



PT. SINAR CENDANA ABADI JAYA

Your Trusted Industrial Supplier Partner





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ABOUT US

PT Sinar Cendana Abadi Jaya adalah perusahaan importir dan distributor selang industri, valves, fittings, serta aksesoris pendukung yang berlokasi di Jakarta Pusat, Indonesia. Kami telah menjadi mitra terpercaya bagi berbagai sektor industri seperti manufaktur, pertambangan, minyak dan gas, konstruksi, hingga pangan di seluruh Indonesia.

Kami berkomitmen untuk menyediakan produk berkualitas tinggi dengan ketersediaan stok yang lengkap, harga yang kompetitif, dan layanan profesional. Fokus kami adalah memberikan solusi yang tepat bagi kebutuhan industri pelanggan, sehingga proses operasional dapat berjalan lebih efisien dan andal.

***PT Sinar Cendana Abadi Jaya** is an importer and distributor of industrial hoses, valves, fittings, and related accessories based in Central Jakarta, Indonesia. With we have earned the trust of various industries including manufacturing, mining, oil & gas, construction, and food & beverage across Indonesia.*

We are committed to delivering high-quality products with complete stock availability, competitive pricing, and professional service. Our mission is to provide reliable industrial solutions that support our clients' operations with efficiency and excellence.



Hydraulic Hose

Used to transport hydraulic fluid under high pressure between pumps, cylinders, valves and actuators in hydraulic systems. Its benefit is providing flexible, durable connections that maintain system pressure and absorb vibration.

Fuel Oil Hose

Designed for transferring fuel oils, gasoline, diesel, and other hydrocarbon fuels in vehicles, refueling systems, or storage facilities. It offers good resistance to fuel, heat, and aging, and ensures leak-free transfer under varying operating conditions.



Oil Suction Delivery Hose

Used for both suction (drawing fluid) and delivery (pushing fluid) of oils, lubricants, and low-viscosity petroleum products. It is capable of withstanding vacuum conditions (to avoid collapse) as well as moderate pressure.

Water Suction Delivery Hose

Used for suction and delivery of water. Constructed with water-resistant elastomers or rubber, reinforced to prevent collapse under vacuum and to handle pressure. It supports agricultural irrigation, dewatering, firefighting, and general water transfer.



Chemical Suction Delivery Hose

Intended for handling a wide range of chemicals under suction or pressure. It offers chemical compatibility, resistance to degradation, and structural integrity under vacuum and pressure. Safe transfer of corrosive fluids without corrosion, leakage or hose failure.

Food-grade Suction Delivery Hose

Designed for transferring food, beverage, dairy, edible oils, or potable liquids under suction or pressure. Made of food-grade certified inner linings, with reinforcement layers and hygienic outer covers. It ensures sanitary, safe fluid transfer for food and beverage industries without contamination.



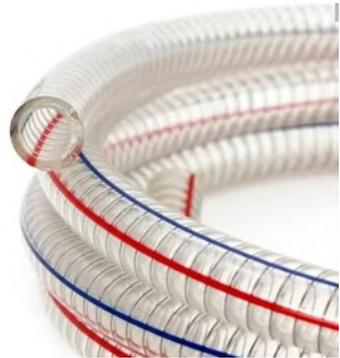


Cement Suction Delivery Hose

Used for suctioning and pumping cement, grout, mortar, or concrete slurries. Designed to resist abrasion, clogging, and maintain vacuum integrity. Reliable material handling in heavy civil works, reducing wear and downtime.

PVC Spring Hose

A flexible hose with a PVC body reinforced by an embedded steel spring helix, used for light pressure, air, dust, or general fluid transfer. Cost-effective, flexible transfer of air, dust, water or light fluids with structural support.



Flexible Metal Hose

Used where metal-level heat, pressure, or durability is required (e.g. steam, high temperature fluids, cryogenics, gas pipelines). It can handle high temperature, high pressure, and is chemically inert, with high fatigue life.



Composite Hose

Used for chemical, petroleum, liquefied gases, in-plant transfer, tank truck loading/unloading. It allows full vacuum operation and positive pressure. Very lightweight relative to metal hose, excellent flexibility, chemical resistance, and suitability for loading/unloading operations.



Teflon Hose

Used for aggressive chemical, high temperature, or ultra-clean fluid transfer where inertness is essential. Inner tube is made of PTFE (polytetrafluoroethylene). It resists most chemicals, has a wide temperature range, low friction, and non-stick properties.

Sandblast Hose

Designed for conveying abrasive media like sand, grit, shot in blasting processes under pressure. Built to resist damage from high-velocity particles, crushing, and wear. Reliable delivery of abrasive materials without premature failure in blasting operations.





PVC Spiral Suction Hose

Used for suction applications with air, water, or light granular materials. Made from flexible PVC tubing reinforced with a rigid helix. It resists collapse under vacuum and is lightweight.

PVC Clear Hose

Clear PVC tubing used for low-pressure fluid transfer, beverage lines, laboratory use, or water lines. Made from flexible PVC material without heavy reinforcement. The benefit is visibility of flow, economical, flexibility and ease of use in light-duty applications.



PVC Braided Hose

Used in applications needing more pressure resistance than clear PVC tubing, such as water lines, air lines, light pneumatic systems. Constructed of PVC reinforced with braided fibers. This gives better strength and kink resistance over plain PVC.



PVC High-Pressure Spray Hose

Intended for pressure spraying tasks (e.g. pressure washers). Built with high-strength PVC compounds and multi-layer reinforcement to stand pressure. It resists kinking abrasion, and UV.



Anti-moss Garden Hose

Garden watering hose treated or constructed to resist moss, algae or growth in the interior. Used in garden irrigation, outdoor watering. Keeps water flow clean over time, reduces internal biofouling, and maintains smooth flow.

Polyurethane (PU) Ducting Hose

Flexible ducting used for air, dust, fume, ventilation in workshops, industrial vacuum systems. It is lightweight, abrasion resistant, extremely flexible and has low memory. Long life under repeated bending, good for dust collection and ventilation.





PVC Food-Grade Hose

Designed for safe transfer of potable water, beverages, and liquid food products. The braided type is reinforced with polyester fibers for higher pressure resistance, while the spring hose has an embedded steel or plastic helix to withstand suction and prevent collapse.



Silicone Food-Grade Hose

Ideal for transferring hot or cold food, dairy, pharmaceutical, and cosmetic products. They resist high temperatures, remain flexible, and do not impart taste or odor to the media. Smooth inner surfaces prevent bacterial growth and allow easy sterilization.

Fire Hose

A high-pressure hose used to deliver water/foam for firefighting applications. Typically constructed with a synthetic rubber or thermoplastic inner tube, reinforced with woven fabric, and an abrasion-resistant outer cover. Designed to handle high pressure and remain flexible for rapid deployment.





Polyurethane Tubing

Used for pneumatic systems, fluid lines in instrumentation, and air lines. Made of solid polyurethane that is flexible, abrasion-resistant, and stable. It supports moderate pressures and repeated bending.

Polyurethane Recoil Tubing

A coiled flexible polyurethane tubing that retracts when not under tension, used for pneumatic tools, air supply reels, or compact installations. Made of PU with memory to recoil, often reinforced to prevent collapse. Saves space, reduces tangling, maintains clean setup in pneumatic tool systems.



Nylon Tubing

Used for pneumatic lines, fuel lines, instrumentation, lubrication systems. Made of nylon offering good pressure rating, and stability. High strength-to-weight, good fatigue life, and stable performance under pressure.



Polyethylene (PE) Tubing

Used for low-pressure fluid transfer (water, chemicals, irrigation, drain lines). Made of polyethylene, often HDPE or LDPE, flexible but moderately stiff.



Unsplit Corrugated Hose

A continuous corrugated flexible hose, used for full sealing ducting, exhaust, flexible conduits, cable protection. The corrugations allow bendability while maintaining strength.

Split Corrugated Hose

Corrugated hose with a split along its length, used for retrofit cable protection or covering existing lines, wiring, or pipes without disconnecting them. Easy installation over existing lines, protecting and bundling while allowing flexibility and service access.





Ball Valve

A quarter-turn shut-off valve using a spherical ball with a drilled hole to control flow. Made of brass, stainless steel, carbon steel, or plastic bodies. It offers tight sealing, and fast operation with minimal leakage even after long idle periods.

Gate Valve

A linear-motion valve that lifts/lowers a gate to open/close the flow path. Made of cast iron, ductile iron, steel, stainless steel, or bronze. It is best used for on/off control (isolation), not for throttling.



Check Valve

A valve that allows flow in one direction only, preventing backflow automatically. Materials vary by service (metals, plastics, elastomers) for pressure and media compatibility. Protects pumps, compressors, and piping systems against reverse-flow damage.



Butterfly Valve

A quarter-turn valve with a flat disc (butterfly) mounted on a central shaft; rotating the disc opens or blocks flow. Used in large diameter pipelines, HVAC, waterworks, and process industries due to its lighter weight and lower cost. Made of cast iron, ductile iron, stainless steel, or plastic.



Globe Valve

A valve with a movable disc, controlling flow by the disc moving onto or off the seat. Made of cast steel, stainless steel, or bronze, with internal trim for sealing. Designed for regulating or throttling flow in pipelines with good control over flow rate.

Foot Valve

A check valve installed at the suction (inlet) side, often with a strainer, to maintain prime in suction lines (e.g., pump intakes). It allows fluid to flow into the pump but prevents backflow that would drain the line. Made of brass, stainless steel, or cast iron with elastomer seals.





Camlock

A quick-connect coupling system allowing fast connection or disconnection of hoses and piping. Made of aluminum, stainless steel, brass, polypropylene or acetal. Useful in petroleum, chemical, agricultural, or industrial fluid transfer where frequent coupling is required.

Sleeve / Ferrule

Used in compression fittings: when a nut is tightened, the ferrule is compressed onto the tubing to create a seal and grip. Made of brass, copper, or stainless steel. Used in pneumatic, hydraulic, instrumentation lines, or refrigeration tubing to join tubing without soldering or welding.



Pneumatic Fitting

Connectors for compressed air or gas lines (e.g. push-to-connect, threaded, elbow, tee fittings). Usually made from brass, nickel-plated brass, stainless steel, or engineering plastics. Used in pneumatic automation, air tools, control systems to route, branch or join air lines.



Hose Clamps

Mechanical bands (galvanized steel or stainless steel) used to secure a hose over a fitting or barb, ensuring a tight seal. They come in worm drive, ear type, T-bolt, and spring types. Applied in plumbing, automotive, HVAC, and fluid systems to prevent hose blow-off under pressure. Reliable, simple, adjustable fastening, and reusability in many cases.



King Nipple

A short tubular fitting (usually male on both ends) used to extend or connect two female threaded parts, often in plumbing or pipe systems. Made of brass, carbon steel, stainless steel, or galvanized steel. Useful for inserting into tight spaces or joining pipes without changing orientation.

Hose Mender

A barbed or corrugated connector used to splice two hoses or repair a cut hose by inserting a fitting into hose ends. Made of brass, plastic or stainless steel. Used in garden hoses, pneumatic lines, irrigation, or low-pressure fluid systems. Quick repair or extension of hoses without replacing entire length.





Brass Fittings



Brass fittings / nipples are commonly used in plumbing, air, fuel, gas, and low-medium pressure fluid systems, available in many forms (elbows, tees, couplings, nipples, reducers). Brass is resistant to rust, provides good sealing, with long service life, and cost-effectiveness with easy installation and reliable sealing.

Galvanized Steel Fittings

Fittings/nipples (elbows, tees, reducers, couplings) made of carbon steel coated with zinc galvanization to resist corrosion. Used in water supply, sprinklers, structural, or general-purpose piping systems.



Stainless Steel Fittings

Pipe and hose fittings/nipples made from stainless steel, offering corrosion resistance and strength. Used in food, pharmaceutical, chemical, marine, or aggressive-environment piping systems. Exceptional durability, hygiene (easy cleaning), resistance to high temperature and chemical corrosion.





Flange

A flat disc or ring with bolt holes that joins sections of pipe, valves or equipment by bolting together with gaskets in between. Made of carbon steel, stainless steel, alloy, or ductile iron. Allows easy assembly, disassembly, maintenance access, and strong, leak-tight connections in piping systems.



Hydraulic Coupling

High-pressure connectors that allow hydraulic lines to be quickly connected or disconnected. Made from alloy steel, stainless steel, or brass with sealing. Used in hydraulic circuits for machinery, mobile equipment, and process systems. Minimal fluid loss on disconnection, safe rapid changeover of hydraulic lines, and ability to lock securely.





NO	Nama	Deskripsi	Keterangan	Options:	Performance Features
A	CHECK VELVE				
1	Serie DBS	<p>Slip-On Duckbill Check Valve Prevents Backflow at the End of a Pipe</p> <p>The series DBS rubber check valve effectively ensures mono-directional flow of slurries, sewerage, sludge and other hard to handle fluids. The valve consists of an elastomer duckbill with a slip-on connection. This simple rugged design eliminates the mechanical parts which can wear and jam in conventional check valves.</p>		<p>Sleeve Elastomer</p> <p>316 Stainless steel pipe clamps</p>	<p>Low pressure drop</p> <p>Corrosion resistant</p> <p>Frost proof</p> <p>Silent operation</p>
2	Series DBF	<p>Flanged Duckbill Check Valve Prevents Backflow at the End of a Pipe</p> <p>The series DBF rubber check valve effectively ensures mono-directional flow of slurries, sewerage, sludge and other hard to handle fluids. The valve consists of an elastomer duckbill with a flanged connection. The back up flange is galvanized carbon steel, with 304 or 316 stainless steel as options. This simple rugged design eliminates the mechanical parts which can wear and jam in conventional check valves. They are available in a variety of elastomers.</p>		<p>Sleeve Elastomer</p> <p>316 Stainless steel back up flanges</p>	<p>Low pressure drop</p> <p>Corrosion resistant</p> <p>Frost proof</p> <p>Silent operation</p>
3	Series DBCP	<p>Flanged Inline Duckbill Check Valve Prevents Backflow Inside the Pipe Line</p> <p>The series DBCP in-line check valve is a simple, reliable, cost effective method of backflow prevention. The series DBCP check valve is designed to be installed between two mating flanges. The simple maintenance-free elastomer with a flanged connection eliminates the mechanical parts which can wear and jam in conventional check valves. For installation at the end of pipe line, the valve can be ordered with optional back up flanges.</p>		<p>Sleeve Elastomer</p> <p>Back up Flange available for service at the end of pipe line</p>	<p>Low pressure drop</p> <p>Frost proof</p> <p>Silent operation</p> <p>Corrosion resistant</p>
4	Series DBRS	<p>Reverse Slip-In Duckbill Check Valve Prevents Backflow Inside the Pipe Line</p> <p>The series DBRS slip-in check valve, like the series DBCP, offers a cost effective method of backflow prevention. It is designed for installation inside of a non-flanged pipe secured by expanding band clamp. The series DBRS slip-in check valve eliminates the mechanical parts which can wear and jam in conventional check valves.</p>		<p>Sleeve Elastomer</p> <p>316 Stainless steel expanding band clamp</p>	<p>Low pressure drop</p> <p>Frost proof</p> <p>Silent operation</p> <p>Corrosion resistant</p>
5	Serien DBMJ	<p>Flanged Fully Enclosed Duckbill Check Valve Prevents Backflow Inside the Pipe Line Cast Iron Enclosure</p>			



The series DBMJ check valve effectively ensures mono-directional flow of slurries, sewerage, sludge and other hard to handle fluids. The valve consists of an elastomer duckbill type check valve inside an iron housing. This simple rugged design eliminates the mechanical parts which can wear and jam in conventional check valves. They are available in a variety of elastomer compounds, with a grey iron housing.

6 Serien DBMJF **Flanged Fully Enclosed Duckbill Check Valve**
Prevents Backflow Inside the Pipe Line
Carbon Steel Fabricated Enclosure

The series DBMJ-F check valve effectively ensures mono-directional flow of slurries, sewerage, sludge and other hard to handle fluids. The valve consists of an elastomer duckbill type check valve inside a steel housing. This simple rugged design eliminates mechanical parts which can wear and jam in conventional check valves. They are available in a variety of elastomer compounds, with a carbon steel fabricated housing.

7 Series ILCV **ILCV In-Line Check Valve**

The In-Line CV slip-in check valve offers cost effective backflow prevention. Its low cracking pressure (1" to 2" above back pressure) combined with high-flow capacity (4x that of conventional slip-in duckbill valves) eliminates upstream flooding. Provides quick drainage during high flow conditions. The series In-Line CV slip-in check valve eliminates mechanical parts which can wear and jam in conventional

Frost proof

 Silent operation
 Corrosion resistant
 High Flow Capacity
 Low pressure drop
 Cracking Pressure = 1" to 2"

Neoprene or EPDM
 304 or 316 Stainless Steel

Series WCV **Wafer Style Check Valve**
Flange Bolts Directly to Pipe Flange
Ideal for Strictly Fluid Applications

The Wafer-style series WCV Check valve is an entirely new valve design specifically engineered for water application. The WCV Check valve operates solely on line pressure and back pressure to open and close, no outside energy source is required. As line pressure builds, the elastomeric flapper disc is pushed away, allowing the water to pass. The memory of the rubber will cause the flapper disc to return flat, and back pressure will seal the flapper against the plate to prevent backflow. The WCV Check valve is designed to be inserted between two mating flanges.

Installation: For horizontal pipe, orient the center rib in vertical position as shown below. For vertical pipe, WCV check valve shall be installed for 'Flow Up'



Series DBS

Slip-On Check Valve

The series DBS rubber check valve effectively ensures mono-directional flow of slurries, sewerage, sludge and other hard to handle fluids.

The valve consists of an elastomer duckbill with a slip-on connection. This simple rugged design eliminates the mechanical parts which can wear and jam in conventional check valves.

Performance Features:

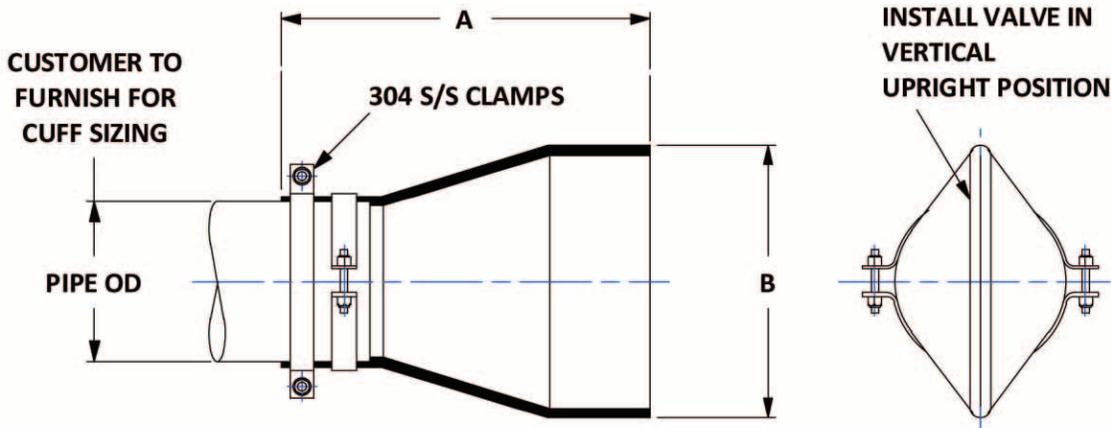
- Low pressure drop.
- Corrosion resistant
- Frost proof
- Silent operation.

Options:

- Sleeve Elastomer
- 316 Stainless steel pipe clamps



Standard Duckbill Design : P2 Max = 25 feet head.
For available Higher pressure, consult factory.



All dimensions are in inches. Weights are in Lbs.

Size	1	1.5	2	2.5	3	4	5	6	8	10	12	14
A	3.00	6.00	6.00	8.00	8.50	12.00	14.00	16.00	19.25	25.00	26.25	31.50
B	2.00	3.50	4.00	5.00	6.25	7.75	11.00	13.00	15.25	19.00	23.00	25.50
Wt, lb	3	4	5	8	10	15	17	20	25	35	60	75

Size	16	18	20	24	30	36	42	44	48	54	60	
A	36.50	40.00	44.00	49.00	66.00	73.25	76.00	76.00	77.50	97.00	100.00	
B	29.00	32.00	37.00	43.00	56.00	63.00	73.00	73.00	79.50	97.00	97.00	
Wt, lb	120	140	300	400	550	850	950	1,125	1,300	1,700	1,700	

Valve dimensions above are valid for standard pipe diameters only.
Dimensions are subject to change without notice.



Series DBF

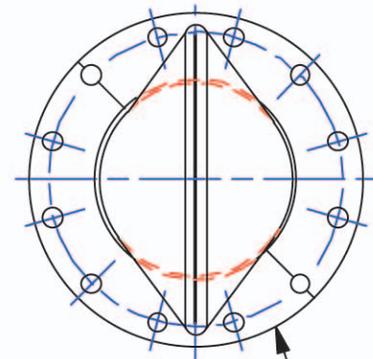
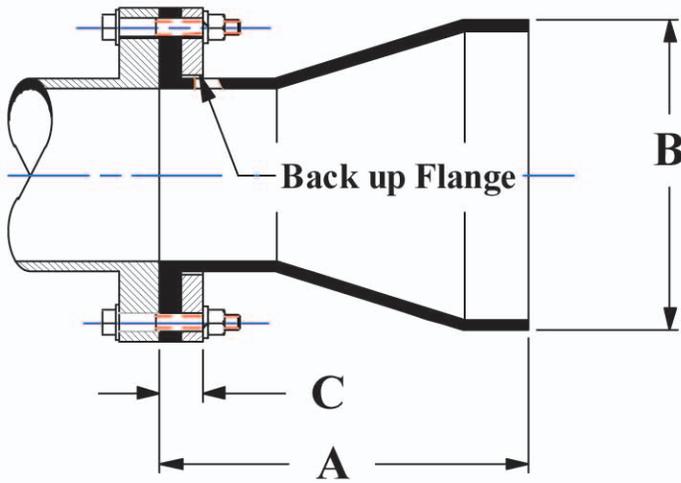
Flanged Check Valve

The series DBF rubber check valve effectively ensures mono-directional flow of slurries, sewerage, sludge and other hard to handle fluids.

The valve consists of an elastomer duckbill with a flanged connection. The back up flange is galvanized carbon steel, with 304 or 316 stainless steel as options. This simple rugged design eliminates the mechanical parts which can wear and jam in conventional check valves. They are available in a variety of elastomers.



Standard Duckbill Design : P2 Max = 25 feet head.
For available Higher pressure, consult factory.



Flange is 125 Lb.
ANSI Standard
Flat Face.

All dimensions are in inches. Weights are in Lbs.

SIZE	1	1.5	2	2.5	3	4	5	6	8	10	12	14
A	3.00	6.37	6.37	7.50	9.25	12.75	18.00	16.75	20.00	25.00	26.25	31.50
B	2.00	3.50	4.00	5.00	6.25	7.87	11.00	13.00	14.25	19.00	23.00	25.50
C	0.75			0.87	1.12				1.62			
Wt, lb	3	4	5	8	10	15	17	20	25	35	60	75

SIZE	16	18	20	24	30	36	42	44	48	54	60
A	32.25	38.25	44.00	49.00	60.00	65.00	66.00	72.00	73.50	97.00	100.00
B	29.00	31.50	36.00	43.00	56.00	63.00	76.00	76.00	79.50	97.00	97.00
C	1.62		1.75	1.75	1.75	2.00				2.50	
Wt, lb	120	200	300	400	600	900	1,000	1,200	1,400	1,800	

Dimensions are subject to change without notice.



Series DBCP

In - Line Check Valve

The series DBCP in-line check valve is a simple, reliable, cost effective method of backflow prevention. The series DBCP check valve is designed to be installed between two mating flanges.

The simple maintenance-free elastomer with a flanged connection eliminates the mechanical parts which can wear and jam in conventional check valves. For installation at the end of pipe line, the valve can be ordered with optional back up flanges.

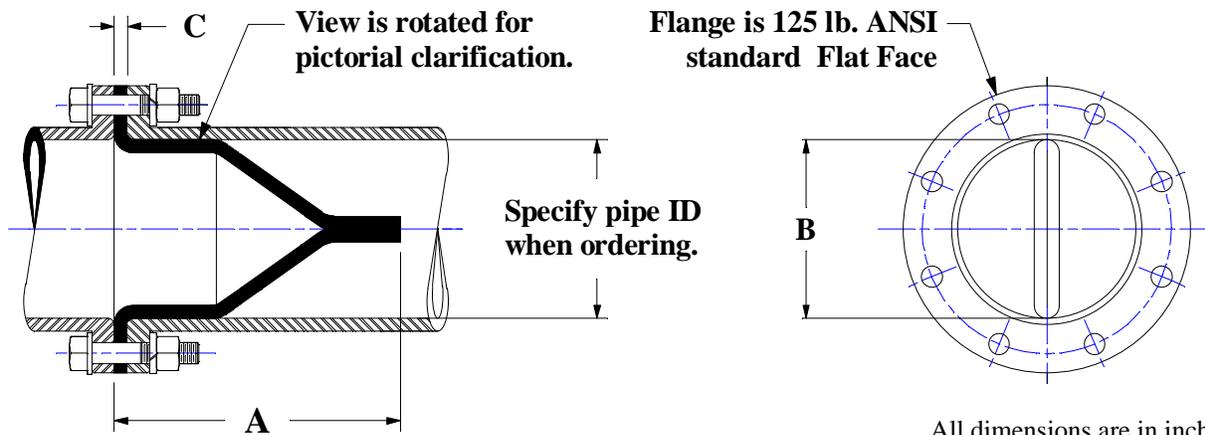


Performance Features:

- Low pressure drop
- Frost proof
- Silent operation
- Corrosion resistant

Options:

- Sleeve Elastomer
- Back up Flange available for service at the end of pipe line



All dimensions are in inches.

SIZE	1	1.5	2	2.5	3	4	5	6	8	10
A	3.00	5.00	6.00	8.00	8.50	13.00	15.00	18.00	17.00	20.00
B	0.87	1.37	1.75	2.25	2.75	3.75	4.50	5.50	7.50	9.50
C	0.37								0.50	
Wt, lb	3	4	5	8	10	15	17	20	25	35

SIZE	12	14	16	18	20	24
A	21.00	21.00	27.00	28.00	32.00	40.00
B	11.25	12.50	14.00	16.00	18.00	22.00
C	0.50	0.62	0.75			
Wt, lb	60	75	120	200	300	400



Series DBRS

Reverse Slip-In Check Valve

The series DBRS slip-in check valve, like the series DBCP, offers a cost effective method of backflow prevention. It is designed for installation inside of a non-flanged pipe secured by expanding band clamp.

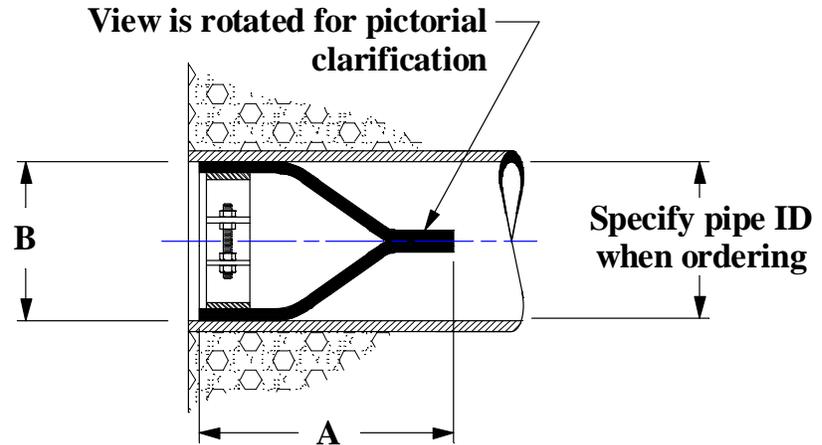
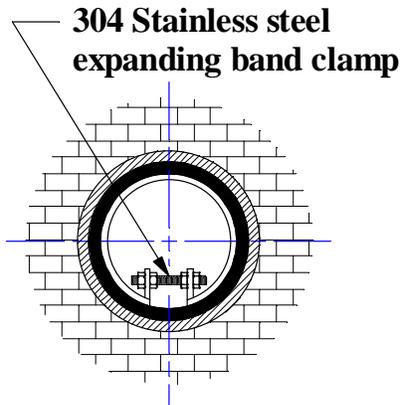
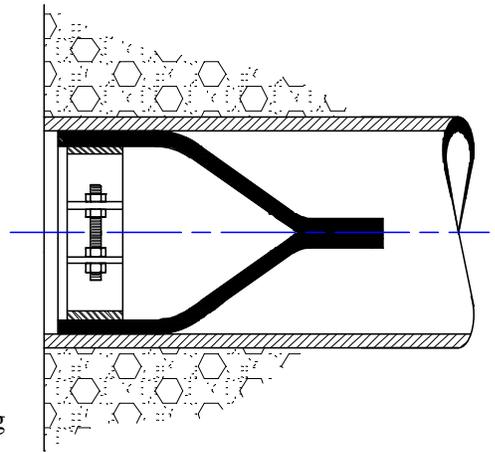
The series DBRS slip-in check valve eliminates the mechanical parts which can wear and jam in conventional check

Performance Features:

- Low pressure drop
- Frost proof
- Silent operation
- Corrosion resistant

Options:

- Sleeve Elastomer
- 316 Stainless steel expanding band clamp



All Dimensions are in Inches.

Size	2	2.5	3	4	5	6	8	10	12	14
A	6.00	6.00	8.50	12.00	15.00	15.00	17.00	19.00	20.00	20.00
B	1.87	2.25	2.75	3.75	4.75	5.75	7.62	9.62	11.50	13.50
Wt, lb	5	8	10	15	17	20	25	35	60	90

Size	16	18	20	24	30	32	36	42	48	60
A	23.00	26.00	29.00	32.00	51.00	57.00	63.00			
B	15.50	17.50	19.50	23.00	29.00	31.00	35.00			
Wt, lb	120	200	300	400	550	600	650			

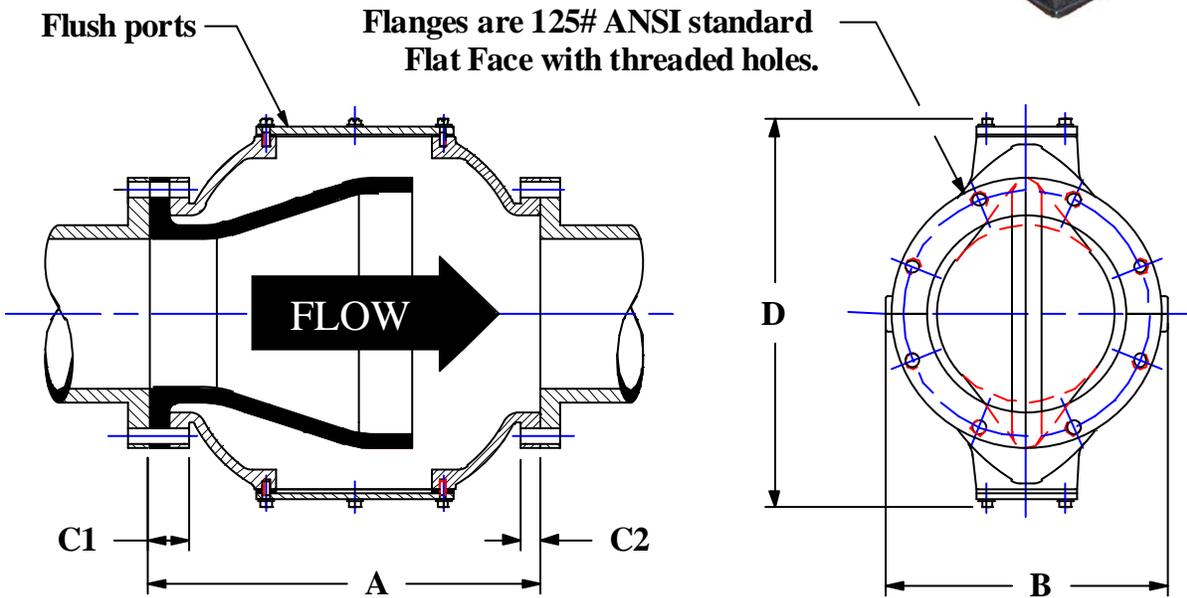


Series DBMJ

Fully Enclosed Check Valve

The series DBMJ check valve effectively ensures mono-directional flow of slurries, sewerage, sludge and other hard to handle fluids.

The valve consists of an elastomer duckbill type check valve inside an iron housing. This simple rugged design eliminates the mechanical parts which can wear and jam in conventional check valves. They are available in a variety of elastomer compounds, with a grey iron housing.



All dimensions are in inches. Weights are in lbs.

SIZE	3	4	6	8	10	12
A	11.25	11.50	14.00	19.50	24.50	27.50
B	7.75	9.00	11.50	14.00	19.00	21.50
C1	1.12	1.12	1.12	1.25		
C2	0.75	0.75	0.75	1.00		
D	9.25	12.87	16.00	19.87	23.00	25.00
Wt, lb	50	90	180	260	440	650

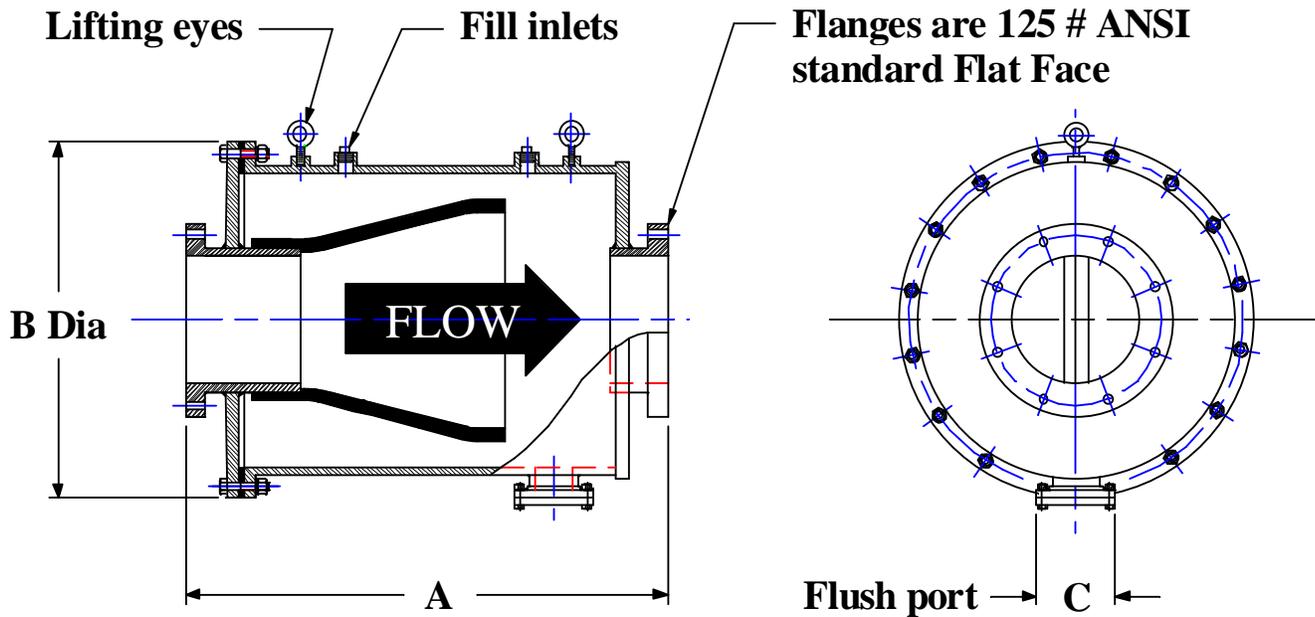


Series DBMJ-F

Fully Enclosed Check Valve

The series DBMJ-F check valve effectively ensures mono-directional flow of slurries, sewerage, sludge and other hard to handle fluids.

The valve consists of an elastomer duckbill type check valve inside a steel housing. This simple rugged design eliminates mechanical parts which can wear and jam in conventional check valves. They are available in a variety of elastomer compounds, with a carbon steel fabricated housing.



All dimensions are in inches. Weights are in Lb.

Size	14	16	18	20	24	30	36	42	48	54	60
A	35.00	47.00	45.00	50.00	60.00	70.00	85.00	90.00	100.00	110.00	120.00
B	28.00	32.00	35.00	43.00	50.00	66.00	77.00	90.00	102.00	126.00	130.00
C	3.00			6.00							
Wt, lb	800	950	1300	1800	2100	2400	3500	5000	6500	7250	9000



ONYX VALVE COMPANY

Series ILCV & ILCV-F In-Line Check Valve

Installation & Maintenance

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1.2 Series ILCV Installation	3
1.2 Series ILCV-F Installation	4
1.3 Anchor Bolt/Pins	5
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1.1 ILCV: Onyx In-Line Rubber Check Valve

This type of rubber check valve is designed to slip directly inside of an existing pipe with the supplied stainless steel expandable clamp or retaining ring to secure in place; it can be fastened from either the inlet or discharge end of the valve. The standard in-line check valve styles must be installed in a truly round pipe. Out of round pipe may cause distortion of the valve causing valve failure.

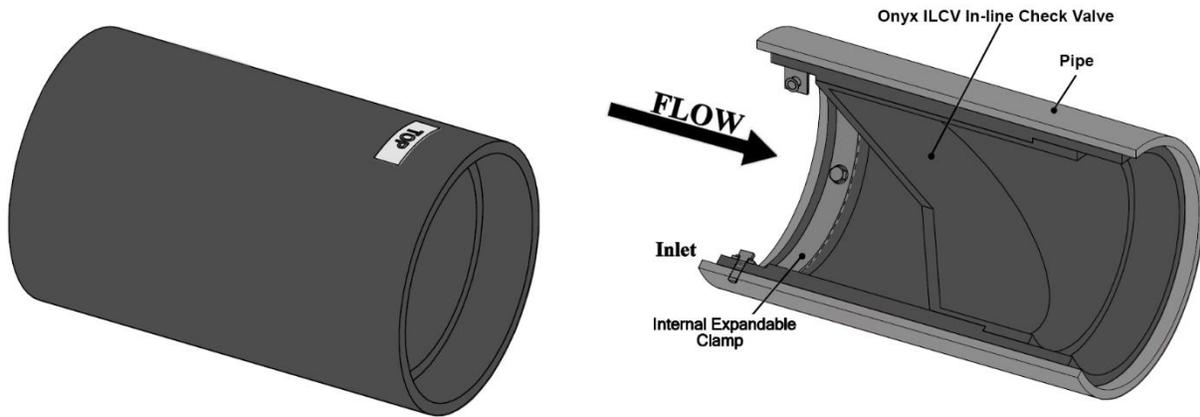


Figure 1: ILCV In-Line Rubber Check Valve

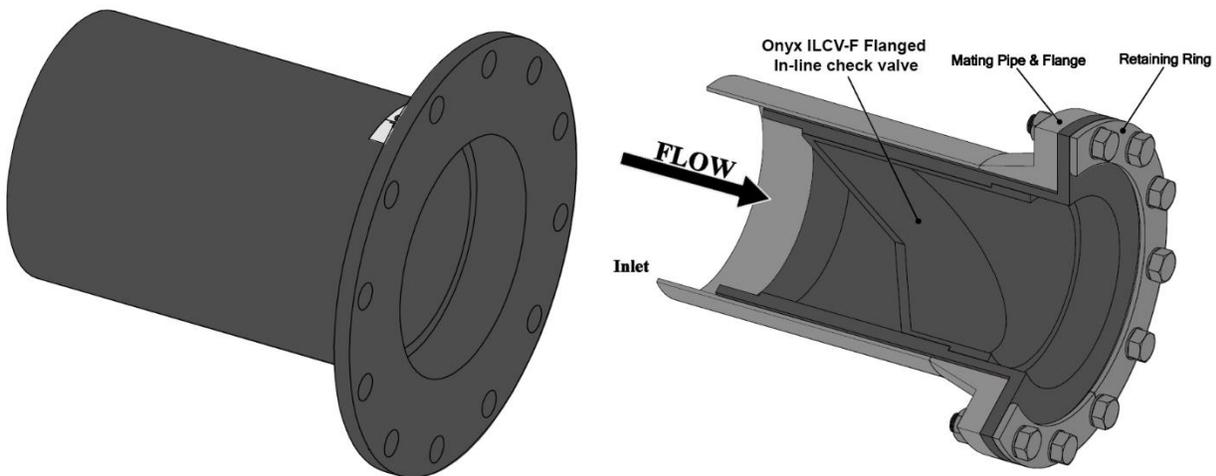


Figure 2: ILCV-F Flanged In-Line Rubber Check Valve

Note: For flanged versions of the In-Line Rubber Check Valves, the integrated rubber flange can be located on either the inlet or discharge end depending on required installation orientation.

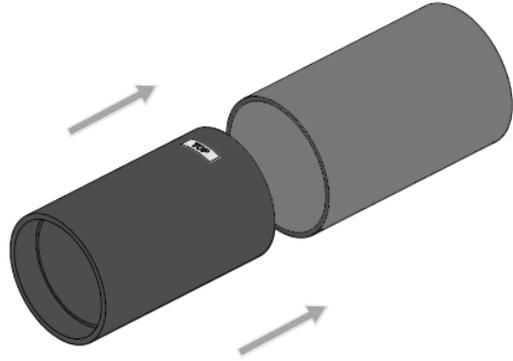


1.2 Onyx In-Line Rubber Check Valve Installation

Series ILCV Style:

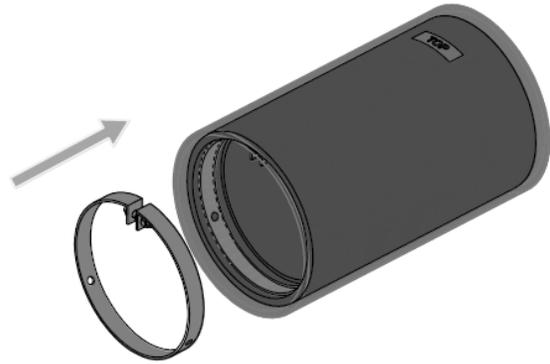
Step 1: Insert Valve

The ILCV valve must be installed in a horizontal pipe and will be supplied with a “FLOW” direction label and a “TOP” label to ensure proper installation orientation within the pipe. Insert the slip-in check valve inside the existing pipe and push until inlet/discharge end is flush with end of pipe.



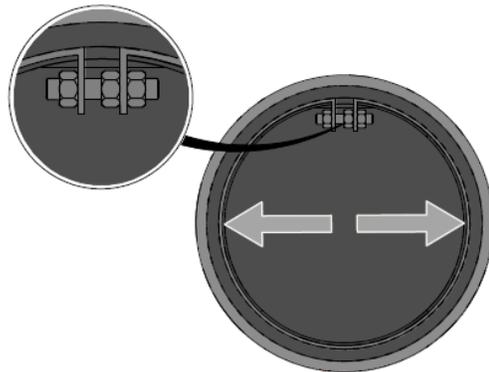
Step 2: Insert Clamp

Insert the expandable internal clamp(s) into the rubber check valve in either the inlet or discharge end depending on installation orientation and ensuring that the adjustable bolts are located at the top of the valve. When installing multiple internal expandable clamps ensure the clamps are evenly spaced/ rotated to provide even clamping pressure as well as the internal expandable fasteners located in a position that minimizes flow interference.



Step 3: Expand Clamp

Tighten the expandable internal clamp until the stainless-steel portion of the clamp has imbedded itself into the rubber of the valve. Tighten the lock nut once the internal expandable clamp is in the proper position and proceed to section for anchor bolting/pinning to anchor the slip-in check valve to the mating pipe.



Note: This style of check valve installation relies on external pressure of the internal expandable clamp to ensure that the valve does not move, care should be taken to ensure proper sealing.



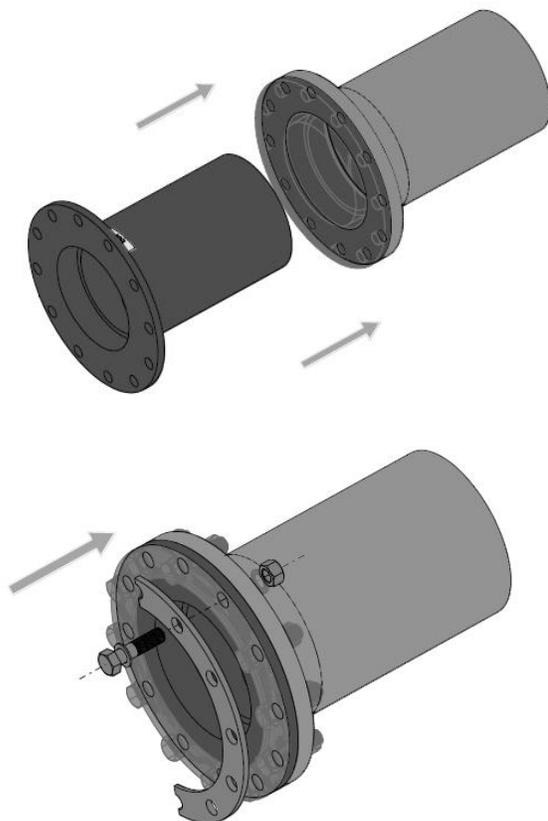
1.2 Onyx In-Line Rubber Check Valve Installation (continued)

Series ILCV-F Flanged Style:

Step 1: Insert Valve

The ILCV-F valve must be installed in a horizontal pipe and will be supplied with a “FLOW” direction label and a “TOP” label to ensure proper installation orientation within the pipe. Insert the slip-in flanged check valve inside the existing pipe and push until flanged inlet/discharge end is flush with end of pipe.

Note: ILCV-F Flanged Check Valve can be supplied with the integrated rubber flange in the inlet or discharge position depending on the required installation parameters.

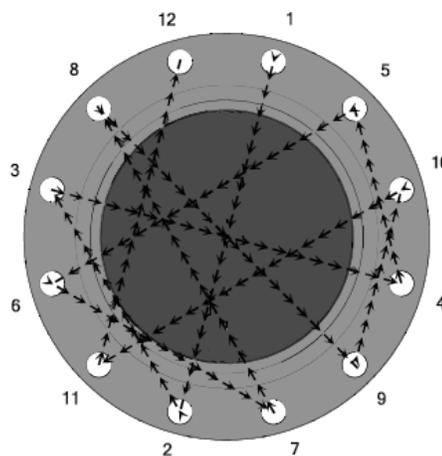


Step 2: Retaining Ring & Bolting

Attach and secure the retaining ring in place with the flange bolting hardware and proceed to Step 3 for flange bolt torquing.

Step 3: Flange Bolt Torquing

Torquing should be accomplished in steps gradually and as evenly as possible around the circumference of the flange. The bolts should be tightened in an alternating sequence similar to a star pattern shown on the figure to the right. The flange bolting is not considered tight and “locked-on” until the edges of the check valve flange bulges out or extrudes slightly. Refer to Section 1.4 for the proper ranges of torque values as well as further examples of the proper patterns used for torquing the flange bolting.



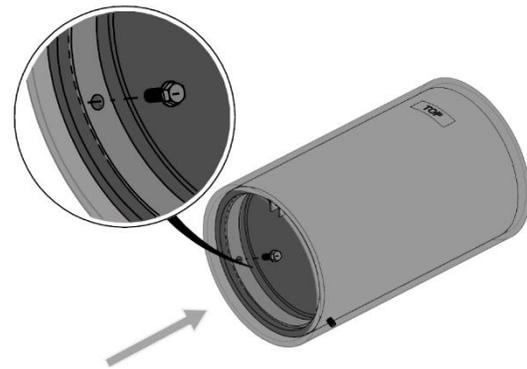
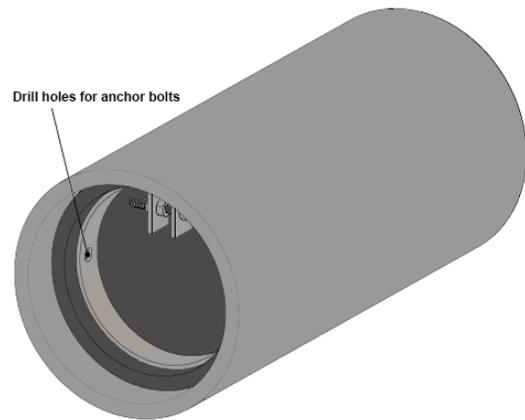
Note: Never tighten bolts on a flanged rubber check valve to the point where there is contact between the retaining ring and mating flange. This type of tightening will crush the integrated rubber flange of the check valve and cause a premature failure.



1.3 Anchor Bolts/Pins

After the Check Valve is installed, drill a hole or holes, depending on the valve size number of clamps, through the cuff of the check valve and into the mating pipe using the center hole on the clamp as a guide. Insert a bolt, which will be sufficient in length to completely travel through the clamp, valve and mating pipe. Completely weld or use some other means of ensuring that this bolt/pin will not fall out or be removed. It is imperative that the clamp and sleeve is properly lined up, so that the rubber is not under pressure due to misalignment.

Insert the Bolt/Pin through the drilled hole(s) and completely weld or use some other means of ensuring that this bolt/pin will not fall out or be removed from the internal expandable clamp.





1.4 ILCV-F Flange Bolt Torque Data

Series ILCV-F Torque Valves	
Size	Approx. Torque Values (ft/lbs)
1" thru 2"	20 - 40
2.5" thru 5"	25 - 60
6" thru 12"	35 - 140
14" thru 18"	50 - 180
20" thru 24"	60 - 200
26" thru 40"	70 - 300
42" thru 50"	80 - 300
52" thru 60"	100 - 400
66" thru 72"	200 - 500
78" thru 90"	300 - 600
96" thru 108"	400 - 700
120"	500 - 800



Series WCV Check Valve

Wafer-Style Check Valve

- The Wafer-style series WCV Check valve is an entirely new valve design specifically engineered for water application. The WCV Check valve operates solely on line pressure and back pressure to open and close, no outside energy source is required. As line pressure builds, the elastomeric flapper disc is pushed away, allowing the water to pass. The memory of the rubber will cause the flapper disc to return flat, and back pressure will seal the flapper against the plate to prevent back-flow. The WCV Check valve is designed to be inserted between two mating flanges.

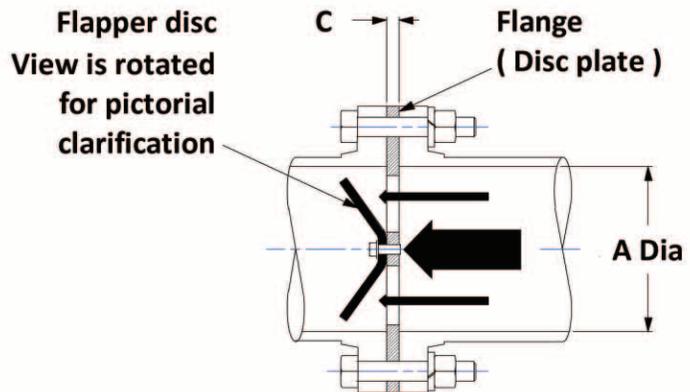
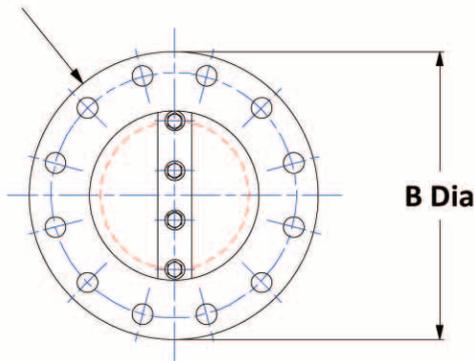


Maximum Backpressure Limits

- 0" → 3" = 175 psi
- 4" → 8" = 150 psi
- 10" → 12" = 100 psi
- 14" → 24" = 75 psi
- 30" and Larger = 50 psi

- Installation : For horizontal pipe, orient the center rib in vertical position as shown below.

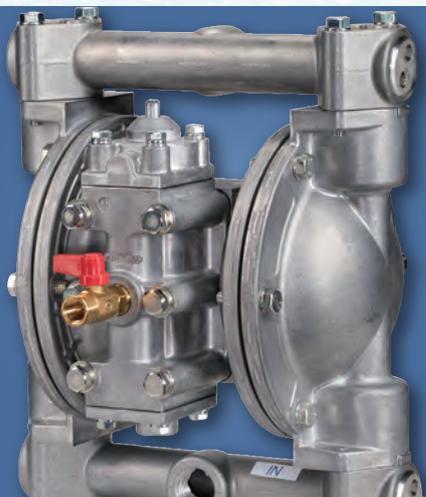
Flange is 125#ANSI standard Flat Face



All dimensions are in inches.

Size	4	5	6	8	10	12	14	16	18	20	24	30	36
A	4.00	5.00	6.00	7.90	10.00	12.00	13.25	15.25	17.25	19.25	23.25	29.25	35.25
B	9.00	10.00	11.00	13.50	16.00	19.00	21.00	23.50	25.00	27.50	32.00	38.75	46.00
C	0.50				0.62			0.75				1.00	
Cv	225	400	575	1200	1800	2520	3200	4200	5400	7500	11000	18000	26000

Dimensions are subject to change without notice.



High Performance Air Operated
Diaphragm Pumps





Yamada Advantages

The Yamada Corporation has been a leading producer of industrial equipment since 1905, and of fluid handling products for over 65 years. As a leader in pneumatic pumping technology, Yamada is known in many industries worldwide for its innovative products, superior quality, and unmatched reliability. An impressive history of product design and engineered solutions establishes Yamada as forerunner in industrial pump technology.

Yamada's reputation for manufacturing top quality products, allied with continuing efforts in research and development, have created a strong foundation for market leadership. As an ISO 9001 certified corporation, stringent quality procedures are followed throughout the manufacturing process, including assembly procedures and product testing.

The Yamada Corporation is headquartered in **Tokyo** with manufacturing facilities located throughout Japan. Production facilities are located in **Arlington Heights, Illinois, USA**, servicing the Western Hemisphere; **The Netherlands**, providing support throughout Europe, Africa, and the Middle East; **Thailand**, covering the Southeast Asia; and **Shanghai**, covering the emerging Asian market. These offices are support centers for over 400 authorized fully stocking Yamada distributors worldwide.

Advantages and Characteristics

1. **Handle a wide variety of fluids with high solids content:** No close fitting or rotating parts so liquid with high solids content and/or particle size can be easily pumped.
2. **Self Priming:** The Yamada pump design (incorporating internal check valves) provides high suction lift even at dry start-up and with heavier fluids.
3. **Ability to run dry:** No close fitting or sliding parts are at risk—the pump can run dry without damage.
4. **Variable flow rate and discharge pressure:** Yamada pumps will run at any setting within their operating range simply by adjusting the air inlet pressure and system conditions. One pump can fit a broad spectrum of applications.
5. **Portable/Simple Installation:** Yamada pumps transport easily to the application site. Simply connect an air supply, attach fluid connections, and the pump is ready to perform. There are no complex controls to install or operate.
6. **Dead Head:** The discharge line can be closed with no damage or wear. The pump will simply slow down and stop.
7. **Shear sensitive:** The gentle nature and minimal parts contact with the liquid make Yamada pumps an excellent choice for shear sensitive fluids.
8. **Safe Operation:** Powered by compressed air, Yamada pumps are intrinsically safe.
9. **Submersible:** If external components are compatible, Yamada pumps can be submerged in liquids by simply running the exhaust line above the liquid level.
10. **Pumping efficiency remains constant:** There are no rotors, gears, or pistons, which wear over time and lead to the gradual decline in performance/flow rate.

For additional information on Yamada products and services, visit ap.yamadacorp.co.jp



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Engineered to Perform. Designed for Long Life.

Rugged, Bolted Construction

All pumps feature bolted construction, which eliminates leak paths and simplifies assembly with actual torque values. This style is superior to clamp band retainer designs that bend or warp, thus causing misalignment and general assembly issues, possibly leading to more unnecessary repairs.

Outside-Accessible Air Valve

Inspection or maintenance of every Yamada air valve may be performed without removing the pump from service.

Maintenance Indicator

Reset button indicates when maintenance is due.

Unified Air Valve Concept

Common-size air valve assemblies reduce parts confusion.

Pilot Valve

Unique to the Yamada design is an individual modular pilot valve that actuates the air valve. It is depressed slightly by the inner center disk creating a pressure drop at one end of the air valve, allowing shifting to occur. It is maintenance free with no cumbersome snap rings or lubricated dynamic o-rings to replace or repair.

Optimal Stroke Length

Extensive research has led to the development of an optimal stroke length that maximizes diaphragm life and performance while minimizing downtime and maintenance costs.



Yamada Air Valve Technology

Yamada air valve technology is the heart of the air-powered double diaphragm pump and determines reliability. Yamada holds several patents on its field proven valve and enjoys a superior reputation throughout the industry.

Unified Air Valve Concept

Yamada offers two common-size air valve assemblies (shown at right) fitting seven series of pumps, further reducing reassembly confusion and parts inventory. Other air-powered double diaphragm pump manufacturers offer multiple air valve designs and revisions in an effort to address ongoing pump reliability problems. Multiple designs and revisions typically create maintenance rebuild issues, parts confusion, and obsolete inventory. *Whether your pumps are functioning continuously or intermittently - at high or low pressure - using dirty or clean air - Yamada offers **one field proven design**.*

Truly Non-Lubricated Air Valve

The patented Yamada air valve on all NDP series pumps never requires lubrication or pre-packing. The advanced design eliminates the need for external lubrication, which can lead to pumpage contamination and maintenance headaches.

Yamada is proud to be the originator and still industry leader of non-lubricated air valve technology for air-powered double diaphragm pumps.

Many other pump manufacturers claim to offer a non-lubricated air valve. These valves are pre-packed with grease and are not truly lube free. Depended upon the design, their air valves will require full time lubrication for continous operation even requiring an inline lubricator be installed oftentimes, depending on the quality of the air running the pump.

Component Replaceable

All Yamada air valves are designed with maintenance in mind and can be replaced quickly and efficiently without taking the pump out of service, reducing downtime.

Many competitor air valves can't be repaired and instead require complete replacement of the valve assembly and housing, further increasing the cost of ownership.

Simply remove four bolts and valve cap from the Yamada pump and slide the assembled air valve into the housing unit.

↓ Air Valve fits pump models
NDP-20, NDP-25, NDP-32



Common-size Air Valve assemblies reduce parts confusion.

← air valve fits pump models NDP-40, NDP-50, NDP-80, and the Flap Valve Diaphragm pump.

Non-Stalling

A patented non-centering, spring-assisted shifter is incorporated into every NDP Series pump, ensuring a positive shift every time.

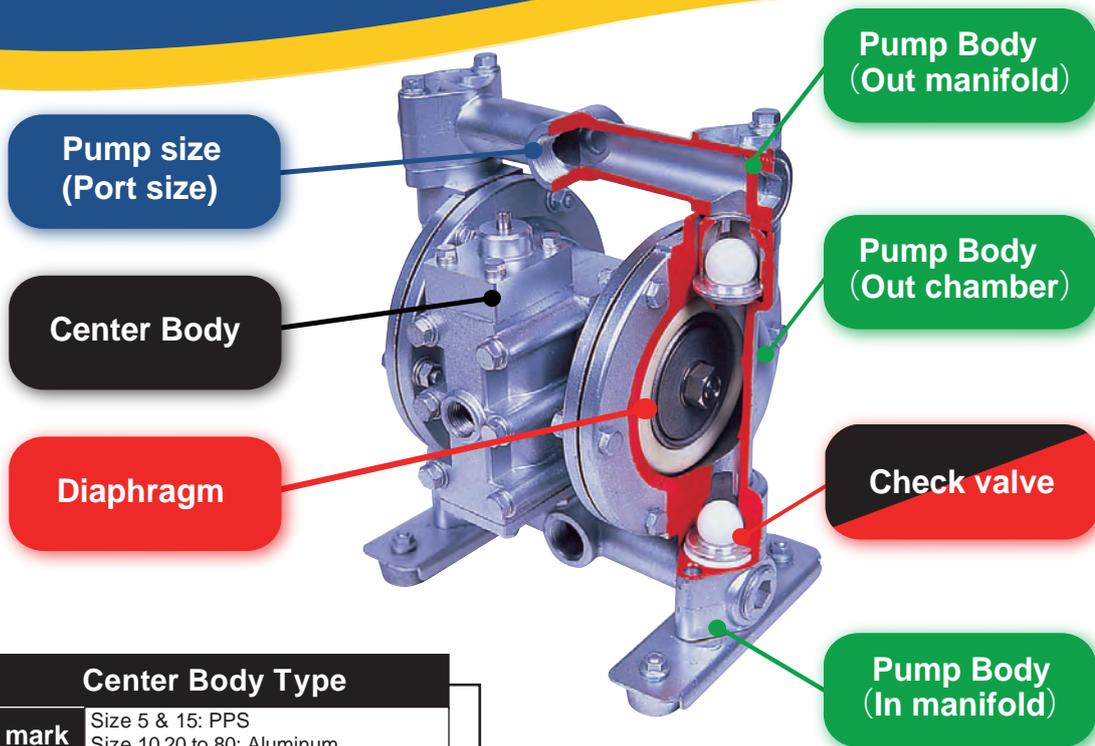
The 304 stainless steel C-springs provide exceptional durability and longevity and are tested to last over **300 million cycles!**

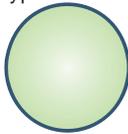
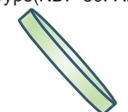
The spring assist also aides in long dead head applications for reliable startup.

Continued on next page >

For additional information on Yamada products and services, visit ap.yamadacorp.co.jp

Model Indicator



Check Valve	
B	Ball Type 
	Flat Type(PTFE for size 5&15) 
F	Flap Type(NDP-50FAN) 

Center Body Type	
No mark	Size 5 & 15: PPS Size 10,20 to 80: Aluminum
P	Polypropylene (Size 20 & 25 & 50)
H	Aluminum Mechanical Switch (Size 40, 50 & 80)

NDP- B

Pump Size	Port Type	Port Type	
		Rc thread / JIS flange	NPT thread / ANSI flange
5 Port size 1/4" (5mm)		Rc thread	NPT
10 Port size 3/8" (10mm)		Rc thread	NPT
15 Port size 1/2" (15mm)		Rc thread	NPT
20 Port size 3/4" (20mm)		Metal Body: Rc thread Plastic Body: JIS/DIN/ANSI flange, Rc thread	NPT
25 Port size 1" (25mm)		Metal Body: Rc thread Plastic Body: JIS/DIN flange, Rc thread	Metal Body: NPT Plastic Body: ANSI flange, NPT
32 Intake port size 1-1/2" (40mm), Discharge port size 1-1/4" (32mm)		Rc thread	NPT
40 Port size 1-1/2", (40mm)		JIS/DIN flange (Cast Iron Body: Rc thread)	ANSI flange (Cast Iron Body: NPT)
50 Port size 2", (50mm)		JIS/DIN/ANSI flange (Cast Iron Body: Rc thread)	ANSI flange (Cast Iron Body: NPT)
80 Port size 3", (80mm)		JIS/DIN/ANSI flange (Cast Iron Body: Rc thread)	ANSI flange (Cast Iron Body: NPT)

Pump Body Material	Liquid Temp Range	Characteristic
A Aluminum (ADC-12/AC4C-T6)	0 ~ 100°C	Good for oil and solvent. Not good for chemical, corrosive and abrasive
S Stainless Steel (SCS14/SUS316)	0 ~ 100°C	Hard and rust resistant. Good for corrosive and abrasive liquid
F Cast Iron (FC250/S45C)	0 ~ 100°C	Hard but easy to rust. Good for Iron oxide, sludge, etc.
P Polypropylene (PPG)	0 ~ 60°C	A tough flexible synthetic thermoplastic materials
V Kynar® (PVDF)	0 ~ 60°C	Good tensile and compressive strength and high impact strength
D Groundable Acetal (POM)	0 ~ 60°C	Excellent mechanical and high-temperature properties
T PTFE	0 ~ 100°C	A synthetic fluoropolymer of tetrafluoroethylene that is characteristically resistant to heat, acid oxidizing agents and to alkalis

Diaphragm/Check Valve Material	Liquid Temp Range	Characteristic
C Neoprene (CR)	0 ~ 70°C	A tough, synthetic rubber that is resistant to the effects of oils, solvents, heat, and weather
N Buna N (NBR)	0 ~ 70°C	An oil-resistant synthetic rubber that is resistant to oil, fuel, and other chemicals
E EPDM	0 ~ 80°C	A type of synthetic rubber that is resistant to heat, ozone and weather, polar substances and steam
H Hytrel® (TPEE)	0 ~ 100°C	A thermoplastic polyester elastomer that gives the flexibility of rubbers, the strength of plastics, and the processibility of thermoplastics
S Santoprene® (TPO)	0 ~ 100°C	A flexible and durable elastomer that has environmental aging resistance, electrical properties
V Viton® (FKM)	0 ~ 100°C	A fluoropolymer elastomer that has oil, heat and chemical resistance
T PTFE	0 ~ 100°C	A synthetic fluoropolymer of tetrafluoroethylene that that is characteristically resistant to heat, acid oxidizing agents and to alkalis
W PTFE+EPDM	0 ~ 90°C	Yamada offers a unique unified PTFE diaphragm with a bonded rubber backer and an outer disk integrated into the diaphragm.

Fair Guideline of Pump size and Flow rate

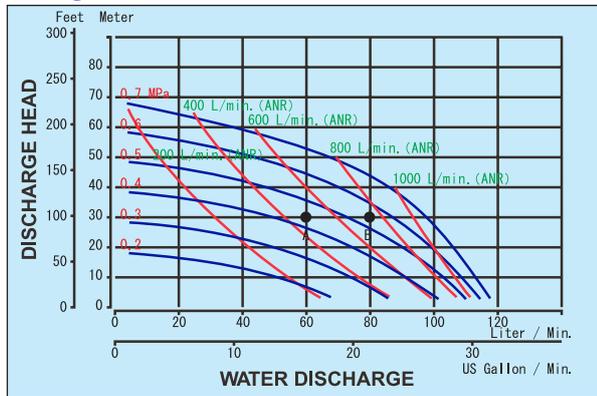
Operation with the maximum cycle shorten the pump lifetime.

To optimize pump performance and lifetime, please select pump in reference to this guideline.

Recommended Flow Rate by Pump Size

	L/min			
NDP-5	5		50	100
DP-10	10			
NDP-15		20		
NDP-20			60	
NDP-25			90	
NDP-40		200	250	500
NDP-50			320	
NDP-80			450	

Using Performance Curves



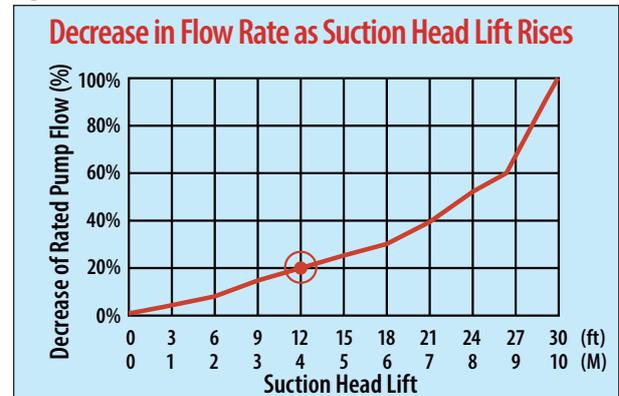
Precautions for pump selection

* Select a pump with safety margin (1.5 times or higher) appropriate for the required conditions with taking effective use of a diaphragm and other expendables into consideration.

* The performance curve shown on the right indicates the data measured with fresh water (viscosity 1 mPa·s, specific gravity 1.0) by dip grazing with the shown devices. The amount of liquid discharged from the pump greatly varies depending on various factors such as the "viscosity, specific gravity and slurry concentration of liquid to be transferred," "suction lift," "discharge head" and "pneumatic transportation distance." If you are not sure which pump you should select, fill in the selection criterion of the "Inquiry Sheet" on the end of the document as much as possible, and contact us.

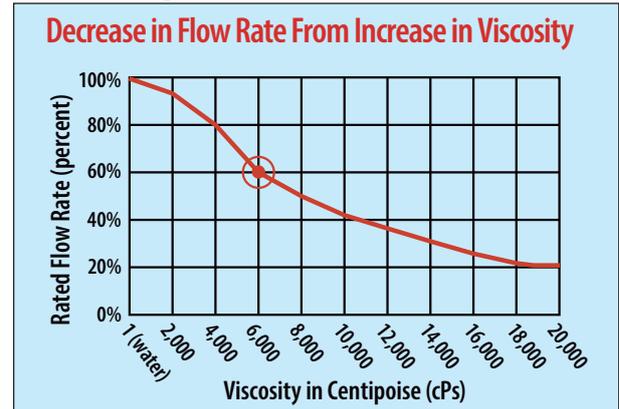
1. The solid lines plot the relation between the amount of the discharged liquid ("water discharge") and the discharge head when the corresponding pressure is given. First, decide which curve corresponds to the desired air pressure.
2. For example, when the supplied air pressure at your site is 0.5 MPa, check the curve marked "0.5 MPa."
3. When liquid to be transferred is fresh water (viscosity is 1 mPa·s and specific gravity is 1.0), the desired water discharge is 60 L/min, and the discharge head is 30 m, the corresponding axes intersect at Point A. This point is located below the 0.5-Mpa curve and satisfies the desired water discharge and discharge head with this pump (Example: NDP-20).
4. If it is required that "the water discharge is 80 L/min, and the discharge head is 30 m," the intersection point is "B" above the 0.5-MPa curve and this indicates that this pump cannot satisfy your conditions. In such a case, we recommend that you select the larger one (NDP-25).

Specified Suction Lift



With a suction lift of 12-ft, 4m pump rate decreases by approximately 20%. Valid for pumps 3/4" and larger; data varies with pump configuration.

Viscous Liquids Performance Data



During the conveyance of a fluid with a viscosity of 6000 cPs, the pump rate decreases to 60% of its rated value (100% = water). Valid for 3/4" pumps & larger. Note: Please consult Yamada when both the pressure and temperature exceed 70 MPa and 180°C, respectively.

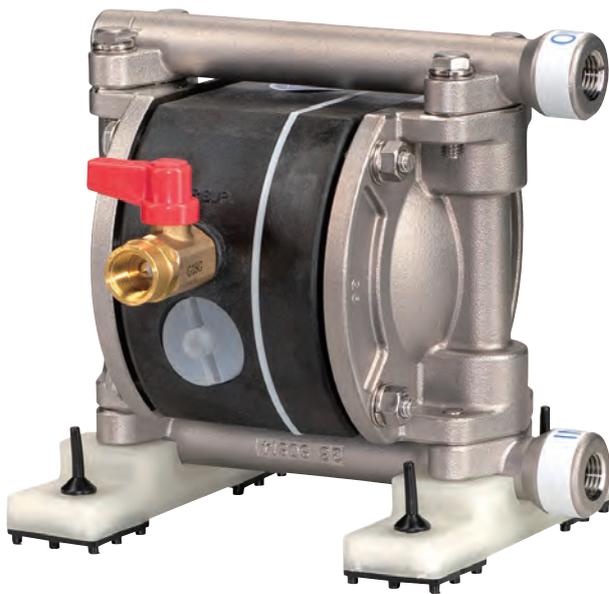
5. The dashed lines plot curves for air consumption as shown in the graph respectively. The point A, intersection point as a result of the condition "3." above (water discharge: 60 L/min, discharge head: 30 m) is located about in the middle between the 400L/min air consumption curve and the 600L/min air consumption curve. Therefore, the air consumption under this condition is approximately 500 L/min (ANR). Since the air consumption is calculated by converting to the barometric pressure, it does not vary depending on the used air pressure.

NDP-5 Series

11L/min Maximum Flow Rate
1/4 inch Port Size

Metal Body Pumps

Plastic Body Pumps



NDP-5FST



NDP-5FPT

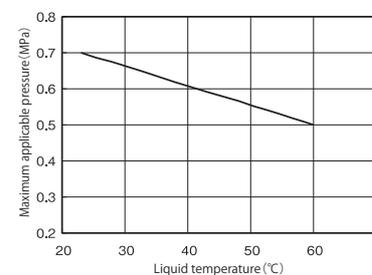


NDP-5FVT

Specifications

Port Size		1/4" (6A)
Liquid	Intake	Rc1/4" or NPT1/4"
	Discharge	
Air	Supply	Rc1/4" or NPT1/4" includes ball valve
	Exhaust	Rc3/8" or NPT3/8" w/ internal silencer*
Air Supply Pressure		0.2-0.7MPa
Maximum Discharge Pressure		0.7MPa
Discharge Volume Per Cycle		20mL
Maximum Size Solid		N/A
Net Weight		NDP-5FAT: 1.6kg NDP-5FST: 2.7kg NDP-5FPT: 1.3kg NDP-5FVT: 1.7kg
Body Material		Aluminum, Stainless Steel, Polypropylene, Kynar®
Diaphragm Material		PTFE

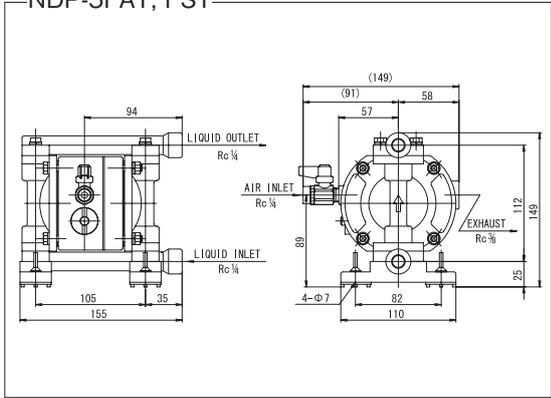
Liquid temperature-pressure correlation chart



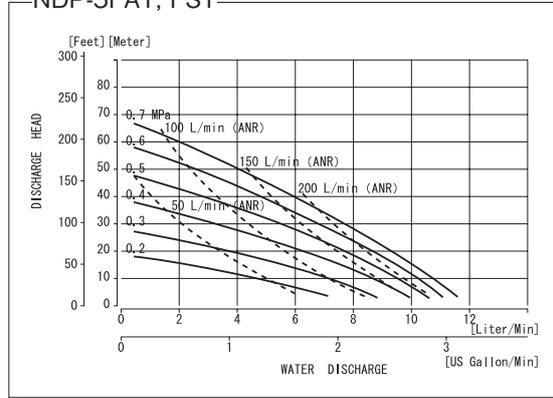
*Silencer is internal type. Exhaust port has Rc3/8" or NPT3/8" thread.

Dimensions and Performance Curve

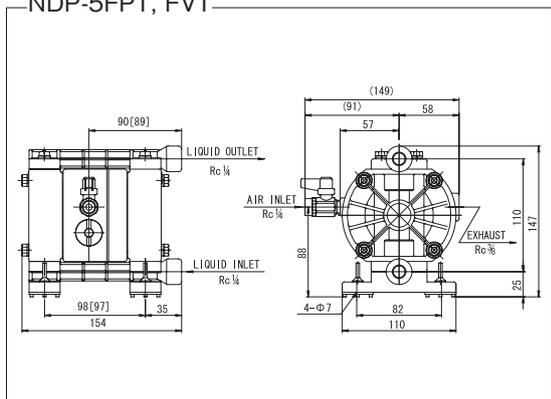
NDP-5FAT, FST



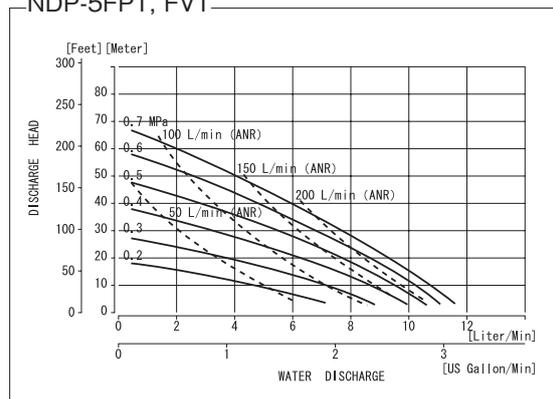
NDP-5FAT, FST



NDP-5FPT, FVT



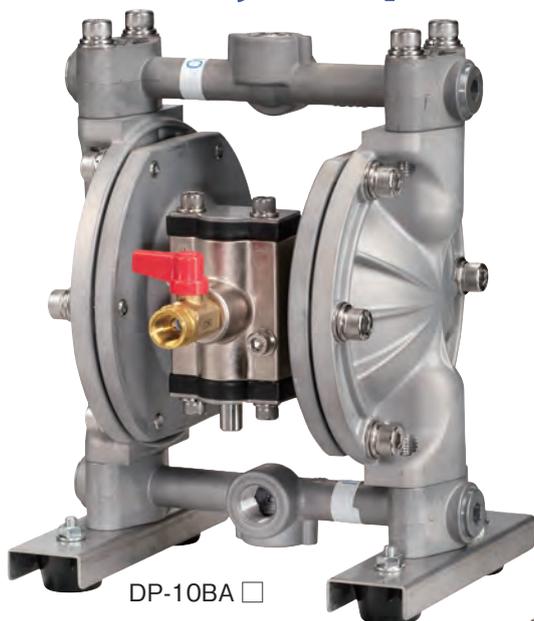
NDP-5FPT, FVT



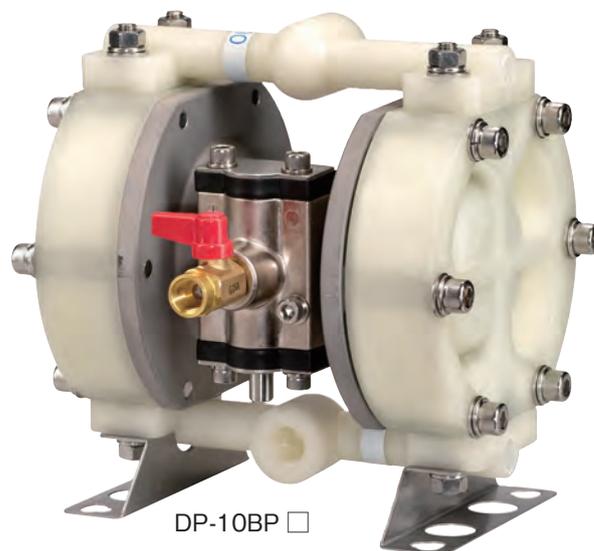
DP-10 Series

20L/min Maximum Flow Rate
3/8 inch Port Size

Metal Body Pumps



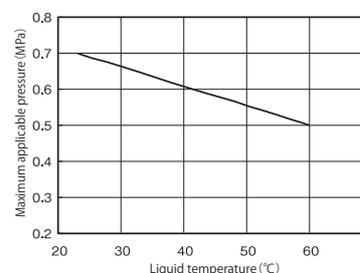
Plastic Body Pumps



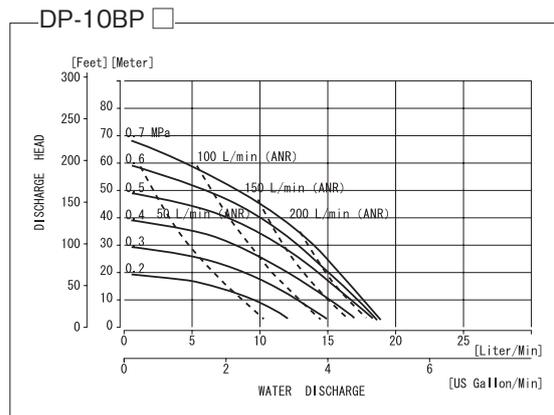
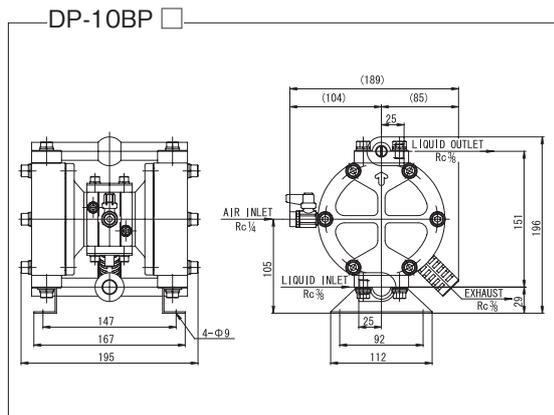
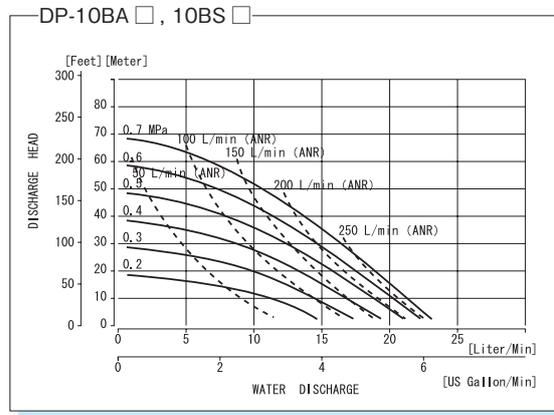
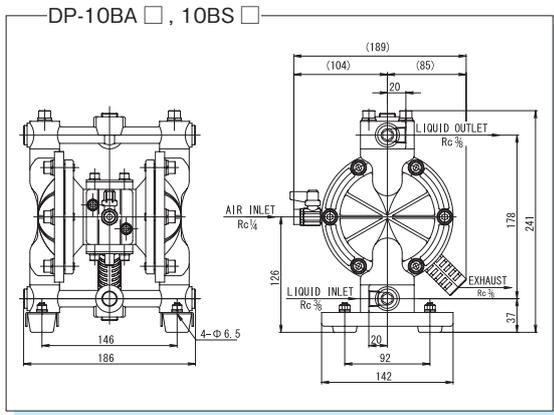
Specifications

Port Size		3/8" (10A)
Liquid	Intake	Rc3/8" or NPT3/8"
	Discharge	
Air	Supply	Rc1/4" or NPT1/4" includes ball valve
	Exhaust	Rc3/8" or NPT3/8" w/ silencer
Air Supply Pressure		0.2-0.7MPa
Maximum Discharge Pressure		0.7MPa
Discharge Volume Per Cycle		50mL
Maximum Size Solid		1mm
Net Weight		DP-10BA□: 3.5kg DP-10BS□: 5.2kg DP-10BP□: 3.0kg
Body Material		Aluminum, Stainless Steel, Polypropylene
Diaphragm Material		Neoprene, Buna N, PTFE, Hytel®, Santoprene®

Liquid temperature-pressure correlation chart



Dimensions and Performance Curve



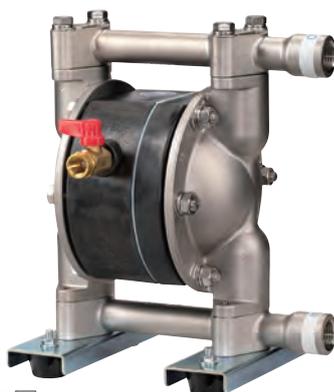
NDP-15 Series

50L/min Maximum Flow Rate
1/2 inch Port Size

Metal Body Pumps



NDP-15BA □



NDP-15BS □

Plastic Body Pumps



NDP-15FP □ ,BP □

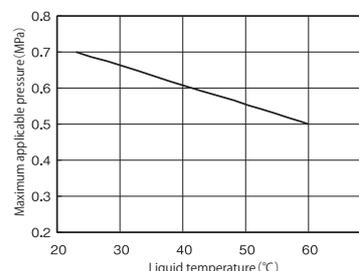


NDP-15FVT

Specifications

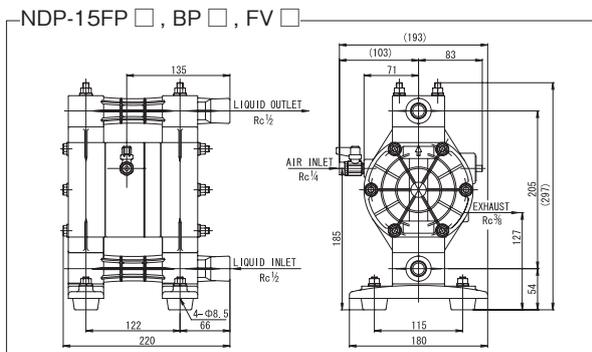
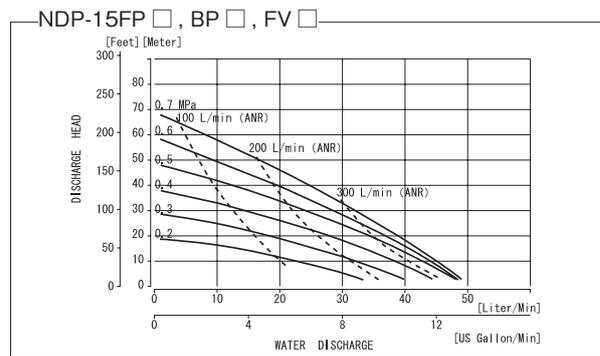
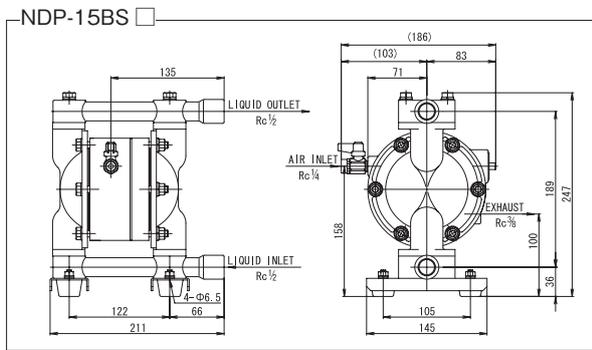
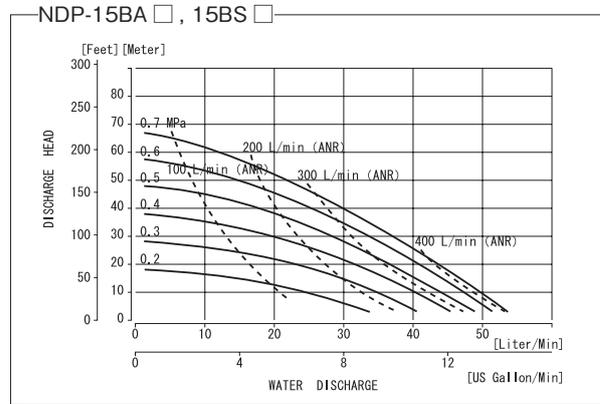
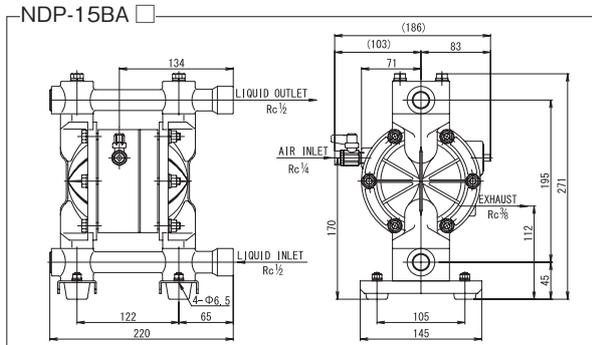
Port Size		1/2" (15A)
Liquid	Intake	Rc1/2" or NPT1/2"
	Discharge	
Air	Supply	Rc1/4" or NPT1/4" includes ball valve
	Exhaust	Rc3/8" or NPT3/8" w/ internal silencer*
Air Supply Pressure		0.2-0.7MPa
Maximum Discharge Pressure		0.7MPa
Discharge Volume Per Cycle		70mL
Maximum Size Solid		1mm
Net Weight		NDP-15BA□ : 4.1kg NDP-15BS□ : 6.3kg NDP-15FP□ : 3.5kg NDP-15FVT : 4.3kg
Body Material		Aluminum, Stainless Steel, Polypropylene, Kynar®
Diaphragm Material		Neoprene, Buna N, PTFE, Hytrel®, Santoprene®

Liquid temperature-pressure correlation chart



*Silencer is internal type. Exhaust port has Rc3/8" or NPT3/8" thread.

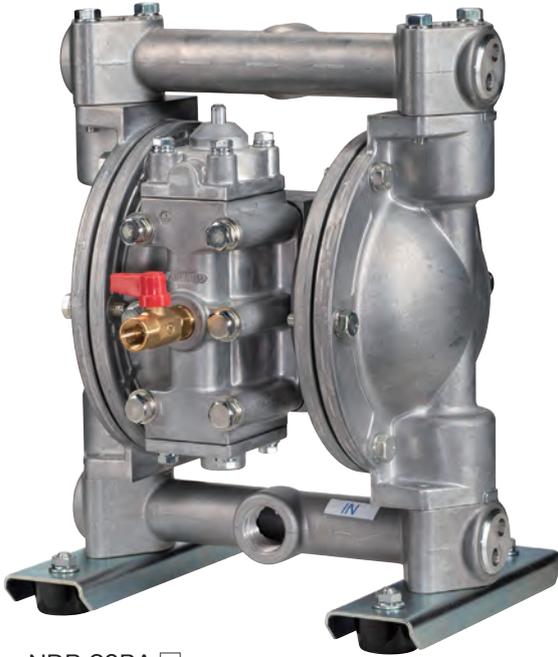
Dimensions and Performance Curve



NDP-20 Series

110L/min Maximum Flow Rate
3/4 inch Port Size

Metal Body Pumps



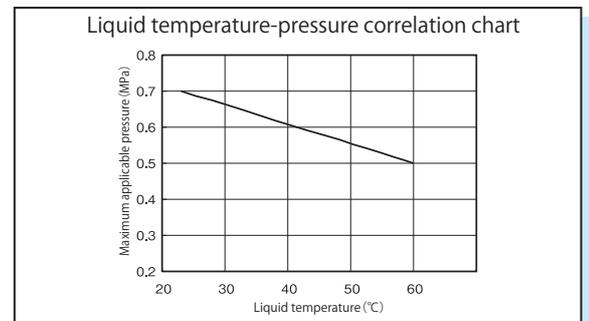
NDP-20BA □



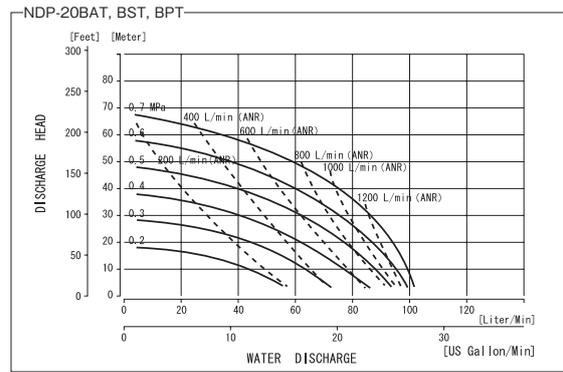
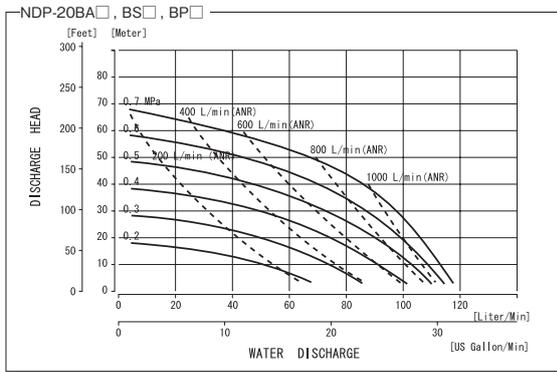
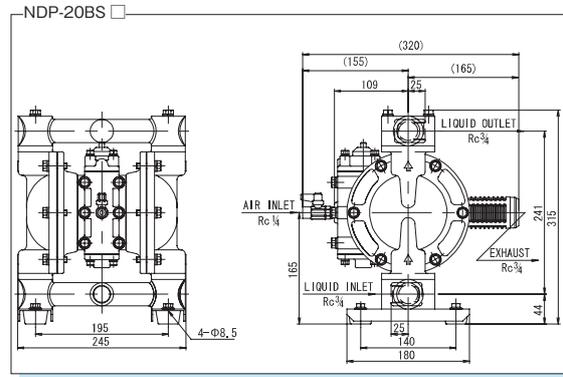
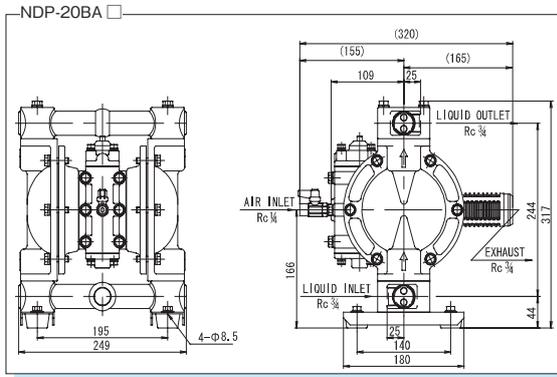
NDP-20BS □

Specifications

Port Size		3/4" (20A)
Liquid	Intake	Metal Body: Rc3/4" or NPT3/4" Plastic Body: JIS/DIN/ANSI Compatible Flange, Rc3/4" or NPT3/4"
	Discharge	
Air	Supply	Rc1/4" or NPT1/4" includes ball valve
	Exhaust	Rc3/4" or NPT3/4" w/ silencer
Air Supply Pressure		0.2-0.7MPa
Maximum Discharge Pressure		0.7MPa
Discharge Volume Per Cycle		Rubber diaphragm: 350mL PTFE diaphragm: 240mL
Maximum Size Solid		2mm
Net Weight		NDP-20BA□: 9.0kg NDP-20BS□: 14.0kg NDP-20BP□: 8.0kg
Body Material		Aluminum, Stainless Steel, Polypropylene
Diaphragm Material		Neoprene, Buna N, EPDM, Viton®, PTFE, Hytrel®, Santoprene®



Dimensions and Performance Curve



NDP-P20 Series

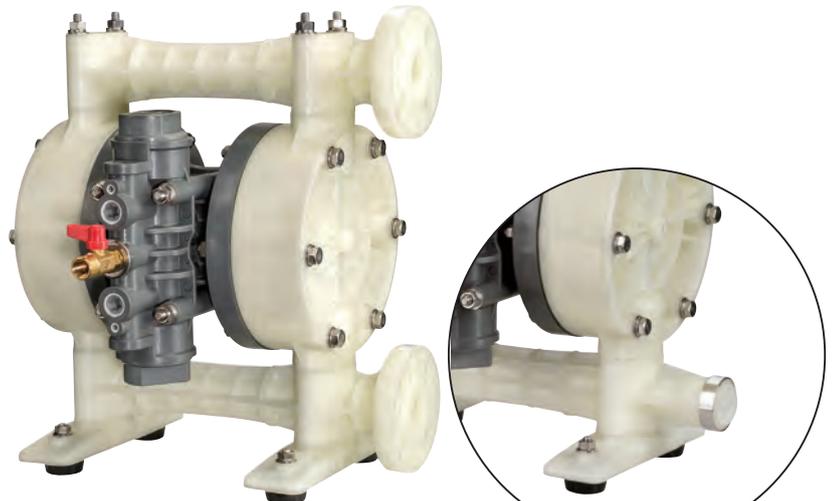
110L/min Maximum Flow Rate
3/4 inch Port Size

Metal Body Pumps



NDP-P20BA □

Plastic Body Pumps



NDP-P20BP □ -FL
(Flange type)

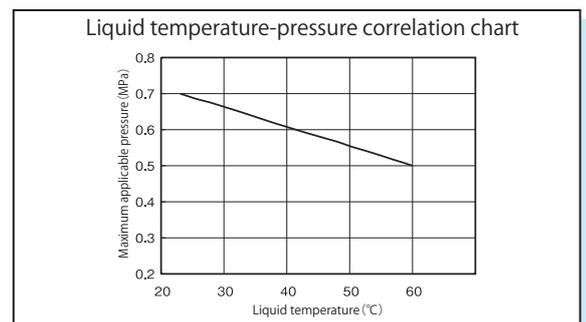
(Rc type)



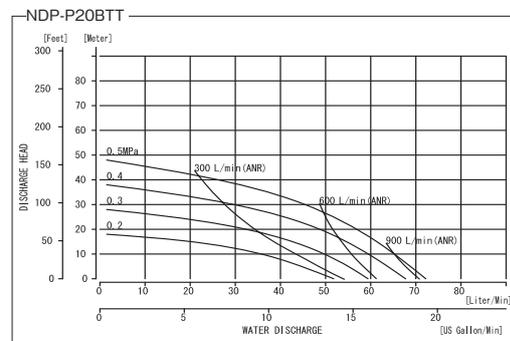
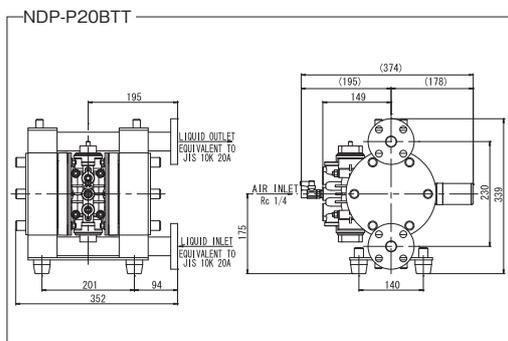
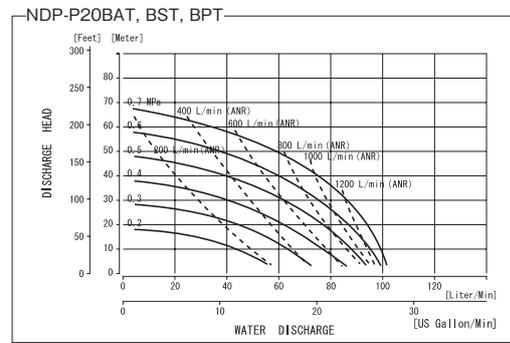
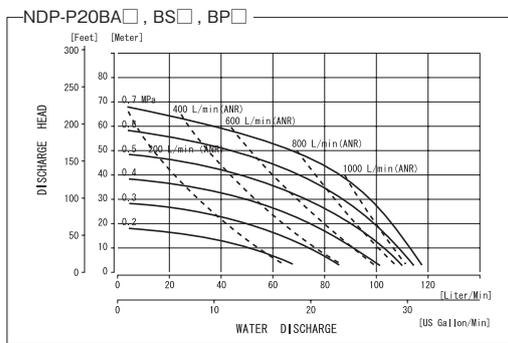
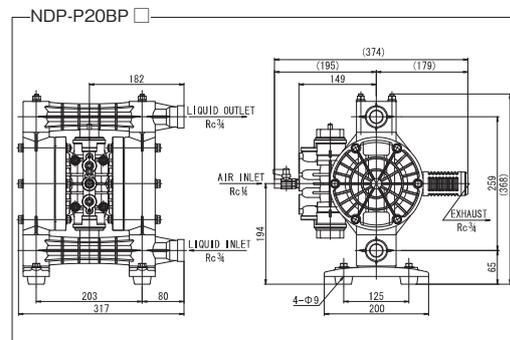
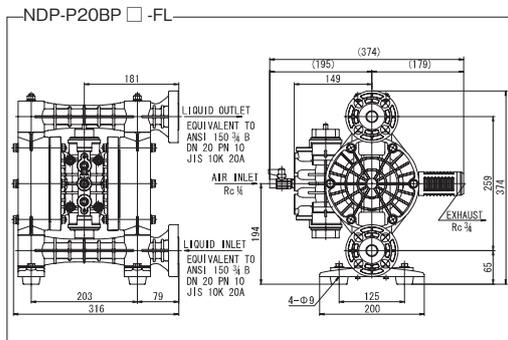
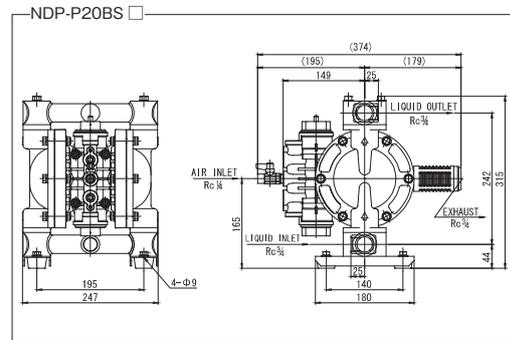
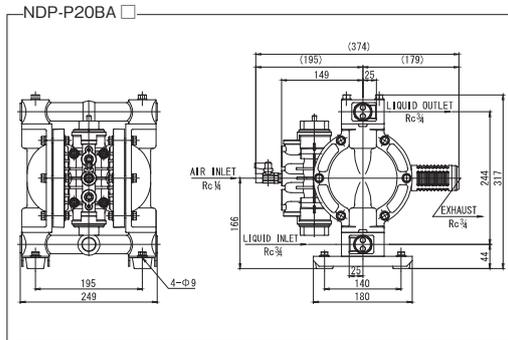
NDP-P20BTT

Specifications

Port Size		3/4" (20A)
Liquid	Intake	Metal Body: Rc3/4" or NPT3/4" Plastic Body: JIS/DIN/ANSI Compatible
	Discharge	Flange, Rc3/4" or NPT3/4" BTT: JIS Flange
Air	Supply	Rc1/4" or NPT1/4" includes ball valve
	Exhaust	Rc3/4" or NPT3/4" w/ silencer
Air Supply Pressure		0.2-0.7MPa (0.2-0.5MPa for P20BTT)
Maximum Discharge Pressure		0.7MPa (0.5MPa for P20BTT)
Discharge Volume Per Cycle		Rubber diaphragm: 350mL PTFE diaphragm: 240mL (290ml for P20BTT)
Maximum Size Solid		2mm
Net Weight		NDP-P20BA□: 7.5kg NDP-P20BS□: 12.5kg NDP-P20BP□: 7.0kg NDP-P20BTT: 20.0kg
Body Material		Aluminum, Stainless Steel, Polypropylene, PTFE
Diaphragm Material		Neoprene, Buna N, EPDM, Viton®, PTFE, Hytrel®, Santoprene®



Dimensions and Performance Curve



NDP-25 Series

160L/min Maximum Flow Rate
1 inch Port Size

Metal Body Pumps



NDP-25BA □

Plastic Body Pumps



NDP-25BP □ -FL
(Flange type)



(Rc type)



NDP-25BV □ -FL
(Flange type)

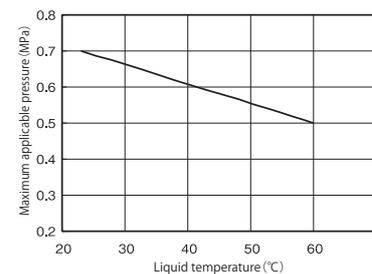


(Rc type)

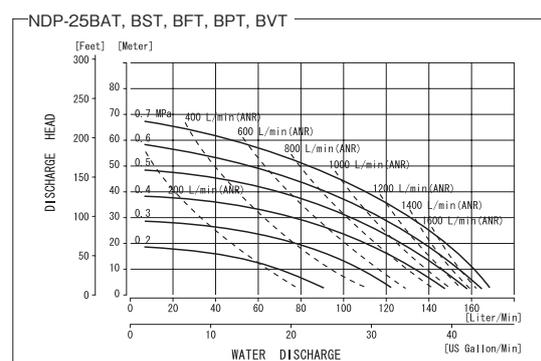
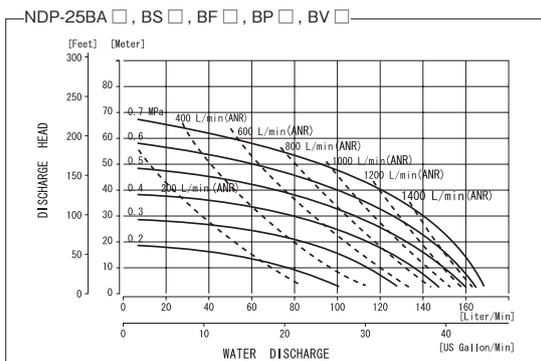
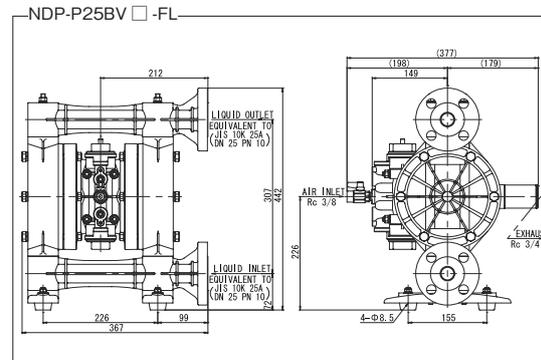
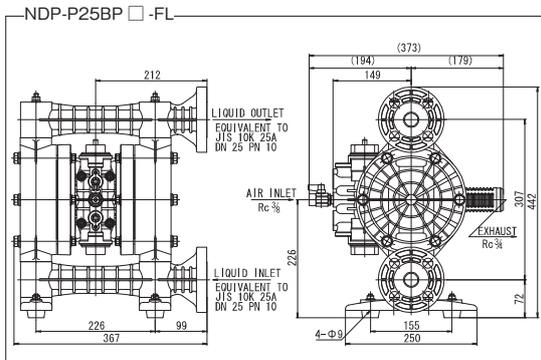
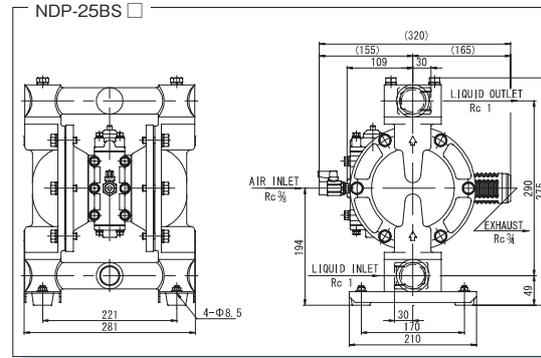
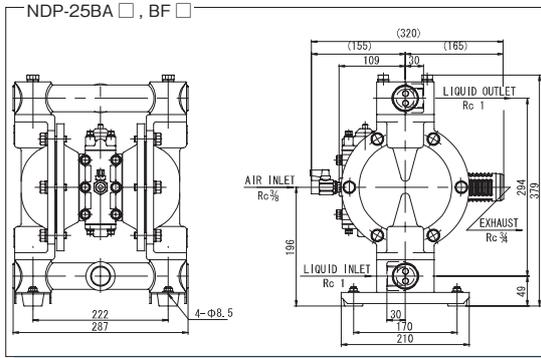
Specifications

Port Size	1" (25A)	
Liquid	Intake	Metal Body: Rc1" or NPT1"
	Discharge	Plastic Body: JIS/DIN Compatible Flange, ANSI Flange, Rc1" or NPT1"
Air	Supply	Rc3/8" or NPT3/8" includes ball valve
	Exhaust	Rc3/4" or NPT3/4" w/ silencer
Air Supply Pressure	0.2-0.7MPa	
Maximum Discharge Pressure	0.7MPa	
Discharge Volume Per Cycle	Rubber diaphragm: 600mL PTFE diaphragm: 500mL	
Maximum Size Solid	3mm	
Net Weight	NDP-25BA□: 13.0kg NDP-25BS□: 20.0kg NDP-25BF□: 20.0kg NDP-25BP□: 11.0kg NDP-25BV□: 13.5kg	
Body Material	Aluminum, Stainless Steel, Cast Iron, Polypropylene, Kynar®	
Diaphragm Material	Neoprene, Buna N, EPDM, Viton®, PTFE, Hytrel®, Santoprene®	

Liquid temperature-pressure correlation chart



Dimensions and Performance Curve



NDP-P25 Series

160L/min Maximum Flow Rate
1 inch Port Size

Metal Body Pumps



NDP-P25BA □, BS □

Plastic Body Pumps



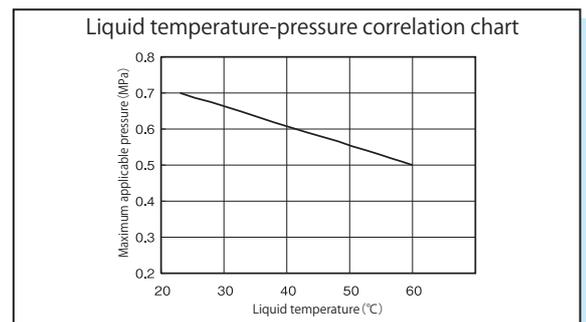
NDP-P25BP □ -FL



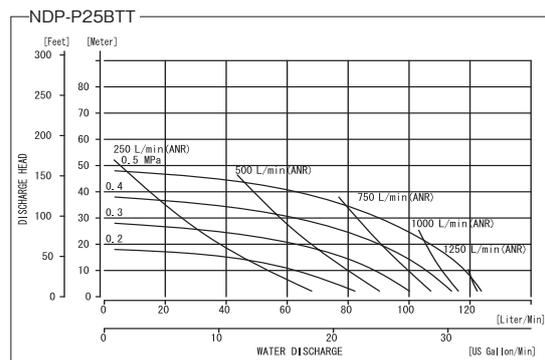
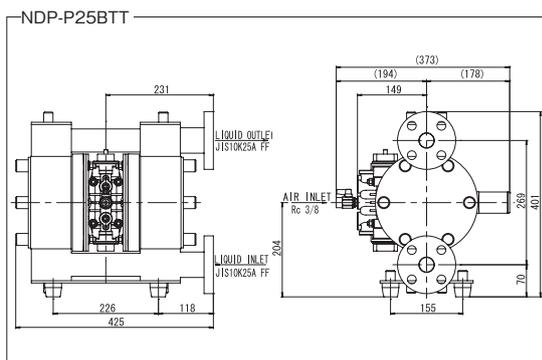
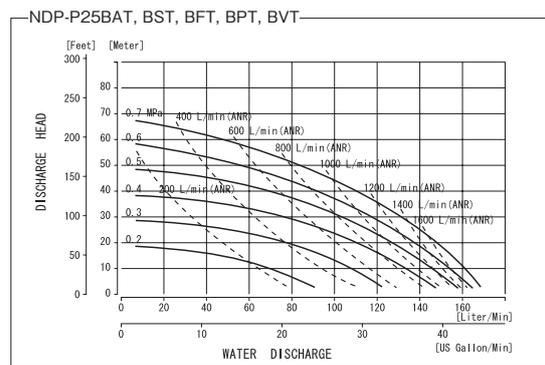
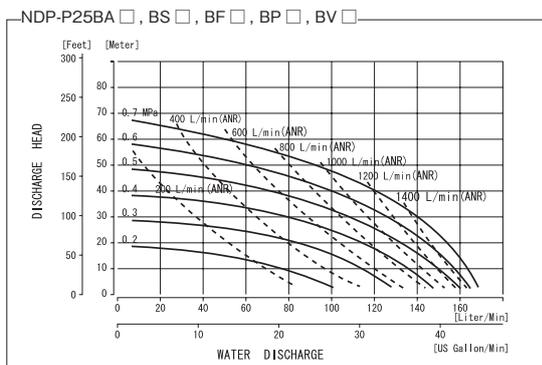
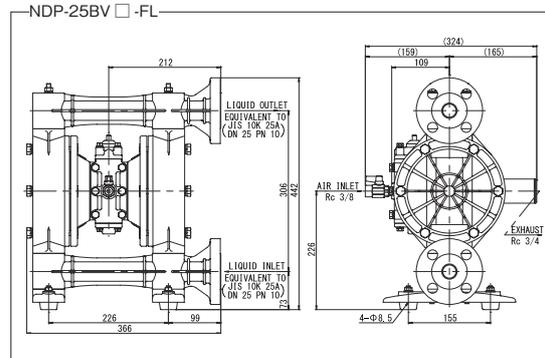
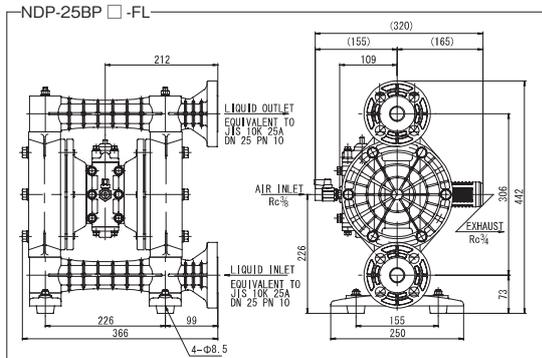
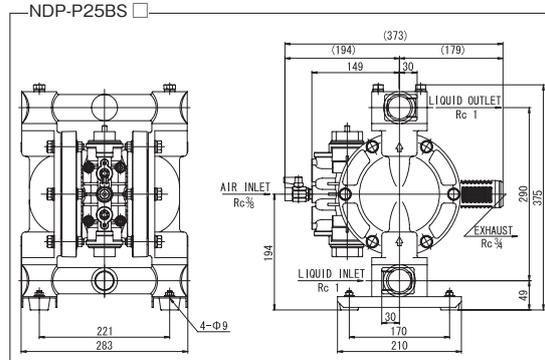
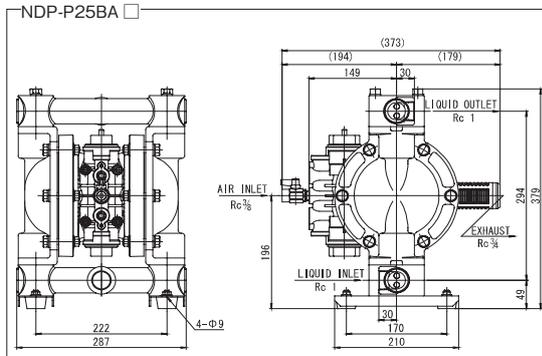
NDP-P25BV □ -FL

Specifications

Port Size		1" (25A)
Liquid	Intake	Metal Body: Rc1" or NPT1"
	Discharge	Plastic Body: JIS/DIN Compatible Flange, ANSI Flange, Rc1" or NPT1" BTT: JIS Flange
Air	Supply	Rc3/8" or NPT3/8" includes ball valve
	Exhaust	Rc3/4" or NPT3/4" w/ silencer
Air Supply Pressure		0.2-0.7MPa (0.2-0.5MPa for P25BTT)
Maximum Discharge Pressure		0.7MPa (0.5MPa for P25BTT)
Discharge Volume Per Cycle		Rubber diaphragm: 600mL PTFE diaphragm: 500mL
Maximum Size Solid		3mm
Net Weight		NDP-P25BA□: 11.0kg NDP-P25BS□: 18.0kg NDP-P25BP□: 9.5kg NDP-P25BV□: 12.0kg NDP-P25BTT: 33.0kg
Body Material		Aluminum, Stainless Steel, Polypropylene, Kynar®, PTFE
Diaphragm Material		Neoprene, Buna N, EPDM, Viton®, PTFE, Hytrel®, Santoprene®



Dimensions and Performance Curve



NDP-40 Series

400L/min Maximum Flow Rate
1-1/2 inch Port Size

Metal Body Pumps



NDP-40BS □



NDP-40BF □

Plastic Body Pumps



NDP-40BP □

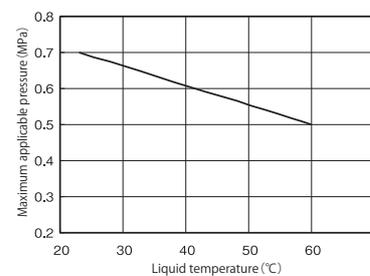


NDP-40BV □

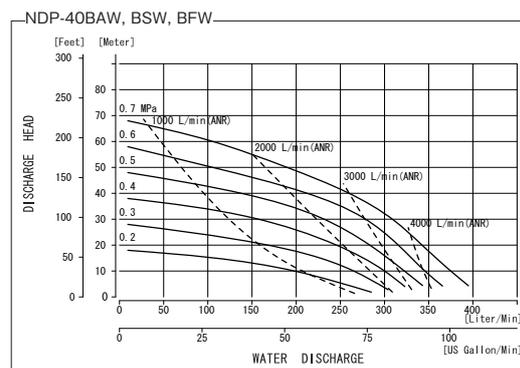
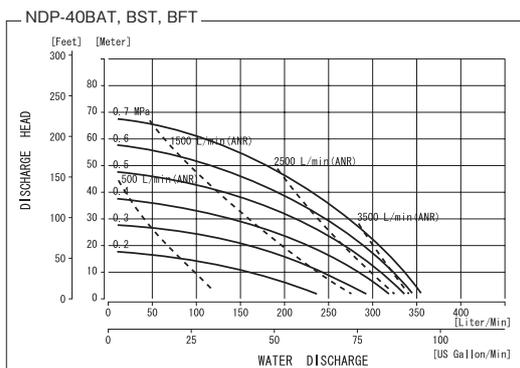
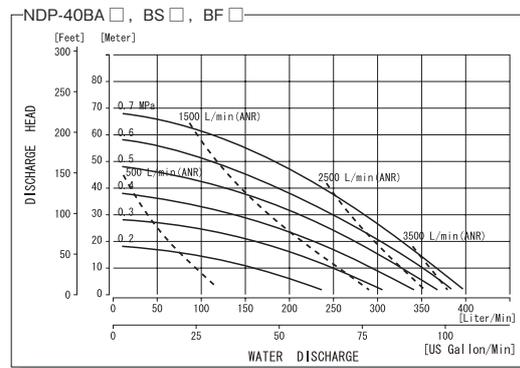
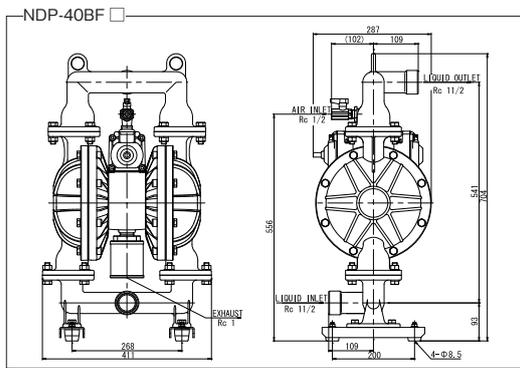
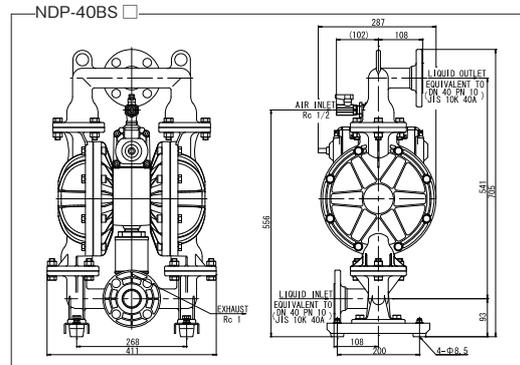
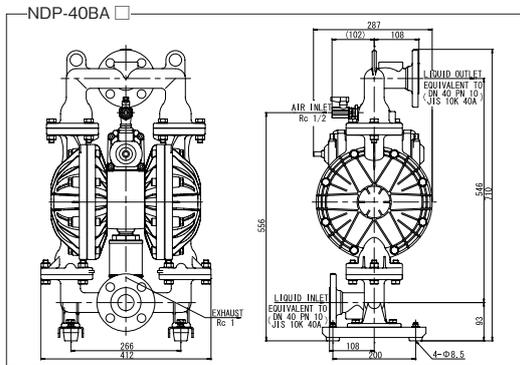
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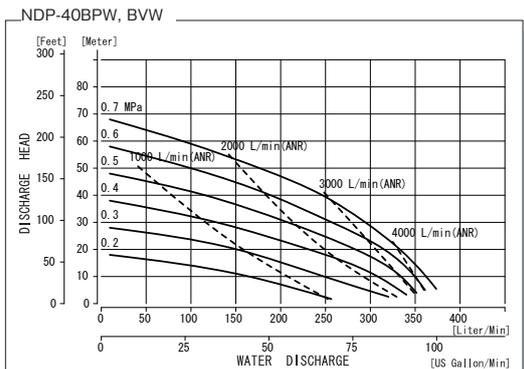
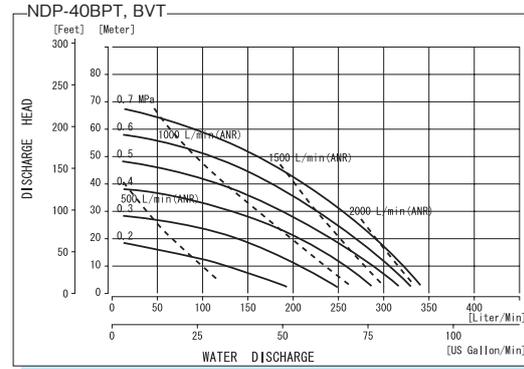
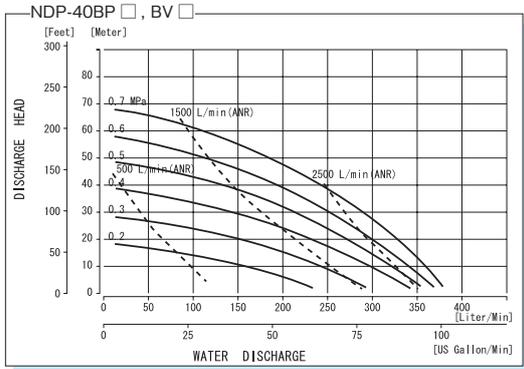
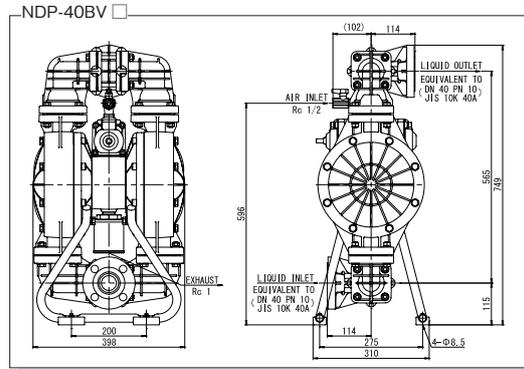
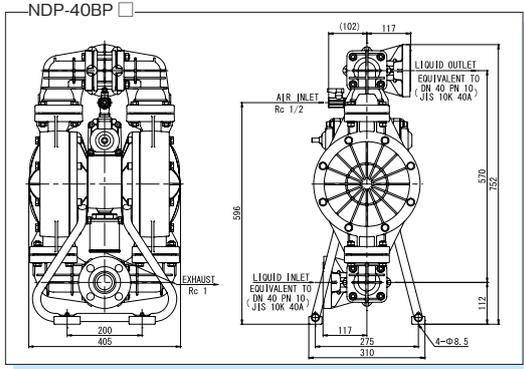
Port Size		1-1/2" (40A)
Liquid	Intake	BA □ : JIS/DIN Compatible Flange or ANSI Flange w/ NPTF
	Discharge	BS □ : JIS/DIN Compatible Flange or ANSI Flange
		BF □ : Rc1-1/2" or NPTF1-1/2"
		BP □ : JIS/DIN Compatible Flange or ANSI Flange
		BV □ : JIS/DIN Compatible Flange or ANSI Flange"
Air	Supply	Rc1/2" or NPT1/2" includes ball valve
	Exhaust	Rc1" or NPT1" w/ silencer
Air Supply Pressure		0.2-0.7MPa
Maximum Discharge Pressure		0.7MPa
Discharge Volume Per Cycle		Rubber diaphragm: 2.8L PTFE diaphragm: 1.4L
Maximum Size Solid		7mm
Net Weight		NDP-40BA □: 29.0kg NDP-40BAT: 26.5kg NDP-40BS □: 40.0kg NDP-40BST: 41.5kg NDP-40BF □: 47.0kg NDP-40BFT: 46.0kg NDP-40BP □: 27.0kg NDP-40BPW: 26.0kg NDP-40BV □: 27.0kg NDP-40BVW: 31.0kg
Body Material		Aluminum, Stainless Steel, Cast Iron, Polypropylene, Kynar®
Diaphragm Material		Neoprene, Buna N, EPDM, Viton®, PTFE, Hytrel®, Santoprene®, PTFE+EPDM

Liquid temperature-pressure correlation chart



Dimensions and Performance Curve





NDP-50/P50 Series 600L/min Maximum Flow Rate 2 inch Port Size

Metal Body Pumps



NDP-50BA □



NDP-50BF □

Plastic Body Pumps



NDP-50BP □



NDP-50BV □



NDP-P50BP □

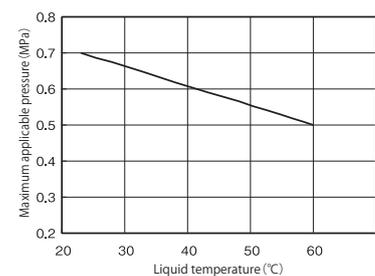


NDP-P50BV □

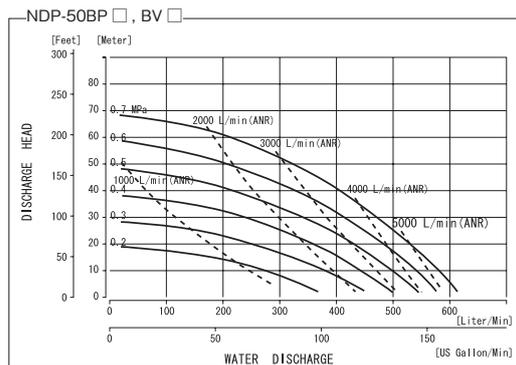
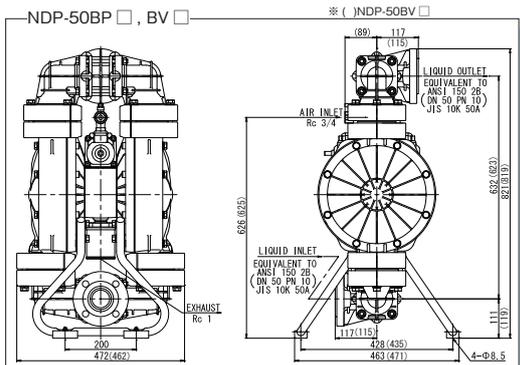
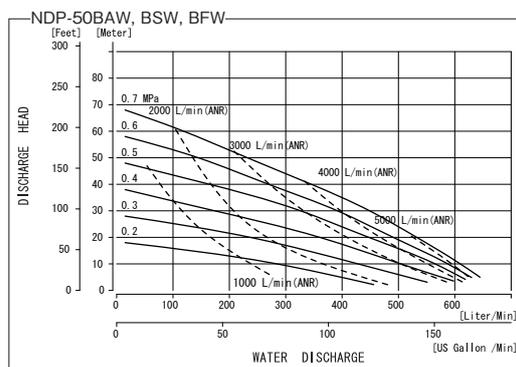
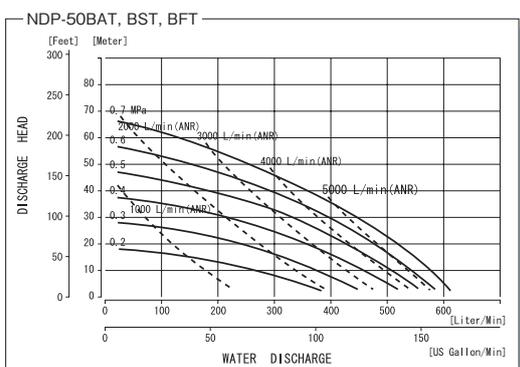
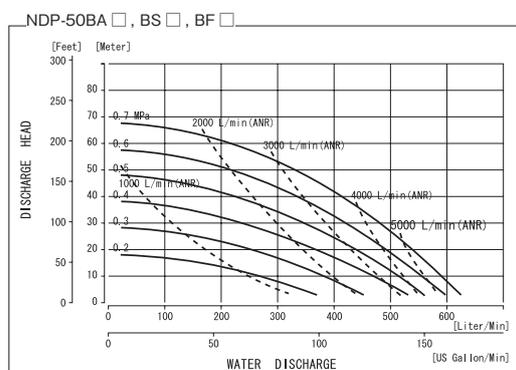
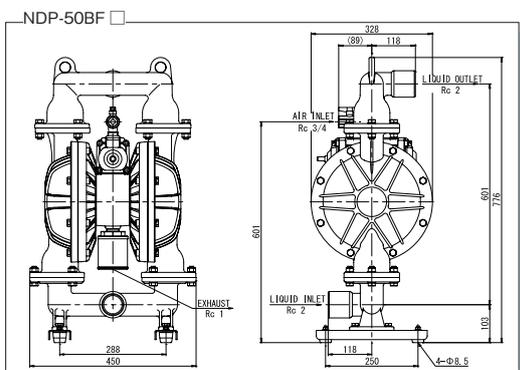
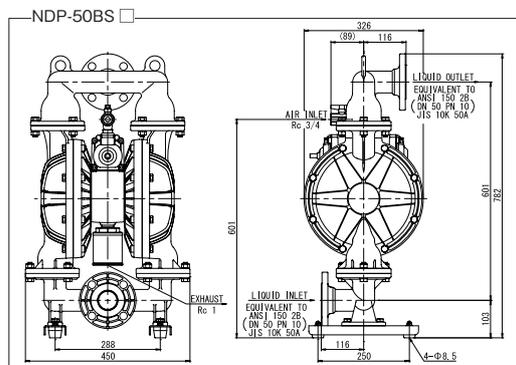
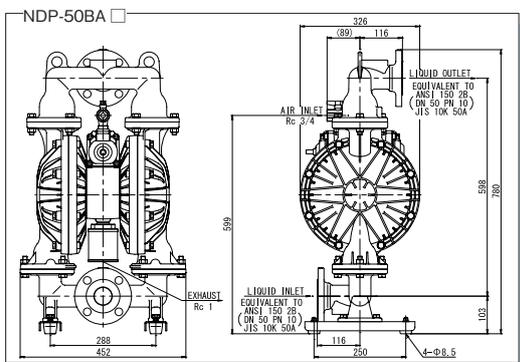
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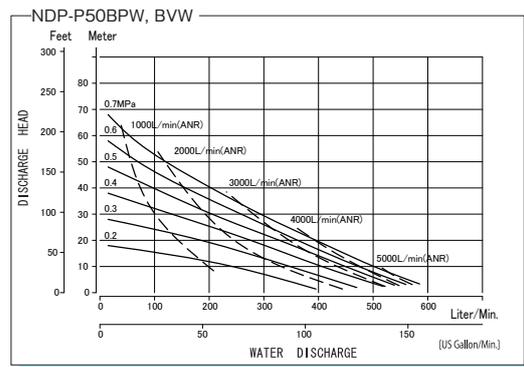
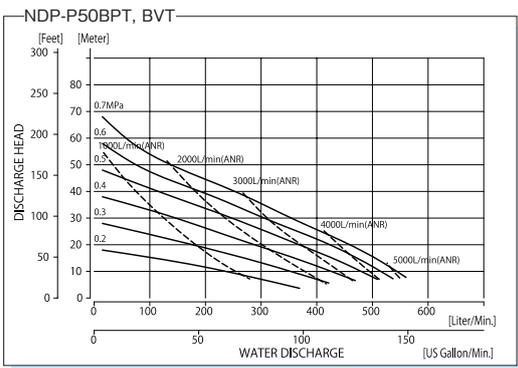
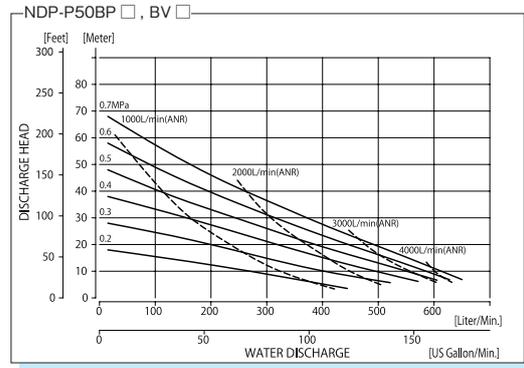
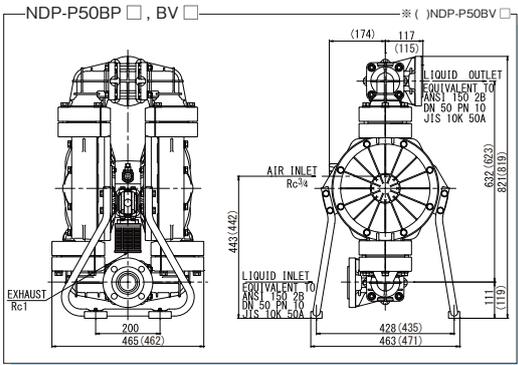
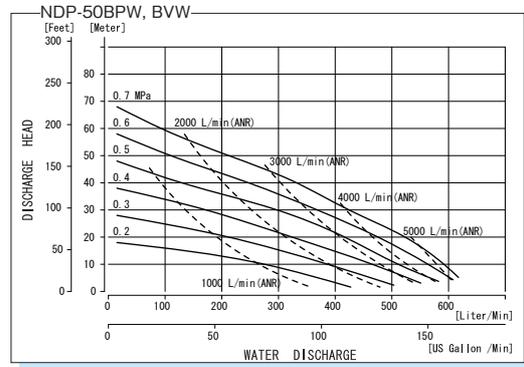
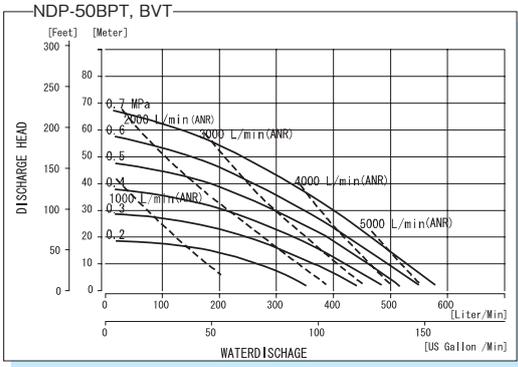
Port Size		1-1/2" (40A)
Liquid	Intake	BA □ : JIS/DIN Compatible Flange or ANSI Flange w/ NPTF BS □ : JIS/DIN/ANSI Compatible Flange or ANSI Flange BF □ : Rc2" or NPTF2"
	Discharge	BP □ : JIS/DIN/ANSI Compatible Flange or ANSI Flange BV □ : JIS/DIN Compatible Flange or ANSI Flange
Air	Supply	Rc3/4" or NPT3/4" includes ball valve
	Exhaust	Rc1" or NPT1" w/ silencer
Air Supply Pressure		0.2-0.7MPa
Maximum Discharge Pressure		0.7MPa
Discharge Volume Per Cycle		Rubber diaphragm: 4.3L (4.1L for P50BP □ and P50BV □) PTFE diaphragm: 2.1L (2.3L for P50BP □ and P50BV □)
Maximum Size Solid		8mm
Net Weight		NDP-50BA □: 37.0kg NDP-50BAT: 32.5kg NDP-50BAW: 33.5kg NDP-50BS □: 60.0kg NDP-50BST: 58.5kg NDP-50BSW: 59.5kg NDP-50BF □: 65.0kg NDP-50BFT: 61.5kg NDP-50BFW: 62.5kg NDP-50BP □: 35.0kg NDP-50BV □: 41.0kg NDP-P50BP □: 37.0kg NDP-P50BV □: 43.0kg
Body Material		Aluminum, Stainless Steel, Cast Iron, Polypropylene, Kynar®
Diaphragm Material		Neoprene, Buna N, EPDM, Viton®, PTFE, Hytrel®, Santoprene®, PTFE+EPDM

Liquid temperature-pressure correlation chart



Dimensions and Performance Curve





NDP-80 Series

800L/min Maximum Flow Rate
3 inch Port Size

Metal Body Pumps



NDP-80BA □

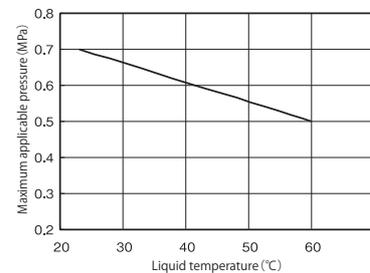


NDP-80BP □

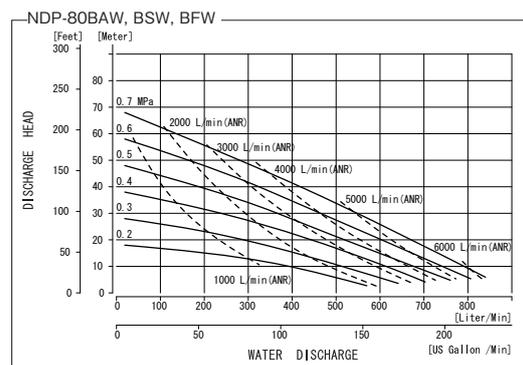
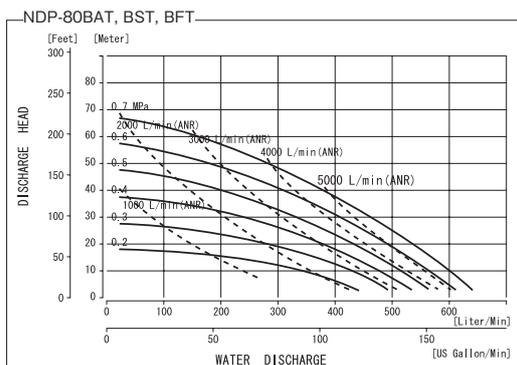
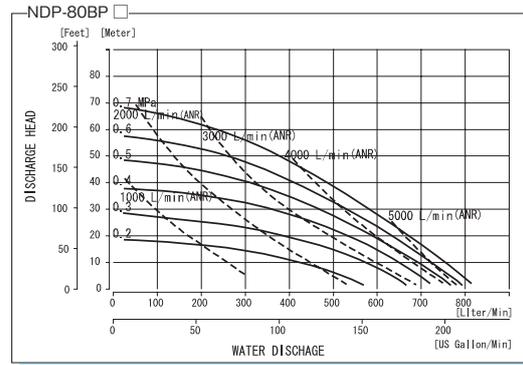
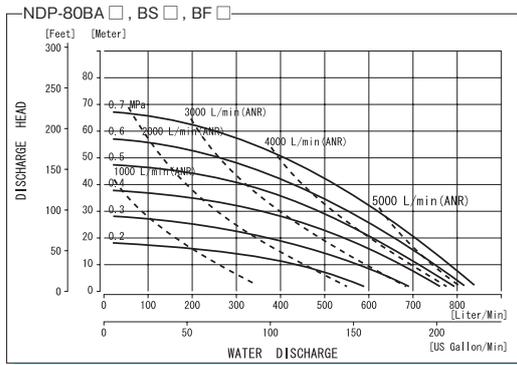
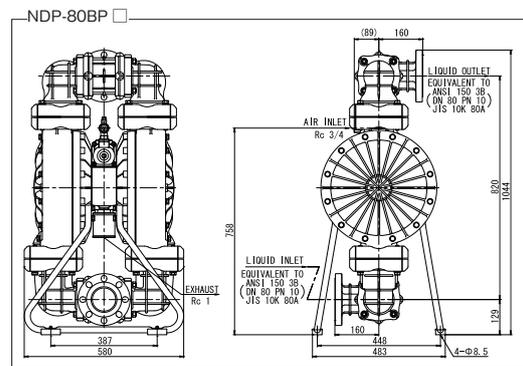
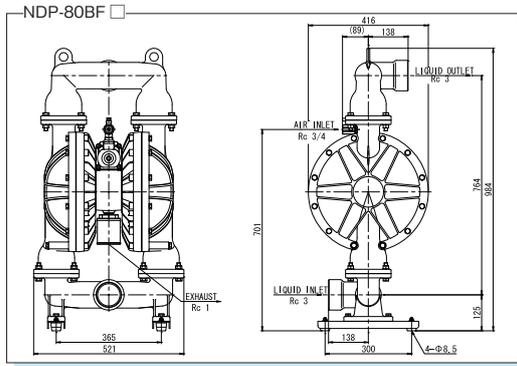
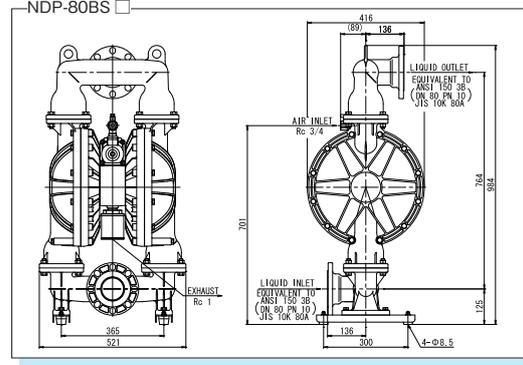
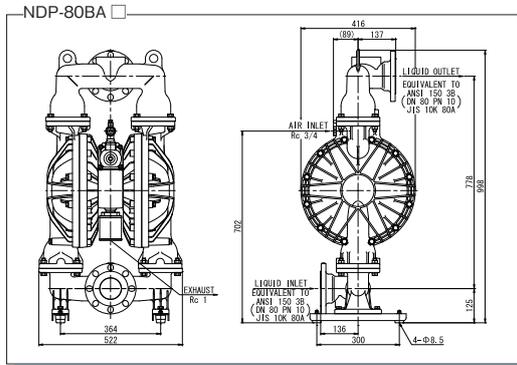
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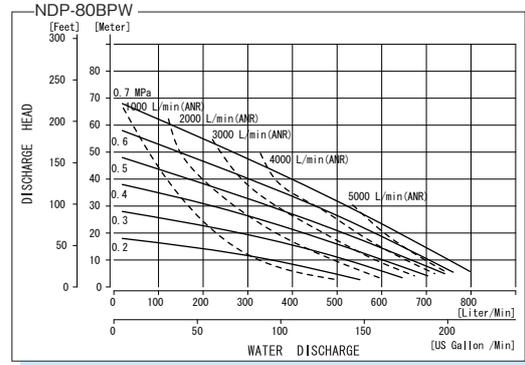
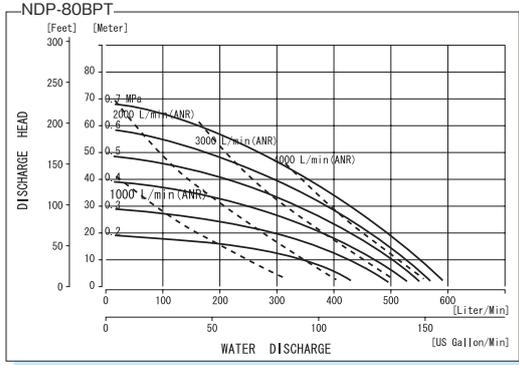
Port Size		3" (80A)
Liquid	Intake	BA □ : JIS/DIN/ANSI Compatible Flange or ANSI Flange w/ NPTF
	Discharge	BS □ : JIS/DIN/ANSI Compatible Flange or ANSI Flange BF □ : Rc3" or NPT3" BP □ : JIS/DIN/ANSI Compatible Flange or ANSI Flange
Air	Supply	Rc3/4" or NPT3/4" includes ball valve
	Exhaust	Rc1" or NPT1" w/ silencer
Air Supply Pressure		0.2-0.7MPa
Maximum Discharge Pressure		0.7MPa
Discharge Volume Per Cycle		Rubber diaphragm: 8.5L PTFE diaphragm: 3.8L
Maximum Size Solid		10mm
Net Weight		NDP-80BA □: 62.0kg NDP-80BAT: 58.5kg NDP-80BAW: 61.0kg NDP-80BS □: 109.0kg NDP-80BST: 101.5kg NDP-80BSW: 104.0kg NDP-80BF □: 109.5kg NDP-80BFT: 101.5kg NDP-80BFW: 104.0kg NDP-80BP □: 65.5kg NDP-80BPT: 61.5kg NDP-80BPW: 67.5kg
Body Material		Aluminum, Stainless Steel, Cast Iron, Polypropylene
Diaphragm Material		Neoprene, Buna N, EPDM, Viton®, PTFE, Hytrel®, Santoprene®, PTFE+EPDM

Liquid temperature-pressure correlation chart



Dimensions and Performance Curve





NDP-32 Series

190L/min Maximum Flow Rate
1-1/2" Intake, 1-1/4" Discharge

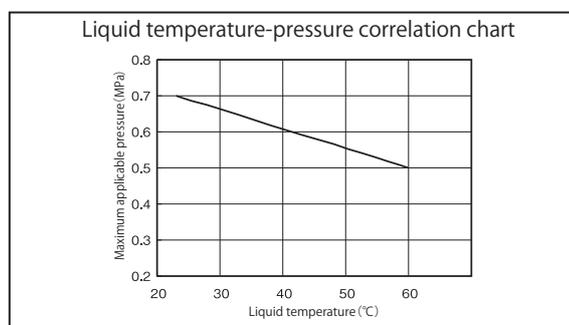
Metal Body Pumps



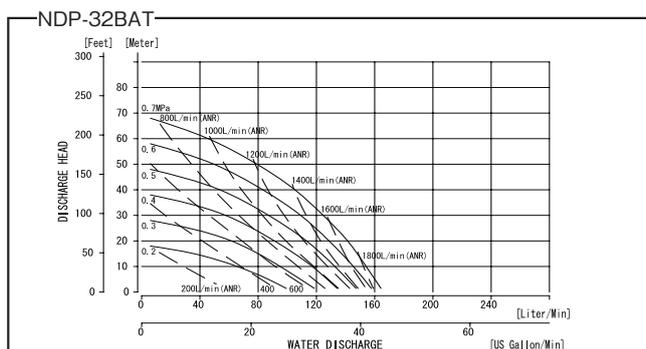
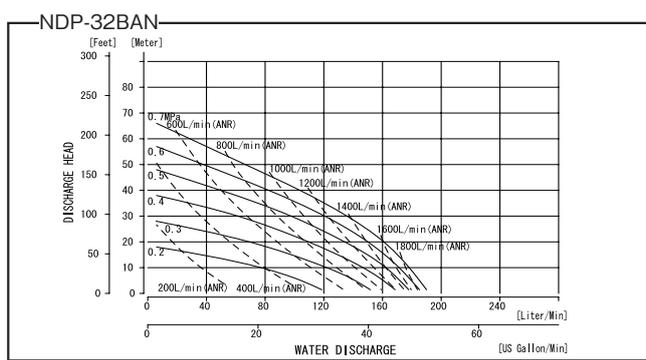
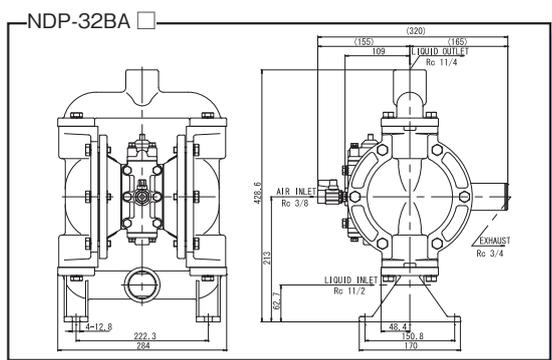
NDP-32BA □

Specifications

Port Size		IN 1-1/2"(40A), OUT 1-1/4"(32A)
Liquid	Intake	Rc1-1/2" or NPT1-1/2"
	Discharge	
Air	Supply	Rc3/8" or NPT3/8" includes ball valve
	Exhaust	Rc3/4" or NPT3/4" w/ silencer
Air Supply Pressure		0.2-0.7MPa
Maximum Discharge Pressure		0.7MPa
Discharge Volume Per Cycle		Rubber diaphragm: 670mL PTFE diaphragm: 560mL
Maximum Size Solid		3mm
Net Weight		12.0kg
Body Material		Aluminum
Diaphragm Material		Buna N, PTFE



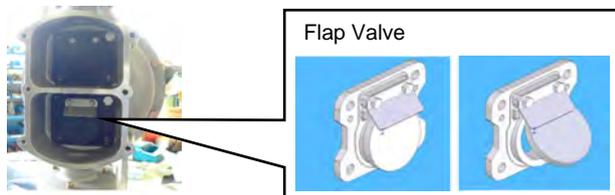
Dimensions and Performance Curve



Specialty Pumps

Flap Valve Diaphragm Pump NDP-50FAN

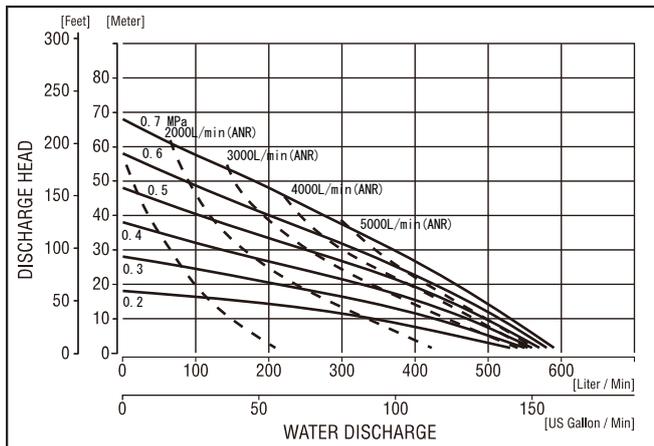
The Flap Valve Diaphragm Pump NDP-50FAN is designed to pump fluids containing solids up to 30mm in diameter.



Example Applications

- ✓ Muddy water containing soil and sand.
- ✓ Solid food waste.

Performance Curve



F-Series High Purity Pumps

Clean Room Manufactured
1/4 inch to 1 inch Port Size

Extensively field proven, Yamada F-Series clean room manufactured pumps are specifically designed for the safe and efficient transfer of ultra high-purity process chemistries. They provide maximum corrosion resistance, ultra high-purity levels and low particle generation.

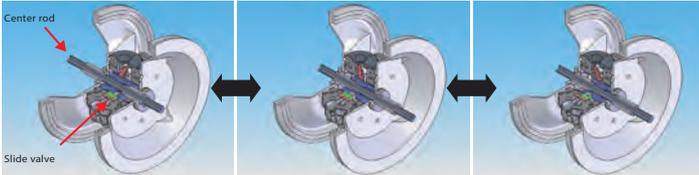
Pumps includes 100% machined virgin PTFE diaphragms, liquid chambers and manifolds.



✓ For additional information, please request the High Purity Pumps catalog or visit www.yamadacorp.co.jp/global

H-Series (Mechanical Switching Type)

Mechanical Switch Pump is designed for use in process type applications, including filter press, high pressure, extended deadheading, long runs of discharge pipe, and where air consumption is critical.



Mechanically-actuated air motor based on the diaphragm movement.

Features

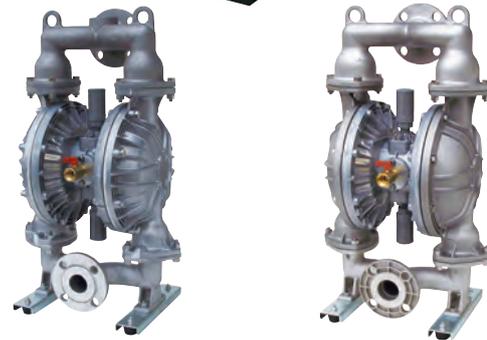
- ✓ Stable stroke even at a very low speed operation!!
- ✓ The highest discharge pressure ever (maximum 0.85MPa)!!
- ✓ Expansion of operating pressure range
- ✓ Energy saving due to the reduced loss of the drive air!!

Available sizes

40, 50 and 80

Available materials

Casing: Aluminum, Stainless Steel, Cast Iron, and PPG
Diaphragms: CR, NBR, EPDM, FKM, PTFE, TPEE, and TPO



E-Series (Electric-Switching Type)

Electric-Switching pumps are built-in high-frequency transmission proximity sensor in the pump.

Available sizes

20, 25, 40, 50, and 80

Available materials

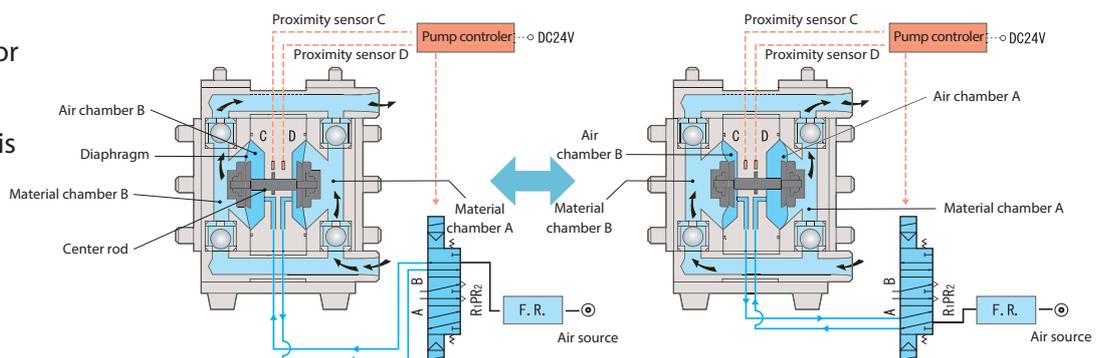
Casing: Aluminum, Stainless Steel, Cast Iron* and PPG
*Cast iron is available only for 40, 50, and 80.
Diaphragms: CR, NBR, EPDM, FKM, PTFE, TPEE, and TPO



Remarks

- ✓ This series is NOT explosion-proof.
- ✓ A solenoid valve and PLC, which are required to operate the pump, can be supplied as an option.

A proximity sensor is installed in the pump, and the pump operation is controlled by a solenoid valve.



Drum Pumps

Fit to 200L Drum
3/8 inch and 3/4 inch Port Size

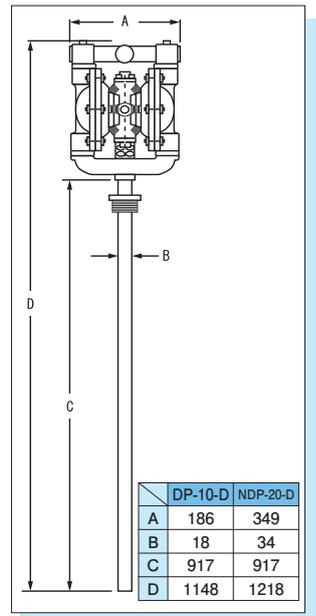


Specifications

Model		DP-10	NDP-20
Port Size		3/8" (10A)	3/4" (20A)
Liquid	Intake	Ø17.3 O.D.	Ø34.0 O.D.
	Discharge	Rc3/8"	Rc3/4"
Air	Supply	Rc1/4" incl. ball valve	Rc1/4" incl. ball valve
	Exhaust	Rc3/8" incl. silencer	Rc3/4" incl. silencer
Air Supply Pressure		0.2-0.7MPa	0.2-0.7MPa
Maximum Discharge Pressure		0.7MPa	0.7MPa
Discharge Volume Per Cycle		50mL	BA□:350mL BAT:240mL
Maximum Size Solid		1mm	2mm
Net Weight		BA□:4.5kg BS□:6.2kg	10.7kg
Accessories		713237 Suction Pipe (SUS304) 803665 Bung Adapter (ADC12)	709406 Suction Pipe (SGP) 803667 Bung Adapter (SS400)

✓ Please refer to DP-10 and NDP-20 Series technical information for additional performance data.

Dimensions

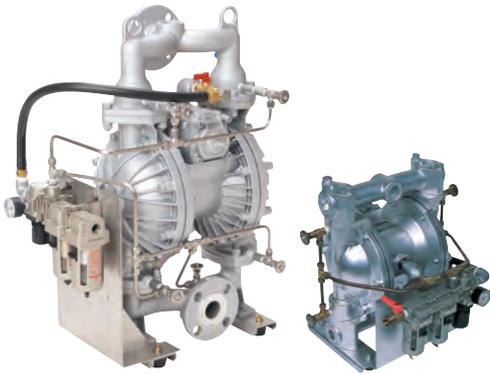


Model Chart

	Body Material	Diaphragm Material			
		Neoprene (CR)	Buna N (NBR)	PTFE	Hytrel® (TPEE)
DP-10	Aluminum (ADC12)	DP-10BAC-D (852918)	DP-10BAN-D (852919)	DP-10BAT-D (852920)	DP-10BAH-D (852934)
	Stainless Steel (SCS14/SUS316)	DP-10BSC-D (852921)	DP-10BSN-D (852922)	DP-10BST-D (852923)	DP-10BSH-D (852935)
NDP-20	Aluminum (ADC12)	NDP-20BAC-D (851397)	NDP-20BAN-D (851396)	NDP-20BAT-D (851398)	NDP-20BAH-D (852827)

Powder Pumps

For dry powder transfer
1 inch to 3 inch Port Size



Yamada Powder Pumps are designed to move bulk powders more effectively throughout your process vs. other unsafe and labor intensive means. These heavy duty pumps will consistently transfer fine-grained, low-bulk density dry powders in a dust-free operation.

✓ For additional information, please request the Powder Pumps catalog or visit www.yamadacorp.co.jp/global

Accessories

Filter/Regulators

Model No.	Model	Fits Pump
1500DP	AC20B-02G-B	NDP-5, DP-10, NDP-15
1500DP	AC25B-02G-B	NDP-20/P20
1500DP	AC30B-03G-B	NDP-25/P25, 32
1500DP	AC40B-04G-B	NDP-40/H40
1500DP	AC50B-06G-B	NDP-50/H50/P50, 80/H80



Companion Flange

JIS, DIN, ANSI and Ferrule Flanges made of SUS304 or SUS316 or PP



Pneumatic Cycle Counter

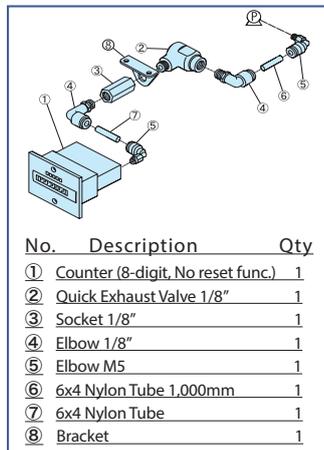
Pneumatic 8-digit mechanical type counter



- ✓ Pump Mounting Bracket is available upon request
- ✓ No count up in dry run
- ✓ No reset function
- ✓ Modification on the center body is required for installation

Model No.	Model	Fits Pump
803413	NMC-ANS	DP-10, NDP-15 ~ 80
804847	NMC-ANH	NDP-H Series

*Except NDP-P20,P25



No.	Description	Qty
①	Counter (8-digit, No reset func.)	1
②	Quick Exhaust Valve 1/8"	1
③	Socket 1/8"	1
④	Elbow 1/8"	1
⑤	Elbow M5	1
⑥	6x4 Nylon Tube 1,000mm	1
⑦	6x4 Nylon Tube	1
⑧	Bracket	1

Raised Pump Bracket

Raised Pump Bracket is available on request



Dry-Run Detector

The Yamada ESV-06/DRD-100 detects increases in air volume due to loss of prime or dry-running, and automatically shuts down the pump to prevent excess cycling and increased diaphragm wear.



Model No.	Model	Supply Air Press	Usable Gas	Air Inlet	Air Outlet
854006	ESV-06			Rc3/4"	Rc3/4"
854008	DRD-100	0.2-0.99MPa	Air / Nitrogen	NPT3/4"	NPT3/4"

Diaphragm Monitoring Kit

For NDP-40, 50 and 80 series, install the street elbow between muffler and exhaust port.

PT thread: 634050, NPT thread: 685716 (Sold separately)

For the DP-F series, install the Sensor Mounting Kit between the sensor and the body.

the Sensor Mounting Kit: 804042 (Sold separately)



Model No.	Model	Fits Pump	Power Supply
805139	DMS-24TN	Except NDP-5 to15	DC24V

Model No.	Model,Description
685968	24V AC Adapter
685969	Extension sensor cord 5M
685016	Gasket
771622	Union

Anti-Stall Device

Retrofit-able kit that pneumatically activates the air valve instantly starting pump operation

***Please use with dedicated sleeve**

Model No.	Model	Fits Pump
804066	SVT-225	NDP-20,25,32
804065	SVT-458	NDP-40,50,80



Dedicated Sleeve

Model No.	Model
804739	Sleeve for SVT225
804740	Sleeve for SVT458



High-Low Level Controller

This unit is used to control the high and low levels of liquid being pumped into or out of a container.

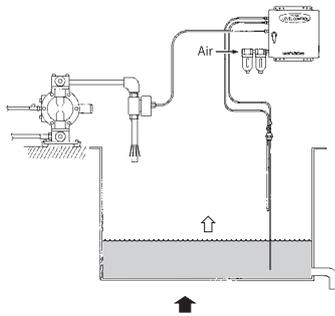
This device is driven by compressed air and is therefore suitable for use in highly explosive environments.

The system is also designed to work in many harsh environments, e.g. areas with high temperature, high humidity or even areas where there are high electromagnetic fields.

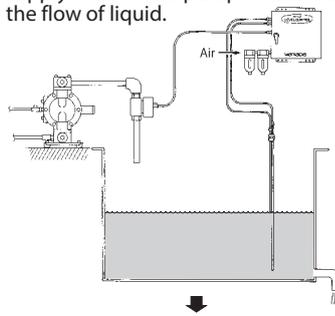
It can handle any liquid with a viscosity of less than 1000cps.



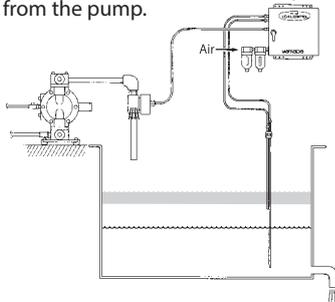
1. Liquid is pumped to raise the level in the tank.



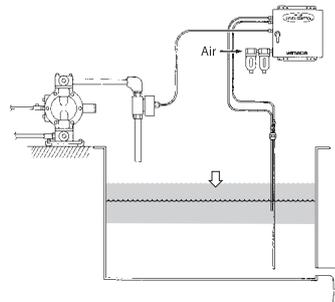
2. When the liquid reaches the upper preset limit the controller stops the supply of air to the pump to shut off the flow of liquid.



2. When the liquid level reaches the lower preset level the air supply will be started to resume the flow of liquid from the pump.



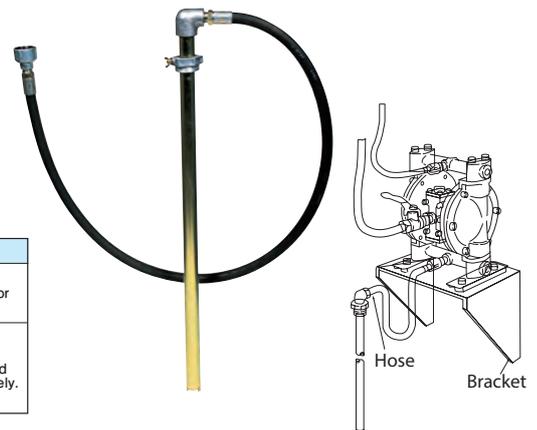
3. The liquid level becomes lower.



Model No.	Model	Supply Air Press.	Output Air Flow	Viscosity Limit	Weight
480005	SA-4150	0.3-0.7MPa	Max 300L/min	1Pa·s or less	6kg

Suction Tube Kit for Drum

This Suction Tube kit fits to the 200L drum. Pump is recommended to be mounted at the height of 1M from floor level.



Material	Model No.	Model	Fits Pump	Hose	Connection	Accessories	Remark
Carbon steel	850126	SCK-200D	Size 20	Oil hose 3/4"x2M	R3/4" with Rc1-1/2" socket	Drum bung adapter (ADC12)	Please prepare suitable connector separately.
	851004	SCK-200D-HV	Size 25,40	Oil hose 1"x2M	R1" with Rc1-1/2" socket	Drum bung adapter (ADC12)	
SUS 304	803407	STU-20-20	Size 20	Not included	Rc3/4"	Drum bung adapter (SUS304)	Please prepare suitable hose and connector separately.
	803405	STU-25-25	Size 25		Rc1"		
	803406	STU-40-40	Size 40		Rc1-1/2"		

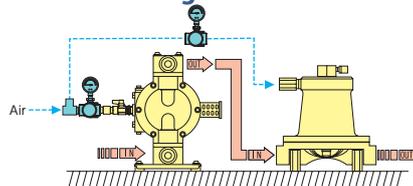
Pulsation Dampeners

3/8", 1", 1-1/2" and 2" Port Size

Yamada AD Pulsation Dampeners incorporate a flow-through design which keeps solids in suspension, maintaining dampener effectiveness.



Installation Diagram



1. Dampener should be installed within 1M of the pump
2. Adjustment of supply air pressure increases the effectiveness
3. Dampener will consume air depending on condition of the pulse
4. Pre-adjustments are required prior to operation
5. Dampener will work best with at least 0.1MPa of backpressure

AD-10 Series (fit to NDP-5, DP-10 and NDP-15)

Specifications

Port Size		3/8" (10A)
Liquid	Intake	Rc3/8" or NPT3/8"
	Discharge	Rc3/8" or NPT3/8"
Air	Supply	Rc1/4" or NPT1/4"
	Exhaust	Rc1/8" w/ silencer
Air Supply Pressure		0.2 - 0.7MPa
Maximum Discharge Pressure		0.7MPa
Net Weight		AD-10A □ : 2.1kg AD-10S □ : 3.0kg AD-10P □ : 2.1kg

⚠ Air supply pressure of Plastic Body Pumps is depending on the liquid temperature. Be sure to check the Liquid temperature - Pressure Correlation Chart.

Model Chart

Body Material	Connection Liquid/Air	Diaphragm Material				
		Neoprene (CR)	Buna N (NBR)	PTFE	Hytre [®] (TPEE)	Santoprene [®] (TPO)
Aluminum (ADC12)	Rc/Rc	AD-10AC (851792)	AD-10AN (851791)	AD-10AT (851796)	AD-10AH (851762)	AD-10AS (853316)
	NPT/NPT	(853313)	(853314)	(853315)	(853320)	(853317)
Stainless Steel (SCS14/SUS316)	Rc/Rc	AD-10SC (851795)	AD-10SN (851794)	AD-10ST (851757)	AD-10SH (851763)	AD-10SS (853322)
	NPT/NPT	(853318)	(853319)	(853320)	(853321)	(853322)
Polypropylene (PPG)	Rc/Rc	AD-10PC (854045)	AD-10PN (853324)	AD-10PT (854046)	AD-10PH (853326)	AD-10PS (854047)
	NPT/NPT	(853323)	(853324)	(853325)	(853326)	(853327)

AD-25 Series (fit to NDP-20/P20, NDP-25/P25 and NDP-32)

Specifications

Port Size		1" (25A)
Liquid	Intake	Rc1" or NPT1"
	Discharge	Rc1" or NPT1"
Air	Supply	Rc1/4" or NPT1/4"
	Exhaust	Rc1/8" w/ silencer
Air Supply Pressure		0.2 - 0.7MPa
Maximum Discharge Pressure		0.7MPa
Net Weight		AD-25A □ : 5.8kg AD-25S □ : 8.2kg AD-25F □ : 8.2kg AD-25P □ : 5.5kg AD-25V □ : 6.3kg

⚠ Air supply pressure of Plastic Body Pumps is depending on the liquid temperature. Be sure to check the Liquid temperature - Pressure Correlation Chart.

Model Chart

Body Material	Connection Liquid/Air	Diaphragm Material						
		Neoprene (CR)	Buna N (NBR)	EPDM	Viton [®] (FKM)	PTFE	Hytre [®] (TPEE)	Santoprene [®] (TPO)
Aluminum (ADC12)	Rc/Rc	AD-25AC (851778)	AD-25AN (851797)	AD-25AE (851798)	AD-25AV (853321)	AD-25AT (851758)	AD-25AH (851760)	AD-25AS (853334)
	NPT/NPT	(853328)	(853329)	(853330)	(853331)	(853332)	(853333)	(853334)
Stainless Steel (SCS14/SUS316)	Rc/Rc	AD-25SC (851786)	AD-25SN (851802)	AD-25SE (851804)	AD-25SV (853338)	AD-25ST (851759)	AD-25SH (851761)	AD-25SS (853341)
	NPT/NPT	(853335)	(853336)	(853337)	(853338)	(853339)	(853340)	(853341)
Cast Iron (S45C)	Rc/Rc	AD-25FC (851800)	AD-25FN (851799)	AD-25FE (851801)	AD-25FV (853352)	AD-25FT (851765)	AD-25FH (851764)	AD-25FS (853355)
	NPT/NPT	(853349)	(853350)	(853351)	(853352)	(853353)	(853354)	(853355)
Polypropylene (PPG)	Rc/Rc	AD-25PC (851971)	AD-25PN (853342)	AD-25PE (853344)	AD-25PV (853345)	AD-25PT (851972)	AD-25PH (851970)	AD-25PS (853348)
	NPT/NPT	(853342)	(853343)	(853344)	(853345)	(853346)	(853347)	(853348)
Kynar [®] (PVDF)	Rc/Rc	-----	-----	AD-25VE* (854972)	AD-25VV* (854973)	AD-25VT* (854974)	AD-25VH* (854975)	AD-25VS* (854977)
	NPT/NPT	-----	-----	(854972)	(854973)	(854974)	(854975)	(854977)

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AD-40 Series (fit to NDP-40/H40)

Specifications

Port Size		1-1/2" (40A)
Liquid	Intake	Rc1-1/2" or NPT1-1/2"
	Discharge	Rc1-1/2" or NPT1-1/2"
Air	Supply	Rc1/4" or NPT1/4"
	Exhaust	Rc1/8" w/ silencer
Air Supply Pressure		0.2 - 0.7MPa
Maximum Discharge Pressure		0.7MPa
Net Weight		AD-40A □ : 10.4kg AD-40S □ : 15.9kg AD-40F □ : 15.2kg AD-40P □ : 11.2kg

⚠ Air supply pressure of Plastic Body Pumps is depending on the liquid temperature. Be sure to check the Liquid temperature - Pressure Correlation Chart.

Model Chart

Body Material	Connection Liquid/Air	Diaphragm Material						
		Neoprene (CR)	Buna N (NBR)	EPDM	Viton [®] (FKM)	PTFE	Hytre [®] (TPEE)	Santoprene [®] (TPO)
Aluminum (ADC12)	Rc/Rc	AD-40AC (852966)	AD-40AN (852967)	AD-40AE (852968)	AD-40AV (852969)	AD-40AT (852970)	AD-40AH (852971)	AD-40AS (852972)
	NPT/NPT	(853361)	(853362)	(853363)	(853364)	(853365)	(853366)	(853367)
Stainless Steel (SCS14/SUS316)	Rc/Rc	AD-40SC (852973)	AD-40SN (852974)	AD-40SE (852975)	AD-40SV (852976)	AD-40ST (852977)	AD-40SH (852978)	AD-40SS (852979)
	NPT/NPT	(853368)	(853369)	(853370)	(853371)	(853372)	(853373)	(853374)
Cast Iron (S45C)	Rc/Rc	AD-40FC (852987)	AD-40FN (852988)	AD-40FE (852989)	AD-40FV (852990)	AD-40FT (852991)	AD-40FH (852992)	AD-40FS (852993)
	NPT/NPT	(853382)	(853383)	(853384)	(853385)	(853386)	(853387)	(853388)
Polypropylene (PPG)	Rc/Rc	AD-40PC (852980)	AD-40PN (852981)	AD-40PE (852982)	AD-40PV (852983)	AD-40PT (852984)	AD-40PH (852985)	AD-40PS (852986)
	NPT/NPT	(853375)	(853376)	(853377)	(853378)	(853379)	(853380)	(853381)
Kynar [®] (PVDF)	Rc/Rc	-----	-----	-----	-----	AD-40VT* (1500AD)	-----	-----
	NPT/NPT	-----	-----	-----	-----	(1500AD)	-----	-----

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AD-50 Series (fit to NDP-50/H50)

Specifications

Port Size		2" (50A)
Liquid	Intake	Rc2" or NPT2"
	Discharge	Rc2" or NPT2"
Air	Supply	Rc1/4" or NPT1/4"
	Exhaust	Rc1/8" w/ silencer
Air Supply Pressure		0.2 - 0.7MPa
Maximum Discharge Pressure		0.7MPa
Net Weight		AD-50A □ : 16.6kg AD-50S □ : 25.0kg AD-50F □ : 24.0kg AD-50P □ : 16.2kg AD-50V □ : 19.4kg

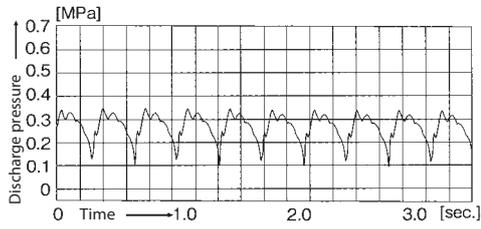
⚠ Air supply pressure of Plastic Body Pumps is depending on the liquid temperature. Be sure to check the Liquid temperature - Pressure Correlation Chart.

Model Chart

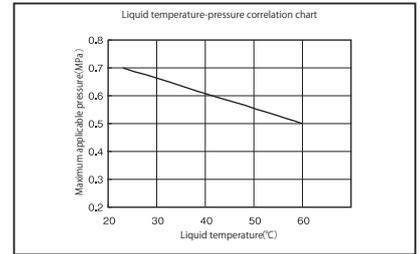
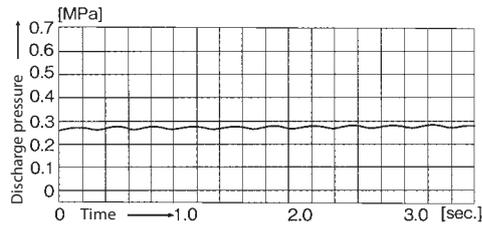
Body Material	Connection Liquid/Air	Diaphragm Material						
		Neoprene (CR)	Buna N (NBR)	EPDM	Viton [®] (FKM)	PTFE	Hytre [®] (TPEE)	Santoprene [®] (TPO)
Aluminum (ADC12)	Rc/Rc	AD-50AC (852994)	AD-50AN (852995)	AD-50AE (852996)	AD-50AV (852997)	AD-50AT (852998)	AD-50AH (852999)	AD-50AS (853000)
	NPT/NPT	(853389)	(853390)	(853391)	(853392)	(853393)	(853394)	(853395)
Stainless Steel (SCS14/SUS316)	Rc/Rc	AD-50SC (853001)	AD-50SN (853002)	AD-50SE (853003)	AD-50SV (853004)	AD-50ST (853005)	AD-50SH (853006)	AD-50SS (853007)
	NPT/NPT	(853396)	(853397)	(853398)	(853399)	(853400)	(853401)	(853402)
Cast Iron (S45C)	Rc/Rc	AD-50FC (853014)	AD-50FN (853015)	AD-50FE (853016)	AD-50FV (853017)	AD-50FT (853018)	AD-50FH (853019)	AD-50FS (853020)
	NPT/NPT	(853410)	(853411)	(853412)	(853413)	(853414)	(853415)	(853416)
Polypropylene (PPG)	Rc/Rc	AD-50PC (853008)	AD-50PN (853009)	AD-50PE (853010)	AD-50PV (853011)	AD-50PT (852933)	AD-50PH (853012)	AD-50PS (853013)
	NPT/NPT	(853403)	(853404)	(853405)	(853406)	(853407)	(853408)	(853409)
Kynar [®] (PVDF)	Rc/Rc	-----	-----	AD-50VE* (853417)	AD-50VV* (853418)	AD-50VT* (1500AD)	AD-50VH* (853419)	AD-50VS* (853420)
	NPT/NPT	-----	-----	(853417)	(853418)	(1500AD)	(853419)	(853420)

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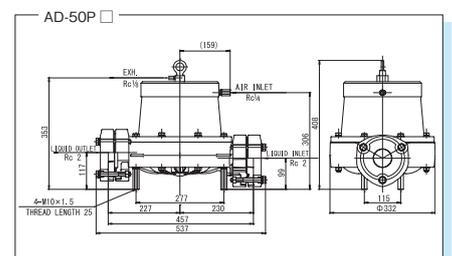
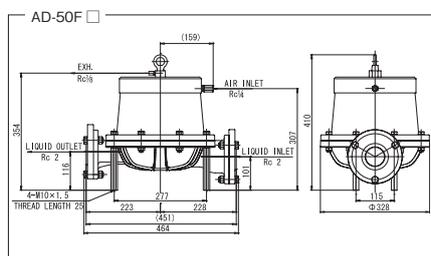
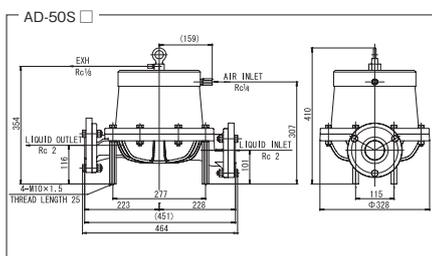
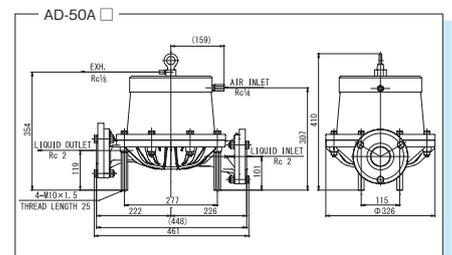
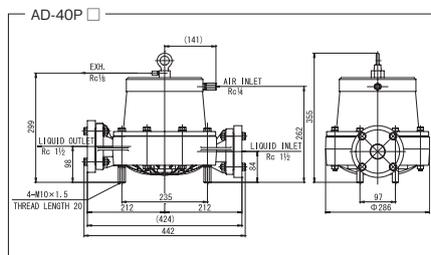
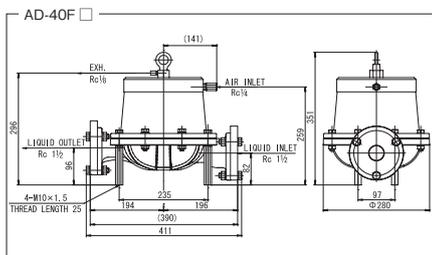
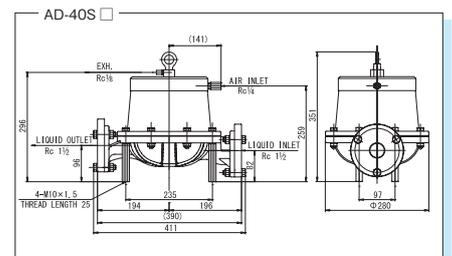
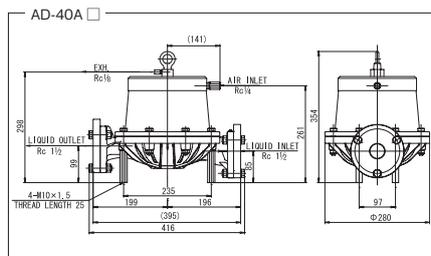
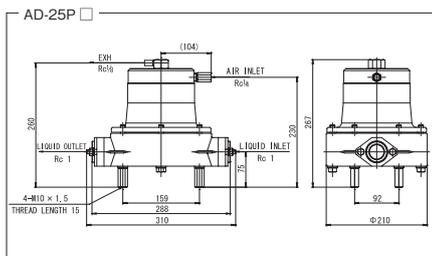
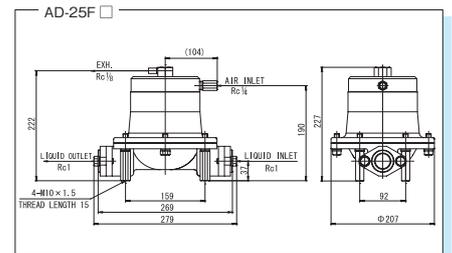
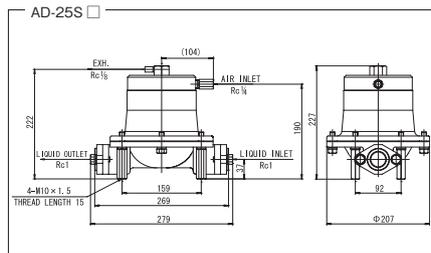
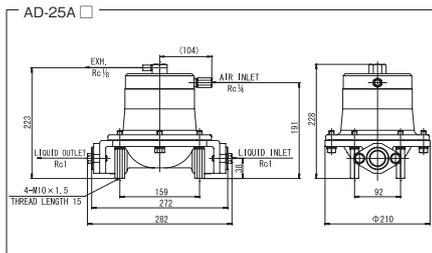
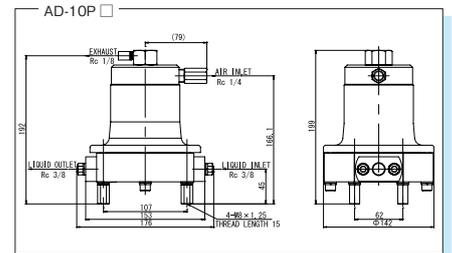
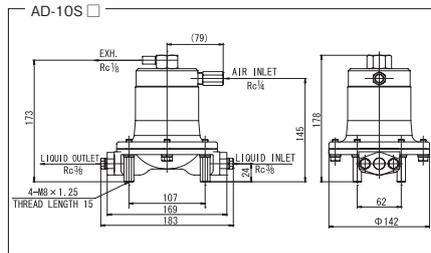
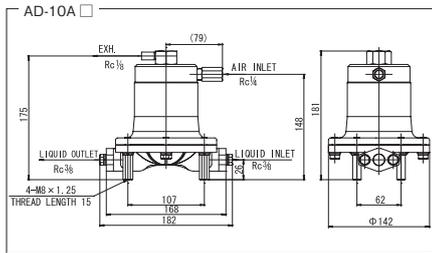
Without Pulsation Dampeners



With Pulsation Dampeners



Dimensions

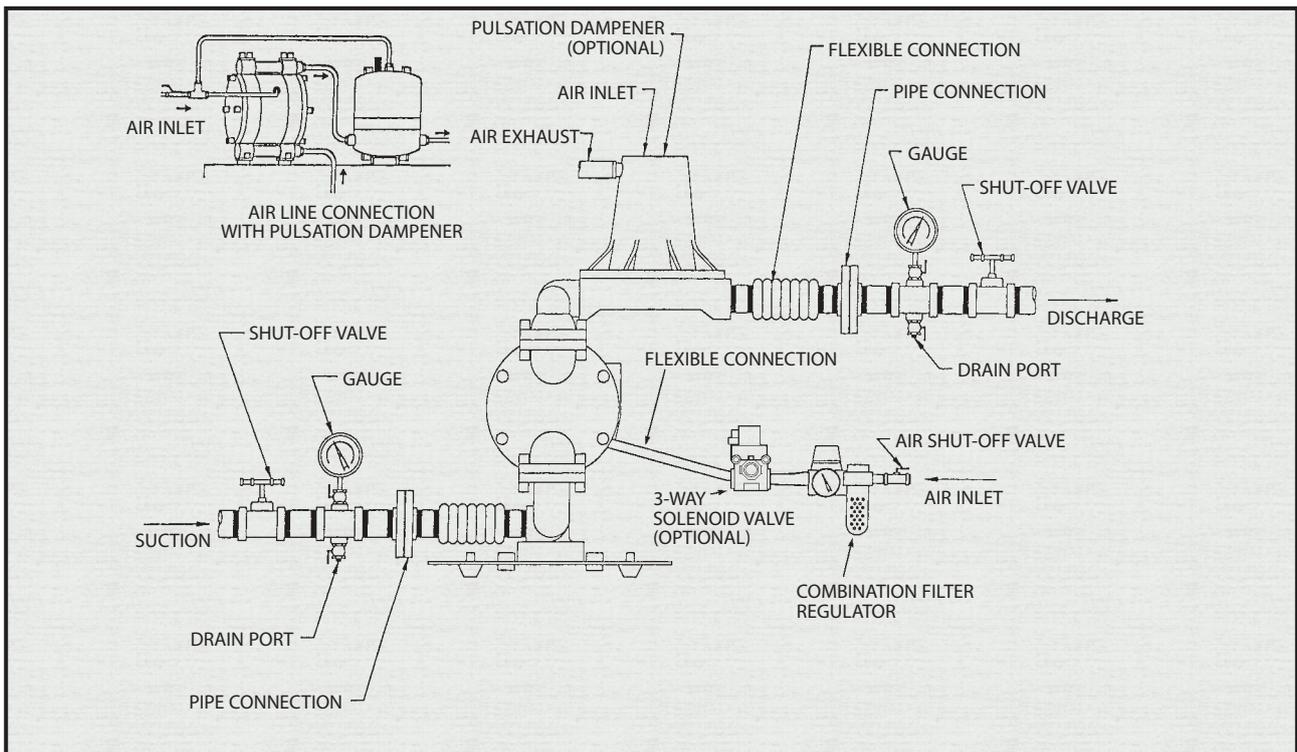


Corrosion Resistant Chart / Installation Diagram

Diaphragm Material	C: Neoprene (CR)	N: Buna N (NBR)	E: Nordel™ (EPDM)	V: Viton® (FKM)	T: Teflon® (PTFE)	H: Hytrel® (TPEE)	S: Santoprene® (TPO)
A: Aluminum (ADC12 AC4C-T6)	Glaze Bilge waste water	Lubricant Kerosene Wax Cutting oil	Acetone solution	Ethylene alcohol Xylene Jet fuel	Latex Paint Ink	Lubricant, heavy oil, brake oil, naphtha, kerosene, mold lubricant	Acetone Bilge waste water
S: Stainless steel (SCS14 SUS316)	Ammonia water Slack lime	L.P.G Ethyl chloride Sodium peroxide	Coal slurry CMP	Methylene chloride Lactic acid Trichloroethylene	Sulfuric acid (98%) Nitric acid (less than 25%) MEK Acetone		
F: Cast iron (FC250 S45C)	Kaolin liquid Ferrite slurry Active sludge Sewage water						
P: Polypropylene (PPG)	Ferrous chloride Glaze	Whiskey Sodium silicate Methyl alcohol	Sulfuric acid (less than 20%)	Ethyl alcohol Perchloroethylene	Plating solution Photograph developing liquid Benzene Hydrogen peroxide		
V: Kynar® (PVDF)					Sodium hypochlorite		
D: Groundable Acetal (POM)	Methyl alcohol Sodium sulfate Ammonium sulfate	Ethyl alcohol Methyl alcohol Ammonium nitrate	Acetaldehyde Butylnitryl Chromic acid	Copper sulfate (II) Sodium sulfate Barium sulfate	Ammonium nitrate Barium sulfate Dimethyl ether	Ethyl alcohol Ammonium chloride Calcium chloride	Acetone Ammonia water Butyl acetate

✓ For further information, please consult Yamada or your nearest distributor.

Ideal Installation for Air-Operated Double Diaphragm Pump



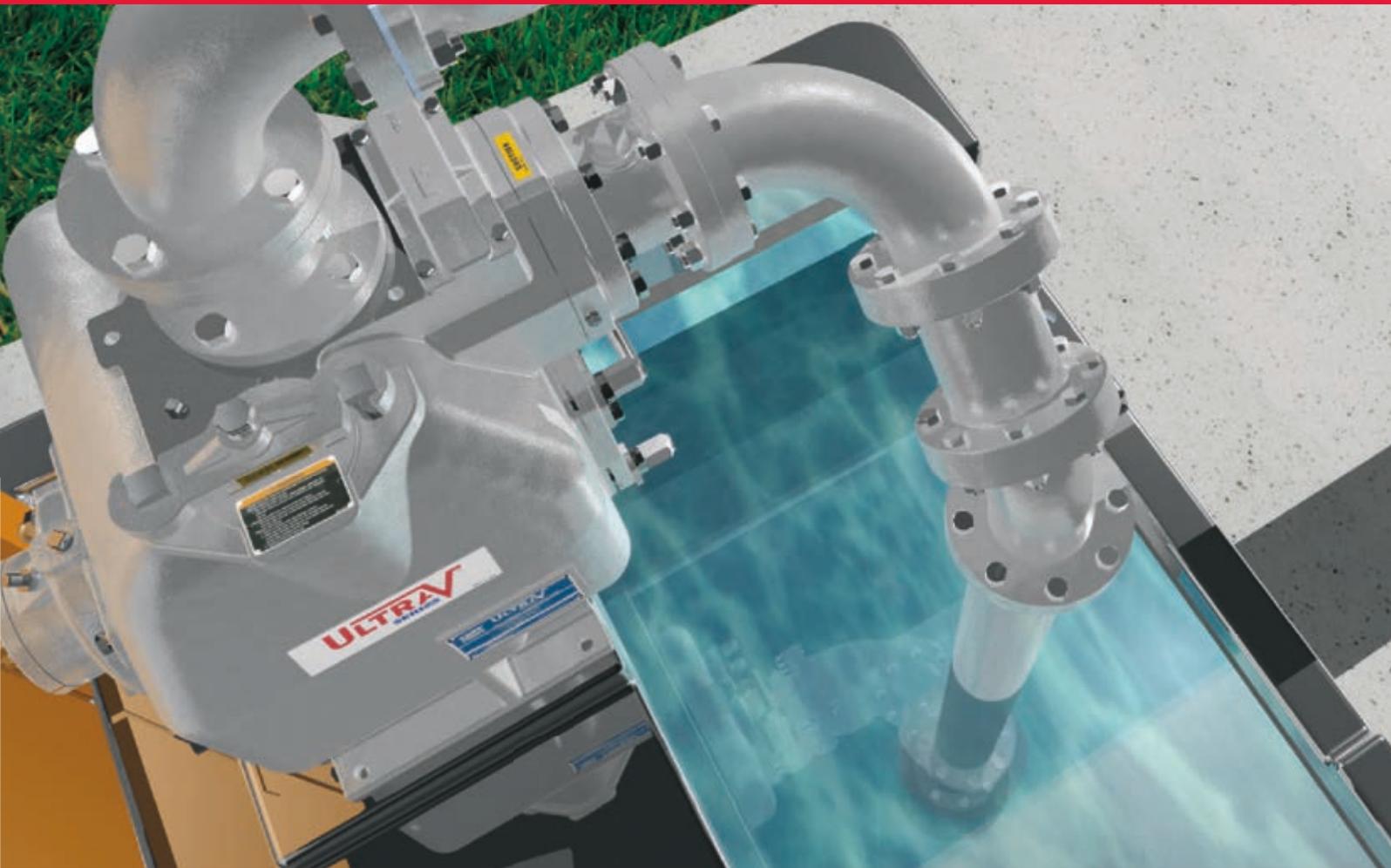


G O R M A N - R U P P P U M P S

PT. SINAR CENDANA ABADI JAYA

SELECTION AND APPLICATION

OF SELF-PRIMING CENTRIFUGAL PUMPS



GR[®]
GORMAN-RUPP
PUMPS

GRpumps.com

SELF-PRIMING | THE SENSIBLE SOLUTION

CHOOSE FROM A FULL LINE OF SELF-PRIMING CENTRIFUGAL PUMPS

Drive Variations:

- **Basic**
- **V-Belt**
- **Flexible Coupled**
- **Engine-Driven**

Self-priming pumps are a sensible solution for industrial and municipal applications. They require very little attention, resulting in significant savings of maintenance time and money.

Gorman-Rupp self-priming centrifugal pumps are easy to install and easy to service. Because they're self-priming, they can be mounted high and dry at floor level with only the suction line in the liquid – there's never a need for service personnel to enter the sump. When service or maintenance is required, it can be completed easily with common hand tools. There are no long drive shafts to install and align, and no hoists or cranes are required.

Gorman-Rupp self-priming pumps are available as basic units for connection to your power source or may be flex-coupled, v-belt driven or engine mounted.

Automatic priming means dependable performance.

All that's needed is an initial priming and the pump will continue to reprime automatically. In fact, our trash handling pumps will reprime with only a partially filled pump casing and a completely dry suction line!

Our reputation for quality has made Gorman-Rupp the world's leader in self-priming centrifugal pumps. In addition, it makes us your best solution – meeting all of your industrial or municipal waste handling needs.

Ultra V Series®

*High-Heads
Solids-Handling*



Ultra V Series® self-priming, centrifugal trash pumps handle 200% more pressure and provide 60% increased flow. Self-cleaning features, reduced footprint and unique configuration capabilities allow these pumps to excel in high-head situations where traditional pumps fall short.

Size: 3" (75 mm) to 6" (150 mm)
Max. Capacity: 1900 gpm (123 lps)
Max. Head: 168' (51 m)
Max Solids: 3" (76.2 mm)

Super T Series®

*Solids-Laden Liquids
and Slurries*



Super T Series® pumps feature a large volute design which allow them to reprime automatically in a completely open system without the need for suction or discharge check valves – and they can do it with the pump casing only partially filled with liquid and a completely dry suction line.

Size: 2" (50 mm)* to 10" (250 mm)
Max. Capacity: 3400 gpm (214.5 lps)
Max. Head: 130' (39.6 m)
Max Solids: 3" (76.2 mm)

* 2" available in T Series only

Super U Series®

*High Efficiency
Solids and Corrosive
Liquids*



Super U Series® self-priming pumps are among the most efficient solids-handling, self-priming pumps available (up to 75%). Open, multivane impeller will handle solids up to 1-1/4" (31.8 mm) in diameter.

Size: 3" (75 mm) to 6" (150 mm)
Max. Capacity: 1500 gpm (95 lps)
Max. Head: 207' (63.1 m)
Max. Solids: 1.25" (31.8 mm)

80 Series®

*Limited Solids
and Corrosive
Liquids*



80 Series® self-priming pumps are designed for high-efficiency, nonstop workloads. Straight-in suction design allows them to operate on higher suction levels than standard self-priming centrifugals.

Size: 1.25" (32 mm) to 10" (250 mm)
Max. Capacity: 2800 gpm (177 lps)
Max. Head: 205' (62 m)
Max. Solids: 2.5" (60.3 mm)

10 Series®

*Solids and
Corrosive Liquids*



10 Series® self-priming pumps have only two moving parts – impeller and shaft – so maintenance problems are minimal.

Size: 1.5" (37.5 mm) to 12" (300 mm)
Max. Capacity: 6000 gpm (378.6 lps)
Max. Head: 170' (51.8 m)
Max. Solids: 3" (76.2 mm)

0 Series®

Clear Liquids



0 Series® self-priming pumps feature straight-in suction which eliminates entrance restrictions and provides better suction performance when handling solvents, petroleum products and similar liquids.

Size: 2" (50 mm) to 6" (150 mm)
Max. Capacity: 1350 gpm (85.2 lps)
Max. Head: 400' (121.9 m)
Max. Solids: .688" (17 mm)

1 HOW TO COMPUTE THE TOTAL DYNAMIC HEAD (TDH)

TOTAL DYNAMIC SUCTION LIFT: A + B = C

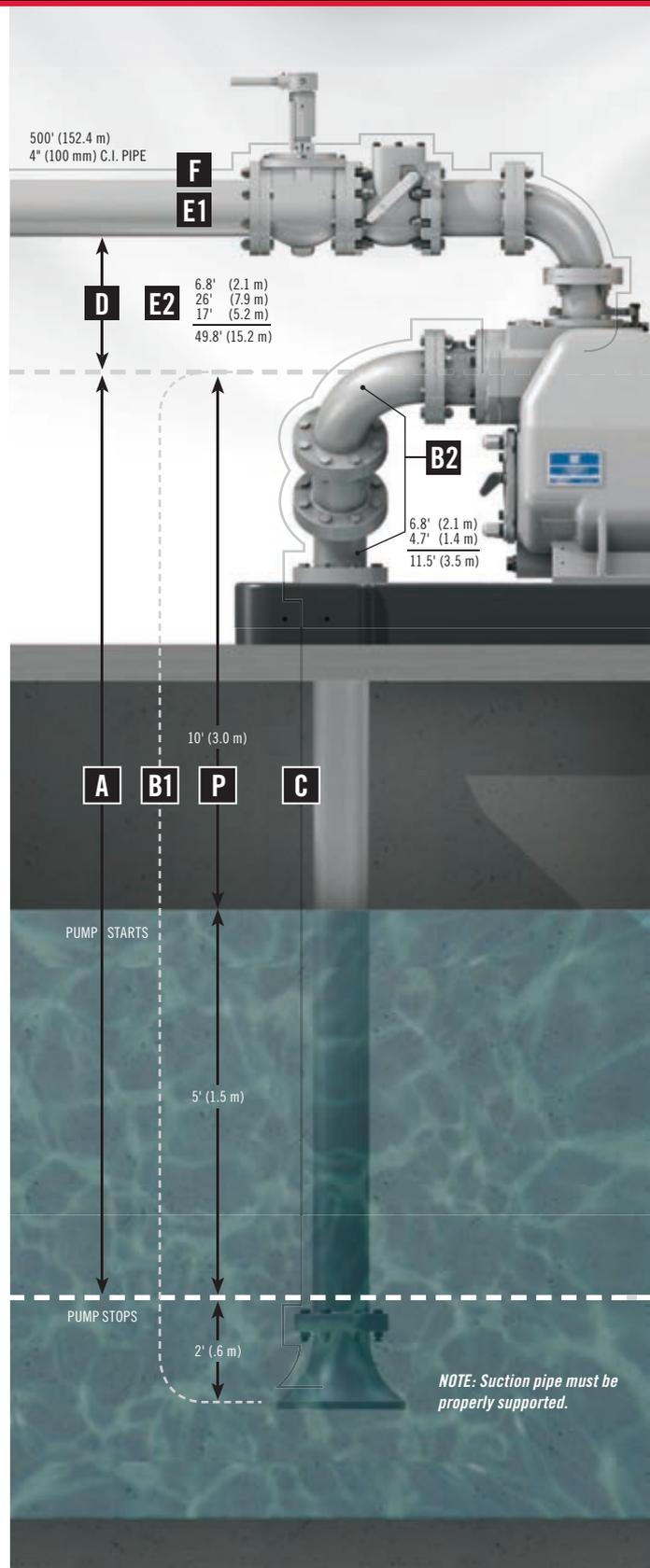
A. Static Suction Lift		15.00' (4.6 m)
B. Friction, Suction (Consult Hydraulic Handbook)		
1. Pipe, Total Length, 4" (100 mm) C.I.	17.00' (5.2 m)	
2. Fittings in Equivalent Length of Pipe		
a. One 90° L.R. Elbow, 4"–6.8' (100 mm–2.1 m)	11.50' (3.5 m)	
b. One 45° Elbow, 4"–4.7' (100 mm–1.4 m)		
3. Total Pipe (Actual & Equivalent)	28.50' (8.7 m)	
4. Total Friction Loss (.285' × 4.43' × .71') (.09 m × 1.4 m × .22 m) (based on friction coefficient C = 100, 4.43/100' and correction factor to C = 120 = .71)	.90' (.27 m)	
C. Total Dynamic Suction Lift		15.90' (4.8 m)

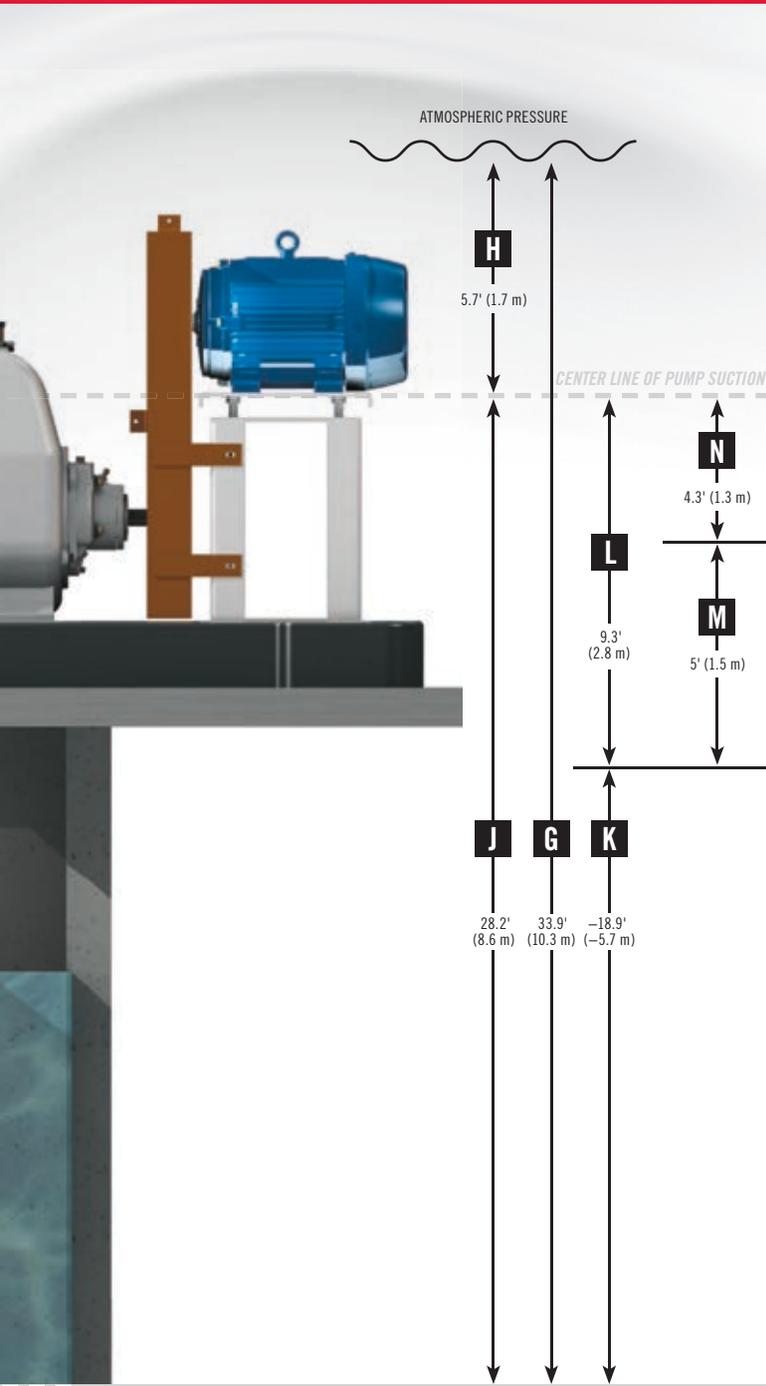
TOTAL DISCHARGE HEAD: D + E = F

D. Static Discharge Head		7.50' (2.3 m)
E. Friction, Discharge or Force Main Line (Consult Hydraulic Handbook)		
1. Pipe, Total Length, 4" (100 mm) C.I.	500.00' (152.4 m)	
2. Fittings in Equivalent Length of Pipe		
a. One 90° L.R. Elbow, 4"–6.8' (100 mm–2.1 m)		
b. One Check Valve, 4"–26' (100 mm–7.9 m)	49.80' (15.2 m)	
c. One Plug Valve, 4"–17' (100 mm–5.2 m)		
3. Total Pipe (Actual & Equivalent)	549.80' (167.6 m)	
4. Total Friction Loss (5.5' × 4.43' × .71') (1.7 m × 1.4 m × .22 m) (based on friction coefficient C = 100, 4.43/100' and correction factor to C = 120 = .71)	17.30' (5.3 m)	
F. Total Dynamic Discharge Head		24.80' (7.5 m)

TOTAL DYNAMIC HEAD: C + F = TDH

C. Total Dynamic Suction Lift	15.90' (4.8 m)	
F. Total Dynamic Discharge Head	+24.80' (7.5 m)	
Total Dynamic Head		40.70' (12.4 m)





2 HOW TO COMPUTE THE NET POSITIVE SUCTION HEAD (NPSH)

	Detailed Computation
G. Atmospheric pressure (at sea level)	33.90' (10.3 m)
H. Atmospheric pressure corrected to 5280' (1609 m) [site elevation]	-5.70' (-1.7 m)
J. Atmospheric pressure available at job site (G-H)	28.20' (8.6 m)
Deductions from available atmospheric pressure:	
1. Total dynamic suction lift	15.90' (4.8 m)
2. Vapor pressure 74° liquid	1.00' (.30 m)
3. Safety factor (may vary based on local regulations)	2.00' (.61 m)
K. Total net deductions from available atmospheric pressure (1+2+3)	-18.90' (-5.7 m)
L. NPSH Available (J-K)	9.30' (2.8 m)
M. NPSH Required (see performance curves)	-5.00' (-1.5 m)
N. NPSH Excess Available, or excess atmospheric pressure (L-M)	4.30' (1.3 m)

NOTE: Items M and N cannot be determined until pumps are selected.

HOW TO DETERMINE THE PRIMING LIFT

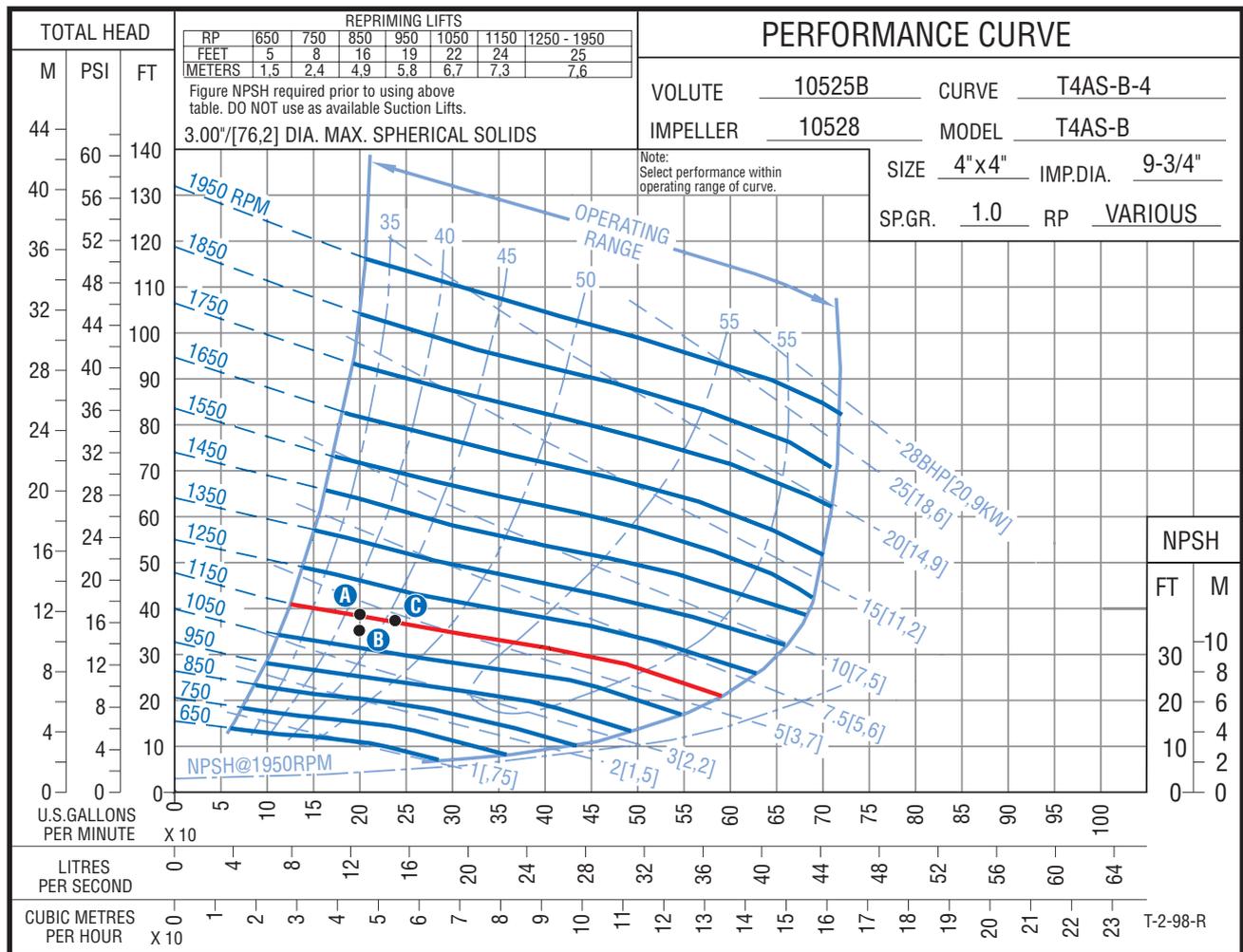
P. Priming lift	10.00' (3.0 m)
-----------------	--------------------------

NOTE: Priming lift is measured from the high liquid level to the center line of the pump suction. Priming lift has no relation to net positive suction head.

3 SELECTING THE CORRECT PUMP

After you've made the necessary calculations, you are ready to choose the correct pump for the application.

Capacity	200 gpm (12.6 lps)
Total Dynamic Head (TDH)	40.70' (12.4 m)
Total Dynamic Suction Lift (TDSL)	15.90' (4.8 m)
Priming Lift	10.00' (3.0 m)
Net Positive Suction Head (NPSH) Available	9.30' (2.8 m)
Spherical Solids	3" (76 mm)



The 3" (76 mm) spherical solids requirement suggests a model T4AS-B. A typical Super T curve is shown. A 9-3/4" (250 mm) diameter impeller, turning at 1150 RPM, would be the correct selection. This is a standard motor on 60 cycle frequency. It may be flex-coupled to the pump; however, for versatility, it may be v-belt driven. Note NPSH requirement of 5' (1.5 m) well within the available NPSH of 9.30' (2.8 m). The priming characteristic of the 9-3/4" (250 mm) diameter impeller at 1150 RPM is 24' (7.3 m) (see priming performance data on each curve). We require only 10' (3 m) of priming lift.

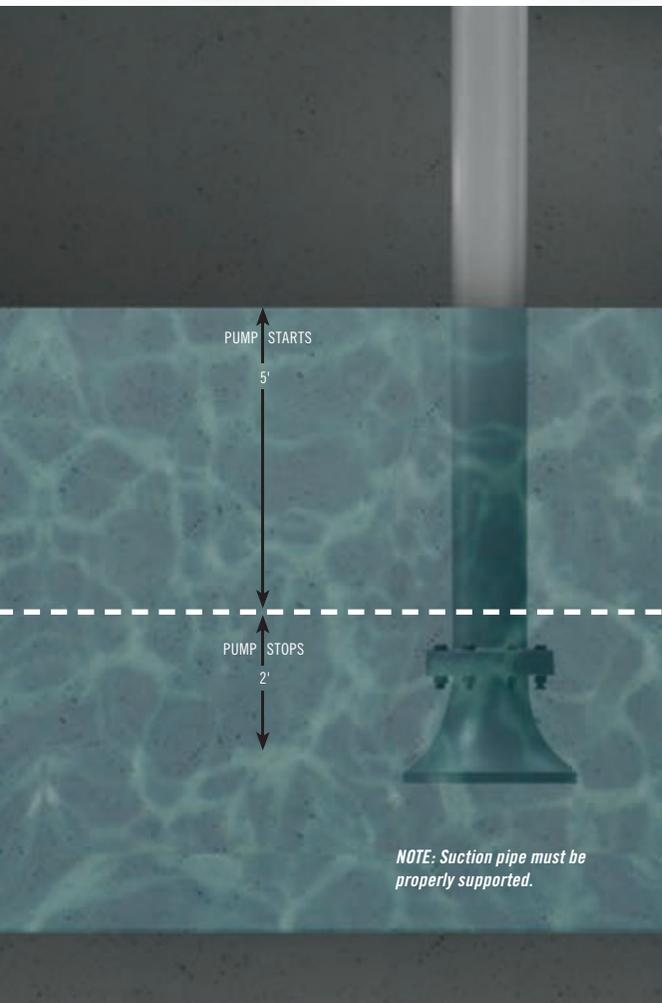
CONCLUSION:

Model T4AS-B pump, equipped with a 9-3/4" (250 mm) diameter impeller, turning at 1150 RPM, is the correct selection.

4 SELECTING THE CORRECT MOTOR

Calculating the correct motor size for a pump involves the use of a complicated formula. To make this process easier, many manufacturers add horsepower (or kilowatt) lines to their performance curves. Referring to point **A** on the curve, the closest non-overloading horsepower line represents 5 brake horsepower (BHP) or 3.7kW.

A good rule of thumb to use when selecting motors is to apply a motor which will provide sufficient power to cover the entire length of the selected pump curve (a practice which results in a “non-overloading” motor selection). Using our example, the selected operating speed of the pump is 1150 RPM. The performance of a pump will follow along this speed curve but will vary due to normal pump wear and changes in sump level. The calculation below accounts for the sump level change between the pump on and off levels.



TDH AT THIS LEVEL 35.70' (10.9 m)

$$\begin{array}{r} 40.70' \text{ (12.4 m)} \\ -5.00' \text{ (-1.5 m)} \\ \hline 35.70' \text{ (10.9 m)} \end{array}$$

or: 36' (11.0 m) TDH at point **B** on curve.

TDH AT THIS LEVEL 40.70' (12.4 m)

See **A** on curve.

The change shown above is basically a change in static head. The actual performance of the pump is illustrated on the curve where the 1150 RPM curve and hydraulic system curve intersects (this is noted on the curve as point **C**). The difference in flow rate between points **A** and **C** is the band our selected pump will operate within from the beginning to the end of the pumping cycle.

Taking all this information into consideration, the best course of action is to select a 7½ HP (5.6kW) motor to ensure non-overloading operation throughout the pump's operating range.





PUMP SELECTION

To assist with the selection of self-priming pumps, we have created the following hypothetical example. We believe the problem and its solution to be typical of a job that might confront engineers and users.

We shall assume there is a requirement for a wastewater collection system that will require a lift station to pump the wastewater to a pretreatment collection system.

The following data were acquired by actual accurate measurements.

SYSTEM REQUIREMENTS

Flow: 200 gpm (12.6 lps)
Solids: 3" (76 mm)
Configuration: Duplex, one pump for standby
Site Elevation: 5280' (1609.3 m) above sea level

SYSTEM CONDITIONS

Static Suction Lift

15' (4.6 m) vertical distance from low liquid level to center line of pump suction.

Suction Pipe

17' (5.2 m), 4" (100 mm) C.I. pipe. Measured from end of suction pipe to pump suction.

90° L.R. elbow and 45° elbow equivalent to 11.5' (3.5 m) of 4" (100 mm) C.I. pipe (for friction loss calculation).

Static Discharge Head

7.5' (2.3 m) vertical distance from center line of pump suction to invert of discharge outlet.

Discharge Pipe

500' (152.4 m), 4" (100 mm) C.I. pipe. Measured from pump discharge outlet.

90° L.R. discharge elbow, check valve and gate valve equivalent to 49.8' (15.2 m) of 4" (100 mm) C.I. pipe (for friction loss calculation).

Priming Lift

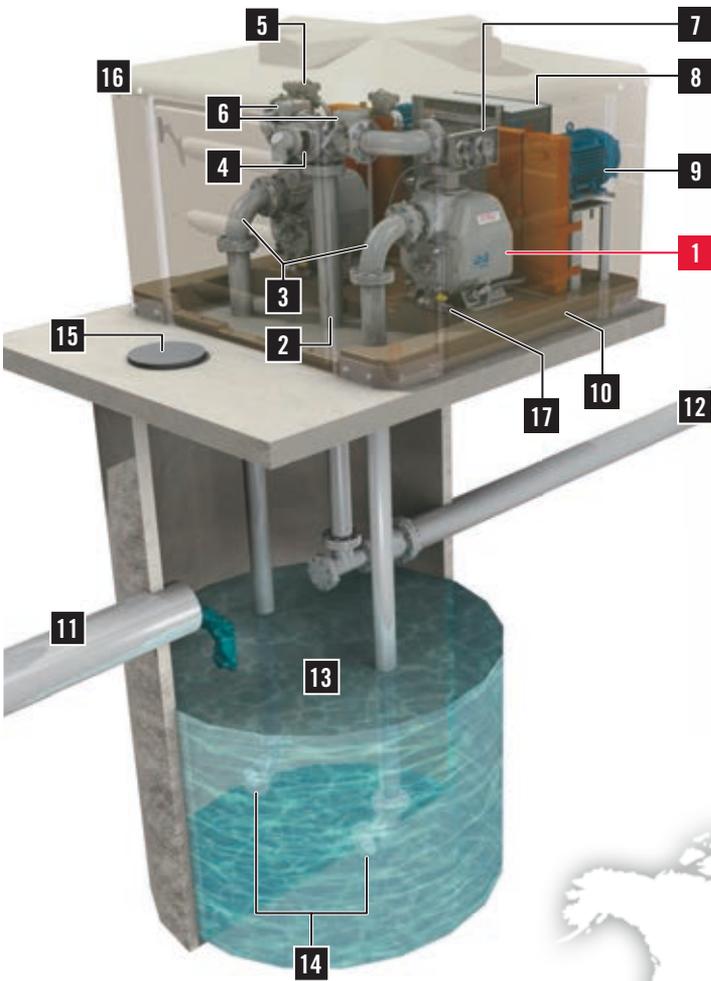
10' (3.0 m) measured from high liquid level to center line of pump suction.

The accumulation of the preceding data now permits calculating the Total Dynamic Suction Lift (TDSL), Total Discharge Head (TDH), and Net Positive Suction Head (NPSH) using the worksheets on the following pages.



PT. SINAR CENDANA ABADI JAYA

E L E M E N T S O F A P U M P I N G S T A T I O N



Although the pump is the heart of a pumping station, other elements should be considered when designing a system. This example identifies some of the items that can make up a system.

- | | |
|--|---|
| 1. Pump (2) | 8. Control Panel |
| 2. Discharge Pipe | 9. Electric Motor (2) |
| 3. Suction Pipe | 10. Base |
| 4. 3-Way Valve (1) | 11. Inlet Pipe |
| 5. Air Release Valve (2) | 12. Discharge/Force Main |
| 6. Discharge Check Valve (2) | 13. Sump/Wet Well |
| 7. Gauge Kit – Suction and Discharge (2) | 14. Suction Flare L.R. 90° Bend or Flange & Flare |
| | 15. Entrance to Sump/Wet Well |
| | 16. Pump Station Enclosure |
| | 17. Pump Drain Kit |



SOLD AND SERVICED THROUGHOUT THE WORLD

Gorman-Rupp has nearly 1,000 distributors worldwide who are qualified to give expert advice on pump selection and application. If you have a service problem, a factory-trained distributor is only a phone call away. Our distributors are backed by the fastest parts service in the industry so your parts will be there when you need them.



PT. SINAR CENDANA ABADI JAYA

- INDUSTRIAL
- CONSTRUCTION / RENTAL
- MINING
- PETROLEUM
- AGRICULTURE



*80 Series[®] Heavy-Duty
Self-Priming Centrifugal Pumps*



80 SERIES®

Heavy-Duty Self-Priming Centrifugal Pumps



Gorman-Rupp 80 Series® medium head, mild solids-handling, self-priming centrifugal pumps are designed for non-stop work loads.

The straight-in-suction design of these high efficiency pumps guarantees quick positive priming and allows them to operate at higher

suction levels than most other self-priming centrifugal pumps.

The liquid being pumped enters directly into the eye of the impeller, and a suction check valve prevents in-line return flow when the pump is shut off.

And, because they have few moving parts, 80 Series® pumps are easy to maintain and service, saving money in the long run.

High-Efficiency Impeller

80 Series pumps come equipped with a multi-vane, open impeller for higher efficiencies. Depending on the model, the impeller design will handle up to 2½" solids. These pumps are perfect for mild-solids handling, medium head applications.



Multiple Seal Options

80 Series pumps are standard with mechanical shaft seals. Grease and gland seals are also available depending on the pumping application. Consult factory for details.



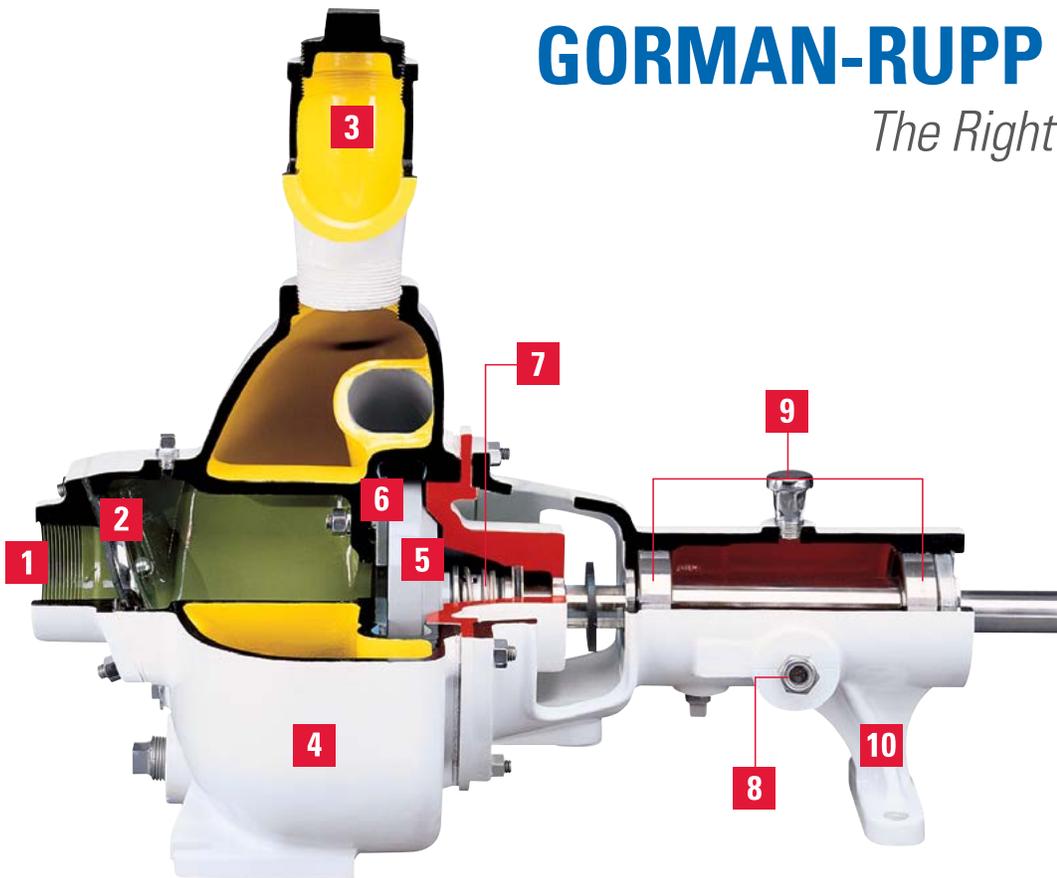
Replaceable Wearplate

The replaceable wearplate is vital in ensuring the pump is operating at peak efficiency around the clock and eliminates the need to replace expensive castings. Wearplates are of extra-thick construction allowing for an extended service life.



GORMAN-RUPP 80 SERIES®

The Right Pump For The Job



- 1-Suction Inlet
- 2-Suction Check Valve
- 3-Discharge Outlet
- 4-Volute
- 5-Balanced Impeller
- 6-Replaceable Wearplate
- 7-Mechanical Shaft Seal
- 8-Bearing Oil Monitor
- 9-Ball Bearings
- 10-Heavy-duty Pedestal

Drive Variations



80 Series®
Basic pump

Size: 1¼" (30 mm) to 10" (250 mm)
Max Capacity: 2800 GPM (176.7 lps)
Max Head: 210' (64.0 m)
Max Solids: 2.5" (63.5 mm)
Seal Elastomer: Viton®
Material of Construction: Gray Iron (consult factory for other metals available)



80 Series®
Close-coupled

Shown with explosion-proof motor
Size: 1¼" (30 mm) to 1½" (38 mm)
Max Capacity: 91 GPM (5.7 lps)
Max Head: 72' (21.9 m)
Seal Elastomer: Viton®
Material of Construction: Gray Iron



80 Series®
Engine driven

Size: 1¼" (30 mm) to 10" (250 mm)
Max Capacity: 2800 GPM (176.7 lps)
Max Head: 210' (64.0 m)
Max Solids: 2.5" (63.5 mm)
Seal Elastomer: Viton®
Material of Construction: Gray Iron (consult factory for other metals available)



80 Series®
Shield-A-Spark portable engine driven

Size: 2" (50 mm) to 3" (75 mm)
Max Capacity: 395 GPM (24.9 lps)
Max Head: 140' (42.7 m)
Seal Elastomer: Viton®
Material of Construction: Aluminum
Engines: Gasoline, Diesel

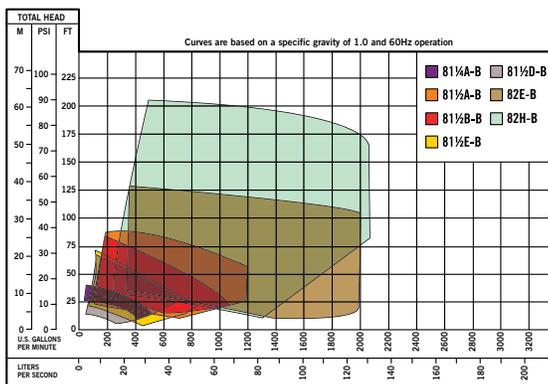


OTS noted models are included in the Gorman-Rupp OTS pump program. These products are available anytime, anywhere.

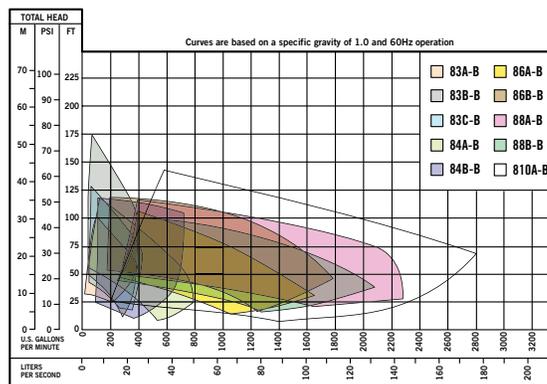
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Pump Performance Data

1¼" to 2" Models



3" to 10" Models



FLUID-HANDLING EQUIPMENT DESIGNED WITH YOUR NEEDS IN MIND



Engineering and manufacturing superiority has been the hallmark of Gorman-Rupp since our inception in 1933. Today we bring our products to life in some of the most efficient, modern and state-of-the-art manufacturing facilities in the world. Gorman-Rupp has a selection of nearly 3,000 pump models, and our world-class team of distributors has worked closely with thousands of end users around the world. We have the proven expertise and the resources to specify, manufacture, test and service your pump, and to ensure reliable performance for the long haul.



PT. SINAR CENDANA ABADI JAYA



SUPER T SERIES®

*Self-Priming, Solids-Handling
Trash Pumps*



A HISTORY OF INNOVATION

Gorman-Rupp has been revolutionizing the pumping industry since 1933. Many of the innovations introduced by Gorman-Rupp over the years have become industry standards.

More than ever, we continue to update our factories, processes, research and development, and engineering to ensure that our pumps and systems are among the most reliable and efficient in the world. One of our most successful and innovative lines of pumps has been our self-priming models.

Revolutionary improvements were made in 1963 with the introduction of our T Series® self-priming pumps. Since then, continuous improvements to head, flow and efficiency have been made.

In 2000 we introduced our Super T Series® with many added maintenance features to enhance serviceability.

Today, Gorman-Rupp self-priming pumps are the world's leading choice for waste handling applications in industries such as steel and paper mills, mining operations, food processing plants, power plants, automotive factories, tanneries and wineries. They are also the pump of choice in many sewage-handling applications worldwide.

Gorman-Rupp's commitment to our original philosophy of innovation, continuous improvement, unparalleled quality and customer service continues to set us apart from others.

OUR PUMPS DELIVER DECADES OF PERFORMANCE AND VALUE

Gorman-Rupp is committed to meeting your fluid-handling requirements long after installation. The quality manufacturing and testing that go into every Super T Series® pump guarantee long-lasting, trouble-free operation. And we provide a five year warranty and fast parts service to back up our products and ensure your peace of mind.

Value

Super T Series® pumps boast some of the lowest lifecycle costs in the industry. Because of the quality manufacturing and testing that goes into every Gorman-Rupp product, you benefit from minimal service interruptions and some of the lowest maintenance in the industry. Gorman-Rupp delivers the best ROI by ensuring low operating costs for decades.

Parts And Service

When you need a replacement part for your Super T Series, you'll have it fast. With tens of thousands of genuine Gorman-Rupp parts and pumps at our disposal, we fill and ship 99% of parts orders within 24 hours. Should your Super T Series pump or ReliaSource® pump package ever require service, our worldwide network of factory-trained distributors is ready to quickly respond to your needs. With just one number to call for parts and service, it's easy and convenient to keep your equipment performing as it should.

Peace Of Mind

At Gorman-Rupp, we don't just say our pumps are reliable. Unlike standard 90-day or one-year warranties, we guarantee every part and working component of a Super T Series pump for a full five years. With Gorman-Rupp, reliable performance is always guaranteed.



Sound-attenuated, engine-driven models are environmentally engineered to operate much quieter than industry standards.

Deal With Tough Solids Applications

New challenges for solids-handling pumps are presented with the rise of stringy solids such as flushable, nonwoven wipes which are increasingly present in sewage. This, along with other clog-prone solids such as feathers in poultry processing applications, can be dealt with effectively with the Gorman-Rupp Eradicator™ Solids Management System. The system is available for all Super T Series® pumps.

Design Features

The Eradicator system features an aggressive self-cleaning wearplate incorporating a number of notches and grooves, as well as a patent-pending lacerating tooth, that helps break up stringy materials and pass them through the pump without impacting performance or interrupting service. A special back cover includes a patented lightweight inspection cover that can easily be removed if it is necessary to inspect the impeller. The innovative design greatly reduces troublesome clogging and expensive downtime.



System Benefits

Easier access to the impeller, increased uptime, improved operational efficiency, reduced maintenance costs and lower life-cycle costs are major benefits of the Eradicator system. No longer does the entire back cover assembly have to be removed to gain access to the impeller, and Eradicator-equipped pumps do not require expensive chopper blades that need periodic replacement. The system is available in cast iron and G-R Hard Iron configurations and can be factory-equipped in new pumps or purchased as a retrofit kit that is interchangeable with Super T Series pumps currently operating in the field.



The Eradicator™ Solids Management System is available for all sizes of Gorman-Rupp Super T Series® pumps.



SUPER T SERIES®

Self-Priming, Solids-Handling Trash Pumps



Superior Solids-Handling

Designed for economical, trouble-free operation, the superior solids-handling capabilities of the Super T Series® pumps make them ideally suited for a variety of applications including solids-laden liquids and slurries. The large volute design allows automatic repriming in a completely open system without the need for suction or discharge check valves.

Available in discharge sizes of three, four, six, eight and ten inches, this line of self-priming pumps boasts capacities to 3400 gallons per minute (214.5 liters per second) and heads to 148 feet (45 meters). Pumps four inches and larger are engineered to allow up to three-inch diameter spherical solids to pass through any critical area, including the recirculation port.

Super T Series pumps are available in several configurations, including a B version for higher head applications, close-coupled or engine-driven models. All Gorman-Rupp Super T Series pumps are backed by a five-year manufacturer's warranty.

Easy To Maintain

Super T Series pumps are designed with ease of service in mind. Because they are self-priming, they can be mounted above the liquid being pumped. Should service or maintenance be required, it can be easily performed using common hand tools without disconnecting piping. The impeller, seal, wear plate and flap valve can all be accessed through the shimless coverplate opening for inspection or service.*

All Super T Series pumps can be coupled to a standard NEMA motor, which means there's no waiting for special motors.

G-R Hard Iron

G-R Hard Iron is offered as an option for our popular Super T Series pumps and is available for your abrasive applications. For years, Gorman-Rupp has proclaimed the benefits of G-R Hard Iron. This durable material provides superior performance by extending the pump life up to six times over standard cast iron or ductile iron components. G-R Hard Iron has a measured hardness in excess of 400 Bhn (Brinell), providing the best abrasion resistance for nearly all pumping applications.

*Not available on ten-inch models.

Super T SERIES®

- 01 | Fill Port
- 02 | Suction Check Valve
- 03 | O-Ring Seal
- 04 | Replaceable Wearplate
- 05 | Balanced Impeller
- 06 | Oversized Seal Oil Chamber
- 07 | Seal Oil Monitor
- 08 | Removable Rotating Assembly
- 09 | Bearing Oil Monitor
- 10 | Pusher Bolt Capability
- 11 | Optional Casing Heater
- 12 | Double Lip Seals
- 13 | Atmospheric Bearing Isolation
- 14 | Cartridge Mechanical Seal
- 15 | Easy-Off Coverplate Nuts
- 16 | Removable Coverplate
- 17 | Easy-Grip Handle
- 18 | Pressure Relief Valve
- 19 | Pusher Bolt Capability
- 20 | Shimless Coverplate Adjustment

Eradicator™ Solids Management System

21 | Lightweight Inspection Cover

The patented design allows for easy access to the impeller for routine maintenance and clearing blockages.

22 | Aggressive Self-Cleaning Wearplate

Incorporates grooves, notches and tooth to shred stringy materials to further reduce clogging.



All Super T Series® pumps come standard with a five-year warranty.



Specifications

Pump Size: 3" (75 mm),
4" (100 mm), 6" (150 mm), 8" (200 mm),
10" (250 mm)
Max. Capacity: 3400 GPM (214.5 lps)
Max. Solids: 3" (76.2 mm)
Max. Head: 175' (53.3 m)
Materials of Construction: Cast Iron,
316 Stainless Steel Fitted, CD4MCu,
G-R Hard Iron Fitted, G-R Hard Iron
with Hard Iron Volute



ECONOMICAL OPERATION & EASY TO SERVICE

Gorman-Rupp's patented external shimless adjustment design doubles the life of the impeller and wearplate.

The external shimless coverplate allows for easy adjustment of the clearance between the impeller and the wearplate. This process eliminates the need to realign belts, couplings or other drive components. In turn, the working height of the seal assembly and impeller back clearance are not disturbed. The unique collar and adjusting screw allow for incremental adjustments of the wearplate clearance.

Once adjustments have been made, the collar locks in place, maintaining the clearance setting even if the coverplate is removed. This design feature doubles the life of the impeller and wearplate while maintaining peak operating efficiency.

Easily Removable Coverplate

The removable coverplate with easy-grip handle and pusher bolt capability provides quick and easy access to the pump interior (not available on 10" models).



Solids-Handling Impeller

Two-vane, ductile iron, semi-open solids handling impeller handles up to 3" (76.2 mm) diameter solids, depending on pump model. Pump out vanes on the impeller shroud reduce foreign material buildup behind the impeller and reduce pressure on seal and bearings. Multi-vane impellers are available in "B" hydraulics models for higher head applications with limited solids. Optional materials include: G-R Hard Iron, 316 Stainless Steel, CD4MCu and High Chrome.



Removable Rotating Assembly

The entire rotating assembly can be removed without disturbing the pump volute or piping. Pusher bolt holes are provided to assist with removal. This allows for quick and easy installation of a spare rotating assembly, resulting in less downtime.



Dual Bearing Protection

An atmospheric barrier along with two lip seals provide additional protection of the pump bearings. This unique design also allows for quick and easy external monitoring of the bearing cavity.



Gorman-Rupp Cartridge Seal

Exclusive double-floating, self-aligning, oil lubricated mechanical cartridge seal with stationary and rotating face of silicon carbide or tungsten titanium carbide is specifically designed for abrasive and/or trash handling service. Consult the factory for additional seal configurations.



GORMAN-RUPP SUPER T SERIES®

The Right Pump For The Job

Gorman-Rupp Super T Series® pumps are available in five sizes and multiple drive variations. When space is critical, close-coupling can be used to solve “tight-fit” problems. V-belt configurations offer the advantage of flexibility in speed selection and usually provide maximum operating speed for the required head and capacity without trimming the impeller. Super T Series pumps are also available with diesel or natural gas powered engines, or as part of a packaged pumping station.

Basic Pump



Super T Series®
Size: 3" (75 mm)
Shown with optional flanges



Super T Series®
Size: 4" (100 mm)
Shown with optional flanges



Super T Series®
Size: 6" (150 mm)
Shown with optional flanges



Super T Series®
Size: 8" (200 mm)
Shown with optional flanges



Super T Series®
Size: 10" (250 mm)

Drive Variations



Super T Series®
Close-coupled



Super T Series®
V-belt driven



Super T Series®
Engine driven
Shown with optional wheel kit



Super T Series®
ReliaSource® Packaged
pumping station



Super T Series®
ReliaPrime™ sound-
attenuated back-up system

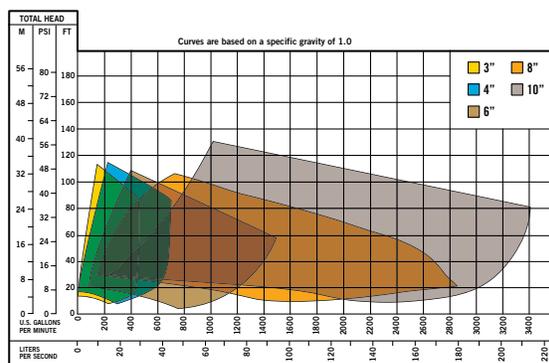
Optional Accessories

- Eradicator™ Solids Management System
- Volute Casing Heater
- Automatic Air Release Valve
- Discharge Check Valve
- Pump High-Temperature Shutdown Kit
- G-R Hard Iron Casings (3", 4" and 6" models)
- High Chrome Impellers (+600 Bhn, limited pump sizes)
- Suction & Discharge Gauge Kits
- Complete Replacement Rotating Assembly
- Pump Spare Parts Kit
- Pump Easy Drain Kit
- Continuous Vane Impeller (10" model only)
- Optional Elastomers and Suction Flap Valve Materials (EPDM, Neoprene, AFLAS-TFE, Viton®*)
- Custom Seal Options including: Flush Kits, Metal Bellows, Double and Chemical Duty Seals, and John Crane Type 9 Mechanical Seals (limited pump sizes)

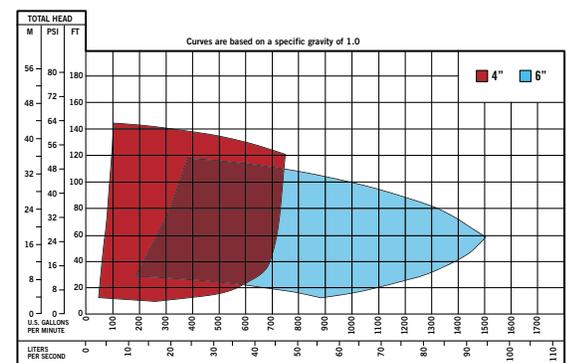
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Pump Performance Data

A Version



B Version – Limited Solids



NOTE: Consult factory for other performance conditions.



FLUID-HANDLING EQUIPMENT DESIGNED WITH YOUR NEEDS IN MIND



★ Manufacturing Facilities

• Distribution Centers

Gorman-Rupp Pumps
Mansfield, Ohio, USA
Gorman-Rupp Canada
St. Thomas, Ontario, Canada

Gorman-Rupp Europe
Culemborg, Netherlands
Gorman-Rupp Africa
Cape Town, South Africa
Durban, South Africa
Johannesburg, South Africa (Headquarters)

Distribution Centers

Bangkok, Thailand
Dubai, United Arab Emirates
Grand Prairie, Texas, USA
Culemborg, Netherlands

Engineering and manufacturing superiority has been the hallmark of Gorman-Rupp since our inception in 1933. Today we bring our products to life in some of the most efficient, modern and state-of-the-art manufacturing facilities in the world. Gorman-Rupp has a selection of nearly 3,000 pump models, and our world-class team of distributors has worked closely with thousands of end users around the world. We have the proven expertise and the resources to specify, manufacture, test and service your pump, and to ensure reliable performance for the long haul.



PT. SINAR CENDANA ABADI JAYA

GR[®]
GORMAN-RUPP
PUMPS

Super
U SERIES  **S**[®]

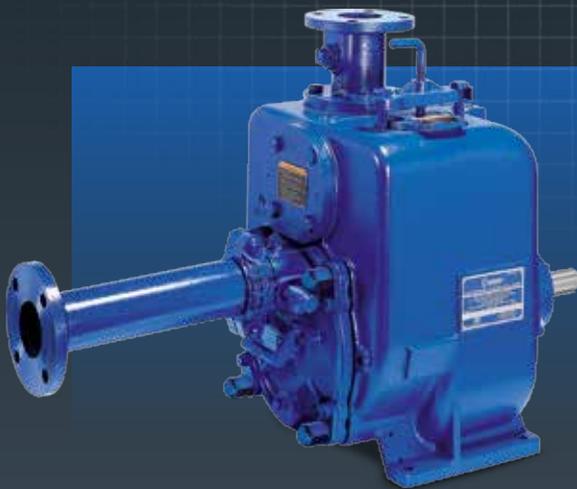
SELF-PRIMING, HIGH-EFFICIENCY PUMPS



GRpumps.com

Super U SERIES®

Super U Series® pumps are available in 3", 4" and 6" discharge sizes. They are capable of handling spherical solids up to 1-1/4" in diameter. There are two different pump design variations to choose from, the "A" or "B" version (depending on installation requirements or performance needs).



"A" VERSION

Highest Efficiency

The "A" version provides more efficiency than the "B" version because the liquid enters directly into the impeller eye.

Removable Spool Flange

A victaulic collar couples the suction extension to the removable coverplate for easy access to pump interior, should the pump need service.



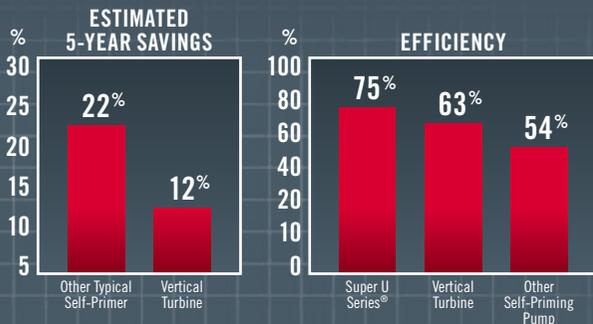
"B" VERSION

The "B" version of the Super U Series® is dimensionally interchangeable (suction and discharge dimensions) with Gorman-Rupp Super T Series® pump models. A removable coverplate with easy-grip handle provides quick access to pump interior, should the pump need to be serviced.

DRIVE VARIATIONS

Gorman-Rupp Super U Series® pumps are available as basic units for connection to customers' power or they may be flex-coupled or V-belt driven by an electric motor.

When space is critical, flex-coupling often solves the "tight-fit" problem. V-belt drive offers the advantage of flexibility in speed selection and usually provides maximum operating speed for required head and capacity without the need to trim the impeller. Various belt and sheave configurations are available.



The 5-year savings generated when you install a Super U Series® high efficiency pump.

Super
U SERIES®

**THE MOST EFFICIENT SELF-PRIMING,
SOLIDS-HANDLING PUMPS AVAILABLE**

UP TO 75% EFFICIENCY

Super U Series® pumps are the most efficient self-priming, solids-handling pumps available. Their unique volute casing design minimizes friction loss and drag. The multi-vane, open impeller is designed for high efficiency, yet can still handle solids up to 1-1/4" (31 mm) in diameter. Super U Series® pumps not only deliver high efficiencies (up to 75%), they also perform efficiently across a broad operating range. Varying loads, which cause a pump to operate left or right of its best efficiency point on the operating curve, will reduce operating efficiency by only



a very small percentage. The patented external shimless adjustment makes it easy to keep the pump in peak operating condition. Each size pump is available in two different design variations, "A" or "B" versions.

EASY TO SERVICE

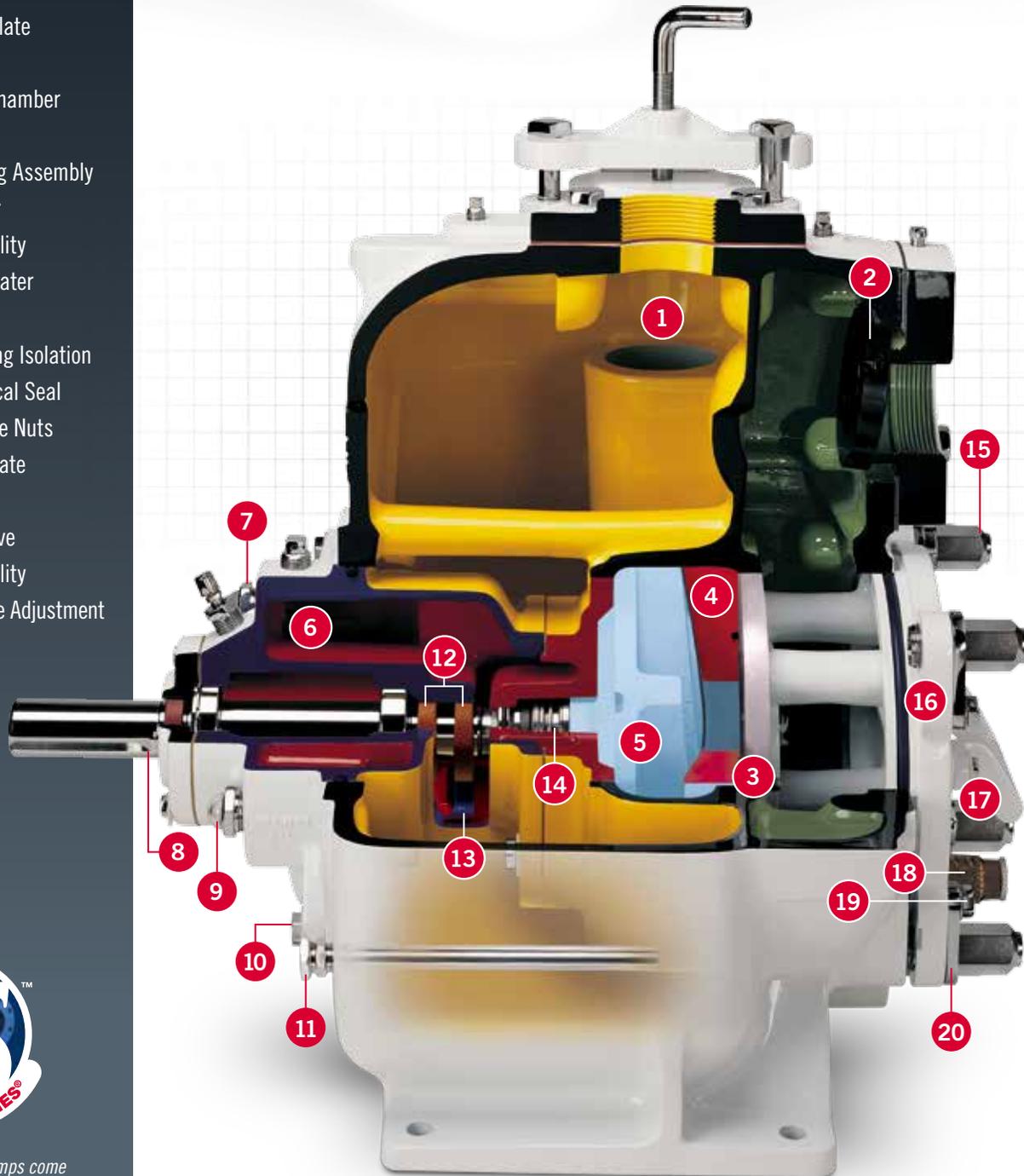
Super U Series® pumps are designed with easy service in mind. Because they're self-priming, they can be mounted high and dry above the liquid being pumped. If service or maintenance is required, it's done quickly and easily with common hand tools. No need to "pull the pump" and waste hours or days of valuable man and machine time. Since there are no elongated shafts, a minimum of workspace is required. And, because all Super U Series® pumps can be coupled to a standard NEMA motor, there's no waiting around for special motor parts.



Super U SERIES®

- 1 Handles up to 1-1/4" Solids
- 2 Suction Check Valve*
- 3 Inner O-Ring Seal
- 4 Replaceable Wearplate
- 5 Impeller
- 6 Oversize Seal Oil Chamber
- 7 Seal Oil Monitor
- 8 Removable Rotating Assembly
- 9 Bearing Oil Monitor
- 10 Pusher Bolt Capability
- 11 Optional Casing Heater
- 12 Double Lip Seals
- 13 Atmospheric Bearing Isolation
- 14 Cartridge Mechanical Seal
- 15 Easy-Off Coverplate Nuts
- 16 Removable Coverplate
- 17 Easy-Grip Handle
- 18 Pressure Relief Valve
- 19 Pusher Bolt Capability
- 20 Shimless Coverplate Adjustment

* "B" version only.



All Super U Series® pumps come standard with an industry-leading five-year warranty.

Super U Series® "B" Version Shown

SERVICE AND MAINTENANCE WITHOUT DISCONNECTING PIPING



MULTI-VANE SOLIDS-HANDLING IMPELLER

Multi-vane, open impeller is designed for high efficiency. Constructed of ductile iron, the impeller will handle up to 1-1/4" (31 mm) diameter solids.

GORMAN-RUPP CARTRIDGE SEAL

Exclusive double-floating, self-aligning, oil lubricated mechanical cartridge seal with stationary and rotating face of silicon carbide is specifically designed for rugged, abrasive service. Consult factory for additional seal configurations.



EASILY REMOVABLE COVERPLATE

If service is required, the removable coverplate with "easy-grip" handle and pusher bolt capability provides quick and easy access to the pump interior without disconnecting piping.* Clogs can be removed and the pump can be returned to service in minutes. Impeller, seal, replaceable wearplate and suction check valve* can also be accessed through the coverplate opening for inspection or service.

***"B" version only.*

PATENTED EXTERNAL SHIMLESS ADJUSTMENT DESIGN DOUBLES THE LIFE OF THE IMPELLER AND WEARPLATE

The external shimless coverplate allows for easy adjustment of the clearance between the impeller and the wearplate. This process eliminates the need to realign belts, couplings or other drive components. In turn, the working height of the seal assembly and impeller back clearance are not disturbed. The unique collar and adjusting screw allow for incremental adjustments of the wearplate clearance with the turn of a hand.

Once adjustments have been made, the collar locks in place, maintaining the clearance setting even if the coverplate is removed.

This design doubles the life of the impeller and wearplate and keeps the pump operating at maximum efficiency.

REMOVABLE ROTATING ASSEMBLY

Inspection of pump shaft or bearings is easily accomplished without disturbing pump casing or piping by removing rotating assembly. Simply remove four bolts from the back or front** of the pump and the entire assembly slides out.



***6" models only.*

DUAL PROTECTION OF BEARINGS

Atmospheric isolation of seal cavity provides positive protection of the bearings. This unique design also provides capabilities for external monitoring.



SUPER U SERIES® SPECIFICATIONS

SIZES	MATERIALS OF CONSTRUCTION	MAX. CAPACITY	Max. Head	Max. Solids
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3", 4", 6" (75 mm, 100 mm, 150 mm)	Cast iron, 316 stainless steel fitted, CD4MCU, G-R Hard Iron fitted	1500 gpm (95 lps)	207' (63 m)	1-1/4" (31 mm)
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A
VERSION



B
VERSION

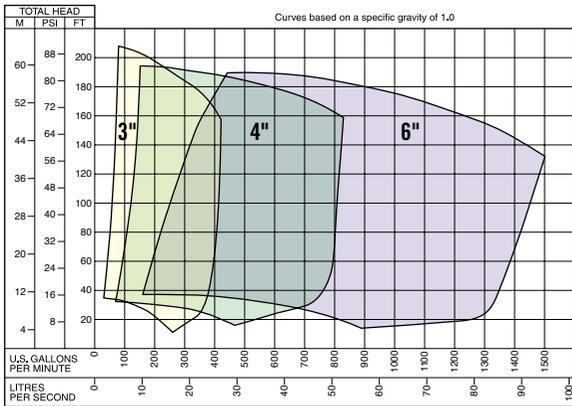


3"
Super U Series®
Shown with optional flanges

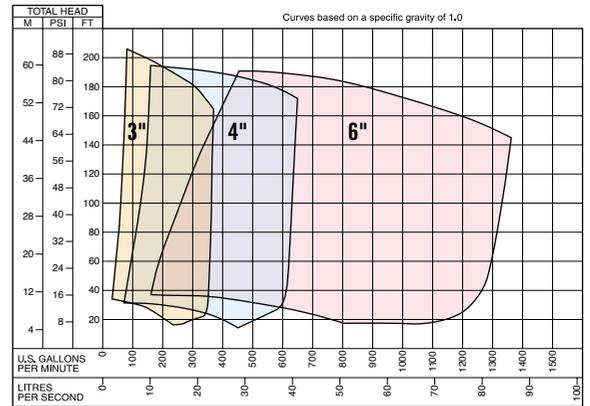
4"
Super U Series®
Shown with optional flanges

6"
Super U Series®
Shown with optional flanges

"A" VERSION



"B" VERSION



Note: Consult factory for other performance conditions.



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ULTRA^V
SERIES

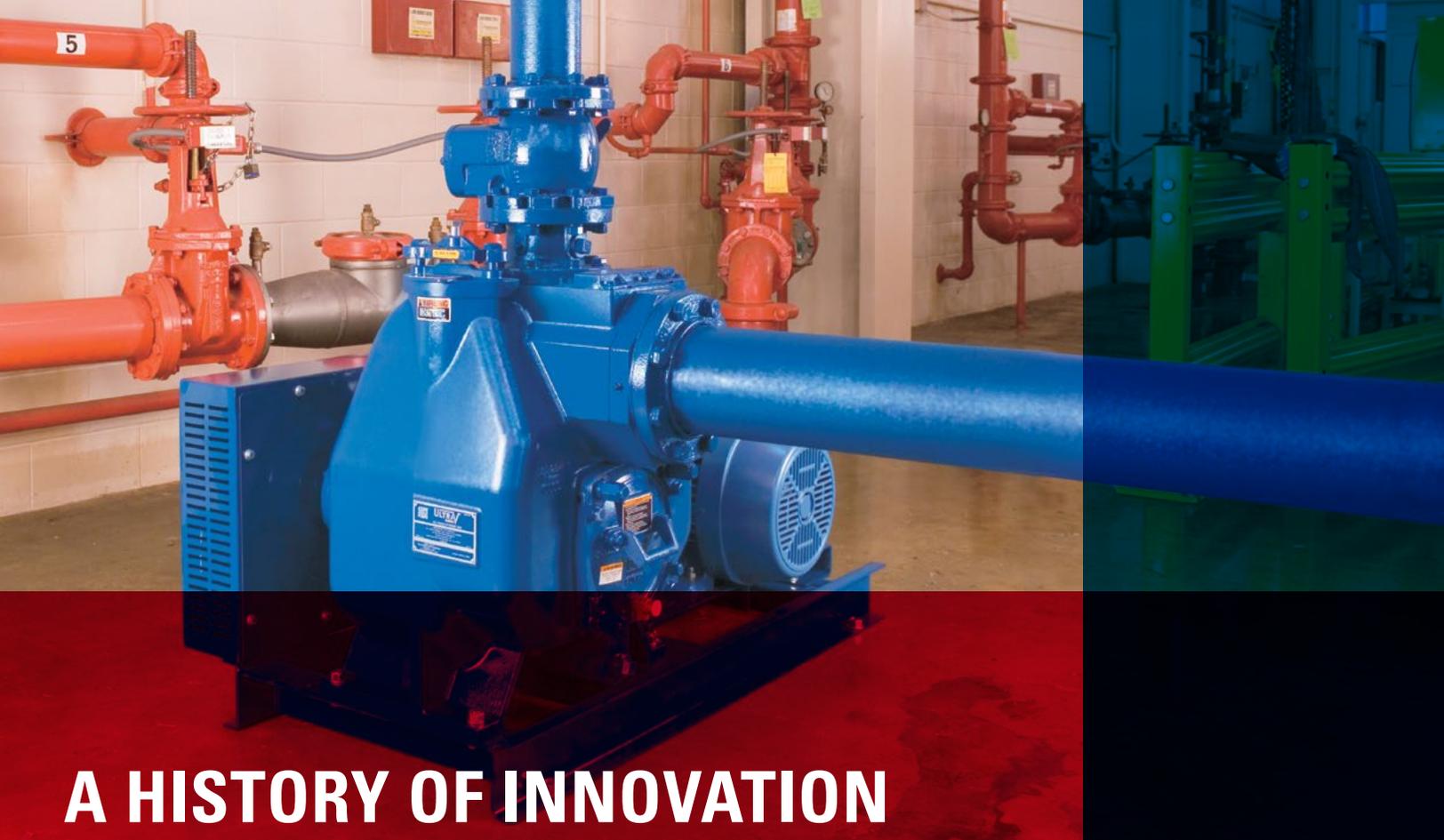


ULTRA V SERIES[®]

*High-Head, High-Performance,
Self-Priming Trash Pumps*

GR[®]
GORMAN-RUPP
PUMPS

The Pump People[®]



A HISTORY OF INNOVATION

Gorman-Rupp has been revolutionizing the pumping industry since 1933. Many of the innovations introduced by Gorman-Rupp over the years have become industry standards.

More than ever, we continue to update our factories, processes, research and development, and engineering to ensure that our pumps and systems are among the most reliable and efficient in the world. One of our most successful and innovative lines of pumps has been our self-priming models.

Revolutionary improvements were made in 1963 with the introduction of our T Series® self-priming pumps. Since then, continuous improvements to head, flow and efficiency have been made.

In 2000 we introduced our Super T Series® with many added maintenance features to enhance serviceability. And, in 2005, Gorman-Rupp introduced the revolutionary Ultra V Series®

which offers industry-leading performance for self-priming applications.

Today, Gorman-Rupp self-priming pumps are the world's leading choice for waste handling applications in industries such as steel and paper mills, mining operations, food processing plants, power plants, automotive factories, tanneries and wineries. They are also the pump of choice in many sewage-handling applications worldwide.

Gorman-Rupp's commitment to our original philosophy of innovation, continuous improvement, unparalleled quality and customer service continues to set us apart from others.



PT. SINAR CENDANA ABADI JAYA

OUR PUMPS DELIVER DECADES OF PERFORMANCE AND VALUE

Gorman-Rupp is committed to meeting your fluid-handling requirements long after installation. The quality manufacturing and testing that goes into every Ultra V Series® pump guarantee long-lasting, trouble-free operation. And we provide a five year warranty and fast parts service to back up our products and ensure your peace of mind.

Value

Ultra V Series® pumps boast some of the lowest lifecycle costs in the industry. Because of the quality manufacturing and testing that goes into every Gorman-Rupp product, you benefit from minimal service interruptions and some of the lowest maintenance in the industry. Gorman-Rupp delivers the best ROI by ensuring low operating costs for decades.

Parts And Service

When you need a replacement part for your Ultra V Series, you'll have it fast. With tens of thousands of genuine Gorman-Rupp parts and pumps at our disposal, we fill and ship 99% of parts orders within 24 hours. Should your Ultra V Series pump or ReliaSource® pump package ever require service, our worldwide network of factory-trained distributors is ready to quickly respond to your needs. With just one number to call for parts and service for your entire lift station, it's easy and convenient to keep your equipment performing as it should.

Peace Of Mind

At Gorman-Rupp, we don't just say our pumps are reliable. Unlike standard 90-day or one-year warranties, we guarantee every part and working component of a Ultra V Series pump for a full five years. With Gorman-Rupp, reliable performance is always guaranteed.



Ultra V Series® pumps are available in a variety of drive variations including basic units, trailer mounted engine-driven units, or as part of an engineered ReliaSource® packaged pump station.

ULTRA V SERIES® & VS SERIES

*High-Head, High Performance Self-Priming,
Solids-Handling Trash Pumps*

Superior Performance

The Ultra V Series® and VS Series solids-handling, self-priming centrifugal trash pumps offer up to three times the pressure and up to 60% more flow.

Available in a variety of pump station configurations or stand-alone in 3", 4" and 6" sizes. The superior solids-handling and increased pressure capabilities of the Ultra V Series pumps make them ideally suited for a variety of industrial and sewage applications.

Ultra V Series® Pumps Feature:

- Up to three times the pressure
- Up to 60% increased flow
- Greater efficiencies
- Self-cleaning features
- Reduced footprint
- Externally removable suction check valve
- Unique configuration capabilities
- Improved solids-handling

Three Times The Pressure

The patented UltraMate® can be paired with the Ultra V Series pump when system requirements exceed the Ultra V's exceptional performance range. By adding the UltraMate unit directly to the Ultra V through an innovative transition chamber, maximum pressure is increased up to three times the pressure of traditional solids-handling, self-priming, single stage pumps. Losses associated with conventional series connected pumps are also reduced, resulting in increased efficiencies.

ULTRAMATE

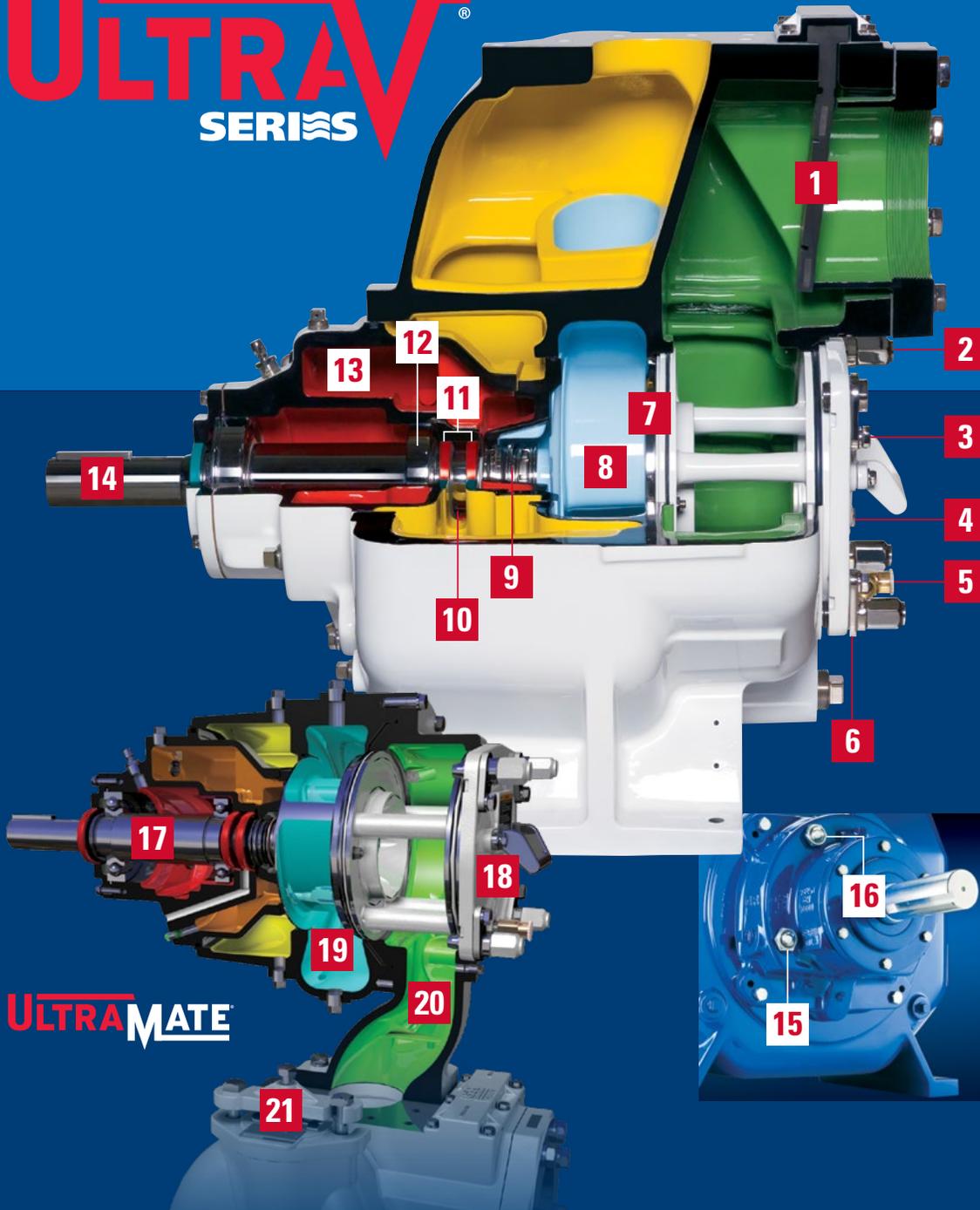


Smart Scroll® Discharge Locator

The patented Smart Scroll® can be rotated to fit your specific piping system. It can be ordered in vertical or horizontal facing, left or right positions.



ULTRA V[®] SERIES



Specifications

Pump Size: 3" (75 mm),
4" (100 mm), 6" (150 mm)
Max. Capacity: 1900 GPM
(119.9 lps)
Max. Solids: 3" (76.2 mm)
Max. Head: 325' (99.1 m)
Materials of Construction:
Cast Iron, 316 Stainless
Steel Fitted, CD4MCu, G-R
Hard Iron Fitted



All Ultra V Series[®] pumps
come standard with a five-
year warranty.

ULTRAMATE

- | | | |
|---|---|--|
| 01 Removable Suction Check Valve | 08 Heavy-Duty Impeller | 16 Seal Oil Sight Gauge |
| 02 Easy-Off Cover Nuts | 09 Cartridge Mechanical Seal | 17 Removable Rotating Assembly* |
| 03 Pusher Bolt Holes | 10 Atmospheric Bearing Isolation | 18 Removable Back Coverplate* |
| 04 Removable Back Coverplate | 11 Two Double Lip Seals | 19 Smart Scroll [®] |
| 05 Pressure Release Valve | 12 Heavy-Duty Bearings | 20 Transition Chamber |
| 06 Shimless Coverplate Adjustment | 13 Oversized Seal Oil Chamber | 21 Fill Port |
| 07 Self-Cleaning Replaceable Wearplate | 14 Removable Rotating Assembly | |
| | 15 Bearing Oil Sight Gauge | |

*Interchangeable with Ultra V Series[®] rotating assembly

ECONOMICAL OPERATION & EASY TO SERVICE

Gorman-Rupp's patented external shimless adjustment design doubles the life of the impeller and wearplate.

The external shimless coverplate allows for easy adjustment of the clearance between the impeller and the wearplate. This process eliminates the need to realign belts, couplings or other drive components. In turn, the working height of the seal assembly and impeller back clearance are not disturbed. The unique collar and adjusting screw allow for incremental adjustments of the wearplate clearance.

Once adjustments have been made, the collar locks in place, maintaining the clearance setting even if the coverplate is removed. This design feature doubles the life of the impeller and wearplate while maintaining peak operating efficiency.

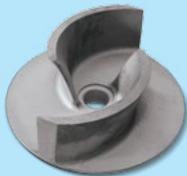


Easily Removable Coverplate

The removable coverplate with easy-grip handle and pusher bolt capability provides quick and easy access to the pump interior.

Solids-Handling Impeller

The two-vane, semi-open solids handling impeller handles up to 3" (76.2 mm) diameter solids, depending on pump model. Pump out vanes on the impeller shroud reduce foreign material buildup behind the impeller and reduce pressure on the seal and bearings.



Replaceable Wearplate

A replaceable self-cleaning wearplate ensures debris is cleared away and does not collect on the impeller vanes. This innovative design reduces the overall life cycle costs by minimizing blockage within the pump.



Gorman-Rupp Cartridge Seal

The exclusive double-floating, self-aligning, oil lubricated mechanical cartridge seal with silicon carbide stationary and rotating faces is specifically designed for abrasive and/or trash handling service. Consult the factory for additional seal configurations.



Dual Bearing Protection

An atmospheric barrier along with two lip seals provide additional protection of the pump bearings. This unique design also allows for quick and easy external monitoring of the bearing cavity.



Removable Rotating Assembly

The entire rotating assembly can be removed without disturbing the pump volute or piping. Pusher bolt holes are provided to assist with removal. This allows for quick and easy installation of a spare rotating assembly, resulting in less downtime.

Check Valve

A positive sealing, externally removable suction check valve is standard on Ultra V Series® models. This eliminates the need to disconnect any piping for inspection or replacement. The check valve has a blowout center that limits excessive volute pressure, protecting the pump.



GORMAN-RUPP ULTRA V SERIES®

The Right Pump For The Job



Built upon the foundation of the Super T Series®, Gorman-Rupp Ultra V Series® pumps excel in high-head applications where traditional self-priming trash pumps fall short. Available in three sizes, these pumps can be configured as a trailer mounted engine-driven unit or be part of an engineered ReliaSource® pump station that is factory assembled, tested, shipped, and ready for installation.

Basic Pumps



Ultra V Series®
Size: 3" (75 mm)



Ultra V Series®
Size: 4" (100 mm)



Ultra V Series®
Size: 6" (150 mm)



VS Series
Size: 3" (75 mm)



VS Series
Size: 4" (100 mm)



VS Series
Size: 6" (150 mm)

Optional Accessories

- Industrial & Municipal ReliaSource® Packages
- Automatic Air Release Valve
- Discharge Check Valve
- Suction & Discharge Flange Kits
- Volute Casing Heater
- Suction & Discharge Gauge Kits
- Complete Replacement Rotating Assembly
- Pump Spare Parts Kit
- Pump Easy Drain Kit
- Custom Seal Options
- Controls & Complete Stations
- Optional Elastomers and Suction Flap Valve Materials (EPDM, Neoprene, AFLAS-TFE, Viton®*)

*Viton® is a registered trademark of DuPont Performance Elastomers. All rights reserved.

Drive Variations



Ultra V Series®
Engine driven
Shown with optional wheel kit

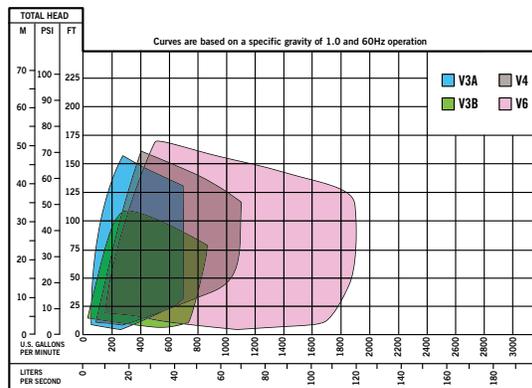


Ultra V Series®
ReliaSource® packaged
pumping stations

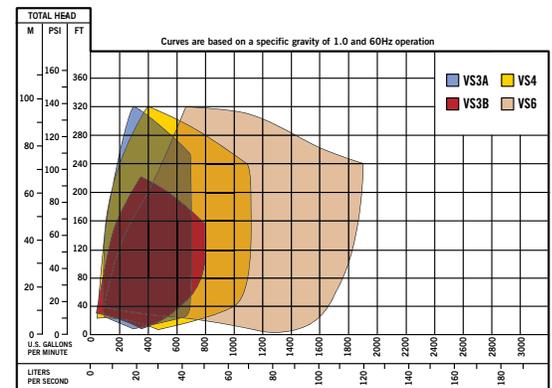
The V3B and VS3B models offer an optional hydraulic design developed to meet three inch solids-handling requirements in a three inch pump.

Pump Performance Data

Ultra V Series®



VS Series



NOTE: Consult factory for other performance conditions.

FLUID-HANDLING EQUIPMENT DESIGNED WITH YOUR NEEDS IN MIND



★ Manufacturing Facilities

• Distribution Centers

Gorman-Rupp Pumps
Mansfield, Ohio, USA
Gorman-Rupp Canada
St. Thomas, Ontario, Canada

Gorman-Rupp Europe
Culemborg, Netherlands
Gorman-Rupp Africa
Cape Town, South Africa
Durban, South Africa
Johannesburg, South Africa (Headquarters)

Distribution Centers
Bangkok, Thailand
Dubai, United Arab Emirates
Grand Prairie, Texas, USA
Culemborg, Netherlands
Sparks, Nevada, USA

Engineering and manufacturing superiority has been the hallmark of Gorman-Rupp since our inception in 1933. Today we bring our products to life in some of the most efficient, modern and state-of-the-art manufacturing facilities in the world. Gorman-Rupp has a selection of nearly 3,000 pump models, and our world-class team of distributors has worked closely with thousands of end users around the world. We have the proven expertise and the resources to specify, manufacture, test and service your pump, and to ensure reliable performance for the long haul.



PT. SINAR CENDANA ABADI JAYA

T2 T Series

self-priming centrifugal solids-handling pump

Gorman-Rupp has been manufacturing self-priming pumps since 1933. Over the years, The Gorman-Rupp Company has set the standard with our T Series® and Super T Series® lines of pumps. Many have tried to copy the dependability that these lines provide.

Today, Gorman-Rupp T Series pumps are the world's leading choice for waste handling applications in industries such as steel and paper mills, deep mines, food processing plants, appliance and automotive factories, tanneries and wineries. They are also leaders in sewage handling applications worldwide. That's because Gorman-Rupp offers customers the performance, efficiency and reliability they can count on, day-in and day-out.

The T2 is the latest addition to the T Series family of our self-priming solids-handling pumps. With the same quality features that the T Series are known for, the T2 has additional innovative features that will enhance maintenance, improve performance and increase pump longevity.

Small package but not small in performance...

With maximum heads to 115 ft. (35.1m) and flows to 210 GPM (13.2 l/s), the T2 pump features a volute design that allows it to reprime automatically in a completely open system, without the need for suction or discharge check valves. In fact, it can reprime with the pump casing only partially filled with liquid and a completely dry suction line.

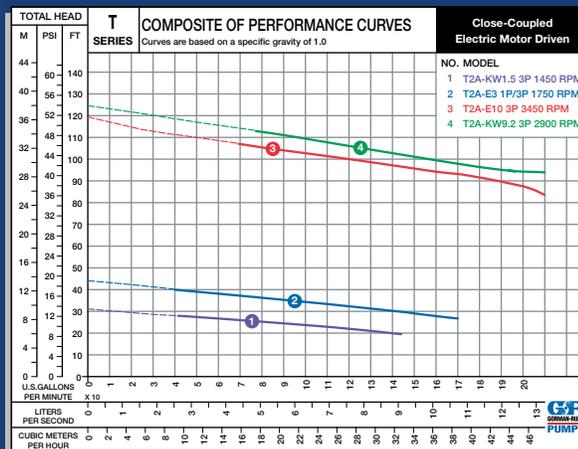
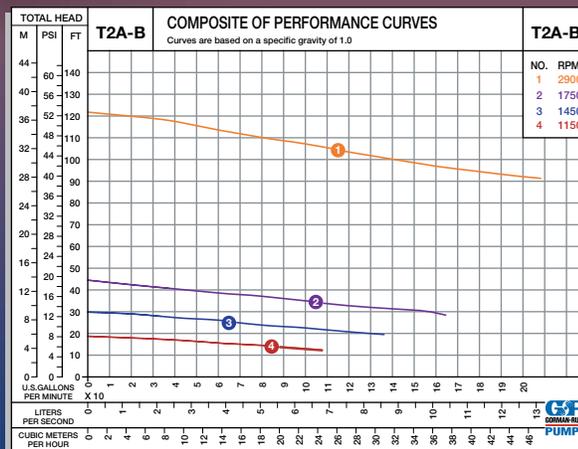
The T2 is standard with a cast iron casing and a two-vane ductile iron open impeller capable of passing 1.5" (38.1mm) spherical solids. 316 stainless steel fitted and G-R hard iron versions are also available. For corrosive and abrasive applications, the T2 can be supplied in an all CD4MCu version. Oil lubricated mechanical seals are available with tungsten titanium carbide or silicon carbide faces.

Simple and compact

T2 is also available in a compact close-coupled version. This configuration is ideal where space is at a premium. Available standard with a 3 hp or 10 hp JM Frame motor, these units will fit into almost any area or can easily be installed as part of an original equipment manufacturer's (OEM) piece of equipment. All close-coupled versions of the T2 come supplied with an open drip-proof (ODP) motor. Other motor styles are available as an option. For 50 Hz international applications, T2 close-coupled models are available with totally enclosed fan-cooled (TEFC) IP55 framed motors.

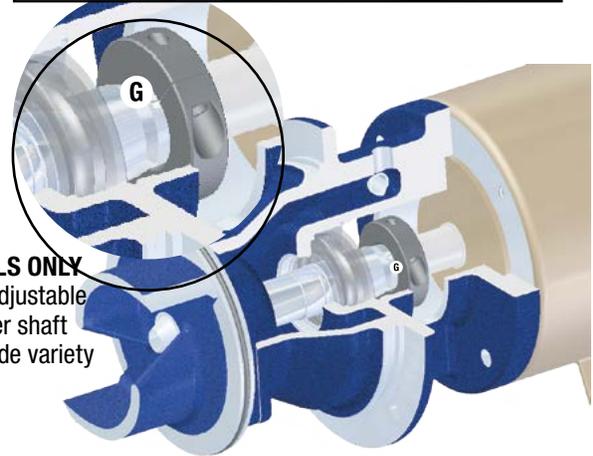
Many drive variations from which to choose

The T2 is available as a basic unit or may be flex-coupled or V-belt driven by an electric motor. When space is limited, flex-coupling solves "tight-fit" concerns. V-belt drive configurations offer the advantage of speed adjustment to match the pump's performance to the application without the need to trim the impeller.





- A Externally Removable Flap Valve:** If maintenance is required, the integral suction flap valve can easily be removed and inspected without the inconvenience of disconnecting the piping or draining the pump casing.
- B Suction and Discharge Connections:** Pump is available with 2" NPT (shown), or optional 2" ASA #125 spool flange or 50mm DIN 2527 spool flanges.
- C Removable Coverplate and Wearplate:** Access pump interior quickly without disconnecting piping. Debris can be removed and pump returned to service in minutes. Impeller, seal and wearplate can also be accessed through coverplate opening for inspection or service. Jacking screw holes are provided.
- D Removable Rotating Assembly:** Inspect or replace shaft or bearings without disturbing pump casing or piping by removing four bolts from the drive end of the pump. This greatly reduces downtime in critical situations. Jacking screw holes are provided.
- E Externally Adjustable Clearance:** The rotating assembly is sealed with an O-ring. External shims between the rotating assembly housing and the pump casing allow for easy shimming to ensure optimum pump performance.
- F Dual Site Gauges:** Individual site gauges are provided for inspecting the oil condition and levels in the bearing and seal cavities.



CLOSE COUPLED MODELS ONLY

- G Locking Collar:** Use of adjustable locking collar with adapter shaft allows for the use of a wide variety of standard drivers.

Complete Packages: As with many of our pumps, T2 pumps can be supplied as part of Gorman-Rupp's packaged pump systems to meet your municipal, industrial wastewater or storm water needs.

The Superior Solution: Our quality reputation has made Gorman-Rupp the world's leader in self-priming centrifugal pumps. And it makes us your best solution—meeting all of your industrial or municipal waste-handling needs. *We Originate...Others Imitate.*



PT. SINAR CENDANA ABADI JAYA



PT. SINAR CENDANA ABADI JAYA

A LASTING SOLUTION FOR CORROSIVE APPLICATION

LEADING MANUFACTURER OF NON METALLIC AS WELL AS WELL METALLIC CENTRIFUGAL PUMPS IN INDIA

“YOUR GUIDE TO THE WORLD-CLASS RANGE OF CHEM-PROOF PUMPS ”



SPECIAL FEATURES

- .Shaft is wellprotected by a confned PTFE sleeve gasket.
- .Special design mechanical seal offered as a standard feature to ensure reliability
- .Impeller clearance can be adjusted externally for all seres except series 'PPM' pumps.
- .Detachable suction and discharge flanges in series CPP and "CPM' save the expensive casing replacement costs.
- .Casing and back plate of seres 'CPK' pumps are offered in carbon steel (ASTM A 216 grade WCB) as a standard. SS 316 material offered on request.



SERIES: CPK



(PFA)

Series "CPK" PFA lined pumps are top-of-the-line pumps for handling highly corrosive fluids including high temperature services. Hi-tech lining process is employed to manufacture defect free components. These pumps can virtually replace expensive Hastelloy-B, Hastelloy-C and ceramic lined pumps at affordable price.

(FEP)

Series "CPK" FEP lined pumps are a variation of PFA lined pumps suitable for most corrosive services and moderately high temperature. Hi-tech lining process is employed to manufacture defect free components. These pumps offer economic alternative to higher alloy pumps like Hastelloy-B, Hastelloy-C and ceramic lined pumps.

(PVDF)

Series "CPK" PvdF Lined pumps are a variation for wide range of corrosive applications, an economic solution to higher alloy pumps. The lined parts are manufactured using Hi-Tech lining process ensuring defect free components.

Range:

Capacities	Q :	up to 400 m ³ /h
Heads	H :	up to 100 m
Pressure	P :	up to 10 bar
Temperature	t :	up to 260 °C (PFA) up to 180 °C (FEP) up to 120 °C (PVDF)





SERIES: CPP

Series 'CPP' solid injection moulded pumps are available in polypropylene (PP) and glass filled polypropylene (GFP) materials. These are suitable for all services compatible with PP.

The pumps incorporate robust design to handle highly corrosive fluids including corrosive slurries.

Range:

Capacities	Q :	up to 400 m ³ /h
Heads	H :	up to 100 m
Pressure	P :	up to 6 bar
Temperature	t :	up to 80° C



SERIES: CPB

Series 'CPB' pumps are a variation of series 'CPP' pumps which incorporate back-pull-out feature. This offers all the advantages for easy maintenance, similar to metallic pumps. The metallic armour supports piping loads without any strain on the pump suction and discharge nozzles.

The pump construction and the spacer coupling together help dismantling of the rotor assembly without disturbing the suction/ discharge pipes and motor.

This feature reduces the need for coupling alignment after every maintenance interval.

Range:

Capacities	Q :	up to 400 m ³ /h
Heads	H :	up to 100 m
Pressure	P :	up to 6 bar
Temperature	t :	up to 80° C





SERIES: CPM



Series 'CPM' monoblock pumps are sturdy, compact in design and are most cost effective.

The pump impeller is directly installed on the motor shaft, reducing the number of components and associated costs.

These pumps are available in solid injection moulded PP and GFP materials.

Range:

Capacities	Q : up to 50 m ³ /h
Heads	H : up to 58 m
Pressure	P : up to 6 bar
Temperature	t : up to 80° C

SERIES: CVSP



Series 'CVSP' vertical submerged pumps are robust in construction. Heavy duty column pipe supports shaft and pump assembly to minimise vibration.

These pumps are designed for Heavy duty operation and are available in PP and GFP materials.

Unique labyrinth sealing feature controls emission of corrosive vapours, aids protection to the drive equipment and surrounding environment.

Range:

Capacities	Q : up to 50 m ³ /h
Heads	H : up to 58 m
Pressure	P : up to 6 bar
Temperature	t : up to 80° C





Series 'CCIP' metallic pumps are designed for heavy-duty service with oversized bearings for reliable operation. These pumps give the best efficiency due to robust closed impeller design. The sturdy shaft design minimises vibration and provides smooth & trouble free operation. The pumps are offered in various materials like Cast Iron, Carbon steel, SS 304(CF8), SS 316(CF8M), SS 316L(CF3 M), A-20, Hast-C, Hast-B, Ni-Hard, CD4MCu etc.

Range:

Capacities	Q :	up to 1150 m ³ /h
Heads	H :	up to 160 m
Pressure	P :	up to 25 bar
Temperature	t :	up to 350° C

SERIES: CCIP



Series 'CNMD' magnetic driven sealless pumps. A set of primary magnets assembled with motor shaft generating magnetic torque which results in the rotation of secondary magnets which is moulded on the impeller insert.

These pumps are available in solid injection moulded PP, GFP and PVDF (Polyvinylidene Difluoride) materials.

Range:

Capacities	Q :	up to 45 m ³ /h
Heads	H :	up to 26 m
Pressure	P :	up to 5 bar
Temperature	t :	PVDF up to 120° C PP/GFP up to 80° C

SERIES: CNMD





SERIES: CMP



Series 'CMP' metallic pumps are designed for heavy-duty service with oversized bearings for reliable operation. The Robust semi-opened impeller design handles moderate percentage of solids without clogging. The sturdy shaft design minimises vibration and provides smooth & trouble free operation. The pumps are offered in various materials like Carbon steel, SS 304 (CF8), SS 316 (CF8M), SS 316L (CF3M), A-20, Hast-C, Hast-B etc.

Range:

Capacities Q : up to 400 m³/h

Heads H : up to 150 m

Pressure P : up to 16 bar

Temperature t : up to 260° C

SERIES: CMCP



Series 'CMP' centre lined mounted pumps are designed for heavy-duty service with oversized bearings for reliable operation, especially for high temperature service.

The pumps are offered in various materials like Carbon steel, SS 304 (CF8), SS 316 (CF8M), SS 316L (CF3M) etc.

Range:

Capacities Q : up to 400 m³/h

Heads H : up to 150 m

Pressure P : up to 16 bar

Temperature t : up to 350° C





SERIES: CMPH



Series 'CMP' metallic pumps are designed for heavy-duty service with oversized bearings for reliable operation. The Robust semi-opened impeller design handles moderate percentage of solids without clogging. The sturdy shaft design minimises vibration and provides smooth & trouble free operation. The pumps are offered in various materials like Carbon steel, SS 304 (CF8), SS 316 (CF8M), SS 316L (CF3M), A-20, Hast-C, Hast-B etc.

Range:

Capacities Q : up to 1400 m³/h

Heads H : up to 160 m

Pressure P : up to 16 bar

Temperature t : up to 280° C



PUMPS SPARES OF OTHER MAKE

CHEM-PROOF



SERIES: CPMM

Series **CPMM** monoblock pumps are sturdy compact in design and are most cost effective.

The pump impeller is directly installed in the motor shaft, reducing the number of components and associated costs

These pumps are available in MS & SS

Range:

Capacities	Q :	up to 50 m ³ /h
Heads	H :	up to 58 m
Pressure	P :	up to 6 bar
Temperature	t :	up to 80 ^o C



SERIES: CSPP

Series **CSPP** is a Thermic fluid pumps chemical process pumps made of ductille iron, SS316, Alloy 20 and Hastelloy designed for normal and demanding chemical process app. This is a seal less magnetic drive centrifugal pump, the external magnet is directly connected to the motor shaft and it transmit the torque to the internal magnet.

Range:

Capacities	Q :	up to 400 m ³ /h
Heads	H :	up to 150 m
Pressure	P :	up to 16 bar
Temperature	t :	up to 350 ^o C





SERIES: CMMD



Series **CMMD** is a metallic magnetic drive chemical process pumps made of ductile iron, SS316, Alloy 20 and Hastelloy designed for normal and demanding chemical process app. This is a seal less magnetic drive centrifugal pump, the external magnet is directly connected to the motor shaft and it transmit the torque to the internal magnet.

Range:

Capacities Q : up to 100 m³/h

Heads H : up to 100 m

Pressure P : up to 16 bar

Temperature t : up to 260^o C

SERIES: CTFP



Series **CTFP** is a Thermic fluid pumps chemical process pumps made of ductile iron, SS316, Alloy 20 and Hastelloy designed for normal and demanding chemical process app. This is a seal less magnetic drive centrifugal pump, the external magnet is directly connected to the motor shaft and it transmit the torque to the internal magnet.

Range:

Capacities Q : up to 400 m³/h

Heads H : up to 150 m

Pressure P : up to 16 bar

Temperature t : up to 350^o C





OTHER BRAND PUMP SPARE



NON METALLIC PUMPS SPARE

DURCO



ITT GOULDS



OTHER METALLIC PUMPS IMPELLER





THERMOSYPHON VESSEL

Series **CPTSO7** Thermosyphon Vessel is used for double mechanical seals in back-to-back or tandem arrangement. This is equipped with cooling coil to dissipate heat from the barrier medium. Higher capacity up to 20 ltr. can also be offered upon request.



Operating Range:
Capacity : 7.0 ltrs
Design Pressure : 35 bar
Hydraulic Test pressure : 53 bar
Working temp. (max) : 150° C
Heat Transfer area : 0.2 m²
Cooling water flow rate : 5 ltrs/min

PP PRIMING POT

Polypropylene priming pots are used when pumps are installed in negative suction conditions. This avoids the need of foot valve and frequent priming of pumps. The priming pot is connected to the pump suction, filled with liquid and sealed airtight before initial start up. This draws the liquid in the suction pipe resulting in priming.



Range:
Capacities Q : 25 to 150 ltr
Pressure P : up to 5 bar
Temperature t : PP up to 80°C





MECHANICAL SEALS



Series CPM 900/CG



Series CPM 935/CG



Series CN40 & CN45



Series CPS 150



Series CP73



Series C2U



Series C20M



Series C80U



Series C88B2



Series CPR100



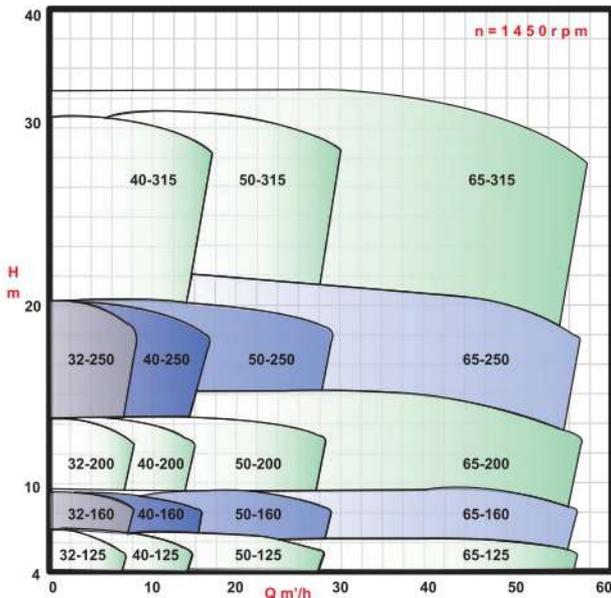
Series CPDF 201



Series CPTS07



FAMILY CURVES



DESIGN CONSTRUCTION DETAILS :-

Casing, stuffing box and impeller are offered in Various Material

- Polypropylene*
- UHMW
- Hdpe
- Glass-fibre Reinforced Polypropylene
- PTFE

* Offered as standard

IMPELLER :-

Solidly moulded, semi-open impeller with metal insert ensures high strength and durability. The impeller is dynamically balanced as per ISO 1940 to achieve minimum vibration and extended bearing life.

SHAFT :-

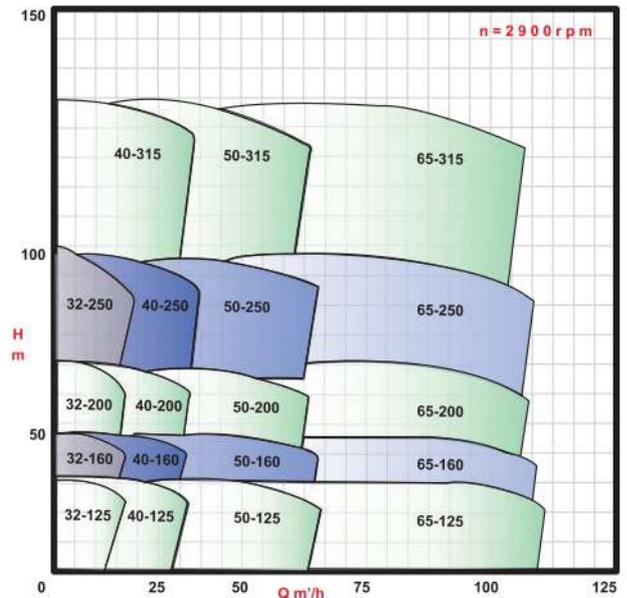
As a standard shaft is offered EN-8 Material. Different materials can be offered on request.

SHAFT SLEEVE :-

Sleeve is protecting the shaft from the attack of corrosive media and can be offered in various materials after confirming chemical compatibility.

- Ceramic (99.5% Alumina Oxide)*
- Silicon Carbide
- Monel
- Alloy-20 (CN7M)
- Hastelloy-B
- Hastelloy-C
- Titanium

* Offered as standard



MECHANICAL SEAL:-

As single externally mounted PTFE bellows Mechanical Seal with various face combination is offered after confirming chemical compatibility.

- GFT v/s CERAMIC *
- GFT v/s SILICON
- CARBON v/s CERAMIC
- CARBON v/s SILICON
- SILICON v/s SILICON

* Offered as standard

SEALING :-

'O' Ring and Gaskets Sealing are provided in the joints to ensure better sealing even at high pressure.

ACCESSORIES

PRIMING CHAMBER :-

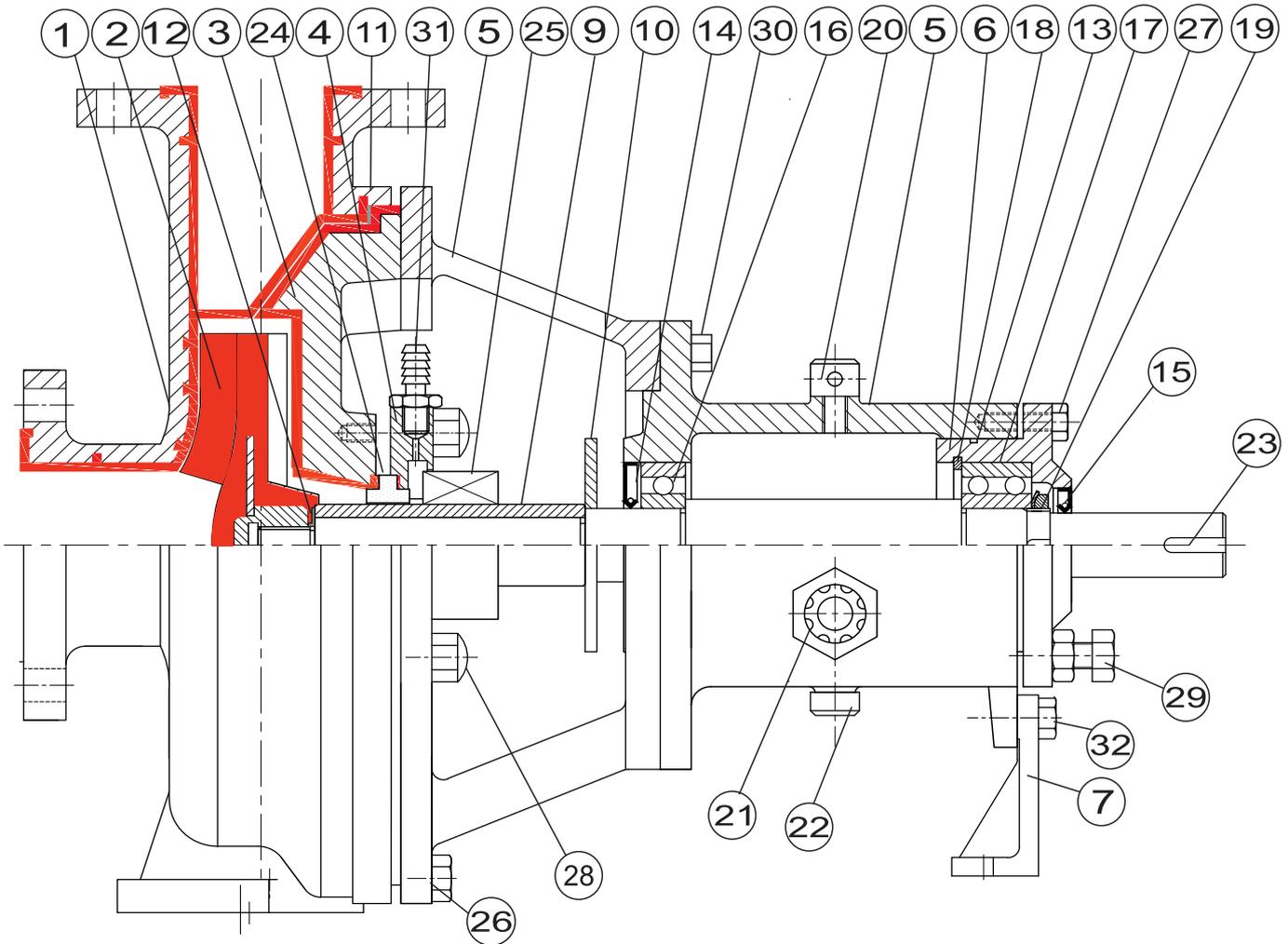
This is specially used for negative suction. It is effective in handling liquids with slurry or particles, as it does not get clogged as easily as the foot valve.

TROLLEY :-

A specially designed, vibration free trolley keeps the pump mobile, whenever required. Further the trolley can also be provided with FRV coating on the parts exposed to chemical drip.

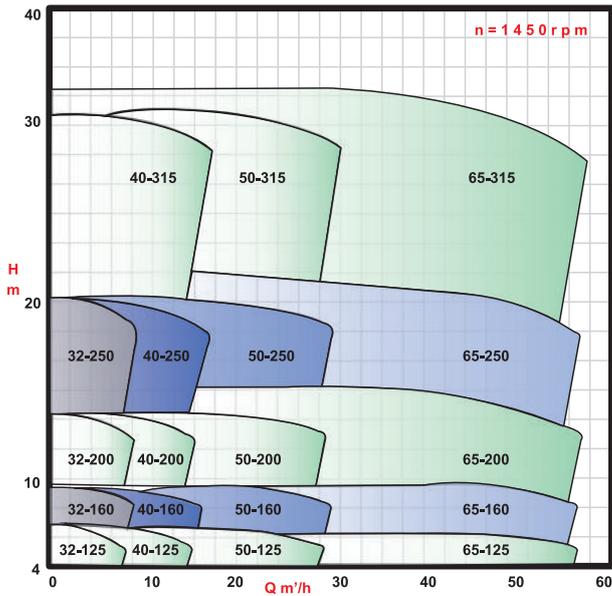
SERIES CPK

SERIES 'CPK' (PVDF, FEP, PFA) ARE TEFLON LINED PUMPS FOR HANDLING HIGHLY CORROSIVE FLUIDS INCLUDING HIGH TEMPERATURE SERVICES. HI-TECH LINING PROCESS IS EMPLOYED TO MANUFACTURE DEFECT FREE COMPONENTS. THESE PUMPS OFFER ECONOMIC ALTERNATIVE TO HIGHER ALLOY PUMPS LIKE HAST ALLOY-B, HAST ALLOY-C AND CERAMIC LINED PUMPS.



No.	Qty	Part Name	Material	No.	Qty	Part Name	Material	No.	Qty	Part Name	Material
1	1	CASING	FEP / PFA / PVDF	16	1	BEARING (IN-BOARD)	SKF . STD	31	2	NIPPLE	BRONZE
2	1	IMPELLER	FEP / PFA / PVDF	17	1	BEARING (OUT-BOARD)	SKF . STD	32	1	SUPPORT PLATE BOLT	SS 316
3	1	STUFFING BOX	FEP / PFA / PVDF	18	1	CIRCLIP	STEEL				
4	1	GLAND	HYLAM / SS 316	19	1	RING NUT & WASHER	MS				
5	1	BEARING FRAME	CAST IRON	20	1	BRETHER PLUG	MS				
6	1	BEARING CUP	CAST IRON	21	1	OIL INDICATOR	ALLIMINIUM				
7	1	SUPPORT PLATE	CAST IRON	22	1	DRAIN PLUG	MS				
8	1	SHAFT	SS 316	23	1	KEY	MS				
9	1	SLEEVE	CERAMIC	24	1	STATIONARY	CERAMIC				
10	1	DEFLECTOR	POLY PROPELYNE	25	1	MECH - SEAL	STD				
11	1	CASING GASKET	PTFE	26	8	CASING BOLT	SS 316				
12	1	IMPELLER GASKET	PTFE	27	4	BEARING CUP BOLT	SS 316				
13	1	BEARING CUP O-RING	VITON	28	4	STUFFING BOX BOLT	SS 316				
14	1	OIL SEAL (IN-BOARD)	NEOPRENE	29	2	JACKETING BOLT	SS 316				
15	1	OIL SEAL (OUT- BOARD)	NEOPRENE	30	4	ADAPTER BOLT	SS 316				

FAMILY CURVES



DESIGN CONSTRUCTION DETAILS :-

Casing, stuffing box and impeller are offered in Various Material

- PFA (Perfluoralkoxy)
- FEP (Fluoroethylene propylene)
- PVDF (Polyvinylidene fluoride)
- GFPP (Glass filled polypropylene)
- PTFE (Polytetrafluoroethylene)

* Offered as standard

IMPELLER :-

Solidly moulded, semi-open impeller with metal insert ensures high strength and durability. The impeller is dynamically balanced as per ISO 1940 to achieve minimum vibration and extended bearing life.

SHAFT :-

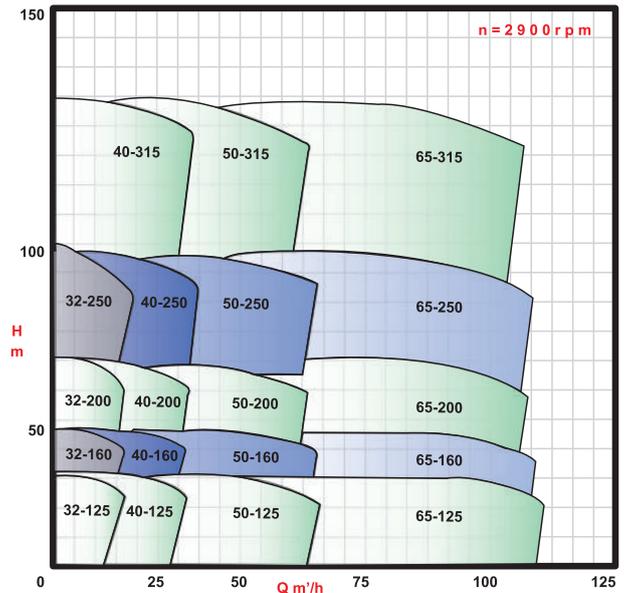
As a standard shaft is offered EN-8 Material. Different materials can be offered on request.

SHAFT SLEEVE :-

Sleeve is protecting the shaft from the attack of corrosive media and can be offered in various materials after confirming chemical compatibility.

- Ceramic (99.5% Alumina Oxide)*
- Silicon Carbide
- Monel
- Alloy-20 (CN7M)
- Hastelloy-B
- Hastelloy-C
- Titanium

* Offered as standard



MECHANICAL SEAL:-

As single externally mounted PTFE bellows & double Mechanical seal with various face combination is Offered after confriming chemical compatibility

- GFT v/s CERAMIC *
- GFT v/s SILICON
- CARBON v/s CERAMIC
- CARBON v/s SILICON
- SILICON v/s SILICON

* Offered as standard

SEALING :-

'O' Ring and Gaskets Sealing are provided in the joints to ensure better sealing even at high pressure.

ACCESSORIES

PRIMING CHAMBER :-

This is specially used for negative suction. It is effective in handling liquids with slurry or particles, as it does not get clogged as easily as the foot valve.

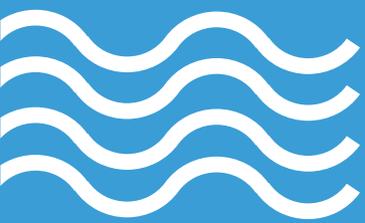
TROLLEY :-

A specially designed, vibration free trolley keeps the pump moblie, whenever required. Further the trolley can also be provided with FRV coating on the parts exposed to chemical drip.

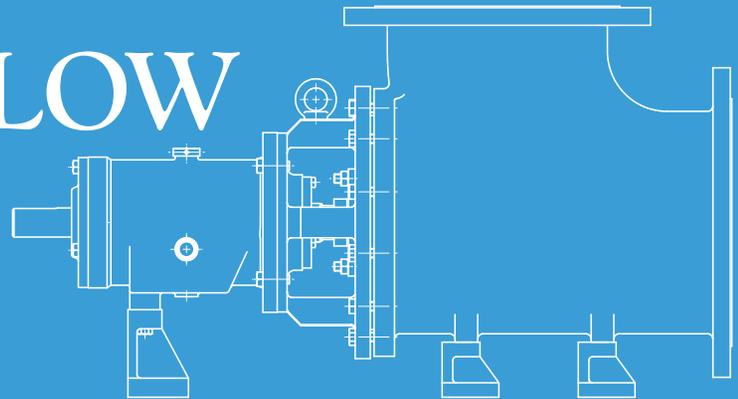


PT. SINAR CENDANA ABADI JAYA

- Chemical • Petrochemical
- Nuclear Power Plants • Refinery • Fertilizer
- Paper • Food & Beverages • Evaporation & Effluent Treatment Plants • Slurries



AXIAL FLOW PUMPS





Axial Flow Pumps

APPLICATION

The CHEM-PROOF Axial Flow pump is unmatched in the industry for high volume / Low head pumping requirements, especially when corrosive and / or abrasive solutions are involved. Mainly used in the following application:

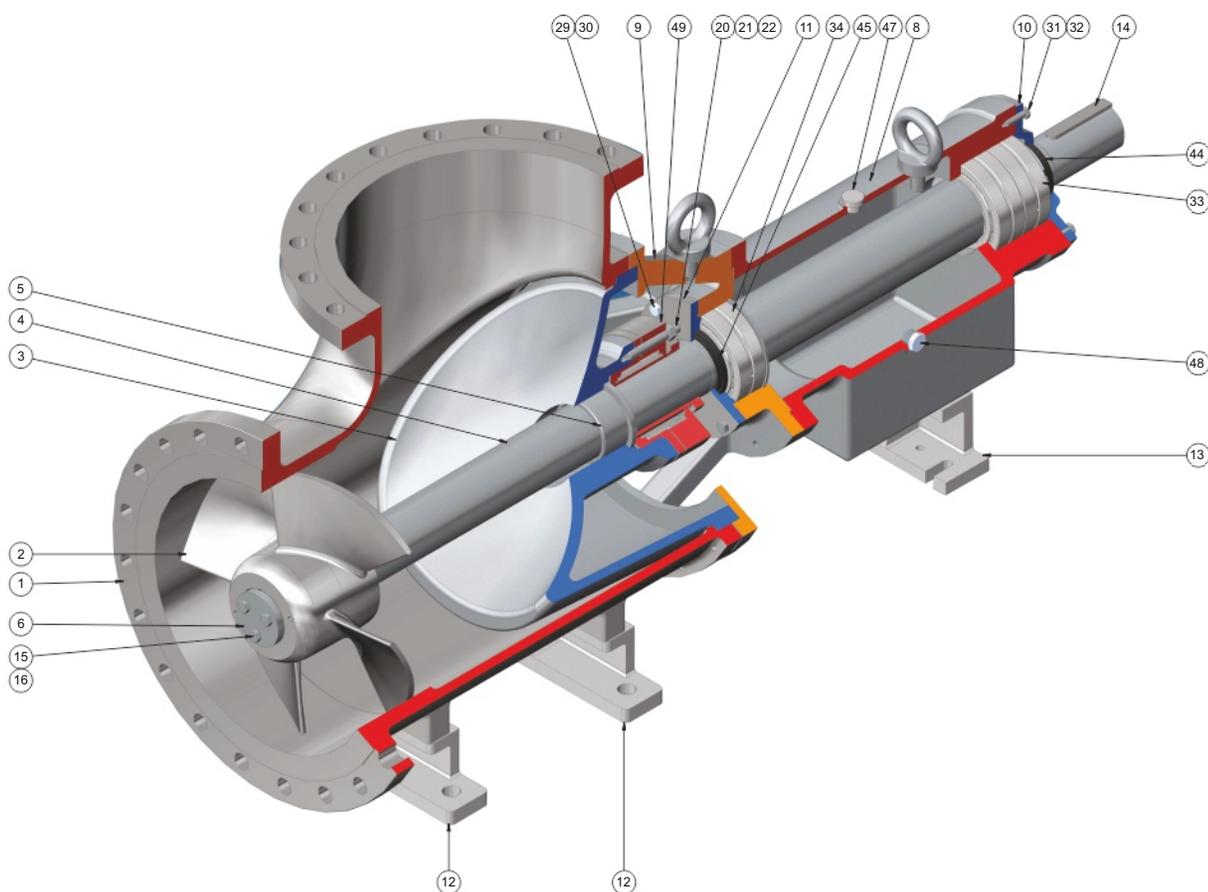
- **Evaporator and Crystallizer Circulation**
- **Phosphate, Soda Ash, Potash and Sodium Chloride Processing**
- **Polypropylene Reactors, Xylene application**
- **Black Liquor Evaporator, Chlorine Dioxide Generators**
- **Sewage Digesters**
- **Raw Water pumping, Flood control, Marine Ballast transfer**

DESIGN

The Axial Flow pump generates flow by the thrust or lift action of rotating axial vanes of the impeller. The pump has an elbow that directs the flow through the suction and out the discharge end of the pump. It can be used in the top or end suction configuration depending up on the need and Flange dimensions, bolt circle and holes comply with ANSI B16.5, 150#. The back pull out design allows for easy maintenance and repair as the rotating element may be removed without disturbing the pipe work. Pump has wear rings as standard and lifting eye on bearing bracket.

OPERATING DATA

Pump size	5 inch to 36 inch (DN 125 to 900)
Flow up to	20,000 m ³ / hr
Head up to	9 meter
Temperature up to	300° C
Max. working Pressure	10 Bar



Part List

Model: Axial Flow Pump

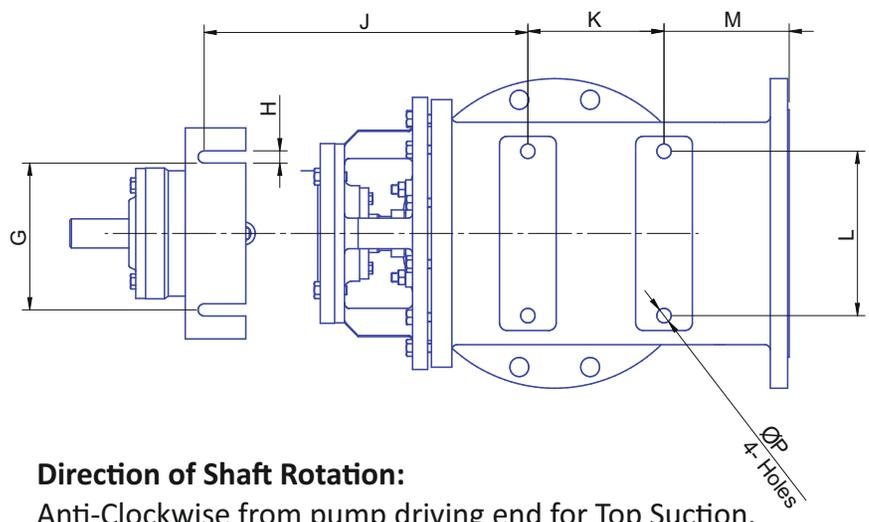
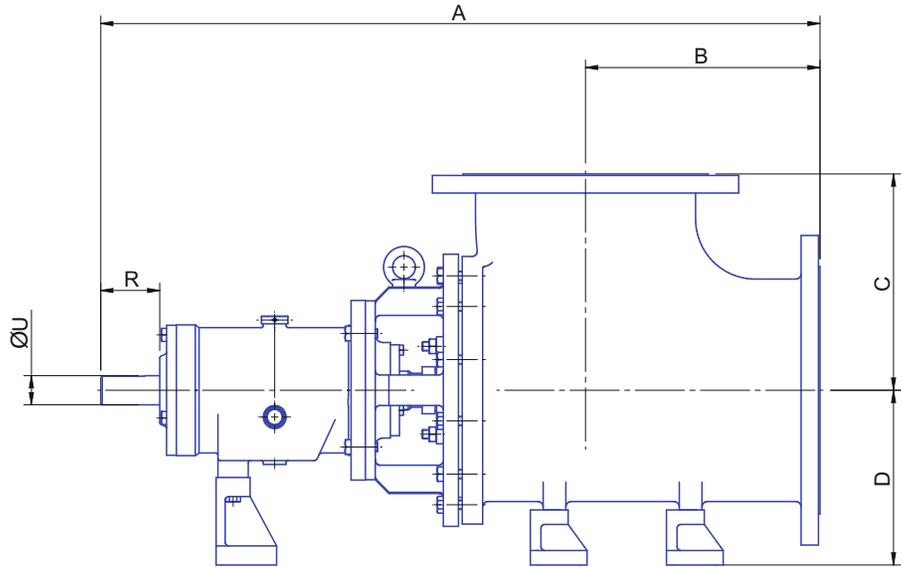
Sr.No.	Part	Qty	MOC						
			CS	CF8	CF8M	CF3M	CN7M	CD4MCuN	Super Duplex
1	Casing	1	CS	CF8	CF8M	CF3M	CN7M	CD4MCuN	Super Duplex
2	Impeller	1	CS	CF8	CF8M	CF3M	CN7M	CD4MCuN	Super Duplex
3	Stuffing	1	CS	CF8	CF8M	CF3M	CN7M	CD4MCuN	Super Duplex
4	Sha?	1	SS 410	SS 304	SS 316	SS 316L	Alloy 20	SS 2205	SS 2507
5	Sintered Bush (Optional)	1	Std						
6	Impeller Washer	1	SS 316			SS 316L	Alloy 20	SS 2205	SS 2507
7*	Key	1	SS 316			SS 316L	Alloy 20	SS 2205	SS 2507
8	Bearing Housing	1	CI						
9	Lantern	1	WCB						
10	Bearing Cover	1	CI						
11	Bearing Cover	1	CI						
12	Support Foot Casing	2	WCB						
13	Foot Support BH	1	CI						
14	Key	1	MS						
15	Hex. Head Bolt	3	SS 316						
16	Washer	3	SS 316						
17*	Stud	4	SS 316						
18*	Hex. Nut	4	SS 316						
19*	Washer	4	SS 316						
20	Stud	4	SS 316						
21	Hex. Nut	4	SS 316						
22	Washer	4	SS 316						
23*	Hex. Head Bolt	12*	SS 316						
24*	Washer	12*	SS 316						
25*	Hex. Head Bolt	2	MS						
26*	Washer	2	MS						
27*	Hex. Head Bolt	6*	MS						
28*	Washer	6*	MS						
29	Hex. Head Bolt	4*	MS						
30	Washer	4*	MS						
31	Hex. Head Bolt	6*	MS						
32	Washer	6*	MS						
33	Bearing	2	Std						
34	Bearing	1	Std						
35*	Bearing Lock Washer	1	Std						
36*	Bearing Lock Nut	1	Std						
37*	Internal Circlip	1	Std						
38*	Internal Circlip	1	Std						
39*	Gasket	1	Oil Paper						
40*	Gasket	1	PTFE						
41*	Gasket	1	PTFE						
42*	Gasket	1	PTFE						
43*	Deflector	1	PTFE						
44	Oil Seal	1	Std						
45	Oil Seal	1	Std						
46*	Square Head Plug	1	Std						
47	Breather Plug	1	Std						
48	Oil Level Indicator	1	Std						
49	Mechanical Seal	1	Std						

Note : Part Sr. No. marked " * " are not visible in assembly
Qty marked " * " may change depending on pump size.

Any material of construction is available on request.



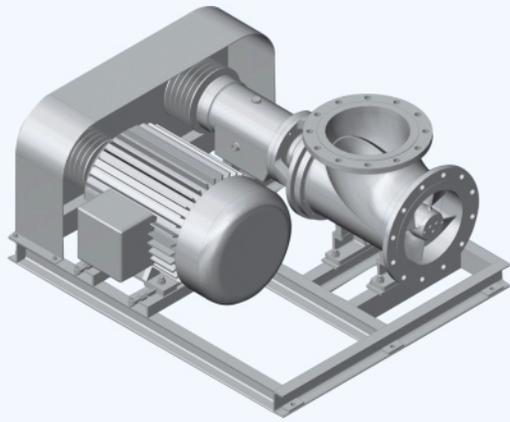
CPAF



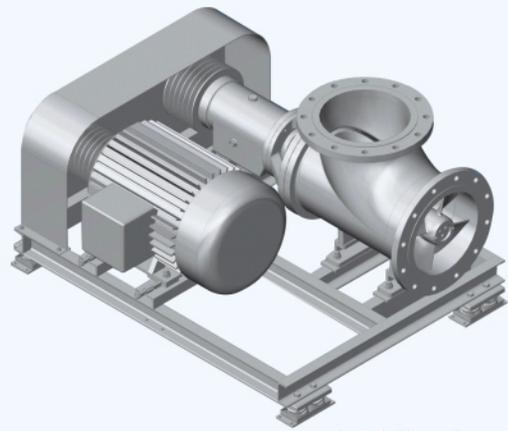
Direction of Shaft Rotation:
Anti-Clockwise from pump driving end for Top Suction.

Model	Dimensions												Weight,kg	
	A	B	C	D	G	H	J	K	L	M	ØP	R		ØU
CPAF-6	808	197	156	229	200	16	385	133	125	84	16	75	38.1	125
CPAF-8	858	257	190	229	200	16	415	152	161	119	16	75	38.1	160
CPAF-10	950	310	283	229	200	16	420	180	215	171	19	75	38.1	200
CPAF-12	1306	345	266	279.4	200	16	630	235	250	160	19	100	57.2	325
CPAF-14	1380	444.5	335	279.4	200	16	670	285	300	165	19	100	57.2	380
CPAF-16	1590	510	421	330	200	16	705	325	340	242	24	127	66.5	570
CPAF-20	1960	535	480	400	225	19	815	406	385	279	32	160	85	915
CPAF-24	2315	760	575	430	225	19	1060	425	470	340	32	160	85	1350
CPAF-30	2775	945	635	560	325	28	1800	635	670	445	32	235	115	2366
CPAF-36	2910	1015	715	660.5	425	40	2030	720	750	500	40	235	130	3686

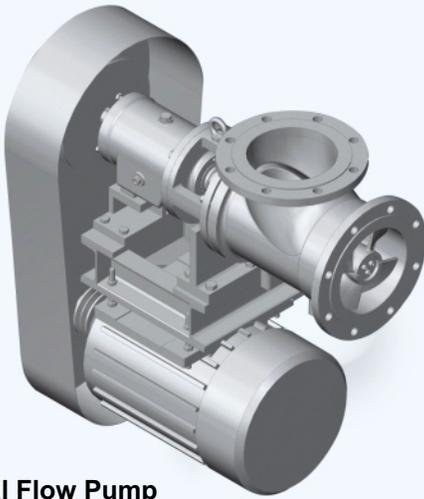
Note: All dimensions are in mm



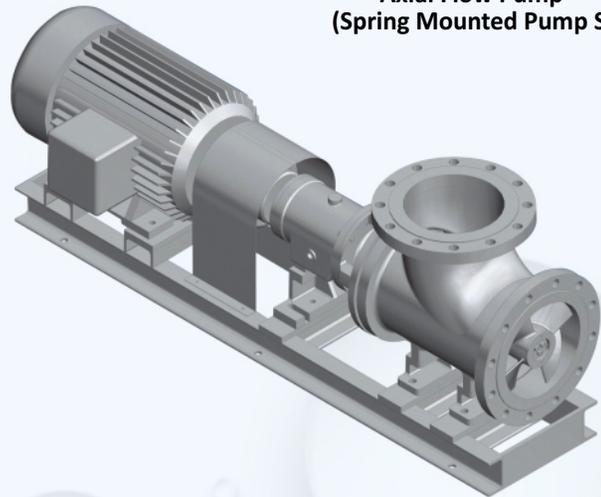
**Axial Flow Pump
(Standard Pump Set)**



**Axial Flow Pump
(Spring Mounted Pump Set)**

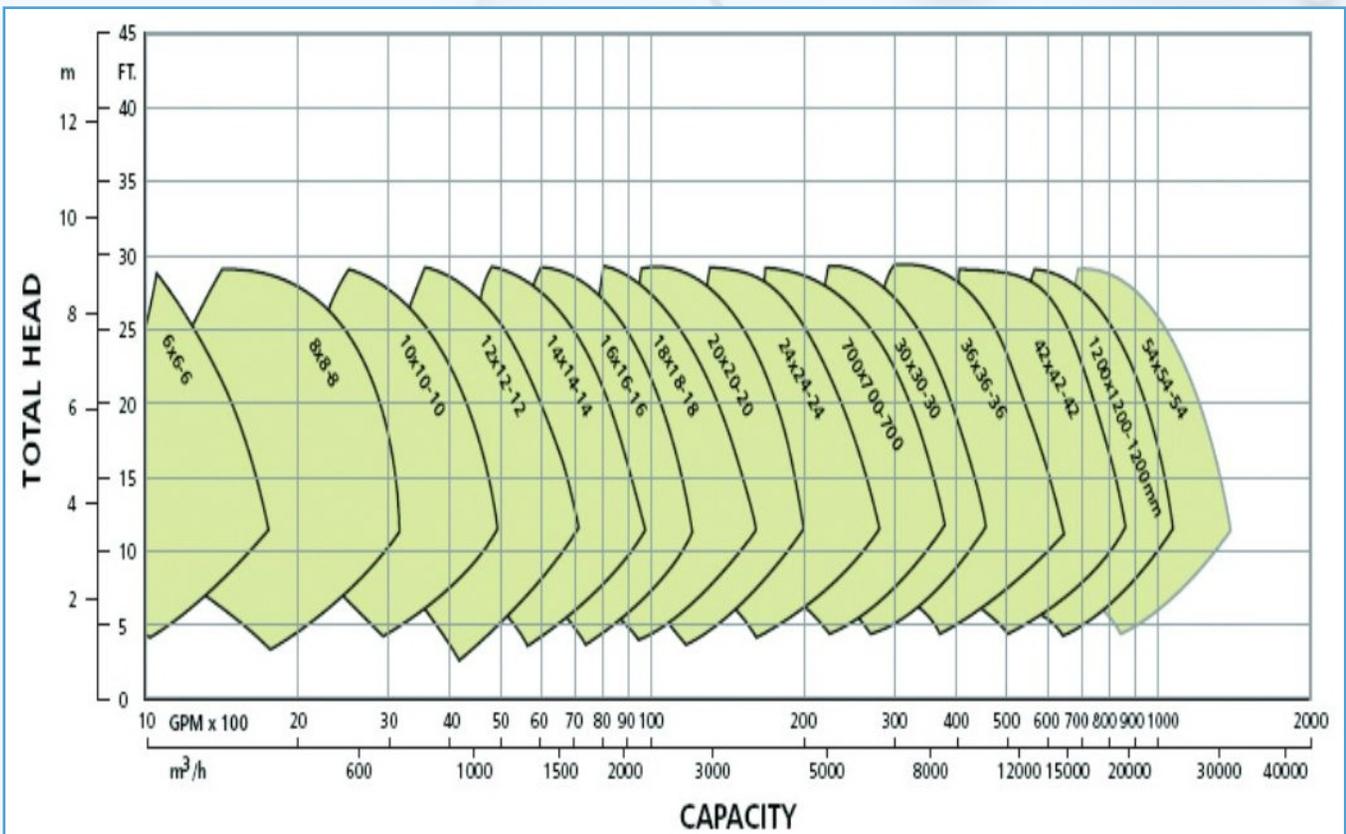


**Axial Flow Pump
(Overhung Pump Set)**



**Axial Flow Pump
(Direct Coupled Pump Set)**

FAMILY CURVE

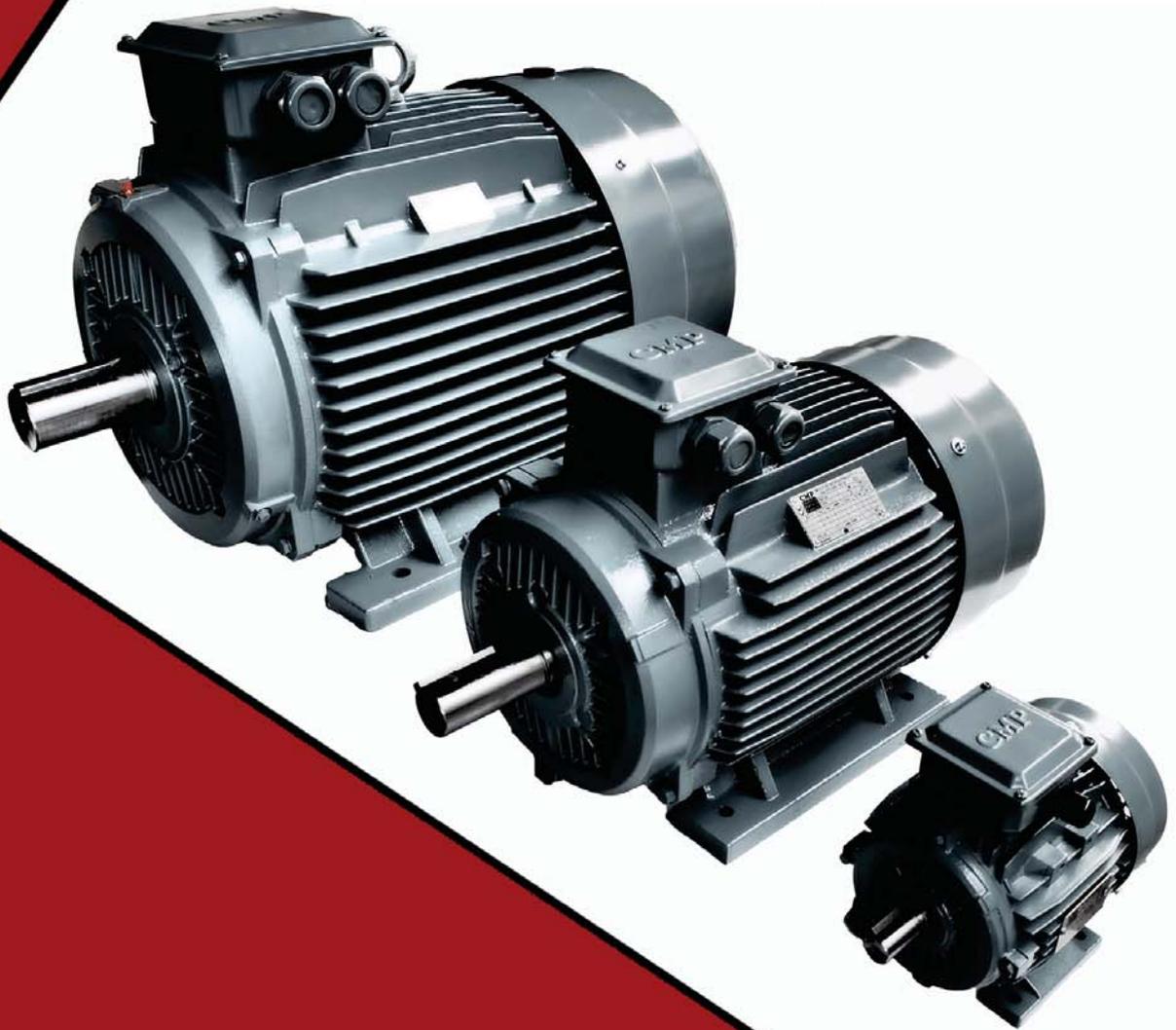


PRODUCTS CATALOG
COMMERCIAL AND INDUSTRIAL

CMP
Century
motors
Producer



PT. SINAR CENDANA ABADI JAYA



DBA SERIES
ELECTRIC MOTOR

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PT. SINAR CENDANA ABADI JAYA

General Information

CMP motors are standard TEFC (Totally Enclosed Fan Cooled) three phase asynchronous motor, designed and manufactured to meet all kinds of environmental conditions. Such as mining, petroleum, marine/offshore and any general tropical working areas.

Combined with high quality materials and stringent manufacturing inspections, **CMP** range of motors offer excellency in efficiency, starting torque, low noise and energy saving.

Type	Motor	Frame Size	KW Range	Voltage	Charecteristic & Features
DBA1	Wide Frequency Based Motor Motor IE1	71 - 355	0.37-315KW	1140V and Below	Low Noise , Less Vibration , Energy Saving ,Efficiency is slightly higher than normal IE1 Leve.I Frequency Range : 30 - 50Hz at variable torque
DBA2	High Efficiency Motor IE2	80 - 355	0.75 - 375KW	1000V and Below	Motor Efficiency Conforms to IEC 60034-30 IE2 Level
DBA3	Premium Efficiency Motor IE3	80 - 355	0.75 - 375KW	1000V and Below	Motor Efficiency Conforms to IEC 60034-30 IE3 Level
DBAM	High KW , Low Voltage Motor	355 - 450	2P 355-800KW	1140V and Below	Available at 50Hz to 60Hz
			4P 355KW - 900KW	For Frame Size	
			6P 315KW-710KW	450, the voltage is	
			8P 250KW - 560KW	690V and above	
			10P 200KW - 400KW		
DBAV	Inverter Duty Motor with Force Cooling Fan	80 - 450	0.55Kw - 900KW	1140V and Below	Frequency range: 5Hz to 100Hz , constant torque at 5Hz - 50Hz, constant power start from 50Hz, with variations for 2 Poles, 4/6/8 Poles. Please refer to catalogue for more information
DBAC	Cooling Tower Motors	71 - 355	0.37 - 315KW	1140V and Below	Available for airstream rated cooling tower
DBAH	2 Speed High Temperature airsteam motor	2/4P, 4/8P, 4/6P, 6/8P	0.37 - 176KW	690V and Below	Suitable for smokespill application. Available for 250 Degree C/2hours and 300 Degree C/2Hours
DBA1H	Single Speed				Suitable for smokespill application.
DBA2H	High Temperature	71 - 355	0.37 - 375KW	1100V and Below	Available for 250 Degree C/2hours
DBA3H	airstream motor				and 300 Degree C/2Hours
DBA*N	Non-sparking				Certification: ECM 21 ATEX-B DO52,
DBA*E	Increased Safety three phase motor (not for coal mine)	80 - 355	0.55 - 710KW	1140V and Below	ECM 21 ATEX-B DO51, Marking : Ex II 3G Ex ec IIC T3 Gc , EX II 2G Ex eb IIC T3 Gb

Note: High voltage , high premium NEMA motors (UL) and other non -standard CMP motor are available upon request.

Introduction

This catalogue details the complete range of CMP DBA series motors. Standard DBA motors are three phase squirrel cage TEFC (Totally Enclosed Fan Cooled), with IEC frame sizes from 71 to 355, with CENELEC frame allocation as standard. They combine excellent electrical characteristics with the robust strength of cast iron.

The standard design includes single speed 2,4,6 and 8 pole as well as a comprehensive selection of 2 speed motors. In addition to the standard design, the range includes:

- DBAS** - Smokespill application
- DBAC** - Cooling tower application
- DBAR** - Airstream rated for Axial flow fans
- DBAP** - Pad mount motors
- DBAN** - Non-sparking Ex nA
- DBAE** - Increased safety Ex e
- DBAtc** - Dust Proof Ex tc Zone 22
- DBAtb** - Dust Proof Ex tb Zone 21

All units are supplied with F Class insulation, with temperature rise being limited to less than 80K (unless otherwise marked). This provides the end user with a wide safety margin under general operating conditions.

In addition we also offer motors wound with H Class insulation, and temperature rise still limited to 80K.

- DBAH** - High ambient temperature application
- DBAHS** - H Class smokespill application

Additional protection is provided by installation of thermistors in all units from 160 frame upward to continuously protect the winding.

The conservative rating of CMP type DBA motors provides additional operational safeguards, ensures long unit life, and renders this series inherently suitable for most arduous mining, industrial or agricultural applications.

Standards and specifications

The main dimensions and rated outputs of CMP type DBA motors generally conform to International Standards IEC60034, IEC60072 and Australian Standard AS1359.

Efficiency

The DBA motor range exceeds requirements of European Eff 2 or Eff 1 and correspond to IE1 (Standard Efficiency) or IE2 (High Efficiency) & IE3 (Premium Efficiency) of the new international standard IEC 00034-30.

- DBA1** = IE1 (Standard Efficiency)
- DBA2** = IE2 (High Efficiency)
- DBA3** = IE3 (Premium Efficiency)

Product code specification

When placing an order the motor product code should be specified. The product code of the motor is composed in accordance with the following example:

G	3	2	00	1503	DBA	1	S	/415
1	2	3	4 - 8	9	10 - 12	13...	Suffix	

Position 1

- G** = Cast Iron frame
- A** = Aluminum frame

Position 2

Winding design

- 3** = Standard three phase motors
- S** = 2 speed fan duty single winding
- D** = 2 speed fan duty separate windings
- T** = 2 speed constant torque single winding
- C** = 2 speed constant torque separate windings

Position 3

Number of poles

- | | | |
|----------------------|-----------------------|-----------------------|
| 2 = 2 poles | F = 2/6 poles | M = 4/12 poles |
| 4 = 4 poles | G = 2/8 poles | N = 6/8 poles |
| 6 = 6 poles | H = 2/10 poles | O = 6/10 poles |
| 8 = 8 poles | I = 2/12 poles | P = 6/12 poles |
| A = 10 poles | J = 4/6 poles | Q = 8/10 poles |
| C = 12 poles | K = 4/8 poles | R = 8/12 poles |
| E = 2/4 poles | L = 4/10 poles | S = 8/16 poles |

Positions 4 to 8

Rated power output*
(kW x 100)

* Refers to high speed for 2 speed motors

Position 9

Mounting arrangements

- | | | |
|------------------|--------------------|-------------------------------|
| 1 = V1 | 5 = B5 | 8 = B3/B14B |
| 3 = B3 | 6 = B3/B14A | 9 = B14B |
| 4 = B3/B5 | 7 = B14A | 0 = for Pad Mount only |

Positions 10 to 12

Series

- DBA1** = IE1 (Standard Efficiency)
- DBA2** = IE2 (High Efficiency)
- DBA3** = IE3 (Premium Efficiency)

Positions 13...*

Series variation

Blank = Standard

- | | |
|-----------------------------|-------------------------------|
| C = Cooling tower | H = H Class insulation |
| L = LHS terminal box | P = Pad mount |
| S = Smokespill | R = Airstream rated |
| | F = Flying Leads |

* Multiple letters indicate multiple variation.

Suffix

Winding design

- | | |
|----------------------------|----------------------------|
| /385 = 380V / 50Hz | /A05 = 1000V / 50Hz |
| /415 = 415V / 50Hz | /B05 = 1100V / 50Hz |
| Blank = 400V / 50Hz | /386 = 380V / 60Hz |

Specifications and Standard Compliance

- **CMP** Motor's dimensional and rated output data generally confirm to IEC 60034 and DIN42673.
- All **CMP** Motors meet the requirement for 'CE' Markings.
- Cooling method are as per IC411 specification.

Motor's Enclosure / Degree of Protection

For vertically mounted motors

- Motors to be mounted with the shaft vertically down must be provided with a suitable cover (available on request) to ensure foreign bodies are prevented from entering the motor. Special care is necessary in fitting protective covers to ensure air flow is not impeded. To maintain IP rating, special additional measures may be required to protect the motor against the ingress of water or foreign bodies. Please contact CMP for further information.

Against solar radiation

- High solar radiation will result in undue temperature rise. In these circumstances motors should be screened from solar radiation by placement of adequate sunshades which do not inhibit air flow.

Degree of protection

- Standard levels of enclosure protection for all DBA frame sizes for both motor and terminal box is IP55, with IP56, IP65 and IP66 available on request. Enclosure designations comply with IEC or AS60529. The enclosure protection required will depend upon the environmental and operational conditions within which the motor is to operate.

Insulation

Standard DBA series motors are wound with F class insulation and winding designs limit the temperature rise to 80K (unless otherwise noted) for which B Class insulation would normally be sufficient. The use of F class insulation provides an additional safety margin of 25K, as shown in the accompanying table, together with an extended operating life.

	Insulation class		
	B	F	H
Max. permissible winding temp. (°C)	130	155	180
Less ambient temp. (°C)	-40	-40	-40
Less hotspot allowance (K)	-10	-10	-15
Equals max. permissible temp. rise (K)	80	105	125
Less max. design temp. rise (K)	-80	-80	-80
Equals min. safety margin (K)	-	25	45

The DBAH version will provide a safety margin of 45K and can be safely operated at elevated ambient temperatures. Due to their conservative design many sizes in the DBA range of motors have temperature rises considerably less than 80K and therefore provide even greater safety margins.

Thermal protection

Motors can be protected against excessive temperature rise by inserting, at various positions within the windings, thermal probes which can either give a warning signal or cut off the supply to the motor in the event of a temperature abnormality.

The units fitted to DBA motors, frame sizes 160 and above, are PTC thermistors. These thermovisible resistors, with positive temperature co-efficient, are fitted one per phase, series connected and are terminated in a terminal strip located in the terminal box. Trip temperature is 160°C (180°C for DBAH series). Additional 130°C thermistors can be fitted as an option for alarm connection.

Paint / Finishing

Type	Colour	Code
DBA1	Blue	RAL5010
DBA2	Grey	RAL7012
DBA3	Green	RAL6032
DBAM	Green	RAL6032

* The Final Top coat for CMP Motors is enamel paint. Epoxy paint is also available upon request.

DBA1 Series Motor Bearings

As standard, frame sizes 71 to 180 have high quality deep groove ball bearings with full contact seals. Bearings are prepacked with grease which, under normal operating conditions, provide a high degree of operational reliability. Frame sizes 200 to 355 have high quality bearings with facilities to enable replenishment of the lubricant during operation. Grease nipples are fitted to endshields with the grease relief chute blanked off by a removable plate.

The table below sets out the permissible forces that can be applied to the motor shaft. Values assume the occurrence of only radial or axial loading. Point of application of the force is assumed to be at the tip of the shaft. Rotor weights have already been allowed for in the calculation of radial and axial loads. These loads are applicable for horizontal mounting only. The values are calculated on the basis of basic rating life or fatigue life L_{10} of 40,000 hours. Adjusted rating life for specific applications can be calculated if all influencing factors are known.

Greater axial forces can be tolerated if the motors are provided with angular contact ball bearings. Note that in such cases, the axial force must operate in one direction.

Lubrication

DBA motors standard bearings are lubricated with lithium based rolling contact bearing grease suitable for operation within the cooling air temperature range of -20°C to $+55^{\circ}\text{C}$. For operation outside this temperature range special lubricants are required. DBAH, DBAS and DBAHS motors use Magnalube G grease.

Special lubricants or additional maintenance may be required in the case of motors exposed to comparatively high degrees of pollution, high humidity, increased or changed bearings loads, or prolonged continuous operation.

Permissible radial and axial forces – standard B3 mounted motors

Motor frame	Bearing		Permissible radial force [N]				Permissible axial force [N]			
	D-end	N-end	2 pole	4 pole	6 pole	8 pole	2 pole	4 pole	6 pole	8 pole
71	6202-C3	6202-C3	320	380	-	-	235	320	-	-
80	6204-C3	6204-C3	465	595	685	-	395	540	650	-
90	6205-C3	6205-C3	490	620	720	-	415	570	685	-
100	6206-C3	6206-C3	700	885	1030	1140	570	775	940	1075
112	6206-C3	6206-C3	960	1230	1415	1575	785	1080	1305	1515
132	6308-C3	6308-C3	1410	1815	2095	2320	1160	1590	1910	2200
160	6309-C3	6309-C3	1825	2345	2710	3020	1470	2030	2450	2800
180	6311-C3	6311-C3	2495	3200	3765	4200	1985	2700	3265	3755
200	6312-C3	6312-C3	2905	3745	4345	4825	2220	3055	3705	4225
225-2	6312-C3	6312-C3	2905	3745	4345	4825	2220	3055	3705	4225
225-4,6,8	6313-C3	6313-C3	3265	4010	4725	5205	2460	3385	4120	4730
250-2	6313-C3	6313-C3	3265	4010	4725	5205	2460	3385	4120	4730
250-4,6,8	6314-C3	6314-C3	3570	4635	5370	5960	2730	3775	4560	5220
280-2	6314-C3	6314-C3	3455				2605			
280-4,6,8	6317-C3	6317-C3		8170	9360	10270		4560	5580	6365
315-2	6317+C3	6317-C3	3550				2730			
315-4,6,8	NU319-C3	6319-C3		15720	17925	19660		4835	5890	6770
355-2	6319-C3	6319-C3	3760				2875			
355-4,6,8	NU322-C3	6322-C3		22125	25350	27860		6115	7390	8530

Recommended Grease Replenishment Intervals (Hours) ¹⁾

Bearing number ²⁾	Bearing bore [mm]	Qty of grease [g]	3000 r/min		1500 r/min		1000 r/min		750 r/min	
			Ball	Roller	Ball	Roller	Ball	Roller	Ball	Roller
6312/NU312	60	20	3800	1900	10100	5050	16000	8000	20000	10800
6313/NU313	65	25	3400	1700	9400	4700	15100	7500	20000	10300
6314/NU314	70	30	3000	1500	8800	4400	14300	7150	19500	9750
6315/NU315	75	30	2570	1285	8200	4100	13500	6750	18500	9250
6316/NU316	80	35	2200	1100	7600	3800	12800	6400	17700	8850
6317/NU317	85	40	1800	900	7100	3550	12100	6050	16800	8400
6318/NU318	90	45	1650	825	6600	3300	11500	5750	16000	8000
6319/NU319	95	45	1500	750	5700	2850	9000	4500	14600	7300
6322/NU322	110	60	1200	600	4800	2400	8300	4150	13400	6700

¹⁾ Based on maximum grease service life of 20,000 hours

²⁾ Refer to Nameplate / Motor to confirm Bearing size.

High capacity bearings

For frame sizes 200 to 280 in applications with increased radial force, cylindrical roller bearings can be substituted for ball bearings at the drive end, according to the accompanying table. When a roller bearing is fitted to the D-end, the N-end ball bearing is locked with a circlip to prevent axial movement. Note that the use of roller bearings is not recommended for 2 pole motors.

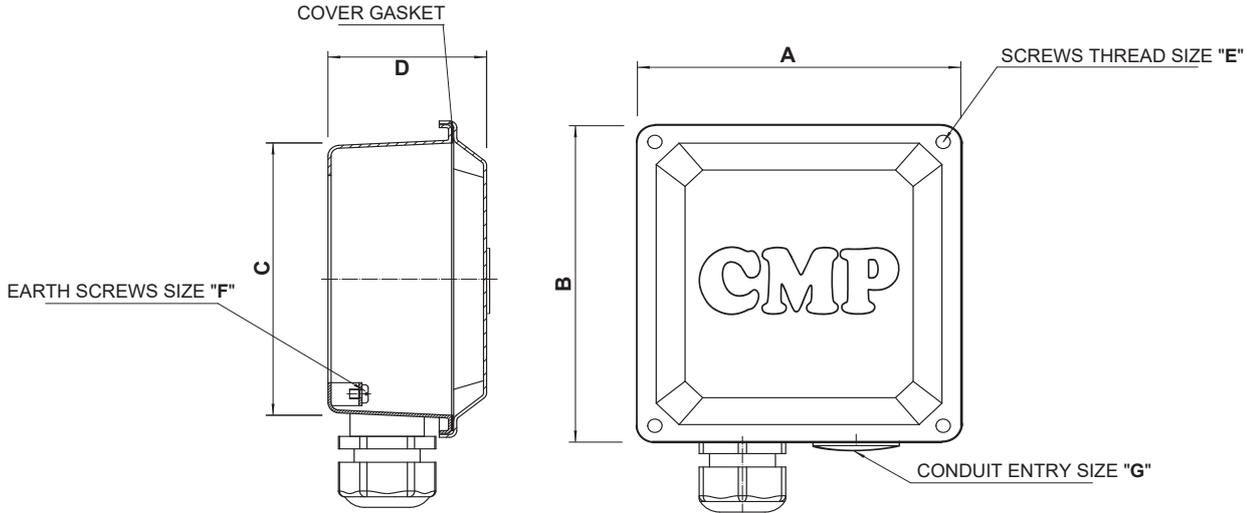
Permissible radial force - high capacity

Motor frame	D-end Roller	N-end Ball	Permissible radial force [N]		
			4 pole	6 pole	8 pole
200	NU312	6312	5825	6730	7455
225	NU313	6313	6015	7055	7740
250	NU314	6314	7295	8420	9315
280	NU317	6317	13445	15320	16770

* DBA D-end bearing = NU6315

Motor Terminal Box and Cable Entry

- Standard terminal box is mounted on the Top. Motors are also available with on the right hand



Frame Size	A	B	C	D	E	F	G
71-80	103	103	84	51	M5	M5	1-M20x1.5
90-100	109	109	92	53	M5	M5	1-M20x1.5
112-132	118	126	108	65	M5	M5	2-M25x1.5
160	158	165	145	78	M6	M6	2-M25x1.5
180	158	165	145	78	M6	M6	2-M32x1.5
200	197	213	191	100	M6	M6	2-M32x1.5
225	197	213	191	100	M6	M6	2-M40x1.5
250	224	248	218	115	M8	M8	2-M40x1.5
280	224	248	218	115	M8	M8	2-M50x1.5
315	310	342	305	162	M10	M10	2-M63x1.5
355	362	400	355	172	M12	M10	2-M63x1.5

Vibration, balancing and noise

Vibration

DBA motors fall within the limits of vibration severity set out in standard IEC 60034-14 which are listed below. As specified in the standard, these values relate to rotating machinery measured in soft suspension.

Vibration severity limit, Level N

Motor frame	Maximum RMS vibration velocity [mm/s]
71	1.6
80	1.6
90	1.6
100	1.6
112	1.6
132	1.6
160	2.2
180	2.2
200	2.2
225	2.2
250	2.2
280	2.2
315	2.8
355	2.8

Balancing

Rotors have been dynamically balanced with a half key. Pulleys or couplings used with motors must also be appropriately balanced.

Name Plate Design



 	CMP ELECTRIC MOTOR (AUSTRALIA) PTY LTD						
	PREMIUM EFFICIENCY MOTOR						
SER. NO.				IM	INS.CL		
TYPE				IP	DUTY		
VOLTS	Hz	KW	AMPS	COSφ	R.P.M	EFF 100%/75%/50%	
PRO.NO.	AMB.TEMP.			°C	KG		
BEARING					YOM		

Electrical Specifications

As standard, DBA motors have the following design and operating parameters. Performance data is based on this standard. Any deviation should be examined and performance values altered in accordance with the information provided in this section.

- Three phase, 415V, 50Hz
- Ambient cooling air temperature, 40°C
- Altitude - 1000m
- Duty cycle - S1 (continuous)
- Rotation - Clockwise viewed from drive end
- Connection - 240 volt Delta/415 volt Star (3kW and below)
- 415 volt Delta/720 volt Star (4kW and above)

Motor wound for 50Hz at rated voltage -	Connected to	Data in percentage of values at 50Hz and rated voltage						
		Output	r/min	I _N	I _L /I _N	T _N	T _L /T _N	T _B /T _N
380V	400V 50Hz	100	100	95	110	100	110	110
	380V 60Hz	100	120	98	83	83	70	85
	400V 60Hz	105	120	98	90	87	80	90
	415V 60Hz	110	120	98	95	91	85	93
	440V 60Hz	115	120	100	100	96	95	98
	460V 60Hz	120	120	100	105	100	100	103
400V	380V 50Hz	100	100	105	91	100	90	90
	415V 50Hz	100	100	96	108	100	108	108
	400V 60Hz	100	120	98	83	83	70	85
	415V 60Hz	104	120	98	89	86	75	88
	440V 60Hz	110	120	98	95	91	85	93
	460V 60Hz	115	120	100	100	96	93	98
415V	480V 60Hz	120	120	100	105	100	100	103
	380V 50Hz*	100	100	109	84	100	84	84
	400V 50Hz	100	100	104	93	100	93	93
	440V 50Hz	100	100	94	112	100	112	112
	415V 60Hz	100	120	98	83	83	70	85
	440V 60Hz	105	120	98	90	87	80	90
460V 60Hz	110	120	98	95	91	85	94	
	480V 60Hz	115	120	100	100	96	95	98

Duty Cycles

S1 Continuous Duty	Operation under constant load, lasting long enough to allow the machine to reach thermal equilibrium
S2 Short-Time Duty	Operation under constant load, for a time to start to allow the machine to reach terminal equilibrium. Idle time of the machines is long enough to allow the machine to cool down to ambient temperature. Standard duration of short-time operation : 10, 30, 60 and 90 minutes
S3 Intermittent Periodic Duty	Operation under repeated, constant load in specific cycles. Neither operating nor resting period are long enough to allow the motor reach thermal equilibrium. The starting losses are small and do not essentially influence the temperature rise. The nominal values of relative starting time are 15, 25, 40, 60% at a daily 10-minute cycle.
S4 Intermittent periodic Duty	Operation under repeated, constant load in specified cycles. The start of the motor influences the temperature rise.
S5 Intermittent Periodic Duty	Same as S4 Operation, except that the electric braking of the machine had an essential influence on the temperature rise
S6 Continuously Operation with Cyclic Load	Operation consisting of a continuous series of equal cycles. Each cycle is made up of no-load and a constant load period. The cycle duration is not long enough to allow the machine to reach thermal equilibrium in one cycle. In order to define S6 operation, the relative starting time must be specified.
S7 Intermittent Periodic Duty with Starting and Braking	Uninterrupted operation with a series of constant loading and braking periods. The most demanding type of operation for the motor. In order to define this type of operation, the number of cycles per hour and the inertia constant must be specified.

* Not applicable for motors with F class temperature rise.
Note: This table is not applicable for hazardous area motors.

- 1) I_N = Full load current T_N = Full load torque
- I_L/I_N = Locked rotor current/ full load current T_L/T_N = Locked rotor torque/ full load torque
- T_B/T_N = Breakdown torque/full load torque

Standard torque values for alternative supplies are obtainable only with special windings. For these purpose-built motors the performance data is the same as for 415V motors except for the currents which are calculated with the accompanying formula:

$$I_x = \frac{415 \times I_N}{U_x}$$

Where:

- I_x = Current
- I_N = Full load current at 415 volt
- U_x = Design voltage

IP protection

Protection of persons against getting in contact with (or approaching) live parts and against contact with moving parts inside the enclosure. Also protection of the machine against ingress of solid foreign objects. Protection of machines against the harmful effects due to the ingress of water.

Explanation of the IP code

Ingress protection	Degree of protection to persons and to parts of the motors inside the enclosure	Degree of protection provided by the enclosure with respect to harmful effects due to ingress of water
IP	5	5
	Position 1	Position 2

Position 1

- 2: Motors protected against solid objects greater than 12 mm
- 4: Motors protected against solid objects greater than 1 mm
- 5: Dust-protected motors
- 6: Dust-tight motors

Position 2

- 3: Motors protected against spraying water
- 4: Motors protected against splashing water
- 5: Motors protected against water jets
- 6: Motors protected against heavy seas

Temperature and Altitude

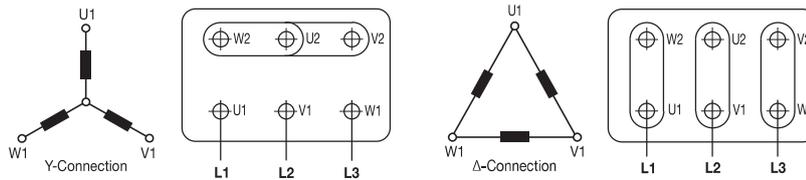
The performance data are based at standard ambient conditions of 40°C at 1000 meter above sea level. For any conditions differ from this standard, please contact CMP for the parameter factoring.

Connections / Diagrams

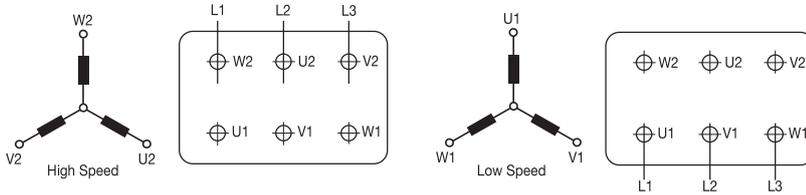
For Single Speed Motor at and below 3.0KW, the standard connections are 230V Delta/400V Star (for 400V Winding). Designed for 400V Direct on Line (DOL) starting, at star terminal connection.

For Single Speed Motor at and above 4.0KW, the standard connections are 400V Delta/690V Star (for 400V winding). These connection are suitable for various starting methods mentioned below.

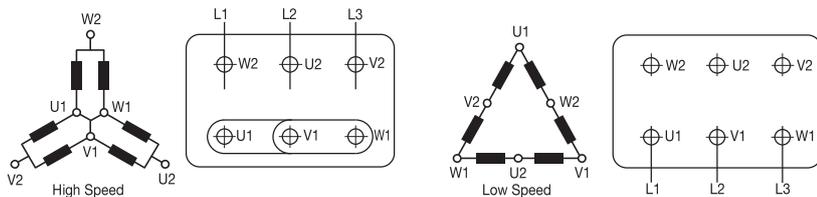
Connection for single speed motors:



Two separate windings for two speed motors:



Dahlander system for two speed motors:



Starting Methods

All of the following starter options are available through CMP Drives division, and are best supplied together with the motor.

D.O.L. Starters

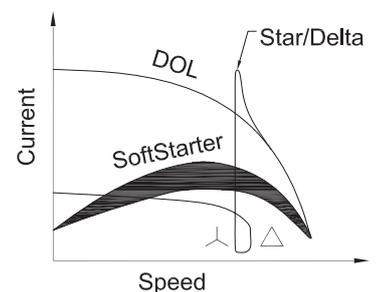
When an electric motor is started by direct connection o the power supply (D.O.L.), it draws a high current, called the 'starting current', which is approximately equal in magnitude to the locked rotor current I_L . As listed in the performance data, locked rotor current can be up to 8 times the rated current I_N of the motor. In circumstances where the motor starts under no load or where high starting torque is not required, it is preferable to reduce the starting current by one of the following means.

Star - Delta starting

DBA motors 4.0kW and above are suitable for the star-delta starting method. Through the use of a star-delta starter, the motor terminals are connected in the star configuration during starting, and reconnected to the delta configuration when running. The benefits of this starting method are a significantly lower starting current, to a value about 1/3 of the D.O.L. starting current, and a corresponding starting torque also reduced to about 1/3 of its D.O.L. value. It should be noted that a second current surge occurs on changeover to the delta connection. The level of this surge will depend on the speed the motor has reached at the moment of changeover.

Electronic soft starters

Through the use of an electronic soft starter, which controls such parameters as current and voltage, the starting sequence can be totally controlled. The starter can be programmed to limit the amount of starting current. By limiting the rate of the current increase the startup time is extended. This starting method is particularly suitable for centrifugal loads (fans and pumps).



Number of starts per hour

The number of starts per hour is dependant on the inertia of the driven load and the load torque demand. When high inertia load is applied (flywheel, heavy fan etc) please refer to your nearest CMP office for advice. A guide to generally acceptable starts per hour would be as per table.

For greater number of starts per hour, please contact your nearest CMP office for advice.

Frame	Starts per Hour			
	2 Pole	4 Pole	6 Pole	8 Pole
71 *	-	40	-	-
80 *	20	40	40	-
90	16	30	40	-
100	16	30	40	40
112	16	30	40	40
132	10	20	25	25
160	10	20	25	25
180	8	15	20	20
200	6	12	12	12
225	5	10	10	10
250	4	8	8	8
280	3	6	6	6
315	3	4	4	4

* 20 Starts / Hour for Ex tD brake Motors

Permitted starting time

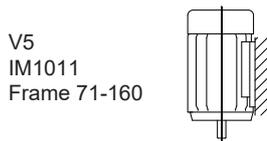
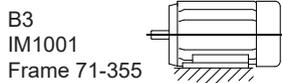
In respect to the temperature rise of the motor, starting time (i.e., from rest to operational speed) should not exceed the time indicated in the following table. Motor must be allowed to cool prior to each start.

Note: For Ex e motors t_E time stated on motor name plate takes precedence over these times

Frame	Starting method	Maximum starting time [sec]			
		2 pole	4 pole	6 pole	8 pole
71	D.O.L.	-	26	-	-
80	D.O.L.	15	26	40	-
90	D.O.L.	10	15	25	-
100	D.O.L.	12	13	18	40
112	D.O.L.	10	10	18	35
132	D.O.L.	14	12	12	25
160-355	D.O.L.	15	15	20	20
160-355	Star-delta	45	45	60	60

Mounting Arrangements

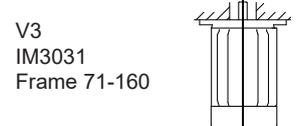
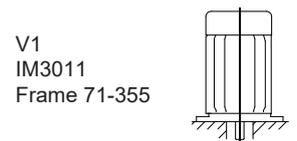
Foot Mounting Horizontal



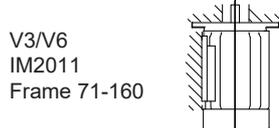
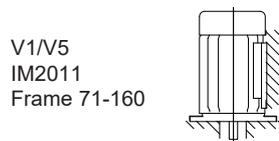
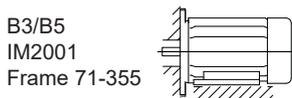
Foot Mounting Vertical



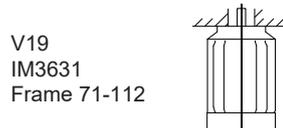
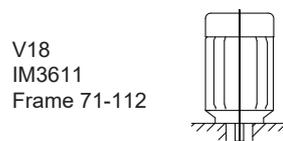
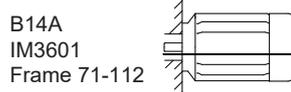
Flange Mounting



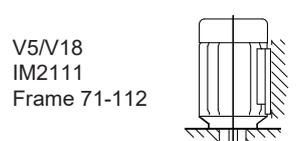
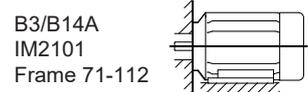
Foot & Flange Mounting



Face Mounting



Foot & Face Mounting



Standards

All electric motors featured in this catalogue meet the relevant IEC, EN, ISO, DIN and NEN standards. The most important standards are listed in the table below.

Description	EN-IEC	ISO	DIN
Nominal operation and properties	IEC 60034-1		
Degree of protection	IEC 60034-5		DIN 40050
Cooling method	IEC 60034-6		
Mountings	IEC 60034-7		
Direction of rotation & connection terminals marking	IEC 60034-8		
Noise	IEC 60034-9		
Voltage	IEC 60038		
Dimensions & tolerances	EN 50347		
Balancing		ISO 2373	DIN 45665
Energy Efficiency	IEC 60034-30		

ErP Directive 2009/125/EC

Implementations Dates

- 16 Jun 2011: IE2 minimum efficiency for motors from 0.75 kW – 375 kW
(IE2 motors can be used with frequency inverters)
- 01 Jan 2015: IE3 minimum efficiency for motors from 7.5 kW – 375 kW
- 01 Jan 2017: IE3 minimum efficiency for motors from 0.75 kW – 375 kW
(IE3 motors can be used with frequency inverters)

ErP Regulation does not apply to:

(a) motors operating wholly immersed in a liquid (b) motors completely integrated into a product (c) motors specifically designed to operate:

- (i) at altitudes exceeding 1000 metres a.s.l.
(soon to be changed to 4000 metres a.s.l.)
- (ii) where ambient temperatures exceed 40°C
(soon to be changed to outside of -30°C to +60°C)
- (iii) in maximum operating temperature > 400°C
- (iv) where ambient temperatures < -15°C (any motor)
or < 0°C for a motor with air cooling
- (v) where water coolant temperature < 5°C or > 25°C
- (vi) in potentially explosive atmospheres
- (d) brake motors
- (e) motors made solely for converter operation

ErP Regulation applies to:

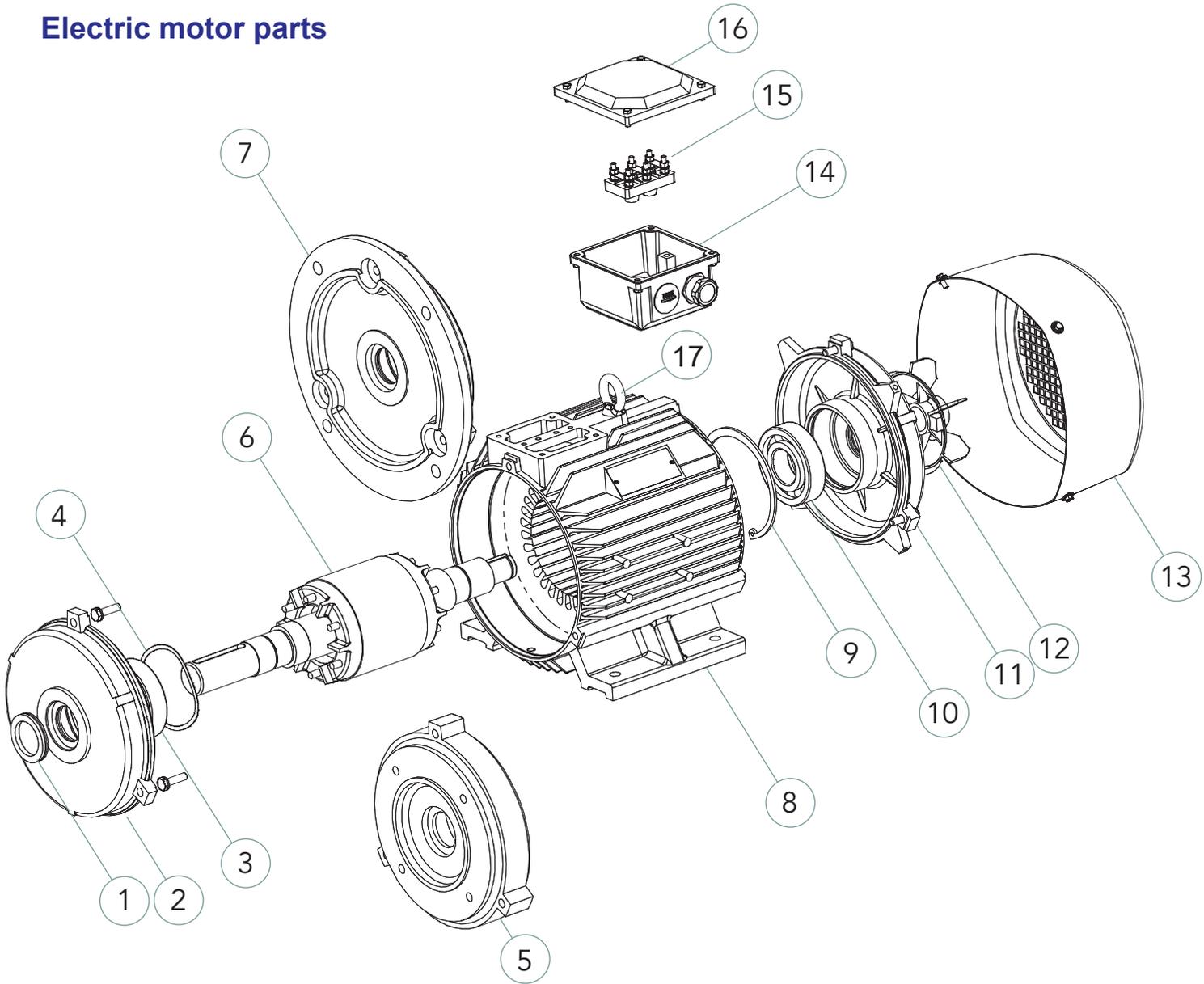
- Single speed, three-phase 50Hz or 50/60Hz induction motors - have 2 to 6 poles
- have a rated voltage of Un up to 1000 V
- have a rated output Pn between 0.75 kW and 375 kW
- are rated on the basis of S1 continuous duty operation

EFFICIENCY

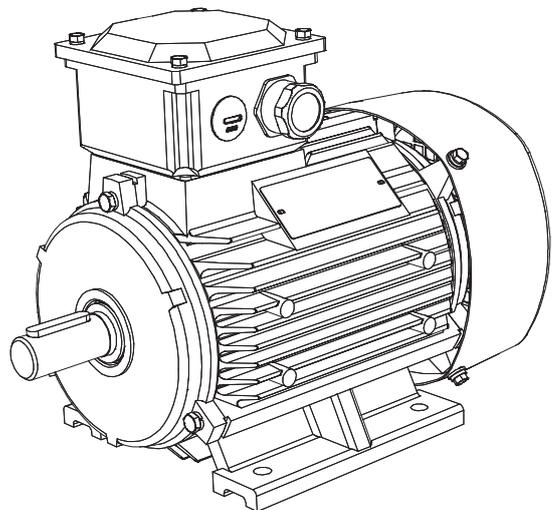
HIGH	IE4* Supper Premium Efficiency	
	IE3 Premium Efficiency	NEMA Premium EISA 2007 from Dec 2010
	IE2 High Efficiency	NEMA Energy Efficient EPAct
	IE1 Standard Efficiency	
LOW		
	IEC Motors	NEMA Motors

*IE4 is under development

Electric motor parts



- 1 - Shaft seal
- 2 - DE Endshield
- 3 - DE Bearing
- 4 - Wavy washer
- 5 - Flange (B14A)
- 6 - Rotor with shaft
- 7 - Flange (B5)
- 8 - Stator housing with stator inside
- 9 - Circlip for fixing the bearing at NDE
- 10 - NDE Bearing
- 11 - NDE Endshield
- 12 - Cooling fan
- 13 - Fan cover
- 14 - Terminal box
- 15 - Terminal block with 6 pins and connection links
- 16 - Terminal box lid
- 17 - Lifting eye



Performance Data 400V/3Ph/50Hz

Class F, IP55 Class B Temperature Rise

KW	Motor Frame Size	Shaft (mm)	Speed (RPM)	Current		Efficiency %			Power Factor (cosφ)			Torque			Moment of inertia J=¼GD² (kg m²)	Weight of foot mount motor (Kgs)
				Full load (A)	Locked Rotor Ist/IN	100	75	50	100	75	50	Full Load (Nm)	Locked Rotor Tst/TN	Break Down Tmax/TN		
3000 RPM = 2Poles																
0.75	80M1	19	2845	1.8	6.1	72.1	71.8	68.7	0.83	0.77	0.65	2.5	2.2	2.3	0.0008	12
1.1	80M2	19	2840	2.5	7	75.0	75.4	73.1	0.84	0.79	0.68	3.7	2.2	2.3	0.0010	14
1.5	90S	24	2840	3.3	7	77.2	77.5	75.7	0.84	0.81	0.71	5	2.2	2.3	0.0015	18
2.2	90L	24	2840	4.7	7	79.7	80.2	78.6	0.85	0.82	0.73	7.4	2.2	2.3	0.0021	24
3	100L	28	2860	6.1	7.5	81.5	81.9	80.3	0.87	0.84	0.75	10	2.2	2.3	0.0031	30
4	112M	28	2880	7.9	7.5	83.1	83.8	83.1	0.88	0.87	0.79	13.3	2.2	2.3	0.0058	36
5.5	132S1	38	2900	10.7	7.5	84.7	84.6	83.0	0.88	0.85	0.77	18.1	2.2	2.3	0.0113	56
7.5	132S2	38	2900	14.3	7.5	86.0	86.4	85.5	0.88	0.88	0.81	24.7	2.2	2.3	0.0133	60
11	160M1	42	2930	20.4	7.5	87.6	87.1	85.1	0.89	0.87	0.80	35.9	2.2	2.3	0.0443	102
15	160M2	42	2930	27.4	7.5	88.7	88.5	87.0	0.89	0.88	0.82	48.9	2.2	2.3	0.0549	114
18.5	160L	42	2930	33.2	7.5	89.3	89.2	87.9	0.90	0.89	0.83	60.3	2.2	2.3	0.0620	128
22	180M	48	2940	39.2	7.5	89.9	89.5	87.7	0.90	0.89	0.82	71.5	2.0	2.3	0.0853	173
30	200L1	55	2950	53.6	7.5	90.7	90.4	88.9	0.89	0.89	0.83	97.1	2.0	2.3	0.153	230
37	200L2	55	2950	65.1	7.5	91.2	91.1	89.9	0.90	0.90	0.84	119.8	2.0	2.3	0.178	244
45	225M	55	2960	78.7	7.5	91.7	91.4	90.1	0.90	0.89	0.83	145.2	2.0	2.3	0.277	286
55	250M	60	2965	95.8	7.5	92.1	91.6	90.0	0.90	0.88	0.81	177.2	2.0	2.3	0.388	377
75	280S	65	2970	129.8	7.5	92.7	92.2	90.7	0.90	0.90	0.84	241.2	2.0	2.3	0.574	490
90	280M	65	2970	153.5	7.5	93.0	92.7	91.4	0.91	0.91	0.86	289.4	2.0	2.3	0.677	539
110	315S	65	2980	187	7.1	93.3	92.5	90.5	0.91	0.89	0.84	352.5	1.8	2.2	1.40	846
132	315M	65	2980	223.9	7.1	93.5	92.8	91.1	0.91	0.90	0.86	423	1.8	2.2	1.57	942
160	315L1	65	2980	267.6	7.1	93.8	93.2	91.5	0.92	0.91	0.87	512.8	1.8	2.2	1.76	1014
185	315L	65	2980	306.9	7.1	93.8	93.2	91.6	0.92	0.90	0.86	592.9	1.8	2.2	2.050	1014
200	315L2	65	2980	333.8	7.1	94.0	93.6	92.3	0.92	0.91	0.88	640.9	1.8	2.2	2.35	1136
220	355M1	75	2980	364.1	7.1	94.0	93.6	92.5	0.92	0.92	0.89	705	1.8	2.2	2.75	1168
250	355M2	75	2980	417.3	7.1	94.0	93.5	92.2	0.92	0.92	0.90	801.2	1.6	2.2	3.25	1785
315	355L2	75	2980	525.8	7.1	94.0	93.6	92.4	0.92	0.93	0.91	1009.5	1.6	2.2	3.93	1806
High Output Frame																
5.5	112M2	28	2900	10.7	7.5	84.7	87.1	86.5	0.88	0.89	0.82	18.1	2.2	2.3	0.0113	45
11	132M	38	2930	20.4	7.5	87.6	89.3	88.5	0.89	0.89	0.83	35.9	2.2	2.3	0.0443	69
75	250M2	60	2965	129.8	7.5	92.7	93.1	91.6	0.90	0.90	0.85	241.2	2	2.3	0.574	440
110	280M2	65	2980	187	7.1	93.3	93.2	91.3	0.91	0.89	0.84	353	1.8	2.2	1.400	868

* Data are for reference only

Data at various voltages

KW	Motor Frame Size	Shaft (mm)	Speed	Full Load Current @ 50Hz			Speed	Full Load Current @ 60Hz			Noise Level No Load @ 1 Metre dB(A)
			50Hz (RPM)	380V (A)	400V (A)	415V (A)	60Hz (RPM)	440V (A)	460V (A)	480V (A)	
3000 RPM = 2Poles											
0.75	80M1	19	2845	1.9	1.8	1.8	3404	1.7	1.7	1.6	67
1.10	80M2	19	2840	2.6	2.5	2.5	3404	2.5	2.4	2.4	67
1.50	90S	24	2840	3.4	3.3	3.3	3404	3.2	3.2	3.1	72
2.2	90L	24	2840	4.8	4.7	4.6	3404	4.7	4.6	4.5	72
3	100L	28	2860	6.3	6.1	6	3428	6	5.9	5.7	76
4	112M	28	2880	8.1	7.8	7.8	3452	7.9	7.7	7.6	77
5.5	132S1	38	2900	11	10.7	10.5	3476	10.6	10.4	10.2	80
7.5	132S2	38	2900	14.7	14.3	14.1	3476	14.3	13.9	13.7	80
11	160M1	42	2930	21.0	20.4	20.1	3512	20.8	20.4	20	86
15	160M2	42	2930	28.2	27.4	27	3512	28	27.4	26.9	86
18.5	160L	42	2930	34.2	33.2	32.8	3512	33.8	33	32.3	86
22	180M	48	2940	40.4	39.2	38.7	3524	40.1	39.2	38.4	89
30	200L1	55	2950	55.2	53.6	52.6	3536	54.9	53.6	52.6	92
37	200L2	55	2950	67.0	65.1	64.1	3536	66	64.6	63.3	92
45	225M	55	2960	81.0	78.7	77.6	3548	80.1	78.3	76.8	92
55	250M	60	2965	98.6	95.8	94.4	3554	97.2	95	93.1	93
75	280S	65	2970	133.0	129.8	127.9	3560	131.6	128.7	126.1	94
90	280M	65	2970	158.1	153.5	151.3	3560	156.2	152.7	149.6	94
110	315S	65	2980	192.6	187.0	184.3	3566	190.9	186.6	182.8	96
132	315M	65	2980	230.6	223.9	220.7	3566	226.4	221.3	216.8	96
160	315L1	65	2980	275.7	267.6	263.7	3566	271.5	265.3	259.9	99
185	315L	65	2980	318.1	308.8	304.2	3566	313.6	306.4	300.1	99
200	315L2	65	2980	343.9	333.8	328.9	3566	339.4	331.7	324.9	99
220	355M1	75	2980	378.3	367.1	361.8	3566	373.3	364.8	357.3	103
250	355M2	75	2980	429.9	417.3	411.1	3572	424.2	414.6	406.1	103
315	355L2	75	2980	541.7	525.8	518	3572	534.6	522.4	511.7	103
High Output Design											
5.5	112M2	28	2900	11.3	10.7	10.1	3480	9.6	9.2	8.8	80
11	132M	38	2930	21.5	20.4	19.7	3516	17.7	16.9	16.2	86
75	250M2	60	2970	136.6	129.8	125.1	3564	116.8	111.7	107.1	94
110	280M2	65	2970	196.8	187	180.2	3564	168.7	161.4	154.7	96

* Data are for reference only

Performance Data 400V/3Ph/50Hz Class

F, IP55 Class B Temperature Rise

KW	Motor Frame Size	Shaft (mm)	Speed (RPM)	Current		Efficiency %			Power Factor (cosφ)			Torque			Moment of inertia J=¼GD² (kg m²)	Weight of foot mount motor (Kgs)
				Full load (A)	Locked Rotor Ist/IN	100	75	50	100	75	50	Full Load (Nm)	Locked Rotor Tst/TN	Break Down Tmax/TN		
1500 RPM = 4Poles																
0.37	71M2	14	1340	1.1	5	67.0	68.2	67.5	0.75	0.67	0.54	2.6	2.0	2.2	0.0009	11
0.55	80M1	19	1390	1.5	5.2	71.0	71.8	68.0	0.76	0.66	0.53	3.8	2.4	2.3	0.0013	14
0.75	80M2	19	1380	2	6	72.1	72.8	71.9	0.76	0.69	0.55	5.2	2.3	2.3	0.0017	16
1.10	90S	24	1390	2.7	6	75.0	76.3	74.3	0.77	0.72	0.59	7.6	2.3	2.3	0.0026	18
1.50	90L	24	1390	3.6	6	77.2	78.4	77.9	0.79	0.73	0.60	10.3	2.3	2.3	0.0035	22
2.2	100L1	28	1410	4.9	7	79.7	80.5	80.0	0.81	0.75	0.62	14.9	2.3	2.3	0.0065	30
3	100L2	28	1410	6.5	7	81.5	82.5	82.2	0.82	0.77	0.65	20.3	2.3	2.3	0.0088	32
4	112M	28	1435	8.5	7	83.1	83.9	85.0	0.82	0.77	0.65	26.6	2.3	2.3	0.0098	42
5.5	132S	38	1440	11.3	7	84.7	85.3	86.3	0.83	0.79	0.68	36.5	2.3	2.3	0.0254	56
7.5	132M	38	1440	15	7	86.0	86.6	87.6	0.84	0.80	0.70	49.7	2.3	2.3	0.0351	70
11	160M	42	1460	21.6	7	87.6	87.8	88.5	0.84	0.80	0.70	72	2.2	2.3	0.0798	106
15	160L	42	1460	28.7	7.5	88.7	88.9	89.6	0.85	0.80	0.71	98.1	2.2	2.3	0.106	130
18.5	180M	48	1470	34.8	7.5	89.3	89.5	90.4	0.86	0.81	0.71	120.2	2.2	2.3	0.147	162
22	180L	48	1470	41.1	7.5	89.9	90.2	90.9	0.86	0.81	0.71	142.9	2.2	2.3	0.164	176
30	200L	55	1470	55.5	7.2	90.7	90.8	91.5	0.86	0.83	0.73	194.9	2.2	2.3	0.268	230
37	225S	60	1475	67.3	7.2	91.2	91.2	91.8	0.87	0.84	0.77	239.6	2.2	2.3	0.458	278
45	225M	60	1475	81.4	7.2	91.7	91.7	92.4	0.87	0.84	0.76	291.4	2.2	2.3	0.56	309
55	250M	65	1480	99.1	7.2	92.1	92.0	92.3	0.87	0.84	0.76	354.9	2.2	2.3	0.773	412
75	280S	75	1480	134.2	7.2	92.7	92.6	92.5	0.87	0.86	0.79	484	2.2	2.3	1.23	501
90	280M	75	1480	160.6	7.2	93.0	92.7	92.9	0.87	0.84	0.76	580.7	2.2	2.3	1.54	576
110	315S	80	1480	193.4	6.9	93.3	92.9	93.1	0.88	0.86	0.79	709.8	2.1	2.2	2.97	889
132	315M	80	1480	231.6	6.9	93.5	93.2	93.6	0.88	0.86	0.80	851.8	2.1	2.2	3.34	982
160	315L1	80	1480	276.6	6.9	93.8	93.5	93.6	0.89	0.87	0.82	1032.4	2.1	2.2	4.03	1070
185	315L	80	1480	319.9	6.9	93.8	93.5	93.4	0.89	0.85	0.77	1193.7	2.1	2.2	4.46	1152
200	315L2	80	1480	345.1	6.9	94.0	93.9	93.9	0.89	0.88	0.83	1290.5	2.1	2.2	4.88	1174
220	355M1	95	1480	376	6.9	94.0	94.0	93.8	0.89	0.88	0.83	1419.6	2.1	2.2	6.45	1423
250	355M2	95	1490	426.5	6.9	94.0	93.7	94.2	0.90	0.90	0.86	1602.4	2.1	2.2	8.33	1638
280	355L1	95	1490	477.7	6.9	94.0	93.9	94.6	0.90	0.91	0.88	1794.7	2.1	2.2	9.42	1735
315	355L2	95	1490	537.4	6.9	94.0	93.8	94.7	0.90	0.91	0.87	2019	2.1	2.2	10.51	1832
High Output Frame																
5.5	112M2	28	1440	11.3	7	84.7	85.3	84.4	0.83	0.78	0.67	36.5	2.3	2.3	0.0254	48
11	132M2	38	1460	21.6	7	87.6	87.8	86.7	0.84	0.82	0.73	72	2.3	2.3	0.0798	78
75	250M2	65	1480	134.2	7.2	92.7	92.6	91.5	0.87	0.87	0.82	484	2	2.3	1.230	450
110	280M2	75	1480	193.4	6.9	93.3	92.9	91.7	0.88	0.86	0.79	709.8	1.8	2.2	2.970	656

* Data are for reference only

Data at various voltages

KW	Motor Frame Size	Shaft (mm)	Speed	Full Load Current @ 50Hz			Speed	Full Load Current @ 60Hz			Noise Level No Load @ 1 Metre dB(A)
			50Hz (RPM)	380V (A)	400V (A)	415V (A)	60Hz (RPM)	440V (A)	460V (A)	480V (A)	
1500 RPM = 4Poles											
0.37	71M2	14	1340	1.12	1.1	1	1608	1	0.9	0.9	55
0.55	80M1	19	1390	1.6	1.5	1.4	1668	1.4	1.3	1.2	58
0.75	80M2	19	1380	2	2	2	1664	1.8	1.8	1.8	58
1.10	90S	24	1390	2.8	2.7	2.7	1664	2.7	2.6	2.6	61
1.50	90L	24	1390	3.6	3.6	3.5	1664	3.4	3.4	3.3	61
2.2	100L1	28	1410	5.1	4.9	4.9	1688	4.8	4.7	4.6	64
3	100L2	28	1410	6.7	6.5	6.4	1688	6.3	6.2	6.1	64
4	112M	28	1435	8.7	8.5	8.4	1718	8.4	8.2	8.1	65
5.5	132S	38	1440	11.6	11.3	11.2	1724	11.2	10.9	10.7	71
7.5	132M	38	1440	15.4	15.0	14.8	1724	15	14.7	14.4	71
11	160M	42	1460	22.2	21.6	21.3	1748	21.8	21.3	20.9	75
15	160L	42	1460	29.5	28.7	28.3	1748	29	28.4	27.8	75
18.5	180M	48	1470	35.8	34.8	34.3	1760	34.9	34.2	33.5	76
22	180L	48	1470	42.3	41.1	40.5	1760	41.2	40.3	39.6	76
30	200L	55	1470	57.1	55.5	54.8	1760	55.8	54.6	53.6	79
37	225S	60	1475	69.3	67.3	66.4	1766	67.6	66.1	64.9	81
45	225M	60	1475	83.4	81.4	80.3	1766	81.7	79.9	78.4	81
55	250M	65	1480	101.9	99.1	97.7	1772	99.8	97.6	95.8	83
75	280S	75	1480	138.1	134.2	132.4	1772	135.8	132.8	130.3	86
90	280M	75	1480	165.2	160.6	158.4	1772	162.8	159.3	156.2	86
110	315S	80	1480	199	193.4	190.7	1772	196.2	191.9	188.1	93
132	315M	80	1480	238.3	231.6	228.4	1772	232.9	227.8	223.4	93
160	315L1	80	1480	284.8	276.6	272.8	1772	279.2	273.1	267.7	97
185	315L	80	1480	328.6	319.2	314.7	1772	322.5	315.3	309.1	97
200	315L2	80	1480	355.2	345.1	340.2	1772	349	341.3	334.6	97
220	355M1	95	1480	388.7	377.6	372.3	1772	383.9	375.4	368	97
250	355M2	95	1490	449.2	426.5	420.5	1784	431.6	421.9	413.5	101
280	355L1	95	1490	491.9	477.7	470.9	1784	483.4	472.6	463.1	101
315	355L2	95	1490	553.4	537.4	529.8	1784	543.9	531.7	521.1	101
High Output Design											
5.5	112M2	28	1440	11.9	11.3	10.9	1728	10.1	9.7	9.3	71
11	132M2	38	1460	22.7	21.6	20.8	1752	19.4	18.6	17.8	75
75	250M2	65	1480	141.3	134.2	129.3	1776	120.9	115.6	110.8	86
110	280M2	75	1480	203.6	193.4	186.4	1776	173.6	166.0	159.1	93

* Data are for reference only

Performance Data 400V/3Ph/50Hz

Class F, IP55 Class B Temperature Rise

KW	Motor Frame Size	Shaft (mm)	Speed (RPM)	Current		Efficiency %			Power Factor (cosφ)			Torque			Moment of inertia J= $\frac{1}{4}GD^2$ (kg m ²)	Weight of foot mount motor (Kgs)
				Full load (A)	Locked Rotor Ist/IN	100	75	50	100	75	50	Full Load (Nm)	Locked Rotor Tst/TN	Break Down Tmax/TN		
1000 RPM = 6Poles																
0.37	80M1	19	885	1.2	4.7	62.0	62.3	58.0	0.70	0.61	0.48	4	1.9	2.0	0.0017	15
0.55	80M2	19	885	1.7	4.7	65.0	66.2	63.2	0.72	0.63	0.49	5.9	1.9	2.1	0.0022	16
0.75	90S	24	910	2.2	5.5	70.0	70.6	67.2	0.70	0.63	0.50	7.9	2.0	2.1	0.0033	20
1.10	90L	24	910	3	5.5	72.9	74.0	71.6	0.72	0.65	0.51	11.5	2.0	2.1	0.0045	22
1.50	100L	28	920	3.8	5.5	75.2	76.3	74.3	0.75	0.69	0.55	15.6	2.0	2.1	0.0081	28
2.2	112M	28	935	5.4	6.5	77.7	78.9	77.5	0.76	0.69	0.56	22.5	2.0	2.1	0.015	38
3	132S	38	960	7.1	6.5	79.7	79.8	77.7	0.76	0.69	0.56	29.8	2.1	2.1	0.029	58
4	132M1	38	960	9.3	6.5	81.4	81.5	79.7	0.76	0.70	0.57	39.8	2.1	2.1	0.039	68
5.5	132M2	38	960	12.4	6.5	83.1	83.4	82.0	0.77	0.72	0.59	54.7	2.1	2.1	0.053	76
7.5	160M	42	970	16.6	6.5	84.7	84.7	83.0	0.77	0.71	0.59	73.8	2.0	2.1	0.0897	109
11	160L	42	970	23.6	6.5	86.4	86.5	85.2	0.78	0.74	0.62	108.3	2.0	2.1	0.127	134
15	180L	48	970	30.5	7	87.7	88.0	87.0	0.81	0.77	0.66	147.7	2.0	2.1	0.214	176
18.5	200L1	55	980	37.2	7	88.6	88.8	87.9	0.81	0.77	0.66	180.3	2.1	2.1	0.319	216
22	200L2	55	980	42.9	7	89.2	89.6	88.8	0.83	0.79	0.68	214.4	2.1	2.1	0.369	226
30	225M	60	980	57.2	7	90.2	90.3	89.5	0.84	0.81	0.72	292.4	2.0	2.1	0.586	292
37	250M	65	980	68.4	7	90.8	90.9	90.1	0.86	0.83	0.73	360.6	2.1	2.1	0.94	364
45	280S	75	980	82.6	7	91.4	91.4	90.5	0.86	0.82	0.73	438.5	2.1	2.0	1.71	451
55	280M	75	980	100.4	7	91.9	92.0	91.2	0.86	0.83	0.75	536	2.1	2.0	2.150	504
75	315S	80	980	135.9	7	92.6	92.3	91.1	0.86	0.84	0.76	730.9	2.0	2.0	3.45	814
90	315M	80	980	162.6	7	92.9	92.6	91.5	0.86	0.84	0.77	877	2.0	2.0	4.08	928
110	315L1	80	980	197.9	6.7	93.3	93.1	92.0	0.86	0.85	0.78	1071.9	2.0	2.0	5.06	1020
132	315L2	80	980	234.2	6.7	93.5	93.3	92.3	0.87	0.85	0.78	1286.3	2.0	2.0	5.84	1068
160	355M	95	990	279.8	6.7	93.8	93.5	92.4	0.88	0.87	0.81	1543.4	1.9	2.0	9.53	1588
185	355M1	95	990	323.5	6.7	93.8	93.6	92.4	0.88	0.87	0.80	1784.6	1.9	2.0	10.67	1705
200	355M2	95	990	349	6.7	94.0	93.8	92.8	0.88	0.87	0.81	1929.3	1.9	2.0	11.8	1732
220	355L1	95	990	383.9	6.7	94.0	93.7	92.4	0.88	0.87	0.80	2122.2	1.9	2.0	13	1821
250	355L2	95	990	436.2	6.7	94.0	93.8	92.9	0.88	0.88	0.82	2411.6	1.9	2.0	14.8	1884

* Data are for reference only

Data at various voltages

KW	Motor Frame Size	Shaft (mm)	Speed	Full Load Current @ 50Hz			Speed	Full Load Current @ 60Hz			Noise Level No Load @ 1 Metre dB(A)
			50Hz (RPM)	380V (A)	400V (A)	415V (A)	60Hz (RPM)	440V (A)	460V (A)	480V (A)	
1000 RPM = 6Poles											
0.37	80M1	19	885	1.3	1.2	1.2	1062	1.1	1.1	1	54
0.55	80M2	19	885	1.8	1.7	1.6	1062	1.5	1.5	1.4	54
0.75	90S	24	910	2.3	2.2	2.2	1088	2.1	2.0	1.9	57
1.10	90L	24	910	3.1	3.0	3	1088	3	2.9	2.9	57
1.50	100L	28	920	3.9	3.8	3.8	1100	3.8	3.7	3.7	61
2.2	112M	28	935	5.5	5.4	5.3	1118	5.4	5.3	5.2	65
3	132S	38	960	7.3	7.1	7.1	1148	6.9	6.8	6.7	69
4	132M1	38	960	9.6	9.3	9.2	1148	9.2	9	8.9	69
5.5	132M2	38	960	12.7	12.4	12.3	1148	12.3	12.1	11.9	69
7.5	160M	42	970	17.0	16.6	16.4	1160	16.6	16.3	16	73
11	160L	42	970	24.2	23.6	23.3	1160	23.3	22.8	22.4	73
15	180L	48	970	31.3	30.5	30.1	1160	30.4	29.8	29.2	73
18.5	200L1	55	980	38.2	37.2	36.8	1172	37.1	36.4	35.7	76
22	200L2	55	980	44.1	42.9	42.4	1172	42.7	41.8	41	76
30	225M	60	980	58.8	57.2	56.4	1172	57.1	55.9	54.9	76
37	250M	65	980	70.4	68.4	67.5	1172	68.9	67.4	66.1	78
45	280S	75	980	85.0	82.6	81.5	1172	83.8	82	80.4	80
55	280M	75	980	103.3	100.4	99.1	1172	101.9	99.7	97.8	80
75	315S	80	980	139.8	135.9	134.1	1172	137.6	134.6	132.1	85
90	315M	80	980	167.3	162.6	160.5	1172	165	161.5	158.4	85
110	315L1	80	980	203.0	197.9	195.3	1172	199.3	195.1	191.4	85
132	315L2	80	980	241.0	234.2	231.1	1172	236.5	231.4	226.9	85
160	355M	95	990	288.0	279.8	275.9	1184	283.5	277.3	271.9	92
185	355M1	95	990	332.2	322.8	318.4	1184	327.4	320.3	314	92
200	355M2	95	990	359.2	349.0	344.2	1184	354.4	346.6	339.9	92
220	355L1	95	990	395.1	383.9	378.6	1184	389.8	381.3	373.9	92
250	355L2	95	990	449.0	436.2	430.2	1184	443	433.3	424.9	92

* Data are for reference only

Performance Data 400V/3Ph/50Hz

Class F, IP55 Class B Temperature Rise

KW	Motor Frame Size	Shaft (mm)	Speed (RPM)	Current		Efficiency %			Power Factor (cosφ)			Torque			Moment of inertia J=1/4GD ² (kg m ²)	Weight of foot mount motor (Kgs)
				Full load (A)	Locked Rotor Ist/IN	100	75	50	100	75	50	Full Load (Nm)	Locked Rotor Tst/TN	Break Down Tmax/TN		
750 RPM = 8Poles																
1.10	100L2	28	680	3.2	5	73.0	73.0	70.0	0.69	0.62	0.49	15.5	1.8	2.0	0.0081	32
1.50	112M	28	690	4.2	5	75.0	75.5	72.5	0.69	0.59	0.46	20.8	1.8	2.0	0.014	40
2.2	132S	38	705	5.7	6	78.0	78.2	75.5	0.71	0.63	0.49	29.8	1.8	2.0	0.032	58
3	132M	38	705	7.5	6	79.0	80.6	79.1	0.73	0.67	0.53	40.6	1.8	2.0	0.0392	68
4	160M1	42	720	9.8	6	81.0	83.0	81.0	0.73	0.65	0.52	53.1	1.9	2.0	0.0635	98
5.5	160M2	42	720	12.9	6	83.0	84.9	83.2	0.74	0.66	0.53	73	2.0	2.0	0.0897	110
7.5	160L	42	720	16.9	6	85.5	86.0	84.5	0.75	0.67	0.54	99.5	2.0	2.0	0.127	132
11	180L	48	730	23.9	6.6	87.5	88.2	87.0	0.76	0.70	0.57	143.9	2.0	2.0	0.214	176
15	200L	55	730	32.4	6.6	88.0	90.0	88.8	0.76	0.69	0.57	196.2	2.0	2.0	0.349	232
18.5	225S	60	730	39	6.6	90.0	90.9	89.8	0.76	0.71	0.59	242	1.9	2.0	0.52	268
22	225M	60	730	45	6.6	90.5	91.4	90.4	0.78	0.72	0.61	287.8	1.9	2.0	0.62	288
30	250M	65	735	60.2	6.6	91.0	91.7	90.7	0.79	0.73	0.61	389.8	1.9	2.0	0.89	372
37	280S	75	735	73.9	6.6	91.5	92.4	91.6	0.79	0.75	0.64	480.8	1.9	2.0	1.71	466
45	280M	75	735	89.4	6.6	92.0	92.7	91.9	0.79	0.74	0.63	584.7	1.9	2.0	2.15	530
55	315S	80	735	105.6	6.6	92.8	93.0	91.6	0.81	0.77	0.67	714.6	1.8	2.0	3.790	804
75	315M	80	735	143.7	6.6	93.0	93.5	92.4	0.81	0.78	0.69	974.5	1.8	2.0	5.2	1000
90	315L1	80	735	168.9	6.6	93.8	93.8	92.6	0.82	0.78	0.68	1169.4	1.8	2.0	6.19	1032
110	315L2	80	735	206	6.4	94.0	94.0	92.9	0.82	0.78	0.69	1429.3	1.8	2.0	7.26	1102
132	355S	95	740	248	6.4	93.7	94.0	92.7	0.82	0.79	0.70	1703.5	1.8	2.0	11.85	1554
160	355M	95	740	299	6.4	94.2	94.3	93.3	0.82	0.81	0.73	2064.9	1.8	2.0	14.5	1702
185	355L1	95	740	345.7	6.4	94.2	94.5	93.3	0.82	0.81	0.73	2387.5	1.8	2.0	16.31	1930
200	355L2	95	740	368	6.4	94.5	94.6	93.6	0.83	0.81	0.73	2581.1	1.8	2.0	18.12	2250
220	355L2	95	740	404.8	6.4	94.5	94.3	92.9	0.83	0.82	0.74	2839.2	1.8	2.0	19.93	2305

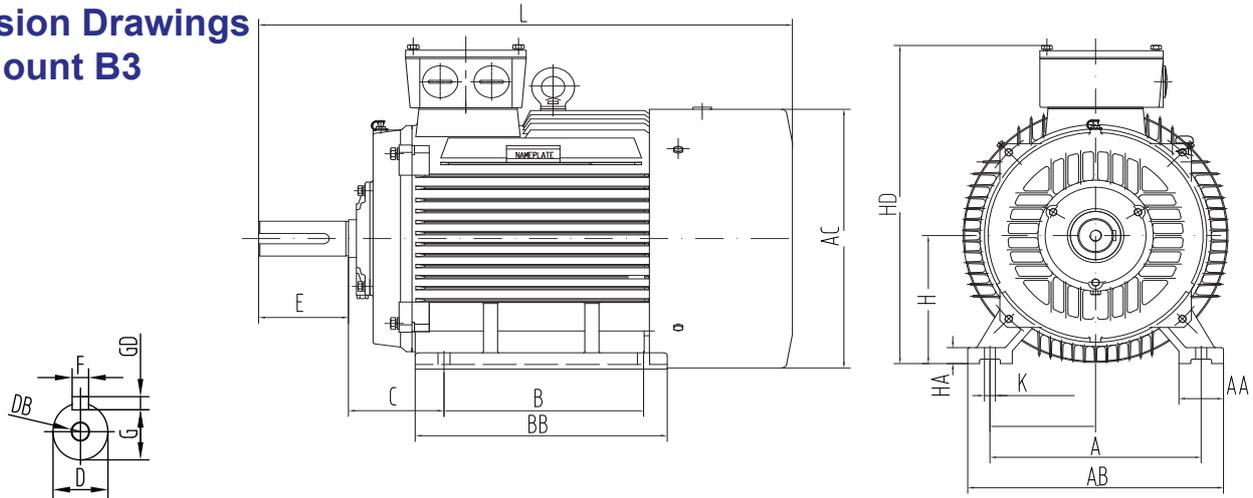
* Data are for reference only

Data at various voltages

KW	Motor Frame Size	Shaft (mm)	Speed	Full Load Current @ 50Hz			Speed	Full Load Current @ 60Hz			Noise Level No Load @ 1 Metre dB(A)
			50Hz (RPM)	380V (A)	400V (A)	415V (A)	60Hz (RPM)	440V (A)	460V (A)	480V (A)	
750 RPM = 8Poles											
1.10	100L2	28	680	3.4	3.2	3.0	815	2.9	2.7	2.6	59
1.50	112M	28	690	4.4	4.2	4.0	830	3.8	3.6	3.5	61
2.2	132S	38	705	6.0	5.7	5.5	845	5.2	5.0	4.8	64
3	132M	38	705	7.9	7.5	7.2	845	6.8	6.5	6.3	64
4	160M1	42	720	10.3	9.8	9.4	864	8.9	8.5	8.1	68
5.5	160M2	42	720	13.6	12.9	12.5	864	11.8	11.2	10.8	68
7.5	160L	42	720	17.8	16.9	16.3	864	15.3	14.7	14.1	68
11	180L	48	730	25.1	23.9	23.0	875	21.7	20.8	19.9	70
15	200L	55	730	36.1	34.3	33.1	875	31.2	29.8	28.6	73
18.5	225S	60	730	41.1	39.0	37.6	875	35.5	33.9	32.5	73
22	225M	60	730	47.4	45.0	43.4	875	40.9	39.1	37.5	73
30	250M	65	735	63.4	60.2	58.1	882	54.8	52.4	50.2	75
37	280S	75	735	77.8	73.9	71.2	882	67.2	64.2	61.6	76
45	280M	75	735	94.1	89.4	86.1	882	81.2	77.7	74.5	76
55	315S	80	735	111.2	105.6	101.8	882	96.0	91.8	88.0	82
75	315M	80	735	151.3	143.7	138.5	882	130.6	125.0	119.8	82
90	315L1	80	735	178.0	168.9	163.7	882	154.4	147.6	141.5	82
110	315L2	80	735	217.0	206.0	198.5	882	187.3	179.1	171.7	82
132	355S	95	740	261.0	248.0	239.0	888	225.4	215.6	206.6	90
160	355M	95	740	315.0	299.0	288.2	888	271.8	260.0	249.1	90
185	355L1	95	740	363.9	345.7	333.2	888	314.3	300.6	288.1	90
200	355L2	95	740	387.4	368.0	354.7	888	334.6	320.0	306.7	90
220	355L2	95	740	426.2	404.8	390.2	888	368.0	352.0	337.4	90

* Data are for reference only

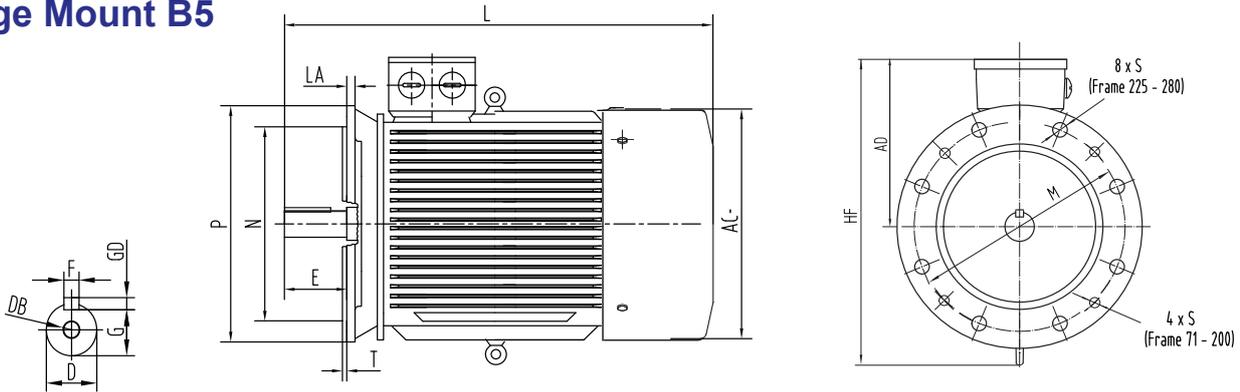
Dimension Drawings
Foot Mount B3



Frame	A	B	C	D	DB	E	F	G	GD	H	K	AA	AB	AC	AD	BB	HA	HD	L
71M	112	90	45	14	M5	30	5	11	5	71	7	32	150	145	80	120	8	195	242
80M	125	100	50	19	M6	40	6	15.5	6	80	10	32	162	165	145	130	10	225	285
90S	140	100	56	24	M8	50	8	20	7	90	10	34	180	180	155	140	12	245	315
90L	140	125	56	24	M8	50	8	20	7	90	10	34	180	180	155	165	12	245	340
100L	160	140	63	28	M10	60	8	24	7	100	12	39	205	205	175	186	14	270	375
112M	190	140	70	28	M10	60	8	24	7	112	12	45	230	240	185	180	13	295	400
132S	216	140	89	38	M12	80	10	33	8	132	12	55	262	275	205	186	18	345	463
132M	216	178	89	38	M12	80	10	33	8	132	12	55	262	275	205	224	18	345	501
160M	254	210	108	42	M16	110	12	37	8	160	14.5	65	318	320	260	260	20	422	610
160L	254	254	108	42	M16	110	12	37	8	160	14.5	65	318	320	260	304	20	422	655
180M	279	241	121	48	M16	110	14	42.5	9	180	14.5	70	350	380	280	311	22	450	690
180L	279	279	121	48	M16	110	14	42.5	9	180	14.5	70	350	380	280	349	22	450	730
200L	318	305	133	55	M16	110	16	49	10	200	18.5	74	390	410	315	365	26	500	770
225S	356	286	149	60	M16	140	18	53	11	225	18.5	78	435	470	340	368	28	555	801
225M*	356	311	149	55	M16	110	16	49	10	225	18.5	78	435	470	340	393	28	555	796
225M	356	311	149	60	M16	140	18	53	11	225	18.5	78	435	470	340	393	28	555	826
250M*	406	349	168	60	M16	140	18	53	11	250	24	80	490	490	370	445	30	621	927
250M	406	349	168	65	M16	140	18	58	11	250	24	80	490	490	370	445	30	621	927
280S*	457	368	190	65	M16	140	18	58	11	280	24	90	545	580	410	485	35	680	981
280S	457	368	190	75	M16	140	20	67.5	12	280	24	90	545	580	410	485	35	680	981
280M*	457	419	190	65	M16	140	18	58	11	280	24	90	545	580	410	536	35	680	1032
280M	457	419	190	75	M16	140	20	67.5	12	280	24	90	545	580	410	536	35	680	1032
315S*	508	406	216	65	M20	140	18	58	11	315	28	120	630	645	535	570	45	841	1185
315S	508	406	216	80	M20	170	22	71	14	315	28	120	630	645	535	570	45	841	1215
315M*	508	457	216	65	M20	140	18	58	11	315	28	120	630	645	535	680	45	841	1295
315M	508	457	216	80	M20	170	22	71	14	315	28	120	630	645	535	680	45	841	1325
315L*	508	508	216	65	M20	140	18	58	11	315	28	120	630	645	535	680	45	841	1295
315L	508	508	216	80	M20	170	22	71	14	315	28	120	635	645	535	680	45	841	1325
355M*	610	560	254	75	M20	140	20	67.5	12	355	28	130	725	720	650	750	52	919	1495
355M	610	560	254	95	M20	170	25	86	14	355	28	130	725	720	650	750	52	919	1525
355L*	610	630	254	75	M20	140	20	67.5	12	355	28	130	725	720	650	750	52	919	1495
355L	610	630	254	95	M20	170	25	86	14	355	28	130	725	720	650	750	52	919	1525

* For 2 Pole motors only

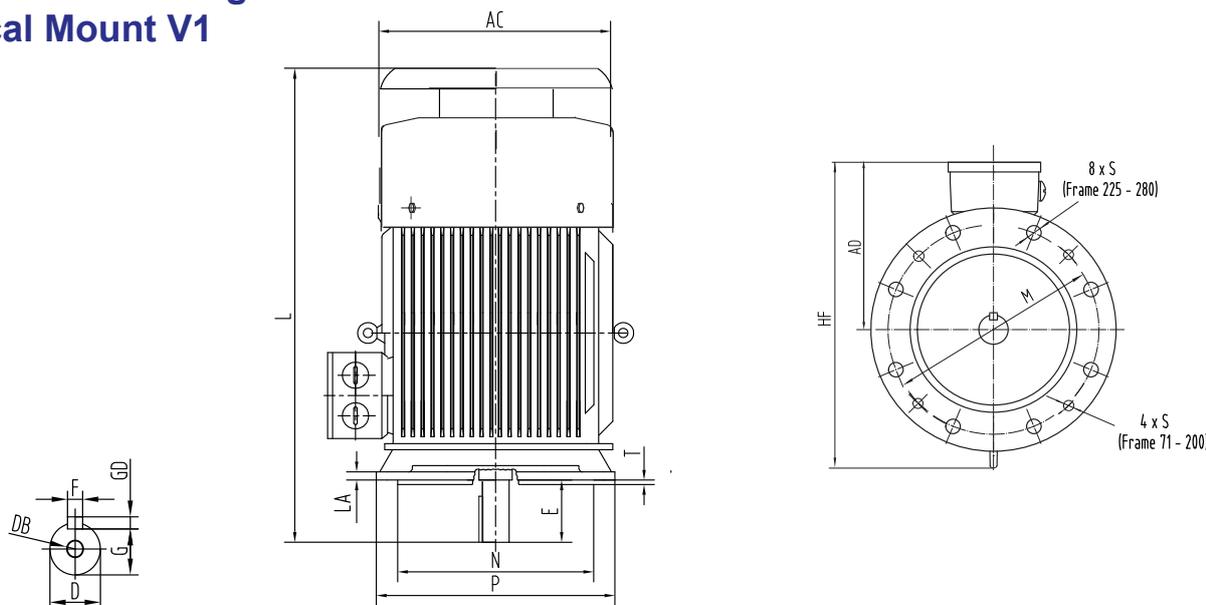
Dimension Drawings Flange Mount B5



Frame	D	DB	E	F	G	GD	M	N	P	S	T	AC	AD	HF	L
71M	14	M5	30	5	11	5	130	110	160	4-Ø10	3.5	145	80	145	242
80M	19	M6	40	6	15.5	6	165	130	200	4-Ø12	3.5	165	145	230	285
90S	24	M8	50	8	20	7	165	130	200	4-Ø12	3.5	180	155	245	315
90L	24	M8	50	8	20	7	165	130	200	4-Ø12	3.5	180	155	245	340
100L	28	M10	60	8	24	7	215	180	250	4-Ø14.5	4	205	175	285	375
112M	28	M10	60	8	24	7	215	180	250	4-Ø14.5	4	240	185	300	400
132S	38	M12	80	10	33	8	365	230	300	4-Ø14.5	4	275	205	315	463
132M	38	M12	80	10	33	8	365	230	300	4-Ø14.5	4	275	205	315	501
160M	42	M16	110	12	37	8	300	250	350	4-Ø18.5	5	320	260	385	610
160L	42	M16	110	12	37	8	300	250	350	4-Ø18.5	5	320	260	385	655
180M	48	M16	110	14	42.5	9	300	250	350	4-Ø18.5	5	380	280	430	690
180L	48	M16	110	14	42.5	9	300	250	350	4-Ø18.5	5	380	280	430	730
200L	55	M16	110	16	49	10	350	300	400	4-Ø18.5	5	410	315	480	770
225S	60	M16	140	18	53	11	400	350	450	8-Ø18.5	5	470	340	535	801
225M*	55	M16	110	16	49	10	400	350	450	8-Ø18.5	5	470	340	535	796
225M	60	M16	140	18	53	11	400	350	450	8-Ø18.5	5	470	340	535	826
250M*	60	M16	140	18	53	11	500	450	550	8-Ø18.5	5	490	370	595	927
250m	65	M16	140	18	58	11	500	450	550	8-Ø18.5	5	490	370	595	927
280S*	65	M16	140	18	58	11	500	450	550	8-Ø18.5	5	580	410	650	981
280S	75	M16	140	20	67.5	12	500	450	550	8-Ø18.5	5	580	410	650	981
280M*	65	M16	140	18	58	11	500	450	550	8-Ø18.5	5	580	410	650	1032
280M	75	M16	140	20	67.5	12	500	450	550	8-Ø18.5	5	580	410	650	1032

* For 2 Pole motors only

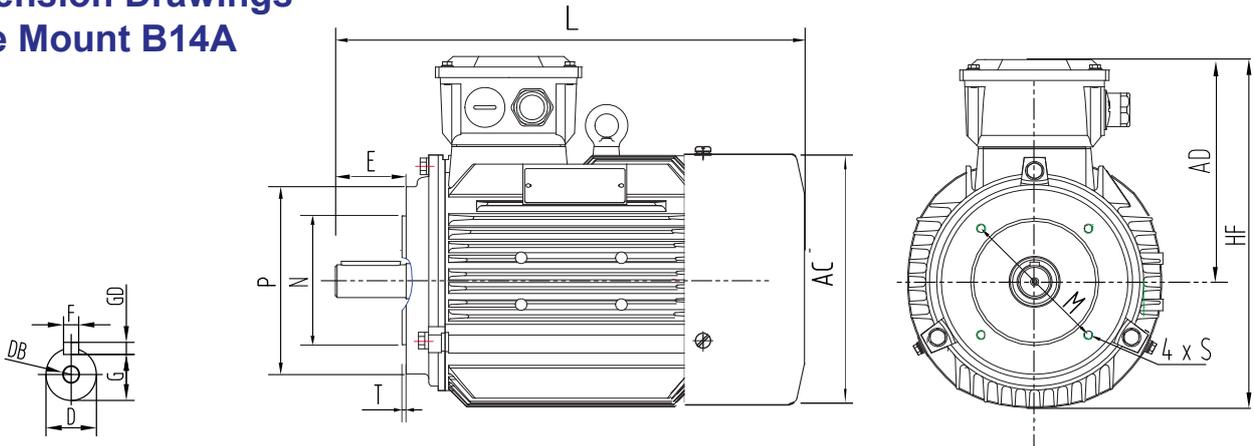
Dimension Drawings Vertical Mount V1



Frame	D	DB	E	F	G	GD	M	N	P	S	T	AC	AD	HF	L
71M	14	M5	30	5	11	5	130	110	160	4-Ø10	3.5	145	80	210	287
80M	19	M6	40	6	15.5	6	165	130	200	4-Ø12	3.5	165	145	250	340
90S	24	M8	50	8	20	7	165	130	200	4-Ø12	3.5	180	155	260	360
90L	24	M8	50	8	20	7	165	130	200	4-Ø12	3.5	180	155	260	385
100L	28	M10	60	8	24	7	215	180	250	4-Ø14.5	4	205	175	300	420
112M	28	M10	60	8	24	7	215	180	250	4-Ø14.5	4	240	185	320	450
132S	38	M12	80	10	33	8	365	230	300	4-Ø14.5	4	275	205	340	513
132M	38	M12	80	10	33	8	365	230	300	4-Ø14.5	4	275	205	340	551
160M	42	M16	110	12	37	8	300	250	350	4-Ø18.5	5	320	260	400	665
160L	42	M16	110	12	37	8	300	250	350	4-Ø18.5	5	320	260	400	710
180M	48	M16	110	14	42.5	9	300	250	350	4-Ø18.5	5	380	280	500	750
180L	48	M16	110	14	42.5	9	300	250	350	4-Ø18.5	5	380	280	500	790
200L	55	M16	110	16	49	10	350	300	400	4-Ø18.5	5	410	315	550	835
225S	60	M16	140	18	53	11	400	350	450	8-Ø18.5	5	470	340	610	905
225M*	55	M16	110	16	49	10	400	350	450	8-Ø18.5	5	470	340	610	900
225M	60	M16	140	18	53	11	400	350	450	8-Ø18.5	5	470	340	610	930
250M*	60	M16	140	18	53	11	500	450	550	8-Ø18.5	5	490	370	650	1035
250M	65	M16	140	18	58	11	500	450	550	8-Ø18.5	5	490	370	650	1035
280S*	65	M16	140	18	58	11	500	450	550	8-Ø18.5	5	580	410	720	1115
280S	75	M16	140	20	67.5	12	500	450	550	8-Ø18.5	5	580	410	720	1115
280M*	65	M16	140	18	58	11	500	450	550	8-Ø18.5	5	580	410	720	1157
280M	75	M16	140	20	67.5	12	500	450	550	8-Ø18.5	5	580	410	720	1157
315S*	65	M20	140	18	58	11	600	550	660	8-Ø24	6	645	535	900	1310
315S	80	M20	170	22	71	14	600	550	660	8-Ø24	6	645	535	900	1340
315M*	65	M20	140	18	58	11	600	550	660	8-Ø24	6	645	535	900	1425
315M	80	M20	170	22	71	14	600	550	660	8-Ø24	6	645	535	900	1455
315L*	65	M20	140	18	58	11	600	550	660	8-Ø24	6	645	535	900	1425
315L	80	M20	170	22	71	14	600	550	660	8-Ø24	6	645	535	900	1455
355M*	75	M20	140	20	67.5	12	740	680	800	8-Ø24	6	720	650	1010	1640
355M	95	M20	170	25	86	14	740	680	800	8-Ø24	6	720	650	1010	1670
355L*	75	M20	140	20	67.5	12	740	680	800	8-Ø24	6	720	650	1010	1640
355L	95	M20	170	25	86	14	740	680	800	8-Ø24	6	720	650	1010	1670

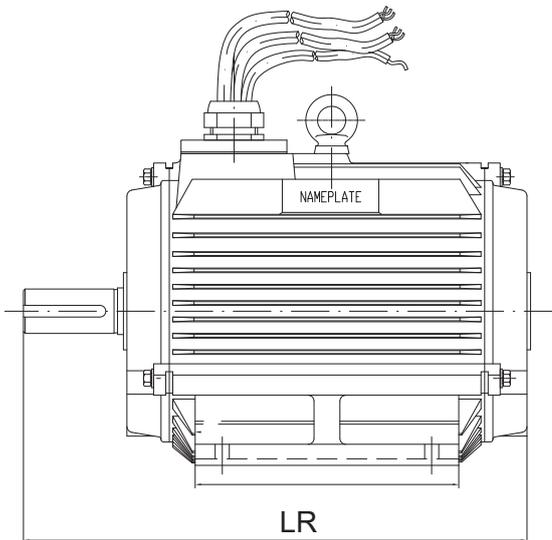
* For 2 Poles only

**Dimension Drawings
Face Mount B14A**



Frame	D	DB	E	F	G	GD	M	N	P	S	T	AC	AD	HF	L
71M	14	M5	30	5	11	5	85	70	105	M5 X 4	2.5	145	80	145	242
80M	19	M6	40	6	15.5	6	100	80	120	M6 X 4	3	165	145	230	295
90S	24	M8	50	8	20	7	115	95	140	M6 X 4	3	180	155	245	315
90L	24	M8	50	8	20	7	115	95	140	M8 X 4	3	180	155	245	340
100L	28	M10	60	8	24	7	130	110	160	M8 X 4	3.5	205	175	285	375
112M	28	M10	60	8	24	7	130	110	160	M8 X 4	3.5	240	185	300	400
132S	38	M12	80	10	33	8	165	130	200	M10X4	3.5	275	205	340	470
132M	38	M12	80	10	33	8	165	130	200	M10X4	3.5	275	205	340	510

**Dimension Drawings Airstream
Application Motor**



Frame	LR (mm)	Frame	LR (mm)
71	214	225M*	700
80	245	225M	730
90S	265	250M*	800
90L	290	250M	800
100L	325	280S*	855
112M	340	280S	855
132S	395	280M*	905
132M	435	280M	905
160M	530	315S*	1015
160L	575	315S	1045
180M	595	315M*	1125
180L	630	315M	1155
200L	675	355L*	1330
225S	705	355L	1360

* 2 Pole motors only

Performance Data 400V/3Ph/50Hz

Class F IP55 Class B Temperature Rise

KW	Motor Frame Size	Shaft (mm)	Speed (RPM)	Current		Efficiency %			Power Factor (cosφ)			Torque			Moment of inertia J=¼GD ² (kg m ²)	Weight of foot mount motor (Kgs)
				Full load (A)	Locked Rotor Ist/IN	100	75	50	100	75	50	Full Load (Nm)	Locked Rotor Tst/TN	Break Down Tmax/TN		
3000 RPM = 2Poles																
0.75	80M1	19	2885	1.7	6.8	77.4	80.5	79.0	0.82	0.80	0.69	2.48	2.3	2.3	0.001	15.5
1.1	80M2	19	2885	2.4	7.3	79.6	82.5	81.3	0.83	0.79	0.67	3.64	2.3	2.3	0.0013	16
1.5	90S	24	2885	3.2	7.6	81.3	83.7	82.4	0.84	0.80	0.69	4.96	2.3	2.3	0.002	20.5
2.2	90L	24	2890	4.5	7.8	83.2	85.9	85.2	0.85	0.84	0.74	7.27	2.3	2.3	0.003	23.5
3	100L	28	2895	5.9	8.1	84.6	86.9	86.6	0.87	0.86	0.78	9.9	2.3	2.3	0.004	31
4	112M	28	2895	7.6	8.3	85.8	87.9	87.3	0.88	0.85	0.76	13.19	2.3	2.3	0.006	40
5.5	132S1	38	2920	10.4	8	87.0	89.1	87.8	0.88	0.84	0.75	17.89	2.2	2.3	0.013	59
7.5	132S2	38	2915	13.8	7.8	88.1	90.0	89.3	0.89	0.87	0.79	24.57	2.2	2.3	0.015	63
11	160M1	42	2945	20	7.9	89.4	90.3	89.1	0.89	0.90	0.85	35.67	2.2	2.3	0.049	107
15	160M2	42	2945	26.9	8	90.3	91.6	90.6	0.89	0.91	0.86	48.64	2.2	2.3	0.056	117
18.5	160L	42	2940	33	8.1	90.9	92.2	91.3	0.89	0.90	0.85	60.09	2.2	2.3	0.0648	137
22	180M	48	2960	39.1	8.2	91.3	91.9	90.5	0.89	0.91	0.86	70.98	2.2	2.3	0.081	166
30	200L1	55	2965	52.9	7.5	92.0	92.7	91.5	0.89	0.88	0.81	96.62	2.2	2.3	0.163	225
37	200L2	55	2965	64.9	7.5	92.5	93.3	92.3	0.89	0.87	0.80	119.17	2.2	2.3	0.172	244
45	225M	55	2965	78.6	7.6	92.9	93.5	92.4	0.89	0.89	0.83	144.94	2.2	2.3	0.302	292
55	250M	60	2965	95.7	7.6	93.2	93.6	92.5	0.89	0.90	0.84	176.55	2.2	2.3	0.42	373
75	280S	65	2980	129.7	6.9	93.8	94.0	92.8	0.89	0.90	0.84	240.35	2.0	2.3	0.986	490
90	280M	65	2970	155.1	7	94.1	94.5	93.4	0.89	0.90	0.85	288.42	2.0	2.3	1.04	537
110	315S	65	2980	187.1	7.1	94.3	94.3	93.0	0.90	0.90	0.85	352.51	2.0	2.2	1.33	830
132	315M	65	2980	223.8	7.1	94.6	94.9	93.8	0.90	0.91	0.86	423.02	2.0	2.2	1.5	850
160	315L1	65	2980	267.7	7.1	94.8	95.3	94.5	0.91	0.92	0.88	512.75	2.0	2.2	1.67	945
200	315L2	65	2980	333.9	7.1	95.0	94.9	93.6	0.91	0.90	0.84	640.94	2.0	2.2	1.88	1070
250	355M	75	2985	417.4	7.1	95.0	94.7	93.1	0.91	0.90	0.86	799.83	2.0	2.2	4.02	1550
315	355L	75	2985	526	7.1	95.0	94.9	93.4	0.91	0.92	0.87	1007.79	2.0	2.2	4.86	1780
355	355L2	80	2985	592.7	7.1	95.0	94.5	93.5	0.91	0.92	0.88	1135.76	2.0	2.2	7.55	1780
375	355L3	80	2985	626.1	7.1	95.0	94.4	93.1	0.91	0.92	0.88	1199.75	2.0	2.2	9.52	1855

* Data are for reference only

- Data upon request

Data at various voltages

KW	Motor Frame Size	Shaft (mm)	Speed	Full Load Current @ 50Hz			Speed	Full Load Current @ 60Hz			Noise Level No Load @ 1 Metre dB(A)
			50Hz (RPM)	380V (A)	400V (A)	415V (A)	60Hz (RPM)	440V (A)	460V (A)	480V (A)	
3000 RPM = 2Poles											
0.75	80M1	19	2885	1.8	1.7	1.7	3461	1.8	1.7	1.7	62
1.10	80M2	19	2885	2.5	2.4	2.4	3461	2.4	2.3	2.3	62
1.50	90S	24	2885	3.3	3.2	3.1	3461	3.1	3.1	3.0	67
2.2	90L	24	2890	4.7	4.5	4.4	3467	4.4	4.3	4.3	67
3	100L	28	2895	6.2	5.9	5.8	3473	5.8	5.7	5.5	74
4	112M	28	2895	8	7.6	7.5	3473	7.6	7.5	7.3	77
5.5	132S1	38	2920	10.9	10.4	10.2	3503	10.3	10.1	9.9	79
7.5	132S2	38	2915	14.5	13.8	13.6	3497	13.8	13.5	13.2	79
11	160M1	42	2945	21	20	19.7	3533	20.2	19.7	19.4	81
15	160M2	42	2945	28.3	26.9	26.6	3533	27.5	26.9	26.4	81
18.5	160L	42	2940	34.7	33	32.5	3527	33.6	32.8	32.2	81
22	180M	48	2960	41.1	39.1	38.5	3551	39.9	39.0	38.2	83
30	200L1	55	2965	55.7	52.9	52.1	3557	54.0	52.8	51.7	84
37	200L2	55	2965	68.3	64.9	64.0	3557	66.1	64.7	63.4	84
45	225M	55	2965	82.7	78.6	77.5	3557	79.9	78.1	76.6	86
55	250M	60	2965	100.7	95.7	94.4	3557	97.6	95.5	93.6	89
75	280S	65	2980	136.5	129.7	127.9	3575	132.2	129.3	126.7	91
90	280M	65	2970	163.3	155.1	152.9	3563	157.1	153.6	150.6	91
110	315S	65	2980	196.9	187.1	184.4	3275	189.9	185.7	181.9	92
132	315M	65	2980	235.6	223.8	220.6	3275	226.7	221.6	217.2	92
160	315L1	65	2980	281.8	267.7	263.8	3575	271.8	265.7	260.3	92
200	315L2	65	2980	351.5	333.9	329.1	3575	338.4	330.7	324.0	92
250	355M	75	2985	439.4	417.4	411.4	3581	422.9	413.4	405.0	100
315	355L	75	2985	553.6	526	518.3	3581	533.0	520.9	510.4	100
355	355L2	80	2985	623.9	592.7	584.1	3581	600.6	587.0	575.2	104
375	355L3	80	2985	659.1	626.1	617.0	3581	634.4	620.1	607.5	104

* Data are for reference only

Performance Data 400V/3Ph/50Hz

Class F, IP55 Class B Temperature Rise

KW	Motor Frame Size	Shaft (mm)	Speed (RPM)	Current		Efficiency %			Power Factor (cosφ)			Torque			Moment of inertia J=¼GD² (kg m²)	Weight of foot mount motor (Kgs)
				Full load (A)	Locked Rotor Ist/IN	100	75	50	100	75	50	Full Load (Nm)	Locked Rotor Tst/TN	Break Down Tmax/TN		
1500 RPM = 4Poles																
0.75	80M2	19	1435	1.8	6.5	79.6	82.3	80.5	0.76	0.70	0.57	4.99	2.3	2.3	0.002	16
1.10	90S	24	1435	2.5	6.6	81.4	83.8	82.4	0.77	0.73	0.60	7.32	2.3	2.3	0.003	21
1.50	90L	24	1440	3.4	6.9	82.8	85.2	84.4	0.78	0.75	0.63	9.95	2.3	2.3	0.004	24.5
2.2	100L1	28	1455	4.7	7.5	84.3	86.2	85.2	0.80	0.75	0.62	14.44	2.3	2.3	0.008	32
3	100L2	28	1455	6.2	7.6	85.5	87.6	86.9	0.81	0.77	0.66	19.69	2.3	2.3	0.009	35
4	112M	28	1455	8.2	7.7	86.6	88.4	87.7	0.81	0.78	0.67	26.25	2.3	2.3	0.013	43
5.5	132S	38	1460	11	7.5	87.7	89.4	88.4	0.82	0.77	0.66	35.98	2.0	2.3	0.029	61
7.5	132M	38	1460	14.7	7.4	88.7	90.1	89.4	0.83	0.79	0.69	49.06	2.0	2.3	0.037	73
11	160M	42	1470	21.3	7.5	89.8	91.1	90.3	0.83	0.82	0.72	71.46	2.2	2.3	0.077	105
15	160L	42	1470	28.4	7.5	90.6	91.6	91.0	0.84	0.81	0.71	97.12	2.2	2.3	0.101	128
18.5	180M	48	1475	34.4	7.7	91.2	92.2	91.6	0.85	0.85	0.77	119.78	2.2	2.3	0.152	156
22	180L	48	1475	40.1	7.8	91.6	92.6	92.0	0.85	0.85	0.77	142.44	2.2	2.3	0.187	175
30	200L	55	1480	55.2	7.2	92.3	93.1	92.3	0.85	0.83	0.74	193.58	2.2	2.3	0.285	236
37	225S	60	1485	67	7.3	92.7	93.3	92.4	0.86	0.85	0.78	237.95	2.2	2.3	0.473	285
45	225M	60	1485	81.1	7.4	93.1	93.8	92.9	0.86	0.84	0.76	289.39	2.2	2.3	0.554	315
55	250M	65	1480	98.7	7.4	93.5	93.8	92.9	0.86	0.83	0.74	352.5	2.2	2.3	0.751	395
75	280S	75	1490	132.4	6.7	94.0	94.2	93.2	0.87	0.86	0.78	480.7	2.2	2.3	1.92	552
90	280M	75	1490	156.7	6.9	94.2	94.6	93.6	0.88	0.87	0.79	576.84	2.2	2.3	2.32	595
110	315S	80	1490	188.8	6.9	94.5	94.6	93.5	0.89	0.88	0.81	705.03	2.2	2.2	2.34	865
132	315M	80	1490	226.1	6.9	94.7	95.1	94.1	0.89	0.88	0.82	846.04	2.2	2.2	2.58	910
160	315L1	80	1490	270.4	7.1	94.9	95.3	94.5	0.90	0.89	0.83	1025.5	2.2	2.2	2.96	1050
200	315L2	80	1490	337.3	7.1	95.1	95.3	94.4	0.90	0.89	0.85	1281.88	2.2	2.2	3.46	1140
250	355M	95	1490	421.6	7.1	95.1	94.8	93.7	0.90	0.90	0.85	1602.35	2.2	2.2	6.6	1540
315	355L	95	1490	531.2	7.1	95.1	95.3	94.3	0.90	0.91	0.87	2018.96	2.2	2.2	7.55	1780
355	355L2	110	1490	611.6	7.0	95.1	95.2	94.2	0.89	0.90	0.88	2275.3	2.2	2.2	15.78	1800
375	355L3	110	1490	646.1	7.0	95.1	95.3	94.2	0.88	0.90	0.88	2403.5	2.2	2.2	17.17	1935

* Data are for reference only

- Data upon request

Data at various voltages

KW	Motor Frame Size	Shaft (mm)	Speed	Full Load Current @ 50Hz			Speed	Full Load Current @ 60Hz			Noise Level
			50Hz (RPM)	380V (A)	400V (A)	415V (A)	60Hz (RPM)	440V (A)	460V (A)	480V (A)	No Load @ 1 Metre dB(A)
1500 RPM = 4Poles											
0.75	80M2	19	1435	1.9	1.8	1.8	1721	1.7	1.7	1.7	56
1.1	90S	24	1435	2.7	2.5	2.5	1721	2.5	2.4	2.4	59
1.5	90L	24	1440	3.5	3.4	3.3	1727	3.4	3.3	3.2	59
2.2	100L1	28	1455	4.9	4.7	4.7	1745	4.6	4.5	4.4	64
3	100L2	28	1455	6.6	6.2	6.2	1745	6.2	6.1	6.0	64
4	112M	28	1455	8.7	8.2	8.1	1745	8.3	8.1	8.0	65
5.5	132S	38	1460	11.6	11	10.9	1751	11.0	10.8	10.6	71
7.5	132M	38	1460	15.5	14.7	14.5	1751	14.8	14.5	14.2	71
11	160M	42	1470	22.4	21.3	21.0	1763	21.4	21.0	20.6	73
15	160L	42	1470	29.9	28.4	28.1	1763	28.8	28.2	27.7	73
18.5	180M	48	1475	36.3	34.4	34.0	1769	34.6	33.8	33.2	76
22	180L	48	1475	42.9	40.1	40.3	1769	41.1	40.2	39.4	76
30	200L	55	1480	58.1	55.2	54.5	1775	55.6	54.5	53.4	76
37	225S	60	1485	70.5	67	66.1	1781	67.9	66.5	65.2	78
45	225M	60	1485	85.4	81.1	80.1	1781	82.1	80.3	78.8	78
55	250M	65	1480	103.9	98.7	97.4	1775	99.7	97.6	95.8	79
75	280S	75	1490	139.3	132.4	130.6	1787	133.9	131.0	128.5	80
90	280M	75	1490	165	156.7	154.6	1787	158.8	155.3	152.3	80
110	315S	80	1490	198.7	188.8	186.1	1787	191.0	186.7	183.1	88
132	315M	80	1490	238	226.1	222.9	1787	229.2	224.1	219.7	88
160	315L1	80	1490	284.6	270.4	266.5	1787	274.8	268.6	263.2	88
200	315L2	80	1490	355	337.3	332.5	1787	342.0	334.4	327.7	88
250	355M	95	1490	443.8	421.6	415.6	1787	427.5	418.0	409.6	95
315	355L	95	1490	559.2	531.2	523.7	1787	538.7	526.7	516.2	95
355	355L2	110	1490	637.3	611.6	596.9	1787	613.8	600.2	588.3	102
375	355L3	110	1490	680.8	646.1	637.9	1787	655.5	641.2	628.7	102

* Data are for reference only

Performance Data 400V/3Ph/50Hz

Class F, IP55 Class B Temperature Rise

KW	Motor Frame Size	Shaft (mm)	Speed (RPM)	Current		Efficiency %			Power Factor (cosφ)			Torque			Moment of inertia J=1/4GD ² (kg m ²)	Weight of foot mount motor (Kgs)
				Full load (A)	Locked Rotor Ist/IN	100	75	50	100	75	50	Full Load (Nm)	Locked Rotor Tst/TN	Break Down Tmax/TN		
1000 RPM = 6Poles																
0.75	90S	24	950	2	5.8	75.9	77.2	74.5	0.71	0.63	0.50	7.54	2.1	2.1	0.004	20
1.10	90L	24	950	2.8	5.9	78.1	79.9	78.2	0.72	0.65	0.52	11.06	2.1	2.1	0.0053	23.5
1.50	100L	28	955	3.8	6	79.8	82.2	80.9	0.72	0.68	0.55	15	2.1	2.1	0.011	30
2.2	112M	28	955	5.4	6	81.8	83.3	81.5	0.72	0.67	0.54	22	2.1	2.1	0.015	39
3	132S	38	975	7.2	6.2	83.3	85.5	83.9	0.72	0.67	0.54	29.38	2.0	2.1	0.032	54
4	132M1	38	975	9.2	6.8	84.6	86.6	85.2	0.74	0.67	0.54	39.18	2.0	2.1	0.039	64
5.5	132M2	38	975	12.3	7.1	86.0	87.9	86.7	0.75	0.68	0.55	53.87	2.0	2.1	0.049	71
7.5	160M	42	980	15.9	6.7	87.2	89.5	88.4	0.78	0.75	0.62	73.09	2.1	2.1	0.096	99
11	160L	42	980	22.6	6.9	88.7	90.0	89.2	0.79	0.75	0.63	107.19	2.1	2.1	0.127	123
15	180L	48	980	29.4	7.2	89.7	91.3	90.7	0.82	0.80	0.69	146.17	2.0	2.1	0.201	163
18.5	200L1	55	985	36.9	7.2	90.4	91.8	91.0	0.80	0.78	0.66	179.36	2.1	2.1	0.325	210
22	200L2	55	980	43.1	7.3	90.9	92.1	91.5	0.81	0.78	0.68	213.3	2.1	2.1	0.371	227
30	225M	60	980	57.6	7.1	91.7	93.0	92.2	0.82	0.81	0.72	290.8	2.0	2.1	0.533	275
37	250M	65	990	69.8	7.1	92.2	92.7	92.0	0.83	0.80	0.70	356.92	2.1	2.1	0.877	365
45	280S	75	990	82.4	7.2	92.7	93.4	92.5	0.85	0.82	0.73	434.09	2.1	2	1.85	480
55	280M	75	990	99.2	7.2	93.1	93.9	93.0	0.86	0.83	0.74	530.55	2.1	2	2.12	525
75	315S	80	995	137.5	6.7	93.7	94.2	93.2	0.84	0.83	0.74	719.85	2.0	2	2.61	810
90	315M	80	995	162.6	6.7	94.0	94.5	93.5	0.85	0.83	0.74	863.82	2.0	2	3.04	875
110	315L1	80	995	198.1	6.7	94.3	94.8	93.9	0.85	0.83	0.74	1055.78	2.0	2	3.71	1010
132	315L2	80	995	234.2	6.7	94.6	95.2	94.3	0.86	0.84	0.75	1266.93	2.0	2	4.24	1060
160	355M1	95	995	283.3	6.7	94.8	94.5	93.2	0.86	0.86	0.79	1535.68	2.0	2	7.44	1455
200	355M2	95	995	353.3	6.7	95.0	94.9	93.8	0.86	0.86	0.79	1919.60	2.0	2	9.1	1590
250	355L	95	995	441.7	6.7	95.0	95.2	94.2	0.86	0.87	0.80	2399.50	2.0	2	10.8	1750
315	355L3	110	995	549.5	6.8	95.0	95.0	94.2	0.86	0.88	0.79	3023.40	2.0	2	21.1	1930

* Data are for reference only

- Data upon request

Data at various voltages

KW	Motor Frame Size	Shaft (mm)	Speed	Full Load Current @ 50Hz			Speed	Full Load Current @ 60Hz			Noise Level No Load @ 1 Metre dB(A)
			50Hz (RPM)	380V (A)	400V (A)	415V (A)	60Hz (RPM)	440V (A)	460V (A)	480V (A)	
1000 RPM = 6Poles											
0.75	90S	24	950	2.1	2	2.0	1139	1.9	1.9	1.9	57
1.1	90L	24	950	3	2.8	2.8	1139	2.6	2.6	2.5	57
1.5	100L	28	955	4	3.8	3.7	1145	3.5	3.5	3.4	61
2.2	112M	28	955	5.7	5.4	5.3	1145	5.1	5.0	4.9	65
3	132S	38	975	7.6	7.2	7.2	1169	6.9	6.8	6.7	69
4	132M1	38	975	9.7	9.2	9.1	1169	9.0	8.9	8.7	69
5.5	132M2	38	975	13	12.3	12.2	1169	12.0	11.8	11.6	69
7.5	160M	42	980	16.8	15.9	15.7	1175	15.7	15.4	15.2	73
11	160L	42	980	23.9	22.6	22.4	1175	22.7	22.2	21.9	73
15	180L	48	980	31	29.4	29.1	1175	29.8	29.2	28.7	73
18.5	200L1	55	985	38.9	36.9	36.5	1181	36.9	36.2	35.6	73
22	200L2	55	980	45.4	43.1	42.6	1175	43.4	42.5	41.7	73
30	225M	60	980	60.6	57.6	56.9	1175	57.6	56.4	55.4	74
37	250M	65	990	73.5	69.8	68.9	1187	70.3	68.9	67.6	76
45	280S	75	990	86.8	82.4	81.4	1187	83.0	81.2	79.7	78
55	280M	75	990	104.4	99.2	97.8	1187	100.3	98.1	96.3	78
75	315S	80	995	144.8	137.5	135.8	1193	139.1	136.2	133.7	83
90	315M	80	995	171.1	162.6	160.5	1193	164.9	161.5	158.4	83
110	315L1	80	995	208.5	198.1	195.5	1193	199.7	195.5	191.8	83
132	315L2	80	995	246.5	234.2	231.1	1193	236.9	231.9	227.5	83
160	355M1	95	995	298.2	283.3	279.5	1193	287.2	281.0	275.7	85
200	355M2	95	995	371.9	353.3	348.7	1193	359.0	351.3	344.6	85
250	355L	95	995	464.9	441.7	435.9	1193	448.4	439.1	430.8	85
315	355L3	110	995	585.8	549.5	549.2	1193	565.4	553.4	542.9	91

* Data are for reference only

Performance Data 400V/3Ph/50Hz

Class F, IP55 Class B Temperature Rise

KW	Motor Frame Size	Shaft (mm)	Speed (RPM)	Current		Efficiency %			Power Factor (cosφ)			Torque			Moment of inertia J=1/4GD ² (kg m ²)	Weight of foot mount motor (Kgs)
				Full load (A)	Locked Rotor Ist/IN	100	75	50	100	75	50	Full Load (Nm)	Locked Rotor Tst/TN	Break Down Tmax/TN		
3000 RPM = 2Poles																
0.75	80M1	19	2885	1.6	7.0	80.7	80.9	78.5	0.82	0.78	0.66	2.48	2.3	2.3	0.0010	15
1.1	80M2	19	2885	2.3	7.3	82.7	83.1	82.2	0.83	0.78	0.65	3.64	2.2	2.3	0.0013	17
1.5	90S	24	2895	3	7.6	84.2	84.6	83.8	0.84	0.81	0.73	4.95	2.2	2.3	0.0021	23
2.2	90L	24	2900	4.4	7.6	85.9	86.3	85.5	0.85	0.82	0.75	7.24	2.2	2.3	0.0028	27
3	100L	28	2890	5.7	7.8	87.1	87.5	86.9	0.87	0.83	0.76	9.91	2.2	2.3	0.0046	32
4	112M	28	2900	7.4	8.3	88.1	88.5	87.5	0.88	0.86	0.80	13.17	2.2	2.3	0.0074	41
5.5	132S1	38	2925	10.1	8.3	89.2	88.2	86.8	0.88	0.83	0.76	17.96	2.0	2.3	0.0145	63
7.5	132S2	38	2925	13.7	7.9	90.1	89.9	88.3	0.89	0.86	0.80	24.49	2.0	2.3	0.0176	70
11	160M1	42	2945	19.6	8.1	91.2	91.9	91.1	0.89	0.88	0.82	35.67	2.0	2.3	0.0513	117
15	160M2	42	2950	26.5	8.1	91.9	92.3	91.6	0.89	0.86	0.81	48.56	2.0	2.3	0.0654	124
18.5	160L	42	2945	32.5	8.2	92.4	92.8	92.7	0.89	0.89	0.85	59.99	2.0	2.3	0.0760	146
22	180M	48	2955	38.5	8.2	92.7	92.5	91.8	0.89	0.87	0.81	71.10	2.0	2.3	0.1183	178
30	200L1	55	2965	52.2	7.6	93.3	93.0	91.8	0.89	0.83	0.75	96.63	2.0	2.3	0.1649	246
37	200L2	55	2965	64.0	7.6	93.7	93.7	93.2	0.89	0.86	0.79	119.17	2.0	2.3	0.1945	260
45	225M	55	2965	76.8	7.7	94.0	94.7	94.0	0.89	0.87	0.81	144.94	2.0	2.3	0.3097	327
55	250M	60	2970	93.6	7.7	94.3	94.2	93.5	0.89	0.87	0.80	176.85	2.0	2.3	0.4168	413
75	280S	65	2975	127.0	7.1	94.7	94.2	93.2	0.89	0.86	0.80	240.76	1.8	2.3	0.6849	527
90	280M	65	2975	151.9	7.1	95.0	94.8	94.1	0.89	0.86	0.79	288.91	1.8	2.3	0.8015	573
110	315S	65	2980	185.3	7.1	95.2	95.4	95.0	0.90	0.88	0.83	352.52	1.8	2.3	1.5305	945
132	315M	65	2975	221.9	7.1	95.4	95.4	95.0	0.90	0.89	0.84	423.73	1.8	2.3	1.7253	980
160	315L1	65	2975	265.4	7.2	95.6	95.8	95.5	0.91	0.87	0.82	513.61	1.8	2.3	2.0592	1040
185	315L	65	2975	306.7	7.2	95.7	95.8	95.3	0.91	0.88	0.82	593.90	1.8	2.2	2.3375	1100
200	315L2	65	2975	331.2	7.2	95.8	95.9	95.6	0.91	0.89	0.84	642.02	1.8	2.2	2.5045	1135
220	315L3	65	2980	364.2	7.2	95.8	95.6	95.4	0.91	0.89	0.85	705.00	1.6	2.2	3.1254	1250
250	355M	75	2980	413.9	7.2	95.8	95.4	94.6	0.91	0.87	0.82	801.17	1.6	2.2	3.1254	1650
280	355L1	75	2980	463.6	7.2	95.8	95.4	95.0	0.91	0.87	0.82	891.30	1.6	2.2	3.7504	1700
315	355L	75	2980	515.9	7.2	95.8	95.6	94.9	0.91	0.88	0.82	1009.48	1.6	2.2	3.7504	1790
355	355L2	80	2980	587.8	7.2	95.8	95.6	95.0	0.91	0.89	0.84	1130.10	1.6	2.2	7.7020	1790
375	355L3	80	2980	620.9	7.2	95.8	95.6	95.1	0.91	0.89	0.85	1193.80	1.6	2.2	8.1221	1950

* Data are for reference only

Data at various voltages

KW	Motor Frame Size	Shaft (mm)	Speed	Full Load Current @ 50Hz			Speed	Full Load Current @ 60Hz			Noise Level No Load @ 1 Metre dB(A)
			50Hz (RPM)	380V (A)	400V (A)	415V (A)	60Hz (RPM)	440V (A)	460V (A)	480V (A)	
3000 RPM = 2Poles											
0.75	80M1	19	2885	1.7	1.6	1.5	3460	1.8	1.4	1.3	62
1.1	80M2	19	2885	2.4	2.3	2.2	3460	2.5	2.0	1.9	62
1.5	90S	24	2895	3.2	3.0	2.9	3470	3.3	2.6	2.5	67
2.2	90L	24	2900	4.6	4.4	4.2	3480	4.8	3.8	3.7	67
3	100L	28	2890	6.0	5.7	5.5	3465	6.3	5.0	4.8	74
4	112M	28	2900	7.8	7.4	7.1	3480	8.1	6.4	6.2	77
5.5	132S1	38	2925	10.6	10.1	9.7	3510	11.1	8.8	8.4	79
7.5	132S2	38	2925	14.4	13.7	13.2	3510	15.1	11.9	11.4	79
11	160M1	42	2945	20.6	19.6	18.9	3530	21.6	17.0	16.3	81
15	160M2	42	2950	27.9	26.5	25.5	3540	29.2	23.0	22.1	81
18.5	160L	42	2945	34.2	32.5	31.3	3530	35.8	28.3	27.1	81
22	180M	48	2955	40.5	38.5	37.1	3545	42.4	33.5	32.1	83
30	200L1	55	2965	54.9	52.2	50.3	3555	57.4	45.4	43.5	84
37	200L2	55	2965	67.4	64.0	61.7	3555	70.4	55.7	53.3	84
45	225M	55	2965	80.8	76.8	74.0	3555	84.5	66.8	64.0	86
55	250M	60	2970	98.5	93.6	90.2	3560	103.0	81.4	78.0	89
75	280S	65	2975	133.7	127.0	122.4	3570	139.7	110.4	105.8	91
90	280M	65	2975	159.9	151.9	146.4	3570	167.1	132.1	126.6	91
110	315S	65	2980	195.1	185.3	178.6	3575	203.8	161.1	154.4	92
132	315M	65	2975	233.6	221.9	213.9	3570	244.1	193.0	184.9	92
160	315L1	65	2975	279.4	265.4	255.8	3570	291.9	230.8	221.2	92
185	315L	65	2975	322.8	306.7	295.6	3570	337.4	266.7	255.6	92
200	315L2	65	2975	348.6	331.2	319.2	3570	364.3	288.0	276.0	92
220	315L3	65	2980	383.4	364.2	351.0	3575	400.6	316.7	303.5	100
250	355M	75	2980	435.7	413.9	398.9	3575	455.3	359.9	344.9	100
280	355L1	75	2980	488.0	463.6	446.8	3575	510.0	403.1	386.3	100
315	355L	75	2980	543.0	515.9	497.3	3575	567.5	448.6	429.9	100
355	355L2	80	2980	618.7	587.8	566.6	3575	646.6	511.1	489.8	104
375	355L3	80	2980	653.6	620.9	598.5	3575	683.0	539.9	517.4	104

* Data are for reference only

Performance Data 400V/3Ph/50Hz

Class F, IP55 Class B Temperature Rise

KW	Motor Frame Size	Shaft (mm)	Speed (RPM)	Current			Efficiency %			Power Factor (cosφ)			Torque			Moment of inertia J=¼GD ² (kg m ²)	Weight of foot mount motor (Kgs)
				Full load (A)	Locked Rotor Ist/IN	Locked Rotor Ist/IN	100	75	50	100	75	50	Full Load (Nm)	Locked Rotor Tst/TN	Break Down Tmax/TN		
1500 RPM = 4Poles																	
0.75	80M2	19	1435	1.7	6.6	6.6	82.5	82.7	82.0	0.75	0.71	0.66	4.99	2.3	2.3	0.0023	17
1.1	90S	24	1435	2.5	6.8	6.8	84.1	84.3	83.8	0.76	0.73	0.65	7.32	2.3	2.3	0.0037	24
1.5	90L	24	1435	3.3	7.0	7.0	85.3	85.5	84.8	0.77	0.73	0.64	9.98	2.3	2.3	0.0048	29
2.2	100L1	28	1450	4.6	7.6	7.6	86.7	86.9	85.8	0.81	0.77	0.68	14.49	2.3	2.3	0.0090	34
3	100L2	28	1450	6	7.6	7.6	87.7	87.9	87.1	0.82	0.78	0.70	19.76	2.3	2.3	0.0120	37
4	112M	28	1455	8	7.8	7.8	88.6	88.9	88.7	0.82	0.77	0.69	26.25	2.2	2.3	0.0175	51
5.5	132S	38	1460	10.6	7.9	7.9	89.6	89.2	88.5	0.83	0.78	0.68	35.98	2.0	2.3	0.0350	66
7.5	132M	38	1460	14.3	7.5	7.5	90.4	90.1	89.3	0.84	0.74	0.65	49.06	2.0	2.3	0.0447	77
11	160M	42	1470	20.4	7.7	7.7	91.4	91.2	90.3	0.85	0.78	0.68	71.46	2.2	2.3	0.0974	113
15	160L	42	1470	27.4	7.8	7.8	92.1	91.6	90.6	0.86	0.78	0.66	97.12	2.2	2.3	0.1239	132
18.5	180M	48	1475	33.5	7.8	7.8	92.6	93.0	92.2	0.86	0.82	0.73	119.78	2.0	2.3	0.1811	171
22	180L	48	1475	39.7	7.8	7.8	93.0	93.7	92.8	0.86	0.82	0.73	142.44	2.0	2.3	0.2242	188
30	200L	55	1475	53.8	7.3	7.3	93.6	93.4	92.7	0.86	0.82	0.73	194.24	2.0	2.3	0.3631	253
37	225S	60	1480	66.1	7.4	7.4	93.9	94.2	93.4	0.86	0.81	0.71	238.75	2.0	2.3	0.5589	297
45	225M	60	1480	80.2	7.4	7.4	94.2	94.2	94.1	0.86	0.83	0.76	290.37	2.0	2.3	0.6351	324
55	250M	65	1485	97.6	7.4	7.4	94.6	95.2	94.4	0.86	0.81	0.71	353.70	2.2	2.3	0.8994	419
75	280S	75	1485	129.5	6.9	6.9	95.0	95.0	94.6	0.88	0.84	0.77	482.32	2.0	2.3	1.6251	583
90	280M	75	1485	155.0	6.9	6.9	95.2	95.3	94.8	0.88	0.85	0.78	578.79	2.0	2.3	1.9672	624
110	315S	80	1485	187.0	7.0	7.0	95.4	95.8	95.2	0.89	0.86	0.80	707.41	2.0	2.2	3.2735	930
132	315M	80	1485	223.9	7.0	7.0	95.6	95.6	95.4	0.89	0.87	0.82	848.89	2.0	2.2	3.6959	970
160	315L1	80	1485	270.8	7.1	7.1	95.8	96.0	95.7	0.89	0.88	0.83	1028.96	2.0	2.2	4.2239	1090
185	315L	80	1485	312.9	7.1	7.1	95.9	96.0	95.8	0.89	0.88	0.82	1189.70	2.0	2.2	4.8575	1100
200	315L2	80	1485	334.1	7.1	7.1	96.0	96.1	95.9	0.90	0.89	0.86	1286.20	2.0	2.2	5.9135	1155
220	315L3	80	1490	367.5	7.1	7.1	96.0	95.8	95.6	0.90	0.88	0.86	1410.10	2.0	2.2	6.3016	1400
250	355M	95	1490	417.6	7.1	7.1	96.0	96.3	95.9	0.90	0.89	0.85	1602.35	2.0	2.2	6.3016	1760
280	355L1	95	1490	467.8	7.1	7.1	96.0	96.1	95.5	0.90	0.88	0.86	1794.60	2.0	2.2	7.9821	1800
315	355L	95	1490	526.2	7.1	7.1	96.0	96.2	95.4	0.90	0.89	0.85	2018.96	2.0	2.2	10.5721	1810
355	355L2	110	1490	606.5	7.1	7.1	96.0	96.2	95.5	0.88	0.86	0.83	2260.20	1.7	2.2	15.1082	1880
375	355L3	110	1490	640.7	7.1	7.1	96.0	96.2	95.4	0.88	0.87	0.85	2387.50	1.7	2.2	16.4413	1880

* Data are for reference only

Data at various voltages

KW	Motor Frame Size	Shaft (mm)	Speed	Full Load Current @ 50Hz			Speed	Full Load Current @ 60Hz			Noise Level No Load @ 1 Metre dB(A)
			50Hz (RPM)	380V (A)	400V (A)	415V (A)	60Hz (RPM)	440V (A)	460V (A)	480V (A)	
1500 RPM = 4Poles											
0.75	80M2	19	1435	1.8	1.7	1.6	1720	1.5	1.5	1.4	56
1.10	90S	24	1435	2.6	2.5	2.4	1720	2.3	2.2	2.1	59
1.50	90L	24	1435	3.5	3.3	3.2	1720	3.0	2.9	2.8	59
2.20	100L1	28	1450	4.8	4.6	4.4	1740	4.2	4.0	3.8	64
3.00	100L2	28	1450	6.3	6.0	5.8	1740	5.5	5.2	5.0	64
4.0	112M	28	1455	8.4	8.0	7.7	1745	7.3	7.0	6.7	65
5.5	132S	38	1460	11.2	10.6	10.2	1750	9.6	9.2	8.8	71
7.5	132M	38	1460	15.0	14.3	13.8	1750	13.0	12.4	11.9	71
11.0	160M	42	1470	21.5	20.4	19.7	1760	18.5	17.7	17.0	73
15.0	160L	42	1470	28.8	27.4	26.4	1760	24.9	23.8	22.8	73
18.5	180M	48	1475	35.3	33.5	32.3	1770	30.5	29.1	27.9	76
22	180L	48	1475	41.8	39.7	38.3	1770	36.1	34.5	33.1	76
30	200L	55	1475	56.6	53.8	51.9	1770	48.9	46.8	44.8	76
37	225S	60	1480	69.6	66.1	63.7	1775	60.1	57.5	55.1	78
45	225M	60	1480	84.4	80.2	77.3	1775	72.9	69.7	66.8	78
55	250M	65	1485	102.7	97.6	94.1	1780	88.7	84.9	81.3	79
75	280S	75	1485	136.3	129.5	124.8	1780	117.7	112.6	107.9	80
90	280M	75	1485	163.2	155.0	149.4	1780	140.9	134.8	129.2	80
110	315S	80	1485	196.8	187.0	180.2	1780	170.0	162.6	155.8	88
132	315M	80	1485	235.7	223.9	215.8	1780	203.5	194.7	186.6	88
160	315L1	80	1485	285.1	270.8	261.0	1780	246.2	235.5	225.7	88
185	315L	80	1485	329.3	312.9	301.6	1780	284.5	272.1	260.8	88
200	315L2	80	1485	351.7	334.1	322.0	1780	303.7	290.5	278.4	88
220	315L3	80	1490	386.9	367.5	354.2	1785	334.1	319.6	306.3	95
250	355M	95	1490	439.6	417.6	402.5	1785	379.6	363.1	348.0	95
280	355L1	95	1490	492.4	467.8	450.9	1785	425.3	406.8	389.8	95
315	355L	95	1490	553.9	526.2	507.2	1785	478.4	457.6	438.5	95
355	355L2	110	1490	638.5	606.5	584.6	1785	551.4	527.4	505.4	102
375	355L3	110	1490	674.4	640.7	617.5	1785	582.5	557.1	533.9	102

* Data are for reference only

Performance Data 400V/3Ph/50Hz

Class F, IP55 Class B Temperature Rise

KW	Motor Frame Size	Shaft (mm)	Speed (RPM)	Current		Efficiency %			Power Factor (cosφ)			Torque			Moment of inertia J= $\frac{1}{4}GD^2$ (kg m ²)	Weight of foot mount motor (Kgs)
				Full load (A)	Locked Rotor Ist/IN	100	75	50	100	75	50	Full Load (Nm)	Locked Rotor Tst/TN	Break Down Tmax/TN		
1000 RPM = 6Poles																
0.75	90S	24	955	1.9	6.0	78.9	79.2	78.2	0.71	0.63	0.51	7.50	2.0	2.1	0.0048	22
1.1	90L	24	955	2.7	6.0	81.0	81.3	80.6	0.73	0.68	0.53	11.00	2.0	2.1	0.0071	28
1.5	100L	28	955	3.6	6.5	82.5	82.9	82.2	0.73	0.68	0.54	15.00	2.0	2.1	0.0126	31
2.2	112M	28	950	5.1	6.6	84.3	84.8	84.1	0.74	0.68	0.56	22.12	2.0	2.1	0.0191	42
3	132S	38	970	6.8	6.8	85.6	85.0	83.4	0.74	0.65	0.52	29.54	2.0	2.1	0.0357	58
4	132M1	38	970	9	6.8	86.8	85.9	84.1	0.74	0.63	0.50	39.38	2.0	2.1	0.0477	69
5.5	132M2	38	970	12.1	7.0	88.0	86.6	85.0	0.75	0.63	0.50	54.15	2.0	2.1	0.0630	76
7.5	160M	42	975	15.4	7.0	89.1	89.1	87.5	0.79	0.69	0.56	73.46	2.0	2.1	0.1119	105
11	160L	42	975	21.9	7.2	90.3	90.1	89.2	0.80	0.74	0.63	107.74	2.0	2.1	0.1492	129
15	180L	48	980	29.4	7.3	91.2	91.8	91.1	0.81	0.77	0.66	146.17	2.0	2.1	0.2574	168
18.5	200L1	55	980	35.9	7.3	91.7	91.9	91.3	0.81	0.78	0.69	180.28	2.0	2.1	0.3881	218
22	200L2	55	980	42.6	7.4	92.2	92.2	91.3	0.81	0.84	0.76	214.39	2.0	2.1	0.4478	240
30	225M	60	985	56.1	6.9	92.9	93.3	92.8	0.83	0.81	0.78	290.86	2.0	2.1	0.6342	295
37	250M	65	985	68.1	7.1	93.3	93.4	92.6	0.84	0.77	0.67	358.73	2.0	2.1	1.0787	389
45	280S	75	985	81.5	7.3	93.7	93.4	92.8	0.85	0.80	0.71	436.29	2.0	2	1.7050	497
55	280M	75	985	98.1	7.3	94.1	94.0	93.3	0.86	0.79	0.70	533.25	2.0	2	2.0619	537
75	315S	80	990	136.2	6.6	94.6	95.0	94.5	0.84	0.80	0.70	723.48	2.0	2	3.9210	830
90	315M	80	990	161.0	6.7	94.9	94.9	94.4	0.85	0.78	0.68	868.18	2.0	2	4.2711	910
110	315L1	80	990	196.5	6.7	95.1	95.2	94.9	0.85	0.82	0.75	1061.11	2.0	2	5.4614	1035
132	315L2	80	990	232.2	6.8	95.4	95.3	94.8	0.86	0.80	0.72	1273.33	2.0	2	6.5817	1120
160	355M1	95	990	280.9	6.8	95.6	95.4	94.5	0.86	0.82	0.76	1543.43	1.8	2	10.3039	1530
185	355M	95	990	324.4	6.8	95.7	95.5	94.8	0.86	0.80	0.72	1784.60	1.8	2	11.7758	1630
200	355M2	95	990	346.4	6.8	95.8	95.6	94.8	0.87	0.81	0.74	1929.29	1.8	2	11.7758	1640
220	355L1	95	990	381.0	6.8	95.8	95.6	94.9	0.87	0.82	0.71	2122.20	1.8	2	13.5875	1840
250	355L	95	990	432.9	6.8	95.8	95.8	95.6	0.87	0.85	0.79	2411.62	1.8	2	15.2860	1930
280	355L2	110	990	484.9	6.8	95.8	95.5	94.5	0.87	0.85	0.78	2701.00	1.8	2	20.6243	1970
315	355L3	110	990	551.9	6.8	95.8	95.1	94.5	0.86	0.82	0.77	3008.25	1.8	2	20.6243	1970

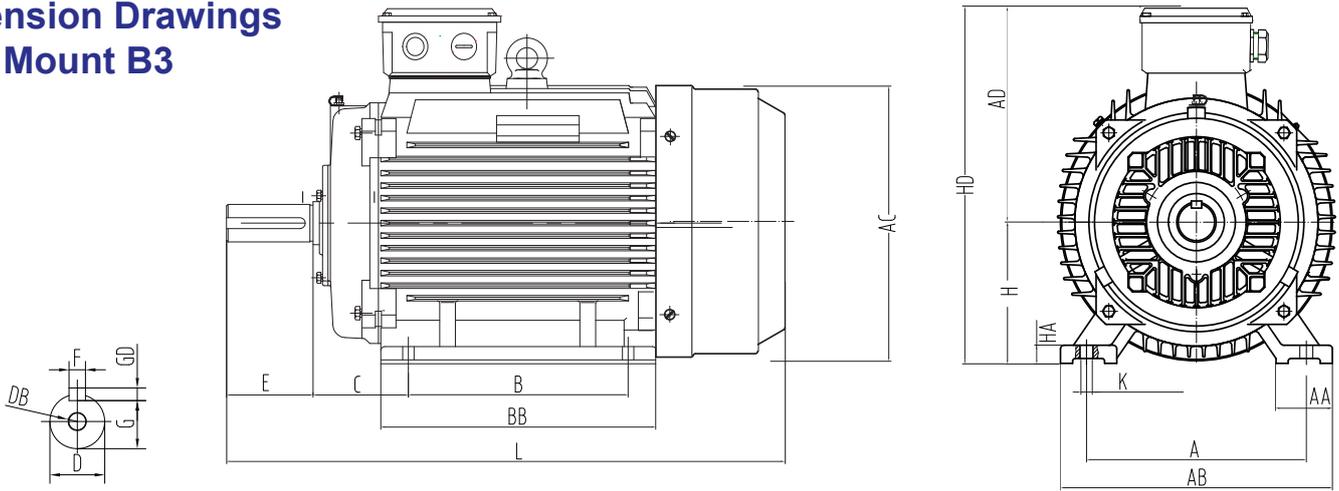
* Data are for reference only

Data at various voltages

KW	Motor Frame Size	Shaft (mm)	Speed	Full Load Current @ 50Hz			Speed	Full Load Current @ 60Hz			Noise Level No Load @ 1 Metre dB(A)
			50Hz (RPM)	380V (A)	400V (A)	415V (A)	60Hz (RPM)	440V (A)	460V (A)	480V (A)	
1000 RPM = 6Poles											
0.75	90S	24	955	2.0	1.9	1.8	1145	1.7	1.7	1.6	57
1.1	90L	24	955	2.8	2.7	2.6	1145	2.5	2.3	2.3	57
1.5	100L	28	955	3.8	3.6	3.5	1145	3.3	3.1	3.0	61
2.2	112M	28	950	5.4	5.1	4.9	1140	4.6	4.4	4.3	65
3	132S	38	970	7.2	6.8	6.6	1160	6.2	5.9	5.7	69
4	132M1	38	970	9.5	9.0	8.7	1160	8.2	7.8	7.5	69
5.5	132M2	38	970	12.7	12.1	11.7	1160	11.0	10.5	10.1	69
7.5	160M	42	975	16.2	15.4	14.8	1170	14.0	13.4	12.8	73
11	160L	42	975	23.1	21.9	21.1	1170	19.9	19.0	18.3	73
15	180L	48	980	30.9	29.4	28.3	1175	26.7	25.6	24.5	73
18.5	200L1	55	980	37.8	35.9	34.6	1175	32.6	31.2	29.9	73
22	200L2	55	980	44.8	42.6	41.1	1175	38.7	37.0	35.5	73
30	225M	60	985	59.1	56.1	54.1	1180	51.0	48.8	46.8	74
37	250M	65	985	71.7	68.1	65.6	1180	61.9	59.2	56.8	76
45	280S	75	985	85.8	81.5	78.6	1180	74.1	70.9	67.9	78
55	280M	75	985	103.3	98.1	94.6	1180	89.2	85.3	81.8	78
75	315S	80	990	143.4	136.2	131.3	1185	123.8	118.4	113.5	83
90	315M	80	990	169.5	161.0	155.2	1185	146.4	140.0	134.2	83
110	315L1	80	990	206.8	196.5	189.4	1185	178.6	170.9	163.8	83
132	315L2	80	990	244.4	232.2	223.8	1185	211.1	201.9	193.5	83
160	355M1	80	990	295.7	280.9	270.7	1185	255.4	244.3	234.1	85
185	355M	95	990	341.5	324.4	312.7	1185	294.9	282.1	270.3	85
200	355M2	95	990	364.6	346.4	333.9	1185	314.9	301.2	288.7	85
220	355L1	95	990	401.0	381.0	367.2	1185	346.4	331.3	317.5	85
250	355L	95	990	455.7	432.9	417.3	1185	393.5	376.4	360.8	85
280	355L2	110	990	510.4	484.9	467.4	1185	440.8	421.7	404.1	85
315	355L3	110	990	580.9	551.9	532.0	1185	501.7	479.9	459.9	91

* Data are for reference only

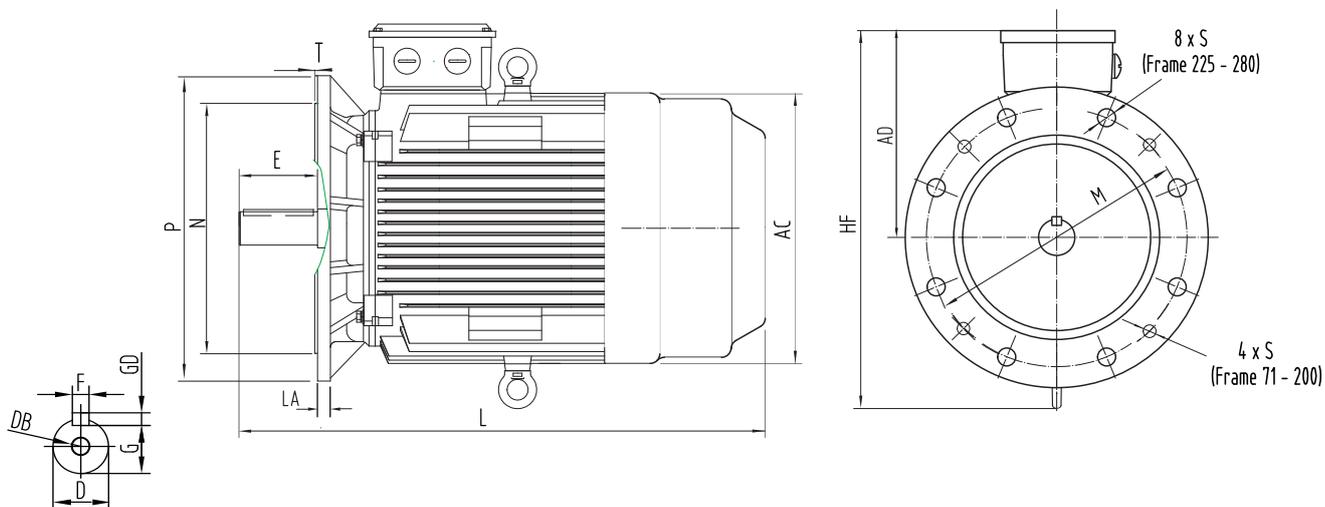
Dimension Drawings
Foot Mount B3



Frame	A	AA	B	C	D	DB	E	F	G	GD	H	K	AB	AC	AD	HD	L	BB	HA
80	125	32	100	50	19	M6	40	6	15.5	6	80	10	160	165	145	225	295	135	10
90S	140	34	100	56	24	M8	50	8	20	7	90	10	180	180	165	255	345	170	12
90L	140	34	125	56	24	M8	50	8	20	7	90	10	180	180	165	255	385	210	12
100L	160	39	140	63	28	M10	60	8	24	7	100	12	200	205	175	275	390	186	14
112M	190	45	140	70	28	M10	60	8	24	7	112	12	230	225	190	302	440	200	15
132S	216	55	140	89	38	M12	80	10	33	8	132	12	265	270	220	352	475	190	18
132M	216	55	178	89	38	M12	80	10	33	8	132	12	265	270	220	352	510	230	18
160M	254	65	210	108	42	M16	110	12	37	8	160	14.5	315	320	260	420	610	260	20
160L	254	65	254	108	42	M16	110	12	37	8	160	14.5	315	320	260	420	655	304	20
180M	279	70	241	121	48	M16	110	14	42.5	9	180	14.5	355	360	265	445	680	311	22
180L	279	70	279	121	48	M16	110	14	42.5	9	180	14.5	355	360	265	445	715	349	22
200L	318	74	305	133	55	M16	110	16	49	10	200	18.5	395	400	305	505	770	379	26
225S	356	78	286	149	60	M16	140	18	53	11	225	18.5	435	450	325	550	795	375	28
225M*	356	78	311	149	55	M16	110	16	49	10	225	18.5	435	450	325	550	800	400	28
225M	356	78	311	149	60	M16	140	18	53	11	225	18.5	435	450	325	550	825	400	28
250M*	406	80	349	168	60	M16	140	18	53	11	250	24	490	510	380	630	890	445	30
250M	406	80	349	168	65	M16	140	18	58	11	250	24	490	510	380	630	890	445	30
280S*	457	90	368	190	65	M16	140	18	58	11	280	24	545	550	395	675	975	485	35
280S	457	90	368	190	75	M16	140	20	67.5	12	280	24	545	550	395	675	975	485	35
280M*	457	90	419	190	65	M16	140	18	58	11	280	24	545	550	395	675	1025	536	35
280M	457	90	419	190	75	M16	140	20	67.5	12	280	24	545	550	395	675	1025	536	35
315S*	508	120	406	216	65	M20	140	18	58	11	315	28	635	630	540	855	1180	570	45
315S	508	120	406	216	80	M20	170	22	71	14	315	28	635	630	540	855	1180	570	45
315M*	508	120	457	216	65	M20	140	18	58	11	315	28	635	630	540	855	1215	610	45
315M	508	120	457	216	80	M20	170	22	71	14	315	28	635	630	540	855	1215	610	45
315L*	508	120	508	216	65	M20	140	18	58	11	315	28	635	630	540	855	1320	680	45
315L	508	120	508	216	80	M20	170	22	71	14	315	28	635	630	540	855	1320	680	45
355M*	610	130	560	254	75	M20	140	20	67.5	12	355	28	735	715	645	1000	1420	690	52
355M	610	130	560	254	95	M20	170	25	86	14	355	28	735	715	645	1000	1420	690	52
355L*	610	130	630	254	75	M20	140	20	67.5	12	355	28	735	715	645	1000	1530	750	52
355L	610	130	630	254	95	M20	170	25	86	14	355	28	735	715	645	1000	1530	750	52
355L2*	610	130	630	254	80	M20	170	22	71	14	355	28	735	715	645	1000	1530	750	52
355L2	610	130	630	254	110	M20	210	28	100	14	355	28	735	715	645	1000	1570	750	52

* For 2 Pole motors only

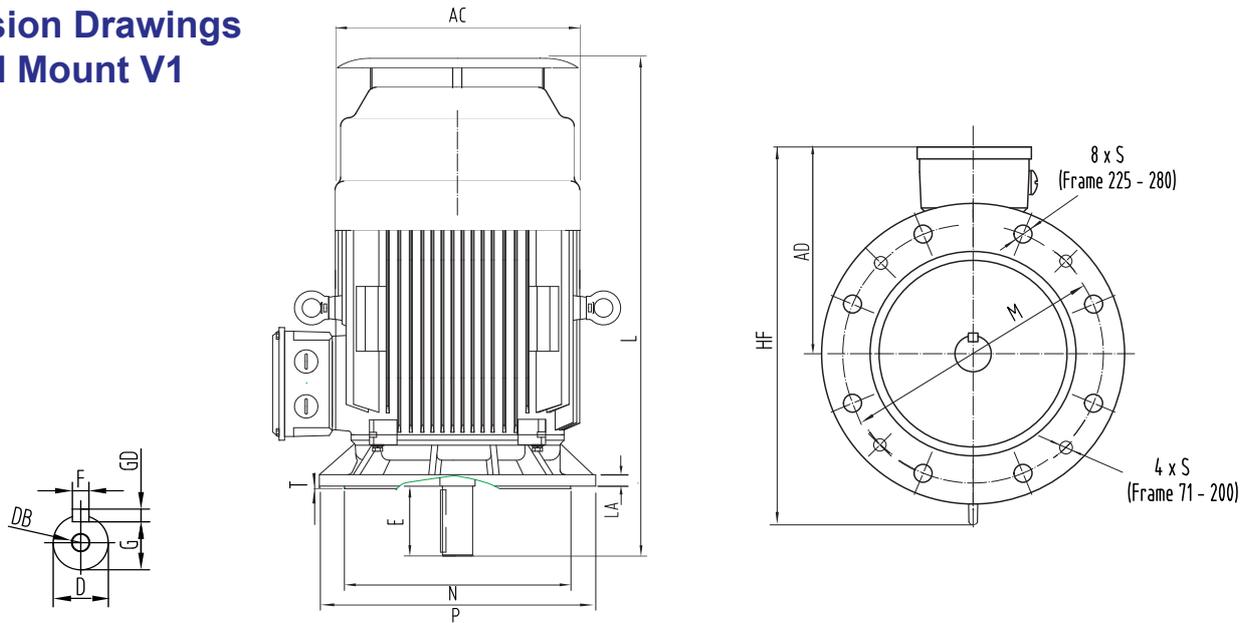
Dimension Drawings
Flange Mount B5



Frame	AC	AD	D	DB	E	F	G	GD	HF	L	LA	M	N	P	S	T
80	165	145	19	M6	40	6	15.5	6	245	295	12	165	130	200	12	3.5
90S	180	165	24	M8	50	8	20.0	7	265	345	12	165	130	200	12	3.5
90L	180	165	24	M8	50	8	20.0	7	265	385	12	165	130	200	12	3.5
100L	205	175	28	M10	60	8	24.0	7	300	390	14	215	180	250	15	4.0
112M	225	190	28	M10	60	8	24.0	7	315	425	14	215	180	250	15	4.0
132S	270	220	38	M12	80	10	33.0	8	370	475	14	265	230	300	15	4.0
132M	270	220	38	M12	80	10	33.0	8	370	510	14	265	230	300	15	4.0
160M	320	260	42	M16	110	12	37.0	8	435	610	16	300	250	350	19	5.0
160L	320	260	42	M16	110	12	37.0	8	435	655	16	300	250	350	19	5.0
180M	360	265	48	M16	110	14	42.5	9	500	680	18	300	250	350	19	5.0
180L	360	265	48	M16	110	14	42.5	9	250	715	18	300	250	350	19	5.0
200L	400	305	55	M16	110	16	49.0	10	570	770	18	350	300	400	19	5.0
225S	450	325	60	M16	140	18	53.0	11	615	795	20	400	350	450	19	5.0
225M*	450	325	55	M16	110	16	49.0	10	615	825	20	400	350	450	19	5.0
225M	450	325	60	M16	140	18	53.0	11	615	825	20	400	350	450	19	5.0
250M*	510	380	60	M16	140	18	53.0	11	715	890	22	500	450	550	19	5.0
250M	510	380	65	M16	140	18	58.0	11	715	890	22	500	450	550	19	5.0
280S*	550	395	65	M16	140	18	58.0	11	760	975	22	500	450	550	19	5.0
280S	550	395	75	M16	140	20	67.5	12	760	975	22	500	450	550	19	5.0
280M*	550	395	65	M16	140	18	58.0	11	760	1025	22	500	450	550	19	5.0
280M	550	395	75	M16	140	20	67.5	12	760	1025	22	500	450	550	19	5.0
315S*	630	540	65	M20	140	18	58.0	11	970	1180	25	600	550	660	24	6.0
315S	630	540	80	M20	170	22	71.0	14	970	1180	25	600	550	660	24	6.0
315M*	630	540	65	M20	140	18	58.0	11	970	1215	25	600	550	660	24	6.0
315M	630	540	80	M20	170	22	71.0	14	970	1215	25	600	550	660	24	6.0
315L*	630	540	65	M20	140	18	58.0	11	970	1320	25	600	550	660	24	6.0
315L	630	540	80	M20	170	22	71.0	14	970	1320	25	600	550	660	24	6.0
355M*	715	645	75	M20	140	20	67.5	12	1135	1420	32	740	680	800	24	6.0
355M	715	645	95	M20	170	25	86.0	14	1135	1420	32	740	680	800	24	6.0
355L*	715	645	75	M20	140	20	67.5	12	1135	1530	32	740	680	800	24	6.0
355L	715	645	95	M20	170	25	86.0	14	1135	1530	32	740	680	800	24	6.0
355L2*	715	645	80	M20	170	22	71.0	14	1135	1530	32	740	680	800	24	6.0
355L2	715	645	110	M20	210	28	100	14	1135	1570	32	740	680	800	24	6.0

* For 2 Pole motors only

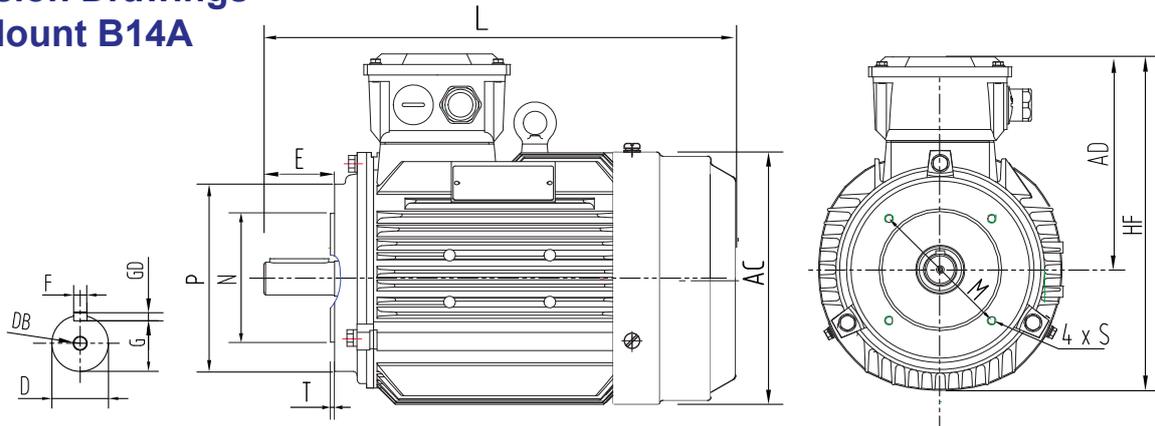
Dimension Drawings
Vertical Mount V1



Frame	AC	AD	D	DB	E	F	G	GD	HF	L	LA	M	N	P	S	T
80	165	145	19	M6	40	6	15.5	6	245	345	12	165	130	200	12	3.5
90S	180	165	24	M8	50	8	20.0	7	265	400	12	165	130	200	12	3.5
90L	180	165	24	M8	50	8	20.0	7	265	430	12	165	130	200	12	3.5
100L	205	175	28	M10	60	8	24.0	7	300	480	14	215	180	250	15	4.0
112M	225	190	28	M10	60	8	24.0	7	315	518	14	215	180	250	15	4.0
132S	270	220	38	M12	80	10	33.0	8	370	560	14	265	230	300	15	4.0
132M	270	220	38	M12	80	10	33.0	8	370	600	14	265	230	300	15	4.0
160M	320	260	42	M16	110	12	37.0	8	435	730	16	300	250	350	19	5.0
160L	320	260	42	M16	110	12	37.0	8	435	760	16	300	250	350	19	5.0
180M	360	265	48	M16	110	14	42.5	9	500	800	18	300	250	350	19	5.0
180L	360	265	48	M16	110	14	42.5	9	250	848	18	300	250	350	19	5.0
200L	400	305	55	M16	110	16	49.0	10	570	845	18	350	300	400	19	5.0
225S	450	325	60	M16	140	18	53.0	11	615	915	20	400	350	450	19	5.0
225M*	450	325	55	M16	110	16	49.0	10	615	910	20	400	350	450	19	5.0
225M	450	325	60	M16	140	18	53.0	11	615	940	20	400	350	450	19	5.0
250M*	510	380	60	M16	140	18	53.0	11	715	1035	22	500	450	550	19	5.0
250M	510	380	65	M16	140	18	58.0	11	715	1035	22	500	450	550	19	5.0
280S*	550	395	65	M16	140	18	58.0	11	760	1115	22	500	450	550	19	5.0
280S	550	395	75	M16	140	20	67.5	12	760	1115	22	500	450	550	19	5.0
280M*	550	395	65	M16	140	18	58.0	11	760	1157	22	500	450	550	19	5.0
280M	550	395	75	M16	140	20	67.5	12	760	1157	22	500	450	550	19	5.0
315S*	630	540	65	M20	140	18	58.0	11	970	1340	25	600	550	660	24	6.0
315S	630	540	80	M20	170	22	71.0	14	970	1340	25	600	550	660	24	6.0
315M*	630	540	65	M20	140	18	58.0	11	970	1425	25	600	550	660	24	6.0
315M	630	540	80	M20	170	22	71.0	14	970	1450	25	600	550	660	24	6.0
315L*	630	540	65	M20	140	18	58.0	11	970	1425	25	600	550	660	24	6.0
315L	630	540	80	M20	170	22	71.0	14	970	1450	25	600	550	660	24	6.0
355M*	715	645	75	M20	140	20	67.5	12	1135	1640	32	740	680	800	24	6.0
355M	715	645	95	M20	170	25	86.0	14	1135	1670	32	740	680	800	24	6.0
355L*	715	645	75	M20	140	20	67.5	12	1135	1640	32	740	680	800	24	6.0
355L	715	645	95	M20	170	25	86.0	14	1135	1670	32	740	680	800	24	6.0
355L2*	715	645	80	M20	170	22	71.0	14	1135	1920	32	740	680	800	24	6.0
355L2	715	645	110	M20	210	28	100	14	1135	1970	32	740	680	800	24	6.0

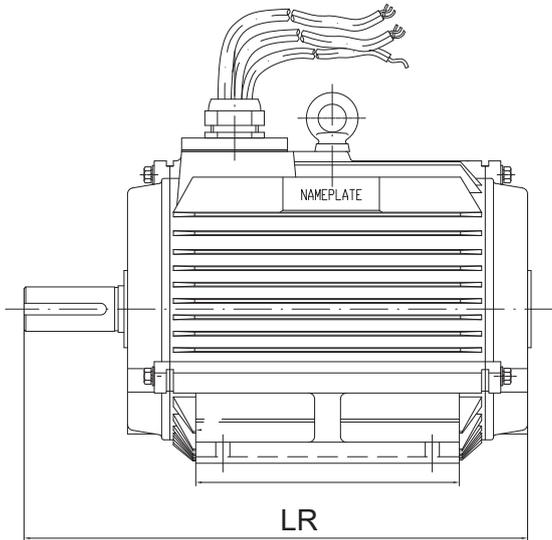
* For 2 Pole motors only

**Dimension Drawings
Face Mount B14A**



Frame	D	DB	E	F	G	GD	M	N	P	S	T	AC	AD	HF	L
80M	19	M6	40	6	15.5	6	100	80	120	M6 X 4	3	167	165	225	295
90S	24	M8	50	8	20	7	115	95	140	M8 X 4	3	190	175	225	345
90L	24	M8	50	8	20	7	115	95	140	M8 X 4	3	190	175	255	385
100L	28	M10	60	8	24	7	130	110	160	M8 X 4	3.5	215	190	275	390
112M	28	M10	60	8	24	7	130	110	160	M8 X 4	3.5	240	190	300	425
132S	38	M12	80	10	33	8	165	130	200	M10X4	3.5	275	220	350	510
132M	38	M12	80	10	33	8	165	130	200	M10X4	3.5	275	220	350	510

**Dimension Drawings
Airstream Application Motor**



Frame	LR (mm)	Frame	LR (mm)
80	250	225M	730
90S	300	250M*	800
90L	330	250M	800
100L	380	280S*	855
112M	405	280S	855
132S	430	280M*	905
132M	470	280M	905
160M	570	315S*	1015
160L	600	315S	1045
180M	630	315M*	1125
180L	680	315M	1155
200L	675	355L*	1330
225S	705	355L	1360
225M*	700		

* 2 Pole motors only

DBA Series , 2 Speed , Pole change

High Speed	Low Speed	High Speed					Low Speed				Weight of motor (Kgs)
KW	KW	Frame	r/min	A	Cos	Eff%	r/min	A	Cos	Eff%	
3000/1500 RPM = 2/4 Poles											
Separate Windings - Y/Y											
0.8	0.16	80M	2840	2.0	0.82	70.0	1400	0.44	0.73	64.0	15
1.2	0.24	90S	2840	2.7	0.85	74.0	1400	0.7	0.73	71.0	18
1.7	0.34	90L	2840	3.5	0.87	75.0	1400	1.4	0.73	72.0	22
2.4	0.48	100L	2880	4.9	0.87	82.0	1400	1.5	0.74	76.0	31
3.3	0.66	112M	2800	6.5	0.87	82.0	1400	1.6	0.74	76.0	42
4.4	0.88	132S1	2880	8.1	0.89	82.0	1400	2.1	0.74	76.0	56
6.1	1.2	132S2	2900	11.5	0.91	83.0	1440	3.1	0.74	80.0	57
8.3	1.7	160M1	2900	15.9	0.91	85.0	1440	4.8	0.77	83.0	106
12	2.4	160M2	2900	20.1	0.91	86.0	1440	6.9	0.75	85.0	107
17	3.4	160L	2900	30	0.91	87.0	1440	7.3	0.76	86.0	130
20	4	180M	2900	36.3	0.91	87.0	1440	10.1	0.75	86.0	162
24	4.8	200L1	2900	42.4	0.91	87.0	1440	13.8	0.75	86.0	230
33	6.6	200L2	2940	70.2	0.91	87.0	1470	15.8	0.76	86.0	232
41	8.2	225M	2940	83.2	0.91	87.0	1470	18.9	0.76	86.0	309
50	10	250M	2950	85.8	0.91	87.0	1480	26.1	0.76	86.0	412
61	12	280S	2950	108.0	0.90	87.0	1480	27.8	0.76	87.0	501
83	17	280M	2950	146.5	0.91	87.2	1480	36.5	0.76	87.0	576
99	20	315S	2955	174.6	0.90	87.0	1480	42.9	0.77	88.0	889
121	24	315M1	2955	212.8	0.91	88.0	1480	51.8	0.77	88.0	982
145	29	315M2	2955	259.1	0.91	88.0	1485	62.0	0.77	88.0	985
176	35	315L	2955	313.0	0.91	88.0	1485	74.0	0.77	88.0	1152

High Speed	Low Speed	High Speed					Low Speed				Weight of motor (Kgs)
KW	KW	Frame	r/min	A	Cos	Eff%	r/min	A	Cos	Eff%	
1500/1000 RPM = 4/6 Poles											
Separate Windings - Y/Y											
0.55	0.18	80M	1410	1.5	0.71	68.0	920	0.57	0.58	62.0	15
0.75	0.25	90S	1420	1.8	0.73	70.0	920	0.95	0.66	63.0	18
1.1	0.36	90L	1420	2.8	0.78	72.0	920	1.0	0.66	68.0	22
1.5	0.5	100L1	1420	3.5	0.81	72.0	920	1.6	0.66	68.0	31
2.2	0.75	100L2	1420	5.0	0.78	81.0	920	2.3	0.67	74.0	32
3.0	1.0	112M	1420	6.3	0.82	81.0	920	2.9	0.68	75.0	42
4	1.3	132S	1440	8.1	0.83	81.0	940	3.5	0.68	75.0	56
5.5	1.8	132M	1450	11.2	0.88	81.0	970	4.6	0.75	75.0	70
7.5	2.5	160M	1450	14.8	0.88	83.0	970	6.2	0.76	77.0	106
11	3.5	160L	1450	21.5	0.88	84.0	970	8.3	0.78	78.0	130
15	5	180L	1460	28.3	0.90	85.0	980	11.7	0.77	80.0	176
18.5	6.1	200L1	1470	36.1	0.86	86.0	980	13.9	0.78	81.0	230
22	7.3	200L2	1470	42.4	0.86	87.0	980	16.5	0.78	82.0	231
33	11	225M	1470	61.5	0.88	88.0	990	22.5	0.84	84.0	309
45	15	250M	1470	80.1	0.88	88.0	990	29.5	0.85	85.0	412
55	18	280M	1480	97.9	0.89	90.0	990	35.2	0.87	85.0	576
75	25	315S	1480	132.0	0.90	91.0	990	47.5	0.87	87.0	889
90	30	315M	1480	154.0	0.91	91.0	990	58.8	0.80	89.0	982
110	36	315L1	1480	183.8	0.91	92.0	990	70.1	0.80	90.1	1152
132	44	315L2	1480	285.2	0.92	92.2	990	87.9	0.80	90.0	1153

* Data are for reference only

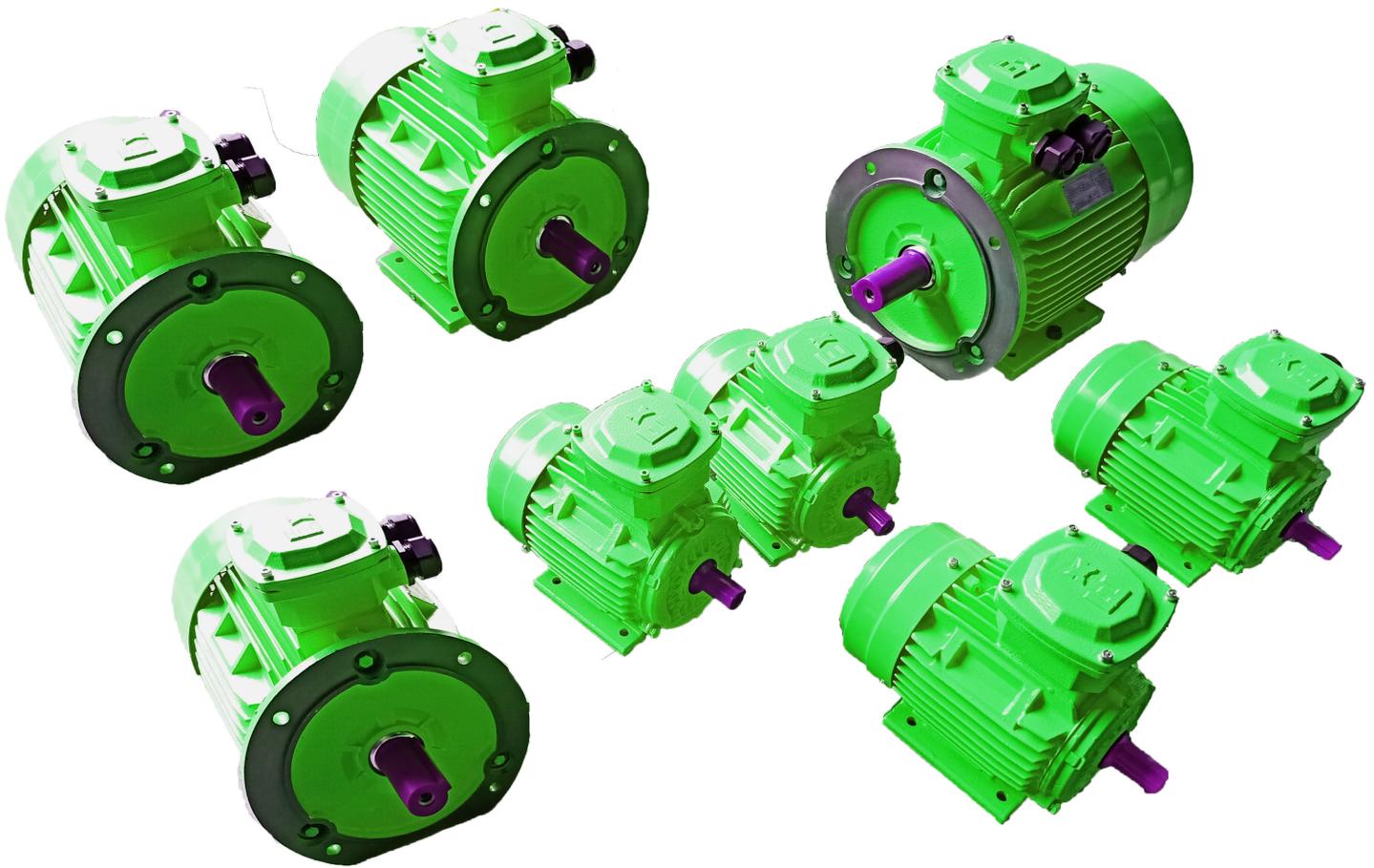
DBA Series , 2 Speed , Pole change

High Speed	Low Speed	High Speed					Low Speed				Weight of motor (Kgs)
KW	KW	Frame	r/min	A	Cos	Effi%	r/min	A	Cos	Effi%	
1500/750 RPM = 4/8 Poles											
Separate Windings - Y/Y											
0.6	0.12	80M1	1380	1.7	0.82	69.0	650	0.7	0.59	46.0	15
0.8	0.16	90S	1390	2.0	0.83	70.0	690	0.8	0.62	54.0	18
1.2	0.24	90L	1400	3.0	0.83	70.0	690	1.1	0.63	55.0	22
1.7	0.34	100L1	1400	4.0	0.80	80.0	690	1.8	0.61	63.0	31
2.4	0.48	100L2	1400	5.4	0.81	80.0	690	2.1	0.61	64.0	32
3.3	0.7	112M	1400	6.8	0.84	83.0	690	2.7	0.61	66.0	42
4.4	0.9	132S	1440	9.23	0.86	80.0	720	3.13	0.62	67.0	56
6.1	1.2	132M	1440	12.5	0.86	82.0	720	4.0	0.63	69.0	70
8.3	1.7	160M	1440	16.6	0.86	84.0	720	5.1	0.65	74.0	106
12	2.4	160L	1450	23.7	0.86	85.0	720	7.1	0.65	75.0	130
17	3.4	180M	1460	32.0	0.90	85.0	730	8.4	0.76	77.0	162
20	4	180L	1460	37.7	0.90	85.0	730	9.9	0.76	77.0	176
24	5	200L	1460	44.7	0.87	89.0	720	13.5	0.67	80.0	230
33	6.6	225S	1460	60.8	0.87	90.0	730	16.9	0.68	83.0	278
41	8.2	225M	1470	75.1	0.88	91.0	730	18.2	0.64	88.0	309
50	10	250M	1470	84.8	0.87	91.0	720	26.2	0.66	88.0	412
61	12	280S	1480	108.1	0.90	91.0	730	28.1	0.66	88.0	501
83	17	280M	1480	145.1	0.92	91.0	730	35.8	0.79	90.0	576
99	20	315S	1480	171.2	0.93	91.0	730	43.8	0.79	90.0	889
121	24	315M	1480	210.5	0.93	92.0	730	50.0	0.82	90.0	982
145	29	315L1	1480	261.4	0.93	92.0	730	61.5	0.82	91.0	1152
176	35	315L2	1480	312.0	0.93	92.0	730	72.8	0.82	91.0	1153

High Speed	Low Speed	High Speed					Low Speed				Weight of motor (Kgs)
KW	KW	Frame	r/min	A	Cos	Effi%	r/min	A	Cos	Effi%	
1000/750 RPM = 6/8 Poles											
Separate Windings - Y/Y											
0.55	0.24	90S	910	1.7	0.75	71.0	690	0.94	0.62	57.0	18
0.75	0.32	90L	910	2.0	0.75	71.0	690	1.1	0.62	57.0	22
1.1	0.47	100L	910	3.2	0.73	71.0	690	2.0	0.60	62.0	31
1.5	0.65	112M	910	4.0	0.73	74.0	690	2.1	0.60	66.0	42
2.2	0.95	132S	910	5.4	0.73	74.0	690	3.2	0.61	67.0	56
3	1.3	132M1	940	7.0	0.76	80.0	700	4.2	0.60	73.0	70
4	1.7	132M2	940	9.9	0.76	80.0	700	5.1	0.60	76.0	71
5.5	2.4	160M	940	11.4	0.76	82.0	700	7.0	0.60	77.0	106
7.5	3.2	160L	940	14.5	0.76	84.0	700	6.7	0.61	82.0	130
11	4.7	180L	940	21.4	0.77	86.0	700	12.3	0.63	82.0	176
13	5.5	200L	960	25.6	0.79	86.0	710	13.1	0.66	82.0	230
15	6.5	225S	960	29.1	0.83	88.0	710	15.2	0.67	82.0	278
21	9	225M	960	39.8	0.83	88.0	710	21.2	0.70	83.0	309
26	11	250M	970	50.3	0.83	89.0	720	24.5	0.78	87.0	412
30	13	280S	970	55.8	0.83	90.0	720	25.8	0.78	87.0	501
37	16	280M	970	77.9	0.86	91.0	720	30.8	0.78	87.0	576
53	23	315S	980	99.5	0.86	91.0	730	49.8	0.81	89.0	889
65	28	315M	980	119.1	0.86	91.0	730	54.3	0.81	89.0	982
80	34	315L1	980	159.1	0.84	91.0	730	68.6	0.78	90.0	1152
92	40	315L2	980	179.5	0.85	92.0	730	81.5	0.80	91.0	1153

* Data are for reference only

Motors for hazardous areas



DBAE/DBAN/DBAtc/DBAtb

Motors used within a hazardous location require a higher level of protection against the risk of harmful occurrences. CMP DBA motors are available in the three most common high protection configurations, Ex e, Ex nA (formerly Ex n) and Ex tc / Ex tb (formerly DIP), supplied with protection ratings IP65 or IP66. DBA Hazardous area motors are available in motor frame sizes 80 to 355. Combinations of protection such as Ex e and Ex tb or Ex nA and Ex tc are also available.



European standards 'EN' series are closely aligned with IEC standards. They share the same numbering and require assessment and certification to ATEX directives, issued by the European Union.

The ATEX directive (2014/34/EC) addresses both the compliance of hazardous area equipment to specified standards, and the compliance to EH&SR (Essential Health & Safety Requirements).

Hazardous area certification

DBA motors in frames 80 to 355 are certified for use in hazardous locations as per ATEX requirements.

The following certificates are currently available:

ATEX

ECM 21 ATEX-B DO51	Exe, Ex eb / Ex tb
ECM 21 ATEX-B DO52	Ex nA, Ex ec / Ex tc

Motor protection types

DBAE - Ex e

Ex e motor protection designates Increased safety as outlined in IEC, EN 60079-7:2014

The increased safety (Ex e) type of protection describes electrical equipment that does not produce arcs or sparks in normal service in which additional measures are applied so as to give increased security against the possibility of excessive temperatures and of the occurrence of arcs and sparks.

Increased safety (Ex e) motors are suitable for Class I, Zone 1, Group II (A,B&C) hazardous areas, and Regal Australia provides for a temperature class of T3 (200°C) in a 40°C ambient (see next page for explanations of classes, zones and groups).

Ex e Protection - t_E time

t_E time is the time it takes for the stator winding or rotor cage to heat up from normal operating temperature, at the highest permitted ambient temperature, to the highest permitted limit temperature (temperature class), with the rotor locked and the stator winding loaded with the starting current.

Motors for hazardous areas

DBAN - Ex nA (formerly Ex n)

Ex nA motor protection designates Non-sparking as outlined in IEC, EN 60079-15:2014. Non-sparking (Ex nA) type of protection describes electrical equipment that, in normal operation, is not capable of igniting a surrounding explosive atmosphere, and a fault capable of causing ignition is not likely to occur.

Non-sparking (Ex nA) motors are suitable for Class I, Zone 2, Group II (A,B&C) hazardous areas, and Regal Australia provides for a temperature class of T3 (200°C) in a 50°C ambient.

Hazardous area classifications

Hazardous areas fall into two categories; hazards due to flammable gases (vapors or mists), and hazards due to combustible dusts (fibres or particles).

Gaseous hazards

Explosive gas atmospheres are classified into zones based on the frequency and duration of their occurrence as below:

Zone 0: an area in which an explosive gas atmosphere is present continuously, for long periods, or is present frequently.

Zone 1: an area in which an explosive gas atmosphere is likely to occur in normal operation occasionally.

Zone 2: an area in which an explosive gas atmosphere is not likely to occur in normal operation, and if it does occur it will exist for a short period only.

Electrical apparatus for potentially explosive atmospheres is divided into the following groups:

Group I: mines susceptible to fire damp (methane).

Group II: other industries.

High surface temperatures can cause ignition of flammable gases or vapors therefore the surface temperature of equipment in hazardous areas must not exceed the ignition temperature of these gases or vapors.

Group I electrical equipment may not have a surface temperature that exceeds 150°C where coal dust can form a layer, and 450°C for internal surfaces where the above risk is avoided by sealing against ingress or dust.

Group II electrical equipment may not have a surface temperature that exceeds its specified temperature class, as listed in the table below:

Temperature class of electrical equipment	Maximum surface temperature of electrical equipment	Ignition temperature of gas or vapor
T1	≤ 450°C	> 450°C
T2	≤ 300°C	> 300°C
T3	≤ 200°C	> 200°C
T4	≤ 135°C	> 135°C
T5	≤ 100°C	> 100°C
T6	≤ 85°C	> 85°C

DBAtc - Ex tc / DBAtb - Ex tb (formerly dIP)

Ex tc / Ex tb motor protection designates dust-excluding ignition proofing as outlined in IEC or AS/NZS61241 series of standards.

Dust-excluding ignition proofing (Ex tc / Ex tb) type of protection describes electrical equipment which is enclosed so that it excludes dust, and which will not permit arcs, sparks or heat otherwise generated or liberated inside the enclosure to cause ignition of exterior accumulations or atmospheric suspensions of a specific dust on or in the vicinity of the enclosure.

Dust-excluding ignition proofed (Ex tc / Ex tb) motors are suitable for Zone 21 or 22 dust laden hazardous areas, and CMP provides for a temperature class of T4 (135°C) in a 50°C ambient.

combustible dust hazards

Many dusts which are generated, processed, handled and stored, are combustible. When ignited, they can burn rapidly and with considerable explosive force if mixed with air in the appropriate proportions. Electrical apparatus used in locations where this hazard is present, requires adequate protection so as to reduce the likelihood of ignition of the external explosive atmosphere.

Areas where dusts, flyings and fibres in air occur in dangerous quantities are classified as hazardous and are divided into three zones according to the level of risk.

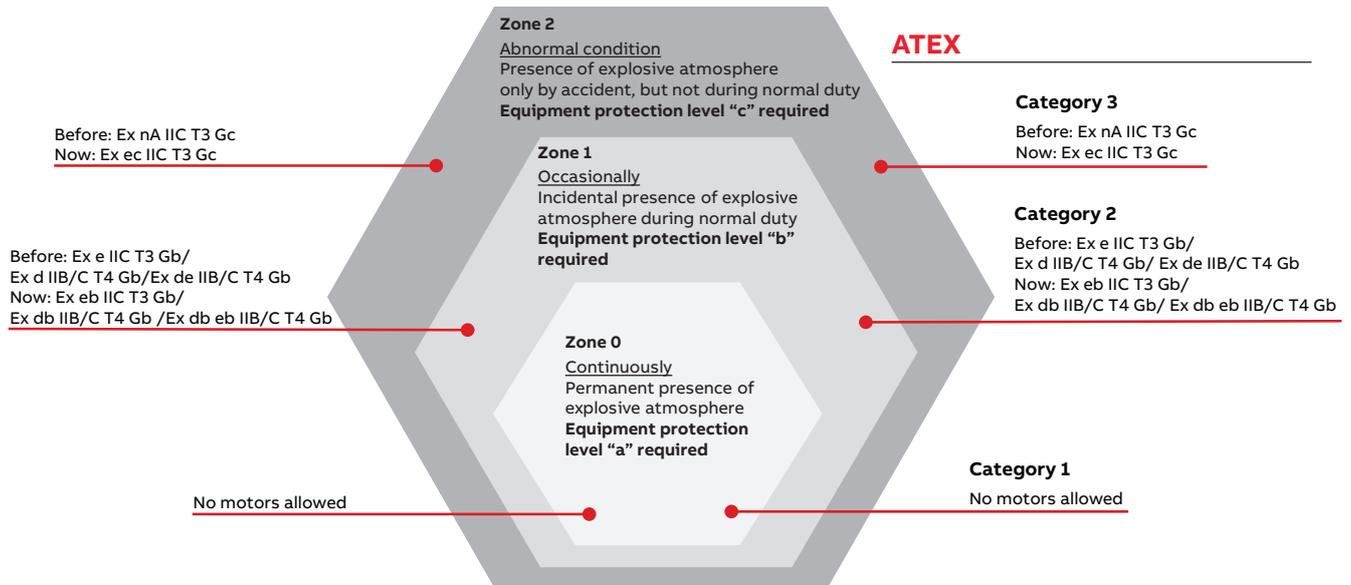
Zone 20: An area in which combustible dust, as a cloud, is present continuously or frequently during normal operation, in sufficient quantity to be capable of producing an explosive dust/air mixture, and/or where layers of dust of uncontrollable and excessive thickness can be formed.

Zone 21: An area not classified as Zone 20 in which combustible dust, as a cloud, is likely to occur during normal operation, in sufficient quantities to be capable of producing an explosive dust/air mixture.

Zone 22: An area not classified as Zone 21 in which combustible dust clouds may occur infrequently, and persist for only a short period, or in which accumulations or layers of combustible dust may be present under abnormal conditions and give rise to combustible dust/air mixtures. Where, following an abnormal condition, the removal of dust accumulations or layers cannot be assured then the area is to be classified.

Motors for hazardous areas

Zones -ATEX



Note: Based on traditional relationship between EPL`s and zones.

There are systems in place worldwide to classify explosive atmospheres by zones, according to the risk posed by explosive gas ("G") or dust ("D").

Classification of explosive atmospheres according to CENELEC and IEC

The following standards define areas according to the presence of gas or dust in the atmosphere:

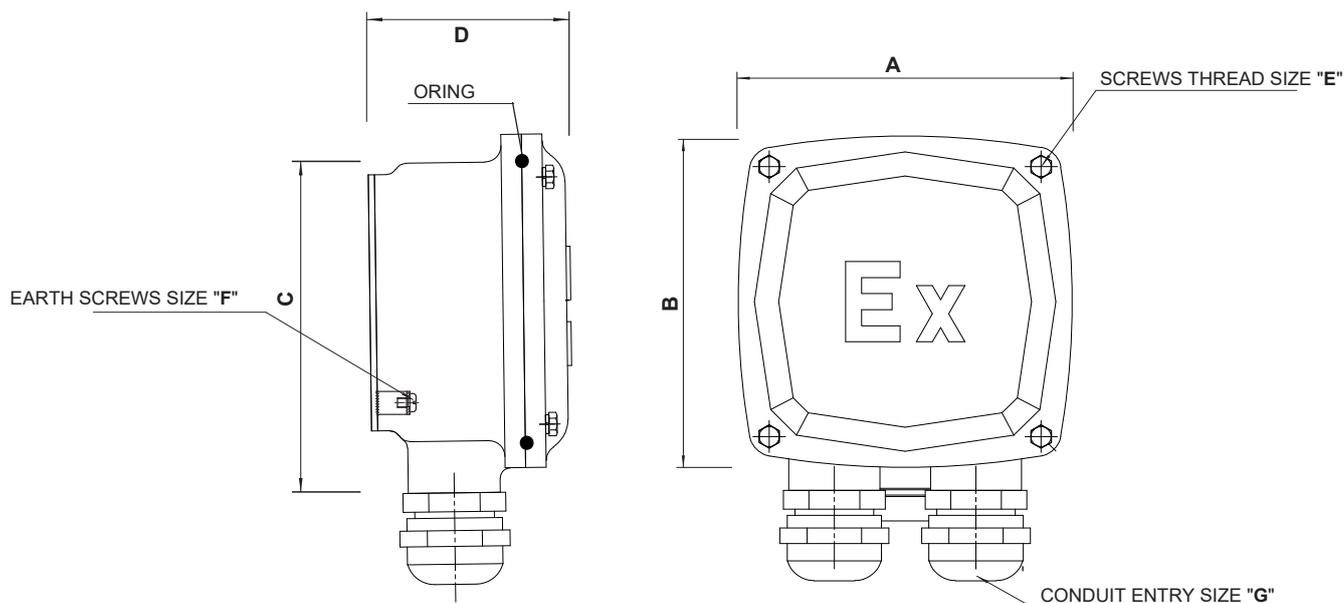
- IEC/EN 60079-10-1 Gas
- IEC/EN 60079-10-2 Dust

Standard IEC 60079-0 EN 60079-0 Group	EPL	Protection level	Installation Zone acc. to IEC 60079-10-x EN 60079-10-x Zones	ATEX Directive 2014/34/EU Equipment group	Equipment category	Main motor protection types	
I (Mines)	Ma	very high	NA	I (Mines)	M1	NA	
	Mb	high			M2		
II (Gas)	Ga	very high	0	II (Surface)	1G	Ex d/Ex de Ex p, Ex db, Ex db eb, Ex p, Ex eb (Ex e)	
	Gb	high	1		2G		
	Gc	enhanced	2		3G		Ex ec (Ex nA)
III Dust	Da	very high	20		1D	NA	
	Db	high	21		2D		Ex tb IP 65
	Dc	enhanced	22		3D		Ex tc IP 65/IP 55

Motors for hazardous areas

Motor Terminal Box and Cable Entry

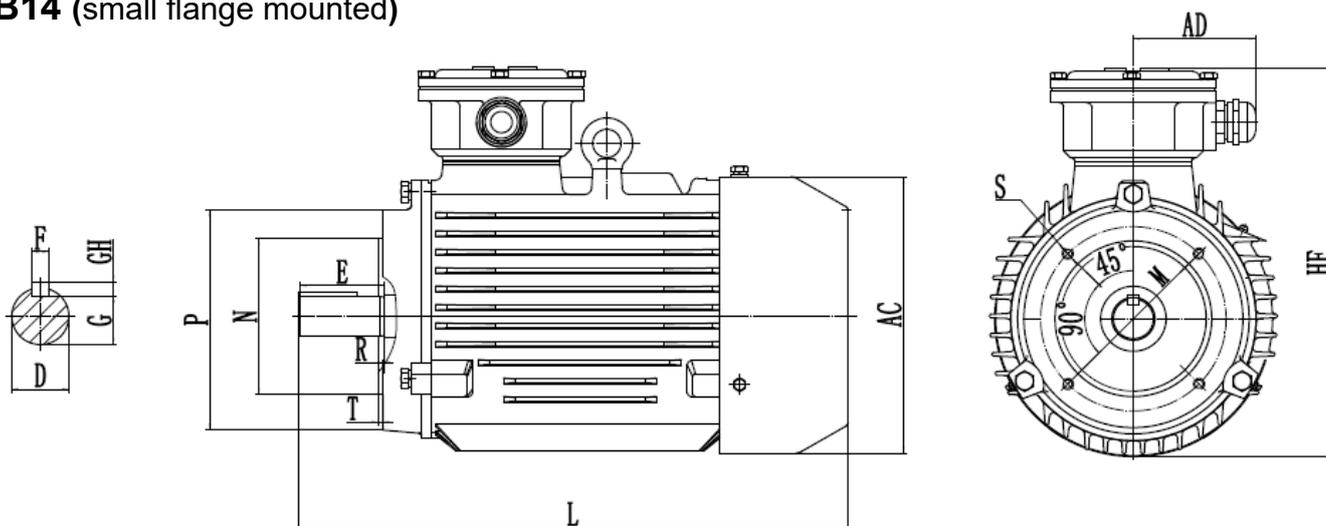
- Standard terminal box is mounted on the Top. Motors are also available with on the right hand



Frame Size	A	B	C	D	E	F	G
80	116	116	107	63	M4	M5	1-M25x1.5
90-100	116	116	107	63	M5	M5	1-M25x1.5
112-132	136	136	128	80	M5	M5	2-M32x1.5
160-180	165	165	162	95	M6	M5	2-M32x1.5
200-255	240	240	222	124	M8	M8	2-M40x1.5
250-280	295	295	290	148	M10	M10	2-M50x1.5
315	340	340	336	198	M16	M12	2-M63x1.5
355	420	420	400	230	M20	M12	2-M63x1.5

Dimensions & Mounting

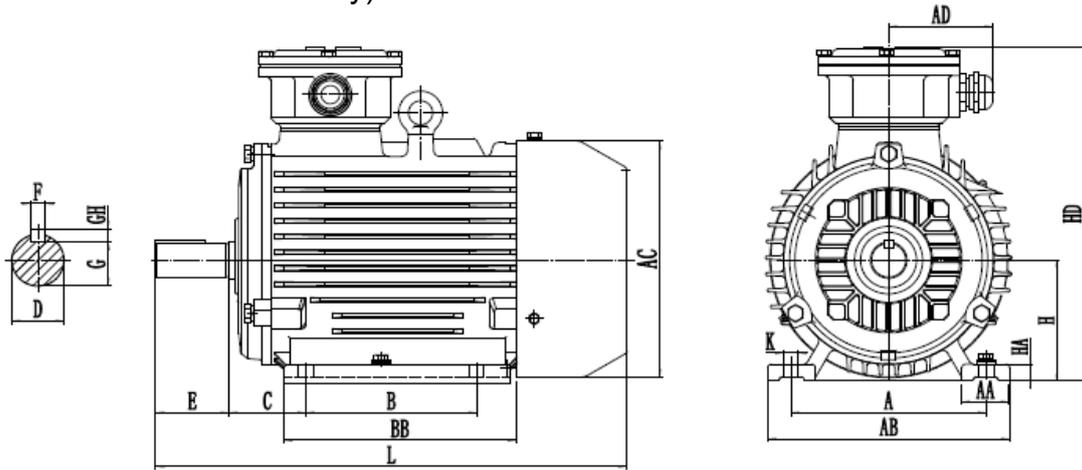
B14 (small flange mounted)



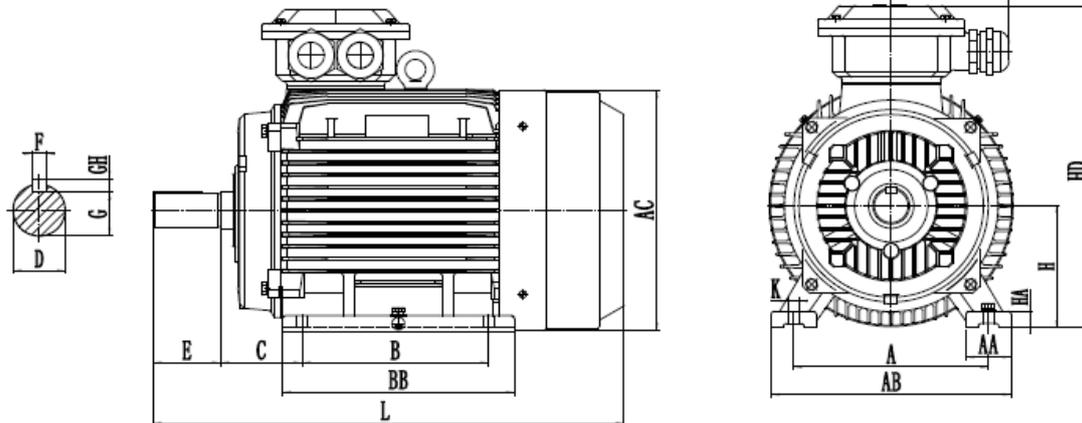
Frame	Poles	Mounting Dimension										Overall Dimension			
		D	E	F	G	M	N	P	R	S	T	AC	AD	HF	L
80M	2,4,6,8	19	40	6	15.5	100	80	120	0	4-M6	3	165	95	240	295
90S	2,4,6,8	24	50	8	20	115	95	140	0	4-M8	3	180	95	250	320
90L	2,4,6,8														345
100L	2,4,6,8	28	60	8	24	130	110	160	0	4-M8	3.5	205	95	280	390
112M	2,4,6,8	28	60	8	24	130	110	160	0	4-M8	3.5	225	115	315	425

Motors for hazardous areas

B3 (Horizontal foot mounted only)



H80-132mm

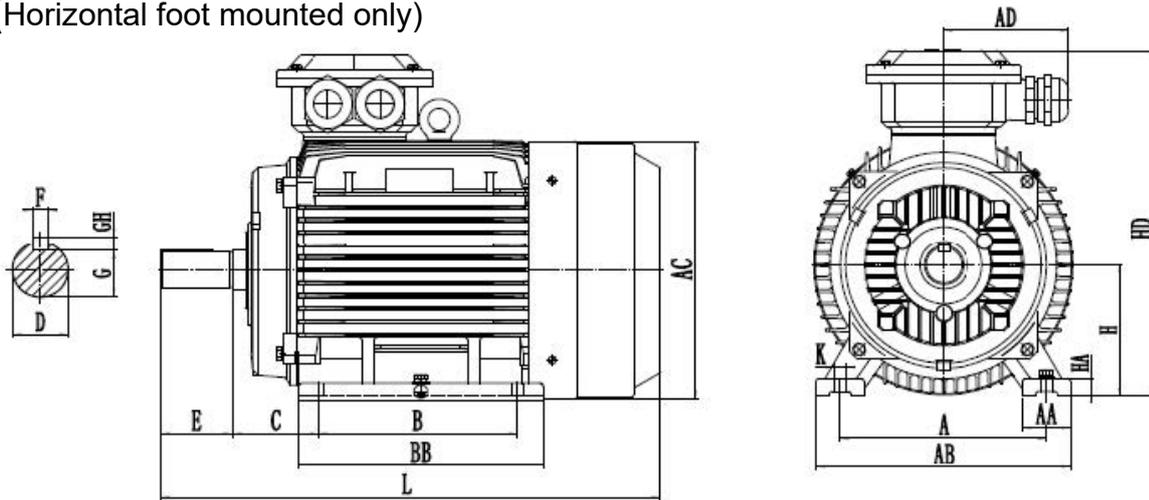


H160-355mm

Frame	Pole	Mounting Dimension									Overall Dimension							
		A	B	C	D	E	F	G	H	K	AA	BB	HA	AB	AC	AD	HD	L
80M	2.4.6.8	125	100	50	19	40	6	15.5	80	10	32	135	10	160	165	95	240	295
90S	2.4.6.8	140	100	56	24	50	8	20	90	10	34	145	12	180	180	95	255	320
90L			125															170
100L	2.4.6.8	160	140	63	28	60	8	24	100	12	39	186	14	200	205	95	285	390
112M	2.4.6.8	190	140	70	28	60	8	24	112	12	45	200	14	230	225	115	320	425
132S	2.4.6.8	216	140	89	38	80	10	33	132	12	55	190	18	265	270	115	410	475
132M			178									230						510
160M	2.4.6.8	254	210	108	42	110	12	37	160	15	65	260	20	315	320	136	430	610
160L			254									304						655
180M	2.4.6.8	279	241	121	48	110	14	42.5	180	15	70	311	22	355	360	136	480	680
180L			279									349						715
200L	2.4.6.8	318	305	133	55	110	16	49	200	19	74	379	26	395	400	190	540	770
225S	4.8	356	286	149	60	140	18	53	225	19	78	375	28	435	450	190	585	795
225M	2		311	149	55	110	16	49				400						800
	4.6.8		60	140	18	53	825											
250M	2	406	349	168	60	140	18	53	250	24	80	445	30	490	510	225	665	890
	4.6.8				65	140	18	58										
280S	2	457	368	190	65	140	18	58	280	24	90	485	35	545	550	225	710	970
	4.6.8				75	140	20	67.5										

Motors for hazardous areas

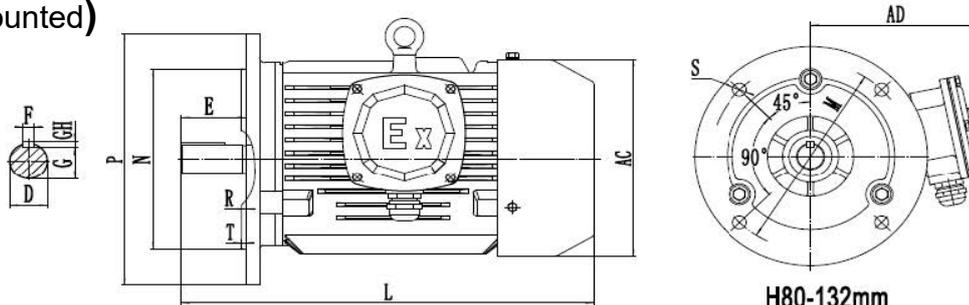
B3 (Horizontal foot mounted only)



H160-355mm

Frame	Pole	Mounting Dimension									Overall Dimension																			
		A	B	C	D	E	F	G	H	K	AA	BB	HA	AB	AC	AD	HD	L												
280M	2	157	419	190	65	140	18	58	280	24	90	536	35	545	550	225	710	1025												
	75				140	20	67.5																							
315S	2	508	406	216	65	140	18	58	315	28	120	610	45	635	630	250	885	1180												
	4.6.8.10				80	170	22	71										1210												
315M	2				65	140	18	58										610	45	635	630	250	885	1215						
	4.6.8.10				80	170	22	71										610	45	635	630	250	885	1245						
315L	2	508	406	216	65	140	18	58	315	28	120	610	45	635	630	250	885	1290												
	4.6.8.10				80	170	22	71										680	1320											
355M	2	610	560	254	75	140	20	67.5	355	28	130	690	52	735	715	290	1040	1390												
	4.6.8.10				95	170	25	86										750	1420											
355L1	2				630	560	254	75										140	20	67.5	355	28	130	690	52	735	715	290	1040	1500
	4.6.8.10							95										170	25	86										750
355L2	2	630	560	254	75	140	20	67.5	355	28	130	690	52	735	715	290	1040	1500												
	4.6.8.10				95	170	25	86										750	1530											

B5 (Flange mounted)

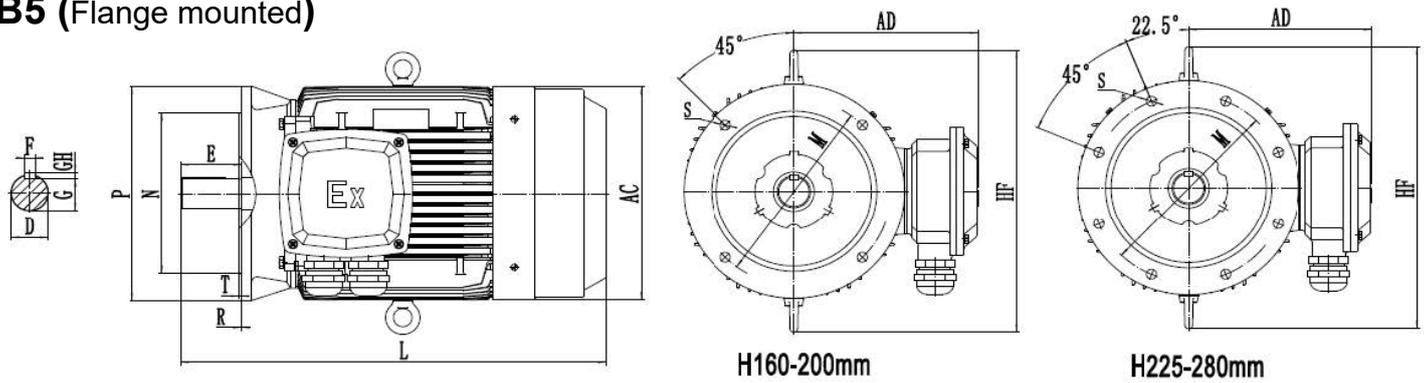


H80-132mm

Frame	Poles	Mounting Dimension										Overall Dimension			
		D	E	F	G	M	N	P	R	S	T	AC	AD	HF	L
80M	2.4.6.8	19	40	6	15.5	165	130	200	0	4-φ12	3.5	165	160	/	295
90S	2.4.6.8	24	50	8	20	165	130	200	0	4-φ12	3.5	180	165	/	320
90L															345
100L	2.4.6.8	28	60	8	24	215	180	250	0	4-φ15	4	205	180	/	390
112M	2.4.6.8	28	60	8	24	215	180	250	0	4-φ15	4	225	205	/	425
132S	2.4.6.8	38	80	10	33	265	230	300	0	4-φ15	4	270	240	/	475
132M															510

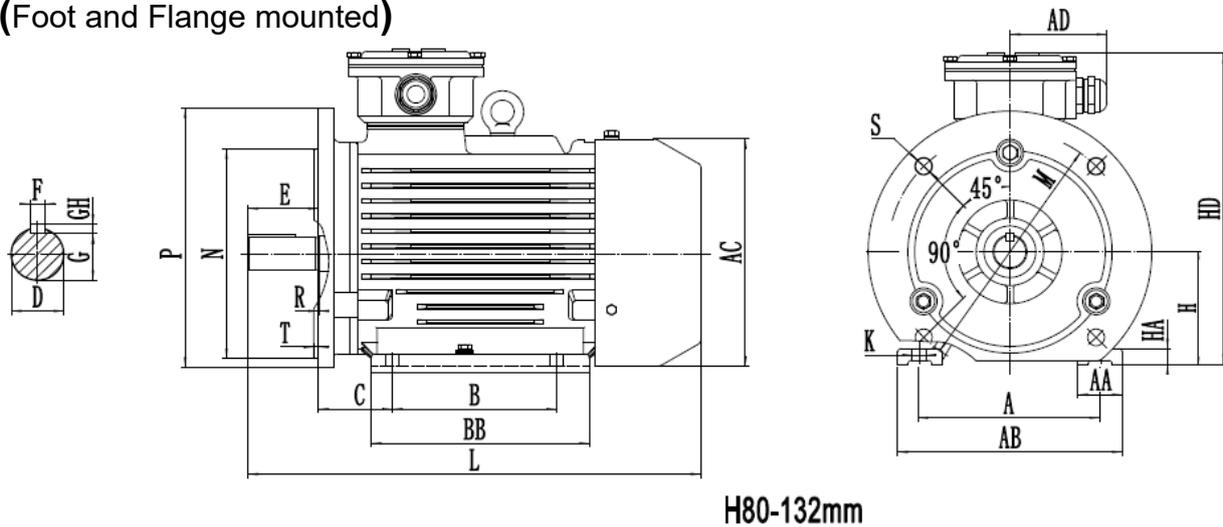
Motors for hazardous areas

B5 (Flange mounted)



机座号 Frame	极数 Poles	安 装 尺 寸 Mounting Dimension										外形尺寸 Overall Dimension			
		D	E	F	G	M	N	P	R	S	T	AC	AD	HF	L
160M	2.4.6.8	42	110	12	37	300	250	350	0	4-φ19	5	320	270	435	610
160L															655
180M	2.4.6.8	48	110	14	42.5	300	250	350	0	4-φ19	5	360	285	490	680
180L															715
200L	2.4.6.8	55	110	16	49	350	300	400	0	4-φ19	5	400	335	550	770
225S	4.8	60	140	18	53	400	350	450	0	8-φ19	5	450	360	580	795
225M	2	55	110	16	49										800
		4.6.8	60	140	18	53	825								
250M	2	60	140	18	53	500	450	550	0	8-φ19	5	510	415	695	890
		4.6.8			58										
280S	2	65	140	18	58	500	450	550	0	8-φ19	5	550	435	725	975
		4.6.8			75										
280M	2	65		18	58										1025
		4.6.8													

B35 (Foot and Flange mounted)

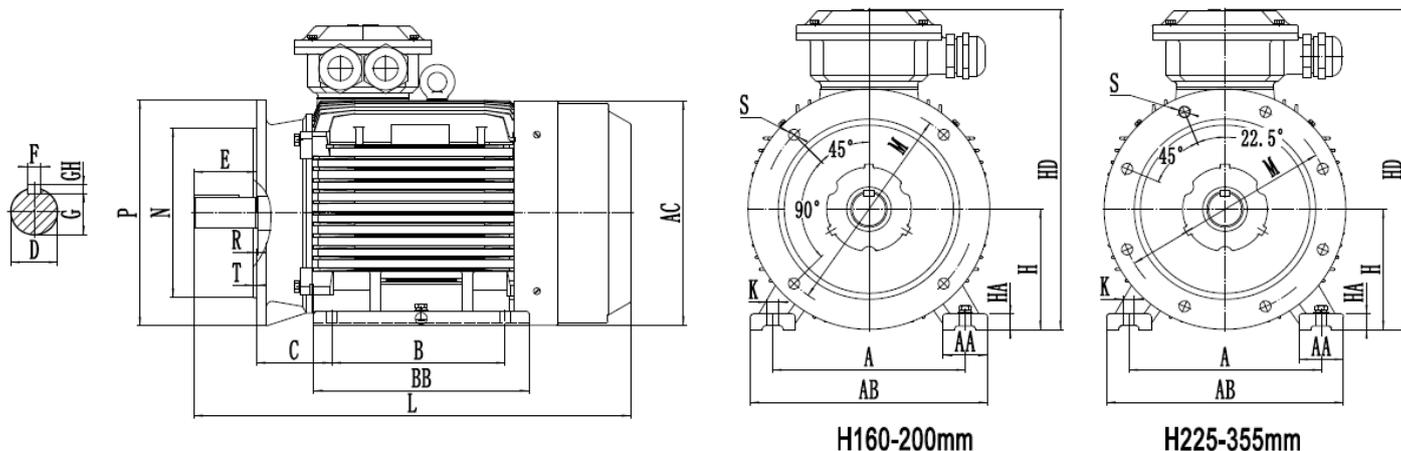


H80-132mm

Frame	Poles	Mounting Dimension														Overall Dimension									
		A	B	C	D	E	F	G	H	M	N	P	R	S	T	K	AA	BB	HA	AB	AC	AD	HD	L	
80M	2.4.6.8	125	100	50	19	40	6	15.5	80	165	130	200	0	4-φ12	3.5	10	32	130	10	160	165	95	240	295	
90S	2.4.6.8	140	100	56	24	50	8	20	90	165	130	200	0	4-φ12	3.5	10	34	145	12	180	180	95	255	320	
90L			125															170						345	
100L	2.4.6.8	160	140	63	28	60	8	24	100	215	180	250	0	4-φ15	4	12	39	186	14	200	205	95	285	390	
112M	2.4.6.8	190	140	70	28	60	8	24	112	215	180	250	0	4-φ15	4	12	45	200	14	230	225	115	320	425	
132S	2.4.6.8	216	140	89	38	80	10	33	132	265	230	300	0	4-φ15	4	12	55	190	18	265	270	115	410	475	
132M			178															230						510	

Motors for hazardous areas

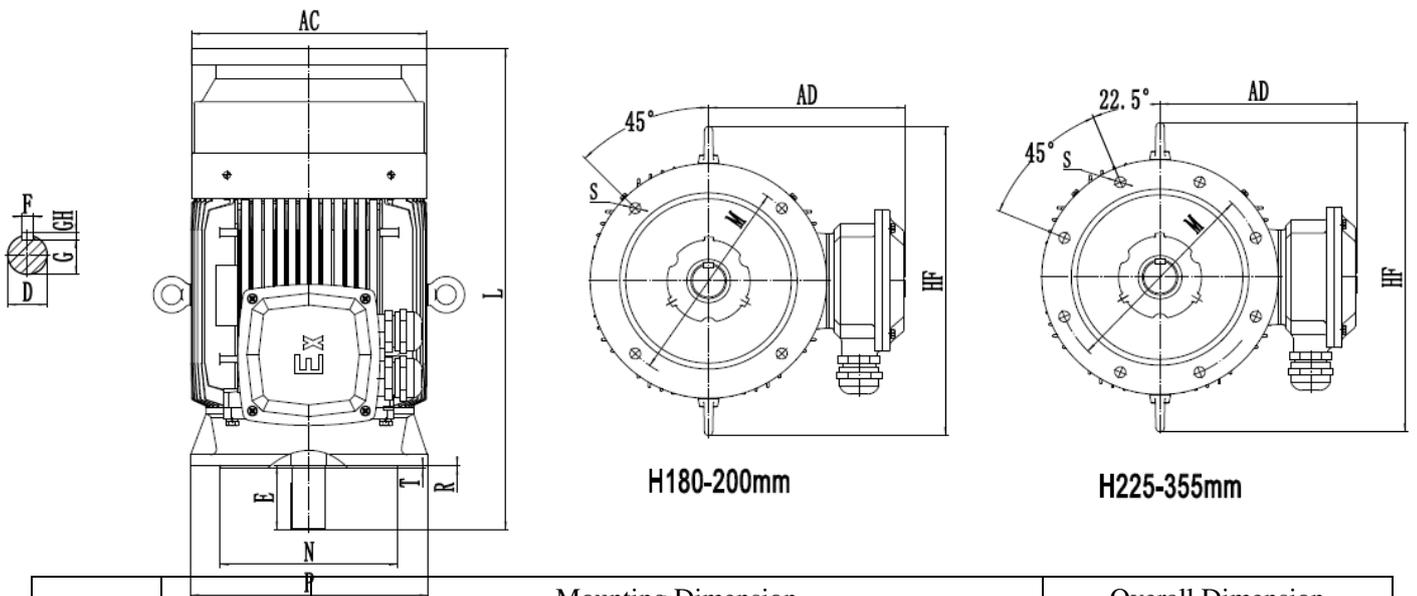
B35 (Foot and B5 flange mounted)



Frame	Poles	Mounting Dimension														Overall Dimension								
		A	B	C	D	E	F	G	H	M	N	P	R	S	T	K	AA	BB	HA	AB	AC	AD	HD	L
160M	2.4.6.8	254	210	108	42	110	12	37	160	300	250	350	0	4-φ19	5	15	65	260	20	315	320	136	430	610
160L			0										304					655						
180M	2.4.6.8	279	241	121	48	110	14	42.5	180	300	250	350	0	4-φ19	5	15	70	311	22	355	360	136	480	680
180L			0										349					715						
200L	2.4.6.8	318	305	133	55	110	16	49	200	350	300	400	0	4-φ19	5	19	74	379	26	395	400	190	540	770
225S	4.8	356	286	149	60	140	18	53	225	400	350	450	0	8-φ19	5	19	78	375	28	435	450	190	585	795
225M	2	356	311	149	55	110	16	49	225	400	350	450	0	8-φ19	5	19	78	400	28	435	450	190	585	800
	4.6.8				60	140	18	53																825
250M	2	406	349	168	60	140	18	53	250	500	450	550	0	8-φ19	5	24	80	445	30	490	510	225	665	890
	4.6.8				65	140	18	58																890
280S	2	457	368	190	65	140	18	58	280	500	450	550	0	8-φ19	5	24	90	485	35	545	550	225	710	975
	4.6.8				75	140	20	67.5										975						
280M	2	457	419	190	65	140	18	58	280	500	450	550	0	8-φ19	5	24	90	536	35	545	550	225	710	1025
	4.6.8				75	140	20	67.5										1025						
315S	2	508	406	216	65	140	18	58	315	600	550	660	0	8-φ24	6	28	120	570	45	635	630	250	885	1180
	4.6.8.10				80	170	22	71										1210						
315M	2	508	457	216	65	140	18	58	315	600	550	660	0	8-φ24	6	28	120	610	45	635	630	250	885	1215
	4.6.8.10				80	170	22	71										1245						
315L	2	508	457	216	65	140	18	58	315	600	550	660	0	8-φ24	6	28	120	680	45	635	630	250	885	1290
	4.6.8.10				80	170	22	71										1320						
355M	2	610	560	254	75	140	20	67.5	355	740	680	800	0	8-φ24	6	28	130	690	52	735	715	290	1040	1390
	4.6.8.10				95	170	25	86										1420						
355L1	2	610	560	254	75	140	20	67.5	355	740	680	800	0	8-φ24	6	28	130	750	52	735	715	290	1040	1500
	4.6.8.10				95	170	25	86										1530						
355L2	2	610	560	254	75	140	20	67.5	355	740	680	800	0	8-φ24	6	28	130	750	52	735	715	290	1040	1500
	4.6.8.10				95	170	25	86										1530						

Motors for hazardous areas

V1 (Vertical shaft down footless flange mounted)



Frame	Poles	Mounting Dimension										Overall Dimension			
		D	E	F	G	M	N	P	R	S	T	AC	AD	HF	L
180M	2,4,6,8	48	110	14	42.5	300	250	350	0	4-Φ19	5	360	285	490	725
180L															765
200L	2,4,6,8	55	110	16	49	350	300	400	0	4-Φ19	5	400	335	550	825
225S	4,8	60	140	18	53	400	350	450	0	8-Φ19	5	450	360	580	855
225M	2	55	110	16	49										860
		4,6,8	60	140	18	53	885								
250M	2	60	140	18	53	500	450	550	0	8-Φ19	5	510	380	695	955
		4,6,8			65										
280S	2	65	140	18	58	500	450	550	0	8-Φ19	5	550	395	725	1045
		4,6,8		75	20										
280M	2	65		18	58										1100
		4,6,8		75	20										
315S	2	65	140	18	58	600	550	660	0	8-Φ24	6	630	565	860	1310
		4,6,8,10	80	170	22										71
315M	2	65	140	18	58										1345
		4,6,8,10	80	170	22										71
315L	2	65	140	18	58	1420									
		4,6,8,10	80	170	22	71	1450								
355M	2	75	140	20	67.5	740	680	800	0	8-Φ24	6	715	680	980	1530
		4,6,8,10	95	170	25										86
355L1	2	75	140	20	67.5										1640
		4,6,8,10,	95	170	25										86
355L2	2	75	140	20	67.5	1640									
		4,6,8,10	95	170	25	86	1670								

Introduction

CMP's E2AD/E3AD range of IE2/IE3 Ex d / Exde 'flameproof' motors are certified for use in Zone 1, Class 1, Group IIA, IIB, IIC hazardous locations. These motors are designed to contain any sparks within the motor without igniting external vapours. They incorporate features such as a robust cast iron construction and special terminal box to meet the stringent certification requirements.

The complete E2AD/E3AD range covers sizes 63 to 450, three phase 2, 4, 6, 8 & 10 pole, with foot and flange mounting options .

Certification

The E2AD/E3AD range is specially designed and certified to the essential health and safety requirements by compliance with applied standard: IEC60079-0-2018, EN 60079-1:2014, EN60079-31:2014, EN1127-1:2019.



ATEX certification number is **ECM 20 ATEX-B WQ50**

II 2G Ex d IIB T4 Gb (T3, T5, T6 as optional) Tamb: -45°C to 60°C

II 2G Ex d IIC T4 Gb (T3, T5, T6 as optional) Tamb: -45°C to 60°C

II 2G Ex d e IIC T4 Gb (T3, T5, T6 as optional) Tamb: -45°C to 60°C

II 2D Ex tb IIIC T85°C... T150°C Db IP65 Tamb: -45°C to 60°C

Standards and specifications

The main dimensions and rated outputs of the E2AD/E3AD series generally conform to International Standards IEC 60034 and IEC 60072.

Operating parameters

Motors are designed with the following parameters:

- Continuous duty (S1)
- Ambient temperatures up to 60°C
- Installation at altitudes up to 1000 metres
- Motors may be suitable for other operating parameters, enquire with CMP.

Performance data is based on these parameters and may need adjustment for different conditions. Motors can be manufactured for any supply between 100 and 1100 Volts and frequencies 0 Hz to 70 Hz.

Terminal box

The terminal box of the E2AD/E3AD series is amply sized to allow for termination of cables and to accept flameproof glands. Cable entry size as below table :

Motor Frame	Cable Entry	Thermistor Entry
63~71	2 x M25 x 1.5	1 x M20 x 1.5
80~100	2 x M25 x 1.5	1 x M20 x 1.5
112~132	2 x M32 x 1.5	1 x M20 x 1.5
160~180	2 x M32 x 1.5	1 x M20 x 1.5
200~225	1 x M50 x 1.5	1 x M20 x 1.5
250~280	1 x M63 x 1.5	1 x M20 x 1.5
315~355	2 x M63 x 1.5	1 x M20 x 1.5

F class insulation, T4 surface temperature

E2AD/E3AD series motors have F class insulation and B class temperature rise. This design feature assures cool running of the motor. Certified Ex d T4 class motors have a maximum allowable surface temperature of 135°C. (T6= 85°C ,T5=100°C , T3=200°C) surface temperature class is available on request.

Degree of protection

Level of enclosure protection for the E2AD/E3AD series is IP55. For IP65, IP56 or IP66 is available on request.

Thermistors

E2AD/E3AD, (T4, T5, T6) motors are fitted, as standard, with one set of (3) 145°C PTC thermistors and are terminated within the main terminal box.

Internal connections

Frame sizes 63 to 100 have three terminals suitable for DOL starting. Frame sizes 132 to 315 have six terminals suitable for DOL or Star/Delta starting.

VVVF drive selection

E2AD/E3AD Ex d hazardous location motors require thermistors when used in conjunction with VVVF drive to ensure the temperature rise remains below the certified T4 level. Exd/VVVF drive packages are available including a force ventilation option on request.

Bearing

Bearings fitted are deep groove ball type and are the same size both ends on frames 63 to 132. 315 Frame motors have a deep groove ball type bearing on the Non Drive end, with a deep groove ball bearing on the drive end for 2 Pole motors, and a cylindrical roller bearing for 4, 6, and 8 Pole motors. Frames 80 to 180 have sealed for life bearings. Frames 200 to 315 have open bearings that are capable of being replenished via grease nipples.

Frame Size	DE		NDE	
	2P	4P	2P	4P
63	6201		6201	
71	6202		6202	
80	6204		6204	
90	6205		6205	
100	6206		6206	
112	6206		6206	
132	6208		6208	
160	6209	6309	6209	
180	6211	6311	6211	
200	6212	6312	6212	
225	6312	6313	6312	
250	6313	6314	6313	
280	6314	6317	6314	
315	6316	6319	6316	6319
355	6319	6322	6319	6322

Paint finish

Motors are painted with a high quality enamel finish. The standard colour is Bright Red Orange (RAL 2008), with other colours available on request.

Gaseous Hazards

Explosive gas atmospheres are classified into zones based on the frequency and duration of their occurrence as below:

- Zone 0: an area in which an explosive gas atmosphere is present continuously, for long periods, or is present frequently.
- Zone 1: an area in which an explosive gas atmosphere is likely to occur in normal operation occasionally.
- Zone 2: an area in which an explosive gas atmosphere is not likely to occur in normal operation, and if it does occur it will exist for a short period only.

Electrical apparatus for potentially explosive atmospheres is divided into the following groups.

Group I : mines susceptible to fire damp (methane)

Group II : other industries

High surface temperatures can cause ignition of flammable gases or vapors therefore the surface temperature of equipment in hazardous areas must not exceed the ignition temperature of these gases or vapors.

Group I : electrical equipment may not have a surface temperature that exceeds 150°C where coal dust can form a layer, and 450°C for internal surfaces where the above risk is avoided by sealing against ingress or dust.

Group II : electrical equipment may not have a surface temperature that exceeds its specified temperature class, as listed in the table below:

Temperature class of electrical equipment	Maximum surface temperature of electrical equipment	Ignition temperature of gas or vapor
T1	≤450°C	>450°C
T2	≤300°C	>300°C
T3	≤200°C	>200°C
T4	≤135°C	>135°C
T5	≤100°C	>100°C
T6	≤85°C	>85°C

Electrical apparatus of Group II may be subdivided according to the nature of the potentially explosive atmosphere for which it is intended.

Group specification and characteristics of some common flammable liquids, gases, and vapors are listed in the table below:

Material	Bolling point [°C]	Flash point [°C]	Ignition temp. [°C]	Gas group
Acetone	56	-20	465	IIA
Acetylene	-83	Gas	305	IIC
Ammonia	-33	Gas	651	IIA
Benzene	80	12	498	IIA
Butane	-1	Gas	287	IIA
Carbon-Monoxide	-192	Gas	609	IIA
Ethane	-89	Gas	472	IIA
Ethyl Alcohol	78	55	363	IIA
Ethylene	-104	Gas	450	IIB
Haptane	98	-4	204	IIA
Hydrogen	-252	Gas	500	IIC
Hydrogen cyanide	26	-18	538	IIB
Methane	-162	Gas	537	IIA
Propane	-42	Gas	432	IIA
Toluene	111	4	480	IIA

Note: The data given in this table is derived from NFPA 325M. Flashpoint is the lowest temperature at which a material gives off sufficient vapor to form an explosive gas / air mixture in the air immediately above the surface.

Equipment within a specific group may only be used within a location with an equal or less level of hazard. Allowable groups are summarized in the table below:

Gas group	Allowable equipment group
IIA	IIA, IIB, IIC
IIB	IIB, IIC
IIC	IIC



Dual certification

Ex d/de motors can also be used for Dust/Ex t applications in zone 21. The following combinations are possible:

- Ex tb IIIB T125 °C Db, IP 65 for zone 21 + Ex d/de IIB/C T3 Gb
- Ex tb IIIC T125 °C Db, IP 65 for zone 21 + Ex d/de IIB/C T3 Gb

ExtD Dust Proof

Dust-excluding ignition proofing (Ex tD) type of protection describes electrical equipment which is enclosed so that it excludes dust, and which will not permit arcs, sparks or heat otherwise generated or liberated inside the enclosure to cause ignition of exterior accumulations or atmospheric suspensions of a specific dust on or in the vicinity of the enclosure.

Dust-excluding ignition proofed (Ex tD) motors are suitable for Zone 21 and 22 dust laden hazardous areas, and CMP Australia provides for a temperature class of T4 (135°C) in a 50°C ambient.

Combustible dust hazards

Many dusts which are generated, processed, handled and stored, are combustible. When ignited, they can burn rapidly and with considerable explosive force if mixed with air in the appropriate proportions. Electrical apparatus used in locations where this hazard is present, requires adequate protection so as to reduce the likelihood of ignition of the external explosive atmosphere.

Areas where dusts, flyings and fibres in air occur in dangerous quantities are classified as hazardous and are divided into three zones according to the level of risk.

Zone 20: An area in which combustible dust, as a cloud, is present continuously or frequently during normal operation, in sufficient quantity to be capable of producing an explosive dust/air mixture, and/or where layers of dust of uncontrollable and excessive thickness can be formed.

Zone 21: An area not classified as Zone 20 in which combustible dust, as a cloud, is likely to occur during normal operation, in sufficient quantities to be capable of producing an explosive dust/air mixture.

Zone 22: An area not classified as Zone 21 in which combustible dust clouds may occur infrequently, and persist for only a short period, or in which accumulations or layers of combustible dust may be present under abnormal conditions and give rise to combustible dust/air mixtures. Where, following an abnormal condition, the removal of dust accumulations or layers cannot be assured then the area is to be classified.

Ignition protection is based on the limitation of the maximum surface temperature of the enclosure and on other surfaces which could be in contact with dust and on the restriction of dust ingress into the enclosure by the use of dust tight or dust protected enclosures.

The following table summarizes the relationship between temperature class, surface temperature and cloud or layer ignition temperature (whichever is the lower)

Temperature class of electrical equipment	Maximum surface temperature of electrical equipment	Cloud or layer ignition temperature of dust
T1	≤450°C	≥500°C
T2	≤300°C	≥350°C
T3	≤200°C	≥250°C
T4	≤135°C	≥185°C
T5	≤100°C	≥150°C
T6	≤85°C	≥135°C

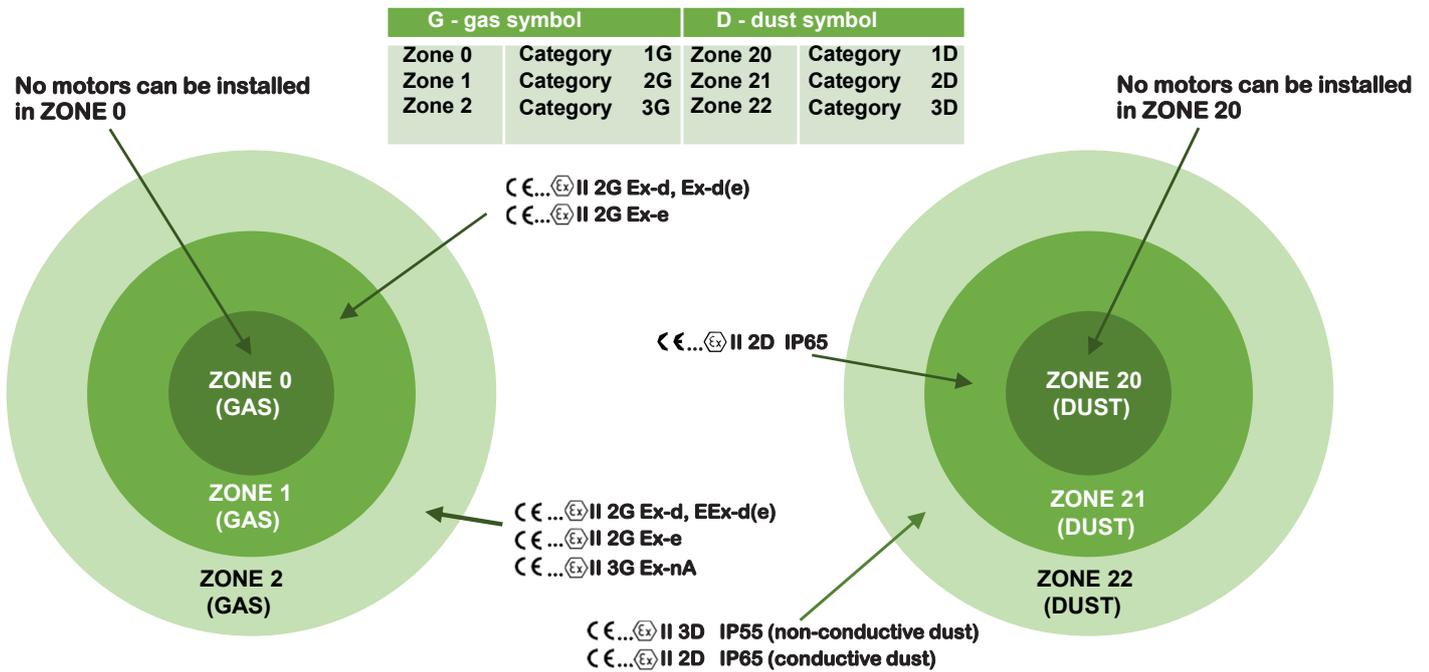
Specifications and characteristics of some common combustible dusts are listed in the table below:

Material	Minimum ignition [mJ]	Ignition Temperature	
		Cloud [°C]	Layer [°C]
Aluminium	15	550	740
Cellulose	80	480	270
Com	40	400	250
Flax	80	230	430
Polypropylene	30	420	--
Rayon	2400	520	250
Rice	50	440	220
Rubber-(synthetic)	30	320	--
Sugar	30	370	400
Wheat flour	50	380	360

ATEX Categories Explanation

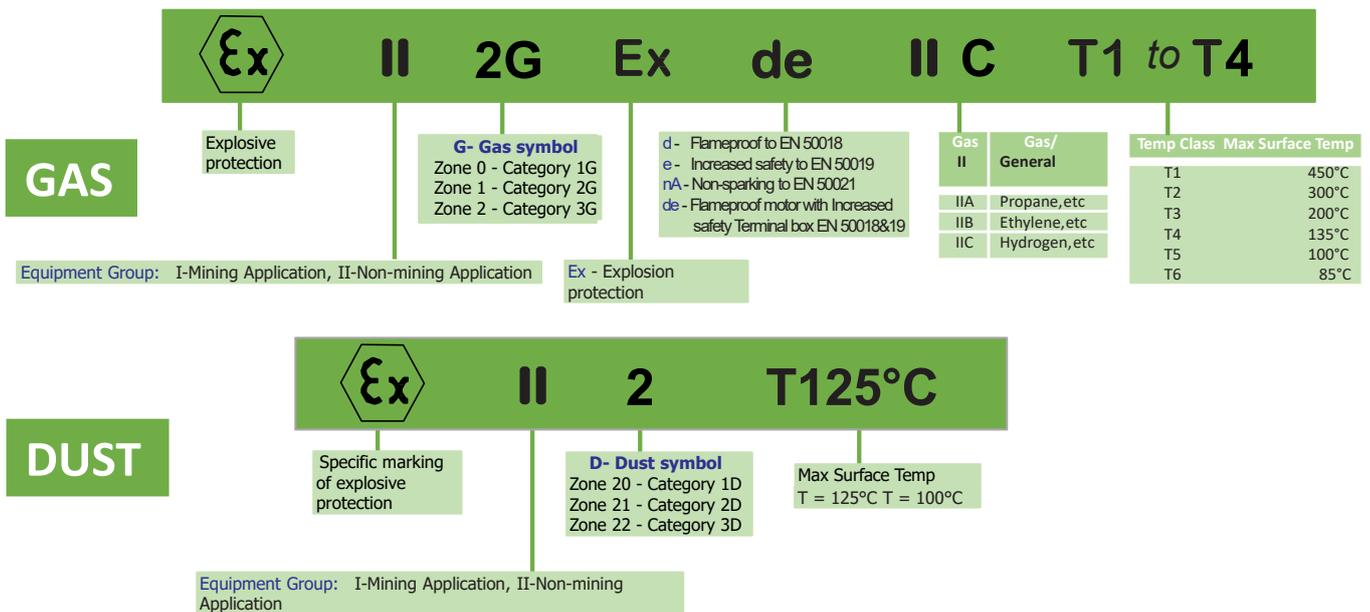
Electric Motors for GAS Explosive Atmospheres

Electric Motors for DUST Explosive Atmospheres



GAS		DUST	
Zone 0	Explosive Gases present continuously	Zone 20	Explosive Dust Atmosphere present continuously
Zone 1	Explosive Gases likely to occur in normal service	Zone 21	Explosive Dust Atmosphere likely to occur in normal service
Zone 2	Explosive Gases unlikely to occur and would be infrequent and short term	Zone 22	Explosive Dust Atmosphere unlikely to occur and would be infrequent and short term

ATEX Marking of equipment protection



PERFORMANCE DATA IE2

PERFORMANCE DATA IE2

FRAME	Output Power		Full load Current (A)			Speed r/min	Eff %	Power Factory φ	Torque			Current	Weight
	KW	HP	380V	400V	415V				Full Load (Nm)	Locked rotor Tst/Tn	Max torque Tmax/TN	Locked rotor Ist/In	Kg
3000 RPM = 2 POLES													
E2AD 63M1-2	0.18	0.25	0.52	0.50	0.48	2720	66.0	0.80	0.66	2.2	2.3	5.0	14
E2AD 63M2-2	0.25	0.33	0.69	0.66	0.63	2720	68.0	0.81	0.94	2.2	2.3	5.0	15
E2AD 71M1-2	0.37	0.5	1.0	0.94	0.91	2740	70.0	0.81	1.34	2.2	2.3	5.5	17
E2AD 71M2-2	0.55	0.75	1.4	1.3	1.3	2740	73.0	0.83	2.0	2.2	2.3	5.5	20
E2AD 80M1-2	0.75	1.0	1.8	1.7	1.6	2875	77.4	0.83	2.5	2.2	2.3	6.0	24
E2AD 80M2-2	1.1	1.5	2.5	2.4	2.3	2875	79.6	0.84	3.7	2.2	2.3	6.0	25
E2AD 90S-2	1.5	2.0	3.3	3.2	3.0	2890	81.3	0.84	5.0	2.2	2.3	7.0	35
E2AD 90L-2	2.2	3.0	4.7	4.5	4.3	2890	83.2	0.85	7.4	2.2	2.3	7.0	38
E2AD 100L-2	3	4.0	6.2	5.9	5.7	2891	84.6	0.87	10.0	2.2	2.3	7.0	44
E2AD 112M-2	4	5.5	8.0	7.6	7.4	2914	85.8	0.88	13.3	2.2	2.3	7.0	46
E2AD 132S1-2	5.5	7.5	11.2	10.6	10.2	2918	87.0	0.88	18.1	2.2	2.3	7.5	81
E2AD 132S2-2	7.5	10	14.6	13.9	13.4	2920	88.1	0.88	24.7	2.2	2.4	7.5	89
E2AD 160M1-2	11	15	21.0	20.0	19.2	2930	89.4	0.89	35.9	2.2	2.4	7.5	142
E2AD 160M2-2	15	20	28.4	26.9	26.0	2930	90.3	0.89	48.9	2.2	2.4	7.5	152
E2AD 160L-2	18.5	25	34.7	33.0	31.8	2937	90.9	0.89	60.3	2.2	2.4	7.5	169
E2AD 180M-2	22	30	41.6	39.5	38.1	2940	91.3	0.89	71.5	2.0	2.3	7.5	227
E2AD 200L 1-2	30	40	56.2	53.4	51.5	2950	92.0	0.88	97.1	2.0	2.4	7.5	265
E2AD 200L2-2	37	50	68.2	64.8	62.5	2950	92.5	0.89	120	2.0	2.4	7.5	275
E2AD 225M-2	45	60	82.5	78.4	75.6	2960	92.9	0.89	145	2.0	2.3	7.6	340
E2AD 250M-2	55	75	99.5	94.8	91.1	2965	93.2	0.90	177	2.1	2.3	7.6	477
E2AD 280S-2	75	100	135	128	123	2970	93.8	0.90	241	2.0	2.3	7.5	655
E2AD 260M-2	90	120	160	152	146	2970	94.1	0.91	289	2.1	2.3	7.5	733
E2AD 315S-2	110	150	194	185	178	2970	94.3	0.91	353	1.8	2.3	7.0	1140
E2AD 315M-2	132	180	233	221	213	2975	94.6	0.91	424	1.8	2.3	7.0	1170
E2AD 315L1-2	160	220	278	265	255	2975	94.8	0.92	514	1.8	2.3	7.0	1385
E2AD 315L2-2	200	270	348	330	318	2975	95.0	0.92	642	1.8	2.3	7.0	1610
E2AD 355M1-2	220	300	383	364	351	2985	95.0	0.92	704	1.6	2.4	7.0	1680
E2AD 355M2-2	250	340	434	412	398	2980	95.0	0.92	801	1.6	2.4	7.0	1720
E2AD 355L 1-2	280	380	485	461	444	2985	95.0	0.92	896	1.6	2.4	7.0	1780
E2AD 355L2-2	315	430	547	520	501	2980	95.0	0.92	1010	1.6	2.4	7.0	1850

PERFORMANCE DATA IE2

PERFORMANCE DATA IE2

FRAME	Output Power		Full load Current (A)			Speed r/min	Eff %	Power Factory φ	Torque			Current	Weight
	KW	HP	380V	400V	415V				Full Load (Nm)	Locked rotor Tst/Tn	Max torque Tmax/TN	Locked rotor Ist/In	Kg
1500 RPM = 4 POLES													
E2AD 63M2-4	0.18	0.25	0.60	0.57	0.55	1310	63.0	0.73	1.37	2.2	2.3	4.0	16
E2AD 71M1-4	0.25	0.33	0.78	0.74	0.71	1330	66.0	0.74	1.87	2.2	2.3	4.0	17
E2AD 71M2-4	0.37	0.5	1.09	1.03	1.00	1330	69.0	0.75	2.77	2.2	2.3	4.0	19
E2AD 80M1-4	0.55	0.75	1.5	1.4	1.3	1390	75.0	0.75	3.8	2.3	2.3	6.3	24
E2AD 80M2-4	0.75	1.0	1.9	1.8	1.7	1400	79.6	0.76	5.2	2.3	2.3	6.0	27
E2AD 90S-4	1.1	1.5	2.7	2.5	2.4	1440	81.4	0.75	7.5	2.3	2.3	6.0	34
E2AD 90L-4	1.5	2.0	3.6	3.4	3.3	1445	82.8	0.75	10.2	2.3	2.3	6.0	38
E2AD 100L 1-4	2.2	3.0	4.9	4.6	4.5	1440	84.3	0.81	14.8	2.3	2.3	7.0	46
E2AD 100L2-4	3	4.0	6.5	6.2	6.0	1440	85.5	0.82	20.2	2.3	2.3	7.0	51
E2AD 112M-4	4	5.5	8.6	8.1	7.8	1445	86.6	0.82	26.5	2.3	2.3	7.0	68
E2AD 132S-4	5.5	7.5	11.5	10.9	10.5	1445	87.7	0.82	36.5	2.3	2.3	7.0	85
E2AD 132M-4	7.5	10	15.3	14.5	14.0	1445	88.7	0.83	49.7	2.3	2.3	7.0	105
E2AD 160M-4	11	15	22.1	21.0	20.3	1460	89.8	0.85	72.0	2.2	2.3	7.0	150
E2AD 160L-4	15	20	29.6	28.1	27.1	1460	90.6	0.86	98.1	2.2	2.3	7.5	171
E2AD 180M-4	18.5	25	35.8	34.0	32.8	1470	91.2	0.86	121	2.2	2.3	7.5	211
E2AD 180L-4	22	30	42.3	40.2	38.8	1470	91.6	0.86	143	2.2	2.3	7.5	224
E2AD 200L-4	30	40	57.3	54.4	52.5	1470	92.3	0.86	195	2.2	2.3	7.2	290
E2AD 225S-4	37	50	69.7	66.2	63.8	1480	92.7	0.86	240	2.2	2.3	7.2	346
E2AD 225M-4	45	60	84.3	80.1	77.2	1480	93.1	0.86	291	2.2	2.3	7.2	358
E2AD 250M-4	55	75	103	97.5	94.0	1480	93.5	0.86	356	2.2	2.3	7.2	492
E2AD 280S-4	75	100	139	132	127	1480	94.0	0.88	484	2.2	2.3	7.2	670
E2AD 280M-4	90	120	167	158	153	1480	94.2	0.88	581	2.2	2.3	6.9	743
E2AD 315S-4	110	150	201	191	184	1485	94.5	0.88	710	2.1	2.2	6.9	986
E2AD 315M-4	132	180	241	229	220	1485	94.7	0.88	852	2.1	2.2	6.9	1070
E2AD 315L1-4	160	220	288	273	263	1485	94.9	0.89	1032	2.1	2.2	6.9	1350
E2AD 315L2-4	200	270	359	341	328	1485	95.1	0.89	1291	2.1	2.2	6.9	1572
E2AD 355M1-4	220	300	390	371	357	1490	95.1	0.90	1410	2.1	2.2	6.9	1690
E2AD 355M2-4	250	340	443	421	406	1490	95.1	0.90	1602	2.1	2.2	6.9	1750
E2AD 355L1-4	280	380	495	470	453	1490	95.1	0.90	1795	2.1	2.2	6.9	1800
E2AD 355L2-4	315	430	559	531	511	1490	95.1	0.90	2019	2.1	2.2	6.9	1850

PERFORMANCE DATA IE2

PERFORMANCE DATA IE2

FRAME	Output Power		Full load Current (A)			Speed r/min	Eff %	Power Factory φ	Torque			Current	Weight
	KW	HP	380V	400V	415V				Full Load (Nm)	Locked rotor Tst/Tn	Max torque Tmax/TN	Locked rotor Ist/In	Kg
1000 RPM = 6 POLES													
E2AD 71M1-6	0.18	0.25	0.67	0.64	0.61	850	62.0	0.66	2.11	1.9	2.1	4.0	18
E2AD 71M2-6	0.25	0.33	0.89	0.84	0.81	850	63.0	0.68	2.93	1.9	2.1	4.0	19
E2AD 80M1-6	0.37	0.5	1.3	1.2	0.7	910	63.0	0.70	3.9	1.9	2.1	4.0	20
E2AD 80M2-6	0.55	0.75	1.5	1.4	0.9	910	75.4	0.72	5.8	1.9	2.1	4.0	25
E2AD 90S-6	0.75	1.0	2.1	2.0	1.9	934	75.9	0.72	7.7	2.0	2.1	5.5	39
E2AD 90L-6	1.1	1.5	3.0	2.8	2.7	945	78.1	0.72	11.1	2.0	2.1	5.5	41
E2AD 100L-6	1.5	2.0	3.8	3.6	3.5	960	79.8	0.75	15.2	2.0	2.1	5.5	45
E2AD 112M-6	2.2	3.0	5.4	5.1	4.9	964	81.8	0.76	21.9	2.0	2.1	6.5	57
E2AD 132S-6	3	4.0	7.2	6.8	6.6	965	83.3	0.76	29.7	2.1	2.1	6.5	84
E2AD 132M1-6	4	5.5	9.4	9.0	8.6	965	84.6	0.76	39.6	2.1	2.1	6.5	92
E2AD 132M2-6	5.5	7.5	12.6	12.0	11.5	970	86.0	0.76	54.4	2.1	2.1	6.5	104
E2AD 160M-6	7.5	10	16.7	15.9	15.3	970	87.2	0.77	73.8	2.0	2.1	8.5	171
E2AD 160L-6	11	15	24.8	23.5	22.7	975	88.7	0.78	108	2.0	2.1	6.5	180
E2AD 180L-6	15	20	31.4	29.8	28.7	980	89.7	0.81	147	2.0	2.1	7.0	230
E2AD 200L 1-6	18.5	25	38.3	36.4	35.1	980	90.4	0.81	180	2.1	2.1	7.0	309
E2AD 200L2-6	22	30	44.3	42.0	40.5	980	90.9	0.83	214	2.1	2.1	7.0	320
E2AD 225M-6	30	40	59.2	56.2	54.2	980	91.7	0.84	292	2.0	2.1	7.0	364
E2AD 250M-6	37	50	70.8	67.3	64.8	980	92.2	0.86	361	2.1	2.1	7.0	535
E2AD 280S-6	45	60	85.8	81.5	78.5	980	92.7	0.86	439	2.1	2.0	7.0	643
E2AD 280M-6	55	75	104	99.2	95.6	980	93.1	0.86	536	2.1	2.0	7.0	735
E2AD 315S-6	75	100	141	134	129	985	93.7	0.86	727	2.0	2.0	7.0	1095
E2AD 315M-6	90	120	169	160	155	985	94.0	0.86	873	2.0	2.0	7.0	1153
E2AD 315L1-6	110	150	206	196	189	985	94.3	0.86	1066	2.0	2.0	6.7	1330
E2AD 315L2-6	132	180	243	231	223	985	94.6	0.87	1280	2.0	2.0	6.7	1485
E2AD 355S-6	160	220	291	277	267	990	94.8	0.88	1543	1.9	2.0	6.7	1610
E2AD 355M1-6	185	250	336	321	310	990	95.0	0.88	1785	1.9	2.0	6.7	1750
E2AD 355M2-6	200	270	363	345	333	990	95.0	0.88	1929	1.9	2.0	6.7	1770

PERFORMANCE DATA IE2

PERFORMANCE DATA IE2

FRAME	Output Power		Full load Current (A)			Speed r/min	Eff %	Power Factory φ	Torque			Current	Weight
	KW	HP	380V	400V	415V				Full Load (Nm)	Locked rotor Tst/Tn	Max torque Tmax/TN	Locked rotor Ist/In	Kg
750 RPM = 8 POLES													
E2AD 80M1-8	0.18	0.25	0.88	0.84	0.8	650	51.0	0.61	2.6	1.8	1.9	3.3	20
E2AD 80M2-8	0.25	0.37	1.15	1.1	1.06	650	54.0	0.61	3.7	1.8	1.9	3.3	22
E2AD 90S-8	0.37	0.5	1.49	1.41	1.36	660	62.0	0.61	5.4	1.8	1.9	4.0	28
E2AD 90L-8	0.55	0.75	2.17	2.07	1.99	660	63.0	0.61	8.0	1.8	2.0	4.0	30
E2AD 100L1-8	0.75	1.0	2.4	2.28	2.19	690	71.0	0.67	10.4	1.8	2.0	4.0	40
E2AD 100L2-8	1.1	1.5	3.32	3.15	3.04	690	73.0	0.69	15.2	1.8	2.0	5.0	46
E2AD 112M-8	1.5	2.2	4.40	4.18	4.03	700	75.0	0.69	20.5	1.8	2.0	5.0	57
E2AD 132S-8	2.2	3.0	6.04	5.73	5.53	710	78.0	0.71	29.6	1.8	2.0	6.0	83
E2AD 132M-8	3	4.0	7.90	7.51	7.24	710	79.0	0.73	40.4	1.8	2.0	6.0	95
E2AD 160M1-8	4	5.5	10.3	9.8	9.4	720	81.0	0.73	53.1	1.9	2.0	6.0	158
E2AD 160M2-8	5.5	7.5	13.6	12.9	12.5	720	83.0	0.74	73.0	2.0	2.0	6.0	180
E2AD 160L-8	7.5	10	17.8	16.9	16.3	720	85.5	0.75	99.5	2.0	2.0	6.0	181
E2AD 180L-8	11	15	25.1	23.9	23.0	730	87.5	0.76	144	2.0	2.0	6.6	228
E2AD 200L-8	15	20	34.1	32.4	31.2	730	88.0	0.76	196	2.0	2.0	6.6	335
E2AD 225S-8	18.5	25	41.1	39.0	37.6	730	90.0	0.76	242	1.9	2.0	6.6	371
E2AD 225M-8	22	30	47.4	45.0	43.3	730	90.5	0.78	288	1.9	2.0	6.6	398
E2AD 250M-8	30	40	63.4	60.2	58.1	735	91.0	0.79	390	1.9	2.0	6.6	522
E2AD 280S-8	37	50	77.8	73.9	71.2	735	91.5	0.79	481	1.9	2.0	6.6	626
E2AD 280M-8	45	60	94.1	89.4	86.1	735	92.0	0.79	585	1.9	2.0	6.6	722
E2AD 315S-8	55	75	111	106	102	735	92.8	0.81	715	1.8	2.0	6.6	955
E2AD 315M-8	75	100	151	144	139	735	93.0	0.81	975	1.8	2.0	6.6	1160
E2AD 315L1-8	90	120	178	169	163	740	93.8	0.82	1162	1.8	2.0	6.6	1238
E2AD 315L2-8	110	150	217	206	199	740	94.0	0.82	1420	1.8	2.0	6.4	1362
E2AD 355S-8	132	180	261	248	239	740	94.0	0.82	1704	1.8	2.0	6.4	1620
E2AD 355M-8	160	220	315	299	288	740	94.2	0.82	2065	1.8	2.0	6.4	1710
E2AD 355L1-8	185	250	362	344	332	740	94.5	0.82	2388	1.8	2.0	6.4	1900
E2AD 355L2-8	200	270	387	368	355	740	94.5	0.82	2581	1.8	2.0	6.4	2000

PERFORMANCE DATA IE3

FRAME	Output Power		Full load Current (A)			Speed r/min	Eff %	Power Factory φ	Torque			Current	Weight
	KW	HP	380V	400V	415V				Full Load (Nm)	Locked rotor Tst/Tn	Max torque Tmax/TN	Locked rotor Ist/In	Kg
3000 RPM = 2 POLES													
E3AD 80M1-2	0.75	1.0	1.8	1.7	1.6	2880	80.7	0.83	2.5	2.2	2.3	6.0	26
E3AD 80M2-2	1.1	1.5	2.4	2.3	2.2	2880	82.7	0.84	3.7	2.2	2.3	6.0	30
E3AD 90S-2	1.5	2.0	3.2	3.1	3.0	2890	84.2	0.84	5.0	2.2	2.3	7.0	38
E3AD 90L-2	2.2	3.0	4.6	4.4	4.2	2890	85.9	0.85	7.4	2.2	2.3	7.0	40
E3AD 100L-2	3	4.0	5.9	5.6	5.4	2895	87.1	0.87	10.0	2.2	2.3	7.0	54
E3AD 112M-2	4	5.5	7.8	7.5	7.2	2905	88.1	0.88	13.3	2.2	2.3	7.0	72
E3AD 132S 1-2	5.5	7.5	10.6	10.1	9.8	2930	89.2	0.88	18.1	2.2	2.3	7.5	92
E3AD 132S2-2	7.5	10	14.4	13.7	13.2	2930	90.1	0.88	24.7	2.2	2.4	7.5	99
E3AD 160M 1-2	11	15	20.4	19.3	18.6	2930	91.2	0.89	35.9	2.2	2.4	7.5	145
E3AD 160M2-2	15	20	27.9	26.5	25.6	2940	91.9	0.89	48.9	2.2	2.4	7.5	154
E3AD 160L-2	18.5	25	34.1	32.4	31.3	2940	92.4	0.89	60.3	2.2	2.4	7.5	165
E3AD 180M-2	22	30	40.1	38.1	36.7	2945	92.7	0.88	71.5	2.0	2.3	7.5	260
E3AD 200L 1-2	30	40	55.5	52.7	50.8	2950	93.3	0.88	97.1	2.0	2.4	7.5	297
E3AD 200L2-2	37	50	65.9	62.6	60.3	2960	93.7	0.89	120	2.0	2.4	7.5	323
E3AD 225M-2	45	60	82.5	78.4	75.5	2960	94.0	0.89	145	2.0	2.3	7.5	457
E3AD 250M-2	55	75	98.5	93.5	90.2	2970	94.3	0.90	177	2.1	2.3	7.5	518
E3AD 280S-2	75	100	134	127	122	2975	94.7	0.90	241	2.0	2.3	7.5	693
E3AD 280M-2	90	120	162	153	148	2975	95.0	0.91	289	2.1	2.3	7.5	756
E3AD 315S-2	110	150	195	185	179	2978	95.2	0.91	353	1.8	2.3	7.0	1174
E3AD 315M-2	132	180	231	219	212	2978	95.4	0.91	424	1.8	2.3	7.0	1328
E3AD 315L 1-2	160	220	283	268	259	2980	95.6	0.92	514	1.8	2.3	7.0	1371
E3AD 315L2-2	200	270	345	328	316	2980	95.8	0.92	642	1.8	2.3	7.0	1446
E3AD 355M 1-2	220	300	379	360	347	2985	95.8	0.92	704	1.6	2.4	7.0	1705
E3AD 355M2-2	250	340	431	409	394	2982	95.8	0.92	801	1.6	2.4	7.0	1705
E3AD 355L 1-2	280	380	483	459	442	2985	95.8	0.92	896	1.6	2.4	7.0	1915
E3AD 355L2-2	315	430	543	516	497	2982	95.8	0.92	1010	1.6	2.4	7.0	2068

PERFORMANCE DATA IE3

PERFORMANCE DATA IE3

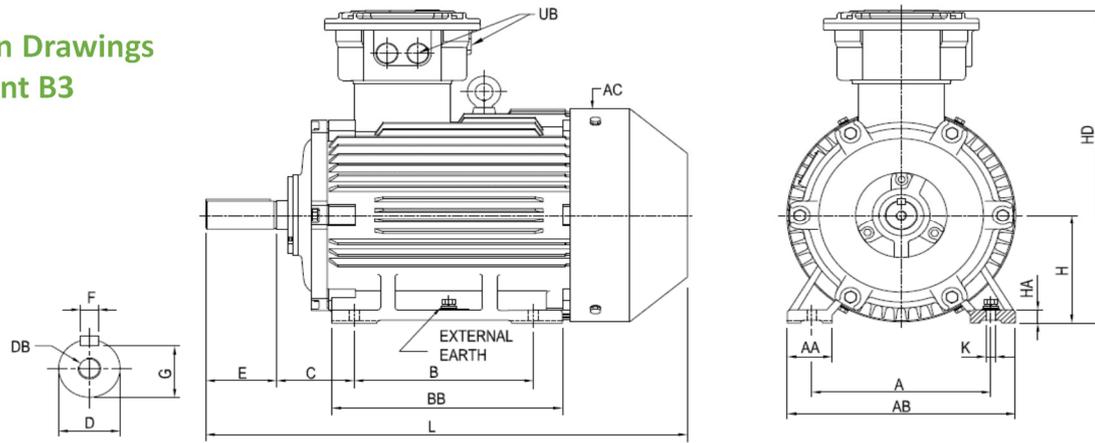
FRAME	Output Power		Full load Current (A)			Speed r/min	Eff %	Power Factory φ	Torque			Current	Weight
	KW	HP	380V	400V	415V				Full Load (Nm)	Locked rotor Tst/Tn	Max torque Tmax/TN	Locked rotor Ist/In	Kg
1500 RPM = 4 POLES													
E3AD 80M2-4	0.75	1.0	1.9	1.8	1.7	1420	82.5	0.74	5.0	2.3	2.3	6.0	29
E3AD 90S-4	1.1	1.5	2.7	2.6	2.5	1440	84.1	0.74	7.3	2.3	2.3	6.0	37
E3AD 90L-4	1.5	2.0	3.6	3.4	3.3	1445	85.3	0.74	9.9	2.3	2.3	6.0	38
E3AD 100L 1-4	2.2	3.0	4.9	4.7	4.5	1440	86.7	0.78	14.6	2.3	2.3	7.0	56
E3AD 100L2-4	3	4.0	6.6	6.3	6.0	1440	87.7	0.78	20.2	2.3	2.3	7.0	60
E3AD 112M-4	4	5.5	8.6	8.1	7.8	1445	88.6	0.80	26.5	2.3	2.3	7.0	78
E3AD 132S-4	5.5	7.5	11.6	11.1	10.7	1460	89.6	0.80	36.0	2.3	2.3	7.0	99
E3AD 132M-4	7.5	10	15.3	14.6	14.0	1460	90.4	0.82	49.1	2.3	2.3	7.0	110
E3AD 160M-4	11	15	22.3	21.2	20.4	1460	91.4	0.82	71.7	2.2	2.3	7.0	150
E3AD 160L-4	15	20	30.1	28.6	27.6	1465	92.1	0.82	97.8	2.2	2.3	7.5	162
E3AD 180M-4	18.5	25	36.1	34.3	33.1	1470	92.6	0.84	120	2.2	2.3	7.5	253
E3AD 180L-4	22	30	42.3	40.2	38.7	1470	93.0	0.85	143	2.2	2.3	7.5	275
E3AD 200L-4	30	40	56.5	53.7	51.7	1470	93.6	0.86	194	2.2	2.3	7.2	309
E3AD 225S-4	37	50	69.5	66.1	63.7	1480	93.9	0.86	238	2.2	2.3	7.2	390
E3AD 225M-4	45	60	83.2	79.1	76.2	1480	94.2	0.87	289	2.2	2.3	7.2	422
E3AD 250M-4	55	75	101	96.2	92.7	1480	94.6	0.87	354	2.2	2.3	7.2	536
E3AD 280S-4	75	100	138	131	126	1480	95.0	0.87	483	2.2	2.3	7.2	777
E3AD 280M-4	90	120	165	157	151	1480	95.2	0.87	578	2.2	2.3	7.2	885
E3AD 315S-4	110	150	199	189	182	1485	95.4	0.87	706	2.1	2.2	6.9	1195
E3AD 315M-4	132	180	238	226	218	1485	95.6	0.88	847	2.1	2.2	6.9	1324
E3AD 315L 1-4	160	220	288	274	264	1485	95.8	0.88	1027	2.1	2.2	6.9	1397
E3AD 315L2 -4	200	270	360	342	329	1485	96.0	0.88	1282	2.1	2.2	6.9	1507
E3AD 355M1-4	220	300	387	368	354	1490	96.0	0.90	1410	2.1	2.2	6.9	1804
E3AD 355M2-4	250	340	449	427	411	1490	96.0	0.88	1602	2.1	2.2	6.9	1865
E3AD 355L 1-4	280	380	495	470	453	1490	96.0	0.90	1795	2.1	2.2	6.9	2061
E3AD 355L2 -4	315	430	567	538	519	1490	96.0	0.88	2019	2.1	2.2	6.9	2174

PERFORMANCE DATA IE3

PERFORMANCE DATA IE3

FRAME	Output Power		Full load Current (A)			Speed r/min	Eff %	Power Factory φ	Torque			Current	Weight
	KW	HP	380V	400V	415V				Full Load (Nm)	Locked rotor Tst/Tn	Max torque Tmax/TN	Locked rotor Ist/In	Kg
1000 RPM = 6 POLES													
E3AD 90S-6	0.75	1.0	2.4	2.3	2.2	935	78.9	0.61	7.7	2.1	2.1	5.5	35
E3AD 90L-6	1.1	1.5	3.0	2.8	2.7	945	81.0	0.69	11.1	2.1	2.1	5.5	37
E3AD 100L-6	1.5	2.0	4.0	3.8	3.7	950	82.5	0.69	15.2	2.1	2.1	5.5	55
E3AD 112M-6	2.2	3.0	5.6	5.3	5.1	955	84.3	0.71	22.0	2.1	2.1	6.5	67
E3AD 132S-6	3	4.0	7.5	7.1	6.8	965	85.6	0.71	29.6	2.1	2.1	6.5	88
E3AD 132M1-6	4	5.5	9.8	9.4	9.0	965	86.8	0.71	39.5	2.0	2.1	6.5	95
E3AD 132M2-6	5.5	7.5	12.6	12.0	11.6	970	88.0	0.75	54.3	2.0	2.1	6.5	104
E3AD 160M-6	7.5	10	16.6	15.7	15.2	970	89.1	0.77	73.8	2.0	2.1	6.5	140
E3AD 160L-6	11	15	23.4	22.2	21.4	978	90.3	0.79	108	2.1	2.1	6.5	165
E3AD 180L-6	15	20	30.8	29.3	28.2	980	91.2	0.81	147	2.1	2.1	7.0	236
E3AD 200L1-6	18.5	25	37.8	35.9	34.6	980	91.7	0.81	180	2.1	2.1	7.0	259
E3AD 200L2-6	22	30	43.6	41.4	40.0	985	92.2	0.83	214	2.1	2.1	7.0	302
E3AD 225M-6	30	40	58.3	55.4	53.4	985	92.9	0.84	292	2.0	2.1	7.0	390
E3AD 250M-6	37	50	71.7	68.1	65.7	985	93.3	0.84	359	2.1	2.1	7.0	510
E3AD 280S-6	45	60	85.8	81.5	78.5	985	93.7	0.85	436	2.1	2.0	7.0	709
E3AD 280M-6	55	75	104	99.1	95.6	988	94.1	0.85	533	2.1	2.0	7.0	786
E3AD 315S-6	75	100	142	135	130	988	94.6	0.85	727	2.0	2.0	7.0	1155
E3AD 315M-6	90	120	169	161	155	988	94.9	0.85	869	2.0	2.0	7.0	1277
E3AD 315L 1-6	110	150	204	194	187	988	95.1	0.86	1063	2.0	2.0	6.7	1375
E3AD 315L2-6	132	180	244	232	224	988	95.4	0.86	1276	2.0	2.0	6.7	1467
E3AD 355M 1-6	160	220	296	281	271	990	95.6	0.87	1543	2.0	2.0	6.7	1815
E3AD 355M2-6	185	250	339	317	306	990	95.7	0.88	1785	1.9	2.0	6.7	1866
E3AD 355M3-6	200	270	360	342	330	990	95.8	0.88	1929	2.0	2.0	6.7	1900
E3AD 355L 1-6	220	300	396	377	363	990	95.8	0.88	2122	1.9	2.0	6.7	2070
E3AD 355L2-6	250	340	451	428	413	990	95.8	0.88	2412	2.0	2.0	6.7	2180

Dimension Drawings
Foot Mount B3

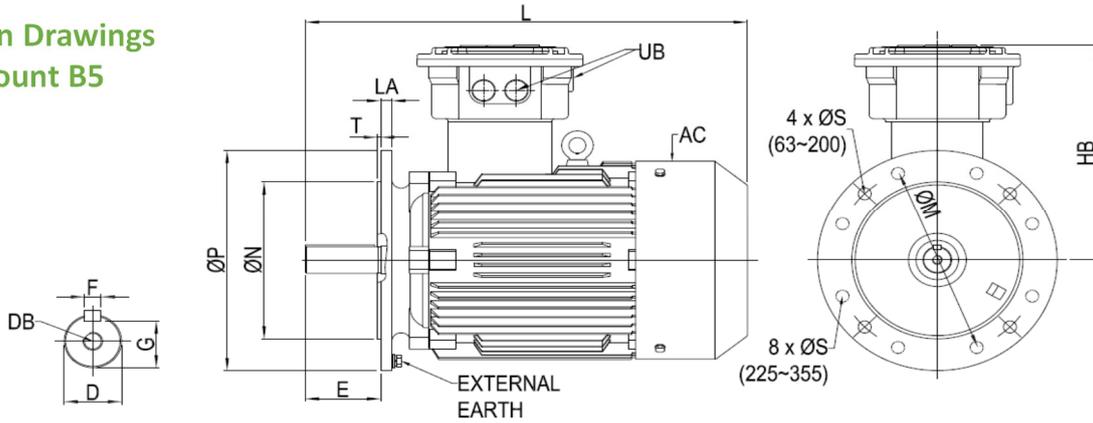


DIMENSION DRAWING B3

FRAME	A	B	C	D	DB	E	F	G	H	K	AA	AB	AC	BB	UB	HA	HD	L
63M	100	80	40	11	M4	23	4	8.5	63	7	23	125	125	105	2xM25,1xM20	6	240	245
71M	112	90	45	14	M5	30	5	11	71	7	28	140	143	114	2xM25,1xM20	7	270	270
80M	125	100	50	19	M6	40	6	15.5	80	10	34	165	165	130	2xM25,1xM20	10	320	330
90S	140	100	56	24	M8	50	8	20	90	10	36	180	180	130	2xM25,1xM20	14	350	360
90L	140	125	56	24	M8	50	8	20	90	10	36	180	180	155	2xM25,1xM20	14	350	385
100L	160	140	63	28	M10	60	8	24	100	12	39	200	205	176	2xM25,1xM20	15	400	440
112M	190	140	70	28	M10	60	8	24	112	12	50	245	230	180	2xM32,1xM20	16	420	460
132S	216	140	89	38	M12	80	10	33	132	12	60	280	270	190	2xM32,1xM20	18	450	510
132M	216	178	89	38	M12	80	10	33	132	12	60	280	270	230	2xM32,1xM20	18	450	550
160M	254	210	108	42	M16	110	12	37	160	15	70	330	325	252	2xM32,1xM20	20	520	670
160L	254	254	108	42	M16	110	12	37	160	15	70	330	325	302	2xM32,1xM20	20	520	710
180M	279	241	121	48	M16	110	14	42.5	180	15	70	355	360	311	2xM32,1xM20	22	550	730
180L	279	279	121	48	M16	110	14	42.5	180	15	70	355	360	349	2xM32,1xM20	22	550	750
200L	318	305	133	55	M20	110	16	49	200	19	70	390	400	366	1xM50,1xM20	25	645	805
225S	356	286	149	60	M20	140	18	53	225	19	75	435	450	355	1xM50,1xM20	28	690	865
225M*	356	311	149	55	M20	110	16	49	225	19	75	435	450	380	1xM50,1xM20	28	690	860
225M	356	311	149	60	M20	140	18	53	225	19	75	435	450	380	1xM50,1xM20	28	690	890
250M*	406	349	168	60	M20	140	18	53	250	24	75	490	500	420	1xM63,1xM20	30	730	945
250M	406	349	168	65	M20	140	18	58	250	24	80	490	500	420	1xM63,1xM20	30	730	945
280S*	457	368	190	65	M20	140	18	58	280	24	90	545	560	438	1xM63,1xM20	35	810	1010
280S	457	368	190	75	M20	140	20	67.5	280	24	90	545	560	438	1xM63,1xM20	35	810	1010
280M*	457	419	190	65	M20	140	18	58	280	24	90	545	560	493	1xM63,1xM20	35	810	1060
280M	457	419	190	75	M20	140	20	67.5	280	24	90	545	560	493	1xM63,1xM20	35	810	1060
315S*	508	406	216	65	M20	140	18	58	315	28	120	640	630	550	2xM63,1xM20	45	1020	1320
315S	508	406	216	80	M20	170	22	71	315	28	120	640	630	550	2xM63,1xM20	45	1020	1350
315M*	508	457	216	65	M20	140	18	58	315	28	120	640	630	680	2xM63,1xM20	45	1020	1350
315M	508	457	216	80	M20	170	22	71	315	28	120	640	630	680	2xM63,1xM20	45	1020	1380
315L*	508	508	216	65	M20	140	18	58	315	28	120	640	630	680	2xM63,1xM20	45	1020	1490
315L	508	508	216	80	M20	170	22	71	315	28	120	640	630	680	2xM63,1xM20	45	1020	1520
355S*	610	500	254	75	M20	140	20	67.5	355	28	120	740	750	636	2xM63,1xM20	52	1080	1570
355S*	610	500	254	95	M20	170	25	86	355	28	120	740	750	636	2xM63,1xM20	52	1080	1570
355M*	610	560	254	75	M20	140	20	67.5	355	28	120	740	750	696	2xM63,1xM20	52	1080	1650
355M	610	560	254	95	M20	170	25	86	355	28	120	740	750	696	2xM63,1xM20	52	1080	1650
355L*	610	630	254	75	M20	140	20	67.5	355	28	120	740	750	766	2xM63,1xM20	52	1080	1750
355L	610	630	254	95	M20	170	25	86	355	28	120	740	750	766	2xM63,1xM20	52	1080	1750

* FOR 2 POLE MOTOR ONLY

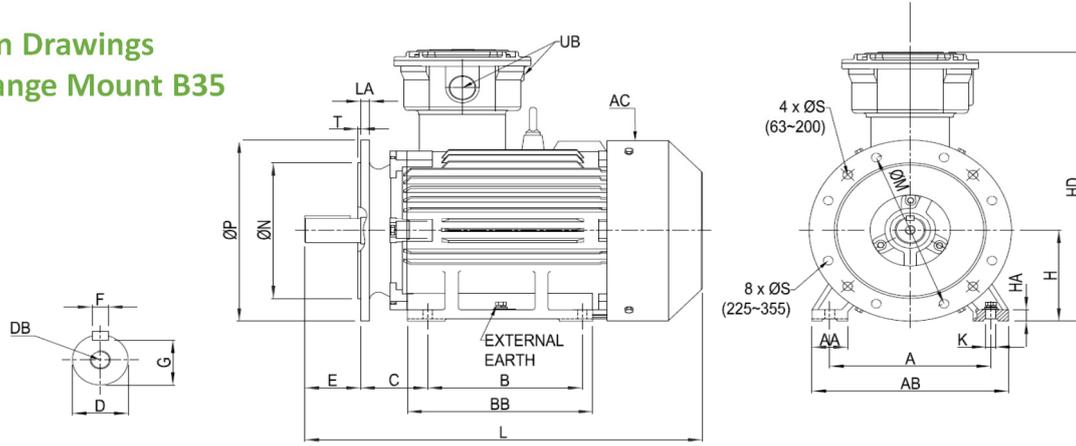
Dimension Drawings
Flange Mount B5



FRAME	D	DB	E	F	G	M	N	P	S	T	AC	UB	HB	LA	L
63M	11	M4	23	4	8.5	115	95	140	10	3	125	2xM25,1xM20	177	6.5	245
71M	14	M5	30	5	11	130	110	160	10	3.5	143	2xM25,1xM20	199	6.5	270
80M	19	M6	40	6	15.5	165	130	200	12	3.5	165	2xM25,1xM20	240	12	330
90S	24	M8	50	8	20	165	130	200	12	3.5	180	2xM25,1xM20	260	12	360
90L	24	M8	50	8	20	165	130	200	12	3.5	180	2xM25,1xM20	260	12	385
100L	28	M10	60	8	24	215	180	250	15	4	205	2xM25,1xM20	300	14	440
112M	28	M10	60	8	24	215	180	250	15	4	230	2xM32,1xM20	308	14	460
132S	38	M12	80	10	33	265	230	300	15	4	270	2xM32,1xM20	318	14	510
132M	38	M12	80	10	33	265	230	300	15	4	270	2xM32,1xM20	318	14	550
160M	42	M16	110	12	37	300	250	350	19	5	325	2xM32,1xM20	360	16	670
160L	42	M16	110	12	37	300	250	350	19	5	325	2xM32,1xM20	360	16	710
180M	48	M16	110	14	42.5	300	250	350	19	5	360	2xM32,1xM20	370	18	730
180L	48	M16	110	14	42.5	300	250	350	19	5	360	2xM32,1xM20	370	18	750
200L	55	M20	110	16	49	350	300	400	19	5	400	1xM50,1xM20	445	18	805
225S	60	M20	140	18	53	400	350	450	19	5	450	1xM50,1xM20	465	20	865
225M*	55	M20	110	16	49	400	350	450	19	5	450	1xM50,1xM20	465	20	860
225M	60	M20	140	18	53	400	350	450	19	5	450	1xM50,1xM20	465	20	890
250M*	60	M20	140	18	53	500	450	550	19	5	500	1xM63,1xM20	480	22	945
250M	65	M20	140	18	58	500	450	550	19	5	500	1xM63,1xM20	480	22	945
280S*	65	M20	140	18	58	500	450	550	19	5	560	1xM63,1xM20	530	22	1010
280S	75	M20	140	20	67.5	500	450	550	19	5	560	1xM63,1xM20	530	22	1010
280M*	65	M20	140	18	58	500	450	550	19	5	560	1xM63,1xM20	530	22	1060
280M	75	M20	140	20	67.5	500	450	550	19	5	560	1xM63,1xM20	530	22	1060
315S*	65	M20	140	18	58	600	550	660	24	6	630	2xM63,1xM20	705	25	1320
315S	80	M20	170	22	71	600	550	660	24	6	630	2xM63,1xM20	705	25	1350
315M*	65	M20	140	18	58	600	550	660	24	6	630	2xM63,1xM20	705	25	1350
315M	80	M20	170	22	71	600	550	660	24	6	630	2xM63,1xM20	705	25	1380
315L*	65	M20	140	18	58	600	550	660	24	6	630	2xM63,1xM20	705	25	1490
315L	80	M20	170	22	71	600	550	660	24	6	630	2xM63,1xM20	705	25	1520
355S*	75	M20	140	20	67.5	740	680	800	24	6	750	2xM63,1xM20	725	25	1570
355S*	95	M20	170	25	86	740	680	800	24	6	750	2xM63,1xM20	725	25	1570
355M*	75	M20	140	20	67.5	740	680	800	24	6	750	2xM63,1xM20	725	25	1650
355M	95	M20	170	25	86	740	680	800	24	6	750	2xM63,1xM20	725	25	1650
355L*	75	M20	140	20	67.5	740	680	800	24	6	750	2xM63,1xM20	725	25	1750
355L	95	M20	170	25	86	740	680	800	24	6	750	2xM63,1xM20	725	25	1750

* FOR 2 POLE MOTOR ONLY

Dimension Drawings
Foot & Flange Mount B35



DIMENSION DRAWING B35

FRAME	A	B	C	D	DB	E	F	G	H	K	AA	AB	M	N	P	S	T	AC	BB	UB	HA	HD	LA	L
63M	100	80	40	11	M4	23	4	8.5	63	7	23	125	115	95	140	10	3	125	105	2xM25,1xM20	6	240	6.5	245
71M	112	90	45	14	M5	30	5	11	71	7	28	140	130	110	160	10	3.5	143	114	2xM25,1xM20	7	270	6.5	270
80M	125	100	50	19	M6	40	6	15.5	80	10	34	165	165	130	200	12	3.5	165	130	2xM25,1xM20	10	320	12	330
90S	140	100	56	24	M8	50	8	20	90	10	36	180	165	130	200	12	3.5	180	130	2xM25,1xM20	14	350	12	360
90L	140	125	56	24	M8	50	8	20	90	10	36	180	165	130	200	12	3.5	180	155	2xM25,1xM20	14	350	12	385
100L	160	140	63	28	M10	60	8	24	100	12	39	200	215	180	250	15	4	205	176	2xM25,1xM20	15	400	14	440
112M	190	140	70	28	M10	60	8	24	112	12	50	245	215	180	250	15	4	230	180	2xM32,1xM20	16	420	14	460
132S	216	140	89	38	M12	80	10	33	132	12	60	280	265	230	300	15	4	270	190	2xM32,1xM20	18	450	14	510
132M	216	178	89	38	M12	80	10	33	132	12	60	280	265	230	300	15	4	270	230	2xM32,1xM20	18	450	14	550
160M	254	210	108	42	M16	110	12	37	160	15	70	330	300	250	350	19	5	325	252	2xM32,1xM20	20	520	16	670
160L	254	254	108	42	M16	110	12	37	160	15	70	330	300	250	350	19	5	325	302	2xM32,1xM20	20	520	16	710
180M	279	241	121	48	M16	110	14	42.5	180	15	70	355	300	250	350	19	5	360	311	2xM32,1xM20	22	550	18	730
180L	279	279	121	48	M16	110	14	42.5	180	15	70	355	300	250	350	19	5	360	349	2xM32,1xM20	22	550	18	750
200L	318	305	133	55	M20	110	16	49	200	19	70	390	350	300	400	19	5	400	366	1xM50,1xM20	25	645	18	805
225S	356	286	149	60	M20	140	18	53	225	19	75	435	400	350	450	19	5	450	355	1xM50,1xM20	28	690	20	865
225M*	356	311	149	55	M20	110	16	49	225	19	75	435	400	350	450	19	5	450	380	1xM50,1xM20	28	690	20	860
225M	356	311	149	60	M20	140	18	53	225	19	75	435	400	350	450	19	5	450	380	1xM50,1xM20	28	690	20	890
250M*	406	349	168	60	M20	140	18	53	250	24	75	490	500	450	550	19	5	500	420	1xM63,1xM20	30	730	22	945
250M	406	349	168	65	M20	140	18	58	250	24	80	490	500	450	550	19	5	500	420	1xM63,1xM20	30	730	22	945
280S*	457	368	190	65	M20	140	18	58	280	24	90	545	500	450	550	19	5	560	438	1xM63,1xM20	35	810	22	1010
280S	457	368	190	75	M20	140	20	67.5	280	24	90	545	500	450	550	19	5	560	438	1xM63,1xM20	35	810	22	1010
280M*	457	419	190	65	M20	140	18	58	280	24	90	545	500	450	550	19	5	560	493	1xM63,1xM20	35	810	22	1060
280M	457	419	190	75	M20	140	20	67.5	280	24	90	545	500	450	550	19	5	560	493	1xM63,1xM20	35	810	22	1060
315S*	508	406	216	65	M20	140	18	58	315	28	120	640	600	550	660	24	6	630	550	2xM63,1xM20	45	1020	25	1320
315S	508	406	216	80	M20	170	22	71	315	28	120	640	600	550	660	24	6	630	550	2xM63,1xM20	45	1020	25	1350
315M*	508	457	216	65	M20	140	18	58	315	28	120	640	600	550	660	24	6	630	680	2xM63,1xM20	45	1020	25	1350
315M	508	457	216	80	M20	170	22	71	315	28	120	640	600	550	660	24	6	630	680	2xM63,1xM20	45	1020	25	1380
315L*	508	508	216	65	M20	140	18	58	315	28	120	640	600	550	660	24	6	630	680	2xM63,1xM20	45	1020	25	1490
315L	508	508	216	80	M20	170	22	71	315	28	120	640	600	550	660	24	6	630	680	2xM63,1xM20	45	1020	25	1520
355S*	610	500	254	75	M20	140	20	67.5	355	28	120	740	740	680	800	24	6	750	636	2xM63,1xM20	52	1080	25	1570
355S*	610	500	254	95	M20	170	25	86	355	28	120	740	740	680	800	24	6	750	636	2xM63,1xM20	52	1080	25	1570
355M*	610	560	254	75	M20	140	20	67.5	355	28	120	740	740	680	800	24	6	750	696	2xM63,1xM20	52	1080	25	1650
355M	610	560	254	95	M20	170	25	86	355	28	120	740	740	680	800	24	6	750	696	2xM63,1xM20	52	1080	25	1650
355L*	610	630	254	75	M20	140	20	67.5	355	28	120	740	740	680	800	24	6	750	766	2xM63,1xM20	52	1080	25	1750
355L	610	630	254	95	M20	170	25	86	355	28	120	740	740	680	800	24	6	750	766	2xM63,1xM20	52	1080	25	1750

* FOR 2 POLE MOTOR ONLY