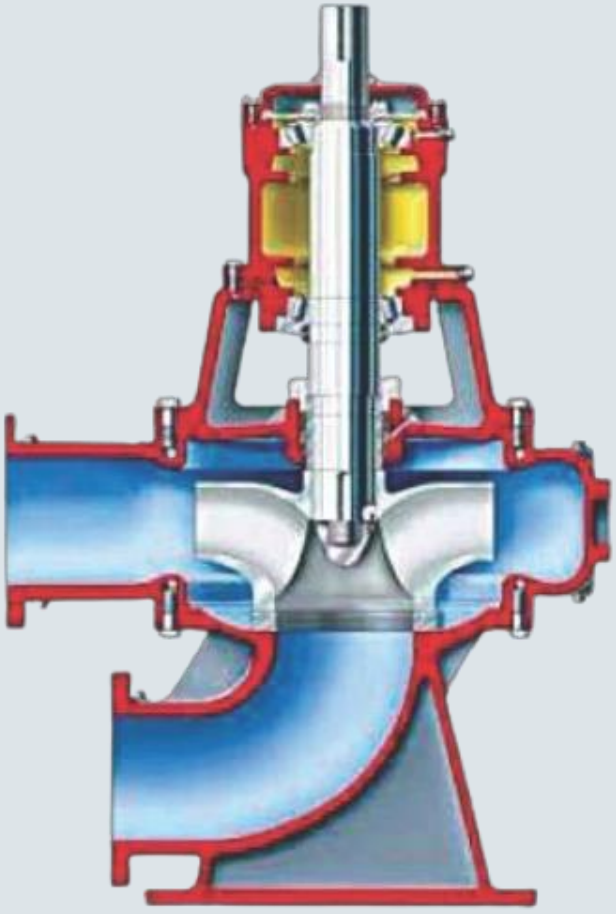
STERLING
PUMPS

Mixed Flow Solid Handling Pumps

MN Series



CERTIFIED
ISO 9001

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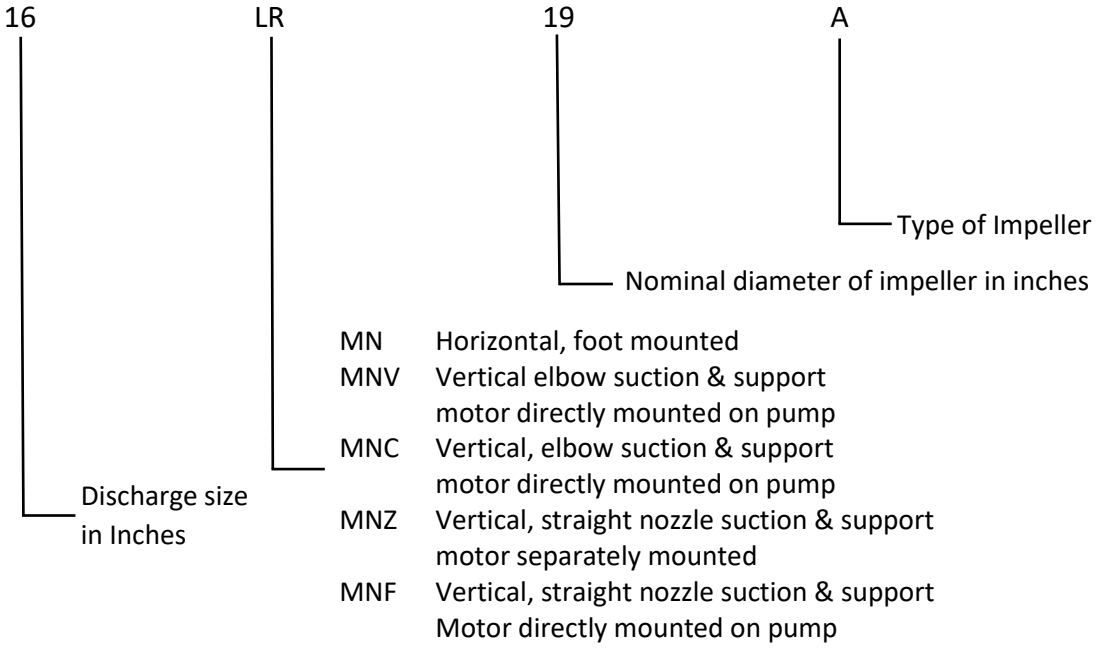
MN Series

Sizes: 10” to 30”
Capacity: to 12,200 m^3/h (45,000 usgpm)
Heads: to 68 metres

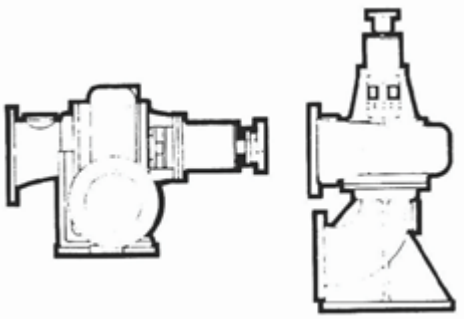
A rugged economical pump with mixed flow impeller. Handles large solids and stringy materials without clogging

Nomenclature



MN Series Overview

A rugged and efficient design for demanding sewage handling service



MN is a mixed flow, centrifugal pump with enclosed non clog impellers, specifically engineered for reliable low cost, long life in the demanding service of sewage handling.

Flexibility

The MN is available in both horizontal and vertical (yet to be developed) models with a variety of mounting arrangements and nozzle positions to suit most piping configurations and pumping station designs without the need of special or costly modifications. The motor can be mounted directly or independently as required.

Reliability

The MN design is a result of years of engineering experience and vast manufacturing capabilities. Shaft deflection is minimized with an oversized shaft and reduced overhand, virtually eliminating shaft failures and increasing packing life. The shaft is supported by our conservative bearing design arranged to eliminate all radial and axial play and to provide a minimum **B-10 life of 100,000 hours**.

Replaceable hardened chrome steel wearing rings are furnished on the impeller and suction head as standard equipment to extend the life of the pump. The shaft is protected from wear by a hardened chrome steel shaft sleeve also furnished as standard equipment.

All supports are designed to minimize vibration and assure rigidity.

These are just a few of the features incorporated into MN design to provide you with the most reliable pump available.

Efficiency

Greatest efficiency and maximum solids handling capabilities are built into every MN pump to provide a wide range of efficient operation and reduce power consumption. Adjustable wearing ring clearance assures continued high efficiency even after years of service.

Ease of Maintenance

Large openings in the bearing bracket permit easy access to the stuffing box. The removable gland facilitates packing adjustment and/or replacement. The stuffing box is arranged for either grease or water seal. A wide variety of mechanical seals can be accommodated. If dismantling is required the entire rotating assembly can be removed without disturbing the casing or suction and discharge piping.

The bearing housings are provided with readily accessible lubrication points.

Non-clogging

The MN impeller is a mixed-flow, enclosed sewage type capable of passing large solids and stringy material. The contoured impeller nut, locked to prevent loosening, is designed to match the contour of the back shroud of the impeller to eliminate projections which might catch strings or trap solids and impede flow. Large hand holes with contoured covers in both the casing and the suction head provide ready access to the impeller.

Typical Applications

In addition to the wide usage in wastewater treatment plants for raw sewage, return and waste sludge, effluent and many others, the following is only a sample of the areas of application for this versatile pump

- Stormwater
- Irrigation
- Drainage
- General Industrial Use
- Slurries
- Condenser Circulation
- Paper Mill Chips
- Fitter Backwash

General Data

Pump Size	10 MN 12	12 MN 14	12 MN 19	12 MN 24	14 MN 16	14 MN 24	16 MN 19	15 MN 25	16 MN 33	20 MN 24	20 MN 30	20 MN 39	24 MN 28	24 MN 33	24 MN 47	30 MN 33	30 MN 43
Max Solid Size	4	4 3/8	4½	4½	5¼	3¾	6	4½	6	6	5	7½	7	6	9	7	8
No. Impeller Vanes	2	2	2	3	2	3	2	3	3	3	3	3	3	3	3	3	3
Max Impeller Diameter	12	14	18 3/8	23 3/8	16	23½	18¾	24½	32½	23½	39 5/8	39 3/8	27½	32½	47¼	32½	39 3/8
Stuffing Box:																	
Inside Diameter	4 5/8	5½	5½	6¼	5½	5½	6¼	6¼	8 9/16	6¼	6¼	8 9/16	6¼	8 9/16	9¼	7 3/8	8 9/16
Depth	3¼	3¼	3¾	4 5/8	3¼	3¼	4 5/8	4 5/8	5 5/8	4 5/8	4 5/8	5 5/8	4 5/8	5 5/8	5 5/8	5 5/8	5 5/8
Number of Rings	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Size of Packing	½	½	½	5/8	½	½	5/8	5/8	¾	5/8	5/8	¾	5/8	¾	¾	¼	¾
Casing Thickness	5/8	5/8	¾	¾	7/8	1	¾	1	7/8	¾	¾	1	7/8	1	1¼	1	1 1/8
Max Discharge Pressure psi	35	35	70	160	35	70	35	70	160	35	70	160	35	70	160	50	70
Max Suction Pressure psi	15	15	25	25	15	25	15	25	25	15	25	25	15	25	25	15	25
Hydro Test Pressure psi	50	50	95	200	50	95	50	95	200	50	95	200	50	95	200	65	95

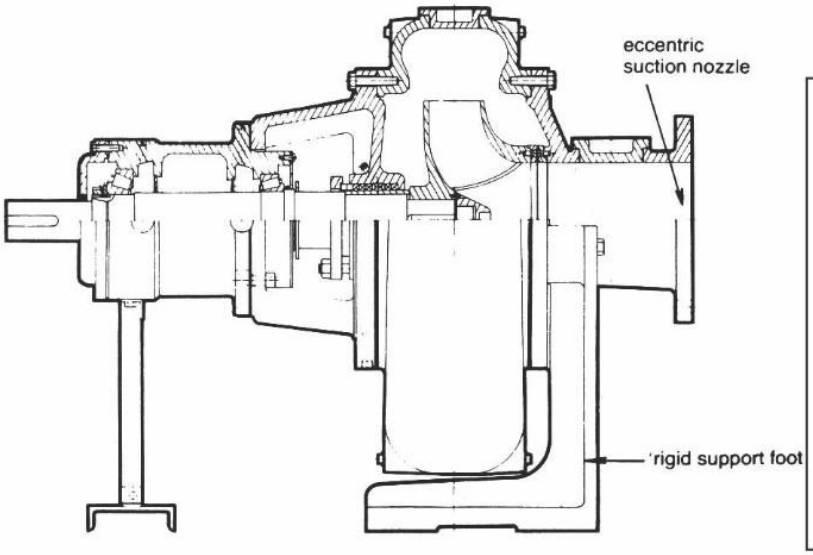
* Ribbed casing

General Data

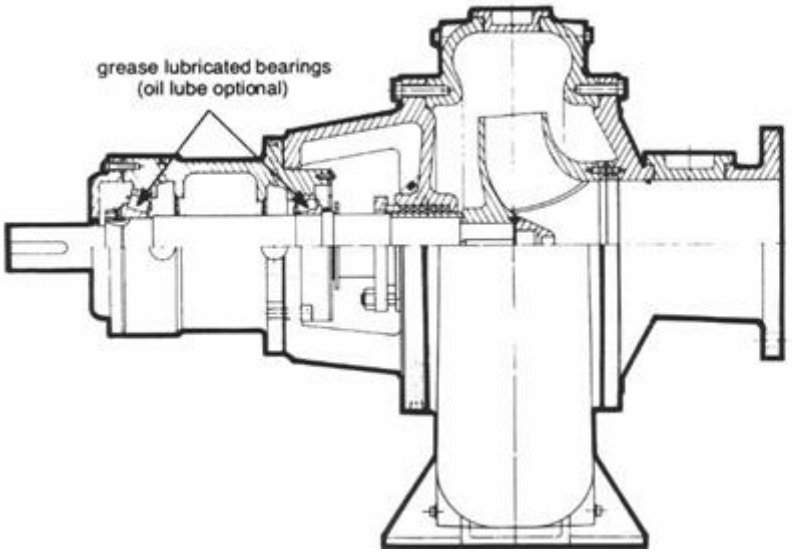
	Part	Material	Part	Material
Fittings of Standard Pumps	Casing	Cast Iron	Shaft Sleeve	Chrome Steel
	Impeller	Cast Iron	Line Bearing	Tapered roller
	Impeller wearing ring	Chrome Steel	Thrust Bearing	Tapered roller
	Suction- head wearing ring	Chrome Steel	Stuffing-box Head	Cast Iron
	Gland	Bronze	Bearing Frame	Cast Iron
	Shaft	Alloy Steel	Suction head or albow	Cast Iron
^10MN – 12 furnished with ball bearings			Note: Optional materials available upon request	
Vertical Shafting	For connecting vertical pumps to their drivers. Universal hoint drive shafts are generally recommended. For torque requirements exceeding the limits of this type, solid shafting with piloted couplings is usually used.			

Typical Sections

Model MN



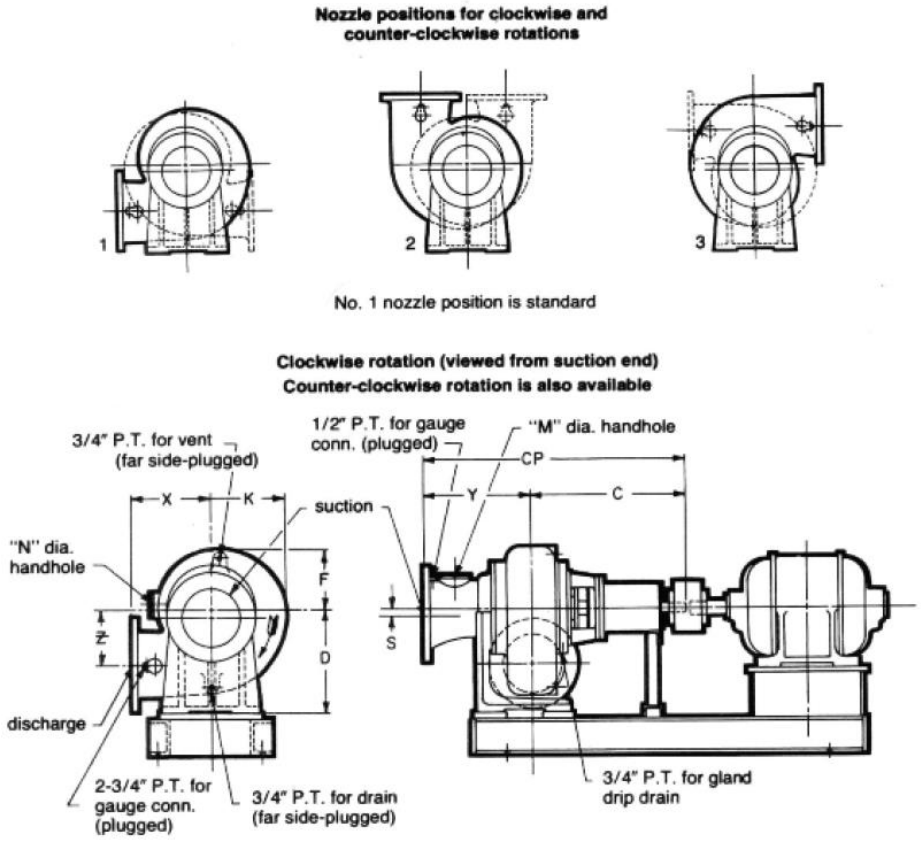
All pump sections on this page are typical of sizes:
10MN-12
12MN-14
12MN-19
12MN-24
14MN-16
14MN-24
16MN-19
16MN-25
16MN-33
20MN-24
20MN-30
24MN-28



All pump sections on this page are typical of sizes:
20MN-39
24MN-33
24MN-47
30MN-33
30MN-43

Dimensions MN Series

Model MN – Horizontal



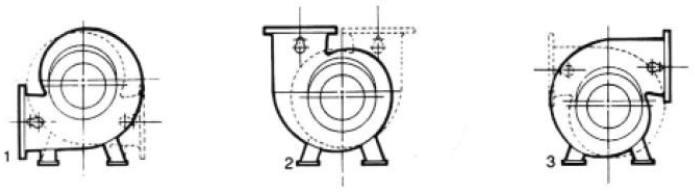
Pump Size	Discharge Diameter	Suction Diameter	C	CP	D	F	K	M	N	S	X	Y	Z	Data on Flanges				
														Diameter of Flange	Flange Thickness	Size of Bolt	Bolt Circle	No. of Bolts
10 MN-12	10	10	28.75	46.75	10.00	10.81	12.44	4.00	4.50	1.00	13.50	18.00	9.00	16.00	0.94	0.88	14.25	12
12 MN-14	12	12	33.12	52.38	21.50	12.62	14.94	4.00	4.50	1.25	14.00	19.25	11.00	19.00	1.00	0.88	17.00	12
12 MN-19	12	12	38.75	57.25	26.00	15.69	17.81	5.00	5.00	1.62	17.00	18.50	14.50	19.00	1.25	0.88	17.00	12
12 MN-24	12	12	46.12	67.00	26.75	19.00	20.50	4.50	5.50	0.00	20.00	20.88	14.75	19.00	1.38	0.88	17.00	12
14 MN-16	14	14	37.75	58.50	26.50	16.19	18.88	5.00	5.00	1.50	16.50	20.75	14.00	21.00	1.12	1.00	18.75	12
14 MN 24	14	14	38.62	59.62	34.00	20.06	22.75	5.00	6.00	1.38	21.00	21.00	17.50	21.00	1.38	1.00	18.75	12
16 MN-19	16	16	39.81	59.31	28.00	16.56	19.75	4.00	5.00	1.62	18.62	19.50	14.62	23.50	1.19	1.00	21.25	16
16 MN-25	16	16	46.62	69.12	34.00	21.06	24.25	6.00	6.00	0.00	22.00	22.50	19.00	23.50	1.44	1.00	21.25	16
16 MN-33	16	16	57.06	84.62	33.75	24.75	26.75	6.00	6.00	0.72	26.56	27.56	19.69	23.50	1.75	1.00	21.25	16
20 MN-24	20	20	44.38	66.56	35.50	23.25	26.62	5.00	6.00	1.75	24.00	22.19	18.00	27.50	1.25	1.12	25.00	20
20 MN-30	20	20	46.06	70.31	41.00	25.00	28.88	6.00	6.00	0.62	26.62	24.25	23.00	27.50	1.69	1.12	25.00	20
24 MN-28	24	24	44.62	72.25	41.00	24.75	29.50	6.00	6.00	1.69	28.00	27.62	22.00	32.00	1.38	1.25	29.50	20

Note: Dimensions are in inches

Dimensions MN Series

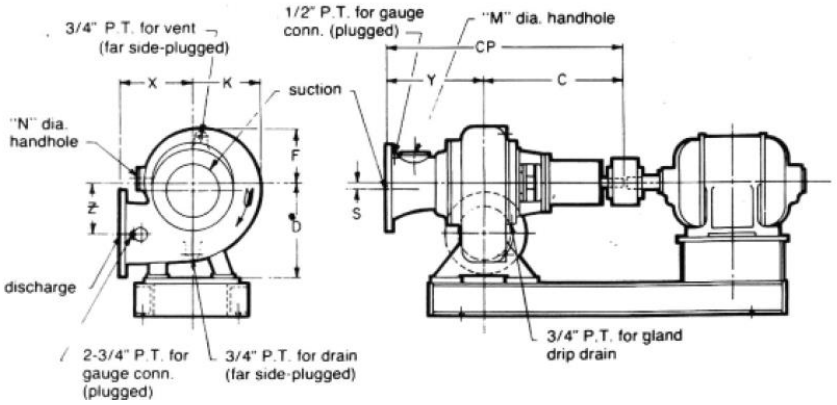
Model MN – Horizontal

Nozzle positions for clockwise and counter-clockwise rotations



No. 1 nozzle position is standard

Clockwise rotation (viewed from suction end)
Counter-clockwise rotation is also available



Pump Size	Discharge Diameter	Suction Diameter	C	CP	D1	D2	D3	F	K	M	N	S	X	Y	Z	Data on Flanges				
																Diameter of Flange	Flange Thickness	Size of Bolt	Bolt Circle	No. of Bolts
20 MN-39	20	20	58.25	91.81	40.00	36.00	33.00	31.75	34.25	7.88	7.88	0.81	33.25	33.56	24.62	27.50	2.12	2.12	25.00	20
24 MN-33	24	24	58.00	88.00	43.00	35.00	33.00	31.00	33.50	7.00	7.00	1.00	31.00	30.00	25.00	32.00	1.88	1.25	29.50	20
24 MN- 47	24	24	58.38	93.50	48.44	42.31	40.16	39.00	41.50	9.00	9.00	0.00	33.88	35.12	31.50	32.00	2.12	1.25	29.50	20
30 MN-33	30	30	50.56	91.30	47.25	42.00	35.00	32.75	40.00	10.25	9.00	3.38	32.00	40.75	20.06	38.75	1.88	1.25	36.00	28
30MN-43	30	30	62.00	104.0	56.00	52.00	44.00	42.00	50.00	10.00	9.00	1.00	38.00	42.00	35.00	38.75	2.12	1.25	36.00	28

D1 Refers to D dimension in the No. 1 nozzle position
D2 refers to D dimension in the No. 2 nozzle position.
D3 refers to D dimension in the No. 3 Nozzle position.

Note: Dimensions are in inches

SL. No.	Pump Model	Bare Pump Weight	GD2 of Rotor (kg. m²)
1	14 MN 16 A	1400	17
2	14 MN 24 A	1780	42
3	20 MN 24 A	2550	73

Typical Specifications – MN Series

Each pump shall be designed to pump sewage containing solids and stringy materials with a minimum of clogging. Each pump shall be rated at m^3/hr at total head of mtr. at rpm. In addition, each pump shall be capable of producing not led than m^3/hr at a minimum total head of mtr at rated speed. Minimum shut off head shall be mtr. Variable speed pumps shall be capable of m^3/hr at a total head of mtr. at reduced speed of rpm.

Driver horsepower shall be min. so as to be non-overloading from shutoff to minimum head specified for full speed operation. Suction and discharge connection shall be inches minimum and the flanges shall be drilled in accordance with ANSI standards for B16.5 flanges.

Casing

The pump casing shall be of the one piece volute type with integral discharge flange and arranged as shown on the drawings. It shall be made of close grained cast iron and of sufficient strength, weight and thickness to provide accurate alignment and prevent excessive deflection.

The casing shall be designed to permit the removal of the rotating assembly without disturbing the suction or discharge connections and provided with a large hand hole to permit inspection and cleaning of the pump interior. The hand hole cover shall match the contour of the casing. Three lifting eyes shall be furnished to facilitate handling.

Each casing shall be hydrostatically tested to one and one quarter times the maximum shut off pressure and provided with three-quarter inch vent, drain and gauge connections.

Suction Head

The suction head shall be of the same material as the casing and designed to provide equal flow distribution to the impeller eye. It shall be provided with a flanged connection, a hand hole with removable cover and a one-half inch gauge tap connection.

Impeller

The impeller shall be single stage end suction mixed flow enclosed type with a minimum minimum number of vanes and shall be designed to prevent clogging and to pass solids, trash and stringy materials contained in sewage.

The impellers shall be made of close grained cast iron, accurately machined and polished to remove hollows or projections which might encourage cavitation. Each impeller shall be statically and dynamically balanced prior to assembly.

The impeller shall be secured to the shaft with a key and contoured lock nut which in turn is secured by a locking screw. The arrangement shall be such that the impeller cannot be loosened by torque from either forward or reverse rotation.

Wearing rings

Removable wearing rings of unlike hardness stainless steel shall be furnished on the impeller and suction head and the axis of rotation. They shall be securely fastened to prevent any relative rotation, and designed to compensate for a minimum of one-quarter inch wear. The impeller ring shall be suitable chrome steel and the suction head ring shall be chrome steel and exceed the impeller ring hardness by not less than 50 points Brinell hardness.

Pump Shaft and Sleeve

Pump shafts shall be of heat treated alloy steel of sufficient size to transmit the full driver horsepower with a liberal safety factor and shall be accurately machined over the entire length. The shafts shall be protected from wear in the stuffing box by a hardened chrome steel shaft sleeve sealed to prevent leakage between the sleeve and the shaft.

Stuffing Box

The stuffing box shall be cast integrally with the stuffing box head, designed for a minimum for five rings of packing in addition to a bronze/C.I. seal cage and suitable for clear water or grease sealing. The stuffing box shall be readily accessible and provided with a removable bronze/C.I. gland to facilitate packing replacement (or mechanical seal as specified). The stuffing box head shall be tapped for a three-quarter inch drain connection

Typical Specifications – MN Series

Bearings

Pump bearings shall be of the tapered roller type mounted in a removable cast iron frame. The bearings shall be arranged to eliminate all radial play and designed for a minimum B-10 life of 100,000 hours in accordance with AFBMA. The bearings shall be grease lubricated and provided with tapped openings for addition of lubricant and draining. Suitable seals shall be provided in the bearing covers to prevent the entrance of contaminants. The bearing frame shall be arranged to provide for the axial adjustment of the wearing rings by the use of jacking screws and removable shims between the bearing frame and the stuffing box head.

Shop Testing

Each pump shall be fully tested on water in the manufacturer's shop in accordance with the Standards of the Hydraulic Institute of Indian standard to determine compliance with the rated conditions. Certified test curves shall be submitted for approval prior to shipment.

Certified Drawings

Certified prints of the proposed equipment shall be furnished for approval. These shall include a combined elevation drawing showing pump, driving equipment and couplings, a pump sectional drawing with a list of materials a proposed performance curve and separate driver prints and data

For Performance Curves, Go to www.sterlingpumps.com.au

Notes

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PUMPS

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