

Genuine Metaris Gear Product Technical Catalog

Pumps & Components - MH Series Bearing & Bushing Style



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Metaris MH Series Units

How to Specify and Code

This catalog contains codes for the most widely used models only; **other assembly codes are available from our sales representatives.**

Single Units & Multiple Units

Metaris pumps and motors are available as single units or multiple assemblies. The full assembly code for the finished unit combines individual codes for shaft end cover, port end cover, gear housing, and drive shaft. The code is preceded by the letter "**P**" for **PUMP** or "**M**" for **MOTOR**, and the letter "**A**", "**B**", or "**C**" for **MODEL**.

Note the examples below.

Single Unit

Assembly Code:

MHM50A-842-BE-OL15-43

- | | |
|--------------------|-------------|
| 1. Motor | M |
| 2. Series | 50 |
| 3. Model | A |
| 4. Shaft End Cover | 842 |
| 5. Port End Cover | BE |
| 6. Gear Housing | OL15 |
| 7. Drive Shaft | 43 |

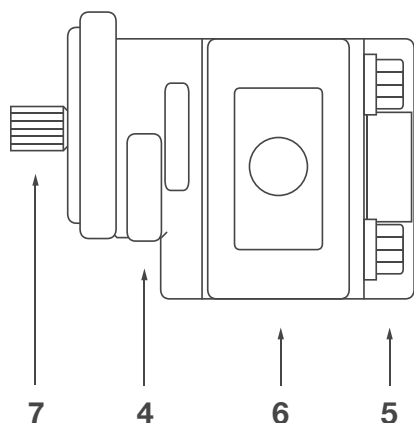
Multiple Unit

Assembly Code:

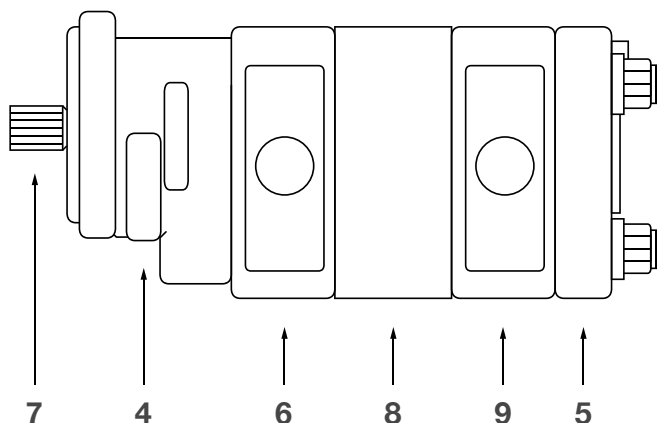
MHP75B-178-BI-OK15-7-C-OK12-1

- | | |
|----------------------|-------------|
| 1. Pump | P |
| 2. Series | 75 |
| 3. Model | B |
| 4. Shaft End Cover | 178 |
| 5. Port End Cover | BI |
| 6. Gear Housing | OK15 |
| 7. Drive Shaft | 7 |
| 8. Bearing Carrier | C |
| 9. Gear Housing | OK12 |
| 10. Connecting Shaft | 1 |

MHM50 SINGLE MOTOR



MHP75 MULTIPLE PUMP

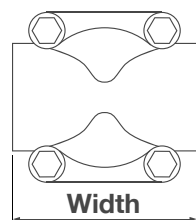


Metaris MH Series Units

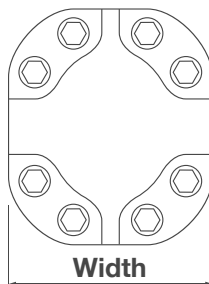
How to Identify Metaris Hydraulic Pumps & Motors

1. Look at the unit from the Port End; see which example it matches the closest. Include the shape.
2. Measure the overall width of the unit, then match the width to the chart beside the Port End Cover.
3. Note: Identification size may differ with different porting.

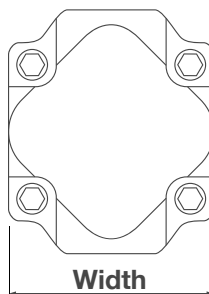
Port End Cover



SERIES	MH315	MH330	MH350	MH365
SIDE PORT WIDTH	4.25 (107.95)	6.68 (169.67)	7.12 (180.85)	7.38 (187.45)
UNPORTED WIDTH	4.00 (101.6)	4.81 (122.17)	5.75 (146.05)	6.25 (158.75)



SERIES	MH37X	MH75/76
WIDTH	5.12 (130.05)	6.13 (155.70)

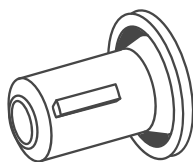


SERIES	MH15	MH20	MH25X	MH30/31	MH50/51
WIDTH	4.38 (111.25)	4.5 (114.3)	4.94 (125.48)	4.81 (122.17)	4.94 (125.48)

Dimensions are in inches (millimeters).

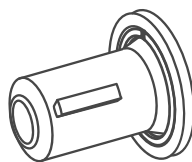
Shaft End Cover

Look at the Shaft End and compare it to the views below. Select the shaft type of your unit.



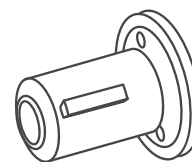
**No Retainer
Outboard Bearing**

Series: MH30, 31, 50, 51



**With
Outboard Bearing**

Series: MH30, 31, 50, 51



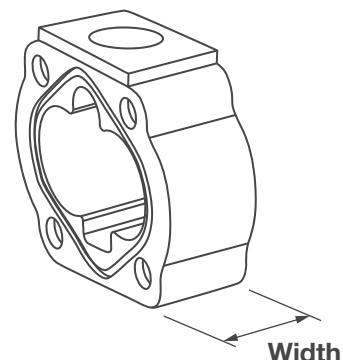
**Screw-in
Retainer**

Series: MH25X, 37X

Metaris MH Series Units

How to Identify Metaris Hydraulic Pumps & Motors

1. Look at the unit from the Port End; see which example it matches the closest.
Include the shape.
2. Measure the overall width of the unit, then match the width to the chart beside the Port End Cover on the previous page.
3. Note: Identification size may differ with different porting.



Gear Housing

For Series MH31, MH51, MH76 - the only way to determine this series is to disassemble the unit and look for dowel pins.

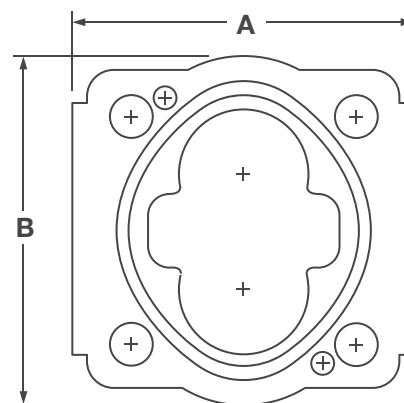
MH20, 25, 30, 31, 50, 51								
HOUSING WIDTH	1.25 (31.75)	1.5 (38.1)	1.75 (44.5)	2 (50.8)	2.25 (57.2)	2.5 (63.5)	2.75 (69.9)	3 (76.2)
GEAR WIDTH	0.5 (12.7)	0.75 (19.1)	1 (25.4)	1.25 (31.8)	1.5 (38.1)	1.75 (44.5)	2 (50.8)	2.25 (57.2)
MH37X, 75, 76								
HOUSING WIDTH	1.5 (38.1)	1.75 (44.5)	2 (50.8)	2.25 (57.2)	2.5 (63.5)	2.75 (69.9)	3 (76.2)	4 (101.6)
GEAR WIDTH	0.5 (12.7)	0.75 (19.1)	1 (25.4)	1.25 (31.8)	1.5 (38.1)	1.75 (44.5)	2 (50.8)	3 (76.2)
MH315								
HOUSING WIDTH	0.9 (22.9)	1.15 (29.2)	1.4 (35.6)	1.65 (41.9)	1.9 (48.3)	2.15 (54.6)	2.4 (61.0)	n/a
GEAR WIDTH	0.5 (12.7)	0.75 (19.1)	1 (25.4)	1.25 (31.8)	1.5 (38.1)	1.75 (44.5)	2 (50.8)	n/a
MH330								
HOUSING WIDTH	1 (25.4)	1.5 (38.1)	1.75 (44.5)	2 (50.8)	2.25 (57.2)	2.5 (63.5)	n/a	n/a
GEAR WIDTH	0.5 (12.7)	1 (25.4)	1.25 (31.8)	1.5 (38.1)	1.75 (44.5)	2 (50.8)	n/a	n/a
MH350								
HOUSING WIDTH	1 (25.4)	1.5 (38.1)	1.75 (44.5)	2 (50.8)	2.25 (57.2)	2.5 (63.5)	2.75 (69.9)	3 (76.2)
GEAR WIDTH	0.5 (12.7)	1 (25.4)	1.25 (31.8)	1.5 (38.1)	1.75 (44.5)	2 (50.8)	2.25 (57.2)	2.5 (63.5)
MH365								
HOUSING WIDTH	1.5 (38.1)	1.75 (44.5)	2 (50.8)	2.25 (57.2)	2.5 (63.5)	2.75 (69.9)	3 (76.2)	n/a
GEAR WIDTH	1 (25.4)	1.25 (31.8)	1.5 (38.1)	1.75 (44.5)	2 (50.8)	2.25 (57.2)	2.5 (63.5)	n/a

Dimensions are in inches (millimeters).

GEAR HOUSING DIMS	A	B	GEAR HOUSING DIMS	A	B
MH15	5.38 (136.7)	5.00 (127.0)	MH75/76	7.62 (193.5)	7.88 (200.2)
MH20	5.50 (139.7)	5.00 (127.0)	MH315	4.00 (101.6)	4.75 (120.7)
MH25	5.44 (138.2) 6.60 (167.6)*	6.00 (152.4)	MH330	4.81 (122.2)	5.88 (149.4)
MH30/31	5.44 (138.2)	5.78 (146.8)	MH350	5.75 (146.1)	6.00 (152.4)
MH37	6.62 (168.1)	7.31 (185.7)	MH365	6.25 (158.8)	7.25 (184.2)
MH50/51	5.44 (138.2) 6.60 (167.6)*	6.00 (152.4)			

*22 & 25 Gear Size

Dimensions are in inches (millimeters).



Metaris MH Series Units

Single Unit Approximate Weight

MODEL	GEAR WIDTH										
	1/2"	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"	2-3/4"	3"
MH15	24 (11)	25 (11)	26 (12)	28 (13)	29 (13)	31 (14)	33 (15)	-	-	-	-
MH20	24 (11)	25 (11)	26 (12)	28 (13)	29 (13)	31 (14)	33 (15)	-	-	-	-
MH25	36 (16)	39 (18)	42 (19)	44 (20)	45 (20)	47 (21)	48 (22)	50 (23)	52 (24)	-	-
MH30/31	30 (14)	31 (14)	32 (15)	33 (15)	34 (15)	35 (16)	36 (16)	-	39 (18)	-	-
MH37	52 (24)	54 (24)	56 (25)	58 (26)	60 (27)	62 (28)	65 (29)	68 (31)	71 (32)	-	78 (35)
MH50/51	37 (17)	40 (18)	43 (20)	45 (20)	46 (21)	48 (22)	49 (22)	51 (23)	54 (24)	-	-
MH75/76	67 (30)	70 (32)	72 (33)	74 (34)	76 (34)	79 (36)	82 (37)	85 (39)	88 (40)	-	92 (42)
MH315	16 (7)	17 (8)	18 (8)	19 (7)	20 (9)	21 (10)	22 (10)	-	-	-	-
MH330	-	35 (16)	36 (16)	37 (17)	39 (18)	40 (18)	41 (19)	-	-	-	-
MH350	-	50 (23)	51 (23)	53 (24)	54 (24)	56 (25)	57 (26)	59 (27)	60 (27)	-	-
MH365	-	-	56 (25)	59 (27)	61 (28)	64 (29)	66 (30)	69 (31)	71 (32)	74 (34)	76 (34)
MHC101	-	-	-	-	-	-	67 (30)	-	69 (31)	-	-
MHC102	-	-	-	-	-	-	68 (31)	-	70 (32)	-	-
MHG101	-	31 (14)	-	-	35 (16)	-	38 (17)	-	-	-	-
MHG102	-	31 (14)	-	-	35 (16)	-	38 (17)	-	-	-	-

Weights are in Pounds. (Kgs).

Multiple Unit Approximate Weight

MODEL	GEAR WIDTH										
	1/2"	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"	2-3/4"	3"
MH15	21 (10)	22 (10)	23 (10)	24 (11)	25 (11)	26 (12)	28 (13)	-	-	-	-
MH20	21 (10)	22 (10)	23 (10)	24 (11)	25 (11)	26 (12)	28 (13)	-	-	-	-
MH25	29 (13)	30 (14)	32 (15)	33 (15)	35 (16)	36 (16)	37 (17)	41 (19)	44 (20)	-	-
MH30/31	23 (10)	24 (11)	26 (12)	27 (12)	28 (13)	30 (14)	31 (14)	-	-	-	-
MH37	43 (20)	45 (20)	47 (21)	50 (23)	53 (24)	56 (25)	59 (27)	62 (28)	65 (29)	-	68 (31)
MH50/51	30 (14)	31 (14)	33 (15)	34 (15)	36 (16)	37 (17)	38 (17)	42 (19)	45 (20)	-	-
MH75/76	54 (24)	57 (26)	60 (27)	63 (29)	65 (29)	67 (30)	69 (31)	71 (32)	74 (34)	-	76 (34)
MH315	16 (7)	17 (8)	18 (8)	19 (7)	20 (9)	21 (10)	22 (10)	-	-	-	-
MH330	-	31 (14)	33 (15)	34 (15)	35 (16)	37 (17)	38 (17)	39 (18)	40 (18)	-	-
MH350	-	50 (23)	51 (23)	53 (24)	54 (24)	56 (25)	57 (26)	59 (27)	60 (27)	-	-
MH365	-	-	56 (25)	59 (27)	61 (28)	64 (29)	66 (30)	69 (31)	71 (32)	74 (34)	76 (34)

Weights are in Pounds. (Kgs).

Note: For the total weight of a multiple unit add the weight from the column of the single unit and the multiple unit column.
(e.g. MH15 single unit 3/4" gear width is 25 pounds plus MH15 multiple unit 3/4" gear width is 22 pounds total weight is 47 pounds)

For total weight in kilograms divide total weight in pounds by 2.2 = weight in kilograms (e.g. 47 pounds ÷ 2.2 = 21.36 kilograms)

Metaris MH Series Units

PL Factor

Each section of a multiple unit should be regarded as a single unit with corresponding delivery and power input requirements. Since the entire input horsepower is fed through a common drive shaft, the power delivered to or from the unit is limited by the physical strength of the shaft. This limit is defined as a “PL” factor, “P” being the operating pressure and “L” being the summation of the total gear widths.

In multiple units the “PL” must be calculated for the first connecting shaft as well as the drive shaft. Each style or type of shaft has a unique “PL” factor as noted in the table with the performance data.

Pressure x Total Gear Width = PL

MH101/102 Series Dump Pumps

Features

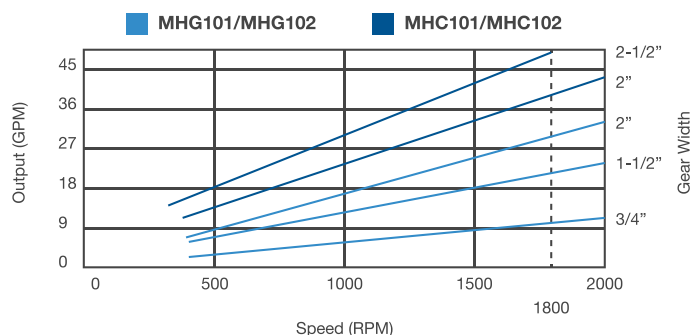
Genuine Metaris Dump Pumps are known for their ruggedness, reliability and interchangeability. Available in both the 101 Remote Mount and the 102 Direct Mount configurations and C or G frames, these pumps offer cast iron construction, a variety of displacements and “Air Shift” capabilities.

- Remote Mount, Direct Mount and Dual Pressure Options
- 3 Piece Cast Iron Construction
- High Pressure Shaft Seals
- Direct Acting Relief C/W Load Check
- Pressure Balance Thrust Plates
- Heavy Duty Roller Bearing
- Two or Three Line Hook-up
- Optional Airshift Control
- Factory set Relief Pressure at 2000 psi
- Optional Mounting Bracket
- Dowelled for Higher Pressure



Specifications

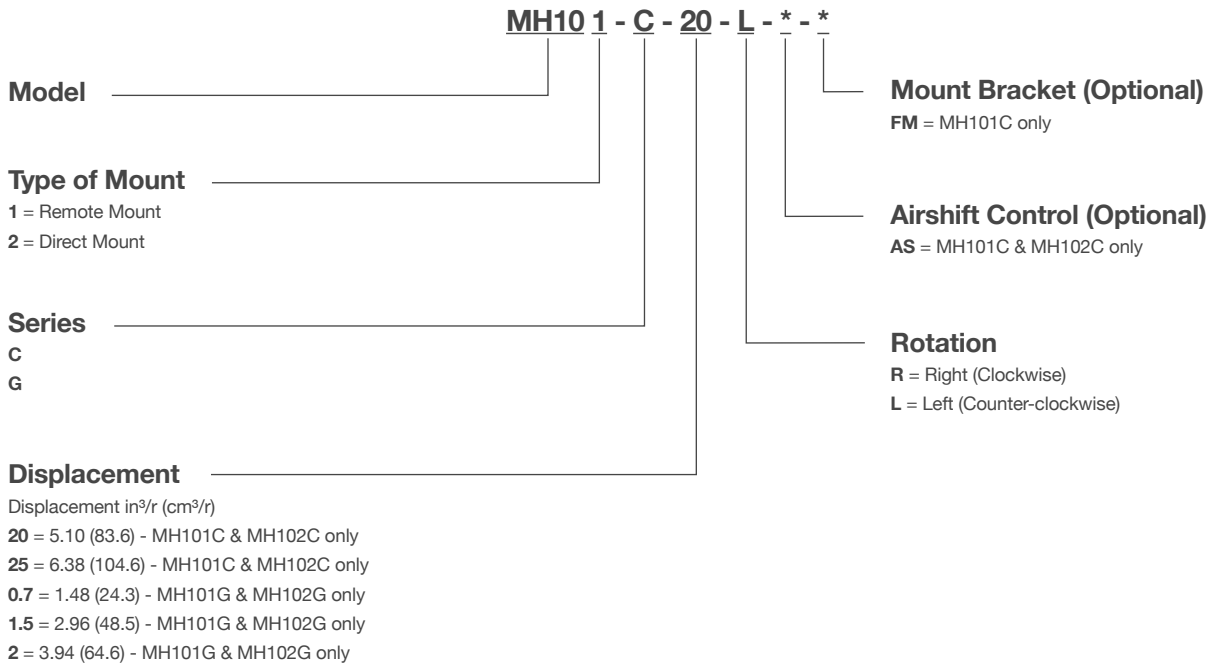
SERIES	REMOTE MOUNT	DIRECT MOUNT	FLOW AT 1800 RPM (GPM/LPM)				MAX RPM	MAX PRESSURE (PSI/BAR)
			3/4"	1-1/2"	2"	2-1/2"		
MH101G	X		9.5 / 36	21 / 79.5	29 / 109.3	-	1800	2500 / 173
MH101C	X		-	-	39 / 147	48 / 180.5	1800	2500 / 173
MH102G		X	9.5 / 36	21 / 79.5	29 / 109.3		1800	2500 / 173
MH102C		X			39 / 147	48 / 180.5	1800	2500 / 173



Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

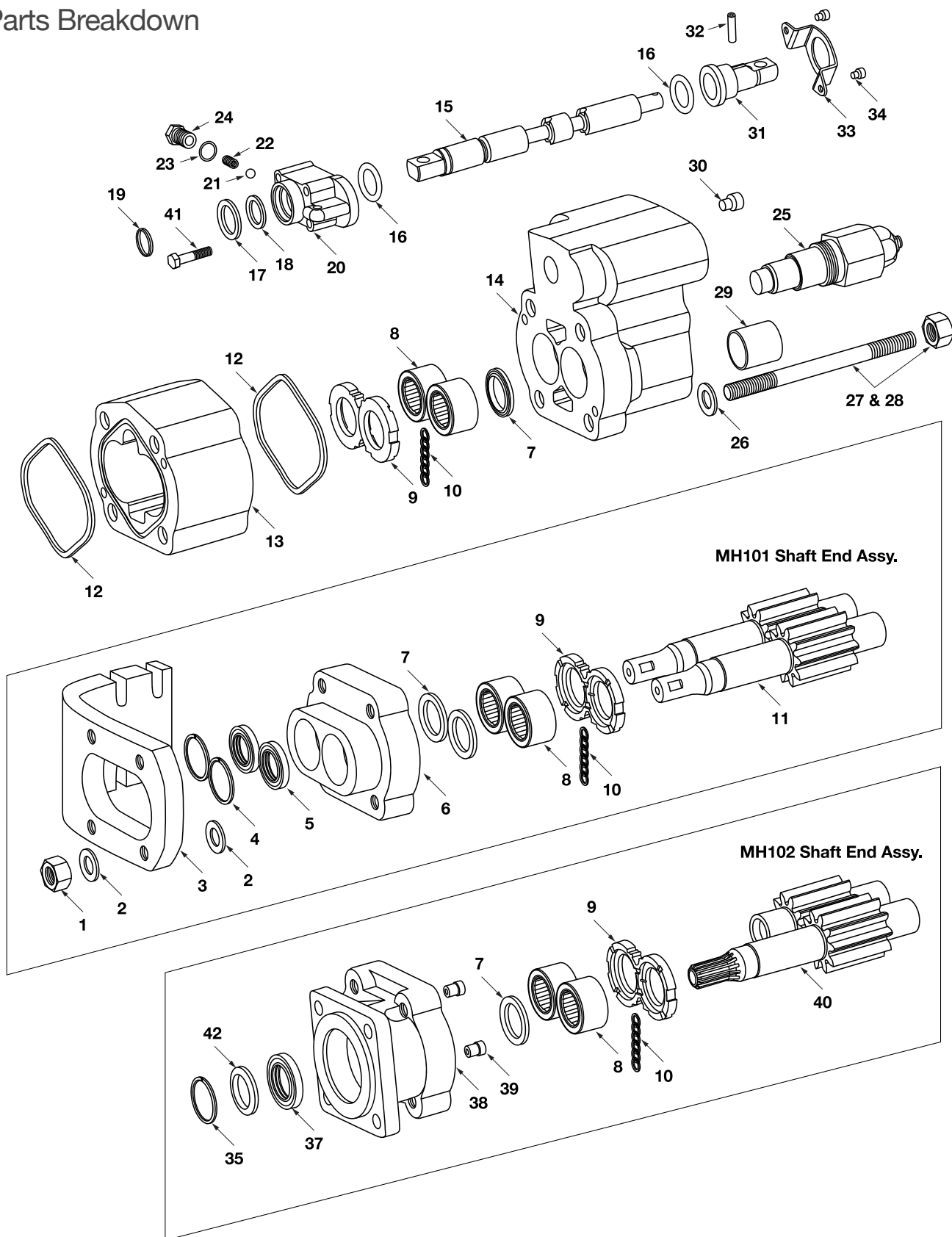
MH101/102 Series Dump Pumps

Model Code Breakdown



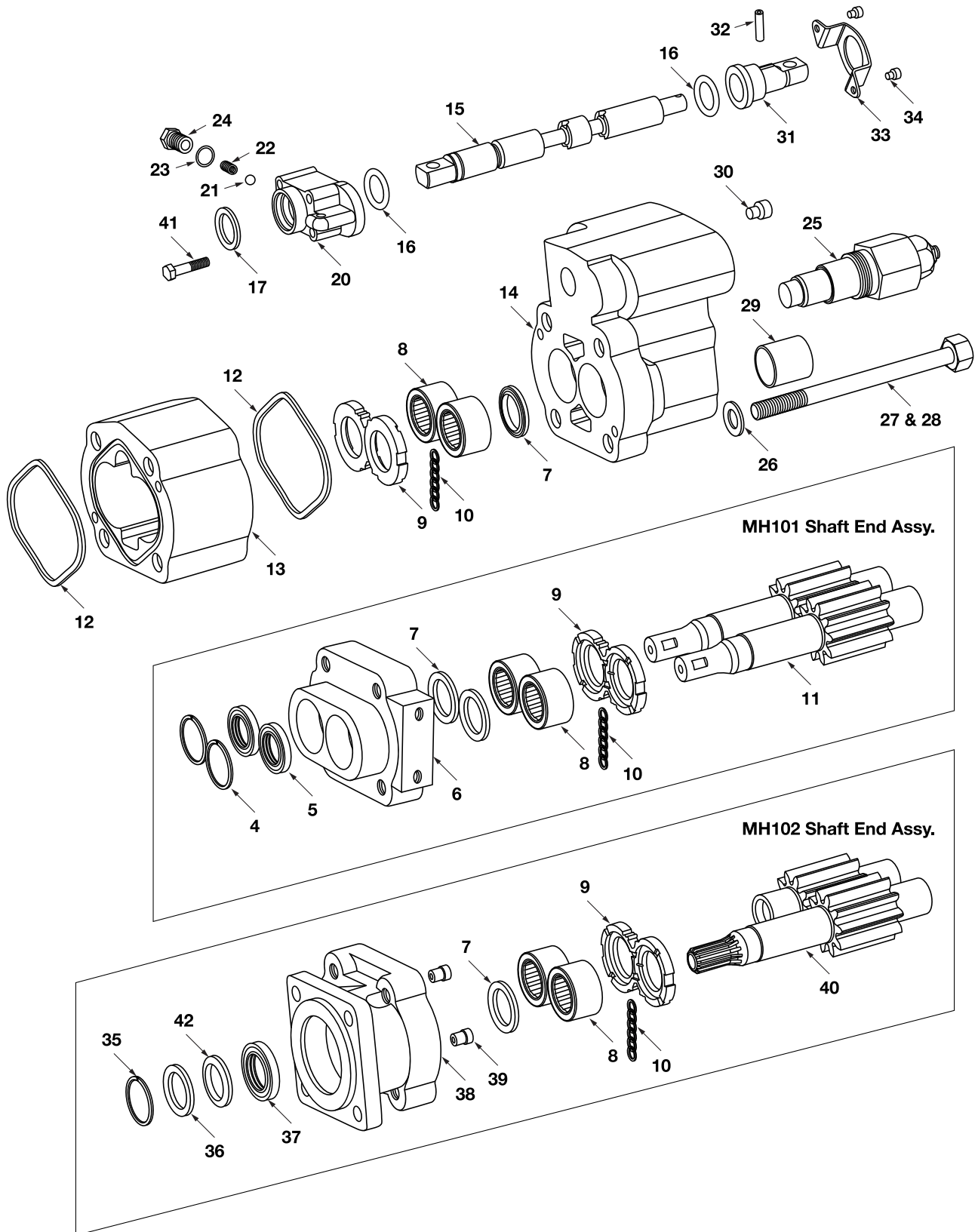
MH101C/102C Series Dump Pumps

Parts Breakdown



MH101G/102G Series Dump Pumps

Parts Breakdown



MH101/102 Series Dump Pumps

Parts Breakdown

DRAWING NO.	DESCRIPTION	MHG SERIES		MHC SERIES	
		METARIS #	ALTERNATE #	METARIS #	ALTERNATE #
1	MHC ONLY HEX NUT	-	-	X42-11-16000	391-1451-076
2	MHC ONLY WASHER	-	-	X45-10-17005	391-3784-028
3	MHC101 BRACKET (OPTIONAL)	-	-	A11-96-39999	314-0100-005
4	MH101 SNAP RING	X05-01-45080	391-2681-487	X05-03-50120	391-2681-493
5	MH101 LIP SEAL	X84-36-02709	391-2883-119	X84-36-03009	391-2883-096
6	MH101 SHAFT END COVER	A13-10-21100	308-5016-201	A11-10-21100	314-5039-201
7	RING SEAL	X81-76-02706	91-2585-006	X81-76-03305	391-2585-009
8	ROLLER BEARING	X03-24-12743	391-0381-068	X03-24-13349	391-0381-059
9	THRUST PLATE	A30-70-10000	391-2185-013	A25-70-10000	391-2185-012
10	POCKET SEAL	X85-11-00002	391-2882-086	X85-11-00002	391-2882-050
11	MH101 SHAFT & GEAR SET	A13-50-XX221	312-29XX-842	A11-50-XX131	314-29XX-640
12	GEAR HOUSING GASKET	X85-11-09203	391-2884-019	X85-11-10803	391-2884-021
13	GEAR HOUSING	A13-32-XX000	308-80XX-901	A11-32-XX000	314-80XX-100
14a	MH101 PORT END COVER	Special Order	308-3910-902	A11-22-01431	314-3910-903
14b	MH102 PORT END COVER	Special Order	308-3910-901	A12-22-01431	314-3910-904
15	SPOOL VALVE	A13-75-15000	308-4000-001	A11-75-15000	314-4000-001
16	O-RING	X86-11-01903	391-1985-014	X81-11-02504	391-2881-103
17	DETENT HOUSING WIPER SEAL	M4022883152	391-2883-152	M4022883147	391-2883-147
18	MHC ONLY RETAINER RING	-	-	X45-19-26003	391-3782-126
19	MHC ONLY SNAP RING	-	-	X05-04-24160	391-2688-003
20	DETENT CAP	A13-96-14176	308-4000-102	A11-96-14891	314-0100-003
21	DETENT BALL	X03-90-10008	391-0282-009	M4022089009	391-0282-009
22	DETENT SPRING	A13-95-00000	391-3581-383	A13-95-00000	391-3581-383
23	LOCK WASHER	X45-17-15004	391-3788-002	X45-17-15004	391-3788-002
24	DETENT RETAINER	A11-60-40000	391-2583-079	A11-60-40000	391-2583-079
25	RELIEF VALVE	A13-75-13000	355-9001-197	A11-75-13000	355-9001-067
26	WASHER	X45-19-15005	391-3782-146	X45-19-17005	391-3784-029
27a	CAP SCREW/ROD / MH101-20	X41-11-14140	391-1401-382	X41-11-XXXXX	391-1401-111
27b	CAP SCREW/ROD / MH101-25	-	-	X41-11-16191	391-1401-110
28a	CAP SCREW/ROD / MH102-20	X41-11-14140	391-1401-382	Special Order	391-1425-433
28b	CAP SCREW/ROD / MH102-25	-	-	Special Order	391-1425-432

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A13-50-XX221 changes to A13-50-15221 for 1.5" gear size
Housing no. A13-32-XX000 changes to A13-32-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH101/102 Series Dump Pumps

Parts Breakdown

DRAWING NO.	DESCRIPTION	MHG SERIES		MHC SERIES	
		METARIS #	ALTERNATE #	METARIS #	ALTERNATE #
29	OPTIONAL SLEEVE	A11-92-32370	391-3283-052	A11-92-32370	391-3283-052
30	PIPE PLUG	X02-02-23190	391-2282-003	X02-02-23250	391-2282-006
31	SPOOL END CAP	A13-96-23249	391-1881-072	A11-96-23869	391-1881-073
32	SPIRAL PIN	A00-94-30525	391-2085-009	A00-94-30525	391-2085-009
33	BRACKET	A13-96-34168	391-0981-007	A11-96-34884	391-0981-010
34	S.H.C. SCREW	X41-22-06010	391-1402-063	X41-22-06010	391-1402-063
35	MH102 SNAP RING	X05-03-56200	391-2686-063	X05-03-77250	391-2686-065
36	MH102 SPACER	A30-92-38520	391-3383-069	-	-
37	MH102 LIP SEAL	X84-36-02709	391-2883-119	X84-36-03309	391-2883-115
38	MH102 SHAFT END COVER	A20-10-21420	308-5030-201	A50-10-21420	313-5033-201
39	CHECK VALVES	A00-75-11000	391-3681-001	A00-75-11000	391-3681-001
40	MH102 SHAFT & GEAR SET 7/8" X 13 TOOTH SPLINE	A30-50-XX221	312-29XX-130	A50-50-XX221	314-29XX-130
41a	CAP SCREW (Not Shown) MHG-Qty 2, MHC-Qty 4	X41-12-06019	391-1433-020	X41-11-08044	391-1401-082
42	MH102 SEAL RETAINER	A20-60-10000	391-3381-040	A50-60-10000	391-3383-087
Not Shown	SHAFT KEY	X01-01-61032	391-1781-021	X01-01-61032	391-1781-021
Not Shown	SEAL RETAINER	A13-60-10000	391-2183-124	-	-

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

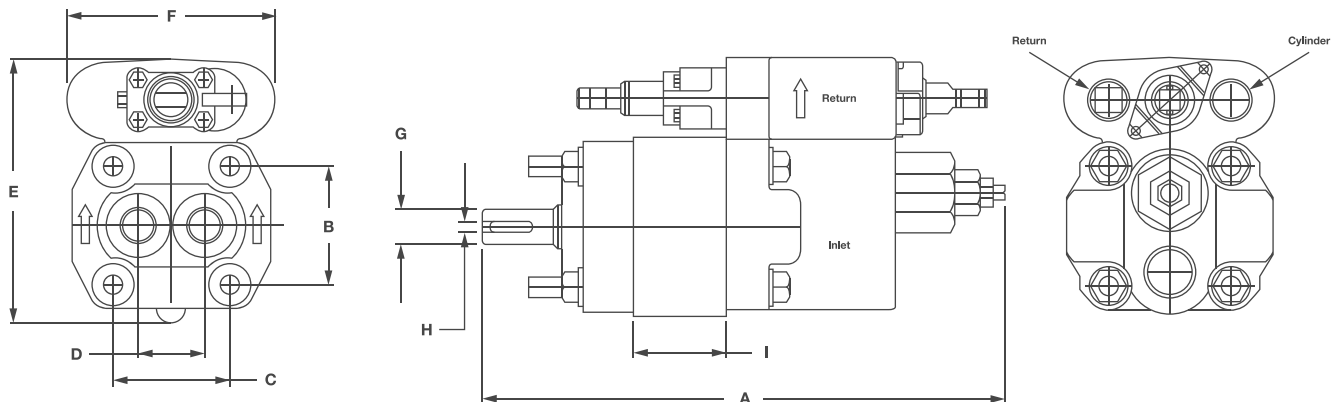
For example: Gear set no. A13-50-XX221 changes to A13-50-15221 for 1.5" gear size
Housing no. A13-32-XX000 changes to A13-32-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH101 Series Dump Pumps

Dimensions

Dimensions are in inches (millimeters).

- Weight: 31 - 70 lbs



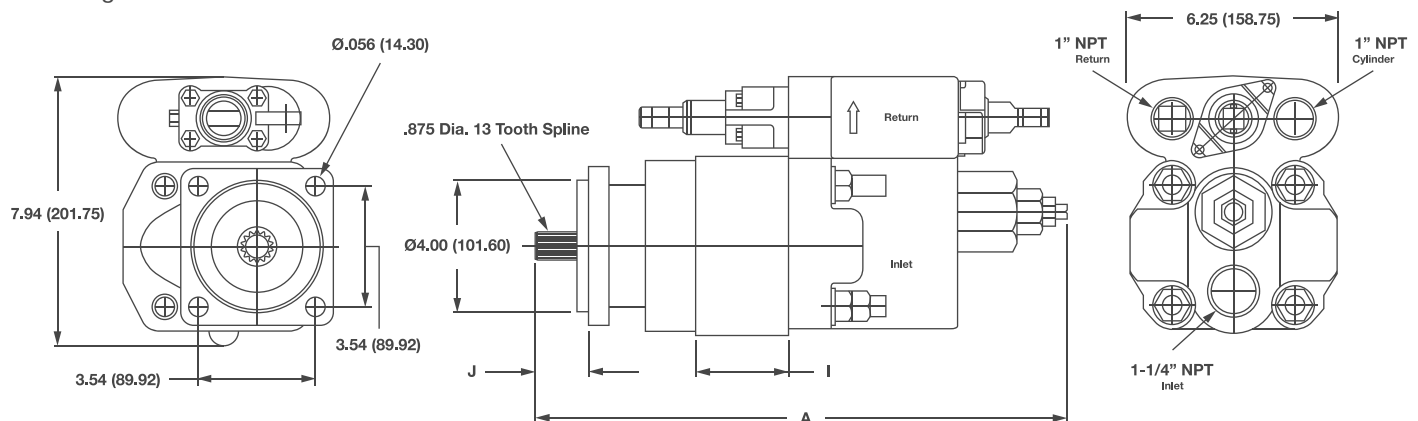
SERIES	A	B	C	D	E	F	G	H	I (25)	I (20)	I (1.5)	I (.75)
MHC101	13.12+GW	3.6 (91.4)	3.56 (90.4)	2 (50.8)	7.9 (201.7)	6.25 (158.8)	1 (25.4)	.25 (6.35)	3.25 (82.6)	2.75 (69.9)	-	-
MHG101	10.6 (269.2)	-	-	1.75 (44.5)	6.1 (154.9)	5.3 (134.6)	1 (25.4)	.25 (6.35)	-	2 (50.8)	.75 (19.1)	1 (25.4)

MH102 Series Dump Pumps

Dimensions

Dimensions are in inches (millimeters).

- Weight: 31 - 70 lbs



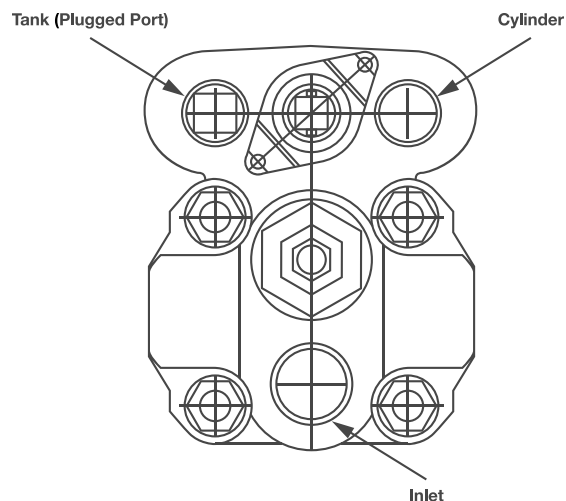
SERIES	A	B	C	D	E	F	G	H	I (25)	I (20)	I (1.5)	I (.75)	J
MHC102	13.62+GW	-	-	-	7.94 (201.7)	6.25 (158.8)	.875 (22.2)	-	3.25 (82.6)	2.75 (69.9)	-	-	1.62 (41.1)
MHG102	11.38+GW	-	-	-	7.94 (201.7)	6.25 (158.8)	.875 (22.2)	-	-	2 (50.8)	.75 (19.1)	1 (25.4)	1.31 (33.3)

MH101/102 Series Dump Pumps

Installation and Operation

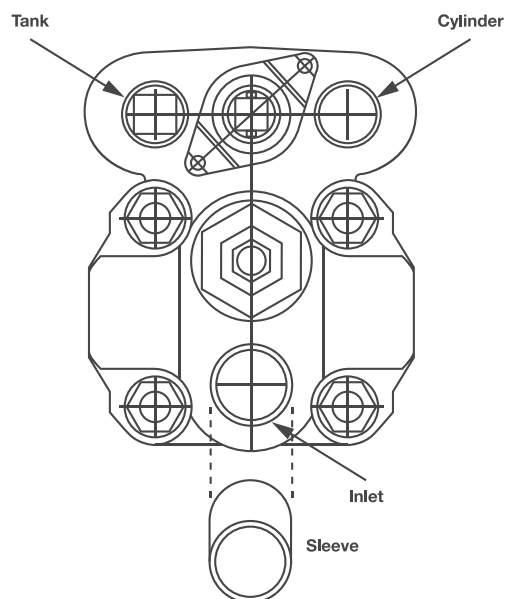
TWO LINE INSTALLATION

- One line to the cylinder
- One line to the supply line of the reservoir
- Tank port on the pump is plugged
- When the spool is in neutral, oil recirculates internally
- When the spool is in the raised position, oil is routed to the cylinder port to raise the cylinder
- When the spool is in the lower position, oil flow from the cylinder is routed back through the relief back to the inlet of the pump
- **NOTE: For intermittent use only**



THREE LINE INSTALLATION

- One line to the cylinder
- One line to the supply line of the reservoir
- One line to the return line of the reservoir
- The sleeve is installed in the inlet port of the pump
- **NOTE: For intermittent or continuous use**



WHEN INSTALLING AIR SHIFTERS

- Lubricate all moving parts before assembly
- Do not over tighten the mounting bolts
- Operate the spool by air to inspect proper movement



MH15 Series Bearing Pump

Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets

Specifications

MH15		DISPLACEMENT		MAX PRESSURE		MAX RPM
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR	
.50	1/2"	.69	(11.3)	2000	(137)	2400
.75	3/4"	1.07	(17.5)	2000	(137)	2400
1.00	1"	1.38	(22.6)	2000	(137)	2400
1.25	1-1/4"	1.73	(28.3)	2000	(137)	2400
1.50	1-1/2"	2.08	(34.1)	2000	(137)	2400
1.75	1-3/4"	2.42	(39.7)	2000	(137)	2400
2.00	2"	2.70	(44.2)	2000	(137)	2400

MH15 Series Bearing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 15 - A - 1 - 07 - WE - AB - 10 - 12 - DH - * - * - *

Type¹ _____
MHP = Pump
MHM = Motor

Unit² _____
A = Single Unit
B = Tandem Unit
C = Single or Tandem Unit w/ a Continental Shaft

Shaft End Cover³ _____
1 = Pump w/ Shaft Bearing (Clockwise Rotation)
2 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)
3 = Pump w/ Shaft Bearing (Double Rotation)
9 = Motor w/ Shaft Bearing & 1/4" Drain Port

Shaft End Cover⁴ _____
00 = Pad Mount **07** = SAE 2-Bolt "B" Mount
02 = Round Flange 6-Bolt **05** = 4-Bolt 3-3/4" "A" Mount
01 = SAE 2-Bolt "A" Mount **10** = 4-Bolt Round

Port End Cover⁵ _____

Connecting Shaft¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers⁹
See page 19 for Bearing Carrier options

Shaft Type⁸
3 = 6 Tooth Spline .997 Maj. Dia. x 2-1/2" Ext
12 = SAE "C" 14 Tooth Spline 1.250" Dia.
11 = 1" Dia. Keyed Shaft
25 = 1.250" Dia. Keyed Shaft (Special Order)

Gear Size⁷
Code / Displacement (in³/r)

05 (.69)	07 (1.07)	10 (1.38)	12 (1.73)	15 (2.08)	17 (2.42)	20 (2.7)
--------------------	---------------------	---------------------	---------------------	---------------------	---------------------	--------------------

Gear Housing⁶
See following page for Gear Housing options

NPT Codes

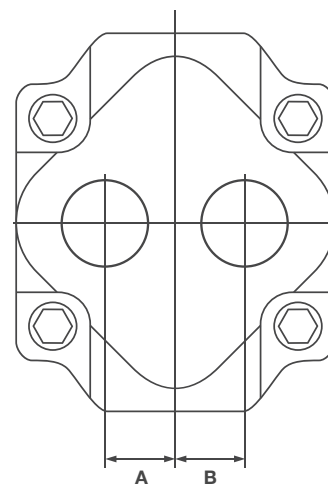
Single Units	Tandem Units	Port Size		A	B
		Left	Right		
BE	BI	None	None	n/a	n/a
WE	WI	3/8"	3/8"	1.25	1.25
CE	CI	None	1/2"	n/a	1.25
FE	FI	1/2"	None	1.25	n/a
GE	GI	1/2"	1/2"	1.25	1.25
HE	HI	1/2"	3/4"	1.25	1.25
KE	KI	3/4"	1/2"	1.25	1.25
JE	JI	3/4"	None	1.25	n/a
DE	DI	None	3/4"	n/a	1.25
LE	LI	3/4"	3/4"	1.25	1.25
VE	VI	3/4"	1"	1.25	1.25
TE	TI	1"	3/4"	1.41	1.41
NE	NI	1"	None	1.25	n/a
ME	MI	None	1"	n/a	1.25
PE	PI	1"	1"	1.25	1.25
SE	SI	1/2"	1"	1.25	1.25
RE	RI	1"	1/2"	1.25	1.25

Orientation is viewed from the shaft end

ORB Codes

Single Units	Tandem Units	Port Size		A	B
		Left	Right		
MO	MU	None	1/2"	n/a	1.25
LO	LU	1/2"	None	1.25	n/a
NO	NU	1/2"	1/2"	1.25	1.25
TO	TU	None	5/8"	n/a	1.25
SO	SU	5/8"	None	1.25	n/a
VO	VU	5/8"	5/8"	1.25	1.25
DO	DU	None	3/4"	n/a	1.25
CO	CU	3/4"	None	1.25	n/a
FO	FU	3/4"	3/4"	1.25	1.25
RO	RU	1/2"	5/8"	1.25	1.25
PO	PU	5/8"	1/2"	1.25	1.25
HO	HU	1/2"	3/4"	1.25	1.25
KO	KU	3/4"	1/2"	1.25	1.25

Orientation is viewed from the shaft end



MH15 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

NPT Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
AP	1/2"	None	x	x	x				
AC	None	1/2"	x	x	x				
EC	1/2"	1/2"	x	x	x				
ED	1/2"	3/4"			x	x	x		
EH	3/4"	1/2"			x	x	x		
AR	3/4"	None		x	x	x	x	x	
AF	None	3/4"			x	x	x	x	x
ER	3/4"	3/4"			x	x	x	x	x
ET	3/4"	1"			x	x	x	x	x
EU	3/4"	1"					x	x	
IJ	1"	3/4"			x	x	x	x	
IQ	1-1/4"	3/4"					x	x	
AT	1"	None			x	x	x	x	x
AH	None	1"			x	x	x	x	x
IL	1"	1"				x	x	x	x
IM	1"	1-1/4" *					x	x	x
IS	1-1/4" *	1"					x	x	x
AV	1-1/4" *	None					x	x	x
AJ	None	1-1/4" *					x	x	x
IT	1-1/4"	1-1/4"					x	x	x

ORB Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
UC	None	1/2"			x	x	x		
UP	1/2"	None			x	x	x		
YC	1/2"	1/2"			x	x	x	x	x
UD	None	5/8"			x	x			
UQ	5/8"	None			x	x	x	x	
YK	5/8"	5/8"			x	x			
UF	None	3/4"			x	x	x	x	
UR	3/4"	None					x	x	x
YR	3/4"	3/4"					x	x	x
UG	None	7/8"					x	x	x
US	7/8"	None					x		
YZ	7/8"	7/8"					x	x	x
YD	1/2"	5/8"					x	x	x
YJ	5/8"	1/2"			x	x	x		
YL	5/8"	3/4"			x	x	x	x	
YQ	3/4"	5/8"			x	x	x	x	
YS	3/4"	7/8"					x	x	x
YX	7/8"	3/4"					x	x	x

Flange Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
OC	None	1/2"		x	x				
OP	1/2"	None		x	x				
ZC	1/2"	1/2"		x	x				
OF	None	3/4"			x	x	x	x	
OR	3/4"	None			x	x	x	x	
ZR	3/4"	3/4"			x	x	x	x	
OH	None	1"				x	x	x	x
OT	1"	None				x	x	x	x
RL	1"	1"				x	x	x	x
OJ	None	1-1/4"					x	x	x
OV	1-1/4"	None					x	x	x
RT	1-1/4"	1-1/4"					x	x	x
ZT	3/4"	1"				x	x	x	
RJ	1"	3/4"				x	x	x	
RM	1"	1-1/4"					x	x	x
RS	1-1/4"	1"					x	x	x
ZF	1/2"	3/4"			x				
ZP	3/4"	1/2"			x				

MH15 Series Bearing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

NPT Codes

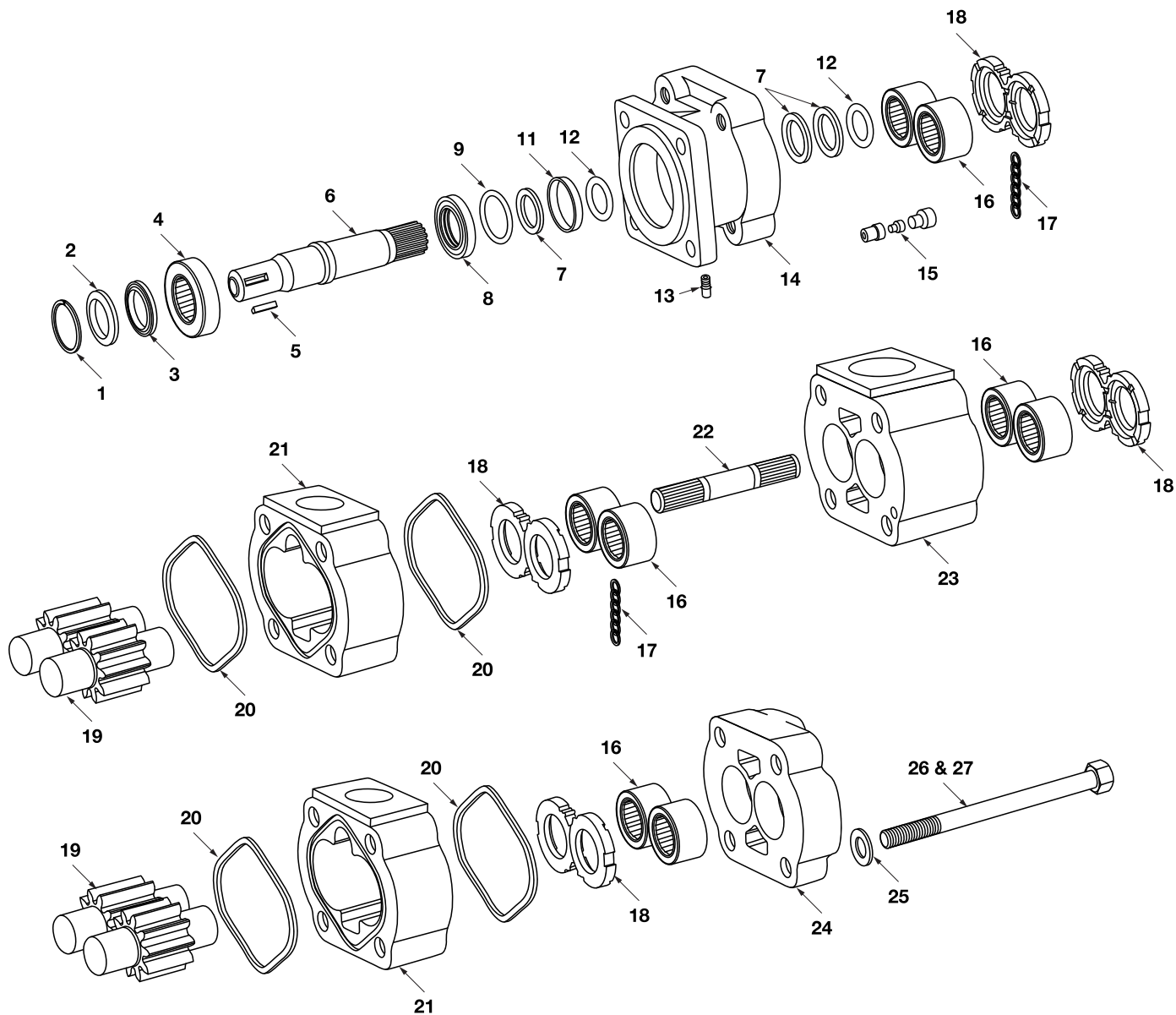
In	Out	CW (Left)	CCW (Right)
None	None	 B	 B
1-1/2"	None	 TL	 TJ
1-1/2"	1"	 XS	 XT
1"	1"	 DH	 HD
1-1/4"	1-1/4"	 BF	 FB

SAE O-ring Codes

In	Out	CW (Left)	CCW (Right)
1-1/2"	None	 TH	 TM
1-1/2"	1"	 TK	 TN
1"	1"	 QD	 DQ
1-1/4"	1-1/4"	 NV	 VN

MH15 Series

Parts Breakdown



MH15 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SPIROL LOCK	X05-03-56200	391-2686-063
2a	BEARING SEAL	Special Order	391-3181-003
2b	BEARING SEAL	Special Order	391-3181-007
3a	BEARING RETAINER	X89-86-02803	391-2687-001
3b	BEARING RETAINER	X89-86-03003	391-2687-002
4a	SHAFT BEARING	X03-17-12552	391-0381-045
4b	SHAFT BEARING	X03-17-12562	391-0381-051
5a	SHAFT DRIVE KEY	X01-01-61044	391-1781-020
5b	SHAFT DRIVE KEY	X01-01-61032	391-1781-021
5c	SHAFT DRIVE KEY	X01-01-61025	391-1781-025
5d	SHAFT DRIVE KEY	X01-01-81238	391-1781-045
6a	0.875" DIA. KEYED SHAFT (1/4" x 1/4" x 1") (TYPE 2)	A15-50-00121	302-1134-016
6b	6 TOOTH SPLINE 0.987" DIA (TYPE 3)	A15-50-00731	302-1134-020
6c	6 TOOTH SPLINE 0.997" DIA. Long. (TYPE 9)	Special Order	302-1134-023
6d	1" KEYED SHAFT (1/4" x 3/8" x 1") (TYPE 11)	A15-50-00131	302-1134-026
6e	0.875" KEYED SHAFT (1/4" X 3/8" X 1-1/4") (TYPE 8)	A15-50-00129	302-1134-021
6f	0.625" KEYED SHAFT (5/32" x 15/64" x 3/4") (TYPE 13)	A15-50-00111	302-1134-019
6g	0.875" KEYED SHAFT MALE THREADED END (1/4" x 3/8" x 7/8") (TYPE 15)	A15-50-00127	302-1134-025
6h	0.875" DIA. 13 TOOTH SPLINE (TYPE 16)	A15-50-00221	302-1134-028
6i	0.750" DIA. KEYED SHAFT (3/16" x 9/32" x 7/8") (TYPE 17)	A15-50-00169	302-1134-004
6j	0.999" KEYED SHAFT (1/4" x 3/8" 2 1/4") (TYPE 18)	A15-50-00134	302-1134-027
6k	1.250" DIA. 14 TOOTH SPLINE SHAFT (TYPE 19)	A15-50-00249	302-1134-002
6l	0.750" DIA. KEYED SHAFT (1/4" x 3/8" x 2") (TYPE 20)	A15-50-00161	302-1134-005
6m	1.250" KEYED SHAFT (5/16" x 15/32" x 1 3/8") (TYPE 25)	Special Order	302-1134-009
6n	0.875" DIA. KEYED SHAFT 1/4" x 3/8" x 1 1/4" (TYPE 31)	Special Order	302-1134-022
6o	0.750" DIA. KEYED SHAFT (3/16" x 3/16" x 2") (TYPE 32)	A15-50-00164	302-1134-013
6p	0.874" DIA KEYED SHAFT (3/16" X 9/32" X 1-1/4") (TYPE 37)	A15-50-00124	302-1134-032
6q	0.625" DIA. 9 TOOTH SPLINE SHAFT (TYPE 96)	A15-50-00211	302-1134-039
7a	BEARING SPACER	A15-92-28520	391-3181-001
7b	BEARING SPACER	A15-92-38800	391-3181-007
7c	BEARING SPACER	A15-92-22620	391-3181-012
7d	BEARING SPACER	A15-92-22520	391-3181-020
8	PUMP SHAFT SEAL	X83-11-02108	391-2883-048
9	O RING SEAL	X81-11-03102	391-2881-215
10	SHAFT O-RING BACKUP RING	A15-82-36020	391-2681-247
11	SEAL RETAINER	A15-60-10000	391-2584-020
12	SHAFT SEAL O RING	X81-15-02204	391-2881-260

MH15 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
13a	GREASE FITTING STR.	X02-09-22030	391-1281-005
13b	GREASE FITTING 45 DEG.	Special Order	391-1281-012
14a	PAD MOUNT S.E.C.	A15-10-21100	302-5095-201
14b	2 BOLT B PILOT S.E.C. (4" or 101.6 mm pilot)	A15-10-21221	302-5025-202
14c	4 BOLT B PILOT S.E.C. (4" or 101.6 mm pilot)	A15-10-21420	302-5035-201
14d	6 BOLT ROUND S.E.C.	A15-10-21650	302-5045-201
14e	2 BOLT A PILOT S.E.C. (3 1/4" or 82.55 mm pilot)	A15-10-21210	302-5025-201
14f	4 BOLT ROUND S.E.C.	A15-10-21450	302-5045-202
15	CHECK VALVE	A00-75-11000	391-3681-001
16	NEEDLE BEARING (Ø 1.625" O.D.)	X03-25-12841	391-0381-062
17	THRUST PLATE POCKET SEAL	X85-11-00002	391-2882-050
18	THRUST PLATE	A15-70-10000	391-2185-007
19	GEAR SET ONLY	A15-50-XX000	302-28XX-000
20	BODY GASKET	X85-11-09203	391-2884-019
21	PUMP & MOTOR GEAR HOUSING	A15-32-XX000	302-80XX-100
22	CONNECTING SHAFT	A15-50-00500	302-1133-001
23	BLANK BEARING CARRIER	A15-40-00000	302-7300-100
24	PORT END COVER	A15-22-00000	302-3100-100
25	FLAT WASHER (1/2")	X45-19-13005	391-3782-027
26	BOLT (1/2"-UNC)	See Fasteners Page	
27	NUTS (1/2"-UNC)	X42-11-13011	391-1471-051
Not Shown	DRAIN PIPE PLUG	X02-03-32110	391-2286-004

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

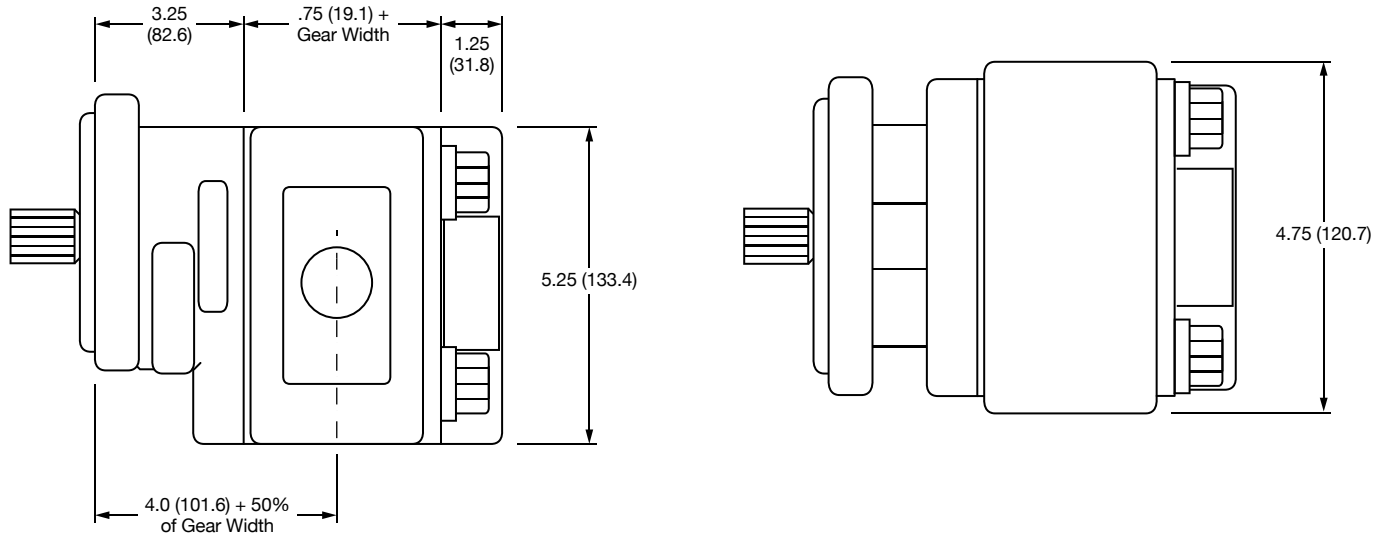
For example: Gear set no. A15-50-XX221 changes to A15-50-15221 for 1.5" gear size
Housing no. A15-32-XX000 changes to A15-32-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH15 Series

Dimensions

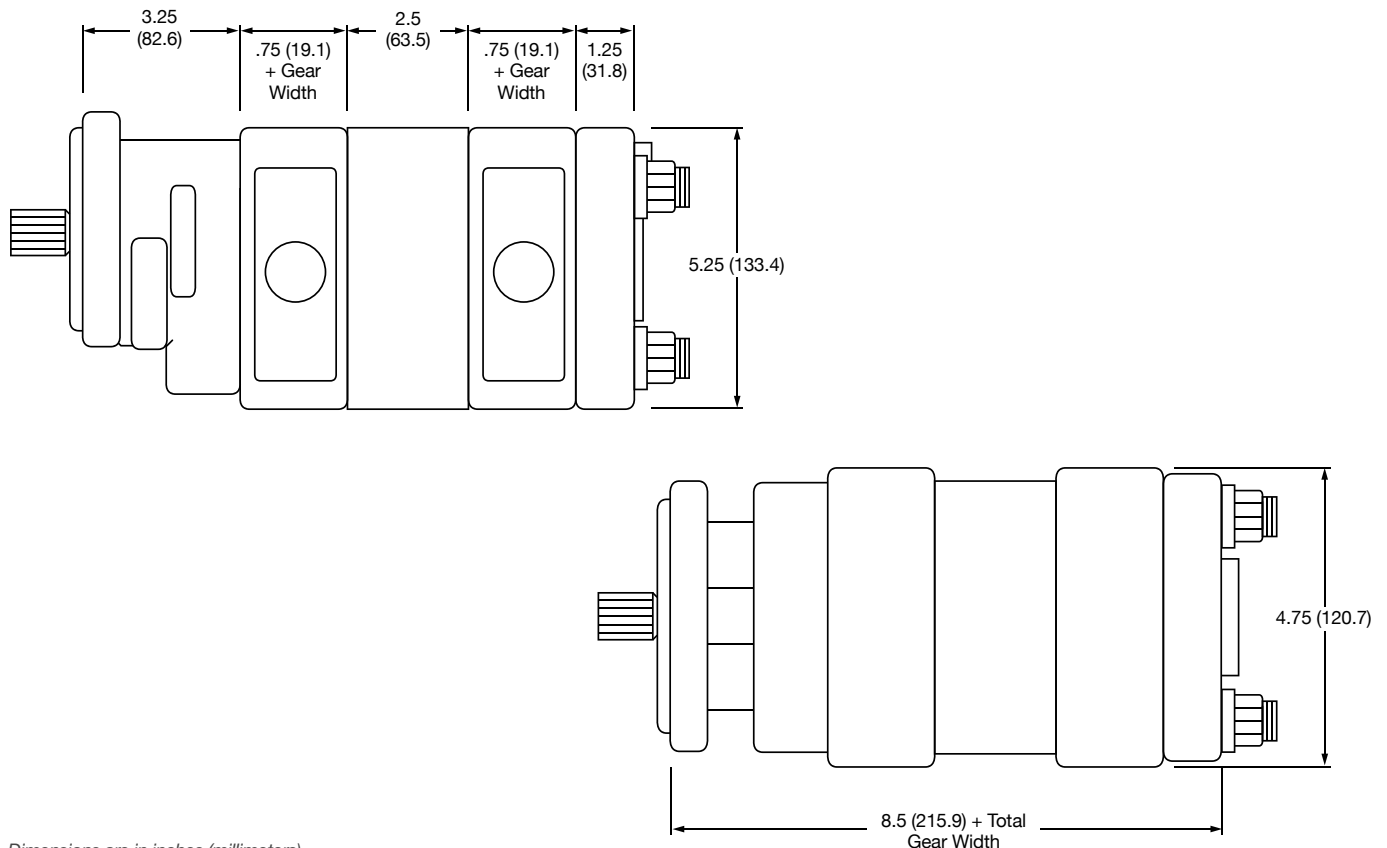
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH20 Series Bearing Pump

Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH20		DISPLACEMENT		MAX PRESSURE	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.50	1/2"	.99	(16.1)	3000	(207)
.75	3/4"	1.48	(24.2)	3000	(207)
1.00	1"	1.97	(32.3)	3000	(207)
1.25	1-1/4"	2.46	(40.4)	3000	(207)
1.50	1-1/2"	2.96	(48.4)	3000	(207)
1.75	1-3/4"	3.45	(56.5)	2500	(172)
2.00	2"	3.94	(64.6)	2500	(172)

MH20 Series Bearing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)				
	1"	1-1/4"	1-1/2"	1-3/4"	2"
900	6.5 / 24.5	8 / 30	10 / 38	12 / 45.5	13.5 / 51
1200	9 / 34	11.5 / 43.5	14 / 53	16 / 60.5	18.5 / 70
1500	11.5 / 43.5	14.5 / 55	17.5 / 66	20.5 / 77.5	23.5 / 89
1800	14 / 53	18 / 68	21.5 / 81.5	25 / 94.5	29 / 110
2100	16.5 / 62.5	21 / 79.5	25 / 94.5	29.5 / 112	34 / 129
2400	19 / 72	24 / 91	29 / 110	34 / 129	39 / 148

Motor Performance Data

SPEED RPM	GEAR WIDTH					
	1"		1-1/2"		2"	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
800	9 / 34	550 / 6.5	13 / 49	870 / 10	17 / 64.5	1150 / 13
1200	13 / 49	550 / 6.5	18 / 68	870 / 10	23.5 / 89	1150 / 13
1600	16 / 60.5	550 / 6.5	23 / 87	860 / 10	30.5 / 115	1140 / 13
2000	19.5 / 74	550 / 6.5	28 / 106	850 / 10	37 / 140	1125 / 13

Note: Input Flow @ 2000psi | Output Torque @ 140 bar

MH20 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "BB" Spline	13,000	5,500
SAE "BB" Keyed	8,600	5,500
SAE "B" Spline	8,300	5,500
SAE "B" Keyed	5,700	5,500
SAE "C" Spline	*	*
SAE "C" Keyed	*	*
Connecting Shaft		5,500

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH20 Series Bearing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 20 - A - 1 - 07 - WE - AB - 10 - 12 - DH - * - * - *

Type¹ _____
MHP = Pump
MHM = Motor

Unit² _____
A = Single Unit
B = Tandem Unit
C = Single or Tandem Unit w/ a Continental Shaft

Shaft End Cover³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
3 = Pump w/o Shaft Bearing (Double Rotation)
4 = Pump w/ Shaft Bearing (Clockwise Rotation)
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)
6 = Pump w/ Shaft Bearing (Double Rotation)
8 = Motor w/ Shaft Bearing & 1/4" Drain Port
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

Shaft End Cover⁴ _____
27 = 4-Bolt Cloverleaf Mount (Type 2) **94** = SAE 2-Bolt "A" Mount (Type 1)
42 = SAE 4-Bolt "B" Mount (Type 1) **96** = SAE 2-Bolt "B" Mount (Type 2)
46 = SAE 2/4-Bolt "B" Mount (Type 1) **97** = SAE 2-Bolt "B" Mount (Type 1)

Port End Cover⁵ _____

Connecting Shaft¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers⁹
See page 29 for Bearing Carrier options

Shaft Type⁸
07 = SAE "C" 14 Tooth Spline 1.250" Dia. (Cont. Only)
12 = Keyed Shaft .75" Dia. x 1.56 Key (Cont. Only)
15 = SAE "B" Keyed .875 Dia. w/ 5/8"-18 Thd (Cont. Only)
25 = SAE "B" 13 Tooth Spline .88" Dia.
30 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key
95 = SAE "A" 9 Tooth Spline .62" Dia.
65 = SAE "B" Spline Type 2
66 = SAE "B" Keyed Type 2
98 = SAE "BB" 15 Tooth Spline 1" Dia.

Gear Size⁷
Code / Displacement (in³/r)

05 (.99)	07 (1.48)	10 (1.97)	12 (2.46)	15 (2.96)	17 (3.45)	20 (3.94)
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Gear Housing⁶
See following pages for Gear Housing options

NPT Codes

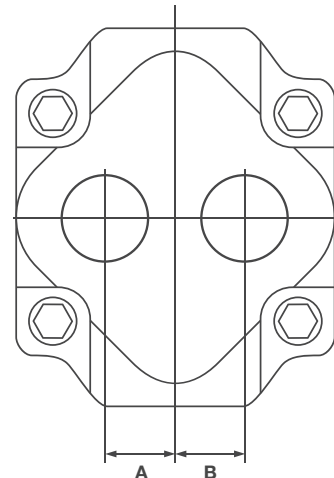
Single Units	Tandem Units	Port Size		A	B
Left	Right				
BE BY	BI BY	None	None	n/a	n/a
KE KY	KI KY	3/4"	None	n/a	1.4
LE LY	LI LY	None	3/4"	1.4	n/a
ME MY	MI MY	3/4"	3/4"	1.4	1.4
QU QQ	QO QQ	1"	1"	1.4	1.4
AI	AI	3/4"	1"	1.4	1.4
EI	EI	1"	3/4"	1.4	1.4

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs
 Orientation is viewed from the shaft end

ORB Codes

Single Units	Tandem Units	Port Size		A	B
Left	Right				
CE CY	CI CY	3/4"	None	n/a	1.4
DE DY	DI DY	None	3/4"	1.4	n/a
FE FY	FI FY	3/4"	3/4"	1.4	1.4
GE GY	GI GY	1"	3/4"	1.4	1.4
HE HY	HI HY	3/4"	1"	1.4	1.4
JE JY	JI JY	1"	1"	1.4	1.4
MA YO	MU YO	1"	None	n/a	1.4
RA RO	SU RO	None	1"	1.4	n/a

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs
 Orientation is viewed from the shaft end



MH20 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

NPT Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
IL	1/2"	None	x	x	x				
IM	None	1/2"	x	x	x				
IR	1/2"	1/2"	x	x					
IC	3/4"	None		x	x	x	x	x	x
ID	None	3/4"		x	x	x	x	x	x
IF	3/4"	3/4"		x	x	x	x	x	x
IG	3/4"	1"			x	x	x	x	x
IH	3/4"	1-1/4"					x	x	
IJ	1"	3/4"			x	x	x	x	x
IK	1-1/4"	3/4"					x	x	
YC	1"	None			x	x	x	x	x
YD	None	1"			x	x	x	x	x
YF	1"	1"			x	x	x	x	x
YG	1"	1-1/4" *				x	x	x	x
YH	1"	1-1/2"					x	x	x
YJ	1-1/4" *	1"					x	x	x
YK	1-1/2"	1"					x	x	x
IA	1-1/4" *	None					x	x	x
IB	None	1-1/4" *					x	x	x
YL	1-1/4"	1-1/4"					x	x	x

BSPP Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
YN	3/4"	None		x	x	x	x	x	x
YQ	None	3/4"		x	x	x	x	x	x
YS	3/4"	3/4"			x	x		x	x
YT	3/4"	1"			x	x			
YU	3/4"	1-1/4"						x	x
YV	1"	3/4"			x	x	x	x	
YW	1-1/4"	3/4"						x	x
SL	1"	None				x	x	x	x
RQ	None	1"				x	x	x	x
MP	1"	1"				x	x	x	
VY	1"	1-1/4" *					x	x	x
IX	1-1/4" *	1"					x	x	x
NJ	1-1/4" *	None						x	x
UI	None	1-1/4" *						x	x
PF	1-1/4"	1-1/4"							x

Split Flange Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
UC	3/4"	None		x	x	x	x	x	x
UD	None	3/4"		x	x	x	x	x	x
UF	3/4"	1/2"		x	x	x	x	x	
UG	3/4"	1"			x	x	x	x	x
UH	3/4"	1-1/4"				x	x	x	x
UJ	1"	3/4"			x	x	x	x	x
UK	1-1/4"	3/4"				x	x	x	x
OC	1"	None				x	x	x	x
OD	None	1"				x	x	x	x
OF	1"	1"			x	x	x	x	x
OG	1"	1-1/4" *				x	x	x	x
OH	1"	1-1/2" *						x	x
OJ	1-1/4" *	1"				x	x	x	x
OK	1-1/2" *	1"						x	x
OA	1-1/4" *	None				x	x	x	x
OB	None	1-1/4" *				x	x	x	x
OL	1-1/4"	1-1/4"					x	x	x
OM	1-1/4"	1-1/2" *						x	x
OP	1-1/2" *	1-1/4"						x	x
OE	1-1/2" *	None						x	x
OU	None	1-1/2" *						x	x

MH20 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing Cont. ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

O.D. Tube Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
EC	3/4"	None		x	x	x	x	x	x
ED	None	3/4"		x	x	x	x	x	x
EF	3/4"	3/4"		x	x	x	x	x	x
EG	3/4"	1"			x	x	x	x	x
EH	3/4"	1-1/4"				x	x	x	x
IN	3/4"	1-1/2"						x	x
EJ	1"	3/4"			x	x	x	x	x
EK	1-1/4"	3/4"				x	x	x	x
IP	1-1/2"	3/4"						x	x
EZ	7/8"	None				x			
EL	7/8"	1"			x				
EM	1"	7/8"			x				
AC	1"	None			x	x	x	x	x
AD	None	1"			x	x	x	x	x
AF	1"	1"				x	x	x	x
AG	1"	1-1/4" *				x	x	x	x
AH	1"	1-1/2" *						x	x
AJ	1-1/4" *	1"				x	x	x	x
AK	1-1/2" *	1"						x	x
AA	1-1/4" *	None				x	x	x	x
AO	None	1-1/4" *				x	x	x	x
AL	1-1/4"	1-1/4"					x	x	x
AM	1-1/4"	1-1/2" *						x	x
AP	1-1/2" *	1-1/4"						x	x
AE	1-1/2" *	None						x	x
AU	None	1-1/2" *						x	x

* Low Pressure Inlet Porting

Metric S.F. Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
VN	3/4"	None			x	x	x	x	
VQ	None	3/4"			x	x	x	x	
VS	3/4"	3/4"			x	x	x	x	
VT	3/4"	1"			x	x	x	x	
RV	1"	3/4"			x	x	x	x	
RU	3/4"	1-1/4"				x	x	x	
RW	1-1/4"	3/4"				x	x	x	
UL	1"	None			x	x	x	x	x
UR	None	1"			x	x	x	x	x
UM	1"	1"				x	x	x	
VU	1"	1-1/4" *				x	x	x	x
UX	1-1/4" *	1"				x	x	x	x
HO	1"	1-1/2" *						x	x
VO	1-1/2" *	1"						x	x
NO	1-1/4" *	None					x	x	x
UO	None	1-1/4" *					x	x	x
PO	1-1/4"	1-1/4"					x	x	x
QO	1-1/4"	1-1/2" *						x	x
SO	1-1/2" *	1-1/4"						x	x
UY	1-1/2" *	None						x	x
TO	None	1-1/2" *						x	x

* Low Pressure Inlet Porting

Metric Str. Thd. Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
EN	3/4"	None			x	x	x		
TQ	None	3/4"			x	x	x		
ES	3/4"	3/4"			x	x			
ET	3/4"	1"			x	x			
EV	1"	3/4"			x	x	x	x	
NL	1"	None			x	x	x		
ER	None	1"			x	x	x	x	x
CM	1"	1"				x	x		
VE	1"	1-1/4" *					x	x	x
EX	1-1/4" *	1"					x	x	x
PA	1-1/4"	1-1/4"						x	x
QA	1-1/4"	1-1/2" *							x
SA	1-1/2" *	1-1/4"							x

* Low Pressure Inlet Porting

MH20 Series Bearing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

NPT Codes

In	Out	CW (Left)	CCW (Right)
None None	None None	 C A	 D J
1" 1-1/4"	None None	 TB VB	 BT BV
1" 1-1/4" 1-1/4"	3/4" 3/4" 1"	 TX VX VZ	 XT XV ZV
1-1/4" 1-1/4" 1-1/2"	3/4" 1" 1"	 TJ VJ VK KW	 JT JV KV -
1"	3/4"	 ZX	 XZ
1"	3/4"	 ZS	 SZ

SAE O-ring Codes

In	Out	CW (Left)	CCW (Right)
1" 1-1/4" 1-1/2"	None None None	 CB DB FB	 BC BD BF
None 1" 1-1/4" 1-1/2" 1-1/4" 1-1/2"	3/4" 3/4" 3/4" 1" 1"	 CJ DJ FJ DK FK	 JP JC JD JF KD KF
1" 1-1/4" 1-1/2" 1-1/4" 1-1/2"	3/4" 3/4" 3/4" 1" 1"	 CR DR FR DS FS	 RC RD RF SD SF
1"	3/4"	 KJ	 JK
1"	3/4"	 KX	 XK

SAE Split Flange Codes

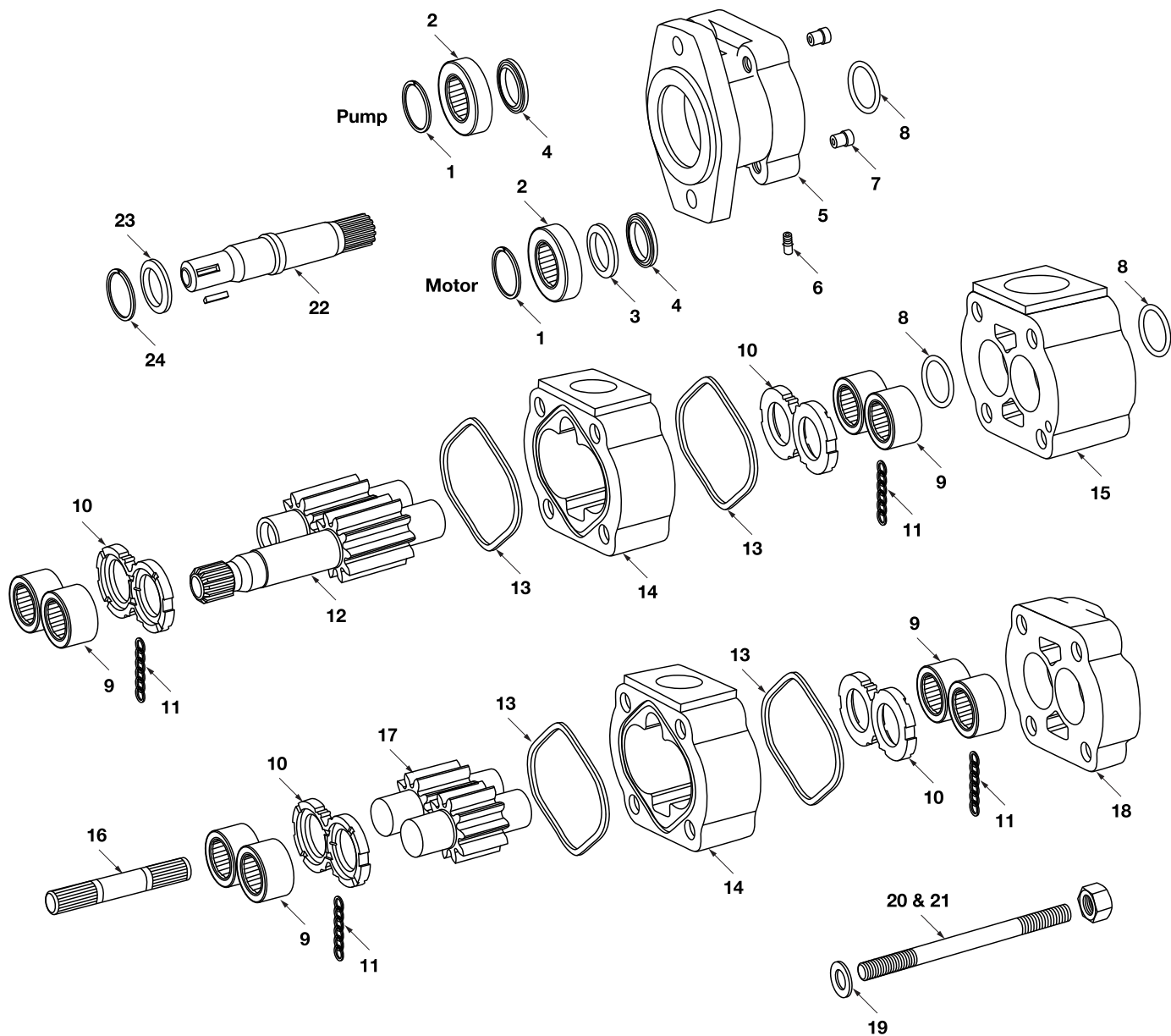
In	Out	CW (Left)	CCW (Right)
1" 1-1/4" 1-1/2"	None None None	 LB MB NB	 BL BM BN
None 1" 1-1/4" 1-1/2" 1-1/4" 1-1/2"	3/4" 3/4" 3/4" 3/4" 1" 1"	 BR LR MR NR MS NS	 RB RL RM RN SM SN
1" 1-1/4" 1-1/2" 1-1/4" 1-1/2"	3/4" 3/4" 3/4" 1" 1"	 LX MX NX MZ NZ	 XL XM XN ZM ZN
1"	3/4"	 SR	 RS
1"	3/4"	 RZ	 ZR

Motors Only Codes

In	Out	Dual	
None	None	 B	
1" 1-1/4" 1" 1-1/4" 1-1/2" 1" 1-1/4" 1-1/2"	1" 1-1/4" 1" 1-1/4" 1-1/2" 1" 1-1/4" 1-1/2"	 TT VV CC BB FF LL MM NN	NPT NPT SAE O-Ring SAE O-Ring SAE O-Ring SAE Split Flange SAE Split Flange SAE Split Flange

MH20 Series

Parts Breakdown



MH20 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SHAFT BEARING SNAP RING	X05-03-56200	391-2686-063
2a	BEARING SPACER (IN PLACE OF SHAFT BEARING)	A30-92-38520	391-3383-069
2b	INPUT SHAFT BEARING	X03-16-12552	391-0381-040
3	MOTOR SEAL RETAINER USED WITH SHAFT BEARING OR SPACER	A20-60-10000	391-3381-040
4a	PUMP LIP SEAL FOR CONTINENTAL SHAFT ONLY	X89-11-02508	391-2883-107
4b	MOTOR LIP SEAL FOR CONTINENTAL SHAFT ONLY	X84-36-02509	391-2883-126
4c	PUMP LIP SEAL FOR SHAFT END COVER	X83-11-02708	391-2883-058
4d	MOTOR LIP SEAL	X84-36-02709	391-2883-119
5a	20 6 BOLT ROUND WITH 2.625" OR 66,67 mm PILOT PUMP S.E.C. TYPE 05	A20-10-21650	308-5043-201
5b	20 PAD PILOT PUMP TYPE 2 S.E.C. TYPE 10	A20-10-22100	308-5016-203
5c	20 4 BOLT CLOVERLEAF PILOT TYPE 2 PUMP S.E.C. TYPE 27	A20-10-22460	308-5036-201
5d	20 4 BOLT B PILOT PUMP S.E.C. TYPE 42 (4" or 101.6 mm pilot)	A20-10-21420	308-5030-201
5e	20 2 1/4 BOLT B PILOT PUMP S.E.C. TYPE 46 (4" or 101.6 mm pilot)	A20-10-21320	308-5053-202
5f	20 2 BOLT A PILOT PUMP S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)	A20-10-21210	308-5020-204
5g	20 2 BOLT B PILOT PUMP S.E.C. TYPE 97 (4" or 101.6 mm pilot)	A20-10-21220	308-5020-201
5h	20 2 BOLT B PILOT TYPE 2 PUMP S.E.C. TYPE 96 (4" or 101.6 mm pilot)	A20-10-22220	308-5029-205
5i	20 6 BOLT ROUND WITH 2.625" or 66.67 mm PILOT MOTOR S.E.C. TYPE 05	A20-10-41650	308-5043-401
5j	20 4 BOLT B PILOT MOTOR S.E.C. TYPE 42 (4" or 101.6 mm pilot)	A20-10-41420	308-5030-401
5k	20 2 1/4 BOLT B PILOT MOTOR S.E.C. TYPE 46 (4" or 101.6 mm pilot)	A20-10-41320	308-5053-402
5l	20 2 BOLT A PILOT MOTOR S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)	A20-10-41210	308-5020-404
5m	20 2 BOLT B PILOT MOTOR S.E.C. TYPE 97 (4" or 101.6 mm pilot)	A20-10-41220	308-5020-401
6	CASE DRAIN PLUG	X02-03-22060	391-2282-056
7a	CHECK VALVE MOTOR	A00-75-11000	391-3681-001
7b	PRESSURE PLUG PUMP	X02-03-32110	391-2286-004
8	RING SEAL	X81-76-02706	391-2585-006
9	ROLLER BEARING (Ø 1.687" O.D.)	X03-24-12743	391-0381-068
10	PUMP & MOTOR THRUST PLATE	A30-70-10000	391-2185-013
11	POCKET SEAL	X85-11-00002	391-2882-086
12a	SHAFT & GEAR TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-XX125	312-29XX-730
12b	SHAFT & GEAR TYPE 25 (0.875" Ø - 13-Tooth spline)	A30-50-XX225	312-29XX-230
12c	SHAFT & GEAR TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A30-50-XX135	312-29XX-740
12d	SHAFT & GEAR TYPE 67 TYPE 2 (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-XX132	312-29XX-940
12e	SHAFT & GEAR TYPE 66 TYPE 2 (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-XX126	312-29XX-930
12f	SHAFT & GEAR TYPE 65 TYPE 2 (0.875" Ø - 13-Tooth spline)	A30-50-XX226	312-29XX-430
13	PUMP & MOTOR HOUSING GASKET	X85-11-09203	391-2884-019
14	PUMP & MOTOR GEAR HOUSING	A20-32-XX000	308-80XX-100
15a	20 MOTOR BEARING CARRIER BLANK	A20-40-00000	308-7300-100

MH20 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
15b	20 PUMP BEARING CARRIER WITH COMMON PASSAGE	A20-40-20000	308-7363-100
16	CONNECTING SHAFT	A30-50-00500	312-1133-001
17	GEAR SET ONLY	A30-50-XX000	312-28XX-000
18	20 PUMP & MOTOR PORT END COVER	A20-22-00000	308-3100-100
19	FLAT WASHER (9/16")	X45-19-15005	391-3782-146
20	BOLTS / STUDS (9/16" UNC)	See Fasteners Page	
21	HEX NUT (9/16" UNC)	X42-11-14012	391-1451-115
22a	CONTINENTAL SHAFT TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-00121	312-1500-300
22b	CONTINENTAL SHAFT TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-00124	312-1135-192
22c	CONTINENTAL SHAFT TYPE 7 (1.250" Ø - 14-tooth spline, Continental only)	A30-50-00241	312-1135-133
22d	CONTINENTAL SHAFT TYPE 25 (0.875" Ø - 13-Tooth spline)	A30-50-00221	312-1135-138
22e	CONTINENTAL SHAFT TAPERED TYPE 32 (Clutch pump shaft with woodruff key)	Special Order	312-1500-001
22f	CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A30-50-00131	312-1500-400
22g	CONTINENTAL SHAFT TYPE 43 Long (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A30-50-00134	312-1135-193
22h	CONTINENTAL SHAFT TYPE 12 (0.750" Ø x 3/16" x 3/16" 1 9/16" key)	A30-50-00169	312-1135-152
22i	CONTINENTAL SHAFT THREADED & KEYED END TYPE 15 (5/8"-18UNF+1/4"x3/8"x7/8"key)	A30-50-00127	312-1135-171
22j	CONTINENTAL SHAFT TYPE 95 (0.625" Ø x 9-tooth spline)	A30-50-00211	312-1000-200
23	CONTINENTAL SHAFT BRG. RETAINER SNAP RING	X05-02-28110	391-2685-011
24	CONTINENTAL SHAFT BRG. RETAINER	A20-60-20000	312-0100-002
Not Shown	SHAFT KEY FOR TYPE 12 SHAFT	X01-02-50540	391-1781-075
Not Shown	SHAFT KEY FOR TYPE 43 & 67 SHAFT	X01-01-61032	391-1781-021
Not Shown	SHAFT KEY FOR TYPE 30 & 66 SHAFT	X01-01-61025	391-1781-025
Not Shown	SHAFT KEY FOR TYPE Spl. SHAFT	X01-01-61044	391-1781-020

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

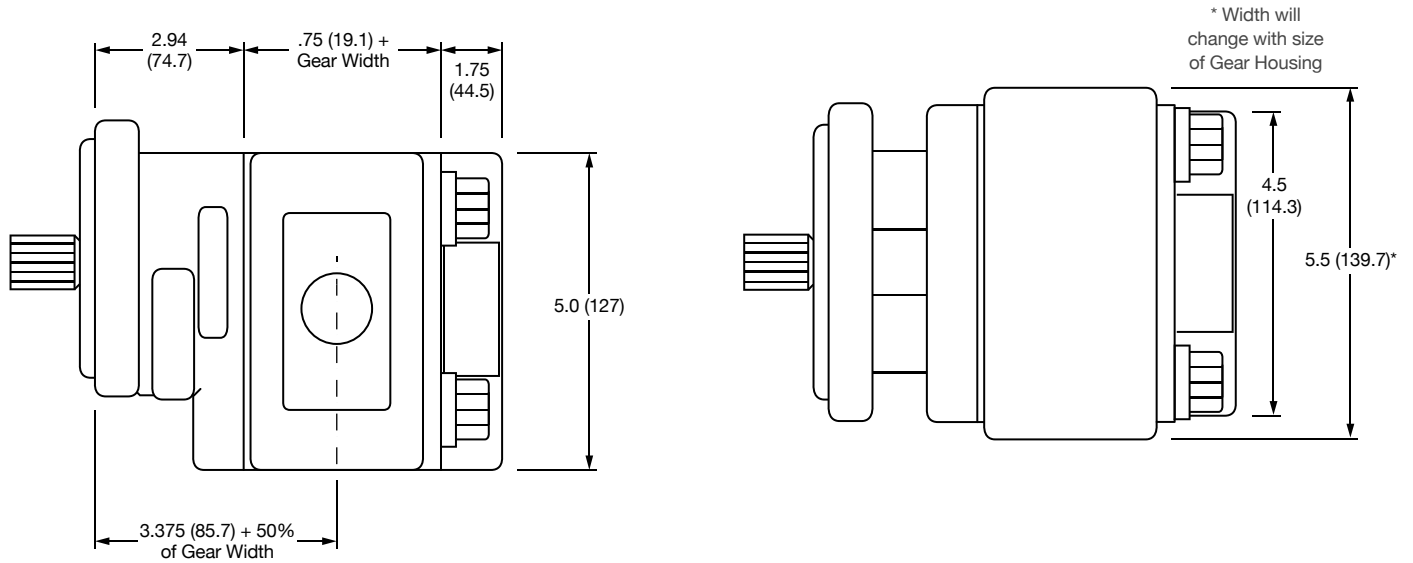
For example: Gear set no. A30-50-XX000 changes to A30-50-15000 for 1.5" gear size
Housing no. A20-32-XX000 changes to A20-32-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH20 Series

Dimensions

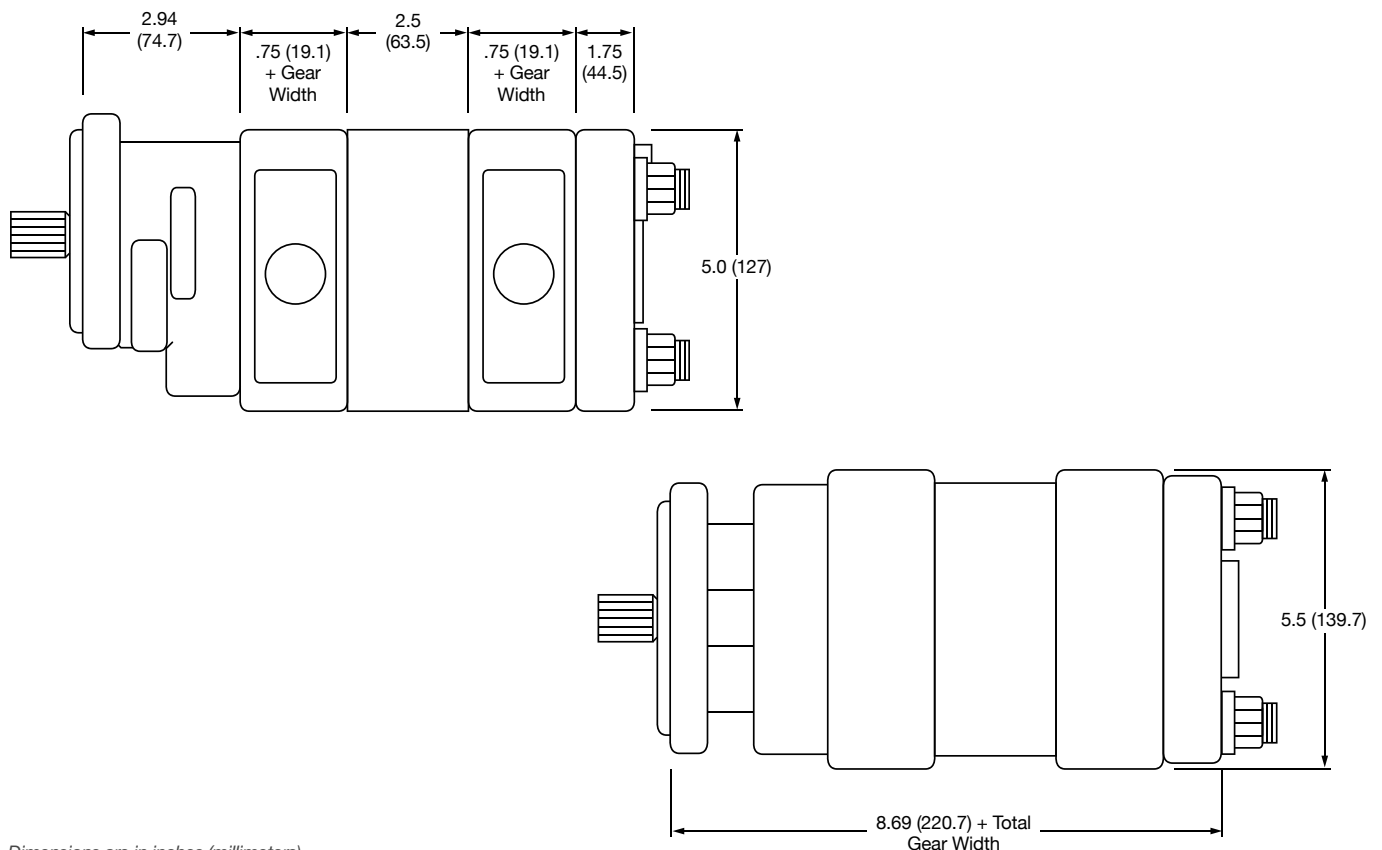
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH25 Series Bearing Pump

Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 2500 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 2500 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH25		DISPLACEMENT		MAX PRESSURE	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.75	3/4"	1.91	(31.3)	2500	(172)
1.00	1"	2.55	(41.8)	2500	(172)
1.25	1-1/4"	3.19	(52.3)	2500	(172)
1.50	1-1/2"	3.83	(62.8)	2500	(172)
1.75	1-3/4"	4.46	(73.1)	2000	(137)
2.00	2"	5.10	(83.6)	2000	(137)
2.25	2-1/4"	5.74	(94.1)	2000	(137)
2.50	2-1/2"	6.38	(104.5)	2000	(137)

MH25 Series Bearing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)						
	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"
900	8.5 / 32	10.5 / 39.5	13 / 49	15 / 57	17.5 / 66	20 / 75.5	22 / 83.5
1200	12 / 46.5	15 / 57	18 / 68	21 / 79.5	24 / 91	27 / 102	30 / 114
1500	15 / 57	19 / 72	23 / 87	27 / 102	31 / 117	35 / 132	39 / 146
1800	18 / 68	23 / 87	27.5 / 104	32.5 / 123	37.5 / 142	42 / 159	47 / 178
2100	21.5 / 81.5	27 / 102	32.5 / 123	38.5 / 146	44 / 167	48.5 / 187	55 / 208
2400	25 / 94.5	31 / 117	37 / 140	44 / 167	51 / 193	57 / 216	63.5 / 240

Motor Performance Data

SPEED RPM	GEAR WIDTH							
	1"		1-1/2"		2"		2-1/2"	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
800	10.5 / 40	670 / 7.5	15.5 / 58.5	1070 / 12.5	21 / 79.5	1450 / 16.5	26 / 98.5	1850 / 21.5
1200	15.5 / 58.5	680 / 8	22.5 / 85	1075 / 12.5	30.5 / 115	1450 / 16.5	37.5 / 142	1840 / 21
1600	20 / 75.5	670 / 7.5	30 / 114	1045 / 12	40 / 151	1440 / 16.5	49.5 / 187	1750 / 20
2000	25 / 94.5	660 / 7.5	37 / 140	1030 / 12	49 / 185	1415 / 16.5	61.5 / 233	1720 / 20

Note: Input Flow @ 2000psi | Output Torque @ 140 bar

MH25 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "BB" Spline	9,900	8,000
SAE "BB" Keyed	6,600	6,600
SAE "B" Spline	6,400	6,400
SAE "B" Keyed	5,750	5,750
SAE "C" Spline	13,850	8,000
SAE "C" Keyed	13,000	8,000
Connecting Shaft		8,000

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH25 Series Bearing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 25 - X - 1 - 07 - WE - AB - 10 - 25 - DH - * - * - *

Type¹ _____
MHP = Pump
MHM = Motor

Unit² _____
X = Single or Tandem Unit w/ a Continental Shaft

Shaft End Cover³ _____
1 = Pump w/ Single Shaft Bearing (Clockwise Rotation) *Type 1 or 2*
2 = Pump w/ Single Shaft Bearing (Counter-clockwise Rot) *Type 1 or 2*
3 = Pump w/ Single Shaft Bearing (Double Rotation) *Type 1 or 2*
4 = Pump w/ Double Shaft Bearing (Clockwise Rotation) *Type 3*
5 = Pump w/ Double Shaft Bearing (Counter-clockwise Rot) *Type 3*
6 = Pump w/ Double Shaft Bearing (Double Rotation) *Type 3*
7 = Motor w/ Single Shaft Bearing & 1/4" Drain Port *Type 1 or 2*
8 = Motor w/ Double Shaft Bearing & 1/4" Drain Port *Type 3*
9 = Motor w/ Single Shaft Bearing & No Drain Port *Type 1 or 2*

Shaft End Cover⁴ _____
00 = Pad Mount (*Type 1 or 3*)
01 = Modified Pad Mount (*Type 1*)
03 = Round Flange 6-Bolt (*Type 1*)
04 = Round Flange 4-Bolt 2.883 Pilot (*Type 2*)
05 = Round Flange 6-Bolt 6.625 Pilot (*Type 2*)
07 = Round Flange 4-Bolt 2.883 Pilot (*Type 2*)
40 = 4-Bolt SQ. 3.249 Pilot (*Type 1*)
42 = SAE 4-Bolt "B" Mount (*Type 1 or 3*)
43 = SAE 4-Bolt "B" Mount w/ 2 Drains (*Type 1*)
78 = SAE 4-Bolt "C" Mount (*Type 1 or 3*)
95 = SAE 2-Bolt "B" Mount w/ 2 Drains (*Type 1*)
97 = SAE 2-Bolt "B" Mount (*Type 1 or 3*)
98 = SAE 2-Bolt "C" Mount (*Type 1*)

Connecting Shaft¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers⁹
See page 39 for Bearing Carrier options

Shaft Type⁸
03 = 6 Tooth Spline 1.1096" Dia. x 2-1/8" Ext. (*Type 1*)
07 = SAE "C" 14 Tooth Spline 1.250" Dia. (*Type 1*)
11 = SAE "C" Keyed 1.250" Dia. (*Type 1*)
25 = SAE "B" 13 Tooth Spline .88" Dia. (*Type 1*)
30 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key (*Type 1*)
38 = .8745" Dia. Keyed 1-7/16" Ext. x 1-1/4" Key (*Type 1*)
39 = .8745" Dia. Keyed 2-15/16" Ext. (*Type 1*)
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key (*Type 1*)
45 = .8745" Dia. Keyed 2-13/32" Ext. x 1-1/4" Key (*Type 2*)
47 = .9996" Dia. Keyed x 1-1/4" Ext. (*Type 2*)
48 = SAE "B" 13 Tooth Spline .875" Dia. (*Type 2*)
53 = SAE "C" 14 Tooth Spline 1.250" Dia. (*Type 2*)
61 = 1.250" Dia. Keyed x 1-1/2" Keyed (*Type 2*)
73 = 1.249" Dia. Keyed, Drilled & Tapped x 1-1/2" (*Type 3*)
76 = .999" Dia. Keyed Grooved x 1-1/2" Keyed (*Type 3*)

Gear Size⁷
Code / Displacement (in³/r)

07	10	12	15	17	20	22	25
(1.91)	(2.55)	(3.19)	(3.83)	(4.46)	(5.10)	(5.74)	(6.38)

Gear Housing⁶
See following pages for Gear Housing options

Port End Cover⁵

NPT Codes

Single Units	Tandem Units	Port Size		A	B
		Left	Right		
BE BY	BI BY	None	None	n/a	n/a
FE FY	FI FY	3/4"	None	n/a	1.38
CE CY	CI CY	None	3/4"	1.38	n/a
GE GY	GI GY	3/4"	3/4"	1.38	1.38

BSPP Ring Codes

Single Units	Tandem Units	Port Size		A	B
		Left	Right		
AE AY	AI AY	3/4"	None	n/a	1.38
QE QY	QI QY	None	3/4"	1.38	n/a
SE SY	SI SY	3/4"	3/4"	1.38	1.38



O-ring Codes

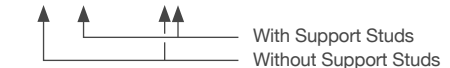
Single Units	Tandem Units	Port Size		A	B
		Left	Right		
HE HY	HI HY	1/2"	None	n/a	1.38
DE DY	DI DY	None	1/2"	1.38	n/a
JE JY	JI JY	1/2"	1/2"	1.38	1.38
UE UY	UI UY	5/8"	None	n/a	1.38
NE NY	NI NY	None	5/8"	1.38	n/a
KE KY	KI KY	3/4"	None	n/a	1.38
LE LY	LI LY	None	3/4"	1.38	n/a
ME MY	MI MY	3/4"	3/4"	1.38	1.38



Orientation is viewed from the shaft end

Metric Str. Thd Codes

Single Units	Tandem Units	Port Size		A	B
		Left	Right		
EB YB	IB YB	5/8"	None	n/a	1.38
EF YF	IF YF	None	5/8"	1.38	n/a
EV YV	IV YV	5/8"	5/8"	1.38	1.38
EE EY	EI EY	3/4"	5/8"	n/a	1.38
VE VY	VI VY	5/8"	3/4"	1.38	n/a
TE TY	TI TY	3/4"	None	n/a	1.38
WE WY	WI WY	None	3/4"	1.38	n/a
XE XY	XI XY	3/4"	3/4"	1.38	1.38



Orientation is viewed from the shaft end

MH25 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

NPT Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
AP	1/2"	None		x							
AC	None	1/2"		x							
EC	1/2"	1/2"		x	x						
ED	1/2"	3/4"		x							
EH	3/4"	1/2"		x							
AR	3/4"	None		x	x	x	x	x	x		
AF	None	3/4"		x	x	x	x	x	x		
ER	3/4"	3/4"			x	x	x	x	x	x	x
ET	3/4"	1"			x	x	x	x	x	x	x
EU	3/4"	1-1/4"						x	x		x
IJ	1"	3/4"			x	x	x	x	x	x	x
IQ	1-1/4"	3/4"						x	x		x
AT	1"	None			x	x	x	x	x	x	x
AH	None	1"			x	x	x	x	x	x	x
IL	1"	1"			x	x	x	x	x	x	x
IM	1"	1-1/4" *					x	x	x	x	x
IS	1-1/4" *	1"					x	x	x	x	x
IY	1-1/2"	1"							x	x	x
AV	1-1/4" *	None						x	x	x	x
AJ	None	1-1/4" *						x	x	x	x
IT	1-1/4"	1-1/4"						x	x	x	x
IU	1-1/4"	1-1/2" *							x	x	x
IZ	1-1/2"	1-1/4"							x	x	x
JC	1-1/2"	1-1/2"								x	x
AW	1-1/2" *	None							x	x	x
AK	None	1-1/2" *							x	x	

* Low Pressure Inlet Porting

BSPP Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
EM	None	3/4"			x	x	x				
EA	3/4"	None			x	x	x				
EJ	3/4"	3/4"			x	x	x	x	x	x	
EK	3/4"	1"			x	x					
YU	3/4"	1-1/4"			x	x	x	x			
EN	1"	3/4"			x	x					
YW	1-1/4"	3/4"			x	x	x	x			
EP	1"	None					x	x	x		
IH	None	1"					x	x	x		
EQ	1"	1"					x	x	x	x	x
ES	1"	1-1/4" *					x				
IR	1-1/4" *	1"					x	x	x	x	x
ID	1-1/2"	1"								x	
NJ	1-1/4" *	None					x	x	x		
JB	None	1-1/4" *									x
IE	1-1/4"	1-1/4"								x	
IQ	1-1/4"	1-1/2" *									x
IS	1-1/2"	1-1/4"									x
JV	1-1/2"	1-1/2"									x

* Low Pressure Inlet Porting

Metric Split Flange Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
ZQ	1"	1"					x				
ZS	1"	1-1/4"				x					
ZD	1-1/2"	1"					x				
ZE	1-1/4"	1-1/4"					x				
OA	1-1/4"	1-1/2"							x		
RF	1-1/2" *	1-1/4"						x			
RW	None	1-1/2" *						x			
RV	1-1/2"	1-1/2"									x
RG	1-1/2"	2" *									x

* Low Pressure Inlet Porting

MH25 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing Cont. ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

ORB Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
UP	1/2"	None		x	x		x				
UC	None	1/2"		x	x		x				
YC	1/2"	1/2"		x	x	x	x				
YD	1/2"	5/8"		x	x		x				
YJ	5/8"	1/2"		x	x		x				
UQ	5/8"	None			x	x	x				
UD	None	5/8"			x	x	x				
YK	5/8"	5/8"			x	x	x		x		
YL	5/8"	3/4"			x	x	x	x			
YQ	3/4"	5/8"			x	x	x	x			
UR	3/4"	None			x	x	x	x			
UF	None	3/4"			x	x	x	x			
YR	3/4"	3/4"			x	x	x	x	x	x	x
YS	3/4"	7/8"								x	
YT	3/4"	1"			x						
YX	7/8"	3/4"								x	
VJ	1"	3/4"			x						
US	7/8"	None				x	x	x	x	x	x
UG	None	7/8"				x	x	x	x	x	x
YZ	7/8"	7/8"				x	x	x	x	x	x
VC	7/8"	1"				x	x	x	x	x	x
VK	1"	7/8"				x	x	x	x	x	x
UT	1"	None				x	x	x	x	x	x
UH	None	1"				x	x	x	x	x	x
VL	1"	1"				x	x	x	x	x	x
VM	1"	1-1/4" *					x	x	x	x	x
VN	1"	1-1/2" *						x			
VS	1-1/4"	1"					x	x	x	x	x
VG	1-1/2" *	1"						x			
UV	1-1/4"	None							x	x	x
UJ	None	1-1/4"							x	x	x
VT	1-1/4"	1-1/4"							x	x	x
VU	1-1/4"	1-1/2"							x	x	x
VZ	1-1/2"	1-1/4"							x	x	x
UW	1-1/2"	None								x	
UK	None	1-1/2"								x	
WC	1-1/2"	1-1/2"									x

* Low Pressure Inlet Porting

Split Flange Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
OP	1/2"	None		x				x			
OC	None	1/2"		x				x			
ZC	1/2"	1/2"						x			
ZF	1/2"	3/4"					x	x	x	x	x
ZP	3/4"	1/2"					x	x	x	x	x
OR	3/4"	None				x	x	x	x	x	x
OF	None	3/4"				x	x	x	x	x	x
ZR	3/4"	3/4"			x	x	x	x	x	x	x
ZT	3/4"	1"			x		x	x	x	x	x
ZU	3/4"	1-1/4" *					x	x	x	x	x
RJ	1"	3/4"			x		x	x	x	x	x
RQ	1-1/4" *	3/4"					x	x	x	x	x
OT	1"	None			x	x	x	x	x	x	x
OH	None	1"			x	x	x	x	x	x	x
RL	1"	1"				x	x	x	x	x	x
RM	1"	1-1/4" *				x	x	x	x	x	x
RN	1"	1-1/2" *					x	x	x	x	x
OS	1"	2"								x	x
RS	1-1/4" *	1"				x	x	x	x	x	x
RY	1-1/2" *	1"					x	x	x	x	x
OZ	2"	1"								x	x
OV	1-1/4" *	None				x	x	x	x	x	x
OJ	None	1-1/4" *				x	x	x	x	x	x
RT	1-1/4"	1-1/4"					x	x	x	x	x
RU	1-1/4"	1-1/2" *					x	x	x	x	x
RX	1-1/4"	2" *							x	x	x
RZ	1-1/2" *	1-1/4"					x	x	x	x	x
SG	2" *	1-1/4"							x	x	x
OW	1-1/2" *	None					x	x	x	x	x
OK	None	1-1/2" *					x	x	x	x	x
SC	1-1/2"	1-1/2"						x	x	x	x
SD	1-1/2"	2" *							x	x	x
SH	2" *	1-1/2"							x	x	x
OX	2" *	None							x		
OL	None	2" *							x		

* Low Pressure Inlet Porting

MH25 Series Bearing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

NPT Codes

In	Out	CW (Left)	CCW (Right)
None	None	 B	 B
1-1/2"	None	 TL	 TJ
1-1/2"	1"	 XS	 XT
1"	1"	 DH	 HD
1-1/4"	1-1/4"	 BF	 FB

SAE O-ring Codes

In	Out	CW (Left)	CCW (Right)
1-1/2"	None	 TH	 TM
1-1/2"	1"	 TK	 TN
1"	1"	 QD	 DQ
1-1/4"	1-1/4"	 NV	 VN

SAE Split Flange Codes

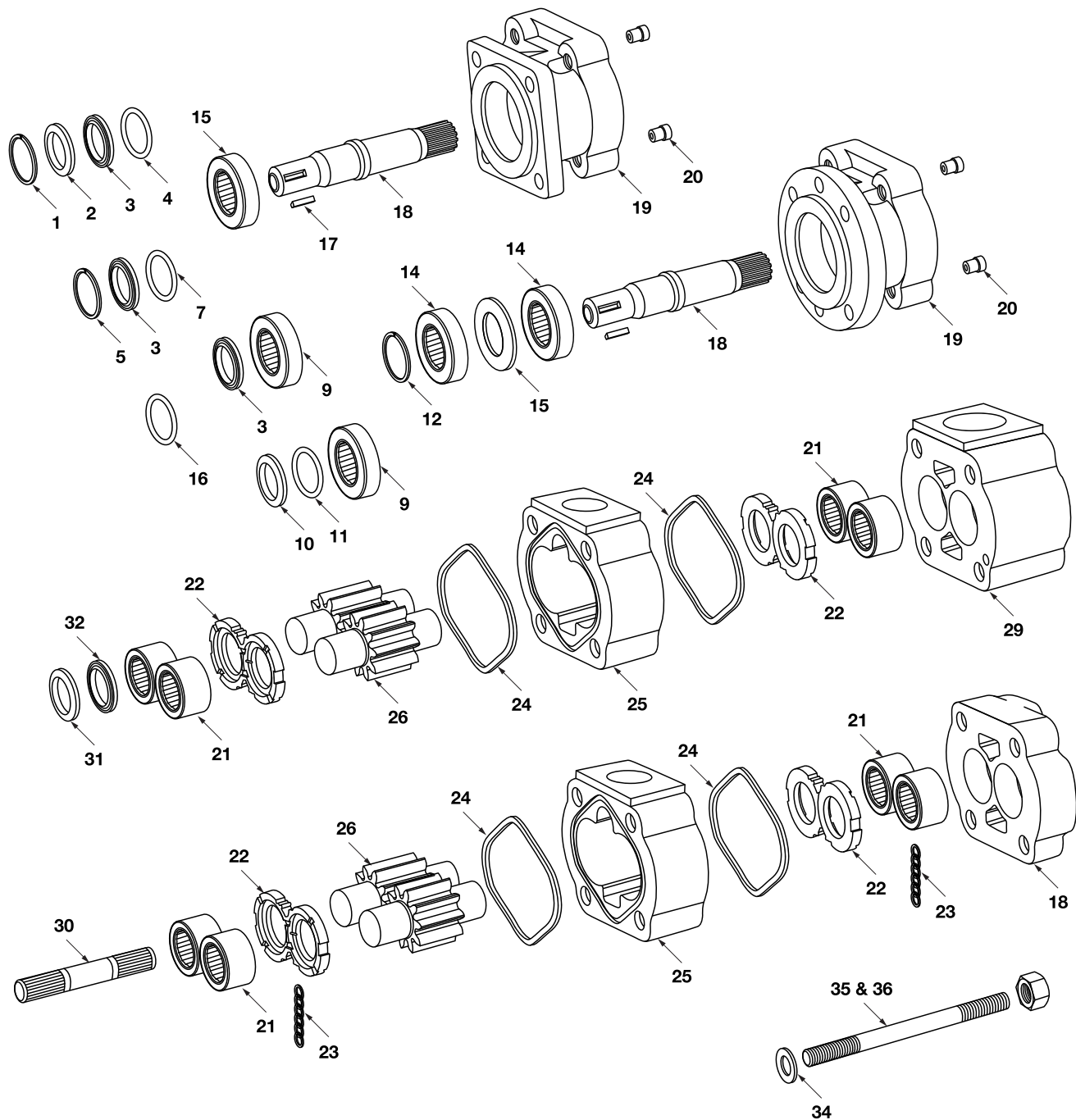
In	Out	CW (Left)	CCW (Right)
1-1/2"	None	 FB	 FT
1-1/2"	1"	 XV	 XW
1"	1"	 LP	 PL
1-1/4"	1-1/4"	 GL	 LG

Motors Only Codes

In	Out	Dual	
None	None	 B	
1"	1"	 TT	NPT
1-1/4"	1-1/4"	 VV	NPT
1-1/2"	1-1/2"	 WW	NPT
1"	1"	 CC	SAE O-Ring
1-1/4"	1-1/4"	 BB	SAE O-Ring
1-1/2"	1-1/2"	 FF	SAE O-Ring
1"	1"	 LL	SAE Split Flange
1-1/4"	1-1/4"	 MM	SAE Split Flange

MH25 Series

Parts Breakdown



MH25 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1a	RETAINER RING	A25-60-50002	391-2581-009
1b	RETAINER RING	A25-60-30001	391-2581-003
2	SEAL RETAINER	A25-60-10001	391-2584-016
3a	DOUBLE LIP PUMP SEAL (FOR TYPE 1 S.E.C.)	X83-11-03008	391-2883-055
3b	HI PRESSURE SHAFT SEAL (FOR TYPE 1 S.E.C.)	X84-36-03009	391-2883-096
3c	PUMP LIP SEAL (FOR TYPE 2 S.E.C.)	X83-11-02508	391-2883-057
3d	DOUBLE LIP PUMP SEAL TYPE 3 TYPE	X83-11-03508	391-2883-052
3e	MOTOR SHAFT SEAL FOR TYPE 1 S.E.C.)	X84-36-03009	391-2883-096
4	O RING	X81-11-05704	391-2881-120
5	RETAINER RING TYPE 3	A25-60-50001	391-2581-001
7	O RING (L 3006-47)	X81-11-06304	391-2881-141
8a	BEARING SLEEVE	A25-60-30003	391-3281-004
8b	BEARING SLEEVE	A25-60-30002	391-2584-024
9	SHAFT ROLLER BEARING	X03-24-12541	391-0381-058
10	SHAFT SEAL BACK UP RING	A25-82-46020	391-2681-248
11	SHAFT SEAL O RING	X81-11-02504	391-2881-261
12	RETAINING RING TYPE 2	X05-03-56200	391-2686-063
13	SHAFT BEARING RACE	X03-40-12552	391-0383-001
14	THRUST BEARING	X03-40-12552	391-0383-002
15	THRUST WASHER	X03-33-13064	391-0384-008
Not Shown	TAPERED ROLLER BEARING SPACER TYPE 3	A25-92-51640	391-3381-007
16	BEARING SLEEVE O RING	X81-11-04403	391-2881-203
17a	DRIVE KEY TYPE 30 & 70 SHAFT	X01-01-61025	391-1781-025
17b	DRIVE KEY TYPE 2 & 84 SHAFT	X01-01-61044	391-1781-020
17c	DRIVE KEY TYPE 20 & 43 & 47 & 52 SHAFT	X01-01-61032	391-1781-021
17d	DRIVE KEY TYPE 38 & 39 & 45 SHAFT	X01-01-50732	391-1781-027
17e	DRIVE KEY TYPE 11& 61 & 101 SHAFT	X01-01-81238	391-1781-045
17f	DRIVE KEY TYPE 58 SHAFT	X01-01-50719	391-1781-032
17g	DRIVE KEY TYPE 73 SHAFT	X01-01-81257	391-1781-008
17h	DRIVE KEY TYPE 76 SHAFT	X01-01-61038	391-1781-019
Not Shown	0.133" THICK SPACER FOR TYPE 3 SHAFTS	A25-92-25392	391-3383-016
Not Shown	0.128" THICK SPACER FOR TYPE 3 SHAFTS	A25-92-25391	391-3383-015
Not Shown	SHAFT BEARING RETAINING RING	X05-02-28110	391-2685-011
18a	13 Tooth spline 0.873" dia. 16/32 pitch (TYPE 25) TYPE 1	A25-50-00221	303-1135-028
18b	SAE B KEYED 7/8" dia. (KEY SIZE 0.25" W X 1" L) (TYPE 30) TYPE 1	A25-50-00121	303-1135-001
18c	KEYED 1.1247" dia.(KEY SIZE 1/4" X 3/8" X 1 3/4") (TYPE 2) TYPE 1	A25-50-00151	303-1135-032
18d	6 Tooth Spline 1.109" dia. .275" tooth (TYPE 3) TYPE 1	A25-50-00791	303-1135-002

MH25 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
18e	6 Tooth Spline 1.120" dia. .275" tooth (TYPE 6) TYPE 1	A25-50-00751	303-1135-035
18f	6 Tooth Spline 1.120" dia. grooved .275" tooth (TYPE 19) TYPE 1	A25-50-00759	303-1135-057
18g	KEYED 0.9846" dia. (KEY SIZE 1/4" X 3/8" X 1 1/4") (TYPE 20) TYPE 1	A25-50-00174	303-1135-010
18h	KEYED 0.8745" dia. (KEY SIZE 3/16" X 9/32" X 1 1/4") (TYPE 38) TYPE 1	A25-50-00124	303-1135-030
18i	KEYED 0.8745" dia. (KEY SIZE 3/16" X 9/32" X 1 1/4") (TYPE 39) TYPE 1	A25-50-00129	303-1135-031
18j	6 Tooth Spline 0.8730" dia. .214" tooth (TYPE 40) TYPE 1	A25-50-00721	303-1135-006
18k	6 Tooth Spline 0.9846" dia. .246" tooth (TYPE 42) TYPE 1	Special Order	303-1135-037
18l	KEYED .9996" dia. (KEY SIZE 1/4" X 3/8" X 1 1/4") (TYPE 43) TYPE 1	A25-50-00131	303-1135-012
18m	14 Tooth Spline 1.228" dia. 12/24 pitch -SAE C Spline (TYPE 7) TYPE 1	A25-50-00241	303-1135-021
18n	KEYED 1.249" dia. (KEY SIZE 5/16" X 15/32" X 1 1/2) (TYPE 11) TYPE 1	A25-50-00141	303-1135-023
18o	17 Tooth Spline 1.249" dia. 16/32 pitch (TYPE 49) TYPE 1	Special Order	303-1135-014
18p	KEYED 0.9846" dia. (KEY SIZE 1/4" X 3/8" X 1 1/4") (TYPE 52) TYPE 1	A25-50-00171	303-1135-009
18q	6 Tooth Spline 1.248" dia. .236" tooth (TYPE 63) TYPE 1	A25-50-00741	303-1135-033
18r	6 Tooth Spline 0.9997" dia. .248" tooth (TYPE 94) TYPE 1	A25-50-00731	303-1135-058
18s	KEYED 0.8745" dia. (KEY SIZE 3/16" X 9/32" X 1 1/4") (TYPE 45) TYPE 2	A25-50-00122	303-1135-015
18t	6 Tooth Spline 0.9846" dia. .246" tooth (TYPE 46) TYPE 2	A25-50-00772	303-1135-013
18u	KEYED 0.9996" dia. (KEY SIZE 1/4" X 3/8" X 1 1/4") (TYPE 47) TYPE 2	A25-50-00132	303-1135-011
18v	13 Tooth spline 0.873" dia. 16/32 pitch (TYPE 48) TYPE 2	A25-50-00222	303-1135-004
18w	14 Tooth Spline 1.248" dia. 12/24 pitch -SAE C Spline (TYPE 53) TYPE 2	A25-50-00242	303-1135-062
18x	14 Tooth Spline 1.248" dia. 12/24 pitch (TYPE 55) TYPE 2	A25-50-00249	303-1135-007
18y	KEYED 0.7495" dia. (KEY SIZE 3/16" X 9/32" X 7/8") (TYPE 58) TYPE 2	A25-50-00162	303-1135-022
18z	KEYED 1.250" dia. (KEY SIZE 5/16" X 15/32" X 1 1/2") (TYPE 61) TYPE 2	A25-50-00142	303-1135-029
18aa	KEYED 0.9846" dia. (KEY SIZE 1/4" X 3/8" X 1") (TYPE 70) TYPE 2	A25-50-00172	303-1135-040
18bb	6 Tooth Spline 0.8730" dia. .214" tooth (TYPE 99) TYPE 2	A25-50-00722	303-1135-072
18cc	KEYED 1.250" dia. + Int. Thread 1/2" -13 Thd (double brg.) (TYPE 73) TYPE 3	A25-50-00143	303-1135-049
18dd	KEYED 0.999" dia. grooved (KEY SIZE 1/4" X 3/8" X 1 1/2") (TYPE 76) TYPE 3	A25-50-00133	303-1135-019
18ee	6 Tooth Spline 1.1235" dia. grooved .277" tooth (TYPE 82) TYPE 3	Special Order	303-1135-041
18ff	KEYED 0.8745" dia. Grooved (KEY SIZE .311" X .124" X 1.187") (TYPE 83) TYPE 3	Special Order	303-1135-038
18gg	KEYED 1.1247" dia. (KEY SIZE 1/4" X 3/8" X 1 3/4") (TYPE 84) TYPE 3	A25-50-00153	303-1135-047
18hh	KEYED 1.250" dia. (KEY SIZE .31" X .47" X 1.50") (TYPE 101) TYPE 3	Special Order	303-1500-501
19a	25 S.E.C. PAD MOUNT PUMP TYPE 1 TYPE 100 / 200 / 300	A25-10-21100	303-5011-202
19b	25 S.E.C. MODIFIED PAD MOUNT PUMP TYPE 1 TYPE 101 / 201 / 301	A25-10-41101	303-5011-401
19c	25 S.E.C. 2 BOLT B MOUNT (SPL.) TYPE 1 TYPE 102 / 202 / 302 (4" or 101.6 mm pilot)	A25-10-21222	303-5021-205
19d	25 S.E.C. 6 BOLT ROUND 3.148" PILOT TYPE 1 TYPE 103 / 203 / 303	A25-10-21650	303-5041-201
19e	25 S.E.C. 4 BOLT SQ 4.748" PILOT TYPE 1 TYPE 106 / 206 / 306	Special Order	303-5031-203
19f	25 S.E.C. 4 BOLT SQ 3.249" PILOT TYPE 1 TYPE 140 / 240 / 340	Special Order	303-5031-406
19g	25 S.E.C. 4 BOLT SQ 3.748 PILOT TYPE 1 TYPE 141 / 241 / 341	Special Order	303-5031-402

MH25 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
19h	25 S.E.C. 4 BOLT B MOUNT TYPE 1 TYPE 142 / 241 / 342 (4" or 101.6 mm pilot)	A25-10-21420	303-5031-201
19i	25 S.E.C. 4 BOLT C MOUNT TYPE 1 TYPE 178 / 278 / 378 (5" or 127 mm pilot)	A25-10-21430	303-5031-202
19j	25 S.E.C. 2 BOLT B MOUNT TYPE 1 TYPE 197 / 297 / 397 (4" or 101.6 mm pilot)	A25-10-21221	303-5021-203
19k	25 S.E.C. 2 BOLT C MOUNT TYPE 1 TYPE 198 / 298 / 398 (5" or 127 mm pilot)	A25-10-21231	303-5021-204
19l	25 S.E.C. PAD MOUNT PUMP WITH DRAIN TYPE 1 TYPE 700	A25-10-41102	303-5011-404
19m	25 S.E.C. MODIFIED PAD MOUNT PUMP WITH DRAIN TYPE 1 TYPE 701	Special Order	303-5011-403
19n	25 S.E.C. 4 BOLT B MOUNT WITH DRAIN TYPE 1 TYPE 742 (4" or 101.6 mm pilot)	A25-10-41422	303-5031-407
19o	25 S.E.C. 4 BOLT C MOUNT WITH DRAIN TYPE 1 TYPE 778 (5" or 127 mm pilot)	A25-10-41430	303-5031-403
19p	25 S.E.C. 2 BOLT B MOUNT WITH DRAIN TYPE 1 TYPE 797 (4" or 101.6 mm pilot)	A25-10-41222	303-5021-403
19q	25 S.E.C. 2 BOLT C MOUNT WITH DRAIN TYPE 1 TYPE 798 (5" or 127 mm pilot)	A25-10-41232	303-5021-405
19r	25 S.E.C. PAD MOUNT PUMP WITH DRAIN TYPE 1 TYPE 900	A25-10-21100	303-5011-202
19s	25 S.E.C. MODIFIED PAD MOUNT PUMP WITH DRAIN TYPE 1 TYPE 901	A25-10-41101	303-5011-401
19t	25 S.E.C. 2 BOLT B MOUNT (SPL.) WITH DRAIN TYPE 1 TYPE 902	A25-10-21222	303-5021-205
19u	25 S.E.C. 6 BOLT ROUND 3.148" PILOT WITH DRAIN TYPE 1 TYPE 903	A25-10-21650	303-5041-201
19v	25 S.E.C. 4 BOLT SQ 4.748" PILOT WITH DRAIN TYPE 1 TYPE 906	Special Order	303-5031-203
19w	25 S.E.C. 4 BOLT SQ 3.748" PILOT WITH DRAIN TYPE 1 TYPE 941	Special Order	303-5031-402
19x	25 S.E.C. 4 BOLT B MOUNT WITH DRAIN TYPE 1 TYPE 942 (4" or 101.6 mm pilot)	A25-10-21420	303-5031-201
19y	25 S.E.C. 4 BOLT C MOUNT WITH DRAIN TYPE 1 TYPE 978 (5" or 127 mm pilot)	A25-10-21430	303-5031-202
19z	25 S.E.C. 2 BOLT C WITH 2 DRAINS TYPE 1 TYPE 993 (5" or 127 mm pilot)	A25-10-41231	303-5021-404
19aa	25 S.E.C. 2 BOLT B WITH 2 DRAINS TYPE 1 TYPE 995 (4" or 101.6 mm pilot)	A25-10-41221	303-5021-402
19bb	25 S.E.C. 2 BOLT B MOUNT WITH DRAIN TYPE 1 TYPE 997 (4" or 101.6 mm pilot)	A25-10-21221	303-5021-203
19cc	25 S.E.C. 2 BOLT C MOUNT WITH DRAIN TYPE 1 TYPE 998 (5" or 127 mm pilot)	A25-10-21231	303-5021-204
19dd	25 S.E.C. 6 BOLT ROUND 2.625" PILOT TYPE 2 TYPE 305	A25-10-22650	303-5043-202
19ee	25 S.E.C. 4 BOLT ROUND 2.883" PILOT TYPE 2 TYPE 304	A25-10-22452	303-5043-204
19ff	25 S.E.C. 4 BOLT ROUND 2.883" PILOT TYPE 2 TYPE 307 (53 25 SHAFT)	A25-10-22451	303-5043-203
19gg	25 S.E.C. 6 BOLT ROUND 2.625" WITH DRAIN PILOT TYPE 2 TYPE 705	A25-10-42650	303-5043-404
19hh	25 S.E.C. 6 BOLT ROUND 2.625" PILOT WITH DRAIN TYPE 2 TYPE 905	A25-10-22650	303-5043-202
19ii	25 S.E.C. 4 BOLT ROUND 2.883" PILOT WITH DRAIN TYPE 2 TYPE 904	A25-10-22452	303-5043-204
19jj	25 S.E.C. 4 BOLT ROUND 2.883" PILOT WITH DRAIN TYPE 2 TYPE 907	A25-10-22451	303-5043-203
19kk	25 S.E.C. PAD MOUNT PUMP WITH DRAIN TYPE 3 TYPE 600 / 800	A25-10-23100	303-5012-201
19ll	25 S.E.C. 4 BOLT C MOUNT WITH DRAIN TYPE 3 TYPE 678 / 878 (5" or 127 mm pilot)	A25-10-23430	303-5039-204
19mm	25 S.E.C. 2 BOLT B MOUNT WITH DRAIN TYPE 3 TYPE 697/897 (4" or 101.6 mm pilot)	A25-10-23220	303-5022-202
19nn	25 S.E.C. 4 BOLT B MOUNT WITH DRAIN TYPE 3 TYPE 842 (4" or 101.6 mm pilot)	A25-10-23420	303-5022-201
19oo	25 S.E.C. 4 BOLT B MOUNT WITH 2 DRAINS TYPE 3 TYPE 843 (4" or 101.6 mm pilot)	A25-10-41421	303-5022-401
19pp	25 S.E.C. 4 BOLT B MOUNT WITH DRAIN TYPE 3 TYPE 642 (4" or 101.6 mm pilot)	A25-10-23420	303-5022-201
20a	CHECK VALVE	A00-75-11000	391-3681-001
20b	PRESSURE PLUG	X02-03-32110	391-2286-004

MH25 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
21	ROLLER BEARING (Ø 1.625" O.D.)	X03-24-13349	391-0381-059
22	PUMP & MOTOR THRUST PLATE	A25-70-10000	391-2185-012
23	POCKET SEAL	X85-11-00002	391-2882-050
24	PUMP & MOTOR HOUSING GASKET	X85-11-10803	391-2884-021
25	PUMP & MOTOR GEAR HOUSING	A25-32-XX000	303-80XX-100
26	GEAR SET ONLY	A25-50-XX000	303-28XX-000
27	ROLL PIN	A00-94-30310	391-2084-020
28	SHAFT BUSHING TYPE 3	X03-00-32531	391-0481-003
29a	PUMP BEARING CARRIER WITH COMMON PASSAGE	A25-40-20000	303-7383-100
29b	MOTOR BEARING CARRIER BLANK	A25-40-00000	303-7300-100
30	CONNECTING SHAFT	A25-50-00500	303-1133-001
31	SHAFT BUSHING	X03-00-32532	391-0481-002
32	CONICAL SPRING	A25-95-00000	391-3581-176
33	PUMP & MOTOR PORT END COVER	A25-22-00000	303-3100-100
34	FLAT WASHER (5/8")	X45-10-17005	391-3784-028
35	BOLT & STUDS (5/8"-UNC)	See Fasteners Page	
36	HEX NUT (5/8"-UNC)	X42-11-16000	391-1451-076
Not Shown	CASE DRAIN PLUG 1/4" NPT	X02-03-22060	391-2282-056
Not Shown	INPUT SHAFT SNAP RING FOR TYPE 2 SHAFTS	X05-04-23170	391-2688-012
Not Shown	INPUT SHAFT THRUST WASHER USED WITH TYPE 2 SHAFTS	X45-10-27002	391-3785-005
Not Shown	INPUT SHAFT RETAINER RING FOR TYPE 2 SHAFTS	A25-60-20000	391-2585-001

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

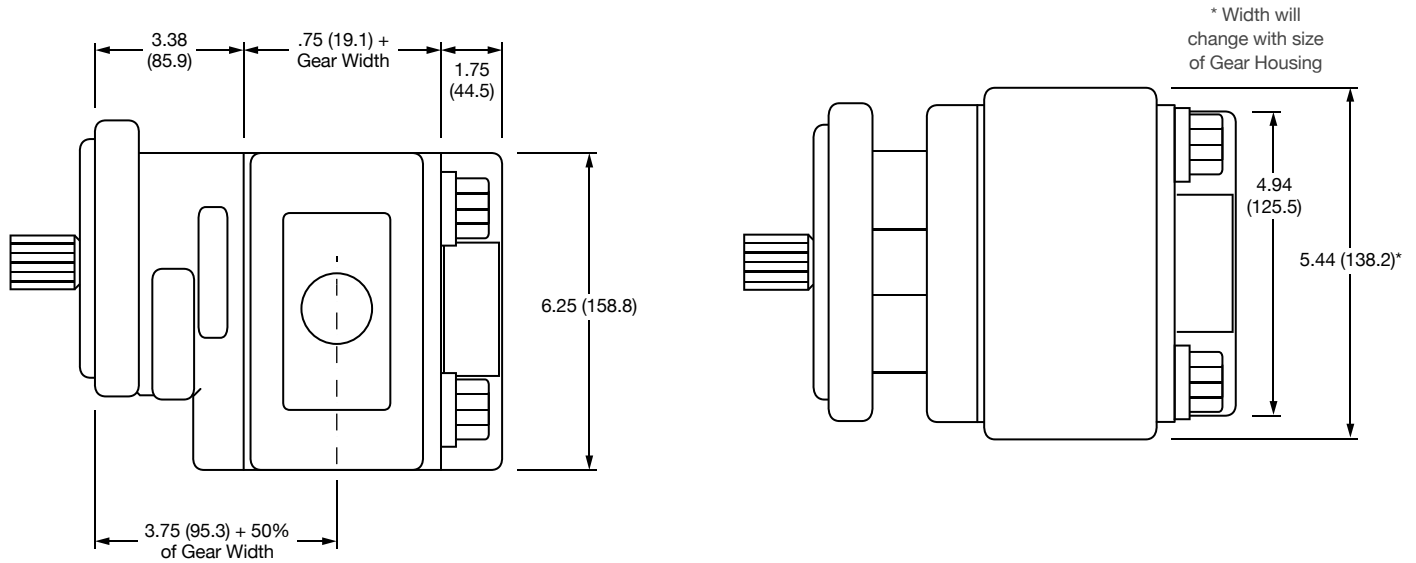
For example: Gear set no. A25-50-XX000 changes to A25-50-15000 for 1.5" gear size
 Housing no. A25-32-XX000 changes to A25-32-15000 for a 1.5" housing size
 No porting sizes have been indicated all porting must be specified when ordering parts.

MH25 Series

Dimensions

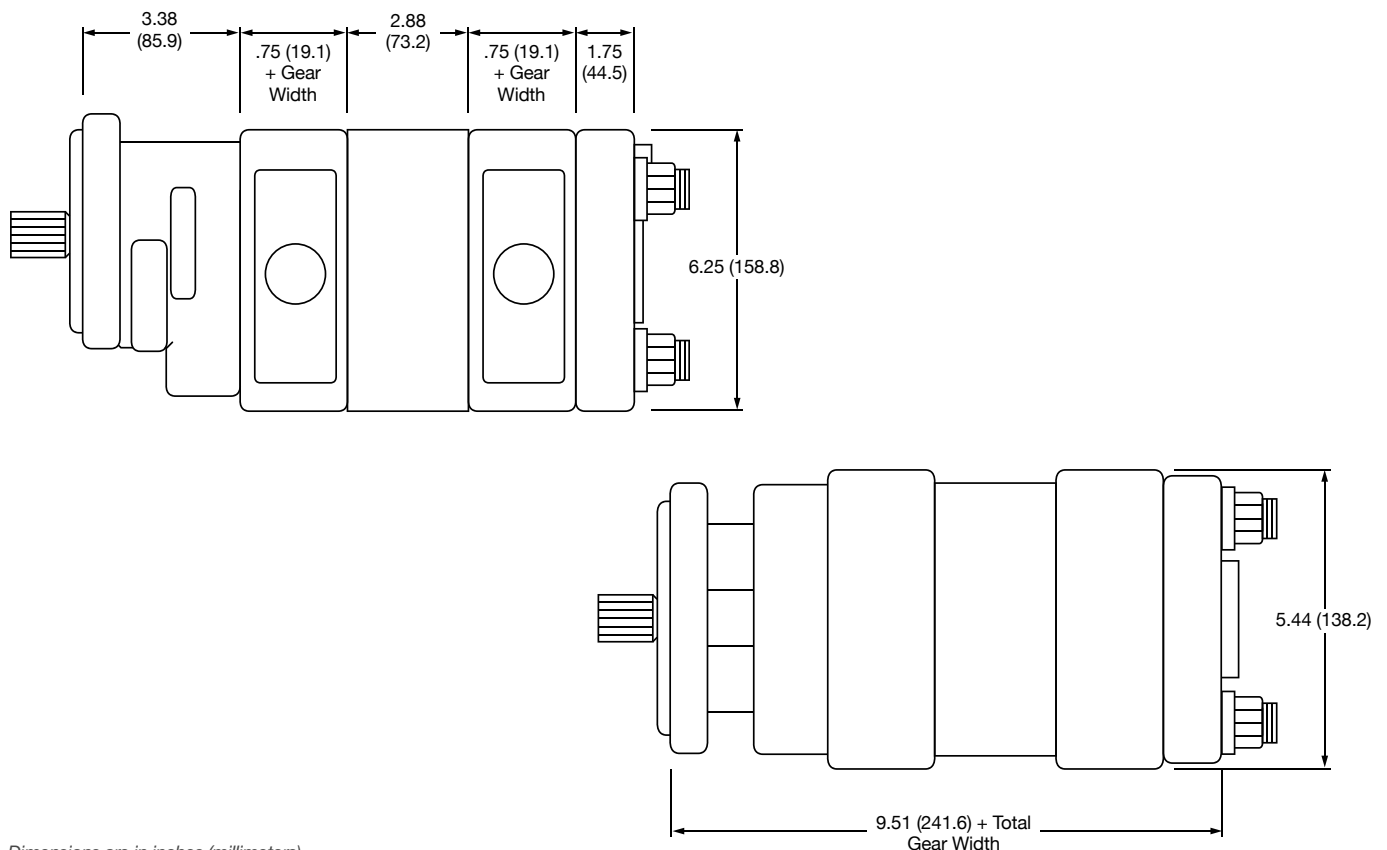
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH30 Series Bearing Pump

Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH30		DISPLACEMENT		MAX PRESSURE	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.50	1/2"	.99	(16.1)	2500	(172)
.75	3/4"	1.48	(24.2)	2500	(172)
1.00	1"	1.97	(32.3)	2500	(172)
1.25	1-1/4"	2.46	(40.4)	2500	(172)
1.50	1-1/2"	2.96	(48.4)	2500	(172)
1.75	1-3/4"	3.45	(56.5)	2250	(145)
2.00	2"	3.94	(64.6)	2250	(145)

MH30 Series Bearing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)				
	1"	1-1/4"	1-1/2"	1-3/4"	2"
900	6.5 / 24.5	8 / 30	10 / 38	12 / 45.5	13.5 / 51
1200	9 / 34	11.5 / 43.5	14 / 53	16 / 60.5	18.5 / 70
1500	11.5 / 43.5	14.5 / 55	17.5 / 66	20.5 / 77.5	23.5 / 89
1800	14 / 53	18 / 68	21.5 / 81.5	25 / 94.5	29 / 110
2100	16.5 / 62.5	21 / 79.5	25 / 94.5	29.5 / 112	34 / 129
2400	19 / 72	24 / 91	29 / 110	34 / 129	39 / 148

Motor Performance Data

SPEED RPM	GEAR WIDTH					
	1"		1-1/2"		2"	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
800	9 / 34	550 / 6.5	13 / 49	870 / 10	17 / 64.5	1150 / 13
1200	13 / 49	550 / 6.5	18 / 68	870 / 10	23.5 / 89	1150 / 13
1600	16 / 60.5	550 / 6.5	23 / 87	860 / 10	30.5 / 115	1140 / 13
2000	19.5 / 74	550 / 6.5	28 / 106	850 / 10	37 / 140	1125 / 13

Note: Input Flow @ 2000psi | Output Torque @ 140 bar

MH30 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "BB" Spline	13,000	5,500
SAE "BB" Keyed	8,600	5,500
SAE "B" Spline	8,300	5,500
SAE "B" Keyed	5,700	5,500
SAE "C" Spline	*	*
SAE "C" Keyed	*	*
Connecting Shaft		5,500

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH30 Series Bearing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 30 - A - 1 - 07 - ME - AB - 10 - 12 - DB - * - * - *

Type¹ _____
MHP = Pump
MHM = Motor

Unit² _____
A = Single Unit
B = Tandem Unit
C = Single or Tandem Unit w/ a Continental Shaft

Shaft End Cover³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
3 = Pump w/o Shaft Bearing (Double Rotation)
4 = Pump w/ Shaft Bearing (Clockwise Rotation)
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)
6 = Pump w/ Shaft Bearing (Double Rotation)
8 = Motor w/ Shaft Bearing & 1/4" Drain Port
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

Shaft End Cover⁴ _____
00 = Pad Mount
05 = 6-Bolt Flng 3.25" Dia. Bolt Circle
42 = SAE 4-Bolt "B" Mount
78 = SAE 4-Bolt "C" Mount
91 = 31/51 Piggyback Mount
92 = 76/31 Piggyback Mount
94 = SAE 2-Bolt "A" Mount
96 = SAE 2-Bolt "B" Mount
97 = SAE 2-Bolt "B" Mount (Type 2)

Connecting Shaft¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers⁹
See page 51 for Bearing Carrier options

Shaft Type⁸
07 = SAE "C" 14 Tooth Spline 1.250" Dia. (Cont. Only)
12 = Keyed Shaft .75" Dia. x 1.56 Key (Cont. Only)
15 = SAE "B" Keyed .875 Dia. w/ 5/8"-18 Thd (Cont. Only)
25 = SAE "B" 13 Tooth Spline .88" Dia.
30 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key
65 = SAE "B" 13 Tooth Spline .875" Dia. Type 2
66 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key Type 2
67 = SAE "B" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key Type 2
68 = 6 Tooth Spline .1" Dia.
95 = SAE "A" 9 Tooth Spline .62" Dia.
98 = SAE "BB" 15 Tooth Spline 1" Dia.

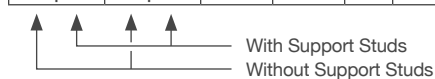
Gear Size⁷
Code / Displacement (in³/r)

05 (.99)	07 (1.48)	10 (1.97)	12 (2.46)	15 (2.96)	17 (3.45)	20 (3.94)
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Port End Cover⁵

NPT Codes

Single Units	Tandem Units	Port Size Left	Port Size Right	A	B
BE BY	BI BY	None	None	n/a	n/a
KE KY	KI KY	3/4"	None	n/a	1.25
LE LY	LI LY	None	3/4"	1.25	n/a
ME MY	MI MY	3/4"	3/4"	1.25	1.25



Orientation is viewed from the shaft end

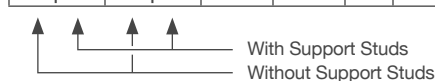
O-ring Codes

Single Units	Tandem Units	Port Size Left	Port Size Right	A	B
GU	GU	1-1/4"	1"	1.38	1.38
HU	HU	1"	1-1/4"	1.38	1.38
TU	TU	1-1/4"	1"	1.38	1.38
XU	XU	1"	1-1/4"	1.38	1.38

Orientation is viewed from the shaft end

ORB Codes

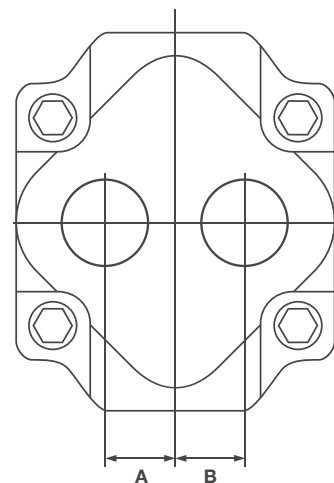
Single Units	Tandem Units	Port Size Left	Port Size Right	A	B
CE CY	CI CY	3/4"	None	n/a	1.25
CA CO	CU CO	3/4"	None	n/a	1.38
DE DY	DI DY	None	3/4"	1.25	n/a
DA DO	DU DO	None	3/4"	1.25	n/a
FE FY	FI FY	3/4"	3/4"	1.25	1.25
JA BO	JU BO	3/4"	3/4"	1.38	1.38
GE GY	GI GY	1"	3/4"	1.25	1.38
KA	KU	1"	3/4"	1.38	1.38
HE HY	HI HY	3/4"	1"	1.38	1.25
LA	LU	3/4"	1"	1.38	1.38
MA YO	MU YO	1"	None	n/a	1.38
RA RO	SU RO	None	1"	1.38	n/a
JE JY	JI JY	1"	1"	1.38	1.38
ZA ZO	ZU ZO	1"	1"	1.38	1.38



Orientation is viewed from the shaft end

Gear Housing⁶

See following pages for Gear Housing options



MH30 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

NPT Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
IL	1/2"	None	x	x					
IM	None	1/2"	x	x					
IR	1/2"	1/2"	x	x					
IC	3/4"	None			x	x	x	x	x
ID	None	3/4"			x	x	x	x	x
IF	3/4"	3/4"			x	x	x	x	x
IG	3/4"	1"			x	x	x	x	
IH	3/4"	1-1/4"					x	x	
IJ	1"	3/4"			x	x	x	x	
IK	1-1/4"	3/4"					x	x	
YC	1"	None			x	x	x	x	
YD	None	1"			x	x	x	x	
YF	1"	1"				x	x	x	
YG	1"	1-1/4" *					x	x	x
YH	1"	1-1/2"					x	x	x
YJ	1-1/4" *	1"					x	x	x
YK	1-1/2"	1"					x	x	x
IA	1-1/4" *	None					x	x	x
IB	None	1-1/4" *					x	x	x
YL	1-1/4"	1-1/4"						x	x
YM	1-1/4"	1-1/2" *							x
YP	1-1/2"	1-1/4"							x
YA	1-1/2" *	None							x
YB	None	1-1/2" *							x

* Low Pressure Inlet Porting

BSPP Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
YN	3/4"	None		x	x	x	x	x	x
YQ	None	3/4"		x	x	x	x	x	x
YS	3/4"	3/4"			x	x		x	x
YT	3/4"	1"			x	x			
YU	3/4"	1-1/4"						x	x
YV	1"	3/4"			x	x	x	x	
YW	1-1/4"	3/4"						x	x
SL	1"	None				x	x	x	x
RQ	None	1"				x	x	x	x
MP	1"	1"				x	x	x	
VY	1"	1-1/4" *					x	x	x
IX	1-1/4" *	1"					x	x	x
NJ	1-1/4" *	None						x	x
UI	None	1-1/4" *						x	x
PF	1-1/4"	1-1/4"							x

* Low Pressure Inlet Porting

Split Flange Codes

Code	Port Size		5	7	10	12	15	17	20
	Left	Right							
AB	None	None	x	x	x	x	x	x	x
UC	3/4"	None			x	x	x	x	
UD	None	3/4"			x	x	x	x	
UF	3/4"	3/4"		x	x	x	x		
UG	3/4"	1"		x	x	x	x		
UH	3/4"	1-1/4"				x	x	x	x
UJ	1"	3/4"			x	x	x	x	x
UK	1-1/4"	3/4"				x	x	x	x
OC	1"	None					x	x	x
OD	None	1"				x	x	x	x
OF	1"	1"			x	x	x	x	x
OG	1"	1-1/4" *				x	x	x	x
OH	1"	1-1/2" *						x	x
OJ	1-1/4" *	1"				x	x	x	x
OK	1-1/2" *	1"						x	x
OA	1-1/4" *	None				x	x	x	x
OB	None	1-1/4" *				x	x	x	x
OL	1-1/4"	1-1/4"					x	x	x
OM	1-1/4"	1-1/2" *						x	x
OP	1-1/2" *	1-1/4"						x	x
OE	1-1/2" *	None						x	x
OU	None	1-1/2" *						x	x

* Low Pressure Inlet Porting

MH30 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing Cont. ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

O.D. Tube Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20
AB	None	None	x	x	x	x	x	x	x
EC	3/4"	None			x	x	x	x	
ED	None	3/4"			x	x	x	x	
EF	3/4"	3/4"			x	x	x	x	x
EG	3/4"	1"			x	x	x	x	x
EH	3/4"	1-1/4"					x	x	
IN	3/4"	1-1/2"							x
EJ	1"	3/4"			x	x	x	x	x
EK	1-1/4"	3/4"					x	x	
IP	1-1/2"	3/4"							x
EZ	7/8"	None				x			
EL	7/8"	1"			x	x			
EM	1"	7/8"			x	x			
AC	1"	None			x	x	x	x	x
AD	None	1"			x	x	x	x	x
AF	1"	1"					x	x	x
AG	1"	1-1/4" *					x	x	x
AH	1"	1-1/2" *						x	x
AJ	1-1/4" *	1"					x	x	x
AK	1-1/2" *	1"						x	x
AA	1-1/4" *	None				x	x	x	
AO	None	1-1/4" *				x	x	x	
AL	1-1/4"	1-1/4"						x	x
AM	1-1/4"	1-1/2" *						x	x
AP	1-1/2" *	1-1/4"						x	x
AE	1-1/2" *	None						x	x
AU	None	1-1/2" *						x	x

* Low Pressure Inlet Porting

Metric Split Flange Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20
AB	None	None	x	x	x	x	x	x	x
VN	3/4"	None			x	x	x	x	
VQ	None	3/4"			x	x	x	x	
VS	3/4"	3/4"			x	x	x	x	
VT	3/4"	1"			x	x	x	x	
RV	1"	3/4"			x	x	x	x	
RU	3/4"	1-1/4"				x	x	x	
RW	1-1/4"	3/4"				x	x	x	
UL	1"	None			x	x	x	x	x
UR	None	1"			x	x	x	x	x
UM	1"	1"				x	x	x	
VU	1"	1-1/4" *				x	x	x	x
UX	1-1/4" *	1"				x	x	x	x
HO	1"	1-1/2" *						x	x
VO	1-1/2" *	1"						x	x
NO	1-1/4" *	None					x	x	x
UO	None	1-1/4" *					x	x	x
PO	1-1/4"	1-1/4"					x	x	x
QO	1-1/4"	1-1/2" *						x	x
SO	1-1/2" *	1-1/4"						x	x
UY	1-1/2" *	None					x	x	
TO	None	1-1/2" *					x	x	

* Low Pressure Inlet Porting

Metric Str. Thd. Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20
AB	None	None	x	x	x	x	x	x	x
EN	3/4"	None			x	x	x		
TQ	None	3/4"			x	x	x		
ES	3/4"	3/4"			x	x			
ET	3/4"	1"			x	x			
EV	1"	3/4"			x	x	x	x	
NL	1"	None			x	x	x		
ER	None	1"			x	x	x	x	x
CM	1"	1"				x	x		
VE	1"	1-1/4" *					x	x	x
EX	1-1/4" *	1"					x	x	x
PA	1-1/4"	1-1/4"						x	x
QA	1-1/4"	1-1/2" *							x
SA	1-1/2" *	1-1/4"							x

* Low Pressure Inlet Porting

MH30 Series Bearing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

NPT Codes

In	Out	CW (Left)	CCW (Right)
None	None	 C A	 D J
1"	None	 TB VB	 BT BV
1-1/4"	3/4"	 TX VX VZ	 XT XV ZV
1-1/4"	3/4"	 TJ VJ VK KW	 JT JV KV
1"	3/4"	 ZX	 XZ
1"	3/4"	 ZS	 SZ

SAE Split Flange Codes

In	Out	CW (Left)	CCW (Right)
1"	None	 LB	 BL
1-1/4"	None	 MB	 BM
1-1/2"	None	 NB	 BN
None	3/4"	 BR	 RB
1"	3/4"	 LR	 RL
1-1/4"	3/4"	 MR	 RM
1-1/2"	3/4"	 NR	 RN
1-1/4"	1"	 MS	 SM
1-1/2"	1"	 NS	 SN
1"	3/4"	 LX	 XL
1-1/4"	3/4"	 MX	 XM
1-1/2"	3/4"	 NX	 XN
1-1/4"	1"	 MZ	 ZM
1-1/2"	1"	 NZ	 ZN
1"	3/4"	 SR	 RS
1"	3/4"	 RZ	 ZR

SAE O-ring Codes

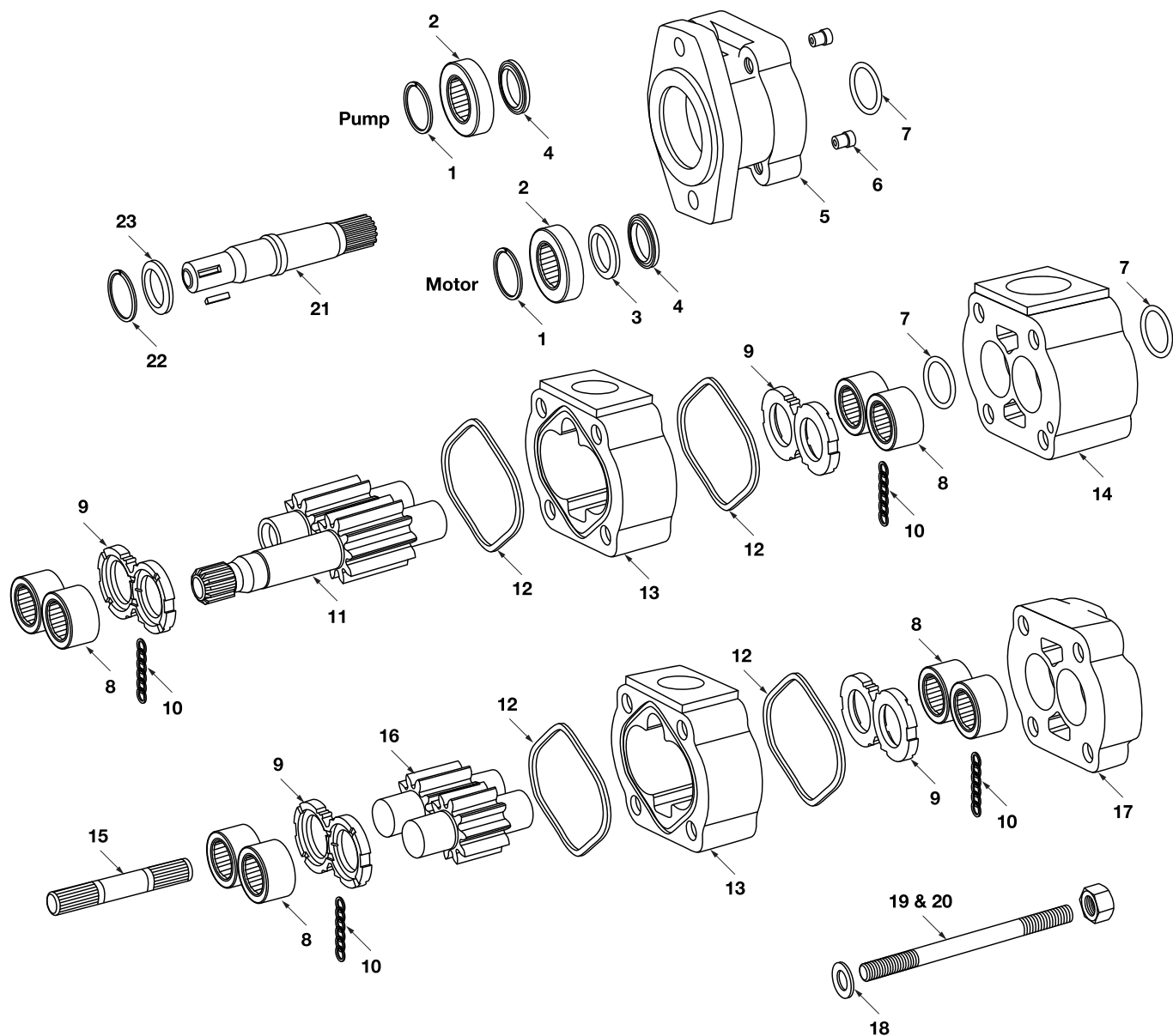
In	Out	CW (Left)	CCW (Right)
1"	None	 CB	 BC
1-1/4"	None	 DB	 BD
1-1/2"	None	 FB	 BF
None	3/4"	 CJ	 JP
1"	3/4"	 DJ	 JC
1-1/4"	3/4"	 FJ	 JD
1-1/2"	3/4"	 DK	 JF
1"	1"	 FK	 KD
1-1/4"	1"	 FS	 KF
1"	3/4"	 CR	 RC
1-1/4"	3/4"	 DR	 RD
1-1/2"	3/4"	 FR	 RF
1-1/4"	1"	 DS	 SD
1-1/2"	1"	 FS	 SF
1"	3/4"	 KJ	 JK
1"	3/4"	 KX	 XK

Motors Only Codes

In	Out	Dual	
None	None	 B	
1"	1"	 TT	NPT
1-1/4"	1-1/4"	 VV	NPT
1"	1"	 CC	SAE O-Ring
1-1/4"	1-1/4"	 BB	SAE O-Ring
1-1/2"	1-1/2"	 FF	SAE O-Ring
1"	1"	 LL	SAE Split Flange
1-1/4"	1-1/4"	 MM	SAE Split Flange
1-1/2"	1-1/2"	 NN	SAE Split Flange

MH30 Series

Parts Breakdown



MH30 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SHAFT BEARING SNAP RING	X05-03-56200	391-2686-063
2a	INPUT SHAFT BEARING	X03-16-12552	391-0381-040
2b	BEARING SPACER (IN PLACE OF SHAFT BEARING)	A30-92-38520	391-3383-069
3	MOTOR SEAL RETAINER USED WITH SHAFT BEARING OR SPACER	A20-60-10000	391-3381-040
4a	PUMP LIP SEAL FOR CONTINENTAL SHAFT ONLY	X89-11-02508	391-2883-107
4b	PUMP LIP SEAL FOR PIGGY BACK 76/31 SHAFT END COVER	X83-11-03308	391-2883-103
4c	MOTOR LIP SEAL	X84-36-02709	391-2883-119
4d	MOTOR LIP SEAL FOR CONTINENTAL SHAFT ONLY	X84-36-02509	391-2883-126
5a	30 PAD PILOT PUMP S.E.C. TYPE 00	A30-10-21100	312-5013-201
5b	30 6 BOLT ROUND WITH 2.625" or 66,67 mm PILOT PUMP S.E.C. TYPE 05	A30-10-21651	312-5043-201
5c	30 4 BOLT B PILOT PUMP S.E.C. TYPE 42 (4" or 101.6 mm pilot)	A30-10-21420	312-5033-201
5d	30 4 BOLT C PILOT PUMP S.E.C. TYPE 78 (5" or 127 mm pilot)	A30-10-21430	312-5033-202
5e	30 2 BOLT A PILOT PUMP S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)	A30-10-21210	312-5023-205
5f	30 2 BOLT B PILOT PUMP S.E.C. TYPE 97 (4" or 101.6 mm pilot)	A30-10-21220	312-5023-202
5g	30 2 BOLT B (TYPE 2) PILOT PUMP S.E.C. TYPE 96 (4" or 101.6 mm pilot)	A30-10-22220	312-5029-201
5h	30/50 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 91	A02-10-21500	312-5029-210
5i	75/30 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 92	A03-10-21500	312-5026-204
5j	30 2/4 BOLT B PILOT PUMP S.E.C. TYPE 46 (4" or 101.6 mm pilot)	A30-10-21320	312-5053-202
5k	30 PAD PILOT MOTOR S.E.C. TYPE 00	A30-10-41100	312-5013-401
5l	30 6 BOLT ROUND WITH 2,625" or 66,67 mm PILOT MOTOR S.E.C. TYPE 05	A30-10-41650	312-5043-601
5m	30 4 BOLT B PILOT MOTOR S.E.C. TYPE 42 (4" or 101.6 mm pilot)	A30-10-41420	312-5033-601
5n	30 4 BOLT C PILOT MOTOR S.E.C. TYPE 78 (5" or 127 mm pilot)	A30-10-41430	312-5033-402
5o	30 2 BOLT A PILOT MOTOR S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)	A30-10-41210	312-5023-405
5p	30 2 BOLT B PILOT MOTOR S.E.C. TYPE 97 (4" or 101.6 mm pilot)	A30-10-41220	312-5023-402
5q	30 2/4 BOLT B PILOT MOTOR S.E.C. TYPE 46 (4" or 101.6 mm pilot)	A30-10-41320	312-5053-402
6a	CHECK VALVE MOTOR	A00-75-11000	391-3681-001
6b	PRESSURE PLUG PUMP	X02-03-32110	391-2286-004
7	RING SEAL	X81-76-02706	391-2585-006
8	ROLLER BEARING (Ø 1.687" O.D.)	X03-24-12743	391-0381-068
9	PUMP & MOTOR THRUST PLATE	A30-70-10000	391-2185-013
10	POCKET SEAL	X85-11-00002	391-2882-086
11a	SHAFT & GEAR TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-XX125	312-29XX-730
11b	SHAFT & GEAR TYPE 25 (0.875" Ø - 13-Tooth spline)	A30-50-XX225	312-29XX-230
11c	SHAFT & GEAR TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A30-50-XX135	312-29XX-740
11d	SHAFT & GEAR TYPE 66 TYPE 2 (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-XX126	312-29XX-930
11e	SHAFT & GEAR TYPE 65 TYPE 2 (0.875" Ø - 13-Tooth spline)	A30-50-XX226	312-29XX-430
12	PUMP & MOTOR HOUSING GASKET	X85-11-10104	391-2884-050

MH30 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
13	PUMP & MOTOR GEAR HOUSING	A31-32-XX000	312-80XX-100
14a	MOTOR BEARING CARRIER BLANK	A30-40-00000	312-7300-100
14b	PUMP BEARING CARRIER WITH COMMON PASSAGE	A30-40-20000	312-7373-100
15	CONNECTING SHAFT	A30-50-00500	312-1133-001
16	GEAR SET ONLY	A30-50-XX000	312-28XX-000
17a	PUMP & MOTOR PORT END COVER	A30-22-00000	312-3200-100
17b	30 PUMP & MOTOR PORT END COVER LARGER PORTING	A30-27-00000	312-3400-100
17c	30/30 PIGGY BACK PORT END COVER	A01-22-03000	312-5029-213
18	FLAT WASHER	X45-10-17005	391-3784-028
19	BOLTS / STUDS	See Fasteners Page	
20	HEX NUT	X42-11-16000	391-1451-076
21a	CONTINENTAL SHAFT TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-00121	312-1500-300
21b	CONTINENTAL SHAFT TYPE 30 Long (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-00124	312-1135-192
21c	CONTINENTAL SHAFT TYPE 7 (1.250" Ø - 14-tooth spline, Continental only)	A30-50-00241	312-1135-133
21d	CONTINENTAL SHAFT TYPE 25 (0.875" Ø - 13-Tooth spline)	A30-50-00221	312-1135-138
21e	CONTINENTAL SHAFT TAPERED TYPE 32 (Clutch pump shaft with woodruff key)	Special Order	312-1500-001
21f	CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A30-50-00131	312-1500-400
21g	CONTINENTAL SHAFT TYPE 43 Long (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A30-50-00134	312-1135-193
21h	CONTINENTAL SHAFT TYPE 12 (0.750" Ø x 3/16" x 3/16" 1 9/16" key)	A30-50-00169	312-1135-152
21i	CONTINENTAL SHAFT THREADED & KEYED END TYPE 15 (5/8"-18UNF + 1/4" x 3/8" x 7/8"key)	A30-50-00127	312-1135-171
21j	CONTINENTAL SHAFT TYPE 95 (0.625" Ø x 9-tooth spline)	A30-50-00211	312-1000-200
22	CONTINENTAL SHAFT BRG. RETAINER SNAP RING	X05-02-28110	391-2685-011
23	CONTINENTAL SHAFT BRG. RETAINER	A20-60-20000	312-0100-002
Not Shown	SEAL RETAINER FOR 50/50 & 30/50 PIGGY BACK PUMP S.E.C.	A30-60-10001	391-2584-063
Not Shown	SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.	X81-11-04704	391-2881-124
Not Shown	SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.	X81-11-05704	391-2881-120
Not Shown	SEAL RETAINER FOR 75/50 & 75/30 PIGGY BACK PUMP S.E.C.	A50-60-10003	391-2585-013
Not Shown	CASE DRAIN PLUG	X02-03-22060	391-2282-056
Not Shown	PUMP & PIGGY BACK 31/31 S.E.C.LIP SEAL	X83-11-02708	391-2883-058
Not Shown	SHAFT KEY FOR TYPE 12 SHAFT	X01-02-50540	391-1781-075
Not Shown	SHAFT KEY FOR TYPE 43 & 67 SHAFT	X01-01-61032	391-1781-021
Not Shown	SHAFT KEY FOR TYPE 30 & 66 SHAFT	X01-01-61025	391-1781-025

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A30-50-XX000 changes to A30-50-15000 for 1.5" gear size
Housing no. A31-32-XX000 changes to A31-32-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH30 Series

Parts Breakdown

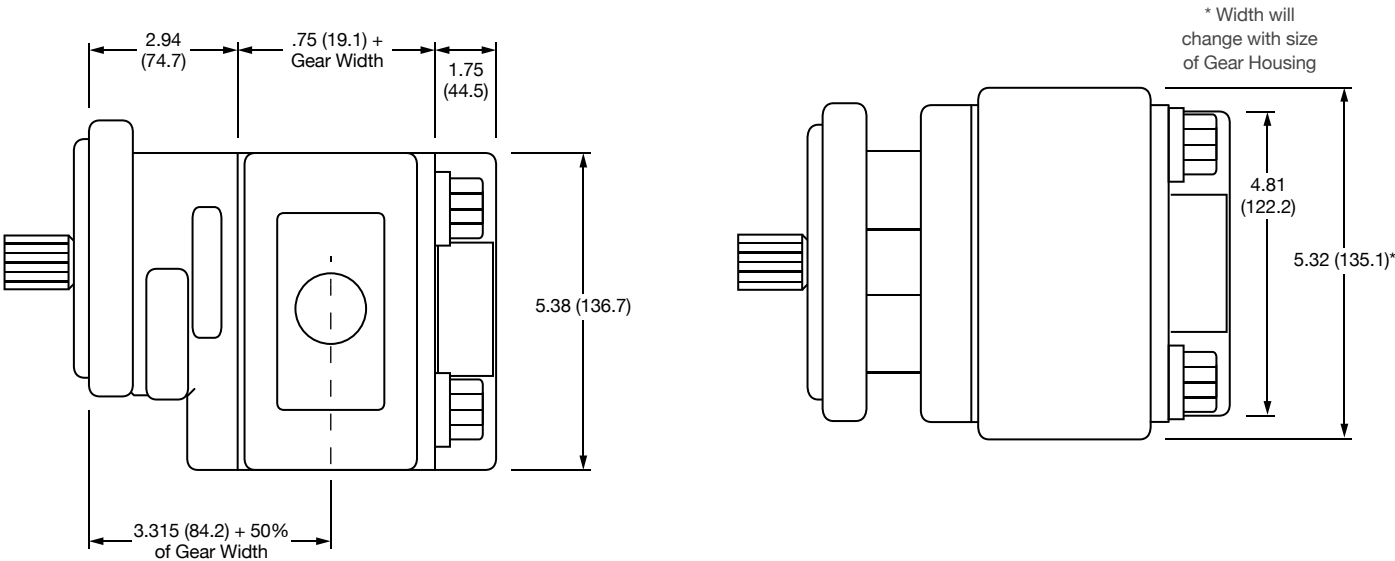
DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
Not Shown	SHAFT KEY FOR TYPE Spl. SHAFT	X01-01-61044	391-1781-020
Not Shown	30/30 PIGGY BACK CONNECTING SHAFT	A01-50-00400	312-1133-002
Not Shown	50/30 PIGGY BACK CONNECTING SHAFT	A02-50-00400	312-1133-003
Not Shown	75/30 PIGGY BACK CONNECTING SHAFT	A03-50-00400	316-1133-003

MH30 Series

Dimensions

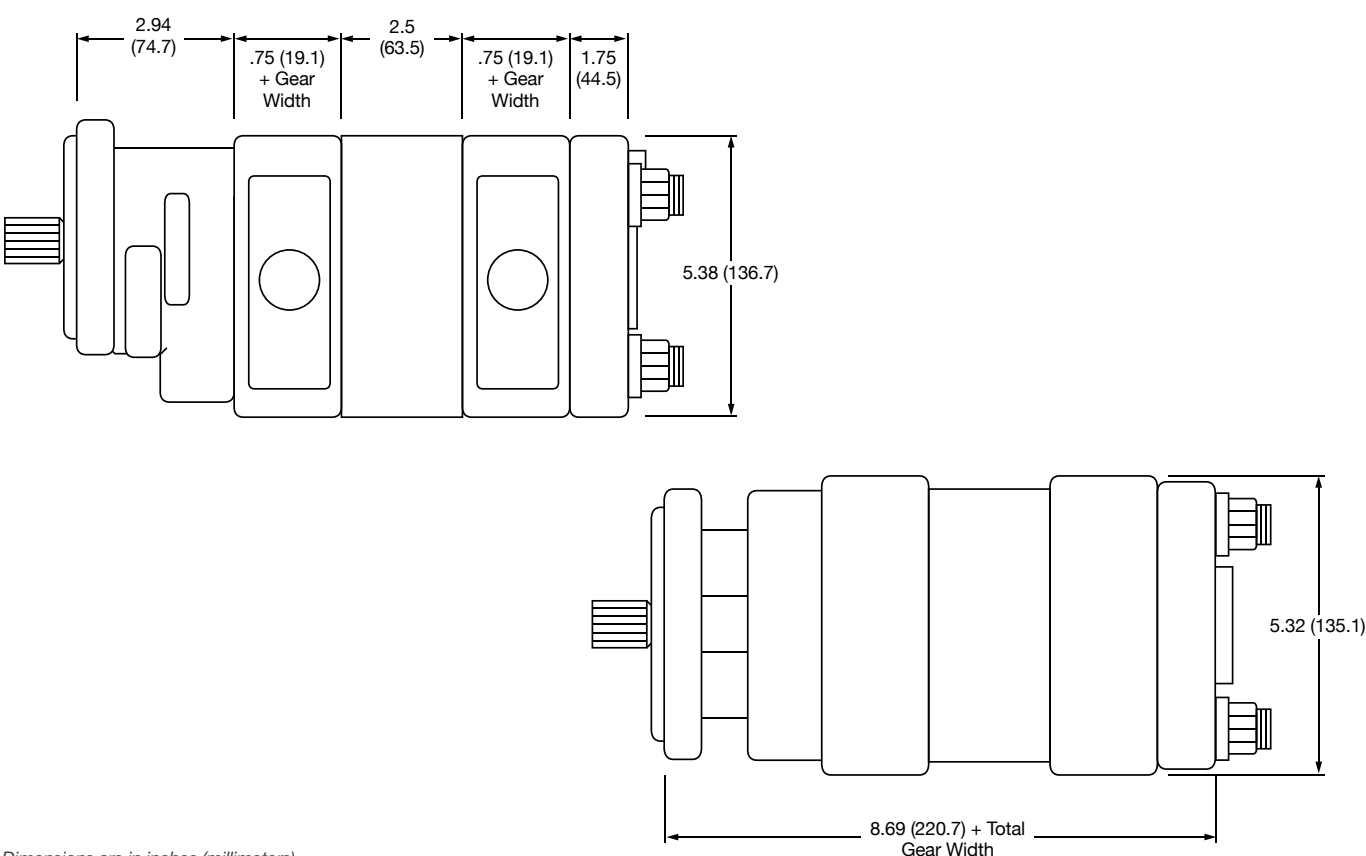
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH31 Series Bearing Pump

Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH31		DISPLACEMENT		MAX PRESSURE (DOWELLED)	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.50	1/2"	.99	(16.1)	3000	(207)
.75	3/4"	1.48	(24.2)	3000	(207)
1.00	1"	1.97	(32.3)	3000	(207)
1.25	1-1/4"	2.46	(40.4)	3000	(207)
1.50	1-1/2"	2.96	(48.4)	3000	(207)
1.75	1-3/4"	3.45	(56.5)	2500	(172)
2.00	2"	3.94	(64.6)	2500	(172)

MH31 Series Bearing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)				
	1"	1-1/4"	1-1/2"	1-3/4"	2"
900	6.5 / 24.5	8 / 30	10 / 38	12 / 45.5	13.5 / 51
1200	9 / 34	11.5 / 43.5	14 / 53	16 / 60.5	18.5 / 70
1500	11.5 / 43.5	14.5 / 55	17.5 / 66	20.5 / 77.5	23.5 / 89
1800	14 / 53	18 / 68	21.5 / 81.5	25 / 94.5	29 / 110
2100	16.5 / 62.5	21 / 79.5	25 / 94.5	29.5 / 112	34 / 129
2400	19 / 72	24 / 91	29 / 110	34 / 129	39 / 148

Motor Performance Data

SPEED RPM	GEAR WIDTH					
	1"		1-1/2"		2"	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
800	9 / 34	675 / 8	13 / 49	1035 / 12	17 / 64.5	1385 / 16
1200	13 / 49	685 / 8	18 / 68	1055 / 12	23.5 / 89	1410 / 16
1600	16 / 60.5	680 / 8	23 / 87	1030 / 12	30.5 / 115	1390 / 16
2000	19.5 / 74	660 / 7.5	28 / 106	1010 / 11.5	37 / 140	1370 / 16

Note: Input Flow @ 2500psi | Output Torque @ 175 bar

MH31 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "BB" Spline	13,000	5,500
SAE "BB" Keyed	8,600	5,500
SAE "B" Spline	8,300	5,500
SAE "B" Keyed	5,700	5,500
SAE "C" Spline	*	*
SAE "C" Keyed	*	*
Connecting Shaft		5,500

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH31 Series Bearing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 31 - A - 1 - 07 - ME - AB - 10 - 12 - DB - * - * - *

Type¹ _____
MHP = Pump
MHM = Motor

Unit² _____
A = Single Unit
B = Tandem Unit
C = Single or Tandem Unit w/ a Continental Shaft

Shaft End Cover³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
3 = Pump w/o Shaft Bearing (Double Rotation)
4 = Pump w/ Shaft Bearing (Clockwise Rotation)
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)
6 = Pump w/ Shaft Bearing (Double Rotation)
8 = Motor w/ Shaft Bearing & 1/4" Drain Port
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

Shaft End Cover⁴ _____
00 = Pad Mount
05 = 6-Bolt Flng 3.25" Dia. Bolt Circle
42 = SAE 4-Bolt "B" Mount
78 = SAE 4-Bolt "C" Mount
91 = 31/51 Piggyback Mount
92 = 76/31 Piggyback Mount
94 = SAE 2-Bolt "A" Mount
96 = SAE 2-Bolt "B" Mount
97 = SAE 2-Bolt "B" Mount (Type 2)

Connecting Shaft¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers⁹
See page 62 for Bearing Carrier options

Shaft Type⁸
07 = SAE "C" 14 Tooth Spline 1.250" Dia. (Cont. Only)
12 = Keyed Shaft .75" Dia. x 1.56 Key (Cont. Only)
15 = SAE "B" Keyed .875 Dia. w/ 5/8"-18 Thd (Cont. Only)
25 = SAE "B" 13 Tooth Spline .88" Dia.
30 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key
65 = SAE "B" 13 Tooth Spline .875" Dia. Type 2
66 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key Type 2
67 = SAE "B" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key Type 2
68 = 6 Tooth Spline .1" Dia.
95 = SAE "A" 9 Tooth Spline .62" Dia.
98 = SAE "BB" 15 Tooth Spline 1" Dia.

Gear Size⁷
Code / Displacement (in³/r)

05 (.99)	07 (1.48)	10 (1.97)	12 (2.46)	15 (2.96)	17 (3.45)	20 (3.94)
--------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------

Port End Cover⁵

NPT Codes

Single Units	Tandem Units	Port Size		A	B
Left	Right				
BE BY	BI BY	None	None	n/a	n/a
KE KY	KI KY	3/4"	None	n/a	1.25
LE LY	LI LY	None	3/4"	1.25	n/a
ME MY	MI MY	3/4"	3/4"	1.25	1.25

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs

Orientation is viewed from the shaft end

O-ring Codes

Single Units	Tandem Units	Port Size		A	B
Left	Right				
GU	GU	1-1/4"	1"	1.38	1.38
HU	HU	1"	1-1/4"	1.38	1.38
TU	TU	1-1/4"	1"	1.38	1.38
XU	XU	1"	1-1/4"	1.38	1.38

Orientation is viewed from the shaft end

ORB Codes

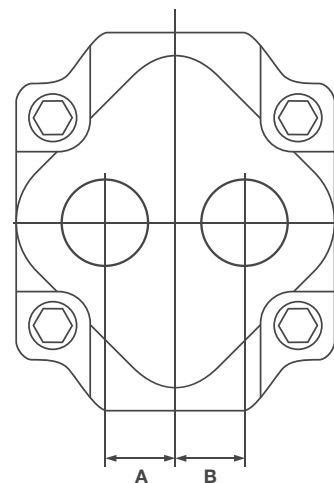
Single Units	Tandem Units	Port Size		A	B
Left	Right				
CE CY	CI CY	3/4"	None	n/a	1.25
CA CO	CU CO	3/4"	None	n/a	1.38
DE DY	DI DY	None	3/4"	1.25	n/a
DA DO	DU DO	None	3/4"	1.25	n/a
FE FY	FI FY	3/4"	3/4"	1.25	1.25
JA BO	JU BO	3/4"	3/4"	1.38	1.38
GE GY	GI GY	1"	3/4"	1.25	1.38
KA	KU	1"	3/4"	1.38	1.38
HE HY	HI HY	3/4"	1"	1.38	1.25
LA	LU	3/4"	1"	1.38	1.38
MA YO	MU YO	1"	None	n/a	1.38
RA RO	SU RO	None	1"	1.38	n/a
JE JY	JI JY	1"	1"	1.38	1.38
ZA ZO	ZU ZO	1"	1"	1.38	1.38

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs

Orientation is viewed from the shaft end

Gear Housing⁶

See following pages for Gear Housing options



MH31 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

NPT Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20
AB	None	None	x	x	x	x	x	x	x
IL	1/2"	None	x	x					
IM	None	1/2"	x	x					
IR	1/2"	1/2"	x	x					
IC	3/4"	None			x	x	x	x	x
ID	None	3/4"			x	x	x	x	x
IF	3/4"	3/4"			x	x	x	x	x
IG	3/4"	1"			x	x	x	x	
IH	3/4"	1-1/4"					x	x	
IJ	1"	3/4"			x	x	x	x	
IK	1-1/4"	3/4"					x	x	
YC	1"	None			x	x	x	x	
YD	None	1"			x	x	x	x	
YF	1"	1"				x	x	x	
YG	1"	1-1/4" *					x	x	x
YH	1"	1-1/2"					x	x	x
YJ	1-1/4" *	1"					x	x	x
YK	1-1/2"	1"					x	x	x
IA	1-1/4" *	None					x	x	x
IB	None	1-1/4" *					x	x	x
YL	1-1/4"	1-1/4"						x	x
YM	1-1/4"	1-1/2" *							x
YP	1-1/2"	1-1/4"							x
YA	1-1/2" *	None							x
YB	None	1-1/2" *							x

* Low Pressure Inlet Porting

BSPP Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20
AB	None	None	x	x	x	x	x	x	x
YN	3/4"	None		x	x	x	x	x	x
YQ	None	3/4"		x	x	x	x	x	x
YS	3/4"	3/4"			x	x		x	x
YT	3/4"	1"			x	x			
YU	3/4"	1-1/4"						x	x
YV	1"	3/4"			x	x	x	x	
YW	1-1/4"	3/4"						x	x
SL	1"	None				x	x	x	x
RQ	None	1"				x	x	x	x
MP	1"	1"				x	x	x	
VY	1"	1-1/4" *					x	x	x
IX	1-1/4" *	1"					x	x	x
NJ	1-1/4" *	None						x	x
UI	None	1-1/4" *						x	x
PF	1-1/4"	1-1/4"							x

* Low Pressure Inlet Porting

Split Flange Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20
AB	None	None	x	x	x	x	x	x	x
UC	3/4"	None			x	x	x	x	
UD	None	3/4"			x	x	x	x	
UF	3/4"	3/4"		x	x	x	x		
UG	3/4"	1"		x	x	x	x		
UH	3/4"	1-1/4"				x	x	x	x
UJ	1"	3/4"			x	x	x	x	x
UK	1-1/4"	3/4"				x	x	x	x
OC	1"	None					x	x	x
OD	None	1"				x	x	x	x
OF	1"	1"			x	x	x	x	x
OG	1"	1-1/4" *				x	x	x	x
OH	1"	1-1/2" *						x	x
OJ	1-1/4" *	1"				x	x	x	x
OK	1-1/2" *	1"						x	x
OA	1-1/4" *	None				x	x	x	x
OB	None	1-1/4" *				x	x	x	x
OL	1-1/4"	1-1/4"					x	x	x
OM	1-1/4"	1-1/2" *						x	x
OP	1-1/2" *	1-1/4"						x	x
OE	1-1/2" *	None						x	x
OU	None	1-1/2" *						x	x

* Low Pressure Inlet Porting

MH31 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing Cont. ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

O.D. Tube Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20
AB	None	None	x	x	x	x	x	x	x
EC	3/4"	None			x	x	x	x	
ED	None	3/4"			x	x	x	x	
EF	3/4"	3/4"			x	x	x	x	x
EG	3/4"	1"			x	x	x	x	x
EH	3/4"	1-1/4"					x	x	
IN	3/4"	1-1/2"							x
EJ	1"	3/4"			x	x	x	x	x
EK	1-1/4"	3/4"					x	x	
IP	1-1/2"	3/4"							x
EZ	7/8"	None				x			
EL	7/8"	1"			x	x			
EM	1"	7/8"			x	x			
AC	1"	None			x	x	x	x	x
AD	None	1"			x	x	x	x	x
AF	1"	1"					x	x	x
AG	1"	1-1/4" *					x	x	x
AH	1"	1-1/2" *						x	x
AJ	1-1/4" *	1"					x	x	x
AK	1-1/2" *	1"						x	x
AA	1-1/4" *	None				x	x	x	
AO	None	1-1/4" *				x	x	x	
AL	1-1/4"	1-1/4"						x	x
AM	1-1/4"	1-1/2" *						x	x
AP	1-1/2" *	1-1/4"						x	x
AE	1-1/2" *	None						x	x
AU	None	1-1/2" *						x	x

* Low Pressure Inlet Porting

Metric Split Flange Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20
AB	None	None	x	x	x	x	x	x	x
VN	3/4"	None			x	x	x	x	
VQ	None	3/4"			x	x	x	x	
VS	3/4"	3/4"			x	x	x	x	
VT	3/4"	1"			x	x	x	x	
RV	1"	3/4"			x	x	x	x	
RU	3/4"	1-1/4"				x	x	x	
RW	1-1/4"	3/4"				x	x	x	
UL	1"	None			x	x	x	x	x
UR	None	1"			x	x	x	x	x
UM	1"	1"				x	x	x	
VU	1"	1-1/4" *				x	x	x	x
UX	1-1/4" *	1"				x	x	x	x
HO	1"	1-1/2" *						x	x
VO	1-1/2" *	1"						x	x
NO	1-1/4" *	None					x	x	x
UO	None	1-1/4" *					x	x	x
PO	1-1/4"	1-1/4"					x	x	x
QO	1-1/4"	1-1/2" *						x	x
SO	1-1/2" *	1-1/4"						x	x
UY	1-1/2" *	None					x	x	
TO	None	1-1/2" *					x	x	

* Low Pressure Inlet Porting

Metric Str. Thd. Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20
AB	None	None	x	x	x	x	x	x	x
EN	3/4"	None			x	x	x		
TQ	None	3/4"			x	x	x		
ES	3/4"	3/4"			x	x			
ET	3/4"	1"			x	x			
EV	1"	3/4"			x	x	x	x	
NL	1"	None			x	x	x		
ER	None	1"			x	x	x	x	x
CM	1"	1"				x	x		
VE	1"	1-1/4" *					x	x	x
EX	1-1/4" *	1"					x	x	x
PA	1-1/4"	1-1/4"						x	x
QA	1-1/4"	1-1/2" *							x
SA	1-1/2" *	1-1/4"							x

* Low Pressure Inlet Porting

MH31 Series Bearing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

NPT Codes

In	Out	CW (Left)	CCW (Right)
None None	None None	 C A	 D J
1" 1-1/4"	None None	 TB VB	 BT BV
1" 1-1/4" 1-1/4"	3/4" 3/4" 1"	 TX VX VZ	 XT XV ZV
1-1/4" 1-1/4" 1-1/2"	3/4" 1" 1"	 TJ VJ VK KW	 JT JV KV
1"	3/4"	 ZX	 XZ
1"	3/4"	 ZS	 SZ

SAE Split Flange Codes

In	Out	CW (Left)	CCW (Right)
1" 1-1/4" 1-1/2"	None None None	 LB MB NB	 BL BM BN
None 1" 1-1/4" 1-1/2" 1-1/4" 1-1/2"	3/4" 3/4" 3/4" 1" 1"	 BR LR MR NR MS NS	 RB RL RM RN SM SN
1" 1-1/4" 1-1/2" 1-1/4" 1-1/2"	3/4" 3/4" 3/4" 1" 1"	 LX MX NX MZ NZ	 XL XM XN ZM ZN
1"	3/4"	 SR	 RS
1"	3/4"	 RZ	 ZR

SAE O-ring Codes

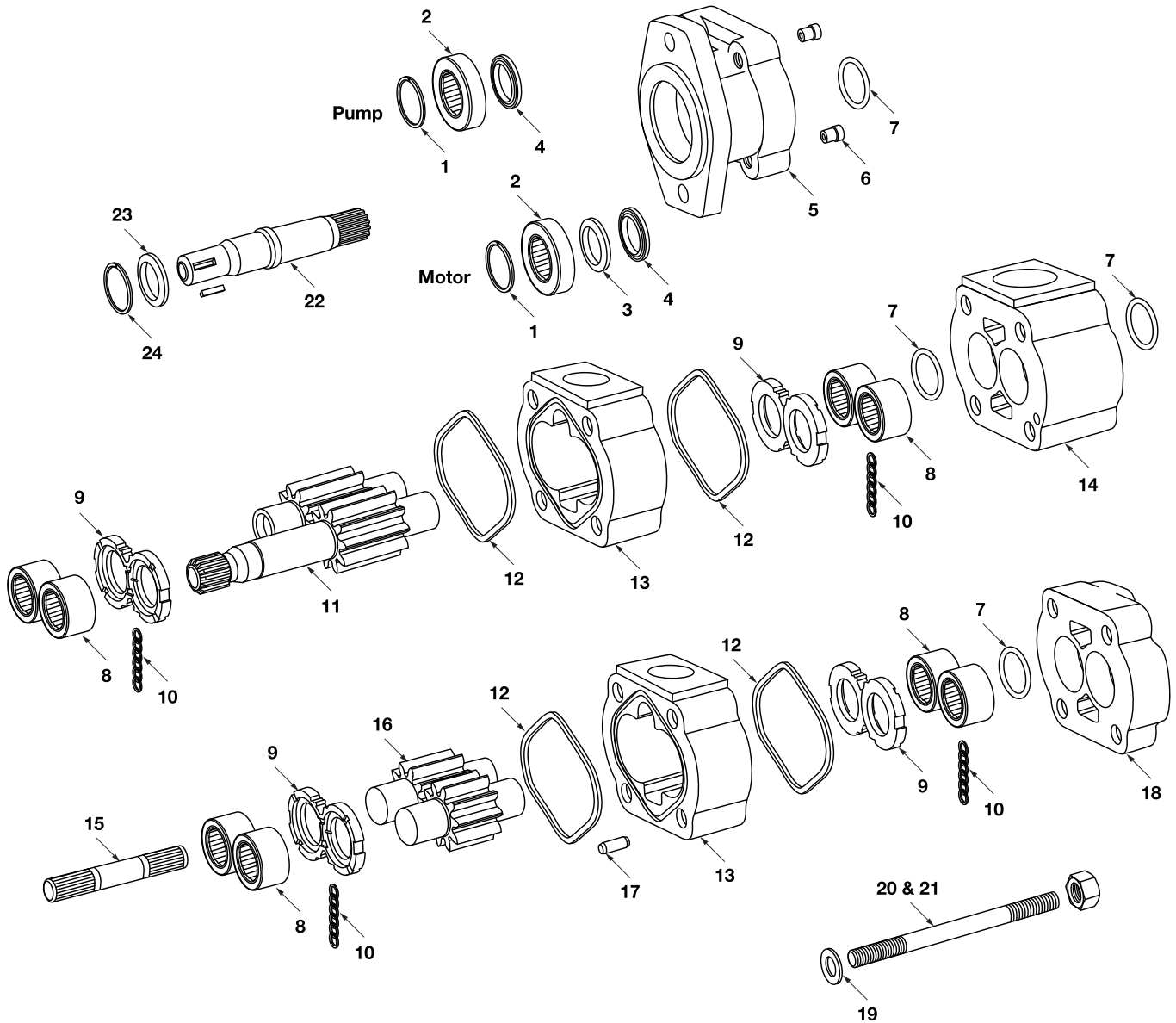
In	Out	CW (Left)	CCW (Right)
1" 1-1/4" 1-1/2"	None None None	 CB DB FB	 BC BD BF
None 1" 1-1/4" 1-1/2" 1-1/4" 1-1/2"	3/4" 3/4" 3/4" 1" 1"	 CJ DJ FJ DK FK	 JP JC JD JF KD KF
1" 1-1/4" 1-1/2" 1-1/4" 1-1/2"	3/4" 3/4" 3/4" 1" 1"	 CR DR FR DS FS	 RC RD RF SD SF
1"	3/4"	 KJ	 JK
1"	3/4"	 KX	 XK

Motors Only Codes

In	Out	Dual	
None	None	 B	
1" 1-1/4" 1" 1-1/4" 1-1/2" 1" 1-1/4" 1-1/2"	1" 1-1/4" 1" 1-1/4" 1-1/2" 1" 1-1/4" 1-1/2"	 TT VV CC BB FF LL MM NN	NPT NPT SAE O-Ring SAE O-Ring SAE O-Ring SAE Split Flange SAE Split Flange SAE Split Flange

MH31 Series

Parts Breakdown



MH31 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SHAFT BEARING SNAP RING	X05-03-56200	391-2686-063
2a	INPUT SHAFT BEARING	X03-16-12552	391-0381-040
2b	BEARING SPACER (IN PLACE OF SHAFT BEARING)	A30-92-38520	391-3383-069
3	MOTOR SEAL RETAINER USED WITH SHAFT BEARING OR SPACER	A20-60-10000	391-3381-040
4a	PUMP LIP SEAL FOR CONTINENTAL SHAFT ONLY	X89-11-02508	391-2883-107
4b	PUMP LIP SEAL FOR PIGGY BACK 76/31 SHAFT END COVER	X83-11-03308	391-2883-103
4c	MOTOR LIP SEAL	X84-36-02709	391-2883-119
4d	MOTOR LIP SEAL FOR CONTINENTAL SHAFT ONLY	X84-36-02509	391-2883-126
5a	31 PAD PILOT PUMP S.E.C. TYPE 00	A31-10-21100	312-5017-201
5b	31 6 BOLT ROUND WITH 2.625" or 66,67 mm PILOT PUMP S.E.C. TYPE 05	A31-10-21650	312-5047-201
5c	31 4 BOLT B PILOT PUMP S.E.C. TYPE 42 (4" or 101.6 mm pilot)	A31-10-21420	312-5037-201
5d	31 4 BOLT C PILOT PUMP S.E.C. TYPE 78 (5" or 127 mm pilot)	A31-10-21430	312-5037-202
5e	31 2 BOLT A PILOT PUMP S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)	A31-10-21210	312-5027-204
5f	31 2 BOLT B PILOT PUMP S.E.C. TYPE 97 (4" or 101.6 mm pilot)	A31-10-21220	312-5027-201
5g	31 2 BOLT B (TYPE 2) PILOT PUMP S.E.C. TYPE 96 (4" or 101.6 mm pilot)	A31-10-22220	312-5027-205
5h	31/51 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 91	A05-10-21500	312-5027-208
5i	76/31 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 92	A06-10-21500	312-5027-209
5j	31 2/4 BOLT B PILOT PUMP S.E.C. TYPE 46 (4" or 101.6 mm pilot)	A30-10-21320	312-5053-202
5k	31 PAD PILOT MOTOR S.E.C. TYPE 00	A31-10-41100	312-5017-401
5l	31 6 BOLT ROUND WITH 2,625" or 66,67 mm PILOT MOTOR S.E.C. TYPE 05	A31-10-41650	312-5047-401
5m	31 4 BOLT B PILOT MOTOR S.E.C. TYPE 42 (4" or 101.6 mm pilot)	A31-10-41420	312-5037-401
5n	31 4 BOLT C PILOT MOTOR S.E.C. TYPE 78 (5" or 127 mm pilot)	A31-10-41430	312-5037-402
5o	31 2 BOLT A PILOT MOTOR S.E.C. TYPE 94 (3 1/4" or 82.55 mm pilot)	A31-10-41210	312-5027-404
5p	31 2 BOLT B PILOT MOTOR S.E.C. TYPE 97 (4" or 101.6 mm pilot)	A31-10-41220	312-5027-401
5q	31 2/4 BOLT B PILOT MOTOR S.E.C. TYPE 46 (4" or 101.6 mm pilot)	A30-10-41320	312-5053-402
6a	CHECK VALVE MOTOR	A00-75-11000	391-3681-001
6b	PRESSURE PLUG PUMP	X02-03-32110	391-2286-004
7	RING SEAL	X81-76-02706	391-2585-006
8	ROLLER BEARING (Ø 1.687" O.D.)	X03-24-12743	391-0381-068
9a	PUMP THRUST PLATE	A31-70-20000	391-2185-031
9b	MOTOR THRUST PLATE	A30-70-10000	391-2185-013
10	POCKET SEAL	X85-11-00002	391-2882-086
11a	SHAFT & GEAR TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-XX125	312-29XX-730
11b	SHAFT & GEAR TYPE 25 (0.875" Ø - 13-Tooth spline)	A30-50-XX225	312-29XX-230
11c	SHAFT & GEAR TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A30-50-XX135	312-29XX-740
11d	SHAFT & GEAR TYPE 66 TYPE 2 (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-XX126	312-29XX-930
11e	SHAFT & GEAR TYPE 65 TYPE 2 (0.875" Ø - 13-Tooth spline)	A30-50-XX226	312-29XX-430

MH31 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
12	PUMP & MOTOR HOUSING GASKET	X85-11-10104	391-2884-050
13	PUMP & MOTOR GEAR HOUSING	A31-32-XX000	312-80XX-100
14a	31 MOTOR BEARING CARRIER BLANK	A31-40-00000	312-7740-100
14b	31 PUMP BEARING CARRIER WITH COMMON PASSAGE	A31-40-20000	312-7723-100
15	CONNECTING SHAFT	A30-50-00500	312-1133-001
16	GEAR SET ONLY	A30-50-XX000	312-28XX-000
17	GEAR HOUSING DOWEL PIN	A00-94-11025	391-2082-032
18a	PUMP & MOTOR PORT END COVER	A31-22-00000	312-3120-100
18b	31 PUMP & MOTOR PORT END COVER LARGER PORTING	A31-27-00000	312-3420-100
18c	31/31 PIGGY BACK PORT END COVER	A04-22-03000	312-5027-212
19	FLAT WASHER	X45-10-17005	391-3784-028
20	BOLTS / STUDS	See Fasteners Page	
21	HEX NUT	X42-11-16000	391-1451-076
22a	CONTINENTAL SHAFT TYPE 30 (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-00121	312-1500-300
22b	CONTINENTAL SHAFT TYPE 30 Long (0.875" Ø x 1/4" x 3/8" x 1" key)	A30-50-00124	312-1135-192
22c	CONTINENTAL SHAFT TYPE 7 (1.250" Ø - 14-tooth spline, Continental only)	A30-50-00241	312-1135-133
22d	CONTINENTAL SHAFT TYPE 25 (0.875" Ø - 13-Tooth spline)	A30-50-00221	312-1135-138
22e	CONTINENTAL SHAFT TAPERED TYPE 32 (Clutch pump shaft with woodruff key)	Special Order	312-1500-001
22f	CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A30-50-00131	312-1500-400
22g	CONTINENTAL SHAFT TYPE 43 Long (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A30-50-00134	312-1135-193
22h	CONTINENTAL SHAFT TYPE 12 (0.750" Ø x 3/16" x 3/16" 1 9/16" key)	A30-50-00169	312-1135-152
22i	CONTINENTAL SHAFT THREADED & KEYED END TYPE 15 (5/8"-18UNF + 1/4" x 3/8" x 7/8" key)	A30-50-00127	312-1135-171
22j	CONTINENTAL SHAFT TYPE 95 (0.625" Ø x 9-tooth spline)	A30-50-00211	312-1000-200
23	CONTINENTAL SHAFT BRG. RETAINER	A20-60-20000	312-0100-002
24	CONTINENTAL SHAFT BRG. RETAINER SNAP RING	X05-02-28110	391-2685-011
Not Shown	PUMP & PIGGY BACK 31/31 S.E.C. LIP SEAL	X83-11-02708	391-2883-058
Not Shown	SEAL RETAINER FOR 51/51 & 31/51 PIGGY BACK PUMP S.E.C.	A30-60-10001	391-2584-063
Not Shown	SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.	X81-11-04704	391-2881-124
Not Shown	SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.	X81-11-05704	391-2881-120
Not Shown	SEAL RETAINER FOR 76/51 & 76/31 PIGGY BACK PUMP S.E.C.	A50-60-10003	391-2585-013
Not Shown	CASE DRAIN PLUG	X02-03-22060	391-2282-056
Not Shown	SHAFT KEY FOR TYPE 12 SHAFT	X01-02-50540	391-1781-075

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A30-50-XX000 changes to A30-50-15000 for 1.5" gear size
Housing no. A31-32-XX000 changes to A31-32-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH31 Series

Parts Breakdown

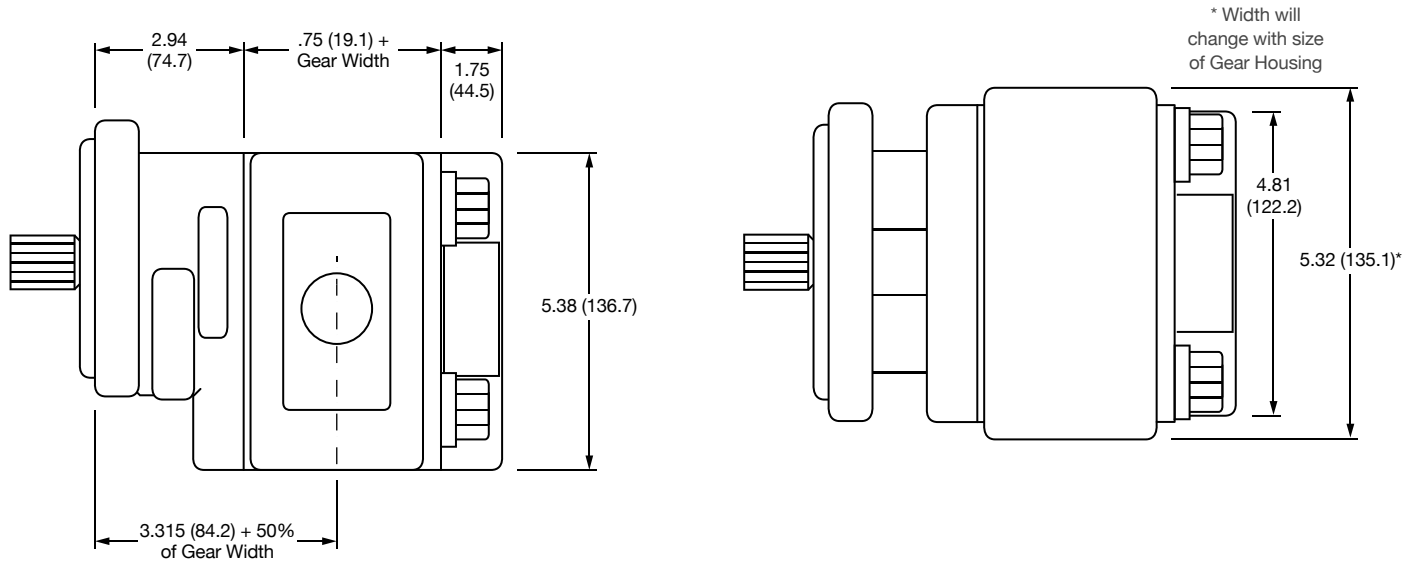
DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
Not Shown	SHAFT KEY FOR TYPE 43 & 67 SHAFT	X01-01-61032	391-1781-021
Not Shown	SHAFT KEY FOR TYPE 30 & 66 SHAFT	X01-01-61025	391-1781-025
Not Shown	SHAFT KEY FOR TYPE Spl. SHAFT	X01-01-61044	391-1781-020
Not Shown	30/30 PIGGY BACK CONNECTING SHAFT	A01-50-00400	312-1133-002
Not Shown	50/30 PIGGY BACK CONNECTING SHAFT	A02-50-00400	312-1133-003
Not Shown	75/30 PIGGY BACK CONNECTING SHAFT	A03-50-00400	316-1133-003

MH31 Series

Dimensions

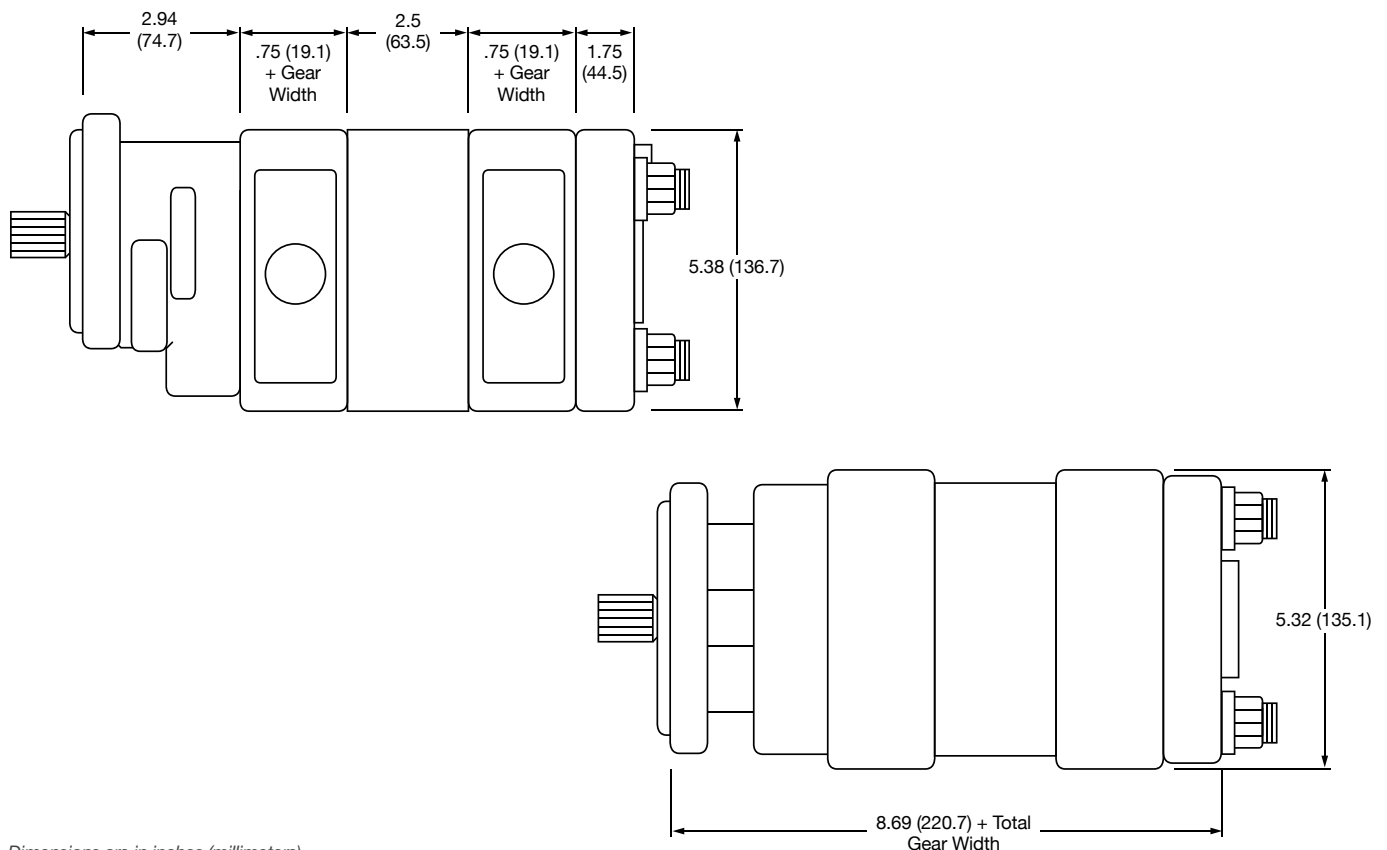
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH37 Series Bearing Pump

Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 2500 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH37		DISPLACEMENT		MAX PRESSURE		MAX PRESSURE (DOWELLED)	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR	PSI	BAR
.75	3/4"	2.25	(36.9)	2000	(138)	2500	(172)
1.00	1"	3.00	(49.2)	2000	(138)	2500	(172)
1.25	1-1/4"	3.75	(61.5)	2000	(138)	2500	(172)
1.50	1-1/2"	4.50	(73.7)	2000	(138)	2500	(172)
1.75	1-3/4"	5.25	(86.0)	2000	(138)	2500	(172)
2.00	2"	6.00	(98.3)	2000	(138)	2500	(172)
2.25	2-1/4"	6.75	(110.6)	2000	(138)	2500	(172)
2.50	2-1/2"	7.50	(122.9)	2000	(138)	2500	(172)
3.00	3"	9.00	(147.5)	2000	(138)	2500	(172)

MH37 Series Bearing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)							
	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"	3"
600	4.5 / 17	6.5 / 25	8.5 / 32	10.5 / 40	12.5 / 47	14 / 53	16.5 / 62	20 / 76
1200	12.5 / 47	16.5 / 62	20 / 76	24 / 91	28 / 106	31.5 / 119	35.5 / 134	43 / 163
1800	20 / 76	26 / 98	31.5 / 119	37.5 / 142	43.5 / 165	49.5 / 187	55 / 208	66.5 / 252
2100	24 / 91	31 / 117	37.5 / 142	44.5 / 168	51 / 193	58 / 219	64.5 / 244	78 / 295
2400	28 / 106	36 / 136	43.5 / 165	51 / 193	59 / 223	67 / 254	74.5 / 282	90 / 341

Motor Performance Data

SPEED RPM	GEAR WIDTH									
	1"		1-1/2"		2"		2-1/2"		3"	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
900	10.5 / 40	750 / 8.5	15 / 57	1200 / 13.5	20 / 76	1650 / 19	24.5 / 93	2125 / 24.5	28 / 106	2670 / 30.5
1000	16 / 61	745 / 8.5	23 / 87	1180 / 13.5	31 / 117	1630 / 18.5	38 / 144	2115 / 24	44 / 167	2635 / 30
1400	21 / 79	730 / 8.5	31 / 117	1165 / 13.5	41 / 155	1610 / 18.5	51 / 193	2100 / 24	60 / 227	2595 / 30
1800	26.5 / 100	700 / 8	39 / 147	1140 / 13	52 / 197	1590 / 18	64 / 242	2075 / 24	76 / 288	2560 / 29.5

Note: Input Flow @ 2000psi | Output Torque @ 140 bar

MH37 PL Chart

SHAFT STYLE	TWO PIECE
SAE "BB" Spline	7,750
SAE "BB" Keyed	5,550
SAE "B" Spline	5,050
SAE "B" Keyed	3,700
SAE "C" Spline	11,950
SAE "C" Keyed	11,950
Connecting Shaft	11,950

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH37 Series Bearing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 37 - X - 1 - 78 - MA - AB - 10 - 10 - FP - * - * - *

Type ¹ _____
MHP = Pump
MHM = Motor

Unit ² _____
X = Single or Tandem Unit w/ a Continental Shaft

Shaft End Cover ³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
3 = Pump w/o Shaft Bearing (Double Rotation)
7 = Motor w/ Shaft Bearing & 1/4" Drain Port
9 = Motor w/ Shaft Bearing & No Drain Port

Shaft End Cover ⁴ _____
11 = Pad Mount
42 = SAE 4-Bolt "B" Mount (Drain Location @ 1 o'clock position)
45 = SAE 4-Bolt "B" Mount (Drain Location @ 12 o'clock position)
78 = SAE 4-Bolt "C" Mount
81 = Round Flange 6-Bolt 3.99 Pilot
98 = SAE 2-Bolt "C" Mount

Connecting Shaft ¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers ⁹
See page 73 for Bearing Carrier options

Shaft Type ⁸
02 = 1.1247 Dia. Keyed Shaft
03 = 6 Tooth Spline 1.1096 Dia. x 2-1/8" Ext.
06 = 1.120 Dia. 6 Tooth Spline
07 = SAE "C" 14 Tooth Spline 1.25 Dia.
08 = 1.250 Dia. Keyed Shaft
10 = 1.1235 Dia. 6 Tooth Spline Shaft
11 = SAE "C" Keyed 1.249 Dia.
25 = SAE "B" 13 Tooth Spline .875" Dia.
30 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key
38 = .8745 Dia. Keyed 1-7/16" Ext. x 1-1/4" Key
73 = 1.249 Dia. Keyed, Drilled & Tapped x 1-1/2"

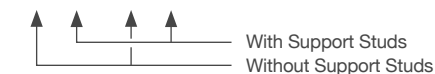
Gear Size ⁷
Code / Displacement (in³/r)

07 (2.25)	10 (3.00)	12 (3.75)	15 (4.50)	17 (5.25)	20 (6.00)	22 (6.75)	25 (7.50)	30 (9.00)
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Port End Cover ⁵

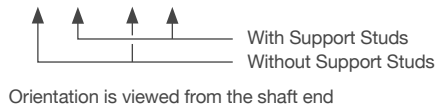
NPT Codes

Single Units	Tandem Units	Port Size Left	Port Size Right	A	B
BA BI	BY BU	None	None	n/a	n/a
CA CI	CY CU	None	3/4"	1.43	n/a
FA FI	FY FU	3/4"	None	n/a	1.43
GA GI	GY GU	3/4"	3/4"	1.43	1.43
DA DI	DY DU	None	1"	1.43	n/a
JA JI	JY JU	1"	None	n/a	1.43
KA KI	KY KU	1"	3/4"	1.43	1.43
HA HI	HY HU	3/4"	1"	1.43	1.43
LA LI	LY LU	1"	1"	1.43	1.43



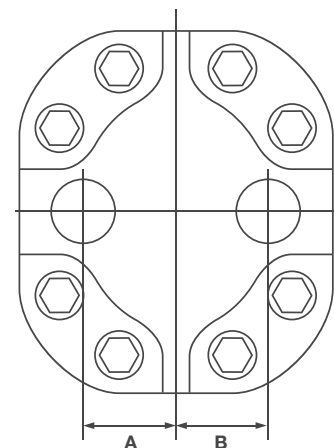
O-ring Ports Codes

Single Units	Tandem Units	Port Size Left	Port Size Right	A	B
MA MI	MY MU	3/4"	3/4"	1.43	1.43
NA NI	NY NU	None	3/4"	1.43	n/a
PA PI	PY PU	3/4"	None	n/a	1.43



Gear Housing ⁶

See following pages for Gear Housing options



MH37 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

NPT Codes

Code	Port Size		5	7	10	12	15	17	20	22	25	30
	Left	Right										
AB	None	None	x	x	x	x	x	x	x	x	x	
EC	1/2"	1/2"		x	x	x						
AR	3/4"	None		x	x	x	x	x				
AF	None	3/4"		x	x	x	x	x				
ER	3/4"	3/4"		x	x	x	x	x	x	x	x	x
ET	3/4"	1"			x	x	x	x	x	x	x	x
EU	3/4"	1-1/4"					x	x	x	x	x	x
IJ	1"	3/4"			x	x	x	x	x	x	x	x
IQ	1-1/4"	3/4"					x	x	x	x	x	x
AT	1"	None			x	x	x	x	x	x	x	x
AH	None	1"			x	x	x	x	x	x	x	x
IL	1"	1"			x	x	x	x	x	x	x	x
IM	1"	1-1/4" *					x	x	x	x	x	x
IN	1"	1-1/2"							x	x	x	x
IS	1-1/4" *	1"					x	x	x	x	x	x
IY	1-1/2"	1"							x	x	x	x
AV	1-1/4" *	None					x	x	x	x	x	x
AJ	None	1-1/4" *					x	x	x	x	x	x
IT	1-1/4"	1-1/4"					x	x	x	x	x	x
IU	1-1/4"	1-1/2" *							x	x	x	x
IZ	1-1/2"	1-1/4"							x	x	x	x
JC	1-1/2"	1-1/2"							x	x	x	x
AW	1-1/2" *	None								x	x	x
AK	None	1-1/2" *								x	x	x

* Low Pressure Inlet Porting

BSPP Codes

Code	Port Size		5	7	10	12	15	17	20	22	25	30
	Left	Right										
AB	None	None	x	x	x	x	x	x	x	x	x	
EM	None	3/4"			x	x	x					
EA	3/4"	None			x	x	x					
EJ	3/4"	3/4"			x	x	x	x				
EK	3/4"	1"			x	x						
YU	3/4"	1-1/4"			x	x	x	x				
EN	1"	3/4"			x	x						
YW	1-1/4"	3/4"			x	x	x	x				
EP	1"	None					x	x	x			
IH	None	1"					x	x	x			
EQ	1"	1"					x	x	x			
ES	1"	1-1/4" *					x					
IR	1-1/4" *	1"					x	x	x			
ID	1-1/2"	1"								x		
NJ	1-1/4" *	None					x	x	x			
JB	None	1-1/4" *								x		
IE	1-1/4"	1-1/4"								x		
IQ	1-1/4"	1-1/2" *									x	x
IS	1-1/2"	1-1/4"									x	x
JV	1-1/2"	1-1/2"									x	x

* Low Pressure Inlet Porting

MH37 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing Cont. ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

ORB Codes

Code	Port Size		5	7	10	12	15	17	20	22	25	30
	Left	Right										
AB	None	None	x	x	x	x	x	x	x	x	x	
UC	None	1/2"		x	x	x	x					
UP	1/2"	None		x	x	x	x					
YC	1/2"	1/2"		x	x	x	x					
UD	None	5/8"		x	x	x	x					
UQ	5/8"	None		x	x	x	x					
YK	5/8"	5/8"		x	x	x	x					
YD	1/2"	5/8"		x	x	x	x					
YJ	5/8"	1/2"		x	x	x	x					
YL	5/8"	3/4"			x	x	x	x				
YQ	3/4"	5/8"			x	x	x	x	x			
YS	3/4"	7/8"				x	x	x				
UF	None	3/4"			x	x	x	x				
UR	3/4"	None			x	x	x	x	x			
YR	3/4"	3/4"			x	x	x	x	x			
UG	None	7/8"				x	x	x	x			
US	7/8"	None				x	x	x	x			
YZ	7/8"	7/8"				x	x	x	x			
YT	3/4"	1"			x	x	x	x	x			
VJ	1"	3/4"			x	x	x	x	x			
YX	7/8"	3/4"				x	x	x	x			
VC	7/8"	1"					x	x	x			
VK	1"	7/8"					x	x	x	x	x	
UH	None	1"					x	x	x	x	x	
UT	1"	None					x	x	x	x	x	
VL	1"	1"					x	x	x	x	x	
UJ	None	1-1/4"						x	x	x	x	
UV	1-1/4"	None						x	x	x	x	
VT	1-1/4"	1-1/4"						x	x	x	x	x
VM	1"	1-1/4"							x	x	x	x
VS	1-1/4"	1"							x	x	x	x
VU	1-1/4"	1-1/2"							x	x	x	x
VZ	1-1/2"	1-1/4"							x	x	x	x
UK	None	1-1/2"									x	x
UW	1-1/2"	None									x	x
WC	1-1/2"	1-1/2"									x	x

* Low Pressure Inlet Porting

Split Flange Codes

Code	Port Size		5	7	10	12	15	17	20	22	25	30
	Left	Right										
AB	None	None	x	x	x	x	x	x	x	x	x	
OC	None	1/2"		x	x	x	x					
OP	1/2"	None		x	x	x	x					
ZC	1/2"	1/2"			x	x	x					
OF	None	3/4"			x	x	x	x	x	x	x	x
OR	3/4"	None			x	x	x	x	x	x	x	x
ZR	3/4"	3/4"			x	x	x	x	x	x	x	x
OH	None	1"			x	x	x	x	x	x	x	x
OT	1"	None				x	x	x	x	x	x	x
RL	1"	1"					x	x	x	x	x	x
OJ	None	1-1/4"					x	x	x	x	x	x
OV	1-1/4"	None					x	x	x	x	x	x
RT	1-1/4"	1-1/4"						x	x	x	x	x
OK	None	1-1/2"						x	x	x	x	x
OW	1-1/2"	None						x	x	x	x	x
SC	1-1/2"	1-1/2"						x	x	x	x	x
OL	None	2"									x	x
OX	2"	None									x	x
SK	2"	2"									x	x
OM	None	2-1/2"										x
OY	2-1/2"	None										x
SQ	2-1/2"	2-1/2"										x
ZF	1/2"	3/4"		x	x	x	x					
ZP	3/4"	1/2"		x	x	x	x					
ZT	3/4"	1"			x	x	x	x	x	x	x	x
RJ	1"	3/4"			x	x	x	x	x	x	x	x
RM	1"	1-1/4"				x	x	x	x	x	x	x
RS	1-1/4"	1"				x	x	x	x	x	x	x
RQ	1-1/4"	3/4"				x	x	x	x	x	x	x
ZU	3/4"	1-1/4"				x	x	x	x	x	x	x
RU	1-1/4"	1-1/2"						x	x	x	x	x
RZ	1-1/2"	1-1/4"						x	x	x	x	x
SD	1-1/2"	2"								x	x	x
SH	2"	1-1/2"								x	x	x
RX	1-1/4"	2"									x	x
SG	2"	1-1/4"									x	x
SF	1-1/2"	2-1/2"										x
SN	2-1/2"	1-1/2"										x
RN	1"	1-1/2"						x	x	x	x	x
RY	1-1/2"	1"						x	x	x	x	x

* Low Pressure Inlet Porting

MH37 Series Bearing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

NPT Codes

In	Out	CW (Left)	CCW (Right)
None	None	 B	 B
1-1/2"	None	 TL	 TJ
1-1/2"	1"	 XS	 XT
1"	1"	 DH	 HD
1-1/4"	1-1/4"	 BF	 FB

SAE Split Flange Codes

In	Out	CW (Left)	CCW (Right)
1-1/2"	None	 FP	 FT
1-1/2"	1"	 XV	 XW
1"	1"	 LP	 PL
1-1/4"	1-1/4"	 GL	 LG

SAE Split Flange Codes

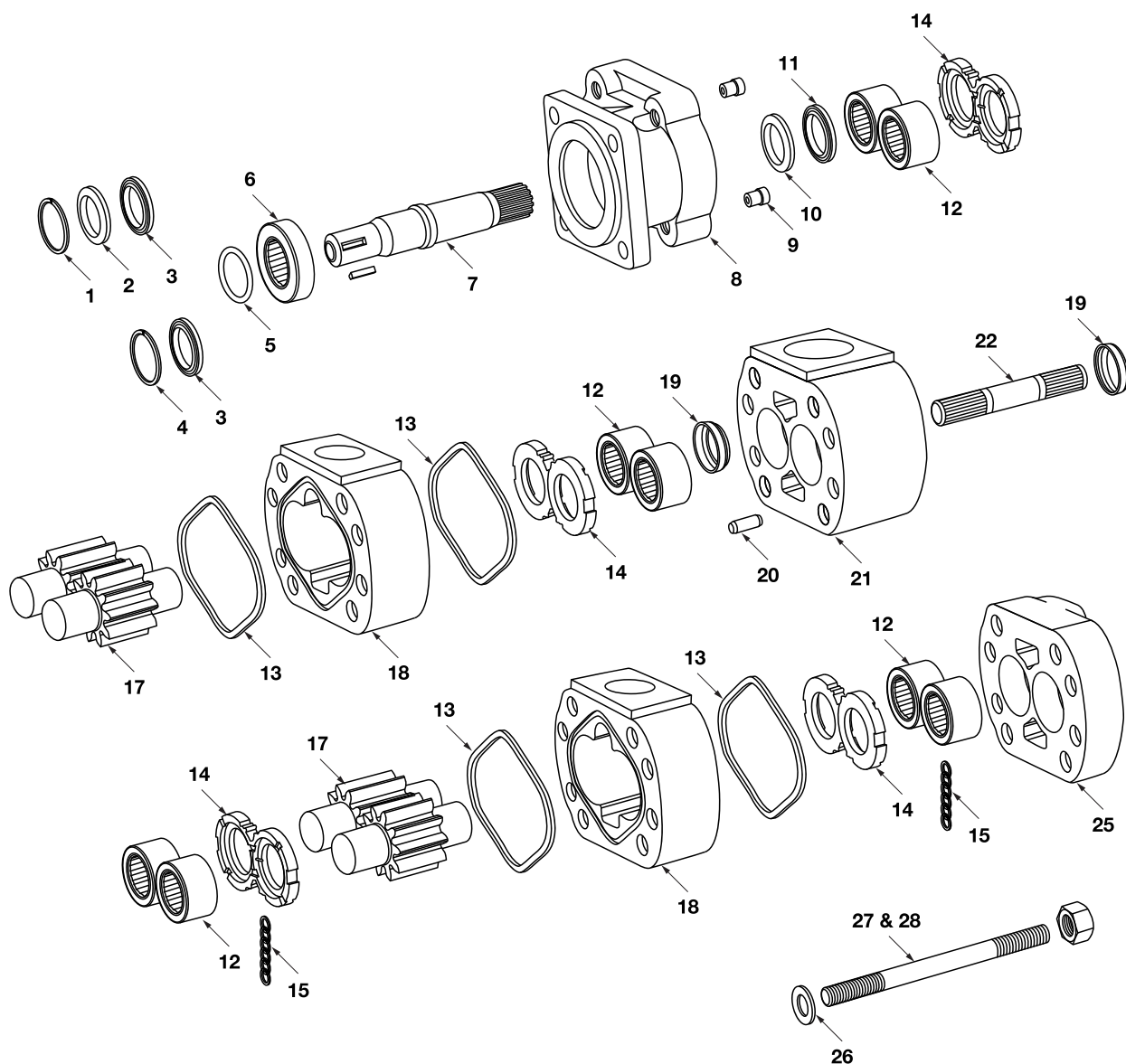
In	Out	CW (Left)	CCW (Right)
1-1/2"	None	 NG	 NK
1-1/2"	1"	 XX	 XZ
1"	1"	 QD	 DQ
1-1/4"	1-1/4"	 NV	 VN

Motors Only Codes

In	Out	Dual	
None	None	 B	
1"	1"	 TT	NPT
1-1/4"	1-1/4"	 VV	NPT
1-1/2"	1-1/2"	 WW	NPT
1"	1"	 CC	SAE O-Ring
1-1/4"	1-1/4"	 BB	SAE O-Ring
1-1/2"	1-1/2"	 FF	SAE O-Ring
1"	1"	 LL	SAE Split Flange
1-1/4"	1-1/4"	 MM	SAE Split Flange
1-1/2"	1-1/2"	 NN	SAE Split Flange

MH37 Series

Parts Breakdown



MH37 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	RETAINER RING	A37-60-50000	391-2581-008
2a	SHAFT SEAL RETAINER	A37-60-10000	391-2584-015
2b	SEAL RETAINER	A37-60-30002	391-2581-004
3a	DOUBLE LIP SEAL (PUMP)	X83-11-03508	391-2883-052
3b	MOTOR SHAFT SEAL	X84-36-03510	391-2883-094
4	SEAL AND BEARING RETAINER RING	A37-60-30001	391-2581-002
5a	SHAFT SEAL RETAINER O RING	X81-15-06904	391-2881-098
5b	SHAFT SEAL RETAINER O RING	X81-15-06904	391-2881-127
6	TAPERED ROLLER BEARING	X03-33-13576	391-0384-006
Not Shown	TAPERED BEARING SPACER	A37-92-59760	391-3381-008
7a	KEYED 1.1247" dia. (KEY SIZE 1/4 X 3/8 X 1 3/4) (TYPE 2) TYPE 1	A37-50-00151	305-1134-003
7b	6 Tooth Spline 1.109" dia. .275" tooth (TYPE 3) TYPE 1	A37-50-00791	305-1135-004
7c	KEYED .996" dia. (KEY SIZE 1/4" X 3/8" X 1 3/4") MALE THREAD (TYPE 4) TYPE 1	Special Order	305-1134-026
7d	6 Tooth Spline 1.120" dia. .275" tooth (TYPE 6) TYPE 1	Special Order	305-1134-005
7e	14-Tooth Spline 1.228" dia. 12/24 pitch -SAE C Spline (TYPE 7) TYPE 1	A37-50-00241	305-1134-001
7f	KEYED 1.125" dia. (KEY SIZE 1/4" X 3/8" X 1 3/4") (TYPE 8) TYPE1	A37-50-00144	305-1134-007
7g	KEYED 1.125" dia. (KEY SIZE 1/4" X 3/8" X 1 3/4") (TYPE 9) TYPE1	Special Order	305-1134-025
7h	6 Tooth Spline 1.1235" dia. .275" tooth GROOVED (TYPE 10) TYPE 1	Special Order	305-1134-022
7i	KEYED 1.249" dia. (KEY SIZE 5/16" X 15/32" X 1 1/2") (TYPE 11) TYPE 1	A37-50-00141	305-1134-008
7j	13 Tooth .858" dia. 16/32 pitch -SAE B Spline (TYPE 25) TYPE 1	Special Order	305-1134-010
7k	KEYED 1.250" dia.THREADED END (KEY SIZE 5/16" X 15/32" X 1 1/2") (TYPE 27) TYPE 1	A37-50-00147	305-1134-012
7l	SAE B KEYED 0.875" dia. (KEY SIZE 0.25" x 0.375" X 1" L) (TYPE 30) TYPE 1	Special Order	305-1134-013
7m	6 Tooth Spline 1.1248" dia. .309" tooth (TYPE 31) TYPE 1	Special Order	305-1134-021
7n	KEYED 1.249" dia. .250" hole (KEY 5/16" X 15/32" X 1 1/2") (TYPE 35) TYPE 1	A37-50-00149	305-1134-019
7o	12 Tooth Spline 1.0818" dia. (TYPE 36) TYPE 1	Special Order	305-1134-020
7p	8 Tooth Spline 1.641" dia. (TYPE 37) TYPE 2	Special Order	305-1134-024
7q	KEYED 1.25" dia. + Int. Thread 1/2" -13 Thd (double brg.) (TYPE 73) TYPE 2	A37-50-00142	305-1134-031
7r	Tang Drive 1.250" dia. (TYPE 78) TYPE 1	Special Order	305-1134-042
7s	KEYED 1.0937" dia. threaded (KEY SIZE 0.25"sq X 2"L) double brg. (TYPE 79) TYPE 2	Special Order	305-1134-037
7t	14 Tooth Spline 1.248" dia. 12/24 pitch (TYPE 85) TYPE 1	A37-50-00244	305-1134-039
7u	KEYED 1.125" dia. (KEY SIZE 1/4" X 1 3/4") (TYPE 86) TYPE 1	Special Order	305-1134-029
7v	KEYED 1.25" dia. + Int. Thread 1/2" -13 Thd (double brg.) (TYPE 87) TYPE 2	Special Order	305-1134-043
8a	37 S.E.C. PAD MOUNT PUMP TYPE 1 TYPE 111 / 211 / 311 / 911	A37-10-21100	305-5012-201
8b	37 S.E.C. 4 BOLT B MOUNT TYPE 1 TYPE 142 / 242 / 342 (4" or 101.6 mm pilot)	A37-10-21420	305-5031-204
8c	37 S.E.C. 4 BOLT SQUARE 3.999" PILOT TYPE 1 TYPE 177 / 277 / 377	Special Order	305-5031-206
8d	37 S.E.C. 4 BOLT C MOUNT TYPE 1 TYPE 178 / 278 / 378 / 978 (5" or 127 mm pilot)	A37-10-21430	305-5031-201

MH37 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
8e	37 S.E.C. 6 BOLT ROUND 3.999" PILOT TYPE 1 TYPE 181 / 281 / 381 / 981	A37-10-21650	305-5041-201
8f	37 S.E.C. 2 BOLT C MOUNT TYPE 1 TYPE 198 / 298 / 398 / 998 (5" or 127 mm pilot)	A37-10-21230	305-5021-201
8g	37 S.E.C. PAD MOUNT WITH DRAIN @ 3 O'CLOCK TYPE 2 TYPE 411 / 511 / 611 / 811	A37-10-22100	305-5012-202
8h	37 S.E.C. 4 BOLT B 3.999" PILOT DRAIN @ 3 O'CLOCK TYPE 2 TYPE 442 / 542 / 642 / 842 (4" or 101.6 mm pilot)	A37-10-22420	305-5032-202
8i	37 S.E.C. 4 BOLT C PILOT WITH DRAIN @ 3 O'CLOCK TYPE 2 TYPE 478 / 578 / 678 / 878 (5" or 127 mm pilot)	A37-10-22430	305-5032-203
8j	37 S.E.C. 4 BOLT B PILOT DRAIN @ 2 O'CLOCK TYPE 1 TYPE 942 (4" or 101.6 mm pilot)	A37-10-21420	305-5031-204
8k	37 S.E.C. 4 BOLT B MOUNT DRAIN @ 12 O'CLOCK TYPE 1 TYPE 745 (4" or 101.6 mm pilot)	A37-10-41422	305-5032-413
8l	37 S.E.C. 4 BOLT C PILOT DRAIN @ 2 O'CLOCK TYPE 1 TYPE 778 (5" or 127 mm pilot)	A37-10-41430	305-5031-403
8m	37 S.E.C. 2 BOLT C PILOT DRAIN @ 2 O'CLOCK TYPE 1 TYPE 798 (5" or 127 mm pilot)	A37-10-41230	305-5021-401
8n	37 S.E.C. PAD MOUNT DRAIN @ 4 O'CLOCK TYPE 1 TYPE 711	A37-10-41100	305-5012-406
8o	37 S.E.C. 4 BOLT B MOUNT DRAIN @ 2 O'CLOCK TYPE 1 TYPE 742 (4" or 101.6 mm pilot)	A37-10-41421	305-5031-406
9a	CHECK VALVE	A00-75-11000	391-3681-001
9b	PRESSURE PLUG PUMP	X02-03-32110	391-2286-004
10	SHAFT BUSHING	X03-00-32835	391-0481-001
11	CONICAL SPRING	A37-95-00000	391-3581-172
Not Shown	CASE DRAIN PIPE PLUG	X02-03-22060	391-2282-056
12	ROLLER BEARING (Ø 2.322" O.D.)	X03-24-13859	391-0381-060
13	GEAR HOUSING GASKET	X85-11-12303	391-2884-023
14	BI-ROTATIONAL THRUST PLATE	A37-70-10000	391-2185-009
15	POCKET SEAL	X85-11-00002	391-2882-023
16	GEAR SPACER	n/a	391-3383-XXX
17	GEAR SET ONLY	A37-50-XX000	305-28XX-000
18	PUMP & MOTOR GEAR HOUSING	A37-32-XX000	305-80XX-100
19	BUSHING	X03-00-32836	391-0481-004
20	ROLL PIN	A00-94-30310	391-2084-020
21a	COMMON PASSAGE BEARING CARRIER	A37-40-20000	305-7000-100
21b	BLANK BEARING CARRIER	A37-40-00000	305-7300-100
22	CONNECT SHAFT	A37-50-00500	305-1133-001
23	TIE ROD	n/a	n/a

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A37-50-XX000 changes to A37-50-15000 for 1.5" gear size
Housing no. A37-32-XX000 changes to A37-32-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH37 Series

Parts Breakdown

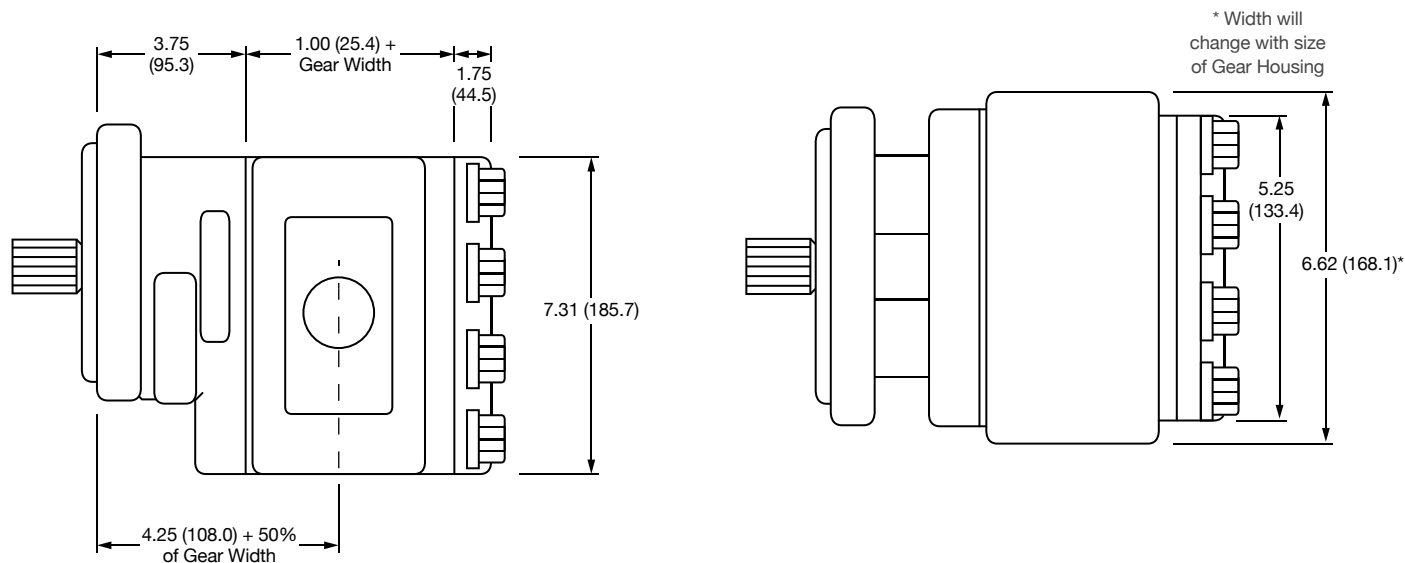
DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
25	PORT END COVER	A37-22-00000	305-3000-100
26	FLAT WASHER (1/2")	X45-19-13005	391-3782-027
27	BOLTS / STUDS (1/2"-UNC)	See Fasteners Page	
28	HEX NUT (1/2"-UNC)	X42-11-13011	391-1451-051
Not Shown	SHAFT RET. SNAP RING	X05-02-31130	391-2685-012
Not Shown	.187" THICK SPACER FOR TYPE 2 SHAFTS	A37-92-28441	391-3383-012
Not Shown	.194" THICK SPACER FOR TYPE 2 SHAFTS	A37-92-28442	391-3383-013
Not Shown	DRIVE KEY TYPE 2 & 4 & 8 & 86 & 87 SHAFT	X01-01-61044	391-1781-020
Not Shown	DRIVE KEY TYPE 9 SHAFT	X01-01-61032	391-1781-021
Not Shown	DRIVE KEY TYPE 11 & 27 & 35 SHAFT	X01-01-81238	391-1781-045
Not Shown	DRIVE KEY TYPE 30 SHAFT	X01-01-61025	391-1781-025
Not Shown	DRIVE KEY TYPE 73 SHAFT	X01-01-81257	391-1781-008
Not Shown	DRIVE KEY TYPE 79 SHAFT	X01-02-60651	391-1781-037

MH37 Series

Dimensions

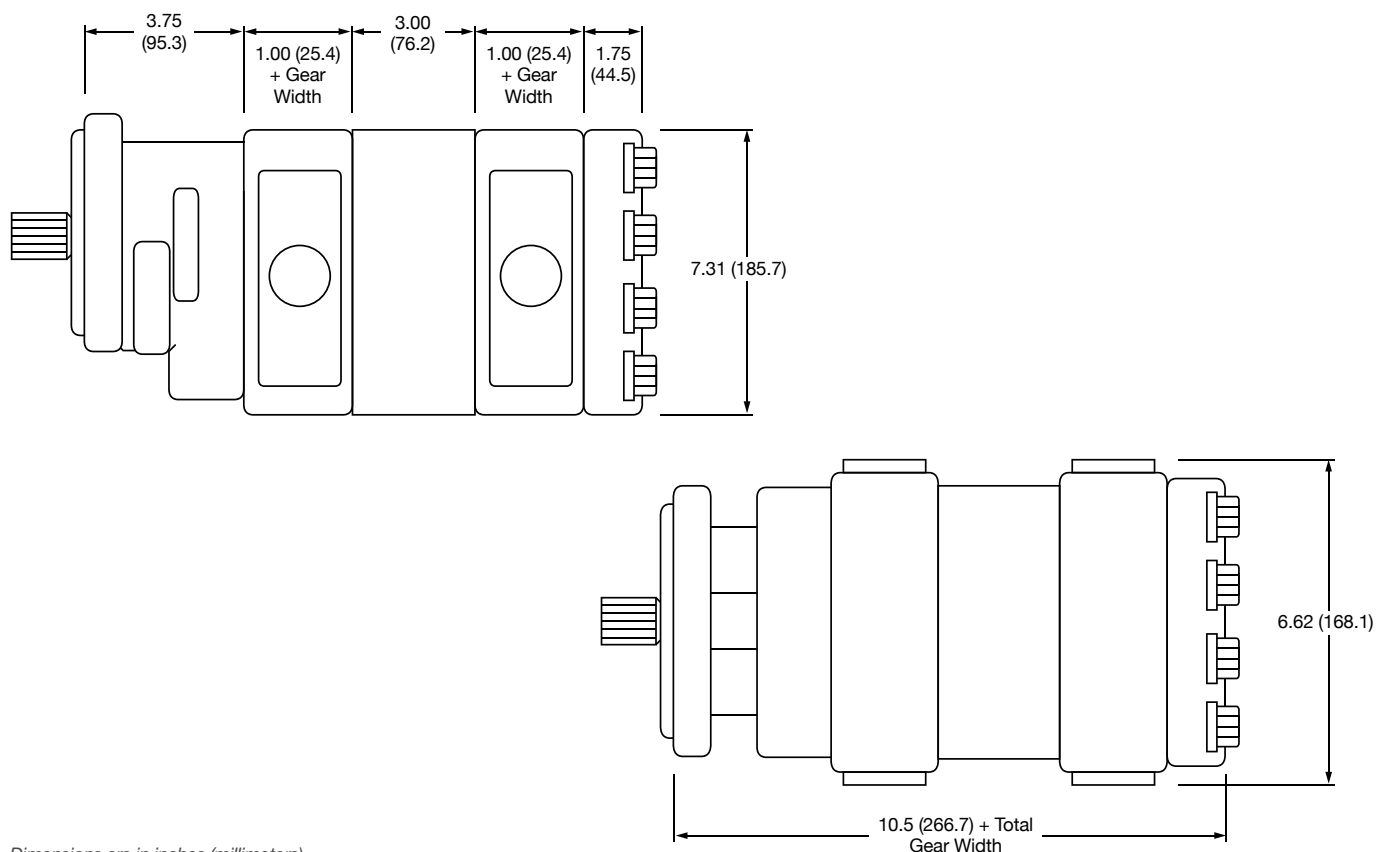
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH50 Series Bearing Pump

Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH50		DISPLACEMENT		MAX PRESSURE	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.75	3/4"	1.91	(31.3)	2500	(172)
1.00	1"	2.55	(41.8)	2500	(172)
1.25	1-1/4"	3.19	(52.2)	2500	(172)
1.50	1-1/2"	3.83	(62.7)	2500	(172)
1.75	1-3/4"	4.46	(73.1)	2000	(145)
2.00	2"	5.10	(83.6)	2000	(145)
2.25	2-1/4"	5.74	(94.0)	2000	(145)
2.50	2-1/2"	6.38	(104.5)	2000	(145)

MH50 Series Bearing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)						
	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"
900	8.5 / 32	10.5 / 39.5	13 / 49	15 / 57	17.5 / 66	20 / 75.5	22 / 83.5
1200	12 / 46.5	15 / 57	18 / 68	21 / 79.5	24 / 91	27 / 102	30 / 114
1500	15 / 57	19 / 72	23 / 87	27 / 102	31 / 117	35 / 132	39 / 146
1800	18 / 68	23 / 87	27.5 / 104	32.5 / 123	37.5 / 142	42 / 159	47 / 178
2100	21.5 / 81.5	27 / 102	32.5 / 123	38.5 / 146	44 / 167	48.5 / 187	55 / 208
2400	25 / 94.5	31 / 117	37 / 140	44 / 167	51 / 193	57 / 216	63.5 / 240

Motor Performance Data

SPEED RPM	GEAR WIDTH							
	1"		1-1/2"		2"		2-1/2"	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
800	10.5 / 40	670 / 7.5	15.5 / 58.5	1070 / 12.5	21 / 79.5	1450 / 16.5	26 / 98.5	1850 / 21.5
1200	15.5 / 58.5	680 / 8	22.5 / 85	1075 / 12.5	30.5 / 115	1450 / 16.5	37.5 / 142	1840 / 21
1600	20 / 75.5	670 / 7.5	30 / 114	1045 / 12	40 / 151	1440 / 16.5	49.5 / 187	1750 / 20
2000	25 / 94.5	660 / 7.5	37 / 140	1030 / 12	49 / 185	1415 / 16.5	61.5 / 233	1720 / 20

Note: Input Flow @ 2000psi | Output Torque @ 140 bar

MH50 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "BB" Spline	9,900	8,000
SAE "BB" Keyed	6,600	6,600
SAE "B" Spline	6,400	6,400
SAE "B" Keyed	5,750	5,750
SAE "C" Spline	13,850	8,000
SAE "C" Keyed	13,000	8,000
Connecting Shaft		8,000

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH50 Series Bearing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 50 - A - 1 - 78 - ME - AB - 10 - 25 - DB - * - * - *

Type¹ _____
MHP = Pump
MHM = Motor

Unit² _____
A = Single Unit
B = Tandem Unit
C = Single or Tandem Unit w/ a Continental Shaft

Shaft End Cover³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
3 = Pump w/o Shaft Bearing (Double Rotation)
4 = Pump w/ Shaft Bearing (Clockwise Rotation)
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)
6 = Pump w/ Shaft Bearing (Double Rotation)
8 = Motor w/ Shaft Bearing & 1/4" Drain Port
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

Shaft End Cover⁴ _____
00 = Pad Mount
42 = SAE 4-Bolt "B" Mount
78 = SAE 4-Bolt "C" Mount
91 = 51/51 Piggyback Mount
92 = 76/51 Piggyback Mount
94 = SAE 2-Bolt "A" Mount
96 = SAE 2-Bolt "B" Mount (Type 2)
97 = SAE 2-Bolt "B" Mount
98 = SAE 2-Bolt "C" Mount
99 = SAE 2-Bolt "C" Mount (Type 2)

Connecting Shaft¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers⁹
See page 85 for Bearing Carrier options

Shaft Type⁸
07 = SAE "C" 14 Tooth Spline 1.25" Dia.
11 = SAE "C" Keyed 1.25" Dia. 5/16" x 15/32" x 1-1/2" Key
25 = SAE "B" 13 Tooth Spline .875" Dia.
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key
53 = SAE "C" 14 Tooth Spline 1.25" Dia.
65 = SAE "B" 13 Tooth Spline .875" Dia. Type 2
67 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key Type 2
73 = SAE "C" Keyed 1.25" Dia. 5/16" x 15/32" x 2-1/4" Key
98 = SAE "BB" 15 Tooth Spline 1" Dia. (Cont. Only)

Gear Size⁷
Code / Displacement (in³/r)

07 (1.91)	10 (2.55)	12 (3.19)	15 (3.83)	17 (4.46)	20 (5.10)	22 (5.74)	25 (6.38)
---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------

Port End Cover⁵

NPT Codes

Single Units	Tandem Units	Port Size		A	B
Left	Right				
BE BY	BI BY	None	None	n/a	n/a
KE KY	KI KY	3/4"	None	n/a	1.38
LE LY	LI LY	None	3/4"	1.38	n/a
ME MY	MI MY	3/4"	3/4"	1.38	1.38

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs

Orientation is viewed from the shaft end

O-ring Codes

Single Units	Tandem Units	Port Size		A	B
Left	Right				
CE CY	CI CY	3/4"	None	n/a	1.38
DE DY	DI DY	None	3/4"	1.38	n/a
FE FY	FI FY	3/4"	3/4"	1.38	1.38

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs

Orientation is viewed from the shaft end

Metric Str. Thd. Codes

Single Units	Tandem Units	Port Size		A	B
Left	Right				
NE	NI NY	3/4"	None	n/a	1.38
PE	PI PY	None	3/4"	1.38	n/a
QE	QI QY	3/4"	3/4"	1.38	1.38

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs

Orientation is viewed from the shaft end

BSPP Codes

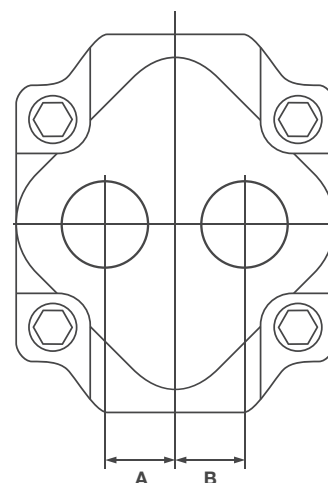
Single Units	Tandem Units	Port Size		A	B
Left	Right				
WE	WI WY	3/4"	None	n/a	1.38
XE	XI XY	None	3/4"	1.38	n/a
ZE	ZI ZY	3/4"	3/4"	1.38	1.38

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs

Orientation is viewed from the shaft end

Gear Housing⁶

See following pages for Gear Housing options



MH50 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

NPT Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
IC	3/4"	None			x						
ID	None	3/4"			x	x	x	x			
IF	3/4"	3/4"			x	x	x	x	x		
IG	3/4"	1"			x	x	x				
IH	3/4"	1-1/4"					x				
IJ	1"	3/4"			x	x	x	x	x		
IK	1-1/4"	3/4"					x				
YC	1"	None				x	x	x	x	x	
YD	None	1"				x	x	x	x	x	
YF	1"	1"				x	x	x	x	x	x
YG	1"	1-1/4" *					x	x	x	x	
YH	1"	1-1/2"									x
YJ	1-1/4" *	1"					x	x	x	x	x
YK	1-1/2"	1"									x
IA	1-1/4" *	None					x	x	x	x	x
IB	None	1-1/4" *					x	x	x	x	x
YL	1-1/4"	1-1/4"						x	x	x	x
YM	1-1/4"	1-1/2" *							x	x	x
YP	1-1/2"	1-1/4"							x	x	x
YR	1-1/2"	1-1/2"							x	x	x
YA	1-1/2"	None							x	x	x
YB	None	1-1/2"							x	x	x

* Low Pressure Inlet Porting

BSPP Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
YN	3/4"	None			x	x					
YQ	None	3/4"			x	x	x	x			
YS	3/4"	3/4"				x	x				
YT	3/4"	1"			x	x	x				
YU	3/4"	1-1/4"			x	x	x	x			
YV	1"	3/4"			x	x	x	x	x		
YW	1-1/4"	3/4"			x	x	x	x			
SL	1"	None			x	x	x				
RQ	None	1"					x	x	x	x	x
MP	1"	1"					x	x	x	x	x
VY	1"	1-1/4" *					x	x	x	x	x
IX	1-1/4" *	1"					x	x	x	x	x
NJ	1-1/4" *	None					x	x	x		
UI	None	1-1/4" *								x	x
PF	1-1/4"	1-1/4"								x	x
IQ	1-1/4"	1-1/2"									x
IS	1-1/2"	1-1/4"									x

* Low Pressure Inlet Porting

Metric Str. Thd. Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
EN	3/4"	None			x	x	x	x			
TQ	None	3/4"			x	x	x	x			
ES	3/4"	3/4"			x	x					
ET	3/4"	1"			x	x	x	x	x		
EV	1"	3/4"			x	x	x	x	x		
NL	1"	None					x	x	x	x	
ER	None	1"					x	x	x	x	
CM	1"	1"					x	x	x		
VE	1"	1-1/4" *					x	x	x	x	x
EX	1-1/4" *	1"					x	x	x	x	x
UA	None	1-1/4"							x	x	x
PA	1-1/4"	1-1/4"							x	x	x
QA	1-1/4"	1-1/2" *							x	x	x
SA	1-1/2"	1-1/4"							x	x	x

* Low Pressure Inlet Porting

MH50 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing Cont. ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

O.D. Tube Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25
AB	None	None	x	x	x	x	x	x	x	x	x
EC	3/4"	None			x	x	x	x	x		
ED	None	3/4"			x	x	x	x	x		
EF	3/4"	3/4"			x	x	x	x	x		
EG	3/4"	1"			x	x	x				
EH	3/4"	1-1/4"					x	x			
EJ	1"	3/4"			x	x	x	x	x		
EK	1-1/4"	3/4"					x	x			
AC	1"	None			x	x	x	x			
AD	None	1"			x	x	x	x			
AF	1"	1"					x	x	x	x	x
AG	1"	1-1/4" *					x	x	x	x	x
AH	1"	1-1/2"						x	x	x	
AJ	1-1/4" *	1"					x	x	x	x	x
AK	1-1/2" *	1"					x	x	x	x	x
AL	1-1/4"	1-1/4"							x	x	x
AM	1-1/4"	1-1/2" *							x	x	x
AP	1-1/2" *	1-1/4"							x	x	x
AR	1-1/2"	1-1/2"									x
AA	1-1/4" *	None					x	x	x	x	x
AO	None	1-1/4" *					x	x	x	x	x
AE	1-1/2" *	None							x	x	
AU	None	1-1/2" *							x	x	

* Low Pressure Inlet Porting

Split Flange Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25
AB	None	None	x	x	x	x	x	x	x	x	x
UC	3/4"	None			x	x	x	x			
UD	None	3/4"			x	x	x	x			
UF	3/4"	3/4"			x	x	x	x	x	x	x
UG	3/4"	1"			x	x	x				
UH	3/4"	1-1/4"				x	x	x			
UJ	1"	3/4"			x	x	x	x	x		
UK	1-1/4"	3/4"				x	x	x			
OC	1"	None			x	x	x	x	x	x	x
OD	None	1"			x	x	x	x	x	x	x
OF	1"	1"				x	x	x	x	x	x
OG	1"	1-1/4" *				x	x	x	x		
OH	1"	1-1/2" *					x	x	x	x	x
OJ	1-1/4" *	1"				x	x	x	x	x	x
OK	1-1/2" *	1"					x	x	x	x	x
OL	1-1/4"	1-1/4"					x	x	x	x	x
OM	1-1/4"	1-1/2" *					x	x	x	x	x
ON	1-1/4"	2"							x	x	x
OP	1-1/2" *	1-1/4"					x	x	x	x	x
OQ	2"	1-1/4"							x	x	
OR	1-1/2"	1-1/2"						x	x	x	x
OS	1-1/2"	2"							x	x	x
OV	2"	1-1/2"							x	x	x
OX	2"	2"									x
OA	1-1/4" *	None				x	x	x	x	x	x
OB	None	1-1/4" *				x	x	x	x	x	x
OE	1-1/2" *	None					x	x	x	x	x
OU	None	1-1/2" *					x	x	x	x	x
UB	1"	2"							x	x	x
UQ	2"	1"							x	x	x
XB	2"	None							x	x	x
ZB	None	2"							x	x	x

* Low Pressure Inlet Porting

MH50 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing Cont. ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

Metric Split Flange Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
VN	3/4"	None			x	x	x	x			
VQ	None	3/4"			x	x	x	x			
VS	3/4"	3/4"			x	x	x				
VT	3/4"	1"			x	x	x	x	x		
RV	1"	3/4"			x	x	x	x	x		
RU	3/4"	1-1/4"			x	x	x				
RW	1-1/4"	3/4"			x	x	x				
UL	1"	None				x	x	x	x	x	
UR	None	1"				x	x	x	x	x	
UM	1"	1"				x	x	x	x	x	
VU	1"	1-1/4" *				x	x	x	x	x	x
UX	1-1/4" *	1"				x	x	x	x	x	x
HO	1"	1-1/2" *					x	x	x		
VO	1-1/2" *	1"					x	x	x		
NO	1-1/4" *	None						x	x	x	x
UO	None	1-1/4" *						x	x	x	x
PO	1-1/4"	1-1/4"					x	x	x	x	x
QO	1-1/4"	1-1/2" *					x	x	x	x	x
SO	1-1/2" *	1-1/4"					x	x	x	x	x
JR	1-1/4"	2"							x	x	x
JM	2"	1-1/4"							x	x	x
UY	1-1/2" *	None					x	x	x	x	
TO	None	1-1/2" *					x	x	x	x	
SV	1-1/2"	1-1/2"							x	x	x
JN	1-1/2"	2"							x	x	x
JQ	2"	1-1/2"							x	x	x

* Low Pressure Inlet Porting

MH50 Series Bearing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

NPT Codes

In	Out	CW (Left)	CCW (Right)
None	None	 C A	 D U
1" 1-1/4" 1-1/2"	None	 TB VB WB	 BT BV BW
1" 1-1/4" 1-1/2"	3/4"	 TX VX WX VZ WZ	 XT XV XW ZV ZW
1" 1-1/4" 1-1/2"	3/4"	 TJ VJ VK WK	 JT JV KV KW
1"	3/4"	 ZX	 XZ

SAE Split Flange Codes

In	Out	CW (Left)	CCW (Right)
1" 1-1/4" 1-1/2"	None	 LB MB NB	 BL BM BN
None 1" 1-1/4" 1-1/2"	3/4"	 BR LR MR NR MS NS	 RB RL RM RN SM SN
1" 1-1/4" 1-1/2"	3/4"	 LX MX MZ NZ	 XL XM ZM ZN
1"	3/4"	 SR	 RS

SAE O-ring Codes

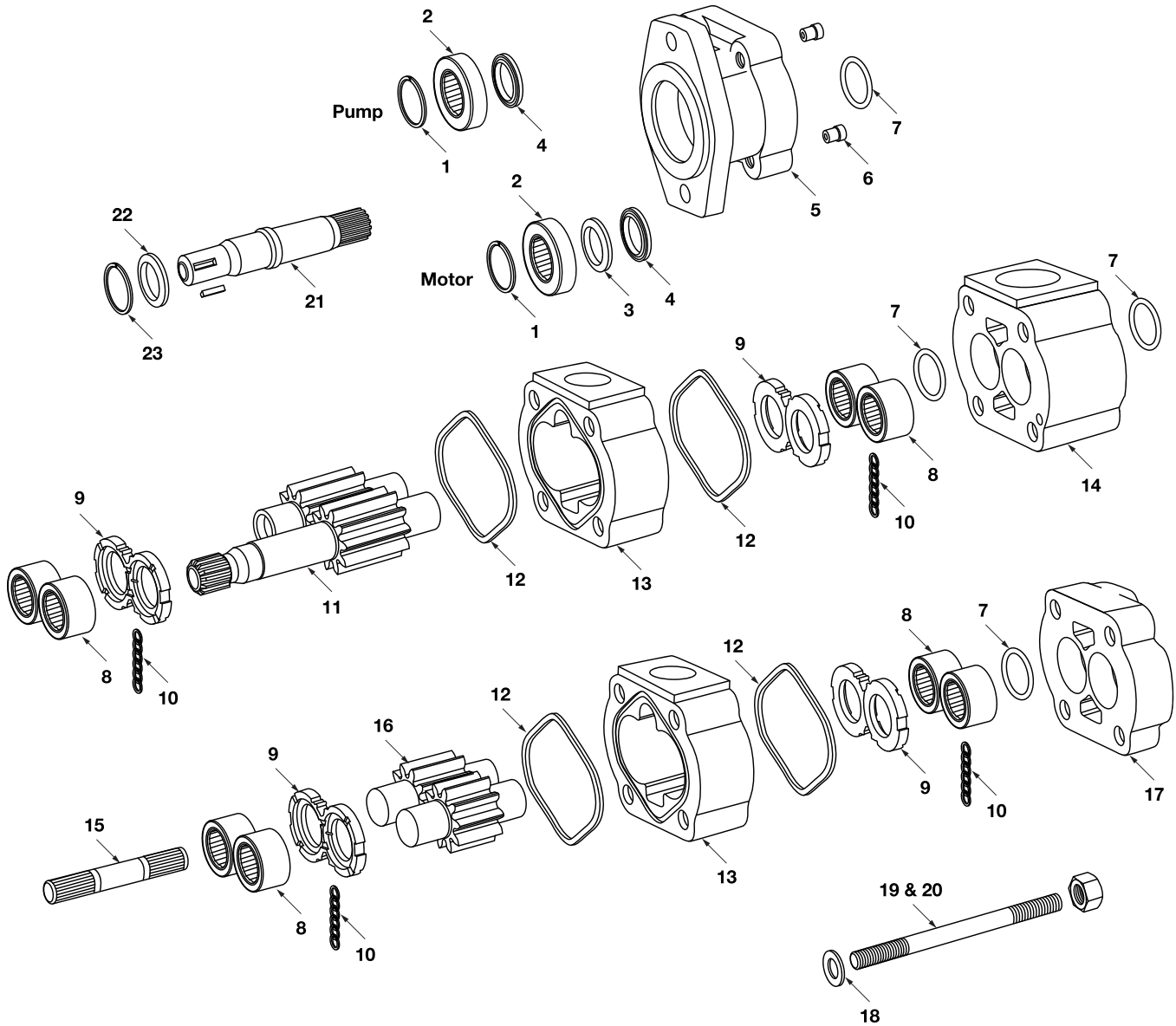
In	Out	CW (Left)	CCW (Right)
1" 1-1/4" 1-1/2"	None	 CB DB FB	 BC BD BF
None 1" 1-1/4" 1-1/2"	3/4"	 PJ CJ DJ FJ DK FK	 JP JC JD JF KD KF
1"	3/4"	 CR	 RC

Motors Only Codes

In	Out	Dual	
None	None	 B	
1" 1-1/4" 1-1/2"	1" 1-1/4" 1-1/2"	 TT VV WW CC BB FF LL MM NN	NPT NPT NPT SAE O-Ring SAE O-Ring SAE O-Ring SAE Split Flange SAE Split Flange SAE Split Flange

MH50 Series

Parts Breakdown



MH50 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SHAFT BRG. SNAP RING	X05-03-77250	391-2686-065
2a	BEARING SPACER & SEAL RETAINER FOR MOTORS	A50-60-10000	391-3383-087
2b	INPUT SHAFT BEARING	X03-16-13272	391-0381-077
3	MOTOR SEAL RETAINER USED WITH SHAFT BEARING	A50-60-30000	391-3383-020
4a	PUMP LIP SEAL	X83-11-03308	391-2883-10
4b	MOTOR LIP SEAL	X84-36-03309	391-2883-115
4c	PUMP LIP SEAL FOR CONTINENTIAL SHAFT ONLY	X89-11-03308	391-2883-133
5a	50 PAD PILOT PUMP SHAFT END COVER TYPE 00	A50-10-21100	313-5013-201
5b	50 4 BOLT B PILOT PUMP SHAFT END COVER TYPE 42 (4" or 101.6 mm pilot)	A50-10-21420	313-5033-201
5c	50 4 BOLT C PILOT PUMP SHAFT END COVER TYPE 78 (5" or 127 mm pilot)	A50-10-21430	313-5033-202
5d	50 2 BOLT B PILOT PUMP SHAFT END COVER TYPE 97 (4" or 101.6 mm pilot)	A50-10-21220	313-5023-204
5e	50 2 BOLT C PILOT PUMP SHAFT END COVER TYPE 98 (5" or 127 mm pilot)	A50-10-21230	313-5023-203
5f	50 2 BOLT B (TYPE 2) PILOT PUMP SHAFT END COVER TYPE 96 (4" or 101.6 mm pilot)	A50-10-22220	313-5029-201
5g	50 2 BOLT C (TYPE 2) PILOT PUMP SHAFT END COVER TYPE 99 (5" or 127 mm pilot)	A50-10-22230	313-5029-202
5h	50/50 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 91	A41-10-21500	313-5029-206
5i	75/50 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 92	A42-10-21500	313-5029-207
5j	50 PAD PILOT MOTOR SHAFT END COVER TYPE 00	A50-10-41100	313-5013-202
5k	50 4 BOLT B PILOT MOTOR SHAFT END COVER TYPE 42 (4" or 101.6 mm pilot)	A50-10-41420	313-5033-405
5l	50 4 BOLT C PILOT MOTOR SHAFT END COVER TYPE 78 (5" or 127 mm pilot)	A50-10-41430	313-5033-403
5m	50 2 BOLT B PILOT MOTOR SHAFT END COVER TYPE 97 (4" or 101.6 mm pilot)	A50-10-41220	313-5023-206
5n	50 2 BOLT C PILOT MOTOR SHAFT END COVER TYPE 98 (5" or 127 mm pilot)	A50-10-41230	313-5023-205
6a	CHECK VALVE MOTOR	A00-75-11000	391-3681-001
6b	PRESSURE PLUG PUMP	X02-03-32110	391-2286-004
7	RING SEAL	X81-76-03305	391-2585-009
8	ROLLER BEARING (Ø 1.937" O.D.)	X03-24-13349	391-0381-059
9a	PUMP & MOTOR THRUST PLATE	A25-70-10000	391-2185-012
9b	DRY VALVE THRUST PLATE	A50-70-10000	391-2185-041
10	POCKET SEAL	X85-11-00002	391-2882-050
11a	SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7	A50-50-XX245	313-29XX-250
11b	SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11	A50-50-XX145	313-29XX-750
11c	SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 25	A50-50-XX225	313-29XX-230
11d	SHAFT & GEAR SET 0.9984" dia. KEYED (1/4" x 3/8" x 1 1/4") TYPE 43	A50-50-XX135	313-29XX-740
11e	SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 53 TYPE 2	A50-50-XX246	313-29XX-450
11f	SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 65 TYPE 2	A50-50-XX226	313-29XX-430
12	PUMP & MOTOR HOUSING GASKET	X85-11-10803	391-2884-021
13	PUMP & MOTOR GEAR HOUSING	A25-32-XX000	303-80XX-100

MH50 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
14a	50 MOTOR BEARING CARRIER BLANK	A50-40-00000	313-7300-100
14b	50 PUMP BEARING CARRIER WITH COMMON PASSAGE	A50-40-20000	313-7363-100
15	CONNECTING SHAFT	A50-50-00500	313-1133-001
16	GEAR SET ONLY	A50-50-XX000	313-28XX-000
17a	50 PUMP & MOTOR PORT END COVER	A50-22-00000	313-3100-100
17b	50 PUMP & MOTOR PORT END COVER SPECIAL LARGER PORTING	A50-27-00000	313-3400-100
17c	50 PIGGY BACK REAR PORT END COVER	A50-22-03000	313-5029-205
18	FLAT WASHER (5/8")	X45-10-17005	391-3784-028
19	BOLTS / STUDS (5/8"-UNC)	See Fasteners Page	
20	HEX NUT (5/8"-UNC)	X42-11-16000	391-1451-076
21a	CONTINENTAL SHAFT TYPE 11 (1 1/4" Ø KEYED 5/16")	A50-50-00141	313-1500-500
21b	CONTINENTAL SHAFT TYPE 7 (1.250" Ø - 14 TOOTH SPLINE)	A50-50-00241	313-1135-194
21c	CONTINENTAL SHAFT TYPE 25 (0.875" Ø- 13 TOOTH SPLINE)	A50-50-00221	313-1000-300
21d	CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A50-50-00131	313-1500-400
21e	CONTINENTAL SHAFT TYPE 73 LONG (1 1/4" Ø KEYED 5/16")	A50-50-00147	313-1500-502
21f	CONTINENTAL SHAFT TYPE 98 - SPLINED - SAE BB 15T	A50-50-00231	313-1000-400
22	CONTINENTAL SHAFT BRG. RETAINER (MAY NOT BE REQUIRED)	A50-60-20000	391-3381-046
23	CONTINENTAL SHAFT BRG. RETAINER SNAP RING (MAY NOT BE REQUIRED)	X05-02-35120	391-2685-040
Not Shown	SEAL RETAINER FOR 51/51 PIGGY BACK PUMP S.E.C.	A30-60-10001	391-2584-063
Not Shown	SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.	X81-11-04704	391-2881-124
Not Shown	SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.	X81-11-05704	391-2881-120
Not Shown	SEAL RETAINER FOR 76/51 PIGGY BACK PUMP S.E.C.	A50-60-10003	391-2585-013
Not Shown	DRY VALVE SEAL RETAINER	A50-60-10001	391-2584-050
Not Shown	CASE DRAIN PLUG	X02-03-22060	391-2282-056
Not Shown	PUMP LIP SEAL FOR PIGGY BACK S.E.C. & P.E.C.	X83-11-02708	391-2883-058
Not Shown	SHAFT KEY FOR TYPE 73 SHAFT	X01-01-81257	391-1781-008
Not Shown	SHAFT KEY FOR TYPE 43 SHAFT	X01-01-61032	391-1781-021
Not Shown	SHAFT KEY FOR TYPE 11 SHAFT	X01-01-81238	391-1781-045
Not Shown	50/50 PIGGY BACK CONNECTING SHAFT	A41-50-00400	313-1133-004
Not Shown	75/50 PIGGY BACK CONNECTING SHAFT	A42-50-00400	313-1133-003

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

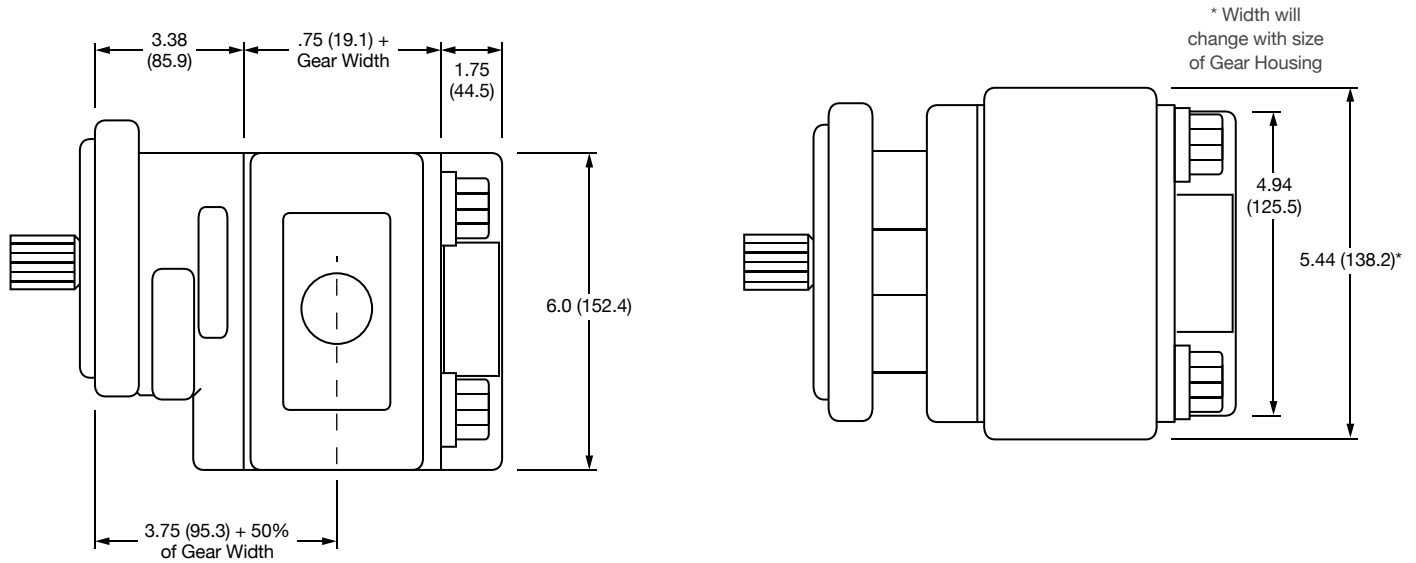
For example: Gear set no. A50-50-XX000 changes to A50-50-15000 for 1.5" gear size
Housing no. A25-32-XX000 changes to A25-32-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH50 Series

Dimensions

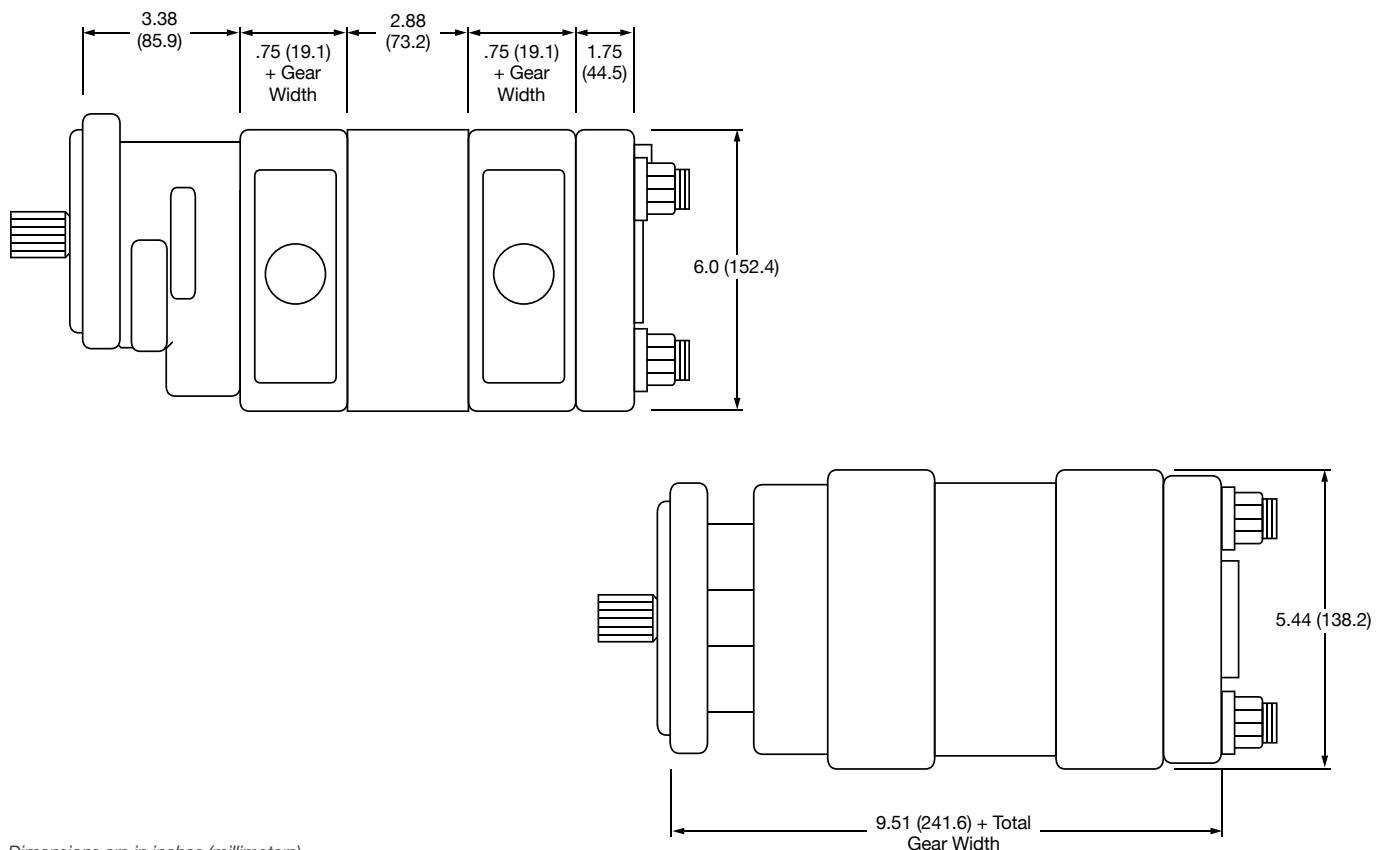
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH51 Series Bearing Pump

Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH51		DISPLACEMENT		MAX PRESSURE (DOWELLED)	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.75	3/4"	1.91	(31.3)	3000	(207)
1.00	1"	2.55	(41.8)	3000	(207)
1.25	1-1/4"	3.19	(52.2)	3000	(207)
1.50	1-1/2"	3.83	(62.7)	3000	(207)
1.75	1-3/4"	4.46	(73.1)	3000	(207)
2.00	2"	5.10	(83.6)	2500	(172)
2.25	2-1/4"	5.74	(94.0)	2500	(172)
2.50	2-1/2"	6.38	(104.5)	2500	(172)

MH51 Series Bearing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)						
	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"
900	8.5 / 32	10.5 / 39.5	13 / 49	15 / 57	17.5 / 66	20 / 75.5	22 / 83.5
1200	12 / 46.5	15 / 57	18 / 68	21 / 79.5	24 / 91	27 / 102	30 / 114
1500	15 / 57	19 / 72	23 / 87	27 / 102	31 / 117	35 / 132	39 / 146
1800	18 / 68	23 / 87	27.5 / 104	32.5 / 123	37.5 / 142	42 / 159	47 / 178
2100	21.5 / 81.5	27 / 102	32.5 / 123	38.5 / 146	44 / 167	48.5 / 187	55 / 208
2400	25 / 94.5	31 / 117	37 / 140	44 / 167	51 / 193	57 / 216	63.5 / 240

Motor Performance Data

SPEED RPM	GEAR WIDTH							
	1"		1-1/2"		2"		2-1/2"	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
800	10.5 / 40	825 / 9.5	15.5 / 58.5	1310 / 15	21 / 79.5	1810 / 21	26 / 98.5	2330 / 27
1200	15.5 / 58.5	850 / 10	22.5 / 85	1340 / 15.5	30.5 / 115	1830 / 21	37.5 / 142	2340 / 27
1600	20 / 75.5	830 / 9.5	30 / 114	1330 / 15.5	40 / 151	1805 / 21	49.5 / 187	2300 / 26.5
2000	25 / 94.5	800 / 9	37 / 140	1290 / 15	49 / 185	1770 / 20.5	61.5 / 233	2250 / 25

Note: Input Flow @ 2500psi | Output Torque @ 175 bar

MH51 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "BB" Spline	9,900	8,000
SAE "BB" Keyed	6,600	6,600
SAE "B" Spline	6,400	6,400
SAE "B" Keyed	5,750	5,750
SAE "C" Spline	13,850	8,000
SAE "C" Keyed	13,000	8,000
Connecting Shaft		8,000

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH51 Series Bearing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 51 - A - 1 - 78 - ME - AB - 10 - 25 - DB - * - * - *

Type¹ _____
MHP = Pump
MHM = Motor

Unit² _____
A = Single Unit
B = Tandem Unit
C = Single or Tandem Unit w/ a Continental Shaft

Shaft End Cover³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
3 = Pump w/o Shaft Bearing (Double Rotation)
4 = Pump w/ Shaft Bearing (Clockwise Rotation)
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)
6 = Pump w/ Shaft Bearing (Double Rotation)
8 = Motor w/ Shaft Bearing & 1/4" Drain Port
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

Shaft End Cover⁴ _____
00 = Pad Mount
42 = SAE 4-Bolt "B" Mount
78 = SAE 4-Bolt "C" Mount
91 = 51/51 Piggyback Mount
92 = 76/51 Piggyback Mount
94 = SAE 2-Bolt "A" Mount
96 = SAE 2-Bolt "B" Mount (Type 2)
97 = SAE 2-Bolt "B" Mount
98 = SAE 2-Bolt "C" Mount
99 = SAE 2-Bolt "C" Mount (Type 2)

Connecting Shaft¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers⁹
See page 96 for Bearing Carrier options

Shaft Type⁸
07 = SAE "C" 14 Tooth Spline 1.25" Dia. Type 1
11 = SAE "C" Keyed 1.25" Dia. 5/16" x 15/32" x 1-1/2" Key
25 = SAE "B" 13 Tooth Spline .875" Dia.
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key
53 = SAE "C" 14 Tooth Spline 1.25" Dia. Type 2
65 = SAE "B" 13 Tooth Spline .875" Dia. Type 2
67 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key
Type 2
73 = SAE "C" Keyed 1.25" Dia. 5/16" x 15/32" x 2-1/4" Key
98 = SAE "BB" 15 Tooth Spline 1" Dia. (Cont. Only)

Gear Size⁷
Code / Displacement (in³/r)

07 (1.91)	10 (2.55)	12 (3.19)	15 (3.83)	17 (4.46)	20 (5.10)	22 (5.74)	25 (6.38)
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Port End Cover⁵

NPT Codes

Single Units	Tandem Units	Port Size		A	B
Left	Right				
BE BY	BI BY	None	None	n/a	n/a
KE KY	KI KY	3/4"	None	n/a	1.38
LE LY	LI LY	None	3/4"	1.38	n/a
ME MY	MI MY	3/4"	3/4"	1.38	1.38

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs

Orientation is viewed from the shaft end

O-ring Codes

Single Units	Tandem Units	Port Size		A	B
Left	Right				
CE CY	CI CY	3/4"	None	n/a	1.38
DE DY	DI DY	None	3/4"	1.38	n/a
FE FY	FI FY	3/4"	3/4"	1.38	1.38

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs

Orientation is viewed from the shaft end

Metric Str. Thd. Codes

Single Units	Tandem Units	Port Size		A	B
Left	Right				
NE	NI NY	3/4"	None	n/a	1.38
PE	PI PY	None	3/4"	1.38	n/a
QE	QI QY	3/4"	3/4"	1.38	1.38

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs

Orientation is viewed from the shaft end

BSPP Codes

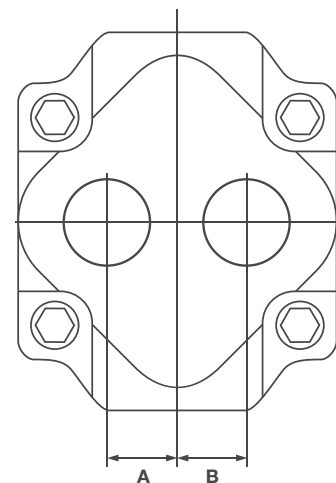
Single Units	Tandem Units	Port Size		A	B
Left	Right				
WE	WI WY	3/4"	None	n/a	1.38
XE	XI XY	None	3/4"	1.38	n/a
ZE	ZI ZY	3/4"	3/4"	1.38	1.38

↑ ↑ ↑ ↑
 With Support Studs
 Without Support Studs

Orientation is viewed from the shaft end

Gear Housing⁶

See following pages for Gear Housing options



MH51 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

NPT Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
IC	3/4"	None			x						
ID	None	3/4"			x	x	x	x			
IF	3/4"	3/4"			x	x	x	x	x		
IG	3/4"	1"			x	x	x				
IH	3/4"	1-1/4"					x				
IJ	1"	3/4"			x	x	x	x	x		
IK	1-1/4"	3/4"					x				
YC	1"	None				x	x	x	x	x	
YD	None	1"				x	x	x	x	x	
YF	1"	1"				x	x	x	x	x	x
YG	1"	1-1/4" *					x	x	x	x	
YH	1"	1-1/2"									x
YJ	1-1/4" *	1"					x	x	x	x	x
YK	1-1/2"	1"									x
IA	1-1/4" *	None					x	x	x	x	x
IB	None	1-1/4" *					x	x	x	x	x
YL	1-1/4"	1-1/4"						x	x	x	x
YM	1-1/4"	1-1/2" *							x	x	x
YP	1-1/2"	1-1/4"							x	x	x
YR	1-1/2"	1-1/2"							x	x	x
YA	1-1/2"	None							x	x	x
YB	None	1-1/2"							x	x	x

* Low Pressure Inlet Porting

BSPP Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
YN	3/4"	None			x	x					
YQ	None	3/4"			x	x	x	x			
YS	3/4"	3/4"				x	x				
YT	3/4"	1"			x	x	x				
YU	3/4"	1-1/4"			x	x	x	x			
YV	1"	3/4"			x	x	x	x	x		
YW	1-1/4"	3/4"			x	x	x	x			
SL	1"	None			x	x	x				
RQ	None	1"					x	x	x	x	x
MP	1"	1"					x	x	x	x	x
VY	1"	1-1/4" *					x	x	x	x	x
IX	1-1/4" *	1"					x	x	x	x	x
NJ	1-1/4" *	None					x	x	x		
UI	None	1-1/4" *								x	x
PF	1-1/4"	1-1/4"								x	x
IQ	1-1/4"	1-1/2"									x
IS	1-1/2"	1-1/4"									x

* Low Pressure Inlet Porting

Metric Str. Thd. Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
EN	3/4"	None			x	x	x	x			
TQ	None	3/4"			x	x	x	x			
ES	3/4"	3/4"			x	x					
ET	3/4"	1"			x	x	x	x	x		
EV	1"	3/4"			x	x	x	x	x		
NL	1"	None					x	x	x	x	
ER	None	1"					x	x	x	x	
CM	1"	1"					x	x	x		
VE	1"	1-1/4" *					x	x	x	x	x
EX	1-1/4" *	1"					x	x	x	x	x
UA	None	1-1/4"							x	x	x
PA	1-1/4"	1-1/4"							x	x	x
QA	1-1/4"	1-1/2" *							x	x	x
SA	1-1/2"	1-1/4"							x	x	x

* Low Pressure Inlet Porting

MH51 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing Cont. ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

O.D. Tube Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25
AB	None	None	x	x	x	x	x	x	x	x	x
EC	3/4"	None			x	x	x	x	x		
ED	None	3/4"			x	x	x	x	x		
EF	3/4"	3/4"			x	x	x	x	x		
EG	3/4"	1"			x	x	x				
EH	3/4"	1-1/4"					x	x			
EJ	1"	3/4"			x	x	x	x	x		
EK	1-1/4"	3/4"					x	x			
AC	1"	None			x	x	x	x			
AD	None	1"			x	x	x	x			
AF	1"	1"					x	x	x	x	x
AG	1"	1-1/4" *					x	x	x	x	x
AH	1"	1-1/2"						x	x	x	
AJ	1-1/4" *	1"					x	x	x	x	x
AK	1-1/2" *	1"					x	x	x	x	x
AL	1-1/4"	1-1/4"							x	x	x
AM	1-1/4"	1-1/2" *							x	x	x
AP	1-1/2" *	1-1/4"							x	x	x
AR	1-1/2"	1-1/2"									x
AA	1-1/4" *	None					x	x	x	x	x
AO	None	1-1/4" *					x	x	x	x	x
AE	1-1/2" *	None							x	x	
AU	None	1-1/2" *							x	x	

* Low Pressure Inlet Porting

Split Flange Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25
AB	None	None	x	x	x	x	x	x	x	x	x
UC	3/4"	None			x	x	x	x			
UD	None	3/4"			x	x	x	x			
UF	3/4"	3/4"			x	x	x	x	x	x	x
UG	3/4"	1"			x	x	x				
UH	3/4"	1-1/4"				x	x	x			
UJ	1"	3/4"			x	x	x	x	x		
UK	1-1/4"	3/4"				x	x	x			
OC	1"	None			x	x	x	x	x	x	x
OD	None	1"			x	x	x	x	x	x	x
OF	1"	1"				x	x	x	x	x	x
OG	1"	1-1/4" *				x	x	x	x		
OH	1"	1-1/2" *					x	x	x	x	x
OJ	1-1/4" *	1"				x	x	x	x	x	x
OK	1-1/2" *	1"					x	x	x	x	x
OL	1-1/4"	1-1/4"					x	x	x	x	x
OM	1-1/4"	1-1/2" *					x	x	x	x	x
ON	1-1/4"	2"							x	x	x
OP	1-1/2" *	1-1/4"					x	x	x	x	x
OQ	2"	1-1/4"							x	x	
OR	1-1/2"	1-1/2"						x	x	x	x
OS	1-1/2"	2"							x	x	x
OV	2"	1-1/2"							x	x	x
OX	2"	2"									x
OA	1-1/4" *	None				x	x	x	x	x	x
OB	None	1-1/4" *				x	x	x	x	x	x
OE	1-1/2" *	None					x	x	x	x	x
OU	None	1-1/2" *					x	x	x	x	x
UB	1"	2"							x	x	x
UQ	2"	1"							x	x	x
XB	2"	None							x	x	x
ZB	None	2"							x	x	x

* Low Pressure Inlet Porting

MH51 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing Cont. ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

Metric Split Flange Codes

Code	Port Size		5	7	10	12	15	17	20	22	25
	Left	Right									
AB	None	None	x	x	x	x	x	x	x	x	x
VN	3/4"	None			x	x	x	x			
VQ	None	3/4"			x	x	x	x			
VS	3/4"	3/4"			x	x	x				
VT	3/4"	1"			x	x	x	x	x		
RV	1"	3/4"			x	x	x	x	x		
RU	3/4"	1-1/4"			x	x	x				
RW	1-1/4"	3/4"			x	x	x				
UL	1"	None				x	x	x	x	x	
UR	None	1"				x	x	x	x	x	
UM	1"	1"				x	x	x	x	x	
VU	1"	1-1/4" *				x	x	x	x	x	x
UX	1-1/4" *	1"				x	x	x	x	x	x
HO	1"	1-1/2" *					x	x	x		
VO	1-1/2" *	1"					x	x	x		
NO	1-1/4" *	None						x	x	x	x
UO	None	1-1/4" *						x	x	x	x
PO	1-1/4"	1-1/4"					x	x	x	x	x
QO	1-1/4"	1-1/2" *					x	x	x	x	x
SO	1-1/2" *	1-1/4"					x	x	x	x	x
JR	1-1/4"	2"							x	x	x
JM	2"	1-1/4"							x	x	x
UY	1-1/2" *	None					x	x	x	x	
TO	None	1-1/2" *					x	x	x	x	
SV	1-1/2"	1-1/2"							x	x	x
JN	1-1/2"	2"							x	x	x
JQ	2"	1-1/2"							x	x	x

* Low Pressure Inlet Porting

MH51 Series Bearing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

NPT Codes

In	Out	CW (Left)	CCW (Right)
None None	None None	 C A	 D U
1" 1-1/4" 1-1/2"	None None None	 TB VB WB	 BT BV BW
1" 1-1/4" 1-1/2" 1-1/4" 1-1/2"	3/4" 3/4" 3/4" 1" 1"	 TX VX WX VZ WZ	 XT XV XW ZV ZW
1" 1-1/4" 1-1/4" 1-1/2"	3/4" 3/4" 1" 1"	 TJ VJ VK WK	 JT JV KV KW
1"	3/4"	 ZX	 XZ

SAE Split Flange Codes

In	Out	CW (Left)	CCW (Right)
1" 1-1/4" 1-1/2"	None None None	 LB MB NB	 BL BM BN
None 1" 1-1/4" 1-1/2" 1-1/4" 1-1/2"	3/4" 3/4" 3/4" 1" 1"	 BR LR MR NR MS NS	 RB RL RM RN SM SN
1" 1-1/4" 1-1/4" 1-1/2"	3/4" 3/4" 1" 1"	 LX MX MZ NZ	 XL XM ZM ZN
1"	3/4"	 SR	 RS

SAE O-ring Codes

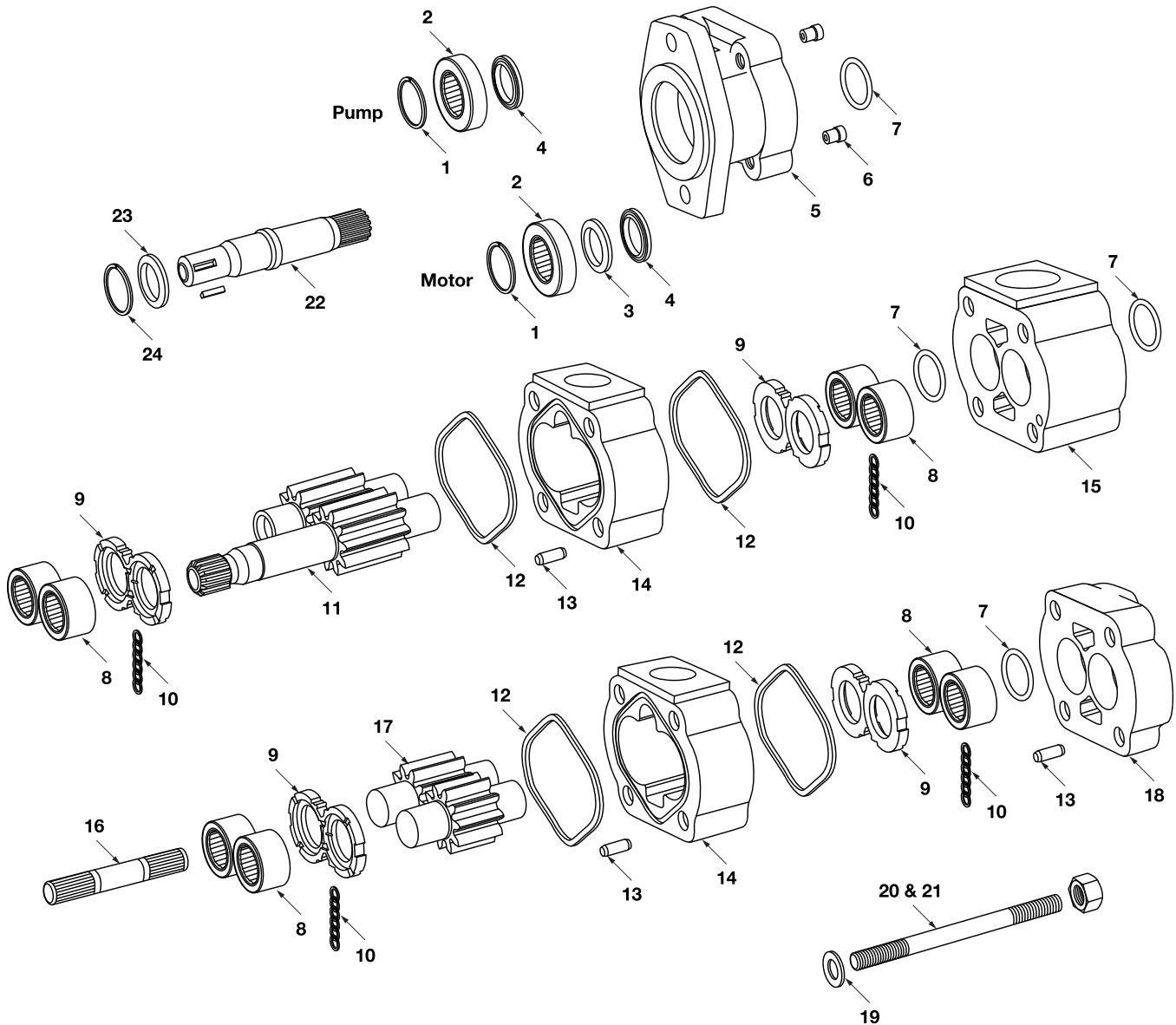
In	Out	CW (Left)	CCW (Right)
1" 1-1/4" 1-1/2"	None None None	 CB DB FB	 BC BD BF
None 1" 1-1/4" 1-1/2" 1-1/4" 1-1/2"	3/4" 3/4" 3/4" 3/4" 1" 1"	 PJ CJ DJ FJ DK FK	 JP JC JD JF KD KF
1"	3/4"	 CR	 RC

Motors Only Codes

In	Out	Dual	
None	None	 B	
1" 1-1/4" 1-1/2" 1" 1-1/4" 1-1/2" 1" 1-1/4" 1-1/2"	1" 1-1/4" 1-1/2" 1" 1-1/4" 1-1/2" 1" 1-1/4" 1-1/2"	 TT VV WW CC BB FF LL MM NN	NPT NPT NPT SAE O-Ring SAE O-Ring SAE O-Ring SAE Split Flange SAE Split Flange SAE Split Flange

MH51 Series

Parts Breakdown



MH51 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SHAFT BRG. SNAP RING	X05-03-77250	391-2686-065
2a	BEARING SPACER & SEAL RETAINER FOR MOTORS	A50-60-10000	391-3383-087
2b	INPUT SHAFT BEARING	X03-16-13272	391-0381-077
3	MOTOR SEAL RETAINER USED WITH SHAFT BEARING	A50-60-30000	391-3383-020
4a	PUMP LIP SEAL	X83-11-03308	391-2883-103
4b	MOTOR LIP SEAL	X84-36-03309	391-2883-115
4c	PUMP LIP SEAL FOR CONTINENTIAL SHAFT ONLY	X89-11-03308	391-2883-133
5a	51 PAD PILOT PUMP SHAFT END COVER TYPE 00	A51-10-21100	313-5017-201
5b	51 4 BOLT B PILOT PUMP SHAFT END COVER TYPE 42 (4" or 101.6 mm pilot)	A51-10-21420	313-5037-201
5c	51 4 BOLT C PILOT PUMP SHAFT END COVER TYPE 78 (5" or 127 mm pilot)	A51-10-21430	313-5037-202
5d	51 2 BOLT B PILOT PUMP SHAFT END COVER TYPE 97 (4" or 101.6 mm pilot)	A51-10-21220	313-5027-201
5e	51 2 BOLT C PILOT PUMP SHAFT END COVER TYPE 98 (5" or 127 mm pilot)	A51-10-21230	313-5027-202
5f	51 2 BOLT B (TYPE 2) PILOT PUMP SHAFT END COVER TYPE 96 (4" or 101.6 mm pilot)	A51-10-22220	313-5027-205
5g	51 2 BOLT C (TYPE 2) PILOT PUMP SHAFT END COVER TYPE 99 (5" or 127 mm pilot)	A51-10-22230	313-5027-206
5h	51/51 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 91	A43-10-21500	313-5027-208
5i	76/51 SHAFT END COVER FOR PIGGYBACK UNITS TYPE 92	A44-10-21500	313-5027-209
5j	51 PAD PILOT MOTOR SHAFT END COVER TYPE 00	A51-10-41100	313-5017-401
5k	51 4 BOLT B PILOT MOTOR SHAFT END COVER TYPE 42 (4" or 101.6 mm pilot)	A51-10-41420	313-5037-401
5l	51 4 BOLT C PILOT MOTOR SHAFT END COVER TYPE 78 (5" or 127 mm pilot)	A51-10-41430	313-5037-402
5m	51 2 BOLT B PILOT MOTOR SHAFT END COVER TYPE 97 (4" or 101.6 mm pilot)	A51-10-41220	313-5027-401
5n	51 2 BOLT C PILOT MOTOR SHAFT END COVER TYPE 98 (5" or 127 mm pilot)	A51-10-41230	313-5027-402
6a	CHECK VALVE MOTOR	A00-75-11000	391-3681-001
6b	PRESSURE PLUG PUMP	X02-03-32110	391-2286-004
7	RING SEAL	X81-76-03305	391-2585-009
8	ROLLER BEARING (Ø 1.937" O.D.)	X03-24-13349	391-0381-059
9a	PUMP THRUST PLATE	A51-70-20000	391-2185-029
9b	MOTOR THRUST PLATE	A25-70-10000	391-2185-012
9c	DRY VALVE THRUST PLATE	A50-70-10000	391-2185-041
10	POCKET SEAL	X85-11-00002	391-2882-050
11a	SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7	A50-50-XX245	313-29XX-250
11b	SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11	A50-50-XX145	313-29XX-750
11c	SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 25	A50-50-XX225	313-29XX-230
11d	SHAFT & GEAR SET 0.9984" dia. KEYED (1/4" x 3/8" x 1 1/4") TYPE 43	A50-50-XX135	313-29XX-740
11e	SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 53 TYPE 2	A50-50-XX246	313-29XX-450
11f	SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 65 TYPE 2	A50-50-XX226	313-29XX-430
12	PUMP & MOTOR HOUSING GASKET	X85-11-10803	391-2884-021

MH51 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
13	HOUSING DOWEL PIN	A00-94-11025	391-2082-032
14	PUMP & MOTOR GEAR HOUSING	A51-32-XX000	313-82XX-100
15a	51 MOTOR BEARING CARRIER BLANK	A51-40-00000	313-7740-100
15b	51 PUMP BEARING CARRIER WITH COMMON PASSAGE	A51-40-20000	313-7723-100
16	CONNECTING SHAFT	A50-50-00500	313-1133-001
17	GEAR SET ONLY	A50-50-XX000	313-28XX-000
18a	51 PUMP & MOTOR PORT END COVER	A51-22-00000	313-3120-100
18b	51 PUMP & MOTOR PORT END COVER SPECIAL LARGER PORTING	A51-27-00000	313-3420-100
18c	51 PIGGY BACK REAR PORT END COVER	A51-22-03000	313-5027-212
19	FLAT WASHER (5/8")	X45-10-17005	391-3784-028
20	BOLTS / STUDS (5/8"-UNC)	See Fasteners Page	
21	HEX NUT (5/8"-UNC)	X42-11-16000	391-1451-076
22a	CONTINENTAL SHAFT TYPE 11 (1.250" Ø KEYED 5/16")	A50-50-00141	313-1500-500
22b	CONTINENTAL SHAFT TYPE 7 (1.250" Ø - 14 TOOTH SPLINE)	A50-50-00241	313-1135-194
22c	CONTINENTAL SHAFT TYPE 25 (0.875" Ø- 13 TOOTH SPLINE)	A50-50-00221	313-1000-300
22d	CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A50-50-00131	313-1500-400
22e	CONTINENTAL SHAFT TYPE 73 LONG (1.250" Ø KEYED 5/16")	A50-50-00147	313-1500-502
23	CONTINENTAL SHAFT BRG. RETAINER (MAY NOT BE REQUIRED)	A50-60-20000	391-3381-046
24	CONTINENTAL SHAFT BRG. RETAINER SNAP RING (MAY NOT BE REQ)	X05-02-35120	391-2685-040
Not Shown	SEAL RETAINER FOR 51/51 PIGGY BACK PUMP S.E.C.	A30-60-10001	391-2584-063
Not Shown	SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.	X81-11-04704	391-2881-124
Not Shown	SEAL RETAINER O RING FOR PIGGY BACK PUMP S.E.C.	X81-11-05704	391-2881-120
Not Shown	SEAL RETAINER FOR 76/51 PIGGY BACK PUMP S.E.C.	A50-60-10003	391-2585-013
Not Shown	CASE DRAIN PLUG	X02-03-22060	391-2282-056
Not Shown	DRY VALVE SEAL RETAINER	A50-60-10001	391-2584-050
Not Shown	PUMP LIP SEAL FOR PIGGY BACK S.E.C. & P.E.C.	X83-11-02708	391-2883-058
Not Shown	SHAFT KEY FOR TYPE 73 SHAFT	X01-01-81257	391-1781-008
Not Shown	SHAFT KEY FOR TYPE 43 SHAFT	X01-01-61032	391-1781-021
Not Shown	SHAFT KEY FOR TYPE 11 SHAFT	X01-01-81238	391-1781-045
Not Shown	50/50 PIGGY BACK CONNECTING SHAFT	A41-50-00400	313-1133-004
Not Shown	75/50 PIGGY BACK CONNECTING SHAFT	A42-50-00400	313-1133-003

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

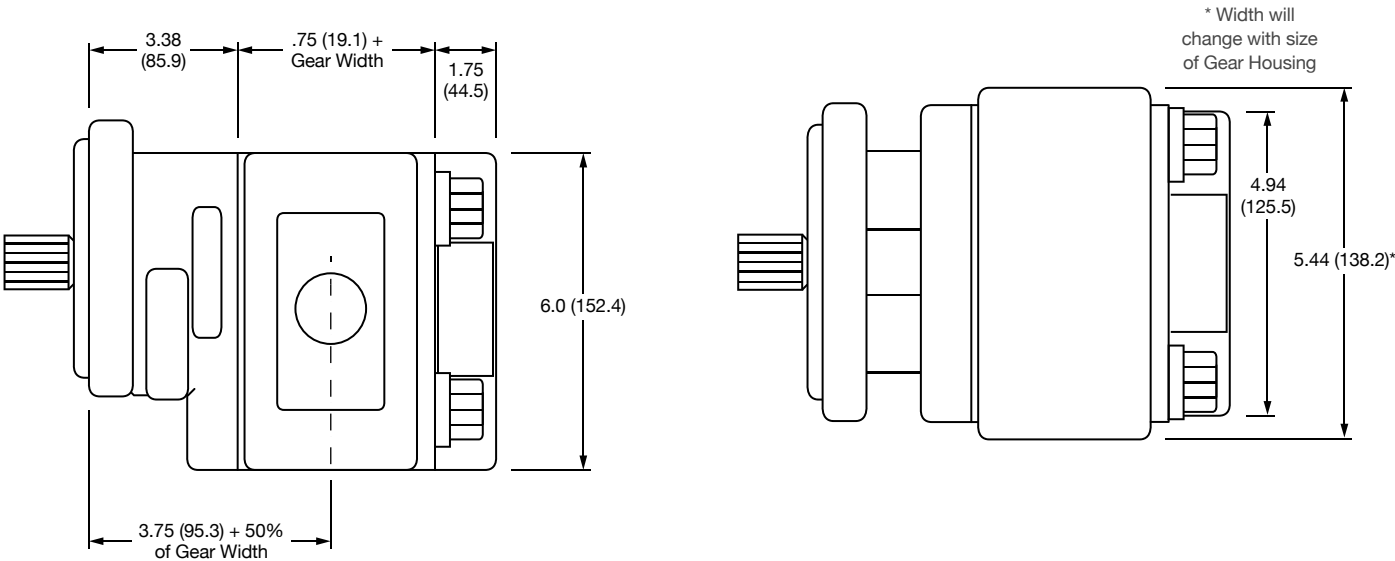
For example: Gear set no. A50-50-XX000 changes to A50-50-15000 for 1.5" gear size
Housing no. A51-32-XX000 changes to A51-32-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH51 Series

Dimensions

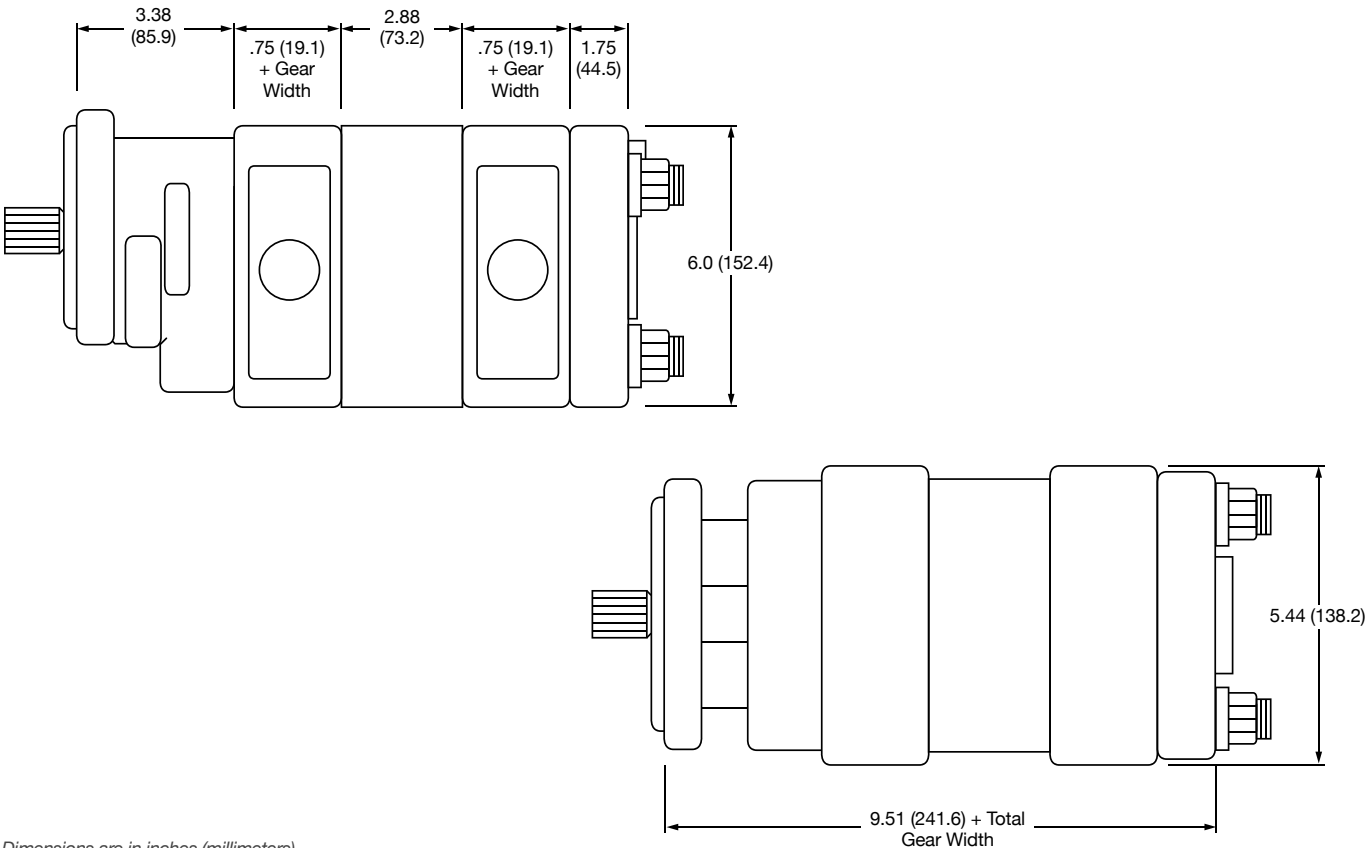
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH75 Series Bearing Pump

Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH75		DISPLACEMENT		MAX PRESSURE	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.75	3/4"	3.07	(50.3)	2500	(172)
1.00	1"	4.1	(67.2)	2500	(172)
1.25	1-1/4"	5.12	(83.9)	2500	(172)
1.50	1-1/2"	6.15	(100.7)	2500	(172)
1.75	1-3/4"	7.17	(117.5)	2500	(172)
2.00	2"	8.2	(134.3)	2500	(172)
2.25	2-1/4"	9.22	(151)	2250	(155)
2.50	2-1/2"	10.25	(167.8)	2250	(155)
2.75	2-3/4"	11.28	(185)	2000	(137)
3.00	3"	12.3	(201)	2000	(137)

MH75 Series Bearing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)								
	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"	2-3/4"	3"
900	11.5 / 43.5	15.5 / 58.5	19.5 / 74	23 / 87	27 / 102	30.5 / 115.5	34.5 / 130.5	38 / 144	42 / 159
1200	17 / 64.5	22 / 83.5	27 / 102	32 / 121	37.5 / 141	42 / 159	48 / 182	452.5 / 199	58 / 220
1500	22 / 83.5	29 / 110	35.5 / 134	41.5 / 157	48 / 182	54.5 / 206	61 / 231	67 / 254	74 / 280
1800	27.5 / 104	35.5 / 134	43.5 / 165	51 / 193	59 / 223	66 / 250	74 / 280	81.5 / 308	90 / 341
2100	33 / 125	42 / 159	51.5 / 195	60 / 227	69.5 / 263	78 / 295	87 / 329	96.5 / 365	106 / 401
2400	38 / 144	49 / 185	59.5 / 225	70 / 265	80 / 303	90 / 341	101 / 382	111 / 420	122 / 462

Motor Performance Data

SPEED RPM	GEAR WIDTH									
	1"		1-1/2"		2"		2-1/2"		3"	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
800	20.5 / 77.5	1050 / 12	28 / 106	1650 / 19	35.5 / 134	2200 / 25.5	43 / 163	2875 / 33	50.5 / 191	3625 / 42
1200	27.5 / 104	1025 / 12	38 / 144	1600 / 18.5	49.5 / 187	2200 / 25.5	60.5 / 229	2850 / 33	72 / 273	3575 / 41
1600	34 / 129	1000 / 11.5	49 / 185	1575 / 18	64 / 242	2175 / 25	78.5 / 297	2800 / 32.5	93 / 352	3500 / 40.5
2000	41.5 / 157	950 / 11	59 / 223	1550 / 18	78 / 295	2175 / 25	96.5 / 365	2750 / 31.5	114 / 431	3425 / 39.5

Note: Input Flow @ 2000psi | Output Torque @ 140 bar

MH75 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "BB" Spline	7,750	7,750
SAE "BB" Keyed	5,550	5,550
SAE "B" Spline	5,050	5,050
SAE "B" Keyed	3,700	3,700
SAE "C" Spline	8,600	7,750
SAE "C" Keyed	8,300	7,750
Connecting Shaft		7,750

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH75 Series Bearing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 75 - A - 1 - 78 - BE - AB - 10 - 11 - DB - * - * - *

Type¹ _____
MHP = Pump
MHM = Motor

Unit² _____
A = Single Unit
B = Tandem Unit
C = Single or Tandem Unit w/ a Continental Shaft

Shaft End Cover³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
3 = Pump w/o Shaft Bearing (Double Rotation)
4 = Pump w/ Shaft Bearing (Clockwise Rotation)
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)
6 = Pump w/ Shaft Bearing (Double Rotation)
8 = Motor w/ Shaft Bearing & 1/4" Drain Port
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

Shaft End Cover⁴ _____
42 = SAE 4-Bolt "B" Mount
78 = SAE 4-Bolt "C" Mount
80 = SAE 4-Bolt "D" Mount
98 = SAE 2-Bolt "C" Mount

Port End Cover⁵ _____

Connecting Shaft¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers⁹
See page 106 for Bearing Carrier options

Shaft Type⁸
07 = SAE "C" 14 Tooth Spline 1.250 Dia.
11 = SAE "C" Keyed 1.249 Dia. 5/16" x 15/32" x 1-1/2"
 Key

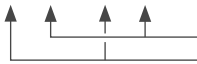
Gear Size⁷
Code / Displacement (in³/r)

07 (3.07)	10 (4.10)	12 (5.12)	15 (6.15)	17 (7.17)	20 (8.20)	22 (9.22)	25 (10.3)	27 (11.3)	30 (12.3)
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Gear Housing⁶
See following pages for Gear Housing options

NPT Codes

Single Units	Tandem Units	Port Size		A	B
		Left	Right		
BE BY	BI BJ	None	None	n/a	n/a


 With Support Studs

 Without Support Studs
 Orientation is viewed from the shaft end

O-ring Ports Codes

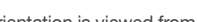
Single Units	Tandem Units	Port Size		A	B
		Left	Right		
JE JY	JI JY	1"	1"	1.62	1.62

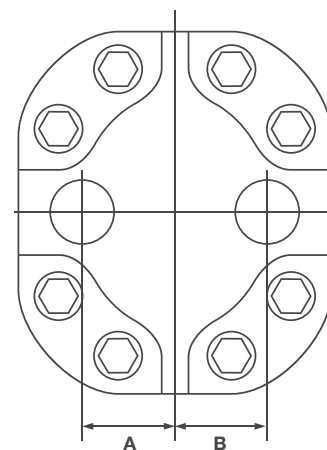

 With Support Studs

 Without Support Studs
 Orientation is viewed from the shaft end

Metric Str. Thd. Ports

Single Units	Tandem Units	Port Size		A	B
		Left	Right		
TE TY	TI TY	1"	1"	1.62	1.62


 With Support Studs

 Without Support Studs
 Orientation is viewed from the shaft end



MH75 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

NPT Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
IC	3/4"	None											
ID	None	3/4"		x	x	x	x						
IF	3/4"	3/4"											
IG	3/4"	1"			x								
IH	3/4"	1-1/4"											
IJ	1"	3/4"			x	x	x						
IK	1-1/4"	3/4"											
YC	1"	None							x				
YD	None	1"				x	x	x	x				
YF	1"	1"			x	x							
YG	1"	1-1/4" *				x	x						
YH	1"	1-1/2"											
YJ	1-1/4" *	1"				x	x						
YK	1-1/2"	1"											
YL	1-1/4"	1-1/4"				x	x	x					
YM	1-1/4"	1-1/2" *											
YP	1-1/2"	1-1/4"											
YR	1-1/2"	1-1/2"											

* Low Pressure Inlet Porting

O.D. Tube Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
EC	3/4"	None		x	x	x	x						
ED	None	3/4"		x	x	x	x						
EF	3/4"	3/4"		x									
EG	3/4"	1"		x		x	x						
EH	3/4"	1-1/4"			x								
EJ	1"	3/4"		x		x	x						
EK	1-1/4"	3/4"			x								
AC	1"	None											
AD	None	1"				x	x						
AF	1"	1"			x	x	x	x	x				
AG	1"	1-1/4" *			x	x							
AH	1"	1-1/2"					x						
AJ	1-1/4" *	1"			x	x							
AK	1-1/2"	1"					x						
AL	1-1/4"	1-1/4"					x	x	x	x	x		x
AM	1-1/4"	1-1/2" *					x	x					
AP	1-1/2"	1-1/4"					x	x					
AR	1-1/2"	1-1/2"						x		x	x		

* Low Pressure Inlet Porting

BSPP Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
YN	3/4"	None			x	x							
YQ	None	3/4"		x	x	x	x	x	x				
YS	3/4"	3/4"											
YT	3/4"	1"		x									
YU	3/4"	1-1/4"											
YV	1"	3/4"											
YW	1-1/4"	3/4"											
SL	1"	None				x	x	x	x	x	x		
RQ	None	1"				x	x	x	x	x	x		
MP	1"	1"				x	x						
VY	1"	1-1/4" *					x	x	x	x	x	x	x
IX	1-1/4" *	1"					x	x	x	x	x	x	x
NJ	1-1/4" *	None					x	x	x				
UI	None	1-1/4" *									x	x	x
PF	1-1/4"	1-1/4"									x		
IQ	1-1/4"	1-1/2"									x	x	x
IS	1-1/2"	1-1/4"									x	x	x
HW	1"	1-1/2"					x	x					
VI	1-1/2"	1"					x	x					

* Low Pressure Inlet Porting

MH75 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing Cont. ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

Split Flange Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
UC	3/4"	None		x	x	x	x						
UD	None	3/4"		x	x	x	x						
UF	3/4"	3/4"		x									
UG	3/4"	1"		x	x								
UH	3/4"	1-1/4"											
UJ	1"	3/4"			x	x	x	x	x				
UK	1-1/4"	3/4"											
OC	1"	None				x							
OD	None	1"			x	x	x	x	x				
OF	1"	1"			x	x	x	x	x		x	x	x
OG	1"	1-1/4" *			x	x	x						
OH	1"	1-1/2" *				x	x	x	x	x			
OJ	1-1/4" *	1"			x	x	x	x	x	x	x		
OK	1-1/2" *	1"				x	x	x	x	x			
OL	1-1/4"	1-1/4"				x	x	x	x	x	x	x	x
OM	1-1/4"	1-1/2" *				x	x	x	x	x	x		
ON	1-1/4"	2"						x	x	x	x	x	x
OP	1-1/2" *	1-1/4"				x	x	x	x	x	x	x	x
OQ	2"	1-1/4"						x	x	x	x	x	x
OR	1-1/2"	1-1/2"							x	x	x	x	x
OS	1-1/2"	2"							x	x	x	x	x
OT	1-1/2"	2-1/2"									x	x	x
OV	2"	1-1/2"							x	x	x	x	x
OW	2-1/2"	1-1/2"									x	x	x
OX	2"	2"										x	x
OA	1-1/4" *	None				x	x	x	x	x	x		
UB	1"	2"							x				
UQ	2"	1"							x				
OB	None	1-1/4" *				x	x	x	x	x	x		
OE	1-1/2" *	None							x	x			
OU	None	1-1/2" *							x	x	x	x	x
OY	2"	2-1/2"											x
OZ	2-1/2"	2"											x
UN	1-1/4"	2-1/2"									x		
US	2-1/2"	1-1/4"									x		

* Low Pressure Inlet Porting

Metric Split Flange Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
VN	3/4"	None		x	x	x	x						
VQ	None	3/4"		x	x	x	x						
VS	3/4"	3/4"		x	x								
VT	3/4"	1"		x	x								
RU	3/4"	1-1/4"			x								
RV	1"	3/4"		x	x	x	x	x	x				
RW	1-1/4"	3/4"			x								
UL	1"	None			x	x	x	x					
UR	None	1"			x	x	x	x					
UM	1"	1"			x	x	x	x	x				
VU	1"	1-1/4" *			x	x							
HO	1"	1-1/2" *				x	x						
UX	1-1/4" *	1"			x	x	x	x	x	x	x		
VO	1-1/2" *	1"				x	x						
NO	1-1/4" *	None				x	x	x	x	x	x		
UO	None	1-1/4" *				x	x	x	x	x	x		
PO	1-1/4"	1-1/4"				x	x	x	x	x	x	x	x
QO	1-1/4"	1-1/2" *					x	x	x	x			
SO	1-1/2" *	1-1/4"					x	x	x	x	x	x	x
JR	1-1/4"	2"						x	x	x	x		
JM	2"	1-1/4"						x	x	x	x		
UY	1-1/2" *	None							x	x	x		
TO	None	1-1/2" *							x	x	x	x	x
SV	1-1/2"	1-1/2"							x	x	x	x	x
JN	1-1/2"	2"							x	x	x	x	x
JQ	2"	1-1/2"							x	x	x	x	x
JX	1-1/2"	2-1/2"										x	x
LJ	2-1/2"	1-1/2"										x	x
JS	2"	2"											x

* Low Pressure Inlet Porting

Metric Str. Thd. Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
EN	3/4"	None		x	x	x	x						
TQ	None	3/4"		x	x	x	x						
ES	3/4"	3/4"		x	x								
ET	3/4"	1"		x									
EV	1"	3/4"		x	x	x	x						
NL	1"	None				x	x						
ER	None	1"				x	x						
CM	1"	1"			x	x	x						

* Low Pressure Inlet Porting

MH75 Series Bearing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

NPT Codes

In	Out	CW (Left)	CCW (Right)
None	None		
None	None	C A	D U

SAE Split Flange Codes

In	Out	CW (Left)	CCW (Right)
1"	None		
1-1/4"	None	LB	BL
1-1/2"	None	MB	BM
		NB	BN
None	3/4"		
1"	3/4"	BR	RB
1-1/4"	3/4"	LR	RL
1-1/2"	3/4"	MR	RM
1-1/4"	1"	NR	RN
1-1/2"	1"	MS	SM
		NS	SN
1"	3/4"		
1-1/4"	3/4"	LX	XL
1-1/4"	1"	MX	XM
1-1/2"	1"	MZ	ZM
		NZ	ZN
1"	3/4"		
		SR	RS

SAE O-ring Codes

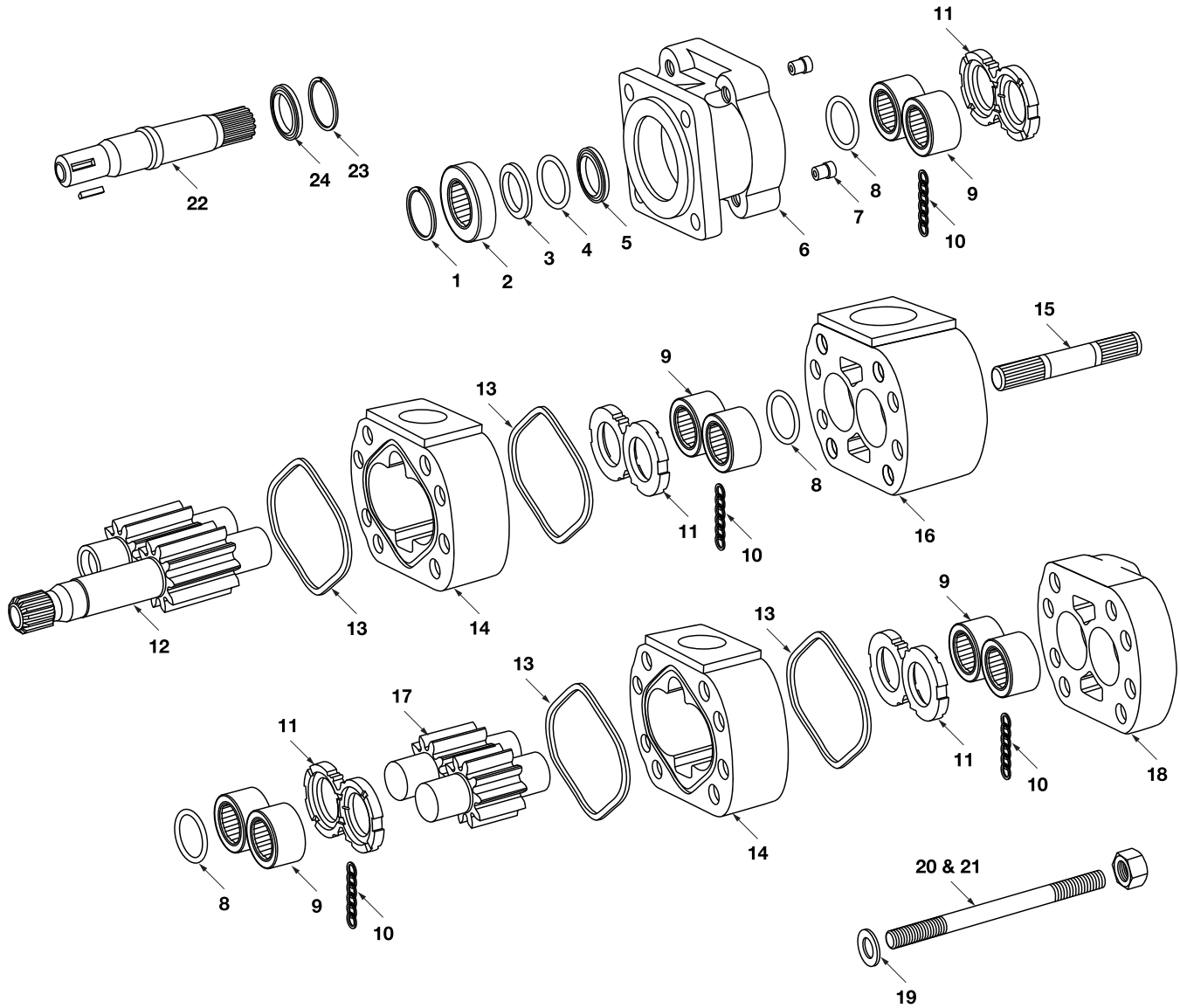
In	Out	CW (Left)	CCW (Right)
1"	None		
1-1/4"	None	CB	BC
1-1/2"	None	DB	BD
		FB	BF
None	3/4"		
1"	3/4"	PJ	JP
1-1/4"	3/4"	CJ	JC
1-1/2"	3/4"	DJ	JD
1-1/4"	1"	FJ	JF
1-1/2"	1"	DK	KD
		FK	KF
1"	3/4"		
1-1/4"	3/4"	CR	RC
1-1/2"	3/4"	DR	RD
1-1/4"	1"	FR	RF
1-1/2"	1"	DS	SD
		FS	SF

Motors Only Codes

In	Out	Dual	
None	None		
		B	
1"	1"		SAE O-Ring
1-1/4"	1-1/4"	CC	SAE O-Ring
1"	1"	BB	SAE Split Flange
1-1/4"	1-1/4"	LL	SAE Split Flange
1-1/2"	1-1/2"	MM	SAE Split Flange
		NN	SAE Split Flange

MH75 Series

Parts Breakdown



MH75 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SHAFT BRG. SNAP RING	X05-01-88280	391-2686-025
2a	INPUT SHAFT BRG.	X03-16-13580	391-0381-078
2b	SPACER TO REPLACE SHAFT BEARING	A75-92-64800	391-3383-018
3a	SEAL RETAINER FOR PUMPS	A75-60-10000	391-2584-082
3b	SEAL RETAINER FOR MOTORS	A75-60-10000	391-2584-051
4	SEAL RETAINER O RING	X81-11-06603	391-2881-457
5a	PUMP LIP SEAL	X83-11-03508	391-2883-052
5b	MOTOR LIP SEAL	X84-36-03510	391-2883-094
6a	75 4 BOLT B PILOT PUMP S.E.C. TYPE 42 (4" or 101.6 mm pilot)	A75-10-21420	316-5033-201
6b	75 4 BOLT C PILOT PUMP S.E.C. TYPE 78 (5" or 127 mm pilot)	A75-10-21430	316-5033-202
6c	75 4 BOLT D PILOT PUMP S.E.C. TYPE 80 (6" or 152.4 mm pilot)	A75-10-21440	316-5033-203
6d	75 2 BOLT C PILOT PUMP S.E.C. TYPE 98 (5" or 127 mm pilot)	A75-10-41230	316-5023-201
6e	75 4 BOLT B PILOT MOTOR S.E.C. TYPE 42 (4" or 101.6 mm pilot)	A75-10-41420	316-5033-408
6f	75 4 BOLT C PILOT MOTOR S.E.C. TYPE 78 (5" or 127 mm pilot)	A75-10-41430	316-5033-402
6g	75 4 BOLT D PILOT MOTOR S.E.C. TYPE 80 (6" or 152.4 mm pilot)	A75-10-41440	316-5033-403
6h	75 2 BOLT C PILOT MOTOR S.E.C. TYPE 98 (5" or 127 mm pilot)	A75-10-41230	316-5023-202
7a	CHECK VALVE MOTOR	A00-75-11000	391-3681-001
7b	PRESSURE PLUG PUMP	X02-03-32110	391-2286-004
8	RING SEAL	X81-76-03809	391-2585-011
9	ROLLER BEARING (Ø 2.322" O.D.)	X03-24-13859	391-0381-060
10	POCKET SEAL	X85-11-00003	391-2882-052
11a	MOTOR & PUMP THRUST PLATE	A75-70-10000	391-2185-020
11b	DRY VALVE THRUST PLATE UNI DIR	A75-70-21000	391-2185-072
11c	CM86 MHW75 THRUST PLATE WINCH MOTOR / Bi-Rot DV	MPN106899	-
Not Shown	DRY VALVE THRUST PLATE SEAL	A75-82-96010	391-2885-040
12a	SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7	A75-50-XX245	316-29XX-250
12b	SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11	A75-50-10145	316-29XX-750
13	PUMP & MOTOR HOUSING GASKET	X85-11-13303	391-2884-024
14	PUMP & MOTOR GEAR HOUSING	A75-32-XX000	316-80XX-100
15	CONNECTING SHAFT	A75-50-00500	316-1133-001
16a	75 MOTOR BEARING CARRIER BLANK	A75-40-00000	316-7300-100
16b	75 PUMP BEARING CARRIER WITH COMMON PASSAGE	A75-40-20000	316-7363-100
17	GEAR SET ONLY	A75-50-XX000	316-28XX-000
18	75 PUMP & MOTOR PORT END COVER	A75-22-00000	316-3100-100
19	FLAT WASHER (5/8")	X45-10-17005	391-3784-028
20	BOLTS / STUDS (5/8"-UNC)	See Fasteners Page	
21	HEX NUT (5/8"-UNC)	X42-11-16000	391-1451-076

MH75 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
22a	CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7	A75-50-00241	316-1135-148
22b	CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11	A75-50-00141	316-1135-147
22c	CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228". Dia. TYPE 7 Long	A75-50-00244	316-1500-502
22d	CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11 Long	A75-50-00144	316-1500-501
23	CONTINENTAL SHAFT BRG. RETAINER SNAP RING	X05-02-38130	391-2685-029
24	CONTINENTAL SHAFT BRG. RETAINER	A75-60-20000	391-3381-039
Not Shown	PUMP LIP SEAL FOR PIGGY BACK P.E.C.	X83-11-03308	391-2883-103
Not Shown	PIGGY BACK CONNECTING SHAFT	A03-50-00400	316-1133-003
Not Shown	75 PIGGY BACK REAR PORT END COVER	A75-22-03000	316-5026-203
Not Shown	SHAFT KEY FOR TYPE 11 SHAFT	X01-01-81238	391-1781-045
Not Shown	DRY VALVE ASSEMBLY 1 1/2" CONNECTION	A00-75-12150	316- PMV-24
Not Shown	DRY VALVE ASSEMBLY 2" CONNECTION	A00-75-12200	316- PMV-32

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

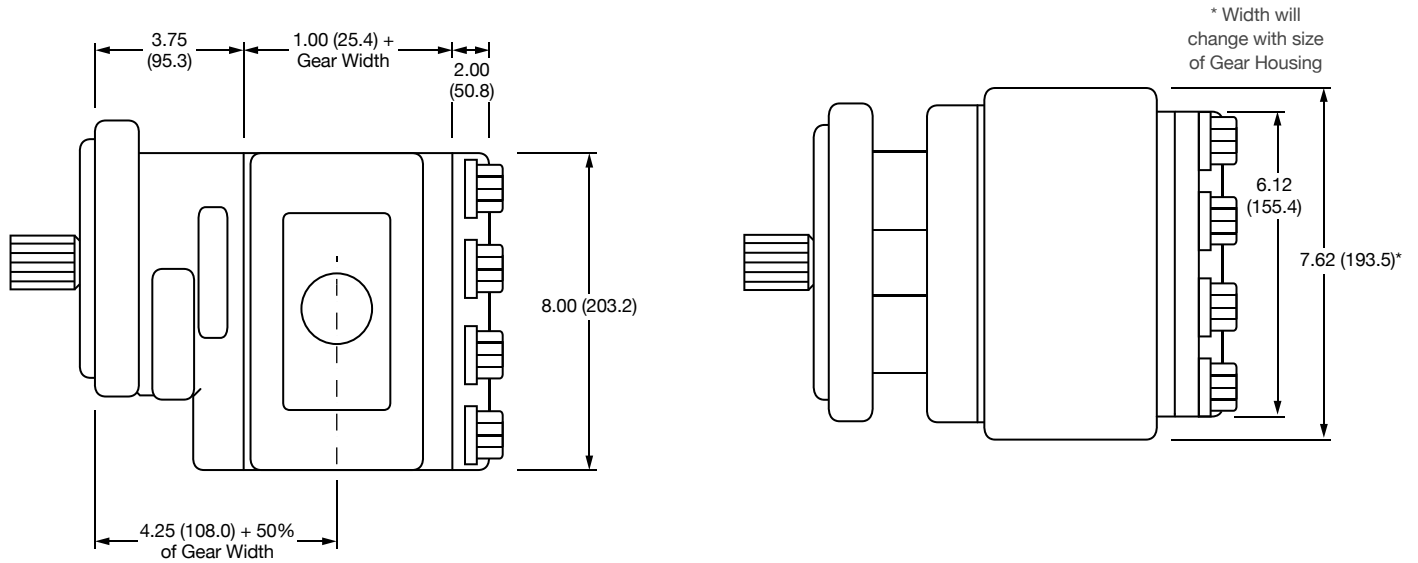
For example: Gear set no. A75-50-XX000 changes to A75-50-15000 for 1.5" gear size
 Housing no. A75-32-XX000 changes to A75-32-15000 for a 1.5" housing size
 No porting sizes have been indicated all porting must be specified when ordering parts.

MH75 Series

Dimensions

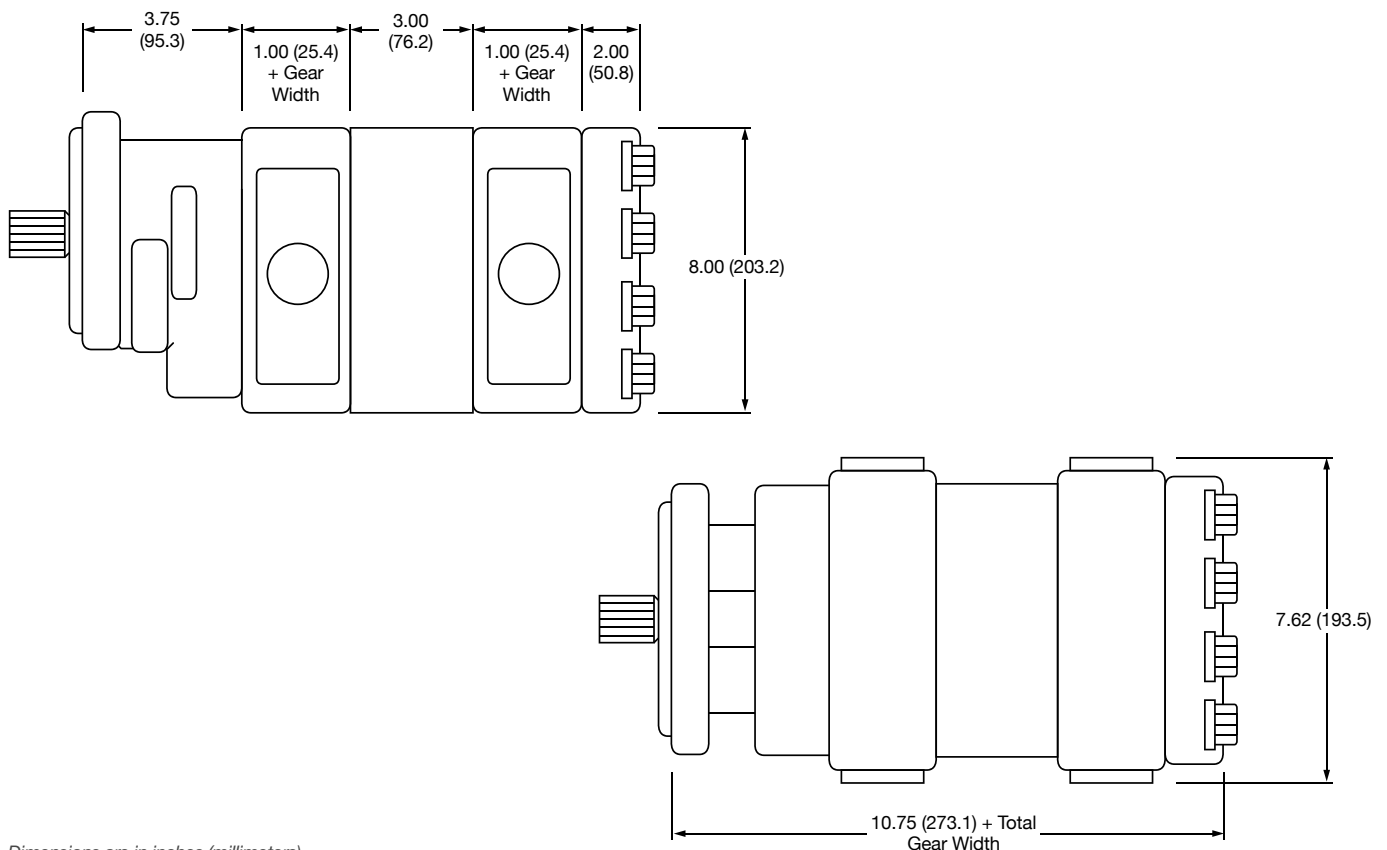
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH76 Series Bearing Pump

Features

Metaris Bearing Pumps & Motors are available in 9 models with a variety of mounting flanges, shaft configurations and porting options. Multi-section units, piggyback designs, dowelled assemblies & flow dividers are all also available. With ductile iron housings, these pumps offer pressure ratings as high as 3000 psi for the most demanding of applications.

- Heavy Duty Roller Bearing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3000 psi
- Multiple Bearing Carrier Options
- Multiple Porting Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH75		DISPLACEMENT		MAX PRESSURE (DOWELLED)	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.75	3/4"	3.07	(50.3)	3000	(207)
1.00	1"	4.1	(67.2)	3000	(207)
1.25	1-1/4"	5.12	(83.9)	3000	(207)
1.50	1-1/2"	6.15	(100.7)	3000	(207)
1.75	1-3/4"	7.17	(117.5)	3000	(207)
2.00	2"	8.2	(134.3)	2500	(172)
2.25	2-1/4"	9.22	(151)	2500	(172)
2.50	2-1/2"	10.25	(167.8)	2500	(172)
2.75	2-3/4"	11.28	(185)	2000	(137)
3.00	3"	12.3	(201)	2000	(137)

MH76 Series Bearing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)								
	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"	2-3/4"	3"
900	11.5 / 43.5	15.5 / 58.5	19.5 / 74	23 / 87	27 / 102	30.5 / 115.5	34.5 / 130.5	38 / 144	42 / 159
1200	17 / 64.5	22 / 83.5	27 / 102	32 / 121	37.5 / 141	42 / 159	48 / 182	452.5 / 199	58 / 220
1500	22 / 83.5	29 / 110	35.5 / 134	41.5 / 157	48 / 182	54.5 / 206	61 / 231	67 / 254	74 / 280
1800	27.5 / 104	35.5 / 134	43.5 / 165	51 / 193	59 / 223	66 / 250	74 / 280	81.5 / 308	90 / 341
2100	33 / 125	42 / 159	51.5 / 195	60 / 227	69.5 / 263	78 / 295	87 / 329	96.5 / 365	106 / 401
2400	38 / 144	49 / 185	59.5 / 225	70 / 265	80 / 303	90 / 341	101 / 382	111 / 420	122 / 462

Motor Performance Data

SPEED RPM	GEAR WIDTH									
	1"		1-1/2"		2"		2-1/2"		3"	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
800	20.5 / 77.5	1410 / 16	28 / 106	2140 / 24.5	35.5 / 134	2875 / 33	43 / 163	3650 / 42	50.5 / 191	4400 / 50.6
1200	27.5 / 104	1400 / 16	38 / 144	2140 / 24.5	49.5 / 187	2870 / 33	60.5 / 229	3650 / 42	72 / 273	4385 / 50.5
1600	34 / 129	1375 / 16	49 / 185	2110 / 24.5	64 / 242	2830 / 32.5	78.5 / 297	3600 / 41.5	93 / 352	4320 / 49.7
2000	41.5 / 157	1350 / 15.5	59 / 223	2090 / 24	78 / 295	2800 / 32.5	96.5 / 365	3500 / 40.5	114 / 431	4200 / 48.3

Note: Input Flow @ 2500psi | Output Torque @ 175 bar

MH76 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "BB" Spline	7,750	7,750
SAE "BB" Keyed	5,550	5,550
SAE "B" Spline	5,050	5,050
SAE "B" Keyed	3,700	3,700
SAE "C" Spline	8,600	7,750
SAE "C" Keyed	8,300	7,750
Connecting Shaft		7,750

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH76 Series Bearing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 76 - A - 1 - 78 - BE - AB - 10 - 11 - DB - * - * - *

Type¹ _____
MHP = Pump
MHM = Motor

Unit² _____
A = Single Unit
B = Tandem Unit
C = Single or Tandem Unit w/ a Continental Shaft

Shaft End Cover³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
3 = Pump w/o Shaft Bearing (Double Rotation)
4 = Pump w/ Shaft Bearing (Clockwise Rotation)
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)
6 = Pump w/ Shaft Bearing (Double Rotation)
8 = Motor w/ Shaft Bearing & 1/4" Drain Port
9 = Motor w/o Shaft Bearing & 1/4" Drain Port

Shaft End Cover⁴ _____
42 = SAE 4-Bolt "B" Mount
78 = SAE 4-Bolt "C" Mount
80 = SAE 4-Bolt "D" Mount
98 = SAE 2-Bolt "C" Mount

Port End Cover⁵ _____

Connecting Shaft¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers⁹
See page 116 for Bearing Carrier options

Shaft Type⁸
07 = SAE "C" 14 Tooth Spline 1.250 Dia.
11 = SAE "C" Keyed 1.249 Dia. 5/16" x 15/32" x 1-1/2" Key

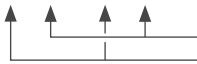
Gear Size⁷
Code / Displacement (in³/r)

07 (3.07)	10 (4.10)	12 (5.12)	15 (6.15)	17 (7.17)	20 (8.20)	22 (9.22)	25 (10.3)	27 (11.3)	30 (12.3)
---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------

Gear Housing⁶
See following pages for Gear Housing options

NPT Codes

Single Units	Tandem Units	Port Size		A	B
		Left	Right		
BE BY	BI BJ	None	None	n/a	n/a


 With Support Studs

 Without Support Studs
 Orientation is viewed from the shaft end

O-ring Ports Codes

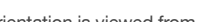
Single Units	Tandem Units	Port Size		A	B
		Left	Right		
JE JY	JI JY	1"	1"	1.62	1.62

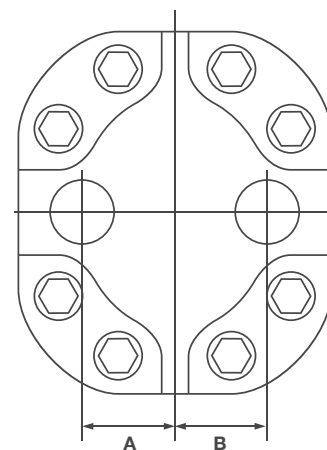

 With Support Studs

 Without Support Studs
 Orientation is viewed from the shaft end

Metric Str. Thd. Ports

Single Units	Tandem Units	Port Size		A	B
		Left	Right		
TE TY	TI TY	1"	1"	1.62	1.62


 With Support Studs

 Without Support Studs
 Orientation is viewed from the shaft end



MH76 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

NPT Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
IC	3/4"	None											
ID	None	3/4"		x	x	x	x						
IF	3/4"	3/4"											
IG	3/4"	1"			x								
IH	3/4"	1-1/4"											
IJ	1"	3/4"			x	x	x						
IK	1-1/4"	3/4"											
YC	1"	None							x				
YD	None	1"				x	x	x	x				
YF	1"	1"			x	x							
YG	1"	1-1/4" *				x	x						
YH	1"	1-1/2"											
YJ	1-1/4" *	1"				x	x						
YK	1-1/2"	1"											
YL	1-1/4"	1-1/4"				x	x	x					
YM	1-1/4"	1-1/2" *											
YP	1-1/2"	1-1/4"											
YR	1-1/2"	1-1/2"											

* Low Pressure Inlet Porting

O.D. Tube Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
EC	3/4"	None		x	x	x	x						
ED	None	3/4"		x	x	x	x						
EF	3/4"	3/4"		x									
EG	3/4"	1"		x		x	x						
EH	3/4"	1-1/4"			x								
EJ	1"	3/4"		x		x	x						
EK	1-1/4"	3/4"			x								
AC	1"	None											
AD	None	1"				x	x						
AF	1"	1"			x	x	x	x	x				
AG	1"	1-1/4" *			x	x							
AH	1"	1-1/2"					x						
AJ	1-1/4" *	1"			x	x							
AK	1-1/2"	1"					x						
AL	1-1/4"	1-1/4"					x	x	x	x	x		x
AM	1-1/4"	1-1/2" *					x	x					
AP	1-1/2"	1-1/4"					x	x					
AR	1-1/2"	1-1/2"						x		x	x		

* Low Pressure Inlet Porting

BSPP Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
YN	3/4"	None			x	x							
YQ	None	3/4"		x	x	x	x	x	x				
YS	3/4"	3/4"											
YT	3/4"	1"		x									
YU	3/4"	1-1/4"											
YV	1"	3/4"											
YW	1-1/4"	3/4"											
SL	1"	None				x	x	x	x	x	x		
RQ	None	1"				x	x	x	x	x	x		
MP	1"	1"				x	x						
VY	1"	1-1/4" *					x	x	x	x	x	x	x
IX	1-1/4" *	1"					x	x	x	x	x	x	x
NJ	1-1/4" *	None					x	x	x				
UI	None	1-1/4" *									x	x	x
PF	1-1/4"	1-1/4"									x		
IQ	1-1/4"	1-1/2"									x	x	x
IS	1-1/2"	1-1/4"									x	x	x
HW	1"	1-1/2"					x	x					
VI	1-1/2"	1"					x	x					

* Low Pressure Inlet Porting

MH76 Series Bearing Pump

Model Code Breakdown Cont.

Gear Housing Cont. ⁶

- Orientation is viewed from the shaft end
- NPT Porting is NOT RECOMMENDED for pressures above 1500 psi
- Ports marked with an 'x' are recommended porting - for all other porting please consult the factory
- Shaded Cells are good for Motor units

Split Flange Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
UC	3/4"	None		x	x	x	x						
UD	None	3/4"		x	x	x	x						
UF	3/4"	3/4"		x									
UG	3/4"	1"		x	x								
UH	3/4"	1-1/4"											
UJ	1"	3/4"			x	x	x	x	x				
UK	1-1/4"	3/4"											
OC	1"	None				x							
OD	None	1"			x	x	x	x	x				
OF	1"	1"			x	x	x	x	x		x	x	x
OG	1"	1-1/4" *			x	x	x						
OH	1"	1-1/2" *				x	x	x	x	x			
OJ	1-1/4" *	1"			x	x	x	x	x	x	x		
OK	1-1/2" *	1"				x	x	x	x	x			
OL	1-1/4"	1-1/4"				x	x	x	x	x	x	x	x
OM	1-1/4"	1-1/2" *				x	x	x	x	x	x		
ON	1-1/4"	2"						x	x	x	x	x	x
OP	1-1/2" *	1-1/4"				x	x	x	x	x	x	x	x
OQ	2"	1-1/4"						x	x	x	x	x	x
OR	1-1/2"	1-1/2"							x	x	x	x	x
OS	1-1/2"	2"							x	x	x	x	x
OT	1-1/2"	2-1/2"									x	x	x
OV	2"	1-1/2"							x	x	x	x	x
OW	2-1/2"	1-1/2"									x	x	x
OX	2"	2"										x	x
OA	1-1/4" *	None				x	x	x	x	x	x		
UB	1"	2"							x				
UQ	2"	1"							x				
OB	None	1-1/4" *				x	x	x	x	x	x		
OE	1-1/2" *	None							x	x			
OU	None	1-1/2" *							x	x	x	x	x
OY	2"	2-1/2"											x
OZ	2-1/2"	2"											x
UN	1-1/4"	2-1/2"									x		
US	2-1/2"	1-1/4"									x		

* Low Pressure Inlet Porting

Metric Split Flange Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
VN	3/4"	None		x	x	x	x						
VQ	None	3/4"		x	x	x	x						
VS	3/4"	3/4"		x	x								
VT	3/4"	1"		x	x								
RU	3/4"	1-1/4"			x								
RV	1"	3/4"		x	x	x	x	x	x				
RW	1-1/4"	3/4"			x								
UL	1"	None			x	x	x	x					
UR	None	1"			x	x	x	x					
UM	1"	1"			x	x	x	x	x				
VU	1"	1-1/4" *			x	x							
HO	1"	1-1/2" *				x	x						
UX	1-1/4" *	1"			x	x	x	x	x	x	x		
VO	1-1/2" *	1"				x	x						
NO	1-1/4" *	None				x	x	x	x	x	x		
UO	None	1-1/4" *				x	x	x	x	x	x		
PO	1-1/4"	1-1/4"				x	x	x	x	x	x	x	x
QO	1-1/4"	1-1/2" *					x	x	x	x			
SO	1-1/2" *	1-1/4"					x	x	x	x	x	x	x
JR	1-1/4"	2"						x	x	x	x		
JM	2"	1-1/4"						x	x	x	x		
UY	1-1/2" *	None							x	x	x		
TO	None	1-1/2" *							x	x	x	x	x
SV	1-1/2"	1-1/2"							x	x	x	x	x
JN	1-1/2"	2"							x	x	x	x	x
JQ	2"	1-1/2"							x	x	x	x	x
JX	1-1/2"	2-1/2"										x	x
LJ	2-1/2"	1-1/2"										x	x
JS	2"	2"											x

* Low Pressure Inlet Porting

Metric Str. Thd. Codes

Code	Port Size Left	Port Size Right	5	7	10	12	15	17	20	22	25	27	30
AB	None	None	x	x	x	x	x	x	x	x	x	x	x
EN	3/4"	None		x	x	x	x						
TQ	None	3/4"		x	x	x	x						
ES	3/4"	3/4"		x	x								
ET	3/4"	1"		x									
EV	1"	3/4"		x	x	x	x						
NL	1"	None				x	x						
ER	None	1"				x	x						
CM	1"	1"			x	x	x						

* Low Pressure Inlet Porting

MH76 Series Bearing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

NPT Codes

In	Out	CW (Left)	CCW (Right)
None	None		
None	None	C A	D U

SAE Split Flange Codes

In	Out	CW (Left)	CCW (Right)
1"	None		
1-1/4"	None	LB	BL
1-1/2"	None	MB	BM
		NB	BN
None	3/4"		
1"	3/4"	BR	RB
1-1/4"	3/4"	LR	RL
1-1/2"	3/4"	MR	RM
1-1/4"	1"	NR	RN
1-1/2"	1"	MS	SM
		NS	SN
1"	3/4"		
1-1/4"	3/4"	LX	XL
1-1/4"	1"	MX	XM
1-1/2"	1"	MZ	ZM
		NZ	ZN
1"	3/4"		
		SR	RS

SAE O-ring Codes

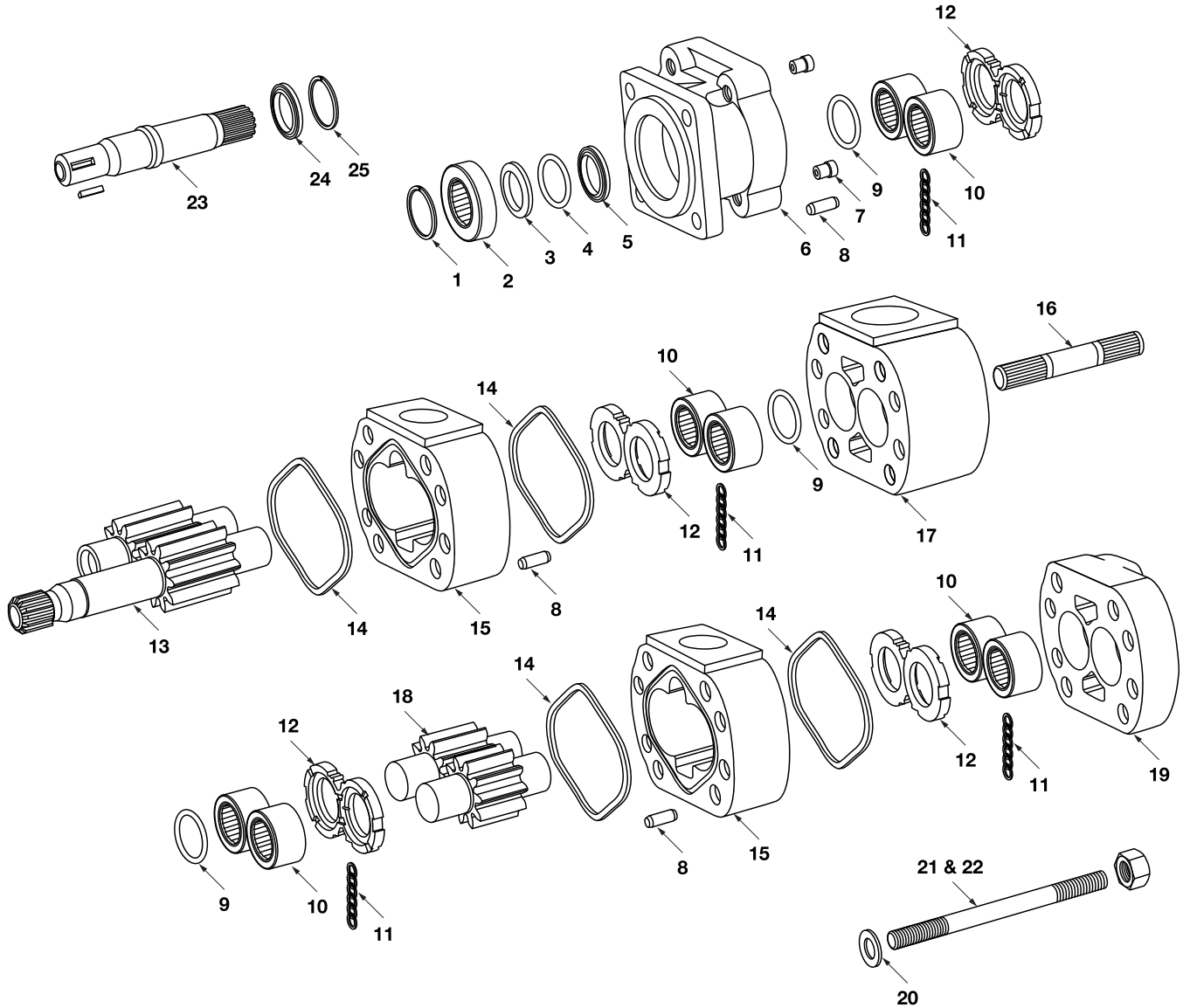
In	Out	CW (Left)	CCW (Right)
1"	None		
1-1/4"	None	CB	BC
1-1/2"	None	DB	BD
		FB	BF
None	3/4"		
1"	3/4"	PJ	JP
1-1/4"	3/4"	CJ	JC
1-1/2"	3/4"	DJ	JD
1-1/4"	1"	FJ	JF
1-1/2"	1"	DK	KD
		FK	KF
1"	3/4"		
1-1/4"	3/4"	CR	RC
1-1/2"	3/4"	DR	RD
1-1/4"	1"	FR	RF
1-1/2"	1"	DS	SD
		FS	SF

Motors Only Codes

In	Out	Dual	
None	None		
		B	
1"	1"		SAE O-Ring
1-1/4"	1-1/4"	CC	SAE O-Ring
1"	1"	BB	SAE Split Flange
1-1/4"	1-1/4"	LL	SAE Split Flange
1-1/2"	1-1/2"	MM	SAE Split Flange
		NN	SAE Split Flange

MH76 Series

Parts Breakdown



MH76 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SHAFT BRG. SNAP RING	X05-01-88280	391-2686-025
2a	INPUT SHAFT BRG.	X03-16-13580	391-0381-078
2b	SPACER TO REPLACE SHAFT BEARING	A75-92-64800	391-3383-018
3a	SEAL RETAINER FOR PUMPS	A75-60-10000	391-2584-082
3b	SEAL RETAINER FOR MOTORS	A75-60-10000	391-2584-051
4	SEAL RETAINER O RING	X81-11-06603	391-2881-457
5a	PUMP LIP SEAL	X83-11-03508	391-2883-052
5b	MOTOR LIP SEAL	X84-36-03510	391-2883-094
6a	76 4 BOLT B PILOT PUMP S.E.C. TYPE 42 (4" or 101.6 mm pilot)	A76-10-21420	316-5033-201
6b	76 4 BOLT C PILOT PUMP S.E.C. TYPE 78 (5" or 127 mm pilot)	A76-10-21430	316-5033-202
6c	76 4 BOLT D PILOT PUMP S.E.C. TYPE 80 (6" or 152.4 mm pilot)	A76-10-21440	316-5033-203
6d	76 2 BOLT C PILOT PUMP S.E.C. TYPE 98 (5" or 127 mm pilot)	A76-10-41230	316-5023-201
6e	76 4 BOLT B PILOT MOTOR S.E.C. TYPE 42 (4" or 101.6 mm pilot)	A76-10-41420	316-5033-408
6f	76 4 BOLT C PILOT MOTOR S.E.C. TYPE 78 (5" or 127 mm pilot)	A76-10-41430	316-5033-402
6g	76 4 BOLT D PILOT MOTOR S.E.C. TYPE 80 (6" or 152.4 mm pilot)	A76-10-41440	316-5033-403
6h	76 2 BOLT C PILOT MOTOR S.E.C. TYPE 98 (5" or 127 mm pilot)	A76-10-41230	316-5023-202
7a	CHECK VALVE MOTOR	A00-75-11000	391-3681-001
7b	PRESSURE PLUG PUMP	X02-03-32110	391-2286-004
8	DOWEL PIN	A00-94-11638	391-2082-033
9	RING SEAL	X81-76-03809	391-2585-011
10	ROLLER BEARING (Ø 2.322" O.D.)	X03-24-13859	391-0381-060
11	POCKET SEAL	X85-11-00003	391-2882-052
12a	PUMP THRUST PLATE	A76-70-20000	391-2185-026
12b	MOTOR THRUST PLATE	A75-70-10000	391-2185-020
12c	DRY VALVE THRUST PLATE	A75-70-21000	391-2185-072
Not Shown	DRY VALVE THRUST PLATE SEAL	A75-82-96010	391-2885-040
13a	SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7 SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11	A75-50-XX245	316-29XX-250
13b	SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11	A75-50-XX145	316-29XX-750
14	PUMP & MOTOR HOUSING GASKET	X85-11-13303	391-2884-024
15	PUMP & MOTOR GEAR HOUSING	A76-32-XX000	316-82XX-100
16	CONNECTING SHAFT	A75-50-00500	316-1133-001
17a	76 MOTOR BEARING CARRIER BLANK	A76-40-00000	316-7740-100
17b	76 PUMP BEARING CARRIER WITH COMMON PASSAGE	A76-40-20000	316-7723-100
18	GEAR SET ONLY	A75-50-XX000	316-28XX-000
19	76 PUMP & MOTOR PORT END COVER	A76-22-00000	316-3120-100
20	FLAT WASHER (5/8")	X45-10-17005	391-3784-028

MH76 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
21	BOLTS / STUDS (5/8"-UNC)	See Fasteners Page	
22	HEX NUT (5/8"-UNC)	X42-11-16000	391-1451-076
23a	CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7	A75-50-00241	316-1135-148
23b	CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11	A75-50-00141	316-1135-147
23c	CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228". Dia. TYPE 7 Long	A75-50-00244	316-1500-502
23d	CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11 Long	A75-50-00144	316-1500-501
24	CONTINENTAL SHAFT BRG. RETAINER	A75-60-20000	391-3381-039
25	CONTINENTAL SHAFT BRG. RETAINER SNAP RING	X05-02-38130	391-2685-029
Not Shown	PIGGY BACK CONNECTING SHAFT	A03-50-00400	316-1133-003
Not Shown	PUMP LIP SEAL FOR PIGGY BACK P.E.C.	X83-11-03308	391-2883-103
Not Shown	76 PIGGY BACK REAR PORT END COVER	A76-22-03000	316-5027-213
Not Shown	DRIVE KEY FOR TYPE 11 SHAFT	X01-01-81238	391-1781-045
Not Shown	DRY VALVE ASSEMBLY 1 1/2" CONNECTION	A00-75-12150	316- PMV-24
Not Shown	DRY VALVE ASSEMBLY 2" CONNECTION	A00-75-12200	316- PMV-32

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

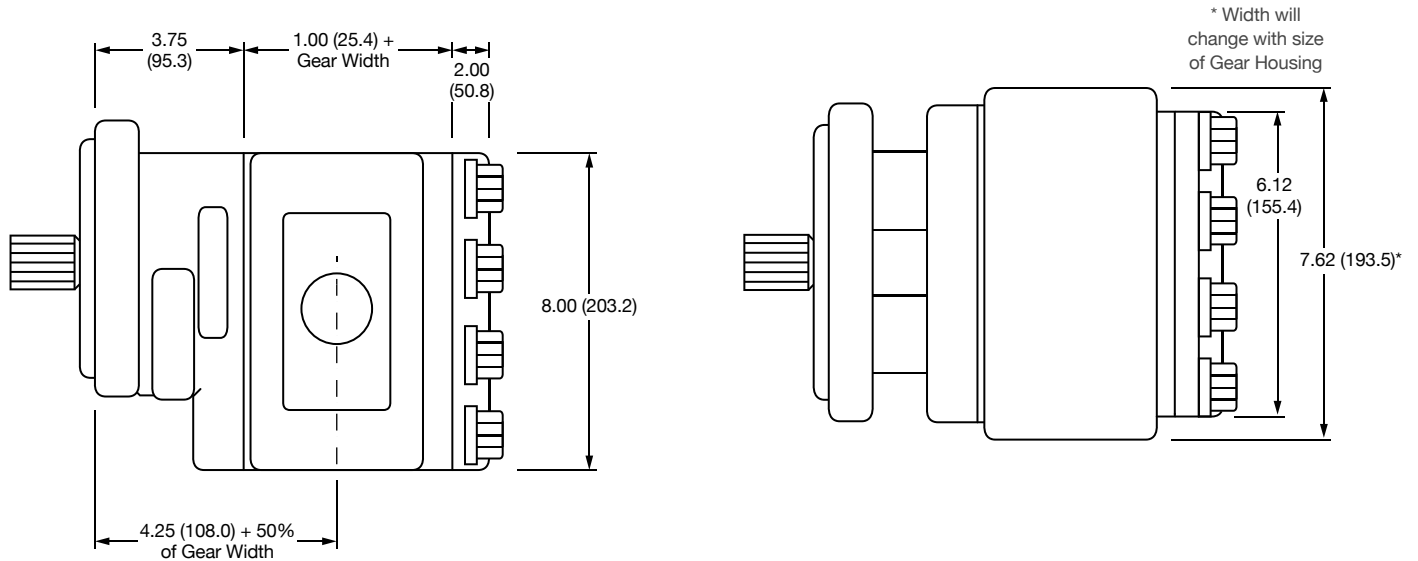
For example: Gear set no. A75-50-XX000 changes to A75-50-15000 for 1.5" gear size
Housing no. A76-32-XX000 changes to A76-32-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH76 Series

Dimensions

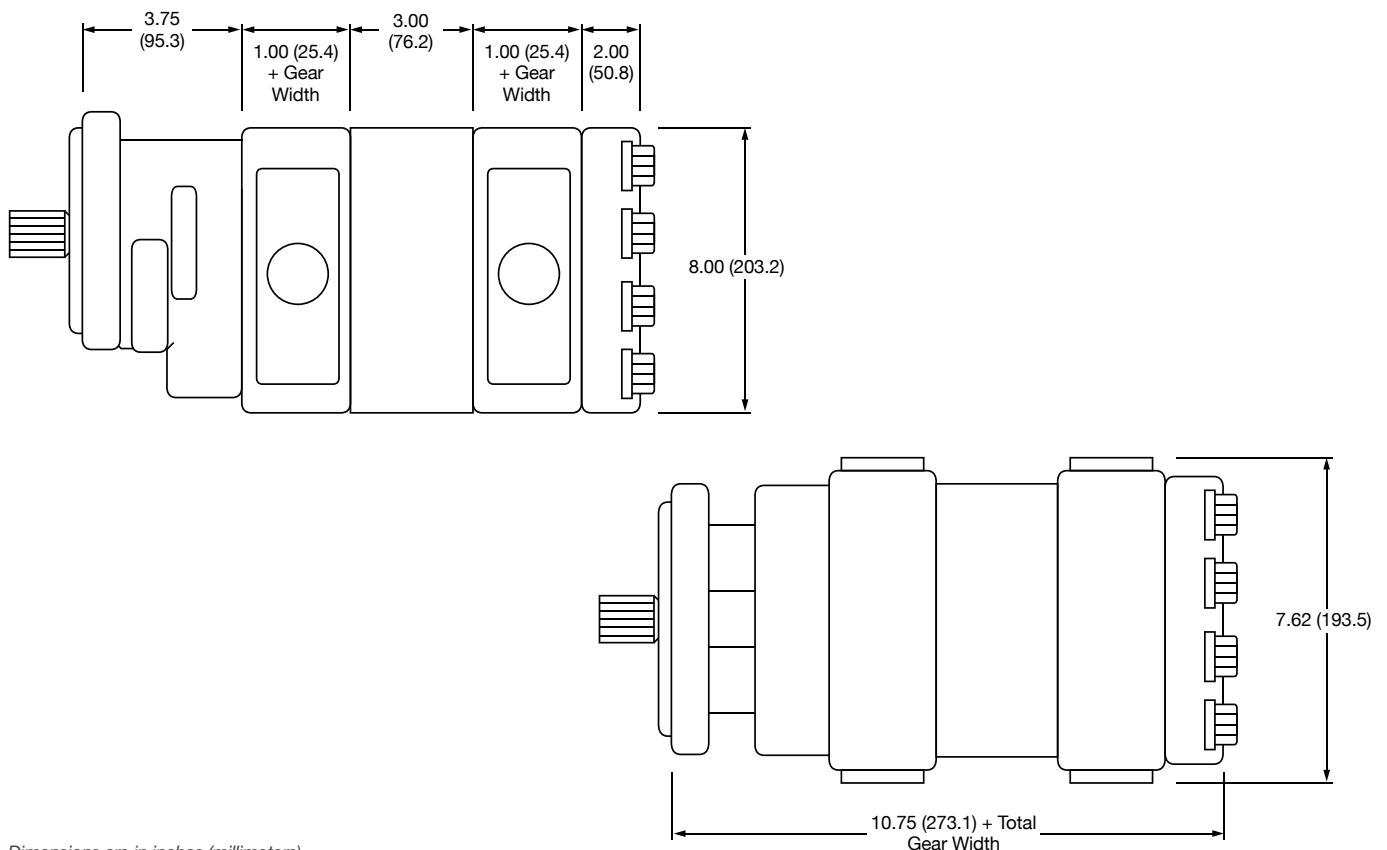
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH315 Series Bushing Pump

Features

Metaris Bushing Pumps & Motors are available in 4 models with many of the same available options as Metaris Bearing Pumps. With ductile iron housings, these pumps offer pressure ratings as high as 3500 psi for the most demanding of applications.

- Heavy Duty Sleeve Bushing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3500 psi
- Multiple Bearing Carrier Options
- NPT & SAE Port Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH315		DISPLACEMENT		MAX PRESSURE	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.50	1/2"	.62	(10.2)	3500	(241)
.75	3/4"	.93	(15.2)	3500	(241)
1.00	1"	1.24	(20.3)	3500	(241)
1.25	1-1/4"	1.55	(25.4)	3500	(241)
1.50	1-1/2"	1.86	(30.5)	3300	(228)
1.75	1-3/4"	2.17	(35.6)	2900	(200)
2.00	2"	2.48	(40.6)	2500	(172)

MH315 Series Bushing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)						
	1/2"	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"
900	2 / 8	3.2 / 12	4.4 / 17	5.5 / 21	6.7 / 26	7.9 / 30	9 / 34
1200	2.8 / 11	4.4 / 17	6 / 23	7.6 / 29	9.2 / 35	10.7 / 40	12.2 / 46
1500	3.6 / 14	5.6 / 21	7.7 / 29	9.6 / 36	11.6 / 44	13.5 / 51	15.4 / 58
1800	4.4 / 17	6.8 / 26	9.3 / 35	11.6 / 44	14 / 53	16.3 / 62	18.6 / 70
2100	5.2 / 20	8.1 / 30	10.9 / 41	13.6 / 51	16.4 / 62	19.1 / 72	21.8 / 83
2400	6 / 23	9.3 / 35	12.5 / 47	15.6 / 59	18.8 / 71	21.9 / 83	25.1 / 95
3000	7.7 / 29	11.7 / 44	15.7 / 59	19.6 / 74	23.7 / 90	27.6 / 104	31.5 / 119

Motor Performance Data

SPEED RPM	GEAR WIDTH									
	1" (3500 PSI)		1-1/4" (3500 PSI)		1-1/2" (3250 PSI)		1-3/4" (2900 PSI)		2" (2500 PSI)	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
900	7.1 / 27	665 / 75.1	8.3 / 32	830 / 93.8	9.6 / 37	925 / 104.5	10.9 / 41	965 / 109	12.2 / 46	950 / 107.3
1200	8.8 / 33	665 / 75.1	10.5 / 40	830 / 93.8	12.2 / 46	925 / 104.5	13.8 / 52	965 / 109	15.5 / 59	950 / 107.3
1500	10.6 / 40	660 / 74.6	12.6 / 48	825 / 93.2	14.7 / 56	920 / 103.9	16.7 / 63	955 / 107.9	18.8 / 71	945 / 106.8
1800	12.3 / 46	665 / 75.1	14.7 / 56	820 / 92.6	17.2 / 65	915 / 103.4	19.6 / 74	950 / 107.3	22.1 / 84	940 / 106.2
2100	14 / 53	665 / 75.1	16.8 / 64	820 / 92.6	19.7 / 75	915 / 103.4	22.5 / 85	950 / 107.3	25.4 / 96	940 / 106.2
2400	15.7 / 59	640 / 72.3	18.9 / 72	800 / 90.4	22.2 / 84	895 / 101.1	25.4 / 96	930 / 105.1	28.8 / 109	920 / 103.9
3000	19 / 72	640 / 72.3	23 / 87	800 / 90.4	27.2 / 103	890 / 100.6	31.2 / 118	925 / 104.5	35.3 / 134	915 / 103.4

Note: Input Flow @ 2500psi | Output Torque @ 175 bar

MH315 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "A" Spline (To 1.25 GW)	4,450	
SAE "A" Keyed	3,600	
SAE "B" Spline	13,400	
SAE "B" Keyed	9,900	
Connecting Shaft		5,550

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH315 Series Bushing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 315 - A - 1 - 93 - AL - AB - 10 - 65 - CJ - * - * - *

Type¹ _____
MHP = Pump
MHM = Motor

Unit² _____
A = Single Unit
B = Tandem Unit
L = Unit w/ Extended Studs

Shaft End Cover³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
4 = Pump w/ Shaft Bearing (Clockwise Rotation) (Code 490 Only)
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation) (Code 590 Only)
9 = Motor w/o Shaft Bearing (Bi-Rotational)

Shaft End Cover⁴ _____
93 = SAE 2-Bolt "A" Mount
96 = SAE 2-Bolt "B" Mount

Connecting Shaft¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers⁹
See following page for Bearing Carrier options

Shaft Type⁸
65 = SAE "B" 13 Tooth Spline .875" Dia. Type 2
66 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key Type 2
96 = SAE "A" 9 Tooth Splined .625 Dia.
97 = SAE "A" Keyed

Gear Size⁷
Code / Displacement (in³/r)

03 (.47)	05 (.62)	06 (.78)	07 (.93)	08 (1.09)	10 (1.24)	11 (1.40)
12 (1.55)	13 (1.71)	15 (1.86)	16 (2.02)	17 (2.17)	18 (2.33)	20 (2.48)

Gear Housing⁶

Code	Port Size		
	In	Out	
AB	None	None	Pump
EB	None	None	Motor

Port End Cover⁵

Unported

		Port Size	
		In	Out
BI		None	None

Side Ported - NPT Codes

CW	CCW	Port Size	
		In	Out
AJ	JA	1-1/4"	1"
AK	KA	1-1/4"	3/4"
AL	LA	1"	1"
AM	MA	1"	3/4"
AR	RA	3/4"	3/4"

Orientation is viewed from the shaft end

Motor - Side Ported - NPT

		Port Size	
		In	Out
DN		3/4"	3/4"
DM		1"	1"
DQ		1/2"	1/2"

Side Ported - SAE O-ring

CW	CCW	Port Size	
		In	Out
FB	BF	1-1/4"	1"
FC	CF	1-1/4"	7/8"
FG	GF	1-1/4"	3/4"
FJ	JF	1-1/4"	5/8"
FL	LF	1"	1"
FV	VF	1"	7/8"
FW	WF	1"	3/4"
FX	XF	1"	5/8"
FY	YF	7/8"	7/8"
FZ	ZF	7/8"	3/4"
BC	CB	7/8"	5/8"
BG	GB	7/8"	1/2"
BJ	JB	3/4"	3/4"
BL	LB	3/4"	5/8"
BN	NB	3/4"	1/2"
BV	VB	1-1/4"	None
BW	WB	1"	None
BX	XB	7/8"	None
BY	YB	3/4"	None
BZ	ZB	None	1"
PD	DP	None	7/8"
PE	EP	None	3/4"
PM	MP	None	5/8"
PN	NP	None	1/2"

Orientation is viewed from the shaft end

Motor - Side Ported - SAE O-ring

		Port Size	
		In	Out
VN		1"	1"
VR		3/4"	3/4"
VQ		1/2"	1/2"

Rear Ported - SAE O-ring

CW	CCW	Port Size	
		In	Out
UC	CU	1-1/4"	1"
UF	FU	1-1/4"	7/8"
UN	NU	1-1/4"	3/4"
UD	DU	1"	1"
UP	PU	1"	7/8"
UQ	QU	1"	3/4"
UR	RU	1"	5/8"
LN	NL	7/8"	7/8"
LP	PL	7/8"	3/4"
LQ	QL	7/8"	5/8"
LR	RL	3/4"	3/4"
LS	SL	3/4"	5/8"
LT	TL	3/4"	1/2"

Orientation is viewed from the shaft end

Motor - Rear Ported - SAE O-ring

		Port Size	
		In	Out
RN		1"	1"
RQ		3/4"	3/4"
RS		1/2"	1/2"

Motor - Rear Ported - NPT

		Port Size	
		In	Out
RX		1"	1"
RY		3/4"	3/4"
RZ		1/2"	1/2"

MH315 Series Bushing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

Dual Outlet Pumps

SAE Split Flange

CW	CCW	Port Size		
		In	Out	Out
CA	AC	1-1/4"	3/4"	3/4"
DA	AD	1-1/4"	3/4"	1/2"
EA	AE	1-1/4"	1/2"	1/2"
FA	AF	1"	3/4"	3/4"
GA	AG	1"	3/4"	1/2"
HA	AH	1"	1/2"	1/2"

Orientation is viewed from the shaft end

Dual Outlet Pumps

SAE O-ring

CW	CCW	Port Size		
		In	Out	Out
JG	GJ	1-1/2"	1"	1"
KG	GK	1-1/2"	1"	7/8"
LG	GL	1-1/2"	7/8"	7/8"
MG	GM	1-1/2"	1"	3/4"
NG	GN	1-1/2"	3/4"	3/4"
PG	GP	1-1/4"	1"	1"
QG	GQ	1-1/4"	1"	7/8"
RG	GR	1-1/4"	7/8"	7/8"
SG	GS	1-1/4"	1"	3/4"
TG	GT	1-1/4"	3/4"	3/4"
UG	GU	1-1/4"	3/4"	5/8"
VG	GV	1-1/4"	3/4"	1/2"
WG	GW	1-1/4"	5/8"	5/8"
XG	GX	1-1/4"	1/2"	1/2"
YG	GY	1"	1"	1"
ZG	GZ	1"	1"	7/8"
RC	CR	1"	7/8"	7/8"
SC	CS	1"	1"	3/4"
TC	CT	1"	3/4"	3/4"
VC	CV	1"	3/4"	5/8"
WC	CW	1"	3/4"	1/2"
XC	CX	1"	5/8"	5/8"
YC	CY	1"	1/2"	1/2"

Orientation is viewed from the shaft end

Single Outlet Pumps

SAE Split Flange

CW	CCW	Port Size	
		In	Out
CJ	JC	1-1/4"	1-1/4"
CL	LC	1-1/4"	1"
CM	MC	1-1/4"	3/4"
HB	BH	1-1/4"	1/2"
HC	CH	1"	1"
HF	FH	1"	3/4"
HL	LH	1"	1/2"
HM	MH	3/4"	3/4"
HN	NH	3/4"	1/2"

Orientation is viewed from the shaft end

Single Outlet Pumps

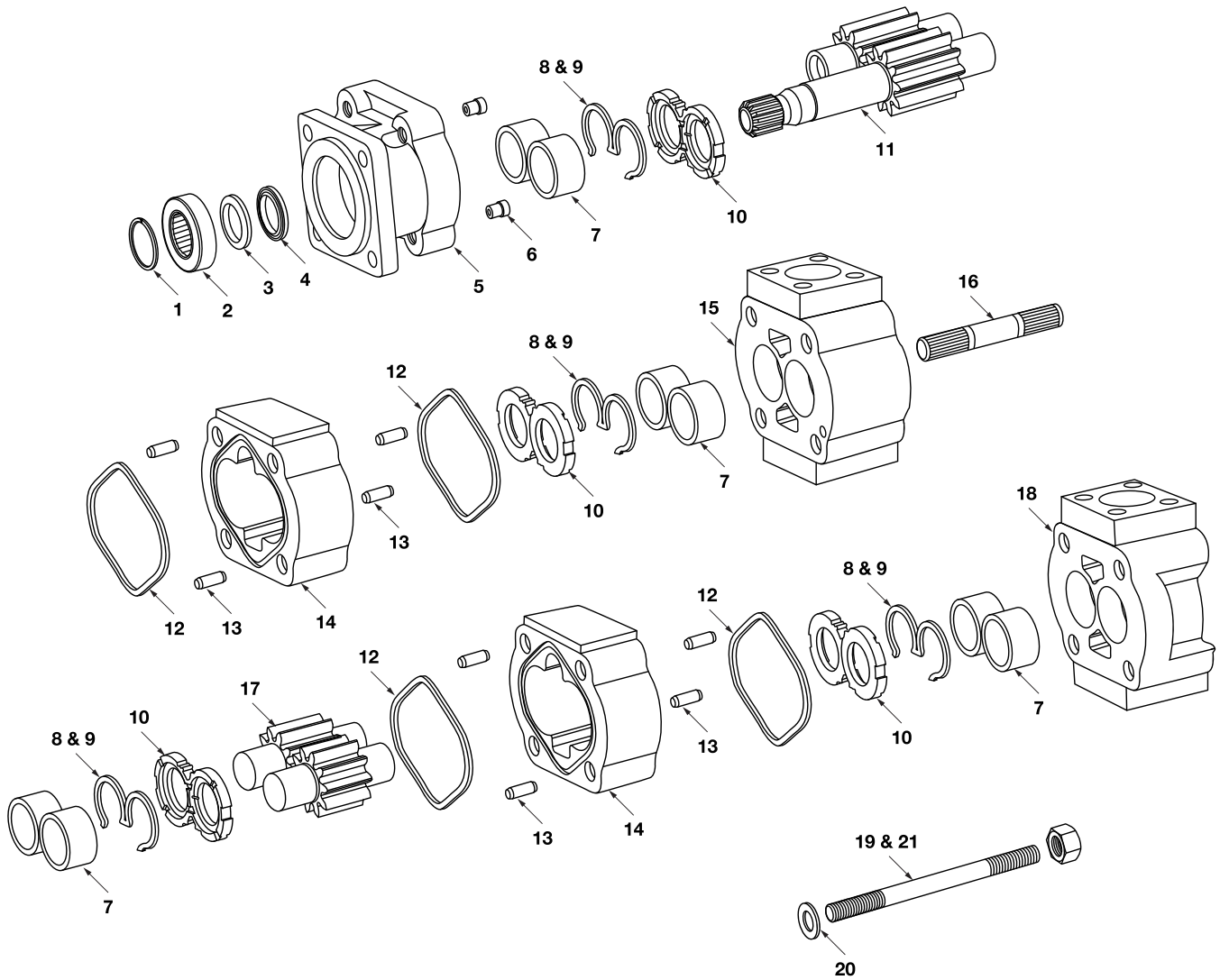
SAE O-ring

CW	CCW	Port Size	
		In	Out
KB	BK	1-1/2"	1-1/2"
KC	CK	1-1/2"	1-1/4"
KF	FK	1-1/2"	1"
KL	LK	1-1/2"	7/8"
KM	MK	1-1/2"	3/4"
KN	NK	1-1/4"	1-1/4"
KO	OK	1-1/4"	1"
KP	PK	1-1/4"	7/8"
KQ	QK	1-1/4"	3/4"
MB	BM	1-1/4"	5/8"
ML	LM	1-1/4"	1/2"
MN	NM	1"	1"
MQ	QM	1"	7/8"
MR	RM	1"	3/4"
MS	SM	1"	5/8"
MT	TM	1"	1/2"
MU	UM	3/4"	3/4"
MV	VM	3/4"	5/8"
MW	WM	3/4"	1/2"

Orientation is viewed from the shaft end

MH315 Series

Parts Breakdown



MH315 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SEAL RETAINER SNAP RING MOTOR ONLY	X05-01-56190	391-2686-016
2	SHAFT BEARING (USED IN TYPE * 90 S.E.C.)	X03-16-12251	391-0381-105
3	SEAL RETAINER FOR MOTORS ONLY	A32-60-10000	391-3384-313
4a	PUMP LIP SEAL	X83-11-02406	391-2883-151
4b	MOTOR LIP SEAL	X84-36-02406	391-2883-156
5a	2 BOLT A PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 93 (3 1/4" or 82.55 mm pilot)	A32-10-21211	326-5029-204
5b	2 BOLT A PILOT PUMP S.E.C. WITH BUSHING TYPE 93 (3 1/4" or 82.55 mm pilot)	A32-10-21212	326-5129-204
5c	2 BOLT B PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 96 (4" or 101.6 mm pilot)	A32-10-21221	326-5029-203
5d	2 BOLT B PILOT PUMP S.E.C. WITH BUSHING TYPE 96 (4" or 101.6 mm pilot)	A32-10-21222	326-5129-203
5e	2 BOLT A PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 93 (3 1/4" or 82.55 mm pilot)	A32-10-41211	326-5029-404
5f	2 BOLT A PILOT MOTOR S.E.C. WITH BUSHING TYPE 93 (3 1/4" or 82.55 mm pilot)	A32-10-41213	326-5129-404
5g	2 BOLT B PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 96 (4" or 101.6 mm pilot)	A32-10-41221	326-5029-403
5h	2 BOLT B PILOT MOTOR S.E.C. WITH BUSHING TYPE 96 (4" or 101.6 mm pilot)	A32-10-41222	326-5129-403
5i	4 BOLT 72 X 100 mm / 80mm PILOT WITHOUT BUSHING TYPE 90	A32-10-21491	326-5033-205
5j	4 BOLT 72 X 100 mm / 80mm PILOT WITH BUSHING TYPE 90	A32-10-21492	326-5133-205
5k	PAD MOUNT WITHOUT BUSHING TYPE 95	n/a	326-5016-202
5l	PAD MOUNT WITH BUSHING TYPE 95	n/a	326-5116-202
5m	2 BOLT A PILOT SEC TYPE 89 W/ SNAP RING	A32-10-41212	326-5029-426
6a	CHECK VALVE MOTOR	A00-75-11000	391-3681-001
6b	PRESSURE PLUG PUMP (may not be required)	X02-03-32110	391-2286-004
7	BUSHING	X03-00-32427	391-0482-195
8	PUMP BUNA SEAL	A32-82-11030	391-2883-168
9	PUMP NYLON BACKUP SEAL	A32-82-46010	391-2883-169
Not Shown	MOTOR NYLON BACKUP SEAL	A32-82-46030	391-2881-995
Not Shown	MOTOR THRUST PLATE SIDE SEAL	A32-82-14022	391-2881-997
Not Shown	MOTOR THRUST PLATE END SEAL	A32-82-14021	391-2881-996
10a	PUMP THRUST PLATE	A32-70-20000	391-2185-063
10b	MOTOR THRUST PLATE	A32-70-10000	391-2185-070
11a	SHAFT & GEAR SAE "A" 0.625" dia. KEYED TYPE 97	A32-50-XX111	326-29XX-920
11b	SHAFT & GEAR SAE "A" 9 TOOTH SPLINE 0.609" maj. dia. TYPE 96	A32-50-XX211	326-29XX-420
11c	SHAFT & GEAR SAE "B" 0.875" dia. KEYED TYPE 66	A32-50-XX126	326-29XX-930
11d	SHAFT & GEAR SAE "B" 13-TOOTH SPLINE 0.858" maj. dia. TYPE 65	A32-50-XX226	326-29XX-430
11e	SHAFT & GEAR TAPERED M12 X 1.5 THD & 3X5 KEYED TYPE 60	n/a	326-29XX-701
11f	SHAFT & GEAR TAPERED 5/16 INTERNAL THD #6 WDF KEY TYPE 56	n/a	326-29XX-604
12a	PUMP HOUSING GASKET	X85-11-08203	391-2881-968
12b	MOTOR HOUSING GASKET	X85-11-08903	391-2881-429

MH315 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
13	HOUSING DOWEL PIN	A00-94-10616	391-2082-071
14a	PUMP GEAR HOUSING	A32-33-XX000	326-81XX-100
14b	MOTOR GEAR HOUSING	A32-32-XX000	326-82XX-100
15a	315 BEARING CARRIER 1 OUTLET WITHOUT BUSHING	A32-40-21000	326-7100-100
15b	315 BEARING CARRIER 1 OUTLET WITH BUSHING	A32-40-31000	326-7600-100
15c	315 BEARING CARRIER 2 OUTLET WITHOUT BUSHING	A32-40-22000	326-7300-100
15d	315 BEARING CARRIER 2 OUTLET WITH BUSHING	A32-40-32000	326-7800-100
16	CONNECTING SHAFT	A32-50-00500	326-1133-001
17	GEAR SET ONLY	A32-50-XX000	326-28XX-000
18a	315 PUMP P.E.C. NO PORTING WITHOUT BUSHING	A32-23-00000	326-3000-100
18b	315 PUMP P.E.C. NO PORTING WITH BUSHING	A32-23-10000	326-3100-100
18c	315 PUMP P.E.C. SIDE PORTING TYPE WITHOUT BUSHING	A32-23-01000	326-3030-100
18d	315 PUMP P.E.C. SIDE PORTING TYPE WITH BUSHING	A32-23-11000	326-3130-100
18e	315 PUMP P.E.C. SIDE & REAR PORTING TYPE WITHOUT BUSHING	A32-26-18000	326-3133-100
18f	315 PUMP P.E.C. SIDE & REAR PORTING TYPE WITH BUSHING	A32-23-08000	326-3033-100
18g	315 MOTOR P.E.C. PORTING TYPE WITHOUT BUSHING	A32-22-02000	326-3020-100
18h	315 MOTOR P.E.C. PORTING TYPE WITH BUSHING	A32-22-12000	326-3120-100
19	BOLTS / STUDS (1/2"-UNC)	See Fasteners Page	
20	FLAT WASHER (1/2")	X45-19-13005	391-3782-132
21	HEX NUT (1/2"-UNC)	X42-11-13011	391-1451-051
Not Shown	CASE DRAIN PLUG	X02-03-12060	391-2281-010
Not Shown	DRIVE KEY FOR TYPE 97 SHAFT	X01-02-40419	391-1781-091
Not Shown	DRIVE KEY FOR TYPE 66 SHAFT	X01-02-60625	391-1781-085

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

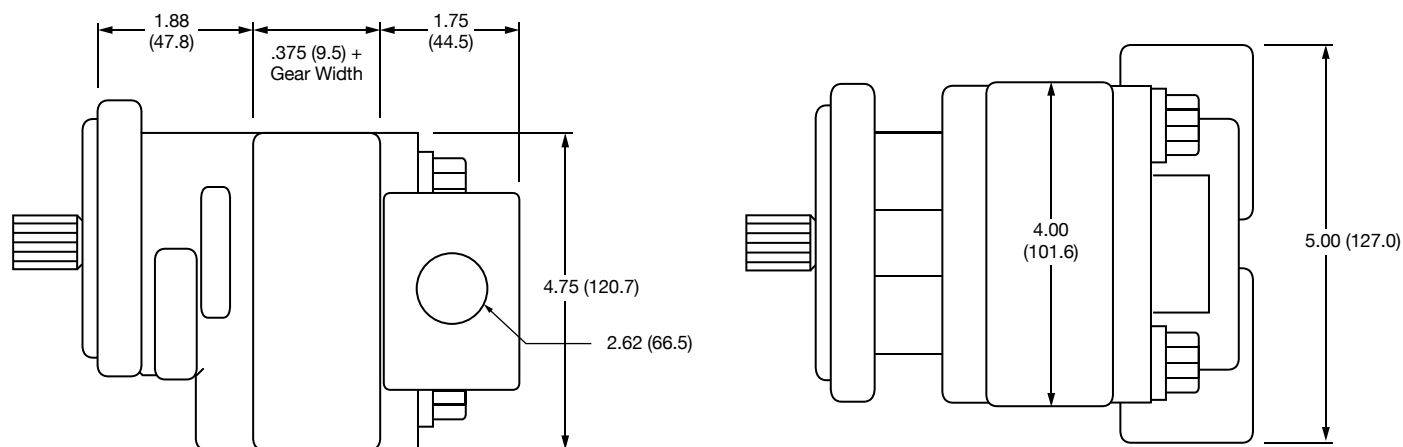
For example: Gear set no. A32-50-XX000 changes to A32-50-15000 for 1.5" gear size
Housing no. A32-33-XX000 changes to A32-33-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH315 Series

Dimensions

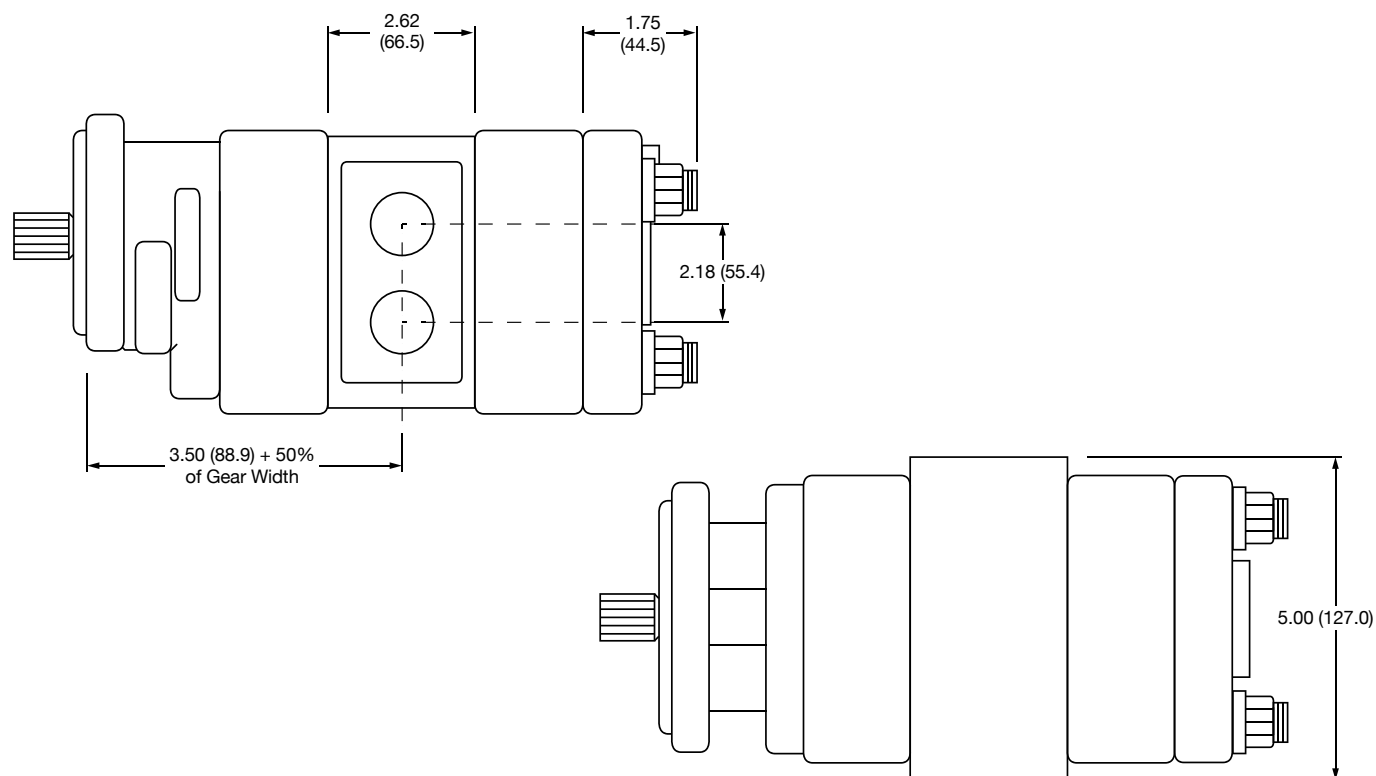
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH330 Series Bushing Pump

Features

Metaris Bushing Pumps & Motors are available in 4 models with many of the same available options as Metaris Bearing Pumps. With ductile iron housings, these pumps offer pressure ratings as high as 3500 psi for the most demanding of applications.

- Heavy Duty Sleeve Bushing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3500 psi
- Multiple Bearing Carrier Options
- NPT & SAE Port Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH330		DISPLACEMENT		MAX PRESSURE	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.50	1/2"	.99	(16.1)	3500	(241)
.75	3/4"	1.48	(24.2)	3500	(241)
1.00	1"	1.97	(32.3)	3500	(241)
1.25	1-1/4"	2.46	(40.4)	3500	(241)
1.50	1-1/2"	2.96	(48.4)	3500	(241)
1.75	1-3/4"	3.45	(56.5)	3250	(224)
2.00	2"	3.94	(64.6)	3000	(207)

MH330 Series Bushing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)						
	1/2"	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"
900	3.2 / 12	5.1 / 19	7 / 26	8.8 / 33	10.6 / 40	12.4 / 47	14.3 / 54
1200	4.5 / 17	7 / 26	9.5 / 36	12 / 45	14.5 / 55	16.9 / 64	19.4 / 73
1500	5.8 / 22	8.9 / 34	12.1 / 46	15.2 / 57	18.3 / 69	21.4 / 81	24.5 / 93
1800	7.1 / 27	10.8 / 41	14.7 / 55	18.4 / 70	22.1 / 84	25.9 / 98	29.6 / 112
2100	8.4 / 32	12.7 / 48	17.2 / 65	21.6 / 82	26 / 98	30.3 / 115	34.7 / 131
2400	9.6 / 36	14.7 / 55	19.8 / 75	24.8 / 94	29.8 / 113	34.8 / 132	39.8 / 151
3000	12.2 / 46	18.55 / 70	24.9 / 94	31.2 / 118	37.5 / 142	43.8 / 166	50.1 / 190

Motor Performance Data

SPEED RPM	GEAR WIDTH									
	1" (3500 PSI)		1-1/4" (3500 PSI)		1-1/2" (3500 PSI)		1-3/4" (3250 PSI)		2" (3000 PSI)	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
900	10.1 / 38	1010 / 114.1	12.3 / 47	1270 / 143.5	14.5 / 55	1530 / 172.9	16.7 / 63	1665 / 188.1	19 / 72	1770 / 200
1200	12.8 / 49	1005 / 113.6	15.7 / 59	1265 / 142.9	18.6 / 70	1525 / 172.3	21.4 / 81	1660 / 187.6	24.3 / 92	1760 / 198.9
1500	15.6 / 59	1000 / 113	19.1 / 72	1255 / 141.8	22.6 / 85	1515 / 171.2	26.1 / 99	1650 / 186.4	29.6 / 112	1750 / 197.7
1800	18.4 / 69	995 / 112.4	22.5 / 85	1250 / 141.2	26.6 / 101	1505 / 170	30.8 / 116	1640 / 185.3	34.9 / 132	1740 / 196.6
2100	21.1 / 80	990 / 111.9	25.9 / 98	1240 / 140.1	30.7 / 116	1495 / 168.9	35.4 / 134	1625 / 183.6	40.2 / 152	1720 / 194.3
2400	23.9 / 90	985 / 111.3	29.3 / 111	1235 / 139.5	34.7 / 131	1480 / 167.2	40.1 / 152	1605 / 181.3	45.5 / 172	1695 / 191.5
3000	29.2 / 110	980 / 110.7	35.9 / 136	1230 / 139	42.6 / 161	1475 / 166.7	49.3 / 186	1595 / 180.2	56 / 212	1685 / 190.4

Note: Input Flow @ 2500psi | Output Torque @ 175 bar

MH330 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "BB" Spline	13,000	6,250
SAE "BB" Keyed	9,300	6,250
SAE "B" Spline	8,450	6,250
SAE "B" Keyed	6,250	6,250
SAE "C" Spline	*	6,250
SAE "C" Keyed	*	6,250
Connecting Shaft		6,250

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH330 Series Bushing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 330 - A - 1 - 78 - AL - AB - 10 - 98 - AU - * - * - *

Type¹ _____
MHP = Pump
MHM = Motor

Unit² _____
A = Single Unit
B = Tandem Unit
C = Single or Tandem Unit w/ a Continental Shaft
L = Unit w/ Extended Studs

Shaft End Cover³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
4 = Pump w/ Shaft Bearing (Clockwise Rotation)
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)
8 = Motor w/ Shaft Bearing (Bi-Rotational)
9 = Motor w/o Shaft Bearing (Bi-Rotational)

Shaft End Cover⁴ _____
42 = SAE 4-Bolt "B" Mount
46 = SAE 2/4-Bolt "B" Mount
78 = SAE 4-Bolt "C" Mount
97 = SAE 2-Bolt "B" Mount

Port End Cover⁵ _____

Connecting Shaft¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers⁹
See following page for Bearing Carrier options

Shaft Type⁸
7 = SAE "C" 14 Tooth Spline 1.250" Dia. (Cont. Only)
25 = SAE "B" 13 Tooth Spline .88" Dia.
30 = SAE "B" Keyed .88" Dia. 1/4" x 3/8" x 1" Key
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key
98 = SAE "BB" 15 Tooth Spline 1" Dia.

Gear Size⁷
Code / Displacement (in³/r)

05 (.99)	07 (1.48)	10 (1.97)	12 (2.46)	15 (2.96)	17 (3.45)	20 (3.94)
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Gear Housing⁶

Code	Port Size		
	In	Out	
AB	None	None	Pump
EB	None	None	Motor

Unported

		Port Size	
		In	Out
BI		None	None

Side Ported - NPT Codes

CW	CCW	Port Size	
		In	Out
AJ	JA	1-1/4"	1"
AK	KA	1-1/4"	3/4"
AL	LA	1"	1"
AM	MA	1"	3/4"
AR	RA	3/4"	3/4"

Orientation is viewed from the shaft end

Motor - Side Ported - NPT

		Port Size	
		In	Out
DN		1"	1"
DM		1-1/4"	1-1/4"
DQ		1-1/2"	1-1/2"

Side Ported - SAE O-ring

CW	CCW	Port Size	
		In	Out
FJ	JF	1-1/4"	1"
FL	LF	1"	1"
BG	GB	1-1/4"	None
BJ	JB	1"	None
BN	NB	None	1"

Orientation is viewed from the shaft end

Motor - Side Ported - SAE O-ring

		Port Size	
		In	Out
VN		1"	1"
VR		3/4"	3/4"
VC		1-1/4"	1-1/4"

Side Ported - SAE Split Flange

CW	CCW	Port Size	
		In	Out
EJ	JE	1-1/2"	1-1/4"
EK	KE	1-1/2"	1"
EL	LE	1-1/4"	1-1/4"
EM	ME	1-1/4"	1"
EN	NE	1"	1"
OF	FO	1-1/2"	None
OG	GO	1-1/4"	None
OJ	JO	1"	None
OM	MO	None	1-1/4"
ON	NO	None	1"

Orientation is viewed from the shaft end

Motor - Side Ported - SAE Split Flange

		Port Size	
		In	Out
CS		1-1/4"	1-1/4"
CT		1"	1"
CV		3/4"	3/4"

MH330 Series Bushing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

Dual Outlet Pumps

SAE Split Flange

CW	CCW	Port Size		
		In	Out	Out
AM	MA	2"	1-1/4"	1-1/4"
AN	NA	2"	1-1/4"	1"
AP	PA	2"	1"	1"
AT	TA	1-1/2"	1-1/4"	1-1/4"
AU	UA	1-1/2"	1-1/4"	1"
AV	VA	1-1/2"	1"	1"
AW	WA	1-1/4"	1-1/4"	1-1/4"
AX	XA	1-1/4"	1-1/4"	1"
AY	YA	1-1/4"	1"	1"
AZ	ZA	1"	1"	1"

Orientation is viewed from the shaft end

Dual Outlet Pumps

SAE O-ring

CW	CCW	Port Size		
		In	Out	Out
GV	VG	1-1/2"	1"	1"
GY	YG	1-1/4"	1"	1"
GZ	ZG	1"	1"	1"

Orientation is viewed from the shaft end

Single Outlet Pumps

SAE Split Flange

CW	CCW	Port Size	
		In	Out
HB	BH	2"	1-1/2"
HC	CH	2"	1-1/4"
HF	FH	2"	1"
HL	LH	1-1/2"	1-1/2"
HM	MH	1-1/2"	1-1/4"
HN	NH	1-1/2"	1"
HO	OH	1-1/4"	1-1/4"

Orientation is viewed from the shaft end

Single Outlet Pumps

SAE O-ring

CW	CCW	Port Size	
		In	Out
KM	MK	1-1/2"	1-1/4"
KN	NK	1-1/2"	1"
KO	OK	1-1/4"	1-1/4"
KP	PK	1-1/4"	1"
KQ	QK	1"	1"

Orientation is viewed from the shaft end

Combined Outlet Pumps

SAE Split Flange

CW	CCW	Port Size	
		In	Out
UN	NU	2"	1-1/2"
UO	OU	2"	1-1/4"
UP	PU	1-1/2"	1-1/2"
UQ	QU	1-1/2"	1-1/4"
UR	RU	1-1/4"	1-1/4"

Orientation is viewed from the shaft end

Combined Outlet Motors

SAE Split Flange

		Port Size	
		In	Out
BB		1-1/2"	1-1/2"
CC		1-1/4"	1-1/4"
EE		1"	1"
FF		3/4"	3/4"

Orientation is viewed from the shaft end

Combined Outlet Pumps

SAE O-ring

CW	CCW	Port Size	
		In	Out
PQ	QP	1-1/2"	1-1/4"
PR	RP	1-1/4"	1-1/4"

Orientation is viewed from the shaft end

Combined Outlet Motors

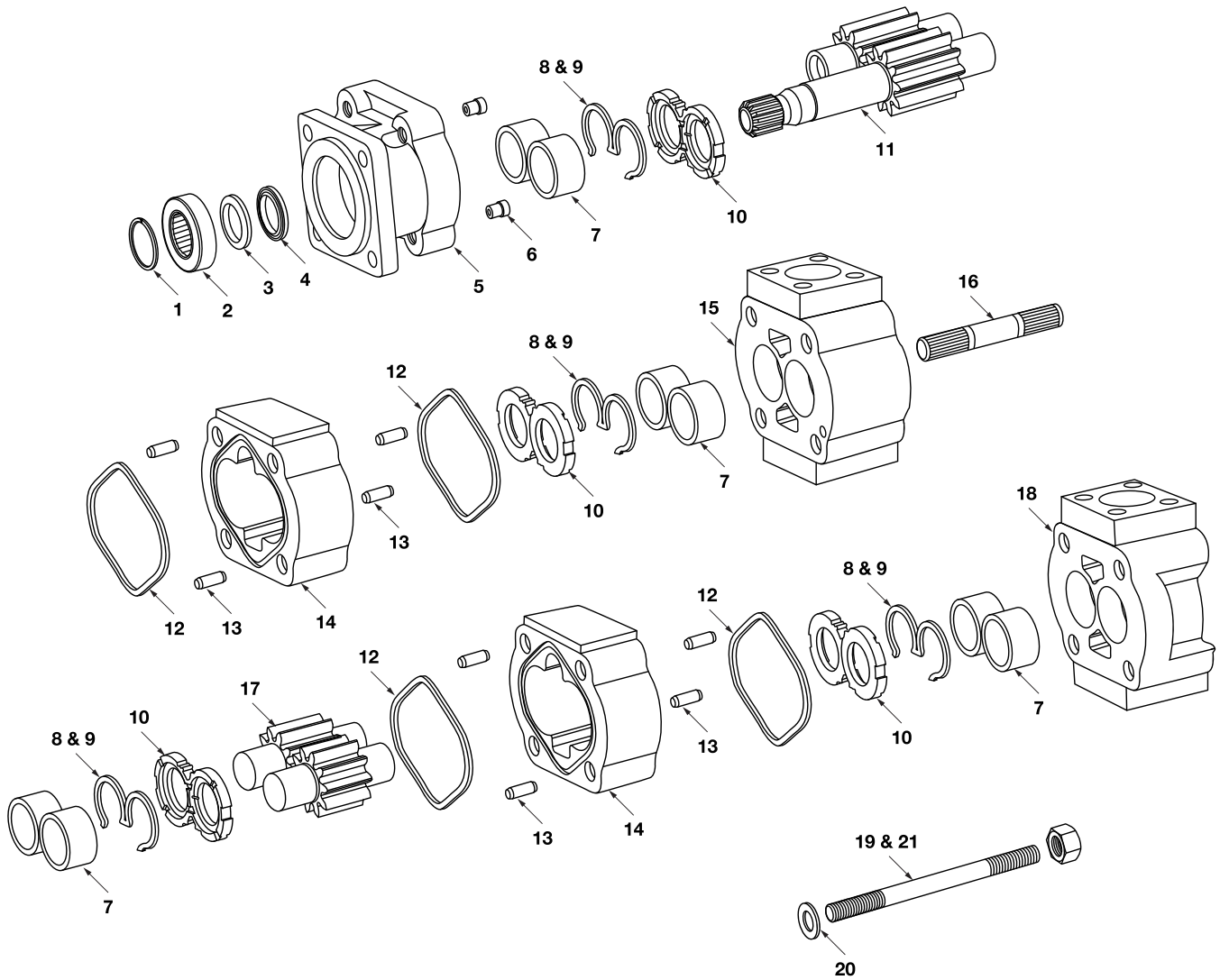
SAE O-ring

		Port Size	
		In	Out
NN		1-1/4"	1-1/4"
QQ		1"	1"
RR		3/4"	3/4"

Orientation is viewed from the shaft end

MH330 Series

Parts Breakdown



MH330 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SHAFT BRG. SNAP RING	X05-03-56200	391-2686-063
2a	INPUT SHAFT BRG.	X03-16-12552	391-0381-040
2b	SPACER IN PLACE OF SHAFT BEARING	A30-92-38520	391-3383-069
3	SEAL RETAINER FOR MOTORS ONLY	A20-60-10000	391-3381-040
4a	PUMP LIP SEAL	X83-11-02708	391-2883-058
4b	MOTOR LIP SEAL	X84-36-02709	391-2883-119
4c	PUMP LIP SEAL FOR CONTINENTAL SHAFT ONLY	X89-11-02508	391-2883-107
4d	MOTOR LIP SEAL FOR CONTINENTAL SHAFT ONLY	X84-36-02509	391-2883-126
5a	4 BOLT B PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101.6 mm pilot)	A33-10-21421	324-5033-201
5b	4 BOLT B PILOT PUMP S.E.C. WITH BUSHING TYPE 42 (4" or 101.6 mm pilot)	A33-10-21422	324-5133-201
5c	4 BOLT C PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)	A33-10-21431	324-5033-202
5d	4 BOLT C PILOT PUMP S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)	A33-10-21432	324-5133-202
5e	2 BOLT B PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101.6 mm pilot)	A33-10-21221	324-5023-201
5f	2 BOLT B PILOT PUMP S.E.C. WITH BUSHING TYPE 97 (4" or 101.6 mm pilot)	A33-10-21222	324-5123-201
5g	2 & 4 BOLT B PILOT PUMP S.E.C. WITHOUT BUSHING TYPE 46 (4" or 101.6 mm pilot)	A33-10-21321	324-5053-201
5h	2 & 4 BOLT B PILOT PUMP S.E.C. WITH BUSHING TYPE 46 (4" or 101.6 mm pilot)	A33-10-21322	324-5153-201
5i	4 BOLT B PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101.6 mm pilot)	A33-10-41421	324-5033-401
5j	4 BOLT B PILOT MOTOR S.E.C. WITH BUSHING TYPE 42 (4" or 101.6 mm pilot)	A33-10-41422	324-5133-401
5k	4 BOLT C PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)	A33-10-41431	324-5033-402
5l	4 BOLT C PILOT MOTOR S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)	A33-10-41432	324-5133-402
5m	2 BOLT B PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101.6 mm pilot)	A33-10-41221	324-5023-401
5n	2 BOLT B PILOT MOTOR S.E.C. WITH BUSHING TYPE 97 (4" or 101.6 mm pilot)	A33-10-41222	324-5123-401
5o	2 & 4 BOLT B PILOT MOTOR S.E.C. WITHOUT BUSHING TYPE 46 (4" or 101.6 mm pilot)	A33-10-41320	324-5053-401
5p	2 & 4 BOLT B PILOT MOTOR S.E.C. WITH BUSHING TYPE 46 (4" or 101.6 mm pilot)	A33-10-41322	324-5153-401
6a	CHECK VALVE MOTOR	A00-75-11000	391-3681-001
6b	PRESSURE PLUG PUMP (may not be required)	X02-03-32110	391-2286-004
7	BUSHING	X03-00-32730	391-0482-306
8	PUMP BUNA SEAL	A33-82-11030	391-2883-166
9	PUMP NYLON BACKUP SEAL	A33-82-46010	391-2883-167
Not Shown	MOTOR NYLON BACKUP SEAL	A33-82-46030	391-2881-929
Not Shown	MOTOR THRUST PLATE SIDE SEAL	A33-82-14022	391-2881-931
Not Shown	MOTOR THRUST PLATE END SEAL	A33-82-14021	391-2881-930
10a	PUMP THRUST PLATE	A33-70-20000	391-2185-056
10b	MOTOR THRUST PLATE	A33-70-10000	391-2185-065
11a	SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 25	A33-50-XX225	324-29XX-230
11b	SHAFT & GEAR SET 0.9984" dia. KEYED (1/4" x 3/8" x 1 1/4") TYPE 43	A33-50-XX135	324-29XX-740

MH330 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
11c	SHAFT & GEAR SET 15 TOOTH SPLINE 0.983" maj. dia TYPE 98	A33-50-XX231	324-29XX-240
12a	PUMP HOUSING GASKET	X85-11-10104	391-2884-050
12b	MOTOR HOUSING GASKET	X85-11-09803	391-2884-076
13	HOUSING DOWEL PIN	A00-94-11025	391-2082-032
14a	PUMP GEAR HOUSING	A33-33-XX000	324-81XX-100
14b	MOTOR GEAR HOUSING	A33-32-XX000	324-82XX-100
15a	330 BEARING CARRIER BLANK WITHOUT BUSHING	A33-40-00000	324-7200-100
15b	330 BEARING CARRIER BLANK WITH BUSHING	A33-40-10000	324-7700-100
15c	330 BEARING CARRIER 1 OUTLET WITHOUT BUSHING	A33-40-21000	324-7100-100
15d	330 BEARING CARRIER 1 OUTLET WITH BUSHING	A33-40-31000	324-7600-100
15e	330 BEARING CARRIER 2 OUTLET WITHOUT BUSHING	A33-40-22000	324-7300-100
15f	330 BEARING CARRIER 2 OUTLET WITH BUSHING	A33-40-32000	324-7800-100
15g	330/315 BEARING CARRIER CW WITHOUT BUSHING	A33-40-23000	324-3050-100
15h	330/315 BEARING CARRIER CW WITH BUSHING	A33-40-33000	324-3150-100
15i	330/315 BEARING CARRIER CCW WITHOUT BUSHING	A33-40-24000	324-3060-100
15j	330/315 BEARING CARRIER CCW WITH BUSHING	A33-40-34000	324-3160-100
16a	CONNECTING SHAFT	A33-50-00500	324-1133-001
16b	PIGGYBACK CONNECTING SHAFT PHASE 2	A81-50-00500	324-1133-004
17	GEAR SET ONLY	A33-50-XX000	324-28XX-000
18a	330 PUMP P.E.C. NO PORTING WITHOUT BUSHING	A33-23-00000	324-3000-100
18b	330 PUMP P.E.C. NO PORTING WITH BUSHING	A33-23-10000	324-3100-100
18c	330 P.E.C. NO PORTING WITHOUT BUSHING CHECK VALVE REQ.	A33-25-00000	324-3000-101
18d	330 P.E.C. NO PORTING WITH BUSHING CHECK VALVE REQ.	A33-25-10000	324-3100-101
18e	330 PUMP P.E.C. PORTING TYPE WITHOUT BUSHING	A33-23-02000	324-3010-100
18f	330 PUMP P.E.C. PORTING TYPE WITH BUSHING	A33-23-12000	324-3110-100
18g	330 MOTOR P.E.C. PORTING TYPE WITHOUT BUSHING	A33-22-02000	324-3020-100
18h	330 MOTOR P.E.C. PORTING TYPE WITH BUSHING	A33-22-12000	324-3120-100
19	BOLTS / STUDS (5/8"-UNC)	See Fasteners Page	
20	FLAT WASHER (5/8")	X45-10-17005	391-3784-028
21	HEX NUT (5/8"-UNC)	X42-11-16000	391-1451-076
Not Shown	CONTINENTAL SHAFT 14 TOOTH SPLINE 1.223" maj. dia. TYPE 7	A33-50-00241	324-1000-500
Not Shown	CONTINENTAL SHAFT 13 TOOTH SPLINE 0.858" maj. dia. TYPE 25	A33-50-00221	324-1000-300

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A33-50-XX000 changes to A33-50-15000 for 1.5" gear size
Housing no. A33-33-XX000 changes to A33-33-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH330 Series

Parts Breakdown

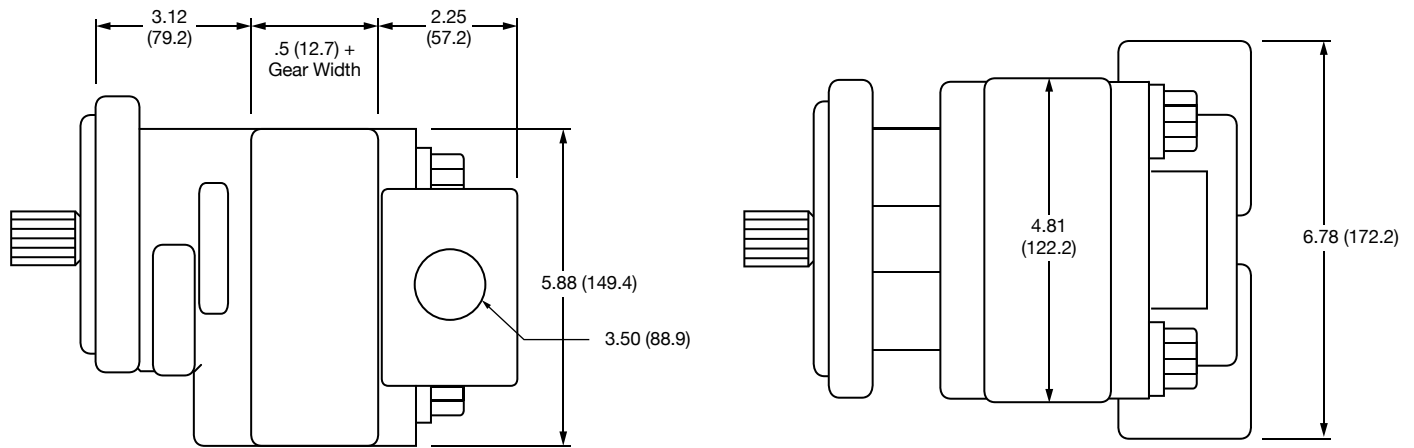
DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
Not Shown	CONTINENTAL SHAFT 0.9984" dia. KEYED (1/4" x 3/8" x 1 1/4") TYPE 43	A33-50-00131	324-1500-400
Not Shown	CONTINENTAL SHAFT 15 TOOTH SPLINE 0.983" maj. dia. TYPE 98	A33-50-00239	324-1200-400
Not Shown	CONTINENTAL SHAFT 0.875" dia. KEYED (1/4" x 3/8" x 1") TYPE 30	A33-50-00121	324-1500-300
Not Shown	DRIVE KEY FOR TYPE 43 SHAFT	X01-02-60632	391-1781-082
Not Shown	DRIVE KEY FOR TYPE 30 SHAFT	X01-02-60625	391-1781-085
Not Shown	CONTINENTAL SHAFT BRG. RETAINER	A20-60-20000	312-0100-002
Not Shown	CONTINENTAL SHAFT BRG. RETAINER SNAP RING	X05-02-28110	391-2685-011

MH330 Series

Dimensions

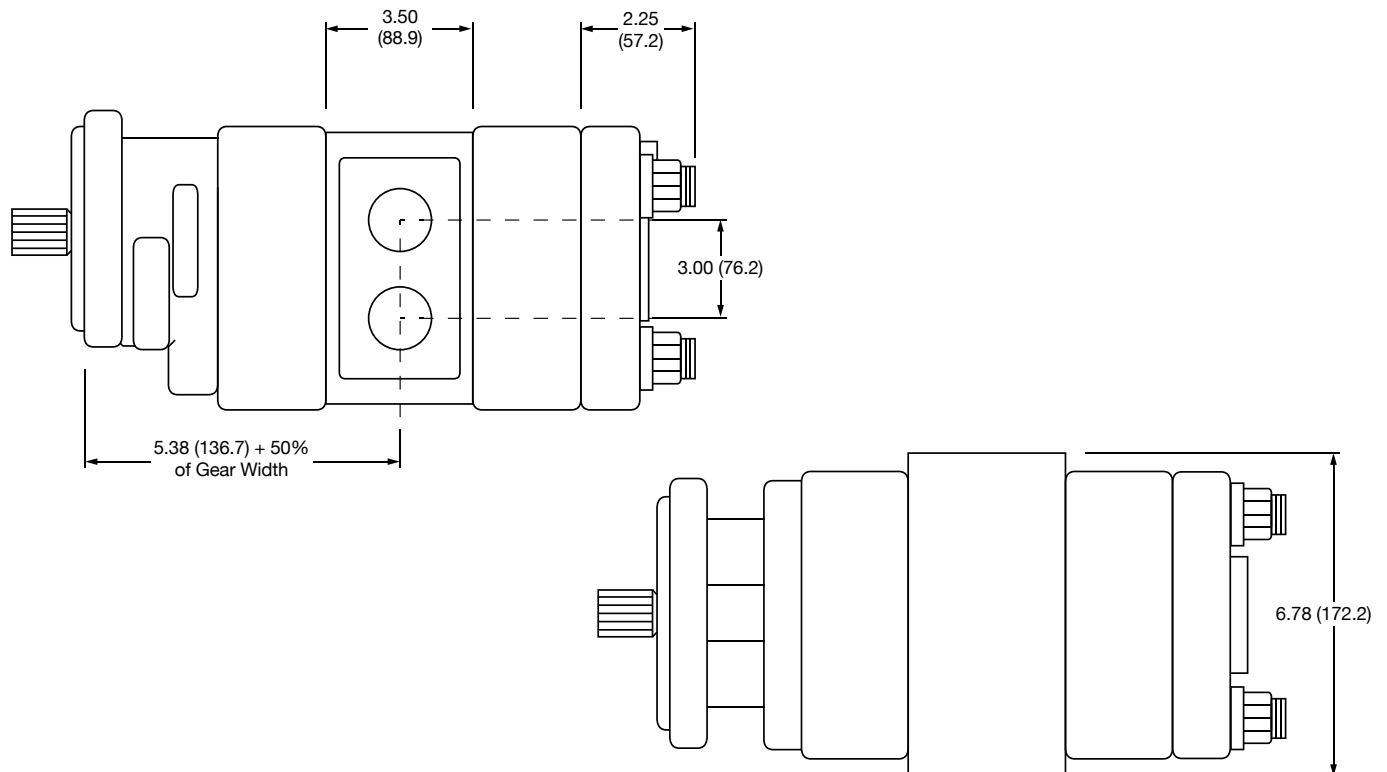
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH350 Series Bushing Pump

Features

Metaris Bushing Pumps & Motors are available in 4 models with many of the same available options as Metaris Bearing Pumps. With ductile iron housings, these pumps offer pressure ratings as high as 3500 psi for the most demanding of applications.

- Heavy Duty Sleeve Bushing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3500 psi
- Multiple Bearing Carrier Options
- NPT & SAE Port Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH350		DISPLACEMENT		MAX PRESSURE	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.50	1/2"	1.28	(20.9)	3500	(241)
.75	3/4"	1.91	(31.3)	3500	(241)
1.00	1"	2.55	(41.8)	3500	(241)
1.25	1-1/4"	3.19	(52.2)	3500	(241)
1.50	1-1/2"	3.83	(62.7)	3500	(241)
1.75	1-3/4"	4.46	(73.1)	3250	(224)
2.00	2"	5.10	(83.6)	3000	(207)
2.25	2-1/4"	5.74	(94.0)	2750	(190)
2.50	2-1/2"	6.38	(104.5)	2500	(172)

MH350 Series Bushing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)								
	1/2"	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"
900	4 / 15	6.4 / 24	8.8 / 33	11.2 / 42	13.7 / 52	16.1 / 61	18.6 / 70	21 / 70	23.4 / 90
1200	5.6 / 21	8.8 / 33	12.1 / 46	15.4 / 58	18.7 / 71	21.9 / 83	25.2 / 95	28.4 / 108	31.7 / 120
1500	7.3 / 28	11.3 / 43	15.5 / 59	19.5 / 74	23.6 / 89	27.7 / 105	31.8 / 120	35.9 / 136	40 / 151
1800	8.9 / 34	13.8 / 52	18.8 / 71	23.6 / 89	28.6 / 108	33.5 / 127	38.4 / 145	43.3 / 164	48.3 / 183
2100	10.6 / 40	16.3 / 62	22.1 / 84	33.6 / 127	33.6 / 127	39.3 / 149	45.1 / 171	50.8 / 192	56.6 / 214
2400	12.2 / 46	18.8 / 71	25.4 / 96	38.5 / 121	38.5 / 146	45.1 / 171	51.7 / 196	58.2 / 220	64.8 / 245

Motor Performance Data

SPEED RPM	GEAR WIDTH									
	1" (3500 PSI)		1-1/4" (3500 PSI)		1-1/2" (3500 PSI)		1-3/4" (3250 PSI)		2" (3000 PSI)	
	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)	INPUT FLOW (GPM/LPM)	OUTPUT TORQUE (IN/LBS / NM)
900	13.4 / 51	1320 / 149.1	16 / 61	1670 / 188.7	18.6 / 70	2025 / 228.8	21.2 / 80	2225 / 251.4	23.8 / 90	2350 / 265.5
1200	15.9 / 64	1315 / 148.6	20.4 / 77	1660 / 187.6	23.8 / 90	2015 / 227.7	27.2 / 103	2215 / 250.3	30.6 / 116	2340 / 264.4
1500	20.5 / 77	1300 / 146.9	24.7 / 93	1640 / 185.3	28.9 / 110	1990 / 224.8	33.2 / 126	2195 / 248	37.4 / 142	2315 / 261.6
1800	24 / 91	1295 / 146.3	29 / 110	1635 / 184.7	34.1 / 129	1980 / 223.7	39.2 / 148	2180 / 246.3	44.2 / 167	2300 / 259.9
2100	27.5 / 104	1285 / 145.2	33.4 / 126	1620 / 183	39.3 / 149	1965 / 222	45.2 / 171	2165 / 244.6	51.1 / 193	2285 / 258.2
2400	31 / 117	1265 / 142.9	37.7 / 143	1600 / 180.8	44.4 / 168	1940 / 219.2	51.2 / 194	2135 / 241.2	57.9 / 219	2255 / 254.8

Note: Input Flow @ 2500psi | Output Torque @ 175 bar

MH350 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "BB" Spline	9,900	9,000
SAE "BB" Keyed	7,100	7,100
SAE "B" Spline	6,450	6,450
SAE "B" Keyed	4,750	4,750
SAE "C" Spline	19,100	9,000
SAE "C" Keyed	13,900	9,000
Connecting Shaft		9,000

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH350 Series Bushing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 350 - A - 1 - 78 - BL - AB - 10 - 98 - AU - * - * - *

Type ¹ _____
MHP = Pump
MHM = Motor

Unit ² _____
A = Single Unit
B = Tandem Unit
C = Single or Tandem Unit w/ a Continental Shaft
L = Unit w/ Extended Studs

Shaft End Cover ³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
4 = Pump w/ Shaft Bearing (Clockwise Rotation)
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)
8 = Motor w/ Shaft Bearing (Bi-Rotational)
9 = Motor w/o Shaft Bearing (Bi-Rotational)

Shaft End Cover ⁴ _____
42 = SAE 4-Bolt "B" Mount
46 = SAE 2/4-Bolt "B" Mount
78 = SAE 4-Bolt "C" Mount
97 = SAE 2-Bolt "B" Mount
98 = SAE 2-Bolt "C" Mount

Port End Cover ⁵ _____

Connecting Shaft ¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers ⁹
See following page for Bearing Carrier options

Shaft Type ⁸
07 = SAE "C" 14 Tooth Spline 1.250 Dia.
11 = SAE "C" Keyed 1.249 Dia. 5/16" x 15/32" x 1-1/2" Key
25 = SAE "B" 13 Tooth Spline .88" Dia.
43 = SAE "BB" Keyed 1" Dia. 1/4" x 3/8" x 1-1/4" Key
73 = SAE "C" Keyed Long
98 = SAE "BB" 15 Tooth Spline 1" Dia.

Gear Size ⁷
Code / Displacement (in³/r)

05 (1.28)	07 (1.91)	10 (2.55)	12 (3.19)	15 (3.83)
17 (4.46)	20 (5.10)	22 (5.74)	25 (6.38)	

Unported

		Port Size	
		In	Out
BI		None	None

Side Ported - SAE O-ring

CW	CCW	Port Size	
		In	Out
FB	BF	1-1/2"	1-1/4"
FC	CF	1-1/2"	1"
FG	GF	1-1/4"	1-1/4"
FJ	JF	1-1/4"	1"
FL	LF	1"	1"
BC	CB	1-1/2"	None
BG	GB	1-1/4"	None
BJ	JB	1"	None
BL	LB	None	1-1/4"
BN	NB	None	1"

Orientation is viewed from the shaft end

Motor - Side Ported - SAE O-ring

		Port Size	
		In	Out
VC		1-1/4"	1-1/4"
VN		1"	1"
VR		3/4"	3/4"

Side Ported - SAE Split Flange

CW	CCW	Port Size	
		In	Out
EC	CE	2"	1-1/2"
EF	FE	2"	1-1/4"
EG	GE	2"	1"
EH	HE	1-1/2"	1-1/2"
EJ	JE	1-1/2"	1-1/4"
EK	KE	1-1/2"	1"
EL	LE	1-1/4"	1-1/4"
EM	ME	1-1/4"	1"
EN	NE	1"	1"
OE	EO	2"	None
OF	FO	1-1/2"	None
OG	GO	1-1/4"	None
OJ	JO	1"	None
OL	LO	None	1-1/2"
OM	MO	None	1-1/4"
ON	NO	None	1"

Orientation is viewed from the shaft end

Motor - Side Ported - SAE Split Flange

		Port Size	
		In	Out
CR		1-1/2"	1-1/2"
CS		1-1/4"	1-1/4"
CT		1"	1"
CV		3/4"	3/4"

Gear Housing

Code	Port Size		
	In	Out	
AB	None	None	Pump
EB	None	None	Motor

MH350 Series Bushing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

Dual Outlet Pumps

SAE Split Flange

CW	CCW	Port Size		
		In	Out	Out
AF	FA	2-1/2"	1-1/4"	1-1/4"
AG	GA	2-1/2"	1-1/4"	1"
AH	HA	2-1/2"	1"	1"
AM	MA	2"	1-1/4"	1-1/4"
AN	NA	2"	1-1/4"	1"
AP	PA	2"	1"	1"
AT	TA	1-1/2"	1-1/4"	1-1/4"
AU	UA	1-1/2"	1-1/4"	1"
AV	VA	1-1/2"	1"	1"
AW	WA	1-1/4"	1-1/4"	1-1/4"
AX	XA	1-1/4"	1-1/4"	1"
AY	YA	1-1/4"	1"	1"
AZ	ZA	1"	1"	1"

Orientation is viewed from the shaft end

Dual Outlet Pumps

SAE O-ring

CW	CCW	Port Size		
		In	Out	Out
GM	MG	2"	1-1/4"	1-1/4"
GN	NG	2"	1-1/4"	1"
GP	PG	2"	1"	1"
GT	TG	1-1/2"	1-1/4"	1-1/4"
GU	UG	1-1/2"	1-1/4"	1"
GV	VG	1-1/2"	1"	1"
GW	WG	1-1/4"	1-1/4"	1-1/4"
GX	XG	1-1/4"	1-1/4"	1"
GY	YG	1-1/4"	1"	1"
GZ	ZG	1"	1"	1"

Orientation is viewed from the shaft end

Single Outlet Pumps

SAE Split Flange

CW	CCW	Port Size	
		In	Out
HB	BH	2"	1-1/2"
HC	CH	2"	1-1/4"
HF	FH	2"	1"
HL	LH	1-1/2"	1-1/2"
HM	MH	1-1/2"	1-1/4"
HN	NH	1-1/2"	1"
HO	OH	1-1/4"	1-1/4"
HP	PH	1-1/4"	1"
HQ	QH	1"	1"
RS	SR	1-1/4"	1"

Orientation is viewed from the shaft end

Single Outlet Pumps

SAE O-ring

CW	CCW	Port Size	
		In	Out
KB	BK	2"	1-1/2"
KC	CK	2"	1-1/4"
KF	FK	2"	1"
KL	LK	1-1/2"	1-1/2"
KM	MK	1-1/2"	1-1/4"
KN	NK	1-1/2"	1"
KO	OK	1-1/4"	1-1/4"
KP	PK	1-1/4"	1"
KQ	QK	1"	1"

Orientation is viewed from the shaft end

Combined Outlet Pumps

SAE Split Flange

CW	CCW	Port Size	
		In	Out
UN	NU	2"	1-1/2"
UO	OU	2"	1-1/4"
UP	PU	1-1/2"	1-1/2"
UQ	QU	1-1/2"	1-1/4"
UR	RU	1-1/4"	1-1/4"

Orientation is viewed from the shaft end

Combined Outlet Motors

SAE Split Flange

		Port Size	
		In	Out
AA		2"	2"
BB		1-1/2"	1-1/2"
CC		1-1/4"	1-1/4"
EE		1"	1"
FF		3/4"	3/4"

Orientation is viewed from the shaft end

Combined Outlet Pumps

SAE O-ring

CW	CCW	Port Size	
		In	Out
PE	EP	2"	1-1/2"
PM	MP	2"	1-1/4"
PN	NP	1-1/2"	1-1/2"
PQ	QP	1-1/2"	1-1/4"
PR	RP	1-1/4"	1-1/4"

Orientation is viewed from the shaft end

Combined Outlet Motors

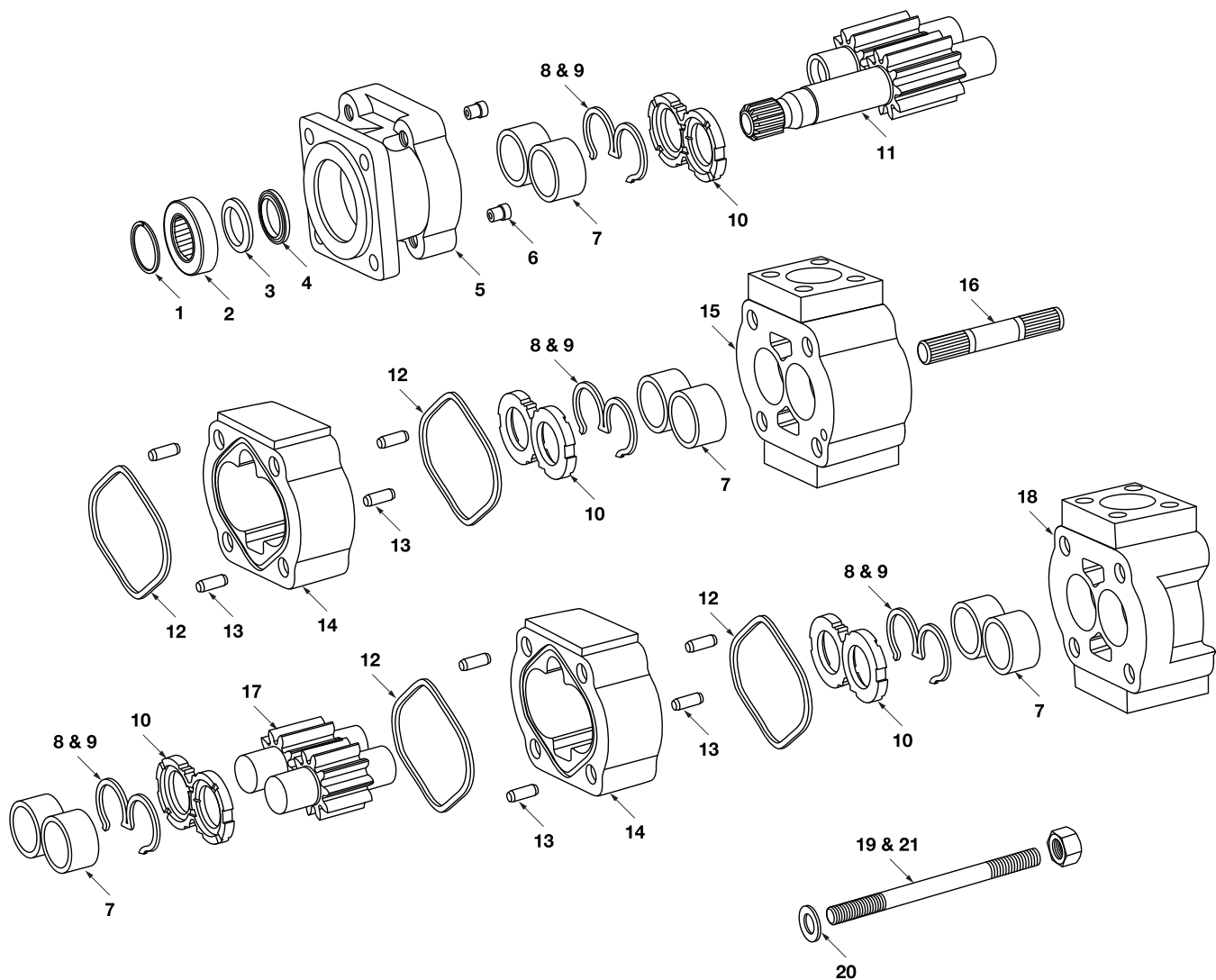
SAE O-ring

		Port Size	
		In	Out
MM		1-1/2"	1-1/2"
NN		1-1/4"	1-1/4"
QQ		1"	1"
RR		3/4"	3/4"

Orientation is viewed from the shaft end

MH350 Series

Parts Breakdown



MH350 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SHAFT BRG. SNAP RING	X05-03-77250	391-2686-065
2a	INPUT SHAFT BRG.	X03-16-13272	391-0381-077
2b	SEAL RETAINER & SPACER IN PLACE OF SHAFT BRG.	A50-60-10000	391-3383-087
3	SEAL RETAINER FOR MOTORS ONLY	A50-60-30000	391-3383-020
4a	PUMP LIP SEAL	X83-11-03308	391-2883-103
4b	MOTOR LIP SEAL	X84-36-03309	391-2883-115
4c	SEAL FOR CONTINENTAL SHAFT	X89-11-03308	391-2883-133
5a	4 BOLT B MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101,6 mm pilot)	A35-10-21421	323-5033-201
5b	4 BOLT B MOUNT PUMP S.E.C. WITH BUSHING TYPE 42 (4" or 101,6 mm pilot)	A35-10-21422	323-5133-201
5c	2/4 BOLT B MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 46 (4" or 101,6 mm pilot)	A35-10-21321	323-5053-201
5d	2/4 BOLT B MOUNT PUMP S.E.C. WITH BUSHING TYPE 46 (4" or 101,6 mm pilot)	A35-10-21322	323-5153-201
5e	4 BOLT C MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)	A35-10-21431	323-5033-202
5f	4 BOLT C MOUNT PUMP S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)	A35-10-21432	323-5133-202
5g	2 BOLT B MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101,6 mm pilot)	A35-10-21221	323-5023-201
5h	2 BOLT B MOUNT PUMP S.E.C. WITH BUSHING TYPE 97 (4" or 101,6 mm pilot)	A35-10-21222	323-5123-201
5i	2 BOLT C MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 98 (5" or 127 mm pilot)	A35-10-21231	323-5023-202
5j	2 BOLT C MOUNT PUMP S.E.C. WITH BUSHING TYPE 98 (5" or 127 mm pilot)	A35-10-21232	323-5123-202
5k	4 BOLT B MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101,6 mm pilot)	A35-10-41421	323-5033-401
5l	4 BOLT B MOUNT MOTOR S.E.C. WITH BUSHING TYPE 42 (4" or 101,6 mm pilot)	A35-10-41422	323-5133-401
5m	2/4 BOLT B MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 46 (4" or 101,6 mm pilot)	A35-10-41321	323-5053-401
5n	2/4 BOLT B MOUNT MOTOR S.E.C. WITH BUSHING TYPE 46 (4" or 101,6 mm pilot)	A35-10-41322	323-5153-401
5o	4 BOLT C MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)	A35-10-41431	323-5033-402
5p	4 BOLT C MOUNT MOTOR S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)	A35-10-41432	323-5133-402
5q	2 BOLT B MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101,6 mm pilot)	A35-10-41221	323-5023-401
5r	2 BOLT B MOUNT MOTOR S.E.C. WITH BUSHING TYPE 97 (4" or 101,6 mm pilot)	A35-10-41222	323-5123-401
5s	2 BOLT C MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 98 (5" or 127 mm pilot)	A35-10-41231	323-5023-402
5t	2 BOLT C MOUNT MOTOR S.E.C. WITH BUSHING TYPE 98 (5" or 127 mm pilot)	A35-10-41232	323-5123-402
6a	CHECK VALVE MOTOR	A00-75-11000	391-3681-001
6b	PRESSURE PLUG PUMP	X02-03-32110	391-2286-004
7	BUSHING	X03-00-33337	391-0482-308
8	PUMP BUNA SEAL	A35-82-11050	391-2882-140
9	PUMP NYLON BACKUP SEAL	A35-82-46010	391-2882-139
10a	PUMP THRUST PLATE	A35-70-20000	391-2185-057
10b	MOTOR THRUST PLATE	A35-70-10000	391-2185-068
Not Shown	MOTOR NYLON BACKUP SEAL	A35-82-46030	391-2885-075
Not Shown	MOTOR THRUST PLATE SIDE SEAL	A35-82-14021	391-2885-073

MH350 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
Not Shown	MOTOR THRUST PLATE END SEAL	A35-82-14020	391-2885-074
11a	SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7	A35-50-XX245	323-29XX-250
11b	SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11	A35-50-XX145	323-29XX-750
11c	SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 25	A35-50-XX225	323-29XX-230
11d	SHAFT & GEAR SET 0.9984" dia. KEYED (1/4" x 3/8" x 1 1/4") TYPE 43	A35-50-XX135	323-29XX-740
11e	SHAFT & GEAR 15 TOOTH SPLINE 0.980" maj. dia. TYPE 98	A35-50-XX231	323-29XX-240
11f	SHAFT & GEAR 1.250" dia. KEYED (5/16" x 5/16" x 2 1/4") TYPE 73	Special Order	323-29XX-752
12a	PUMP HOUSING GASKET	X85-11-11403	391-2884-074
12b	MOTOR HOUSING GASKET	X85-11-10803	391-2884-021
13	HOUSING DOWEL PIN	A00-94-11025	391-2082-032
14a	PUMP GEAR HOUSING	A35-33-XX000	323-81XX-100
14b	MOTOR GEAR HOUSING	A35-32-XX000	323-82XX-100
15a	350 BEARING CARRIER BLANK WITHOUT BUSHING	A35-40-00000	323-7200-100
15b	350 BEARING CARRIER BLANK WITH BUSHING	A35-40-10000	323-7700-100
15c	350 BEARING CARRIER 1 OUTLET WITHOUT BUSHING	A35-40-21000	323-7100-100
15d	350 BEARING CARRIER 1 OUTLET WITH BUSHING	A35-40-31000	323-7600-100
15e	350 BEARING CARRIER 2 OUTLET WITHOUT BUSHING	A35-40-22000	323-7300-100
15f	350 BEARING CARRIER 2 OUTLET WITH BUSHING	A35-40-32000	323-7800-100
15g	350/315 BEARING CARRIER CW WITHOUT BUSHING	A35-40-23000	323-3050-100
15h	350/315 BEARING CARRIER CW WITH BUSHING	A35-40-33000	323-3150-100
15i	350/315 BEARING CARRIER CCW WITHOUT BUSHING	A35-40-24000	323-3060-100
15j	350/315 BEARING CARRIER CCW WITH BUSHING	A35-40-34000	323-3160-100
16a	CONNECTING SHAFT	A35-50-00500	323-1133-001
16b	PIGGYBACK CONNECTING SHAFT PHASE 2	A82-50-00500	323-1133-006
16c	PIGGY BACK CONNECTING SHAFT BEARING SNAP RING	X05-01-61200	391-2686-019
16d	PIGGY BACK CONNECTING SHAFT BEARING	X03-16-13055	391-0381-099
16e	PIGGY BACK CONNECTING SHAFT SAE "B" SPLINE	A35-50-00620	323-1133-003
16f	PIGGY BACK CONNECTING SHAFT SAE "A" SPLINE	A35-50-00610	323-1133-002
17	GEAR SET ONLY	A35-50-XX000	323-28XX-000
18a	350 PUMP & MOTOR P.E.C. WITHOUT BUSHING NO PORTING	A35-23-00000	323-3000-100
18b	350 PUMP & MOTOR P.E.C. WITH BUSHING NO PORTING	A35-23-10000	323-3100-100
18c	350 PUMP P.E.C. PORTING TYPE WITHOUT BUSHING	A35-23-02000	323-3010-100

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A35-50-XX000 changes to A35-50-15000 for 1.5" gear size
 Housing no. A35-33-XX000 changes to A35-33-15000 for a 1.5" housing size
 No porting sizes have been indicated all porting must be specified when ordering parts.

MH350 Series

Parts Breakdown

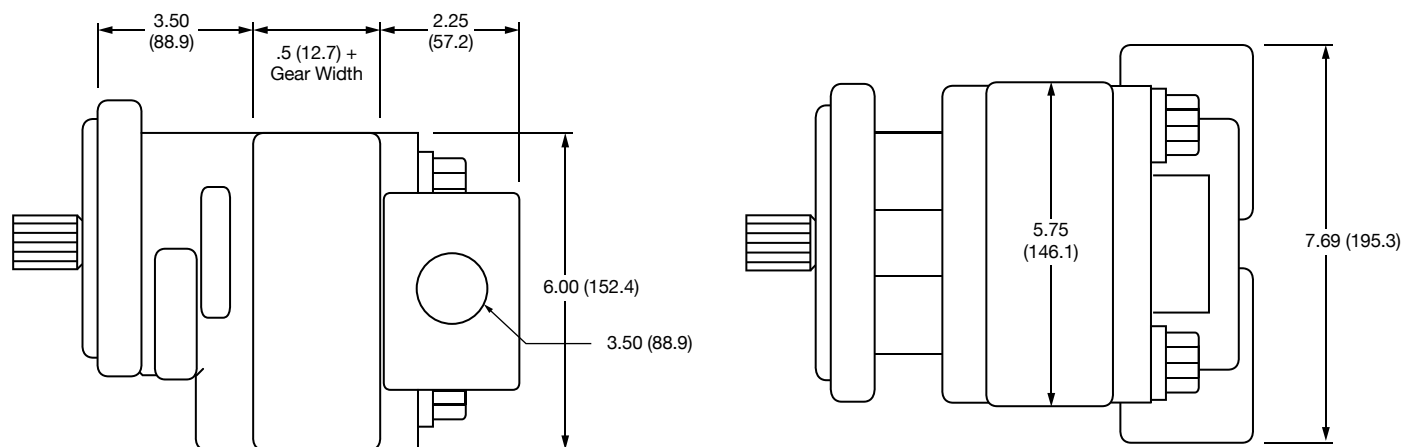
DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
18d	350 PUMP P.E.C. PORTING TYPE WITH BUSHING	A35-23-12000	323-3110-100
18e	350 MOTOR P.E.C. PORTING TYPE WITHOUT BUSHING	A35-22-02000	323-3020-100
18f	350 MOTOR P.E.C. PORTING TYPE WITH BUSHING	A35-22-12000	323-3120-100
18g	350 P.E.C. TO S.A.E. "A" PILOT CW WITHOUT BUSHING	A35-23-04000	323-3054-099
18h	350 P.E.C. TO S.A.E. "A" PILOT CW WITH BUSHING	A35-23-14000	323-3154-099
18i	350 P.E.C. TO S.A.E. "A" PILOT CCW WITHOUT BUSHING	A35-23-05000	323-3064-099
18j	350 P.E.C. TO S.A.E. "A" PILOT CCW WITH BUSHING	A35-23-15000	323-3164-099
18k	350 P.E.C. TO S.A.E. "B" PILOT CW WITHOUT BUSHING	A35-23-06000	323-3054-100
18l	350 P.E.C. TO S.A.E. "B" PILOT CW WITH BUSHING	A35-23-16000	323-3154-100
18m	350 P.E.C. TO S.A.E. "B" PILOT CCW WITHOUT BUSHING	A35-23-07000	323-3064-100
18n	350 P.E.C. TO S.A.E. "B" PILOT CCW WITH BUSHING	A35-23-17000	323-3164-100
19	BOLTS / STUDS (5/8"-UNC)	See Fasteners Page	
20	FLAT WASHER (5/8")	X45-10-17005	391-3784-028
21	HEX NUT (5/8"-UNC)	X42-11-16000	391-1451-076
Not Shown	CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11	A35-50-00141	323-1500-500
Not Shown	CONTINENTAL SHAFT TYPE 25 (0.875" Ø- 13 TOOTH SPLINE)	A35-50-00221	323-1000-300
Not Shown	CONTINENTAL SHAFT TYPE 73 LONG (1 1/4" Ø KEYED 5/16")	A35-50-00147	323-1500-502
Not Shown	CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7	A35-50-00241	323-1135-194
Not Shown	CONTINENTAL SHAFT TYPE 43 (1.00" Ø x 1/4" x 3/8" x 1 1/4" key)	A35-50-00131	323-1500-400
Not Shown	DRIVE KEY FOR TYPE 11 SHAFT	X01-02-80838	391-1781-083
Not Shown	DRIVE KEY FOR TYPE 43 SHAFT	X01-02-60632	391-1781-082
Not Shown	DRIVE KEY FOR TYPE 73 SHAFT	Special Order	391-1781-088
Not Shown	CONTINENTAL SHAFT BRG. RETAINER	A50-60-20000	391-3381-046
Not Shown	CONTINENTAL SHAFT BRG. RETAINER SNAP RING	X05-02-35120	391-2685-040
Not Shown	CASE DRAIN PLUG	X02-03-12060	391-2281-010

MH350 Series

Dimensions

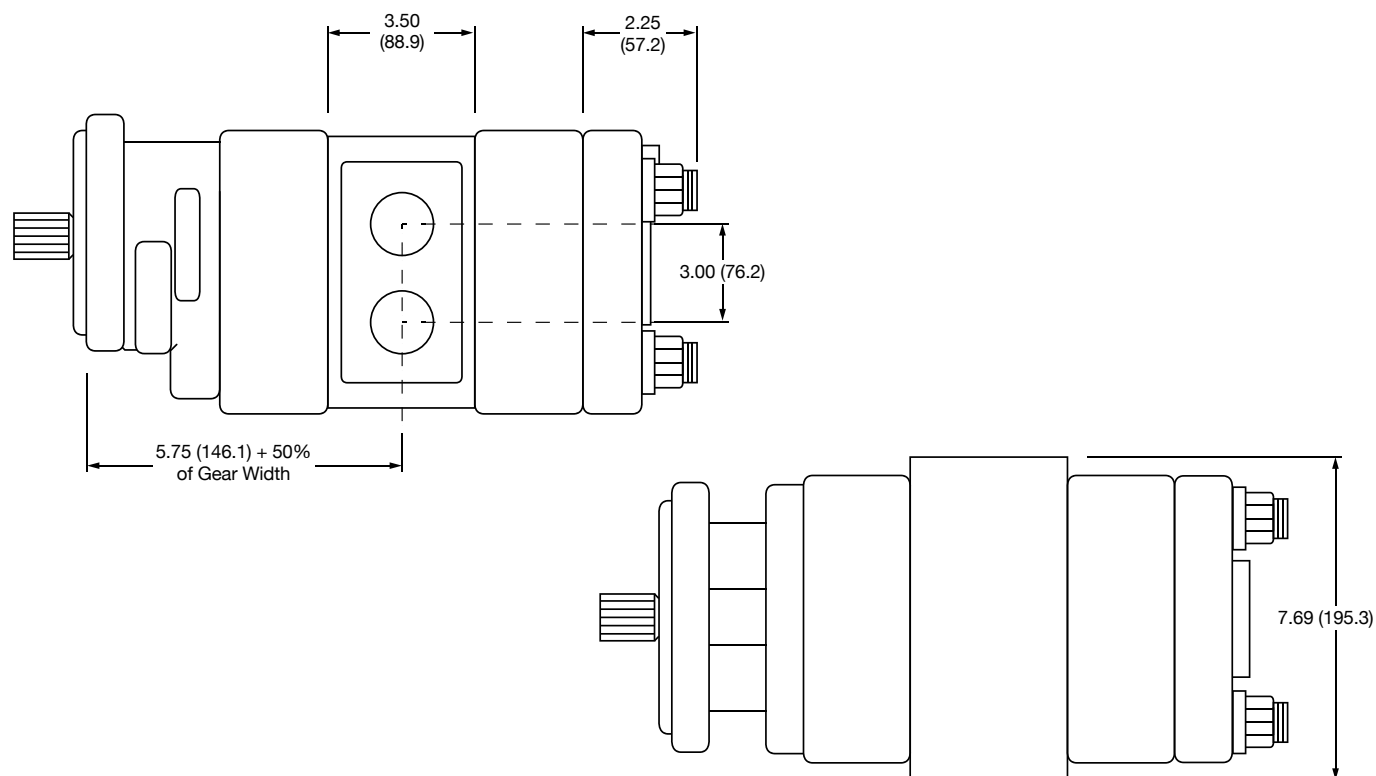
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.



Dimensions are in inches (millimeters).

MH365 Series Bushing Pump

Features

Metaris Bushing Pumps & Motors are available in 4 models with many of the same available options as Metaris Bearing Pumps. With ductile iron housings, these pumps offer pressure ratings as high as 3500 psi for the most demanding of applications.

- Heavy Duty Sleeve Bushing Design
- Dowelled and Rugged Cast Iron Construction
- Pressure Balanced Wear Plates
- Working Pressure up to 3500 psi
- Multiple Bearing Carrier Options
- NPT & SAE Port Options
- High Strength Steel Gear & Shaft Sets



Specifications

MH365		DISPLACEMENT		MAX PRESSURE	
GEAR WIDTH		IN ³ /REV	(CM ³ /REV)	PSI	BAR
.75	3/4"	2.70	(44.3)	3500	(241)
1.00	1"	3.60	(59.0)	3500	(241)
1.25	1-1/4"	4.50	(73.8)	3500	(241)
1.50	1-1/2"	5.40	(88.5)	3500	(241)
1.75	1-3/4"	6.30	(103.3)	3500	(241)
2.00	2"	7.20	(118.0)	3500	(241)
2.25	2-1/4"	8.10	(132.8)	3250	(224)
2.50	2-1/2"	9.00	(147.5)	3000	(207)

MH365 Series Bushing Pump

Pump Performance Data

SPEED RPM	GEAR WIDTH (GPM/LPM)							
	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"
900	8 / 30	11.5 / 44	14.9 / 57	18.4 / 70	21.8 / 83	25.4 / 96	28.8 / 109	32.3 / 122
1200	11.5 / 44	16.2 / 61	20.8 / 79	25.5 / 96	30 / 114	34.7 / 131	39.3 / 149	44 / 166
1500	15 / 57	20.9 / 79	26.6 / 101	32.5 / 123	38.2 / 145	44.1 / 167	49.8 / 188	55.6 / 211
1800	18.5 / 70	25.6 / 97	32.5 / 123	39.5 / 149	46.4 / 176	53.4 / 202	60.3 / 228	67.3 / 255
2100	22 / 83	30.2 / 114	38.3 / 145	46.5 / 176	54.6 / 207	62.8 / 238	70.8 / 268	79 / 299
2400	25.6 / 97	34.9 / 132	44.2 / 167	53.5 / 203	62.8 / 238	72.1 / 273	81.4 / 308	90.7 / 343

Motor Performance Data

SPEED RPM	GEAR WIDTH													
	1" (3500 PSI)		1-1/4" (3500 PSI)		1-1/2" (3500 PSI)		1-3/4" (3500 PSI)		2" (3500 PSI)		2-1/4" (3250 PSI)		2-1/2" (3000 PSI)	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B
900	18.4 / 70	1865 / 210.7	22 / 83	2355 / 266.1	25.6 / 97	2860 / 323.1	29.2 / 111	3370 / 380.8	32.9 / 124	3850 / 435	36.5 / 138	4020 / 454.2	40.1 / 152	4125 / 466.1
1200	23.3 / 88	1845 / 208.5	28.1 / 106	2330 / 263.3	32.9 / 124	2830 / 319.7	37.6 / 142	3335 / 376.8	42.4 / 160	3800 / 430.5	47.2 / 179	3980 / 449.7	52 / 197	4080 / 461
1500	28.2 / 107	1815 / 205.1	34.1 / 129	2295 / 259.3	40.1 / 152	2780 / 314.1	46 / 74	3280 / 370.6	52 / 197	3750 / 423.7	57.9 / 219	3915 / 442.3	63.8 / 242	4020 / 454.2
1800	33.1 / 125	1805 / 203.9	40.2 / 152	2280 / 257.6	47.3 / 179	2765 / 312.4	54.4 / 206	3265 / 368.9	61.5 / 233	3730 / 421.4	68.6 / 260	3895 / 440.1	75.7 / 287	3995 / 451.4
2100	37.9 / 144	1755 / 198.3	46.2 / 175	2220 / 250.8	54.4 / 206	2690 / 303.9	62.8 / 238	3160 / 357	71.1 / 269	3610 / 407.9	79.3 / 300	3770 / 426	87.6 / 332	3865 / 436.7
2400	42.8 / 162	1705 / 192.6	52.3 / 198	2155 / 243.5	61.7 / 234	2615 / 295.5	51.2 / 269	3055 / 345.2	80.6 / 305	3490 / 394.3	90.1 / 341	3645 / 411.8	99.5 / 377	3740 / 422.6

Note: Input Flow @ 2500psi | Output Torque @ 175 bar

A: Input Flow - GPM / LPM

B: Output Torque - In/Lbs. / Nm

MH365 PL Chart

SHAFT STYLE	INTEGRAL	TWO PIECE
SAE "BB" Spline	7,750	7,750
SAE "BB" Keyed	5,550	5,550
SAE "B" Spline	3,050	3,050
SAE "B" Keyed	3,700	3,700
SAE "C" Spline	14,900	11,950
SAE "C" Keyed	10,800	10,800
Connecting Shaft		11,950

Values based on using anti-wear type petroleum oil 150 SUS at 100° F (ISO rating of 32 cSt at 38° C) and 0 psi inlet pressure.

MH365 Series Bushing Pump

Model Code Breakdown

Repeat for Tandem Units

MHP - 365 - A - 1 - 78 - BL - AB - 10 - 11 - AU - * - * - *

Type ¹ _____
MHP = Pump
MHM = Motor

Unit ² _____
A = Single Unit
B = Tandem Unit
C = Single or Tandem Unit w/ a Continental Shaft
L = Unit w/ Extended Studs

Shaft End Cover ³ _____
1 = Pump w/o Shaft Bearing (Clockwise Rotation)
2 = Pump w/o Shaft Bearing (Counter-clockwise Rotation)
4 = Pump w/ Shaft Bearing (Clockwise Rotation)
5 = Pump w/ Shaft Bearing (Counter-clockwise Rotation)
8 = Motor w/ Shaft Bearing (Bi-Rotational)
9 = Motor w/o Shaft Bearing (Bi-Rotational)

Shaft End Cover ⁴ _____
42 = SAE 4-Bolt "B" Mount
78 = SAE 4-Bolt "C" Mount
97 = SAE 2-Bolt "B" Mount
98 = SAE 2-Bolt "C" Mount

Port End Cover ⁵ _____

Connecting Shaft ¹⁰
For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers ⁹
See following page for Bearing Carrier options

Shaft Type ⁸
07 = SAE "C" 14 Tooth Spline 1.250 Dia.
11 = SAE "C" Keyed 1.249 Dia. 5/16" x 15/32" x 1-1/2" Key

Gear Size ⁷
Code / Displacement (in³/r)

07 (2.70)	10 (3.60)	12 (4.50)	15 (5.40)
17 (6.30)	20 (7.20)	22 (8.10)	25 (9.00)

Gear Housing ⁶

Code	Port Size		
	In	Out	
AB	None	None	Pump
EB	None	None	Motor

Unported

		Port Size	
		In	Out
BI		None	None

Side Ported - SAE O-ring

CW	CCW	Port Size	
		In	Out
FB	BF	1-1/2"	1-1/4"
FC	CF	1-1/2"	1"
FG	GF	1-1/4"	1-1/4"
FJ	JF	1-1/4"	1"
FL	LF	1"	1"
BC	CB	1-1/2"	None
BG	GB	1-1/4"	None
BJ	JB	1"	None
BL	LB	None	1-1/4"
BN	NB	None	1"

Orientation is viewed from the shaft end

Motor - Side Ported - SAE O-ring

		Port Size	
		In	Out
VC		1-1/4"	1-1/4"
VN		1"	1"
VR		3/4"	3/4"

Side Ported - SAE Split Flange

CW	CCW	Port Size	
		In	Out
EC	CE	2"	1-1/2"
EF	FE	2"	1-1/4"
EG	GE	2"	1"
EH	HE	1-1/2"	1-1/2"
EJ	JE	1-1/2"	1-1/4"
EK	KE	1-1/2"	1"
EL	LE	1-1/4"	1-1/4"
EM	ME	1-1/4"	1"
EN	NE	1"	1"
OE	EO	2"	None
OF	FO	1-1/2"	None
OG	GO	1-1/4"	None
OJ	JO	1"	None
OL	LO	None	1-1/2"
OM	MO	None	1-1/4"
ON	NO	None	1"

Orientation is viewed from the shaft end

Motor - Side Ported - SAE Split Flange

		Port Size	
		In	Out
CR		1-1/2"	1-1/2"
CS		1-1/4"	1-1/4"
CT		1"	1"
CV		3/4"	3/4"

MH365 Series Bushing Pump

Model Code Breakdown Cont.

Bearing Carriers ⁹

Dual Outlet Pumps

SAE Split Flange

CW	CCW	Port Size		
		In	Out	Out
AC	CA	2-1/2"	1-1/2"	1-1/2"
AD	DA	2-1/2"	1-1/2"	1-1/4"
AE	EA	2-1/2"	1-1/2"	1"
AF	FA	2-1/2"	1-1/4"	1-1/4"
AG	GA	2-1/2"	1-1/4"	1"
AH	HA	2-1/2"	1"	1"
AM	MA	2"	1-1/4"	1-1/4"
AN	NA	2"	1-1/4"	1"
AP	PA	2"	1"	1"
AT	TA	1-1/2"	1-1/4"	1-1/4"
AU	UA	1-1/2"	1-1/4"	1"
AV	VA	1-1/2"	1"	1"
AW	WA	1-1/4"	1-1/4"	1-1/4"
AX	XA	1-1/4"	1-1/4"	1"
AY	YA	1-1/4"	1"	1"
AZ	ZA	1"	1"	1"

Orientation is viewed from the shaft end

Dual Outlet Pumps

SAE O-ring

CW	CCW	Port Size		
		In	Out	Out
GJ	JG	2"	1-1/2"	1-1/2"
GK	KG	2"	1-1/2"	1-1/4"
GL	LG	2"	1-1/2"	1"
GM	MG	2"	1-1/4"	1-1/4"
GN	NG	2"	1-1/4"	1"
GP	PG	2"	1"	1"
GT	TG	1-1/2"	1-1/4"	1-1/4"
GU	UG	1-1/2"	1-1/4"	1"
GV	VG	1-1/2"	1"	1"
GW	WG	1-1/4"	1-1/4"	1-1/4"
GX	XG	1-1/4"	1-1/4"	1"
GY	YG	1-1/4"	1"	1"
GZ	ZG	1"	1"	1"

Orientation is viewed from the shaft end

Single Outlet Pumps

SAE Split Flange

CW	CCW	Port Size	
		In	Out
CJ	JC	2-1/2"	1-1/2"
CL	LC	2-1/2"	1-1/4"
CM	MC	2-1/2"	1"
HB	BH	2"	1-1/2"
HC	CH	2"	1-1/4"
HF	FH	2"	1"
HL	LH	1-1/2"	1-1/2"
HM	MH	1-1/2"	1-1/4"
HN	NH	1-1/2"	1"
HO	OH	1-1/4"	1-1/4"
HP	PH	1-1/4"	1"
HQ	QH	1"	1"

Orientation is viewed from the shaft end

Single Outlet Pumps

SAE O-ring

CW	CCW	Port Size	
		In	Out
KB	BK	2"	1-1/2"
KC	CK	2"	1-1/4"
KF	FK	2"	1"
KL	LK	1-1/2"	1-1/2"
KM	MK	1-1/2"	1-1/4"
KN	NK	1-1/2"	1"
KO	OK	1-1/4"	1-1/4"
KP	PK	1-1/4"	1"
KQ	QK	1"	1"

Orientation is viewed from the shaft end

Combined Outlet Pumps

SAE Split Flange

CW	CCW	Port Size	
		In	Out
UC	CU	2-1/2"	1-1/2"
UF	FU	2-1/2"	1-1/4"
UN	NU	2"	1-1/2"
UO	OU	2"	1-1/4"
UP	PU	1-1/2"	1-1/2"
UQ	QU	1-1/2"	1-1/4"
UR	RU	1-1/4"	1-1/4"

Orientation is viewed from the shaft end

Combined Outlet Motors

SAE Split Flange

		Port Size	
		In	Out
AA		2"	2"
BB		1-1/2"	1-1/2"
CC		1-1/4"	1-1/4"
EE		1"	1"
FF		3/4"	3/4"

Orientation is viewed from the shaft end

Combined Outlet Pumps

SAE O-ring

CW	CCW	Port Size	
		In	Out
PE	EP	2"	1-1/2"
PM	MP	2"	1-1/4"
PN	NP	1-1/2"	1-1/2"
PQ	QP	1-1/2"	1-1/4"
PR	RP	1-1/4"	1-1/4"

Orientation is viewed from the shaft end

Combined Outlet Motors

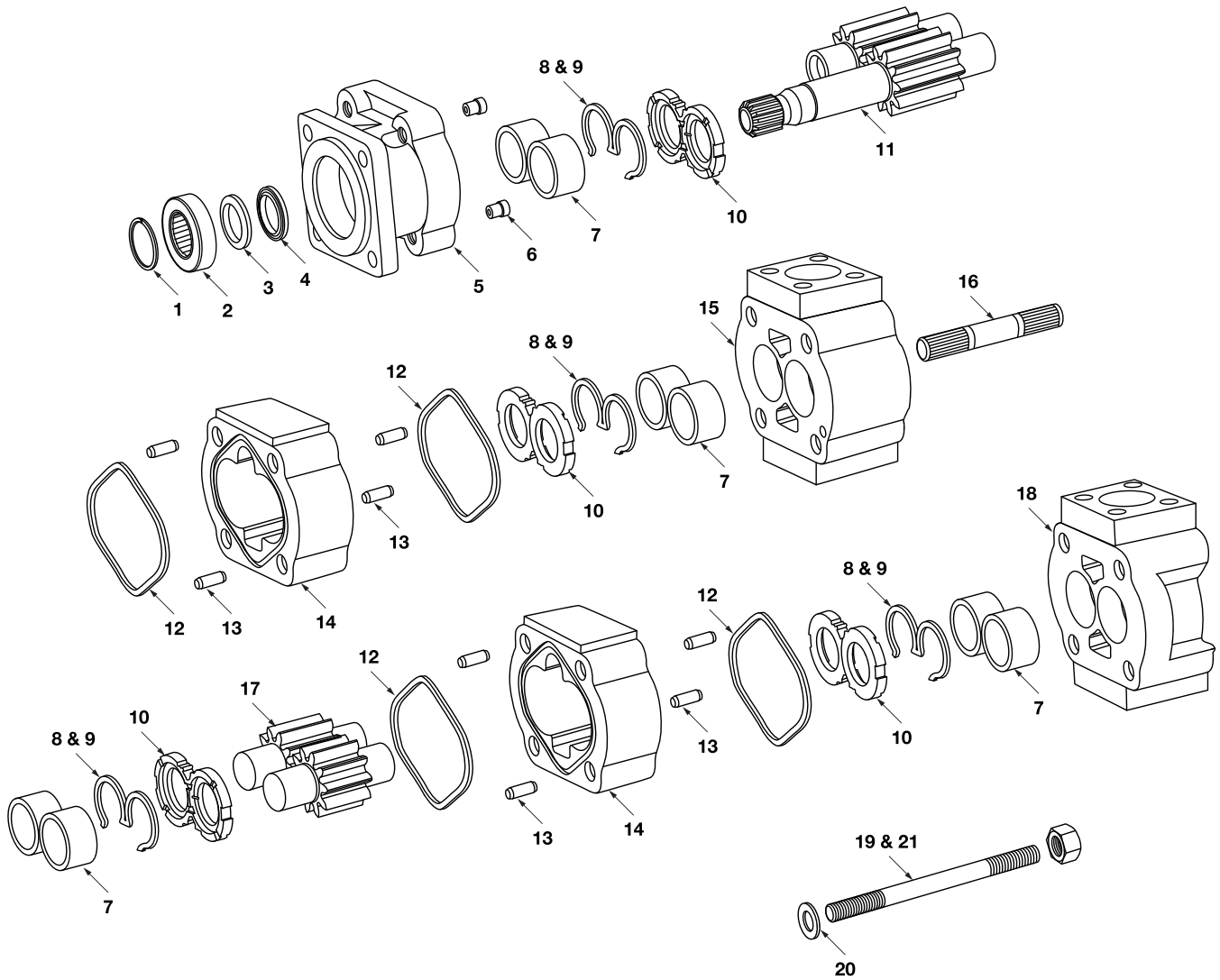
SAE O-ring

		Port Size	
		In	Out
MM		1-1/2"	1-1/2"
NN		1-1/4"	1-1/4"
QQ		1"	1"
RR		3/4"	3/4"

Orientation is viewed from the shaft end

MH365 Series

Parts Breakdown



MH365 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
1	SHAFT BRG. SNAP RING	X05-01-88280	391-2686-025
2a	INPUT SHAFT BRG.	X03-16-13580	391-0381-078
2b	SEAL RETAINER & SPACER IN PLACE OF SHAFT BRG.	A36-60-10002	391-3383-099
3	SEAL RETAINER FOR MOTORS ONLY	A36-60-10001	391-2584-119
4a	PUMP LIP SEAL	X83-11-03508	391-2883-052
4b	MOTOR LIP SEAL	X84-36-03510	391-2883-094
5a	4 BOLT B MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101.6 mm pilot)	A36-10-21421	322-5033-201
5b	4 BOLT B MOUNT PUMP S.E.C. WITH BUSHING TYPE 42 (4" or 101.6 mm pilot)	A36-10-21422	322-5133-201
5c	4 BOLT C MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)	A36-10-21431	322-5033-202
5d	4 BOLT C MOUNT PUMP S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)	A36-10-21432	322-5133-202
5e	2 BOLT B MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101.6 mm pilot)	A36-10-21221	322-5023-201
5f	2 BOLT B MOUNT PUMP S.E.C. WITH BUSHING TYPE 97 (4" or 101.6 mm pilot)	A36-10-21222	322-5123-201
5g	2 BOLT C MOUNT PUMP S.E.C. WITHOUT BUSHING TYPE 98 (5" or 127 mm pilot)	A36-10-21231	322-5023-202
5h	2 BOLT C MOUNT PUMP S.E.C. WITH BUSHING TYPE 98 (5" or 127 mm pilot)	A36-10-21232	322-5123-202
5i	4 BOLT B MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 42 (4" or 101.6 mm pilot)	A36-10-41421	322-5033-401
5j	4 BOLT B MOUNT MOTOR S.E.C. WITH BUSHING TYPE 42 (4" or 101.6 mm pilot)	A36-10-41422	322-5133-401
5k	4 BOLT C MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 78 (5" or 127 mm pilot)	A36-10-41431	322-5033-402
5l	4 BOLT C MOUNT MOTOR S.E.C. WITH BUSHING TYPE 78 (5" or 127 mm pilot)	A36-10-41432	322-5133-402
5m	2 BOLT B MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 97 (4" or 101.6 mm pilot)	A36-10-41221	322-5023-401
5n	2 BOLT B MOUNT MOTOR S.E.C. WITH BUSHING TYPE 97 (4" or 101.6 mm pilot)	A36-10-41222	322-5123-401
5o	2 BOLT C MOUNT MOTOR S.E.C. WITHOUT BUSHING TYPE 98 (5" or 127 mm pilot)	A36-10-41231	322-5023-402
5p	2 BOLT C MOUNT MOTOR S.E.C. WITH BUSHING TYPE 98 (5" or 127 mm pilot)	A36-10-41232	322-5123-402
6a	CHECK VALVE MOTOR (Not required on all models)	A00-75-11000	391-3681-001
6b	PRESSURE PLUG PUMP (Not required on all models)	X02-03-32110	391-2286-004
7	BUSHING	X03-00-33842	391-0482-307
8	PUMP BUNA SEAL	A36-82-13050	391-2883-176
9	PUMP NYLON BACKUP SEAL	A36-82-46020	391-2883-177
Not Shown	MOTOR NYLON BACKUP SEAL	A36-82-46030	391-2885-071
Not Shown	MOTOR THRUST PLATE SIDE SEAL	A36-82-14021	391-2885-069
Not Shown	MOTOR THRUST PLATE END SEAL	A36-82-14022	391-2885-070
10a	PUMP THRUST PLATE	A36-70-20000	391-2185-055
10b	MOTOR THRUST PLATE	A36-70-10000	391-2185-060
11a	SHAFT & GEAR 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7	A36-50-XX245	322-29XX-250
11b	SHAFT & GEAR 1.250" KEYED (5/16") TYPE 11	A36-50-XX145	322-29XX-750
11c	SHAFT & GEAR SET 13 TOOTH SPLINE 0.858" maj. dia TYPE 25	A36-50-XX225	322-29XX-230
12a	PUMP HOUSING GASKET	X85-11-12703	391-2884-052
12b	MOTOR HOUSING GASKET	X85-11-12303	391-2884-023

MH365 Series

Parts Breakdown

DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
13a	PUMP HOUSING DOWEL PIN	A00-94-22119	391-2082-062
13b	MOTOR HOUSING DOWEL PIN	A00-94-22408	391-2082-069
14a	PUMP GEAR HOUSING	A36-33-XX000	322-81XX-100
14b	MOTOR GEAR HOUSING	A36-32-XX000	322-82XX-100
15a	365 BEARING CARRIER 1 OUTLET WITHOUT BUSHING	A36-40-21000	322-7100-100
15b	365 BEARING CARRIER 1 OUTLET WITH BUSHING	A36-40-31000	322-7600-100
15c	365 BEARING CARRIER 2 OUTLET WITHOUT BUSHING	A36-40-22000	322-7300-100
15d	365 BEARING CARRIER 2 OUTLET WITH BUSHING	A36-40-32000	322-7800-100
15e	365 MOTOR BEARING CARRIER BLANK WITHOUT BUSHING	A36-40-00000	322-7200-100
15f	365 MOTOR BEARING CARRIER BLANK WITH BUSHING	A36-40-10000	322-7700-100
15g	365/330 BEARING CARRIER CW WITHOUT BUSHING	A36-40-23000	322-3050-100
15h	365/330 BEARING CARRIER CW WITH BUSHING	A36-40-33000	322-3150-100
15i	365/330 BEARING CARRIER CCW WITHOUT BUSHING	A36-40-24000	322-3060-100
15j	365/330 BEARING CARRIER CCW WITH BUSHING	A36-40-34000	322-3160-100
16a	CONNECTING SHAFT	A36-50-00500	322-1133-001
16b	PIGGYBACK CONNECTING SHAFT 365/330	A83-50-00500	322-1133-002
17	GEAR SET ONLY	A36-50-XX000	322-28XX-000
18a	365 PUMP PORT END COVER WITHOUT BUSHING NO PORTING	A36-23-00000	322-3000-100
18b	365 PUMP PORT END COVER WITH BUSHING NO PORTING	A36-23-10000	322-3100-100
18c	365 PUMP PORT END COVER WITHOUT BUSHING PORTING TYPE	A36-23-02000	322-3010-100
18d	365 PUMP PORT END COVER WITH BUSHING PORTING TYPE	A36-23-12000	322-3110-100
18e	365 MOTOR PORT END COVER WITHOUT BUSHING NO PORTING	A36-22-00000	322-3000-099
18f	365 MOTOR PORT END COVER WITH BUSHING NO PORTING	A36-22-10000	322-3100-099
18g	365 MOTOR PORT END COVER WITHOUT BUSHING PORTING TYPE	A36-22-02000	322-3020-100
18h	365 MOTOR PORT END COVER WITH BUSHING PORTING TYPE	A36-22-12000	322-3120-100
18i	365 P.E.C. TO S.A.E. "A" PILOT CW WITHOUT BUSHING	A36-22-04000	322-3054-099
18j	365 P.E.C. TO S.A.E. "A" PILOT CW WITH BUSHING	A36-23-14000	322-3154-099
18k	365 P.E.C. TO S.A.E. "A" PILOT CCW WITHOUT BUSHING	A36-22-05000	322-3064-099
18l	365 P.E.C. TO S.A.E. "A" PILOT CCW WITH BUSHING	A36-23-17000	322-3164-099
18m	365 P.E.C. TO S.A.E. "B" PILOT CW WITHOUT BUSHING	A36-23-06000	322-3054-100
18n	365 P.E.C. TO S.A.E. "B" PILOT CW WITH BUSHING	A36-23-16000	322-3154-100
18o	365 P.E.C. TO S.A.E. "B" PILOT CCW WITHOUT BUSHING	A36-23-07000	322-3064-100

Note: The **XX** shown in the part number is in place of the size - the true value must be placed into the part number when ordering parts.

For example: Gear set no. A36-50-XX000 changes to A36-50-15000 for 1.5" gear size
Housing no. A36-33-XX000 changes to A36-33-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH365 Series

Parts Breakdown

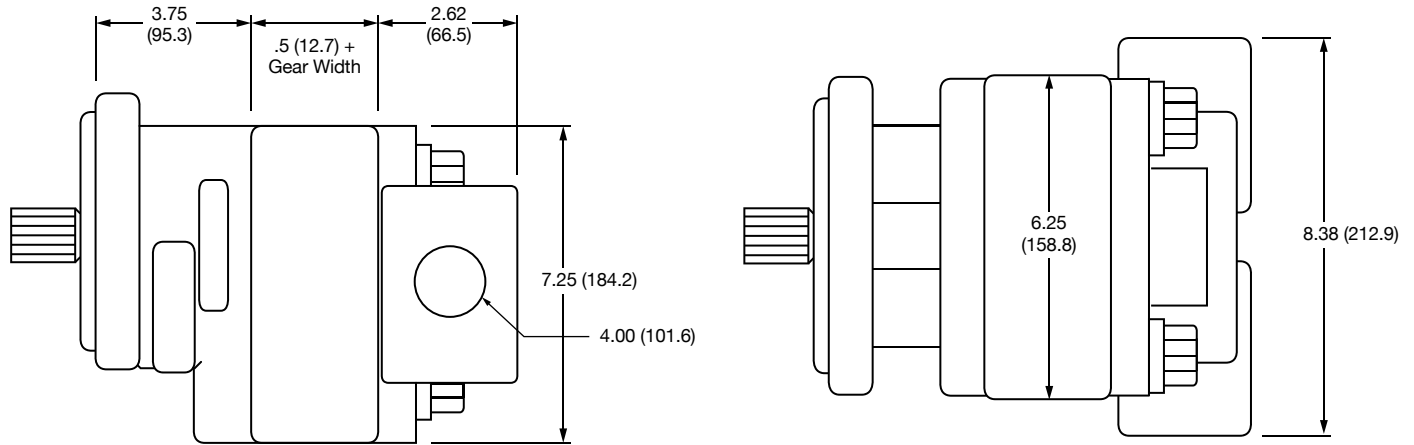
DRAWING NO.	DESCRIPTION	METARIS #	ALTERNATE #
18p	365 P.E.C. TO S.A.E. "B" PILOT CCW WITH BUSHING	A36-23-17000	322-3164-100
19	BOLTS / STUDS	See Fasteners Page	
20a	MOTOR FLAT WASHER	X45-10-21004	391-3782-114
20b	PUMP FLAT WASHER	X45-10-17005	391-3784-028
21a	PUMP HEX NUT	X42-11-16000	391-1451-076
21b	MOTOR HEX NUT	X42-11-19016	391-1451-086
Not Shown	CONTINENTAL SHAFT 1.250" KEYED (5/16") TYPE 11	A36-50-00141	322-1500-500
Not Shown	CONTINENTAL SHAFT 14 TOOTH SPLINE 1.228" maj. dia. TYPE 7	A36-50-00241	322-1000-500
Not Shown	CONTINENTAL SHAFT BRG. RETAINER	X45-19-35002	391-3782-158
Not Shown	CONTINENTAL SHAFT BRG. RETAINER SNAP RING	X05-02-38130	391-2685-029
Not Shown	SHAFT KEY FOR TYPE 11 SHAFT	X01-02-80838	391-1781-083
Not Shown	PIGGYBACK CONNECTING SHAFT BEARING	X03-16-13055	391-0381-099
Not Shown	PIGGYBACK CONNECTING SHAFT LIP SEAL	X83-11-03308	391-2883-103
Not Shown	PIGGYBACK CONNECTING SHAFT BEARING SNAP RING	X05-01-61200	391-2686-019
Not Shown	1/4" ORB DRAIN PLUG	X02-03-12060	391-2281-010

MH365 Series

Dimensions

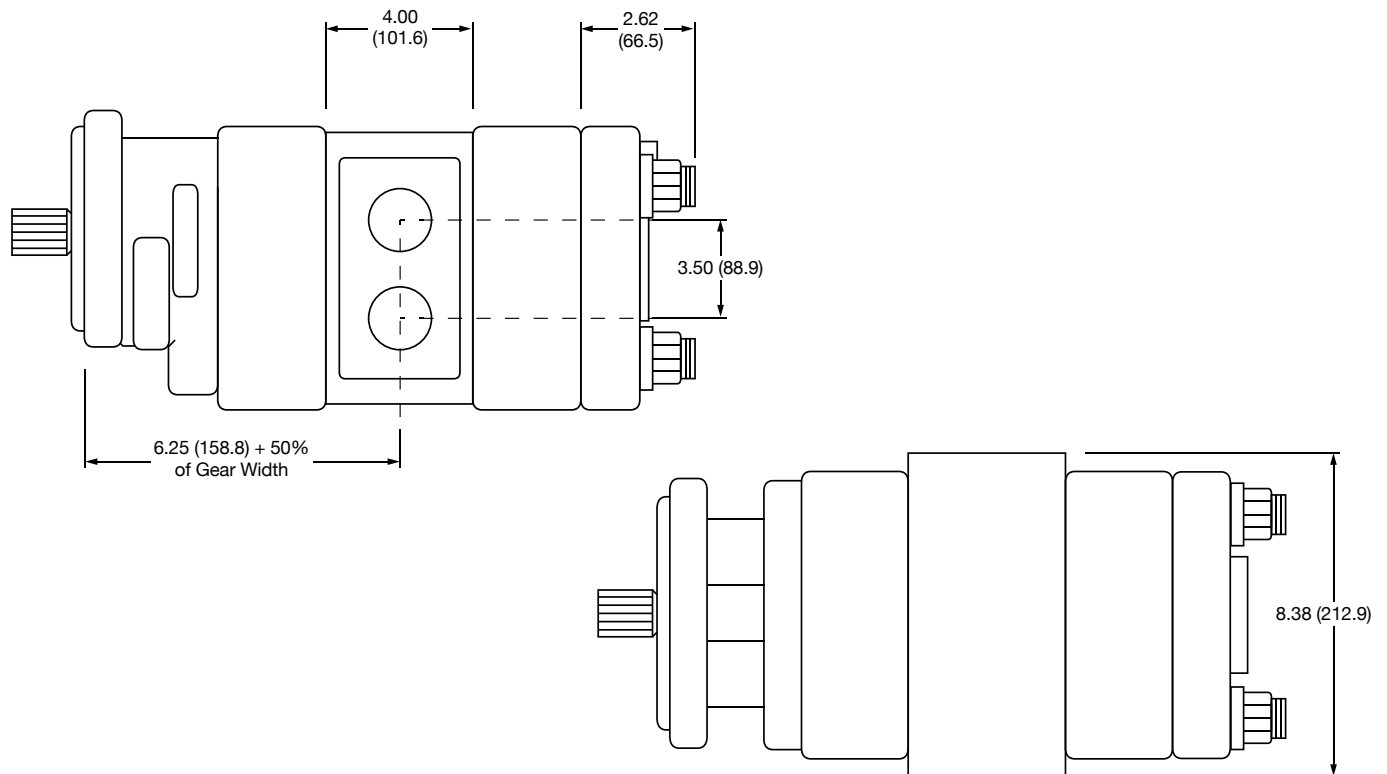
Single Unit

* Shaft dimension will change with the type of shaft used.



Multiple Unit

* Shaft dimension will change with the type of shaft used.

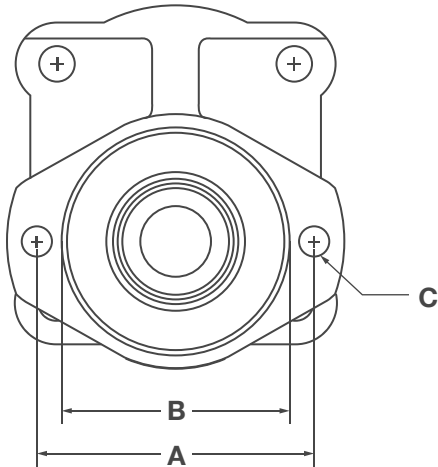


Dimensions are in inches (millimeters).

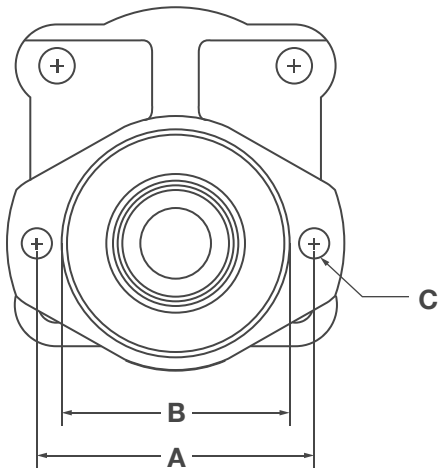
Metaris MH Series Units

Shaft End Covers

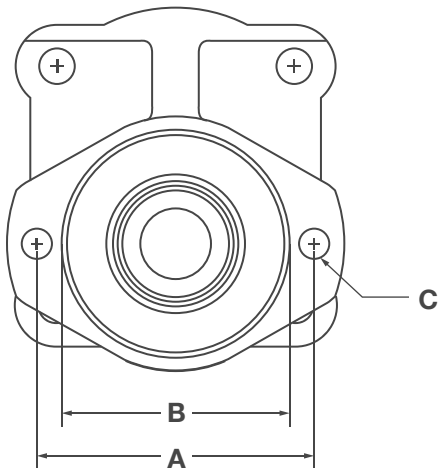
2-Bolt "A" Mount



2-Bolt "B" Mount



2-Bolt "C" Mount



2-BOLT "A" MOUNT	A	B	C	CODE
MH15	4.19 (106.4)	3.25 (82.6)	0.44 (11.2)	01
MH20	4.19 (106.4)	3.25 (82.6)	0.44 (11.2)	94
MH25			n/a	
MH30	4.19 (106.4)	3.25 (82.6)	0.44 (11.2)	94
MH31	4.19 (106.4)	3.25 (82.6)	0.44 (11.2)	94
MH37			n/a	
MH50			n/a	
MH51			n/a	
MH75			n/a	
MH76			n/a	
MH315	4.19 (106.4)	3.25 (82.6)	0.44 (11.2)	93
MH330			n/a	
MH350			n/a	
MH365			n/a	

2-BOLT "B" MOUNT	A	B	C	CODE
MH15	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	07
MH20	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	97
MH25	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	97
MH30	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	97
MH31	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	97
MH37			n/a	
MH50	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	97
MH51	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	97
MH75			n/a	
MH76			n/a	
MH315	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	96
MH330	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	97
MH350	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	97
MH365	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	97

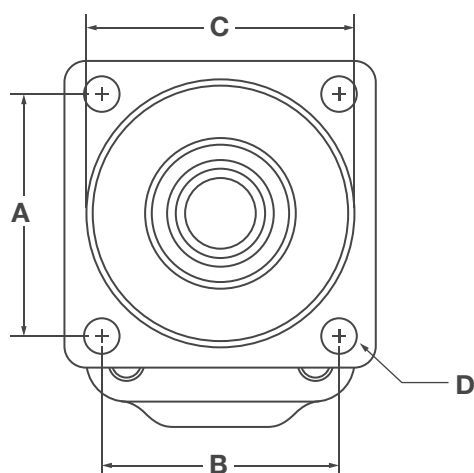
2-BOLT "C" MOUNT	A	B	C	CODE
MH15			n/a	
MH20			n/a	
MH25	7.13 (181.1)	4.99 (126.7)	0.69 (17.5)	98
MH30			n/a	
MH31			n/a	
MH37	7.13 (181.1)	4.99 (126.7)	0.69 (17.5)	98
MH50	7.13 (181.1)	4.99 (126.7)	0.69 (17.5)	98
MH51	7.13 (181.1)	4.99 (126.7)	0.69 (17.5)	98
MH75	7.13 (181.1)	4.99 (126.7)	0.69 (17.5)	98
MH76	7.13 (181.1)	4.99 (126.7)	0.69 (17.5)	98
MH315			n/a	
MH330			n/a	
MH350	7.13 (181.1)	4.99 (126.7)	0.69 (17.5)	98
MH365	7.13 (181.1)	4.99 (126.7)	0.69 (17.5)	98

Dimensions are in inches (millimeters).

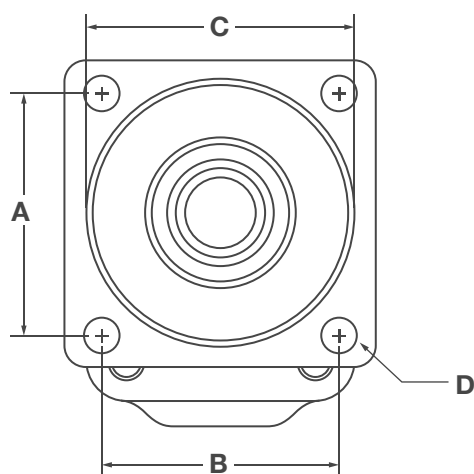
Metaris MH Series Units

Shaft End Covers

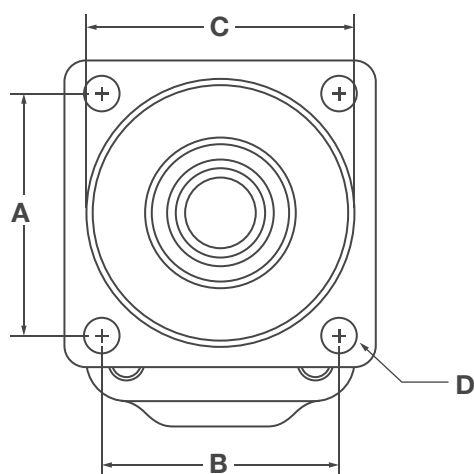
4-Bolt "B" Mount



4-Bolt "C" Mount



4-Bolt "D" Mount



4-BOLT "B" MOUNT	A	B	C	D	CODE
MH15	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	12
MH20	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42
MH25	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42
MH30	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42
MH31	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42
MH37	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42
MH50	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42
MH51	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42
MH75	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42
MH76	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42
MH315	n/a				
MH330	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42
MH350	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42
MH365	3.54 (89.9)	3.54 (89.9)	3.99 (101.3)	0.56 (14.2)	42

4-BOLT "C" MOUNT	A	B	C	D	CODE
MH15	n/a				
MH20	n/a				
MH25	4.51 (114.5)	4.51 (114.5)	4.99 (126.7)	0.56 (14.2)	78
MH30	4.51 (114.5)	4.51 (114.5)	4.99 (126.7)	0.56 (14.2)	78
MH31	4.51 (114.5)	4.51 (114.5)	4.99 (126.7)	0.56 (14.2)	78
MH37	4.51 (114.5)	4.51 (114.5)	4.99 (126.7)	0.56 (14.2)	78
MH50	4.51 (114.5)	4.51 (114.5)	4.99 (126.7)	0.56 (14.2)	78
MH51	4.51 (114.5)	4.51 (114.5)	4.99 (126.7)	0.56 (14.2)	78
MH75	4.51 (114.5)	4.51 (114.5)	4.99 (126.7)	0.56 (14.2)	78
MH76	4.51 (114.5)	4.51 (114.5)	4.99 (126.7)	0.56 (14.2)	78
MH315	n/a				
MH330	4.51 (114.5)	4.51 (114.5)	4.99 (126.7)	0.56 (14.2)	78
MH350	4.51 (114.5)	4.51 (114.5)	4.99 (126.7)	0.56 (14.2)	78
MH365	4.51 (114.5)	4.51 (114.5)	4.99 (126.7)	0.56 (14.2)	78

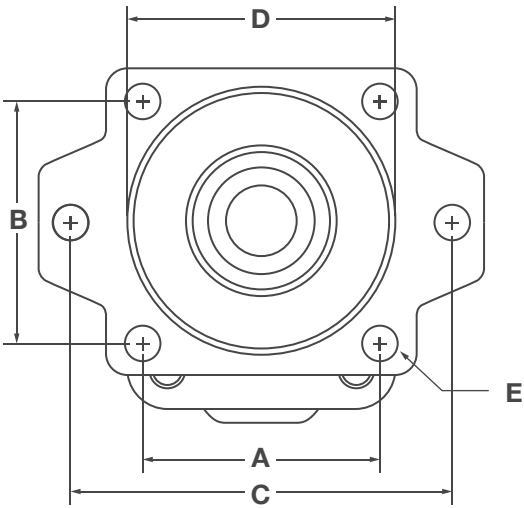
4-BOLT "D" MOUNT	A	B	C	D	CODE
MH15	n/a				
MH20	n/a				
MH25	n/a				
MH30	n/a				
MH31	n/a				
MH37	n/a				
MH50	n/a				
MH51	n/a				
MH75	6.36 (161.5)	6.36 (161.5)	5.99 (152.1)	0.81 (20.6)	80
MH76	6.36 (161.5)	6.36 (161.5)	5.99 (152.1)	0.81 (20.6)	80
MH315	n/a				
MH330	n/a				
MH350	n/a				
MH365	n/a				

Dimensions are in inches (millimeters).

Metaris MH Series Units

Shaft End Covers

2/4-Bolt "B" Mount



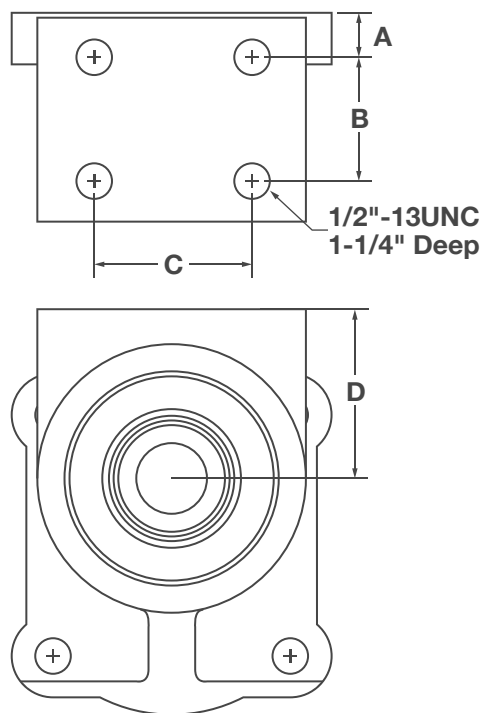
2/4-BOLT "B" MOUNT	A	B	C	D	E	CODE
MH15			n/a			
MH20	3.54 (89.9)	3.54 (89.9)	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	46
MH25			n/a			
MH30	3.54 (89.9)	3.54 (89.9)	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	46
MH31	3.54 (89.9)	3.54 (89.9)	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	46
MH37			n/a			
MH50	3.54 (89.9)	3.54 (89.9)	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	46
MH51	3.54 (89.9)	3.54 (89.9)	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	46
MH75			n/a			
MH76			n/a			
MH315			n/a			
MH330	3.54 (89.9)	3.54 (89.9)	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	46
MH350	3.54 (89.9)	3.54 (89.9)	5.75 (146.1)	4.00 (101.6)	0.56 (14.2)	46
MH365			n/a			

Dimensions are in inches (millimeters).

Metaris MH Series Units

Shaft End Covers

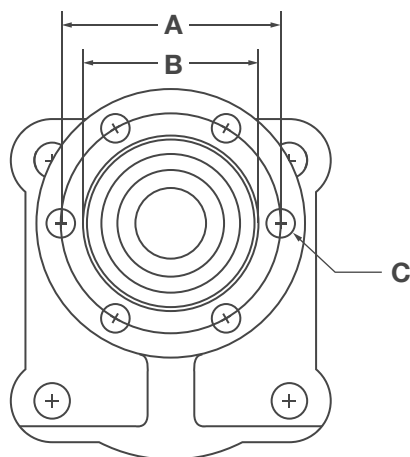
Pad Mount



PAD MOUNT	A	B	C	D	CODE
MH15			n/a		
MH20			n/a		
MH25	0.69 (17.5)	2.00 (50.8)	2.00 (50.8)	2.50 (63.5)	00
MH30	0.69 (17.5)	2.00 (50.8)	2.00 (50.8)	2.50 (63.5)	00
MH31	0.69 (17.5)	2.00 (50.8)	2.00 (50.8)	2.50 (63.5)	00
MH37	0.88 (22.4)	2.50 (63.5)	3.50 (88.9)	2.50 (63.5)	00
MH50	0.69 (17.5)	2.00 (50.8)	2.00 (50.8)	2.50 (63.5)	00
MH51	0.69 (17.5)	2.00 (50.8)	2.00 (50.8)	2.50 (63.5)	00
MH75			n/a		
MH76			n/a		
MH315			n/a		
MH330			n/a		
MH350			n/a		
MH365			n/a		

Dimensions are in inches (millimeters).

6-Bolt Round



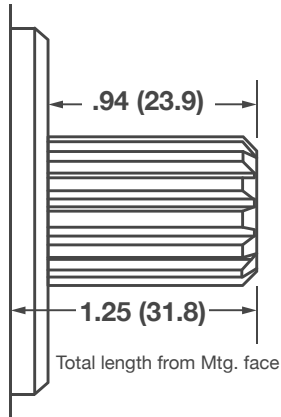
6-BOLT ROUND	A	B	C	CODE
MH15			n/a	
MH20	3.25 (82.6)	2.63 (66.8)	0.44 (11.2)	05
MH25	4.00 (101.6)	3.15 (80.0)	0.56 (14.2)	05
MH30	3.25 (82.6)	2.63 (66.8)	0.44 (11.2)	05
MH31	3.25 (82.6)	2.63 (66.8)	0.44 (11.2)	05
MH37			n/a	
MH50			n/a	
MH51			n/a	
MH75			n/a	
MH76			n/a	
MH315			n/a	
MH330			n/a	
MH350			n/a	
MH365			n/a	

Dimensions are in inches (millimeters).

Metaris MH Series Units

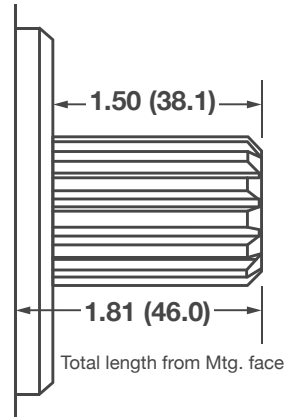
Drive Shaft Dimensions

SAE "A" 9-Tooth Spline, 5/8"



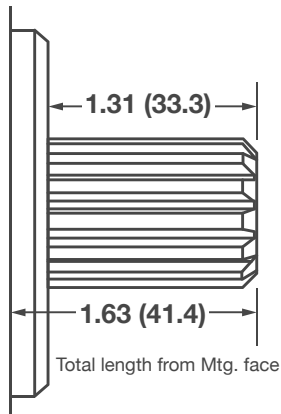
- 9-Tooth, .625 Dia.
- .94 (23.9) Shaft Length
- 16/32 Dia. Pitch
- Major Dia. .603-.609
- Minor Dia. .4835 Max.
- ANSI 16-4
- Code 95
- Unit Sizes 20, 30, 31

SAE "BB" 15-Tooth Spline, 1"



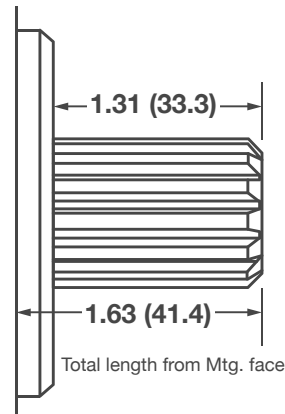
- 15-Tooth, 1.00 Dia.
- 1.50 (38.1) Shaft Length
- 16/32 Dia. Pitch
- Major Dia. .978-.996
- Minor Dia. .840 Max.
- ANSI 25-4
- Code 98
- Unit Sizes 20, 30, 31, 50, 51, 330, 350

SAE "B" 13-Tooth Spline, 7/8"



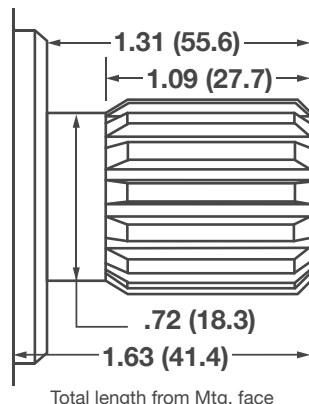
- 13-Tooth, .875 Dia.
- 1.31 (33.3) Shaft Length
- 16/32 Dia. Pitch
- Major Dia. .853-.858
- Minor Dia. .7335 Max.
- ANSI 22-4
- Code 25
- Unit Sizes 20, 30, 31, 50, 51, 330, 350

SAE "B" Spline, Type 2



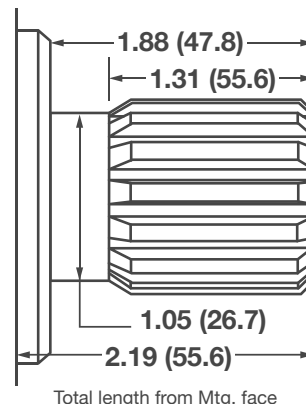
- 13-Tooth, .875 Dia.
- 1.31 (33.3) Shaft Length
- 16/32 Dia. Pitch
- Major Dia. .853-.858
- Minor Dia. .7335 Max.
- ANSI 22-4
- Code 65
- Unit Sizes 20, 30, 31, 50, 51, 315

SAE "B" Spline, Type 2



- 13-Tooth, .875 Dia.
- 1.31 (33.3) Shaft Length
- 16/32 Dia. Pitch
- Major Dia. .853-.858
- Minor Dia. .7335 Max.
- ANSI 22-4
- Code 65
- Unit Sizes 20, 30, 31, 315,

SAE "C" 14-Tooth Spline, 1-1/4"



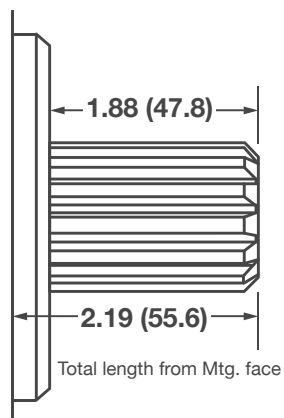
- 14-Tooth, 1.250 Dia.
- 1.88 (47.8) Shaft Length
- 12/24 Dia. Pitch
- Major Dia. 1.223-1.228
- Minor Dia. 1.0627 Max.
- ANSI 32-4
- Code 7
- Unit Sizes 20, 30, 31, 50, 51, 75, 76, 330, 350, 365

Dimensions are in inches (millimeters).

Metaris MH Series Units

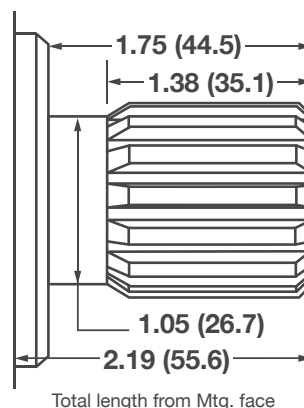
Drive Shaft Dimensions

SAE "C" 14-Tooth Spline, 1-1/4"



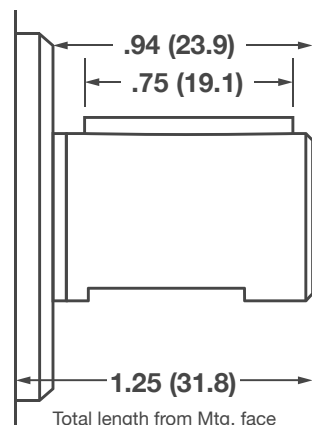
- 14-Tooth, 1.250 Dia.
- 1.88 (47.8) Shaft Length
- 12/24 Dia. Pitch
- Major Dia. 1.223-1.228
- Minor Dia. 1.0627 Max.
- ANSI 32-4
- Code 7
- Unit Sizes 20, 30, 31, 50, 51, 75, 76, 330, 350, 365

SAE "C" Spline, Type 2



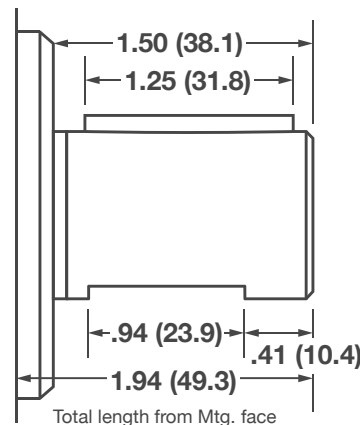
- 14-Tooth, 1.250 Dia.
- 1.75 (44.5) Shaft Length
- 12/24 Dia. Pitch
- Major Dia. 1.223-1.228
- Minor Dia. 1.0627 Max.
- ANSI 32-4
- Code 53
- Unit Sizes 50, 51

SAE "A" Keyed, 5/8"



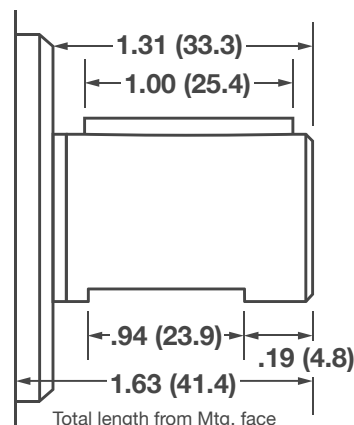
- 5/8" Keyed, .625 Dia.
- .94 (23.9) Shaft Length
- Square Key .16 x .16 x .75
- Major Dia. .625
- Minor Dia. .624
- ANSI 16-1

SAE "BB" Keyed, 1"



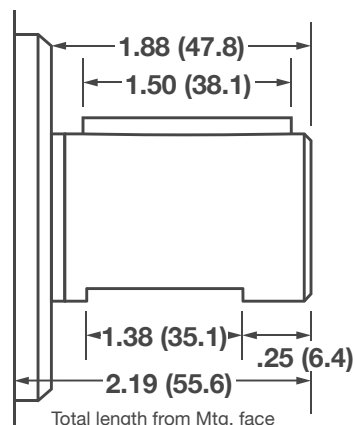
- 1" Keyed, 1.00 Dia.
- 1.50 (38.1) Shaft Length
- #25 P&W Key .25 x .38 x 1.25
- Major Dia. .998
- Minor Dia. .997
- ANSI 25-1
- Code 43
- Unit Sizes 20, 30, 31, 330, 350

SAE "B" Keyed, 7/8"



- 7/8" Keyed, .875 Dia.
- 1.31 (33.3) Shaft Length
- #15 P&W Key .25 x .375 x 1
- Major Dia. .875
- Minor Dia. .874
- ANSI 22-1
- Code 30
- Unit Sizes 20, 30, 31, 330

SAE "C" Keyed, 1-1/4"



- 1-1/4" Keyed, 1.25 Dia.
- 1.88 (47.8) Shaft Length
- #25 P&W Key .31 x .47 x 1.5
- Major Dia. 1.25
- Minor Dia. 1.248
- ANSI 32-1
- Code 11
- Unit Sizes 50, 51, 75, 76, 330, 365

Dimensions are in inches (millimeters).

Metaris MH Series Units

Piggyback Pumps

The piggyback pump is two pumps sharing the same driveline. Metaris offers three types of piggyback units. The original bearing type piggyback version, the Add-A-Pump and the phase two close couple model. The Add-A-Pump allows for any type of pump to be installed to the rear of the main pump. While the close couple type requires a Metaris 300 series pump added to the rear of the main pump, the bearing type requires another bearing type unit to be added to the main pump.

Fig. 1
Bearing Type Piggyback Pump

- Single drive
- Two suction lines required
- Both pumps bearing type

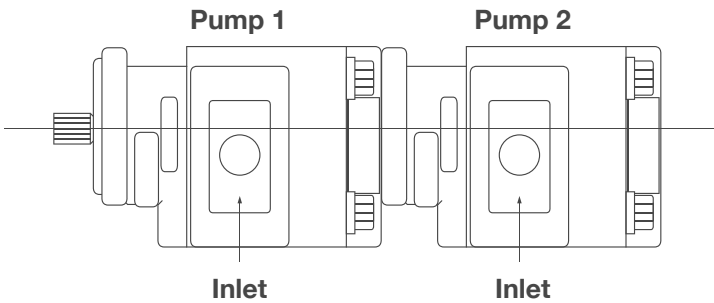


Fig. 2
Close Couple Type Piggyback Pump

- Single drive
- One suction lines required
- Both pumps bushing type

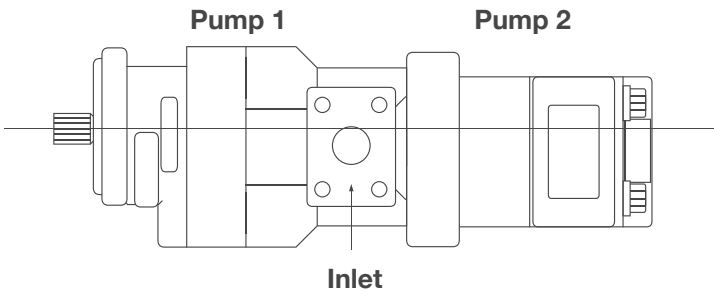
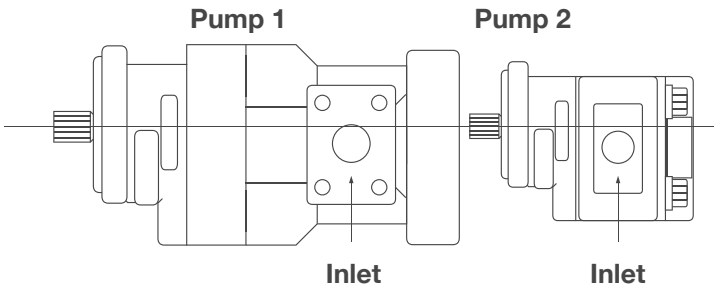


Fig. 3
Add-a-Pump Piggyback Unit

- Single drive
- Two suction lines required
- Second pump can be any type



Pump Configurations

Fig. 1

BEARING TYPE PUMPS	
PUMP 1	PUMP 2
MHP75	MHP50
MHP75	MHP30
MHP76	MHP51
MHP76	MHP31
MHP50	MHP50
MHP50	MHP30
MHP51	MHP51
MHP51	MHP31
MHP30	MHP30
MHP31	MHP31

Fig. 2

BUSHING TYPE PUMPS	
PUMP 1	PUMP 2
MHP365	MHP330
MHP350	MHP315
MHP330	MHP315

Fig. 3

ADD-A-PUMP TYPE	
PUMP 1	PAD MOUNT
MHP365	"A" Pad
MHP365	"B" Pad
MHP350	"A" Pad
MHP350	"B" Pad

For Piggyback units, please consult the factory.

Metaris MH Series Units

Flow Dividers

To build an assembly code number for a flow divider, the code letters and numbers are the same found when building codes for pumps/motors. When selecting the correct code for the flow divider use the clockwise gear housing and end cover codes from the pump code section for the series required.

These units are built in the 30 / 31 / 50 / 51/ 75 / 76 models.

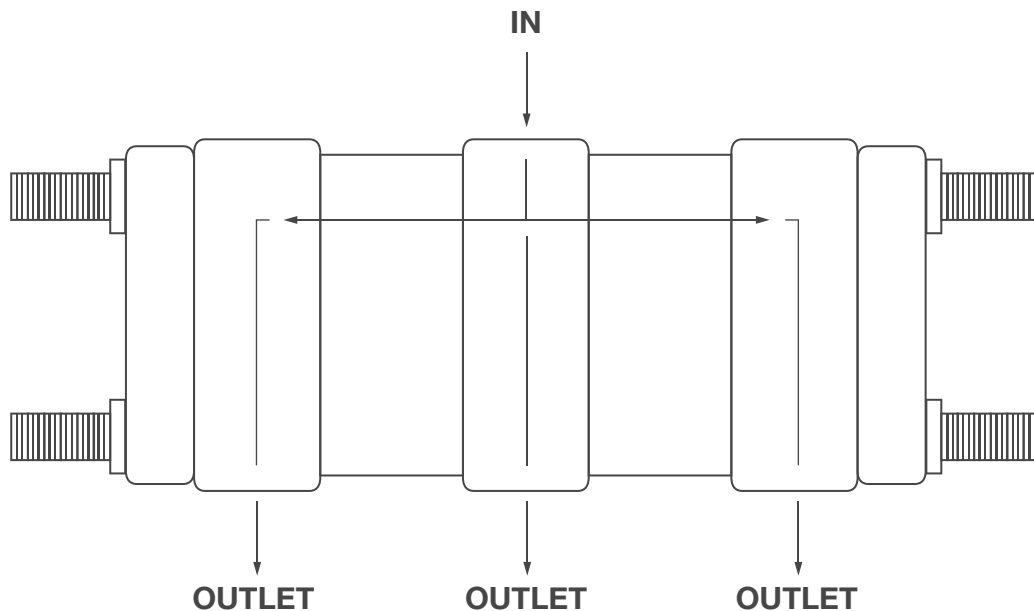
Consult the factory for codes not found in the catalog.

Sample Code for Three Section Flow Divider

Assembly Code:

MFD50B-BY-OD12-1-E-OJ25-1-E-UD10-BY

1. Flow Divider		MFD
2. Series		50
3. Model		B
4. Port End Cover	(Blank w/Ext. Studs)	BY
5. Gear Housing	(1" Split Flange on one side)	OD12
6. Connecting Shaft	(Not shown)	1
7. Bearing Carrier	(No ports)	E
8. Gear Housing	(1-1/4" x 1" Split Flange)	OJ25
9. Connecting Shaft	(Not shown)	1
10. Bearing Carrier	(No ports)	E
11. Gear Housing	(3/4" Split Flange on one side)	UD10
12. Port End Cover	(Blank w/Ext. Studs)	BY



Metaris MH Series Units

Seal Kits

Each seal kit will work for a motor or pump. For multiple section units, you add the second kit - for example:

For a single MH30/31 unit use 1-SK30

If the unit is a 2 section unit use 1-SK30 + SK30M

If the unit is a 3 section unit use 1-SK30 + SK30M + SK30M

If the unit is a 4 section unit use 1-SK30 + SK30M + SK30M + SK30M

SINGLE UNIT	QTY	1-SK20 A20-80-31100		1-SK25 A25-80-31100		1-SK30 A30-80-31100	
		METARIS #	ALT #	METARIS #	ALT #	METARIS #	ALT #
SHAFT SEAL INTERGAL	1	X83-11-02708	391-2883-058	n/a	n/a	X83-11-02708	391-2883-058
SHAFT SEAL CONTINENTAL	1	X89-11-02508	391-2883-107	X83-11-03008	391-2883-055	X89-11-02508	391-2883-107
SHAFT SEAL CONTINENTAL TYPE 2	1	n/a	n/a	X83-11-02508	391-2883-057	n/a	n/a
SHAFT SEAL INTERGAL MOTOR	1	X84-36-02709	391-2883-119	X84-36-03009	391-2883-096	X84-36-02709	391-2883-119
SHAFT SEAL CONTINENTAL MOTOR	1	X83-36-02509	391-2883-126	X84-36-03510	391-2883-094	X83-36-02509	391-2883-126
HOUSING GASKET SEAL	2	X85-11-09203	391-2884-019	X85-11-10803	391-2884-021	X85-11-10104	391-2884-050
POCKET SEAL (2" STRIP)	1	X85-11-00002	391-2882-086	X85-11-00002	391-2882-050	X85-11-00002	391-2882-086
RING SEAL FOR TYPE 1	2	n/a	n/a	X03-00-32532	391-0481-002	n/a	n/a
SEAL RET. "O" RING	2	n/a	n/a	X81-11-05704	391-2881-120	n/a	n/a
SPRING	1	n/a	n/a	A25-95-00000	391-3581-176	n/a	n/a
RING SEAL FOR TYPE 2	1	n/a	n/a	X03-00-32531	391-0481-003	n/a	n/a
SEAL RET. "O" RING	1	n/a	n/a	X81-11-04403	391-2881-203	n/a	n/a
SEAL RET. "O" RING	1	n/a	n/a	X81-11-06304	391-2881-141	n/a	n/a
SHAFT SEAL BACK UP RING	1	n/a	n/a	A25-82-46020	391-2681-248	n/a	n/a
SHAFT SEAL "O" RING	1	n/a	n/a	X81-11-02504	391-2881-261	n/a	n/a

SINGLE UNIT	QTY	1-SK50 A50-80-31100		1-SK37 A37-80-31100		1-SK75 A75-80-31100	
		METARIS #	ALT #	METARIS #	ALT #	METARIS #	ALT #
SHAFT SEAL INTERGAL	1	X83-11-03308	391-2883-103	n/a	n/a	X83-11-03508	391-2883-052
SHAFT SEAL CONTINENTAL	1	X89-11-03308	391-2883-133	X83-11-03508	391-2883-052	n/a	n/a
SHAFT SEAL CONTINENTAL TYPE 2	1	n/a	n/a	n/a	n/a	n/a	n/a
SHAFT SEAL INTERGAL MOTOR	1	X83-36-03309	391-2883-115	n/a	n/a	X84-36-03510	391-2883-094
SHAFT SEAL CONTINENTAL MOTOR	1	n/a	n/a	X84-36-03510	391-2883-094	n/a	n/a
HOUSING GASKET SEAL	2	X85-11-10803	391-2884-021	X85-11-12303	391-2884-023	X85-11-13303	391-2884-024
POCKET SEAL (2" STRIP)	1	X85-11-00002	391-2882-050	X85-11-00002	391-2882-023	X85-11-00003	391-2882-052
RING SEAL FOR TYPE 1	2	X81-76-03305	391-2585-009	X03-00-32835	391-0481-001	X81-76-03809	391-2585-011
SEAL RET. "O" RING	2	n/a	n/a	X81-15-06904	391-2881-127	X81-11-06603	391-2881-457
SPRING	1	n/a	n/a	A37-95-00000	391-3581-172	n/a	n/a
RING SEAL FOR TYPE 2	1	n/a	n/a	X03-00-32836	391-0481-004	n/a	n/a
SEAL RET. "O" RING	1	n/a	n/a	X81-15-06904	391-2881-098	n/a	n/a
SEAL RET. "O" RING	1	n/a	n/a	n/a	n/a	n/a	n/a
SHAFT SEAL BACK UP RING	1	n/a	n/a	n/a	n/a	n/a	n/a
SHAFT SEAL "O" RING	1	n/a	n/a	n/a	n/a	n/a	n/a

Metaris MH Series Units

Seal Kits Cont.

Each seal kit will work for a motor or pump. For multiple section units, you add the second kit - for example:

For a single MH30/31 unit use 1-SK30

If the unit is a 2 section unit use 1-SK30 + SK30M

If the unit is a 3 section unit use 1-SK30 + SK30M + SK30M

If the unit is a 4 section unit use 1-SK30 + SK30M + SK30M + SK30M

SINGLE UNIT	QTY	1-SK315 A32-80-31100		1-SK330 A33-80-31100	
		METARIS #	ALT #	METARIS #	ALT #
SHAFT SEAL INTERGAL	1	X83-11-02406	391-2883-151	X83-11-02708	391-2883-058
SHAFT SEAL CONTINENTAL	1	n/a	n/a	X89-11-02508	391-2883-107
SHAFT SEAL INTERGAL MOTOR	1	X83-36-02406	391-2883-156	X84-36-02709	391-2883-119
SHAFT SEAL CONTINENTAL MOTOR	1	n/a	n/a	X83-36-02509	391-2883-126
PUMP HOUSING GASKET SEAL	2	X85-11-08203	391-2881-968	X85-11-10104	391-2884-050
MOTOR HOUSING GASKET SEAL	2	X85-11-08903	391-2881-429	X85-11-09803	391-2884-076
THRUST PLATE PUMP SEAL (CHANNEL)	2	A32-82-11030	391-2883-168	A33-82-11030	391-2883-166
THRUST PLATE PUMP SEAL (BACK-UP)	2	A32-82-46010	391-2883-169	A33-82-46010	391-2883-167
THRUST PLATE MOTOR SEAL (BACK-UP)	2	A32-82-46030	391-2881-995	A33-82-46030	391-2881-929
THRUST PLATE MOTOR SEAL (SEAL END)	4	A32-82-14021	391-2881-996	A33-82-14021	391-2881-930
THRUST PLATE MOTOR SEAL (SEAL SIDE)	4	A32-82-14022	391-2881-997	A33-82-14022	391-2881-931

SINGLE UNIT	QTY	1-SK350 A35-80-3100		1-SK365 A36-80-31100	
		METARIS #	ALT #	METARIS #	ALT #
SHAFT SEAL INTERGAL	1	X83-11-03308	391-2883-103	X83-11-03508	391-2883-052
SHAFT SEAL CONTINENTAL	1	n/a	n/a	n/a	n/a
SHAFT SEAL INTERGAL MOTOR	1	X83-36-03309	391-2883-115	X84-36-03510	391-2883-094
SHAFT SEAL CONTINENTAL MOTOR	1	n/a	n/a	n/a	n/a
PUMP HOUSING GASKET SEAL	2	X85-11-11403	391-2884-074	X85-11-12703	391-2884-052
MOTOR HOUSING GASKET SEAL	2	X85-11-10803	391-2884-021	X85-11-12303	391-2884-023
THRUST PLATE PUMP SEAL (CHANNEL)	2	A35-82-11050	391-2882-140	A36-82-46020	391-2883-177
THRUST PLATE PUMP SEAL (BACK-UP)	2	A35-82-46010	391-2882-139	A36-82-13050	391-2883-176
THRUST PLATE MOTOR SEAL (BACK-UP)	2	A35-82-46030	391-2885-075	A36-82-46030	391-2885-071
THRUST PLATE MOTOR SEAL (SEAL END)	4	A35-82-14020	391-2885-074	A36-82-14022	391-2885-070
THRUST PLATE MOTOR SEAL (SEAL SIDE)	4	A35-82-14021	391-2885-073	A36-82-14021	391-2885-069

Metaris MH Series Units

Seal Kits Cont.

Each seal kit will work for a motor or pump. For multiple section units, you add the second kit - for example:

For a single MH30/31 unit use 1-SK30

If the unit is a 2 section unit use 1-SK30 + SK30M

If the unit is a 3 section unit use 1-SK30 + SK30M + SK30M

If the unit is a 4 section unit use 1-SK30 + SK30M + SK30M + SK30M

MULTIPLE SECTION UNIT	QTY	SK20M A20-80-32100		SK25M A25-80-32100		SK30M A30-80-32100	
		METARIS #	ALT #	METARIS #	ALT #	METARIS #	ALT #
HOUSING GASKET SEAL	2	X85-11-09203	391-2884-019	X85-11-10803	391-2884-021	X85-11-10104	391-2884-050
POCKET SEAL (2" STRIP)	1	X85-11-00002	391-2882-086	X85-11-00002	391-2882-050	X85-11-00002	391-2882-086
RING SEAL	2	X81-76-02706	391-2585-006	X03-00-32531	391-0481-003	X81-76-02706	391-2585-006

MULTIPLE SECTION UNIT	QTY	SK37M A37-80-32100		SK50M A50-80-32100		SK75M A75-80-32100	
		METARIS #	ALT #	METARIS #	ALT #	METARIS #	ALT #
HOUSING GASKET SEAL	2	X85-11-12303	391-2884-023	X85-11-10803	391-2884-021	X85-11-13303	391-2884-024
POCKET SEAL (2" STRIP)	1	X85-11-00002	391-2882-023	X85-11-00002	391-2882-050	X85-11-00003	391-2882-052
RING SEAL	2	X03-00-32836	391-0481-004	X81-76-03305	391-2585-009	X81-76-03809	391-2585-011

MULTIPLE SECTION UNIT	QTY	SK315M A32-80-32100		SK330M A33-80-32100	
		METARIS #	ALT #	METARIS #	ALT #
PUMP HOUSING GASKET SEAL	2	X85-11-08203	391-2881-968	X85-11-10104	391-2884-050
MOTOR HOUSING GASKET SEAL	2	X85-11-08903	391-2881-429	X85-11-09803	391-2884-076
THRUST PLATE PUMP SEAL (CHANNEL)	2	A32-82-11030	391-2883-168	A33-82-11030	391-2883-166
THRUST PLATE PUMP SEAL (BACK-UP)	2	A32-82-46010	391-2883-169	A33-82-46010	391-2883-167
THRUST PLATE MOTOR SEAL (BACK-UP)	2	A32-82-46030	391-2881-995	A33-82-46030	391-2881-929
THRUST PLATE MOTOR SEAL (SEAL END)	4	A32-82-14021	391-2881-996	A33-82-14021	391-2881-930
THRUST PLATE MOTOR SEAL (SEAL SIDE)	4	A32-82-14022	391-2881-997	A33-82-14022	391-2881-931

MULTIPLE SECTION UNIT	QTY	SK350M A35-80-32100		SK365M A36-80-32100	
		METARIS #	ALT #	METARIS #	ALT #
PUMP HOUSING GASKET SEAL	2	X85-11-11403	391-2884-074	X85-11-12703	391-2884-052
MOTOR HOUSING GASKET SEAL	2	X85-11-10803	391-2884-021	X85-11-12303	391-2884-023
THRUST PLATE PUMP SEAL (CHANNEL)	2	A35-82-11050	391-2882-140	A36-82-46020	391-2883-177
THRUST PLATE PUMP SEAL (BACK-UP)	2	A35-82-46010	391-2882-139	A36-82-13050	391-2883-176
THRUST PLATE MOTOR SEAL (BACK-UP)	2	A35-82-46030	391-2885-075	A36-82-46030	391-2885-071
THRUST PLATE MOTOR SEAL (SEAL END)	4	A35-82-14020	391-2885-074	A36-82-14022	391-2885-070
THRUST PLATE MOTOR SEAL (SEAL SIDE)	4	A35-82-14021	391-2885-073	A36-82-14021	391-2885-069

Metaris MH Series Units

Fasteners

SINGLE UNITS												
GEAR CODE												
MODEL	5	7	10	12	15	17	20	22	25	27	30	BOLT DIA.
MH15	4"	4.25"	4.5"	4.5"	5"	5"	5.5"					1/2" NC
MH20	4"	4.25"	4.5"	4.5"	5"	5"	5.5"					9/16" NC
MH25	3.75"	4"	4.25"	4.5"	4.75"	5"	5.25"	5.5"	5.75"			5/8" NC
MH30/31	3.75"	4"	4.25"	4.5"	4.75"	5"	5.25"	5.5"	5.75"			5/8" NC
MH37	4.75"	5"	5.25"	5.5"	5.75"	6"	6.5"	6.5"	6.75"	7"	7.25"	1/2" NC
MH50/51	3.75"	4"	4.25"	4.5"	4.75"	5"	5.25"	5.5"	5.75"			5/8" NC
MH75/76		4.5"	4.75"	5"	5.25"	5.5"	5.75"	6"	6.5"	6.5"	6.75"	5/8" NC
MH315	2.75"	3"	3.25"	3.5"	3.75"	4"	4.25"					1/2" NC
MH330	3.75"	4"	4.25"	4.5"	4.75"	5"	5.25"					5/8" NC
MH350	5.25"	5.5"	5.75"	6"	6.5"	6.5"	6.75"	7"	7.5"			5/8" NC
MHP365		4.5"	5"	5"	5.5"	5.5"	6"	6"	6.5"			5/8" NC
MHM365			5"	5"	5.5"	5.5"	6"	6"	6.5"			3/4" NC

MULTIPLE UNITS												
GEAR LENGTH												
MODEL	.5"	.75"	1"	1.25"	1.5"	1.75"	2"	2.25"	2.5"	2.75"	3"	
MH15	$4.125 + (N * 3.25) + (TGS) = L$											
MH20	$4.25 + (N * 3.25) + (TGS) = L$											
MH25	$4 + (N * 3.625) + (TGS) = L$											
MH30/31	$4 + (N * 3.25) + (TGS) = L$											
MH37	$4.875 + (N * 4) + (TGS) = L$											
MH50/51	$4 + (N * 3.625) + (TGS) = L$											
MH75/76	$4.5 + (N * 4) + (TGS) = L$											
MH315	$2.875 + (N * 3) + (TGS) = L$											
MH330	$4 + (N * 4) + (TGS) = L$											
MH350	$5.5 + (N * 4) + (TGS) = L$											
MHP365	$4.75 + (N * 4.5) + (TGS) = L$											
MHM365	$5 + (N * 4.5) + (TGS) = L$											

N = Number of Bearing Carriers
TGS = Total Gear Width
(Width is achieved by adding all gear sets together)

L = Rod Length
e.g. To build a triple MH350 unit with gear sets
(1st section = 2", 2nd section = 1.5", 3rd section = 1")

Rod Length = $5.5" + (N * 4) + (TGS)$
Rod Length = $5.5" + (2 * 4) + (2" + 1.5" + 1")$
Rod Length = $5.5" + (8) + (4.5")$
Rod Length = 18"

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