

Genuine Metaris Gear Product Technical Catalog

Pumps & Components - MH Series Bearing & Bushing Style



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
.07	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

1 2 3 4 5 6 7 8 9 6 7 10

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

Type ¹

MHP = Pump
MHM = Motor

Unit ²

A = Single Unit
B = Tandem Unit
C = 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)
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 Cover ⁴

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 Cover ⁵

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

Connecting Shaft ¹⁰

For connecting tandem units
1 = Connecting Shaft - Multiple Units

Bearing Carriers ⁹

See page 106 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

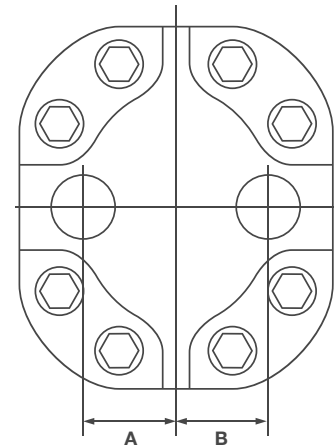
Gear Size ⁷

Code / Displacement (in³/r)

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

Gear Housing ⁶

See following pages for Gear Housing options



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		5	7	10	12	15	17	20	22	25	27	30
	Left	Right											
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		5	7	10	12	15	17	20	22	25	27	30
	Left	Right											
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		5	7	10	12	15	17	20	22	25	27	30
	Left	Right											
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
IS	1-1/2"	1-1/4"										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		5	7	10	12	15	17	20	22	25	27	30
	Left	Right											
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			
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		5	7	10	12	15	17	20	22	25	27	30
	Left	Right											
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
SV	1-1/2"	1-1/2"								x	x	x	x
JN	1-1/2"	2"								x	x	x	x
JQ	2"	1-1/2"								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		5	7	10	12	15	17	20	22	25	27	30
	Left	Right											
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

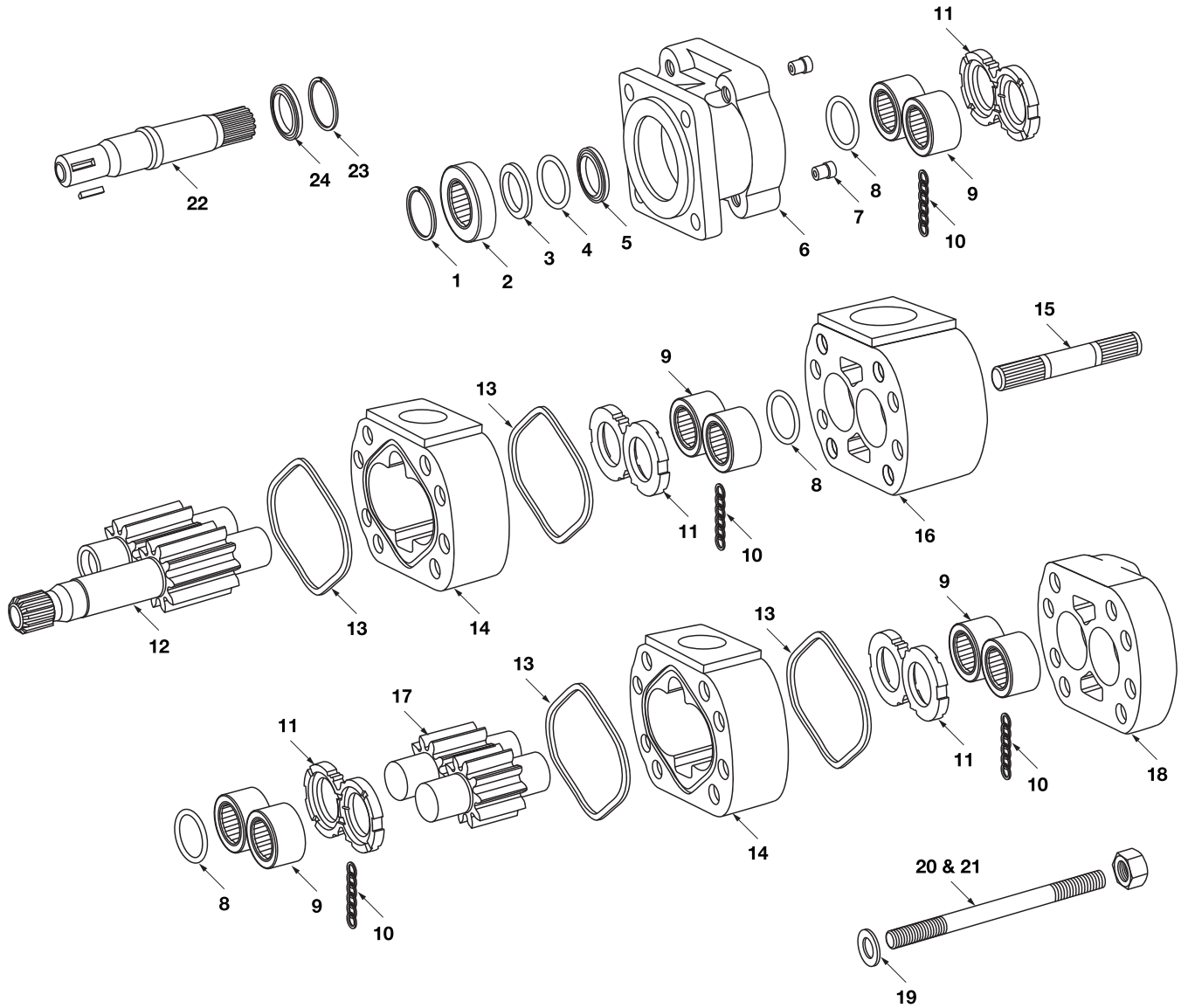
In	Out	CW (Left)	CCW (Right)
1"	None		
1-1/4"	None	CB	BC
1-1/2"	None	DB	BD
		FB	BF
None	3/4"		
1"	3/4"	PJ	JP
1-1/4"	3/4"	CJ	JC
1-1/2"	3/4"	DJ	JD
1-1/4"	1"	FJ	JF
1-1/2"	1"	DK	KD
		FK	KF
1"	3/4"		
1-1/4"	3/4"	CR	RC
1-1/2"	3/4"	DR	RD
1-1/4"	1"	FR	RF
1-1/2"	1"	DS	SD
		FS	SF

Motors Only Codes

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

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.

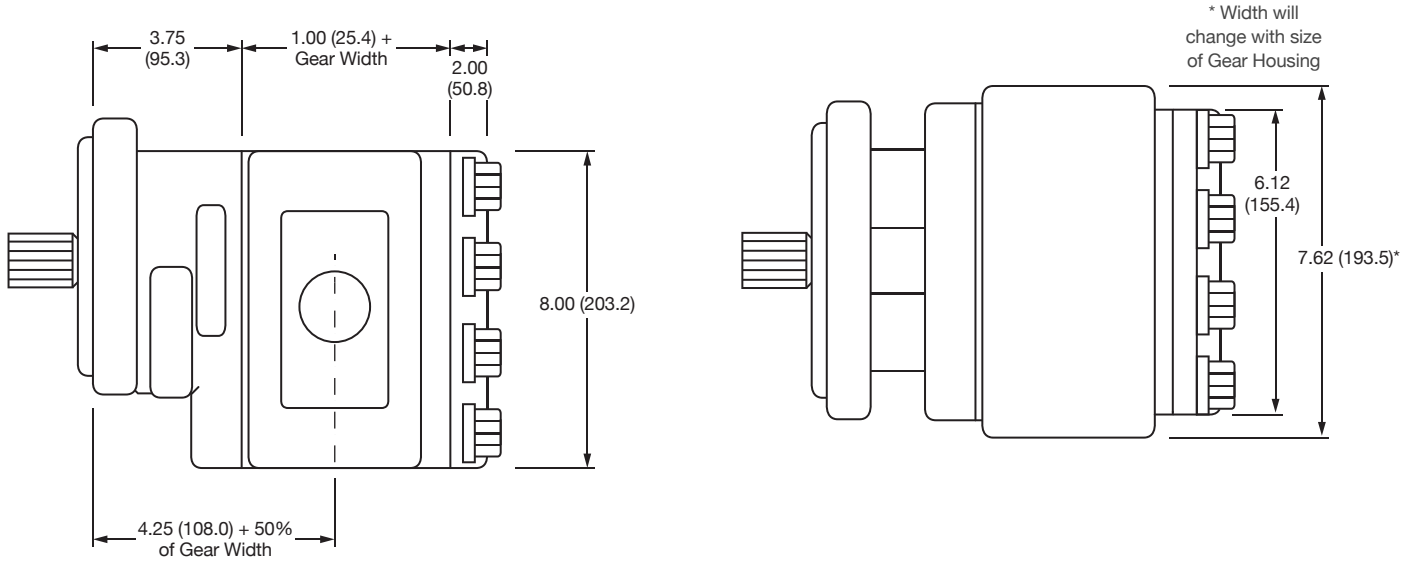
For example: Gear set no. A75-50-XX000 changes to A75-50-15000 for 1.5" gear size
Housing no. A75-32-XX000 changes to A75-32-15000 for a 1.5" housing size
No porting sizes have been indicated all porting must be specified when ordering parts.

MH75 Series

Dimensions

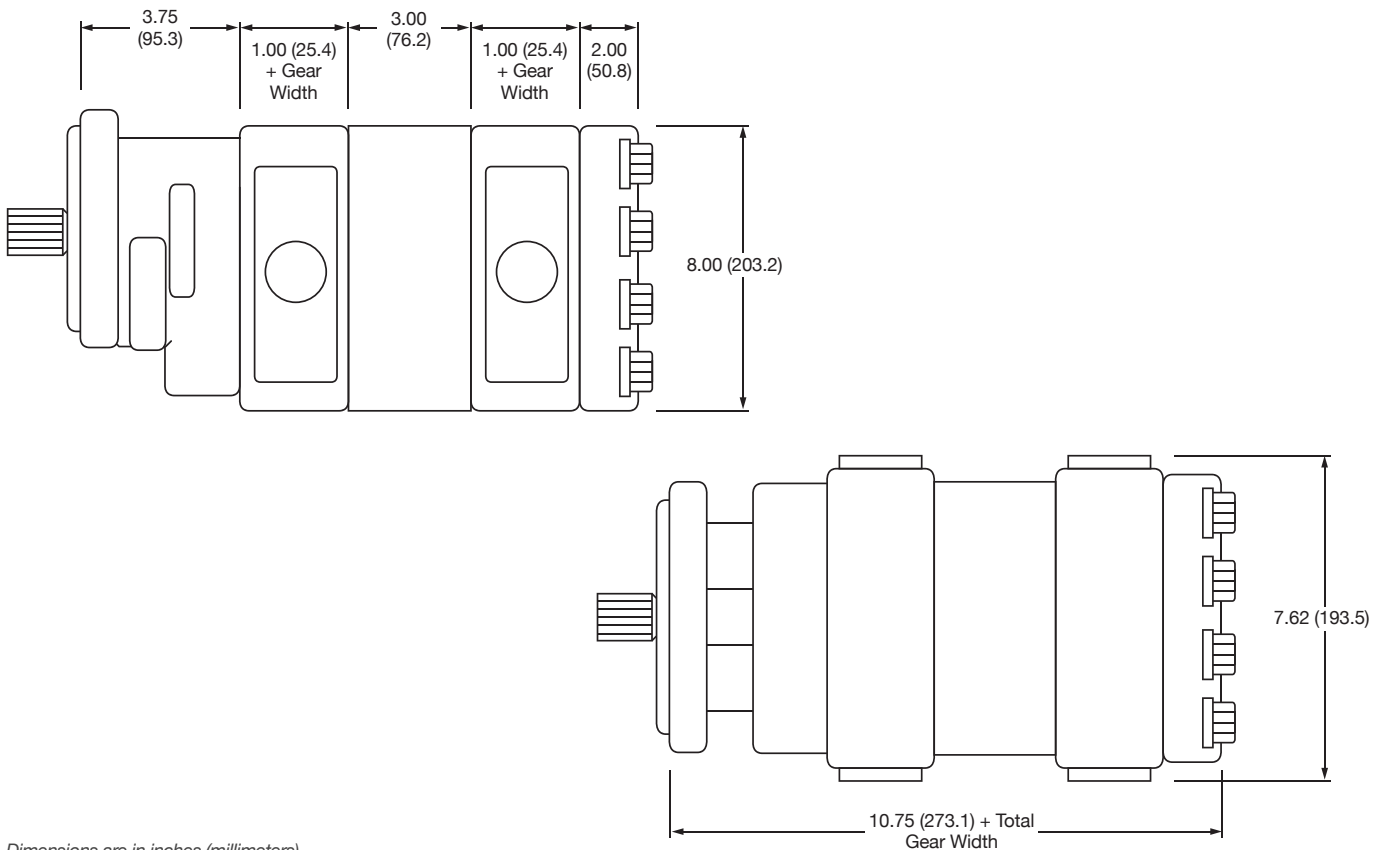
Single Unit

* 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).