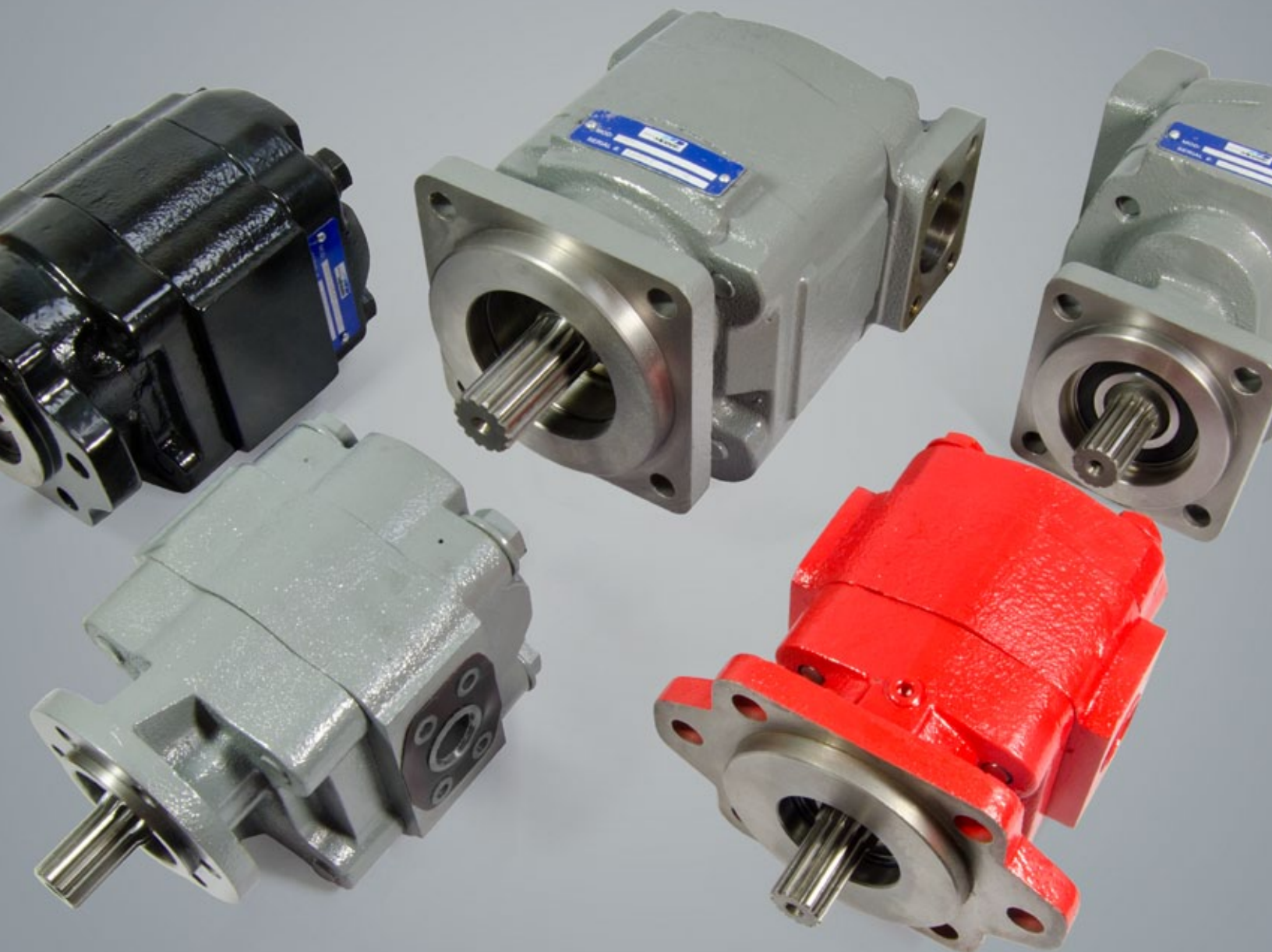


# Genuine Metaris Gear Product Technical Catalog

Pumps & Components - MH Series Bearing & Bushing Style



# 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 <sup>3</sup> /REV	(CM <sup>3</sup> /REV)	PSI	BAR
.05	1/2"	.62	(10.2)	3500	(241)
.07	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

1      2      3      4      5      6      7      8      9      6      7      10  
**MHP - 315 - A - 1 - 93 - AL - AB - 10 - 65 - CJ - \* - \* - \***

### Type <sup>1</sup>

MHP = Pump  
MHM = Motor

### Unit <sup>2</sup>

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

### Shaft End Cover <sup>3</sup>

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 Cover <sup>4</sup>

93 = SAE 2-Bolt "A" Mount  
96 = SAE 2-Bolt "B" Mount

### Port End Cover <sup>5</sup>

#### 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"

### Connecting Shaft <sup>10</sup>

For connecting tandem units  
1 = Connecting Shaft - Multiple Units

### Bearing Carriers <sup>9</sup>

See following page for Bearing Carrier options

### Shaft Type <sup>8</sup>

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 Size <sup>7</sup>

Code / Displacement (in<sup>3</sup>/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 Housing <sup>6</sup>

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

# MH315 Series Bushing Pump

## Model Code Breakdown Cont.

### Bearing Carriers <sup>9</sup>

#### 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

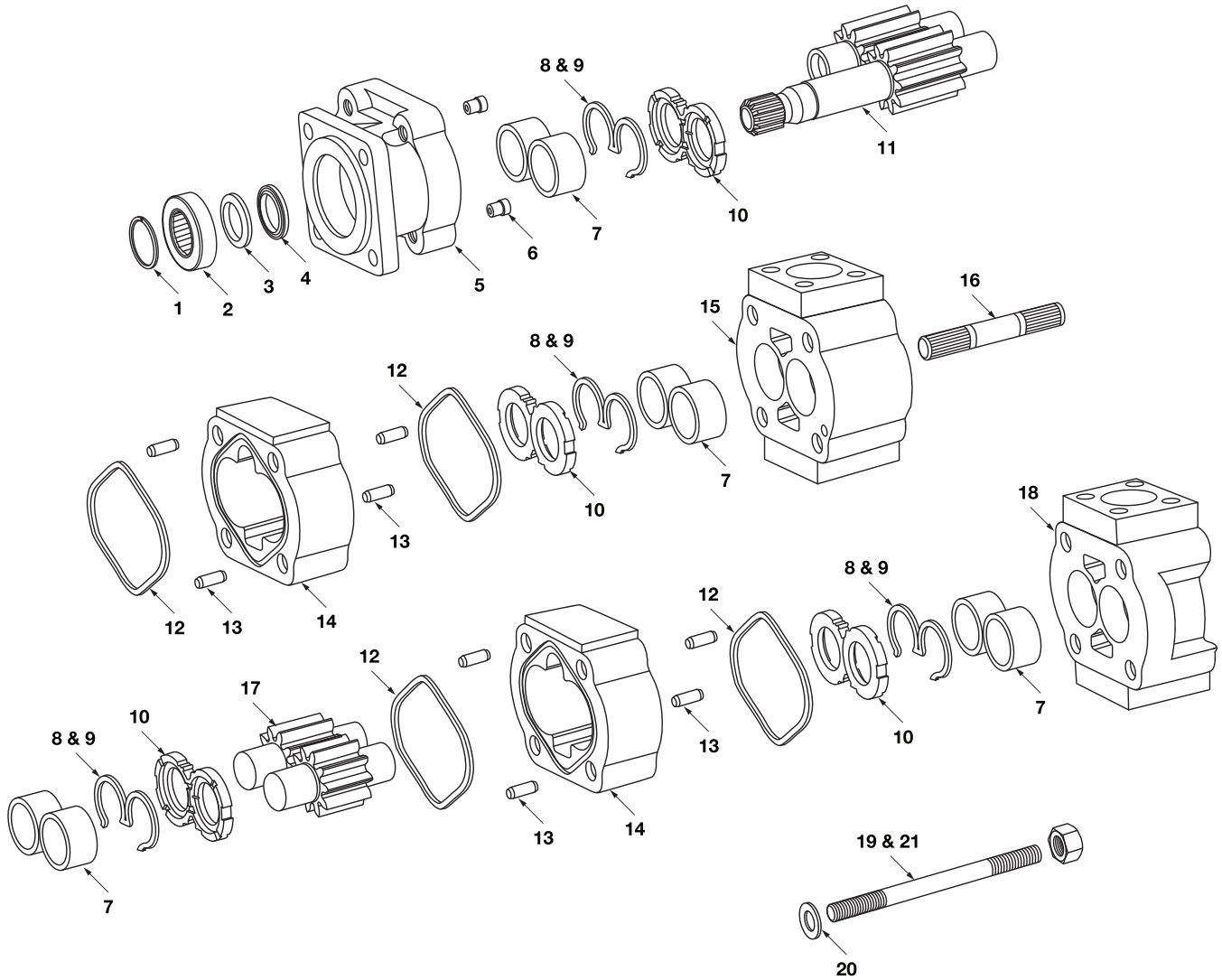
##### SAE O-ring

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
<b>Not Shown</b>	MOTOR NYLON BACKUP SEAL	A32-82-46030	391-2881-995
<b>Not Shown</b>	MOTOR THRUST PLATE SIDE SEAL	A32-82-14022	391-2881-997
<b>Not Shown</b>	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.

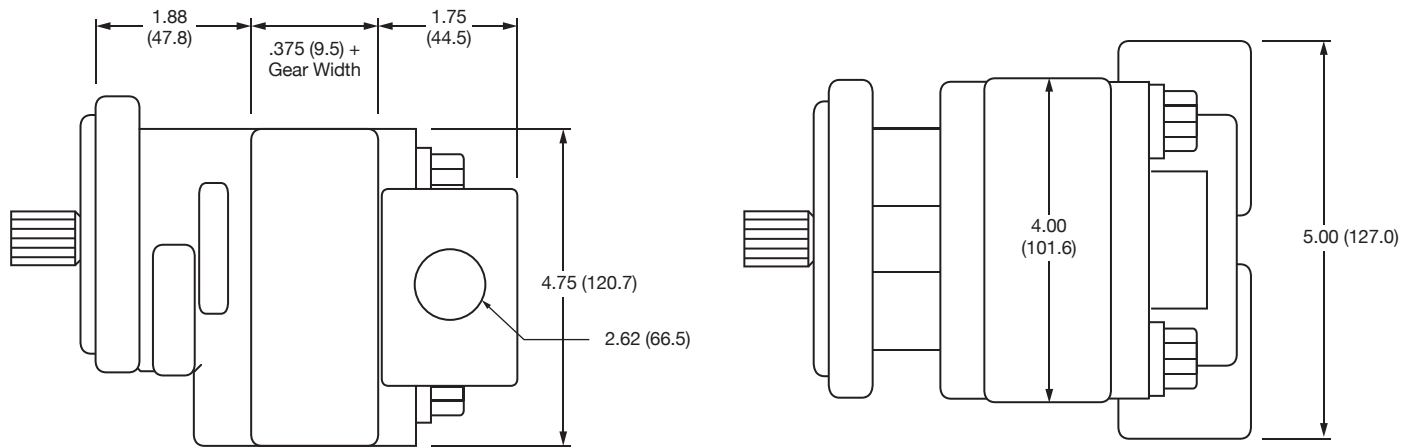


# MH315 Series

## Dimensions

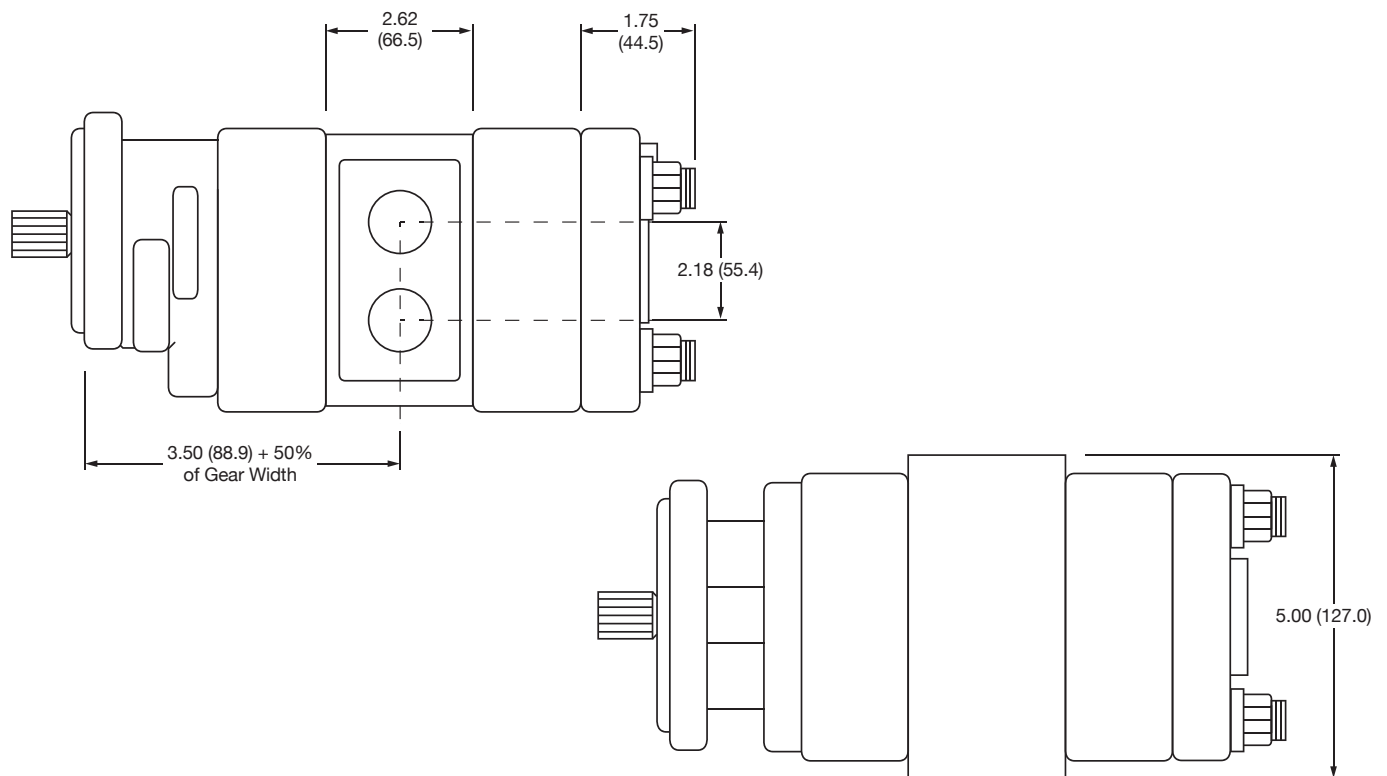
### Single Unit

\* 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).