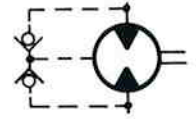




# HYDRAULIC MOTORS

## GEAR MOTORS 40 SERIES Specification Sheet



The CROSS series 40 hydraulic gear type motors feature advanced design concepts which produce long service life and high reliability when operated up to rated speeds and pressures. Improved gear tooth design and pressure-balanced loading plates provide for a high volumetric and overall efficiency, while operating at a low noise level.

### GENERAL SPECIFICATIONS

Displacement sizes

0.50	0.75	1.00	1.25	1.50	1.80	cu.in./Rev.
8.2	12.3	16.4	20.5	24.6	29.5	cc/Rev.

- Rated working pressure (Max. relief valve setting at full flow) . . .3000 psi (207 bar)
- Maximum shock and surge pressure . . . . .3500 psi (242 bar)
- Maximum flow rate (input) . . . . .34 gpm (129 l/m)
- Maximum speed (continuous) . . . . .up to 4000 rpm
- Maximum horsepower (at rated speed and pressure) . . . . .49 hp (36.5 Kw)
- Mounting (any position) . . . . .SAE "A" size, 2-bolt
- Weight . . . . .Approx. 7 lbs. (3.2 Kg)

### MATERIAL SPECIFICATIONS

- Body and end covers . . . . . Die cast aluminum alloy
- Gears . . . . . Sintered metal
- Shaft . . . . . Hardened steel
- Bearings . . . . . Pressure lubricated, Teflon impregnated sleeve
- Seals . . . . . Buna N

### STANDARD FEATURES

- Rotation: Bi-directional (Dual Rotation)
- Ports: 3/4" SAE #12 straight thread o-ring (1 1/16 - 12) • 1/4" NPTF Drain port
- Internal check valves (no external drain required if back pressure is below shaft seal rating)
- Shaft: 5/8" dia. Woodruff keyed (short) • Shaft Seal: 250 psi (17 bar)

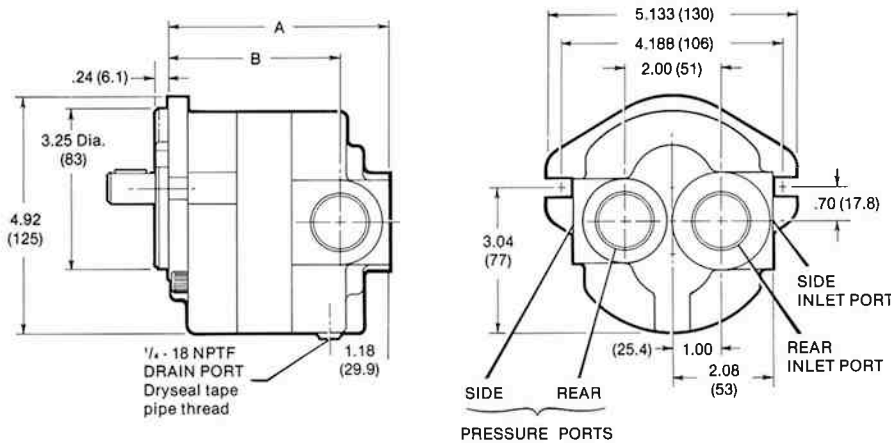
### OPTIONAL FEATURES AVAILABLE

- Rotation: Right hand (clockwise); Left hand (counterclockwise)
- Ports: Rear inlet and outlet location
- Shafts: 5/8" dia. splined (9 tooth); 5/8" dia. keyed (long); 3/4" dia. keyed (long)

NOTE: Refer to CROSS pump and motor technical/service sheet for side and end load limitations, oil and filter recommendations, start-up procedures, etc.

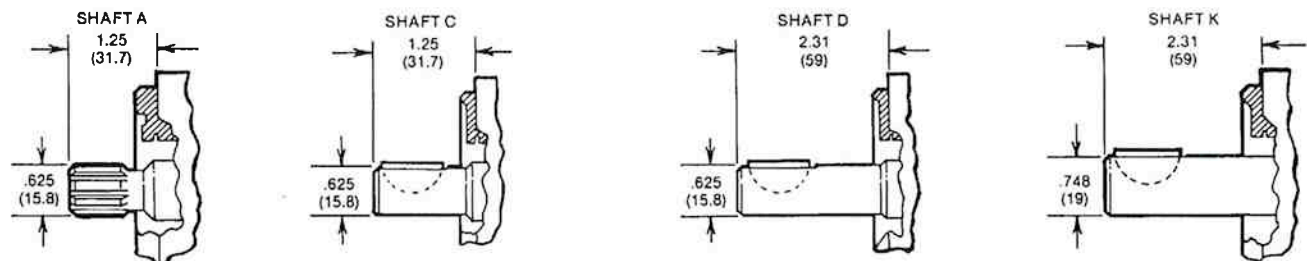


**DIMENSIONAL DATA in inches and (millimeters)**



Displacement cu.in./Rev. (cc/Rev)	Dim. "A" inches (mm)	Dim. "B" inches (mm)
.50 (8.2)	4.25 (107)	3.23 (82)
.75 (12.3)	4.44 (112)	3.42 (86)
1.00 (16.4)	4.62 (117)	3.60 (91)
1.25 (20.5)	4.81 (122)	3.79 (96)
1.50 (24.6)	4.99 (126)	3.97 (100)
1.80 (29.5)	5.22 (132)	4.20 (106)

**OUTPUT SHAFT**



SHAFT "A": 9 tooth, 16/32 pitch, 30° pressure angle, flat root side fit, Class 1.  
SHAFT "C", "D" and "K" : Woodruff key - 3/4" dia. x 5/32.

**ORDERING DATA**

Series	Type	Special Options	Size cu.in./R x 10	Rotation	Mounting	Shaft Size & Type		PORTS LOCATION and SIZE Inlet      Outlet			
						A	K				
40	M motor	H 250 psi shaft seal	5	D dual	A SAE "A" 2-bolt	5/8" spline	3/4" dia. keyed (long)	SC	1 1/16	1 1/16	SIDE PORTS
			7								
			10								
			12								
			15	L left						REAR PORTS	
			18	R right							
					5/8" dia. keyed						
					5/8" dia. keyed (long)						

\*Standard

**EXAMPLE: 40MH12DACSC**

Describes a Series 40 Gear Motor, 250 psi shaft seal, displacement of 1.2 cu. in. per revolution; bi-directional rotation; SAE "A" 2-Bolt Mount; 5/8" dia. keyed shaft and 1 1/16-12 side ports.



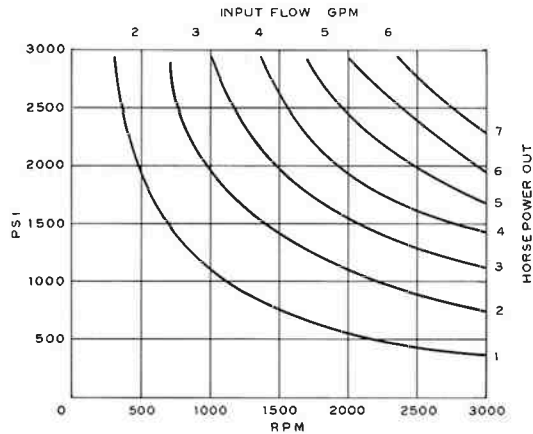
# HYDRAULIC MOTORS

## GEAR MOTORS 40 SERIES

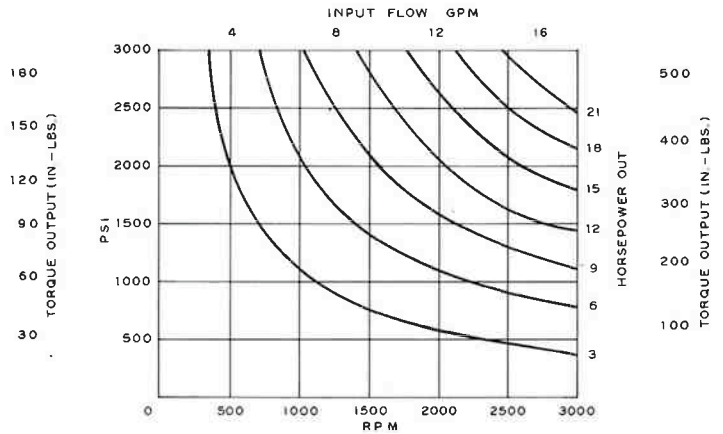
### TYPICAL PERFORMANCE DATA

(FOR SPECIFIC PERFORMANCE DATA,  
CONTACT CROSS ENGINEERING)

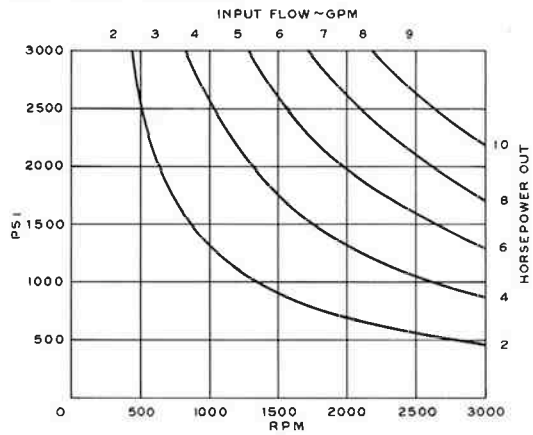
#### MODEL 40M005



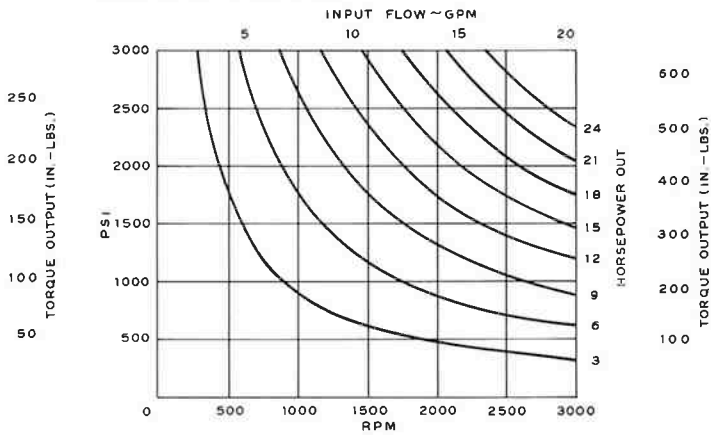
#### MODEL 40M012



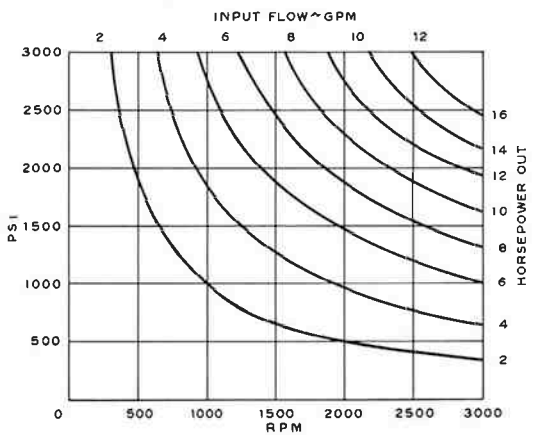
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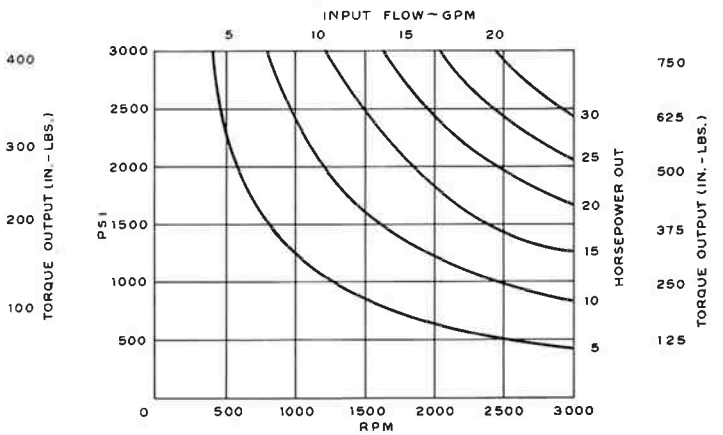
#### MODEL 40M015



#### MODEL 40M010



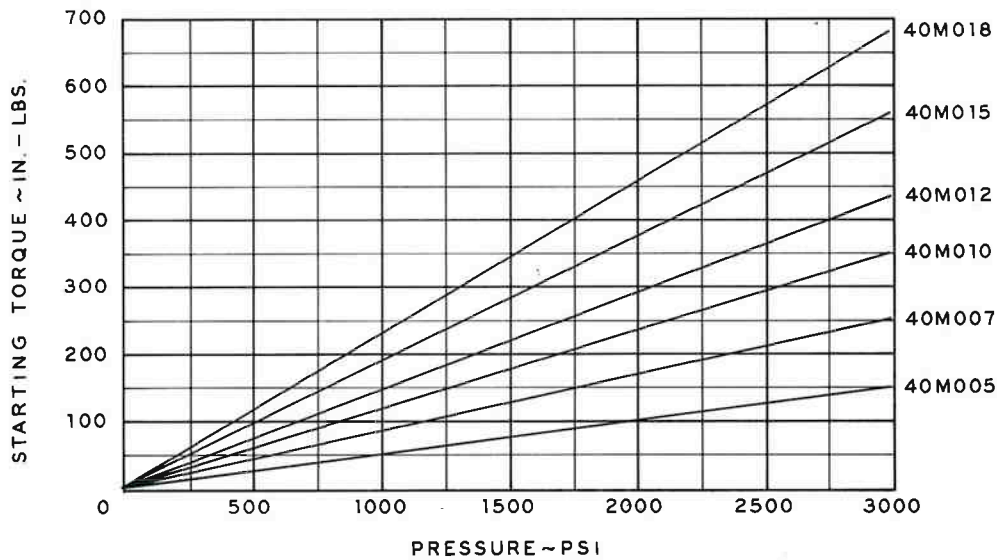
#### MODEL 40M018



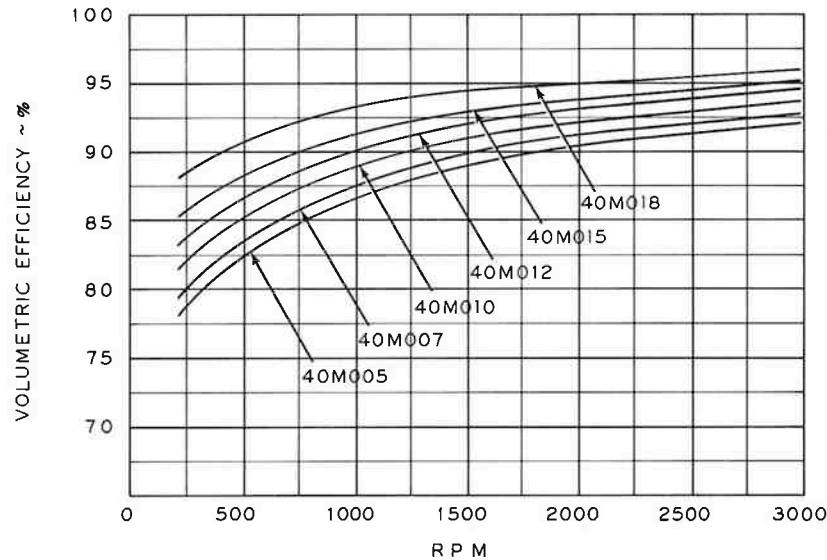


**TYPICAL PERFORMANCE DATA**

**STARTING ENGINE TORQUE (in.-lbs.) vs. PRESSURE (PSI)**



**VOLUMETRIC EFFICIENCY (%) vs. RPM  
(TYPICAL)**



(FOR SPECIFIC PERFORMANCE DATA,  
CONTACT CROSS ENGINEERING)

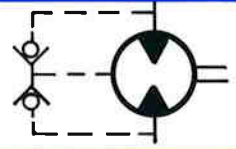


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# HYDRAULIC MOTORS

## GEAR MOTORS 50 Series Specification Sheet



The Series 50 gear motors feature a Cross gear tooth design that provides more displacement within a given package design. Pressure balanced loading plates provide high volumetric and overall efficiency. Available in 7 sizes, with displacements from 1.52 to 5.20 cubic inches per revolution, the compact design permits locating up to a 100 horsepower unit in a space less than 6½" x 7" x 7½". Side or rear ports permit versatility for positioning the motor anywhere in the system design.

### GENERAL SPECIFICATIONS

Displacement sizes:

1.52	1.95	2.32	2.74	3.30	3.80	5.20	cu.in./Rev.
24.9	32.0	38.0	44.9	54.1	62.3	85.2	cc/Rev.

Rated working pressure (Max. relief valve setting at full flow) . . . . .3000 psi (207 Bar)  
 Maximum shock and surge pressure . . . . .3500 psi (242 Bar)  
 Maximum flow rate (input) . . . . .up to 56 gpm (227 l/m)  
 Maximum speed (continuous) . . . . .up to 3000 rpm  
 Maximum horsepower (at rated speed and pressure) . . . . .up to 100 hp (74.6 Kw)  
 Mounting (any position) . . . . .SAE "B" size 2-bolt  
 Weight . . . . .Approx. 19 lbs. (8.6 Kg)

### MATERIAL SPECIFICATIONS

End covers . . . . . Die cast aluminum alloy  
 Gears and shaft . . . . . Hardened steel  
 Bearings . . . . . Pressure lubricated, Teflon impregnated sleeve  
 Seals . . . . . Buna N  
 Body . . . . . Permold aluminum alloy

### STANDARD FEATURES

- Rotation: Bi-directional (dual rotation) • Internal Check Valves (no external drain required if back pressure is below shaft seal rating)
- Ports: 1" SAE #16 (1<sup>5</sup>/<sub>16</sub> - 12) side location; inlet and outlet
- Shaft: 7/8" dia. Woodruff keyed • Shaft Seal: 250 psi (17 bar)

### OPTIONAL FEATURES AVAILABLE

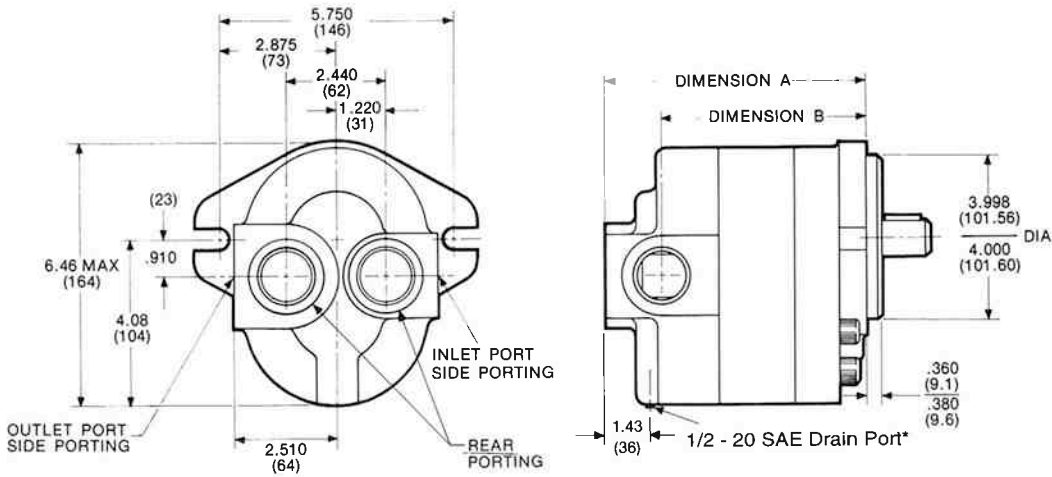
- Rotation: Right hand (clockwise); Left hand (counterclockwise)
- Ports: Rear inlet and outlet location
- Shafts: SAE 7/8" dia. splined (13 tooth); SAE 1" dia. splined (15 tooth)  
7/8" dia. Woodruff keyed (long)

NOTE: Refer to CROSS pump and motor Technical Service Sheet for side and end load limitations, oil recommendations and other recommendations.





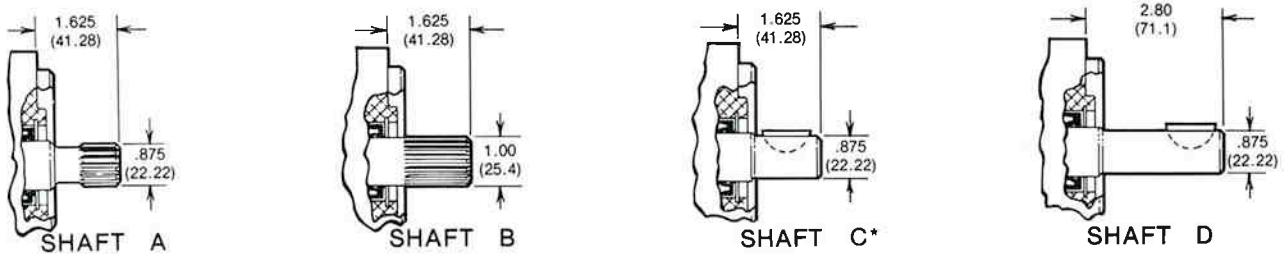
**DIMENSIONAL DATA: in inches and (millimeters)**



Displacement cu.in./Rev. (cc/Rev.)	Dim. "A" inches (mm)	Dim. "B" inches (mm)
1.52 (24.9)	5.60 (142)	4.23 (107)
1.95 (32.0)	5.80 (147)	4.43 (113)
2.32 (38.0)	5.96 (151)	4.56 (116)
2.74 (44.9)	6.15 (156)	4.78 (121)
3.30 (54.1)	6.40 (163)	5.03 (128)
3.80 (62.3)	6.62 (168)	5.25 (133)
5.20 (85.2)	7.21 (183)	5.84 (148)

\* Drain port must be used when back pressure exceeds shaft seal pressure rating.

**OUTPUT SHAFT**



Shaft "A"	13 Tooth, 16/32 pitch, 30° pressure angle, flat root side fit, Class I
"B"	15 Tooth, 16/32 pitch, 30° pressure angle, flat root side fit, Class I
*"C"	Woodruff key: 1" Dia. x 1/4"
"D"	Woodruff key: 1" Dia. x 1/4"

**ORDERING DATA**

Series	Type	Special Options	Size cu.in./Rev. x 10	Rotation	Mounting	Shaft Size & Type	Ports Location & Size			
							Inlet	Outlet		
50	M Motor	H 250 psi Shaft Seal	15	D Dual	B SAE "B" 2-Bolt	A 7/8 dia. spline B 1" Dia. spline	SC	15/16	15/16	Side Ports
			23							
			27	L Left Hand	C 7/8" Dia. Keyed	RF	15/16	15/16	Rear Ports	
			33							
			38	R Right Hand	D 7/8" Dia. Keyed (Long)	RF	15/16	15/16	Rear Ports	
			52							

EXAMPLE: 50MH15DBCSC is a 50 Series motor, 250 psi shaft seal, 1.52 displacement per rev., dual rotation, SAE "B" 2-bolt mounting, 7/8" dia. keyed shaft and 1 5/16" inlet and outlet side ports.



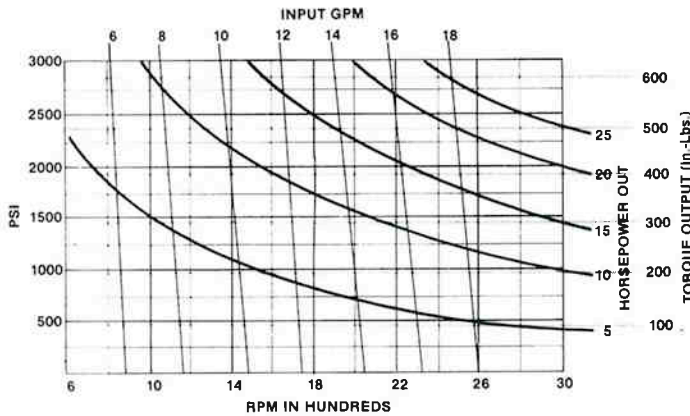
# HYDRAULIC MOTORS

## GEAR MOTORS 50 Series

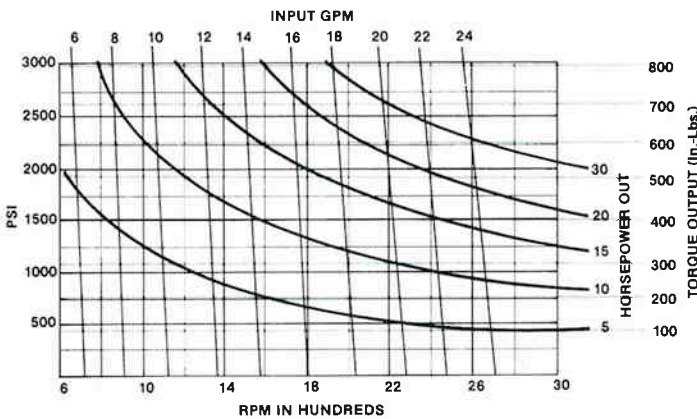
### TYPICAL PERFORMANCE DATA

(FOR SPECIFIC PERFORMANCE DATA,  
CONTACT CROSS ENGINEERING)

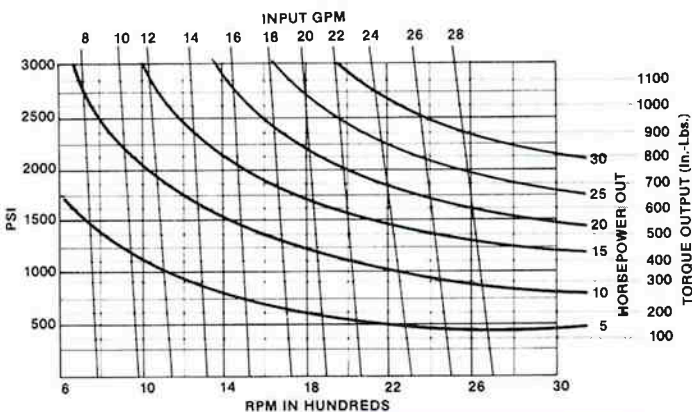
#### MODEL 50M015



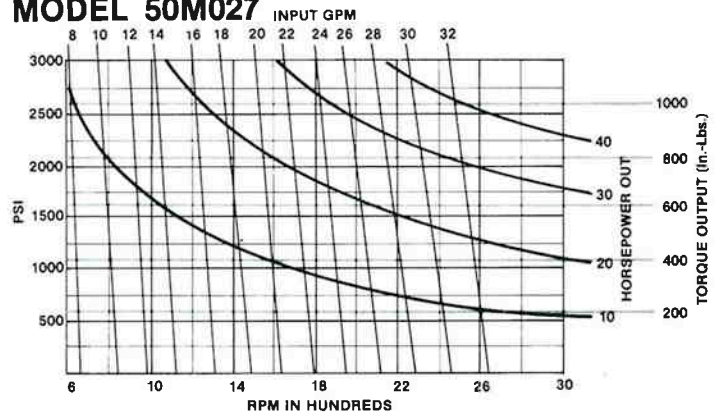
#### MODEL 50M019



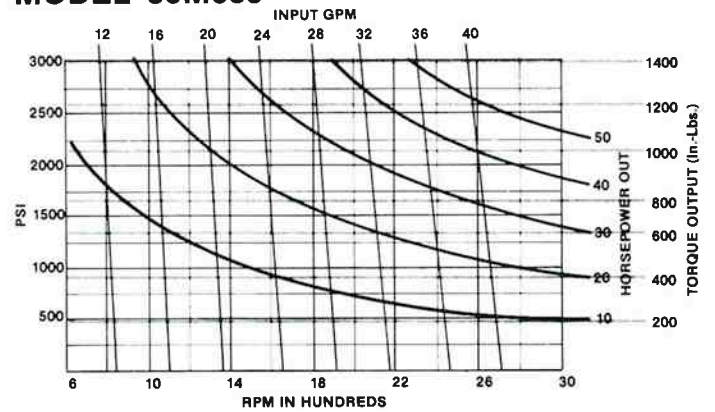
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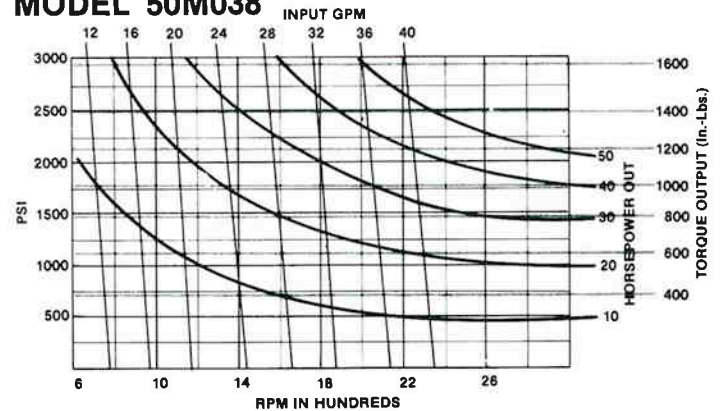
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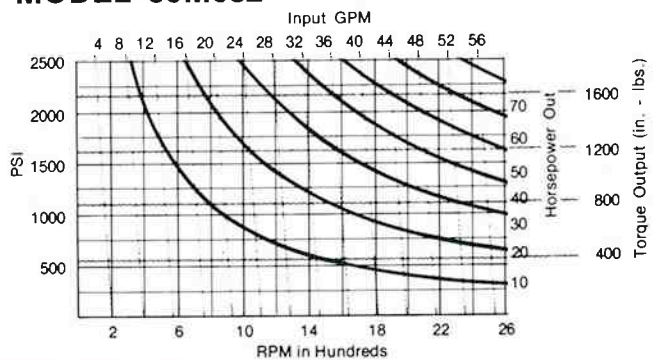
#### MODEL 50M033



#### MODEL 50M038

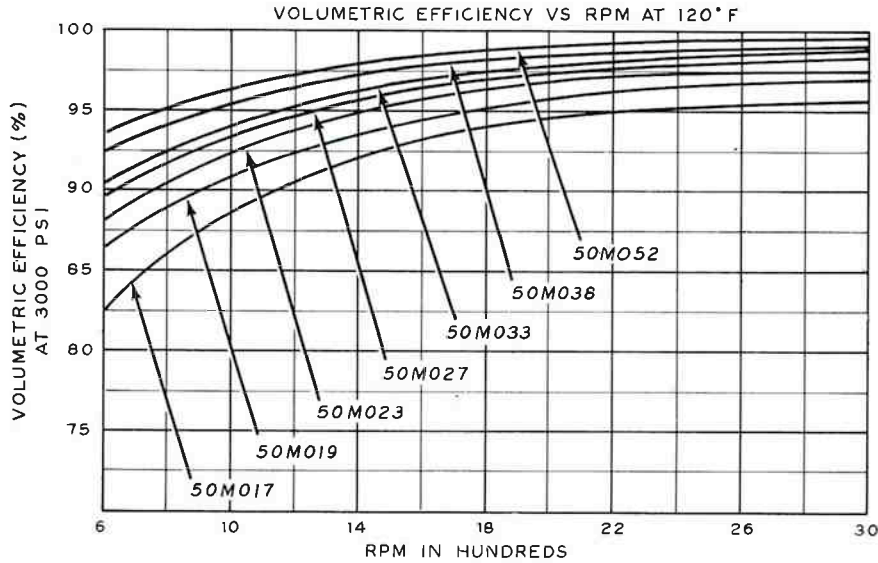


#### MODEL 50M052

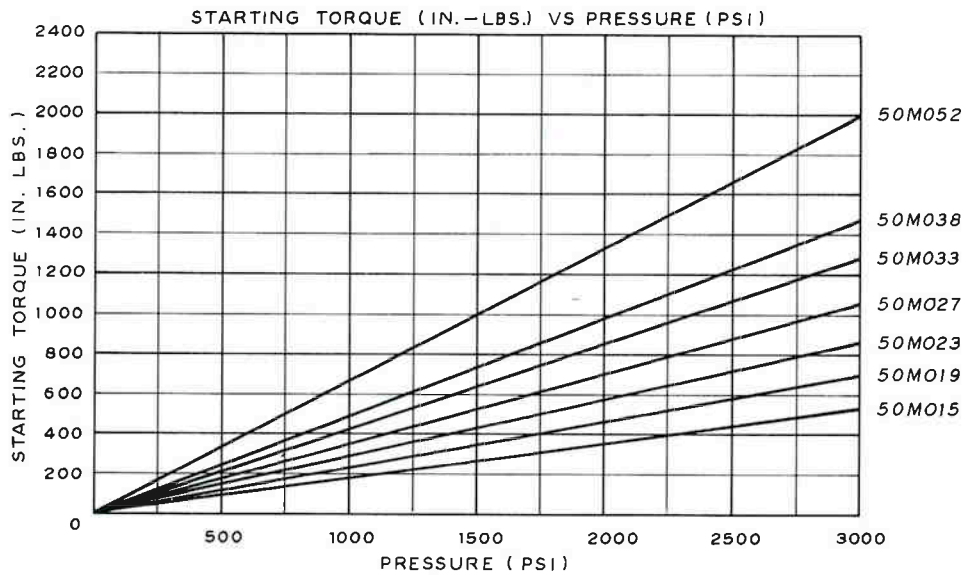




**TYPICAL PERFORMANCE**



**VOLUMETRIC EFFICIENCY**



**STARTING TORQUE**

(FOR SPECIFIC PERFORMANCE DATA CONTACT CROSS ENGINEERING)



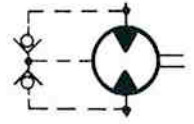
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# HYDRAULIC MOTORS

## GEAR MOTORS 60 SERIES Specifications Sheet



The CROSS series 60 gear type motors feature advanced design concepts which produce long service life and high reliability when operated up to rated speeds and pressures. Improved gear tooth design and pressure-balanced loading plates provide for a high volumetric and overall efficiency, while operating at a low noise level.

### GENERAL SPECIFICATIONS

Displacement sizes

4.05	5.15	6.15	7.15	8.15	9.25	cu.in./Rev.
66.4	84.4	100.8	117.2	133.6	151.6	cc/Rev.

- Rated working pressure (Max. relief valve setting at full flow) . . . . . 3000 psi (207 bar)
- Maximum shock and surge pressure . . . . . 3500 psi (242 bar)
- Maximum flow rate (input) . . . . . 108 gpm (409 l/m)
- Maximum speed (continuous) . . . . . up to 3,000 rpm
- Maximum horsepower (at rated speed and pressure) . . . . . 189 hp (148 Kw)
- Mounting (any position) . . . . . SAE "C" size, 2 and 4-bolt
- Weight . . . . . Approx. 42 lbs. (19 Kg)

### MATERIAL SPECIFICATIONS

- End covers . . . . . Die cast aluminum alloy
- Gears and shafts . . . . . Hardened steel
- Bearings . . . . . Pressure lubricated, Teflon impregnated sleeve
- Seals . . . . . Buna N
- Body . . . . . Permold aluminum alloy

### STANDARD FEATURES

- Rotation: Bi-directional (Dual Rotation) • Ports: 1 1/2" SAE #24, o-ring (1 7/8 - 12) side location • 1/4" NPTF drain port • Internal check valves (no external drain required if back pressure is below shaft seal rating) • Shaft: 1 1/4" dia. with straight key • Shaft seal: 250 psi (17 bar)

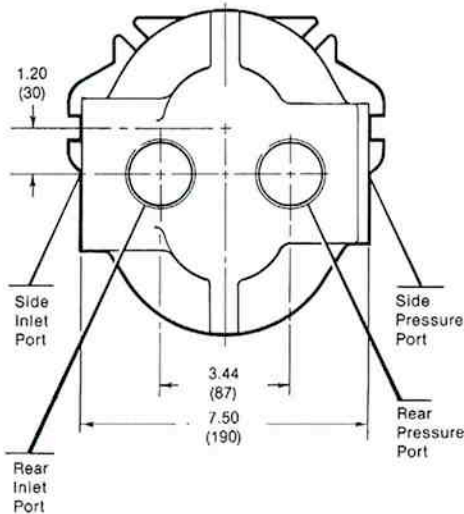
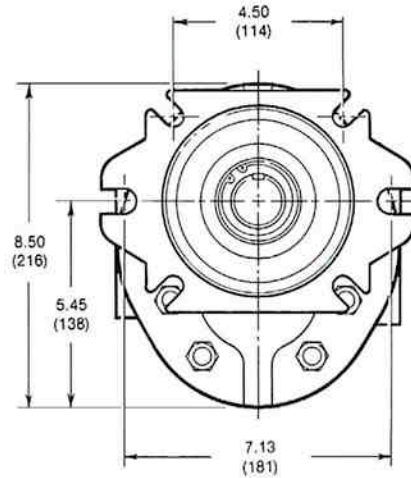
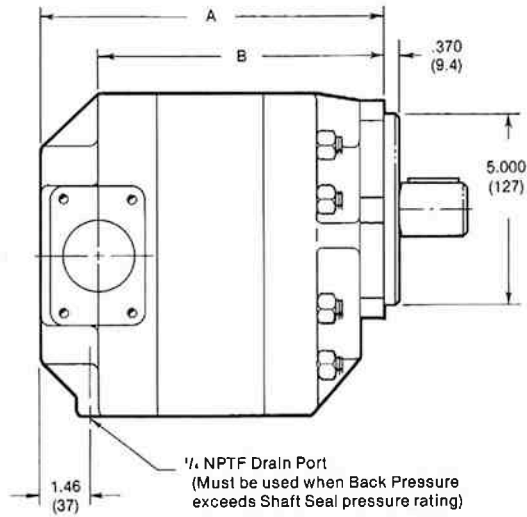
### OPTIONAL FEATURES AVAILABLE

- Rotation: Right hand (clockwise); Left hand (counterclockwise)
- Ports: Straight thread inlet and outlet, rear location; 1 1/4" and 1 1/2" split flange side ports, inlet and outlet
- Shaft: 1 1/4" splined (14 tooth, 12/24 pitch, 30° P.A. flat root side fit)

NOTE: Refer to CROSS pump and motor technical/service sheet for side and end load limitations, oil recommendations, start-up procedures, etc.



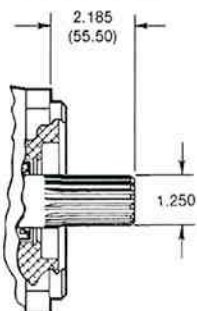
**DIMENSIONAL DATA** in inches and (millimeters)



Displacement		Dimension "A"		Dimension "B"	
cu.in./Rev.	cc/Rev.	inches	mm	inches	mm
4.05	(66.4)	7.75	(197)	6.24	(158)
5.15	(84.4)	8.00	(203)	6.50	(165)
6.15	(100.8)	8.27	(210)	6.77	(172)
7.15	(117.2)	8.52	(216)	7.02	(178)
8.15	(133.6)	8.77	(223)	7.27	(185)
9.25	(151.6)	9.05	(230)	7.55	(192)

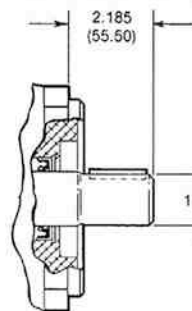
**OUTPUT SHAFT**

**SHAFT A**



Splined, 14 tooth,  
 12/24 pitch, 30°  
 pressure angle, flat root  
 side fit, Class 6.  
 Diameter 1.25"  
 (31.75)

**SHAFT C (Standard)**



Keyway for straight key  
 is .3120 inches wide,  
 and .160 inches deep.  
 Diameter 1.25"  
 (31.75)



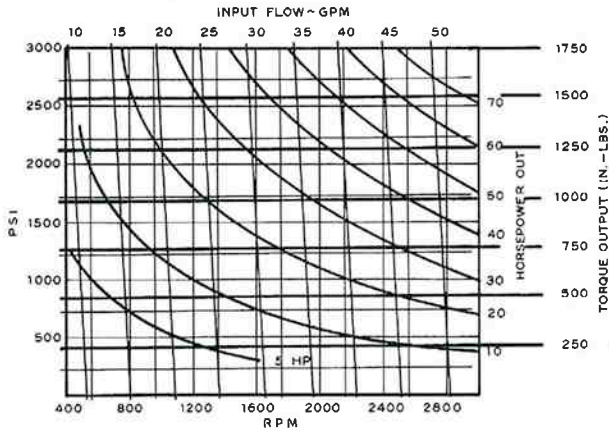
# HYDRAULIC MOTORS

# GEAR MOTORS 60 SERIES

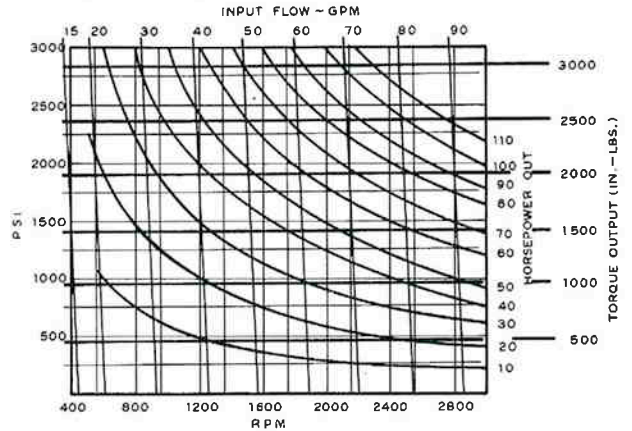
## TYPICAL PERFORMANCE DATA

(FOR SPECIFIC PERFORMANCE DATA,  
CONTACT CROSS ENGINEERING)

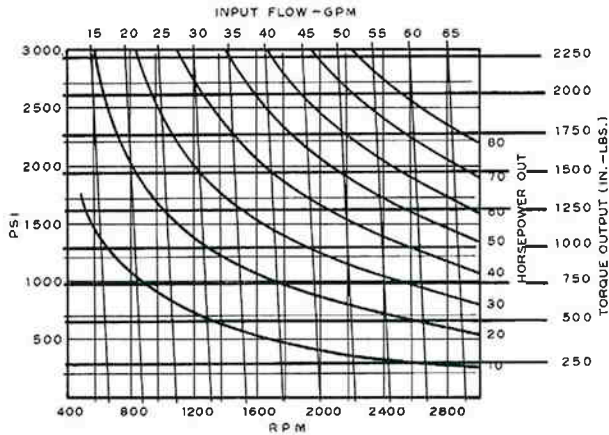
### MODEL 60M040



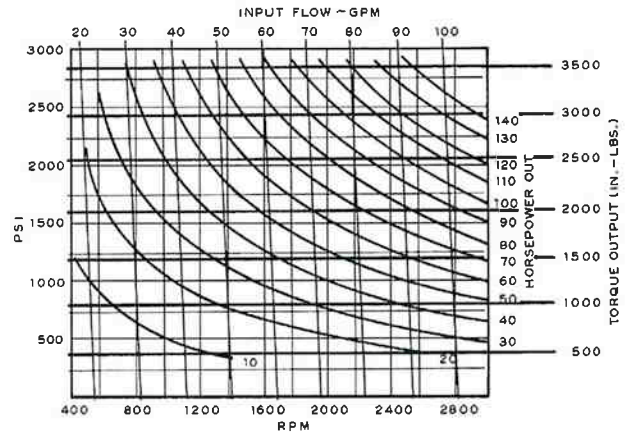
### MODEL 60M071



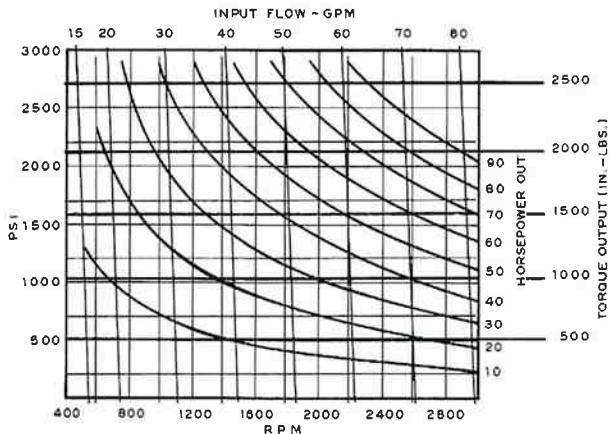
### MODEL 60M051



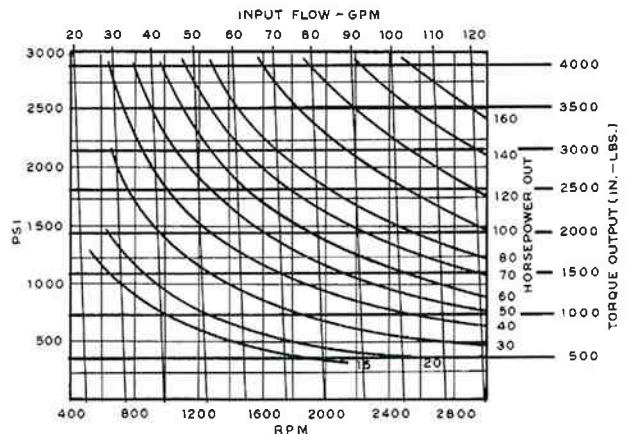
### MODEL 60M081



### MODEL 60M061



### MODEL 60M092

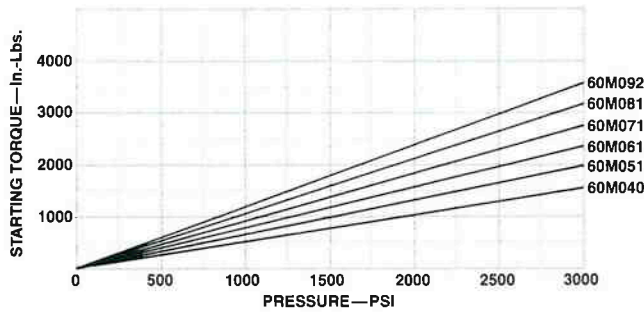




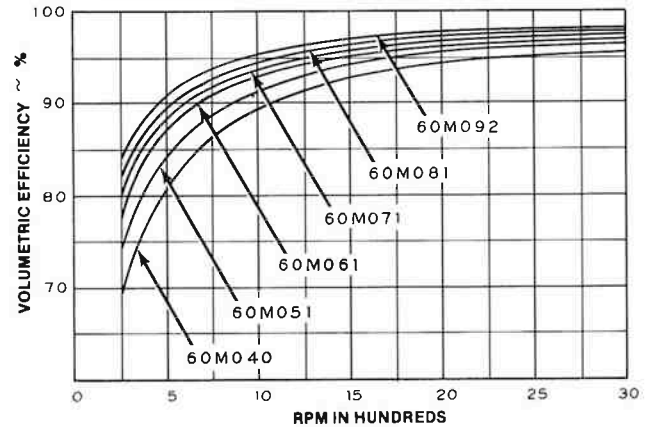
**TYPICAL PERFORMANCE DATA**

(FOR SPECIFIC PERFORMANCE DATA,  
CONTACT CROSS ENGINEERING)

**STARTING TORQUE (in.-lbs.) vs. PRESSURE (PSI)**



**VOLUMETRIC EFFICIENCY vs RPM at 120° F**



**ORDERING DATA**

Series	Type	Special Options	Size cu.in./ Rev. x 10	Rotation	Mounting	Shaft Size & Type	Port Location, Size & Type Inlet and Outlet	
60	M motor	H 250 psi Shaft Seal	40	D dual	C SAE 2 & 4 bolt combin- ation	A 1 1/4 dia. splined	SF 1 7/8 - 12 SAE #24 SH 1 1/2" spl. flg.	SIDE PORTS
			51	L left				
			61	R right	C 1 1/4 dia. straight keyway	RK 1 7/8 - 12 SAE #24	REAR PORTS	
			71					
			81					
			92					

**EXAMPLE: 60MH40DCCSF**

Describes a Series 60 Gear Motor with 250 psi shaft deal; displacement of 4.0 cu. in. per revolution; bi-directional rotation; combination SAE two and four bolt "C" mount; 1 1/4" dia. shaft with straight keyway and 1 7/8 - 12 side ports.



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