



# 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>3</sup>/<sub>16</sub> - 12) side location; inlet and outlet
- Shaft: 7/8" dia. Woodruff keyed • Shaft Seal: 250 psi (17 bar)

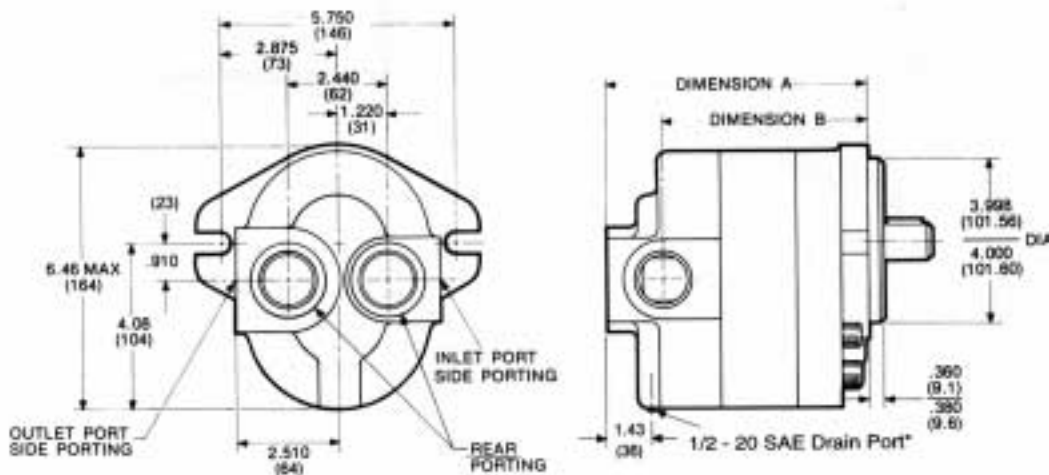
### OPTIONAL FEATURES AVAILABLE

- 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.



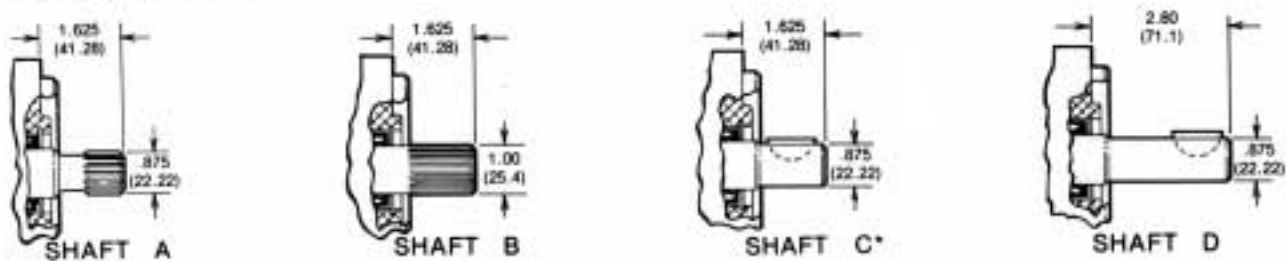
**DIMENSIONAL DATA: in inches and (millimeters)**



| Displacement<br>cu.in./Rev.<br>(cc/Rev.) | Dim. "A"<br>inches -<br>(mm) | Dim. "B"<br>inches<br>(mm) |
|--|------------------------------|----------------------------|
| 1.52<br>(24.9)                           | 5.60<br>(142)                | 4.23<br>(107)              |
| 1.95<br>(32.0)                           | 5.80<br>(147)                | 4.43<br>(113)              |
| 2.32<br>(38.0)                           | 5.95<br>(151)                | 4.56<br>(116)              |
| 2.74<br>(44.9)                           | 6.15<br>(156)                | 4.76<br>(121)              |
| 3.30<br>(54.1)                           | 6.40<br>(163)                | 5.03<br>(128)              |
| 3.80<br>(62.3)                           | 6.62<br>(168)                | 5.25<br>(133)              |
| 5.20<br>(85.2)                           | 7.21<br>(183)                | 5.84<br>(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<br>cu.in./Rev.<br>x 10 | Rotation        | Mounting                       | Shaft<br>Size & Type | Ports<br>Location & Size |        |       |
|--------|------------|-------------------------------|-----------------------------|-----------------|--------------------------------|----------------------|--------------------------|--------|-------|
|        |            |                               |                             |                 |                                |                      | Inlet                    | Outlet |       |
| 50     | M<br>Motor | H<br>250 psi<br>Shaft<br>Seal | 15                          | D<br>Dual       | B<br>SAE "B"<br>2-Bolt         | A<br>7/8 dia. spline | SC                       | 15/16  | 15/16 |
|        |            |                               | 19                          |                 |                                | B<br>1" Dia. spline  |                          |        |       |
|        |            |                               | 23                          | L<br>Left Hand  | C<br>7/8" Dia. Keyed           |                      |                          |        |       |
|        |            |                               | 27                          |                 | D<br>7/8" Dia. Keyed<br>(Long) |                      |                          |        |       |
|        |            |                               | 33                          | R<br>Right Hand | RF                             | 15/16                | 15/16                    |        |       |
|        |            |                               | 38                          |                 |                                |                      |                          |        |       |
| 52     |            |                               |                             |                 |                                |                      |                          |        |       |

EXAMPLE: 50MH150BCSC 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 1/16" inlet and outlet side ports.



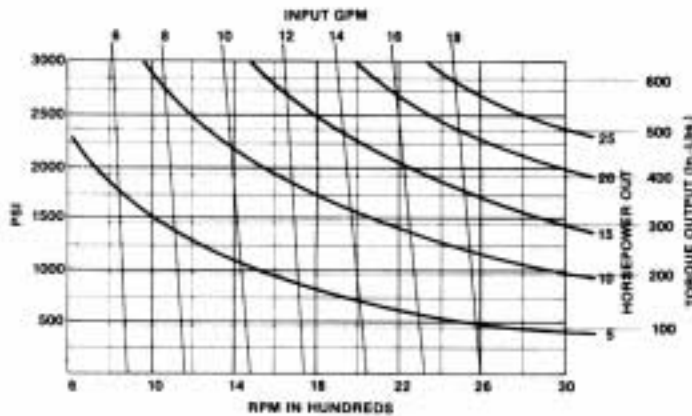
# HYDRAULIC MOTORS

# GEAR MOTORS 50 Series

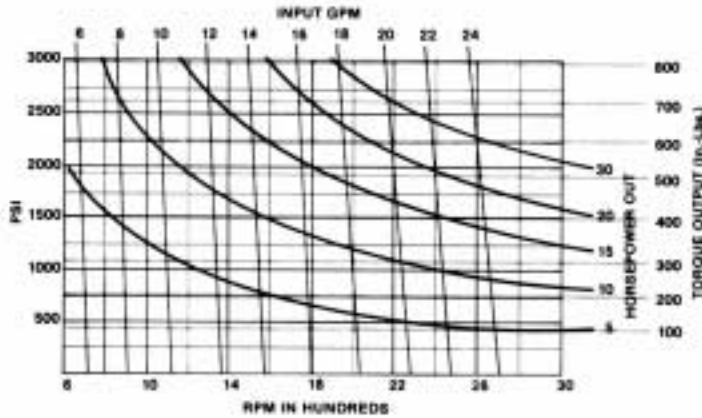
## TYPICAL PERFORMANCE DATA

(FOR SPECIFIC PERFORMANCE DATA,  
CONTACT CROSS ENGINEERING)

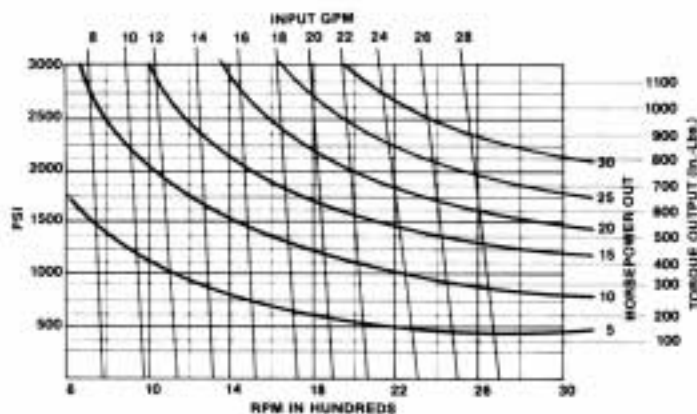
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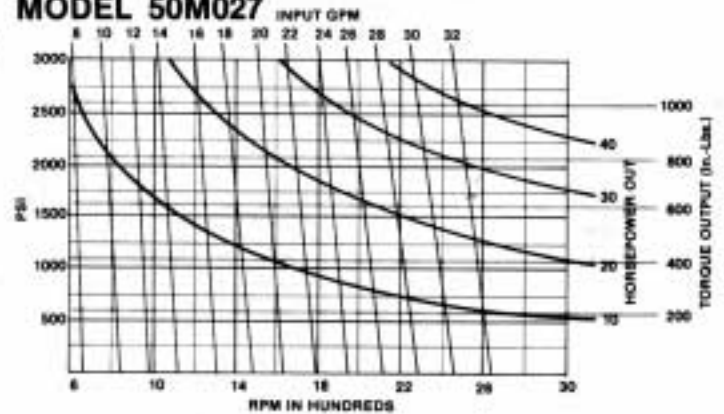
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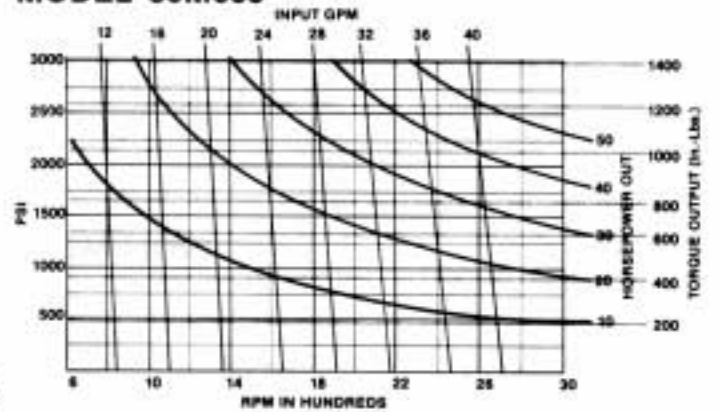
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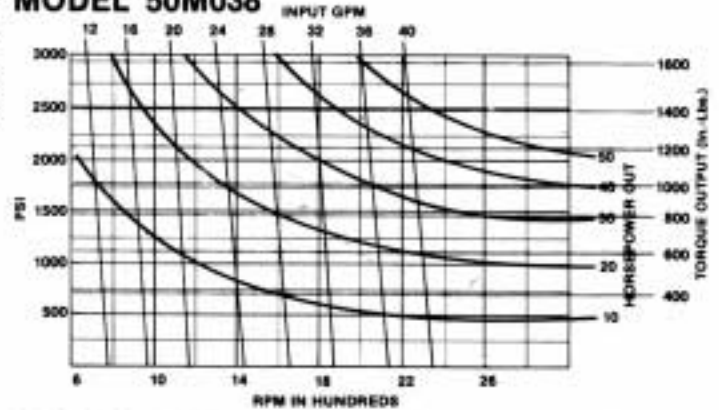
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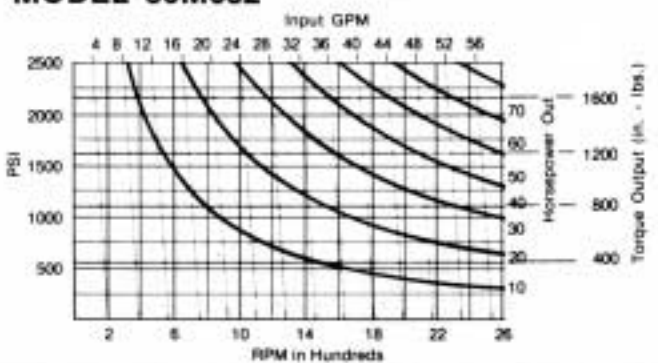
### MODEL 50M033



### MODEL 50M038

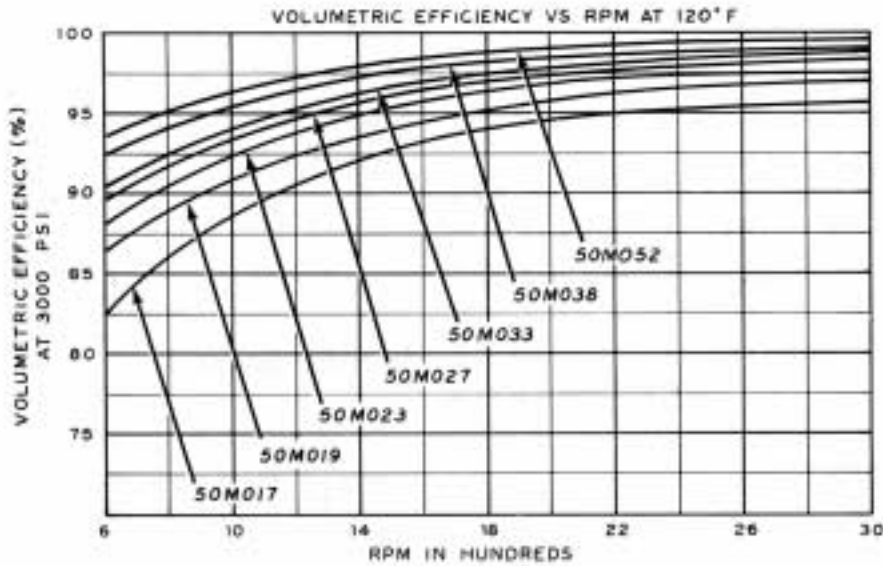


### MODEL 50M052

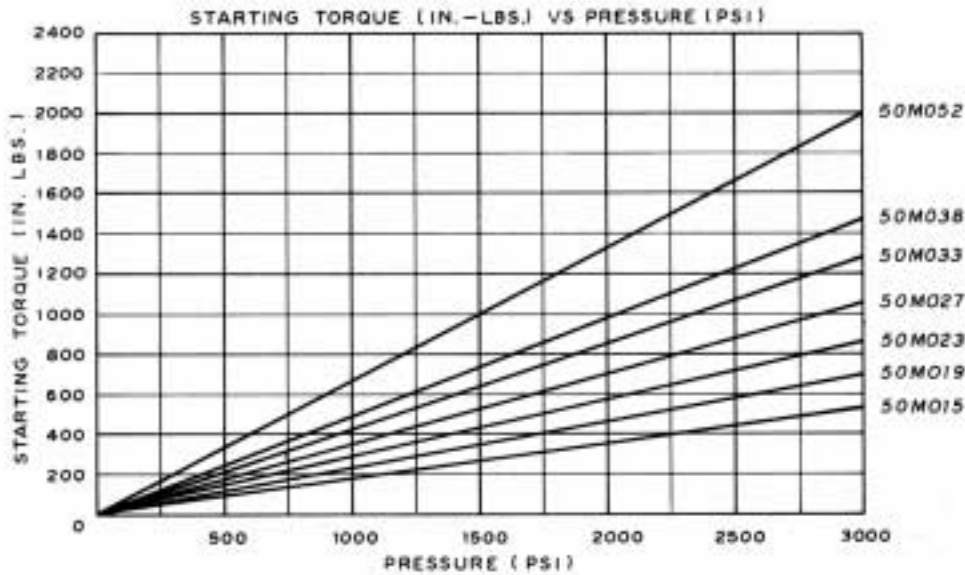




**TYPICAL PERFORMANCE**



**VOLUMETRIC EFFICIENCY**



**STARTING TORQUE**

(FOR SPECIFIC PERFORMANCE DATA CONTACT CROSS ENGINEERING)



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