

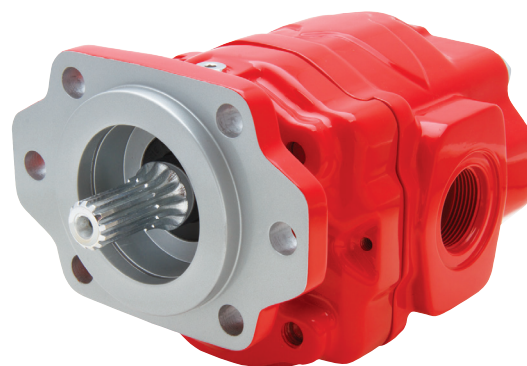
# OPTIMUM W SERIES

## GEAR PUMPS



## DESIGNED FOR OPTIMUM PERFORMANCE

The Optimum W Series gear pumps/motors offer premier performance for a wide variety of applications across several industries. Featuring the innovative OPTI-Grip® technology, the Optimum W Series exemplifies strength, endurance, and rigidity, making for long-lasting units even in the most extreme conditions. The Optimum W Series is the smallest range of the Optimum group, providing eight displacements to cover low flow, higher pressure requirements.



## TARGET MARKETS

- Agriculture
- Material Handling
- Dump & Construction
- Mining

## KEY FEATURES

- 8 pump displacements available
- Noise reducing, quiet design
- Speeds up to 3,600 RPM
- Patented OPTI-Grip® technology
- Bi-rotational, 4-port design standard (SAE straight thread only)
- High-quality, tested design
- Long life, high-performance bushings
- Pressures up to 4,350 PSI (300 BAR)
- Additional features & benefits

## PUMP SPECIFICATIONS

MODEL NUMBER	DISPLACEMENT CU.IN. (CC)	MAX. * RPM	MIN. RPM	MAX. PRES. PSI (BAR)	PORTS (ODT) SIDE & REAR	PORTS (SF) SIDE ONLY	WEIGHT LBS. (KG.) **
W06	1.45 (23.9)	3,600	800	4,350 (300)	-16	1.50" × 1.00"	40.8 (18.5)
W08	1.96 (32.2)	3,600	600	4,350 (300)	-16	1.50" × 1.00"	42.7 (19.4)
W11	2.42 (39.7)	3,250	600	4,350 (300)	-16	1.50" × 1.00"	44.0 (19.9)
W13	2.92 (47.9)	3,000	600	4,000 (275)	-20	1.50" × 1.00"	44.9 (20.4)
W15	3.46 (56.8)	2,750	600	3,750 (260)	-20	2.0" × 1.25"	47.2 (21.4)
W17	3.96 (65)	2,500	600	3,500 (240)	-20	2.0" × 1.25"	48.7 (22.1)
W19	4.37 (71.6)	2,500	600	3,250 (225)	-20	2.0" × 1.25"	49.5 (22.4)
W21	4.87 (79.8)	2,500	600	3,000 (210)	-20	2.0" × 1.25"	50.7 (23.0)

\* Max. RPM is shown at 0 in.Hg. and with an appropriately sized inlet hose

\*\* Weights shown are for single, direct mount pumps

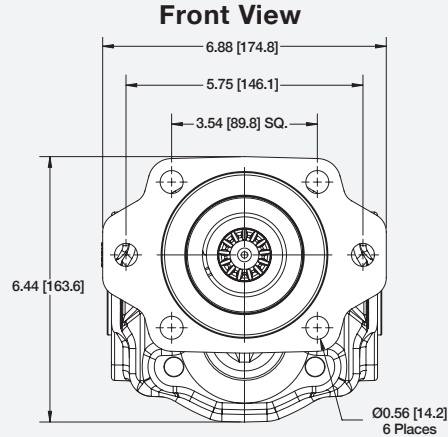
### Notes:

Max. inlet vacuum is not to exceed 5 in.Hg. (0.17 BAR).

Porting shown is standard pump porting, other porting configurations are available.

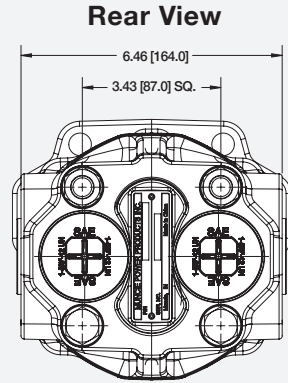
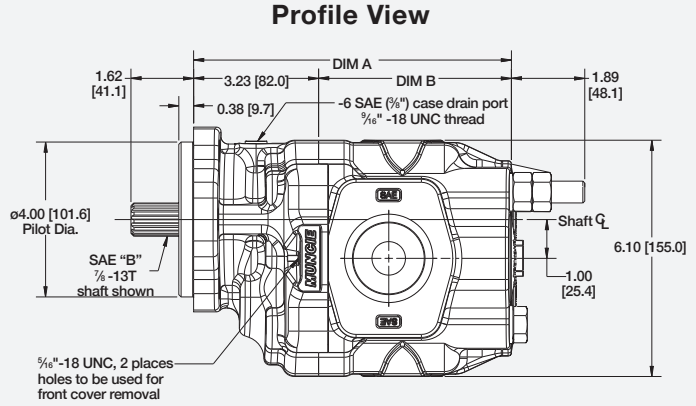
Motor applications will require a case drain to be plumbed directly back to the tank due to excessive return line pressures or surges.

# DIRECT MOUNT DIMENSIONS

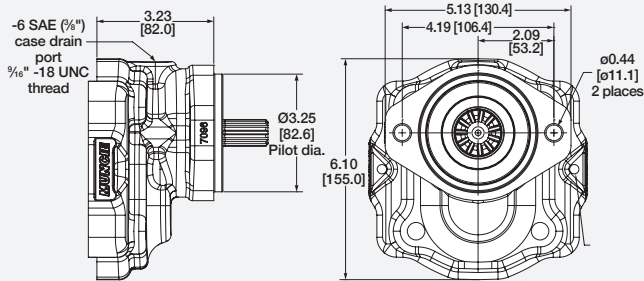


SAE "B" 2/4-Bolt Mounting Flange Shown

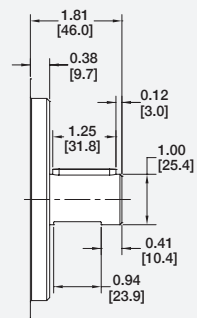
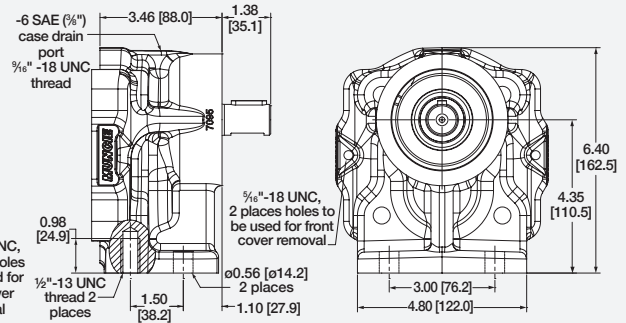
MODEL NUMBER	DIM A IN [MM]	DIM B IN [MM]
W06	6.59 [167.5]	3.37 [85.5]
W08	6.83 [173.5]	3.60 [91.5]
W11	7.05 [179]	3.82 [97]
W13	7.28 [185]	4.06 [103]
W15	7.54 [191.5]	4.31 [109.5]
W17	7.78 [197.5]	4.55 [115.5]
W19	7.97 [202.5]	4.74 [120.5]
W21	8.21 [208.5]	4.98 [126.5]



SAE "A" 2-Bolt Mounting Flange Shown with 3/4" - 11T spline shaft



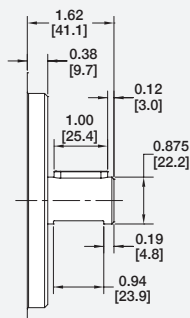
Muncie Power's Remote Mount "R" Mounting Flange Shown with SAE "B" 7/8" round shaft



SHAFT CODE 01

SAE "BB" 1.0" Rd. Shaft with 1/4" key

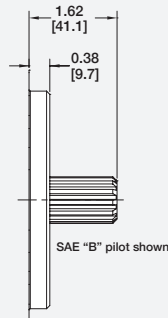
SAE "B" pilot shown



SHAFT CODE 09

SAE "B" 7/8" Rd. Shaft with 1/4" key

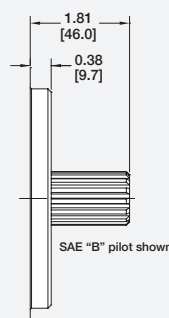
SAE "B" pilot shown



SHAFT CODE 02

SAE "B" 7/8"-13T Spline

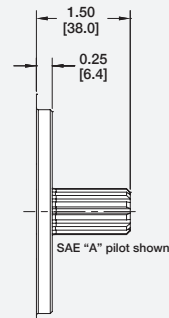
- SAE external involute spline
- 7/8" nominal diameter, 13 teeth
- 1/16" diametrical pitch
- Flat root side fit
- Major Ø=0.853"-0.858" [21.67-21.80mm]
- Minor Ø=0.721"-0.732" [18.32-18.60mm]



SHAFT CODE 17

SAE "BB" 1.0"-15T Spline

- SAE external involute spline
- 1.0" nominal diameter, 15 teeth
- 1/16" diametrical pitch
- Flat root side fit
- Major Ø=0.978"-0.983" [24.84-24.97mm]
- Minor Ø=0.847"-0.858" [21.52-21.80mm]



SHAFT CODE 16

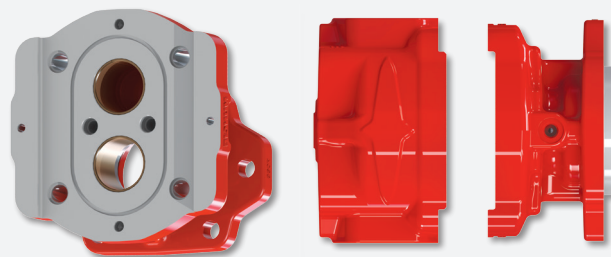
3/4"-11T Spline

- SAE external involute spline
- 3/4" nominal diameter, 11 teeth
- 1/16" diametrical pitch
- Flat root side fit
- Major Ø=0.729"-0.734" [18.51-18.64mm]
- Minor Ø=0.597"-0.608" [15.17-15.45mm]

## OPTI-GRIP® TECHNOLOGY

The Optimum Series' integral, two-piece castings are press fit together for greater structural integrity over other traditional designs.

Muncie Power's innovative, patented OPTI-Grip® 3-D diamond-like design allows for higher pressure capabilities and a more rigid pump design for long life and maintained performance.



## MODEL NUMBER CONSTRUCTION

### Pump Series

W — Optimum Series Gear Pump

### GPM (LPM) @ 1,000 RPM

06—1.45 (23.9)  
08—1.96 (32.2)  
11—2.42 (39.7)  
13—2.92 (47.9)  
15—3.46 (56.8)  
17—3.96 (65)  
19—4.37 (71.6)  
21—4.87 (79.8)

### Shaft Size Options

*(metric info where applicable):*

01 — SAE "BB" 1.0" Round Shaft w/¼ Key  
(25.4 Round w/6.35 Key)  
02 — SAE "B" ¾" -13T Spline  
09 — SAE "B" ¾" Round Shaft w/¼ Key  
(22.2 Round w/6.35 Key)  
16 — ¾" -11T Spline  
17 — SAE "BB" 1.0" -15T Spline

### Mounting Flange Options

A — SAE "A" 2-Bolt  
B — SAE "B" 2/4-Bolt  
R — Remote Foot Mount

### Mounting Flange Configuration Options \*

#### Bi-rotational Internals (pump or motor)

J0 — Bi-rotational, w/o O.B. Bearing, w/SAE -6 (¾") Drain (Use w/Splined Shafts)  
J1 — Bi-rotational, w/ O.B., w/SAE -6 (¾") Drain (Use w/Round Shafts)

#### Uni-rotational Internals (pump or motor) \*\*\*

K0 — CW w/o O.B. Bearing, w/SAE -6 (¾") Drain (Use w/Splined Shafts)  
K1 — CCW w/o O.B. Bearing, w/SAE -6 (¾") Drain (Use w/Splined Shafts)  
K2 — CW w/ O.B. Bearing, w/SAE -6 (¾") Drain (Use w/Round Shafts)  
K3 — CCW w/ O.B. Bearing, w/SAE -6 (¾") Drain (Use w/Round Shafts)

**W-11-02-B-J0-GI GI-A-1-5-T0-11-GI**

*For multiple units only. Delete for single units or repeat for triple units.*

### Side Ports Option 2nd Unit

See "Side Ports, 1st Section" Below

### GPM (LPM) @ 1,000 RPM, 2nd Unit

See values for single unit to the left

### Thru Drive (Multiple Units Only)

T0 — No thru ports

### Assembly Section Options

4 — Single Unit, w/Extended Studs  
5 — Tandem Unit, w/Extended Studs  
6 — Triple Unit, w/Extended Studs

### Design Number: 1

### Additional Attribute Options

A — High Pressure Shaft Seal \*\*  
F — Modified for Ford F-650, F-750  
W — Double Seal for Wet Spline

### Rear Port & Size Options

#### SAE Ports

GI — SAE-16 × SAE-16 (W06-W11)  
GT — SAE-20 × SAE-20 (W13 & larger)

#### Split Flange Ports

XX — No rear ports

### Side Port Options 1st Section

#### SAE Ports

GI — SAE-16 × SAE-16 (W06-W11)  
GT — SAE-20 × SAE-20 (W13 & larger)

#### Split Flange Ports

IV — 1.50" SF × 1.00" SF (W06-W13)  
JC — 2.00" SF × 1.25" SF (W15 & Larger)

\* It is recommended that pumps or motors with a round output shaft use an outboard bearing to assist with radial loads.

\*\* 150 PSI (10 BAR) max. back-pressure

\*\*\* Uni-rotational internals (K configuration codes) are used with split flange ports only.

# OPTIMUM SERIES GENERAL INFORMATION

## Oil Recommendations

Muncie Power Products does not promote specific manufacturers' brands of oil, but does recommend the use of quality petroleum-based hydraulic oils. Different climate temperatures require that the oil viscosity be appropriate for the operating conditions. Consult the oil manufacturer for your exact application needs.

**NEVER** dilute the hydraulic oil for cold weather operation with, including but not limited to, diesel fuel, kerosene, etc.

- **Oil Viscosity:** 60–1,000 SUS (10.5–215 cSt) for continuous operation. Viscosity should not exceed 7,500 SUS (1,600 cSt) at start-up.
- **Special Fluids:** Biodegradable and water-glycol type fluids are acceptable for use with the Optimum Series Pumps/Motors.

## Inlet/Outlet Condition

- Maximum inlet vacuum should not exceed 5 in.Hg. across all operating RPMs and temperature conditions.
- An undersized inlet port size could have maximum RPM limitations.
- An oversized outlet port size could have maximum pressure limitations.

## Operating Temperatures

Proper control of the system operating temperature is critical for long product life and the protection of all other hydraulic components.

- Ideal operating temperatures:  
+100° F to +140° F (+37.8° to +60° C)
- Maximum Continuous temperature:  
+180° F (+82.2° C)
- Maximum Intermittent temperature:  
+200° F (+93.3° C)

## Hose Sizing

Hydraulic hose must be properly sized based on the oil velocity in feet per second (FPS) and of the appropriate type (SAE rating) for the specified rate of flow and pressure. The following are hose recommendations for common applications; hose requirements may differ for non-standard applications.

- Inlet hose: 2–4 FPS, SAE 100R4 type
- Pressure hose: 7–15 FPS, SAE 100R2 type
- Return hose: 4–8 FPS, SAE 100R1 type

## Filtration Recommendations

Proper filtration is vital to the life of any hydraulic system since it helps protect hydraulic components from foreign objects which may have entered the system.

- **Return Line Filters:** Return filters are always recommended with a minimum 10 micron rating. Some applications require better filtration with an absolute rating and possibly 3 or 6 micron media.
- **Pressure Filters:** Pressure filters are not typically required for gear pump applications, but they are available if desired.
- **Suction Strainers:** Suction strainers are very useful in catching large objects. Strainers should never be sized smaller than 100 mesh (149 micron), and should always include a 3 PSI (0.2 BAR) bypass.

## Oil Cleanliness Recommendations (ISO 4406-1999)

@ 2,000 PSI (138 BAR): 20/17/15

@ 3,000 PSI (207 BAR): 19/17/14

@ 4,000+ PSI (276+ BAR): 17/15/12



A Member of the Interpump Group

MP15-13 (Rev. 11-25)

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