

TRUNNION MOUNT

TELESCOPIC CYLINDERS



HIGH PERFORMANCE IN A LIGHTER CYLINDER

Muncie Trunnion Mount cylinders not only offer the mounting style that allows for increased capacity in the dump body by allowing for significant reduction or elimination of the dog house but also many other features. With the strict machining tolerances, solid stop contact faces* and larger overlap between stages the Muncie cylinders are one of the strongest and most stable cylinders on the market.



KEY FEATURES

- Self-bleeding design for easier installation process
- No packing or head nuts on each stage. Only one head nut that doesn't need adjustments
- Chrome-plated final stage extends the life of the cylinder
- Solid stops machined into top and bottom of each stage, eliminating stop rings and threaded stops
- Stages are machined and precision ground inside and out to allow for optimal seal / wiper performance
- Each cylinder is equipped with bearing supports at both the top and bottom. Longer stages have increased overlap for improved column stability.
- Tight machining tolerances cause smaller tube clearances that result in increased rigidity
- One of the lightest cylinders on the market which translates to greater payloads, less oil consumption and faster dumping
- Low maintenance requirements offer many years of top performance without additional expenses
- Easily remove outer cover for ease of service

QUALITY MATERIALS

- All steel tubing are made from seamless hot rolled steel, this results in higher tensile tubes for increased column strength and stiffness*
- Stages have no welded seems allowing for higher pressure capabilities
- The quality steel used increases resistance to mechanical stress and increases cylinder life
- Seals and wipers are made of polyurethane and feature a double lip design assuring optimum performance in all climate conditions (-40°F to 212°F / -40°C to 100°C)
- Bearing supports are made of DELRIN®, they are compatible with all types of hydraulic oils approved by pump makers and are capable of withstanding high and low pressures

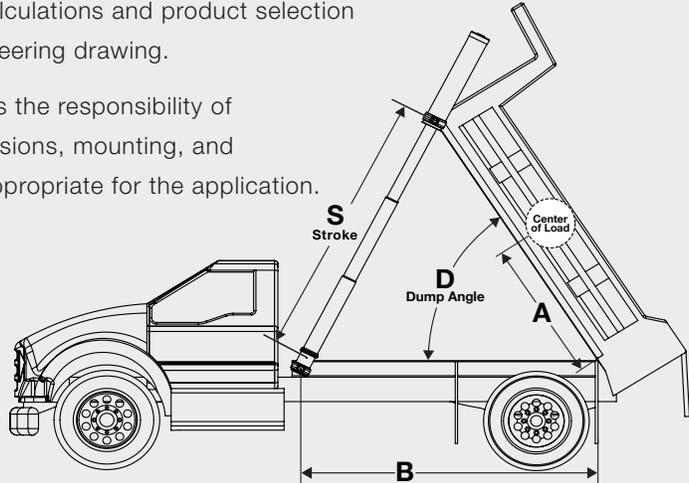
* Note: Not available with 3.5 & 4.5 series models

DUMP BODY CYLINDER CALCULATIONS

These calculations provide approximate values. Final calculations and product selection should be determined by a qualified engineer and engineering drawing.

When selecting a hydraulic cylinder for replacement. It is the responsibility of the purchaser and installer / user to verify that all dimensions, mounting, and performance features of the replacement cylinder are appropriate for the application.

- A = Dump hinge pin to center of load in inches**
- B = Dump hinge pin to cylinder base pin in inches**
- D = Dump body to frame angle**
- S = Stroke of cylinder**



*Normal minimum dump angle is 45° and normal maximum dump angle is 57°.

| Dump Angle* | 42° | 43° | 44° | 45° | 46° | 47° | 48° | 49° | 50° | 51° | 52° | 53° | 54° | 55° | 56° | 57° |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| "D" | .670 | .683 | .696 | .708 | .720 | .732 | .744 | .756 | .767 | .778 | .789 | .800 | .810 | .821 | .830 | .840 |

CYLINDER STROKE

Approximate Stroke (inches) = "B" x "D"

- Example: B = 180" and Desired Dump Angle = 50°
- Approximate Cylinder Stroke = 162" x .767
- Approximate Cylinder Stroke = 138"

REQUIRED FORCE

Force required to lift a load = [Load (lbs) x "A"] / "B"

- Example: Load = 40,000 lbs, A = 90", and B = 180"
- Force required = [40,000 lbs x 90"] / 180"
- Force Required = 20,988 lbs

LIFTING CAPACITY AT GIVEN PRESSURES FOR EACH STAGE DIAMETER

| Stage Dia. (in) | Eff. Area (in ²) | 800 PSI | 1,000 PSI | 1,500 PSI | 2,000 PSI | 2,500 PSI | 2,900 PSI* | 3,200 PSI* |
|-----------------|------------------------------|---------|-----------|-----------|-----------|-----------|------------|------------|
| 6.65 | 34.73 | 27,786 | 34,732 | 52,098 | 69,465 | 86,831 | 100,724 | 111,143 |
| 5.87 | 27.06 | 21,650 | 27,062 | 40,594 | 54,125 | 67,656 | 78,481 | 86,600 |
| 5.08 | 20.27 | 16,215 | 20,268 | 30,402 | 40,537 | 50,671 | 58,778 | 64,859 |
| 4.37 | 15.00 | 11,999 | 14,999 | 22,498 | 29,997 | 37,497 | 43,496 | 47,996 |
| 3.74 | 10.99 | 8,789 | 10,986 | 16,479 | 21,972 | 27,465 | 31,859 | 35,155 |
| 3.54 | 9.84 | 7,874 | 9,842 | 14,763 | 19,685 | 24,606 | 28,543 | 31,495 |
| 2.95 | 6.83 | 5,468 | 6,835 | 10,252 | 13,670 | 17,087 | 19,821 | 21,872 |
| 2.36 | 4.37 | 3,499 | 4,374 | 6,562 | 8,749 | 10,936 | 12,686 | 13,998 |
| 1.77 | 2.46 | 1,968 | 2,461 | 3,691 | 4,921 | 6,151 | 7,136 | 7,874 |

Notes:

A properly designed system should operate at approximately 800 psi or less during the start of the lift. The load imposed on a cylinder by a dump body is dynamic, and as such, your system pressure will be changing to accommodate the difference in force required to lift the changing load. You will see system pressure increase as your cylinder extends from stage to stage. You will also see a decrease in cycle time due to the effective volume change from stage to stage as the cylinder extends (your cylinder will move faster).

Note: 3.5-4.5 Series MAX Pressure 3,200 PSI (220 BAR), 5.5-7.5 Series MAX Pressure 2,900 PSI (200 BAR)

MODEL NUMBER CONSTRUCTION

6.5 - 4 - 160 - B - 00

SERIES

(7.5, 6.5, 5.5, 4.5, 3.5)

NUMBER OF STAGES

4 - (7.5 & 6.5 series only)

3 - (5.5, 4.5 & 3.5 series only)

DESIGN CODE

MOUNT TYPE

B - Trunion

NOMINAL STROKE (IN)

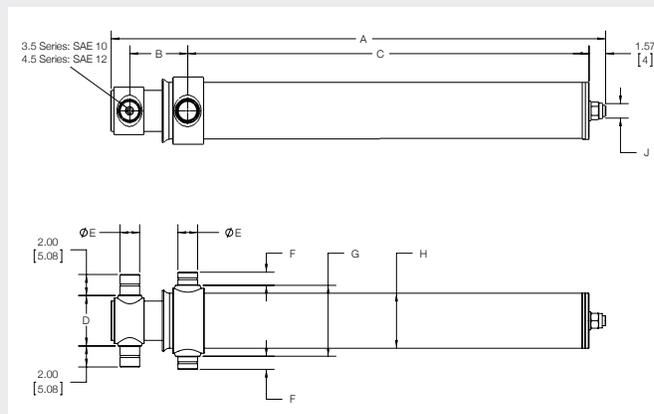
See next page for standard size availability

DIMENSIONS

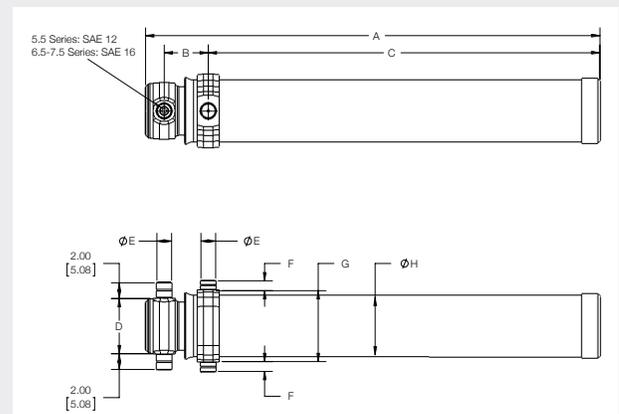
ENGLISH MEASUREMENTS (in., gal., lbs.)

| MODEL NO. | STROKE LENGTH (in) | A | B | C | D | E | F | G | H | J | STAGE DIAMETER (in) 1/2/3/4/5 | FILL / EXTEND (gal) | CYLINDER WEIGHT (lbs) |
|---------------|--------------------|-------|------|-------|------|------|------|------|------|-------|----------------------------------|---------------------|-----------------------|
| 3.5-3-082-B00 | 82 | 36.8 | 5.51 | 28.0 | 4.8 | 1.87 | 1.26 | 6.75 | 5.24 | M24x3 | 2.95 / 2.36 / 1.17 | 0.29 / 1.6 | 128 |
| 3.5-3-110-B00 | 111 | 47.05 | 5.51 | 38.19 | 4.8 | 1.87 | 1.26 | 6.75 | 5.24 | M24x3 | 2.95 / 2.36 / 1.17 | 0.36 / 2.2 | 161 |
| 4.5-3-090-B00 | 90 | 40.16 | 5.24 | 31.59 | 5.75 | 1.87 | 1.26 | 8.03 | 6.26 | M39x3 | 3.54 / 2.95 / 2.36 | 0.36 / 2.7 | 198 |
| 4.5-3-110-B00 | 111 | 47.00 | 5.50 | 38.20 | 5.75 | 1.87 | 1.26 | 8.03 | 6.26 | M39x3 | 3.54 / 2.95 / 2.36 | 0.48 / 3.3 | 225 |
| 4.5-3-120-B00 | 120 | 50.0 | 5.40 | 41.20 | 5.75 | 1.87 | 1.26 | 8.03 | 6.26 | M39x3 | 3.54 / 2.95 / 2.36 | 0.51 / 3.6 | 238 |
| 5.5-3-100-B00 | 100 | 45.8 | 5.59 | 37.9 | 6.99 | 1.87 | 1.26 | 9.0 | 7.6 | - | 5.08 / 4.37 / 3.74 | 0.67 / 6.6 | 286 |
| 5.5-3-121-B00 | 121 | 52.9 | 5.59 | 44.9 | 6.99 | 1.87 | 1.26 | 9.0 | 7.6 | - | 5.08 / 4.37 / 3.74 | 0.79 / 8.1 | 319 |
| 5.5-3-138-B00 | 138 | 57.6 | 5.59 | 49.7 | 6.99 | 1.87 | 1.26 | 9.0 | 7.6 | - | 5.08 / 4.37 / 3.74 | 0.90 / 9.1 | 356 |
| 6.5-4-146-B00 | 146 | 48.5 | 6.85 | 39.3 | 7.99 | 2.24 | 1.50 | 10.2 | 8.6 | - | 5.87 / 5.08 / 4.37 / 3.74 | 1.1 / 11.4 | 397 |
| 6.5-4-160-B00 | 160 | 53.2 | 6.85 | 44.0 | 7.99 | 2.24 | 1.50 | 10.2 | 8.6 | - | 5.87 / 5.08 / 4.37 / 3.74 | 1.2 / 12.7 | 431 |
| 6.5-4-170-B00 | 169 | 55.0 | 6.85 | 45.8 | 7.99 | 2.24 | 1.50 | 10.2 | 8.6 | - | 5.87 / 5.08 / 4.37 / 3.74 | 1.2 / 13.5 | 444 |
| 6.5-4-180-B00 | 180 | 55.0 | 6.85 | 45.8 | 7.99 | 2.24 | 1.50 | 10.2 | 8.6 | - | 5.87 / 5.08 / 4.37 / 3.74 | 1.3 / 14.4 | 444 |
| 7.5-4-182-B00 | 182 | 61.1 | 8.78 | 49.7 | 9.02 | 2.24 | 1.50 | 12.8 | 9.63 | - | 6.65 / 5.87 / 5.08 / 4.37 | 1.6 / 19.4 | 667 |
| 7.5-4-194-B00 | 194 | 61.1 | 8.78 | 49.7 | 9.02 | 2.24 | 1.50 | 12.8 | 9.63 | - | 6.65 / 5.87 / 5.08 / 4.37 | 1.7 / 20.2 | 667 |

3.5 & 4.5 MODELS



5.5 - 7.5 MODELS



METRIC MEASUREMENTS (cm., L., Kgs.)

| MODEL NO. | STROKE LENGTH (cm) | A | B | C | D | E | F | G | H | J | STAGE DIAMETER (cm) 1/2/3/4/5 | FILL / Extend (L) | CYLINDER WEIGHT (Kg) |
|---------------|--------------------|-------|------|-------|-------|------|------|-------|-------|-------|----------------------------------|-------------------|----------------------|
| 3.5-3-082-B00 | 208.3 | 93.5 | 14.0 | 71.0 | 12.2 | 4.76 | 3.2 | 17.1 | 13.3 | M24x3 | 7.5 / 6.0 / 4.5 | 1.1 / 6.1 | 58.1 |
| 3.5-3-110-B00 | 281.9 | 119.5 | 14.0 | 97.0 | 12.2 | 4.76 | 3.2 | 17.1 | 13.3 | M24x3 | 7.5 / 6.0 / 4.5 | 1.4 / 8.3 | 73.0 |
| 4.5-3-090-B00 | 228.6 | 102.0 | 13.3 | 80.2 | 14.6 | 4.76 | 3.2 | 20.4 | 15.9 | M39x3 | 9.0 / 7.5 / 6.0 | 1.4 / 10.2 | 89.8 |
| 4.5-3-110-B00 | 281.9 | 119.5 | 14.0 | 97.0 | 14.6 | 4.76 | 3.2 | 20.4 | 15.9 | M39x3 | 9.0 / 7.5 / 6.0 | 1.8 / 12.5 | 102.1 |
| 4.5-3-120-B00 | 304.8 | 127.0 | 13.8 | 104.7 | 14.6 | 4.76 | 3.2 | 20.4 | 15.9 | M39x3 | 9.0 / 7.5 / 6.0 | 1.9 / 13.6 | 107.9 |
| 5.5-3-100-B00 | 254.00 | 116.4 | 14.2 | 96.2 | 17.78 | 4.76 | 3.2 | 22.86 | 19.3 | - | 12.9 / 11.1 / 9.5 | 2.5 / 35.1 | 129.7 |
| 5.5-3-121-B00 | 307.30 | 134.4 | 14.2 | 114.1 | 17.78 | 4.76 | 3.2 | 22.86 | 19.3 | - | 12.9 / 11.1 / 9.5 | 3.0 / 30.5 | 144.7 |
| 5.5-3-138-B00 | 350.52 | 146.3 | 14.2 | 126.2 | 17.75 | 4.76 | 3.2 | 22.86 | 19.3 | - | 12.9 / 11.1 / 9.5 | 3.4 / 34.4 | 161.5 |
| 6.5-4-146-B00 | 370.84 | 123.2 | 17.4 | 99.82 | 20.29 | 5.69 | 3.81 | 25.91 | 21.84 | - | 14.9 / 12.9 / 11.1 / 9.5 | 4.0 / 43.1 | 180.1 |
| 6.5-4-160-B00 | 406.00 | 135.1 | 17.4 | 111.8 | 20.29 | 5.69 | 3.81 | 25.91 | 21.84 | - | 14.9 / 12.9 / 11.1 / 9.5 | 4.4 / 48.1 | 195.5 |
| 6.5-4-170-B00 | 429.26 | 139.7 | 17.4 | 116.3 | 20.29 | 5.69 | 3.81 | 25.91 | 21.84 | - | 14.9 / 12.9 / 11.1 / 9.5 | 4.6 / 51.1 | 201.4 |
| 6.5-4-180-B00 | 457.20 | 139.7 | 17.4 | 116.3 | 20.29 | 5.69 | 3.81 | 25.91 | 21.84 | - | 14.9 / 12.9 / 11.1 / 9.5 | 4.8 / 54.5 | 201.4 |
| 7.5-4-182-B00 | 462.28 | 155.2 | 22.3 | 126.2 | 22.91 | 5.69 | 3.81 | 32.51 | 24.46 | - | 16.9 / 14.9 / 12.9 / 11.1 | 6.1 / 73.4 | 302.6 |
| 7.5-4-194-B00 | 492.76 | 155.2 | 22.3 | 126.2 | 22.91 | 5.69 | 3.81 | 32.51 | 24.46 | - | 16.9 / 14.9 / 12.9 / 11.1 | 6.3 / 76.5 | 302.6 |

Note: MAX Pressure(s): 3.5-4.5 Series = 3,200 PSI (220 BAR), 5.5-7.5 Series = 2,900 PSI (200 BAR)

CYLINDER SEAL AND REBUILD KITS

Seal kits contain all seals and wipers needed for each stage. Rebuild kits contain all seals, wipers and bearing supports needed for each stage.

| CYLINDER MODEL | SEAL KIT NO. | REBUILD KIT NO. |
|----------------|--------------|-----------------|
| 3.5-3-XXX-B00 | GSK-3.53-00 | RBK-3.53-00 |
| 4.5-3-XXX-B00 | GSK-3.53-00 | RBK-4.53-00 |
| 5.5-3-XXX-B00 | GSK-5.53-00 | RBK-5.53-00 |
| 6.5-4-XXX-B00 | GSK-6.54-00 | RBK-6.54-00 |
| 7.5-4-XXX-B00 | GSK-7.54-00 | RBK-7.54-00 |

