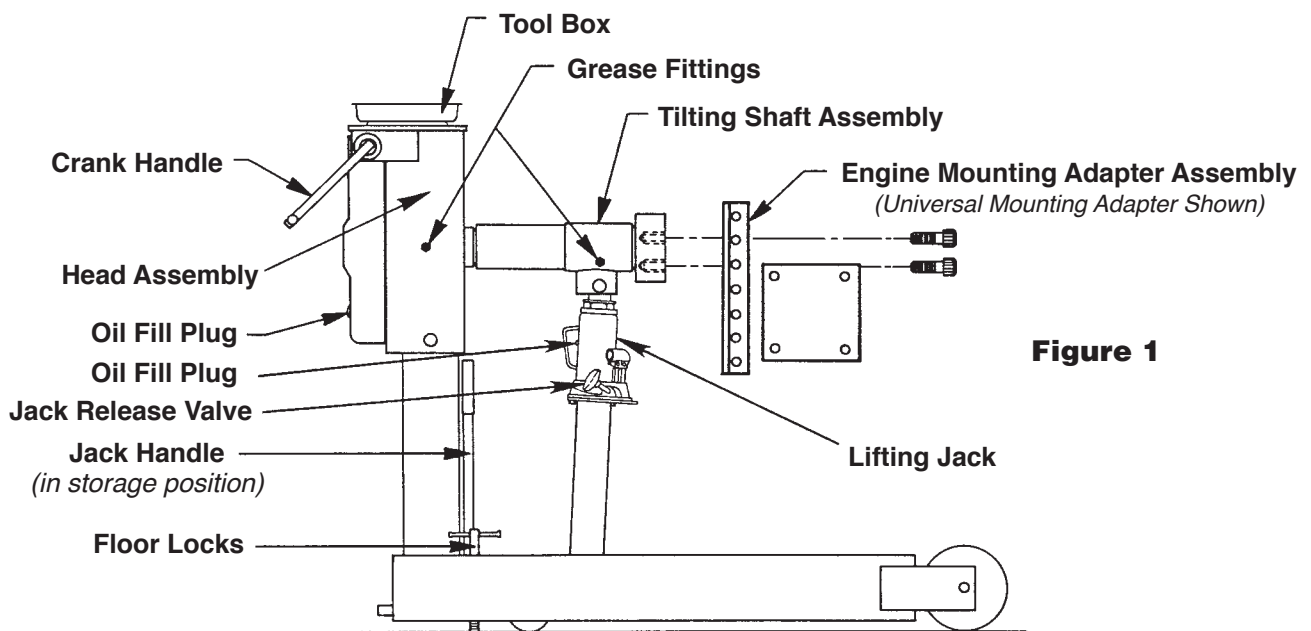


Heavy-Duty Engine Repair Stand

Maximum Capacity: 2722 kg (6000 lbs.)

Engine Stand Weight: 260 kg (573 lbs.)

Description: Designed for mounting engines, transmissions, or other components by using the universal mounting plate or a mounting plate designed specifically for the application. The component may be rotated 360 degrees by using the crank handle; the component may be raised by using the lifting jack to increase swing radius for clearance when rotating the component. Two front wheels and two rear casters provide mobility.



Explanation of Safety Signal Words

The safety signal word designates the degree or level of hazard seriousness.

DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Assembly & Operating Instructions

Safety Precautions



CAUTION: To prevent personal injury and/ or property damage,



- Study, understand, and follow all safety precautions and operating instructions before using this engine stand. If the operator cannot read instructions, operating instructions and safety precautions must be read and discussed in the operator's native language.



- Only qualified operators may install, operate, adjust, maintain, clean, repair, inspect, or transport this machinery.

- Wear eye protection that meets ANSI Z87.1, CE EN166, AS/NZS 1337, and OSHA standards.

- Do not exceed the rated capacity of 2722 kg (6000 lbs.). Maximum capacity is determined with the center of the engine located not more than 330 mm (13 inches) from the mounting hub surface of the engine stand.

- Use the engine stand only on a hard, level surface.

- Lock the handle locking mechanism before applying a load to the engine stand. Lock the handle locking mechanism once the engine is in a working position.

- Ensure the load is centered and secured to the mounting attachments. Off-center loads may make the load and handle rotate in either direction when the rotational locking device is released. Release rotational locking devices slowly and carefully. To avoid having an off-balance load, locate the engine's center of balance within 50.8 mm (2.0 inches) of the engine stand rotating shaft.

- To maintain shear strength specifications, use alloy steel grade 8 or property class 10.9 socket head cap screws to mount adapters or engines.

- To ensure full thread engagement, tapped holes in adapters and engine blocks must be clean and not damaged. A thread length engagement equal to 1-1/2 screw diameters minimum is needed to maintain strength requirements.

- The engine must be solidly mounted to the repair stand before removing the support from the lifting device.

- Regularly check the cap screws on the repair stand assembly to verify they are torqued.

- Stay out from underneath a load that is being lifted or suspended.



- Use the lifting jack when necessary to lift the engine for rotation. While working on the engine, keep the jack at its lowest position to keep the center of gravity low and reduce the possibility of tipping.

- Release system pressure **SLOWLY** to lower an engine. Do not unscrew the release valve knob more than two turns from its closed position.

- No alterations shall be made to this product.

- Only attachments and / or adapters supplied by the manufacturer may be used.

- This device is designed for general use in normal environments. This device is not designed for lifting and moving people, agri-food machinery, mobile machinery, or in special work environments such as explosive, flammable or corrosive.

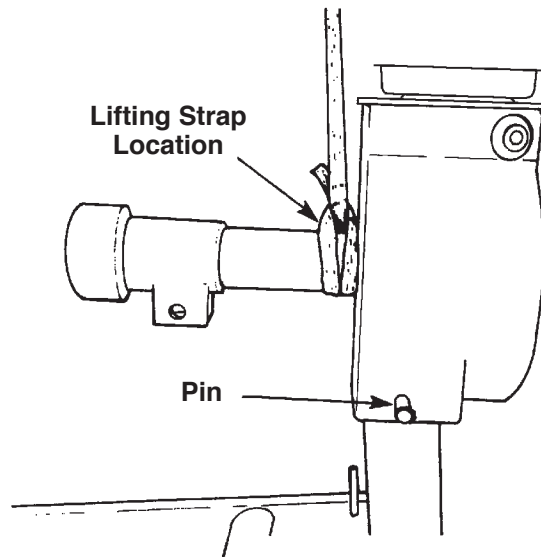
Assembly Instructions

(Item numbers refer to parts list No. 100300)

Note:

- *It is easier to assemble the repair stand if you leave the base on the shipping pallet during assembly.*
 - *Use an overhead crane or lift when assembling this repair stand; a forklift may be used if other means are not available.*
1. Place the head assembly in an upright position.
 2. Place the tool box (Item No. 1) on top of the head assembly.
 3. Place the jack (13) on the plate as shown in the parts list. Bolt the jack to the plate using lockwashers and cap screws (20 and 21) and move the completed assembly forward.
 4. Assemble a retaining ring (4) on one end of each pin (Items 15 and 30).
 5. Attach a lifting strap around the head assembly as shown in Figure 2. Lift the head assembly and lower it onto the post. Align the holes and insert the longer pin (30). Place a retaining ring (4) on the other end of the pin.

Figure 2



6. Raise the lifting jack assembly and fit it into the mounting bracket located under the tilting shaft assembly. Insert a pin (15) and fasten the pin in place with a retaining ring (4).
7. Place the jack handle (29) in its storage position on the repair stand as shown in Figure 1.
8. Tighten the collar (6) until snug against the bushing on the tube assembly (3). Back off the collar 1/8 turn and tighten the set screw (5).
9. If an engine mounting adapter has been included, attach it to the tilting shaft as shown in Figure 1. Torque the bolts to 610 N•m (450 ft. lbs.)

Note: Use the hex stock (provided) as an adapter with a socket wrench on the allen head screws.

Assembly & Operating Instructions

Using the Universal Adapter Plate to Mount an Engine

1. Verify the handle locking mechanism on the engine stand is engaged before mounting an engine. Refer to Figure 5.
2. Select an engine adapter plate that has the correct bolt pattern for the engine to be serviced. Use the application chart provided with the adapter plate to determine which bolt holes adapt to the specific engine model.
3. Bolt the engine adapter plate to the engine using the spacers, bolts, and washers specified in the application chart. Wrench tighten the bolts. See Figure 3.
4. Attach side plates to the engine adapter plate, but leave the cap screws and nuts loose.
5. See Figure 4. Align the engine (with side plates attached to the adapter plate) with the universal adapter plate on the engine stand. Raise or lower the engine until its center of balance is in-line with the rotating shaft of the engine stand. *Note: The engine's center of balance (greatest concentration of weight) is usually about 50.8 mm (two inches) above the center of the crankshaft.*
6. Align the closest tapped holes in the universal adapter plate with holes in the side plates. Securely tighten the side plates to the engine adapter plate on the engine and to the universal adapter plate on the engine stand.

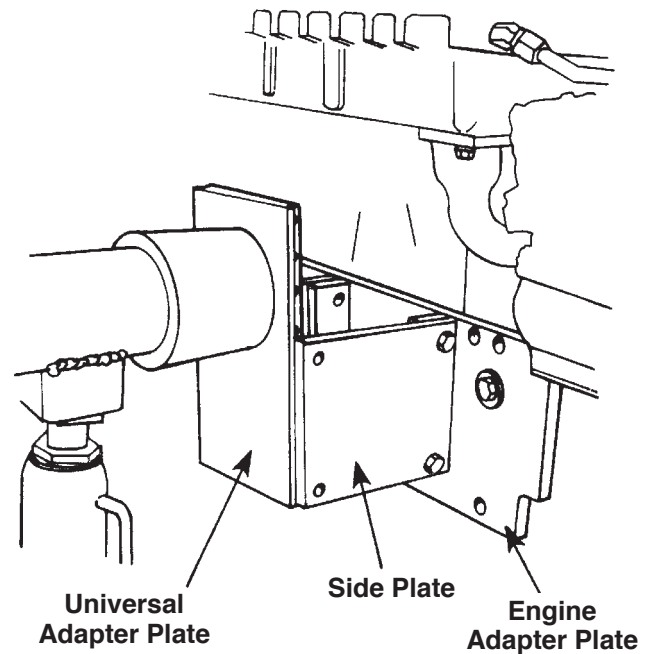


Figure 3

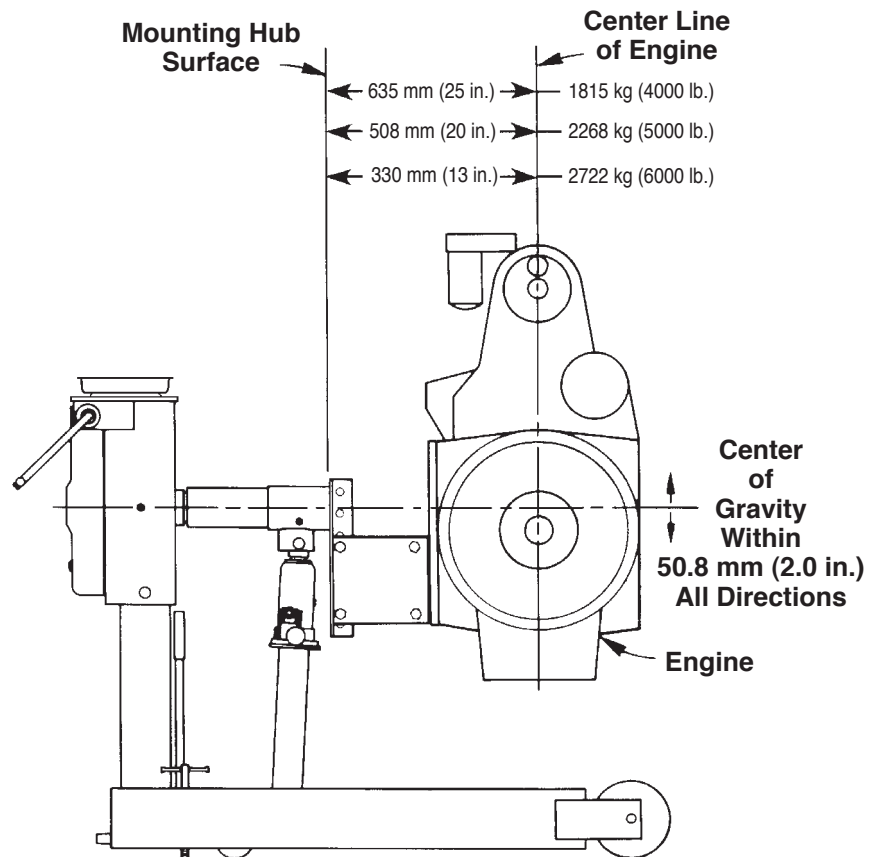


Figure 4

Handle Locking Mechanism

To ensure engine stability in all positions, this repair stand is equipped with a positive-crank handle locking mechanism. See Figure 5.

To Engage: Slide the collar inward toward the gear housing. Align and engage the collar slots with the socket head cap screws of the housing. It may be necessary to rotate the crank slightly to engage the collar.

To Disengage: Slide the collar away from the housing beyond the shaft's ball detent.

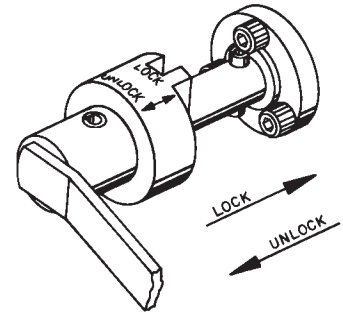


Figure 5

Preventive Maintenance



CAUTION: It is absolutely required that the two grease fittings on the tilting shaft and the gear box are serviced regularly using a good quality grease. Failure to grease this area can cause equipment damage and possible injury to the operator.

1. The worm and gear assembly operates in oil contained in the gear cover housing. The oil level should be just below the fill plug hole located on the lower part of the cover. Check the oil level regularly, and add oil if necessary (Mobilux, EP-023 or equivalent).
2. Regularly check the oil level in the hydraulic lifting jack. Fully retract the jack piston and remove the small hex filler plug located on the main body. Add approved hydraulic jack oil until the oil level is just below the filler plug hole. Install the filler plug.
3. If it is difficult to rotate an engine in one direction only, tighten the collar (Item 6) until snug against the gear box post. Back off the collar 1/8 turn and tighten the set screw (5).
4. Do not tighten the jack release valve tighter than necessary; never use a pliers on the release valve.
5. Regularly check all cap screws on the engine stand to verify they are still torqued. Refer to parts list No. 100300 for torque specifications.
6. Refer to parts list No. 100300 for repair part numbers.



Component for OTC No. 1750 or No. 1750A

Engine Mounting Adapter

Maximum Capacity: 1360 kg (3000 lbs.)

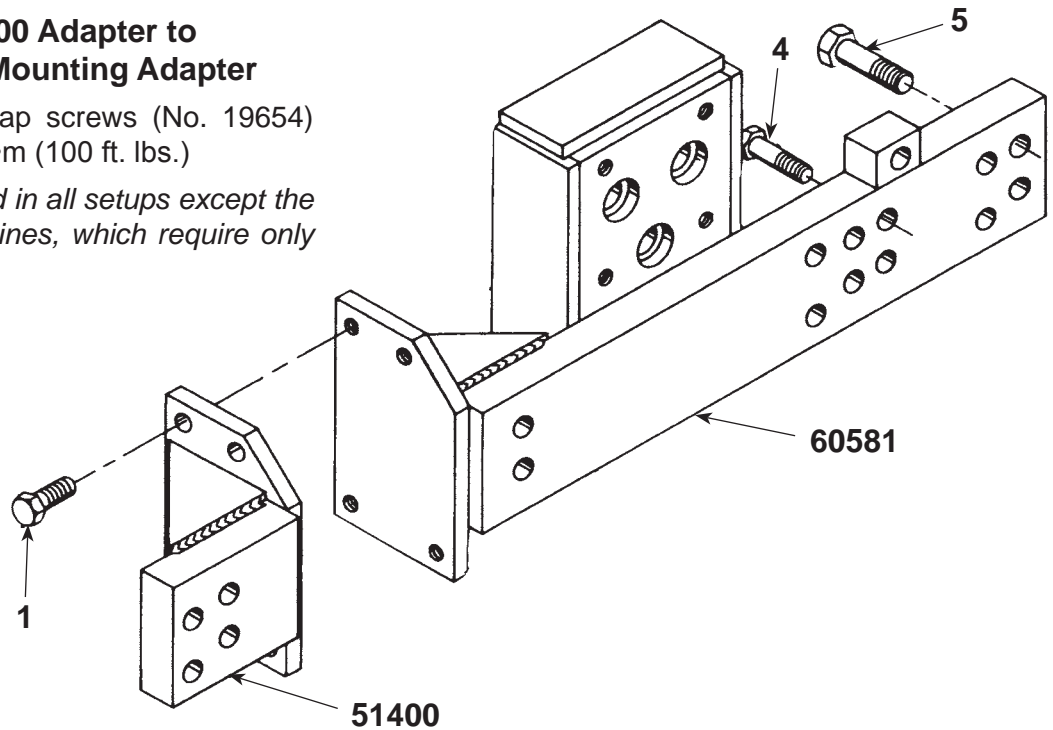
Tool Weight: 56 kg (123 lbs.)

Description: Engine mounting adapter designed for mounting John Deere 400-Series and 500-Series engines to the OTC 1750 and 1750A Heavy-Duty Engine Repair Stands.

Attach No. 51400 Adapter to No. 60581 Engine Mounting Adapter

Use the four hex head cap screws (No. 19654) provided. Torque to 136 N•m (100 ft. lbs.)

Note: No. 51400 is needed in all setups except the 400 Series 4-cylinder engines, which require only the No. 60581.



Parts List

Item No.	Part No.	No. Req'd	Description
1	19654	4	Hex Head Cap Screw— 5/8-11 x 38.1 mm (1-1/2 in.) lg.
2	51400	1	End Adapter
3	60581	1	Engine Mounting Adapter
4	19656	5	Hex Head Cap Screw— 5/8-11 x 69.9 mm (2-3/4 in.) lg.
5	19657	5	Hex Head Cap Screw— 3/4-10 x 69.9 mm (2-3/4 in.) lg.

Note: No. D05223ST Engine Repair Stand consists of No. 205466 Engine Mounting Adapter and No. 1750 Engine Repair Stand. Refer to Form No. 100300 for information regarding the engine repair stand.

Parts List & Operating Instructions

Explanation of Safety Signal Words

The safety signal word designates the degree or level of hazard seriousness.



DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Safety Precautions



CAUTION: To prevent personal injury and/ or property damage,



- Study, understand, and follow all safety precautions and operating instructions before using this engine mounting adapter. If the operator cannot read instructions, operating instructions and safety precautions must be read and discussed in the operator's native language.

- Only qualified operators may install, operate, adjust, maintain, clean, repair, inspect, or transport this engine mounting adapter.



- Wear eye protection that meets ANSI Z87.1, CE EN166, AS/NZS 1337, and OSHA standards.
- Do not exceed the rated capacity shown on the engine mounting adapter.
- To maintain shear strength specifications, use SAE grade 8 or property class 10.9 hex head cap screws to mount components or engines.
- Use this engine mounting adapter with OTC No. 1750 or No. 1750A Heavy-Duty Engine Repair Stand only.
- Do not use this engine mounting adapter for anything other than its intended purpose.
- No alteration shall be made to this product.
- Inspect the condition of the engine mounting adapter before each use; do not use if damaged, altered, or in poor condition.
- Use only those repair parts called out in the parts list in this document. Items found in the parts list have been carefully tested and selected by Bosch.

Preventive Maintenance

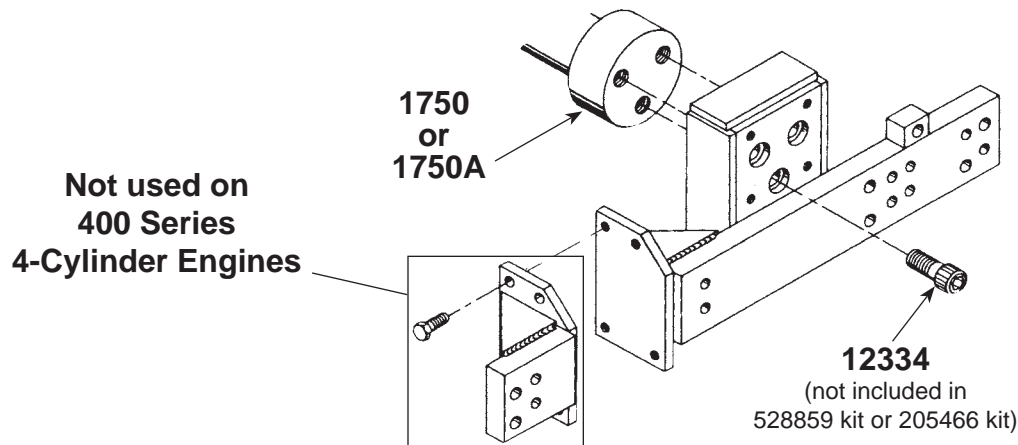


CAUTION: To prevent personal injury,

- Only qualified personnel shall perform inspections and repairs to this engine mounting adapter.
- Before each use, an approved inspector must inspect the engine mounting adapter for bends, cracks, dents, elongated holes, or missing hardware. If damage is found, discontinue use.
- Use only those repair parts called out in the parts list in this document. Items found in the parts list have been carefully tested and selected by Bosch.

Operating Instructions

1. Mount the engine adapter to OTC No. 1750 or 1750A Heavy-Duty Engine Repair Stand using the three 1–8 UNC socket head cap screws included with the engine repair stand.
 2. Torque cap screws to 610 N•m (450 ft. lbs.) using the hex adapter included with the engine repair stand.
- Refer to Form No. 102302, and the decal on the engine repair stand, for information regarding load ratings and other specifications when mounting engines or components to the engine repair stand.

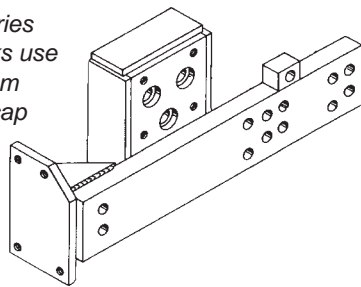


Mount the Engine to an Adapter and/or Engine Stand

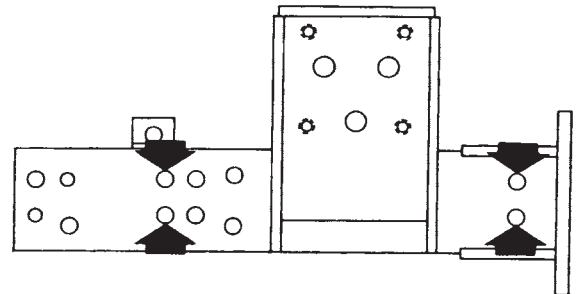
Choose one of the following setups to attach the engine mounting adapter to a 400 or 500 Series engine.

400 Series (4-270) 4-Cylinder Engines

NOTE: Some 400 series 4-cylinder short blocks use 3/4-10 UNC x 69.9 mm (2-3/4 in.) hex head cap screws.



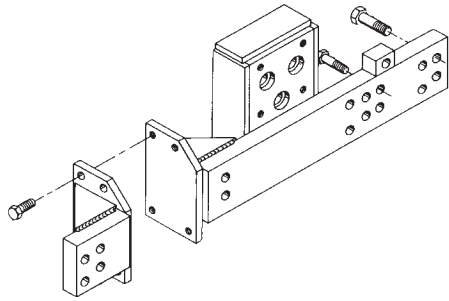
Mount No. 60581 to the starter side of the engine **without** No. 51400 end adapter.



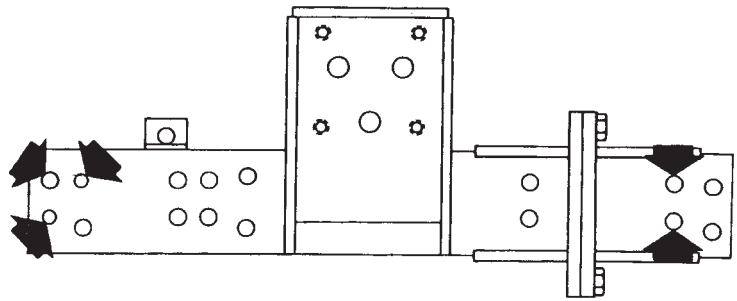
- Use four 5/8-11 UNC x 69.9 mm (2-3/4 in.) lg. hex head cap screws as shown.
- Minimum thread engagement required: 31.75 mm (1-1/4 in.)
- Torque to 136 N•m (100 ft. lbs.).

Parts List & Operating Instructions

400 Series (6-404) 6-Cylinder Engines

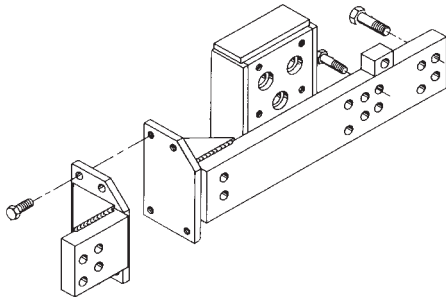


Mount No. 60581 to the starter side of the engine **with** No. 51400 end adapter in place.

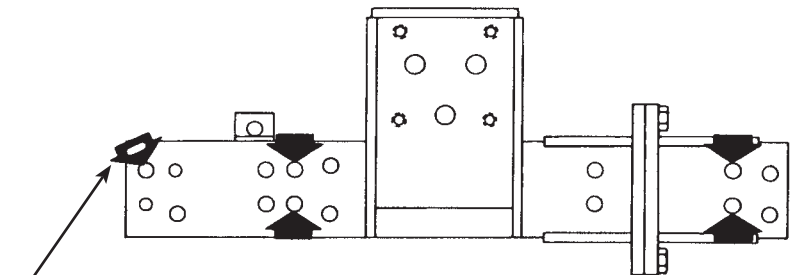


- Use five 5/8-11 UNC x 69.9 mm (2-3/4 in.) lg. hex head cap screws as shown.
- Minimum thread engagement required: 31.75 mm (1-1/4 in.)
- Torque to 136 N•m (100 ft. lbs.).

400 Series (6-466) 6-Cylinder Engines

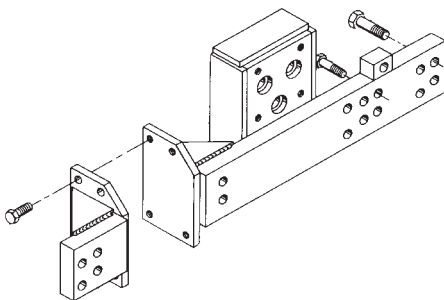


Mount No. 60581 to the starter side of the engine **with** No. 51400 end adapter in place.

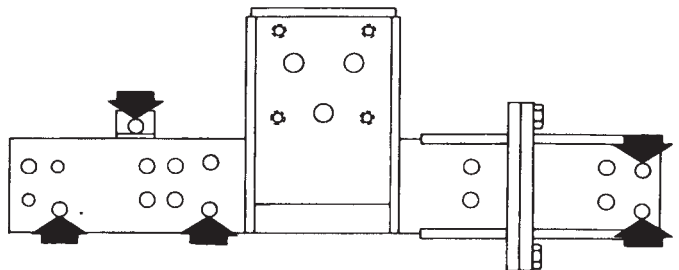


- Use one 3/4-10 x 69.9 mm (2-3/4 in.) lg. hex head cap screw as shown.
 - Minimum thread engagement required: 38 mm (1-1/2 in.)
 - Torque to 203 N•m (150 ft. lbs.).
-
- Use four 5/8-11 UNC x 69.9 mm (2-3/4 in.) lg. hex head cap screws as shown.
 - Minimum thread engagement required: 31.75 mm (1-1/4 in.)
 - Torque to 203 N•m (150 ft. lbs.).

500 Series 6-Cylinder Engines



Mount No. 60581 to the starter side of the engine **with** No. 51400 end adapter in place.



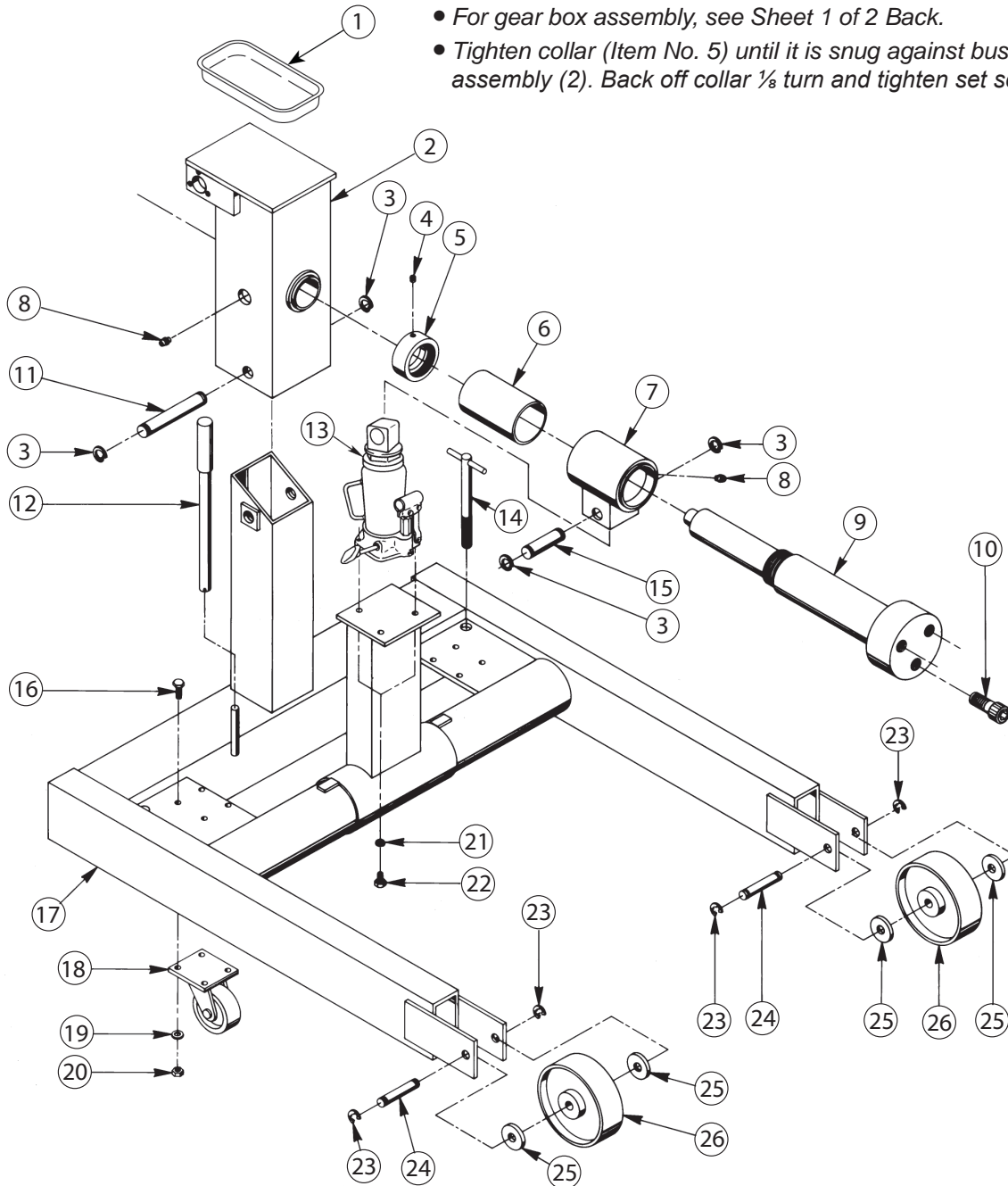
- Use five 3/4-10 x 69.9 mm (2-3/4 in.) lg. hex head cap screws as shown.
- Minimum thread engagement required: 31.75 mm (1-1/4 in.)
- Torque to 203 N•m (150 ft. lbs.).

Heavy-Duty Engine Repair Stand

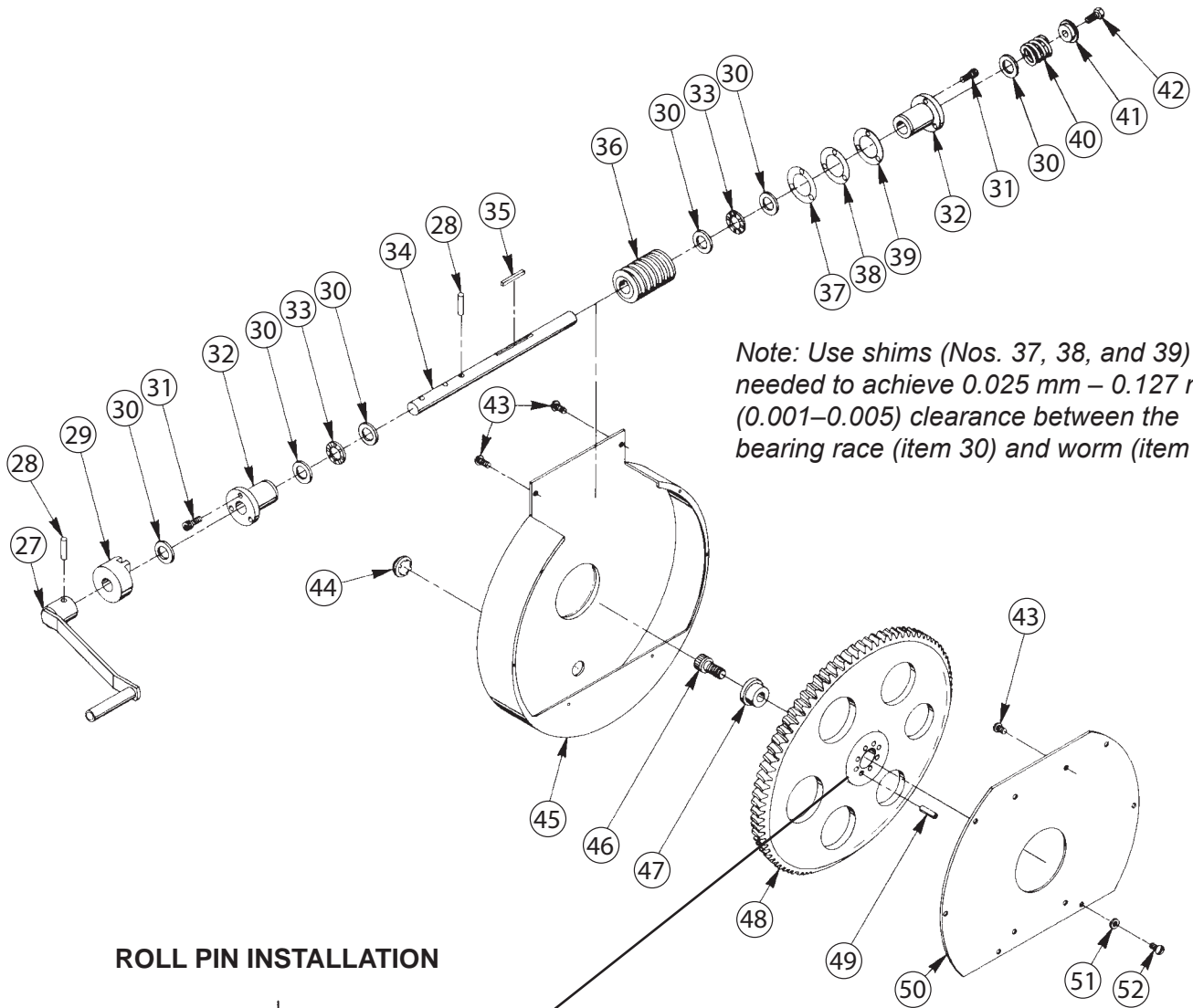
Maximum Capacity: 2722 kg (6000 lbs.)

Notes:

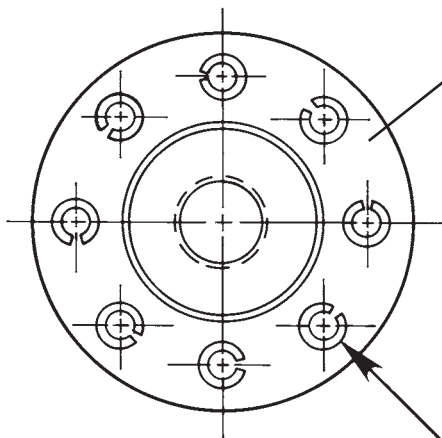
- For gear box assembly, see Sheet 1 of 2 Back.
- Tighten collar (Item No. 5) until it is snug against bushing in tube assembly (2). Back off collar 1/8 turn and tighten set screw (4).



Gear Box Assembly



ROLL PIN INSTALLATION



Insert roll pins (item 49) into the hub of the worm gear (item 48) with the slot of each pin oriented as shown.

Replacement Parts Kits

No. 564185—Fastener Kit

Item		
No.	Qty.	Description
4	1	Set Screw— $\frac{1}{4}$ -20 x 12.7 mm ($\frac{1}{2}$ in.) lg.; torque to 8–10 N•m (70–90 in. lbs.)
10	3	Socket Hd. Cap Screw—1-8 x 63.5 mm ($2\frac{1}{2}$ in.) lg.
21	2	Lockwasher—used with 9.5 mm ($\frac{3}{8}$ in.) bolt
22	2	Hex Hd. Cap Screw— $\frac{3}{8}$ -16 x 25.4 mm (1 in.) lg.
Parts Not Shown		
-	4	Hex Nut
-	4	Hex Hd. Cap Screw
-	4	Hex Hd. Cap Screw— $\frac{5}{8}$ -11 x 2.75-in. lg.

No. 564186—Hardware Kit

Item		
No.	Qty.	Description
3	4	Retaining Ring—used with 28.6 mm ($1\frac{1}{8}$ in.) shaft
11	1	Pin
15	1	Pin
-	1	Abrasive Strip [3.65 m (12 ft.) non-skid safety]
-	1	Warning Decal
-	1	Warning Decal

No. 564187—Front Wheel Kit

Item		
No.	Qty.	Description
23	4	Retaining Ring—used with 19.1 mm ($\frac{3}{4}$ in.) shaft
24	2	Pin—19.1 mm x 100 mm ($\frac{3}{4}$ x 3-15/16)
25	4	Spacer
26	2	Wheel—203.2 mm (8 in.) dia.

No. 564188—Caster Kit

Item		
No.	Qty.	Description
16	8	Hex Hd. Cap Screw— $\frac{3}{8}$ -16 x 31.8 mm ($1\frac{1}{4}$ in.) lg.
18	2	Swivel Caster
19	8	SAE Washer—used with 9.5 mm ($\frac{3}{8}$ in.) bolt
20	8	Nut— $\frac{3}{8}$ -16 UNC

No. 564189—Shim Kit

Item		
No.	Qty.	Description
37	1	Shim
38	1	Shim
39	2	Shim

No. 564190—Gear and Worm Kit

Item		
No.	Qty.	Description
28	2	Roll Pin—7.9 mm x 38.1 mm ($5/16$ x $1\frac{1}{2}$ in.) lg.
35	1	Key
36	1	Worm
48	1	Worm Gear
49	8	Roll Pin—7.9 mm x 25.4 mm ($5/16$ x 1 in.) lg.

No. 564191—Gear Box Hardware Kit

Item		
No.	Qty.	Description
31	6	Socket Hd. Cap Screw— $\frac{1}{4}$ -20 x 22.2 mm ($\frac{7}{8}$ in.) lg.; torque to 15–17 N•m (130–150 in. lbs.)
40	1	Compression Spring—37.3 mm O.D. x 37.3 mm lg. (1-15/32 O.D. x 1-15/32 in. lg.)
41	1	Spring Retainer
42	1	Hex Hd. Cap Screw— $\frac{3}{8}$ -16 x 25.4 mm (1 in.) lg.
43	6	Round Hd. Screw— $\frac{1}{4}$ -20 x 12.7 mm ($\frac{1}{2}$ in.) lg.
44	1	Snap Plug
46	1	Socket Hd. Cap Screw— $\frac{5}{8}$ -11 x 31.8 mm ($1\frac{1}{4}$ in.) lg.; torque to 203–271 N•m (150–200 ft. lbs.)
47	1	Cap
51	6	Washer—shakeproof, No.10
52	6	Self-tapping Screw—No. 10 x 12.7 mm ($\frac{1}{2}$ in.) lg.

No. 564192—Bearing Kit

Item		
No.	Qty.	Description
30	6	Needle Thrust Bearing Race
33	2	Needle Thrust Bearing

No. 564193—Gear Cover Kit

Item		
No.	Qty.	Description
45	1	Plastic Gear Cover
50	1	Back Plate

Parts List

Replacement Parts

Item No.	Part No.	No. Req'd.	Description
1	4490	1	Magnetic Tray
2	60551	1	Gear Housing
5	38375	1	Collar
6	204531	1	Tube
7	43265	1	Bushing Housing
8	16696	2	Grease Fitting
9	51306	1	Shaft Assembly
12	302889	1	Handle Assembly
13	53780	1	12-Ton Jack
14	204522	2	Locking Screw Assembly
17	60539BL2	1	Engine Stand Base
27	38370	1	Handle
29	38369	1	Lock
32	204657	2	Bushing Assembly
34	38428	1	Worm Shaft

Parts Not Shown

556608	1	OTC Logo Decal
43385	1	Warning Decal
MB990607-01	1	Torque Wrench Socket
205061	1	Engine Mounting Plate (used with 1750A)
205466	1	Engine Adapter Plate (used with D05223ST)
556609	1	Load Rating Decal