



SPICER®
Off-Highway Products

Service Manual

Axle
S20BZ127-1
S20BZ130-1

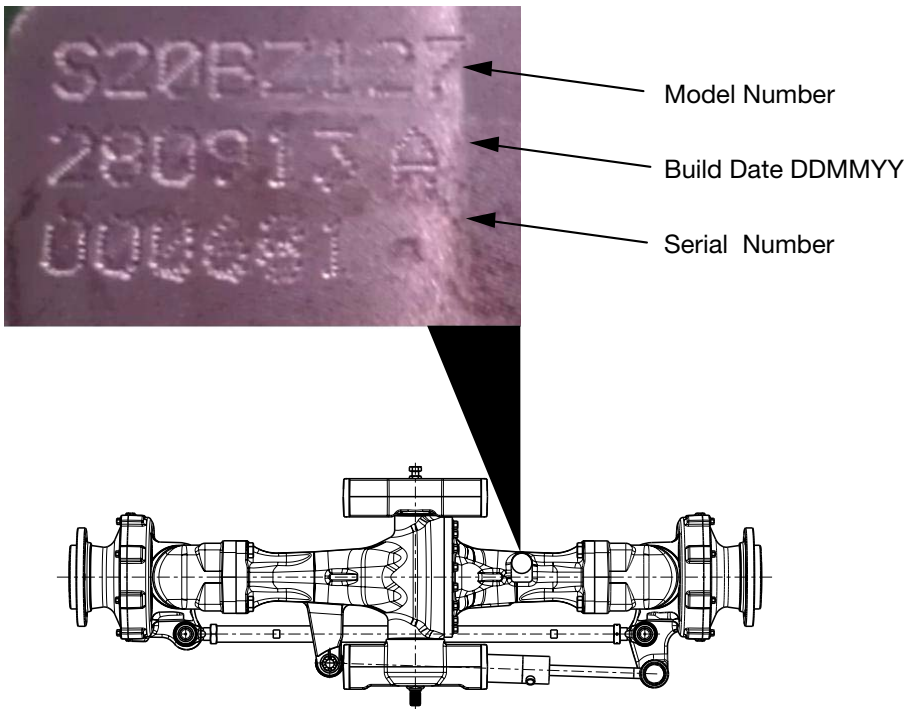
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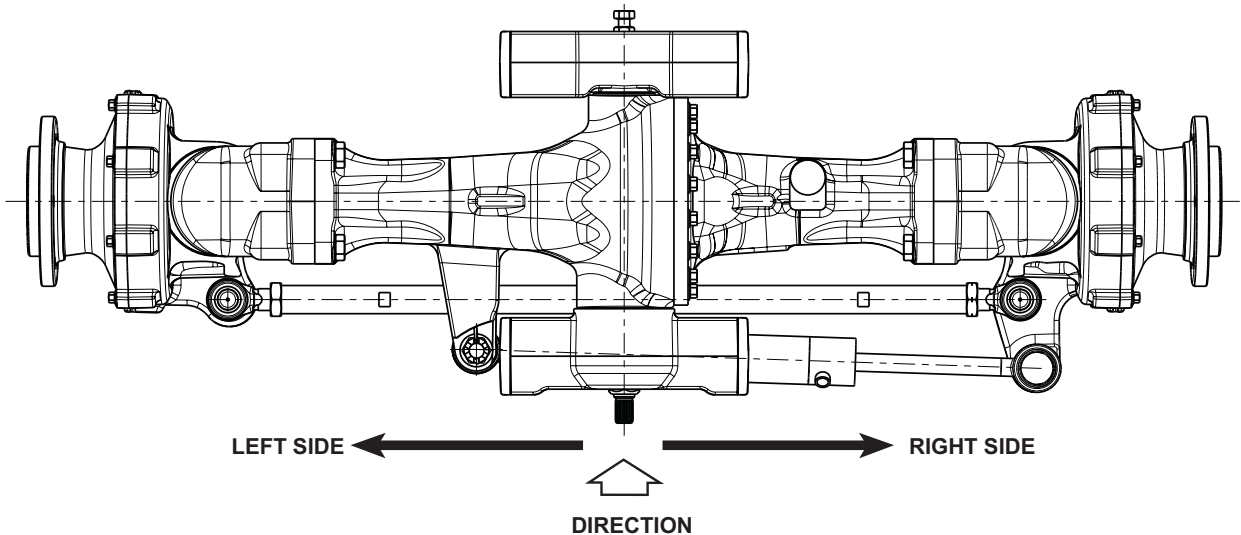
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MAINTENANCE & LUBRICATION

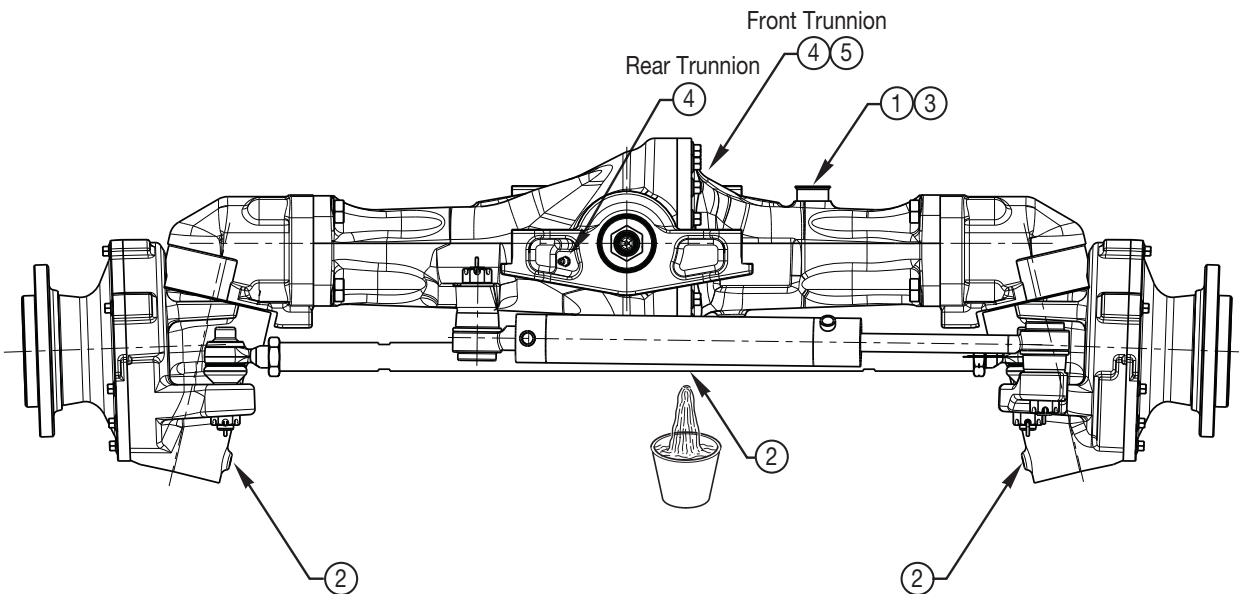
Data Plate



Definition of Viewpoints



Maintenance Points



- 1 - Oil fill plug
- 2 - Oil drain plug
- 3 - Check level plug
- 4 - Grease zerk
- 5 - Front trunnion thrust bolt

Maintenance Intervals

Operation	Component	Frequency	Lubricant
Oil Check Levels	Axle	Every 50 hours check level on dipstick	J20C
Oil Change	Axle	Initially after 100 working hours Every 600 hours	
Greasing	Front & Rear Trunnion	Dry land applications - Weekly or every 50 hours whichever is earlier Wet land applications - Daily	NLGI 3EP
Tightening	Front Trunnion Bolt	Every 600 hours verify: Thrust bolt torque - 11-22 lbs. ft [15-30 N•m] Jam nut - 48-55 lbs. ft [65-75 N•m]	--
	Wheel Nuts	Initially after 10 working hours Every 200 hours	

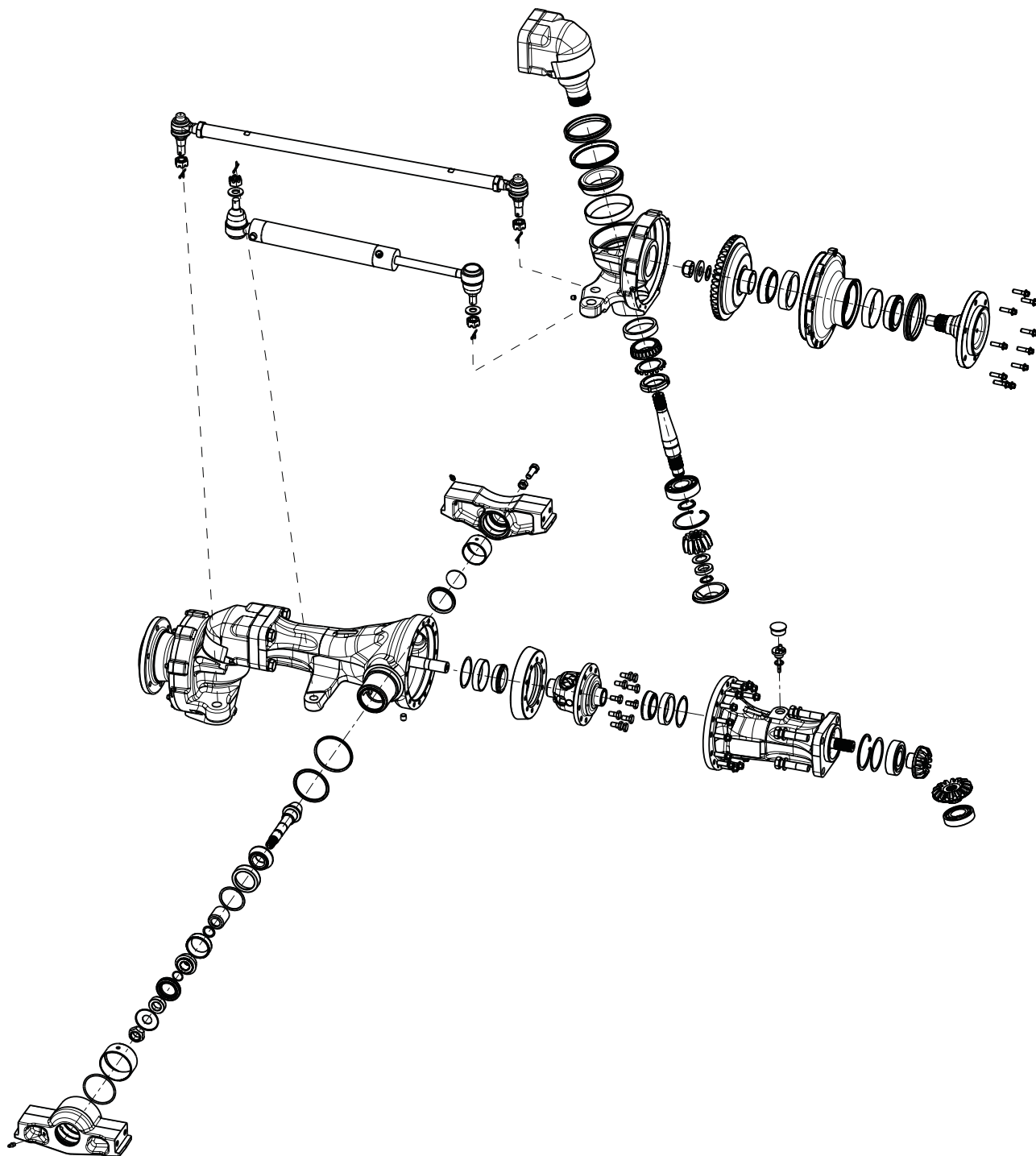
SAFETY PRECAUTIONS

1. During all operations described in this manual, the axle should be fastened onto a trestle, while the other parts mentioned should rest on supporting benches.
2. When removing one of the arms, an anti-tilting safety trestle should be placed under the other arm.
3. When working on an arm that is fitted on the machine, make sure that the supporting trestles are correctly positioned and that the machine is locked lengthways.
4. Do not admit any other person inside the work area; mark off the area, hang warning signs and remove the ignition key from the machine.
5. Use only clean, quality tools; discard all worn, damaged, low quality or improvised wrenches and tools. Ensure that all dynamometric wrenches have been checked and calibrated.
6. Always wear gloves and non-slip rubber shoes when performing repair work.
7. Should you stain a surface with oil, remove marks straight away.
8. Dispose of all lubricants, seals, rags and solvents once work has been completed. Treat them as special waste and dispose of them according to the relative law provisions obtaining in the country where the axles are being overhauled.
9. Make sure that only weak solvents are used for cleaning purposes; avoid using turpentine, dilutants and toluol, xylol-based or similar solvents; use light solvents such as Kerosene, mineral spirits or water-based, environment friendly solvents.
10. For the sake of clarity, the parts that do not normally need to be removed have not been reproduced in some of the diagrams.
11. For agricultural axles, the terms RIGHT and LEFT refer to the position from the operator's seat. For construction axles, the terms RIGHT and LEFT refer to the position outside facing the machine (with the input drive facing forward).
12. After repair work has been completed, accurately touch up any coated part that may have been damaged.
13. Follow all safety instructions in the Original Equipment Manufacturer (OEM) manual that came with the vehicle.

	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	Indicates an imminently hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a situation which, if not avoided, may result in damage to components.
	Indicates information which may make product service easier to perform.

DISASSEMBLY & REASSEMBLY

Exploded View



Driveshaft & Hydraulic Line Removal

Driveshaft & Hydraulic Line Removal

1. Disconnect the steering cylinder hydraulic lines.
2. Remove the spring pin from the driveshaft splined connector.
3. Support the driveshaft and slide the splined connector toward the center of the driveshaft to remove the driveshaft from the machine.

Axle Removal



FIGURE 1:

1. Remove axle completely, supporting the axle with a hoist and remove front wheels. Place the axle on workbench or blocks to disassemble.

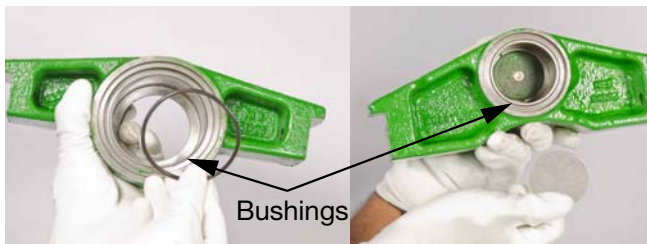


FIGURE 2:

2. Remove front and rear trunnions. Inspect axle pin bushings and replace, if required.

NOTE:

When removing the rear trunnions also remove the o-ring, thrust washer, and the v-ring on the housing. Inspect the o-ring and replace if damaged.

When removing the front trunnion, also remove the v-ring and thrust washer.

Steering Cylinder Removal



FIGURE 3:

1. Remove cotter pins, castle nuts, and washers.



FIGURE 4:

2. Remove steer cylinder.

NOTE:

Cylinder ball end studs are tapered. Use a Steering Cylinder & Tie Rod Removal Tool, page 33 to avoid damaging threads if cylinder is to be reused.

Tie Rod Removal



FIGURE 5:

1. Remove the cotter pin and the castle nut from tie rods.

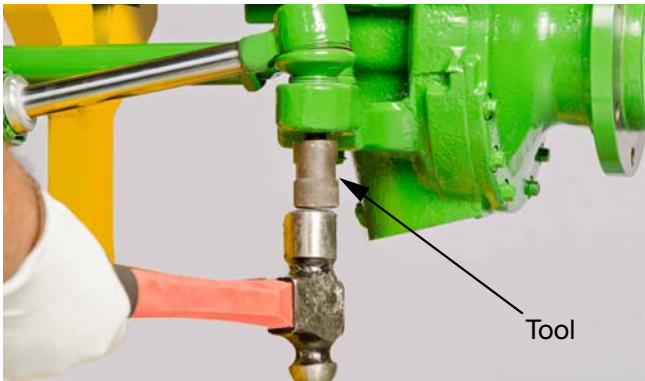


FIGURE 6:

2. Using a tie rod end removal tool, remove tie rod ends from knuckles.

NOTE:

Tie rod ball end studs are tapered. Use a Steering Cylinder & Tie Rod Removal Tool, page 33 to avoid damaging threads if tie rod is to be reused.

NOTE:

One of the tie rod ends and jam nut has left-hand threads.

Drain Plug Removal



FIGURE 7:

1. Remove plugs and drain oil from final drive housings and main axle.

Final Drive Cover Disassembly



FIGURE 8:

1. Remove capscrews from final drive cover.



FIGURE 9:

2. Separate final drive cover and output shaft from final drive housing.

NOTE:

It may be necessary to pry the cover from the housing using the two pry bars on each side of the cover.



FIGURE 10:

3. Loosen output shaft nut and remove nut, plate retainer, and shim.

CAUTION

The retaining nut on the output shaft is a special "torque prevailing" nut. Always replace this nut. Do not reuse. Never tighten a torque prevailing nut with an impact wrench. Always use a torque wrench to correctly tighten torque prevailing nuts.

Final Drive Cover Disassembly



FIGURE 11:

4. Remove 41T bevel gear from output cover.



FIGURE 12:

5. Remove the output cover.



FIGURE 13:

6. Remove face seal from the output cover and the output shaft.



FIGURE 14:

7. If necessary, press bearings off of bevel gear and output shaft.

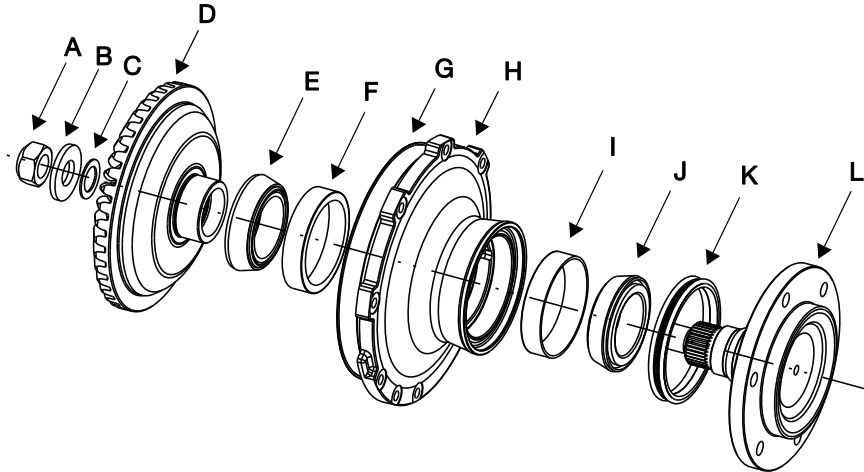


FIGURE 15:

8. Clean and inspect all parts replacing any damaged components.

Final Drive Cover Installation

- A- Spindle Nut
- B- Retainer Plate
- C- Shim
- D- Bevel Gear
- E- Bearing Cone
- F- Bearing Cup
- G- O-ring
- H- Final Drive Cover
- I- Bearing Cup
- J- Bearing Cone
- K- Face Seal
- L- Output Shaft



1. Install bearing cups (F&I) to the final drive cover (H).
2. Install the bearing cone (J) to the output shaft (L).



FIGURE 16:

3. Using the Face Seal Tool, page 29, install the face seal (K) on the final drive cover (H) and output shaft (L). (See "Face Seal Installation", on page 14, for cleaning of face seal.)
4. Install the final drive cover (H) to the output shaft (L).
5. Install the bearing cone (E) to the bevel gear (D).
6. Install the bevel gear (D) to the final drive cover and output shaft assembly (H&L).
7. Install new o-ring (G) on final drive cover (H).
8. To adjust bearings:
 - a. To ensure proper seating of the bearing, roll and oscillate the 41T gear (D).
 - b. To select shims (C), start with old shim and install additional shims, as required, on the output shaft.

NOTE:

For initial assembly and measurements, assemble final drive with the USED spindle nut. Do not use a NEW spindle nut until final assembly as this nut is torque prevailing.



FIGURE 17:

- c. Assemble the shim, washer, and USED spindle nut to output shaft and tighten the nut to 330–360 lbs. ft. [447.2–488 N•m].
- d. Using the Final Drive Bracket Tool, page 34, verify the rolling torque of the final drive cover is 54–76 lbs. in. [6.1–8.6 N•m].
- e. If the rolling torque is not correct, reselect shims (C) to achieve the correct rolling torque.
- f. If the rolling torque is correct, remove the USED spindle nut. Using a NEW spindle nut (B), apply thread lock to the threads and tighten nut to 330–360 lbs. ft. [447.2–488 N•m].



FIGURE 18:

9. Install final drive cover to knuckle housing tightening capscrews to 22–28 lbs. ft. [30–38 N•m].

Drop Shaft Disassembly

Drop Shaft Disassembly



FIGURE 19:

1. Carefully remove welch plug from knuckle housing.



FIGURE 20:

2. Remove snap ring from drop shaft.



FIGURE 21:

3. Remove washer and shim(s) from drop shaft. Save all shim(s) between the washer and bevel gear.



FIGURE 22:

4. Remove bevel gear from drop shaft.



FIGURE 23:

5. Remove snap ring from knuckle housing.



FIGURE 24:

6. Remove drop shaft and bearing from knuckle housing.

Drop Shaft Assembly & Installation

Drop Shaft Assembly & Installation



FIGURE 25:

7. Remove the snap ring and bearing from the drop shaft.



FIGURE 26:

8. Inspect all drop shaft parts and replace any unserviceable components.

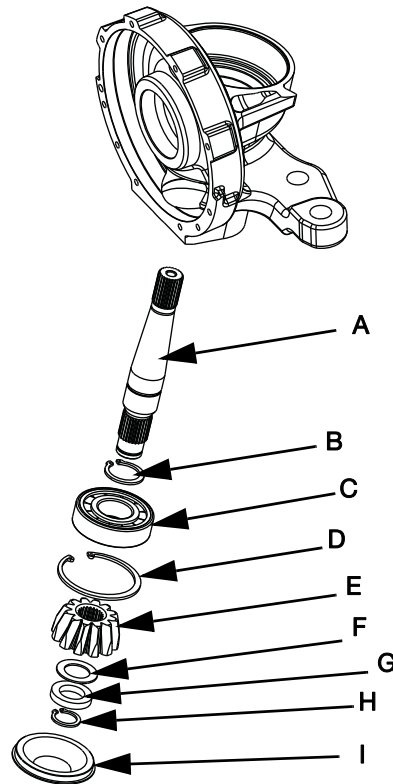


FIGURE 27:

1. Install snap ring (B) and bearing (C) on drop shaft (A).
2. Install drop shaft (A) assembly in final drive housing.
3. Install internal snap ring (D) in final drive housing.
4. Install bevel gear (E), any shim(s) (F), washer (G), and snap ring (H) on drop shaft.
5. Install final drive cover assembly to knuckle housing.
6. To set lower final drive backlash, shim (F) the bevel gear end play to 0.025–0.030 in. [0.64–0.76 mm].



FIGURE 28:

7. The end play sets backlash to 0.005–0.007 in. [0.13–0.18 mm].

Knuckle Housing Removal



FIGURE 29:

8. Apply Loctite 380/480 to a new welch plug (I) and install to knuckle housing using the Welch Plug Driver Tool, page 38.

⚠ CAUTION

The welch plug should always be replaced. Do not reuse.

Knuckle Housing Removal

1. Remove final drive cover. (See “Drain Plug Removal”, on page 6.)
2. Remove final drive drop shaft. (See “Drop Shaft Dis-assembly”, on page 9.)

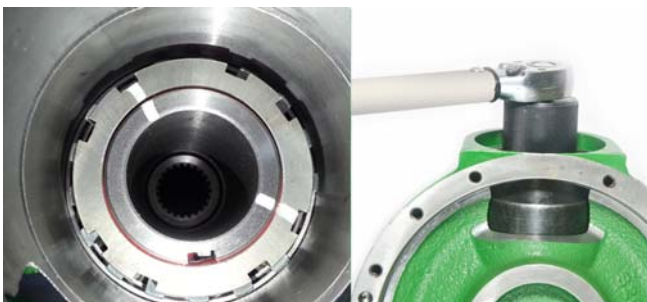


FIGURE 30:

3. Straighten tabs on star lockwasher that secure spanner nut in slot. Loosen the spanner locknut using the Final Drive Spanner Nut Socket, page 32.



FIGURE 31:

4. Remove spanner locknut, star lockwasher, and bearing cone.



FIGURE 32:

5. Remove knuckle housing from shoulder housing.

Knuckle Housing Installation



FIGURE 33:

6. Remove face seal assembly and bearing cone. Press off bearing cups from knuckle, if necessary. Clean and inspect all parts replacing any damaged components.

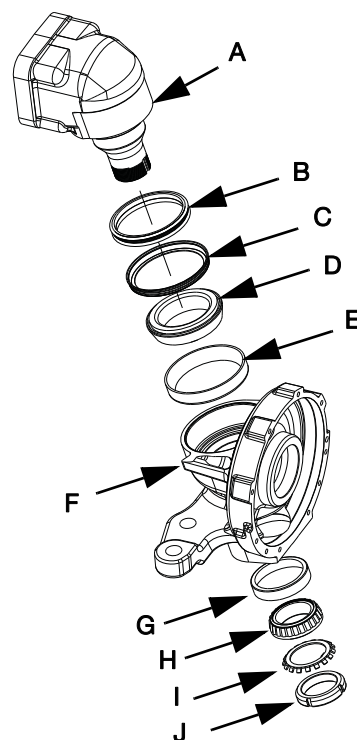


FIGURE 34:

7. Install bearing cups (E & G) into knuckle using appropriate drivers.



FIGURE 35:

8. Install bearing cone (D) into knuckle housing
9. Install face seal cup (C) using the Face Seal Cup Driver, page 31.

CAUTION

The face seal cup (C) should always be replaced. Do not reuse.

Knuckle Housing Installation



FIGURE 36:

- 10.** Install face seal (C) using the Face Seal Tool, page 29. (See “Face Seal Installation”, on page 14.)



FIGURE 37:

- 11.** Lubricate knuckle housing.



FIGURE 38:

- 12.** Install knuckle housing on shoulder assembly.
13. Lubricate and install bearing cone (H).

- 14.** Install star lockwasher (I). Add Loctite 277 to spanner nut (J) threads and install using Final Drive Spanner Nut Socket, page 32, and torque to 66-74 lbs. ft. [90-100 N•m].
- 15.** Rock knuckle housing (F) back and forth to seat bearing rollers and re-torque spanner nut to 66-74 lbs. ft. [90-100 N•m]. Repeat this step a minimum of 4 times until the nut will no longer advance.

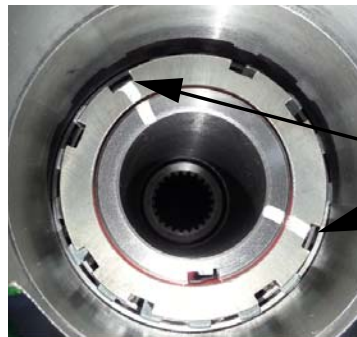


FIGURE 39:

- 16.** Fold two tabs of the star lockwasher fully into the spanner nut slots to lock nut into place. If tabs are not aligned with spanner nut slots, advance nut slightly until two tabs align. Ensure tabs are squarely seated into slots.

CAUTION

The star lockwasher (I) should always be replaced. Do not reuse.

- 17.** Install drop shaft. (See “Drop Shaft Assembly & Installation”, on page 10.)
- 18.** Install final drive cover. (See “Final Drive Cover Installation”, on page 8.)

Face Seal Installation

⚠ CAUTION

- The face seal cup should always be replaced. Do not reuse.
- Replace damaged seals. If metal face seals are damaged, the face seal o-rings should also be replaced.
- Clean metal face seal rings with a non-petroleum based solvent.

1. Housing components that contact the rubber seal must be free from foreign material (oil, grease, dirt, metal chips, dust or lint particles, etc.) before installing the seal. This should be done using a lint-free wipe and a non-petroleum based solvent. Dry with a clean wipe.
2. Clean face seal o-ring with isopropyl alcohol spray prior to installation to remove any debris.

NOTE:

Sealing rings must be handled with care. Lapped sealing faces must not be damaged, scratched, or contaminated with dirt or grease.

3. When installing the rubber o-ring on the seal ring, ensure that it is uniformly seated on the retaining lip and is not twisted.

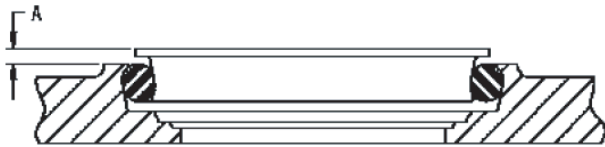


FIGURE 40:



FIGURE 41:

4. Place the seal in the Face Seal Tool, page 29, and locate this assembly squarely against the top of the conical seal.



FIGURE 42:

5. Spray the o-ring and seat with isopropyl alcohol to act as a lubricant to the o-ring.



FIGURE 43:

6. Use sudden and even pressure to push in the seal and ensure the retaining lip is not twisted or pinched.
7. The sealing ring face should be parallel to the conical seal face within 0.50 mm (see Figure 40).
8. After installing the seal halves, wipe both metal sealing faces clean with a lint-free cloth.

NOTE:

Metal face seals should be replaced when the distance between the seal inner diameter and seal contact band is less than 50% of the distance between the seal inner diameter and the outer diameter.

9. Then apply a coat of clean MS8¹ oil to the metal seal faces with a lint-free applicator. The oil must not wet surfaces other than the sealing faces.
10. Clean the metal surfaces with lint-free cloth.

¹ MS8 oil is mineral-based oil ranging from 10W to 90W.

Shoulder Housing Removal & Disassembly

Shoulder Housing Removal & Disassembly

1. Remove knuckle housing. (See “Knuckle Housing Removal”, on page 11.)



FIGURE 44:

2. Remove four capscrews fastening shoulder housing to axle housing.



FIGURE 45:

3. Remove the internal snap ring and any shim(s) from shoulder housing.



FIGURE 46:

4. Remove bearing and upper shoulder 12T gear assembly from shoulder housing.

NOTE:

The bearings are pressed onto the gears, and the assemblies are slip fit into the housing.



FIGURE 47:

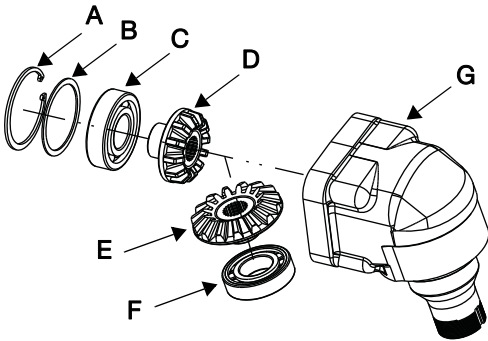
5. Remove bearing and lower shoulder 15T gear assembly from shoulder housing.



FIGURE 48:

6. If necessary, press off gear from bearings. Clean and inspect all parts replacing any damaged components.

Shoulder Housing Assembly



- A- Snap Ring
- B- Shim
- C- Bearing
- D- Bevel Gear (12T)
- E- Bevel Gear (15T)
- F- Bearing
- G- Shoulder Housing

FIGURE 49:



FIGURE 50:

1. Install bearing (F) and lower bevel gear 15T (E) into shoulder housing (G).

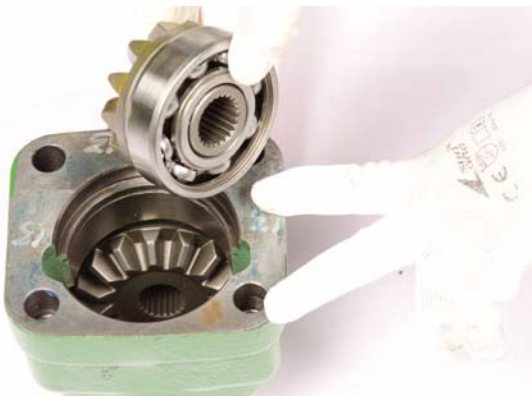


FIGURE 51:

2. Install bearing (C) and upper bevel gear 12T (D) into shoulder housing (G).

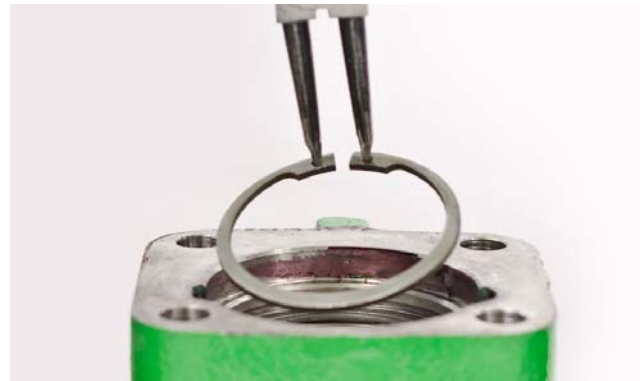


FIGURE 52:

3. Install internal snap ring (A) into shoulder housing (G).

NOTE:

Do not install shims (B) until backlash measurements are taken.



FIGURE 53:

4. Measure end play of the upper shoulder gear.
To set the end play:
 - a. Measure distance between the bearing (C) and the snap ring (A) at several locations.
 - b. Assemble shims (B) such that end play is within 0.006–0.011 in. [0.15–0.28 mm]. This will ensure backlash is 0.004–0.008 in. [0.10–0.20 mm].

Shoulder Housing Assembly



FIGURE 54:

5. Apply Hylomar M (Optional: Loctite 515) to mating surfaces of the axle and shoulder housing.

NOTE:

Bolts used to fasten shoulder housing to axle housing are special bolts and should be replaced after disassembly.

Washers used to fasten shoulder housing to axle housing are special hardened washers.



FIGURE 55:

6. Install capscrews fastening the shoulder housing to the axle housing and tighten to 210.2–231.5 lbs. ft. [285–314 N•m].

Center Section Removal & Disassembly

Center Section Removal & Disassembly

1. Before removing the differential, remove the drive-shaft (see page 4), axle (see page 5), steering cylinder (see page 5), tie rods (see page 6), and right-hand and left-hand wheel end assemblies.



FIGURE 56:

2. Remove axle shafts.



FIGURE 57:

3. Keep the left-hand trumpet arm on proper support. Remove capscrews from the arm.



FIGURE 58:

4. Remove the right-hand trumpet arm from the center section.



FIGURE 59:

5. Remove the shim and bearing cup from the right-hand trumpet arm.



FIGURE 60:

6. Remove the differential assembly from left-hand trumpet arm.



FIGURE 61:

7. Remove the shim and bearing cup from the left-hand trumpet arm.

Center Section Removal & Disassembly



FIGURE 62:

8. Press off both bearings, if necessary. Then remove ring gear capscrews and ring gear from differential case.

NOTE:

The differential case and internal parts come as an assembly. If any damage is apparent, there is no need to disassemble the case, as the whole assembly must be replaced.

9. Clean and inspect all parts replacing any damaged components.

Pinion Disassembly



FIGURE 63:

10. Loosen pinion nut.



FIGURE 64:

11. Remove the nut and slinger. DO NOT discard nut at this time.

CAUTION

The pinion nut is a torque prevailing nut. Always replace this nut. Do not reuse.

Never tighten a torque prevailing nut with an impact wrench. Always use a torque wrench to tighten correctly.



FIGURE 65:

12. Remove spacer.

Center Section Removal & Disassembly



FIGURE 66:

13. Remove oil seal and bearing cone.



FIGURE 67:

14. Remove o-ring.



FIGURE 68:

15. Remove pinion, bearing, pinion bearing spacer, and shim from housing.

NOTE:

The ring gear and pinion gear are a matched set and are serviced as an assembly. If either the ring gear or pinion has wear or damage, both must be replaced.



FIGURE 69:

16. Remove both bearing cups being careful not to damage housing surface.



FIGURE 70:

17. Remove shim with inner bearing cup.

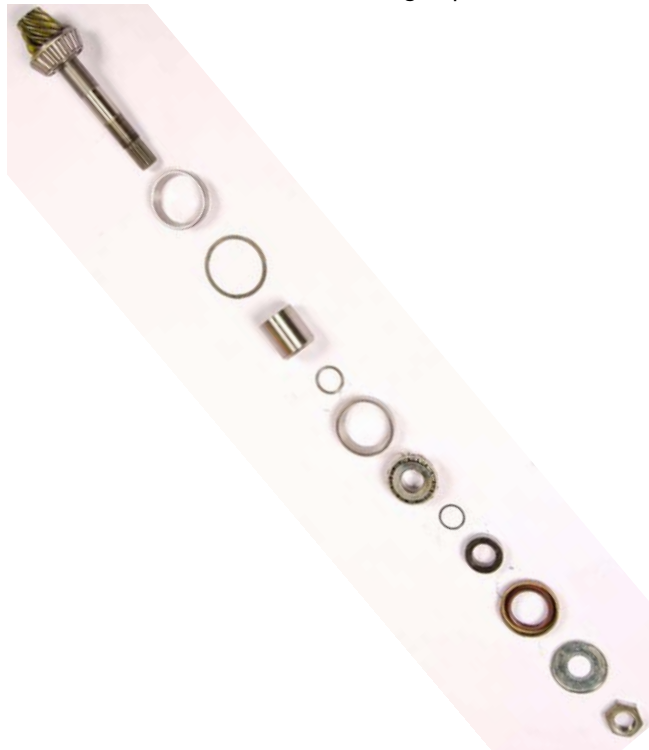
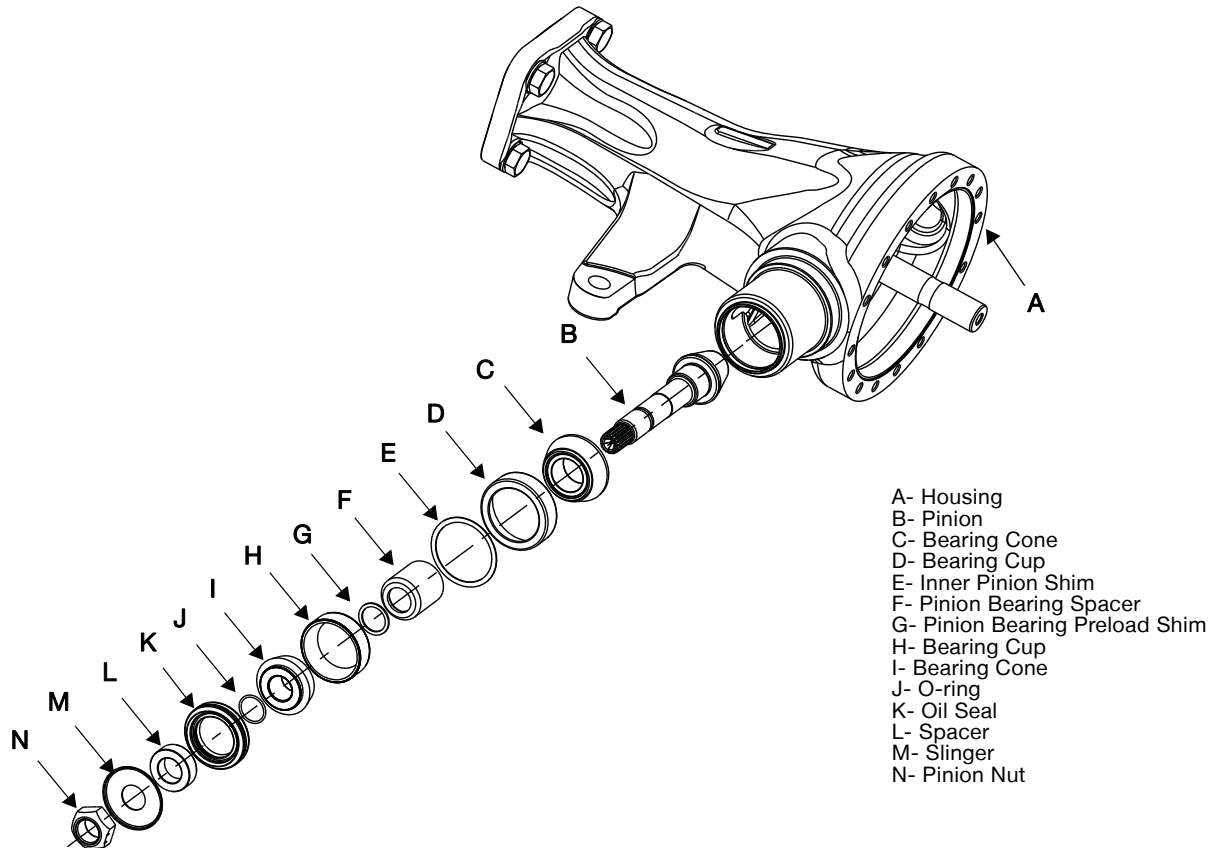


FIGURE 71:

18. Clean and inspect all parts replacing any damaged components.

Center Section Assembly & Installation

Center Section Assembly & Installation



Pinion Assembly

1. Assemble bearing cone (C) to pinion (B).



FIGURE 72:

2. Place inner shim(s) (E) under bearing cup (D) to set pinion height.
 - a. If the original pinion and bearing are being used, use the original shims, or install new shims the same thickness as original shims.

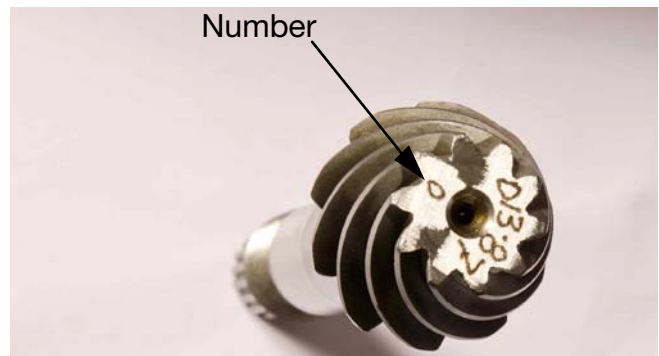


FIGURE 73:

- b. If ring and pinion or bearing are being replaced, notice the (+) or (-) number (P) on the end of pinion or on pinion stem. This indicates the best running position of each particular gear set in thousandths of an inch. If the number on the new set is not the same as the number on the one being replaced, adjust the height by adding or removing inner shim(s) (B) from original shim pack according to dimension etched on the end of pinion or on pinion stem.

Example 1: If the old pinion reads +4 and the new pinion is marked 0, add 0.004 in. shims to the original pack.

Example 2: If the old pinion reads +2 and the new pinion is marked -1, add 0.003 in. shims to the original pack.

Center Section Assembly & Installation



FIGURE 74:

3. Using a Pinion Bearing Cup Tool, page 36, assemble bearing cups (D&H) and shims (E) in the housing (A).



FIGURE 75:

4. Install the pinion with bearing (B&C), spacer (F), and shim (G).

NOTE:

Number on pinion and ring gear indicate matched set. Make sure numbers on ring and pinion gears match before assembling.



FIGURE 76:

5. Install the bearing cone (I).



FIGURE 77:

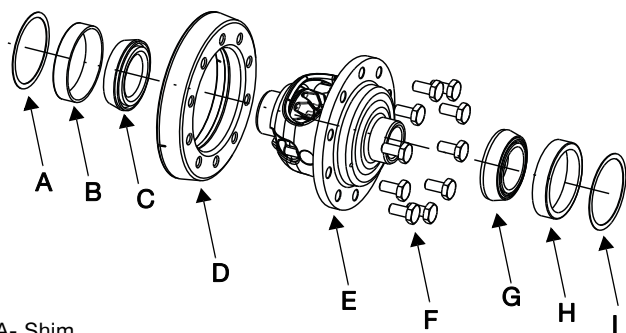
6. Install the spacer (L), slinger (M) & **OLD** pinion nut (N). Spacer bore chamfer should be towards o-ring.



FIGURE 78:

7. Tighten the old pinion nut to 100–118 lbs. ft. [135–160 N•m].
8. Check the rotation of the pinion.
 - a. Verify the pinion rotation torque is 10-15 lbs. in. [1.13–1.69 N•m].
 - b. If the pinion does not turn within specification, adjust the shim pack (G). Add shims if rotation torque is too high, remove shims if rotation torque is too low.

Center Section Assembly & Installation



- A- Shim
- B- Bearing Cup
- C- Bearing Cone
- D- Ring Gear
- E- Differential
- F- Ring Gear Bolts
- G- Bearing Cone
- H- Bearing Cup
- I- Shim

FIGURE 79:



FIGURE 80:

9. Install the ring gear (D) to the differential (E) tightening the ring gear bolts (F) to 58–65 lbs. ft. [79–88 N•m].

NOTE:

Bolts used to fasten differential and ring gear are special bolts and should be replaced after disassembly.



FIGURE 81:

10. Install the shim (A) and bearing cup (B) into center section. The bearing shim(s) control the ring and pinion backlash and the preload of the differential bearings.

CAUTION

There may be several shims on each differential case. Whatever shim thickness is added to one side of the differential case must be removed from the other side. Or, whatever shims are removed from one side must be added to the other to keep bearing preload from changing.

- a. If differential bearings (C&G) were not removed, place original shims (A&I), or new shims equaling the same thickness, on the same side of the differential assembly from which they were removed.
- b. If the differential case bearings or gear set are being replaced, set the bearing preload and gear backlash by adding or removing shim(s) between the ring gear side bearing and differential case.
- c. Shim the bearings until preload is 1.5–3 lbs. ft. [2–4 N•m].



FIGURE 82:

11. Install the differential case assembly to the carrier housing.
12. Check gear backlash with a dial indicator is 0.010–0.015 in. [0.25–0.37 mm] at pinion start end.



FIGURE 83:

13. Install the shims (I) and bearing cup (H) in the arm. Temporarily assemble the left-hand trumpet arm with 4 bolts and check the backlash and pre-load using the Backlash Measurement Tool, page 37.

If backlash IS CORRECT, continue to Step 14.

If backlash IS NOT CORRECT, remove the left-hand trumpet arm, then recalculate and select the necessary shims to obtain the correct backlash and pre-load.

Center Section Assembly & Installation



FIGURE 84:

- 14.** Remove the four (4) bolts used for the temporary assembly and remove the left-hand trumpet arm.



FIGURE 85:

- 15.** Apply Hylomar M (Optional: Loctite 515) evenly to the surface of the trumpet housing.

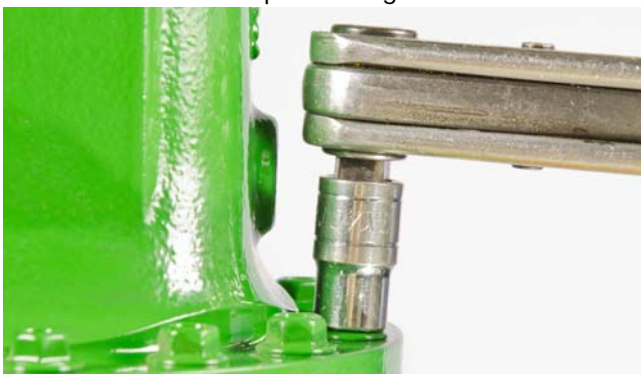


FIGURE 86:

- 16.** Install the short housing to the long housing by applying Loctite 262 to all capscrews and torquing to 50–55 lbs. ft. [68–75 N•m].



FIGURE 87:

- 17.** Remove spacer (L), slinger (M), and old pinion nut (N).



FIGURE 88:

- 18.** Install new o-ring (J).

⚠ CAUTION

The o-ring (J) should always be replaced. Do not reuse.



FIGURE 89:

- 19.** Install a new oil seal (K) using the Spacer Seal Tool, page 35, to sure ensure the seal seats correctly.

⚠ CAUTION

The oil seal (L) should always be replaced. Do not reuse.

Drain Plug Installation



FIGURE 90:

20. Install spacer (L), slinger (M), and NEW pinion nut (N).
Apply Loctite 272 to pinion nut threads and tighten to 100–118 lbs. ft. [135–160 N•m].

Drain Plug Installation



FIGURE 91:

1. Apply Loctite 565 to center housing drain plug threads (left photo above) and tighten to 15–20 lbs. ft. [20–27 N•m].
Apply Loctite 565 to wheel end drain plug threads (right photo above) and tighten to 7–10 lbs. ft. [9.5–13.5 N•m].
Then fill final drive housings and main axle with 5.5L (1.45 gal) J20C oil.

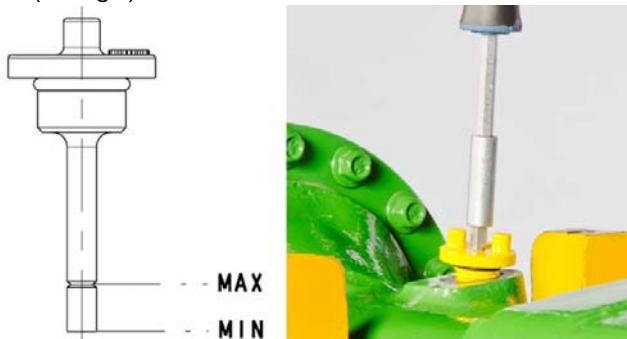


FIGURE 92:

2. Verify the oil level is between the MIN and MAX level on the dipstick.

⚠ CAUTION

Avoid Damage! Allow oil one hour to settle before checking level to ensure accurate dipstick reading. Then repeat oil check after several hours of operation.

Tie Rod Installation

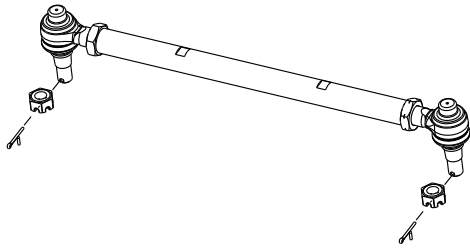


FIGURE 93:

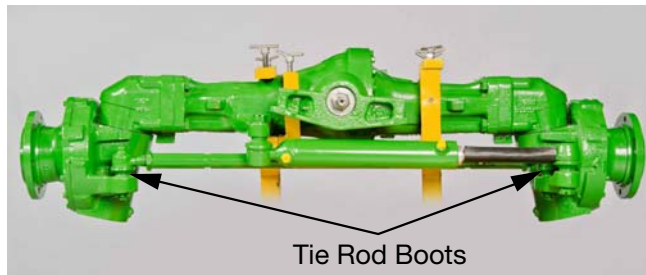


FIGURE 94:

1. Inspect tie rod end boots, replacing boots as needed.
2. Insert tie rod ends into holes in knuckle arms.



FIGURE 95:

3. Install castle nuts to tie rod ends and tighten to 85–94 lbs. ft. [115–128 N•m].

NOTE:

Only grease tie rods if grease zerk is present.

4. Install cotter pins. If slots in castle nuts do not align with holes after torquing, tighten nuts until next slot aligns.
5. Adjust toe-in. (See “Toe-in Adjustment”, on page 28.)
6. Install wheel and tire to final drive.

Steering Cylinder Installation

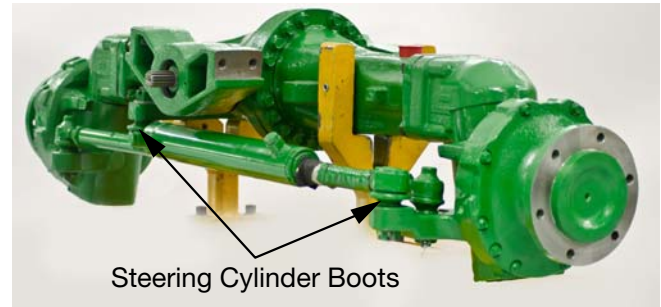


FIGURE 96:

1. Inspect steering cylinder boots, replacing as needed.



FIGURE 97:

2. Install cylinder and secure with washers and castle nuts. Torque castle nuts to 84.8–94.4 lbs. ft. [115–128 N•m] and install cotter pins. If slots in castle nut do not line up with cotter pin holes, continue tightening nut until next slot aligns.

Axle Trunnion Installation

Axle Trunnion Installation

1. Raise front axle off ground to take weight off front axle.

Assemble Rear Trunnion

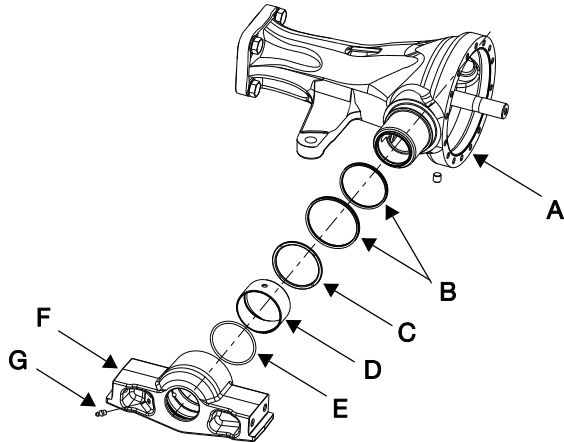


FIGURE 98:

2. Install o-ring (E) inside the rear trunnion (F) bore.

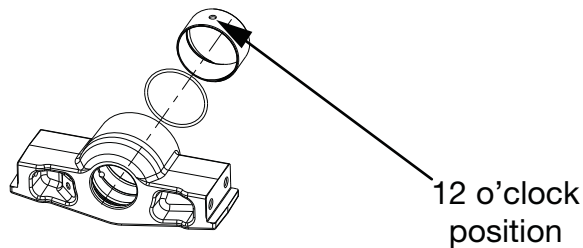


FIGURE 99:

3. Insert the rear bushing (D) on the rear trunnion (F).

⚠ CAUTION

Ensure the hole in the bushing is oriented in the 12 o'clock position.

4. Install v-ring and v-ring seal (B) on center section pin (A).
5. Install the thrust washer (C) on the rear trunnion (F) bore. It might be necessary to apply grease to the thrust washer to hold it in place.



FIGURE 100:

6. Slide rear trunnion (F) on center section (A) pin.

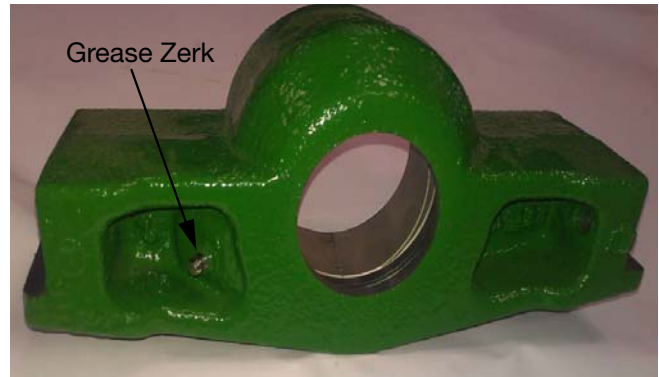


FIGURE 101:

7. Grease the rear trunnion after installation using the grease zerk (G) until grease purges out from the v-ring.

Assemble Front Trunnion

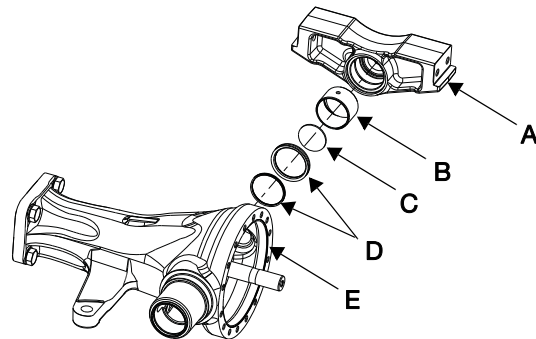


FIGURE 102:

1. Install bushing (B) in front trunnion (A).

⚠ CAUTION

Ensure the hole in the bushing is oriented in the 12 o'clock position.

2. Install the thrust plate (C) on the front trunnion (A). It might be necessary to apply grease to thrust plate to hold it in place.
3. Install v-ring and v-ring seal (D) on center section (E) pin.
4. Slide front trunnion (A) on center section (E) pin.

Axle Installation & End Play Adjustment

Axle Installation & End Play Adjustment

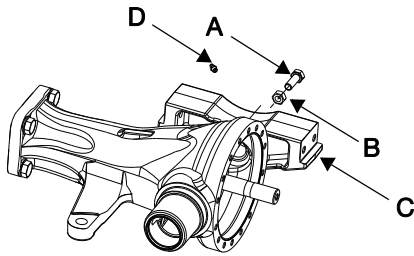


FIGURE 103:

1. Install axle into vehicle.
2. Install front trunnion hex nut (B) loosely on bolt (A).
3. Thread bolt (A) into front trunnion (C) and tighten to 11-22 lbs. ft [15-30 N•m].
4. Tighten the jam nut (B) tight against the front trunnion (C) to a torque of 48-55 lbs. ft [65-75 N•m].

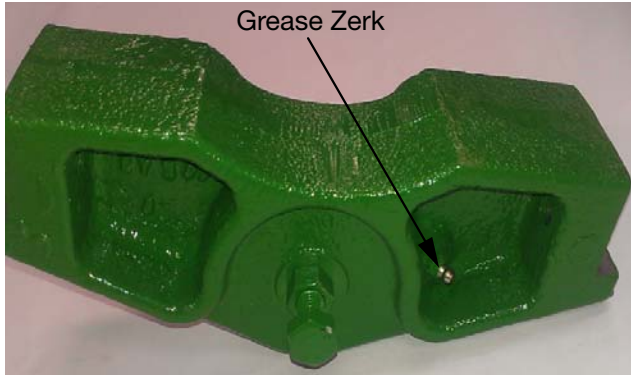


FIGURE 104:

5. Grease the front trunnion after installation using the grease zerk (D) until grease purges out from the v-ring.

Toe-in Adjustment

NOTE:

The toe-in adjustment must be performed on the vehicle.

1. Jack up front axle so tires are off floor.
2. Rotate tire by hand and scribe a line near the center of each of the front tires.

NOTE:

One of the tie rod ends and jam nut has left-hand threads.

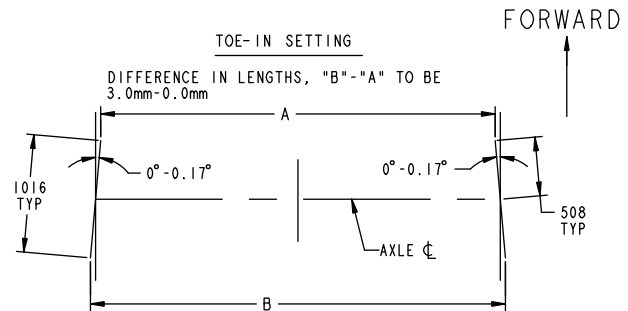


FIGURE 105:

3. Measure and record the distance between the lines at the front and the rear of the tire at about axle height. The front measurement should be less than the rear measurement.
4. If measurement is not correct, loosen jam nuts on both ends of tie rod and turn the tie rod using a wrench to increase or decrease the amount of toe until the measured dimension is 0-0.125 in. [0-3 mm] between the front and rear.
5. Apply Loctite 262 and tighten the jam nuts to 116-124 lbs. ft. [157-168 N•m].

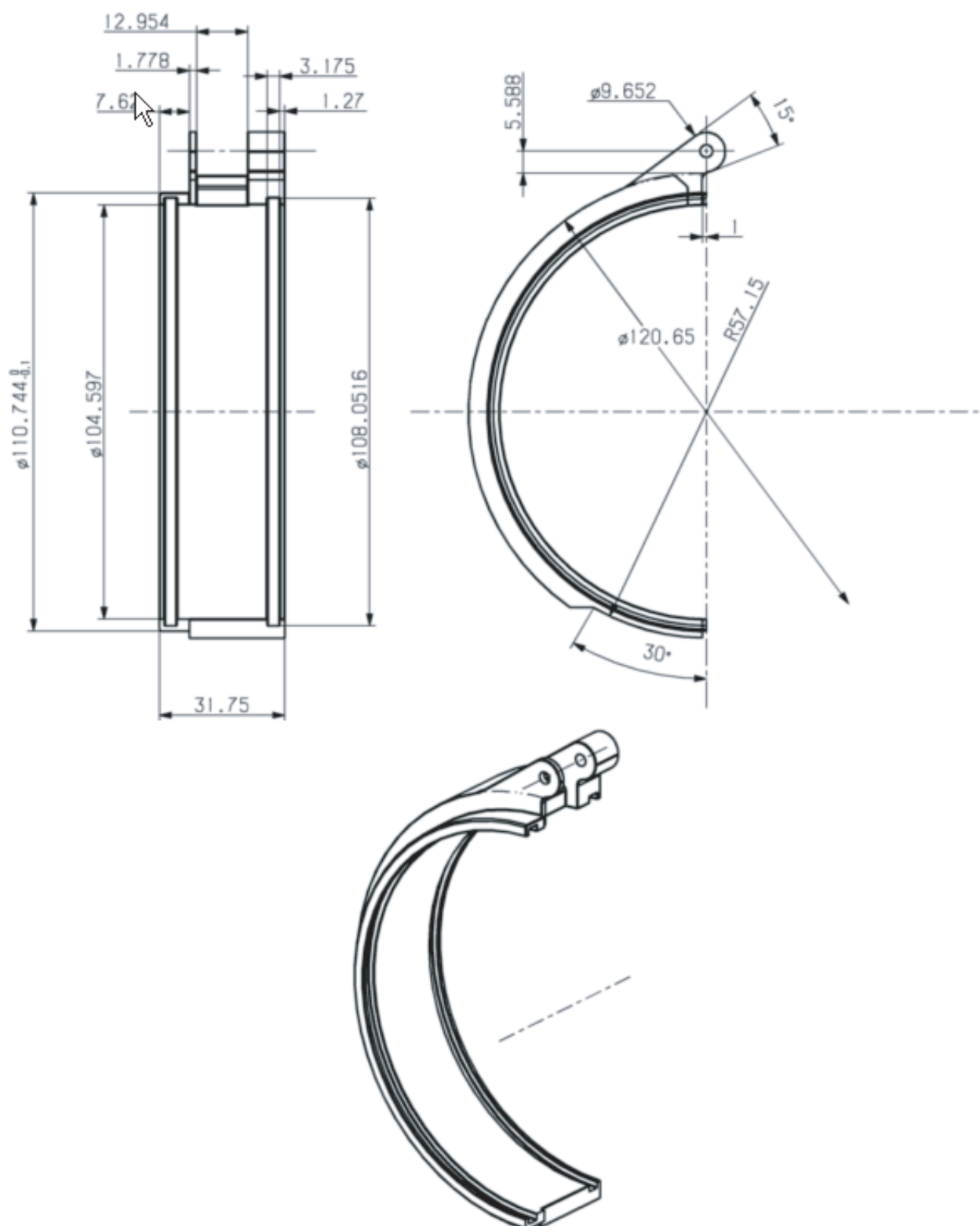
Driveshaft & Hydraulic Line Installation

1. Position driveshaft onto machine. While supporting drive shaft, slide splined connector toward machine.
2. Install spring pin to drive shaft splined connector.
3. Connect steering cylinder hydraulic lines.

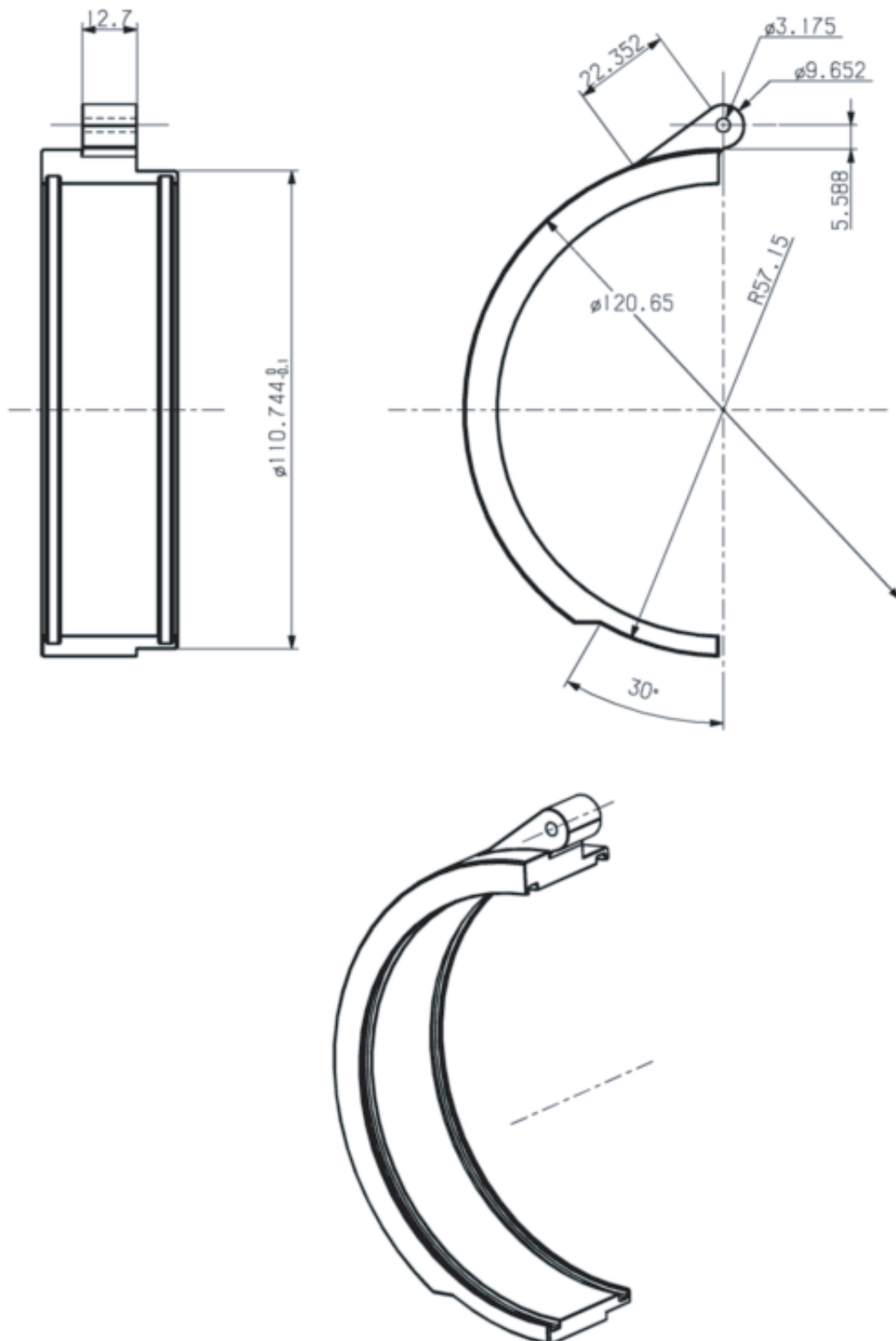
SPECIAL TOOLS

Face Seal Tool

Left-Hand Side

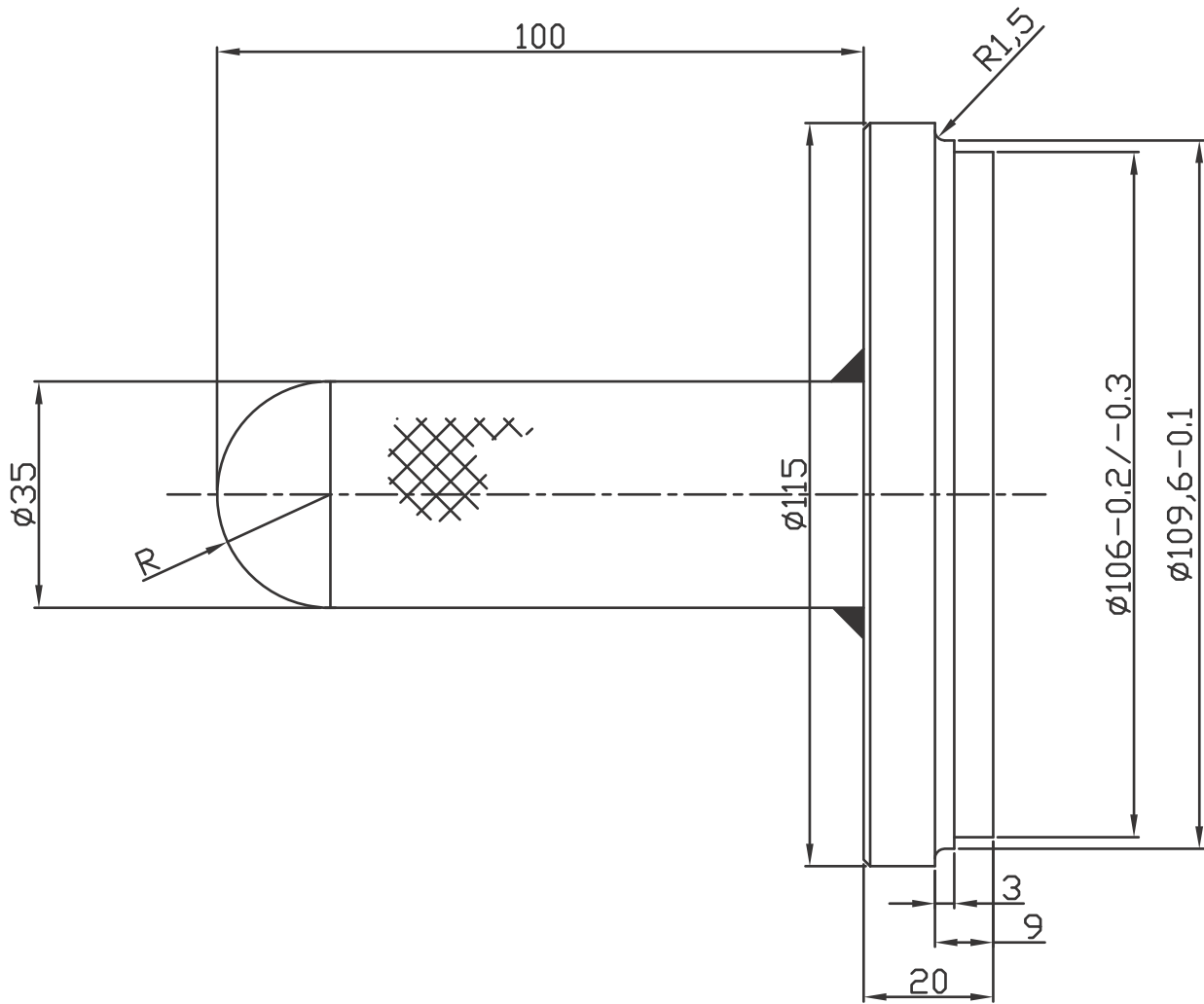


Right-Hand Side



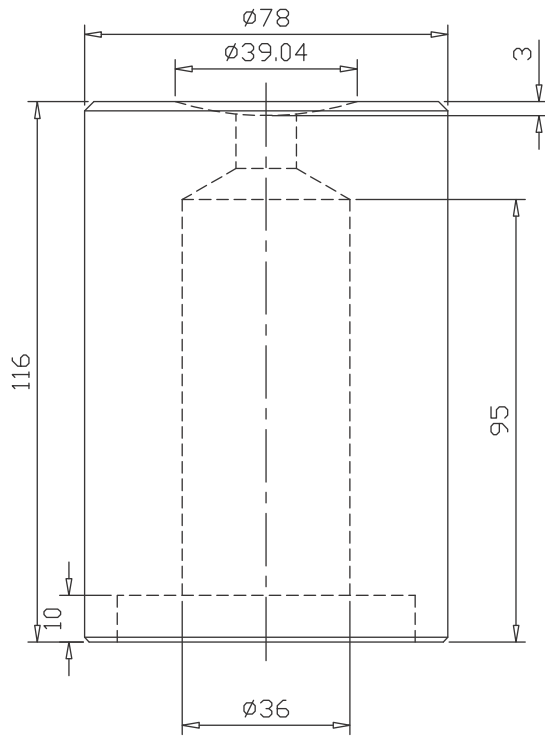
Face Seal Cup Driver

Face Seal Cup Driver

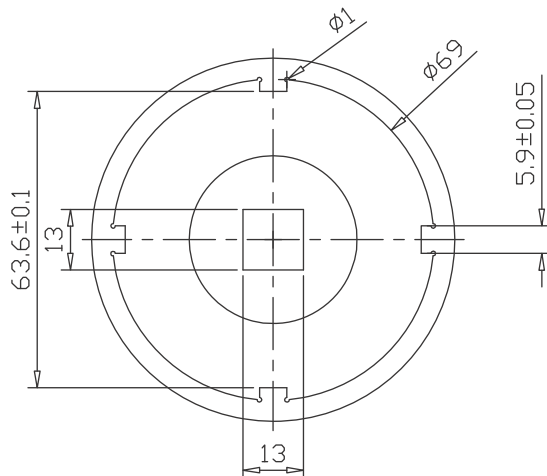


DOLLY FOR FACE SEAL
CUP PRESSING
MATL; MS
QTY; 1NO.

Final Drive Spanner Nut Socket

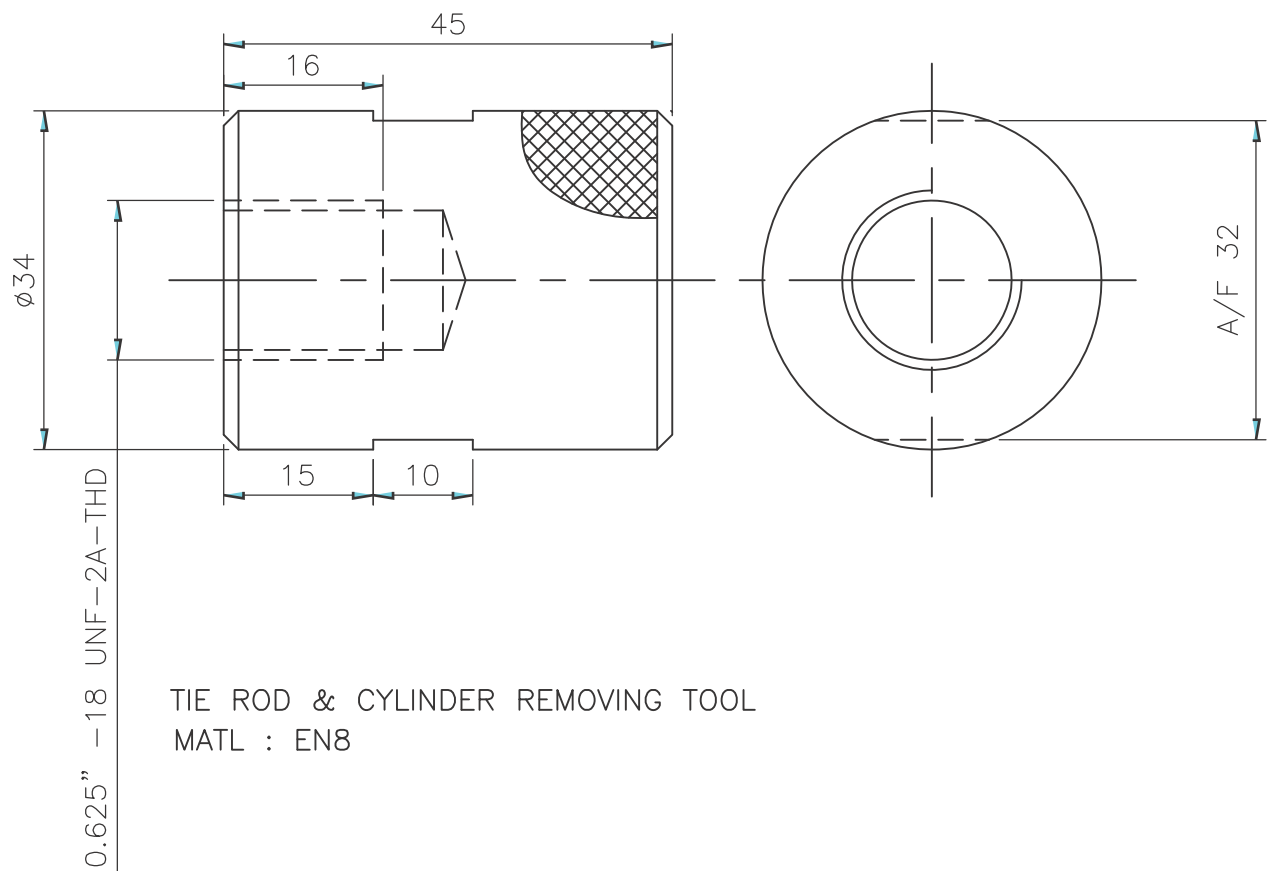


01
 SOCKET
 MATL; EN-8 TOUGHENED
 QTY; 2NOS
 PINION NUT TORQUING SHOULDER
 WO-055-10

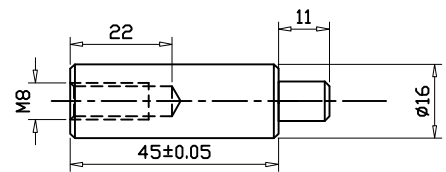
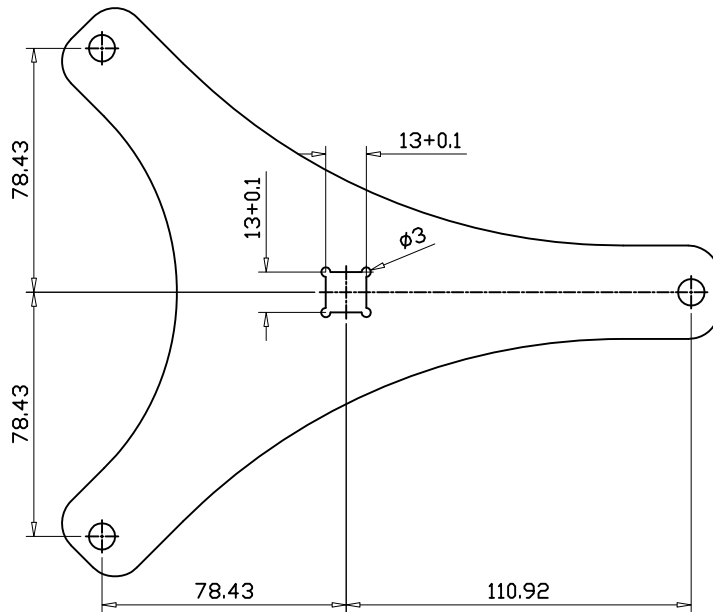


Steering Cylinder & Tie Rod Removal Tool

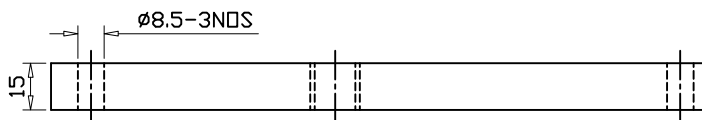
Steering Cylinder & Tie Rod Removal Tool



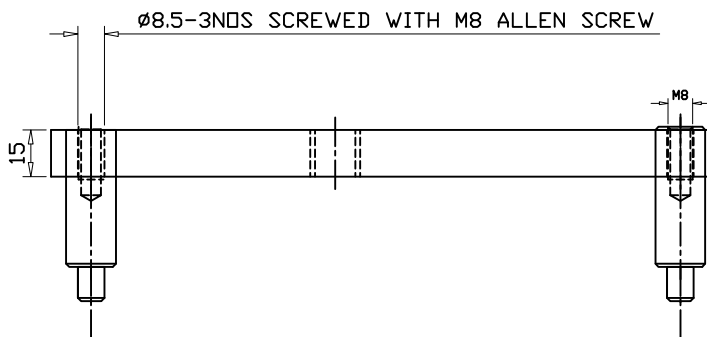
Final Drive Bracket Tool



01
LOCATER
MATL; EN-8 TOUGHENED
QTY; 3NOS.
DRIVE SHAFT TTR CHECKING
PLATE
WO-074-10

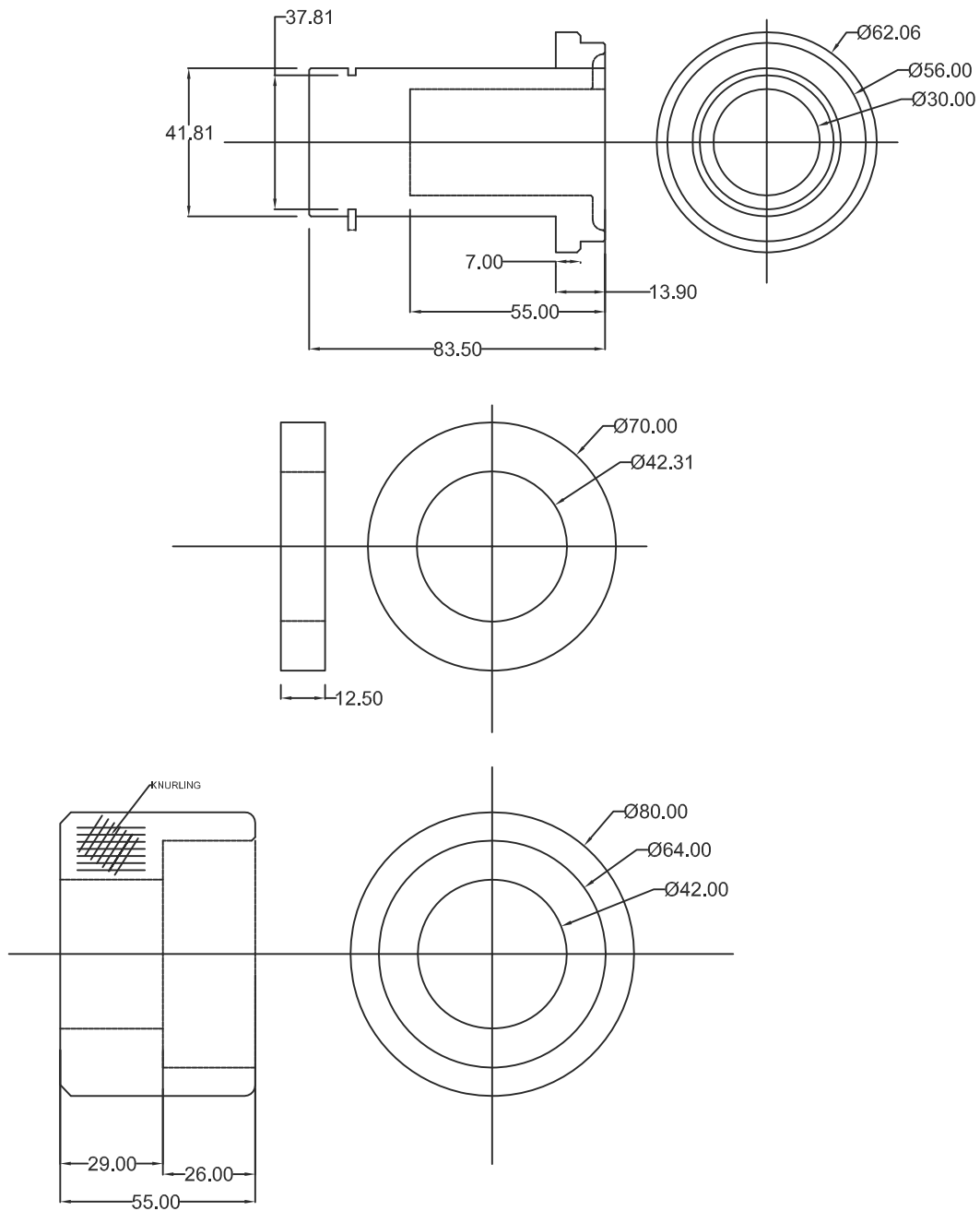


01
PLATE
MATL; MS
QTY; 1NO.
DRIVE SHAFT TTR CHECKING
PLATE
WO-074-10



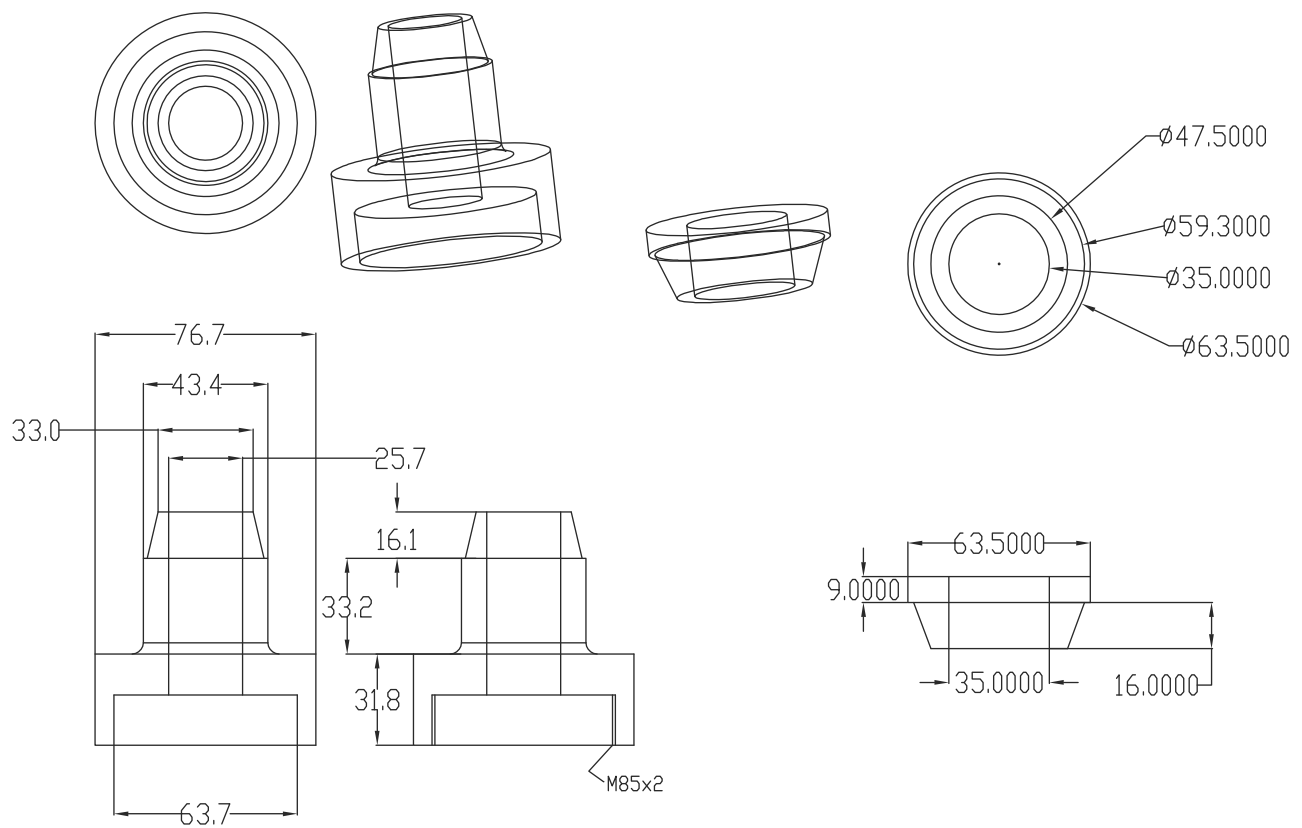
Spacer Seal Tool

Spacer Seal Tool



PINION OIL SEAL ASSEMBLY TOOL
MAT:20MnCr5
CASE HARDEN 55-60 HR

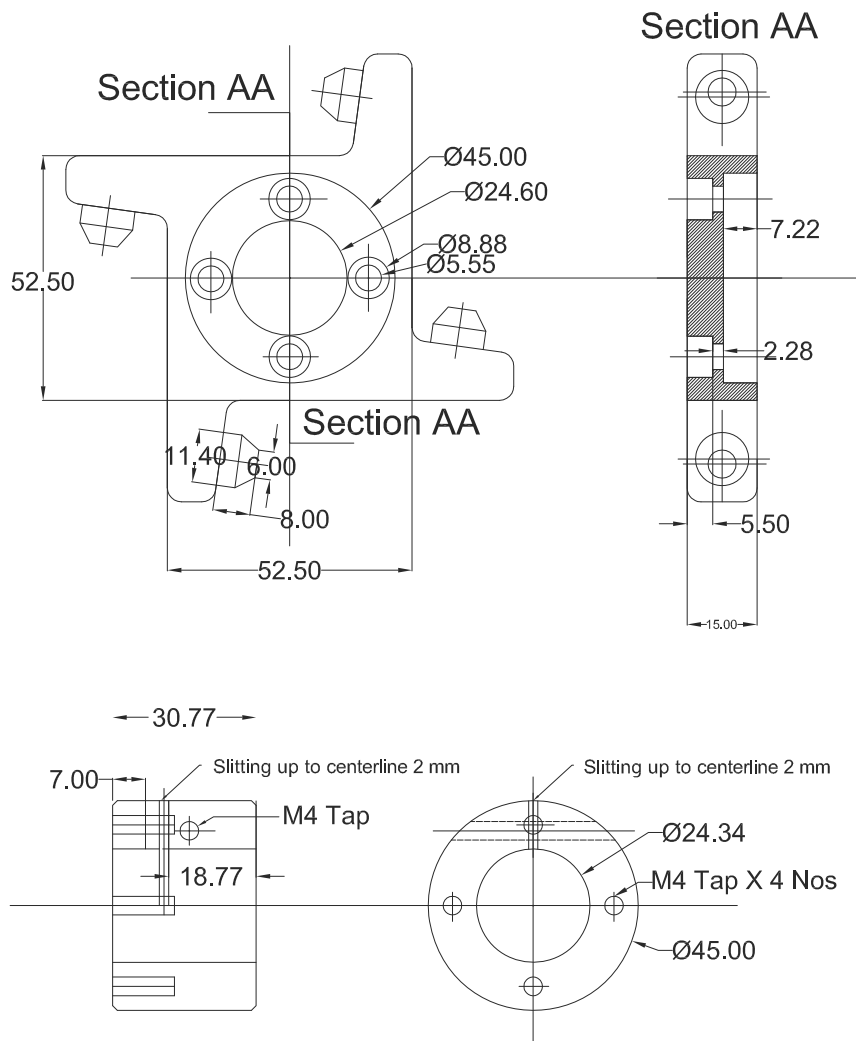
Pinion Bearing Cup Tool



PINION INNER AND
OUTER PRESSING TOOL

Backlash Measurement Tool

Backlash Measurement Tool



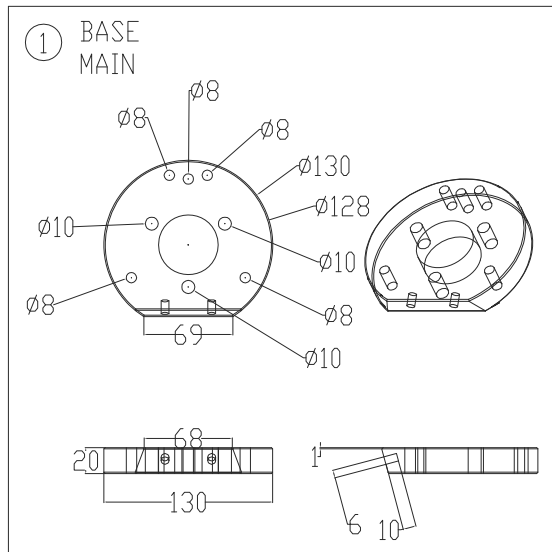
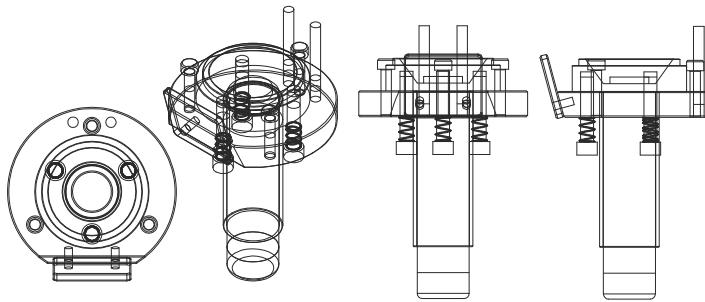
ASSEMBLY OF TWO PIECES

BACKLASH MEASURING TOOL

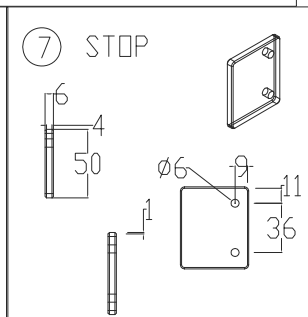
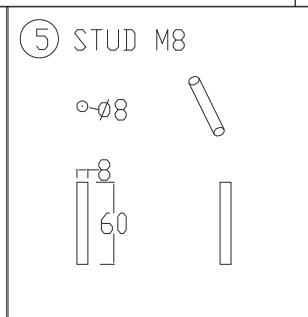
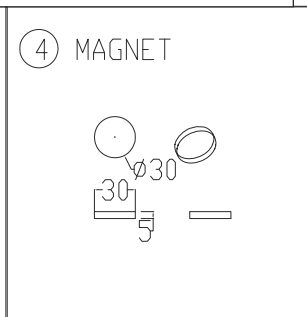
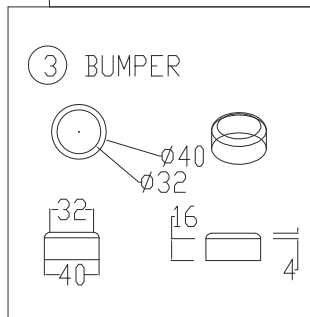
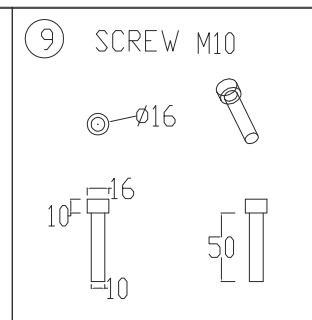
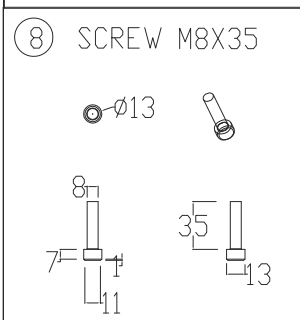
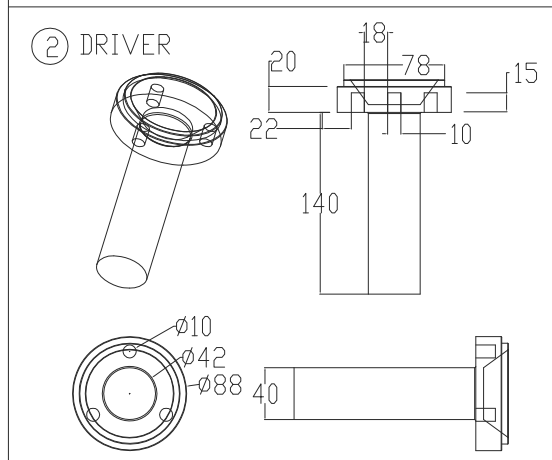
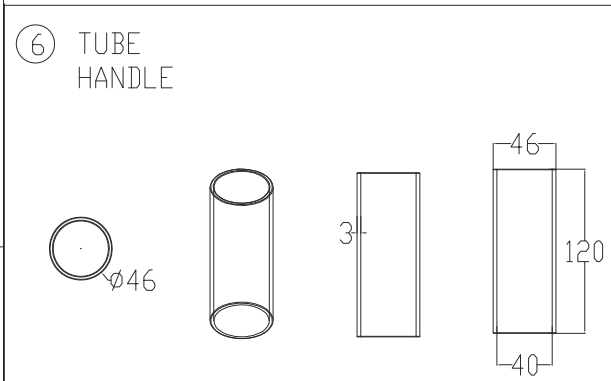
MAT:20MnCr5

CASE HARDEN 55-60 HR

Welch Plug Driver Tool



09	SCREW M10	03	MS	--
08	SCREW M8	03	MS	--
07	STOP	01	MS	--
06	TUBE HANDLE	01	MS	--
05	STUD	02	MS	--
04	MAGENT	01	MS	--
03	BUMPER	01	MS	--
02	DRIVER	01	MS	--
01	BASE MAIN	01	MS	--
NO. SR.	DESCRIPTION	QTY	MATL	REMARK



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