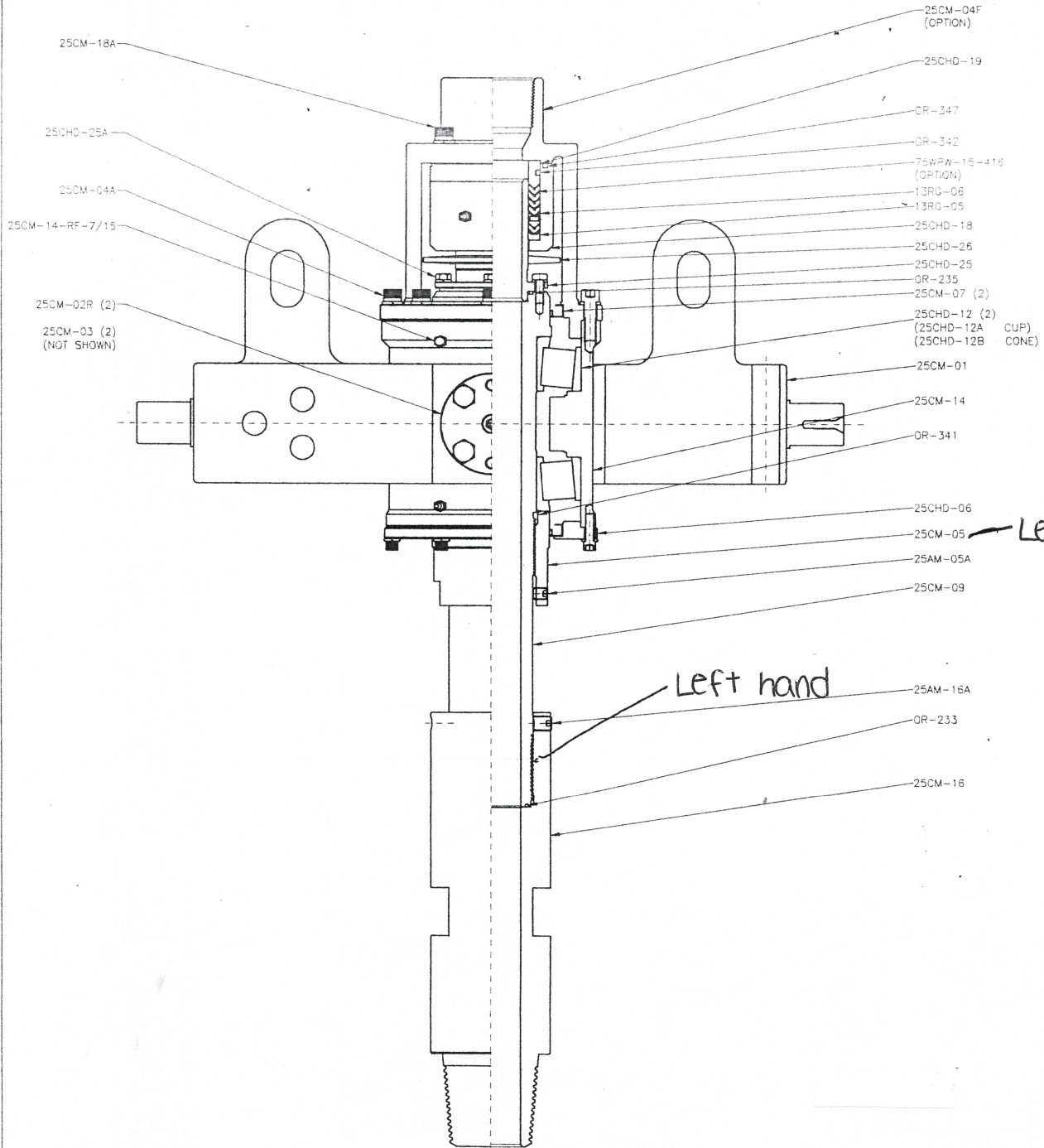
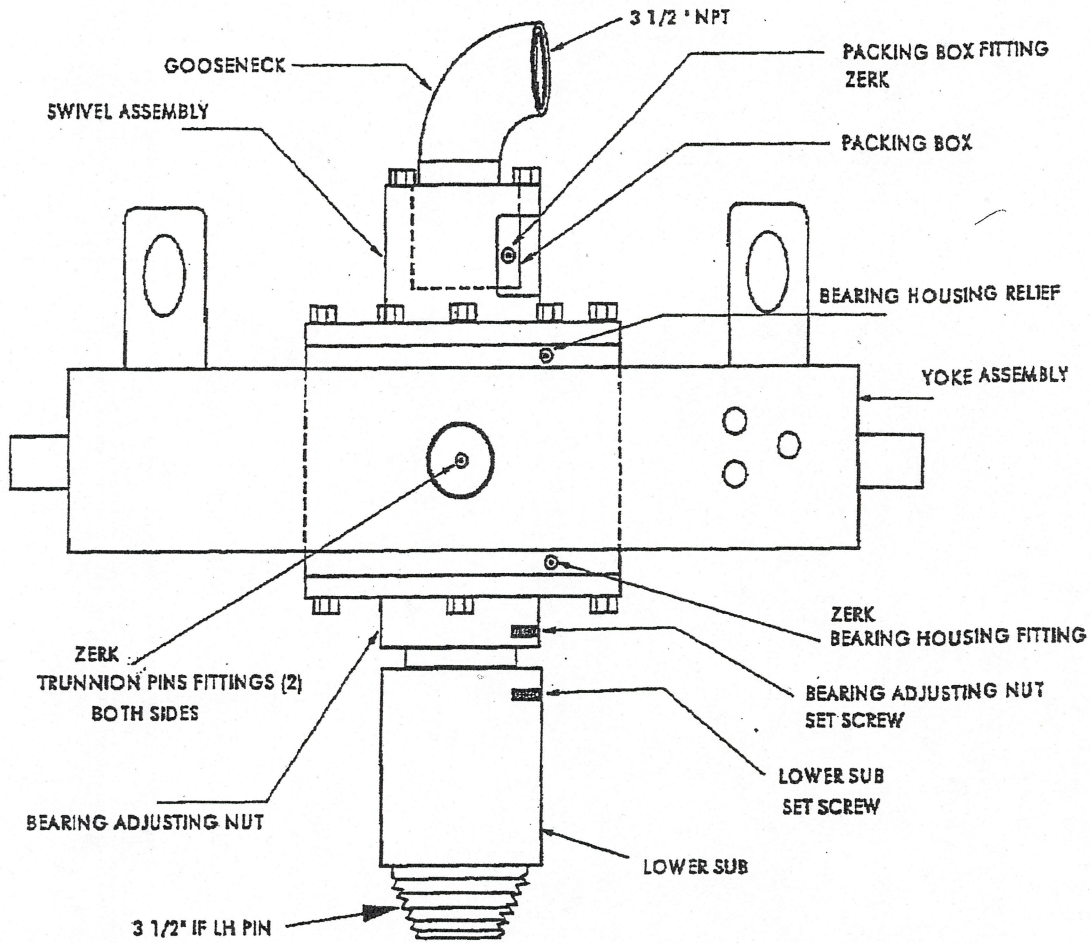


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<u>Tolerances Unless Otherwise Specified</u> Fractions = $\pm \frac{1}{16}$ " X = $\pm .000$ " JXX = $\pm .015$ " JXXX = $\pm .008$ " Angles = $\pm 5^\circ$ Fillet Radii = $\pm .010$ " - $.031$ " External Corners = $.010$ " - $.020$ " X 45° Max T.I.R. = $\pm .002$ "	Part No.: 25CM-8010-10 Name: SWIVEL ASSEMBLY W/ CALLOUTS Description:	<h1>25CM</h1>	Drawing No.	Revision
	MATERIAL:		MAT'L TYPE:	M-210-B
Drawn By: CPE	Date: 3-8-09	CM'd By:	Date:	DO NOT SCALE



25 CM SWIVEL

Figure 1

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25 CM SWIVEL PARTS LIST

TECHNICAL SPECS.
25CM Swivel

Static Load Capacity	:.....	50,000 lbs.
Rotating Load Capacity	:.....	25,000 lbs. @ 100 RPM
Pulldown Load Capacity	:.....	25,000 lbs.
Fluid Passage (ID)	:.....	2.50"
Hose Connection	:.....	3" NPT female
Lower Sub Connection	:.....	3 1/2" IF LH
Bearing Type	:.....	Adjustable tapered roller
Bearing Lubrication	:.....	Grease Bath
Packing Assembly	:.....Standard.....	V-Ring (SOFT) For working pressure 75-500 PSI
	:.....OPTIONAL.....	V-Ring (HARD) For working pressure 350-1500 PSI
	:.....OPTIONAL.....	Rubber Ring For working pressure 0-250 PSI

The 25CM swivel is designed for the Ingersoll Rand, TH-60, TH-55, and T3W. This unit can be retrofitted into older machines by exchanging old swivel and yoke assembly with the 25CM swivel and yoke assembly. The three (3) different packing arrangements allows this unit to be worked in all types of drilling. This simple design, with adjustable bearings, will provide long swivel life and easy field service when required.

PACKING REPLACEMENT
25CM

I. Packing Replacement (Chevron, V-Ring)

NOTE: Prior to replacing leaking packing, lubricate this packing as described in DAILY MAINTENANCE while spindle is rotating with pressure off. This will normally stop leakage. If this fails to stop leakage packing must be replaced to stop leakage.

Packing Set options for 25CM Swivel:

- A: Normal working pressure between 75 to 500 PSI, chose
P/N 25CM-20-416.(STANDARD PACKING SET)
- B: Normal working pressure between 350 to 1500 PSI,
chose P/N 25CM-20.(OPTIONAL PACKING SET)

TO REPLACE PACKING:

1. Unscrew and remove the Washpipe Screw w/ Lock Washers, P/N - 25CM-25A
 2. Unscrew and remove the Packing Box Cap Screws w/ Lock Washer, P/N - 25CM-18A
 3. Slide (pry) Washpipe P/N - 25CM-25 up into Packing Box Assembly.
 4. Remove Packing Box Assembly through window in Gooseneck P/N - 25CM-04
 5. Disassemble the Packing Box Assembly. Clean and inspect all metal parts for wear and/or damage, replace if necessary.
- A: Disassembly of Packing Box Assembly
- a. Pry Washpipe P/N 25CM-25 down, out of Packing Box.
 - b. Remove Mud Slinger P/N 25CM-08 from Washpipe. From Packing Box Assembly
 - c. Remove Packing Gland P/N 25CM-19
 - d. Remove the upper four (4) pieces of Packing P/N 25CM-20-416 or 25CM-20.
 - e. Remove Lantern Ring P/N 25CM-21
 - f. Remove the last piece of Packing
 - g. Remove the Packing Seat Ring P/N 25CM-21

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6. Remove O'Ring P/N 25CM-347 from upper face of Packing Box P/N 25CM-18
7. Remove O'Ring P/N 25CM-235 from upper face of Spindle P/N 25CM-09
8. Clean O'Ring groove.
9. Reverse above steps to install refurnished Packing Assembly.
10. Lubricate Packing Assembly after installation and every 3-4 hour of drilling time to insure proper packing life.

NOTE:

Lack of packing lubrication will cause premature packing failure and can cause swivel to lock up.

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Fax # 952-461-3403

25CM BEARING SWIVEL

To remove and replace the bearing of the 25CM Swivel, it is best to remove the swivel from the rig. Disassembly can be completed without removing the swivel, but numerous steps must be done to insure the threads between the spindle and the lower connection are not damaged during disassembly.

Decide if the swivel is going to be removed or while attached to power head. We suggest removal from the power head and drill pipe.

To disassemble:

To remove swivel/yoke assembly:

1. Break the joint connecting the lower connection of swivel to the spindle. This is a 3-1/2" IF Left hand joint. Break loose, but do not unscrew.
2. Support the hydraulic hose bracket attached to the swivel joint. Unscrew the 3 bolts securing the bracket to the yoke.
3. Remove the 2 cables attached to the yoke.
4. Disconnect the air/mud supply hose from the swivel
5. Unscrew the lower connection from the power head and remove swivel/yoke from drill

To disassemble the 25CM Swivel/Yoke:

1. Remove the 4 bolts on each side of the yoke, securing the 2 trunnion pins to the yoke
2. Remove the 2 trunnion pins
3. Remove the yoke from swivel
4. Remove the two 25CM-16A set screw from the 25CM-16 lower connection. These sets screws are 5/8" x 3/4" with a nylon pellet.
5. Unscrew the lower connection 25CM-16 from the bearing spindle 25CM-09. This is a LEFT hand thread.
6. Remove the two 25CM-05A set screws from the 25CM-05 bearing adjusting nut. Newer units will have a welded stop below the bearing adjusting nut that will need to be removed.
7. Unscrew the 25CM-05 bearing adjusting nut from the 25CM-09 bearing spindle. This is a LEFT hand thread.
8. Remove the packing assembly, by unscrewing the four 25CM-18A (top of Bonnet) and the four 25CHD-25A washpipe bolts (top of washpipe flange)
9. Remove the eight 25CM-04A bonnet bolts and remove the 25CM-04 Bonnet from The 25CM-14 Bearing housing.
10. Remove the six 25CM-06A oil box bolts (bottom of bearing housing) then remove the 25CM-06 oil box.
11. Remove the 25CM-09 bearing spindle

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12. Remove the two 25CHD-12B bearing cones from the bearing housing.
13. Remove the two 25CHD-12A bearing cups from the bearing housing.

Additional Items to be removed:

From the bearing housing 25CM-14, remove the two trunnion pin bushings 25CM-14A. From the oil box 25CHD-06 remove the one 25CM-07 housing seal. From the bonnet 25CM-04 remove the one 25CM-07 housing seal. From the spindle 25CM-09, remove the following three o'rings.

OR-233 thread seal

OR-341 adjusting nut

OR-235 washpipe O'ring

Complete disassembling of the packing assembly.

Clean and inspect all items, replacing all rubber goods, replacing any item showing wear and/or damage.

Note: When the swivel is re-assembled, the bearing adjusting nut 25CM-05 is torqued to 95-105 ft lbs. And the spindle, 25CM-09 and lower connection is torqued to 1500 ft lbs.

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25CM
MAINTENANCE

I. Daily Service

1. Clean external surfaces.
2. Visually inspect unit for leakage, damage, and/or wear. DO NOT USE if fault is found until unit is repaired and/or replaced.
3. Lubricate Bearings. With the unit warm, after running for about one (1) hour, with the spindle rotating lubricate bearings through the zerk fitting provided in the lower portion of the Bearing Housing (25CM-14). Lubricate until grease exits the relief fitting in the upper portion of the Bearing Housing.
4. Lubricate the Packing (every 3-4 hour and/or when Packing begins to leak). With spindle rotating and pressure (air compressor/mud pump) off, lubricate packing through the zerk fitting provided in the Packing Box (see Figure #1). If the unit becomes hard to rotate after lubricating, relief some of the grease pressure by depressing ball on the zerk fitting of Packing Box.
5. Lubricate Trunnion Pin (2) through the zerk fitting provided in end of trunnion pin. (see Figure #1)
6. Check/Inspect for Spindle movement while drilling. If present refer to MAINTENANCE SECTION.

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ROUTINE MAINTENANCE
25CM

- I. Packing set replacement, described in PACKING REPLACEMENT.

II . Housing Seal Replacement

NOTE: Replace Housing Seals

1. Every four (4) to six (6) months
2. When they begin to leak grease.
3. When damage occurs
4. Doing major overall

UPPER HOUSING SEAL REPLACEMENT

1. Remove Packing Assembly as described in PACKING REPLACEMENT
2. Remove air line/mud line from Gooseneck hose connection
3. Unscrew and remove the Gooseneck Cap Screws w/ Lock Washers P/N 25CM-04A
4. Remove Gooseneck P/N 25CM-04
 - a. Clean part
 - b. Remove old Housing Seal, Upper P/N 25CM-07
5. Replace Housing Seal, Lip of seal should point down towards bearings.
6. Reverse to reassemble.

LOWER HOUSING SEAL REPLACEMENT

1. Unscrew Lower Sub P/N 25CM-16 from top head spindle
2. Unscrew and remove the Lower Seal Box Screws w/ Lock Washer, P/N 25CM-06A
3. Slide Lower Seal Box P/N 25CM-06, down and off of Lower Sub.
4. Remove the Lower Seal P/N 25CM-07
 - a. Remove old Housing Seal, Lower P/N 25CM-07
 - b. Clean Part

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Phone # 800-637-1940
Fax # 952-461-3403

5. Replace Housing Seal, Lip of seal should point up towards bearings.
6. Reverse to reassemble.

NOTE:

After replacing Housing Seals be sure to lubricate Bearings in Bearing Housing.

III. Checking and Adjust Bearing Adjusting Nut P/N 25CM-05.

A. Check Daily

- B. Adjust when Spindle P/N 25CM-09, travels up and down greater than 1/32".

This spindle travel is caused by bearing wear and/or Bearing Adjusting Nut becoming loose while drilling (Unscrewing)

TO ADJUST BEARING ADJUSTING NUT P/N-25CM-05

1. Loosen Bearing Adjusting Nut Set Screws (2)
2. Tighten Bearing Adjusting Nut P/N 25CM-05, LEFT HAND THREAD.
 - a. Average torque is 125 ft. lbs.
 - b. If Spindle P/N 25CM-09 becomes locked up after tighten bearing adjusting nut, reduce torque until spindle begins to rotate.
3. The Bearing Adjust Nut should preload bearings. Making spindle hard (tight) to rotate, this is normal.

NOTE: A loose Bearing Adjusting Nut will,

1. Cause premature packing failure
2. Cause premature bearing failure
3. Cause general failure in swivel.

4. Tighten the Bearing Lock Nut Set Screws (2).

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