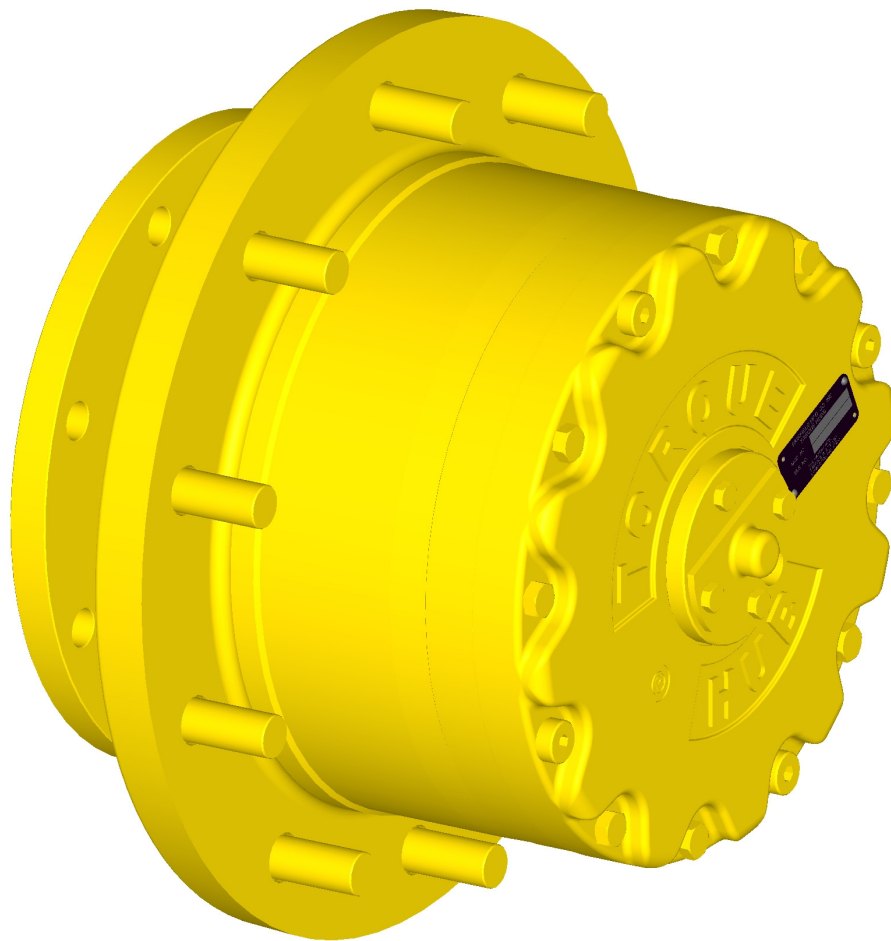


oerlikon
fairfield

**Torque-Hub[®] Planetary Final Drive
W3B/W3C Series Service Manual**



Rev 03/07/13

While every precaution has been taken in the preparation of this document, Fairfield Manufacturing Co. Inc. assumes no liability with respect to the use of the documentation described herein, or for any act or omission of Fairfield Manufacturing Co. Inc. concerning this documentation. Torque-Hub[®] is a registered trademark of Fairfield Manufacturing Co. Inc.

Features and specifications are subject to change without notice.

Planetary Final Drive Service Manual

Content

	Introduction	04
	Roll and Leak Test	05
	Tightening and Torquing Bolts	07
	Lubrication Information	08
Disassembly Instructions	Main Disassembly	12
	Carrier Disassembly	15
	Coupling Disassembly	16
	Input Shaft Disassembly	17
	Cover Disassembly	18
	Housing-Spindle Disassembly	19
Assembly Instructions	Cover Subassembly	24
	Carrier Subassembly	26
	Housing Spindle Subassembly	28
	Coupling Subassembly	30
	Input Shaft Subassembly	31
	Main Assembly	32
	Assembly Drawing	36
	Parts List	37
	Assembly Tools	40
General Information	Contact Information	52

Planetary Final Drive Service Manual

Introduction

This manual is a step-by-step guide to the disassembly and assembly of the W3C/W3B Series Torque-Hub[®] units. It is designed for the customer or mechanic who is repairing this particular Torque-Hub[®] model.

Users of this manual should note that each part mentioned is followed by an identification number enclosed in parentheses. These part numbers may be referred to in the Parts List and Assembly Drawing sections of this manual.

Specialized tools used to assemble this unit are noted in the assembly procedures and diagrammed in the Assembly Tools section.

Users should familiarize themselves with the procedures for roll and leak testing, as well as bolt tightening and torquing found on the following three pages before starting any repairs.

Standard safety practices should be followed during the disassembly and assembly procedures described. Safety glasses and safety shoes should be worn, and heavy, heat resistant gloves should be used when handling heated components. Be especially alert when you see the word **CAUTION**. This indicates that a particular operation could cause personal injury if not performed properly or if certain safety procedures are not followed. The word **NOTE** is used to bring attention to certain procedures or helpful hints that will aid in the disassembly and assembly process.

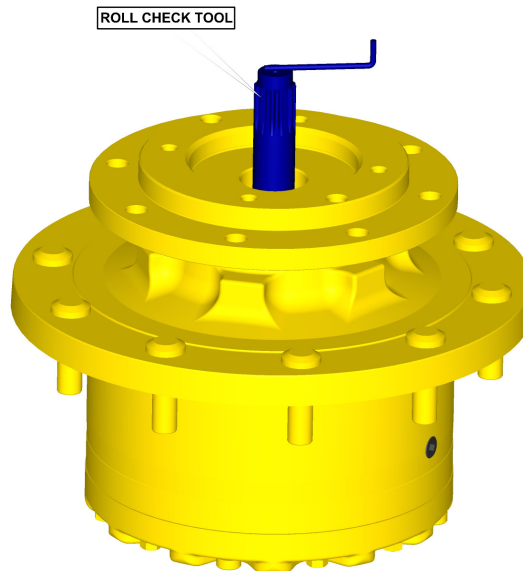
Planetary Final Drive Service Manual

Roll and Leak Test

Torque-Hub® units should always be roll and leak tested before disassembly (if possible) and after assembly to make sure the unit's gears, bearings, and seals are working properly. The following information briefly outlines what to look for when performing these tests.

The Roll Test

The purpose of the roll test is to determine if the unit's gears are rotating consistently, easily and properly. Release the brake by applying 400 Psi to the brake port. To perform a roll test, use the recommended tool from table below (or something equivalent) to apply constant rotational force to the input of the gearbox. If more drag is felt in the gears only at certain points, then the gears are not rolling consistently and easily and should be examined for improper installation or defects. Some gear packages roll with more difficulty than others. Do not be concerned if the gears in the unit seem to roll hard as long as they roll with *consistency*. Rotate the gearbox both clockwise and counterclockwise the same number of turns as the ratio of the unit. The gearbox ratio is the same number as the last three numbers on the ID tag.

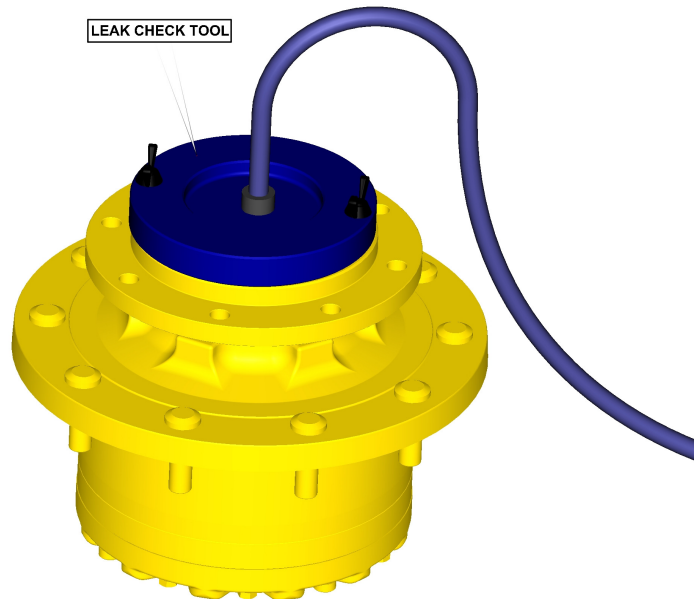


Model code	Roll Test Tool
W3xxx3xxx	T223988
W3xxx4xxx	T223989
W3xxx7xxx	T223990
W3Bxxx8xxx	T223997

Continued on Next Page

The Leak Test

The purpose of a leak test is to make sure the unit is airtight. To perform a leak test use the leak test fixture from the table below. If the tool is not available, the gearbox must be sealed to perform the test. This can be accomplished by assembling the sealed input device onto the gearbox at the input end and replace one of the oil plugs with an air chuck. **DO NOT EXCEED 10 PSI PRESSURE DURING THE LEAK TEST.** Higher pressure will create a false sealing effect in assemblies with lip-seals. The unit has a leak if the pressure gauge reading on your leak check fitting starts to fall after the gearbox has been pressurized and allowed to equalize. Leaks will most likely occur at the pipe plugs, the main seal or wherever o-rings or gaskets are located. The exact location of a leak can usually be detected by brushing a soap and water solution around the main seal and where the o-rings or gaskets meet on the exterior of the unit and then checking for air bubbles. If a leak is detected in a seal, o-ring, or gasket, the part must be replaced and the unit rechecked. Leak test at 10 psi for 20 minutes.

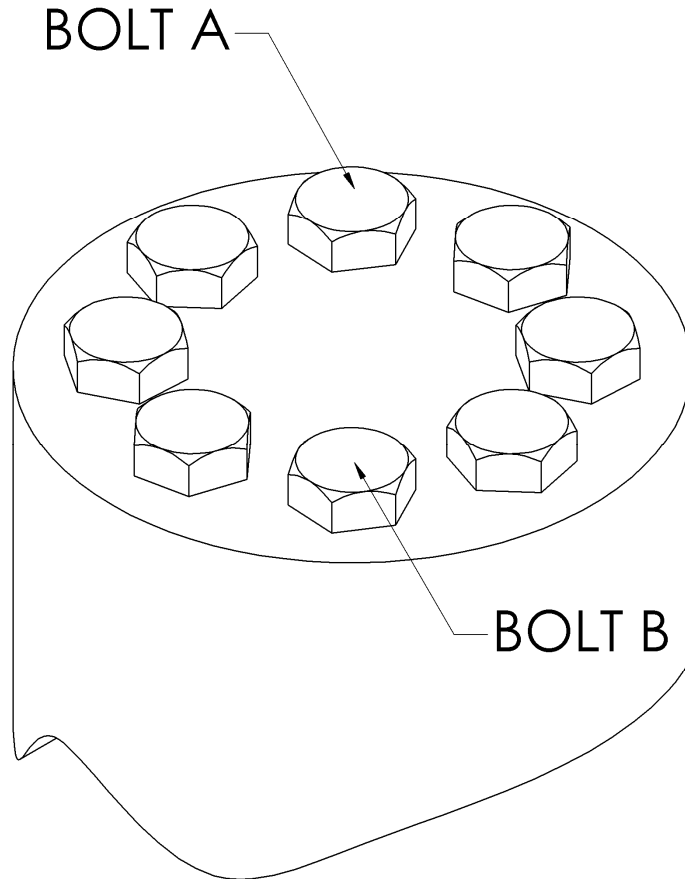


Model code	Leak Test Tool
W3Cxxxxxxxx	T220225
W3Bxxxxxxxx	T201476

Planetary Final Drive Service Manual

Tightening and Torquing Bolts

If an air impact wrench is used to tighten bolts, extreme care should be taken to ensure the bolts are not tightened beyond their specified torque. The following steps describe how to tighten and torque bolts or socket head cap screws in a bolt circle.



1. Tighten (but do not torque) bolt "A" until snug.
2. Go to the opposite side of the bolt circle and tighten bolt "B" until equally snug.
3. Crisscross around the bolt circle and tighten the remaining bolts.
4. Use a torque wrench to apply the specified torque to bolt "A".
5. Using the same sequence, crisscross around the bolt circle and apply an equal torque to the remaining bolts.

Planetary Final Drive Service Manual

Lubrication Information

General Properties:

The lubricant used in most Torque-Hub® drives should be petroleum based gear fluid containing anti-oxidation, anti-foaming and extreme pressure additives. The lubricant should have a minimum viscosity index of 95 cst and maintain a minimum viscosity of 40 cst under normal operating conditions. Some applications require special considerations; consult the machine manufacturer and Oerlikon Fairfield for more additional information.

The table below lists the recommended viscosities for various ambient operating temperatures. These recommendations are based on temperature rise of 50° to 100°F at normal operating conditions.

Differential Planetary		Simple Planetary		
Ambient Temperature	ISO Index	AGMA Lubricate Number	ISO Index	AGMA Lubricate Number
-40° to -5° F ⁽¹⁾	VG100	3EP	VG100	3EP
-5° to 40° F	VG150	4EP	VG100	3EP
40° to 105° F	VG220/VG320	5EP/6EP	VG150/VG220	4EP/5EP
105° to 150° F ⁽²⁾	VG460	7EP	VG320	6EP
Footnotes				
1. For operation in this ambient temperature range, synthetic oil is recommended with a pour point of 10°F lower than the minimum ambient temperature.				
2. For operation in this ambient temperature range, synthetic oil is recommended for proper lubricant life at elevated temperatures.				

Continued on Next Page

Maintenance

Oil amounts for each series of Torque-Hub[®] drives are indicated in the appropriate series literature. An initial oil change should be made after the first 50 hours of operation. Subsequent oil changes should be made at 1,000 hour intervals or annually, whichever comes first.

Oil temperatures should be not higher than 160° to 180°F for continuous operation, and no higher than 200°F for intermittent operation. For special applications, high horsepower, high speeds or wide temperature changes, please consult Oerlikon Fairfield.

Oil Fill Level

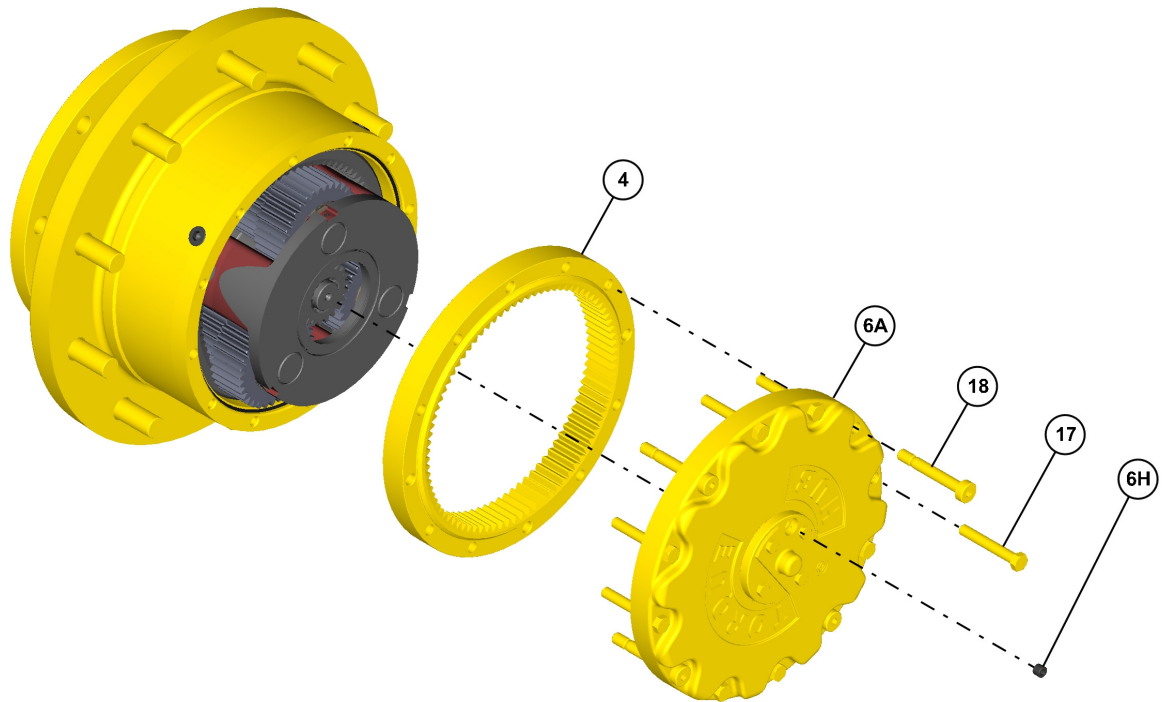
When the Torque-Hub[®] unit is mounted horizontally, unless otherwise specified, the gearbox should be filled half-full of oil. Consult the appropriate series literature for approximate fill volumes. Vertically mounted Torque-Hub[®] units may require special lubrication procedures. Please contact Oerlikon Fairfield for vertically mounted applications.

THIS PAGE
INTENTIONALLY
LEFT BLANK

DISASSEMBLY

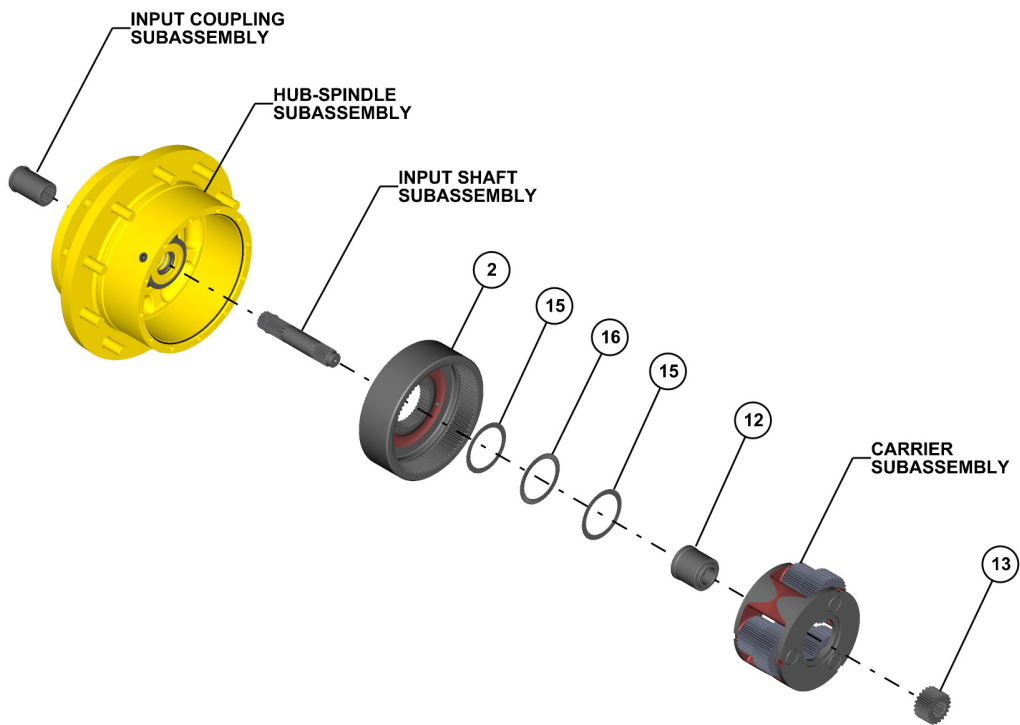
Planetary Final Drive Service Manual

Main Disassembly

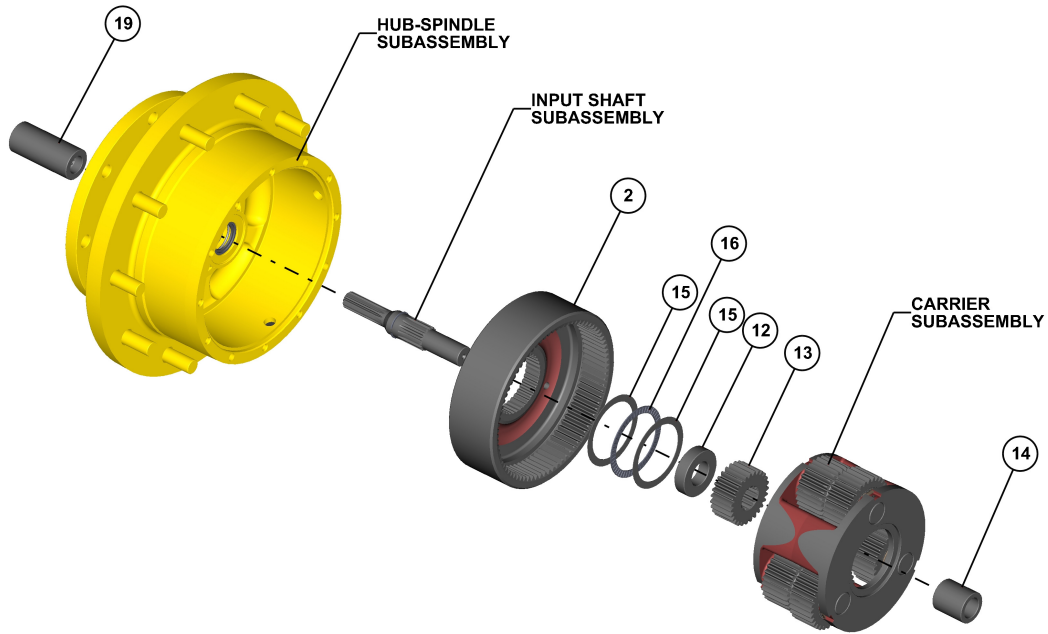


1. Perform roll check and leak check prior to disassembling the unit.
2. Remove the magnetic Pipe Plug (6H) from Cover Plate (6A) and drain the oil out of the gearbox.
NOTE: Record the condition and volume of the oil.
3. Remove eight of Bolts (17) followed by four of Bolts (18) from Cover Subassembly.
4. Lift the Cover Subassembly off of the unit.
5. Lift Ring Gear (4) off the unit.

Continued on Next Page



NOTE: Figure 1 refers to 30, 35, 50, 64 & 73 : 1 Ratios



NOTE: Figure 2 refers to 18, 24, 31 & 43 : 1 Ratios

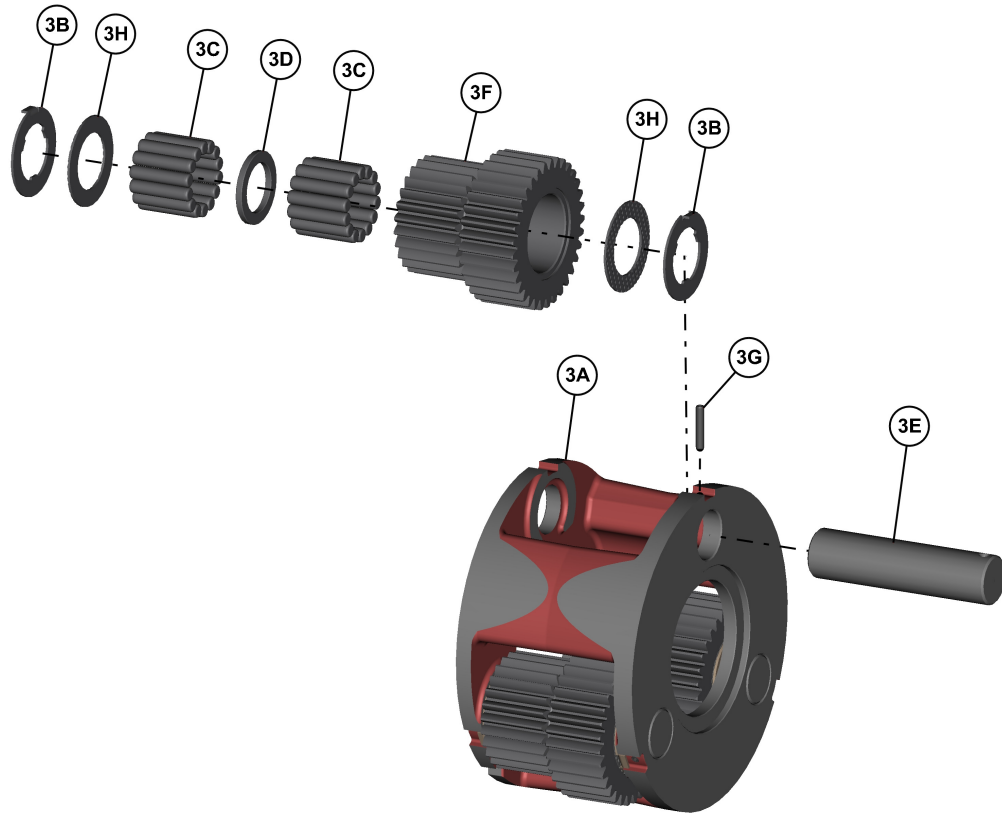
Continued on Next Page

6. If applicable remove Spacer (14) from the Input Shaft (11)
7. Remove the Sun Gear (13).
8. Lift out the Carrier Subassembly from the unit.
9. Remove the Input Spacer (12) from the unit.
10. Remove two Thrust Spacers (15) and Thrust Bearing (16) from the Internal Gear (2).
11. Remove Internal Gear (2).from the unit.
12. Remove Input Shaft Subassembly from the Hub Spindle Subassembly.
13. Take out Input Coupling Subassembly of the Hub Spindle Subassembly.

This concludes the Main Disassembly.

Planetary Final Drive Service Manual

Carrier Disassembly

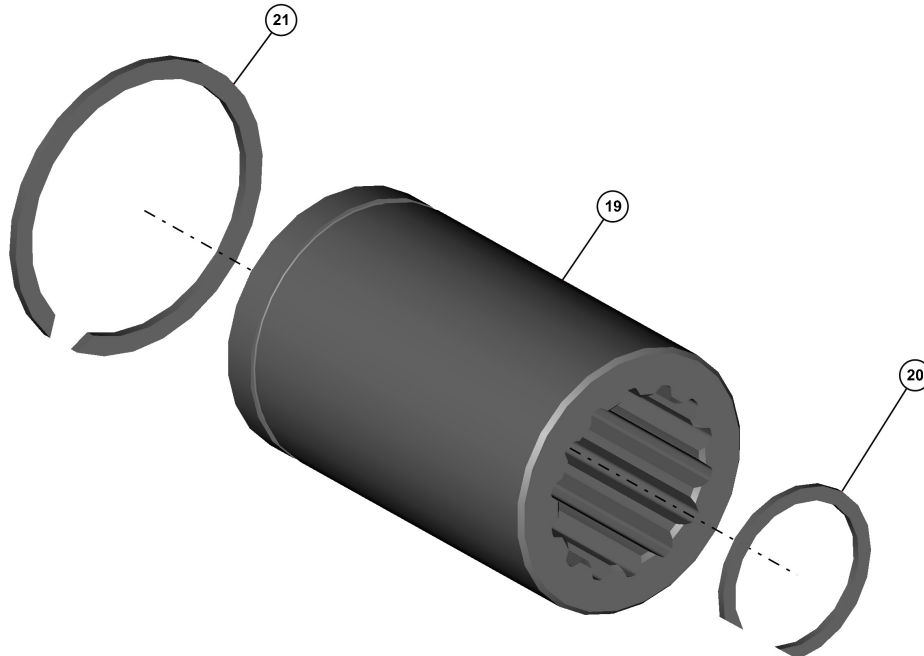


1. Drive Planet Shaft (3E) out of the carrier pin holes; forcing the Roll Pin (3G) to shear off.
2. Hold on to the Planet Gear (3F) and push the Planet Shaft (3E) out of the Carrier (3A). The Thrust Washers (3B and 3H) will slide off the shaft as it is removed.
3. Using a hammer and punch, drive the Roll Pin (3G) out of the Planet Shaft (3E) and Carrier (3A).
4. Remove first set of Needle Bearings (3C) from the inside of the Planet Gear (3F).
5. Remove Thrust Washer (3D) from Planet Gear (3F).
6. Remove second set of Needle Bearings (3C) from the inside of the Planet Gear (3F).
7. Repeat steps 1-6 for the remaining two Planet Gears (3F).

This concludes the Carrier Disassembly.

Planetary Final Drive Service Manual

Coupling Disassembly



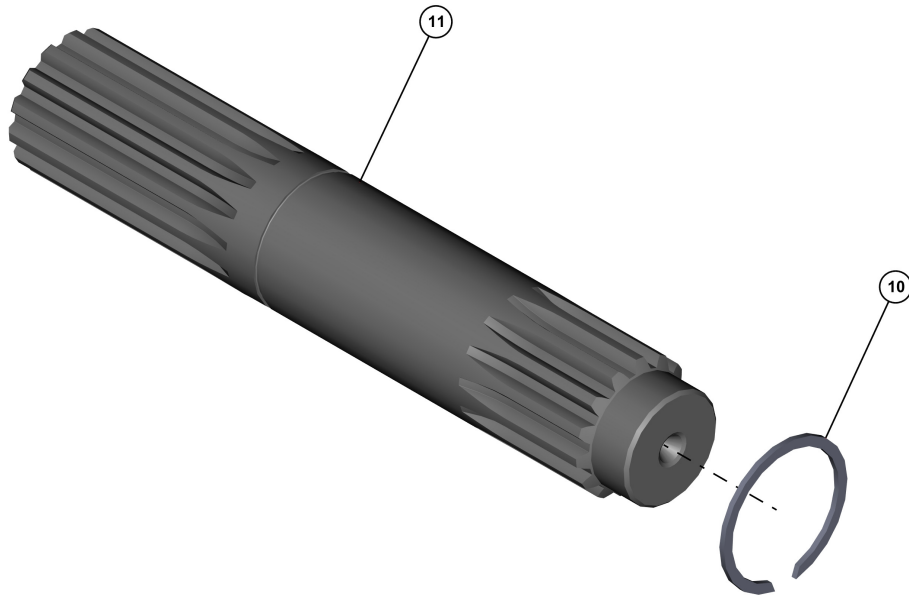
CAUTION: Safety glasses must be worn during this next steps.

1. If necessary, remove Internal Retaining Ring (20).from the groove of Coupling (19).
2. If necessary, remove External Retaining Ring (21) from the groove of Coupling (19).

This concludes the Coupling Disassembly.

Planetary Final Drive Service Manual

Input Shaft Disassembly



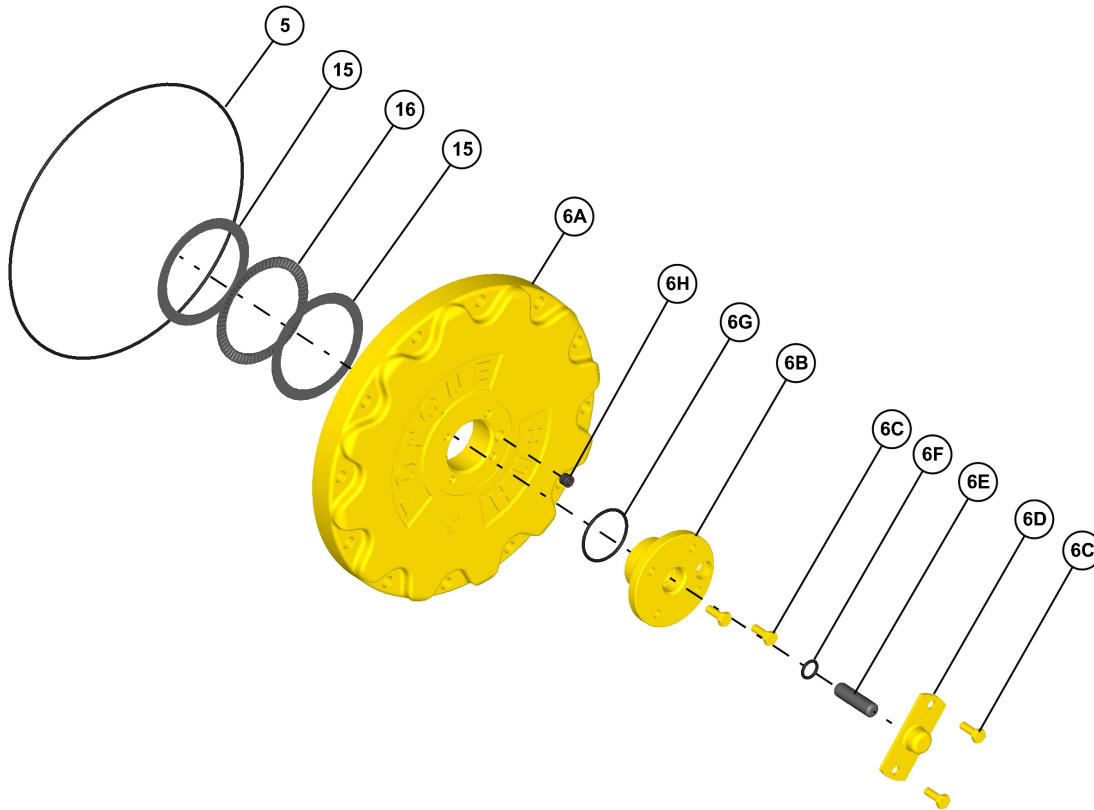
CAUTION: Safety glasses must be worn during this next steps.

1. If necessary, remove External Retaining Ring (10) from the groove of the Input Shaft (11).

This concludes the Input Shaft Disassembly.

Planetary Final Drive Service Manual

Cover Disassembly

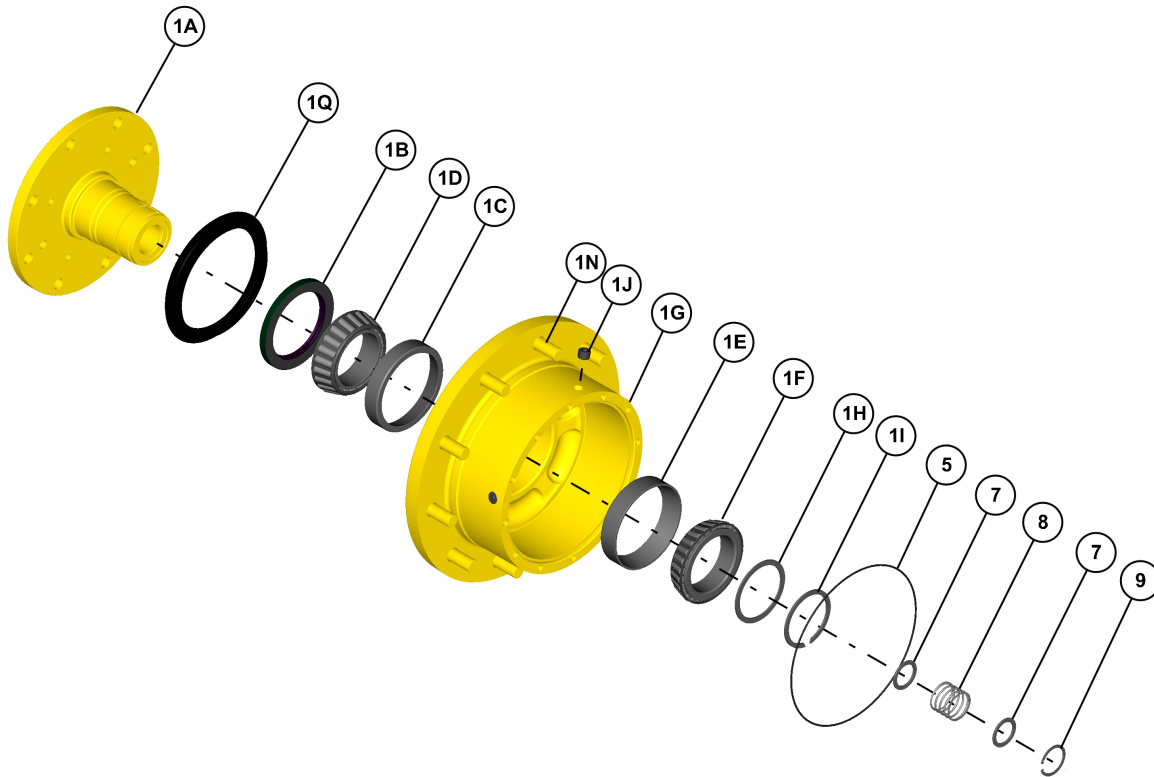


1. Remove the O-Ring (5) from groove in Cover (6A) and Discard O-Ring.
2. Remove two Thrust Washers (15) and Thrust Bearing (16) from Cover (6A).
3. Remove two Hex Bolts (6C) from Disengage Cap (6D), if required.
4. Remove the Disengage Cap (6D) from the Cover Cap (6B).
5. Pull the Disengage Rod (6E) out of the Cover Cap (6B).
6. Remove O-Ring (6F) from the Cover Cap (6B) and discard it.
7. Remove two Hex Bolts (6C) from Cover Cap (6B), if required.
8. Remove Cover Cap (6B) from Cover Plate (6A).
9. Remove O-Ring (6G) and discard it.
10. Remove Pipe Plug (6H) from the Cover (6A).

This concludes the Cover Disassembly.

Planetary Final Drive Service Manual

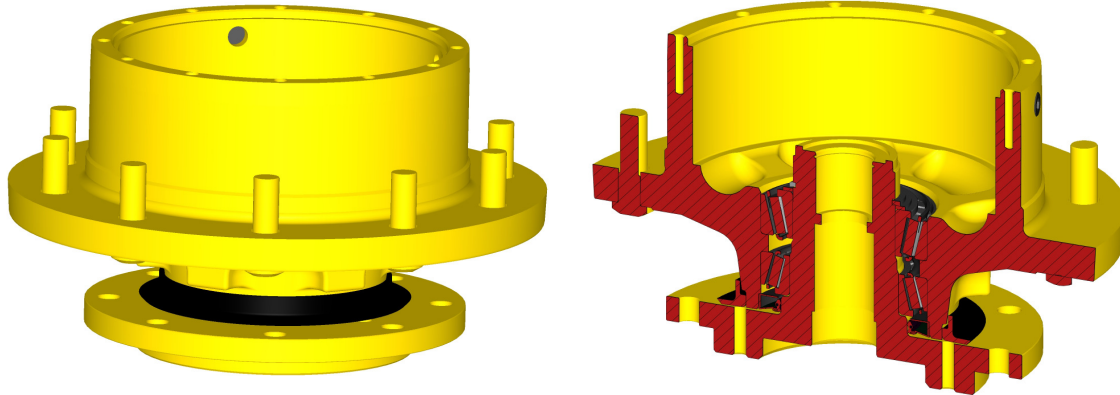
Housing-Spindle Disassembly



CAUTION: Safety glasses must be worn during these next steps.

- 1 Remove Internal Retaining Ring (9) from the groove of the Spindle (1A).
- 2 Remove Thrust Washer (7) from the spindle (1A).
- 3 Remove Spring (8) from the Spindle (1A).
- 4 Remove Thrust Washer (7) from the Spindle (1A).
5. Set the unit on a bench so that the Spindle (1A) flange is down.

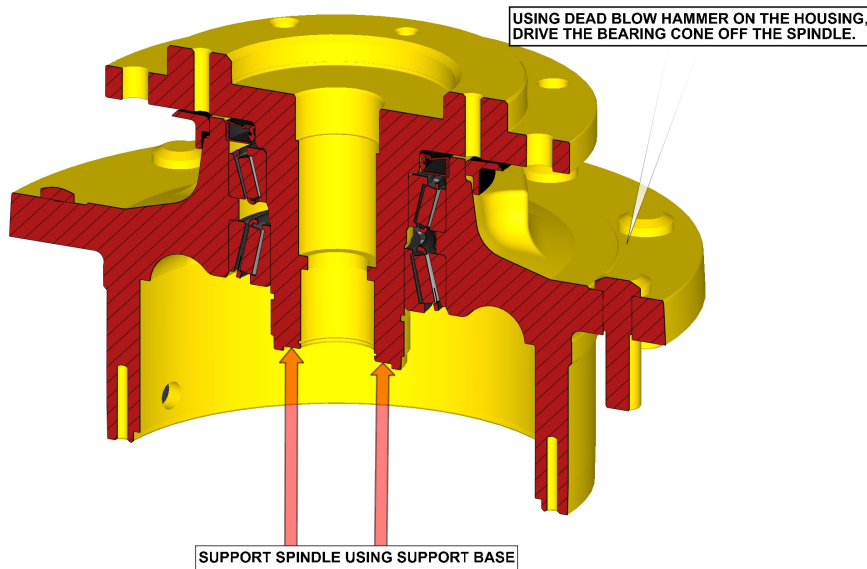
Continued on Next Page



6. Remove the O-Ring (5) from the Housing (1G) and discard it.

CAUTION: Safety glasses must be worn during these next steps.

7. Remove Retaining Ring (1I) from the groove of Spindle (1A).
8. Remove Thrust Washer (1H) from the Spindle (1A).
9. Remove two Pipe Plugs (1J) from the Housing (1G).
10. Turn the unit over and carefully place the unit on a support base until the Spindle (1A) post rests on it. Ensure there is enough gap to lower the Housing (1G) down.



11. Use a dead blow hammer on the Housing (1G) flange to drive the inboard Bearing Cone (1F) off of the Spindle (1A).

Continued on Next Page

12. Lift the Spindle (1A) out of the Housing (1G).
13. If required, remove Boot Seal (1Q) from the Housing (1G)
14. Remove Lip Seal (1B) from the Housing (1G)
15. Remove the Bearing Cone (1D) from the Bearing Cup (1C).
16. Using a hammer and punch drive the inboard Bearing Cup (1E) out of the Housing (1G). Be careful not to damage the counter bore in the housing.
17. Turn the Housing (1G) over and drive the outboard Bearing Cup (1C) out of the Housing (1G). Be careful not to damage the counter-bore in the housing.

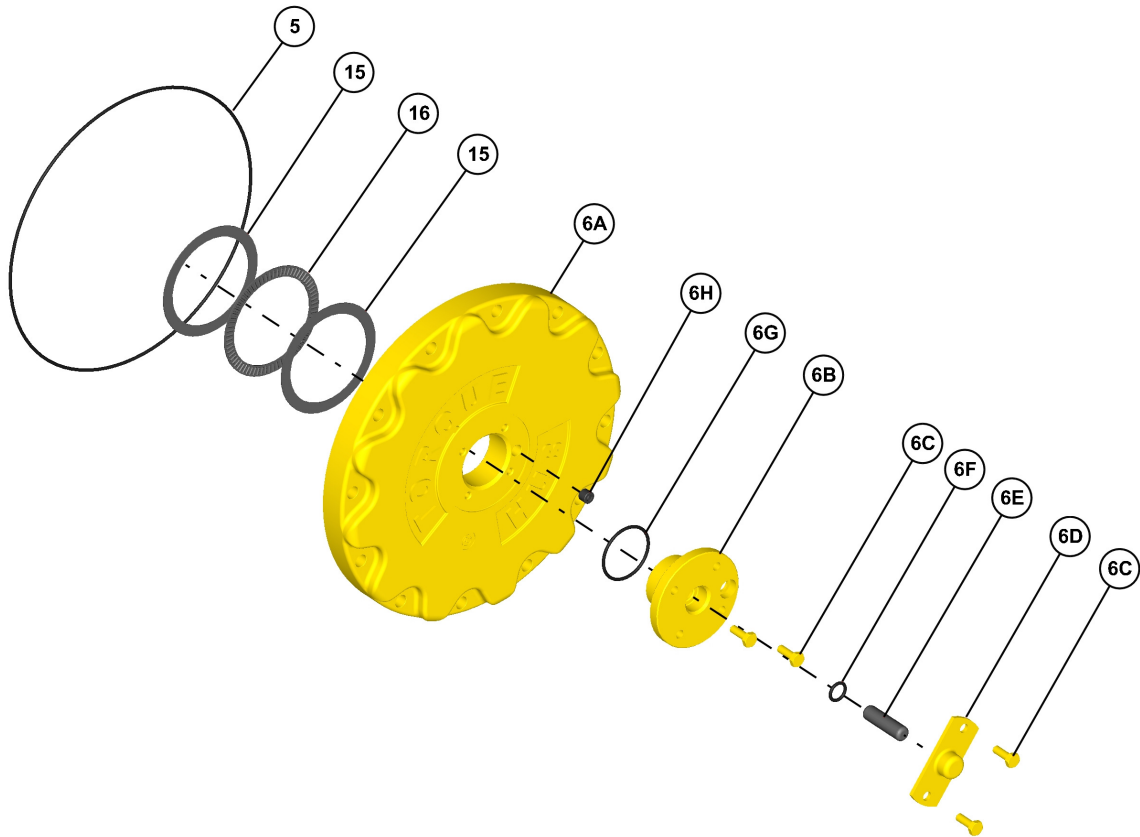
This concludes the Housing-Spindle Disassembly.

THIS PAGE
INTENTIONALLY
LEFT BLANK

ASSEMBLY

Planetary Final Drive Service Manual

Cover Subassembly



1. Screw Pipe Plug (6H) into Cover Plate (6A) using thread sealant and hand hexagonal wrench.
2. Apply grease and position O-Ring (6G) over Cover Cap (6B) until it rests against the flange.
3. Blow out internal groove of Cover Cap (6B) with air hose. Place greased O-Ring (6F) into internal groove of Cover Cap (6B).
NOTE: The Disconnect Rod (6E) may be used to push the greased O-Ring (6F) into position in the O-Ring groove of the Cover Cap (6B)
4. Place Cover Cap (6B) into Cover Plate (6A).with larger flange hole on Cover Cap (6B) located over Pipe Plug (6H). Fasten Cover Cap (6B) with two Bolts (6C) located 180 degrees apart. Torque Bolts to 70-80 in-lbs.
5. Place Disengage Cap (6D) on Cover Cap (6B) with nipple facing out. Secure with two Bolts (6C) located 180 degrees apart. Torque Bolts (6C) to 70-80 in-lbs.
6. Turn Cover Plate (6A) over and push Disconnect Rod (6E) into Cover Cap (6B), until Disconnect Rod (6E) bottoms out on the Disengage Cap (6D).

Continued on Next Page

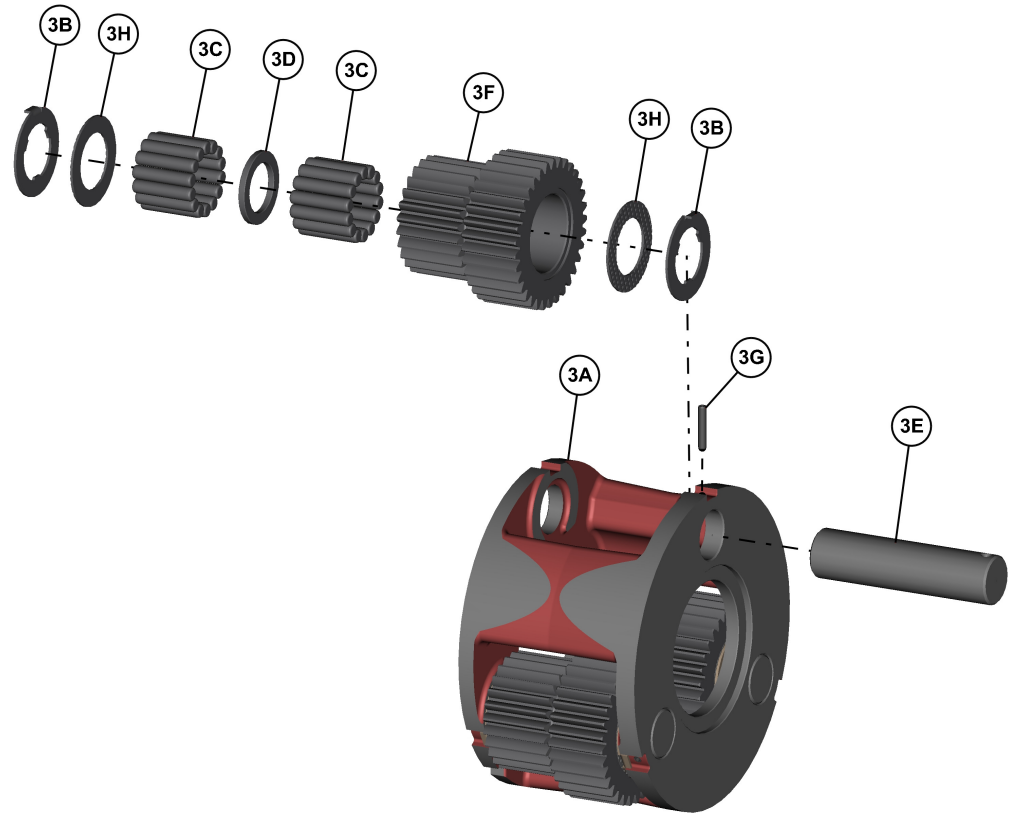
7. Grease and install O-Ring (5) into groove on the Cover Plate (6A).
8. Grease and install Thrust washers (15) and Thrust Bearing (16) into Cover Plate (6A)

NOTE: Thrust Washers (15) has to be assembled onto either sides of Thrust Bearing (16) and then, this has to be greased and installed as a single unit into Cover Plate (6A)

This concludes the Cover Subassembly.

Planetary Final Drive Service Manual

Carrier Subassembly



1. Apply a liberal coat of grease to the bore of Cluster Gear (3F). This will enable the Needle Rollers (3C) to be held in place during assembly.
2. Install first row of 14 Needle Rollers (3C) into the bore of Cluster Gear (3F).
NOTE: The last roller installed must be installed end wise. That is, the end of the last roller must be placed in between the ends of the two rollers that form the space, and then slid parallel to the other rollers into place.
3. Place one Spacer (3D) on top of the Needle Rollers (3C) inside the Planet Gear (3F).
4. Install second row of 14 Needle Rollers (3C) into the bore of Cluster Gear (3F) against Spacer (3D). Grease and install Ball Indent Washers (3H) onto the counter bores of either sides of Cluster Gear (3F) with indents away from the cluster gears.
5. Place Carrier (3A) into tool fixture so that one of the roll pin holes is straight up.
6. Start Planet Shaft (3E), with end opposite roll pin hole first, through the planet shaft hole in carrier (3A), making sure that the roll pin hole with the large chamfer in the planet shaft is straight up.

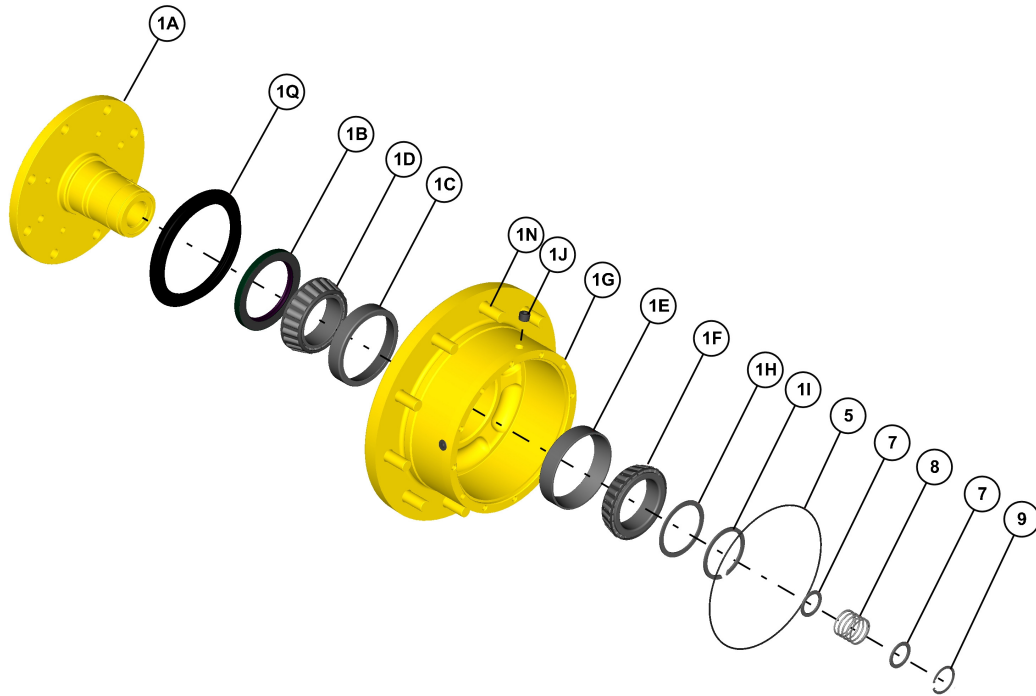
Continued on Next Page

7. Using ample grease to hold it in position, slide one Thrust Washer (3B) over Planet Shaft (3E) with tang resting in the cast slot of Carrier (3A).
8. With large end of Cluster Gear (3F) facing the roll pin hole in the Carrier (3A), place Cluster Gear (3F) into position in Carrier (3A) and push Planet Shaft (3E) through the Cluster Gear (3F) without going all the way through.
9. Slide the second Thrust Washer (3B) between the Cluster Gear (3F) and the Carrier (3A) with the tang of Washer located in the cast slot of Carrier (3A) .Finish sliding Planet Shaft (3E) through the Thrust Washers (3H and 3B) and into Carrier (3A).
10. Position the chamfered side on the Planet Shaft (3E) roll pin hole so that it is in line with the hole in the Carrier (3A), using a 1/8 inch diameter punch.
11. After using a 3/16 inch punch to align the two roll pin holes. Drive the Roll Pin (3G) through Carrier (3A) and into Planet Shaft (3E) until the Roll Pin (3G) is flush with the bottom of the cast tang slot in the Carrier (3A). Use a ¼ inch pin punch to make sure the Roll Pin (3G) is flush in the slot.
12. Repeat the steps 1 through 11 for the remaining two Cluster Gears (3F)

This concludes the Carrier Subassembly.

Planetary Final Drive Service Manual

Housing Spindle Subassembly



1. If required, using Stud pressing fixture press Studs (1N) into the flange holes of the Hub (1G), be sure stud heads are tight to the hub flange face.
 2. Place Hub (1G) on table such that long hub end is up.
 3. Press Bearing Cup (1E) using T148905 with the large diameter side up into cover end of Hub (1G).
 4. Turn Hub (1G) over and press Bearing Cup (1C) into Hub (1G) using T148905 with small diameter side up
- NOTE:** Apply generous amount of lubricating oil on all bearings at the time of installation.
5. Place Bearing Cone (1D) on Bearing Cup (1C).
 6. Press Bearing Seal (1B) with the open face down into the Hub (1G), be sure seal is flush with the hub face.
- NOTE:** Generally Seals should not be reused.
7. If the unit requires Seal Boot (1Q) place on Hub (1G) with flange end facing up. Coat the inside surface of the seal – boot – flange with liberal amount of grease.
 8. Place Spindle (1A) with large diameter end down on the bench and coat the seal shoulder with oil.

Continued on Next Page

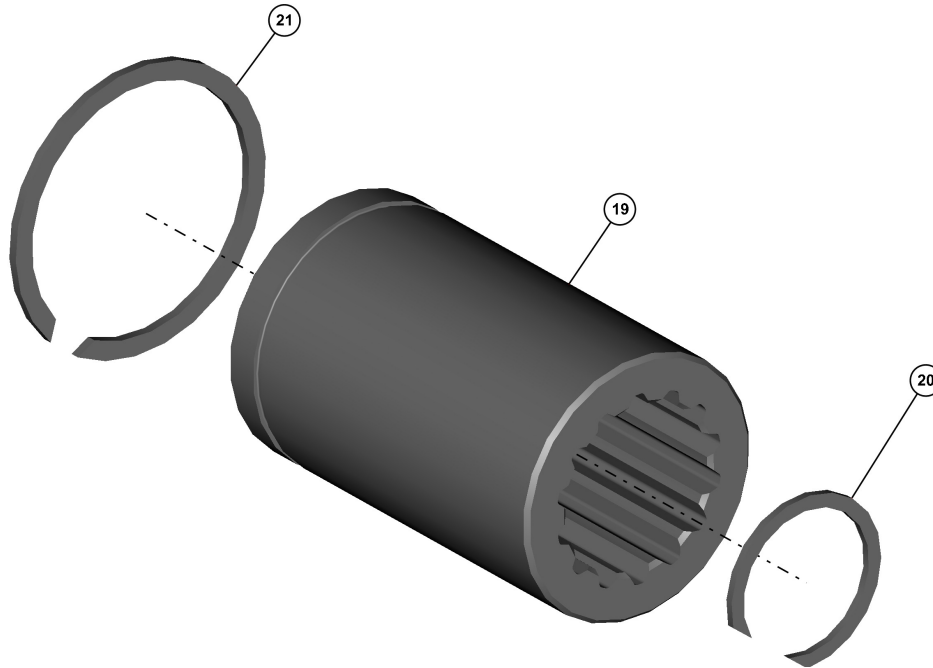
9. Place Hub (1G) onto Spindle (1A) making sure the Seal (1B) is in position on the seal shoulder of Spindle (1A).

NOTE: The Bearing Cone (1F) is a press fit onto Spindle (1A) and is installed using Snap Ring Assembly Tool T205660
10. Place Snap Ring Assembly Tool T205660 onto Spindle (1A).
11. Place Bearing Cone (1F) onto the tapered portion of Snap Ring Assembly Tool T205660.
12. Place Spacer (1H) and Retaining Ring (1I) onto the top of the Bearing Cone (1F).
13. Slowly press Bearing Cone (1F) Spacer (1H) and Retaining Ring (1I) all at once using a Bearing Pressing Tool, T137970, until the Retaining Ring (1I) falls into the retaining ring groove on the Spindle (1A.)
14. Install Pipe Plug (1J) into Hub (1G).
15. Grease and install O-Ring (5) into Hub (1G).
16. Grease and install Thrust Washer (7) into Spindle (1A).
17. Install Spring (8) into Spindle (1A) until it Bottoms on Thrust Washer (7).
18. Grease and place second Thrust Washer (7) on Spring (8).
19. Using retaining ring pliers, push Retaining Ring (9) against Thrust Washer (7) until retaining ring snaps into place in the Spindle (1A) groove.

This concludes the Housing-Spindle Subassembly.

Planetary Final Drive Service Manual

Coupling Subassembly



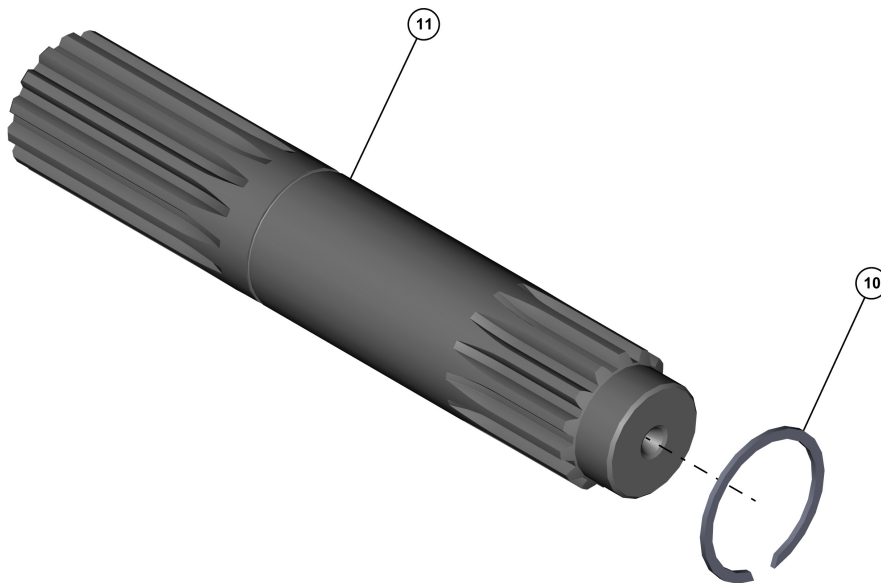
CAUTION: Safety glasses must be worn during these next steps.

1. If necessary, install External Retaining Ring (21) into groove on OD of Coupling (19).
2. If necessary, install Internal Retaining Ring (20) into retaining ring groove of the Coupling (19).

This concludes the Coupling Subassembly.

Planetary Final Drive Service Manual

Input Shaft Subassembly



CAUTION: Safety glasses must be worn during these next steps.

1. If necessary, install Retaining Ring (10) onto the groove of Input Shaft (11).

This concludes the Input Shaft Subassembly.

Planetary Final Drive Service Manual

Main Assembly

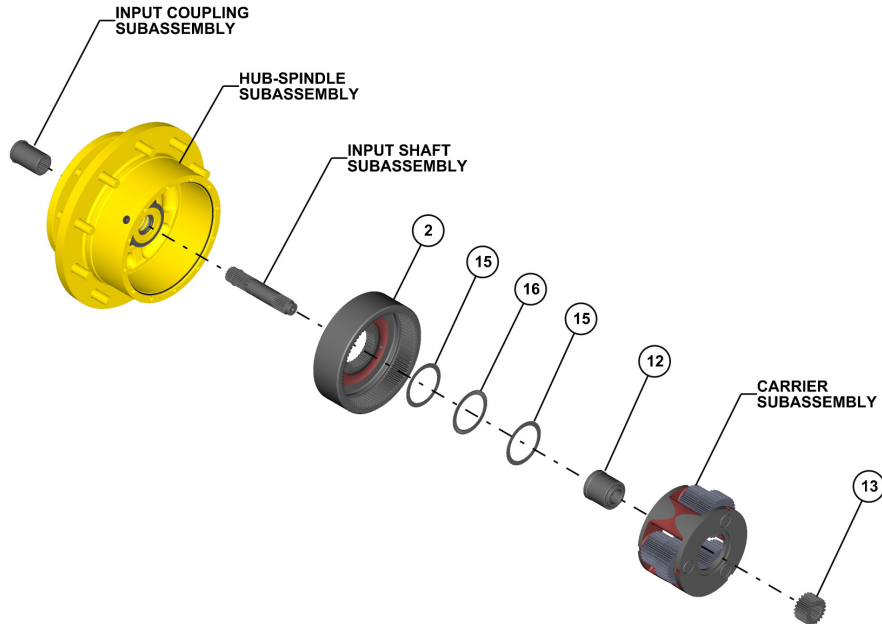


Figure 1: 30, 35, 50, 54 & 73:1 Ratios

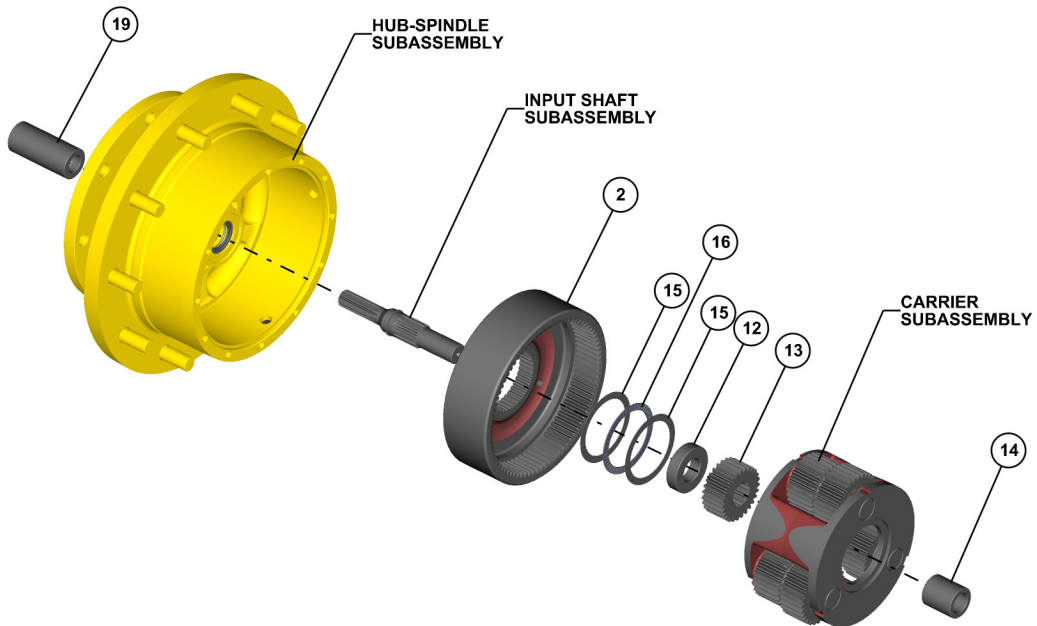
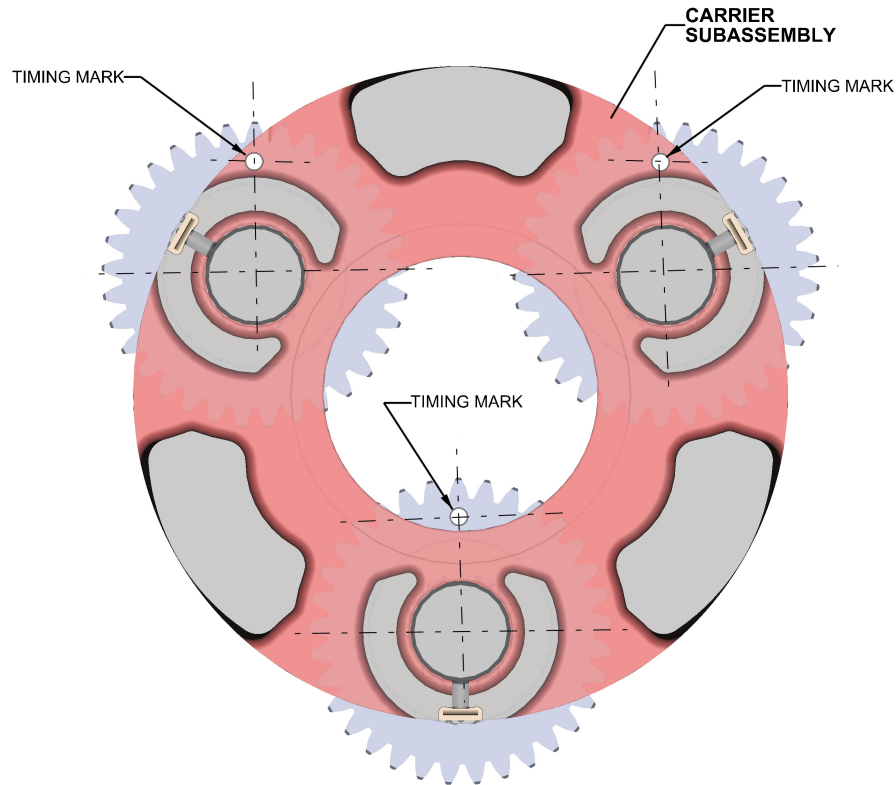


Figure 2: 18, 24, 31 & 43:1 Ratios

Continued on Next Page

1. Place Hub-Spindle Sub assembly on the table with Spindle flange side down.
2. Set the Internal Gear (2) with the spline down, so that the spline of the spindle (1A) is in mesh with the internal spline of the Internal Gear (2).
3. Install Input Shaft Subassembly with the retaining ring end down into the spindle counter bore.
4. Slide Thrust Spacer (12) over the Input Shaft (11) Make sure the large end is against the Spindle (1A).

NOTE: Refer to Figure 2 with 18, 24, 31 & 43 : 1 Ratios.



5. Place Carrier Subassembly with the large end of Cluster Gears facing up. Position all three punch marks on the face of large gears at 12 o'clock and secure the gear teeth using timing fixture.
6. With longer shoulder side of Ring Gear (4) facing down, place the ring gear into mesh with the Cluster Gear (3F) and remove this assembly from timing fixture

Continued on Next Page

NOTE: Be sure that the punch marks remain in their correct location during Ring Gear (4) installation.

7. Place Thrust Washer (15), Thrust Bearing (16) and Thrust Washer (15), in order, on the pilot diameter on Internal Gear (2).

NOTE: For 30, 35, 50, 54 & 73:1 ratios Skip step 8.

8. Install Input gear (13) with counter bore down in mesh with the Input Shaft (11) splines counter bore down.
9. With small end of Cluster Gear (3F) down and while holding Ring Gear (4) in mesh with Carrier Sub Assembly, place assembly into Internal Gear (2).
10. Once in place Rotate the Ring Gear (4) until hole marked "X" is aligned with one of shoulder bolt holes in Hub (1G)

NOTE: If the gears do not mesh easily or carrier sub assembly does not rotate freely, then remove the Carrier and Ring Gear and check timing (Step 5).

NOTE: Check each Cluster Gear (3F) to make sure that the timing punch-marks is in line with a tooth on the large end & a tooth on the small end of the cluster gear. THESE TWO TEETH MUST BE IN LINE WITH THE PUNCH-MARKS ON EVERY CLUSTER GEAR (3F).

NOTE: For 30, 35, 50, 54 & 73:1 ratios Skip step 11.

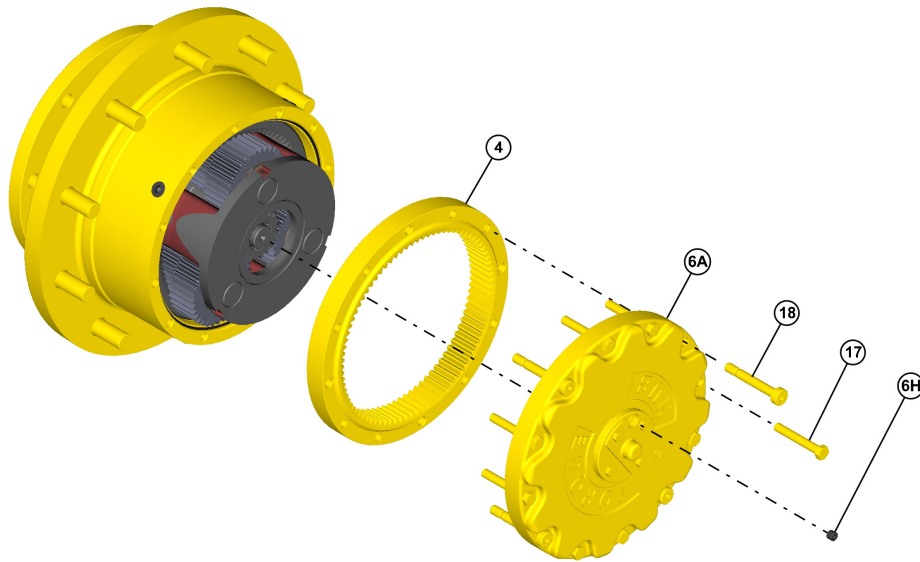
11. Install Spacer (14) onto the Input Shaft (11) against the Input Gear (13).

NOTE: Refer to Figure 2 with 18, 24, 31 & 43 : 1 Ratios

NOTE: For 18,24, 37 & 43:1 ratios Skip step 12.

12. Install Input Gear (13) with counter bore down to mesh with the teeth of Cluster Gear (3F)

Continued on Next Page

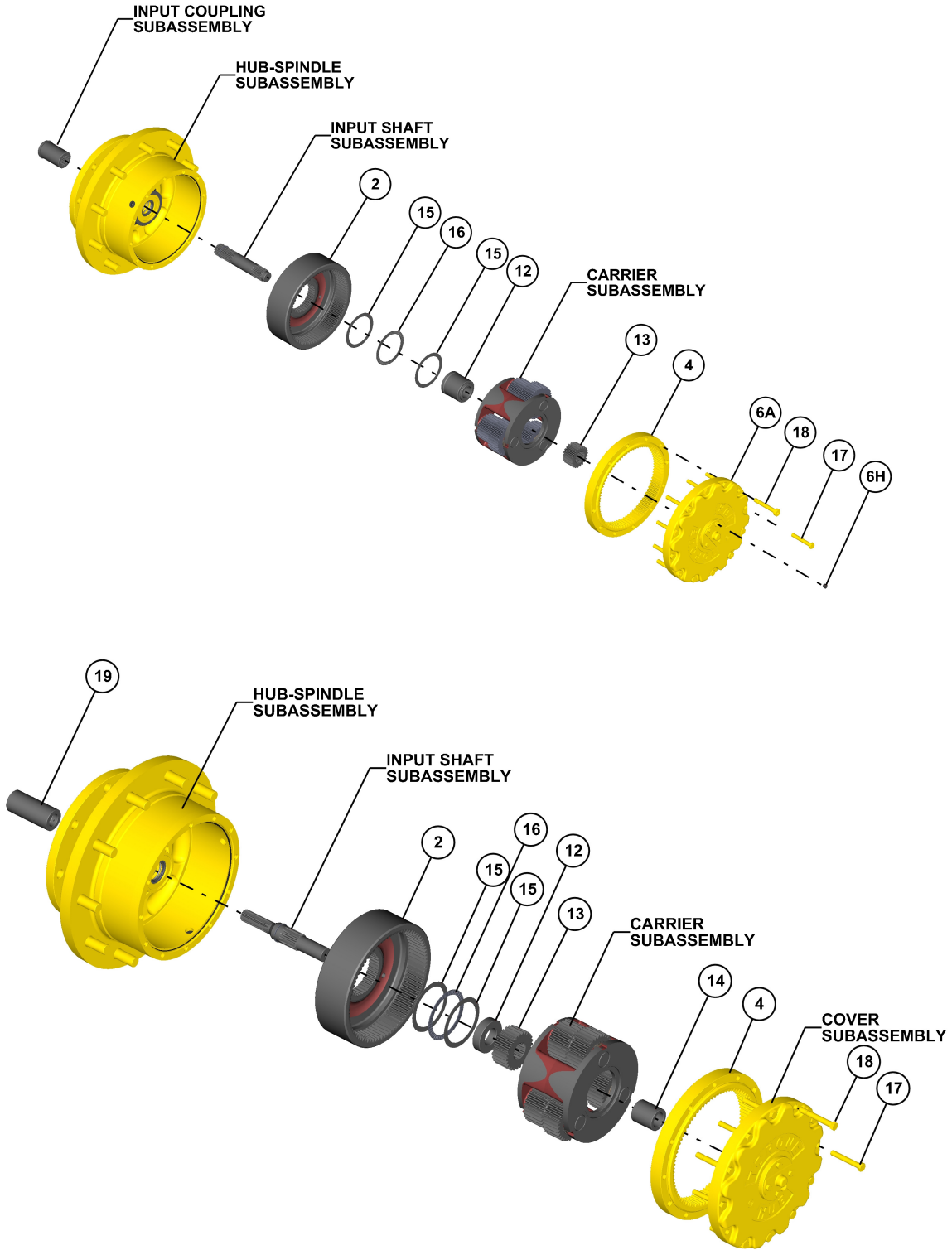


13. Install Cover Sub-Assembly onto the Ring Gear (4) being sure that the pipe plugs in the Hub (1G) and Cover (6A) are in time with each other. Be sure the Thrust Washers (15 & 16) remain on the Cover (6).
14. Install four Shoulder Bolts (18) into the four marked counter bore holes in the Hub (1G). Start Shoulder Bolts (18) by hand for the length of at least two threads or two full turns before running down and torque to 45-47 ft-lbs
15. Place the remaining eight Bolts (17) into the remaining holes and torque to 45-47 ft-Lbs.
16. Turn the assembly over and insert Input Coupling Subassembly into the Spindle (1A) counter bore.
17. The unit should now be leak and roll checked as per instructions on page 5, and 6. The motor can be reinstalled into the gearbox for the leak check to seal it off, and the unit pressurized through a pipe plug hole on the cover.

This concludes the Main assembly.

Planetary Final Drive Service Manual

Assembly Drawing



Planetary Final Drive Repair Instructions

Parts List

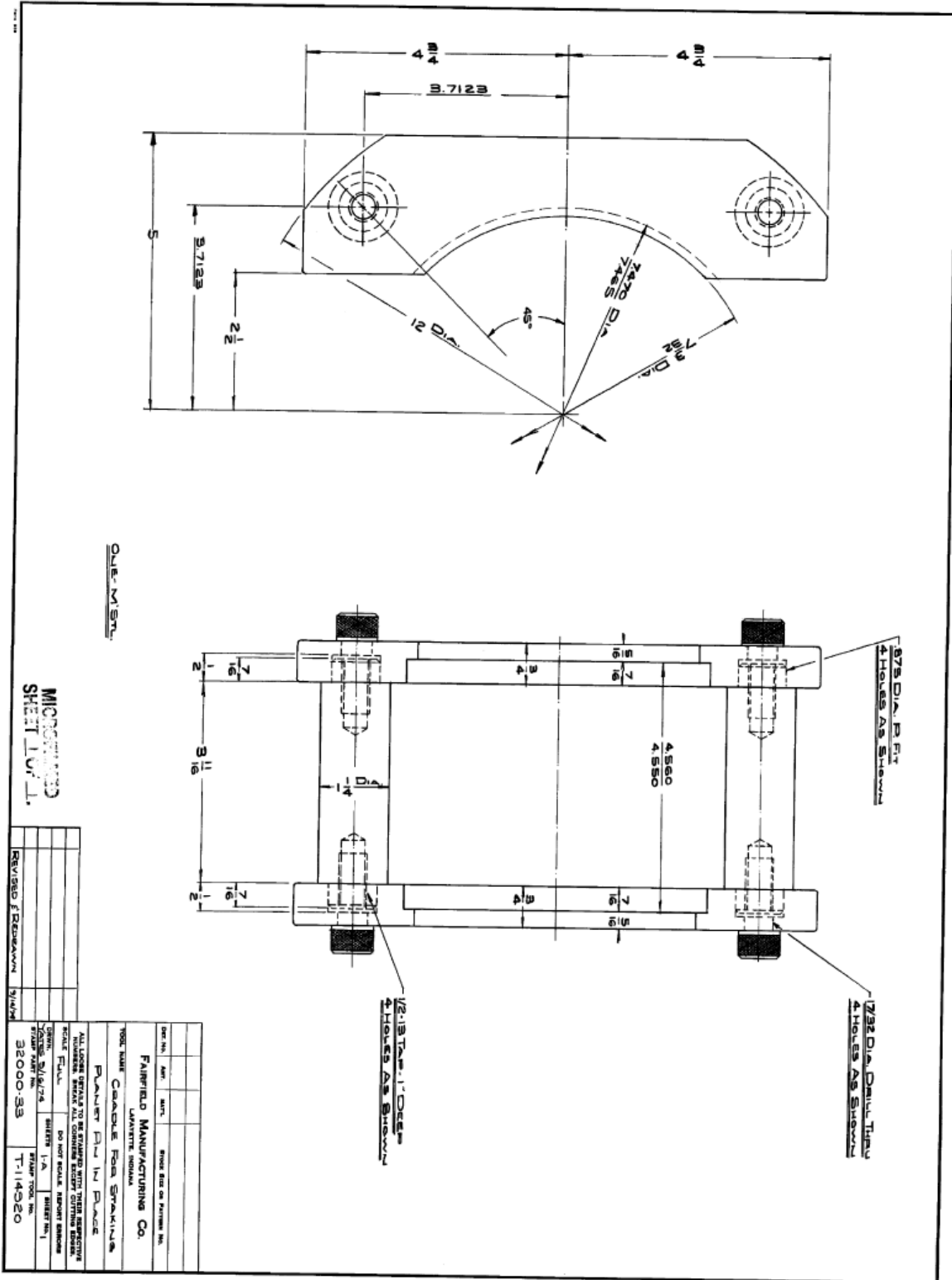
Number	Qty	Description
1A	1	SPINDLE
1B	1	LIP SEAL
1C	1	BEARING CUP
1D	1	BEARING CONE
1E	1	BEARING CUP
1F	1	BEARING CONE
1G	1	HOUSING
1H	1	THRUST WASHER
1I	1	EXTERNAL RETAINING RING
1J	1	PIPE PLUG
1N	10	STUD
1Q	1	BOOT SEAL
2	1	INTERNAL GEAR
3	1	CARRIER
3A	1	CARRIER
3B	6	WASHER
3C	84	NEEDLE BEARING
3D	3	THRUST WASHER
3E	3	PLANET SHAFT
3F	3	CLUSTER GEAR
3G	3	ROLL PIN
3H	6	BALL INDENT WASHER
4	1	RING GEAR
5	1	O-RING
6A	1	COVER PLATE
6B	1	COVER CAP
6C	4	HEX BOLT
6D	1	DISENGAGE CAP
6E	1	DISENGAGE ROD
6F	1	O-RING
6G	1	O-RING
6H	1	PIPE PLUG
6J	1	ID PLATE
7	2	THRUST WASHER
8	1	SPRING
9	1	INTERNAL RETAINING RING
10	1	EXTERNAL RETAINING RING
11	1	INPUT SHAFT

Number	Qty	Description
12	1	INPUT SPACER
13	1	SUN GEAR
14	1	SPACER
15	4	THRUST WASHER
16	2	THRUST BEARING
17	8	HEX BOLT
18	4	SPECIAL BOLT
19	1	COUPLING
20	1	INTERNAL RETAINING RING
21	1	EXTERNAL RETAINING RING

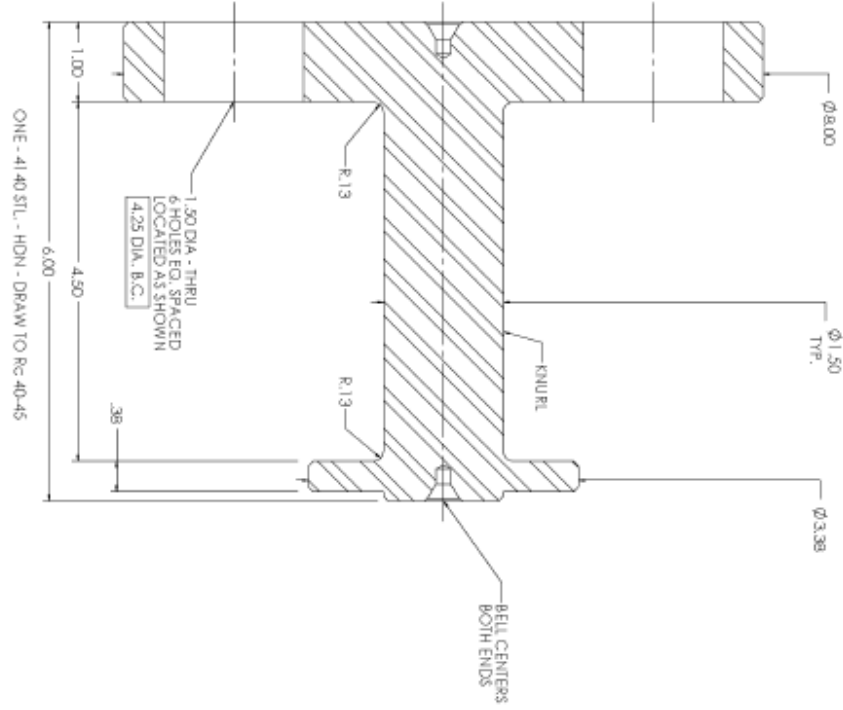
Planetary Final Drive Repair Instructions

Assembly Tools

T114920 – CRADLE FOR STAKING PLANET PIN PLACE



T122786 – PLUG FOR PRESSING IN OIL SEAL



REV	DESCRIPTION	DATE	BY	CHKD
C	ADDED HAND GUARD			
B	REDRAWN			
A	REDESIGNED			

SCALE	DRAWN	DATE	SHEET NO.	TOTAL SHEETS
1:1	RAS-04-28-07		1	1
	STAMP PART NO.		STAMP TOOL NO.	
	W10C100443		T122786	

FAIRFIELD

DESIGNED FOR EXCELLENCE
LAVERGNE, MINNAPOLIS, U.S.A.

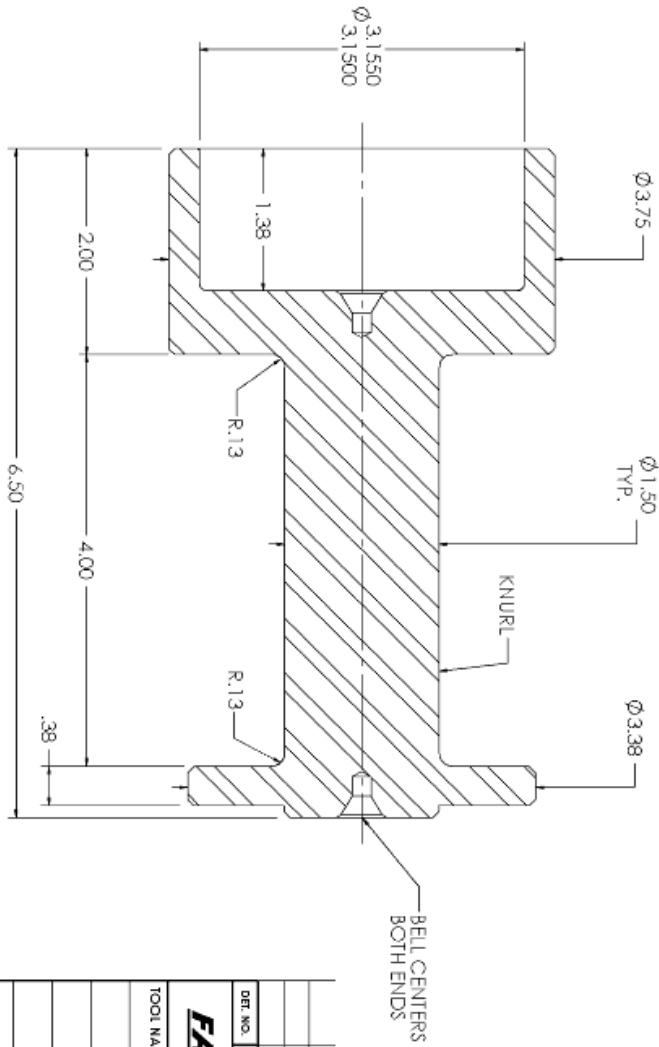
TOOL MAKE

PLUG FOR
PRESSING IN OIL SEAL

ALL LODGE ORDER TO BE DRAWN AND TOOL SPECIFIED NUMBER - BRCA ALL CORNERS EXCEPT CHAMFERED CORNERS TOLERANCE ON DIMENSIONS UNLESS OTHERWISE SPECIFIED
2013 2000 XE 2000 J. 2000
UNLESS OTHERWISE SPECIFIED TO B.S. CASES.
DO NOT SCALE DRAWING - IMPACT BREAK

CMNO:
W.C.I.
NO. 01
REWORK:
CI NO:
MATL:

T134344 – SNAP RING SEATING TOOL



ONE - 4140 STL - HDN - DRAW TO RC 40-45

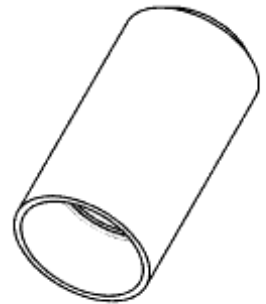
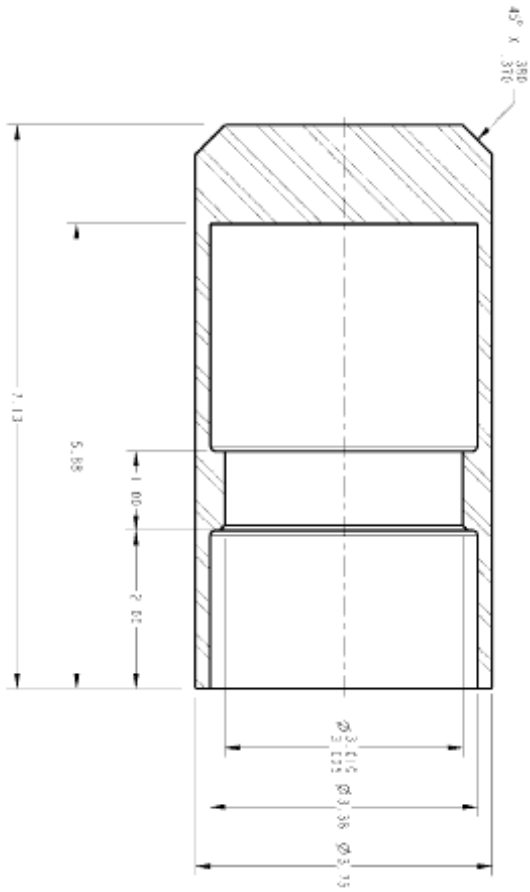
BELL CENTERS
BOTH ENDS

CW/O:	
W C:	
REQ'D:	
REWORK:	
CL NO:	
MATL:	

REV	DESCRIPTION	DATE
C	ADDED HAND GUARD	06-28-07
B	REDRAWN	06-28-07
A	REDESIGNED	06-28-07

DET. NO.	AMT.	MATL.	STOCK SIZE OR PART NUMBER
FAIRFIELD			
GEARED FOR EXCELLENCE			
LAFAYETTE INDIANA U.S.A.			
TOOL NAME			
SNAP RING			
SEATING TOOL			
ALL LOOSE DETAILS TO BE STAMPED WITH THEIR RESPECTIVE NUMBERS - BREAK ALL CORNERS EXCEPT CUTTING EDGES			
TOLERANCE ON DIMENSIONS UNLESS OTHERWISE SPECIFIED			
UNLESS OTHERWISE SPECIFIED ALL:			
CHAMFERS ON X 45° - FADIR. ON R. MAX.			
.XXX L.000 .XX L.015 .X L.050			
DO NOT SCALE DRAWING - REPORT ERRORS			
SCALE	1:1		
DRAWN	PAS 06-28-07	SIZE	B
STAMP PART NO.	S3AW3B	SHEETS	1
		SHEET NO.	1
		STAMP TOOL NO.	T134344

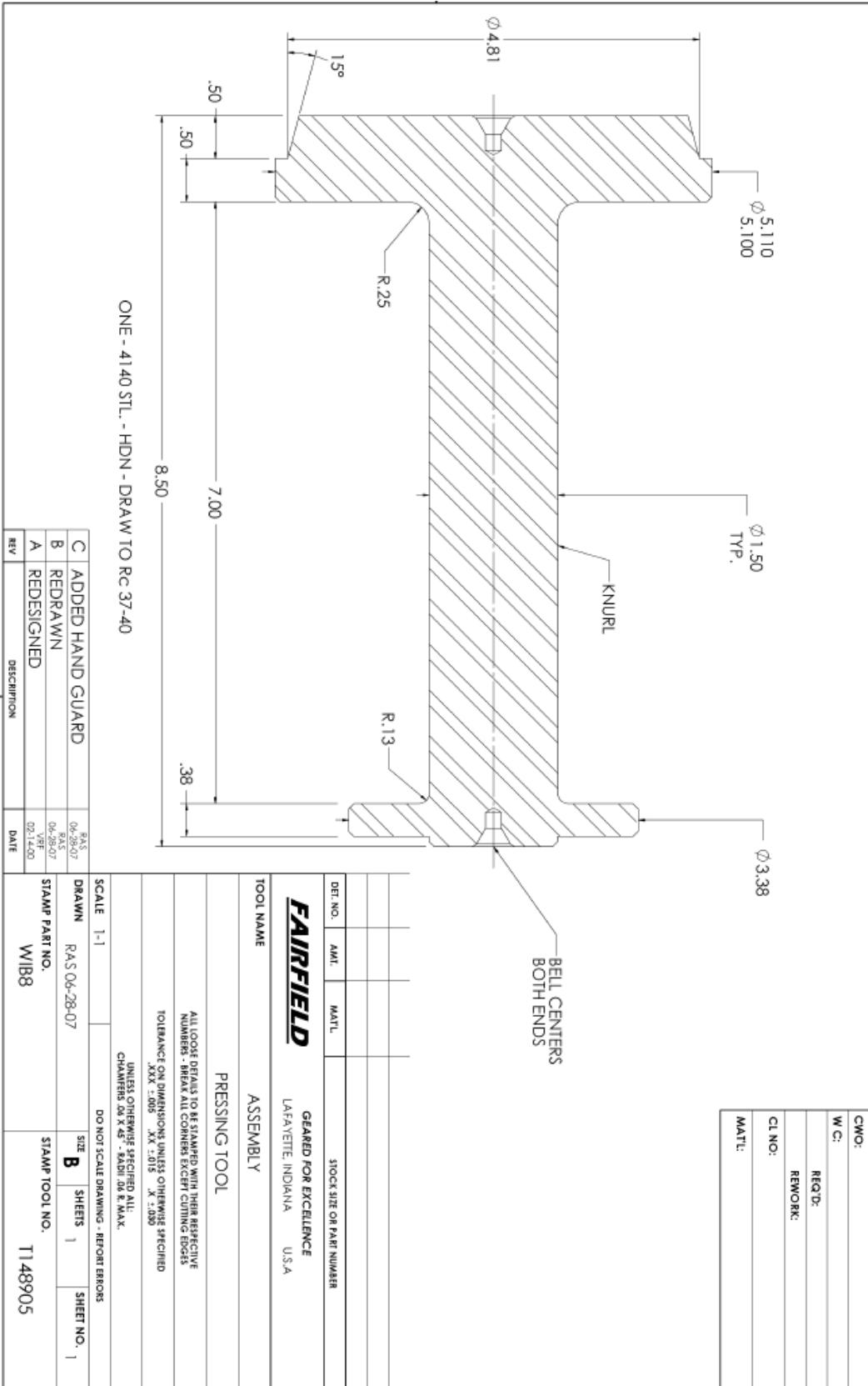
T137970 – TOOL TO PRESS IN BEARING



DATE	
W. L.	
REVISION	
CL. NO.	
MATERIAL	

STOCK NO.	1137970
DATE	
TOOL NO.	
TOOL NAME	TOOL TO PRESS IN BEARING
FAIRFIELD	GEARED FOR EXCELLENCE
	CHARLOTTE, VIRGINIA U.S.A.
ALL USED DETAILS TO BE SHOWN WITH THEIR RESPECTIVE NUMBERS. SHOW ALL DIMENSIONS EXCEPT COMMON SENSE DETAILS.	
ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED	
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES	
SCALE: FULL	DO NOT SCALE DRAWING. REPORT ERRORS
DRAWN BY	J. J. J. / J. J. J.
CHECKED BY	
DATE	3/27/79
STAMP NO.	3670000
SHEET NO.	1
TOTAL SHEETS	1

T148905 – ASSEMBLY PRESSING TOOL

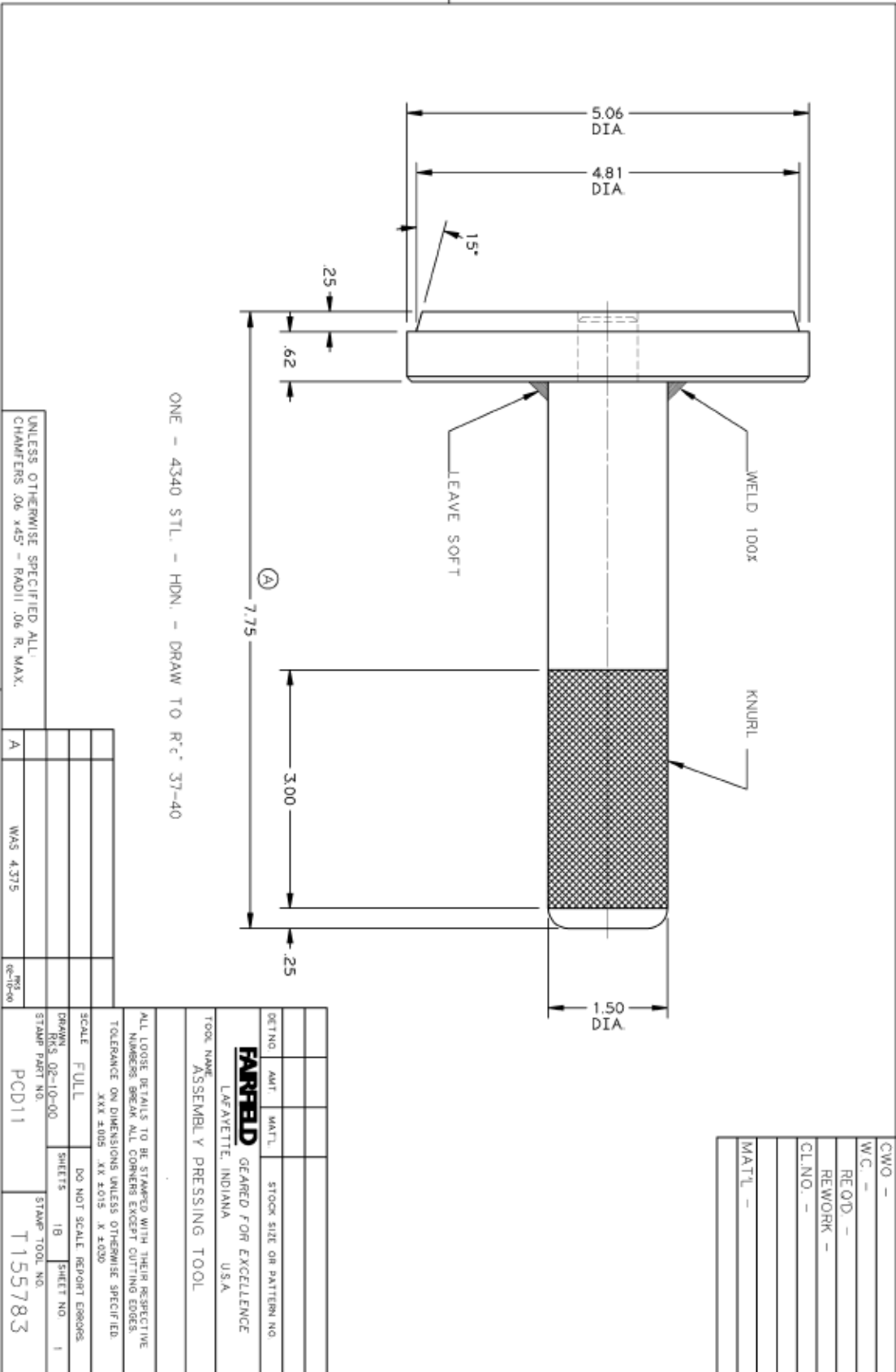


REV	DESCRIPTION	DATE
C	ADDED HAND GUARD	06/28/07
B	REDRAWN	06/28/07
A	REDESIGNED	02/14/00

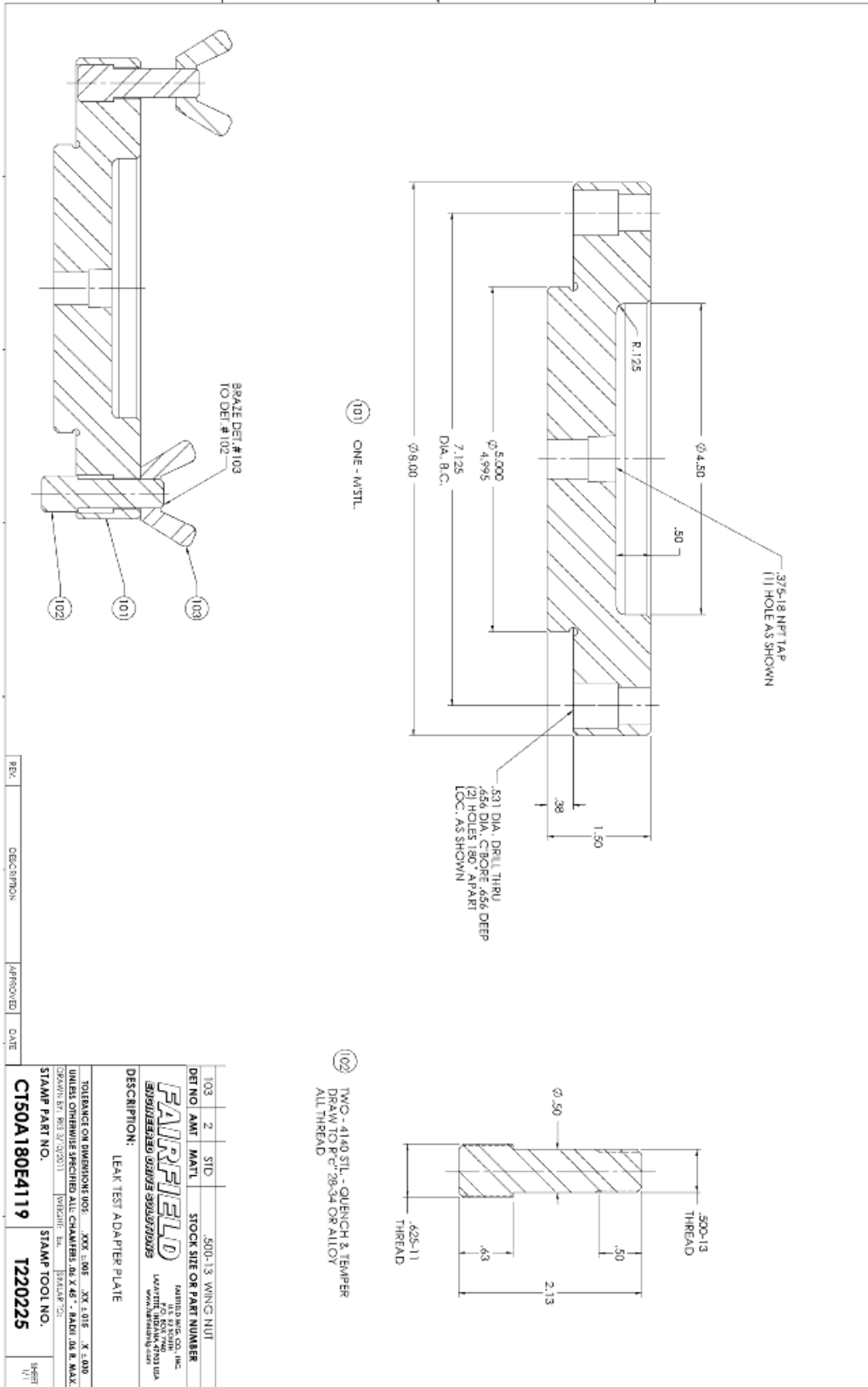
CWO:		SCALE 1-1	
W C:		DRAWN RAS 06-28-07	
REQ'D:		SIZE B SHEETS 1 SHEET NO. 1	
REWORK:		STAMP PART NO. W1B8	
CL NO:		STAMP TOOL NO. T148905	
MATT:			

DEL. NO.	AMT.	MATL.	STOCK SIZE OR PART NUMBER
FAIRFIELD			
GEARED FOR EXCELLENCE			
LAFAYETTE, INDIANA U.S.A			
TOOL NAME ASSEMBLY			
PRESSING TOOL			
ALL LOOSE DETAILS TO BE STAMPED WITH THEIR RESPECTIVE NUMBERS - BREAK ALL CORNERS EXCEPT CUTTING EDGES			
TOLERANCE ON DIMENSIONS UNLESS OTHERWISE SPECIFIED			
UNLESS OTHERWISE SPECIFIED ALL CHAMFERS 90 X 45° - RADIUS .06 R. MAX.			
.XXX ±.008 .XX ±.015 .X ±.030			
DO NOT SCALE DRAWING - REPORT ERRORS			

T155783 – ASSEMBLY PRESSING TOOL



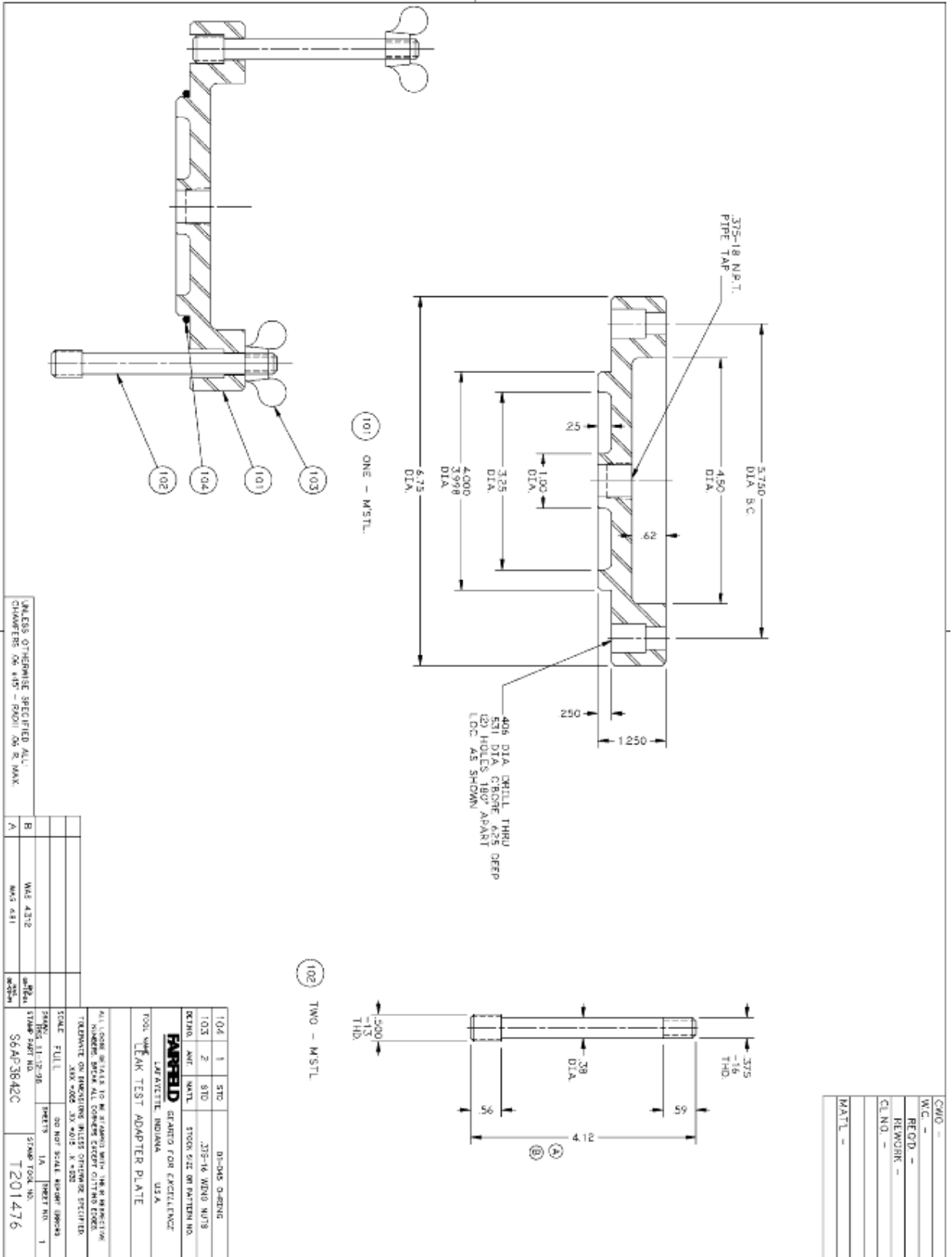
T220225 – LEAK TEST ADAPTER PLATE



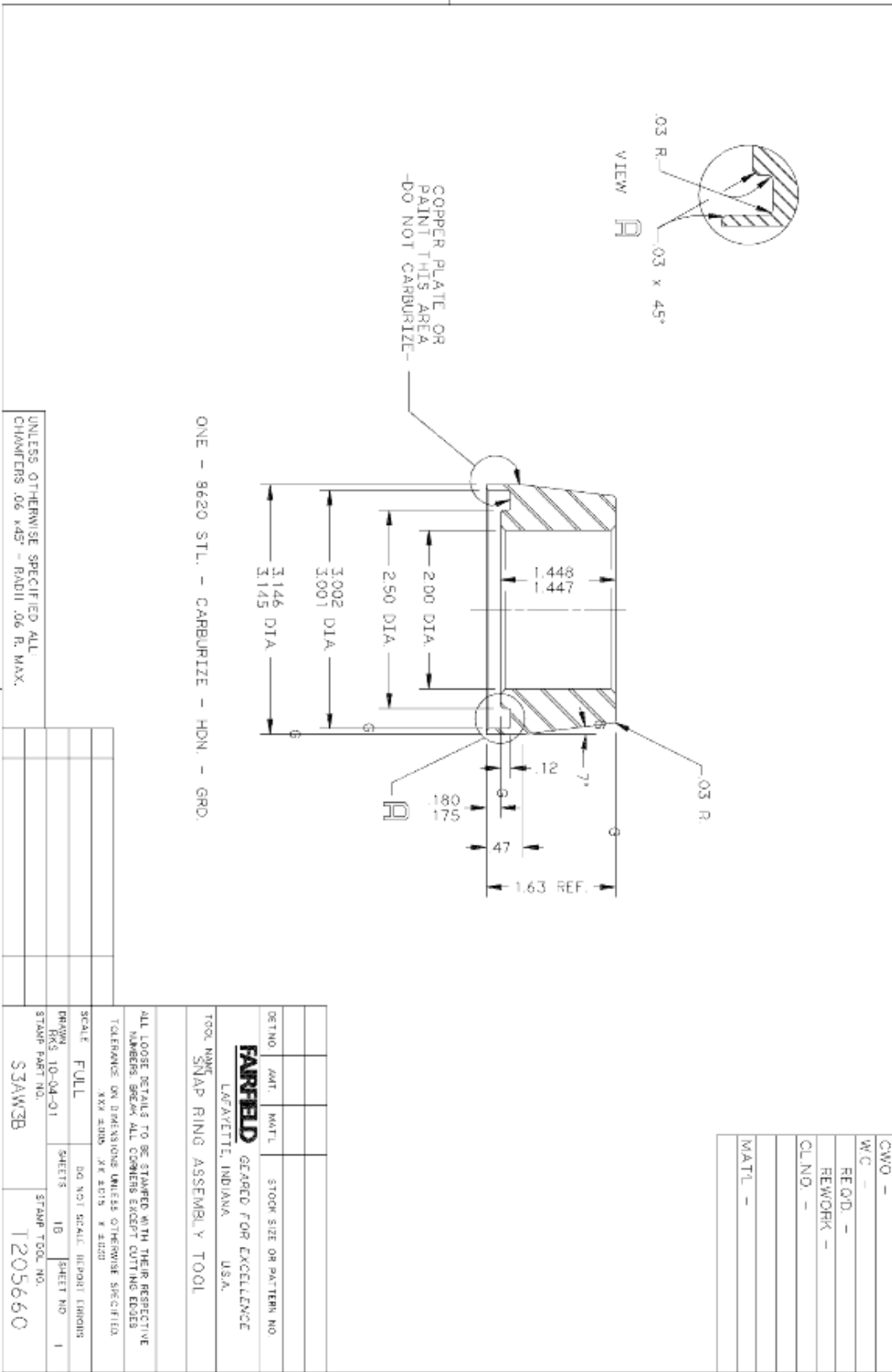
REV.	DESCRIPTION	APPROVED	DATE

103	2	STD	500-13 WINGC NUT
DET NO	AMT	MATL	STOCK SIZE OR PART NUMBER
PARFIELD ENGINEERING DIVISION 5905/5700S 1400 W. 50th St. Inc. Lubert, MO 65070-2933 USA www.parfield.com			
TOLERANCE ON DIMENSION UNLESS SPECIFIED: XXX - .005 - .XX 4.01E - X - 0.005 UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS			
DESCRIPTION: LEAK TEST ADAPTER PLATE			
STAMP PART NO.		STAMP TOOL NO.	
CT50A180FA119		T220225	
SHEET		1/1	

T201476 – LEAK TEST ADAPTER PLATE



T205660 – SNAP RING ASSEMBLY TOOL



T223988 – ROLL TEST TOOL



REV.	DESCRIPTION	APPROVED	DATE
------	-------------	----------	------

DET NO.	AMT	MAT'L	STOCK SIZE OR PART NUMBER
FAIRFIELD <small>CONSTRUCTION MATERIALS SUPPLY</small> 1000 N. W. 10TH AVE. MIAMI, FL 33136 (305) 551-1111 WWW.FAIRFIELD.COM			
DESCRIPTION:			
100 ANGLE BARS PER LOT. XX 408 XX 416 XX 424 INTERMEDIATE SPACING AIR CHAMBER OF X-RT-3A001 AIR MAT. CONVENT: RESIDE 72012 INFLATION			
STAMP PART NO.		STAMP TOOL NO.	
T223988		T223988	
SHEET			1/1

T223989 – ROLL TEST TOOL



REV	DESCRIPTION	APPROVED	DATE

FAIRFIELD <small>MANUFACTURING INC. 1000 W. 10TH ST. LAWRENCE, MA 01840 www.fairfieldinc.com</small>		DWT NO. AMT. MAT'L STOCK SIZE OR PART NUMBER	
DESCRIPTION:			
TOLERANCE ON DIMENSIONS: .XXX ±.003 .XX ±.015 .X ±.010 UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS IN X, IN. - MINUS IN & MAX. DRAWN BY: INSCOF BY: SDA/AST TO:			
STAMP PART NO.		STAMP TOOL NO.	
T223989		111	

T223990 – ROLL TEST TOOL



REV	DESCRIPTION	APPROVED	DATE
-----	-------------	----------	------

DET NO	AMT	MAT'L	STOC K SIZE OR PART NUMBER
<p>FAIRFIELD <small>FAIRFIELD GROUP CORPORATION</small> FAIRFIELD GROUP CORPORATION 125 SOUTH LAUREL STREET WASHINGTON, MISSISSIPPI 39201</p>			
DESCRIPTION:			
TOLERANCE ON DIMENSION: POS. .XXX L.003 .XX L.013 .X L.010 UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE X .49" - .5000 DIA & MAX DRAWN BY: WEIGHT: Kg SERIALS: TC			
STAMP PART NO.		STAMP TOOL NO.	
T223990			
SHEET			1/1

T223997 – ROLL TEST TOOL



REV	DESCRIPTION	APPROVED	DATE
-----	-------------	----------	------

DEPT NO | AMT | MAT'L | STOCK SIZE OR PART NUMBER

FAIRFIELD
MANUFACTURING CO., INC.
415 E. 100th St.
University Heights, OH 44119-4023
www.fairfieldmfg.com

DESCRIPTION:

TORQUE RANGE ON DIMENSIONAL TOOL: .XXX L ODS . JXX L ODS . X L ODS
UNLESS OTHERWISE SPECIFIED ALL CHAMFERS ON X & 45° SLOPE DO & MAX.
DIMENSIONS: WEIGHT: BY: MATERIAL:

STAMP PART NO. | STAMP TOOL NO. | SHEET
| T223997 | 1/1

Planetary Final Drive Repair Instructions

Contact Information

With over 80 years of experience, Fairfield Manufacturing has become the largest U.S. non-captive producer of gears, custom gear assemblies, planetary final drives, and related gear products. Fairfield Manufacturing, headquartered in Lafayette, Indiana, is distinguished by our extensive design, manufacturing, and applications engineering capabilities. Our 500,000 square foot plant is a modern, fully equipped manufacturing facility that includes a full service heat treat department.

Our philosophy of synchronous engineering is a partnership that matches our best and brightest people with your people to evaluate your unique requirements, and develop products and assemblies that meet your needs.

For more information, contact Fairfield Manufacturing today

Mailing Address

Fairfield Manufacturing Co., Inc.,
U.S. 52 South / P.O. Box 7940
Lafayette IN 47903-7940

Shipping Address

2309 Concord Road
Lafayette, IN 47909

Fax

Main
Applications Engineering
Sales and Service

(765) 772-4001
(765) 772-4011
(765) 772-4010

E-mail

Applications Engineering
Sales

apps@fairfieldmfg.com
sales@fairfieldmfg.com

Website

www.fairfieldmfg.com

THIS PAGE
INTENTIONALLY
LEFT BLANK

oerlikon

fairfield

Oerlikon Fairfield

U.S. 52 South / P.O. Box 7940

Lafayette, IN 47903 USA

765-772-4000

www.oerlikon.com/fairfield