

# **S**ECTION 9

## 1500 SERIES

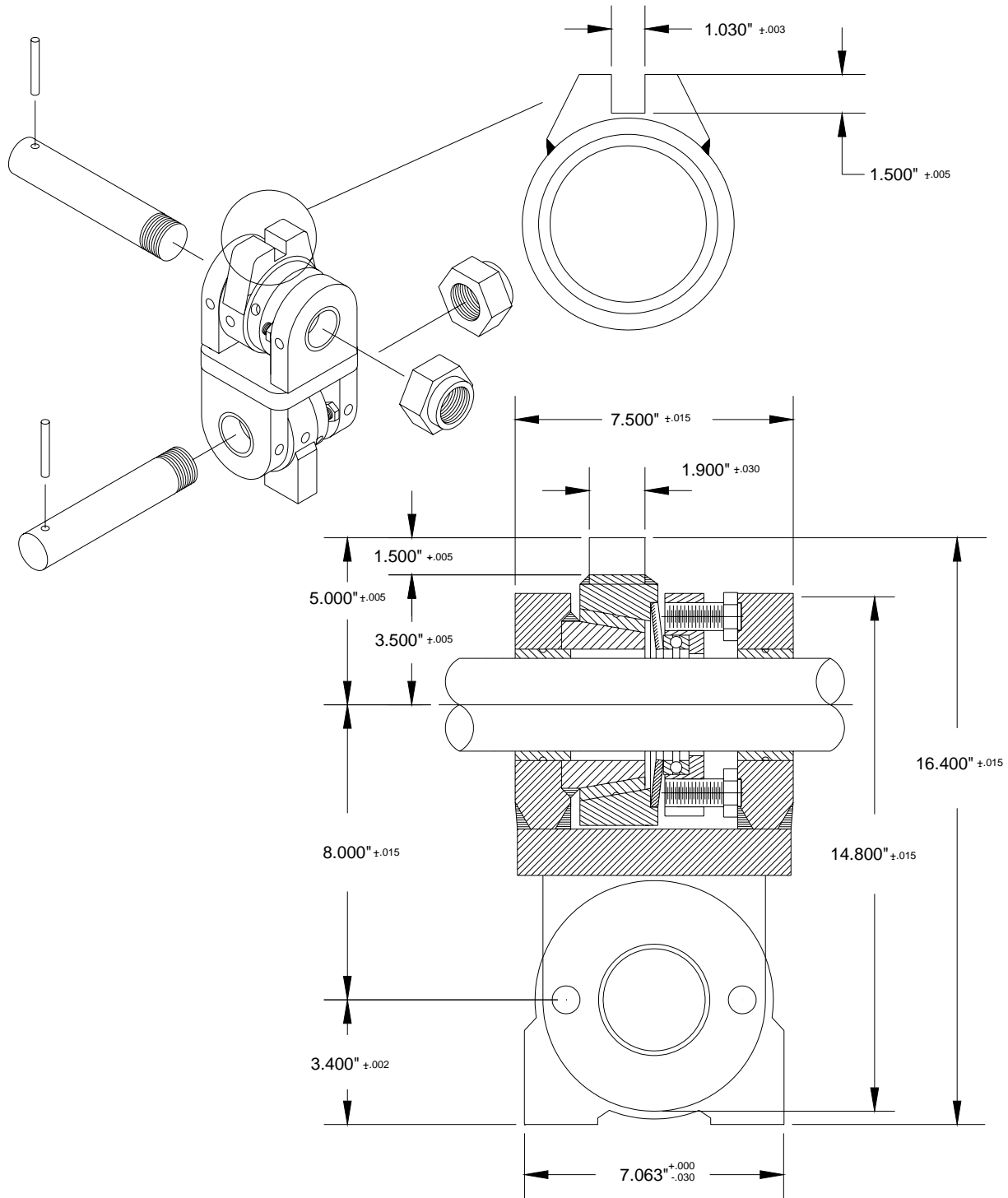
9-3	<a href="#"><u>Snubber Assembly - Parts</u></a>
9-4	<a href="#"><u>Mounting and Operational Instructions (ESCO)</u></a>
9-6	<a href="#"><u>Mounting and Operational Instructions WPG 500 – WPG 600</u></a>
9-8	<a href="#"><u>B31500-1</u></a>
9-10	<a href="#"><u>B31500-2</u></a>
9-12	<a href="#"><u>B31500-3</u></a>
9-14	<a href="#"><u>B31500-4</u></a>
9-16	<a href="#"><u>B31500-5</u></a>
9-18	<a href="#"><u>B31500-7</u></a>
9-20	<a href="#"><u>B31500-8</u></a>
9-22	<a href="#"><u>B31500-9</u></a>
9-24	<a href="#"><u>B31500-9 Mounting and Operational Instructions</u></a>

blank page

**INTERNAL MOUNT**

**1500 SERIES**

**SNUBBER ASSEMBLY – PARTS**



**INTERNAL MOUNT**

**1500 SERIES**

**ESCO**

**MOUNTING AND OPERATIONAL INSTRUCTIONS**

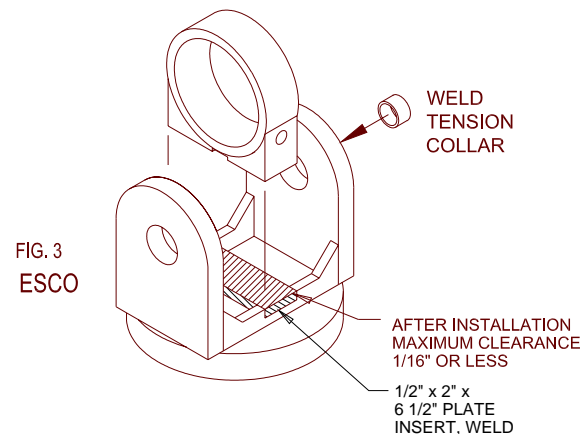
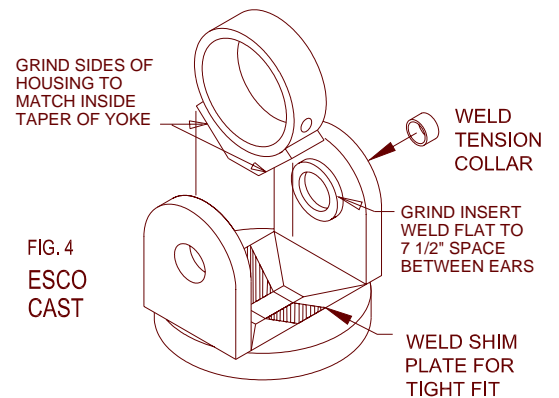
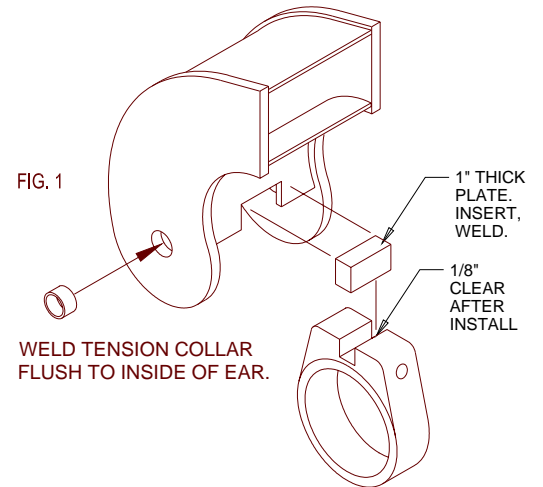
**INSTRUCTIONS:**

1. Boom & rotate yokes require tension collars beneath nut. Insert welded flush to inside of ear.
2. Insert the snubber ass'y between the ears of the boom or stick. Line up the anchor on the housing so it engages the retaining bracket. In some cases, shims or spacers must be added on each side of the snubber. Shim it so it can still be moved by hand.
3. Insert the pin.
4. If required, insert weld shim plate to top of rotate yoke. Allow 1/16" maximum clearance, housing to plate, providing full contact of housing. For cast yoke with inside taper, grind housing to match taper. \*If required, weld shim plate to taper for tight fit to housing.
5. To set the tension, turn the adjusting bolts ½ turn, equally, on each adjusting bolt until the desired tension is achieved.

**CAUTION: Over tensioning of the snubber reduces friction sleeve life.**

6. To replace the friction sleeve, first loosen the adjusting bolts so the pressure plate, bearing, spring washer, and the housing can be remove, then pry off using a bar on each side. Heating of sleeve may be required.
7. Apply a thin even coat of loctite 620 (or equivalent) to core and inner friction sleeve surface before installation of sleeve.
8. **IMPORTANT: All service points on the snubber should be greased every 10 hours. (friction sleeve: Grease B3T-390G only).**

Greases with 5% - 6% MOLY are recommended:  
 Military Spec. MIL G23549C  
 -Lubriplate 176            5°F./-15°C.  
 -Lubriplate 3000        15°F./-9.5°C.  
 -Lubriplate 3000w      -30°F./-34.5°C.  
 -or EQUIVALENT

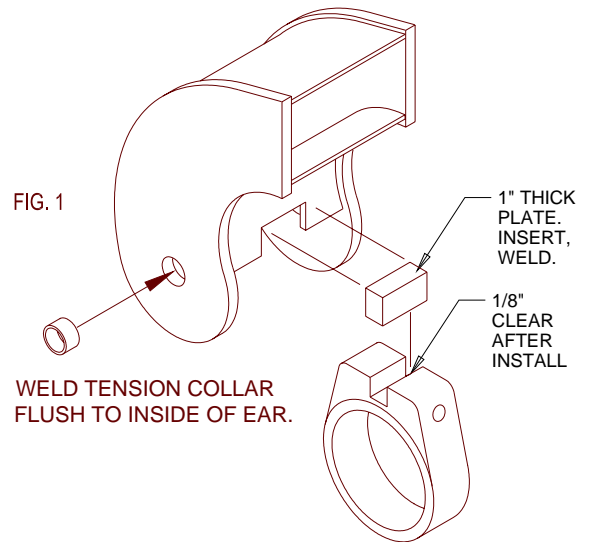


**INTERNAL MOUNT**

**MOUNTING AND OPERATIONAL INSTRUCTIONS**

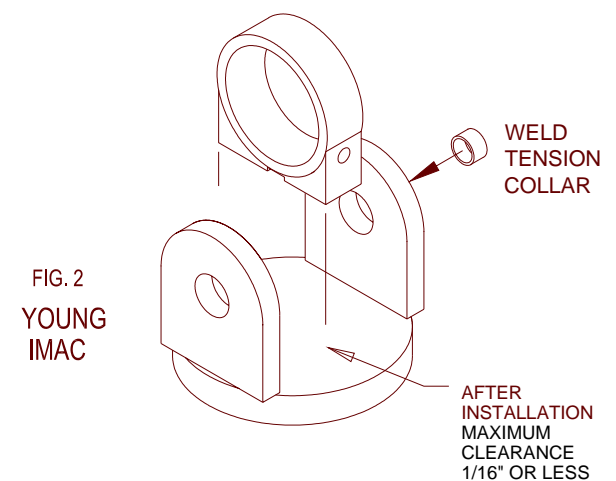
**INSTRUCTIONS:**

1. Measure Young grapple distance between ears. For less than 7-1/2", snubber link requires milling, maximum 1/4" each side. Boom & Rotate yokes with tension collars beneath pin nut require tension collars to be welded flush to inside of ear.
2. Insert the snubber ass'y between the ears of the boom or stick. Line up the anchor on the housing so it engages the retaining bracket. In some cases, shims or spacers must be added on each side of the snubber link. Shim it so it can still be moved by hand.
3. Insert the pin.
4. If required, insert weld shim plate to top of rotate yoke. Allow 1/16" maximum clearance, housing to plate, provide full contact of housing.
5. To set the tension, turn the adjusting bolts 1/2 turn, equally, on each adjusting bolt until the desired tension is achieved.



**CAUTION:** Over tensioning of the snubber reduces friction sleeve life.

6. To replace the friction sleeve, first loosen the adjusting bolts so the pressure plate bearing, spring washer, and the housing can be removed, then pry off using a bar on each side. Heating of sleeve may be required.
7. Apply a thin even coat of loctite 620 (or equivalent) to core and inner friction sleeve surface before installation of sleeve.
8. **IMPORTANT:** All service points on the snubber should be greased every 10 hours. (friction sleeve: Grease B3T-390G only).



Greases with 5% - 6% MOLY are recommended:  
Military Spec. MIL G23549C  
-Lubriplate 176            5°F./-15°C.  
-Lubriplate 3000           15°F./-9.5°C.  
-Lubriplate 3000w        -30°F./-34.5°C.  
-or EQUIVALENT

**INTERNAL MOUNT**

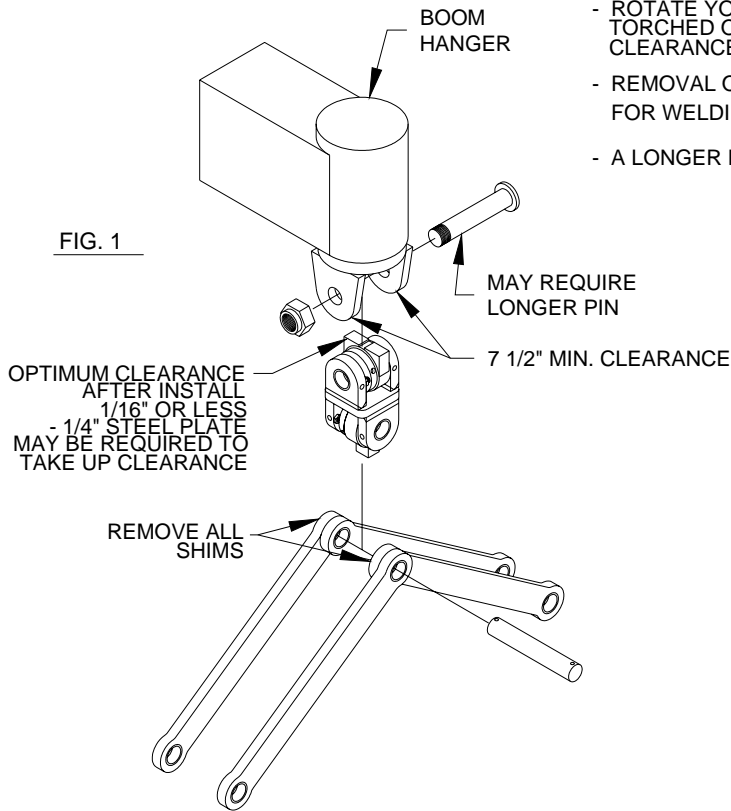
**MOUNTING AND OPERATIONAL INSTRUCTIONS  
MODELS ---- WELDCO – WPG 500 – WPG 600**

**KIT # B31500-5**

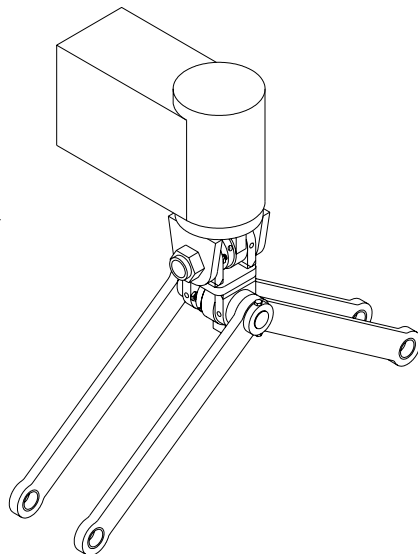
**STEP 1**

- REMOVE ORIGINAL LINK BAR AND PINS.
- ROTATE YOKE EARS ON BOOM WILL NEED TO BE TORCHED OFF AND RE-WELDED AT 7-1/2" MINIMUM CLEARANCE.
- REMOVAL OF ROTATE YOKE FOR WELDING IS RECOMMENDED.
- A LONGER PIN MAY BE REQUIRED.

**FIG. 1**



**FIG. 2**

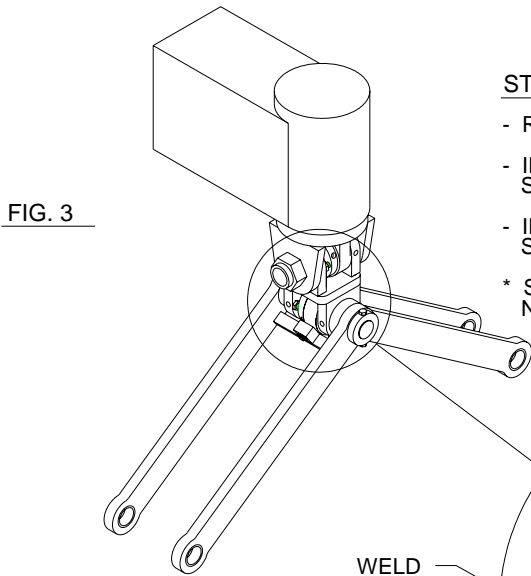


**STEP 2**

- INSTALL SNUBBER BETWEEN ROTATE YOKE EARS. (NOTE: MAINTAIN MINIMUM 1/16" OR LESS CLEARANCE BETWEEN TOP OF SNUBBER HOUSING AND BOTTOM OF BOOM HANGER.)
- REMOVE ALL SHIMS IN LOWER LINK ARMS TO ALLOW FOR 7-1/2" MINIMUM CLEARANCE.
- INSTALL LOWER LINK PIN.

**INTERNAL MOUNT**

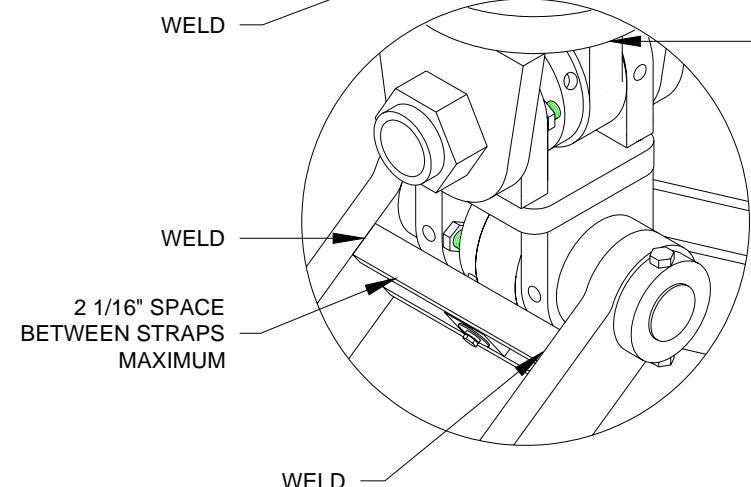
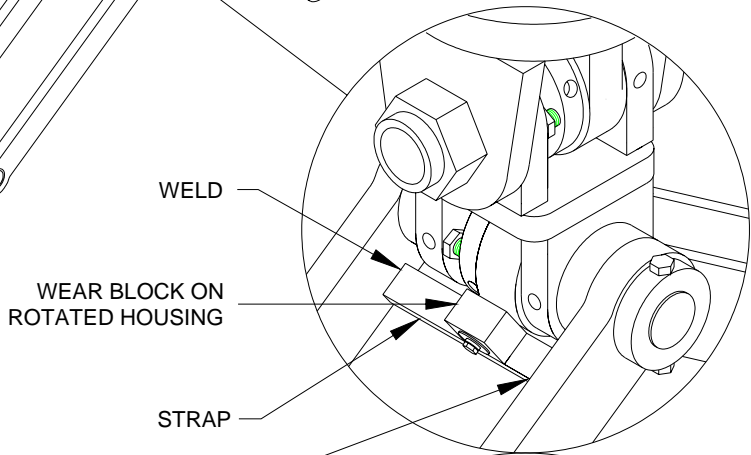
**MOUNTING AND OPERATIONAL INSTRUCTIONS**  
**MODELS ---- WELDCO – WPG 500 – WPG 600**



**STEP 3**

- ROTATE LOWER SNUBBER HOUSING PARALLEL TO LOWER LINK ARM.
- INSTALL STRAP BELOW WEAR BLOCK AND WELD BETWEEN LINK ARMS. SEE FIG. 4
- INSTALL STRAP ABOVE WEAR BLOCK AND WELD BETWEEN LINK ARMS. SEE FIG. 5

\* STRAP MATERIAL 1/2" X 2-1/4" STEEL BAR, TRIM TO LENGTH. NOT INCLUDED IN KIT.

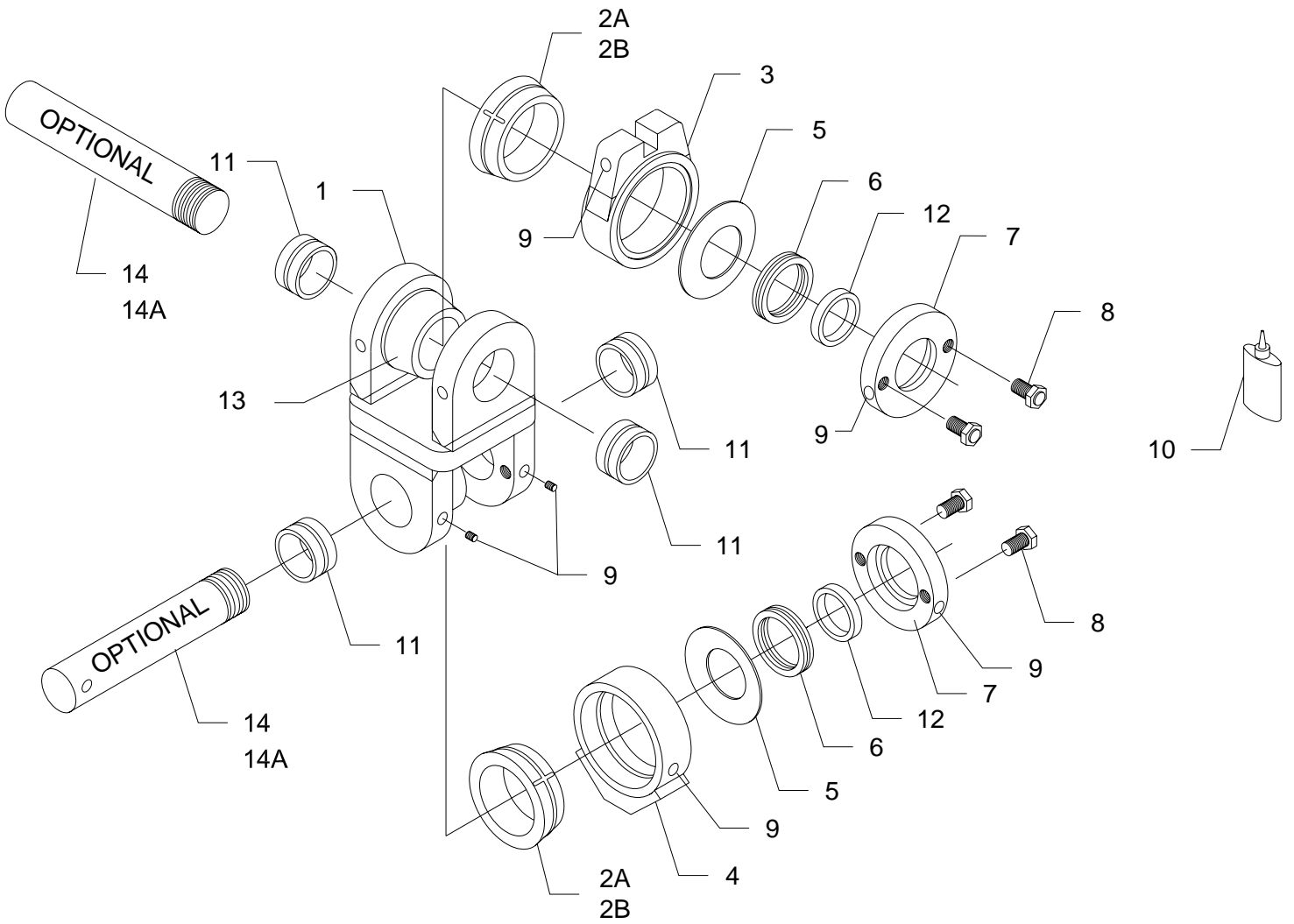


**IMPORTANT: GREASE SNUBBER EVERY 10 HOURS.**  
**(FRICTION SLEEVE: GREASE B3T-390 ONLY)**

**INTERNAL MOUNT**

**B31500-1**

USE WITH ESCO GRAPPLE-- 2" PINS  
CAST YOKE





**INTERNAL MOUNT**

**B31500-1**

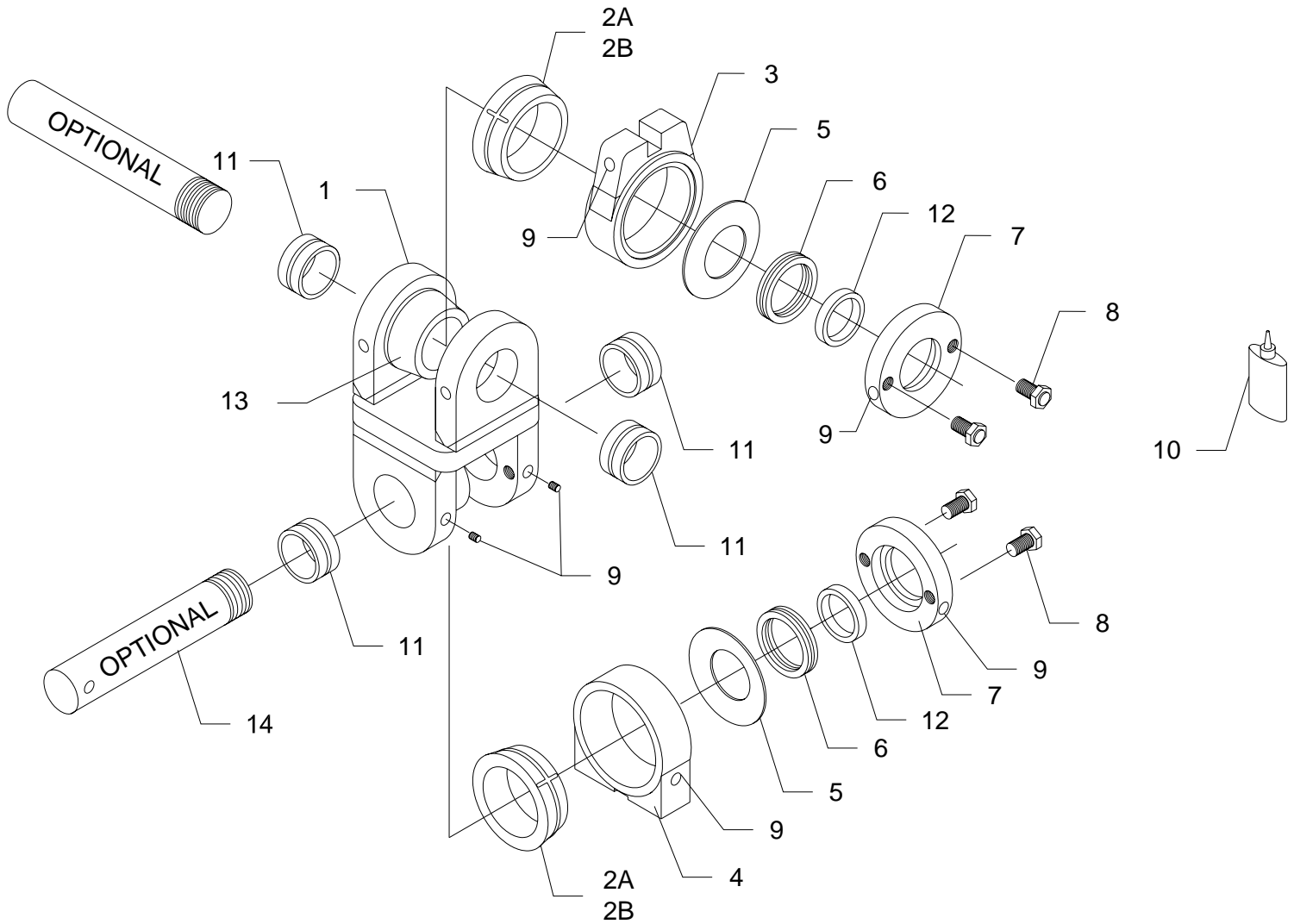
USE WITH ESCO GRAPPLE – 2" PINS  
CAST YOKE

ITEM	PART#	DESCRIPTION	QTY
1	B3T-280	LINK ASS'Y (2.5" I.D. BORE)	1
2	B3T-390G	FRICTION SLEEVE (ZINC ALLOY ZA12)	2
OPT.	B3T-595	FRICTION SLEEVE (COMPOSITE MATERIAL)	2
3	B3T-230	SLOT HOUSING 1.030" SLOT	1
4	B3T-300	TAPERED BASE HOUSING	1
5	B3T-540	SPRING WASHER	2
6	B3S-155	BEARING	2
7	B3T-285	PRESSURE PLATE	2
8	B3T-290	ADJUSTING BOLT	4
9	B3T-105	ZERK	10
10	B3T-575	SLEEVE RETAINER LOCTITE 620 OR EQUIVALENT	1
11	B3T-305S	BUSHING (2.008" I.D. x 2.500" O.D.)	4
12	B3T-605	BEARING SEAL	2
13	B3T-585	CORE / EAR ASS'Y (2.5" BUSHING O.D.)	OPT.
14	B3T-570	OPTIONAL, PIN 2" O.D. x 12.5" THRD 2"NF-12 x 2"	OPT.
		ESCO # 4105142, T/J # 414999	
14A	B3T-590	OPTIONAL, PIN 2" O.D. X 13.5" THRD 2" NF-12 X 2"	OPT.
		CAT # 1250123, 284-6655 T/J # 8431126	
15	B3T-1420	OPTIONAL, LOCKING DOWEL CAT # 1M8949	OPT.

**INTERNAL MOUNT**

**B31500-2**

USE WITH ESCO GRAPPLE (FABRICATED YOKE)  
DENHARCO DP550 – DH550 – DH550  
YOUNG GRAPPLE / IMAC GRAPPLE  
2" PIN O.D.



**INTERNAL MOUNT**

**B31500-2**

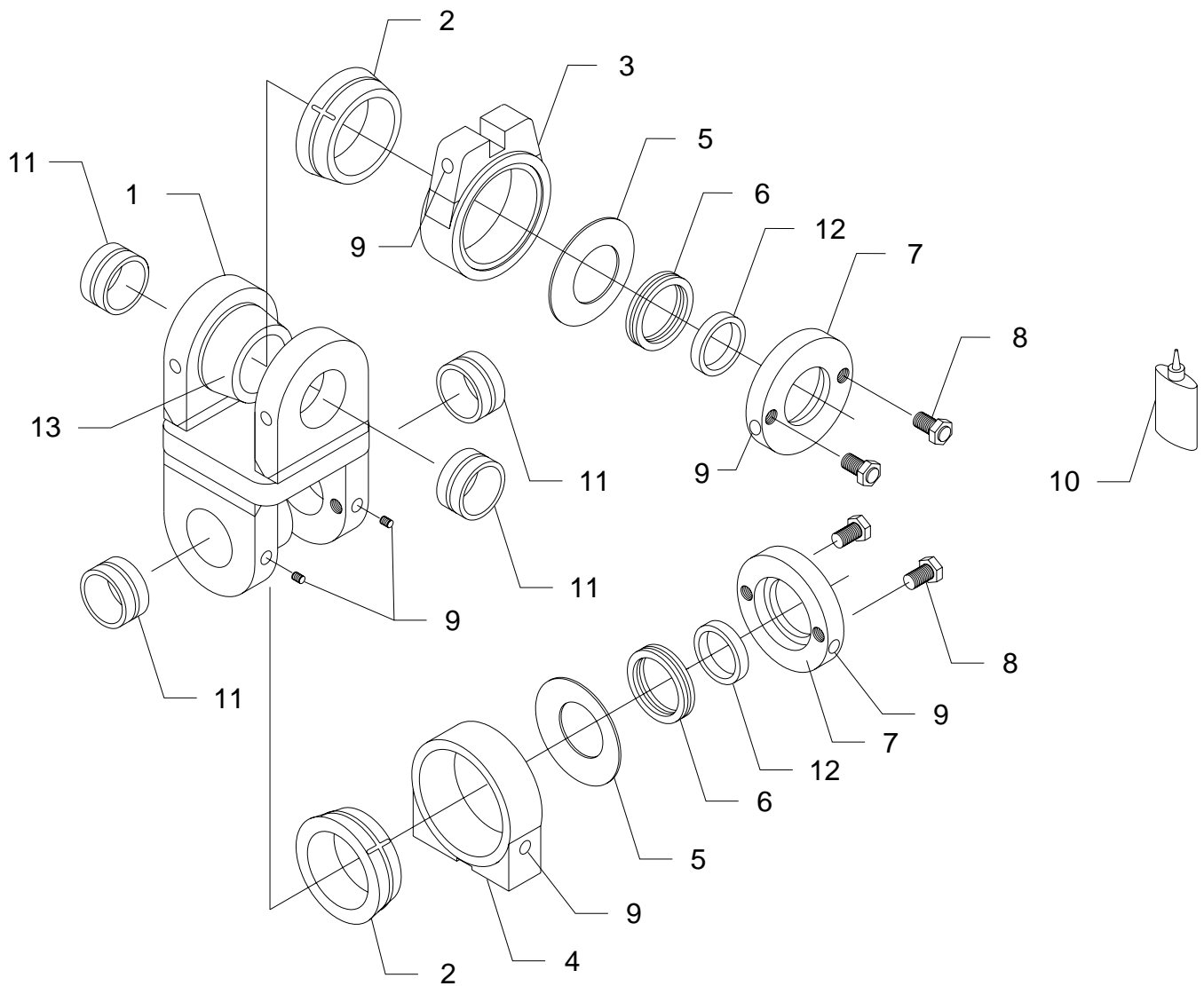
USE WITH ESCO GRAPPLE (FABRICATED YOKE)  
DENHARCO DP550 – DH550 – DH550  
YOUNG GRAPPLE / IMAC GRAPPLE  
2" PIN O.D.

ITEM	PART#	DESCRIPTION	QTY
1	B3T-280	LINK ASS'Y (2.5" I.D. BORE)	1
2	B3T-390G	FRICITION SLEEVE (ZINC ALLOY ZA12)	2
OPT.	B3T-595	FRICITION SLEEVE (COMPOSITE MATERIAL)	2
3	B3T-230	SLOT HOUSING 1.030" SLOT	1
4	B3T-385	FOOT HOUSING	1
5	B3T-540	SPRING WASHER	2
6	B3S-155	BEARING	2
7	B3T-285	PRESSURE PLATE	2
8	B3T-290	ADJUSTING BOLT	4
9	B3T-105	ZERK	10
10	B3T-575	SLEEVE RETAINER LOCTITE 620 OR EQUIVALENT	1
11	B3T-305S	BUSHING (2.008" I.D. x 2.500" O.D.)	4
12	B3T-605	BEARING SEAL	2
13	B3T-585	CORE / EAR ASS'Y (2.5" BUSHING O.D.)	OPT.
14	B3T-570	OPTIONAL, PIN 2" O.D. x 12.5" - 2"NF-12 x 2" LONG	OPT.
		ESCO # 4105142 – T/J # 414999	
15	B3T-1420	OPTIONAL, LOCKING DOWEL CAT # 1M8949	OPT.

**INTERNAL MOUNT**

**B31500-3**

USE WITH YOUNG GRAPPLE  
PIERCE HTH 20  
2-1/2" PIN O.D.



**INTERNAL MOUNT**

**B31500-3**

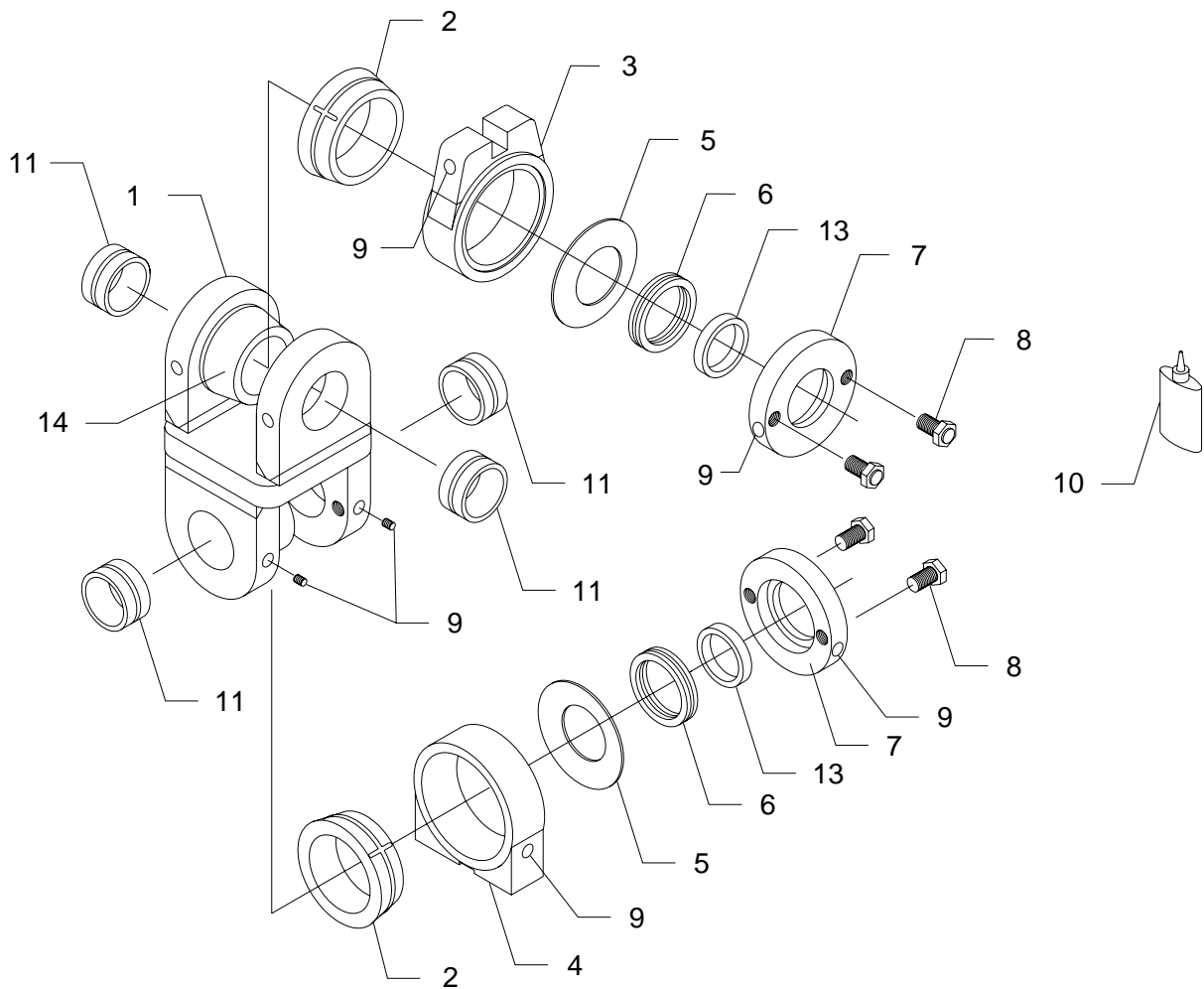
USE WITH YOUNG GRAPPLE  
 PIERCE HTH 20  
 2-1/2" PIN O.D.

<b>ITEM</b>	<b>PART#</b>	<b>DESCRIPTION</b>	<b>QTY</b>
1	B3T-565	LINK ASS'Y (3" I.D. BORE)	1
2	B3T-390G	FRICTION SLEEVE (ZINC ALLOY ZA12)	2
OPT.	B3T-595	FRICTION SLEEVE (COMPOSITE MATERIAL)	2
3	B3T-230	SLOT HOUSING 1.030" SLOT	1
4	B3T-385	FOOT HOUSING	1
5	B3T-540	SPRING WASHER	2
6	B3S-155	BEARING	2
7	B3T-285	PRESSURE PLATE	2
8	B3T-290	ADJUSTING BOLT	4
9	B3T-105	ZERK	10
10	B3T-575	SLEEVE RETAINER LOCTITE 620 OR EQUIVALENT	1
11	B3T-255S	BUSHING (2.508" I.D. x 3.000" O.D.)	4
12	B3T-605	BEARING SEAL	2
13	B3T-515	CORE / EAR ASS'Y (3" BUSHING O.D.)	OPT.

**INTERNAL MOUNT**

**B31500-4**

USE WITH BARKO 475 & 52" CRX GRAPPLE  
2" / 2-1/2" PIN O.D.



**INTERNAL MOUNT**

**B31500-4**

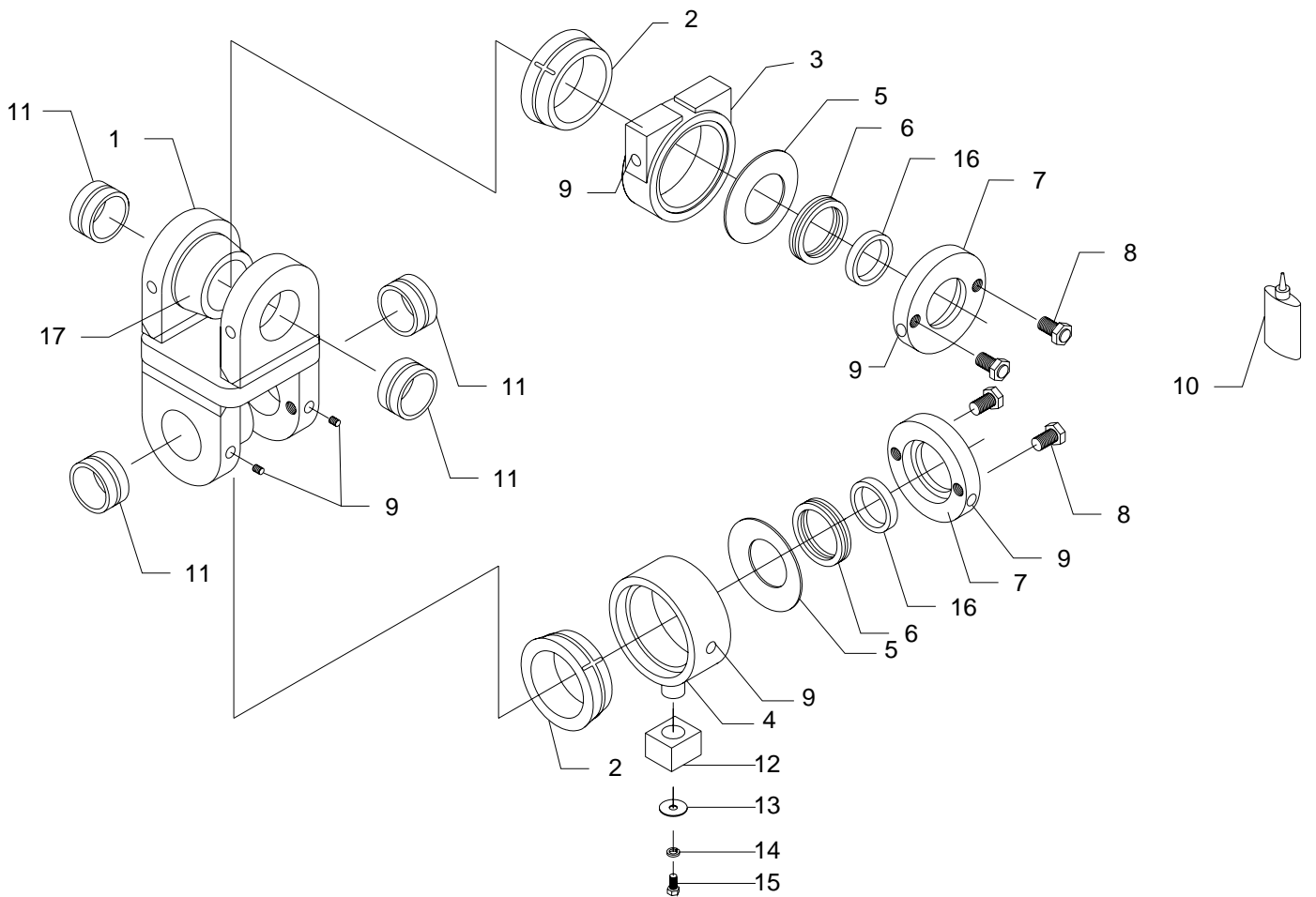
USE WITH BARKO 475 & 52" CRX GRAPPLE  
2" / 2-1/2" PIN O.D.

ITEM	PART#	DESCRIPTION	QTY
1	B3T-565	LINK ASS'Y (3" I.D. BORE)	1
2	B3T-390G	FRICTION SLEEVE (ZINC ALLOY ZA12)	2
OPT.	B3T-595	FRICTION SLEEVE (COMPOSITE MATERIAL)	2
3	B3T-230	SLOT HOUSING 1.030" SLOT	1
4	B3T-385	FOOT HOUSING	1
5	B3T-540	SPRING WASHER	2
6	B3S-155	BEARING	2
7	B3T-285	PRESSURE PLATE	2
8	B3T-290	ADJUSTING BOLT	4
9	B3T-105	ZERK	10
10	B3T-575	SLEEVE RETAINER LOCTITE 620 OR EQUIVALENT	1
11	B3T-295S	BUSHING (2.008" I.D. x 3.000" O.D.)	2
12	B3T-255S	BUSHING (2.508" I.D. x 3.000" O.D.)	2
12	B3T-605	BEARING SEAL	2
13	B3T-515	CORE / EAR ASS'Y (3" BUSHING O.D.)	OPT.

**INTERNAL MOUNT**

**B31500-5**

USE WITH WELDCO GRAPPLE WPG500 / WPG600  
CAT 518 / CAT 528  
CLARK 668D





**INTERNAL MOUNT**

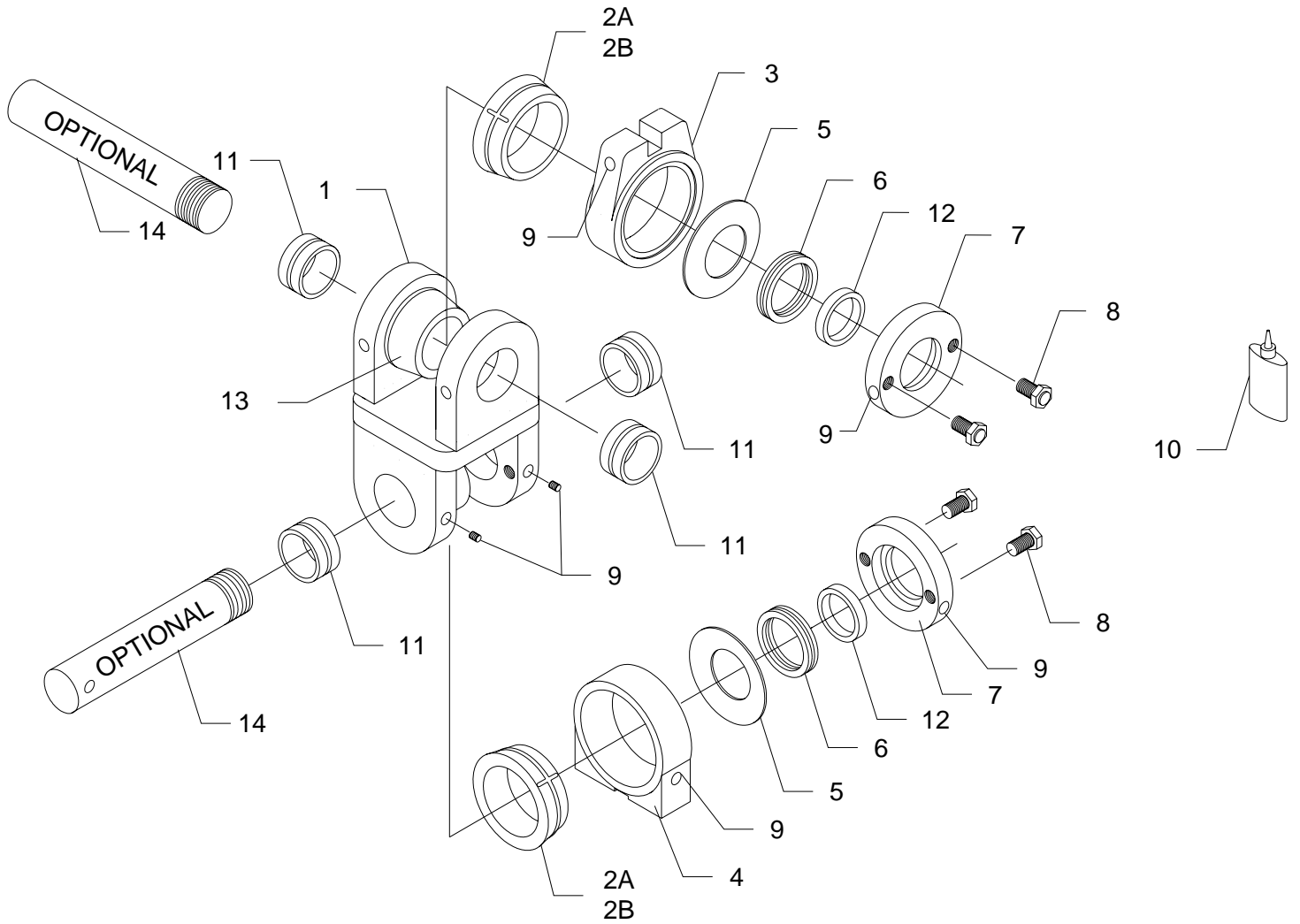
**B31500-5**

USE WITH WELCO GRAPPLE WPG500 / WPG600  
 CAT 518 / CAT 528  
 CLARK 668D

<b>ITEM</b>	<b>PART#</b>	<b>DESCRIPTION</b>	<b>QTY</b>
1	B3T-565	LINK ASS'Y (3" I.D. BORE)	1
2	B3T-390G	FRICITION SLEEVE (ZINC ALLOY ZA12)	2
OPT.	B3T-595	FRICITION SLEEVE (COMPOSITE MATERIAL)	2
3	B3T-385	FOOT HOUSING	1
4	B3T-170C	STUD HOUSING	1
5	B3T-540	SPRING WASHER	2
6	B3S-155	BEARING	2
7	B3T-285	PRESSURE PLATE	2
8	B3T-290	ADJUSTING BOLT	4
9	B3T-105	ZERK	10
10	B3T-575	SLEEVE RETAINER LOCTITE 620 OR EQUIVALENT	1
11	B3T-255S	BUSHING (2.508" I.D. x 3.000" O.D.)	4
12	B3T-180S	WEAR BLOCK	1
13	B3T-155	WASHER (1/2" FLAT x 1-3/8" O.D. Gr8 PLATED)	1
14	B3T-150	WASHER (1/2" LOCK Gr8 PLATED)	1
15	B3T-145	BOLT (1/2" UNC x 1" Gr8 PLATE)	1
16	B3T-605	BEARING SEAL	2
17	B3T-515	CORE / EAR ASS'Y (3" BUSHING O.D.)	OPT.

**INTERNAL MOUNT**

**B31500-7**



**INTERNAL MOUNT**

**1500 SERIES**

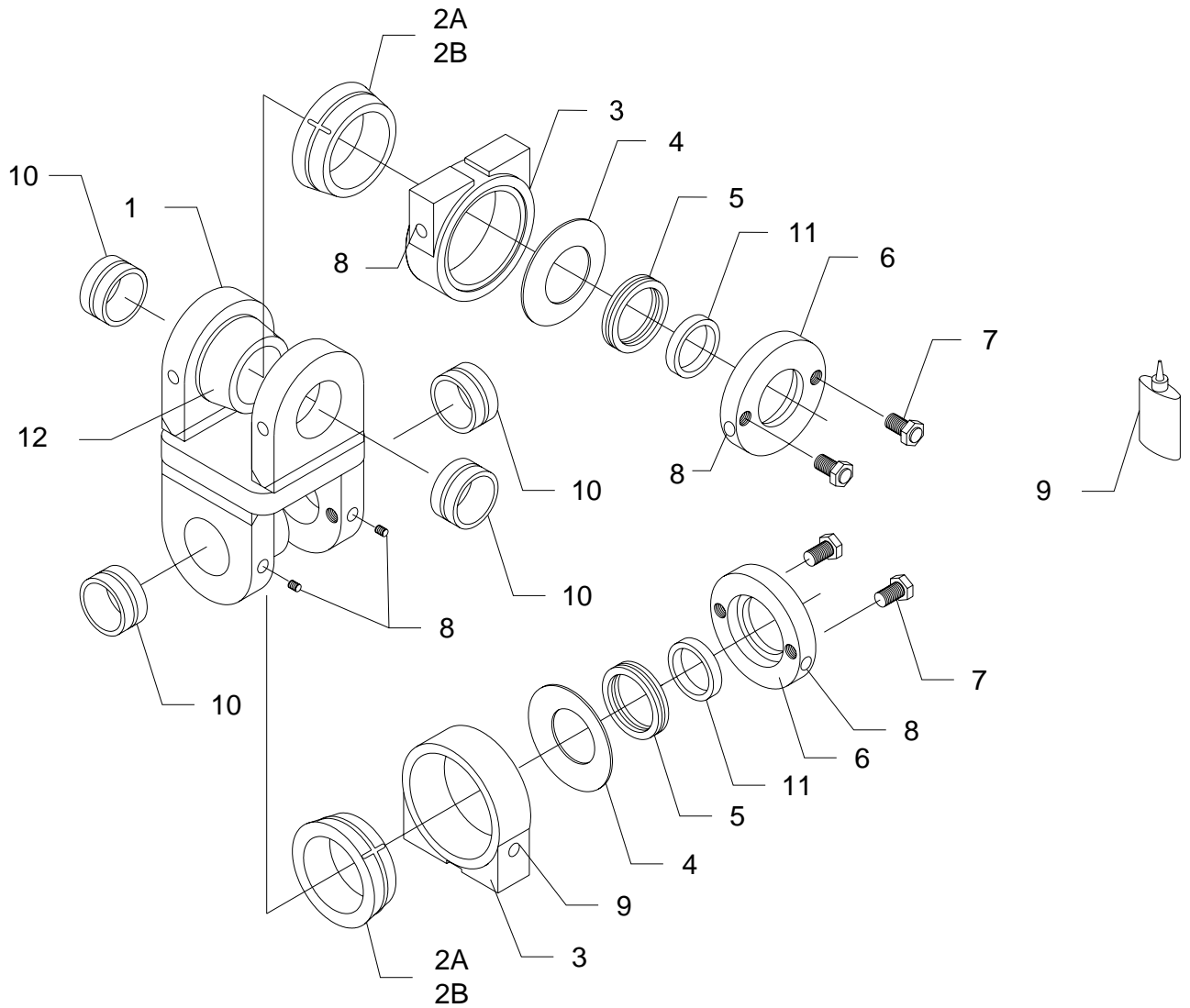
**B31500-7**

<b>ITEM</b>	<b>PART#</b>	<b>DESCRIPTION</b>	<b>QTY</b>
1	B3T-565	LINK ASS'Y (3" I.D. BORE)	1
2	B3T-390G	FRICTION SLEEVE (ZINC ALLOY ZA12)	2
OPT.	B3T-595	FRICTION SLEEVE (COMPOSITE MATERIAL)	2
3	B3T-230	SLOT HOUSING 1.030" SLOT	1
4	B3T-385	FOOT HOUSING	1
5	B3T-540	SPRING WASHER	2
6	B3S-155	BEARING	2
7	B3T-285	PRESSURE PLATE	2
8	B3T-290	ADJUSTING BOLT	4
9	B3T-105	ZERK	10
10	B3T-575	SLEEVE RETAINER LOCTITE 620 OR EQUIVALENT	1
11	B3T-295S	BUSHING (2.008" I.D. x 3.000" O.D.)	4
12	B3T-605	BEARING SEAL	2
13	B3T-515	CORE / EAR ASS'Y (3" BUSHING O.D.)	OPT.
14	B3T-570	PIN 2" O.D. x 12.5" OPTIONAL *REPLACES ESCO # 4105142 – CAT # 1250123 – TJ # 414999	OPT.

**INTERNAL MOUNT**

**B31500-8**

2 – FOOT HOUSINGS  
2" PIN O.D.



**INTERNAL MOUNT**

<b>1500 SERIES</b>
--------------------

**B31500-8**

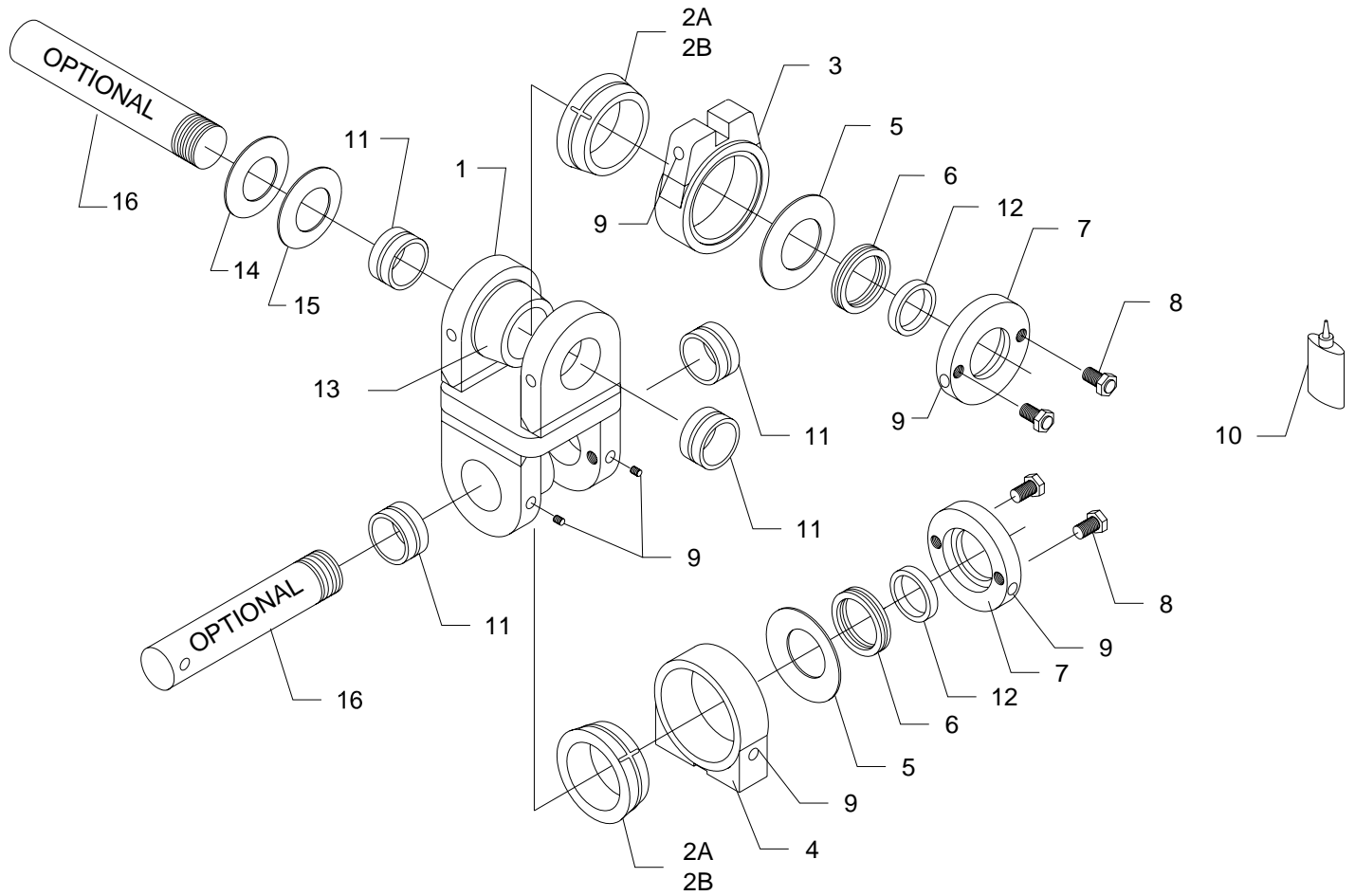
2 – FOOT HOUSINGS  
 2" PIN O.D.

<b>ITEM</b>	<b>PART#</b>	<b>DESCRIPTION</b>	<b>QTY</b>
1	B3T-580	LINK ASS'Y (2.5" I.D. BORE)	1
2	B3T-390G	FRICTION SLEEVE (ZINC ALLOY ZA12)	2
OPT.	B3T-595	FRICTION SLEEVE (COMPOSITE MATERIAL)	2
3	B3T-385	FOOT HOUSING	2
4	B3T-540	SPRING WASHER	2
5	B3S-155	BEARING (INCLUDES B3T-605 SEAL)	2
6	B3T-285	PRESSURE PLATE	2
7	B3T-290	ADJUSTING BOLT	4
8	B3T-105	ZERK	8
9	B3T-575	SLEEVE RETAINER LOCTITE 620 OR EQUIVALENT	1
10	B3T-305S	BUSHING (2.008" I.D. x 2.500" O.D.)	4
11	B3T-605	BEARING SEAL	2
12	B3T-585	CORE / EAR ASS'Y (2.5" BUSHING O.D.)	OPT.

**INTERNAL MOUNT**

**B31500-9**

USE WITH CAT GRAPPLE  
535B-545-545B  
2 1/2" PIN O.D



**INTERNAL MOUNT**

**B31500-9**

USE WITH CAT GRAPPLE  
535B-545-545B  
2 1/2" PIN O.D

ITEM	PART#	DESCRIPTION	QTY
1	B3T-565	LINK ASS'Y (3" I.D. BORE)	1
2	B3T-390G	FRICTION SLEEVE (ZINC ALLOY ZA12)	2
OPT.	B3T-595	FRICTION SLEEVE (COMPOSITE MATERIAL)	2
3	B3T-230	SLOT HOUSING 1.030" SLOT	1
4	B3T-385	FOOT HOUSING	1
5	B3T-540	SPRING WASHER	2
6	B3S-155	BEARING (INCLUDES B3T-605 SEAL)	2
7	B3T-285	PRESSURE PLATE	2
8	B3T-290	ADJUSTING BOLT	4
9	B3T-105	ZERK	10
10	B3T-575	SLEEVE RETAINER LOCTITE 620 OR EQUIVALENT	1
11	B3T-255S	BUSHING (2.508" I.D. x 3.000" O.D.)	4
12	B3T-605	BEARING SEAL	2
13	B3T-515	CORE / EAR ASS'Y (3" BUSHING O.D.)	OPT.
14	B3T-195	SPACER 6" x 3 1/2" x 3/4" (1 TOP 1 BOTTOM)	2
15	B3T-225	SPACER 6" x 3 1/2" x 7/8" (1 TOP 1 BOTTOM)	2
16	B3T-1230	OPTIONAL, PIN 2 1/2" X 15 1/2" - 2 1/2" NF-12 x 3" LNG	OPT
		REPLACES CAT # 1687797	

**INTERNAL MOUNT  
ESCO**

**1500-9 SERIES**

**CAT 535B, 545, 545B**

**MOUNTING AND OPERATIONAL INSTRUCTIONS**

**INSTRUCTIONS:**

2. Boom & Rotate yokes require tension collars beneath nut insert welded flush to inside of ear.
2. Centre spacers on pin holes 3/4" & 7/8", 1 each side equal, top & bottom, weld into position.
9. Boom Nose -- Housing lock plate between ears requires reinforcing gussets to prevent bending when snubber is set to maximum tension.
10. Rotate Yoke --Housing lock plate to be insert welded similar to a "T" section to prevent bending.
11. To set the tension, turn the adjusting bolts 1/2 turn, equally, on each adjusting bolt until the desired tension is achieved.

**CAUTION: Over tensioning of the snubber reduces friction sleeve life.**

12. To replace the friction sleeve, first loosen the adjusting bolts so the pressure plate, bearing, spring washer, and the housing can be removed, then pry off using a bar on each side. Heating of sleeve may be required.
13. Apply a thin even coat of loctite 620 (or equivalent) to core and inner friction sleeve surface before installation of sleeve.
14. **IMPORTANT: All service points on the snubber should be greased every 10 hours. (friction sleeve: Grease B3T-390G only).**

Greases with 5% - 6% MOLY are recommended:  
Military Spec. MIL G23549C  
-Lubriplate 176            5<sup>0</sup>F./-15<sup>0</sup>C.  
-Lubriplate 3000           15<sup>0</sup>F./-9.5<sup>0</sup>C.  
-Lubriplate 3000w        -30<sup>0</sup>F./-34.5<sup>0</sup>C.

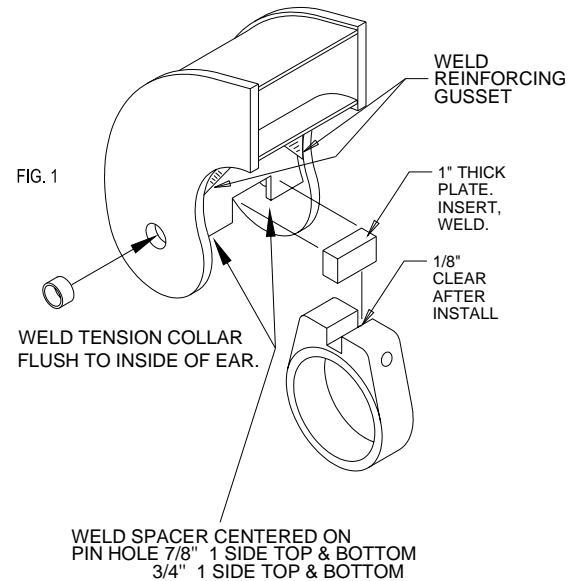
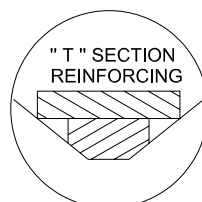


FIG. 2  
ESCO  
CAST

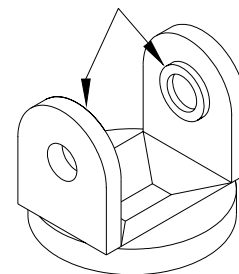


FIG. 3  
ESCO

