



**LO150C ORANGE PEEL SCRAP GRAPPLE
PARTS BOOK CONTENT LIST**

DATE IN SERVICE FORM

GRAPPLE ASSEMBLY -----	520W321
GRAPPLE HEAD ASSEMBLY -----	28W2174
ROTARY UNION ASSEMBLY -----	28W2177
ROTARY UNION SEAL KIT -----	587V735
HYDRAULIC CYLINDER ASSEMBLY-----	15W359
CYLINDER SEAL KIT -----	587V512
HOSE ASSEMBLY -----	28V1074
GRAPPLE HYDRAULIC PLUMBING (JIC) -----	632W1744
GRAPPLE HYDRAULIC PLUMBING (ORFS) (OPT) -----	587V746
GRAPPLE ENCLOSURE KIT-----	587W719
LEG REINFORCEMENT KIT -----	587W724
LEG REBUILD KIT -----	587W729
SPECIFICATION SHEET -----	613V160
SERVICE AND MAINTENANCE	
GRAPPLE LUBRICATION CHART -----	446V16
RING BEARING BOLT INSPECTION PROCEDURE -----	163V75
RING BEARING BOLT INSTALLATION PROCEDURE -----	163V76
SERVICE INSTRUCTIONS -----	545V1728

DATE IN SERVICE

Record the following information to establish the date the machine is released to the customer. Make two copies of the completed form. Keep one copy for your records and send the second copy to:

YOUNG CORPORATION
ATTN: WARRANTY DEPT.
P. O. BOX 3522
SEATTLE WA 98124

EQUIPMENT INFORMATION

Date in Service: _____

Hours on Machine: _____

Machine Make and Model: _____

Machine Attachments: _____

Attachments Model and Serial Number: _____

Young Equipment Model: _____

Young Serial or Reference Number: _____

Dealer Name and Address: _____

Purchaser Name and Address: _____

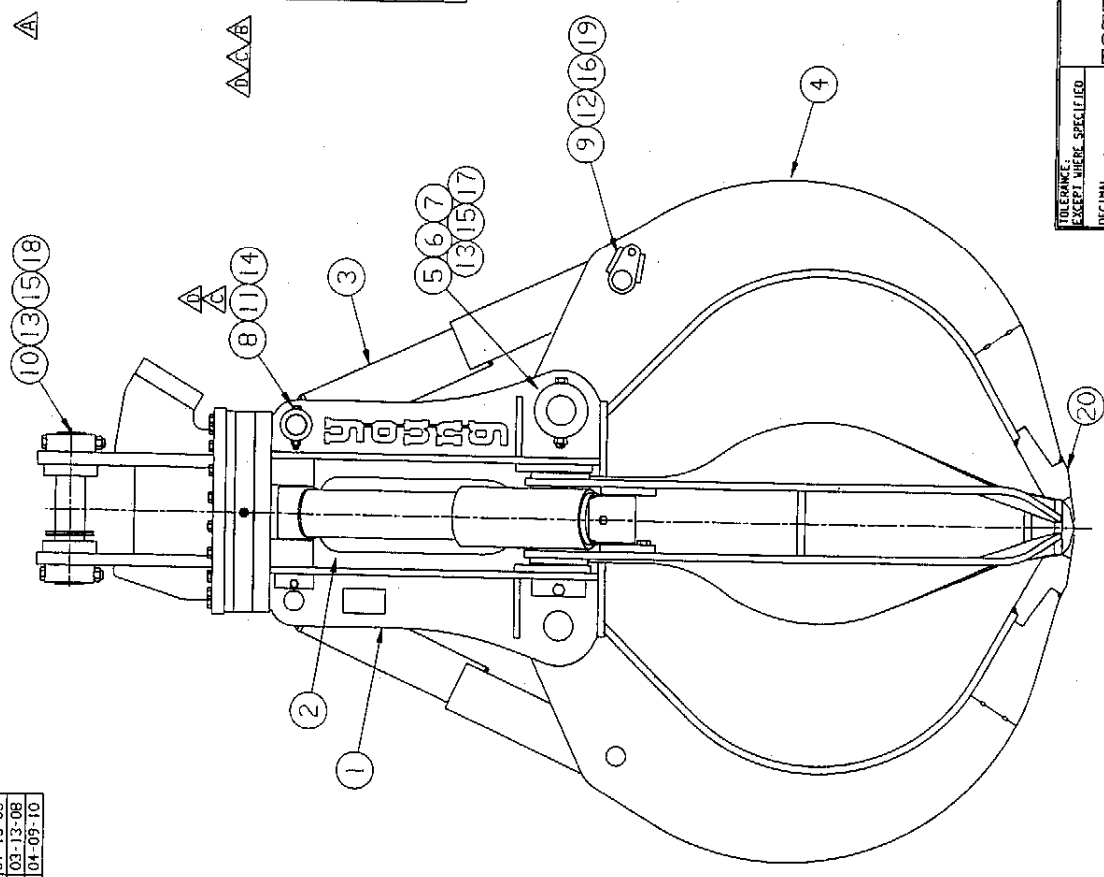
Other Attachment Serial Numbers: _____

Young Original Order Number: _____

Sign _____ Date _____

DRAWING NUMBER: 520W321	
LT/R	CHANGE
A	EC02854
B	EC02913
C	EC03670
D	EC04381
	NOE
	HR
	DATE
	05-05-05
	07-13-06
	03-13-08
	04-09-10

BILL OF MATERIALS		DRAWING NUMBER:	520W321
ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	GRAPPLE HEAD ASSEMBLY	28W2174
2	1	GRAPPLE HYDRAULIC PLUMBING	632W1744
3	4	GRAPPLE HYDRAULIC CYLINDER, MODEL *1236, 15W359	REF.
4	4	GRAPPLE LEG	169Y395
5	8	BUSHING	534W369
6	8	SEAL	2189P30047
7	4	PIN: GRAPPLE LEG MOUNTING	208W301
8	4	PIN: GRAPPLE CYLINDER MOUNTING, BASE END	395W409
9	4	PIN: GRAPPLE CYLINDER MOUNTING, ROD END	365W391
10	1	PIN: CROSSHEAD MOUNTING	207V118
11	4	1/2-13 NC x 4" LG. HEX HEAD CAPSCREW GR. 8	1608-17AA
12	4	3/4-10 NC x 1, 3/4" LG. HEX HEAD CAPSCREW GR. 8	1612-8AA
13	6	3/4-10 NC x 6" LG. HEX HEAD CAPSCREW GR. 8	1612-25AA
14	4	1/2-13 NC LOCK NUT	1118-5AA
15	6	3/4-10 NC LOCK NUT	1118-9AA
16	4	3/4" LOCK WASHER	1210-12
17	4	GREASE FITTING	1120-1
18	3	SHIM: 1/8" THK.	5075P09728
19	8	LOCKBAR	420V84
20	4	LEG TIP CASTING	211W6
			REF.

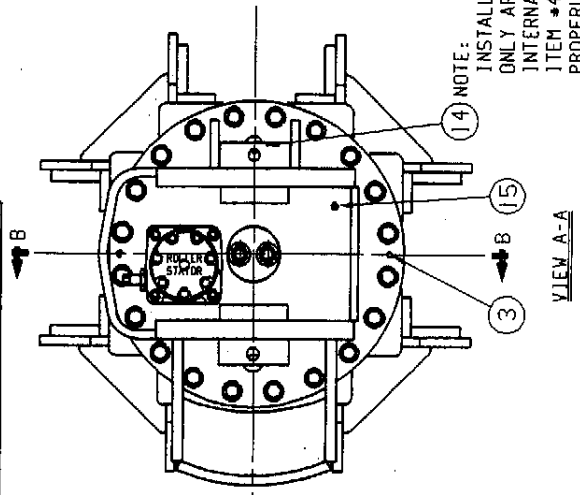
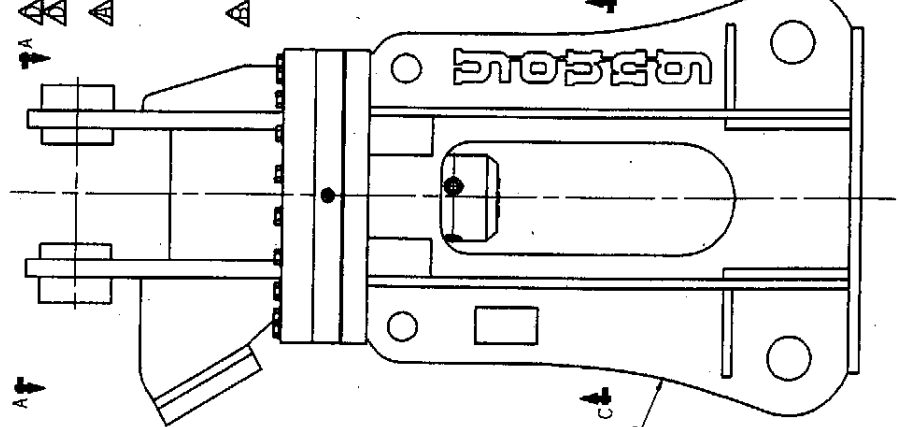


TOLERANCE EXCEPT WHERE SPECIFIED	STATUS	INITIALS	DATE	USED FOR	RED'D	MATERIAL
DECIMAL : 0.020	CHECKED			LO-150C	1	
XX	PRE-PRODUCTION					
FRACT. DIM. : 1/16	PRODUCTION					
ANGULAR : 1 DEG						

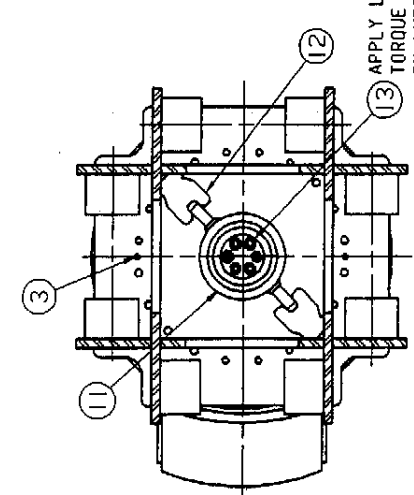
LO-150C	
GRAPPLE ASSEMBLY	
OWN BY	DATE
NOE	10-21-04
SCALE	520W321 D

DRAWING NUMBER: 28W2174	
LT/R	CHANGE BY DATE
A	ECO 2886 NDE 06-16-05
B	ECO3035 CHG 13 LG JS 12/2/05
C	ECO 3208 NDE 06-12-06
D	ECO 3703 NDE 05-07-08

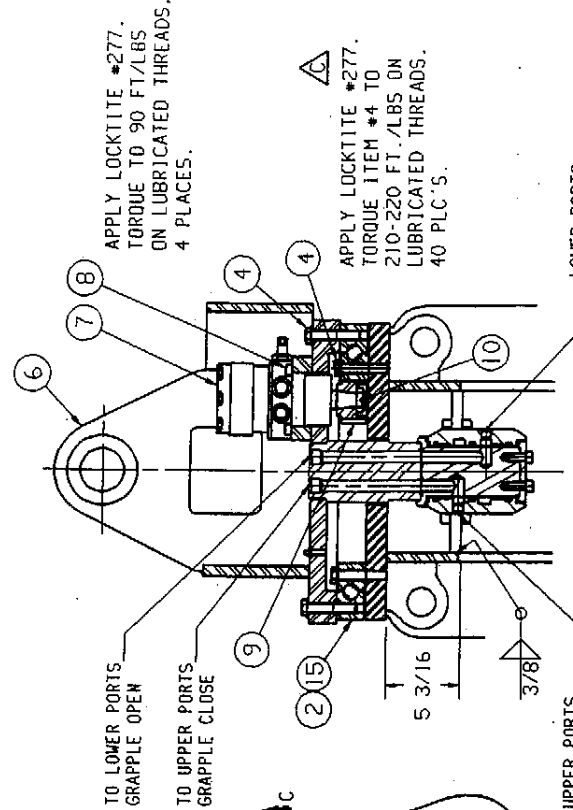
BILL OF MATERIALS		DRAWING NUMBER: 28W2174	
ITEM	QTY	DESCRIPTION	PART NUMBER
1	1	GRAPPLE HEAD	360Y180
2	1	RING BEARING	385W34
3	4	DOMEL PIN	5089P1005
4	40	5/8-11NCx3 1/2 LG. FLANGED HEX HEAD CAPSRW GR.B	3710-10AA
5	1	GRAPPLE SPINDLE	438Y125
6	1	GRAPPLE HYDRAULIC MOTOR 12.4 CU. IN.	618Y19
7	4	1/2-13 NC x 2 1/4 LG. SOCKET HEAD CAPSCREW	2008-12
8	1	PINION GEAR	200W4
9	1	CUTTER PIN 1/8" φ	1222-5
10	1	ROTARY UNION	28W2177
11	2	ROTARY UNION STOP BRACKET	62V1227
12	4	1/2-13 NC x 8.00 LG. SOCKET HEAD CAPSCREW	2008-35
13	2	HOLLOW HEX PLUG	2460-20
14	2	GREASE FITTING	1120-1



NOTE:
INSTALL ITEM #14
ONLY AFTER ALL
INTERNAL CAPSCREWS
ITEM #4, HAVE BEEN
PROPERLY TORQUED.



APPLY LOCKTITE #277.
TORQUE TO 90 FT/LBS
ON LUBRICATED THREADS.
4 PLACES.



APPLY LOCKTITE #277.
TORQUE TO 90 FT/LBS
ON LUBRICATED THREADS.
4 PLACES.

APPLY LOCKTITE #277.
TORQUE ITEM #4 TO
210-220 FT./LBS ON
LUBRICATED THREADS.
40 PLC'S.

UPPER PORTS
PLUMB TO THE
BLIND END OF
THE CYLINDERS

LOWER PORTS
PLUMB TO THE
ROD END OF THE
CYLINDERS

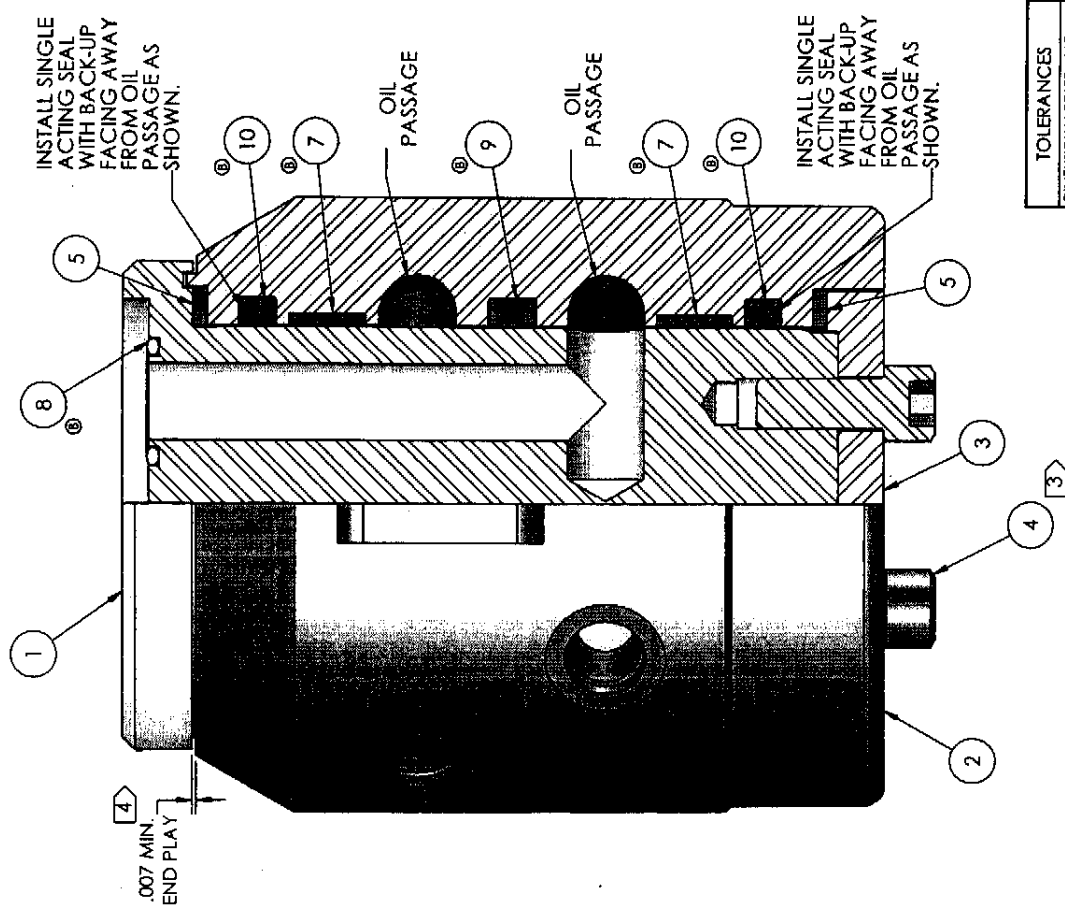
TOLERANCE:	PERCENT	DECIMAL	INCH	FRANGLAR
± 0.001				
± 0.010				
± 0.050				
± 0.100				

STATUS	INITIALS	DATE	USED FOR	REQ'D	MATERIAL
CHECKED			LO-100X		
PRE-PRODUCTION			LO-125C		
PRODUCTION			LO-150C		
			LO-200C		
			LO-250C		

DRAWN BY		DATE	SCALE	28W2174 D
NDE		11-02-04		

GRAPPLE HEAD ASSEMBLY

BILL OF MATERIALS			DRAWING NUMBER: 28W2177		
ITEM	QUANTITY	PART NO.	DESCRIPTION	WEIGHT	TOTAL
1	1	438Y126	ROTARY UNION SPINDLE	16	16
2	1	155Y83	ROTARY UNION HOUSING	30	30
3	1	453V73	ROTARY UNION CAP	2	2
4	2	2008-08AA	1/2 - 13 NC x 1 1/4" LG. SHCS. GR.-8. BLACK	0	0
5	2	477V92	THRUST RING	0	0
6	1	587V735	SEAL KIT (INCLUDES THE FOLLOWING PARTS)	0	0
7	2	REF	WEAR RING, 3.3/4" O.D. x 3/4" WIDE (5321P3006)	0	0
8	2	REF	SEAL, O-RING, 1" I.D. x 1 1/4" O.D. x 1/8" WALL (5301P214)	0	0
9	1	REF	SEAL, DOUBLE ACTING, 3 1/2" I.D. (5327P28)	0	0
10	2	REF	SEAL, SINGLE ACTING, 3 1/2" I.D. (5328P28)	0	0
⊙ SEAL KIT (587V735) INCLUDES ITEMS #7, #8, #9 AND #10 ONLY.				TOTAL WEIGHT: 49 #	



ASSEMBLY INSTRUCTIONS:

1. PARTS INSPECTION:

INSPECT HOUSING GLANDS FOR GOUGES AND SCRATCHES WHICH WILL BE A SOURCE OF OIL LEAKAGE. CHECK SPINDLE SURFACE FOR SMALL SCRATCHES IN SEAL AND WEAR RING LOCATIONS. CLEAN, DEBURR AND REPAIR AS REQUIRED.

2. SEAL INSTALLATION:

TAKE CARE TO AVOID SCRATCHING OR GOUGING SEAL AND WEAR RING GLANDS DURING INSTALLATION OR REMOVAL. ORIENT SINGLE ACTING SEALS WITH BACK-UPS FACING AWAY FROM OIL PASSAGES AS SHOWN. SEALS WILL HAVE TO BE BENT INTO A KIDNEY SHAPE TO INSTALL INTO GROOVES. BEND SEAL BACK-UPS AS LITTLE AS POSSIBLE.

3. ROTARY UNION ASSEMBLY:

LUBRICATE SPINDLE O.D. AND HOUSING I.D. WITH HYDRAULIC OIL OR VASELINE AND ASSEMBLE ROTARY UNION. APPLY ANTI-SEIZE AND TORQUE THE TWO MOUNTING BOLTS (2008-8AA) TO 77 FT.-LBS.

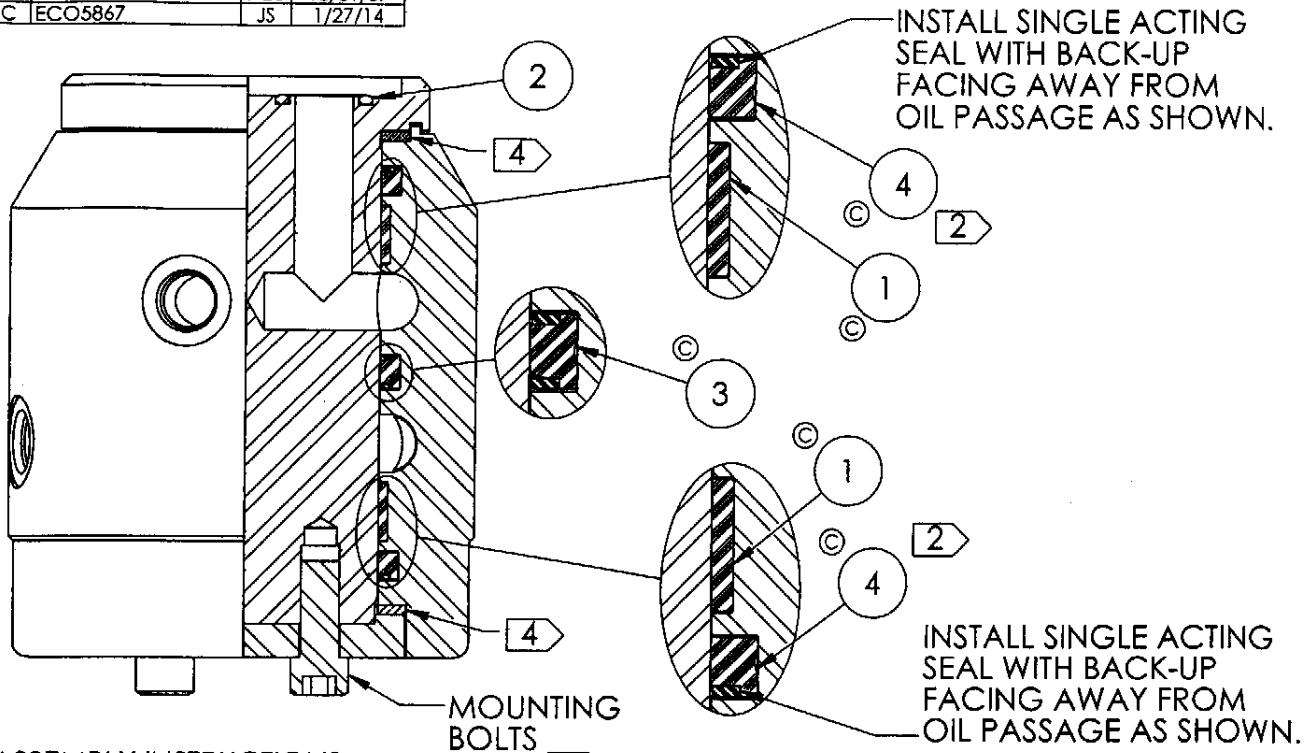
4. ROTARY UNION INSPECTION:

CHECK THAT END PLAY BETWEEN SPINDLE AND HOUSING IS .007" MIN. AS SHOWN AND ENSURE HOUSING ROTATES FREELY.

REV	DESCRIPTION	DATE	BY	CHKD
2	ECO 2/25/01	2/25/01	ECO	ECO
1	ECO 1/16/97	1/16/97	ECO	ECO
0	ECO 1/16/97	1/16/97	ECO	ECO

TOLERANCES DIMENSIONAL TOLERANCES EXCEPT WHERE SPECIFIED: FRACTIONAL: 1/16 ANGULAR: ±1 TWO PLACE DECIMAL: ±0.020 THREE PLACE DECIMAL: ±0.010	PROPRIETARY INFORMATION THE INFORMATION CONTAINED ON THIS DRAWING IS THE PROPERTY OF YOUNG CORPORATION, SEATTLE, WASHINGTON. IT SHALL NOT BE COPIED OR DUPLICATED WITHOUT THEIR WRITTEN CONSENT.	USED ON	LO-100C, LO-125C, LO-150C, LO-200C, LO-250C
		COMPANION	gjt
ROTARY UNION ASSEMBLY		ENG DWN	DATE
		NOE	G.K. 09-28-04
		SCALE	7/8
		SHEET	1 OF 1
		REV	28W2177 B

DWG. NUMBER: 587V735				TOLERANCE: EXCEPT WHERE SPECIFIED	DECIMAL: .XX +/- .02 .XXX +/- .010	FRACTIONAL: +/- 1/16 ANGULAR : +/- 1°	STATUS	INITIALS	DATE
LTR	CHANGE	BY	DATE				CHECKED		
A	ECO3114	JS	1/25/06				PRE-PROD.		
B	ECO3563	PCJ	10/31/07				PRODUCTION		
C	ECO5867	JS	1/27/14						



ASSEMBLY INSTRUCTIONS:

1. **PARTS INSPECTION:**
INSPECT HOUSING SEAL GLANDS FOR GOUGES AND SCRATCHES WHICH WILL BE A SOURCE OF OIL LEAKAGE. CHECK SPINDLE SURFACE FOR SMALL SCRATCHES IN SEAL AND WEAR RING LOCATIONS. CLEAN, DEBURR AND REPAIR AS REQUIRED.
2. **SEAL INSTALLATION:**
TAKE CARE TO AVOID SCRATCHING OR GOUGING SEAL AND WEAR RING GLANDS DURING INSTALLATION OR REMOVAL. ORIENT SINGLE ACTING SEALS WITH BACK-UPS FACING AWAY FROM OIL PASSAGES AS SHOWN. SEALS WILL HAVE TO BE BENT INTO A KIDNEY SHAPE TO INSTALL INTO GROOVES. BEND SEAL BACK-UPS AS LITTLE AS POSSIBLE.
3. **ROTARY UNION ASSEMBLY:**
LUBRICATE SPINDLE O.D. AND HOUSING I.D. WITH HYDRAULIC OIL OR VASELINE AND ASSEMBLE ROTARY UNION. APPLY ANTI-SEIZE LUBRICANT TO MOUNTING BOLTS AND TORQUE TO 77 FT - LBS. ROTATE HOUSING TO ENSURE THAT IT TURNS FREELY.
4. **THRUST RINGS ARE NOT PART OF SEAL KIT AND ARE SHOWN FOR REFERENCE ONLY.**

ITEM	QTY	PART NO.	DESCRIPTION
1	2	5321P3006	WEAR RING, 3 3/4" O.D. x 3/4" WIDE
2	2	5301P214	SEAL, O-RING, 1" I.D. x 1 1/4" O.D. x 1/8" WALL
3	1	5327P28	SEAL, DOUBLE ACTING, 3 1/2" I.D.
4	2	5328P28	SEAL, SINGLE ACTING, 3 1/2" I.D.
5	1	REF	SEAL KIT INSTALLATION (587V735) (INCLUDE THIS DRAWING IN KIT)

©A
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USED ON	PROPRIETARY DOCUMENT		ROTARY UNION SEAL KIT					
28W2177	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF YOUNG CORPORATION. ANY REPRODUCTION IN PART OR IN WHOLE WITHOUT THE WRITTEN PERMISSION OF YOUNG CORPORATION IS STRICTLY PROHIBITED.							
28W2197		ENG	DWN	DATE	SCALE	SHEET	587V735	REV
28W2213		NOE	NOE	10-29-04	7:16	1 OF 1		C
28W2215								

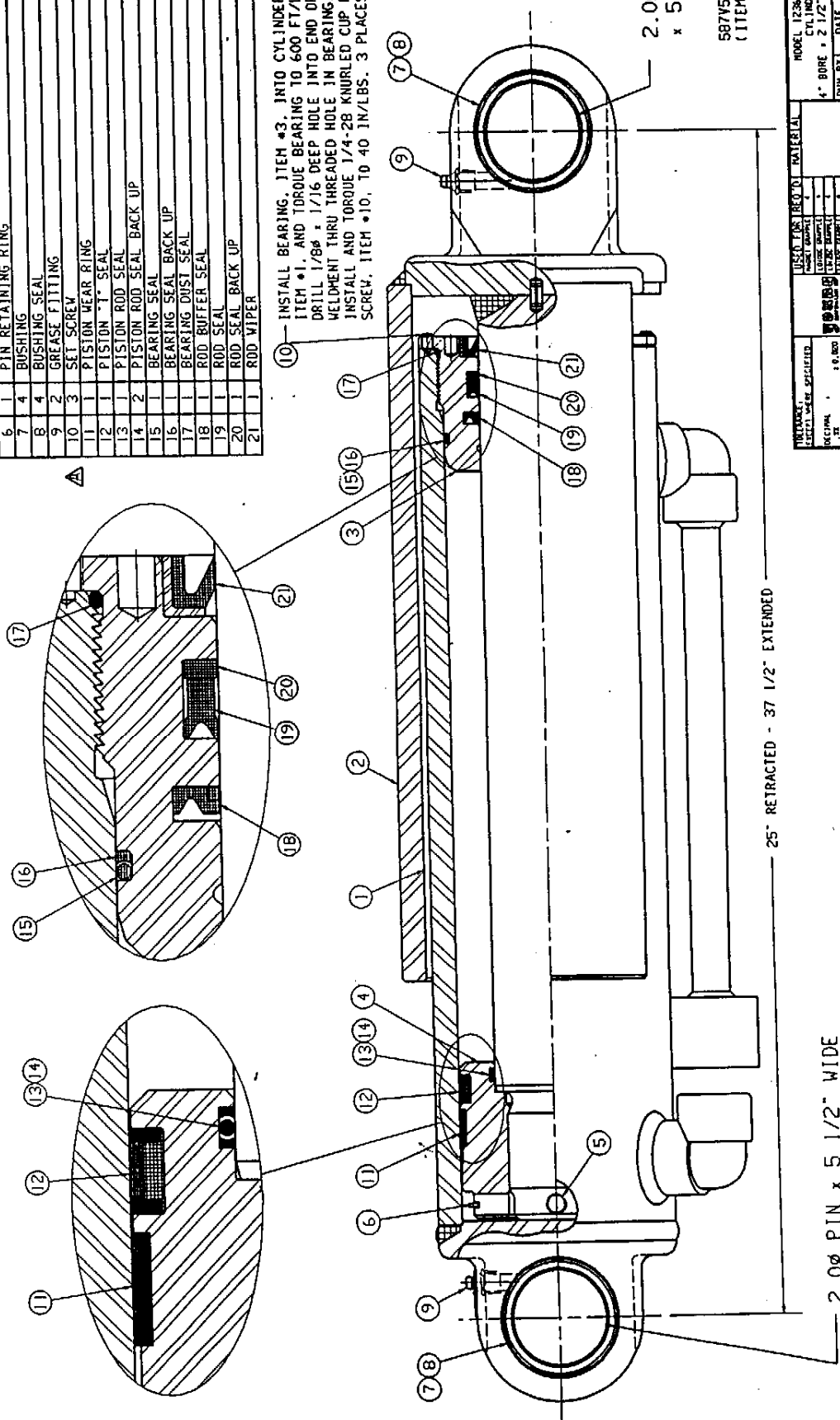
15W359

ISSUE NO	TITLE: MAGNET GRAPPLE CYLINDER							
4	ASSY. NO.: D-23803			DATE: 05-28-97				
ISSUE DATE WCM 09/07/11	DWG. REV	PARTS LIST: 1236	CODE	SIZE	NORDICK	NO. RECD	ITEM NO.	
		PART NAME			PART NUMBER			
<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> ECO 4784 </div> <div style="text-align: center;"> ECO 4019 </div> <div style="text-align: center;"> ECO 3646 </div> <div style="text-align: center;"> ECO 3153 </div> </div>	0	ASSEMBLY DRAWING	A	D	23803			
	0	CYLINDER WELD	A	D	23804	1	1	
	4	BARREL	N	C	23805	1		
	/	ELBOW	N	/	22050	1		
	/	ELBOW	N	/	1182-4	1		
	3	BLIND END	N	C	17600	1		
	/	PORT TUBE	N	/	23806	1		
	2	MANIFOLD BLOCK	N	B	21869	1		
	/	PLUG	N	/	2050-8	1		
	0	ROD WELDMENT	A	D	23807	1	2	
	0	ROD	N	C	23808	1		
	0	ROD EYE	N	C	23809	1		
	0	SHROUD	N	B	23810	1		
	/	ROLL PIN	N	/	5021P1	1		
	ECO 3555	1	BEARING	A	C	23821	1	3
	ECO 2764	1	PISTON	A	C	22496	1	4
		/	PISTON LOCK PIN	A	/	2084-3.25 x .375	1	5
		/	PIN RETAINING RING	A	/	2062-350	1	6
		/	BUSHING	A	/	534V368	4	7
		/	BUSHING SEAL	A	/	2189P20023	4	8
	/	GREASE FITTING	A	/	1120-1	2	9	
ECO 2364	/	SET SCREW	A	/	1864-2-C-L	3	10	
	/	NAME TAG	A	A	10713	1	11	
	/	DRIVE SCREW	A	/	12393	2	12	
	/	SHIPPING PLUG	A	/	2077-8	2	13	
* *		PACKING KIT (#14-#24)	A	/	587V512			
	/	PISTON WEAR RING	A	/	1997-4.0	1	14	
	/	PISTON "T" SEAL	A	/	2117-4.0	1	15	
	/	PISTON ROD SEAL	A	/	5301P230	1	16	
	/	PISTON ROD SEAL B/U	A	/	5304P230	2	17	
	/	BEARING SEAL	A	/	5300P240	1	18	
	/	BEARING SEAL B/U	A	/	1963-4.0	1	19	
	/	BEARING DUST SEAL	A	/	5300P155	1	20	
	/	ROD BUFFER SEAL	A	/	5303P20	1	21	
	/	ROD SEAL	A	/	2099P25171	1	22	
	/	ROD SEAL BACK UP	A	/	5302P2002	1	23	
	/	ROD WIPER	A	/	2189P25039	1	24	

DRAWING NUMBER: 15W359

ITEM QTY	DESCRIPTION	PART NUMBER
1	CYLINDER WELDMENT	D-23804
2	ROD WELDMENT	D-23807
3	BEARING	C-23821
4	PISTON	C-22496
5	PISTON LOCK PIN	2084-3.25 x .375
6	PIN RETAINING RING	2062-350
7	BUSHING	534V368
8	BUSHING SEAL	2189P70023
9	GREASE FITTING	1120-1
10	SET SCREW	1864-2-C-1
11	PISTON WEAR RING	1997-4.0
12	PISTON 1" SEAL	2117-4.0
13	PISTON ROD SEAL	5301P230
14	PISTON ROD SEAL BACK UP	5304P230
15	BEARING SEAL	5300P240
16	BEARING SEAL BACK UP	1963-4.0
17	BEARING DUST SEAL	5300P155
18	ROD BUFFER SEAL	5303P20
19	ROD SEAL	2099P25171
20	ROD SEAL BACK UP	5302P2002
21	ROD VIPER	2189P25039

INSTALL BEARING, ITEM #3, INTO CYLINDER WELDMENT.
 ITEM #1, AND TORQUE BEARING TO 600 FT/LBS.
 DRILL 1/8" x 1/16 DEEP HOLE INTO END OF CYLINDER
 WELDMENT THRU THREADED HOLE IN BEARING.
 INSTALL AND TORQUE 1/4-28 KNURLED CUP POINT SET
 SCREW, ITEM #10, TO 40 IN/LBS. 3 PLACES.



25" RETRACTED - 37 1/2" EXTENDED

2.00 PIN x 5 1/2" WIDE

2.00 PIN
x 5" WIDE

5874512 PACKING KIT
(ITEMS 11 THRU 21)

REVISION	DATE	BY	CHKD	SCALE
1	06-03-97	G.K.		1/2

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	ITEM #1	1	EA	
2	ITEM #2	1	EA	
3	ITEM #3	1	EA	
4	ITEM #4	1	EA	
5	ITEM #5	1	EA	
6	ITEM #6	1	EA	
7	ITEM #7	1	EA	
8	ITEM #8	1	EA	
9	ITEM #9	1	EA	
10	ITEM #10	3	EA	
11	ITEM #11	1	EA	
12	ITEM #12	1	EA	
13	ITEM #13	1	EA	
14	ITEM #14	1	EA	
15	ITEM #15	1	EA	
16	ITEM #16	1	EA	
17	ITEM #17	1	EA	
18	ITEM #18	1	EA	
19	ITEM #19	1	EA	
20	ITEM #20	1	EA	
21	ITEM #21	1	EA	

MODEL 1234 MAGNET SHAPPLE
 CYLINDER ASSY FOR
 4" BORE x 2 1/2" ROD x 12 1/2" STROKE
 DWH BT DATE SCALE
 G.K. 06-03-97 1/2 15W359

DWG. NUMBER: 28V1074				TOLERANCE: EXCEPT WHERE SPECIFIED	DECIMAL: .XX +/- .02 .XXX +/- .010	FRACTIONAL: +/- 1/16 ANGULAR : +/- 1°	STATUS CHECKED PRE-PROD. PRODUCTION	INITIALS	DATE
LTR	CHANGE	BY	DATE						
A	ECO3407	NOE	2/26/07						
B	ECO3430	NOE	3/8/07						
C	ECO5420	BB	10/23/12						

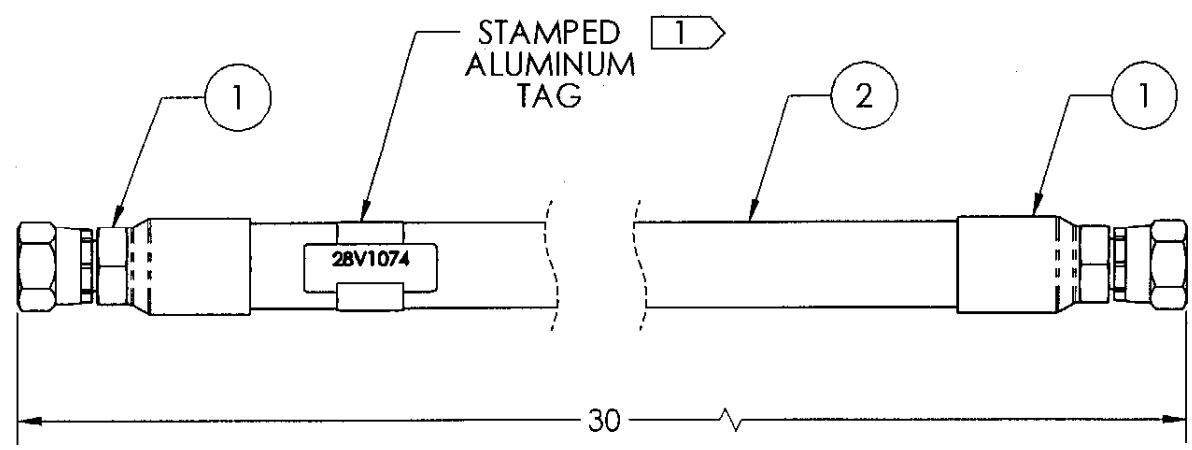
WEIGHT: 3 #

DESCRIPTION:
 BUY OUT HOSE.
 1/2" HOSE WEATHERHEAD DIAMOND SERIES H430, 30" LENGTH.
 6,000 PSI AND 3.5" MINIMUM BEND RADIUS.
 1/2" FEMALE JIC STRAIGHT FITTING BOTH ENDS.

LOCAL SUPPLIER:
 FITTINGS INC. 206-767-4670

ORDER THE FOLLOWING WEATHERHEAD COMPONENTS:

HOSE TYPE	FITTING	FITTING
H43008	43008U-608	43008U-608



NOTE:

T YOUNG CORP. TO MARK ALUMINUM I.D. TAG WITH HOSE ASSEMBLY PART NUMBER AND ATTACH TAG TO HOSE.
 LOCAL SUPPLIER CAN NOT SUPPLY CUSTOM I.D. TAGS.

BILL OF MATERIALS				DRAWING NUMBER: 28V1074	
ITEM	QTY	PART NO.	DESCRIPTION	WEIGHT	TOTAL
1	2	43008U-608	1/2" JIC FEMALE STRAIGHT x 1/2" HOSE	0	0
2	1	H43008	1/2" HOSE, 6000 PSI	3	3

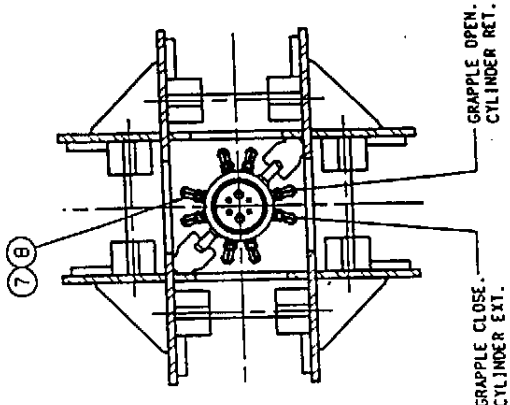
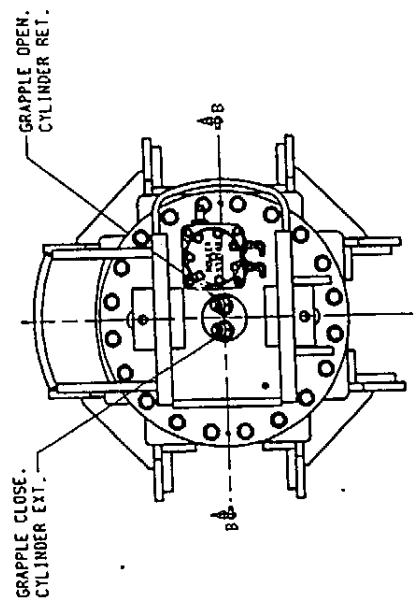
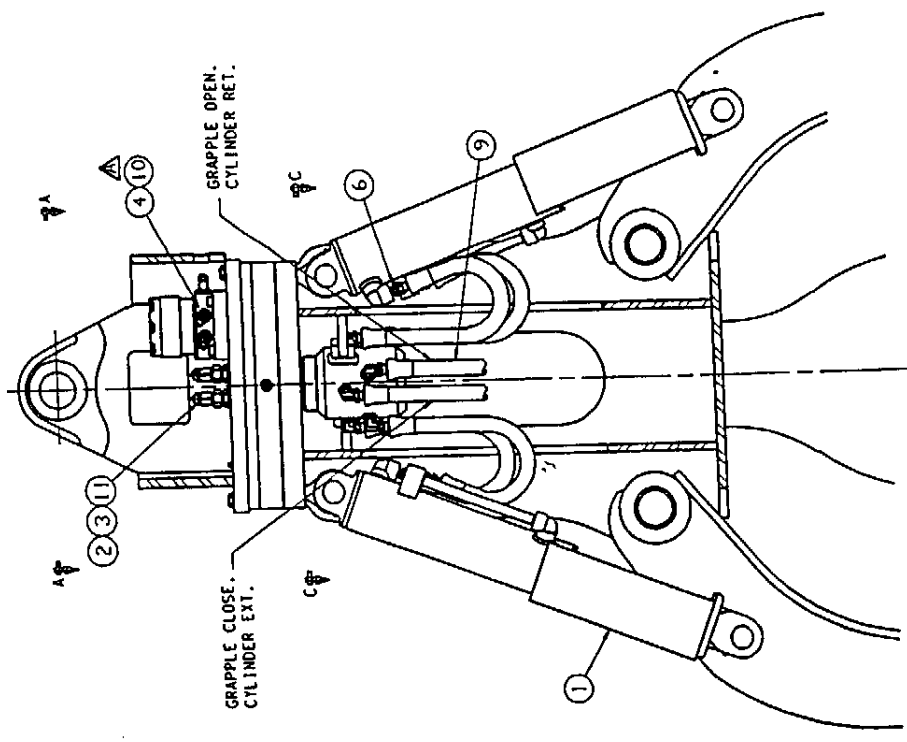
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USED ON	MATERIAL		HOSE ASSEMBLY				28V1074	REV
LO-100C LO-125C LO-150C LO-200C								ENG DWN
			NOE	NOE	3/8/07	1:2	1 OF 1	

DRAWING NUMBER: 632W1744
 BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	PART NUMBER
1	4	GRAPPLE HYDRAULIC CYLINDER	15W359
2	2	STRAIGHT THREAD CONNECTOR	2423-12-12
3	2	SWIVEL NUT 45° ELBOW	2430-12-12
4	2	STRAIGHT THREAD ELBOW	2425-6-10
5			2400-8-6
6	8	MALE CONNECTOR	2423-8-8
7	8	STRAIGHT THREAD CONNECTOR	2429-8-8
8	8	SWIVEL NUT 90° ELBOW	28V1074
9	8	HOSE ASSEMBLY	2437-6
10	2	JIC CAP: #6	
11	2	JIC CAP: #12	

DRAWING NUMBER: 632W1744		DATE
CHANGE	NOE	08-08-05
A	ECD 2934	NOE 08-25-05
A	ECD 2948	



NOTE:

- 1 TO CONVERT TO ORFS FITTINGS, REMOVE EXISTING FITTINGS (JIC), ITEMS #2, #3, #4, #8 AND #9.
- 2 INSTALL FITTINGS LISTED ON DRAWING NO.: 632W1745
- 3 ITEM #2 MUST BE FORGED FITTINGS (PARKER 12-12 VS0L0-5)

SECTION B-B

ITEM NO.	DATE	STATUS	INITIALS	DATE	USED FOR	REQ. QTY.	MATERIAL
1		CHECKED			LD-100C		
2					LD-125C		
3					LD-150C		
4					LD-200C		
5					LD-250C		

GRAPPLE HYDRAULIC PLUMBING			
DWN BY	DATE	SCALE	632W1744B
NOE	10-25-04	-	

DRAWING NUMBER: 587V746

LTR	CHANGES	DATE
-----	---------	------

HYDRAULIC PLUMBING DRAWING - JIC AS STD

- LO-100C: 632W1744
- LO-125C: 632W1744
- LO-150C: 632W1744
- LO-200C: 632W1744
- LO-250C: 632W1744

REMOVE FROM ABOVE DRAWINGS

QTY	DESCRIPTION	PART NUMBER
2	STR. THD. CONNECTOR - SAE TO JIC	2423-12-12
2	SWIVEL NUT ELBOW-45° - JIC TO JIC	2426-12-12
2	STR. THD. ELBOW	2425-6-10
2	JIC CAP: #6	2437-6
2	JIC CAP: #12	2437-12

HYDRAULIC PLUMBING DRAWING - ORFS OPTION

- LO-100C: 632W1745
- LO-125C: 632W1745
- LO-150C: 632W1745
- LO-200C: 632W1745
- LO-250C: 632W1745

ADD KIT

QTY	DESCRIPTION	PART NUMBER
2	STR. THD. ELBOW-90° - SAE TO ORFS	2502-6-10
2	STR. THD. ELBOW-45° - SAE TO ORFS	2501-16-12
2	ORFS CAP: #6	2522-6
2	ORFS CAP: #16	2522-16

MUST BE A FORGED FITTING (PARKER 16-12 V5DLO-S)

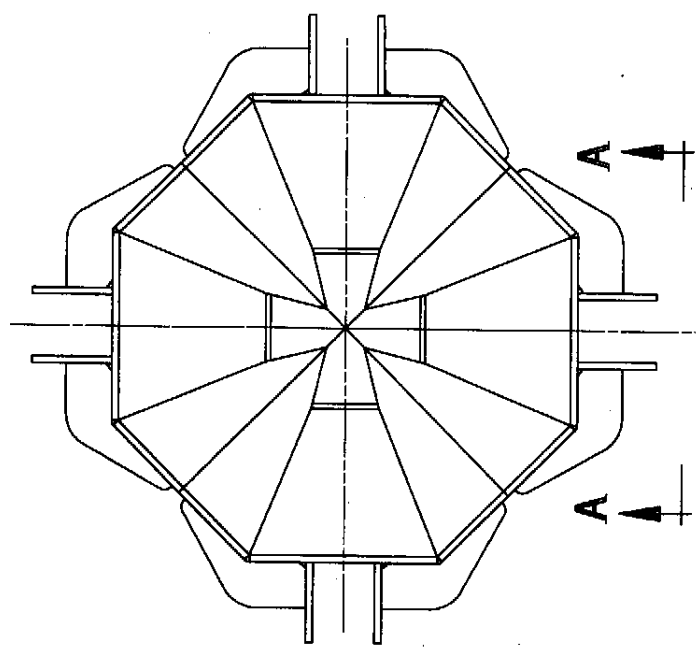
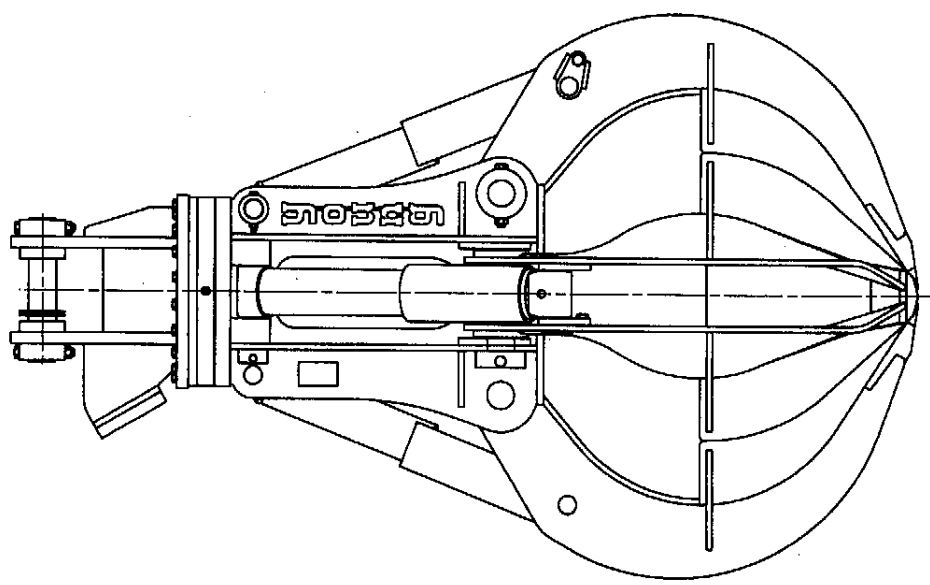
NOTE:

THIS KIT IS TO CONVERT GRAPPLE FROM JIC FITTINGS TO ORFS FITTINGS AND MUST BE INSTALLED PRIOR TO SHIPPING GRAPPLE.

FOR GRAPPLE WITH ROTATION MOTOR

young	USE FOR	REQ'D	MATERIAL	O.R.F.S. CONVERSION KIT		
	LO-100C					
	LO-125C			DWN BY	DATE	SCALE
	LO-150C			NOE	09-21-05	-
	LO-200C			587V746		
	LO-250C					

ITEM ID	PART/SPEC.	DESCRIPTION	WEIGHT	TOTAL
DRAWING NUMBER: 587W719				



VIEW AA

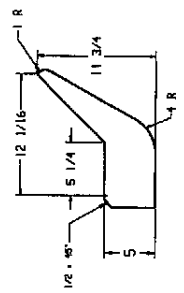
NOTE : THIS DRAWING IS FOR PARTS BOOK USE ONLY.
 FOR FABRICATION DETAILS SEE 587W719 SHEET 2.

BILL OF MATERIALS ITEM ID PART/SPEC. DESCRIPTION WEIGHT TOTAL		PROPRIETARY INFORMATION THE INFORMATION CONTAINED ON THIS DRAWING IS THE PROPERTY OF TUNGSHAN. REPRODUCTION OR TRANSMISSION IN ANY FORM OR BY ANY MEANS WITHOUT THEIR WRITTEN CONSENT IS STRICTLY PROHIBITED.		USED IN 587W719		LO-150C GRAPPLE LEG ENCLOSURE KIT	
TOLERANCES: FRACTIONS: 1/16, 1/8, 3/16, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1	DECIMALS: 0.0005, 0.001, 0.002, 0.005, 0.01, 0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100	DATE: 11-19-04 BY: [Signature] CHECKED BY: [Signature]	DATE: 11-19-04 BY: [Signature] CHECKED BY: [Signature]	SCALE: 1/2" = 1'-0"	SHEET: 1 OF 2	DRAWING NUMBER: 587W719	SHEET: 1 OF 2

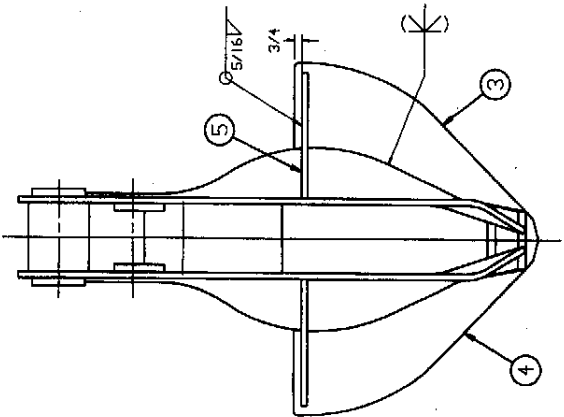
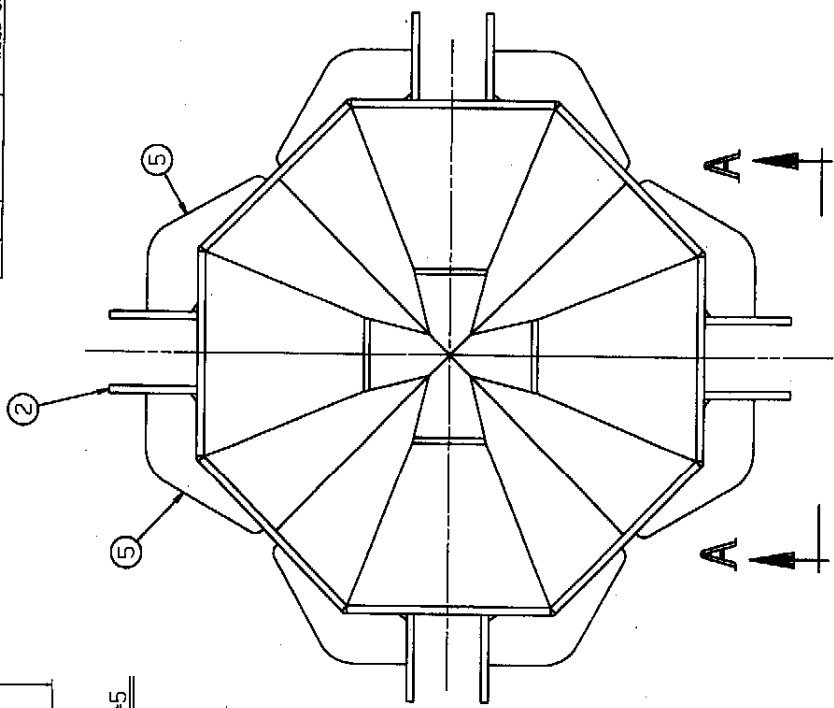
DRAWING NUMBER: 587N719

ITEM	QTY	PART/SPEC.	DESCRIPTION	WEIGHT	TOTAL
1	1		LO100B GRAPPLE ASSEMBLY (REF.) 520W321	-	-
2	4		GRAPPLE LEG ASSEMBLY (REF.) 169Y395	-	-
3	4		3/4" A514 PLATE : LEG ENCLOSURE PLATE	48	192
4	4		3/4" A514 PLATE : LEG ENCLOSURE PLATE	48	192
5	8		3/4" A514 PLATE : GUSSET	13	104
6	1		WELD SPECIFICATION	-	-

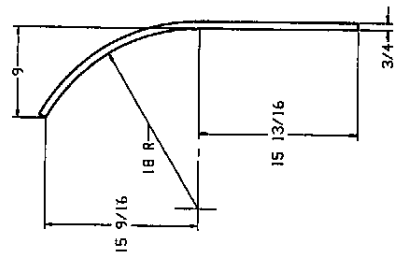
TOTAL PLATE WEIGHT: 503*



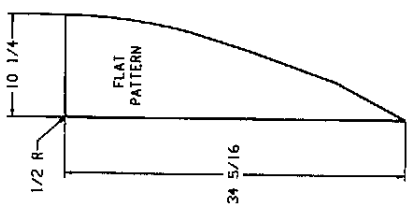
DETAIL ITEM #5



VIEW AA



DETAIL ITEM #3



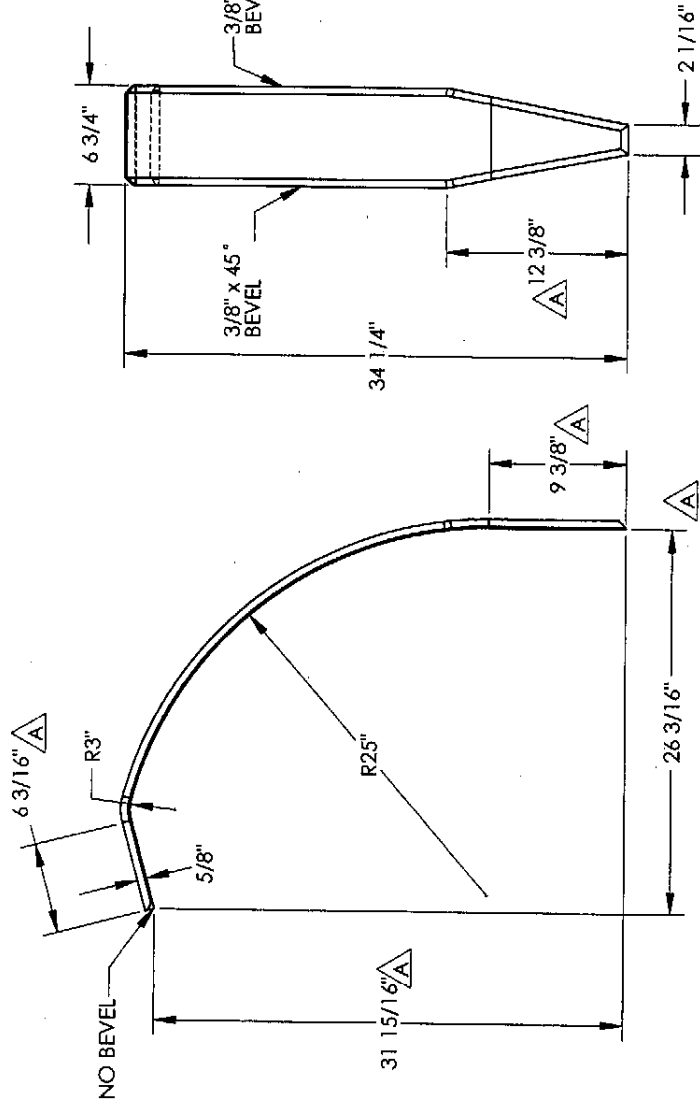
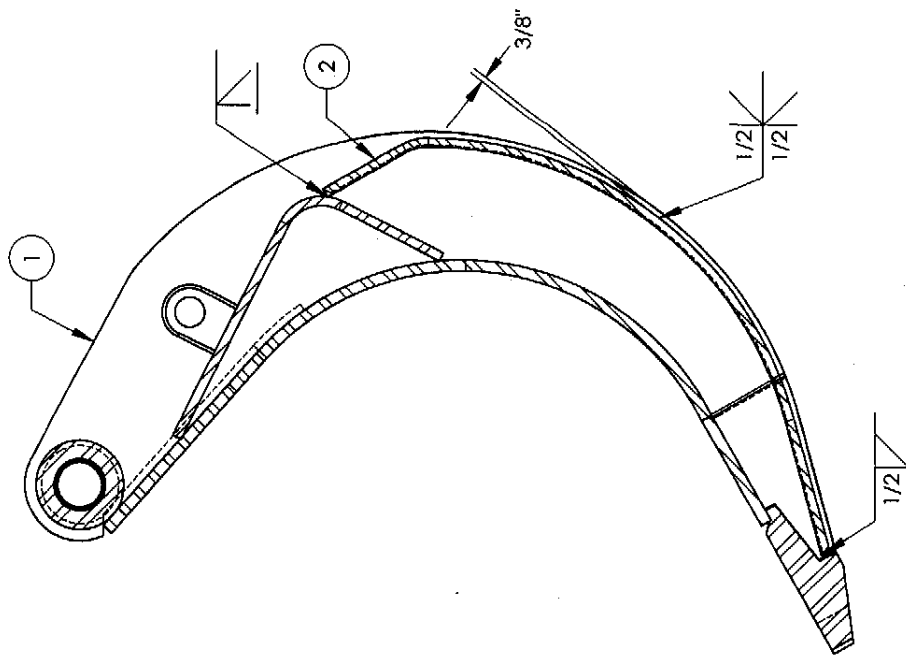
ITEM #4 OPPOSITE

NOTE : USE FOR FABRICATION ONLY.
DO NOT USE IN PARTS BOOK.

PROPRIETARY INFORMATION THE INFORMATION CONTAINED ON THIS DRAWING IS THE PROPERTY OF THE COMPANY AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT THE WRITTEN CONSENT OF THE COMPANY.	USED ON S20W321	LO-150C GRAPPLE LEG ENCLOSURE KIT
SPECIALS SPECIFIED: SECTION 1 : 0.000 SECTION 2 : 0.010 SECTION 3 : 0.015 SECTION 4 : 0.020	DATE 11-19-04	SCALE 1/4" = 1"
DATE 11-19-04	BY [Signature]	DRAWN BY [Signature]

BILL OF MATERIALS			
ITEM	QTY.	PART NO.	DESCRIPTION
1	1	169Y395	GRAPPLE LEG (REFERENCE)
2	1	5012M10	5/8 PLATE A572-50
			WEIGHT TOTAL
			52
			S2

DRAWING NO. 587W724

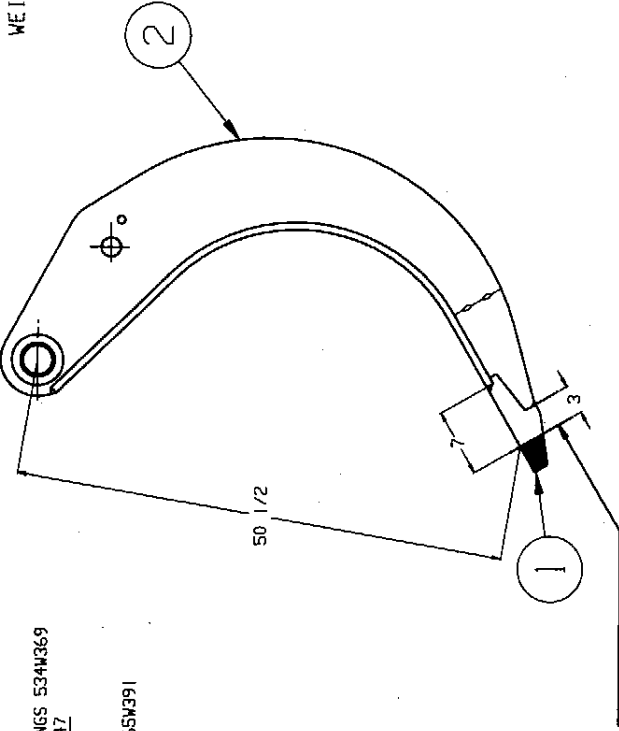


DETAIL ITEM #1

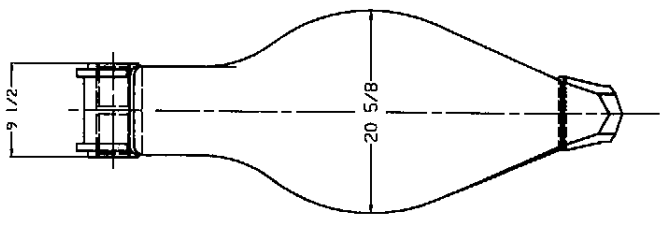
TOLERANCES		PROPRIETARY INFORMATION		USED ON	
DIMENSIONAL TOLERANCES EXCEPT WHERE SPECIFIED: FRACTIONAL: 1/16 ANGULAR: ±1° TWO PLACE DECIMAL: ±0.020 THREE PLACE DECIMAL: ±0.010		THE INFORMATION CONTAINED ON THIS DRAWING IS THE PROPERTY OF YOUNG CORPORATION, SEATTLE WASHINGTON. IT SHALL NOT BE COPIED OR DUPLICATED WITHOUT THEIR WRITTEN CONSENT.		169Y395	
DIMENSIONAL TOLERANCES EXCEPT WHERE SPECIFIED: FRACTIONAL: 1/16 ANGULAR: ±1° TWO PLACE DECIMAL: ±0.020 THREE PLACE DECIMAL: ±0.010		YOUNG CORPORATION		LO-150C GRAPPLE LEG REINFORCEMENT KIT	
LTR CHANGE BY REVISIONS		ENGR/DWN NOE/MRV		DATE 11-15-04	
A LTR CHANGE BY REVISIONS		SCALE 1:8		SHEET 1 OF 1	
REV 587W724 A		REV 587W724 A		REV 587W724 A	

BILL OF MATERIALS			DRAWING NUMBER: 587W729		
ITEM	QTY	PART/SPEC. #	DESCRIPTION	WEIGHT	TOTAL
1	1	211146	LEG TIP CASTING	34	34
2	1	169T395	GRAPPLE LEG REF.		
3	1	613V62	WELD SPECIFICATION FOR CASTING		

125/3.497 ϕ THRU FOR (2) BUSHINGS 534H369
 3.499 ϕ (2) SEALS 21B9P30047
 125/2.003 ϕ FOR PIN 365V391
 2.008 ϕ



WEIGHT: 34*



MAXIMUM TIP CASTING WEAR. THE TIP CASTING MUST BE REPLACED WITH A NEW ONE TO PREVENT THE HYDRAULIC CYLINDER FROM FULLY EXTENDING WHEN THE GRAPPLE IS COMPLETELY CLOSED. IF THE GRAPPLE LEG TIP IS NOT REPLACED AT THIS TIME, DAMAGE TO THE HYDRAULIC CYLINDERS COULD RESULT.

NEW GRAPPLE LEG REFERENCE DIMENSIONS

TOLERANCE:	PROPRIETARY INFORMATION	USED ON
EXCEL WHERE SPECIFIED	THE INFORMATION CONTAINED ON THIS DRAWING IS THE PROPERTY OF YOUNG & RUBICAM. IT IS TO BE KEPT IN CONFIDENCE AND NOT REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THEIR WRITTEN CONSENT.	169T395
DECIMAL: ± 0.020		
FRACTIONAL: ± 0.010		
ANGLES: ± 1/16		
MAGNIFICATION: ± 1.000		

DATE	CHANGE	BY	DATE

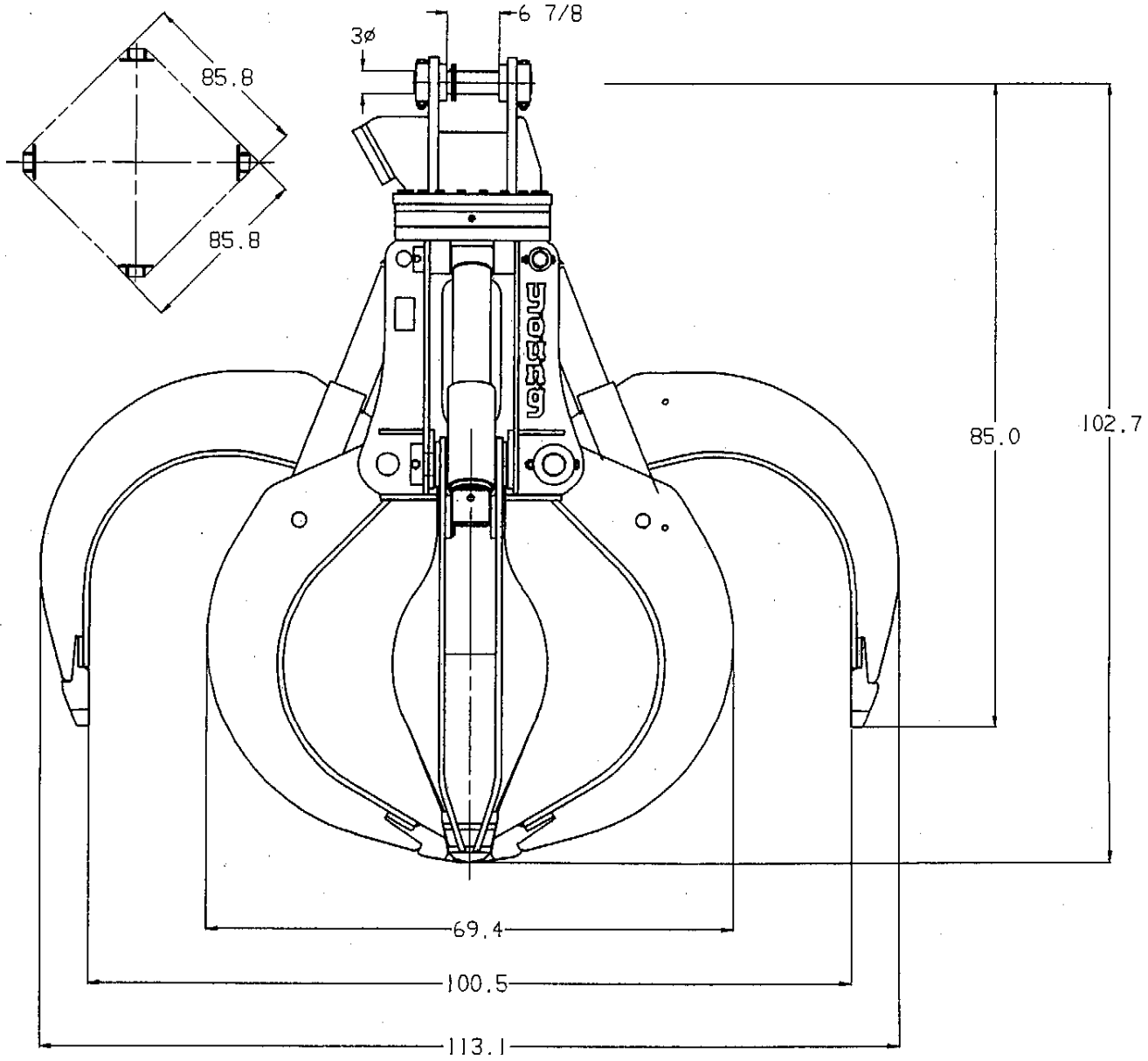
NO.	REVISION	DATE	SCALE	T.B.
1		11-15-04		

YOUNG & RUBICAM

LO-150C
 GRAPPLE LEG REBUILD KIT

587W729 /

DWG. NUMBER: 613V160		TOLERANCE:	DECIMAL:	FRACTION: $\pm 1/16$	STATUS	INITIALS	DATE
LTR	CHANGE	EXCEPT WHERE SPECIFIED	.XX ± 0.020 .XXX ± 0.010	ANGLE : ± 1 DEG	CHECKED		
					PRE-PROD.		
					PRODUCTION		



TOLERANCE: UNLESS SPECIFIED OTHERWISE	USED ON	MATERIAL	LO-150C SPEC SHEET				REV
DECIMAL : .XX ± 0.020 .XXX ± 0.010	LO-150C						
FRACTIONAL: $\pm 1/16$			NOE	NOE	10-21-04	-	613V160 /
ANGULAR : ± 1 DEG			young CORPORATION				

DRAWING NUMBER: 446V16
 PART NUMBER
 TYPE
 SIZE

BILL OF MATERIALS
 ITEM QTY SIZE

DRAWING NUMBER: 446V16
 SUPERVISOR CHANGE DATE

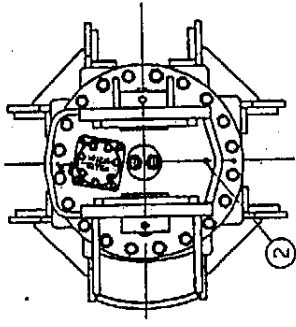
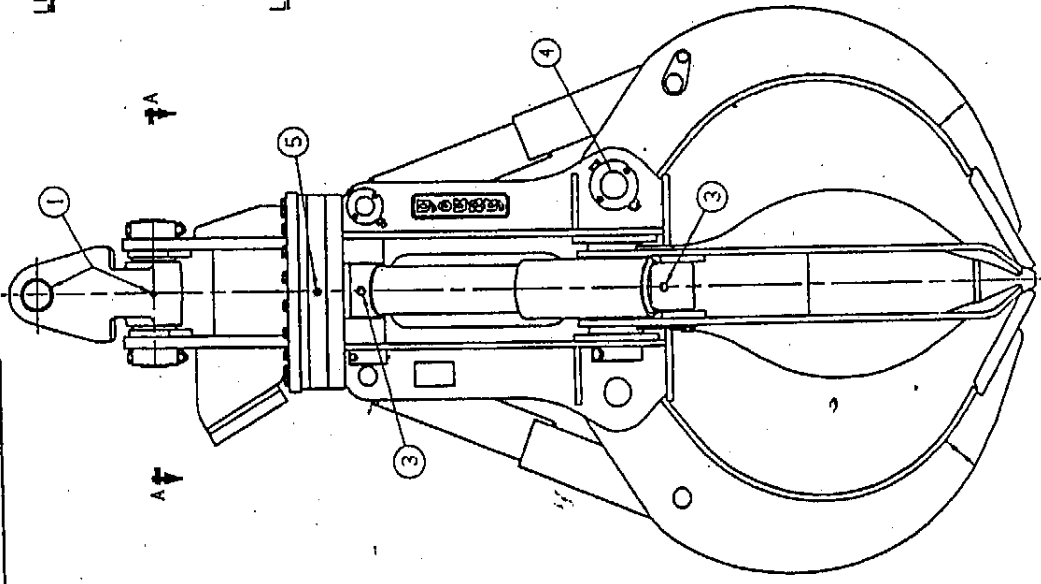
LUBRICATION INSTRUCTIONS
 ALWAYS WIPE GREASE FITTINGS CLEAN PRIOR TO LUBRICATING.

USE A HAND OPERATED GREASE GUN WITH A LITHIUM BASED, MULTI PURPOSE, "EP" (EXTREME PRESSURE) #2 GREASE WHICH CONTAINS 3% MOLYBDENUM DISULFIDE AND MEETS N.L.G.I. (NATIONAL LUBRICATION GREASE INSTITUTE) #2 STANDARDS.

ALWAYS CONSULT YOUR LOCAL DEALER WHEN QUESTIONS ARISE ABOUT LUBRICATION OR OIL SPECIFICATIONS.

LUBRICATION SCHEDULE AND LOCATION
 GREASE INTERVALS VARY ACCORDING TO OPERATING CONDITIONS

- DAILY OR EVERY 4 HOURS
1. SWIVEL LINK PINS (2 PLACES)
 2. ROTATION BEARINGS (1 PLACE)
 3. CYLINDER PIVOT PINS (8 PLACES)
 4. LEG PIVOT PINS (4 PLACES)
 5. ROTATION GEAR (1 PLACE)
 INITIAL PROCEDURE:
 GREASE THOROUGHLY AT INITIAL START UP AND EVERY 40 OPERATING HOURS THEREAFTER.
 TO ASSURE UNIFORM GREASE DISTRIBUTION THROUGHOUT THE BEARING, APPLY TWO COMPRESSIONS WITH A HAND OPERATED GREASE GUN. ROTATE THE GRAPPLE 90° AND REPEAT AS ABOVE FOR ONE COMPLETE ROTATION.
- CAUTION: DO NOT STAND IN THE PATH OF THE GRAPPLE DURING ROTATION.



VIEW A-A

REVISION	DATE	INITIALS	DATE	USED FOR	OIL	MATERIAL
1				U-100B		
2				U-125B		
3				U-150B		
4				U-200B		

STATUS	ORDERED	PRE-PRODUCTION	PRODUCTION
DATE			

SCALE	1:1
FRACTION	1/16
ANGLE	1:1

DRAWN BY	DATE	SCALE
G.K.	12-09-97	1/12

GRAPPLE LUBRICATION CHART

446V16 /

DWG. NUMBER: 163V75			TOLERANCE:	DECIMAL:	FRACTION: +/- 1/16	STATUS	INITIALS	DATE
LTR	CHANGE	DATE	EXCEPT WHERE	.XX +/- .020	ANGLE : +/- 1 DEG	CHECKED		
A	ECO4088	07-23-09	SPECIFIED	.XXX +/- .010		PRE-PROD.		
						PRODUCTION		

RING BEARING BOLT INSPECTION PROCEDURE

USE THIS PROCEDURE TO ENSURE THE BOLTED JOINTS OF THE RING BEARING ARE NOT SEPARATING. A JOINT GAP WHICH IS LARGER THAN THE ORIGINAL GAP DIMENSION INDICATES LOOSE OR STRETCHED BOLTS WHICH REQUIRE IMMEDIATE ATTENTION.

1. DAILY INSPECTION:


- A. VISUALLY INSPECT THE OUTER RING BEARING BOLTS FOR LOOSENING.
- B. VISUALLY INSPECT THE GAPS BETWEEN THE RING BEARING, THE SPINDLE AND THE HEAD. SEE SHEET 2 AND SHEET 3 FOR PARTS IDENTIFICATION, ORIGINAL GAP DIMENSIONS AND HOW TO IDENTIFY BEARING SIZE. IF THE GAPS ARE LARGER THAN THE DIMENSIONS SHOWN ON SHEET 3, PROCEED TO STEP 2 A.

2. FIRST 30 DAYS OF OPERATION AND ANNUAL INSPECTION:

- A. REMOVE THE INNER BOLT ACCESS PLUGS (2 PLACES) FROM THE TOP SIDE OF THE SPINDLE TO ACCESS THE INNER MOUNTING BOLTS.
- B. PERFORM A BOLT TORQUE INSPECTION BY APPYLING 60 FT/LBS OF TORQUE (CLOCKWISE FROM ABOVE) IN THE TIGHTENING DIRECTION . ANY BOLTS THAT ROTATE DURING THE INSPECTION ARE CONSIDERED LOOSE AND MUST BE REINSTALLED OR REPLACED.
- C. BOLT REINSTALLATION:
IF THERE ARE LOOSE BOLTS WITH NO SEPARATION AT THE BOLTED JOINT, BOLTS MAY BE REINSTALLED PER BOLT INSTALLATION PROCEDURE 163V76
- D. BOLT REPALCEMENT:
IF THERE ARE LOOSE BOLTS WITH SEPARATION AT THE BOLTED JOINT, ALL THE BOLTS MUST BE REMOVED, CHECKED FOR THREAD DAMAGE AND BOLT STRETCH AND REPLACED IF REQUIRED. ALL THREADED HOLES MUST BE CHECKED FOR DAMAGE AND REPAIRED PER ONE OF THE THREAD REPAIR KITS SHOWN BELOW. REINSTALL THE NEW BOLTS PER BOLT INSTALLATION PROCEDURE 163V76

BEARING NUMBER	THREAD REPAIR KIT
385W34 -----	587V838
385W35 -----	587V839
385W37 -----	587V840

PROPRIETARY INFORMATION | THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF YOUNG CORPORATION SEATTLE WA. IT SHALL NOT BE COPIED OR DUPLICATED WITHOUT THEIR WRITTEN CONSENT.

USED ON		MATERIAL			RING BEARING BOLT INSPECTION PROCEDURE					
385W34					ENG	DWN	DATE	SCALE	163V75	REV
385W35					G.K.	G.K.	05-08-09	-		A
385W37										

DWG. NUMBER: 163V75			TOLERANCE:	DECIMAL:	FRACTION: +/- 1/16	STATUS	INITIALS	DATE
LTR	CHANGE	DATE	EXCEPT WHERE	.XX +/- .020	ANGLE : +/- 1 DEG	CHECKED		
A	ECO4088	07-23-09	SPECIFIED	.XXX +/- .010		PRE-PROD.		
						PRODUCTION		

PARTS IDENTIFICATION

OUTER BEARING MOUNTING BOLTS

INNER BEARING MOUNTING BOLT ACCESS PLUGS (2)

SPINDLE

SPINDLE BOTTOM PLATE (RING BEARING MOUNTING SURFACE)

SPINDLE DOWEL PINS (2)


INNER BEARING MOUNTING BOLTS

RING BEARING


HEAD DOWEL PINS (2)

HEAD TOP PLATE (RING BEARING MOUNTING SURFACE) CHECK TO MAKE SURE THE SURFACE IS FLAT TO Δ .006" TOLERANCE

HEAD

Δ  .006

PROPRIETARY INFORMATION | THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF YOUNG CORPORATION SEATTLE WA. IT SHALL NOT BE COPIED OR DUPLICATED WITHOUT THEIR WRITTEN CONSENT.

USED ON	MATERIAL		RING BEARING BOLT INSPECTION PROCEDURE			
385W34			ENG	DWN	DATE	SCALE
385W35			G.K.	G.K.	09-16-08	1/16
385W37			163V75		REV	A

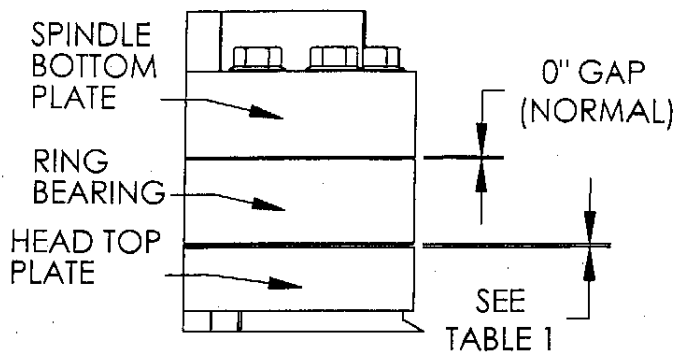
DWG. NUMBER: 163V75			TOLERANCE:	DECIMAL:	FRACTION: +/- 1/16	STATUS	INITIALS	DATE
LTR	CHANGE	DATE	EXCEPT WHERE	.XX +/- .020	ANGLE : +/- 1 DEG	CHECKED		
A	ECO4088	07-23-09	SPECIFIED	.XXX +/- .010		PRE-PROD.		
						PRODUCTION		

OPERATORS DAILY INSPECTION PROCEDURE

BEARING IDENTIFICATION

THE BEARING PART NUMBER CAN BE DETERMINED BY MEASURING AROUND ITS CIRCUMFERENCE.

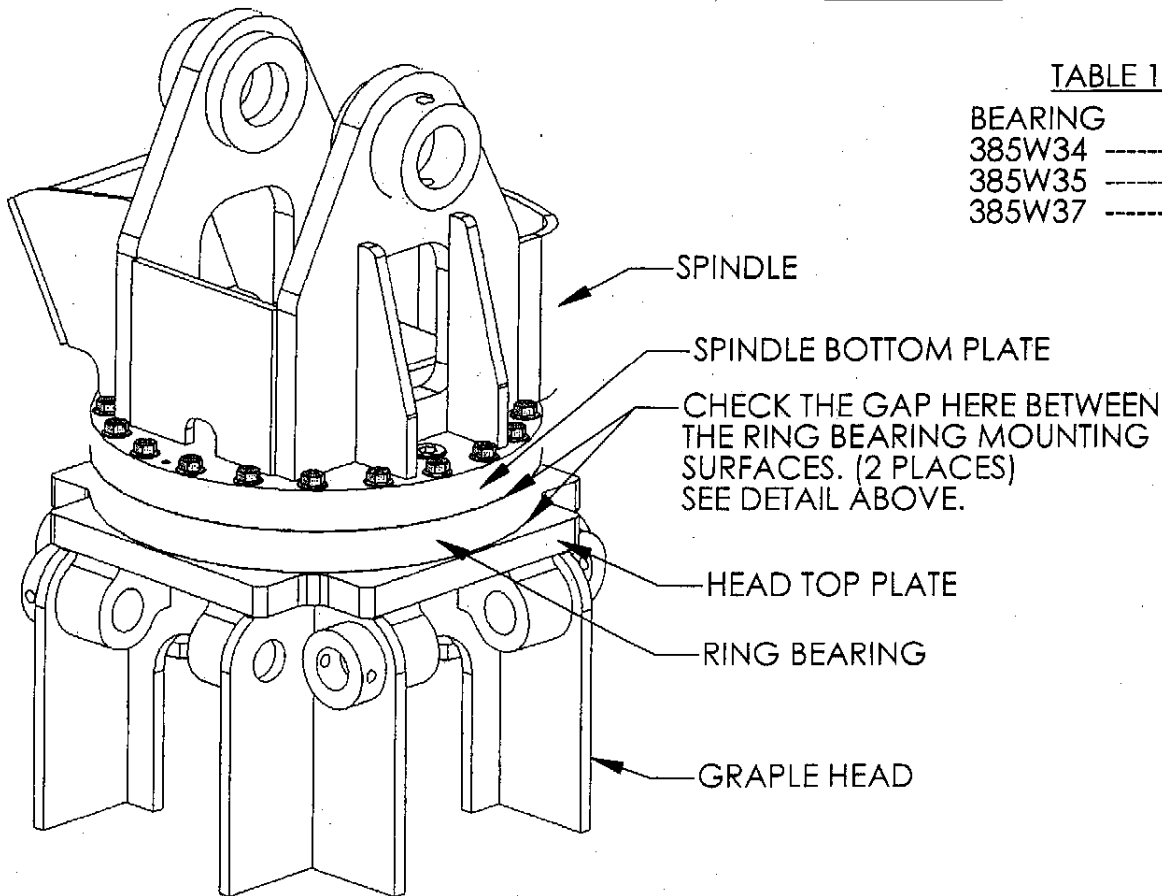
PART NUMBER	CIRCUMFERENCE
385W34	64 3/8"
385W35	81 3/4"
385W37	51 5/8"



GAP DETAIL

TABLE 1

BEARING	GAP
385W34	1/16"
385W35	3/8"
385W37	1/4"



PROPRIETARY INFORMATION | THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF YOUNG CORPORATION SEATTLE WA. IT SHALL NOT BE COPIED OR DUPLICATED WITHOUT THEIR WRITTEN CONSENT.

USED ON	MATERIAL		RING BEARING BOLT INSPECTION PROCEDURE				REV
385W34							
385W35			G.K.	G.K.	09-16-08	1/12	163V75
385W37							A

DWG. NUMBER: 163V76		TOLERANCE:	DECIMAL:	FRACTION: +/- 1/16	STATUS	INITIALS	DATE
LTR	CHANGE	EXCEPT WHERE SPECIFIED	.XX +/- .020 .XXX +/- .010	ANGLE : +/- 1 DEG	CHECKED		
	DATE				PRE-PROD.		
					PRODUCTION		

RING BEARING BOLT INSTALLATION PROCEDURE

1. CLEAN ALL THREADS (BOLT AND HOLE) WITH "LOCTITE" CLEANER AND DEGREASER (602V7).
2. SPRAY BOLT AND HOLE WITH LOCTITE 7649 Primer 'N' (602V8) or '7471' (Primer T). ALLOW 30 SECONDS TO DRY.
3. APPLY SEVERAL DROPS OF LOCTITE '277' (602V9) DOWN THE SIDES OF THE HOLE.
4. APPLY SEVERAL DROPS OF LOCTITE '277' TO THE BOLT THREADS.
5. THREAD THE BOLT INTO THE HOLE TO A SNUG CONDITION.
6. TIGHTEN BOLTS USING A CROSS PATTERN TO THE VALUES SHOWN BELOW.

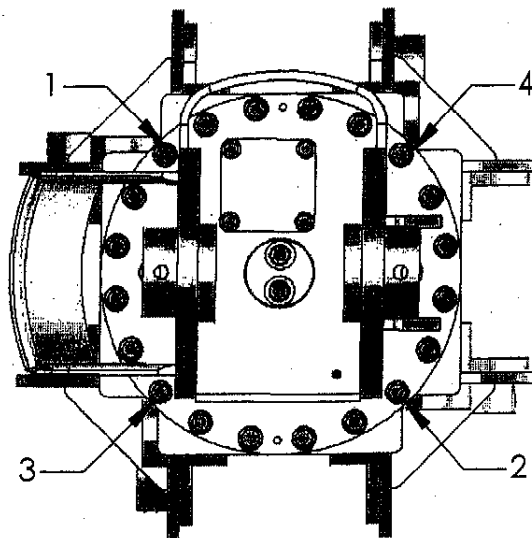
TORQUE VALUES:

385W37: 1/2 - 13 NC ----- 90 FT/LBS

385W34: 5/8 - 11 NC ----- 190 FT/LBS
(WITH WASHER)

385W34: 5/8 - 11 NC ----- 220 FT/LBS
(FLANGED HEAD)

385W35: 3/4 - 16 NF ----- 300 FT/LBS



TORQUE BOLTS IN A CROSS PATTERN

NOTE:

THIS PROCEDURE IS TO BE USED WITH UNPLATED BOLTS ONLY

PROPRIETARY INFORMATION | THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF YOUNG CORPORATION SEATTLE WA. IT SHALL NOT BE COPIED OR DUPLICATED WITHOUT THEIR WRITTEN CONSENT.

USED ON		YOUNG CORPORATION	RING BEARING BOLT INSTALLATON PROCEDURE			
385W34			ENG	DWN	DATE	SCALE
385W35			G.K.	G.K.	05-08-09	1/12
385W37			163V76			REV X

DWG. NUMBER: 545V1728		TOLERANCE EXCEPT WHERE SPECIFIED:			STATUS	SIGNATURE	DATE
		DECIMAL:	FRACTIONAL:	ANGULAR:	CHECKED		
LTR	CHANGE	DATE	.XX ±.020	±1/16	±1°0'0"	PRE-PROD.	
			.XXX ±.010			PRODUCTION	

SERVICE INSTRUCTIONS FOR ROTATING TOOLS

ROTARY UNION SERVICE

ROTARY UNION REMOVAL:

1. WITH THE LEGS OR CLAMS IN THE OPEN POSITION DISCONNECT HOSES FOR EACH CYLINDER AT THE ROTARY UNION FITTINGS. PLUG THE CYLINDER HOSES AND ROTARY UNION PORTS.
2. REMOVE CYLINDER MOUNTING PINS FROM TOOL HEAD AND SWING THE CYLINDERS AWAY FROM THE CYLINDER HEAD.
3. LOOSEN ALL FOUR ROTARY UNION MOUNTING BOLTS UNTIL THEY ARE OUT OF THE GRAPPLE SPINDLE THREADS.
4. REMOVE THE ROTARY UNION WITH THE MOUNTING BOLTS IN THE HOLES OF THE ROTARY UNION.

ROTARY UNION INSTALLATION:


1. INSTALL FOUR MOUNTING BOLTS IN THE HOLES OF THE ROTARY UNION.
2. CONNECT ROTARY UNION TO THE TOOL SPINDLE. USE LOCTITE 242 ON THE MOUNTING BOLTS AND TORQUE TO 77 FT-LBS.

NOTE: THE HYDRAULIC PORTS IN THE ROTARY UNION MUST BE ALIGNED WITH THE PORTS IN THE TOOL SPINDLE.

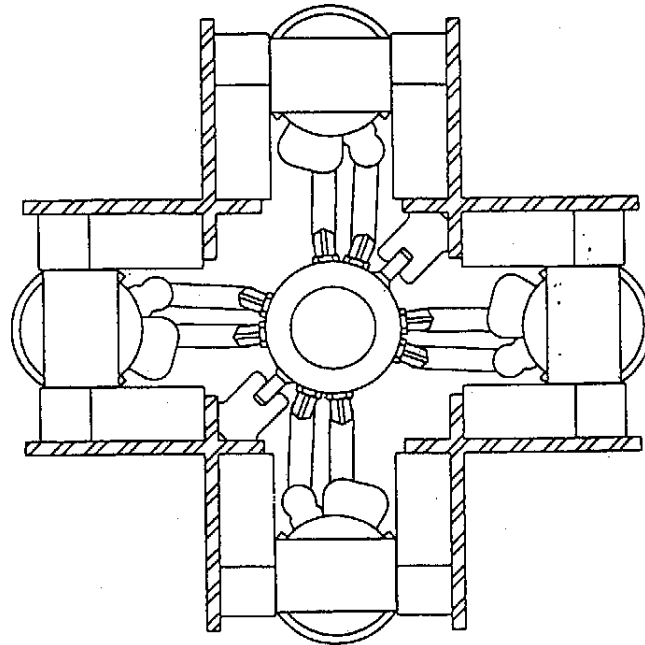
CARE SHOULD ALSO BE USED TO ASSURE THAT THE O-RING SEALS ARE PROPERLY ALIGNED AND UNDAMAGED AND ALL SURFACES ARE CLEAN.

3. SWING CYLINDERS INTO POSITION AND INSTALL CYLINDER MOUNTING PINS.
4. CONNECT THE CYLINDER HOSES TO THE ROTARY UNION FITTINGS.

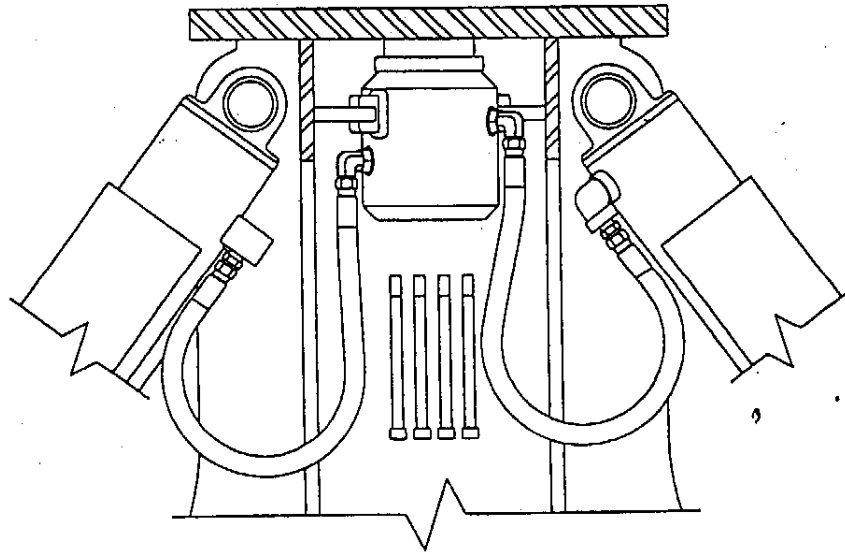
NOTE: THE LOWER PORTS ON THE ROTARY UNION ARE TO CLOSE THE TOOL AND UPPER PORTS ARE TO OPEN THE TOOL.


	USE FOR	REQ	MATERIAL	<p align="center">ROTATING TOOL SERVICE INSTRUCTIONS</p>			
				DWN BY	DATE	SCALE	545V1728
				NOE	03-02-05	-	SHEET 1 OF 2

DWG. NUMBER: 545V1728		TOLERANCE EXCEPT WHERE SPECIFIED:			STATUS	SIGNATURE	DATE
		DECIMAL:	FRACTIONAL:	ANGULAR:	CHECKED		
LTR	CHANGE	DATE	.XX ±.020 .XXX ±.010	±1/16 ±1°0'0"	PRE-PROD.		
					PRODUCTION		



ORANGE PEEL GRAPPLE
 ROTARY UNION TO CYLINDER HYDRAULIC HOSES
 SHON AS AN EXAMPLE



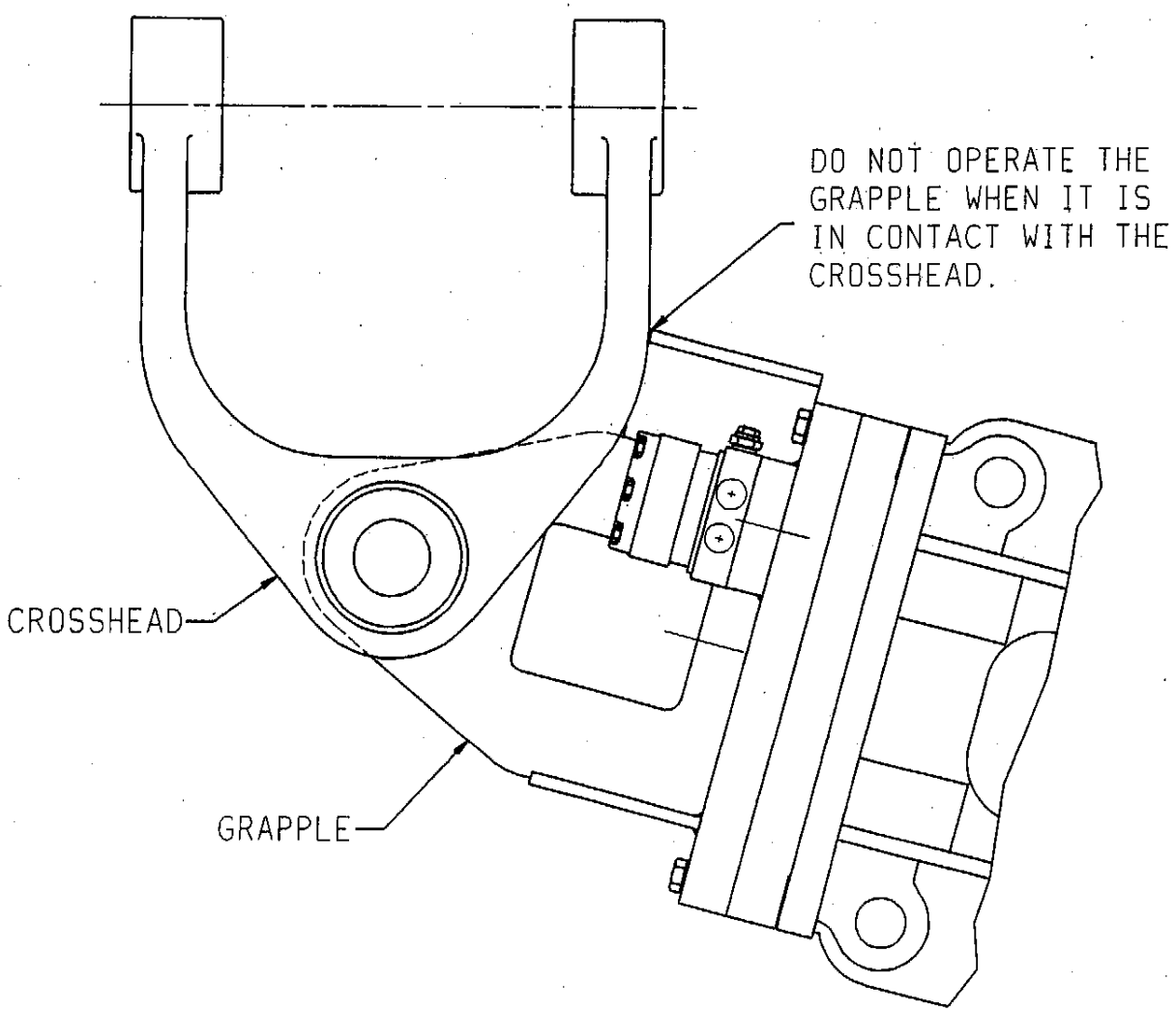
	USE FOR	REQ	MATERIAL	ROTATING TOOL SERVICE INSTRUCTIONS			
				DWN BY	DATE	SCALE	545V1728
				NOE	03-02-05	-	SHEET 2 OF 2

DWG. NUMBER: 840V2		
LTR	CHANGE	DATE

CAUTION

DO NOT PUT THE GRAPPLE IN A BIND

THE GRAPPLE IS IN A BIND WHEN IT MAKES CONTACT WITH THE CROSSHEAD. OPERATING THE GRAPPLE WHILE IN THIS POSITION CAN DAMAGE IT BY SEVERELY OVERLOADING THE RING BEARING AND ITS MOUNTING BOLTS. DO NOT OPERATE THE GRAPPLE WHILE IT IS IN A BIND.



TOLERANCE: UNLESS SPECIFIED OTHERWISE	USED ON 0000000000	MATERIAL 0000000000	young <small>CORPORATION</small>	SCRAP GRAPPLE BINDING					
DECIMAL : ± 0.020 .XX ± 0.010 .XXX ± 0.010				ENG	DWN	DATE	SCALE	840V2	X
FRACTIONAL: ± 1/16 ANGULAR : ± 1 DEG				JS	JS	9/18/06	3/8		

4. The product is not altered or repaired other than by, or under the supervision of, Young;
5. The product is maintained and used strictly in accordance with all applicable Young instructions; and
6. The product is stored and maintained in factory condition until commencement of service.

Only new or remanufactured parts or components, furnished or approved by Young Corporation, will be used if Young elects to repair the product. If any such part or component is defective in material or workmanship when installed, Young will repair or replace it, at the sole discretion of Young, provided the defect is reported to Young within 90 days of installation.

Young and Customer expressly agree that if a product covered by this agreement fails to conform to the above warranty, Young's obligation and all remedies and the measure of damages are limited exclusively to repair or replacement of any nonconforming part (at Young's sole discretion and option). IN NO EVENT SHALL YOUNG BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES OR EXPENSES (INCLUDING, WITHOUT LIMITATION, LABOR, TRANSPORTATION, LOSS OF USE, LOSS OF PROFITS AND DAMAGE TO PERSON OR PROPERTY) EVEN IF YOUNG HAS BEEN ADVISED OF THE POSSIBILITY THEREOF.

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