

Ditch Witch[®]

JT4020

ISSUE NO. 09PL-08/11

For Replacement Copy Order **P/N 053-470**

This product is covered by one or more of the following patents:

US B1 4,858,704; 4,953,638; 5,148,880; 5,242,026; 5,341,887; 5,490,569; 5,684,466; 5,713,423, 5,794,719; 5,880,680; 5,941,322; 6,085,852; 6,109,371; 6,179,065; 6,216,803; 6,250,403; 6,250,404; 6,290,606; 6,311,790; 6,411,094; 6,543,551; 6,550,547; 6,672,409; 6,739,413; 6,776,246; 6,808,210; 6,827,158; RE37,450; RE37,923; RE37,975; RE38,418

AU 689,533; 706,544; 718,034, 755,862

CA 2,156,398

FR 674,093

DE 694 17 019; 695 29 634; 297 01 406

EP 0683845; 0674093; 0817901; 0846841


GB 2,209,239; 2,312,006; EP674,093; EP846,841

JP 3,458,247

Other U.S. and foreign patents pending

This manual contains information concerning the following models:
JT4020 Directional Drilling System

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 **Ditch Witch**, Ditch Witch, CMW, AutoCrowd, Modularmatic, Jet Trac, Roto Witch, Subsite, Fluid Miser, Perma-Soil, Power Pipe, Super Witch, Super Witch II, Pierce Arrow, The Underground, and The Underground Authority Worldwide are registered trademarks of The Charles Machine Works, Inc.

ID0135012

FOREWORD

This manual contains illustrated parts lists to help you select quality ProTech[®] Replacement parts for your Ditch Witch[®] equipment. Using other replacement parts will lessen the productivity of your equipment.

- ◆ Part numbers enclosed in a box are no longer available from The Charles Machine Works, Inc. Your local Ditch Witch dealer may be able to locate the part for you.
- ◆ Footnotes provide more information to help you identify parts shown in the manual.
- ◆ Assembly instructions and Tech Bits articles referenced in footnotes are available through your local Ditch Witch dealer.
- ◆ Description and specifications in this book were current at publication. However, The Charles Machine Works, Inc. reserves the right to improve equipment, so this manual might not reflect the most current improvements.
- ◆ Instructions on recommended equipment use and maintenance are in the Operator's Manual that was shipped with your equipment.

Keep the following in mind when ordering ProTech replacement parts:

- ◆ Specify parts you need by part number and description, not by illustration reference numbers.
- ◆ Have equipment model and serial number on hand to help ensure you get the right parts for your machine whether it's old or new.

Thank you for buying and using Ditch Witch equipment and ProTech replacement parts.

WARRANTY

DW WARRANTY Policy
July, 2005

POLICY 1: DITCH WITCH® EQUIPMENT AND REPLACEMENT PARTS LIMITED WARRANTY POLICY

Subject to the limitation and exclusions herein, free replacement parts will be provided at any authorized Ditch Witch dealership for any Ditch Witch equipment or parts manufactured by The Charles Machine Works, Inc. (CMW) that fail due to a defect in material or workmanship within one (1) year of first commercial use (Exception: 2 years for all SK500 Attachments). Free labor will be provided at any authorized Ditch Witch dealership for installation of parts under this warranty during the first year following "initial commercial" use of the serial numbered Ditch Witch equipment on which it is installed. The customer is responsible for transporting their equipment to an authorized Ditch Witch dealership for all warranty work.

EXCLUSIONS FROM PRODUCT WARRANTY

- All incidental or consequential damages.
- All defects, damages, or injuries caused by misuse, abuse, improper installation, alteration, neglect, or uses other than those for which products were intended.
- All defects, damages, or injuries caused by improper training, operation, or servicing of products in a manner inconsistent with manufacturer's recommendations.
- All engines and engine accessories (these are covered by original manufacturer's warranty).
- Tires, belts, and other parts which are subject to another manufacturer's warranty. (Such warranty will be available to purchaser.)
- ALL IMPLIED WARRANTIES NOT EXPRESSLY STATED HEREIN, INCLUDING ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY.

IF THE PRODUCTS ARE PURCHASED FOR COMMERCIAL PURPOSES, AS DEFINED BY THE UNIFORM COMMERCIAL CODE, THEN THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE FACE HEREOF AND THERE ARE NO IMPLIED WARRANTIES OF ANY KIND WHICH EXTEND TO A COMMERCIAL BUYER. ALL OTHER PROVISIONS OF THIS LIMITED WARRANTY APPLY INCLUDING THE DUTIES IMPOSED.

Ditch Witch products have been tested to deliver acceptable performance in most conditions. This does not imply they will deliver acceptable performance in all conditions. Therefore, to assure suitability, products should be operated under anticipated working conditions prior to purchase.

Defects will be determined by an inspection within thirty (30) days of the date of failure of the product or part by CMW or its authorized dealer. CMW will provide the location of its inspection facilities or it's nearest authorized dealer upon inquiry. CMW reserves the right to supply remanufactured replacement parts under this warranty as it deems appropriate.

Extended warranties are available upon request from your local Ditch Witch dealer or CMW.

Some states do not allow exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply. Further, some states do not allow exclusion of or limitation of how long an implied warranty lasts, so the above limitation may not apply. This limited warranty gives product owner specific legal rights and the product owner may also have other rights which vary from state to state.

For information regarding this limited warranty, contact CMW's Product Support Department, P.O. Box 66, Perry, OK 73077-0066, or contact your local Ditch Witch dealer.

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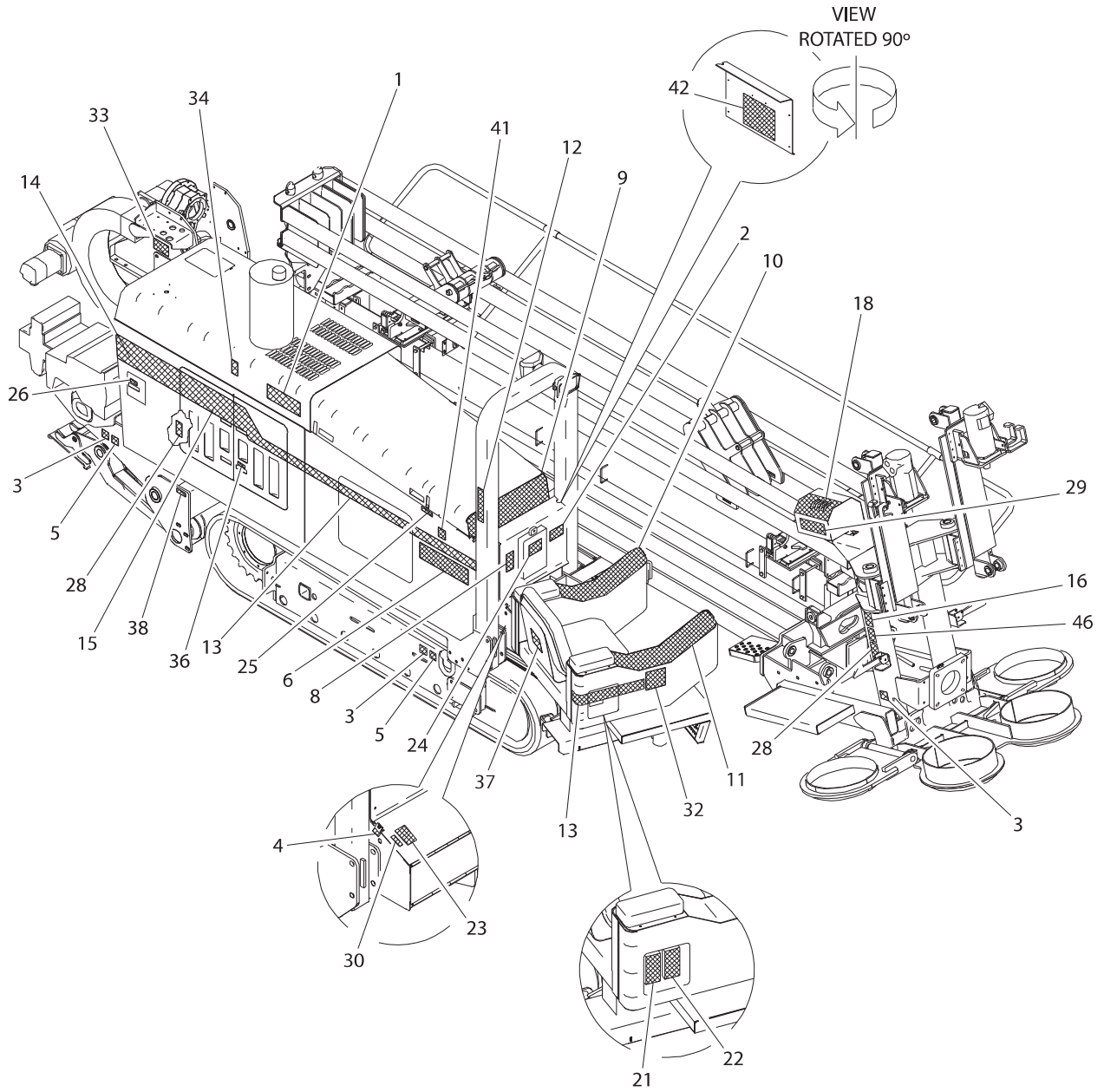
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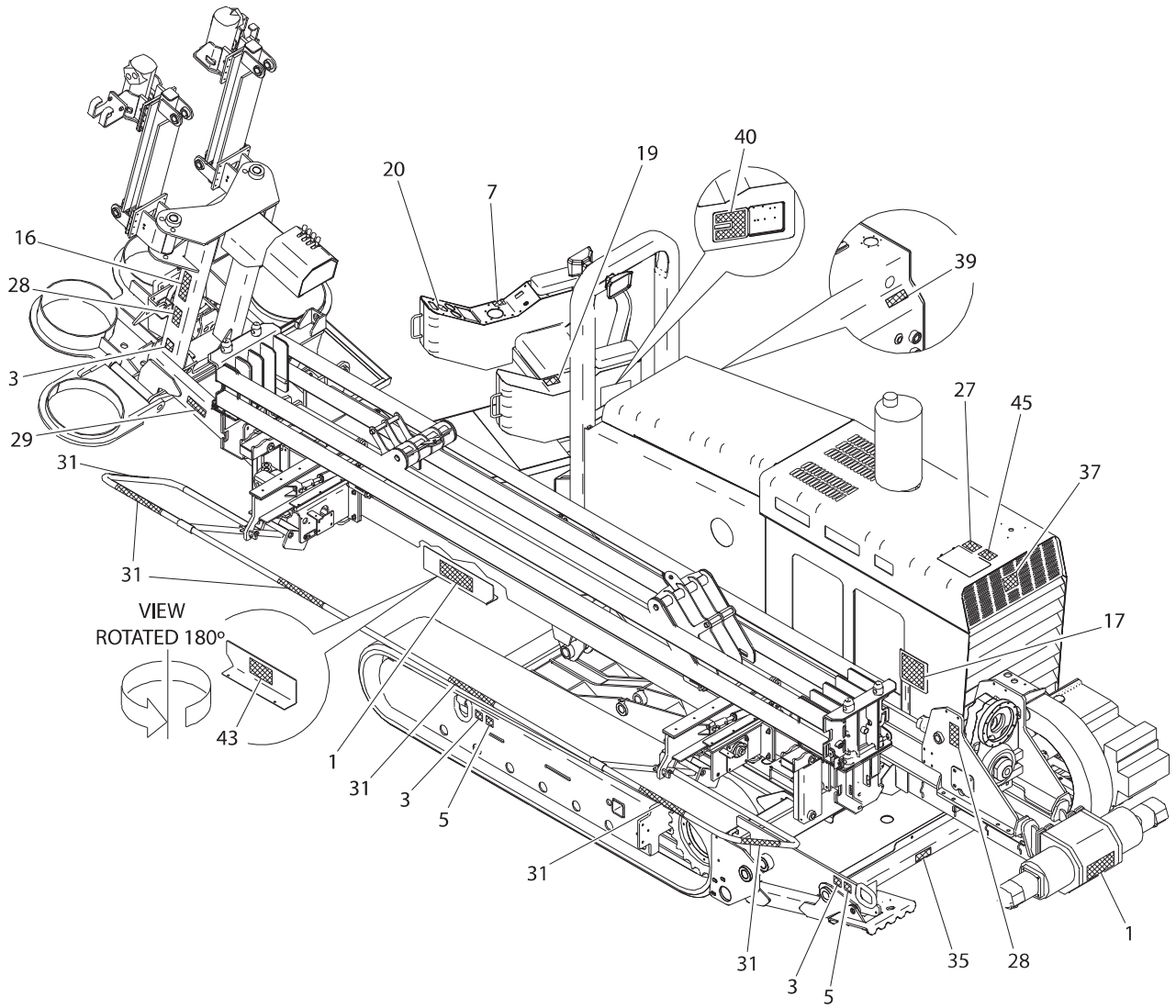
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DECALS

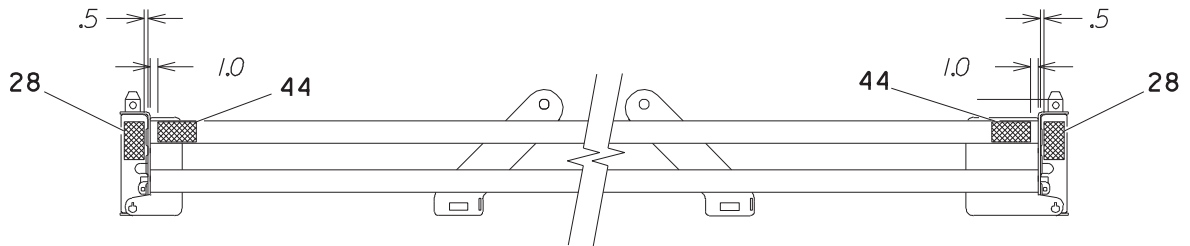
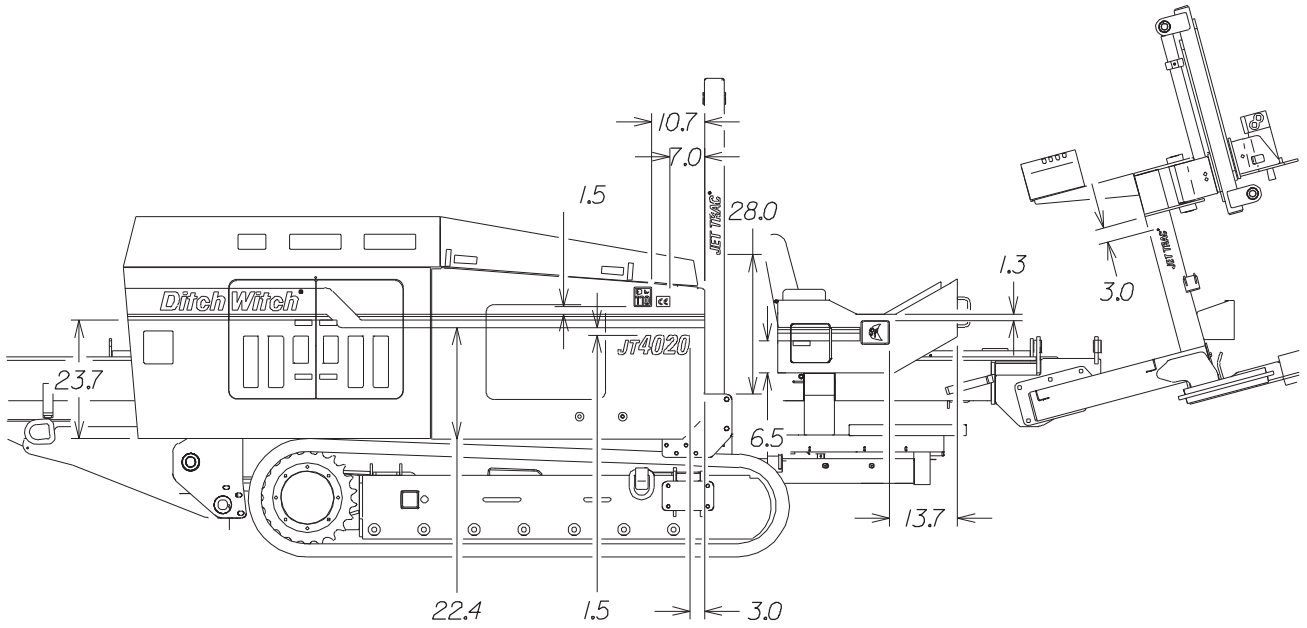
DECAL LOCATION JT4020



DECAL LOCATION JT4020



DECAL LOCATION JT4020



DECAL LOCATION JT4020

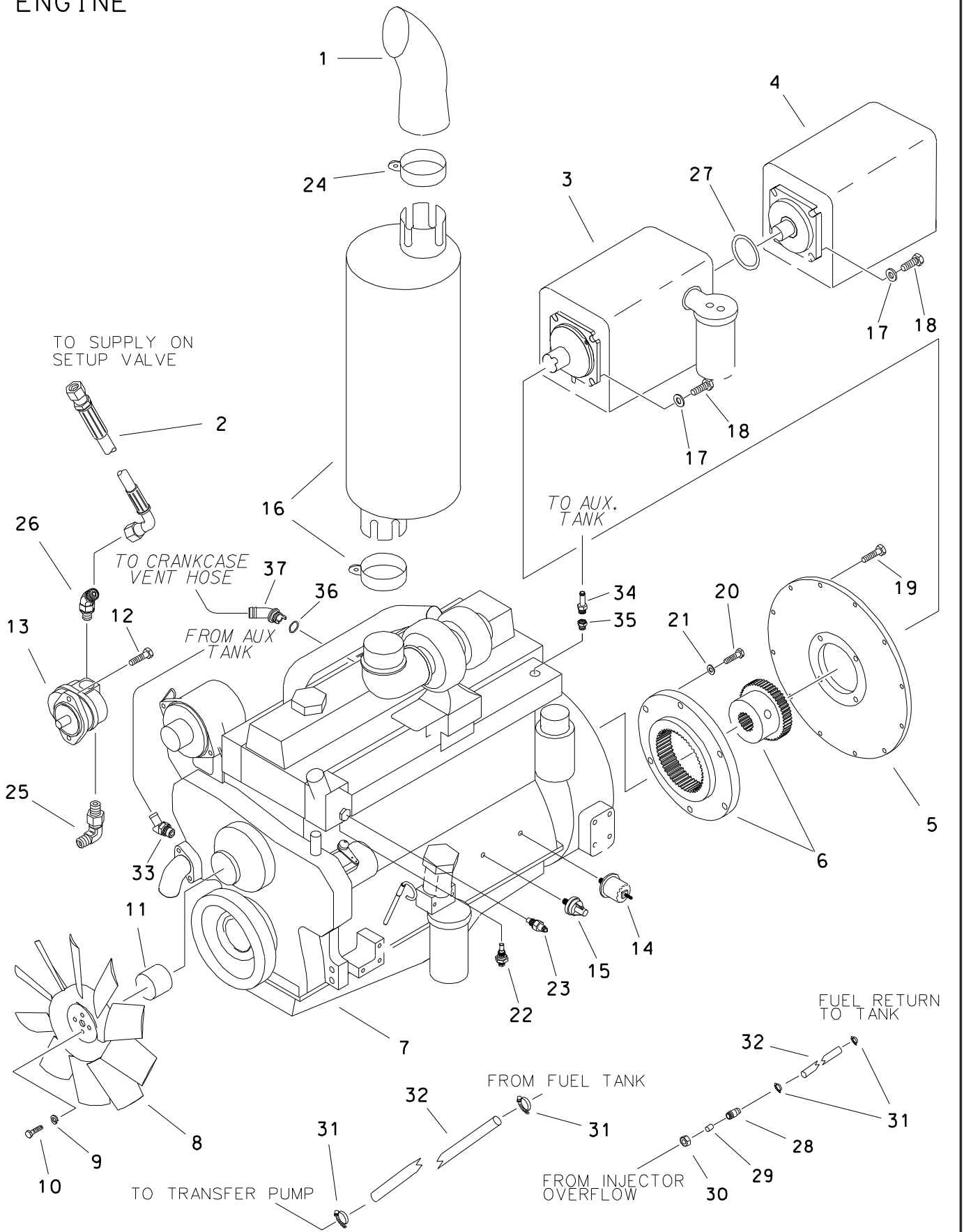
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	275-727		DECAL KIT - 4020	
1	274-049	3	DANGER ELECTROCUTION	
2	274-050	1	WARNING JOBSITE HAZARD	
3	274-318	6	TIE DOWN LOCATION	
4	274-375	1	MASTER DISCONNECT SWITCH	
5	274-442	4	LIFT LOCATION	
6	274-678	1	JT4020 MODEL - ID	
7	274-724	1	ONE CALL NOTIFICATION	
8	274-780	1	JET TRAC PATENT (S)	
9	274-826	1	INSTRUMENT PANEL JT4020	
10	700-827	1	LEFT INSTRUMENTS JT4020	
11	700-828	1	RIGHT CONSOLE PANEL JT4020	
12	274-875	1	JET TRAC LOGOTYPE	
13	274-877	AR	GRAPHIC STRIPE (SOLD PER INCH)	USE 80"
14	274-883	1	DITCH GRAPHIC STRIPE	
15	274-884	4	WITCH GRAPHIC STRIPE	
16	274-885	2	JET TRAC LOGO TYPE	
17	274-909	1	AUTOMATION REFLECTOR PANEL	SEE FOOTNOTE 3
18	274-936	1	ANCHOR DRIVER CONTROL PANEL	
19	274-948	1	AUTO-LOAD SWITCH PANEL	SUPERSEDED BY 274-827
20	274-949	1	FLUID PRESSURE GAUGE 1193 PSI	75 GPM MUD PUMP
21	274-988	1	JOYSTICK CONTROLLER	
22	274-989	1	AUTOMATION CONTROLLER	
23	275-033	1	NOTICE ELECTRICAL SYSTEM	
24	275-048	1	IMPORTANT SAFETY RULES	
25	275-120	1	RESERVOIR (THF)	
	274-672	1	ENVIRO HYDRAULIC RESERVOIR	SEE FOOT NOTE 2
26	275-148	1	FUEL TANK (DIESEL)	
27	273-146	1	NOTICE ADD COOLANT	
28	275-184	28	WARNING MOVING PARTS	4 PER PIPE BOX
29	275-197	2	DANGER ROTATING SHAFT	
30	275-203	1	BATTERY	
31	275-230	6	DANGER STRIPE 1.75" X 18"	
32	275-307	1	DITCH WITCH EMBLEM	
33	275-341	1	WARNING SLIDING PARTS	
34	275-355	1	CAUTION HOT PARTS	
35	275-372	1	IMPORTANT CYLINDER LOCK	
36	275-400	1	NOTICE OIL LEVEL	
37	275-449	2	DITCH WITCH LOGO PLACARD	
38	275-497	1	OIL DRAIN - ID	
39	274-198	1	NOTICE OIL LEVEL	
40	274-951	1	LEFT RELAY PANEL JT4020	
41	274-291	1	SOUND POWER 10	SEE FOOT NOTE 1
42	273-006	1	RELAY PANEL	
43	273-005	1	SOLENOID VALVE	
44	275-326	24	WARNING CRUSHING WEIGHT	4 PER PIPE BOX
45	273-138	1	NOTICE COOLANT	
46	273-278	1	DANGER WRENCH	

FOOTNOTES

1. NOT PART OF KIT. FOR EUROPEAN UNITS ONLY
2. NOT PART OF KIT. SEE 256-030 ENVIRONMENTAL HYDRAULIC OIL.
3. NOT PART OF KIT. USED ON MACHINES WITH PHOTO-ELECTRIC EYES.

ENGINE COMPONENTS

ENGINE



ENGINE

1.	196-373	1	EXTENSION TUBE (3" OD X 12")	
2.	154-955	-	HOSE (080FX90-102"-3000)	
3.	158-439	1	HYDRAULIC PUMP	
	159-074	1	FILTER ELEMENT (1-3/8-UNF)	
4.	<u>158-467</u>	1	HYDRAULIC PUMP	USED PRIOR TO SN 2T2007, EXCEPT SN 2T1185
	149-926	1	HYDRAULIC PUMP	USED SN 2T2007 AND ABOVE, ALSO SN 2T1185
	190-803	-	SEAL REPAIR KIT	
	190-804	-	BEARING KIT	
	499-063	-	SHAFT (SPLINED 14T)	
	499-064	-	LOAD SENSE CONTROL	
5.	336-051	1	FLY WHEEL HOUSING COVER	
6.	160-897	1	DRIVE COUPLING	SEE FOOTNOTE 1
7.	194-781	1	"NS" ENGINE - DEERE DIESEL	
	194-823	-	THERMOSTAT	
	165-883	-	GASKET, THERMOSTAT	
	194-815	-	OIL FILTER ELEMENT	
	194-816	-	FUEL FILTER ELEMENT	
	194-493	-	PRIMARY FILTER SEDIMENT BOWL	
	217-451	-	ALTERNATOR	
	211-022	-	STARTER	
	171-012	-	BELT	SEE FOOTNOTE 6
	194-159	-	WATER PUMP	
	168-617	-	WATER PUMP GASKET	
8.	194-818	1	FAN (23.0"OD, 2.50" BC)	SEE FOOTNOTE 3
9.	105-091	4	LOCK WASHER (5/16")	
10.	105-589	4	SCREW (M8-1.25 X 100mm)	
11.	194-742	1	FAN SPACER	
12.	106-079	2	SCREW (M10-1.50 X 30mm)	
13.	158-461	1	HYDRAULIC PUMP	SEE FOOTNOTE 2
	500-966	-	SEAL REPAIR KIT	
14.	<u>215-113</u>	1	OIL PRESSURE SENDER	
	215-183	1	SENDER, OIL PRESSURE HD	
15.	217-736	1	OIL PRESSURE SWITCH	
16.	196-372	1	MUFFLER OUTLINE	
	194-027	-	MUFFLER CLAMP (4.143")	
17.	105-244	8	WASHER (1/2")	
18.	105-048	8	BOLT (1/2-NC X 1-1/2")	USE 242 LOCTITE
19.	106-383	12	FLG LK SCREW (M10-1.50 X 30mm)	USE 242 LOCTITE
20.	105-156	8	BOLT (3/8-NC X 1-1/2")	USE 242 LOCTITE, TORQUE TO 30 FT LBS

ENGINE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
21.	105-072	8	LOCK WASHER (3/8")	
22.	217-550	1	WATER TEMPERATURE SENDER	SEE FOOTNOTE 5
23.	214-751	1	HIGH TEMPERATURE SWITCH	
24.	194-049	1	MUFFLER CLAMP (3.135")	
25.	154-286	1	CONNECTOR (120-16S90)	
26.	154-264	1	CONNECTOR (080-10S45)	
27.	157-201	-	O-RING (049 D70)	SEE FOOTNOTE 4
28.	156-275	1	TUBE CONNECTOR (04H-05T)	
29.	156-276	1	FERRULE (05T)	
30.	156-277	1	COMPRESSION NUT (05T)	
31.	110-528	4	SNAP-ON CLAMP (.531" TO .593")	
32.	116-108	1	BULK HOSE (5/16", SOLD PER 1')	USE (120.0")
33.	153-160	1	S/O COUPLER (18M-10H45)	REMOVE PLUG AND INSTALL ELBOW IN WATER PUMP
34.	155-162	1	COUPLER (04N-05H)	
35.	115-286	1	REDUCER (08N-1/4-NF)	
36.	157-050	1	O-RING (116 D70)	
37.	153-161	1	ELBOW (-12H45, SPECIAL)	

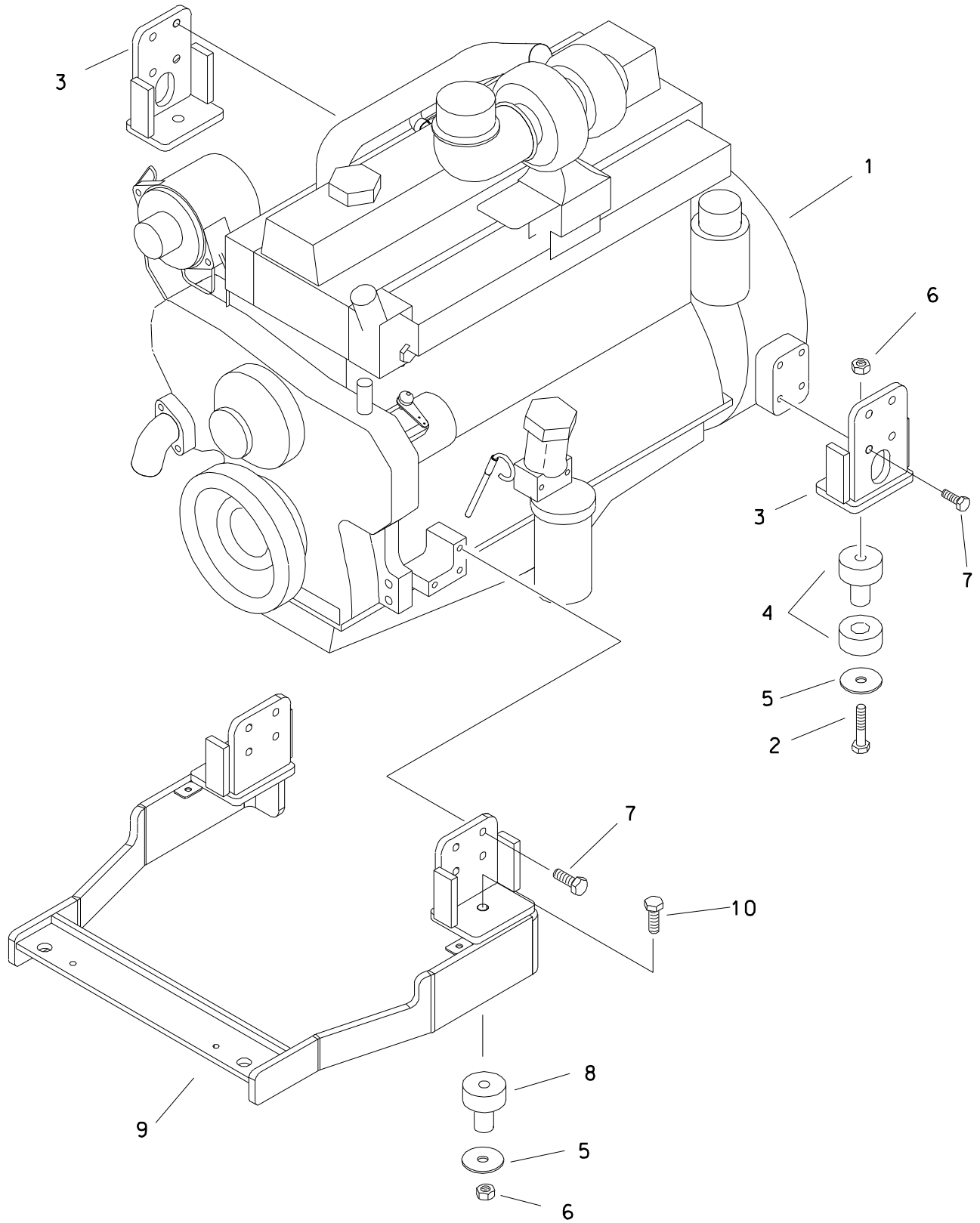
FOOTNOTES

1. TORQUE CROSSBOLT TO 60-65 FT LB; MOUNT FLUSH WITH END OF SHAFT
2. RE-INSTALL GASKET FROM COVER PLATE.
3. FAN MUST BE CENTERED IN DIAMETER OF RADIATOR SHROUD OPENING, INSTALL WITH NOTCHES TOWARD RADIATOR
4. ONE O-RING COMES WITH REF. #3 (HYDROSTATIC PUMP) UNDER AUX MTG PAD COVER
5. REMOVE O-RING FROM PLUG AND INSTALL ON WATER TEMPATURE SENDER WHEN ASSEMBLING
6. EARLY MACHINES HAD DEERE P/N R123437. WHEN REPLACING BELT, ORDER CMW P/N 171-012 (DEERE P/N R122126). IF INSTALLING R122126, BE SURE THAT IDLER NEXT TO FAN PULLEY IS INSTALLED IN UPPER HOLE IN BRACKET. IF INSTALLING R123437, IDLER MUST BE INSTALLED IN LOWER HOLE IN BRACKET.

NOTE:

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

ENGINE MOUNTS

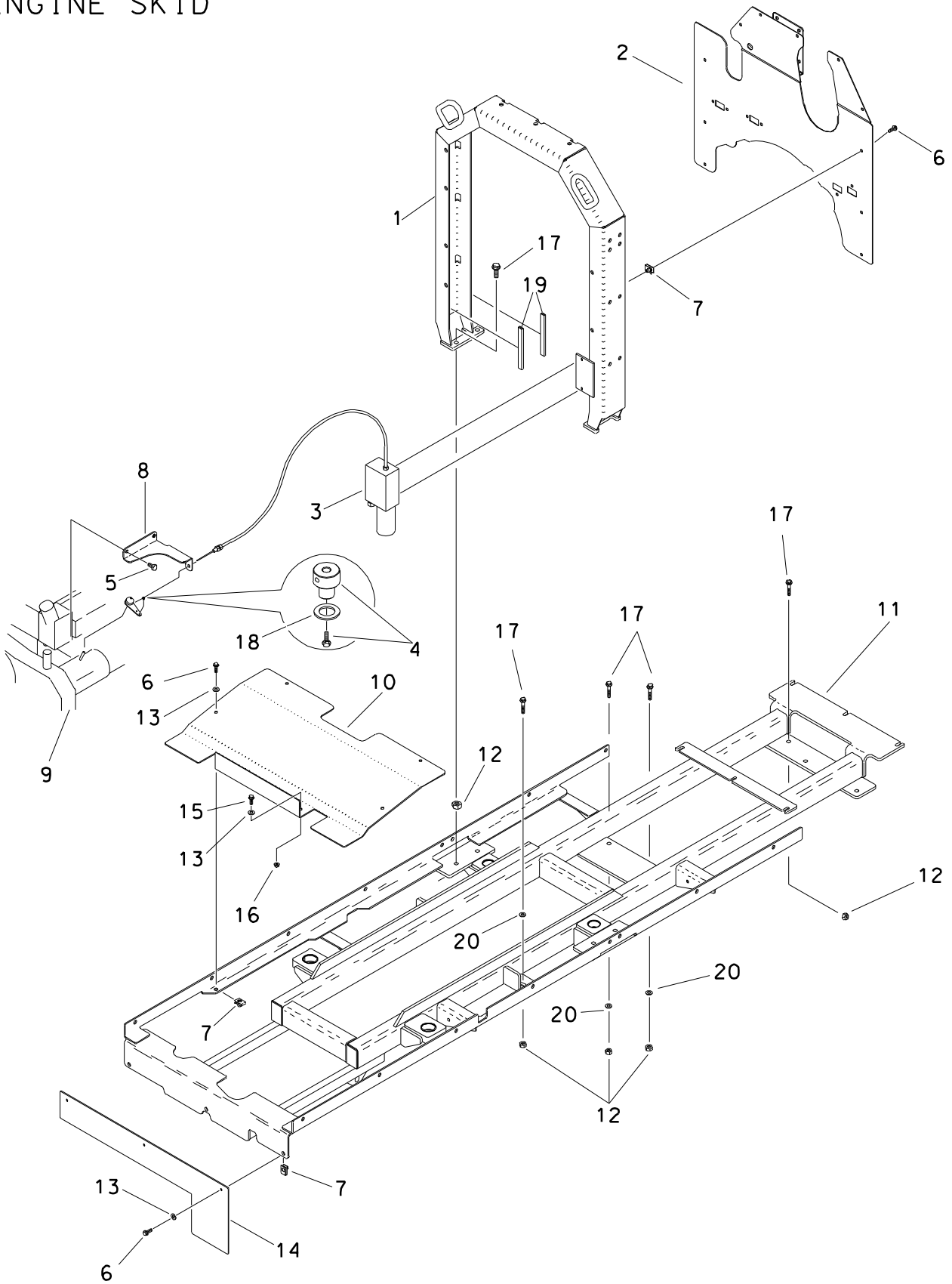


ENGINE MOUNTS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	194-781	-	ENGINE- DEERDIESEL;	
2.	106-343	2	SCREW (M16-2.0 X 110mm)	
3.	354-325	2	REAR ENGINE MOUNT	
4.	116-127	2	SHOCK MOUNT	
5.	105-416	4	WASHER (5/8")	
6.	106-545	4	LOCKNUT (M16-2.00, PRV TRQ, 10.9)	
7.	105-247	14	SCREW (M12-1.75 X 35mm)	USE 242 LOCTITE
8.	116-726	2	SHOCK MOUNT	
9.	350-506	1	FRONT ENGINE MOUNT	
10.	106-342	2	SCREW (M16-2.0 X 90mm)	

FOOTNOTES

ENGINE SKID



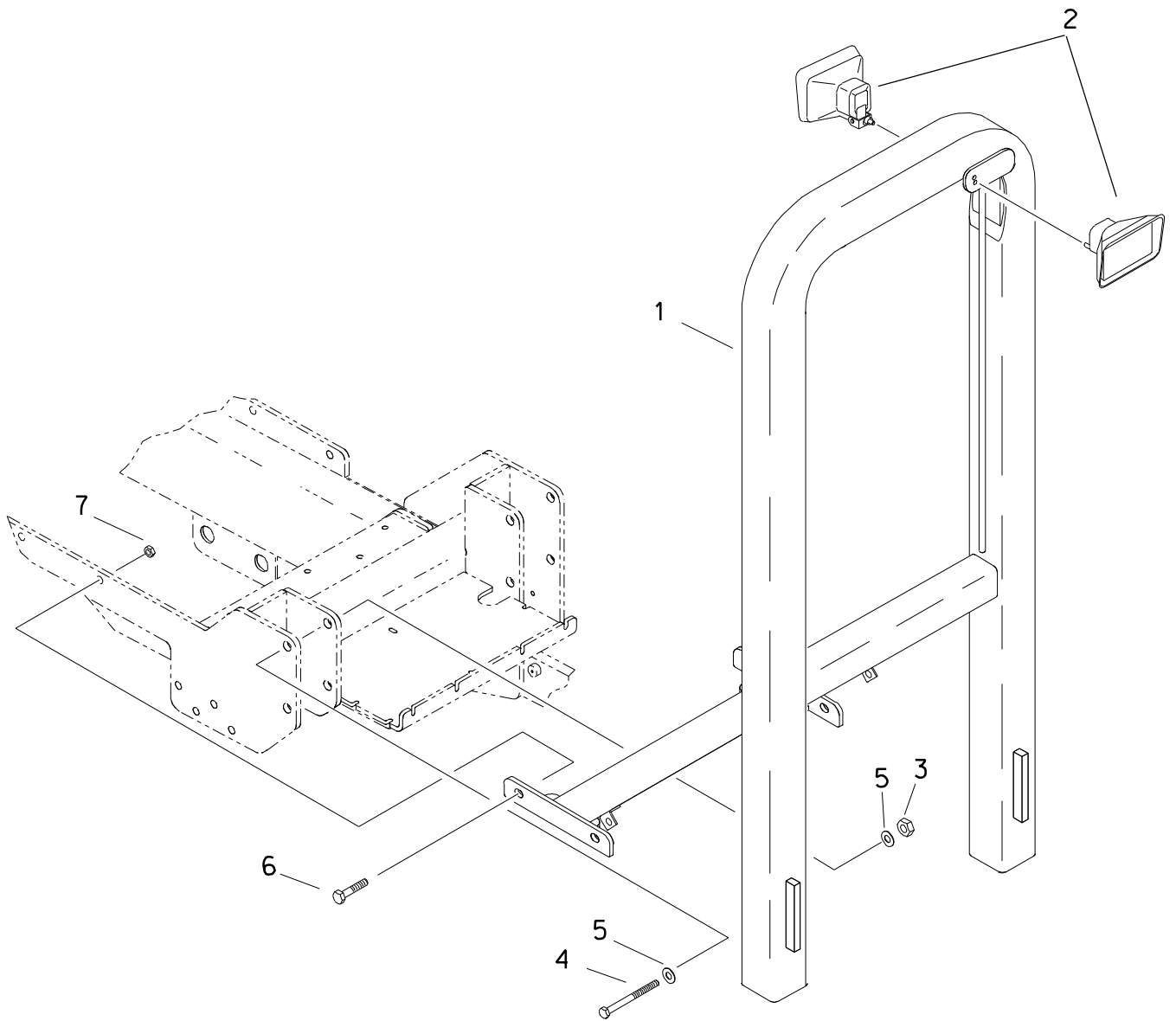
ENGINE SKID

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-596	1	SKID LIFT	
2.	354-561	-	FIREWALL	
3.	215-231	1	LINEAR ACTUATOR	SEE FOOTNOTE 1
4.	196-058	1	CABLE SWIVEL (.081")	
5.	105-245	2	BOLT (M10-1.50 X 25mm)	
6.	106-991	13	FLG LK SCREW (M8-1.25 X 20mm)	
7.	106-551	13	CLIP NUT (M8-1.25)	
8.	354-952	1	BRACKET	
9.	194-781	-	ENGINE - DEERE DIESEL	
10.	350-415	1	DEFLECTOR FLAP	
11.	354-597	1	ENGINE SKID	
12.	106-685	13	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
13.	105-118	9	WASHER (3/8")	
14.	350-410	1	DEFLECTOR FLAP	
15.	106-992	2	FLG LK SCREW (M8-1.25 X 25mm)	
16.	106-561	2	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
17.	106-632	13	FLG LK SCREW (M12-1.75 X 35mm)	
18.	106-205	1	WASHER (.191")	
19.	115-686	AR	BULK EDGE (5/32", SOLD PER 1")	USE 2 @ 5.0"
20.	106-391	4	WASHER (M12)	USED ON SLOTTED HOLES

FOOTNOTES

1. REMOVE MOUNTING PLATE AND MOUNT USING TWO 1/4" BOLTS THAT COME WITH LINEAR ACTUATOR

2-POST ROPS

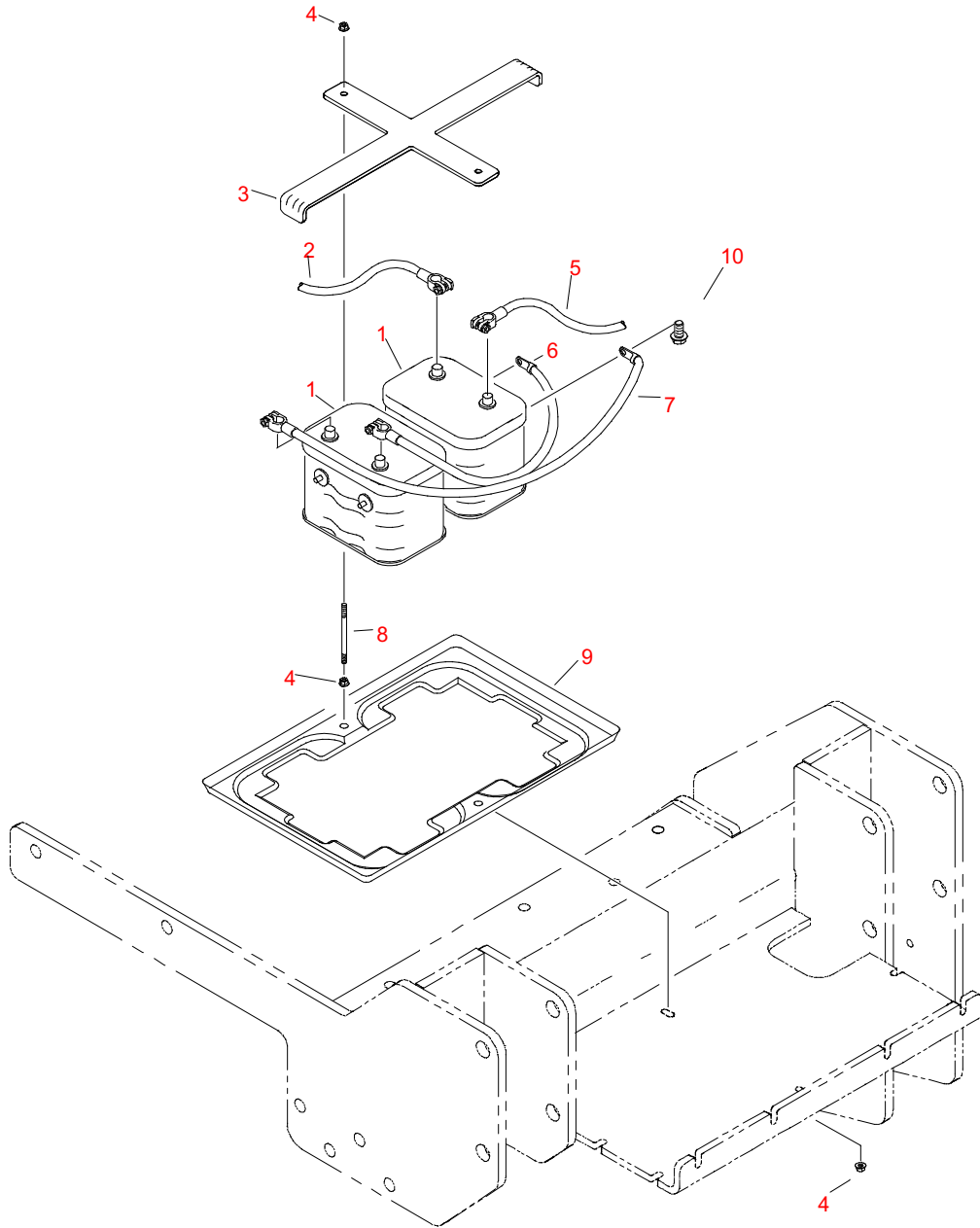


2-POST ROPS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	306-357	1	2-POST ROPS	
2.	217-057	2	WORKING LIGHT - CLEAR	
	105-033	1	BOLT (5/16-NC X 2")	
	105-091	2	LOCK WASHER (5/16")	
	105-092	2	NUT (5/16-NC)	
3.	106-665	4	LOCKNUT (M20-2.50, 10.9)	
4.	106-373	4	SCREW (M20-2.5 X 160mm)	
5.	106-399	8	WASHER (M20, HARDENED)	
6.	106-470	4	FLG SCREW (M16-2.00 X 40mm)	
7.	106-545	4	LOCKNUT (M16-2.00, PRV TRQ, 10.9)	

FOOTNOTES

DUAL BATTERY OPTION



DUAL BATTERY OPTION

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	101-072		DUAL BATTERY KIT	FOOTNOTE 1
1.	215-244	2	BATTERY	
	273-267	2	BATTERY WARRANTY DECAL	FOOTNOTE 2
2.	215-381	-	BATTERY CABLE (1 GA X 12", BLK)	
3.	347-857	-	DUAL BATTERY STRAP	
4.	105-832	-	FLG LOCKNUT (1/4-NC)	
5.	215-339	-	BATTERY CABLE (2/0 GA X 96", RED)	
6.	215-360	1	BATTERY CABLE (2 GA X 23.6", BLK)	
7.	215-361	1	BATTERY CABLE (2 GA X 23.6", RED)	
8.	356-491	-	TIE-DOWN ROD (1/4-NC X 9.3")	
9.	362-784	-	BATTERY TRAY	
10.	106-384	2	FLG LK BOLT (3/8-NC X 3/8")	

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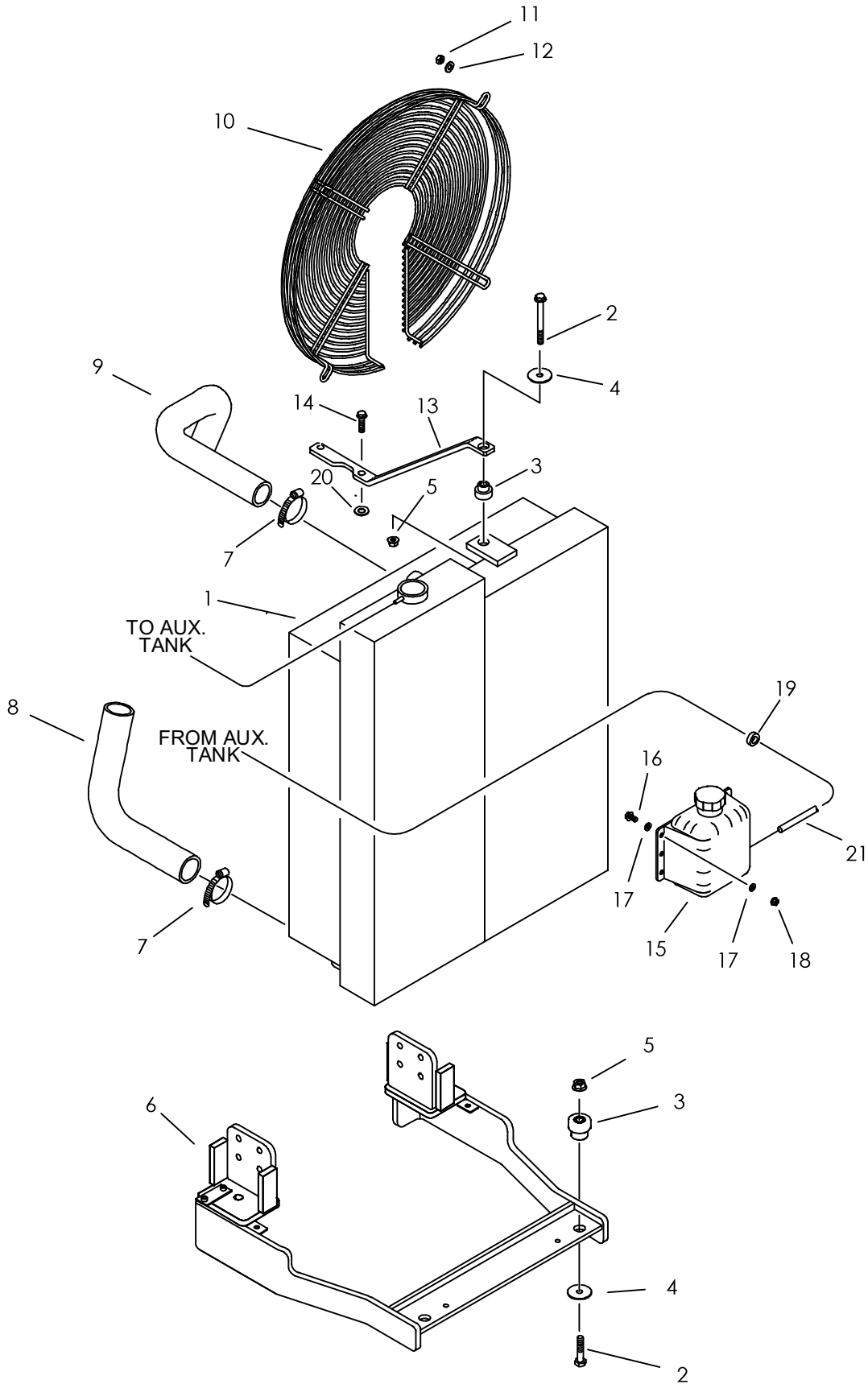
FOOTNOTES:

1. REFER TO INSTRUCTION 051-253
2. LOCATE DECAL ON BATTERY SO THAT DECAL IS VISIBLE WHEN VIEWING BATTERY.

NOTE:

RADIATOR

JT4020



T

805-434

RADIATOR

JT4020

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	306-822	1	RADIATOR	SEE FOOTNOTE 1
	111-091	1	RADIATOR CAP	
2.	106-142	3	SCREW (M10-1.50 X 65MM)	
3.	116-727	3	SHOCK MOUNT	
4.	105-223	3	WASHER (3/8")	
5.	106-387	3	FLG LOCKNUT (M10-1.50)	
6.	350-506	-	FRONT ENGINE MOUNT	
7.	110-134	4	WORM CLAMP (2.062" TO 2.750")	
8.	116-706	1	LOWER COOLANT HOSE	
9.	116-705	1	UPPER COOLANT HOSE	
10.	194-737	1	FAN GUARD (24")	
11.	106-561	4	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
12.	105-118	4	WASHER (3/8")	
13.	354-436	1	RADIATOR BRACKET	
14.	106-632	2	FLG LK SCREW (M12-1.75 X 35MM, SER)	
15.	364-229	1	OVERFLOW TANK (3 QT)	
	110-765	1	CAP (2-1/4")	
	190-053	-	POLY-PATCH TANK REPAIR KIT	
16.	107-334	2	SCREW (M8-1.25 X 25MM, BUT SOC)	
17.	105-117	4	WASHER (5/16")	SEE FOOTNOTE 2
18.	106-561	2	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
19.	115-349	1	GROMMET (1/2")	SEE FOOTNOTE 1
20.	105-940	2	WASHER (5/8")	
21.	115-381	AR	BULK HOSE (1/4", SOLD PER 1")	USE 1 @ 39"

FOOTNOTES

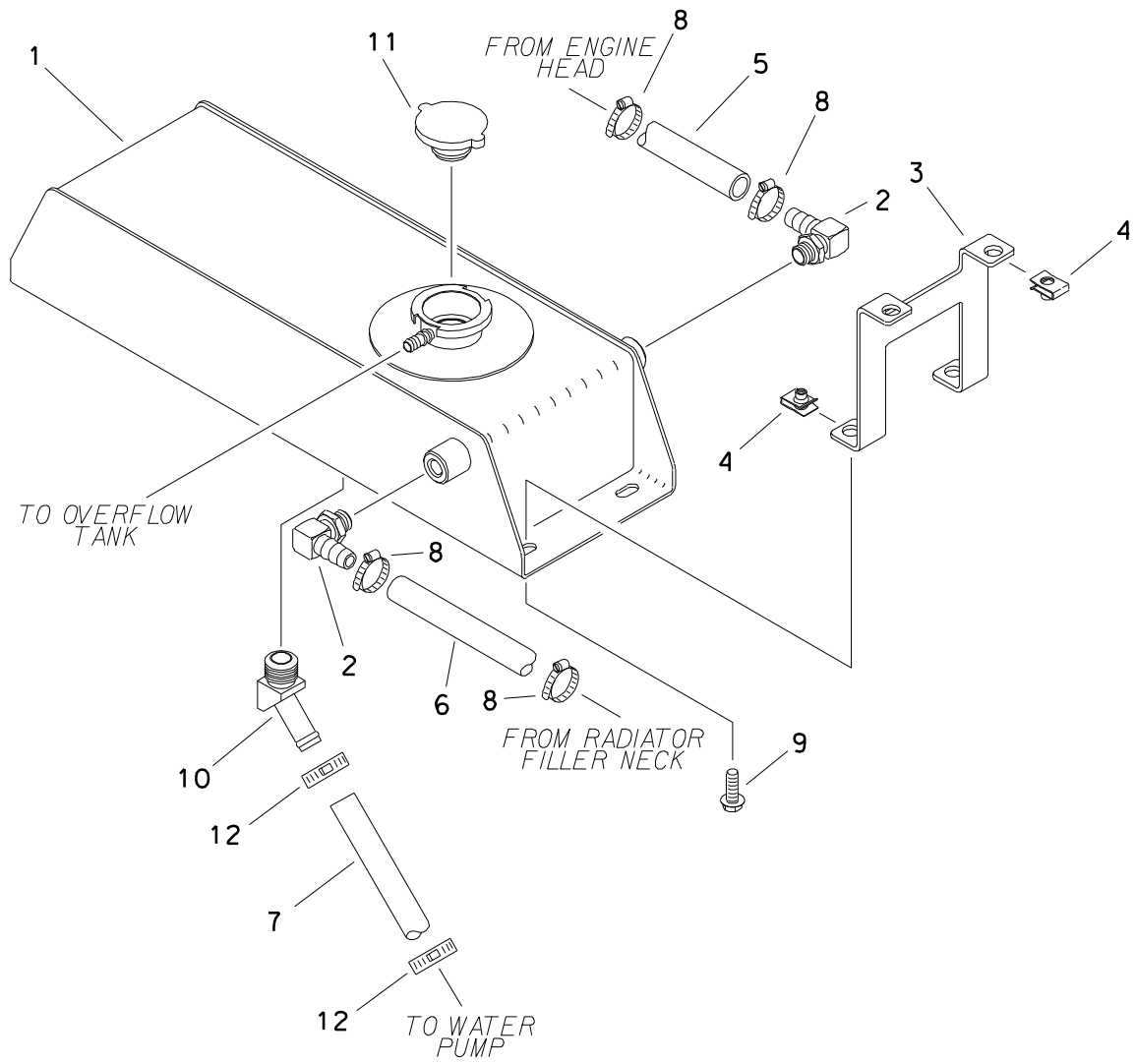
- FAN MUST BE CENTERED IN DIAMETER OF RADIATOR SHROUD OPENING. ROUTE OVERFLOW HOSE THROUGH HOLE AND GROMMET (115-349) IN TOP HOOD.
- ONE OF THESE WASHER (106-916) SHOULD BE PLACED BETWEEN NUT (106-561) AND OVERFLOW TANK (364-229), TWO PLACES. ONE OF THE WASHERS SHOULD BE PLACED BETWEEN OVERFLOW TANK AND HOOD STIFFENER PLATE, TWO PLACES.

NOTE:

T

805-434

DEAERATION TANK

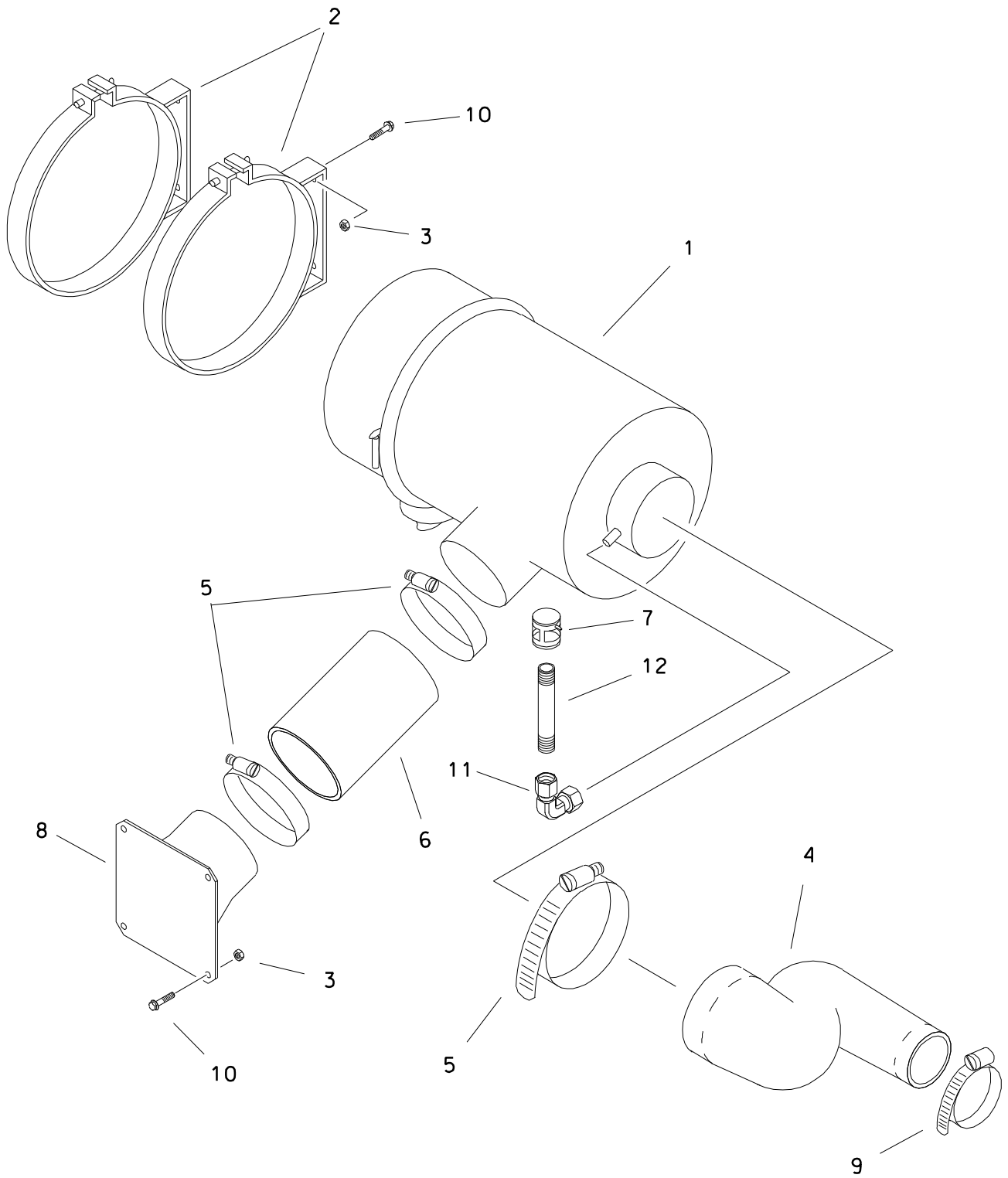


DEAERATION TANK

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	364-543	1	EXPANSION TANK	
2.	155-164	2	S/O COUPLER (04N-05H90)	
3.	309-257	2	BRACKET	
4.	106-551	8	CLIP NUT (M8-1.25)	
5.	116-108	AR	BULK HOSE (5/16", SOLD PER 1')	USE 1 @ 48"
6.	116-108	AR	BULK HOSE (5/16", SOLD PER 1')	USE 1 @ 12"
7.	116-750	AR	BULK HOSE (5/8", SOLD PER 1')	USE 1 @ 22.5"
8.	110-249	4	WORM CLAMP (1/4" TO 5/8")	
9.	106-991	4	FLG LK SCREW (M8-1.25 X 20MM)	
10.	149-487	1	S/O COUPLER (08N-10H45)	
11.	111-084	1	RADIATOR CAP	
12.	110-026	2	WORM CLAMP (1/2" TO 1-1/4")	

FOOTNOTES

AIR FILTER SYSTEM

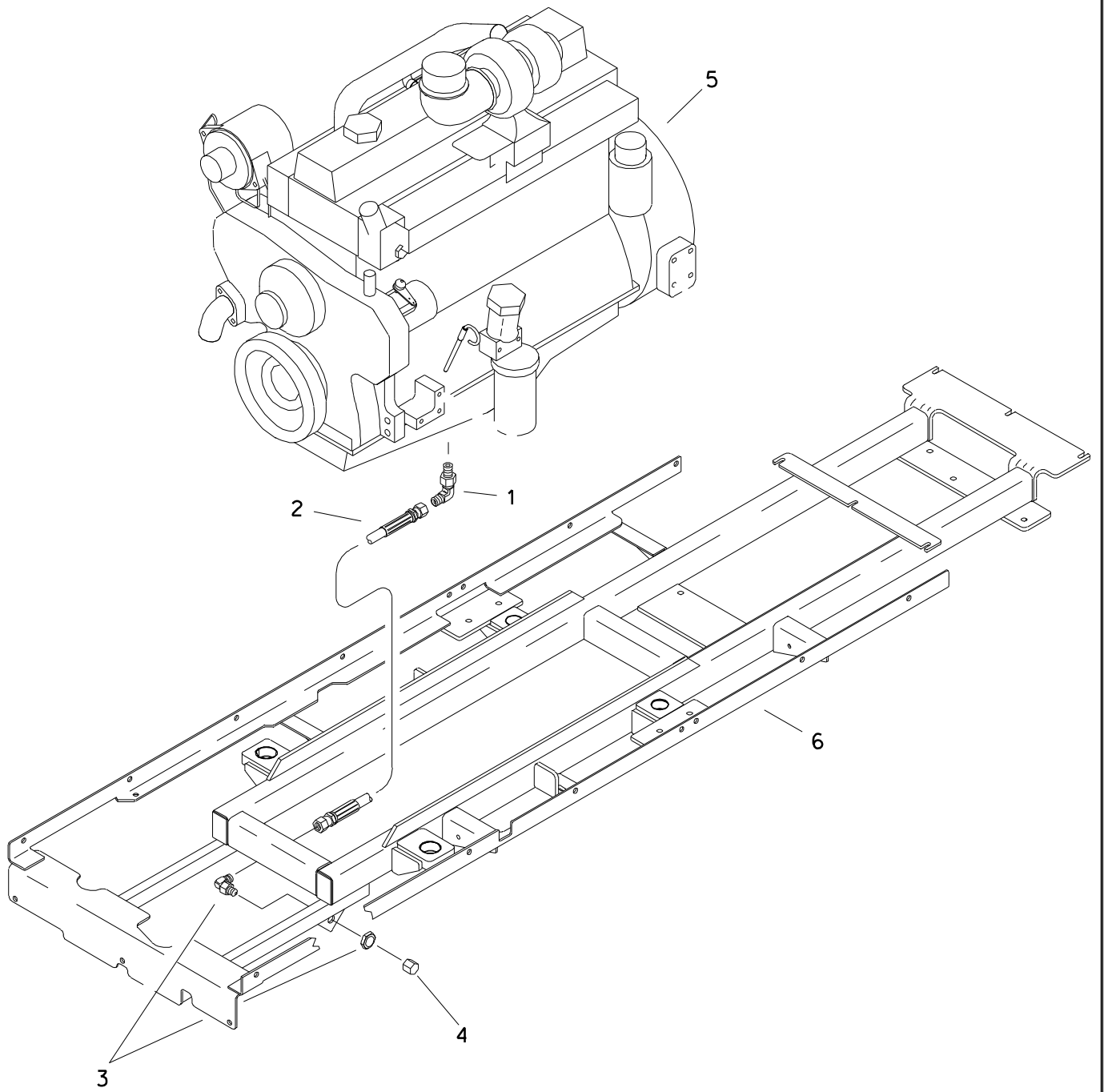


AIR FILTER SYSTEM

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	159-373	1	AIR FILTER	
	194-827	1	PRIMARY AIR FILTER ELEMENT	
	194-828	1	SECONDARY AIR FILTER ELEMENT	
2.	196-349	2	MOUNTING CLAMP (11.810")	
3.	106-561	8	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
4.	116-725	1	INTAKE HOSE (3" X 5")	
5.	110-391	3	WORM CLAMP (4-3/4" TO 5-5/8")	
6.	117-616	1	INTAKE HOSE (5" X 12")	
7.	194-788	1	RESTRICTION INDICATOR (25", H2O)	
8.	350-615	1	AIR INTAKE (5")	
9.	110-367	1	WORM CLAMP (3-1/4" TO 4-1/8")	
10.	106-162	8	FLG SCREW (M8-1.25 X 20MM)	
11.	156-228	1	ELBOW (O2NF-O2NF90)	
12.	115-188	1	NIPPLE (O2N-4.250")	

FOOTNOTES

ENGINE OIL DRAIN

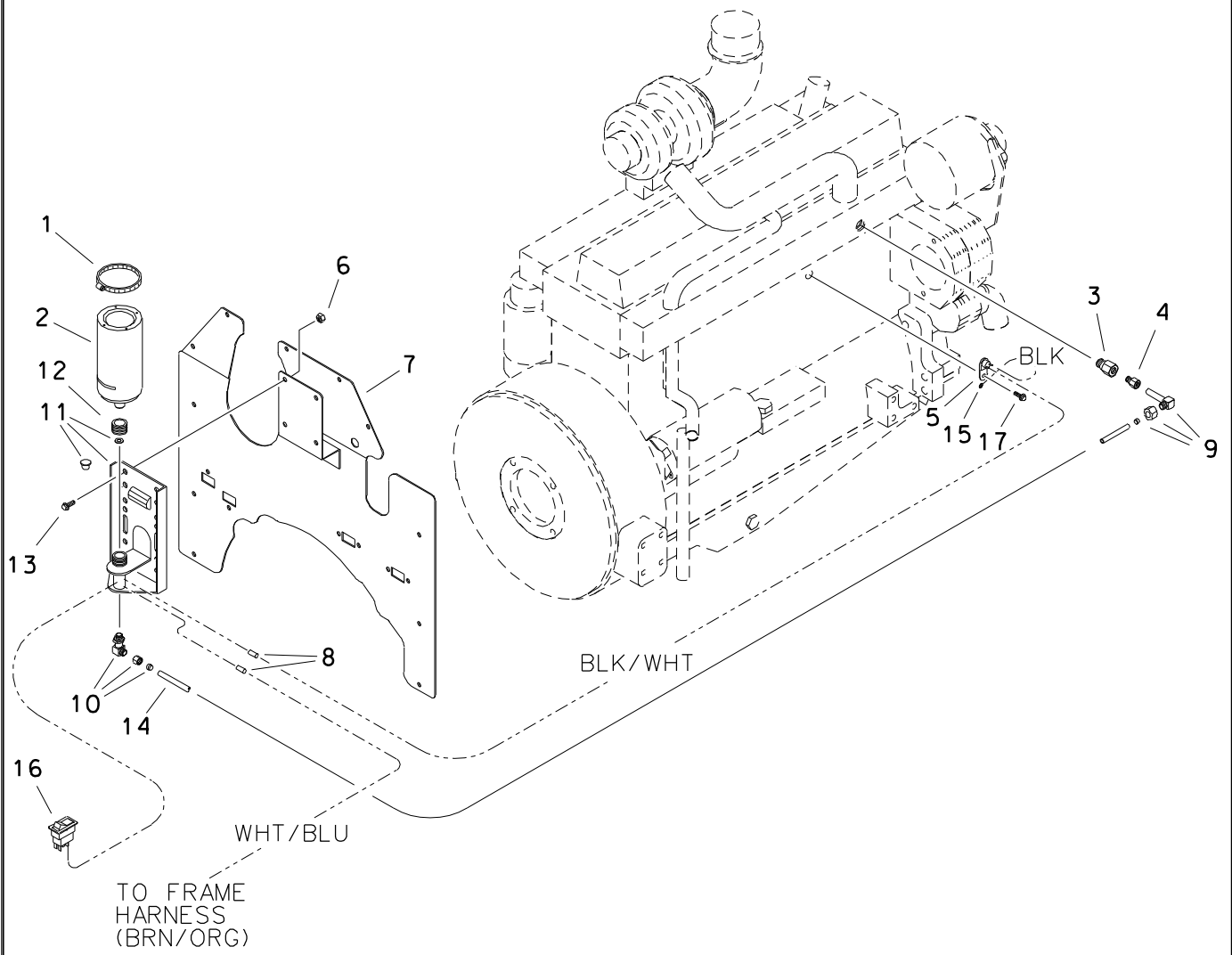


ENGINE OIL DRAIN

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-467	1	CONNECTOR (M18-1.50-08J90)	
2.	154-576	1	HOSE (08JFX-22.5"-2000)	
3.	154-148	1	BK CONNECTOR (08J-08J90BK)	
4.	154-089	1	CAP (08JF)	
5.	194-781	-	ENGINE DEERE - DIESEL	
6.	354-597	-	ENGINE SKID	

FOOTNOTES

COLD START KIT



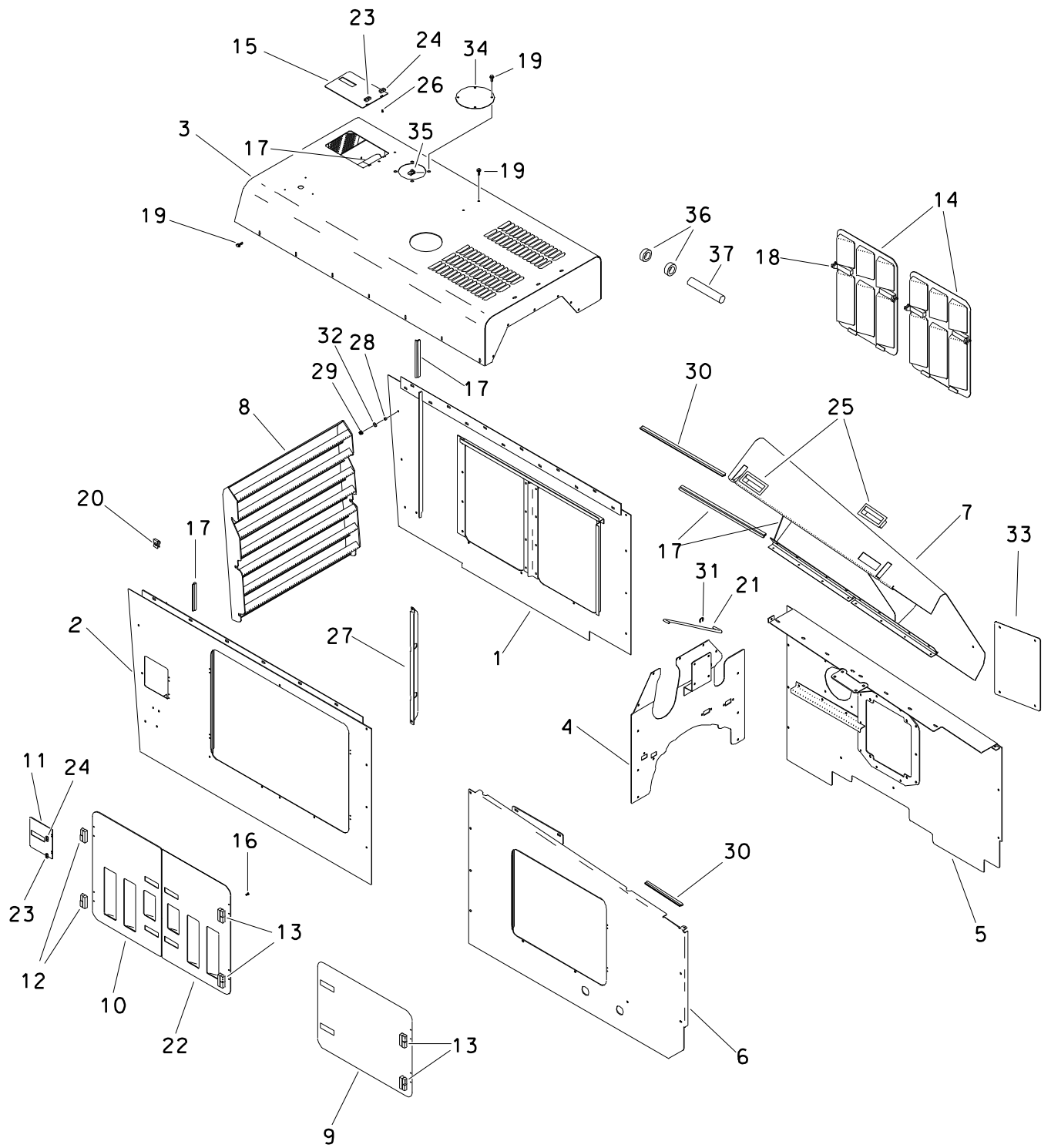
COLD START KIT

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	101-073		COLD START KIT	INCL REF NOS. 1, 3-6, AND 8-17; SEE FOOTNOTE 1
1.	110-367	1	WORM CLAMP (3.250" TO 4.125")	
2.	195-842	1	ETHER CANISTER	SEE FOOTNOTE 2
3.	155-171	1	REDUCER (10S-06SF)	
4.	155-253	1	CONNECTOR (06S-02NF)	
5.	215-073	1	SENSOR SWITCH	
6.	105-894	4	LOCKNUT (M10-1.50, PRV TRQ, 10.9)	
7.	354-561	-	FIREWALL	
8.	215-478	2	BUTT CONNECTOR (14-16 GA)	
9.	195-843	1	INJECTOR NOZZLE	INCL FERRULE AND NUT
	156-204	-	FERRULE (02T)	
	156-205	-	COMPRESSION NUT (02T)	
10.	156-272	1	TUBE CONNECTOR (02N-02T90, ORF)	INCL FERRULE AND NUT
	156-204	-	FERRULE (02T)	
	156-205	-	COMPRESSION NUT (02T)	
11.	195-841	1	VALVE/CANISTER BRACKET	INCL CAPLUG AND GASKET
	110-252	-	CAPLUG (3/4")	
	195-844	-	GASKET	
12.	115-365	AR	GROMMET (2-1/8", SOLD PER 1")	USE 1 @ 1.50"
13.	105-825	4	FLG LK BOLT (3/8-NC X 3/4")	
14.	156-018	AR	BULK TUBING (1/8", SOLD PER 1")	USE 1 @ 40"
15.	215-590	1	RING TERMINAL (3/8")	
16.	217-917	1	ROCKER SWITCH (DPDT) OFF-(ON)	REPLACES PLUG IN R.H. OPERATOR CONSOLE
17.	105-245	1	SCREW (M10-1.50 X 25MM)	

FOOTNOTES

1. REFER TO INSTALLATION INSTRUCTIONS 051-252.
2. NOT PART OF KIT, NEED TO ORDER SEPARATELY

ENGINE COVERS



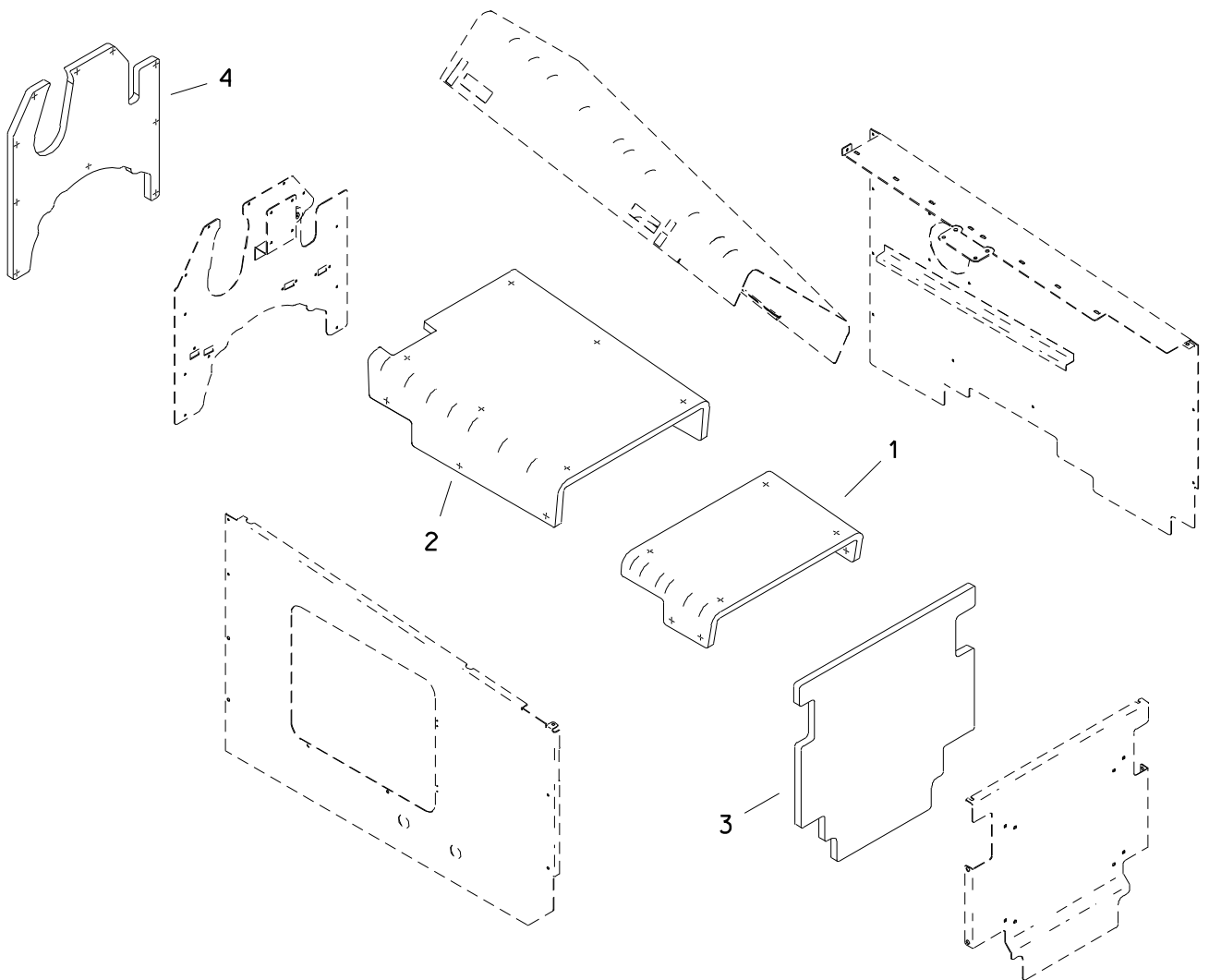
ENGINE COVERS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-605	1	REAR ENGINE PANEL (LEFT)	
2.	350-606	1	REAR ENGINE PANEL (RIGHT)	
3.	350-423	1	ENGINE PANEL (TOP)	
4.	354-561	1	FIREWALL	
5.	350-609	1	FRONT ENGINE PANEL (LEFT)	SEE FOOTNOTE 1
	308-722	1	FRONT ENGINE PANEL (LEFT)	SEE FOOTNOTE 1
6.	350-610	1	FRONT ENGINE PANEL (RIGHT)	
7.	350-611	1	FRONT HOOD	
8.	354-564	1	GRILLE	
9.	354-579	1	DOOR PANEL	
10.	350-419	1	LEFT DOOR	
11.	354-581	1	DOOR PANEL	
12.	111-002	2	LIFT-OFF HINGE (OFF-SET)	
13.	105-617	4	LIFT-OFF HINGE (OFF-SET)	
14.	350-412	2	LEFT DOOR	
15.	354-875	1	DOOR PANEL	
16.	106-228	24	SCREW (M5-.80 X 10mm)	
17.	116-489	AR	BULK EDGE (1/8", SOLD PER 1')	USE 1 @ 165.0"
18.	117-558	14	ADJUST LEVER LATCH (LOCKING)	
	214-961		KEY, PAIR (BASE CODE)	
	217-309		LOCK PLUG 4/LATCH (BASE CODE)	
	110-757	14	LEVER LATCH (ADJUST LOCKING)	INCL KEYS
	110-596		KEYS (PAIR)	
19.	106-991	75	FLG LOCK SCREW (M8-1.25 X 20mm)	
20.	106-551	67	CLIP NUT (M8-1.25)	
21.	354-884	1	PROP BAR	
22.	350-420	1	RIGHT DOOR	
23.	111-051	2	HINGE	
24.	111-052	2	HINGE	
25.	110-989	2	POCKET PULL	
26.	105-650	16	SCREW (M4-.70 X 10mm)	
27.	350-745	1	BACKUP BAR	
28.	184-870	2	SPACER	
29.	106-561	2	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
30.	115-686	AR	BULK EDGE (5/32", SOLD PER 1')	USE 1 @ 55.0"
31.	115-477	1	GRIP RING (.375")	
32.	106-389	2	WASHER (M8)	
33.	308-718	1	DOOR	SEE FOOTNOTE 1
34.	309-258	1	COVER	
35.	106-551	4	CLIP NUT (M8-1.25)	
36.	115-033	2	GROMMET (1-1/4")	SEE FOOTNOTE 3
37.	117-378	AR	BULK HOSE, LOW PRESSURE (-12)	USE 1 @ 46", SEE FOOTNOTE 2

FOOTNOTES

1. WHEN REPLACING 350-609, ORDER 308-722 AND 308-718.
2. INSTALL THROUGH HOLES IN TOP PANEL (350-423 REF#3) AFTER INSTALLING GROMMETS (115-033 REF#38).
3. INSTALL IN HOLES IN TOP PANEL (350-423 REF#3) BEFORE INSTALLING HOSE (117-375 REF#37).

SOUND INSULATION ENGINE COVERS



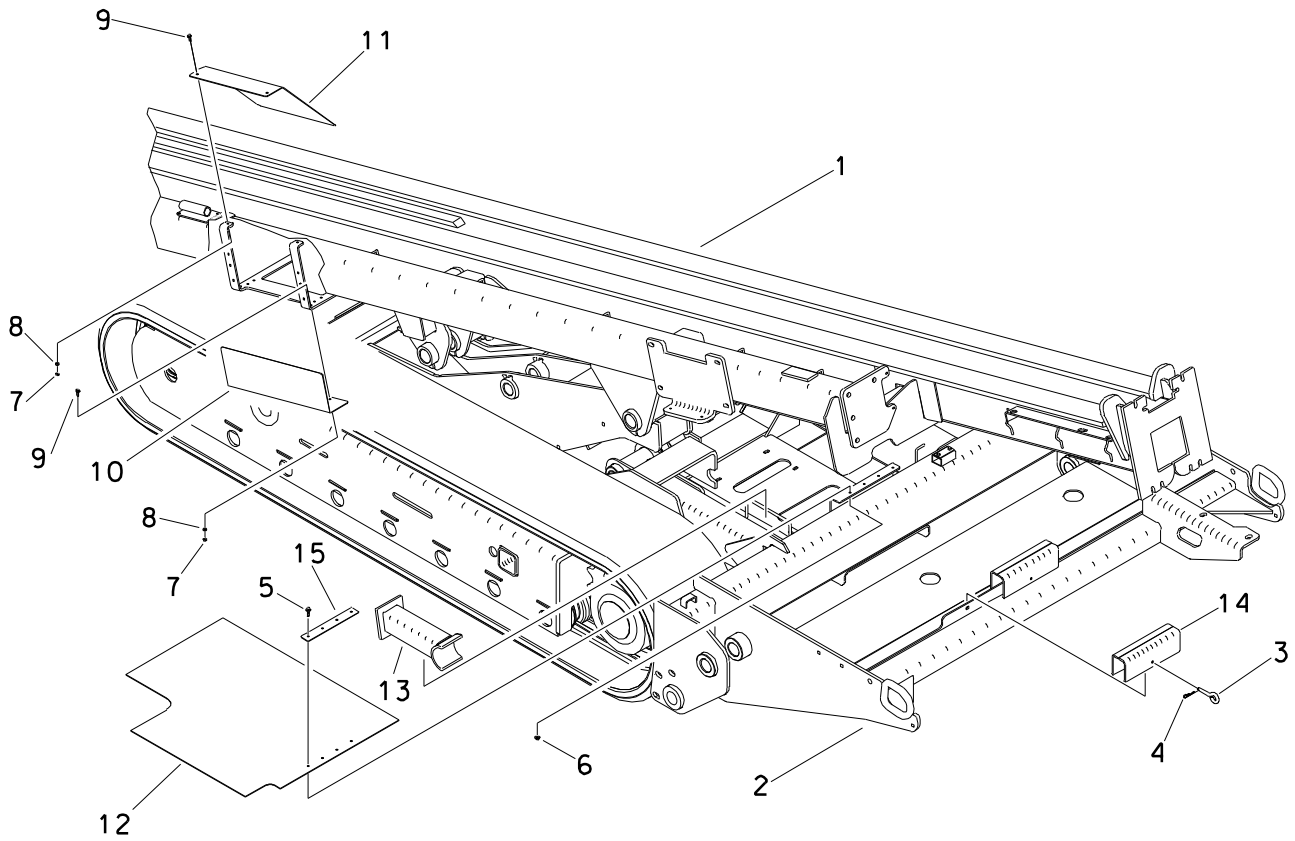
SOUND INSULATION ENGINE COVERS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-937	1	SOUND INSULATION (HOOD-FRONT)	SEE FOOTNOTE 1, 2
2.	354-938	1	SOUND INSULATION (HOOD-REAR)	SEE FOOTNOTE 1, 2
3.	354-939	1	SOUND INSULATION (BATTERY PANEL)	
4.	354-940	1	SOUND INSULATION (FIREWALL)	SEE FOOTNOTE 2
5.	111-043	36	INSULATION STUD	

FOOTNOTES

- 1. FIBERGLASS MUST BE SCORED ALONG BEND LINE TO ACHIEVE ACCEPTABLE BEND RESULTS
- 2. "X" MARKS ON INSULATION INDICATE APPROX LOCATION OF INSULATION STUDS

VALVE COVERS & CYLINDER LOCKS

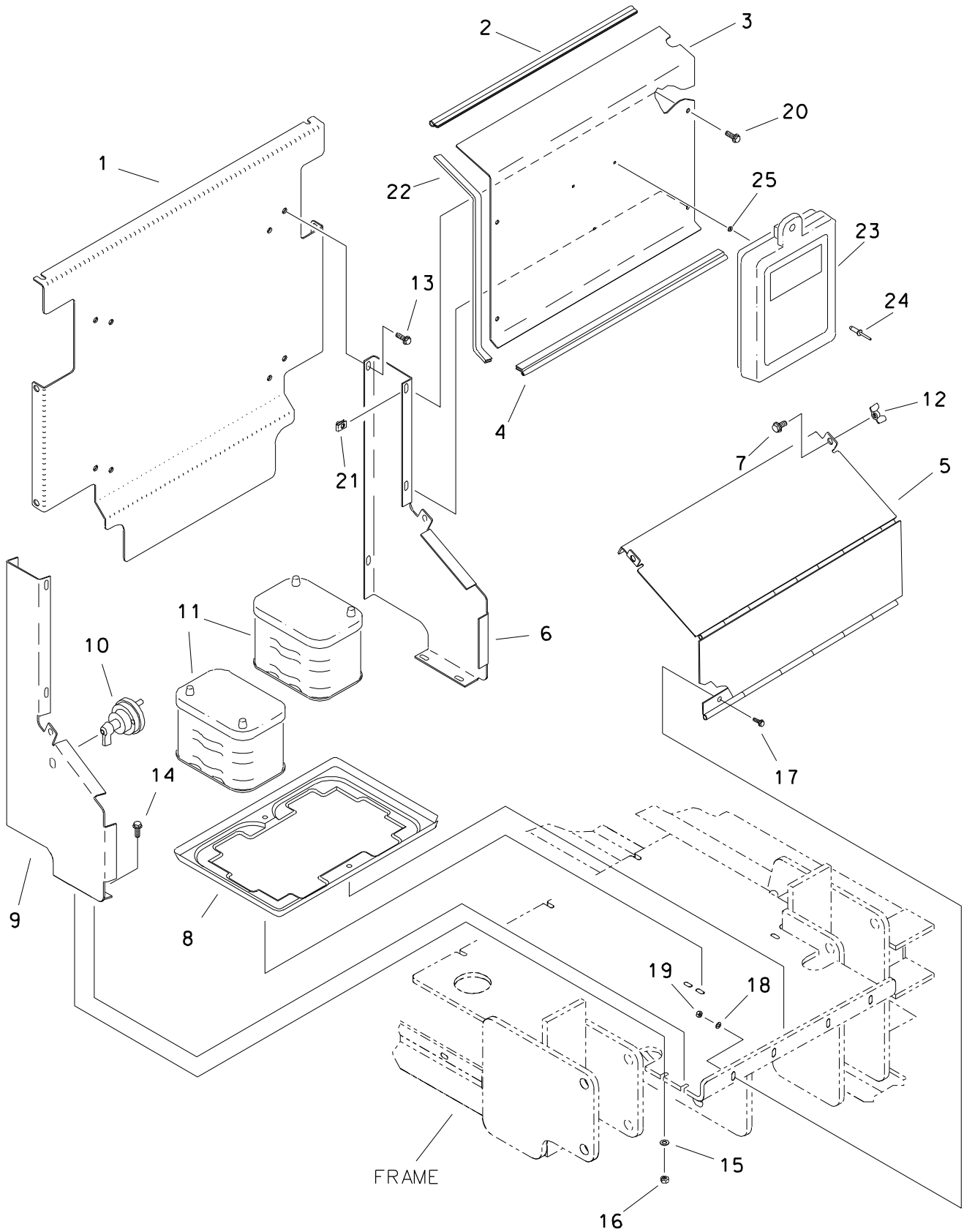


VALVE COVERS & CYLINDER LOCKS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-507	-	DRILL FRAME	
2.	350-750	-	MAIN FRAME	
3.	110-034	2	EYE PIN (7/16" X 3")	
4.	110-033	2	HAIR CLIP PIN (1/8" X 1/2")	
5.	106-991	4	FLG LK SCREW (M8-1.25 X 20MM)	
6.	106-561	4	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
7.	105-085	4	LOCKNUT (1/4-NC)	
8.	105-095	4	WASHER (1/4")	
9.	106-159	4	FLG SCREW (1/4-NC X 3/4")	
10.	354-528	1	VALVE COVER	
11.	354-595	1	VALVE COVER	
12.	116-863	1	COVER FLAP	
13.	354-562	1	DRILL FRAME STIFF LEG	
14.	354-980	2	CYLINDER LOCK	
15.	350-514	1	CLAMP PLATE	

FOOTNOTES

BATTERY COVERS



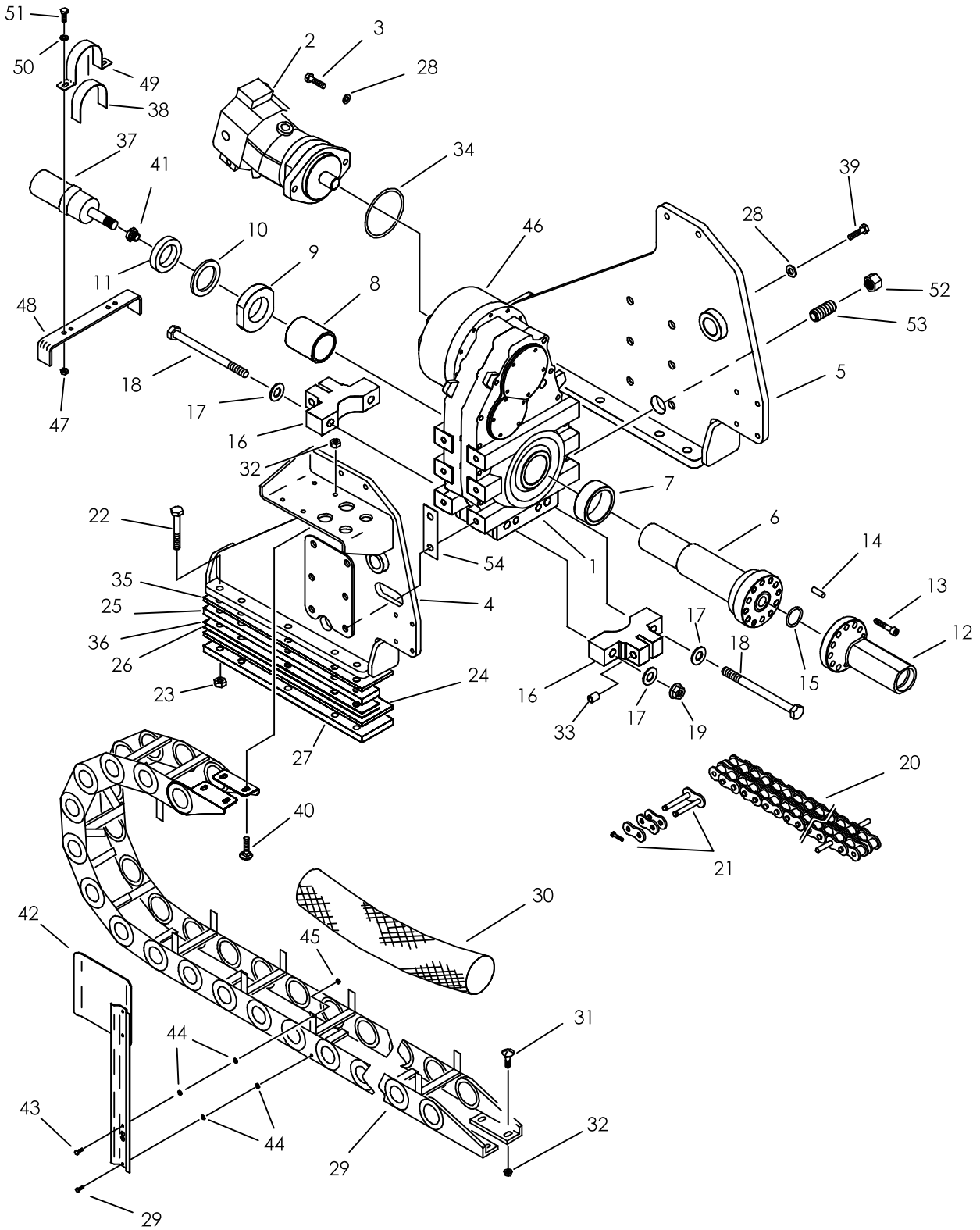
BATTERY COVERS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-475	1	BATTERY BACK PANEL	
2.	116-421	AR	BULK EDGE (1/8", SOLD PER 1')	USE 1 @ 21.5"
3.	354-467	1	RELAY BOARD COVER	
4.	116-489	AR	BULK EDGE (1/8", SOLD PER 1')	USE 1 @ 21.5"
5.	354-880	1	BATTERY COVER	
6.	354-469	1	BATTERY SIDE PANEL (LEFT)	
7.	105-825	2	FLG LK BOLT (3/8-NC X 3/4")	
8.	362-784	-	BATTERY TRAY	
9.	354-468	1	BATTERY SIDE PANEL (RIGHT)	
10.	217-819	-	BATTERY DISCONNECT SWITCH	
11.	215-244	-	BATTERY	
12.	105-180	2	WING NUT (3/8-NC)	
13.	106-991	4	FLG LK SCREW (M8-1.25 X 20mm)	
14.	106-992	4	FLG LK SCREW (M8-1.25 X 25mm)	
15.	105-117	4	WASHER (5/16")	
16.	106-561	4	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
17.	106-988	4	FLG LK SCREW (M6-1.00 X 20mm)	
18.	105-117	4	WASHER (5/16")	
19.	106-538	4	LOCKNUT (M6-1.00, PRV TRQ, 10.9)	
20.	106-162	4	FLG SCREW (M8-1.25 X 20mm)	
21.	106-551	4	CLIP NUT (M8-1.25)	
22.	115-686	AR	BULK EDGE (5/32", SOLD PER 1')	USE 2 @ 20.5"
23.	250-622	1	MANUAL COMPARTMENT	
24.	110-560	3	PDP RIVET (3/16" X 1/2", ALUM)	
25.	106-205	3	WASHER (.191")	

FOOTNOTES

FRAME COMPONENTS

CARRIAGE PRIOR TO S/N 2T1167



CARRIAGE PRIOR TO S/N 2T1167

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	166-423	1	ROTATION DRIVE GEARBOX	SEE FOOTNOTE 5. INCLUDES PLANETARY (I166-I152).
	197-060		REBUILT ROTATION GEARBOX	SEE FOOTNOTE 5.
2.	158-012	1	HYD MOTOR	
	190-906		SEAL REPAIR KIT	
	157-750		SHAFT SEAL	
	217-745		CONTROL SOLENOID	
	499-176		CONNECTOR PLUG	
	197-075		REBUILT 158-012 HYD. MOTOR	
3.	105-997	2	BOLT (5/8-NC X 1-3/4", SOC)	USE 242 LOCTITE. TORQUE TO 175 LB-FT.
4.	350-752	1	RIGHT CARRIAGE SIDE	
5.	350-753	1	LEFT CARRIAGE SIDE	
6.	350-768	1	SLIDING OUTPUT SHAFT	APPLY 256-666 OPEN GEAR COMPOUND TO SPLINED AREA.
7.	171-112	1	SPACER	
8.	184-946	1	SPACER	
9.	107-104	1	NUT -2.933 NS	
10.	106-532	1	THRUST LOCK WASHER (2.937")	
11.	106-531	1	THRUST LOCKNUT (2.937-NS)	
12.	307-538	1	SAVER SUB (3.12 SLOD)	SEE FOOTNOTE 7.
13.	107-354	9	SCREW (M16-2.00 X 55mm, SOC)	USE 242 LOCTITE. TORQUE TO 225 LB-FT.
14.	500-818	3	DOWEL PIN (16mm X 40mm)	
15.	157-151	1	O-RING (226 D90)	
16.	350-759	2	CHAIN ANCHOR	USE WITH I30-604 CHAIN.
17.	106-399	4	WASHER (M20, HARDENED)	
18.	107-204	2	SCREW (M20-2.5 X 300mm, 10.9)	
19.	106-665	2	LOCKNUT (M20-2.50, 10.9)	
20.	130-604	1	ROLLER CHAIN (#140-2, .500" 297P)	SEE FOOTNOTE 3.
	178-246	-	EXTENDED PIN (#140-2, .500")	SEE FOOTNOTE 4.
21.	130-606	2	CONNECTOR LINK (#140-2, .500")	USE WITH I30-604 CHAIN.
	130-607	AR	ROLLER LINK (#140-2, .500")	USE WITH I30-604 CHAIN.
22.	107-144	10	SCREW (M16-2.0 X 100mm)	
23.	106-545	10	LOCKNUT (M16-2.00, PRV TRQ, 10.9)	
24.	350-932	2	BOTTOM SLIDE BAR	
25.	350-931	2	THICK SLIDE SPACER	
26.	350-933	2	SLIDE SHIM	
27.	350-930	2	SLIDE BAR	
28.	106-398	14	WASHER (M16, HARDENED)	
29.	350-767	1	HOSE TRACK (5" X 150")	INCL REF NO. 30, SEE FOOTNOTE I & 8.
	306-620	AR	REPAIR SECTION (5.00"W X 20"L)	
	308-831	AR	EASY-OUT BAR (1/2" X 5")	
	308-832	AR	EASY-OUT BAR (1/2" X 5")	
	308-833	AR	5" ALUMINUM FLAT BAR	
	308-834	AR	WINDOW EXTENDER	
	307-337	AR	L1 BRACKET (LEFT)	
	307-338	AR	L1 BRACKET (RIGHT)	

NOT SHOWN:

FOOTNOTES:

NOTE:

CARRIAGE PRIOR TO S/N 2T1167

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
30.	354-368	-	HOSE BAG (150")	SEE FOOTNOTE 8.
31.	105-249	4	CARRIAGE BOLT (3/8-NC X 1-1/4")	
32.	105-047	8	LOCKNUT (3/8-NC)	
33.	130-601	4	ROLLER BUSHING (#140)	USE WITH I30-604 CHAIN
34.	157-084	1	O-RING (159 D70)	
35.	354-515	2	TOP SLIDE BAR	
36.	354-509	2	THIN SLIDE SPACER	
37.	159-382	1	WATER SWIVEL (16N-16NF)	
	190-905		SWIVEL REPAIR KIT	
38.	350-475	1	WATER SWIVEL PAD	
39.	106-666	12	SCREW (M16-2.00 X 65MM, 10.9)	USE 277 LOCTITE, TORQUE TO 225 LB-FT. SEE FOOTNOTE 6.
40.	105-600	4	CARRIAGE BOLT (3/8-NC X 1")	
41.	115-261	1	REDUCER (24N-16NF)	
42.	350-432	1	TARGET	SEE FOOTNOTE 2.
43.	106-640	1	SCREW (M6-1.00 X 20mm, BUT SOC)	
44.	106-389	4	WASHER (M8)	
45.	106-538	1	LOCKNUT (M6-1.00, PRV TRQ, 10.9)	
46.	166-152	1	ROTATION GEARBOX PLANETARY	
47.	105-894	2	LOCKNUT (M10-1.50, PRV TRQ, 10.9)	
48.	354-476	1	SWIVEL BAR	
49.	354-909	1	CLAMP	
50.	106-390	2	WASHER (M10)	
51.	105-245	2	SCREW (M10-1.50 X 25MM)	
52.	514-106	1	CAP (08NF)	
53.	115-161	1	NIPPLE (08N, 3-1/2")	
54.	116-882	1	SHIM	USED PRIOR TO SN 2S0795

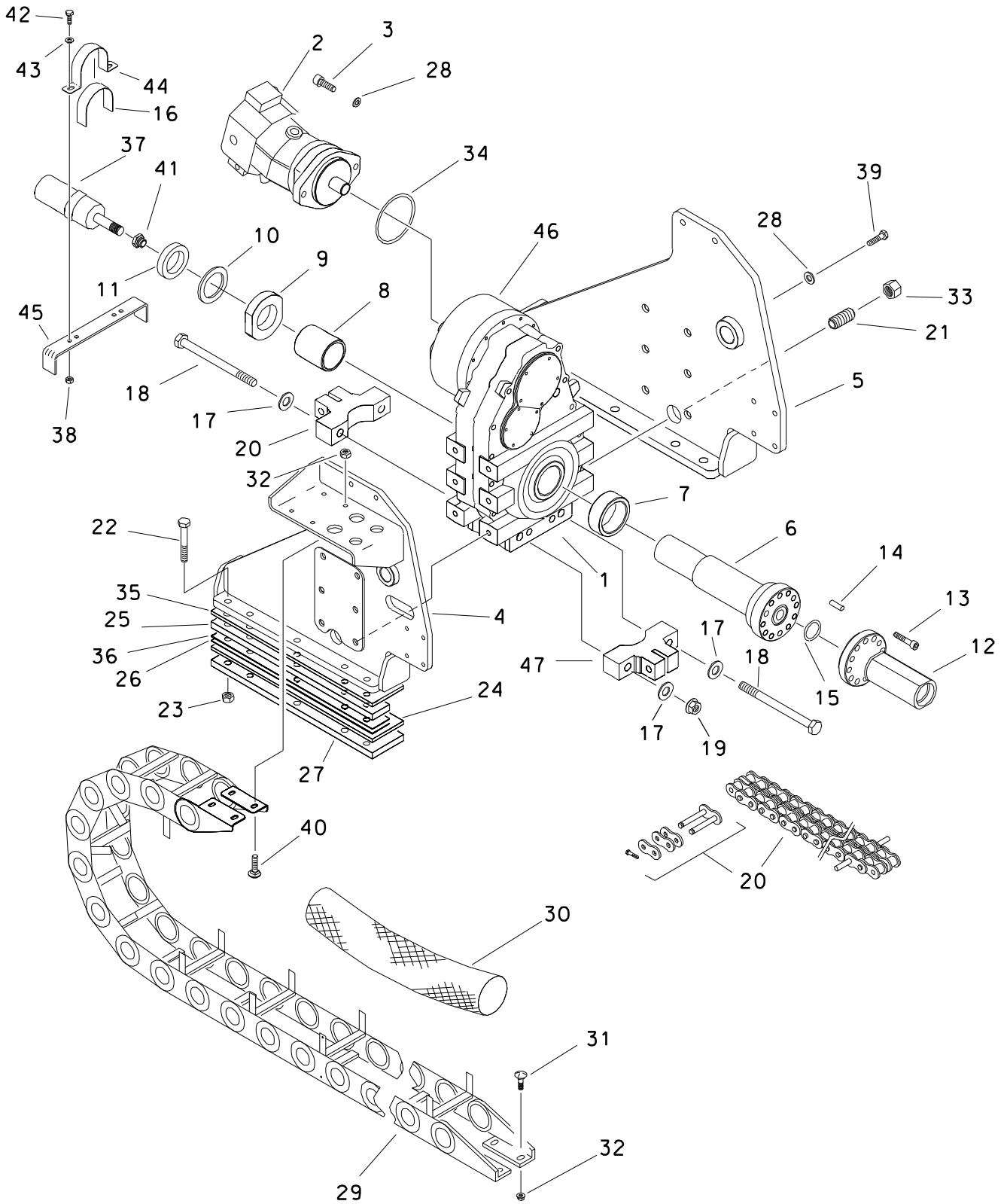
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FOOTNOTES:

1. INSTALL HOSE TRACK SO THAT THE POINT ATTACHING TO CARRIAGE IS THE END W/ EXTENDER BAR NEAREST THE END.
2. INSTALL TARGET ON HOSE TRACK ON THE NINTH EXTENDER BAR FROM THE CARRIAGE END.
3. THE END THE EXTENDED PIN IS CLOSEST TO WILL ATTACH TO THE FRONT OF THE CARRIAGE.
4. REFER TO SERVICE BULLETIN 052-098 FOR INSTALLATION INSTRUCTIONS
5. HOLDS 10.5 PINTS OF MPL, SEE GEAR BOX PAGE FOR SERVICE PARTS.
6. EARLY MACHINES USE 8 WASHERS & 8 SCREWS.
7. 350-756 SAVER SUB IS SUPERSEDED BY 307-538. USE 307-538 SAVER SUB FOR ALL REPLACEMENTS.
8. INSTALL ELECTRIC CABLE THAT ATTACHES TO ROTATION MOTOR INSIDE ACCESSORY FLAP ON HOSE BAG.

NOTE:

CARRIAGE BEGINS S/N 2T1167



CARRIAGE

BEGINS S/N 2T1167

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	166-423	1	ROTATION DRIVE GEARBOX	SEE FOOTNOTE 4. INCLUDES PLANETARY (166-152)
	197-060		REBUILT ROTATION GEARBOX	SEE FOOTNOTE 4.
2.	158-012	1	HYD MOTOR	
	190-906		SEAL REPAIR KIT	
	157-750		SHAFT SEAL	
	217-745		CONTROL SOLENOID	
	499-176		CONNECTOR PLUG	
	197-075		REBUILT 158-012 HYD. MOTOR	
3.	105-997	2	BOLT (5/8-NC X 1-3/4", SOC)	USE 242 LOCTITE, TORQUE TO 175 LB-FT.
4.	350-752	1	RIGHT CARRIAGE SIDE	
5.	350-753	1	LEFT CARRIAGE SIDE	
6.	350-768	1	SLIDING OUTPUT SHAFT	APPLY 256-666 OPEN GEAR COMPOUND TO SPLINED AREA.
7.	171-112	1	SPACER	
8.	184-946	1	SPACER	
9.	107-104	1	NUT -2.933 NS	
10.	106-532	1	THRUST LOCK WASHER (2.937")	
11.	106-531	1	THRUST LOCKNUT (2.937-NS)	
12.	307-538	1	SAVER SUB (3.12 SLOD)	SEE FOOTNOTE 5.
13.	107-354	9	SCREW (M16-2.00 X 55mm, SOC)	USE 242 LOCTITE, TORQUE 225 LB-FT.
14.	500-818	3	DOWEL PIN (16mm X 40mm)	
15.	157-151	1	O-RING (226 D90)	
16.	350-475	1	WATER SWIVEL PAD	
17.	106-399	4	WASHER (M20, HARDENED)	
18.	107-204	2	SCREW (M20-2.5 X 300mm, 10.9)	
19.	106-665	2	LOCKNUT (M20-2.50, 10.9)	
20.	129-007	1	ROLLER CHAIN ASS'Y #140-2 297P	SEE FOOTNOTE 2.
	130-624		CONNECTOR LINK (#140-2, .707")	SEE FOOTNOTE 2.
	130-622		EXTENDED PIN (#140-2, .707")	SEE FOOTNOTE 2.
	129-022	1	ROLLER CHAIN #140-2 297P	INCLUDES 2X 129-023, 2X 179-601
	179-601		EXTD PIN LINK #140-2, .701"	
	129-023		CONNECTOR LINK (#140-2, .701")	
21.	115-161	1	NIPPLE (08N, 3-1/2")	
22.	107-144	10	SCREW (M16-2.0 X 100mm)	
23.	106-545	10	LOCKNUT (M16-2.00, PRV TRQ, 10.9)	
24.	350-932	2	BOTTOM SLIDE BAR	
25.	350-931	2	THICK SLIDE SPACER	
26.	350-933	2	SLIDE SHIM	
27.	350-930	2	SLIDE BAR	
28.	106-398	14	WASHER (M16, HARDENED)	
29.	350-767	1	HOSE TRACK (5" X 150")	INCL REF NO. 30, SEE FOOTNOTE 1 & 6.
	306-620	AR	REPAIR SECTION (5.00"W X 20"L)	
	308-831	AR	EASY-OUT BAR (1/2" X 5")	
	308-832	AR	EASY-OUT BAR (1/2" X 5")	
	308-833	AR	5" ALUMINUM FLAT BAR	
	308-834	AR	WINDOW EXTENDER	
	307-337	AR	L1 BRACKET (LEFT)	
	307-338	AR	L1 BRACKET (RIGHT)	

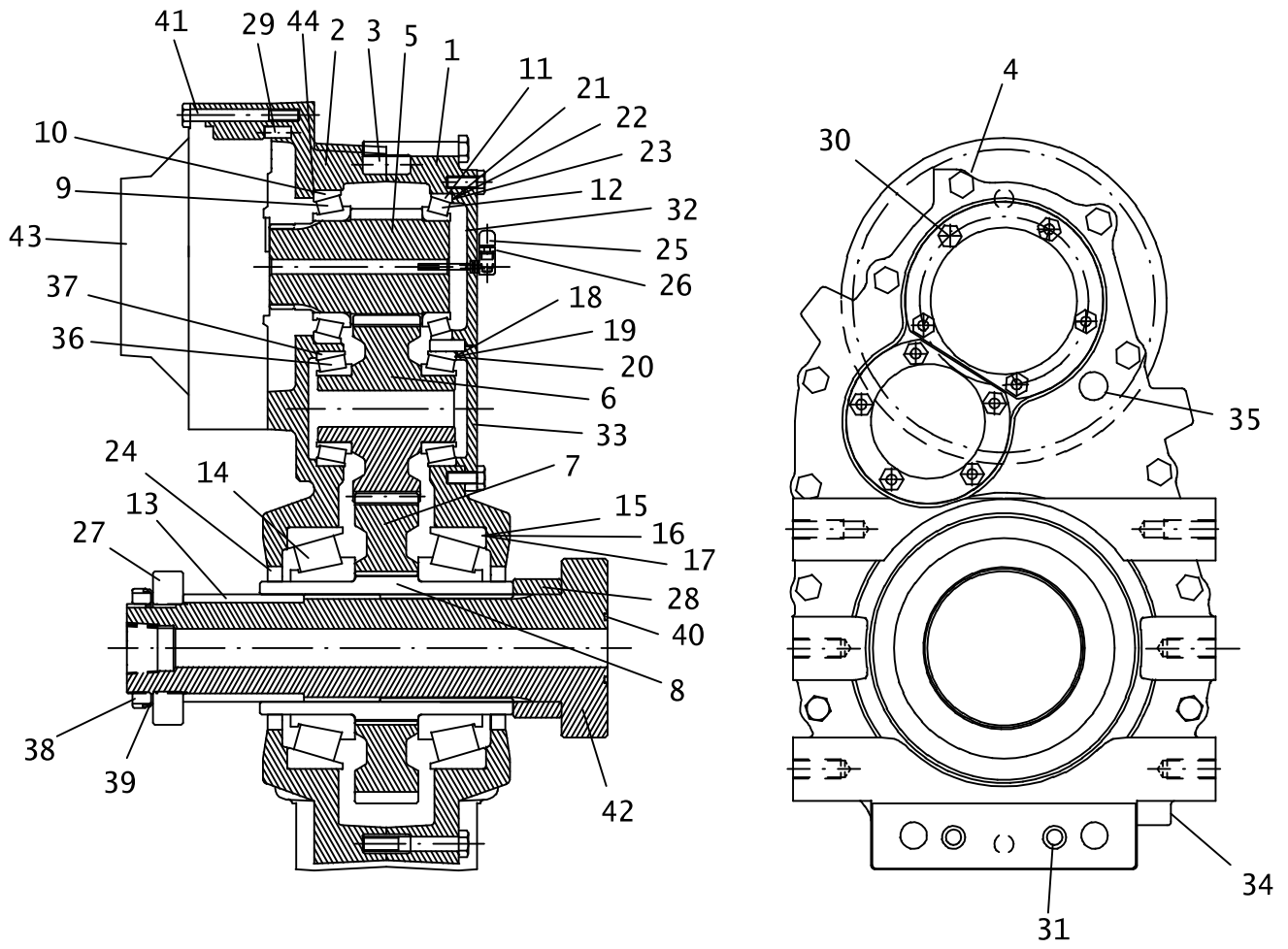
CARRIAGE BEGINS S/N 2T1167

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
30.	354-368	-	HOSE BAG (150")	SEE FOOTNOTE 6.
31.	105-249	4	CARRIAGE BOLT (3/8-NC X 1-1/4")	
32.	105-047	8	LOCKNUT (3/8-NC)	
33.	514-106	1	CAP (08NF)	
34.	157-084	1	O-RING (159_D70)	
35.	354-515	2	TOP SLIDE BAR	
36.	354-509	2	THIN SLIDE SPACER	
37.	159-382	1	WATER SWIVEL (16N-16NF)	
	190-905	-	SWIVEL REPAIR KIT	
38.	105-894	2	LOCKNUT (M10-1.50, PRV TRQ, 10.9)	
39.	106-666	12	SCREW (M16-2.00 X 65MM, 10.9)	USE 277 LOCTITE, TORQUE TO 225 LB-FT.
40.	105-600	4	CARRIAGE BOLT (3/8-NC X 1")	
41.	115-261	1	REDUCER (24N-16NF)	
42.	105-245	2	SCREW (M10-1.50 X 25MM)	
43.	106-390	2	WASHER (M10)	
44.	354-909	1	CLAMP	
45.	354-476	1	SWIVEL BAR	
46.	166-152	1	ROTATION GEARBOX PLANETARY	
47.	130-623	1	CHAIN ANCHOR (#140-2, .707")	

FOOTNOTES

1. INSTALL HOSE TRACK SO THAT THE POINT ATTACHING TO CARRIAGE IS THE END W/ EXTENDER BAR NEAREST THE END.
2. ROLLER CHAIN ASSY (129-007) COMES WITH 2 CHAIN ANCHORS, 2 CONNECTOR LINKS, & 1 EXTENDED PIN (INSTALLED). THE END THE EXTENDED PIN IS CLOSEST TO WILL ATTACH TO THE FRONT OF THE CARRIAGE. ONE CHAIN ANCHOR (130-623) IS ATTACHED TO CHAIN, SECOND CHAIN ANCHOR IS SHIPPED LOOSE TO ALLOW CHAIN TO BE INSTALLED THROUGH DRILL FRAME TUBE. WHEN INSTALLING SECOND CHAIN ANCHOR, INSTALL CONNECTOR LINK (130-624) OPPOSITE DIRECTION OF CONNECTOR LINK ON OTHER END OF CHAIN TO ALLOW BOLTS (ITEM 18) TO BE INSTALLED EASILY.
3. REFER TO SERVICE BULLETIN 052-098 FOR INSTALLATION INSTRUCTIONS
4. HOLDS 10.5 PINTS OF MPL, SEE GEAR BOX PAGE FOR SERVICE PARTS.
5. 350-756 SAVER SUB IS SUPERSEDED BY 307-538. USE 307-538 SAVER SUB FOR ALL REPLACEMENTS.
6. INSTALL ELECTRIC CABLE THAT ATTACHES TO ROTATION MOTOR INSIDE ACCESSORY FLAP ON HOSE BAG.

ROTATION GEAR BOX



ROTATION GEAR BOX

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	166-423		ROTATION DRIVE GEARBOX	INCL REF NO'S 1-12, 14-26, 29-37, 41 & 43.
	197-060		REBUILT ROTATION GEARBOX	INCL REF NO'S 1-12, 14-26, 29-37. SEE FOOTNOTE 2
1.	169-074	1	COVER	
2.	169-075	1	COVER	
3.	500-818	5	DOWEL PIN (16mm X 40mm)	
4.	106-700	11	SCREW (M12-1.75 X 80mm)	
5.	168-034	1	INPUT PINION GEAR	
6.	168-035	1	IDLER GEAR	
7.	168-036	1	OUTPUT GEAR	
8.	167-309	1	OUTPUT SHAFT	
9.	125-308	1	TAPERED BEARING (3")	
10.	125-309	1	TAPERED RACE (5")	
11.	125-359	1	TAPERED RACE (4.781")	
12.	125-360	1	TAPERED BEARING (3")	
13.	184-946	1	SPACER (75mm X 88.9mm)	
14.	125-1009	2	TAPERED BRNG/RACE (110mm)	
15.	165-810	3	SHIM (.002")	
16.	165-811	3	SHIM (.003")	
17.	165-812	3	SHIM (.007")	
18.	165-842	3	SHIM (.051mm)	
19.	165-843	3	SHIM (.076mm)	
20.	165-844	3	SHIM (.178mm)	
21.	165-869	3	SHIM (.051mm)	
22.	165-868	3	SHIM (.076mm)	
23.	165-870	3	SHIM (.178mm)	
24.	157-631	2	INTERNAL SEAL (4.250")	
25.	159-003	1	AIR VENT (02N)	
26.	514-123	1	PICKUP TUBE (02N-02NF90-2")	
27.	107-104	1	NUT - 2.933 NS	
28.	171-112	1	SPACER	
29.	105-534	3	DOWEL PIN (.375" X .875")	
30.	105-245	10	SCREW (M10-1.50 X 25mm)	
31.	106-117	2	SCREW (M12-1.75 X 80mm)	
32.	350-828	1	CAP	USED PRIOR TO SN/2T1161 AND AFTER SN/2T1180
	308-890	1	CAP	USED SN/2T1161 TO SN/2T1180
33.	350-829	1	CAP	
34.	115-211	1	PLUG (08N, SQ, MAG)	SEE FOOTNOTE 1
35.	115-167	1	PLUG (12N, SQ)	
36.	126-170	2	TAPERED BEARING (2.250")	
37.	126-171	2	TAPERED RACE (3.740")	
38.	106-531	1	THRUST LOCKNUT (2.937-NS)	
39.	106-532	1	THRUST LOCK WASHER (2.937")	
40.	157-151	1	O-RING (226 D90)	
41.	105-179	12	BOLT (3/8-NC X 3-1/2")	TORQUE TO 40 FT LB
42.	350-768	1	SLIDING OUTPUT SHAFT	USE COMPOUND GREASE 256-666 ON INITIAL INSTALLATION
43.	166-152	1	ROTATION GEARBOX PLANETARY	SEE FOOTNOTE 2
44.	107-530	1	SHIM	USED SN/2T1161 TO SN/2T1180

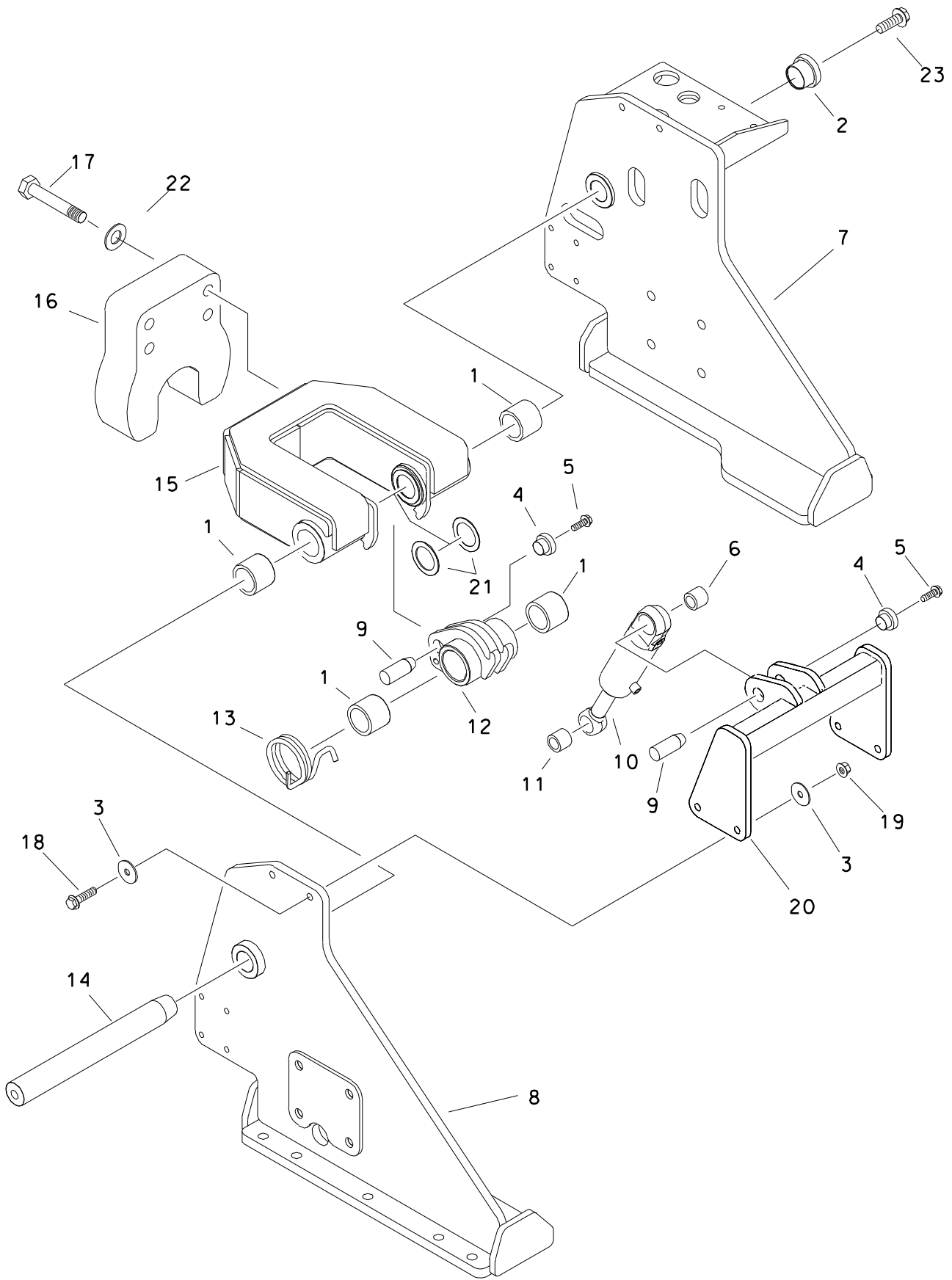
FOOTNOTES:

- NOT SHOWN: 1X 514-106 AND 1X 115-161 REPLACE ITEM 34
- APPLY A 3/16" MIN. BEAD OF LOCTITE SUPERFLEX RED HIGH TEMP RTV (OR EQUIVALENT) ON BOTH SIDES OF PLANETARY. BE SURE THAT DOWELS (ITEM 29) ARE INSTALLED BEFORE ATTACHING PLANETARY.
- 126-172 SUPERSEDED BY 125-1009. TIMKEN® 32222M WILL NOT WORK IN THIS APPLICATION.

NOTE:

179-297 & 179-298 - ASSEMBLY TOOLS REQUIRED WHEN REBUILDING GEARBOX

BACKUP WRENCH

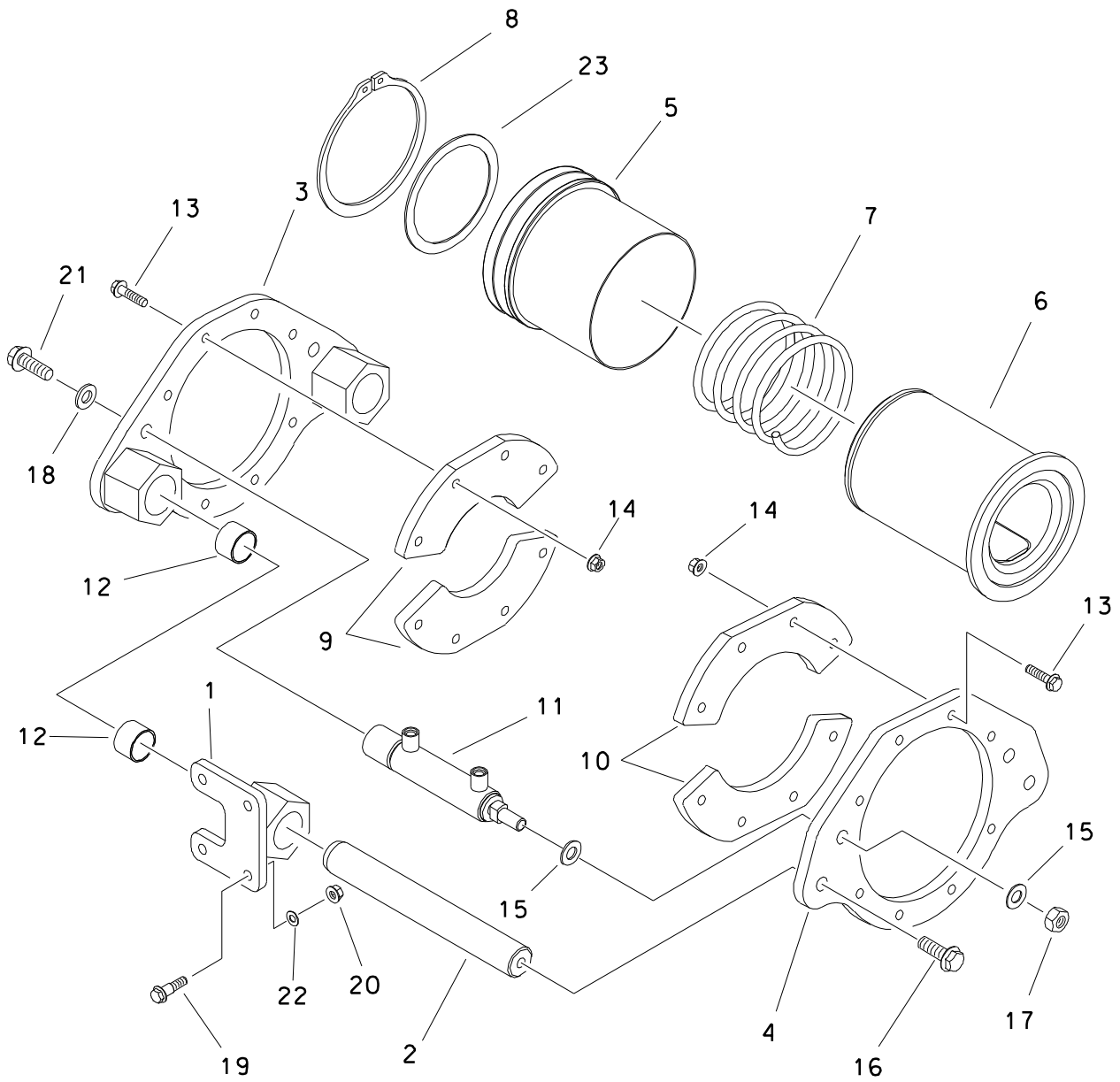


BACKUP WRENCH

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	125-772	4	COMPOSITION BUSHING (1.5")	
2.	181-974	1	TAPERED INSERT (1.50")	
3.	106-391	8	WASHER (M12)	
4.	181-981	2	TAPERED INSERT (1.0")	
5.	105-245	2	SCREW (M10-1.5 X 25mm)	
6.	125-800	1	COMPOSITION BUSHING (1")	
7.	350-752	1	RIGHT CARRIAGE SIDE	
8.	350-753	1	LEFT CARRIAGE SIDE	
9.	349-548	2	TAPERED PIN (25.4mm X 66mm)	
10.	151-027	1	CYL (2" X 1" X 3")	
11.	125-770	1	COMPOSITION BUSHING (1")	
12.	350-954	1	BELL CRANK	
13.	117-062	1	TORSION SPRING	
14.	179-213	1	TAPERED PIN (38.1mm X 414.6mm)	
15.	350-755	1	BACKUP WRENCH	
16.	350-955	1	BACKUP WRENCH	
17.	106-810	4	SCREW (M16-2.0 X 90mm, 10.9)	
18.	106-334	4	SCREW (M12-1.75 X 50mm)	
19.	106-685	4	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
20.	350-754	1	CYLINDER MOUNT STRUCTURE	
21.	110-054	2	MACHINERY BUSHING (1.75", 14GA)	
22.	106-398	4	WASHER (M16, HARDENED)	
23.	106-470	1	FLG SCREW (M16-2.00 X 40mm)	

FOOTNOTES

BREAKOUT WRENCH



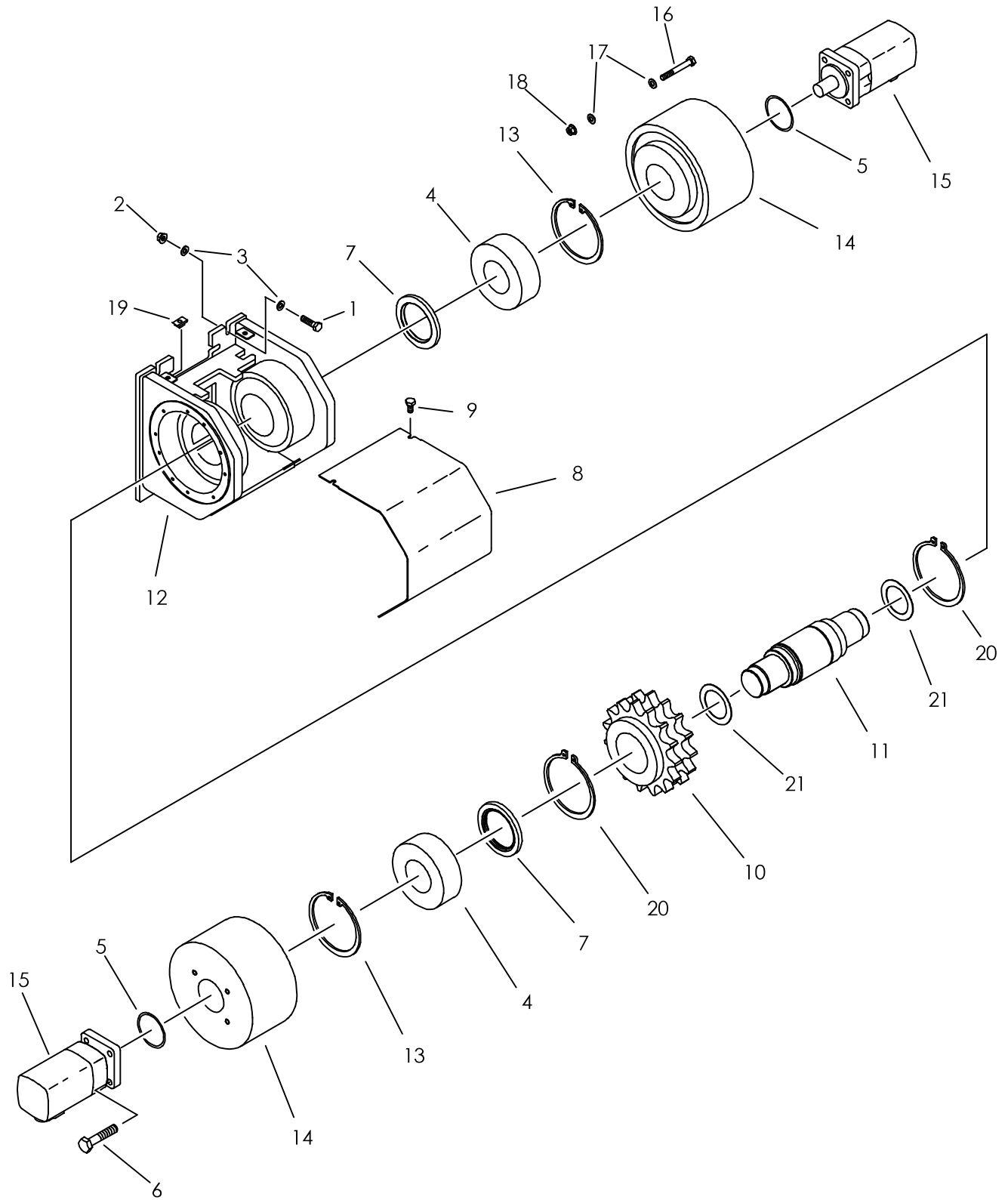
BREAKOUT WRENCH

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-798	2	WRENCH GUIDE MOUNT	
2.	179-211	2	GUIDE PIN	
3.	350-799	1	BREAKOUT PLATE	
4.	350-800	1	FRONT BREAKOUT PLATE	
5.	350-940	1	SLEEVE	
6.	350-941	1	WRENCH COLLAR	
7.	117-114	1	COMPRESSION SPRING (4.5" X 8")	
8.	118-016	1	EXTERNAL SNAP RING (5.000")	
9.	350-913	2	REAR BREAKOUT TAB	
10.	350-914	2	FRONT BREAKOUT TAB	
11.	150-730	2	CYLINDER 3.50" STROKE	SEE FOOTNOTE 2.
12.	125-442	4	BRONZE BUSHING (1.252")	
13.	106-989	16	FLG SCREW (M8-1.25 X 35mm)	
14.	106-561	16	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
15.	105-058	4	BELLEVILLE WASHER (1/2")	
16.	106-632	2	FLG LOCK SCREW (M12-1.75 X 35mm)	
17.	106-031	2	LOCKNUT (M12-1.75, NLK)	
18.	106-391	2	WASHER (M12)	
19.	105-750	8	SHLD BOLT (M10 X 30MM, M8-1.25)	SEE FOOTNOTE 1
20.	106-561	8	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	SEE FOOTNOTE 1
21.	106-797	2	SCREW (M12-1.75 X 35mm, SDC)	
22.	105-118	8	WASHER (3/8")	
23.	309-871	1	WASHER, SPRING RETAINER	BEGINS W/ SN

FOOTNOTES

1. ON EARLIER MODELS (WITHOUT SHOULDER BOLTS), DO NOT TIGHTEN FULLY. LEAVE 1 TO 2 MM GAP WHEN TIGHTENING.
2. USED ON UNITS AFTER S/N 2T3574

THRUST DRIVE



THRUST DRIVE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	106-334	8	SCREW (M12-1.75 X 50mm)	
2.	106-685	8	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
3.	106-397	16	WASHER (M12, HARDENED)	
4.	125-314	2	ROLLER BEARING (2.952")	
5.	157-084	2	O-RING (159 D70)	
6.	105-066	8	BOLT (1/2-NC X 1-3/4")	
7.	155-883	2	INTERNAL SEAL (3.750")	
8.	350-726	1	THRUST DRIVE COVER	
9.	106-991	4	FLG LK SCREW (M8-1.25 X 20MM)	
10.	175-740	1	SPROCKET (D140B15)	
11.	167-318	1	THRUST DRIVE SHAFT	
12.	350-725	1	THRUST DRIVE HOUSING	
13.	118-031	2	INTERNAL SNAP RING (6.250")	
14.	166-151	2	GEARBOX PLANETARY	SEE FOOTNOTE 1
	501-861		PRIMARY CARRIER (8")	
	501-862		SECONDARY CARRIER (8")	
	501-863		COVER	
	501-864		RING GEAR, 8"	OBSOLETE
	501-865		SUN GEAR, 8"	
15.	158-026	2	HYDRAULIC MOTOR (15 CU/IN)	
	500-711		SEAL REPAIR KIT - REAR	
	500-758		SEAL REPAIR KIT - SHAFT	
16.	105-808	24	BOLT (3/8-NC X 7")	
17.	106-390	48	WASHER (M10)	
18.	105-047	24	LOCKNUT (3/8-NC)	
19.	106-551	4	CLIP NUT (M8-1.25)	
20.	118-044	2	EXTERNAL SNAP RING (4.250")	
21.	126-127	AR	THRUST WASHER RACE (1.750")	

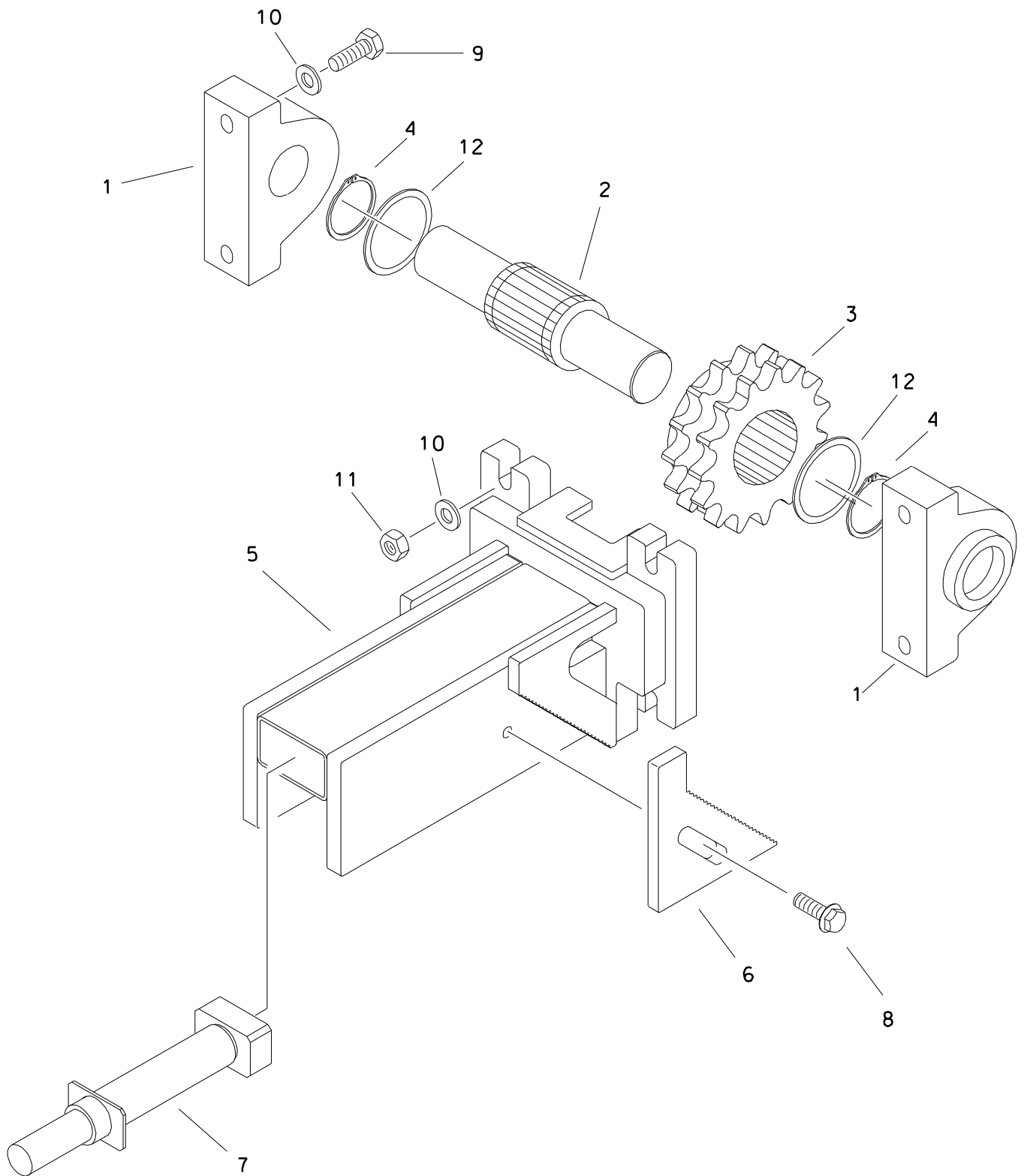
NOT SHOWN:

FOOTNOTES:

1. APPLY RED GASKET MAKER TO BOTH SIDES OF PLANETARY.

NOTE:

THRUST IDLER



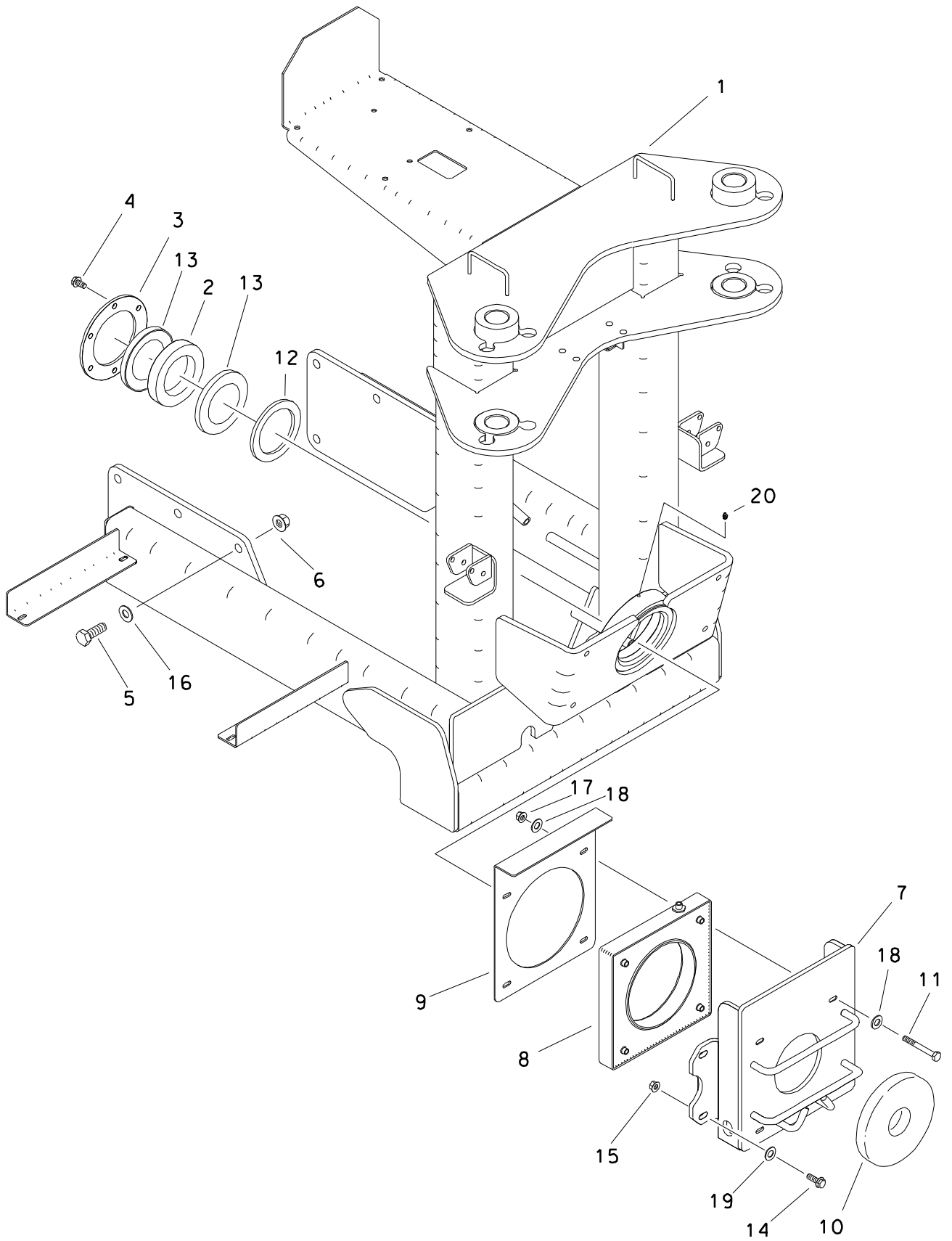
THRUST IDLER

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	125-523	2	PILLOW BLOCK BEARING (2.930")	
	125-558	-	ADAPTER SLEEVE KIT (125-523)	
2.	166-473	1	IDLER SHAFT	BEGINS WITH S/N 2W0295; SEE FOOTNOTE 2
	167-319	-	IDLER SHAFT	
	101-133	1	THRUST IDLER KIT	INCL. REF. NO.'S 2 - (166-473), 4 - (115-453) & 12
3.	175-740	1	SPROCKET (D140B15)	SAME AS THRUST DRIVE
4.	118-044	2	EXTERNAL SNAP RING (4.250")	REQ'D W/ SHAFT 167-319
	115-453	2	EXTERNAL SNAP RING (4")	BEGINS WITH S/N 2W0295; SEE FOOTNOTE 2
5.	350-727	1	THRUST IDLER HOUSING	
6.	350-728	2	ADJUSTMENT PLATE	KEEP BOTH SIDES ON SAME NOTCH WHEN ADJUSTING
7.	151-165	1	GREASE CYLINDER	SEE FOOTNOTE 1
8.	106-470	2	FLG SCREW (M16-2.00 X 40mm)	
9.	106-633	4	BOLT (M20-2.50 X 130mm)	
10.	105-460	8	WASHER (13/16")	
11.	106-665	4	LOCKNUT (M20-2.50)	
12.	179-489	2	INPUT SHIM 4.002 X 4.750 X .135	BEGINS WITH S/N 2W0295; SEE FOOTNOTE 2

FOOTNOTES

1. WHEN ADJUSTING, RELEASE PRESSURE AFTER POSITIONING ADJUSTMENT PLATES
2. WHEN REPLACING IDLER SHAFT (167-319),
ORDER 101-133 WHICH INCLUDES:
 - 115-453 2 EXTERNAL SNAP RING
 - 166-473 1 IDLER SHAFT
 - 179-489 2 INPUT SHIM 4.002 X 4.750 X .135

FRONT PIPE GUIDE



FRONT PIPE GUIDE

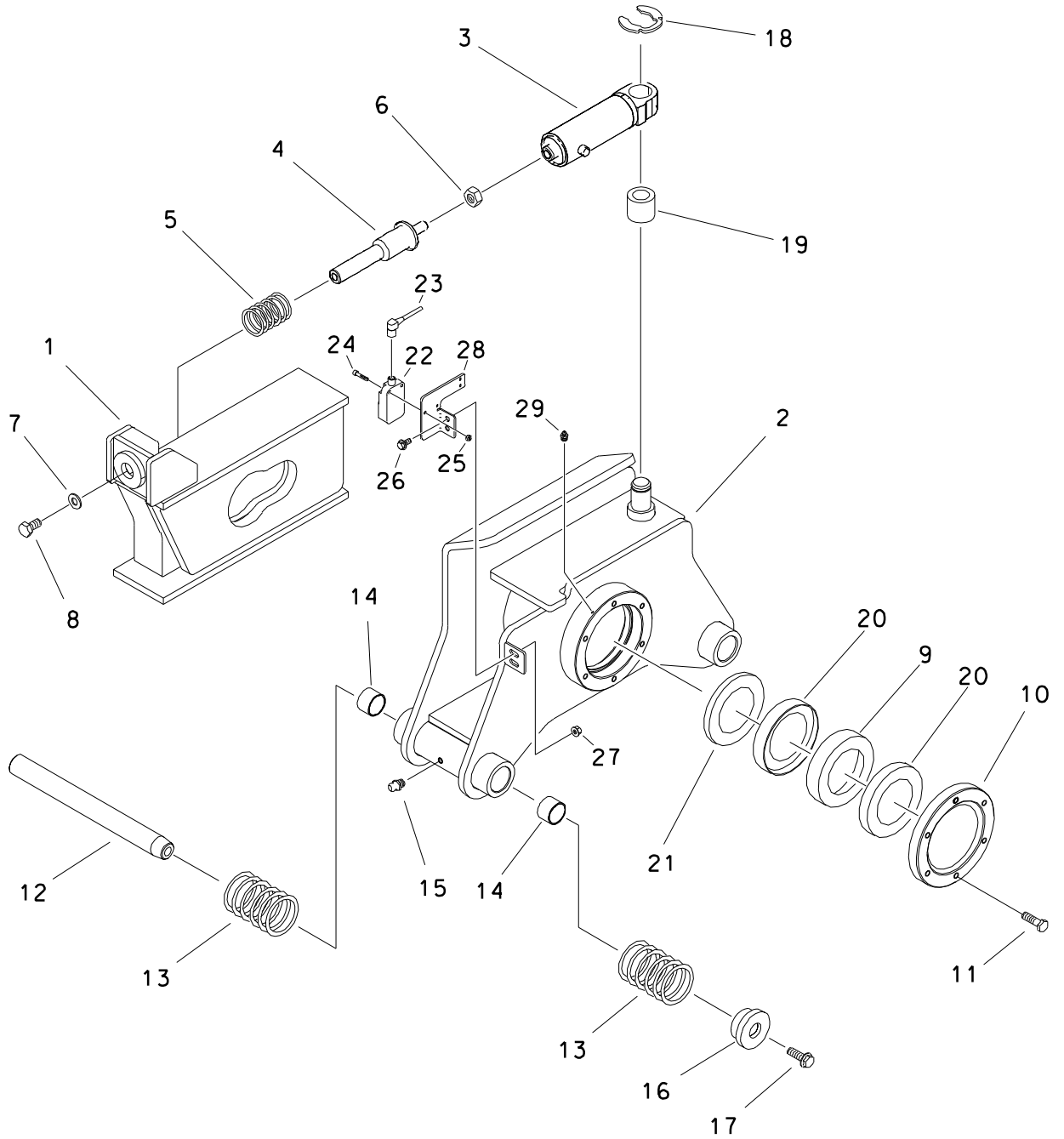
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-770	1	ANCHOR ATTACHMENT FRAME	
2.	307-091	1	GUIDE BEARING	USE WITH REF 20
	125-130	1	BALL BEARING (3.346")	SEE FOOTNOTE 1, PRIOR TO S/N -----
3.	307-891	1	RETAINER PLATE	
	354-348	1	RETAINER PLATE	PRIOR TO S/N -----
4.	106-383	6	FLG LK SCREW (M10-1.50 X 30MM)	
5.	106-340	8	SCREW (M16-2.0 X 50mm)	
6.	106-442	8	FLG LOCKNUT (M16-2.00, PRV TRQ)	
7.	354-563	1	COIL COVER	
8.	216-063	1	CURRENT TRANSFORMER	
9.	349-631	1	BACK COVER PLATE	
10.	116-485	1	ROD WIPER (1.750")	
11.	106-602	4	SCREW (M8-1.25 X 80mm)	
12.	178-432	1	WASHER	
13.	305-866	2	GUIDE BEARING	USE WITH REF 2
14.	105-876	4	SCREW (M10-1.50 X 35mm)	
15.	105-894	4	LOCKNUT (M10-1.5, PRV TRQ, 10.9)	
16.	106-398	8	WASHER (M16, HARDENED)	
17.	106-561	4	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
18.	105-117	8	WASHER (5/16")	
19.	105-118	4	WASHER (3/8")	
20.	115-003	1	ZERK (1/4-NF, STR)	SEE FOOTNOTE 2

FOOTNOTES

1. CAN BE USED IN PLACE OF 307-091 AND 305-866.
2. FILL WITH MULTIPURPOSE GREASE AFTER ASSEMBLY.

NOT SHOWN: 191-032 BEARING KIT - INCLUDES 2, 3, 4, 12, 13.

FRONT WRENCH



FRONT WRENCH

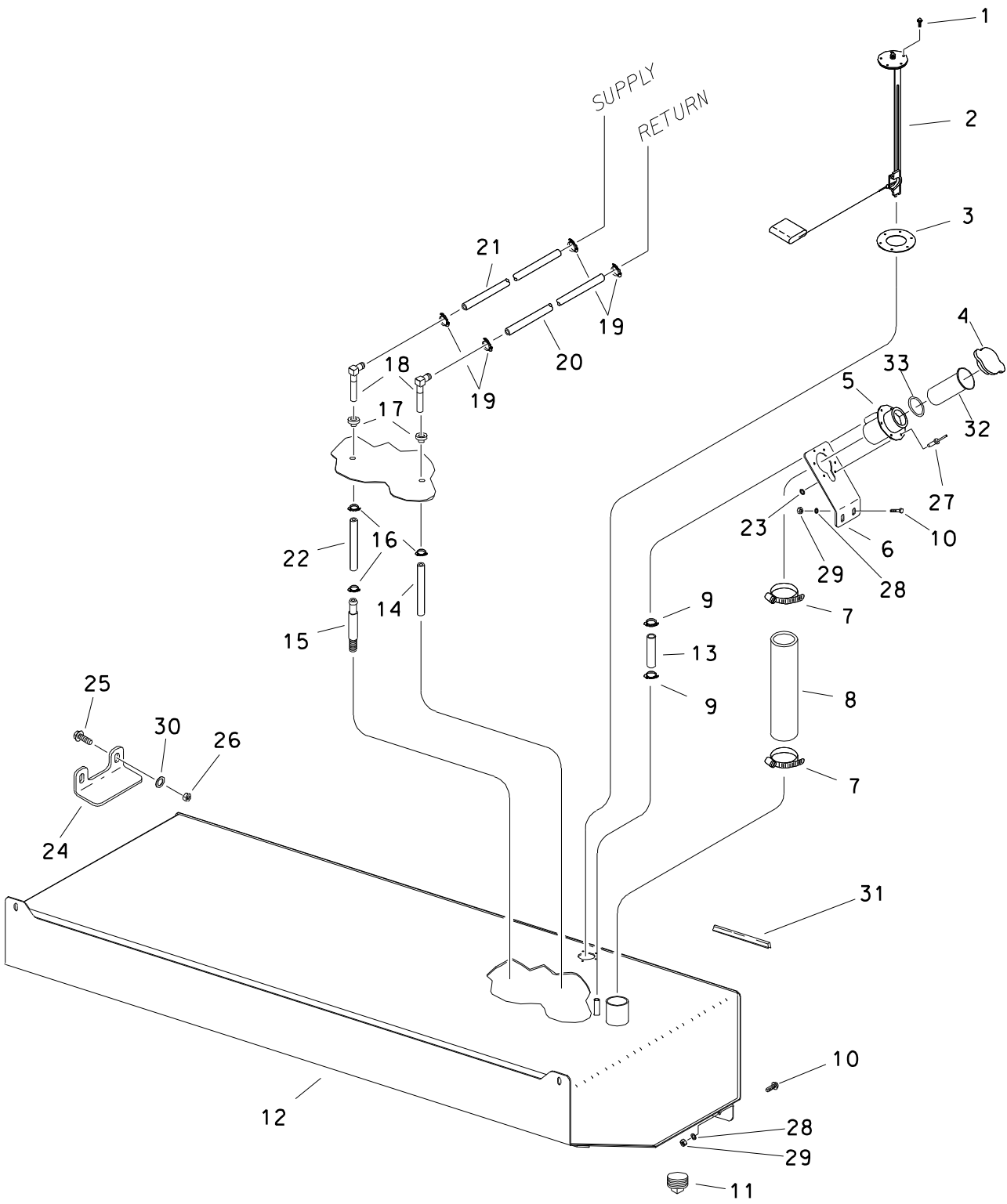
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-778	1	WRENCH PLATE	
2.	350-779	1	WRENCH MOUNT	
3.	151-173	1	CYLINDER (2" X 1" X 3")	
4.	349-634	1	SPRING GUIDE	
5.	117-143	1	COMPRESSION SPRING	
6.	105-403	1	JAM NUT (5/8-NC)	
7.	105-884	1	WASHER (.531")	
8.	105-828	1	FLG LK BOLT (1/2-NC X .750")	
9.	307-091	1	GUIDE BEARING	USE WITH REF 20
	125-130	1	BALL BEARING (3.346")	NOT SHOWN SEE FOOTNOTE 1
10.	307-891	1	RETAINER PLATE	
	354-348	1	RETAINER PLATE	PRIOR TO S/N
11.	106-383	6	FLG LK SCREW (M10-1.50 X 30MM)	
12.	179-217	2	TAPERED PIN (31.7mm X 345mm)	
13.	117-123	4	COMPRESSION SPRING	
14.	125-481	4	BRONZE BUSHING (1.25")	
15.	115-001	2	ZERK (02N)	
16.	181-982	2	TAPERED INSERT (1.250")	
17.	106-469	2	FLG SCREW (M12-1.75 X 30mm)	
18.	115-483	1	KLIP RING (1.25")	
19.	125-771	1	COMPOSITION BUSHING (1.25")	USE WITH REF 9
20.	305-866	2	GUIDE BEARING	
21.	178-432	1	WASHER	
22.	214-692	1	PROXIMITY SWITCH	
23.	214-683	1	PROXIMITY SWITCH HARNESS	
24.	106-426	2	SCREW (M5-0.80 X 25MM, SOC)	
25.	106-850	2	LOCKNUT (M5-0.80)	
26.	106-380	2	FLG LK SCREW (M8-1.25 X 16MM)	
27.	106-386	2	FLG LOCKNUT (M8-1.25)	
28.	307-674	1	BRACKET, SWITCH	
29.	115-003	1	ZERK (1/4-NF, STR)	SEE FOOTNOTE 2

FOOTNOTES

1. CAN BE USED IN PLACE OF 307-091 AND 305-866.
2. FILL GUIDE BEARING WITH MULTI PURPOSE GREASE AFTER ASSEMBLY.

NOT SHOWN: 191-032 BEARING KIT - INCLUDES REFERENCES 9,10,11,20,21.

FUEL TANK



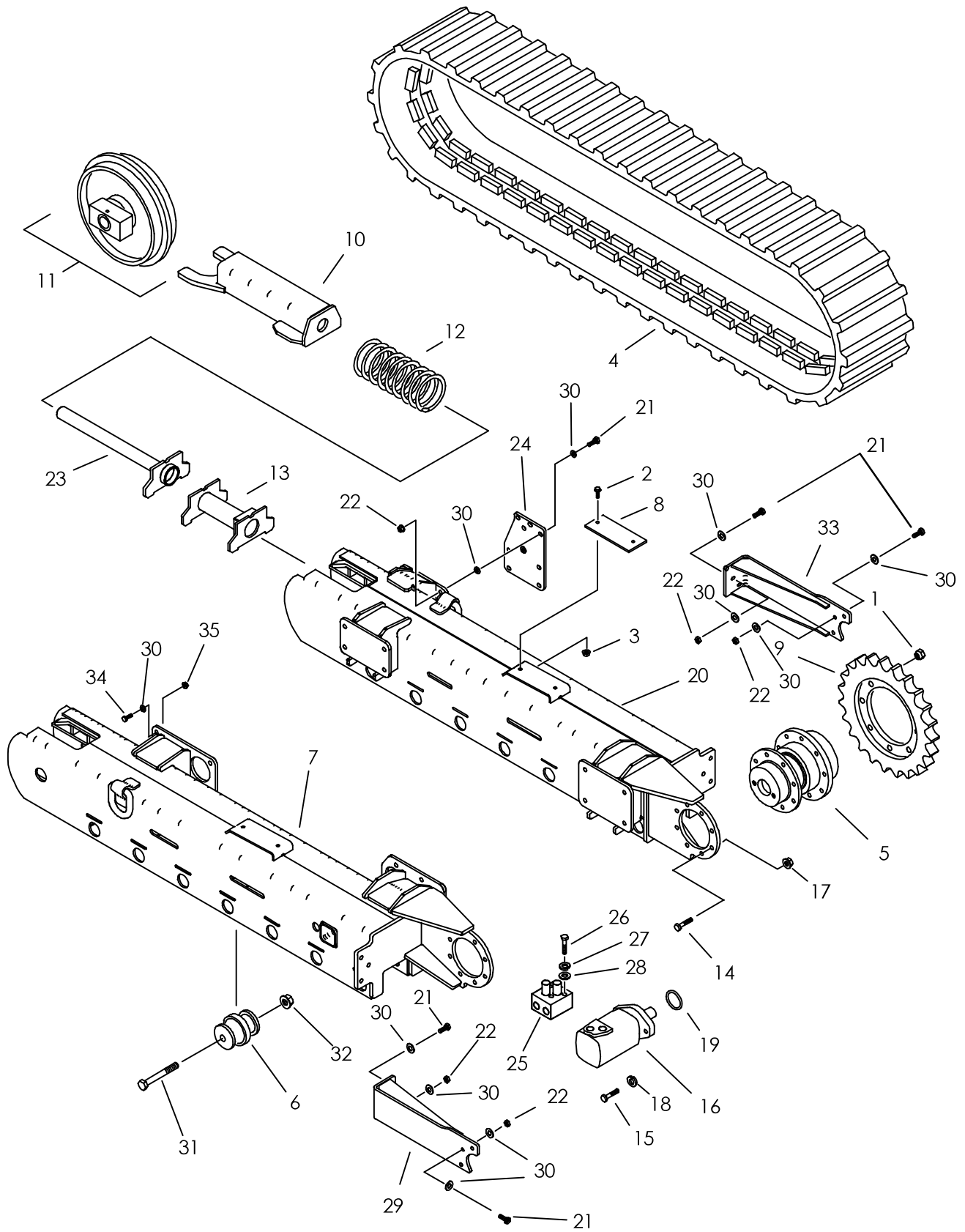
FUEL TANK

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	105-214	5	FLG SCREW (#10-24 X 1/2")	
2.	217-568	1	FUEL SENDER	
3.	165-704	1	GASKET	
4.	110-010	1	FUEL CAP (1-1/2")	
5.	364-080	1	FILLER NECK	
	364-659	1	FILLER NECK	
6.	364-487	1	FUEL FILL BRACKET	
7.	110-134	2	WORM CLAMP (2-1/16" TO 2-3/4")	
8.	116-721	1	FUEL HOSE (21")	
9.	110-217	2	WORM CLAMP (7/16" TO 1")	
10.	106-162	6	FLG SCREW (M8-1.25 X 20mm)	
11.	115-152	1	PLUG (12N, SQ, FM)	
12.	364-477	1	FUEL TANK	
13.	116-322	AR	BULK HOSE (1/2", SOLD PER 1')	USE 1 @ 22"
14.	118-096	AR	BULK FUEL TUBING (1/4", PER 1')	USE 1 @ 9"
15.	156-268	1	FUEL STRAINER (04H)	SEE FOOTNOTE 1
	194-505	1	FUEL PICKUP (04H)	BEGINS WITH S/N. SEE FOOTNOTE 1
16.	110-563	3	SPRING CLAMP (3/8")	
17.	116-325	2	GROMMET (.362")	SEE FOOTNOTE 1
18.	156-269	2	S/O COUPLER (04H-05H90)	BEGINS WITH S/N. SEE FOOTNOTE 1
19.	110-528	4	SNAP-ON CLAMP (.531" TO .593")	
20.	116-108	AR	BULK HOSE (5/16", SOLD PER 1')	USE 1 @ 78"
21.	116-108	AR	BULK HOSE (5/16", SOLD PER 1')	USE 1 @ 68"
22.	118-096	AR	BULK FUEL TUBING (1/4", PER 1')	USE 1 @ 7", SEE FOOTNOTE 1
23.	106-205	4	WASHER (.191")	INSTALL ON POP RIVET
24.	354-973	2	TANK CLAMP	
25.	106-632	4	FLG LK SCR (M12-1.75X35MM, SER)	
26.	106-685	4	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
27.	110-253	4	POP RIVET (3/16" X 1/2")	
28.	105-117	6	WASHER (5/16")	
29.	106-561	6	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
30.	106-391	4	WASHER (M12)	
31.	116-789	AR	RUBBER EDGE TRIM 1/8" (FT)	USE 1 @ 15", SEE FOOTNOTE 2
32.	364-663	1	FILLER NECK SCREEN	BEGINS WITH S/N.
33.	155-708	1	O-RING (218 D70)	BEGINS WITH S/N.

FOOTNOTES

- WHEN INSTALLING SUPPLY HOSE, INSTALL 116-325 ON SMALL PORTION OF LONG HOSE BARB OF 156-269 FIRST. INSTALL 7" HOSE 1.5" ONTO 156-269 AND FULLY ONTO 156-268. COMPLETED ASSEMBLY SHOULD MEASURE 10.8+/-0.1 FROM END TO END.
- START EDGING 8" FROM END OF TANK AND USE LOCTITE 401.

TRACK GROUP



TRACK GROUP

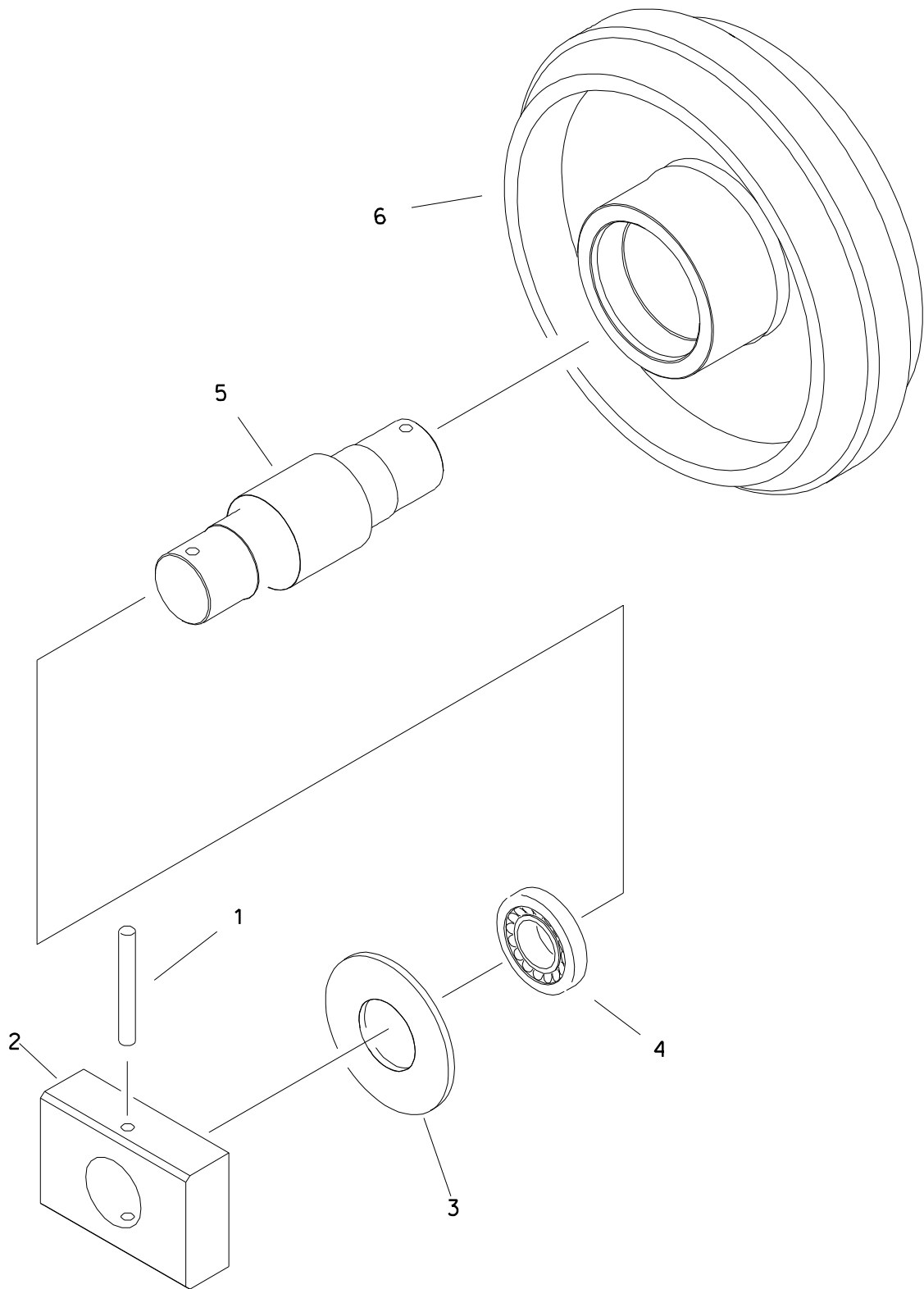
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	106-066	18	LUG NUT (5/8-NF)	
2.	107-010	4	FLG LOCK SCREW (M12-1.75 X 30mm)	
3.	106-685	4	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
4.	354-480	2	RUBBER TRACK (400MM 82P)	
5.	166-218	2	PLANETARY GEARBOX (22.04:1)	TRACK PLANETARY
6.	354-861	14	ROLLER	
7.	350-757	1	LEFT ROLLER FRAME	
8.	349-314	2	SLIDE PAD	
9.	175-293	2	SPROCKET (2.755"A22)	
10.	354-517	2	YOKE	
11.	354-860	2	IDLER PARTS ASS'Y	
12.	117-164	2	COMPRESSION SPRING	COMPRESSED LENGTH 18" +0 -1/4" TO KEEP TRACKS TIGHT
13.	354-531	1	RIGHT GREASE CYLINDER	
	354-530	1	LEFT GREASE CYLINDER	
14.	105-303	16	FLG BOLT (5/8-NC X 2-1/2")	
15.	107-773	4	SCREW (1/2-NC X 4.25, GD8)	USE 242 LOCTITE; TORQUE TO 130 FT LB
16.	158-949	1	HYDRAULIC MOTOR	
	158-951	1	HYDRAULIC MOTOR	
17.	105-994	16	FLG LOCKNUT (5/8-NC)	
18.	105-070	4	LOCK WASHER (.500")	
19.	155-768	2	O-RING (155 D70)	
20.	350-758	1	RIGHT ROLLER FRAME	
21.	106-616	20	SCREW (M16-2.00 X 55mm, 10.9)	QTY OF 36 BEFORE S/N
22.	106-545	27	LOCKNUT (M16-2.00, PRV TRQ, 10.9)	
23.	354-529	2	SPRING GUIDE	
24.	350-831	1	ROPS SUPPORT PLATE	
25.	159-453	2	COUNTERBALANCE MANIFOLD	OBSOLETE
	158-020		HYDRAULIC VALVE	
26.	105-599	8	BOLT (3/8-NF X 4.000")	
27.	105-072	8	LOCK WASHER (3/8")	
28.	106-390	8	WASHER (M10)	
29.	354-569	1	LEFT TRACK GUARD	
30.	106-398	56	WASHER (M16, HARDENED)	
31.	105-597	14	BOLT (1-NC X 7.50", GD8)	
32.	105-919	14	FLG NUT (1-NC)	
33.	354-570	1	RIGHT TRACK GUARD	
34.	107-598	16	SCREW (M16 X 60MM 10.9)	BEGINS WITH S/N 2T3577
35.	106-442	16	FLG LKNUT (M16-2.00, PRV TRQ, 10.9)	USE LOCTITE 242; TORQUE EVENLY TO 250 FT-LB

NOT SHOWN:

FOOTNOTES:

NOTE:

IDLER

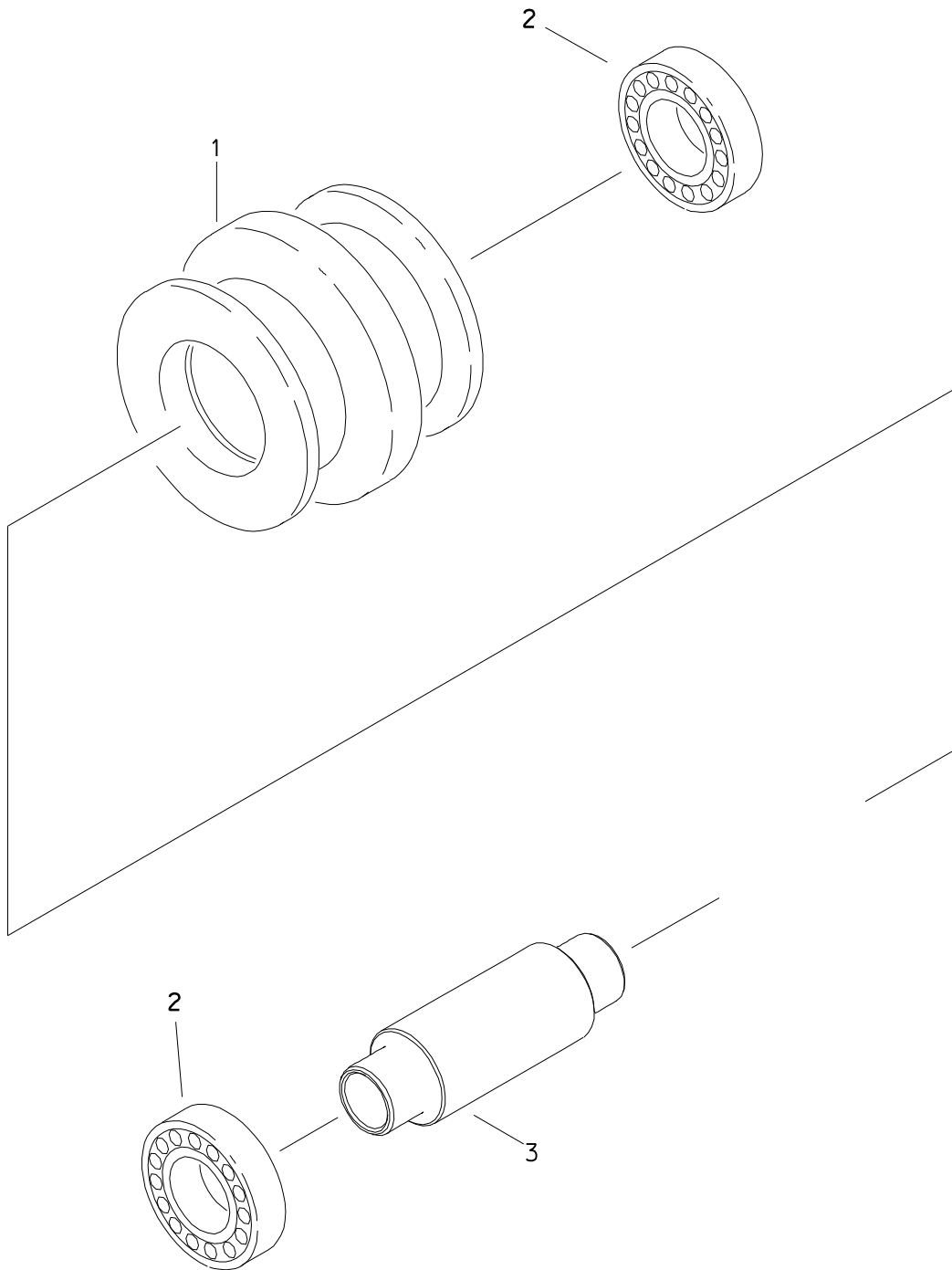


IDLER

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	354-860		IDLER	INCL REF NO'S 1 - 6
1.	107-295	2	ROLL PIN (.375" X 3.75")	
2.	354-833	2	OUTER BLOCK	
3.	125-482	2	WASHER (2.283")	
4.	125-134	2	BALL BEARING (2.362")	PACK WITH GREASE
5.	354-827	1	IDLER SHAFT	
6.	350-515	1	IDLER	PACK INSIDE WITH GREASE

FOOTNOTES

ROLLER

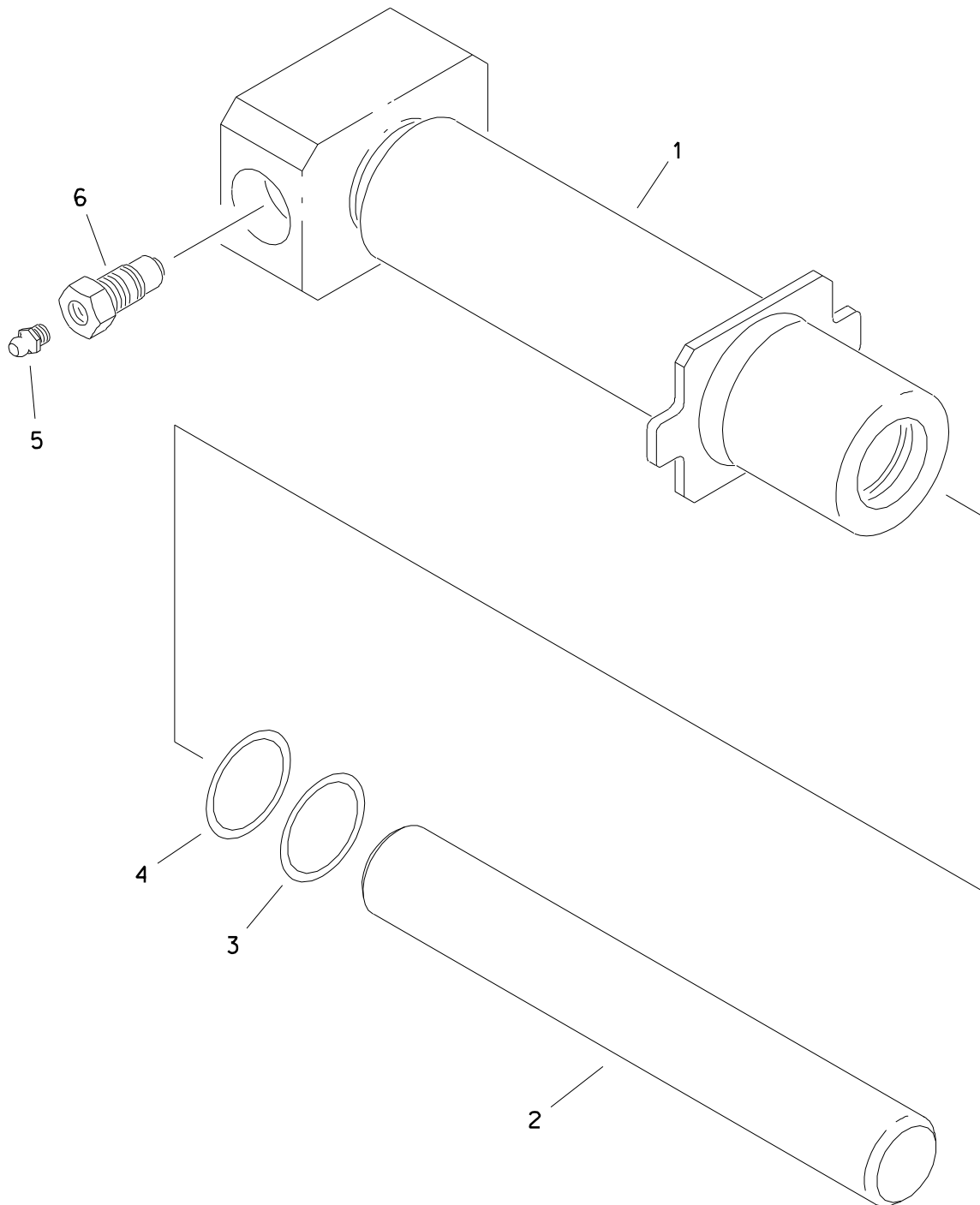


ROLLER

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	354-861		ROLLER	INCL REF NO'S 1-3
1.	170-341	1	ROLLER SHELL	
2.	125-138	2	BALL BEARING (1.250")	
3.	167-336	1	SHAFT	

FOOTNOTES

GREASE CYLINDER

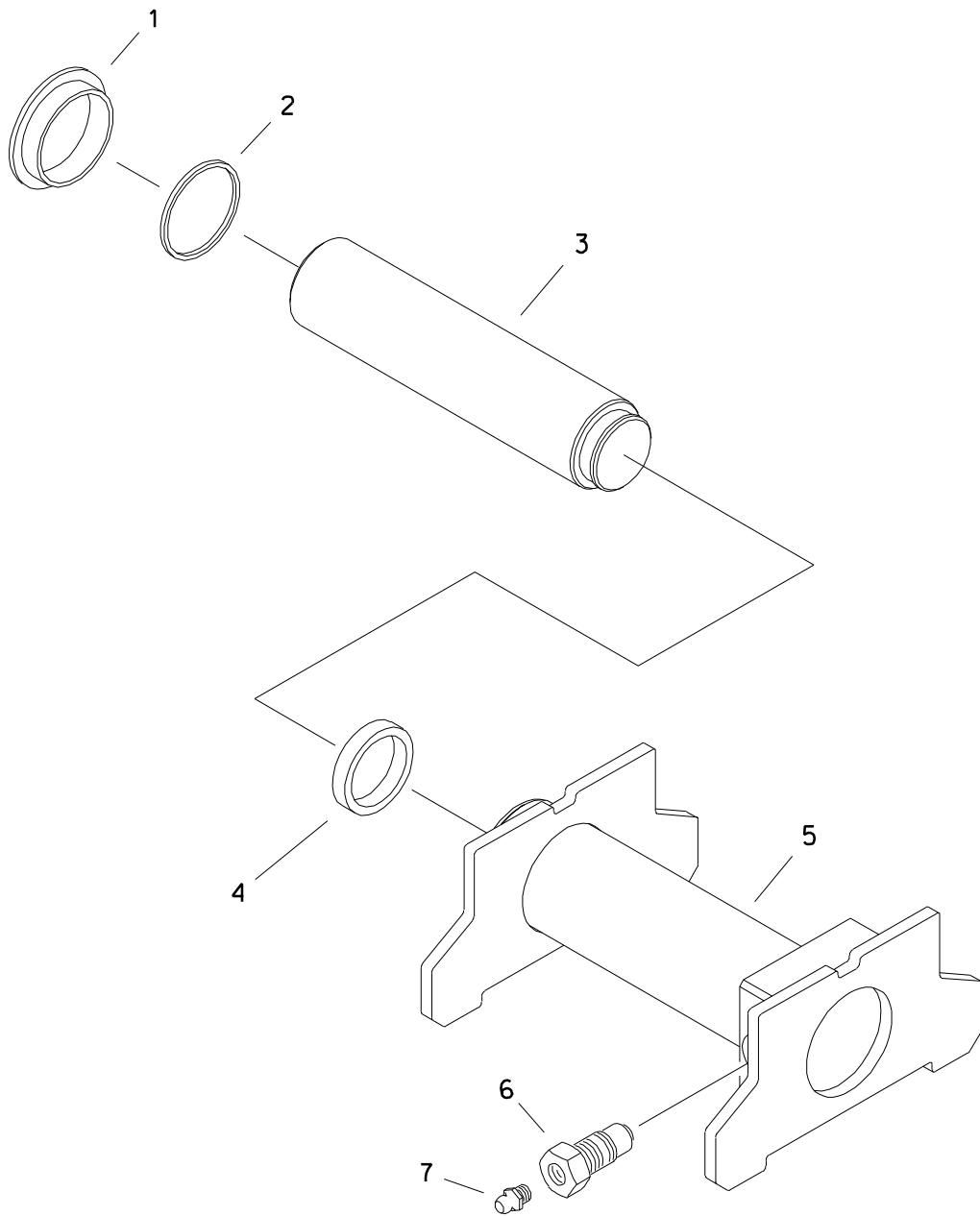


GREASE CYLINDER

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	151-165		GREASE CYLINDER	INCL REF NO'S 1 - 6
1.	353-404	1	GREASE CYLINDER	
2.	153-534	1	GREASE CYLINDER ROD	
3.	155-732	1	BACKUP RING (224 D90)	
4.	155-704	1	O-RING (224 D70)	
5.	115-019	1	ZERK (Q2N)	
6.	159-093	1	RELIEF VALVE (5/8-NF, Q2N)	

FOOTNOTES

GREASE CYLINDER

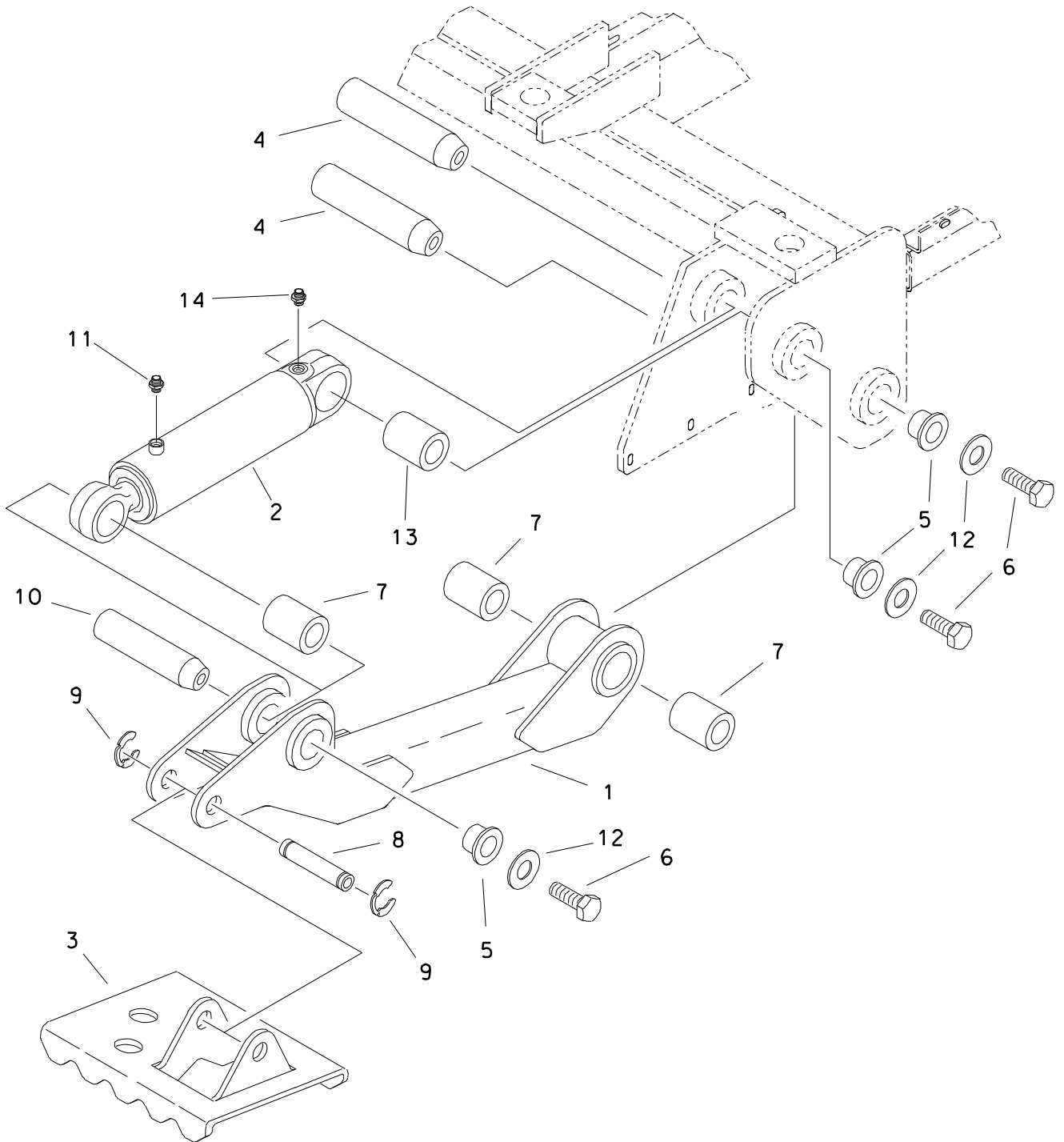


GREASE CYLINDER

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	354-530	1	LEFT GREASE CYLINDER	INCL REF NO'S 1 THRU 7
	354-531	1	RIGHT GREASE CYLINDER	INCL REF NO'S 1 THRU 7
1.	157-562	1	RETAINER RING (2.625")	
2.	157-561	1	ROD WIPER (2.492")	
3.	150-682	1	GREASE CYLINDER ROD	
4.	157-560	1	PISTON SEAL (1.975")	
5.	151-184	1	RIGHT BARREL	
	151-183	1	LEFT BARREL	
6.	159-093	1	RELIEF VALVE (5/8-NF, Q2N)	
7.	115-019	1	ZERK (Q2N)	

FOOTNOTES

REAR STABILIZER



REAR STABILIZER

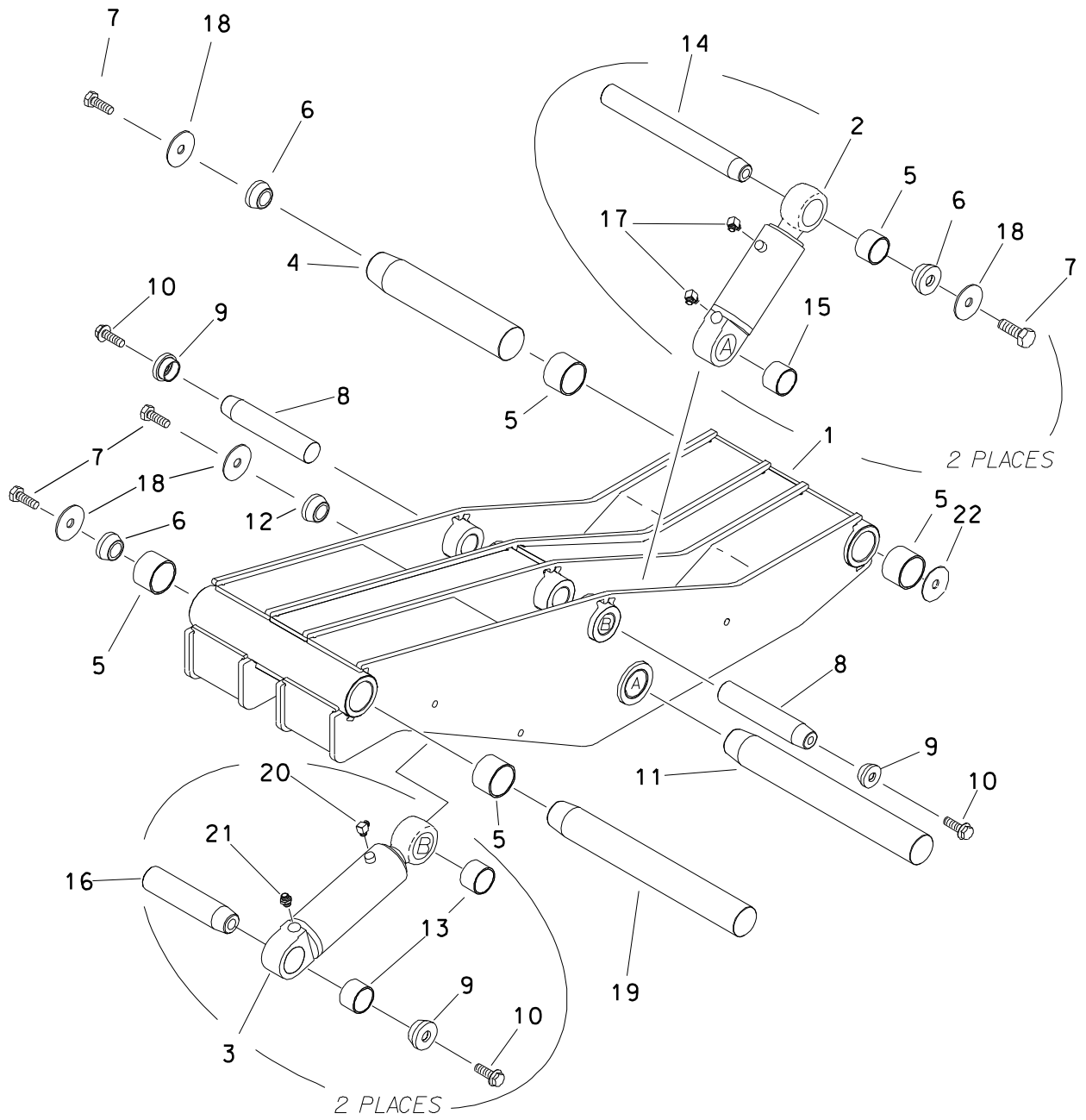
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-508	1	RIGHT STABILIZER	
	354-537	1	LEFT STABILIZER	
2.	151-187	2	CYLINDER ASSEMBLY	4" X 2" X 10"
3.	350-850	1	RIGHT STABILIZER PAD	
	354-536	1	LEFT STABILIZER PAD	
4.	179-223	4	TAPERED PIN (50.8mm X 208mm)	
5.	184-064	6	TAPERED INSERT (2")	
6.	106-798	6	SCREW (M20-2.50 X 55mm, 10.9)	
7.	125-754	6	COMPOSITION BUSHING (2")	
8.	179-224	2	PAD PIN	
9.	115-483	4	KLIP RING (1.25")	
10.	183-832	2	TAPERED PIN (50.8MM X 135MM)	
11.	154-261	2	CONNECTOR (040-08S)	
12.	106-399	6	WASHER (M20, HARDENED)	
13.	125-844	2	COMPOSITION BUSHING (2")	
14.	154-374	2	CONNECTOR (040-08S, DRF)	

FOOTNOTES

NOTES

REFER TO O-RING CHART (800-301) IN BACK OF BOOK FOR REPLACEMENT OF O-RINGS.

PIVOT



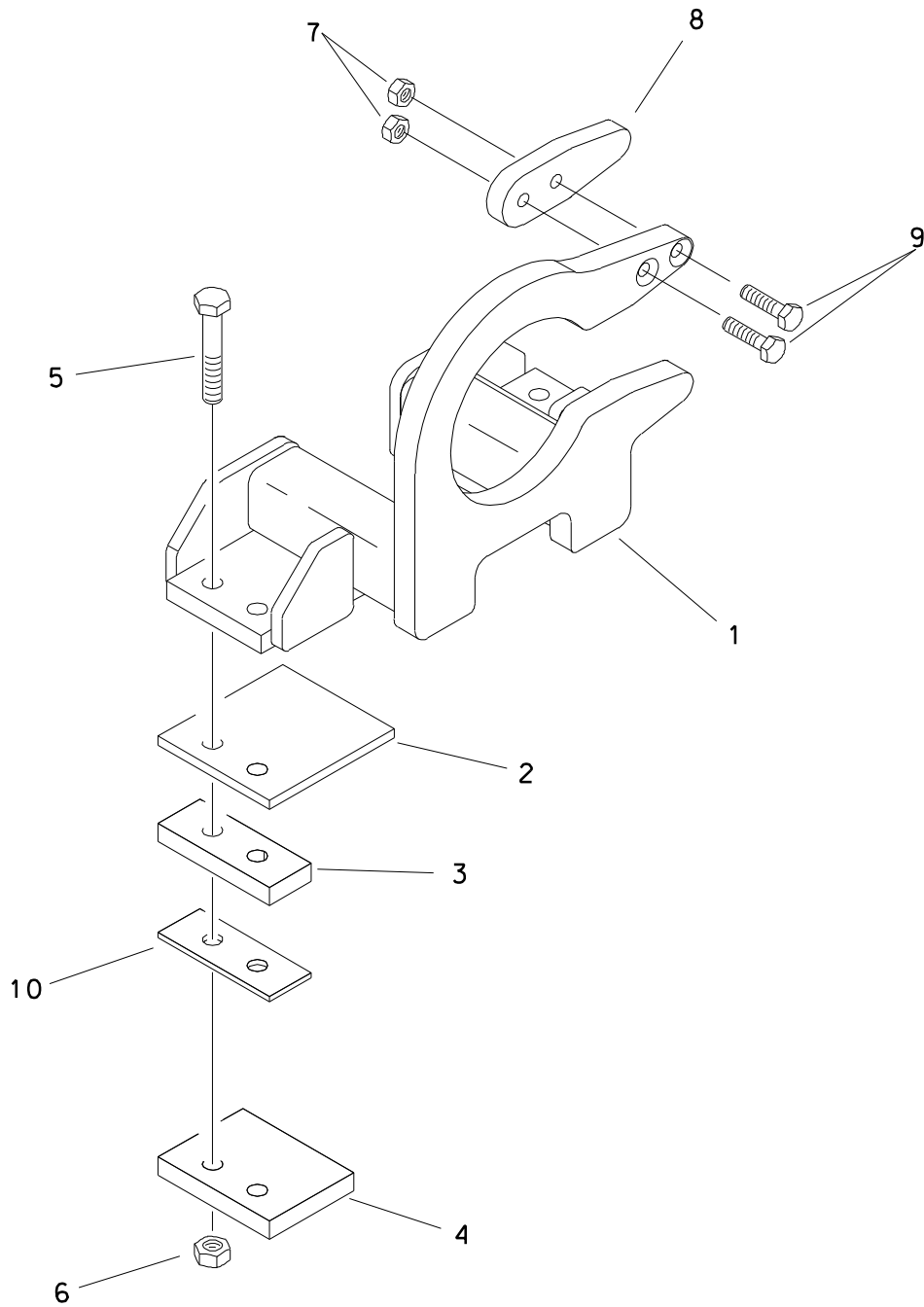
PIVOT

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-724	1	PIVOT	
2.	151-066	2	CYL (4" X 2" X 5")	
3.	151-070	2	CYL (3" X 1.75" X 8")	
4.	179-220	1	TAPERED PIN (50.8mm X 585mm)	
5.	125-754	6	COMPOSITION BUSHING (2")	
6.	184-064	4	TAPERED INSERT (2.00")	
7.	106-798	5	SCREW (M20-2.50 X 55MM, 10.9)	
8.	183-768	2	TAPERED PIN (44.4mm X 205mm)	
9.	181-975	4	TAPERED INSERT (1.750")	
10.	106-470	4	FLG SCREW (M16-2.00 X 40mm)	
11.	179-221	1	TAPERED PIN (57.1mm X 425mm)	
12.	184-031	1	TAPERED INSERT (2.250")	
13.	125-773	4	COMPOSITION BUSHING (1.75")	
14.	179-077	2	TAPERED PIN (50.8mm X 170mm)	
15.	125-781	2	COMPOSITION BUSHING (2.259")	
16.	183-882	2	TAPERED PIN (44.4mm X 228.6mm)	
17.	154-276	4	CONNECTOR (040-08S90)	
18.	106-399	5	WASHER (M20, HARDENED)	
19.	179-248	1	2.0" X 22.04" PIN	
20.	154-226	2	CONNECTOR (040-06S90)	
21.	154-220	2	CONNECTOR (040-06S)	
22.	110-168	4	MACHINERY BUSHING (2.00")	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

CENTER PIPE SUPPORT



CENTER PIPE SUPPORT

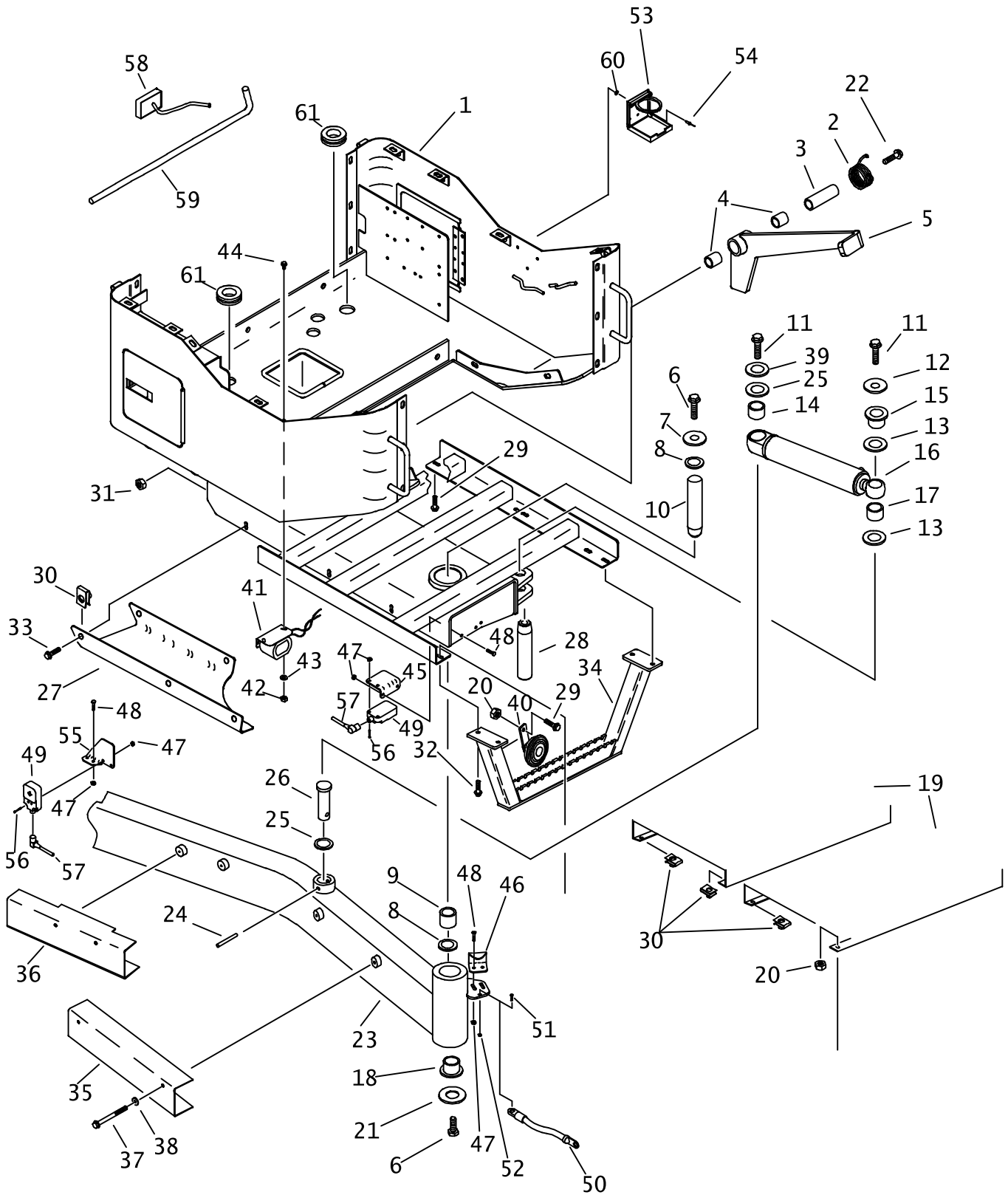
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-505	1	CENTER SUPPORT	
2.	354-506	2	CENTER SUPPORT BEARING	
3.	354-507	2	CENTER SUPPORT SPACER	
4.	354-508	2	CENTER SUPPORT BAR	
5.	106-342	4	SCREW (M16-2.00 X 90mm)	
6.	106-545	4	LOCKNUT (M16-2.00, PRV TRQ, 10.9)	
7.	106-089	2	NUT (M12-1.75, 10.9)	
8.	350-424	1	EXTENSION PLATE	
9.	107-355	2	SCREW (M12-1.75 X 60mm, SOC_CSK	
)				
10.	178-181	AR	SHIM	

FOOTNOTES

NOTES:

OPERATOR'S STATION

OPERATOR STATION



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805-629

OPERATOR STATION

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-746	1	OPERATOR FRAME	
2.	117-156	1	TORSION SPRING	
3.	354-454	1	HANDLE SPACER	
4.	125-813	2	COMPOSITION BUSHING (1")	
5.	354-390	1	HANDLE	
6.	106-345	2	SCREW (M20-2.50 X 50mm)	
7.	105-423	1	WASHER (3/4")	
8.	111-001	2	WASHER (M51.2)	
9.	125-754	1	COMPOSITION BUSHING (2")	
10.	179-226	1	TAPERED PIN (50.8mm X 272mm)	
11.	105-245	3	SCREW (M10-1.50 X 25mm)	
12.	106-396	1	WASHER (M10, HARDENED)	
13.	110-084	2	BRASS BUSHING (1-5/32")	
14.	125-771	1	COMPOSITION BUSHING (1.25")	
15.	181-981	1	TAPERED INSERT (1")	
16.	151-031	1	CYL (2" X 1" X 8")	
17.	125-770	1	COMPOSITION BUSHING (1")	
18.	184-064	1	TAPERED INSERT (2")	
19.	350-989	2	FLOOR TREADS	
20.	106-561	5	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
21.	106-399	1	WASHER (M20, HARDENED)	
22.	106-336	1	SCREW (M12-1.75 X 90mm)	
23.	350-750	-	MAIN FRAME	
24.	105-503	1	ROLL PIN (1/4" X 2")	
25.	110-093	2	MACHINERY BUSHING (1-1/4", 18GA)	
26.	179-225	1	PIN (31.75mm X 60mm)	
27.	350-988	1	CHANNEL COVER	
28.	183-767	1	TAPERED PIN (25.4mm X 60mm)	
29.	106-991	7	FLG LK SCREW (M8-1.25 X 20mm)	
30.	106-551	10	CLIP NUT (M8-1.25)	
31.	106-685	1	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
32.	106-381	4	FLG LK SCREW (M8-1.25 X 25MM)	
33.	106-992	4	FLG LK SCREW (M8-1.25 X 25MM)	
34.	354-488	1	STEP	
35.	354-500	1	WIRE COVER	
36.	354-502	1	WIRE COVER	
37.	106-595	4	SCREW (M6-1.00 X 60mm)	
38.	106-388	4	WASHER (M6)	
39.	105-223	1	WASHER (3/8")	
40.	306-609	1	HIGH FREQUENCY HORN-----	OBSOLETE
	192-006	1	HIGH FREQUENCY HORN	
	192-005	1	HORN BRACKET	
41.	214-416	1	HORN (ELECTRIC)	
42.	106-538	2	LOCKNUT (M6-1.00, PRV TRQ, 10.9)	

FOOTNOTES

NOTE:

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805-629

OPERATOR STATION

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
43.	106-389	2	WASHER (M8)	
44.	106-988	2	FLG LK SCREW (M6-1.00 X 20mm)	
45.	354-586	1	BRACKET (PROX SWITCH)	ENDS WITH S/N 2S4081
	307-773	1	BRACKET, SWITCH	BEGINS WITH S/N 2S4081
46.	359-951	1	BRACKET (PROX SWITCH)	ENDS WITH S/N 2S4081
	307-771	1	TARGET PLATE	BEGINS WITH S/N 2S4081
47.	106-048	4	LOCKNUT (#10-24)	ENDS WITH S/N 2S4081
	106-850	10	LOCKNUT (M5-.80)	BEGINS WITH S/N 2S4081
48.	106-049	4	BOLT (#10-24 X 3/4", PHLPS)	ENDS WITH S/N 2S4081
	107-430	6	SCREW (M5-.80 X 14MM)	BEGINS WITH S/N 2S4081
49.	217-227	2	PROXIMITY SWITCH	ENDS WITH S/N 2S4081
	214-692	2	PROXIMITY SWITCH	BEGINS WITH S/N 2S4081
50.	214-088	1	CABLE ASS'Y (6GA X 200 MM)	
51.	106-217	1	BOLT (1/4-NC X 1", SIL BRZ)	
52.	106-455	1	LOCKNUT (1/4-NC, SIL BRZ)	
53.	354-905	1	CUP HOLDER	
54.	110-560	3	POP RIVET (3/16" X 1/2", ALUM)	
55.	307-772	1	BRACKET, SWITCH	
56.	106-426	4	SCREW (M5-.80 X 25MM, SOC)	
57.	214-683	2	PROX SWITCH HARNESS	
58.	216-032	1	VOLT LIMITER (EL STR SYSTEM)	
59.	215-799	1	VOLTAGE STAKE	
60.	106-205	3	WASHER (.191")	
61.	115-355	2	GROMMET (1-3/8)	

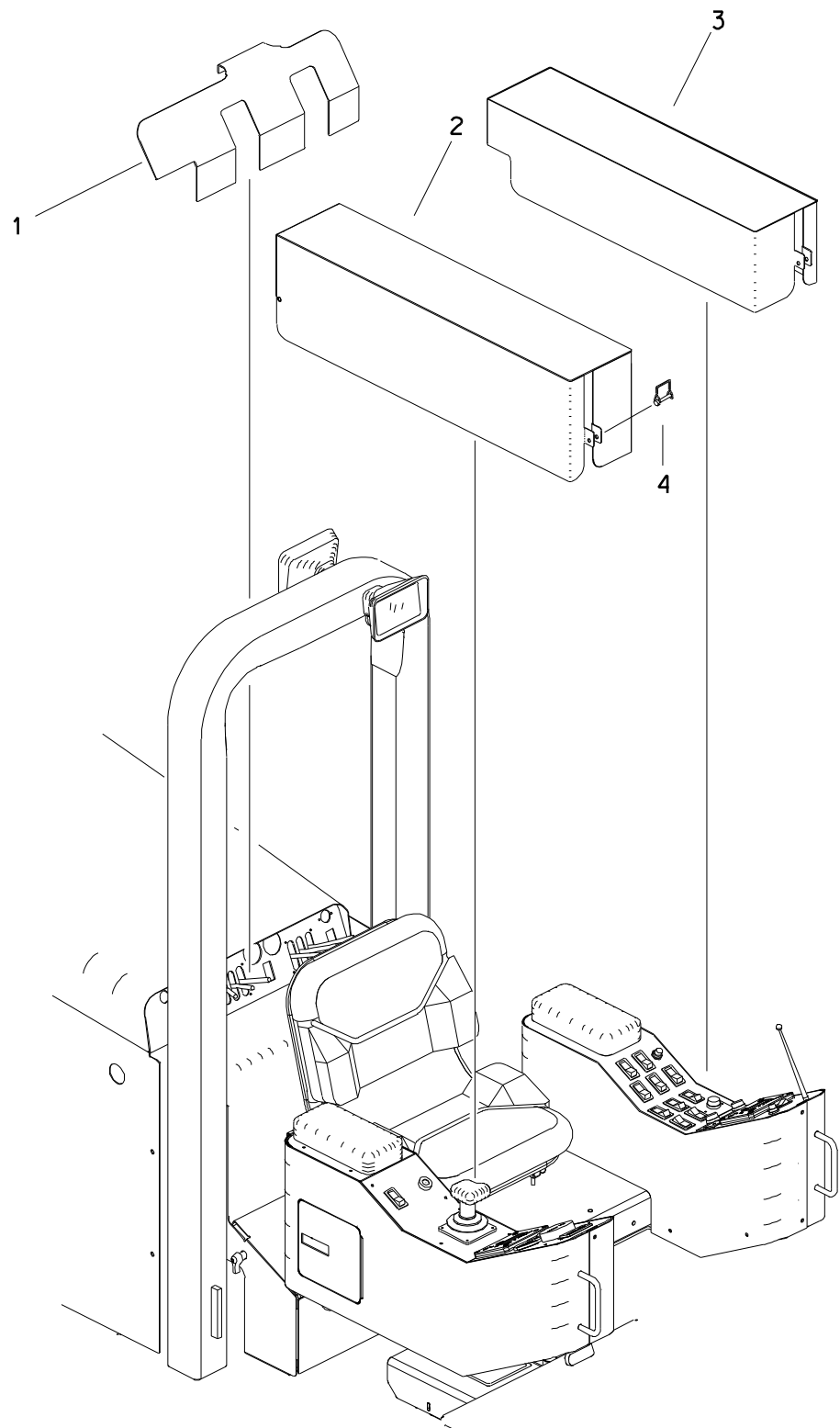
FOOTNOTES

NOTE:

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805-629

VANDAL COVERS

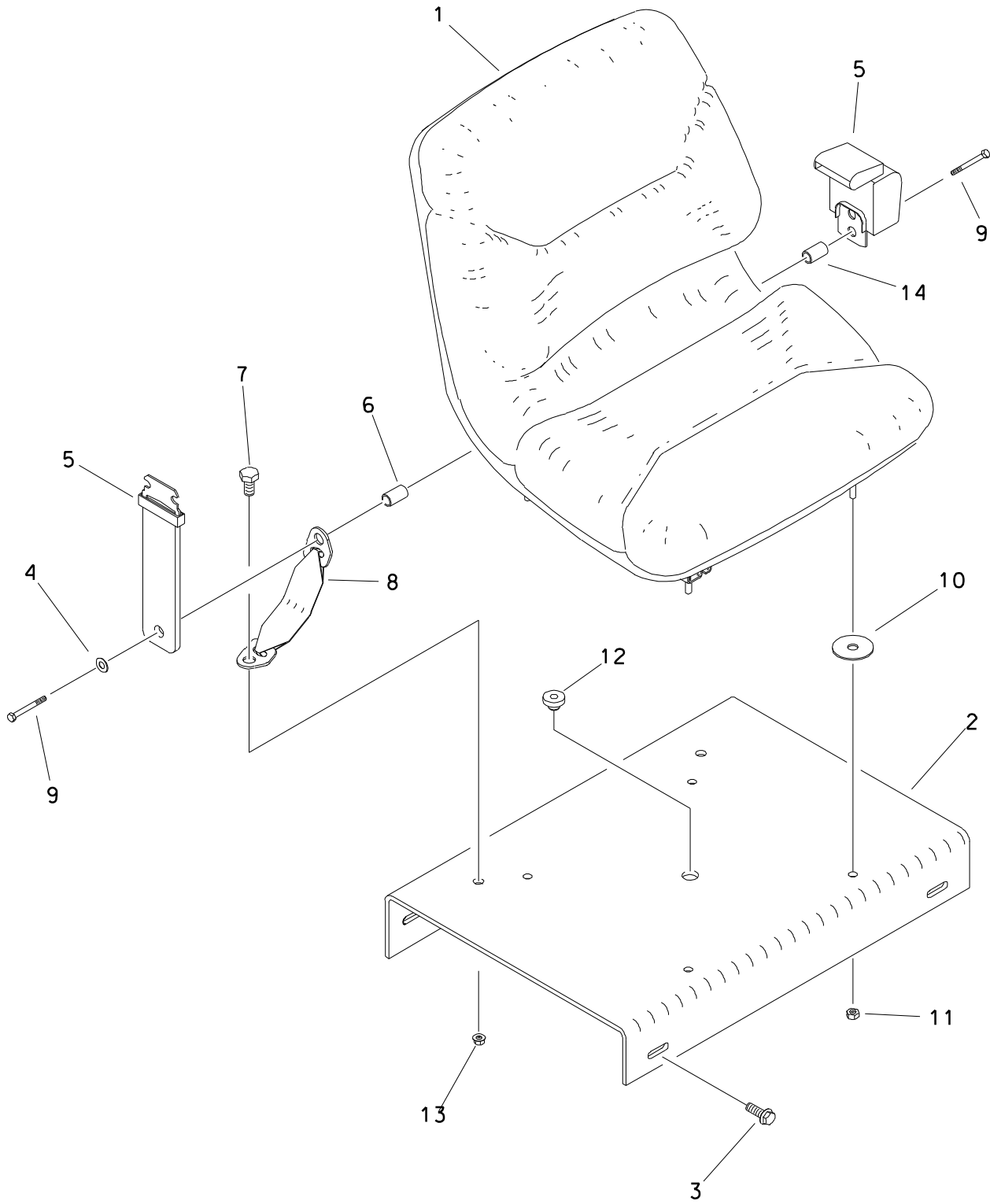


VANDAL COVERS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	N/A		VANDAL KIT	
1.	354-584	1	VANDAL COVER	
2.	354-565	1	RIGHT VANDAL COVER	
3.	354-578	1	LEFT VANDAL COVER	
4.	110-032	2	SNAPPER PIN (5/16" X 2-1/2")	

FOOTNOTES

SEAT-BELTS-COVER

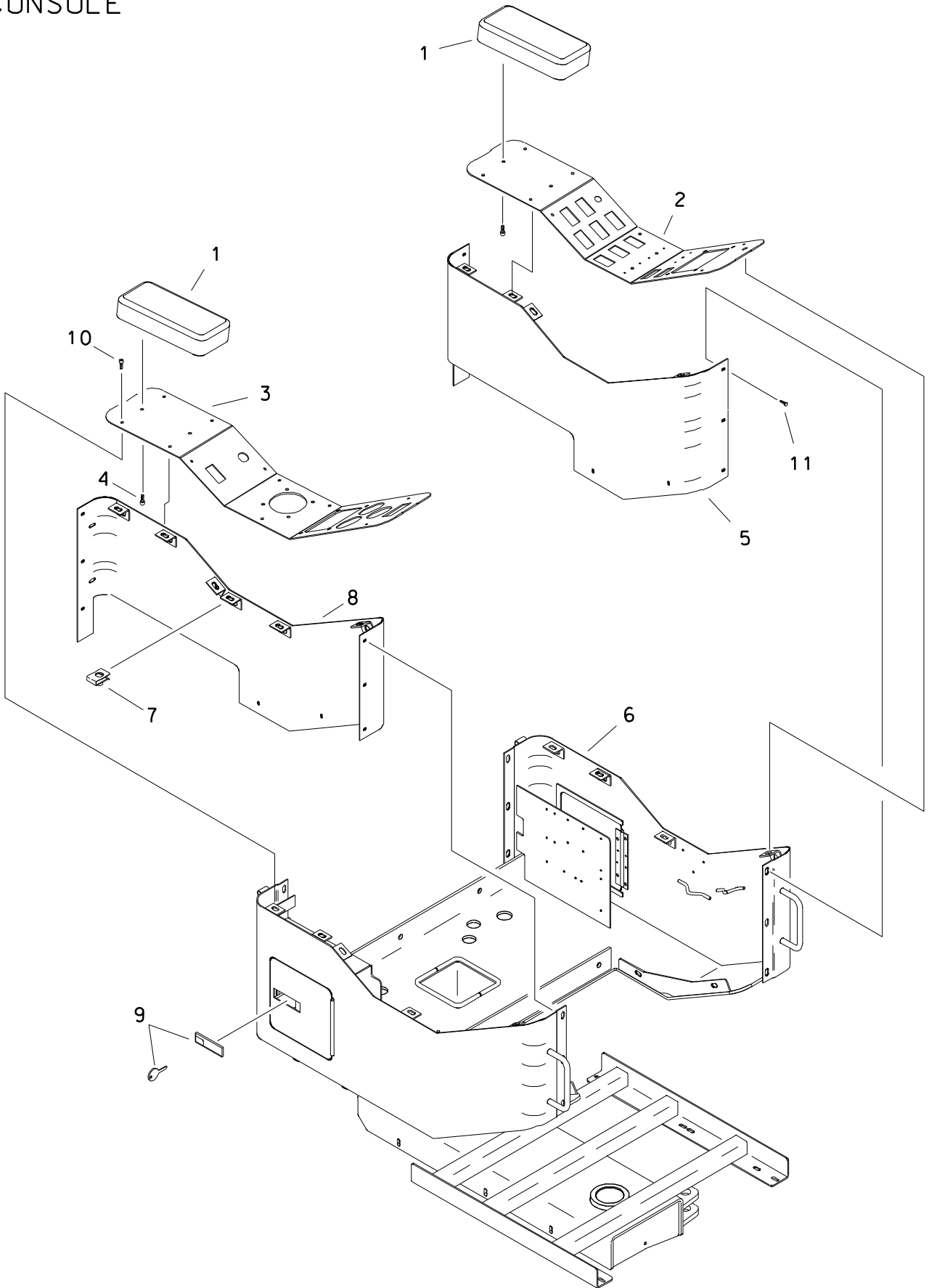


SEAT-BELTS-COVER

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	117-153	1	SEAT	INCL SWITCH & TRACK
	217-750	1	SEAT SWITCH	OPERATOR PRESENCE
	115-428	1	ADJUSTABLE TRACK	
2.	350-978	1	SEAT BASE	
3.	107-001	5	FLG LK BOLT (M10-1.50 X 25mm)	
4.	105-071	2	WASHER (1/2")	
5.	110-704	1	SEAT BELT SET	
6.	184-252	1	BUSHING (.562" X 1" X .590")	
7.	105-273	2	SCREW (M12-1.75 X 30mm)	
8.	115-430	2	SEAT BELT TETHER	
9.	105-066	2	BOLT (1/2-NC X 1-3/4")	INSTALL WITH 242 LOCTITE
10.	105-267	4	CUP WASHER (5/16")	
11.	105-089	4	LOCKNUT (5/16-NC)	
12.	116-203	1	GROMMET (9/16")	
13.	106-685	2	LOCKNUT (M12-1.75,PRV TRQ,10.9)	
14.	178-107	1	BUSHING (.562" X 1" X .984")	

FOOTNOTES

CONSOLE



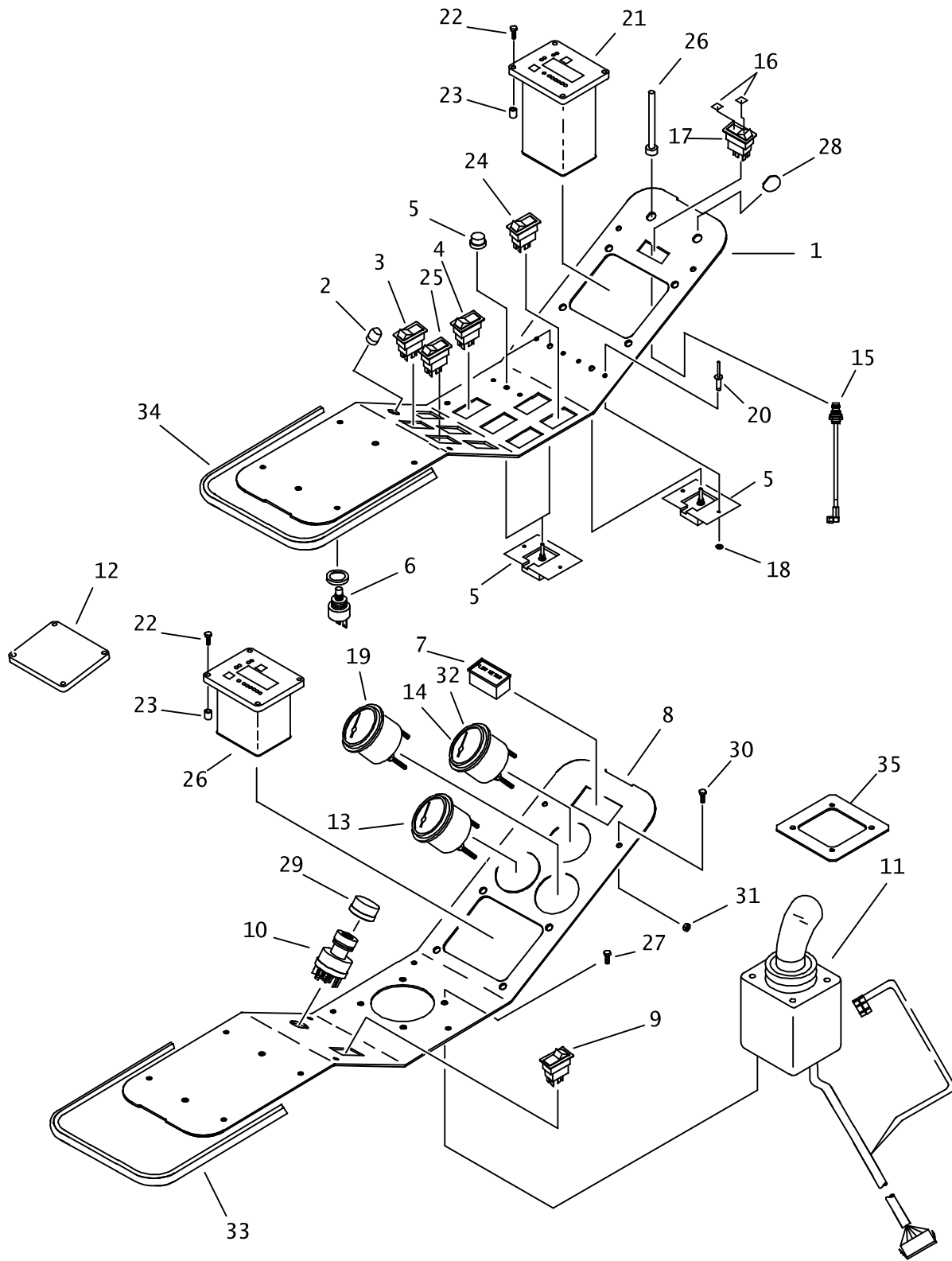
CONSOLE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-389	2	ARM REST PAD	
2.	350-996	1	LEFT CONSOLE COVER	
3.	350-998	1	RIGHT CONSOLE COVER	
4.	105-865	4	BOLT (1/4-NC X 3/4", GD8)	
5.	350-749	1	LEFT CONSOLE	
6.	350-746	-	OPERATOR FRAME	
7.	106-574	36	CLIP NUT (M6-1.00)	
8.	350-748	1	RIGHT CONSOLE	
9.	117-558	2	ADJUST LEVER LATCH (LOCKING)	
	214-961		KEY, PAIR (BASE CODE)	
	217-309		LOCK PLUG 4/LATCH (BASE CODE)	
	110-757	2	LEVER LATCH (ADJUST LOCKING)	INCL KEYS
	110-596	-	KEY (PAIR)	
10.	106-640	19	SCREW (M6-1.00 X 20mm, BUT SOC)	
11.	106-988	17	FLG LK SCREW (M6-1.00 X 20mm)	

FOOTNOTES

CONSOLE GAUGES

JT4020
ENDS WITH S/N 2T4301



CONSOLE GAUGES

JT4020

ENDS WITH S/N 2T4301

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-996	-	LEFT CONSOLE COVER	
2.	306-608	1	BUTTON COVER	
3.	217-907	1	ROCKER SWITCH (DPDT) ON-ON	
4.	217-911	6	ROCKER SWITCH (SPDT) ON-OFF(OH)	
5.	217-940	2	FLUID FLOW POTENTIOMETER	
6.	306-607	1	HORN BUTTON	
7.	217-221	1	FLOW METER DISPLAY	
8.	350-998	-	RIGHT CONSOLE	
9.	217-917	1	ROCKER SWTCH (DPDT) OFF-(OH)	
10.	214-852	1	IGNITION SWITCH	(OLD STYLE)
	214-961		KEY, PAIR (BASE CODE)	
	214-962		SWITCH MOUNTING NUT	
11.	191-078	1	JOYSTICK AND HARNESS KIT	INCLUDES JOYSTICK & HARNESS
	307-288	1	BOOT (RUBBER)	OLD STYLE
	214-473	1	JOYSTICK 'HANDLE' {GRAY}	OLD STYLE
	499-108	-	PUSH BUTTON	OLD STYLE
	499-109	-	3 POSITION SWITCH	OLD STYLE
	599-285	1	JT420 JOYSTICK CONVERSION KIT	INCLUDES JOYSTICK & HARNESS. SEE FOOTNOTE 2
	107-414	4	SCREW (M4-.70 X 30mm, BUT SOC)	NEW REPLACEMENT
	107-514	4	CLIP NUT (M4-.70)	NEW REPLACEMENT
	214-703	1	DUAL AXIS JOYSTICK	NEW REPLACEMENT
	217-279	1	JOYSTICK HARNESS	NEW REPLACEMENT
12.	348-896	1	COVER PLATE	
13.	217-552	1	PRESSURE GAUGE (6000 PSI)	FOR UNITS WITHOUT 90D ANTENNA
14.	191-048	1	PRESSURE GAUGE KIT	
15.	214-413	1	RIG RF CABLE (2130mm)	
16.	217-156	2	DIFFUSION LENS (GREEN)	
17.	217-923	1	ROCKER SWITCH (DPDT) ON-OFF-OH	
	217-925	1	ROCKER SWITCH (ACTUATOR)	
18.	106-205	4	WASHER (.191")	
19.	217-079	1	PRESSURE GAUGE (10,000 PSI)	
20.	110-560	4	POP RIVET (3/16" X 1/2", ALUM)	
21.	217-232	1	EL STR SYS CONTROL MODULE	ELECTRIC STRIKE SYSTEM
	197-232		(ESID) CONTROL MODULE REBUILT	REPLACEMENT FOR 217-232
22.	106-640	8	SCREW (M6-1.00 X 20mm, BUT SOC)	
23.	106-670	8	NUTSERT (M6-1.00)	
24.	217-912	1	ROCKER SWITCH (DPDT) ON-ON-OH	
25.	214-489	2	ROCKER SWITCH (DPDT) (OH) OFF (OH)	
26.	221-177	1	ANTENNA UHF US-UK EXR450TN CEN	USA
	219-948	-	ANTENNA 420-450MHZ RT ANG TNC	INTERNATIONAL
27.	106-049	4	BOLT (#10 - 24 X 3/4", PHLPS)	
28.	275-089	1	STEERING WHEEL PLAQUE	
29.	216-009	1	COVER (13/16", NYLON)	
30.	106-049	2	BOLT (#10-24 X 3/4", PLPS)	
31.	106-048	2	LOCKNUT (#10-24)	
32.	274-949	-	FLUID PRESSURE GAUGE 1193 PSI	SEE FOOTNOTE 1
33.	116-789	-	RUBBER EDGE TRIM 1/8" (12 GA)	1 @ 93", USE 401 LOCTITE
34.	116-789	-	RUBBER EDGE TRIM 1/8" (12 GA)	1 @ 83", USE 401 LOCTITE
	116-789	-	RUBBER EDGE TRIM 1/8" (12 GA)	
35.	315-878	1	ADAPTOR PLATE	

NOT SHOWN:

FOOTNOTES:

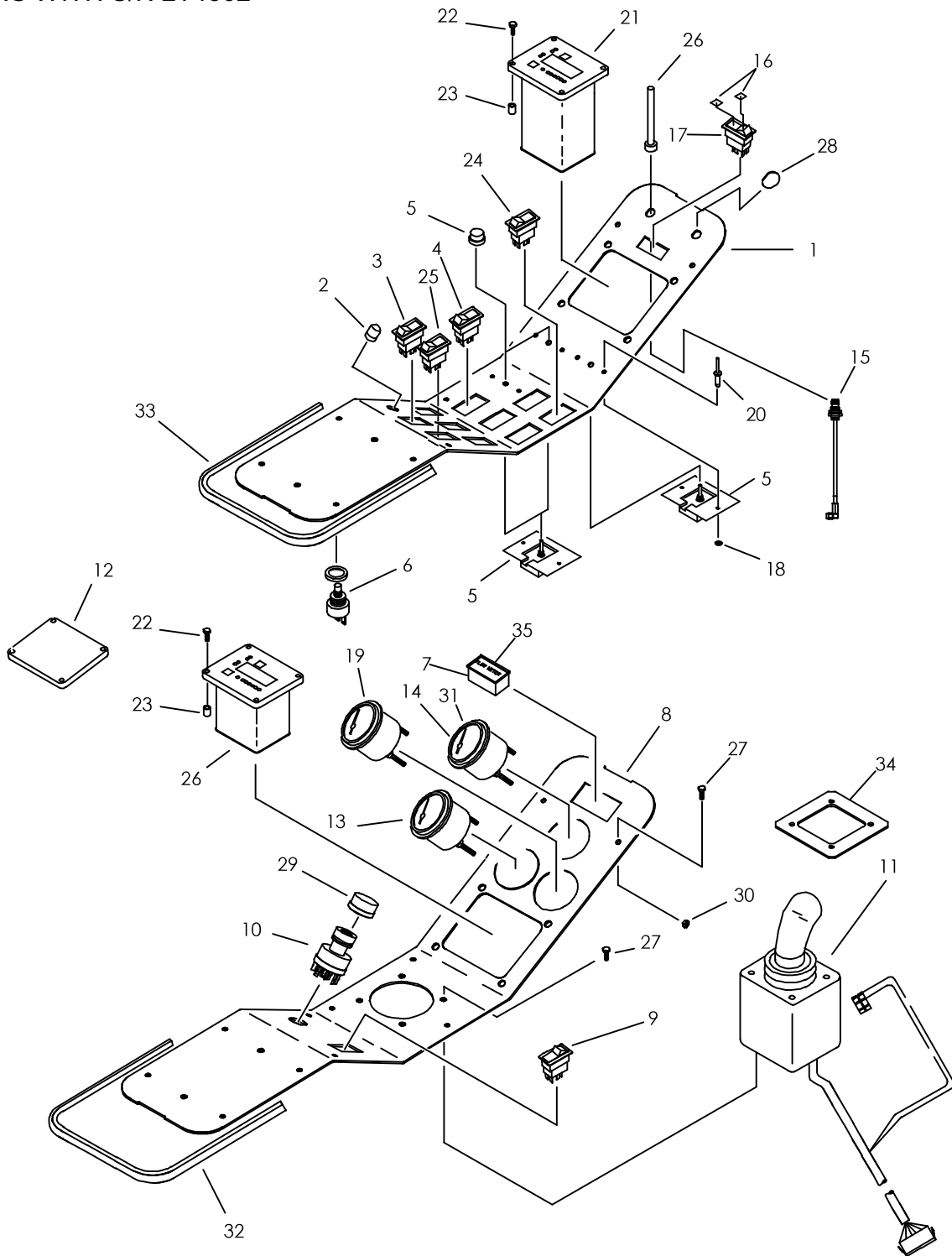
1. REFER TO SERVICE BULLETIN 052-317
2. REFER TO SERVICE BULLETIN 052-321

NOTE:

ELECTRICAL STRIKE SYSTEM

JT4020

BEGINS WITH S/N 2T4302



ELECTRICAL STRIKE SYSTEM

JT4020

BEGINS WITH S/N 2T4302

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-996	-	LEFT CONSOLE COVER	
2.	306-608	1	BUTTON COVER	
3.	217-907	1	ROCKER SWITCH (DPDT) ON-ON	
4.	217-911	6	ROCKER SWITCH (SPDT) ON-OFF(ON)	
5.	217-940	2	FLUID FLOW POTENTIOMETER	
6.	306-607	1	HORN BUTTON	
7.	217-221	1	FLOW METER DISPLAY	
8.	350-998	-	RIGHT CONSOLE	
9.	217-917	1	ROCKER SWTCH (DPDT) OFF-(ON)	
10.	214-852	1	IGNITION SWITCH	
	214-961		KEY, PAIR (BASE CODE)	
	214-962		SWITCH MOUNTING NUT	
11.	191-078	1	JOYSTICK AND HARNESS KIT	OBSOLETE INCLUDES JOYSTICK & HARNESS (OLD STYLE)
	307-288	1	BOOT (RUBBER)	OLD STYLE
	214-473	1	JOYSTICK 'HANDLE' {GRAY}	OLD STYLE
	499-108	-	PUSH BUTTON	OLD STYLE
	499-109	-	3 POSITION SWITCH	OLD STYLE
	599-285	1	JT4020 JOYSTICK CONVERSION KIT	INCLUDES JOYSTICK AND HARNESS. SEE FOOTNOTE 2
	107-414	4	SCREW (M4-.70 X 30mm, BUT SOC)	NEW REPLACEMENT
	107-516	4	CLIP NUT (M4-.70)	NEW REPLACEMENT
	214-703	1	DUAL AXIS JOYSTICK	NEW REPLACEMENT
	217-279	1	JOYSTICK HARNESS	NEW REPLACEMENT
12.	348-896	1	COVER PLATE	FOR UNITS WITHOUT 90D ANTENNA
13.	217-552	1	PRESSURE GAUGE (6000 PSI)	
14.	191-048	1	GAUGE KIT	
15.	214-413	1	RIG RF CABLE (2130mm)	
16.	217-156	2	DIFFUSION LENS (GREEN)	
17.	217-923	1	ROCKER SWITCH (DPDT) ON-OFF-ON	
	217-925	1	ROCKER SWITCH (ACTUATOR)	
18.	106-205	4	WASHER (.191")	
19.	217-079	1	PRESSURE GAUGE (10,000 PSI)	
20.	110-560	4	POP RIVET (3/16" X 1/2", ALUM)	
21.	217-241	1	ESID MODULE NEW (T)	
	197-079	-	REBUILT ESID MODULE 217-241	ELECTRIC STRIKE SYSTEM
22.	106-640	8	SCREW (M6-1.00 X 20MM, BUT SOC)	
23.	106-670	8	NUTSERT (M6-1.00)	
24.	214-912	1	ROCKER SWITCH (DPST) ON-OFF	
25.	214-489	2	ROCKER SWITCH (DPST) (ON) OFF (ON)	
26.	221-177	1	ANTENNA UHF US-UK EXR450TN CEN	USA
	219-948	-	ANTENNA 420-450MHZ RT ANG TNC	INTERNATIONAL
27.	106-049	6	BOLT (#10-24 X 3/4", PLPS)	
28.	275-089	1	STEERING WHEEL PLAQUE	
29.	216-009	1	COVER (13/16", NYLON)	
30.	106-048	2	LOCKNUT (#10-24)	
31.	274-949	-	FLUID PRESSURE GAUGE 1193 PSI	SEE FOOTNOTE 1
32.	116-789	-	RUBBER EDGE TRIM 1/8" (12 GA)	1 @ 93", USE 401 LOCTITE
33.	116-789	-	RUBBER EDGE TRIM 1/8" (12 GA)	1 @ 83", USE 401 LOCTITE
34.	315-878	1	ADAPTOR PLATE	
35.	319-412	1	FLOW METER WEATHER COVER	

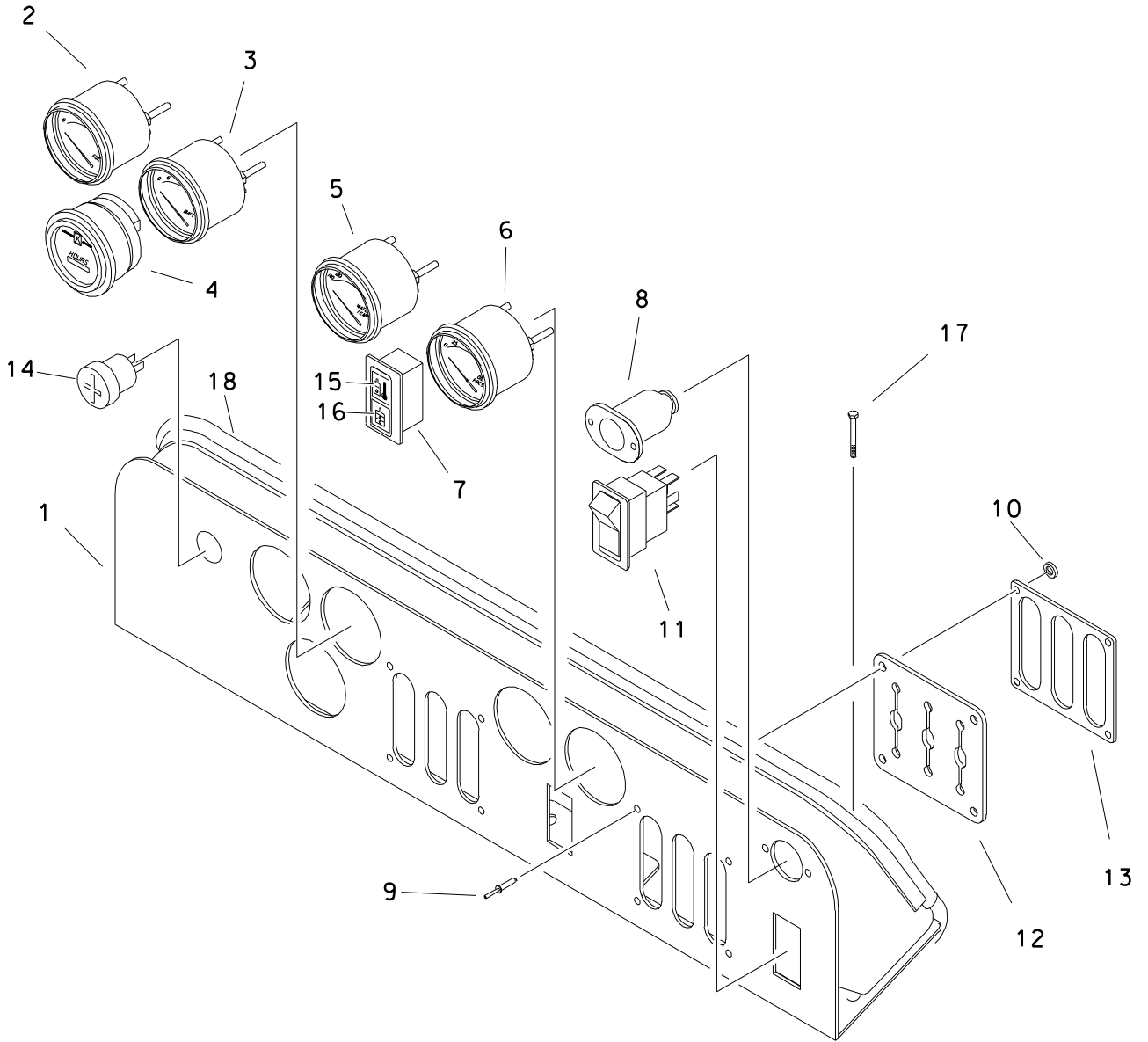
NOT SHOWN:

FOOTNOTES:

1. REFER TO SERVICE BULLETIN 052-317
2. REFER TO SERVICE BULLETIN 051-321

NOTE:

GAUGE PANEL



GAUGE PANEL

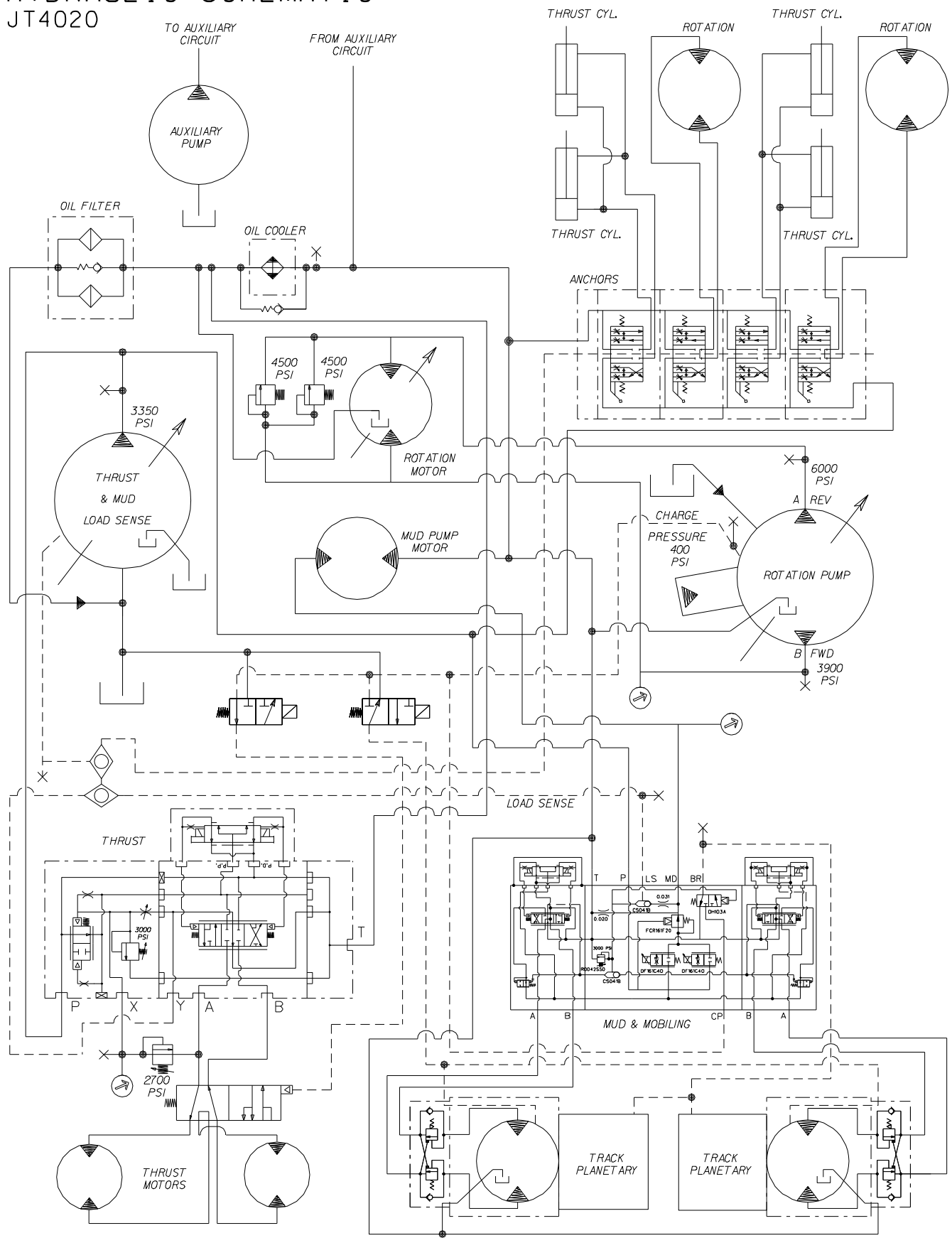
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-473	1	INSTRUMENT PANEL	
2.	215-133	1	FUEL GAUGE	
3.	215-415	1	NITE-LIGHT KIT (12V DC)	
	215-129	1	VOLT METER	
	215-415		NITE-LIGHT KIT (12V DC)	
4.	215-128	1	HOURLY METER	
5.	217-531	1	WATER TEMPERATURE GAUGE	
	215-415		NITE-LIGHT KIT (12V DC)	
6.	215-131	1	OIL PRESSURE GAUGE	
	215-415		NITE-LIGHT KIT (12V DC)	
7.	217-020	1	PILOT LIGHT	ON-ON, SPDT
	217-046		BULB (12V DC)	
8.	214-301	1	ACCESSORY SOCKET	
9.	110-560	10	PDP RIVET (3/16" X 1/2", ALUM)	
10.	106-205	10	WASHER (.191")	
11.	217-907	1	ROCKER SWITCH (DPDT) ON-ON	
12.	116-773	2	CONTROL HANDLE SEAL	
13.	354-462	2	SEAL BACKUP PANEL	
14.	306-603	1	AUDIO ALARM	
15.	217-027	1	INSERT (RED) HYD OIL HI TEMP	
16.	217-036	1	INSERT (YELLOW) HYD OIL PSI	
17.	106-987	5	FLG LOCK SCREW (M6-1.00 X 16mm)	
18.	116-489	AR	BULK EDGE (1/8", SOLD PER 1 FT)	USE 1 @ 32.5"
19.	106-574	5	CLIP NUT (M6-1.00)	NOT SHOWN, ATTACH TO HYDRAULIC TANK

FOOTNOTES

NOTES:

HYDRAULICS

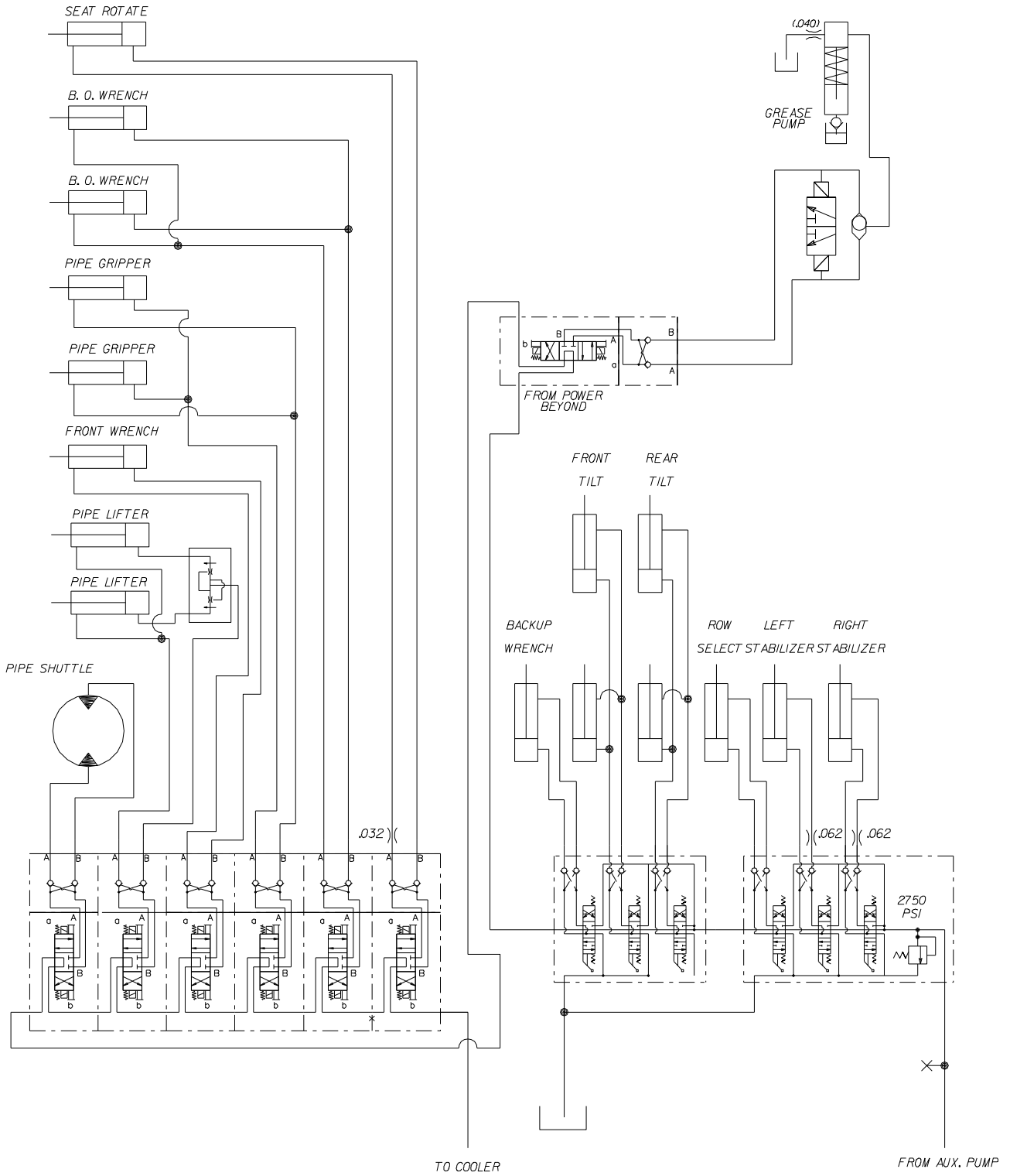
HYDRAULIC SCHEMATIC JT4020



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806-507

HYDRAULIC SCHEMATIC JT4020

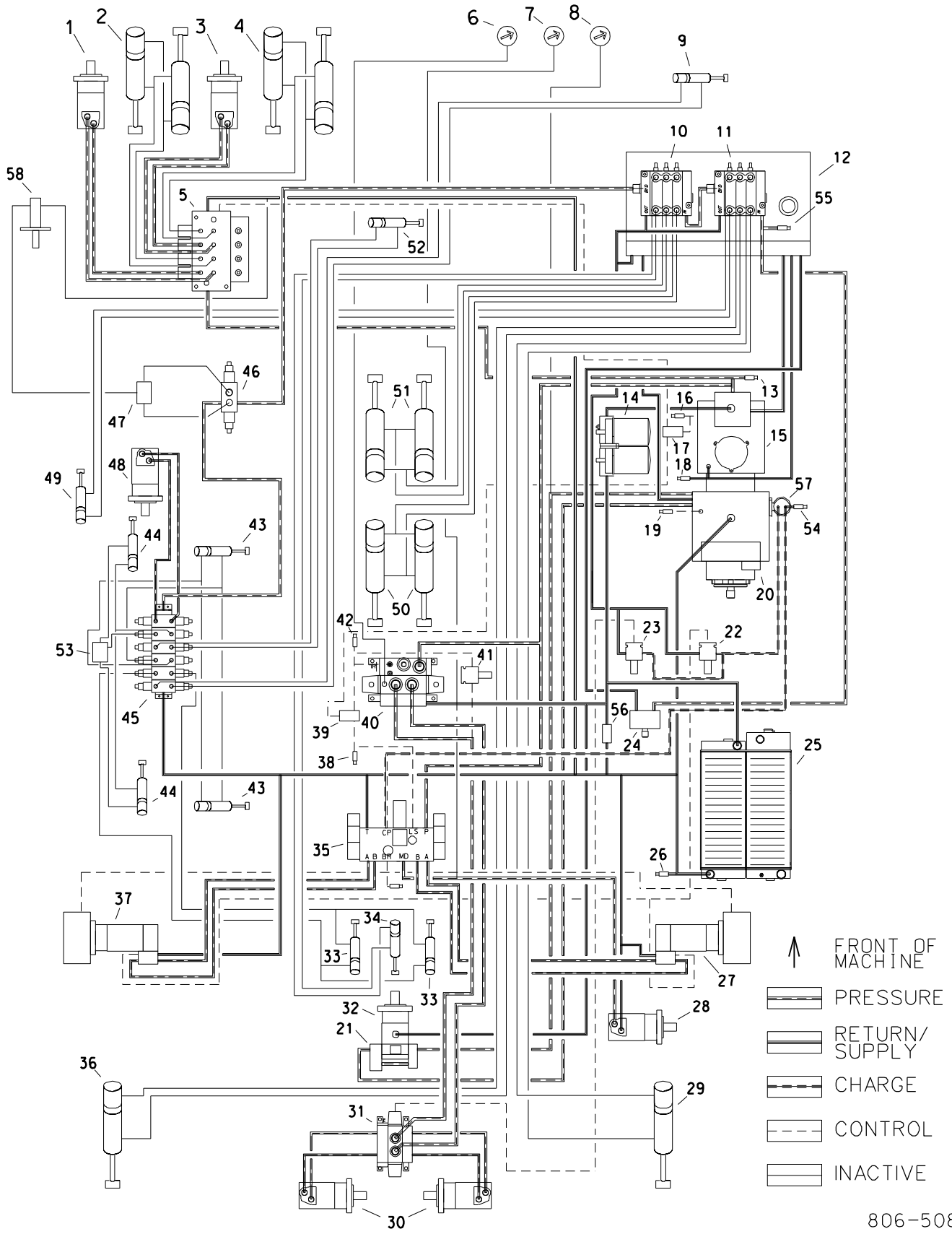


HYDRAULIC SCHEMATIC
JT4020

SPECIFICATIONS

ENGINE		PUMP			MOTOR	
MFG (NO LOAD)	RPM	TYPE	GPM	DISPLACEMENT	TYPE	DISPLACEMENT
<i>DEERE</i>	<i>2550</i>	<i>ROTATION</i>	<i>60.0</i>	<i>6.10 C.I.</i>	<i>ROTATION</i>	<i>4.88 C.I.</i>
		<i>THRUST & MUD</i>	<i>65.0</i>	<i>6.47 C.I.</i>	<i>THRUST</i>	<i>15.0 C.I.</i>
		<i>AUXILIARY</i>	<i>5.4</i>	<i>0.5 C.I.</i>	<i>GROUND DRIVE</i>	<i>9.6/4.8 C.I.</i>
					<i>MUD</i>	<i>6.0 C.I.</i>
					<i>SHUTTLE</i>	<i>24.0 C.I.</i>
					<i>ANCHOR</i>	<i>38.0 C.I.</i>

HYDRAULIC DIAGRAM
 BEGINS WITH S/N 251484



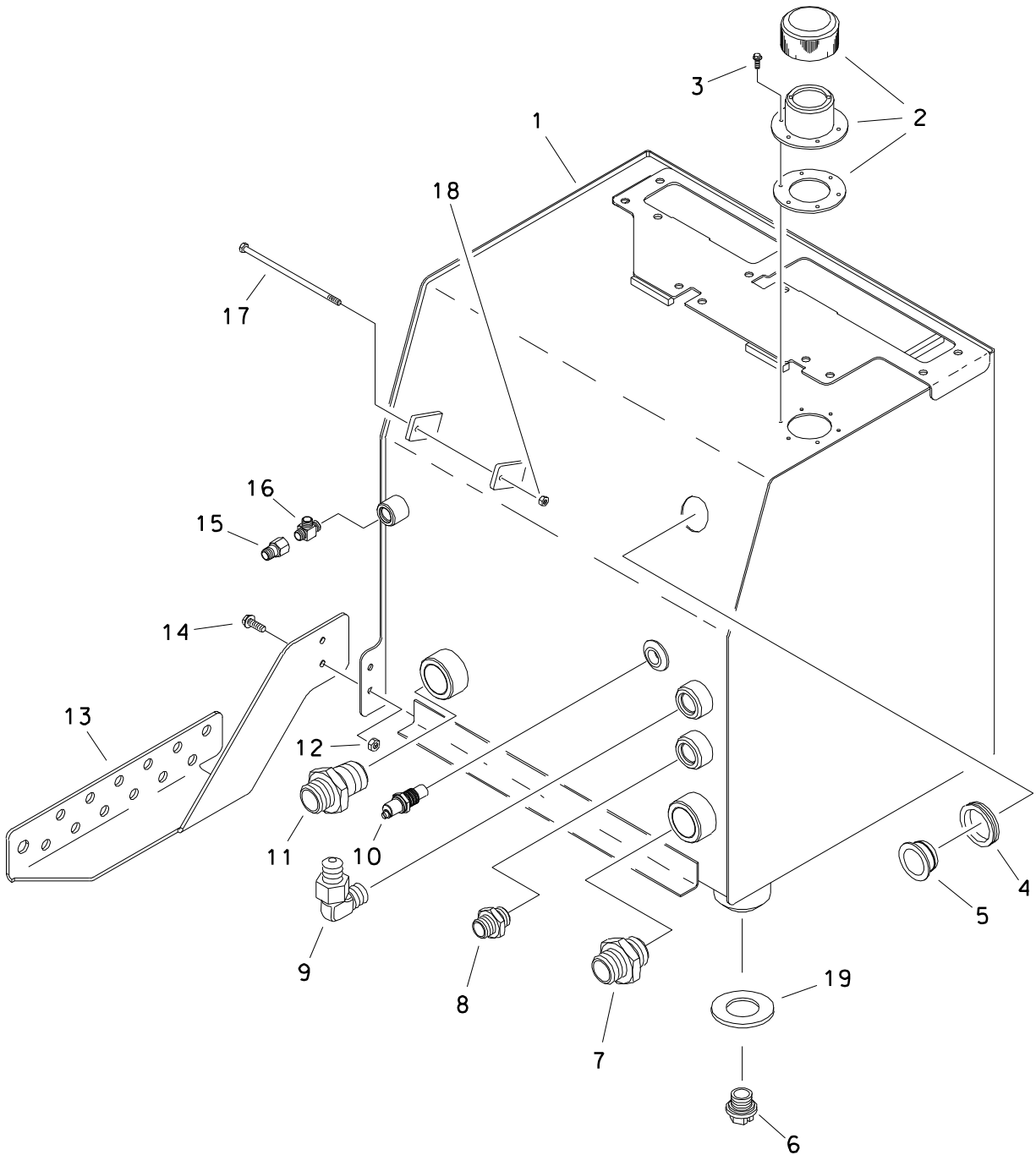
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HYDRAULIC DIAGRAM

BEGINS WITH S/N 251484

REF NO.	DESCRIPTION	REMARKS
1.	LEFT ANCHOR MOTOR	
2.	LEFT ANCHOR CYLINDERS	
3.	RIGHT ANCHOR MOTOR	
4.	RIGHT ANCHOR CYLINDERS	
5.	ANCHOR VALVE	
6.	THRUST PRESSURE GAUGE	
7.	DRILLING FLUID GAUGE	
8.	ROTATION PRESSURE GAUGE	
9.	SEAT ROTATION CYLINDER	
10.	SETUP VALVE	
11.	SETUP VALVE	
12.	HYDRAULIC RESERVOIR	
13.	TEST PORT	
14.	OIL FILTERS	
15.	THRUST & DRILLING FLUID PUMP, ANCHORS	LOAD SENSE
16.	TEST PORT	
17.	SHUTTLE VALVE	
18.	TEST PORT	
19.	TEST PORT	
20.	HYDROSTATIC PUMP	
21.	SPIKE RELIEF MANIFOLD	
22.	TWO SPEED MOBILING VALVE	
23.	TWO SPEED THRUST VALVE	
24.	AUXILIARY PUMP	
25.	OIL COOLER/RADIATOR	
26.	TEST PORT	
27.	GROUND DRIVE MOTOR W/ COUNTERBALANCE VALVE	
28.	DRILLING FLUID MOTOR	
29.	RIGHT STABILIZER CYL	
30.	THRUST MOTORS	
31.	SERIES PARALLEL VALVE	
32.	ROTATION MOTOR	
33.	REAR BREAKOUT WRENCH CYL	
34.	AUXILIARY BREAKOUT WRENCH CYL	
35.	GROUND DRIVE AND DRILLING FLUID VALVE	
36.	LEFT STABILIZER CYL	
37.	GROUND DRIVE MOTOR W/ COUNTERBALANCE VALVE	
38.	TEST PORT	
39.	SHUTTLE VALVE	
40.	THRUST VALVE (ELECTRIC)	
41.	THRUST LIMITER VALVE	
42.	TEST PORT	
43.	PIPE GRIPPER CYL	
44.	PIPE LIFTER CYL	
45.	PIPE HANDLING VALVE	
46.	LUBRICATION VALVE	
47.	SELECTOR VALVE	
48.	SHUTTLE MOTOR	
49.	ROW SELECT VALVE	
50.	REAR DRILL FRAME PIVOT CYL	
51.	FRONT DRILL FRAME PIVOT CYL	
52.	FRONT WRENCH CYL	
53.	DIVERTER VALVE	
54.	TEST PORT	
55.	TEST PORT	
56.	BYPASS CHECK VALVE	
57.	HYDRAULIC OIL FILTER	
58.	GREASE PUMP	

HYDRAULIC RESERVOIR



HYDRAULIC RESERVOIR

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-614	1	HYDRAULIC RESERVOIR	
2.	110-008	1	FILLER BREATHER (2-1/8")	
3.	105-214	6	FLG SCREW (#10-24 X 1/2")	
4.	115-320	1	GROMMET (1-1/2")	
5.	116-218	1	SIGHT GLASS (2")	INCL REFLECTOR, SEE FOOTNOTE 1
	360-849	-	REFLECTOR	
6.	149-398	1	DRAIN PLUG (1" W/.375 ORF)	
7.	154-497	1	CONNECTOR (160-20S)	
8.	154-300	1	CONNECTOR (100-12S90)	
9.	154-286	1	CONNECTOR (120-16S90)	
10.	214-819	1	TEMPERATURE SWITCH	USE 567 LOCTITE
11.	155-148	1	S/O COUPLER (20S-24H)	
12.	106-561	2	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
13.	354-466	1	BULKHEAD PLATE	
14.	106-162	2	FLG SCREW(M8-1.25 X 20MM, GD8)	
15.	154-262	1	REDUCER (060-080F)	
16.	154-299	-	RUN TEE (08S-080-080)	
17.	106-061	1	BOLT (1/4-NC X 6-1/2")	
18.	105-085	1	LOCKNUT (1/4-NC)	
19.	149-829	1	1" SEAL WASHER	

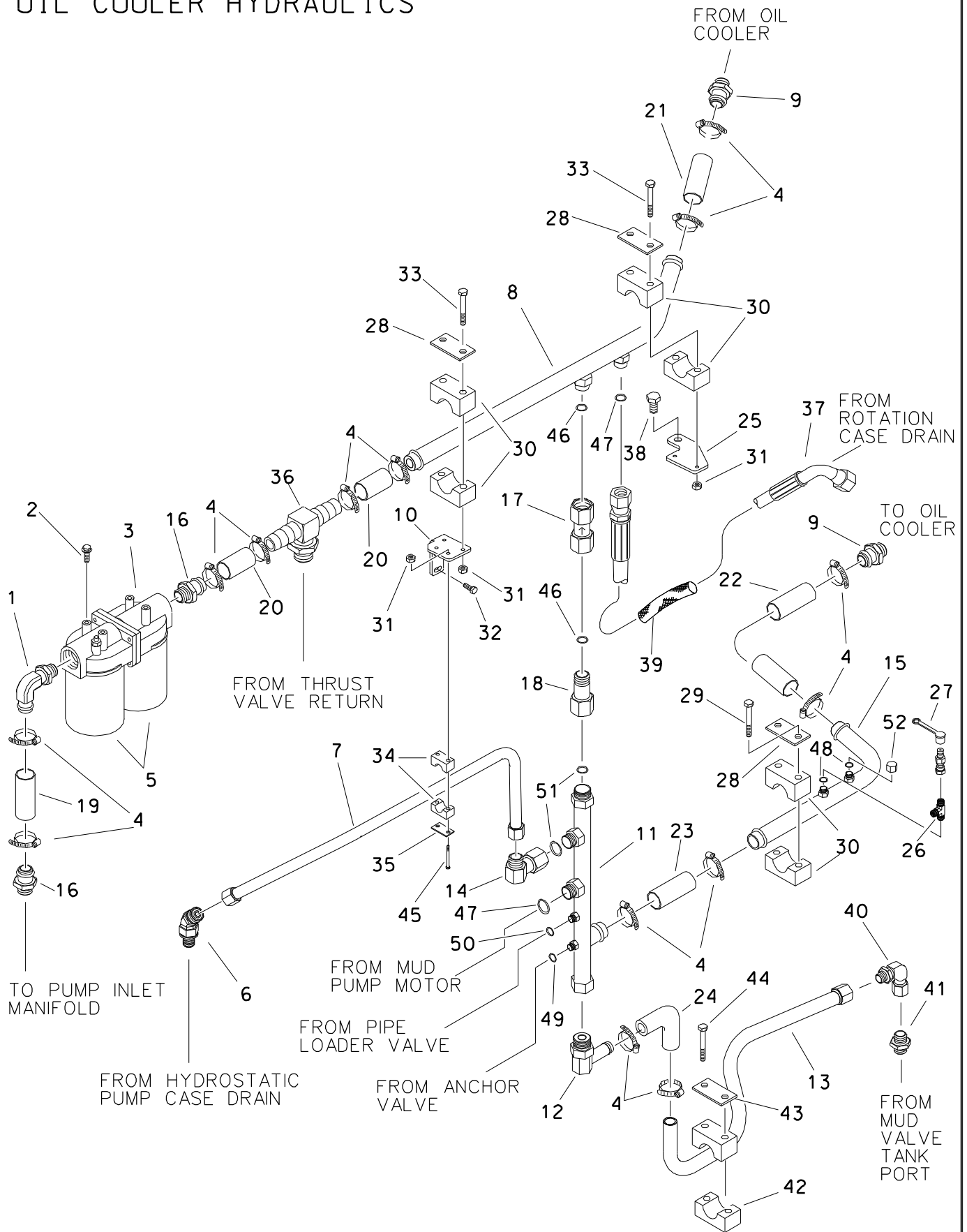
FOOTNOTES

1. REFER TO SPECIAL TOOL DIAGRAM 052-524, FOR INSTALLATION.

NOTE:

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

OIL COOLER HYDRAULICS



OIL COOLER HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	514-135	1	S/O COUPLER (24S-24H90)	
2.	105-825	4	FLG LK BOLT (3/8-NC X 3/4")	
3.	159-411	1	FILTER HEAD (20SF-20SF)	
4.	110-250	14	WORM CLAMP (1-1/4" TO 2-1/8")	
5.	149-840	2	FILTER ELEMENT (1-1/2-UNF)	SEE FOOTNOTE 1 & 2
6.	154-371	1	CONNECTOR (12S-16045)	
7.	156-177	1	HYD LINE (16DFX)	CASE DRAIN
8.	156-876	1	HYD LINE (16)	COOLER RETURN
9.	155-148	2	S/O COUPLER (20S-24H)	
10.	354-464	1	TOP REAR COOLANT BRACKET	
11.	156-893	1	HYD LINE (16)	COOLER TUBE
12.	155-149	1	S/O COUPLER (16S-20H90)	
13.	156-894	1	HYD LINE (20)	VALVE DRAIN
14.	154-290	1	UNION (160-16DFX90)	
15.	156-877	1	HYD LINE (24)	COOLER TUBE
16.	514-138	2	S/O COUPLER (24S-24H)	
17.	158-693	1	FLOW CHECK VALVE (16SF-16SF)	FLOW ARROW ON CHECK VALVE MUST POINT UPWARD
18.	510-014	1	UNION (16J-16DFX)	
19.	116-588	AR	BULK HOSE (1-1/2", SOLD PER 1')	USE 1 @ 13"
20.	116-588	AR	BULK HOSE (1-1/2", SOLD PER 1')	USE 2 @ 6.5"
21.	116-588	AR	BULK HOSE (1-1/2", SOLD PER 1')	USE 1 @ 19.5"
22.	116-588	AR	BULK HOSE (1-1/2", SOLD PER 1')	USE 1 @ 24.75"
23.	116-588	AR	BULK HOSE (1-1/2", SOLD PER 1')	USE 1 @ 4.75"
24.	116-587	AR	BULK HOSE (1-1/4", SOLD PER 1')	USE 1 @ 17"
25.	354-465	1	TOP FRONT COOLANT BRACKET	
26.	154-265	1	UN RUN TEE (040FX-040-040)	
27.	159-156	1	QDC ADAPTER (02-040F)	
	159-148	1	DUST CAP (1/8")	
28.	322-362	3	BACKUP SPACER	
29.	105-224	2	BOLT (1/4-NC X 2-1/2")	
30.	111-008	3	BOLT-ON CLAMP (1-1/2", SET)	
31.	105-085	6	LOCKNUT (1/4-NC)	
32.	105-245	2	SCREW (M10-1.50 X 25mm)	
33.	105-297	4	BOLT (1/4-NC X 3-1/4")	
34.	110-573	1	BOLT-ON CLAMP (1", SOLD PER SET)	
35.	322-289	1	BACKUP (BOLT-ON)	
36.	514-441	1	S/O BR TEE (160-24H-24H)	
37.	155-470	1	HOSE (12DFX90M-90"-3000)	
38.	106-559	1	SCREW (M12-1.75 X 25mm)	
39.	115-924	1	ABRASION SLEEVE (1.59" X 88")	
40.	514-422	1	CONNECTOR (200-200FX90)	

OIL COOLER HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
41.	514-094	1	CONNECTOR (16S-200)	
42.	110-852	2	BLT-ON CLP (1.2",SOLD PER SET)	
43.	322-362	1	BACKUP SPACER	
44.	105-224	2	BOLT (1/4-NC X 2-1/2")	
45.	107-025	2	SCREW (M6-1.00 X 50MM)	
46.	155-748	2	O-RING (Q16 D90)	
47.	157-017	2	O-RING (O18 D90)	
48.	157-037	2	O-RING (O11 D90)	
49.	157-040	1	O-RING (Q16 D90)	
50.	157-039	1	O-RING (O14 D90)	
51.	155-714	2	O-RING (O21 D90)	
52.	154-296	1	CAP (O40E)	

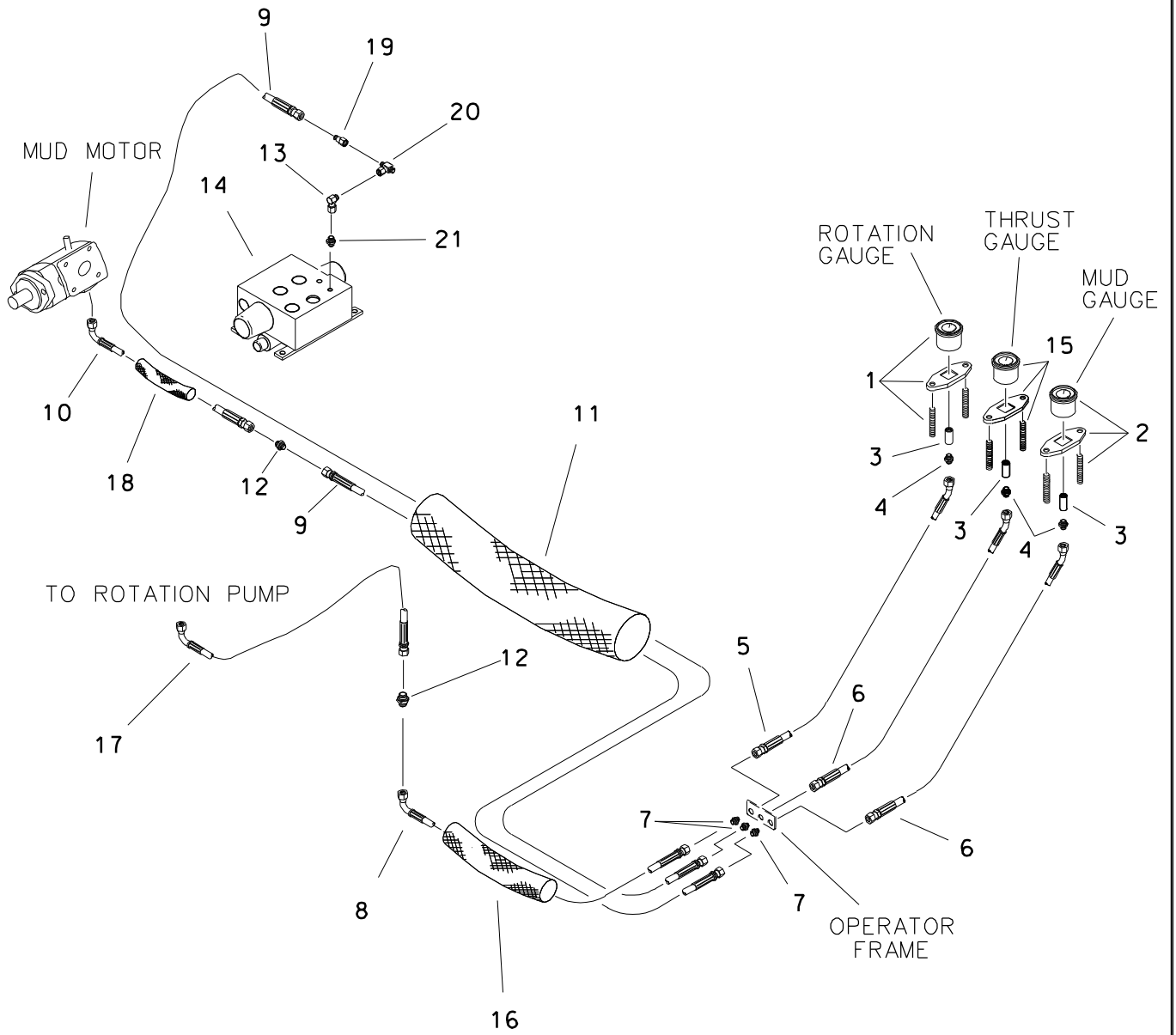
FOOTNOTES

- USE 159-079 ELEMENT FOR NORMAL MAINTENCE.
USE 149-840 ELEMENT AFTER HOSE OR COMPONENT REPLACEMENT OR REPAIR
- INCLUDES 149-840 FILTER ON NEW MACHINES
REPLACE WITH 159-079 AFTER FIRST 50 HOURS

NOTE

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

ROTATION, THRUST AND MUD GAUGES



ROTATION, THRUST AND MUD GAUGES

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	217-079	1	PRESSURE GAUGE (10000PSI)	
	499-202		GAUGE CLAMP & STUDS	SEE FOOTNOTE 1
2.	191-048	1	GAUGE KIT	
	499-202		GAUGE CLAMP & STUDS	SEE FOOTNOTE 1
3.	514-408	3	COLLAR (04NF)	
4.	154-339	3	CONNECTOR (04N-040)	
5.	515-646	1	HOSE (040FX45-62"-10000)	
6.	515-283	2	HOSE (040FX45-62"-3000)	
7.	154-275	3	BK CONNECTOR (040-040BK)	
8.	515-664	1	HOSE (040FX90-80"-7350)	37 GPM
9.	515-161	2	HOSE (040FX-160"-3000)	70 GPM
10.	154-705		HOSE (040FX90S-60"-3000)	
	515-257		HOSE (040FX90-54"-3000)	
11.	117-741	1	ABRASION SLEEVE (1.59" X 145")	
12.	154-335	2	CONNECTOR (040-040)	
13.	154-228		UNION (060-060FX90)	
14.	516-092		THRUST VALVE (ELECTRIC)	
	157-440		THRUST VALVE (ELECTRIC)	
15.	217-552	1	PRESSURE GAUGE (6000 PSI)	
	499-202		GAUGE CLAMP & STUDS	SEE FOOTNOTE 1
16.	117-702	1	ABRASION SLEEVE (1.00" X 68")	
17.	515-665	1	HOSE (040FX90-34"-7350)	
18.	117-714	1	ABRASION SLEEVE (1.00 X 54")	
19.	154-373		REDUCER (040-060F)	
20.	154-348		UNION BRANCH TEE (060FX-060-060)	
21.	154-411		CONNECTOR (04S-060)	

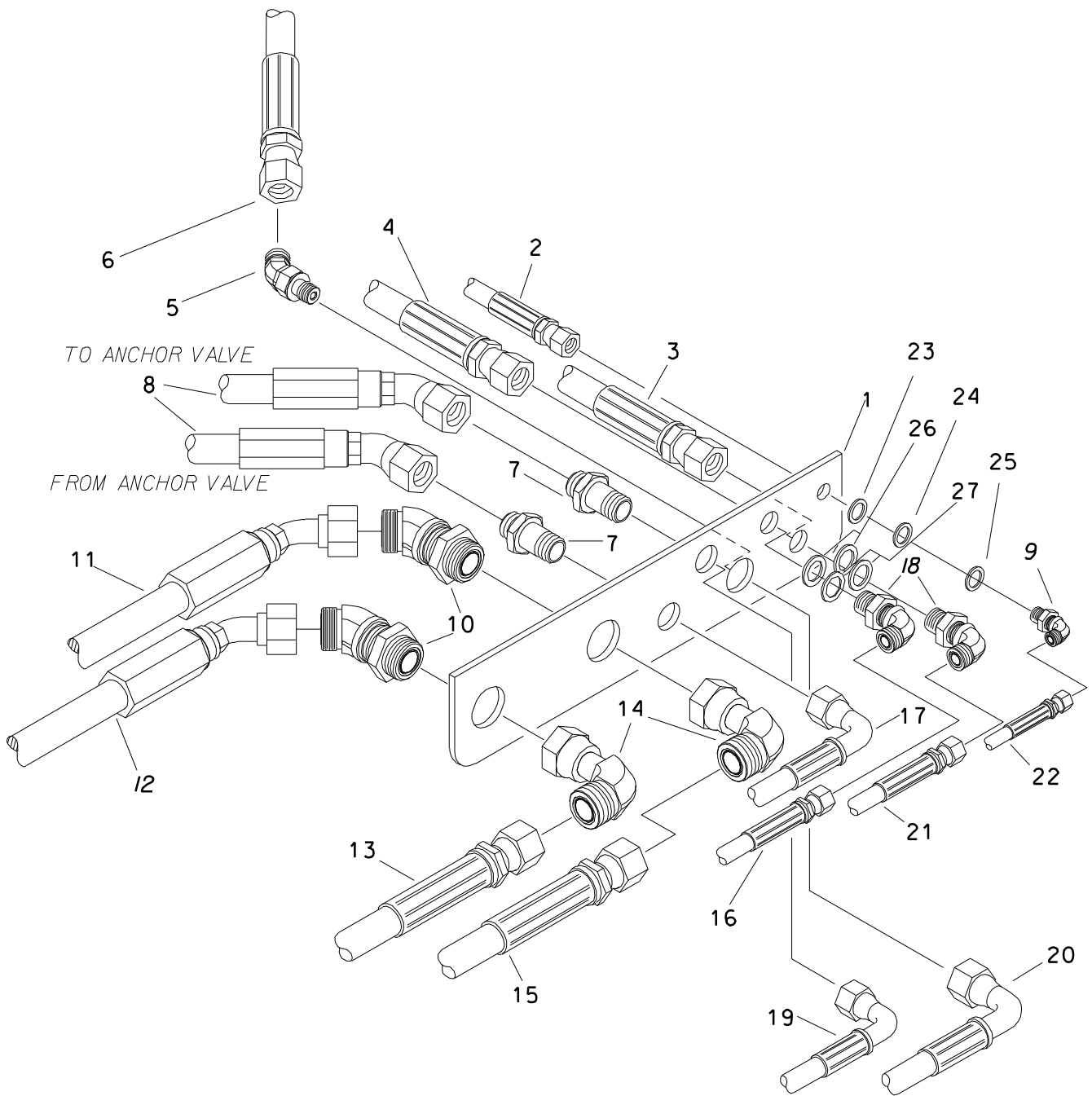
FOOTNOTES

1. BEGINS WITH S/N -----

NOTE

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

MAIN FRAME BULKHEADS



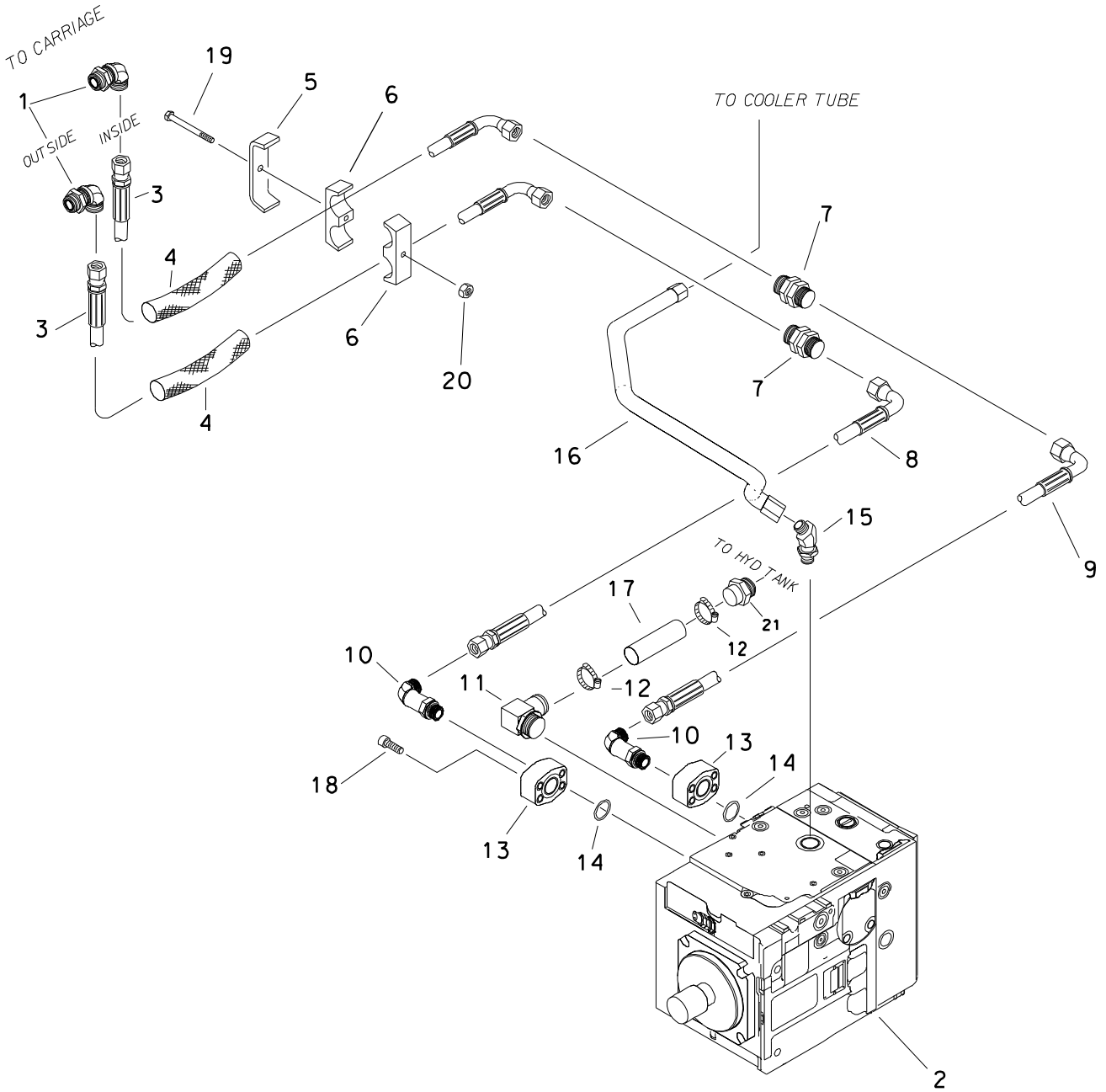
MAIN FRAME BULKHEADS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-740	-	BULKHEAD PLATE	PART OF MAIN FRAME
2.	154-950	1	HOSE (040FX-150"-3000)	TO SERIES PARALLEL VALVE
3.	515-661	1	HOSE (080FX90-187"-3000)	TO PIPE LOADER VALVE
4.	515-660	1	HOSE (080FX-175"-3000)	FROM PIPE LOADER VALVE
5.	154-448	1	BK CONNECTOR (120-12045BK)	
6.	515-431	1	HOSE (120FX-210"-3000)	FROM ROTATION MOTOR CASE DRAIN
7.	154-309	2	BK CONNECTOR (100-100BK)	
8.	515-671	2	HOSE (100FX45-52"-3000)	SEE GRAPHICS
9.	154-355	1	BK CONNECTOR (040-04090BK)	
10.	514-242	2	BK CONNECTOR (160-16045BK)	
11.	515-652	1	HOSE (160FX-47"-3000)	TO THRUST VALVE
12.	515-655	1	HOSE (160FX90-47"-3000)	FROM THRUST VALVE
13.	154-815	1	HOSE (160FX-48"-4000)	TO RETURN LINE (BEFORE FILTERS)
14.	154-290	2	UNION (160-160FX90)	
15.	515-653	1	HOSE (160FX-16FL90-27"-3000)	FROM LOAD SENSE PUMP
16.	154-677	1	HOSE (080FX-62"-3000)	TO COOLER TUBE
17.	515-690	1	HOSE (100FX90L-58"-3000)	TO COOLER TUBE
18.	154-396	2	BK CONNECTOR (080-08090BK)	
19.	515-454	1	HOSE (100FX90L-20"-3000)	FROM LOAD SENSE PUMP
20.	155-470	1	HOSE (120FX90M-90"-3000)	TO UPPER COOLER TUBE
21.	515-366	1	HOSE (080FX-52"-3000)	FROM HYDRAULIC CONTROL VALVE ON HYD TANK
22.	154-692	1	HOSE (040FX-54"-3000)	FROM THRUST SHIFT SOLENOID VALVE
23.	106-391	1	WASHER (M12)	
24.	106-398	1	WASHER (M16, HARDENED)	
25.	105-940	1	WASHER (5/8")	
26.	105-460	2	WASHER (13/16")	
27.	106-399	2	WASHER (M20, HARDENED)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

ROTATION HYDRAULICS



ROTATION HYDRAULICS

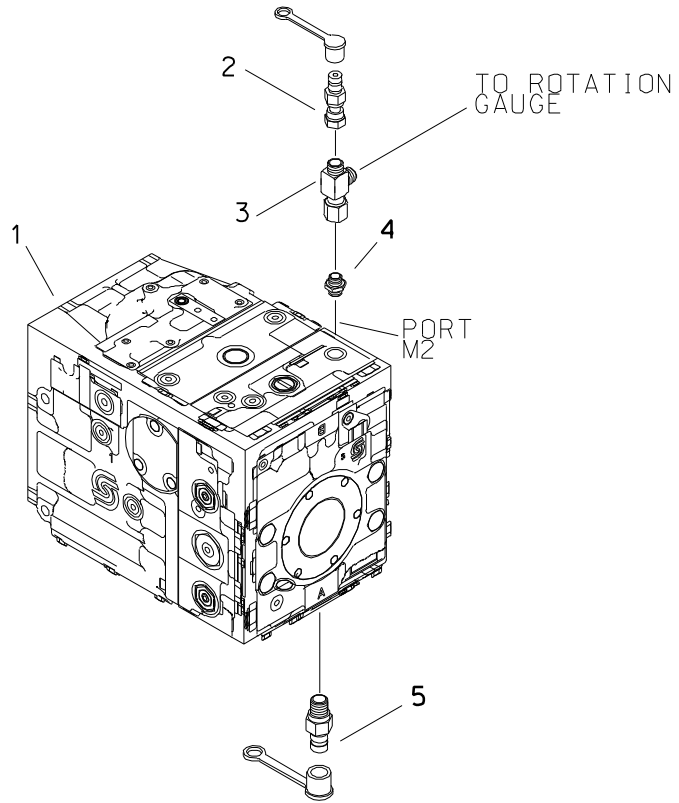
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-419	2	BK CONNECTOR (160-16090BK)	
2.	158-439	-	HYDRAULIC PUMP	
3.	515-662	2	HOSE (160FX90-212"-6000)	
4.	117-290	2	ABRASION SLEEVE (2.07" X 58")	
5.	315-623	1	BACKUP SPACER	
6.	110-359	1	BOLT-ON CLAMP (1-1/2", SET)	
7.	154-389	2	BK CONNECTOR (160-160BK)	
8.	515-666	1	HOSE (160FX90-52"-6000)	
9.	154-763	1	HOSE (160FX90S-54"-6000)	
10.	154-289	2	CONNECTOR (16S-16090, XL)	
11.	155-176	1	S/O COUPLER (20S-24H90)	
12.	110-250	2	WORM CLAMP (1-1/4" TO 2-1/8")	
13.	514-245	2	HEAD FLANGE (16HFL-16SF)	
14.	157-029	2	O-RING (219 D90)	
15.	154-371	1	CONNECTOR (12S-16045)	
16.	156-177	1	HYD LINE (-16)	CASE DRAIN
17.	116-588	AR	BULK HOSE (1-1/2", SOLD PER FT)	USE 1 @ 18.5"
18.	105-918	8	BOLT (7/16-NC X 1-1/2", SOC)	
19.	107-078	1	SCREW (M8-1.25 X 90mm)	
20.	106-561	1	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
21.	155-148	1	S/O COUPLER (20S-24H)	

FOOTNOTES

NOTE

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

ROTATION TEST PORTS



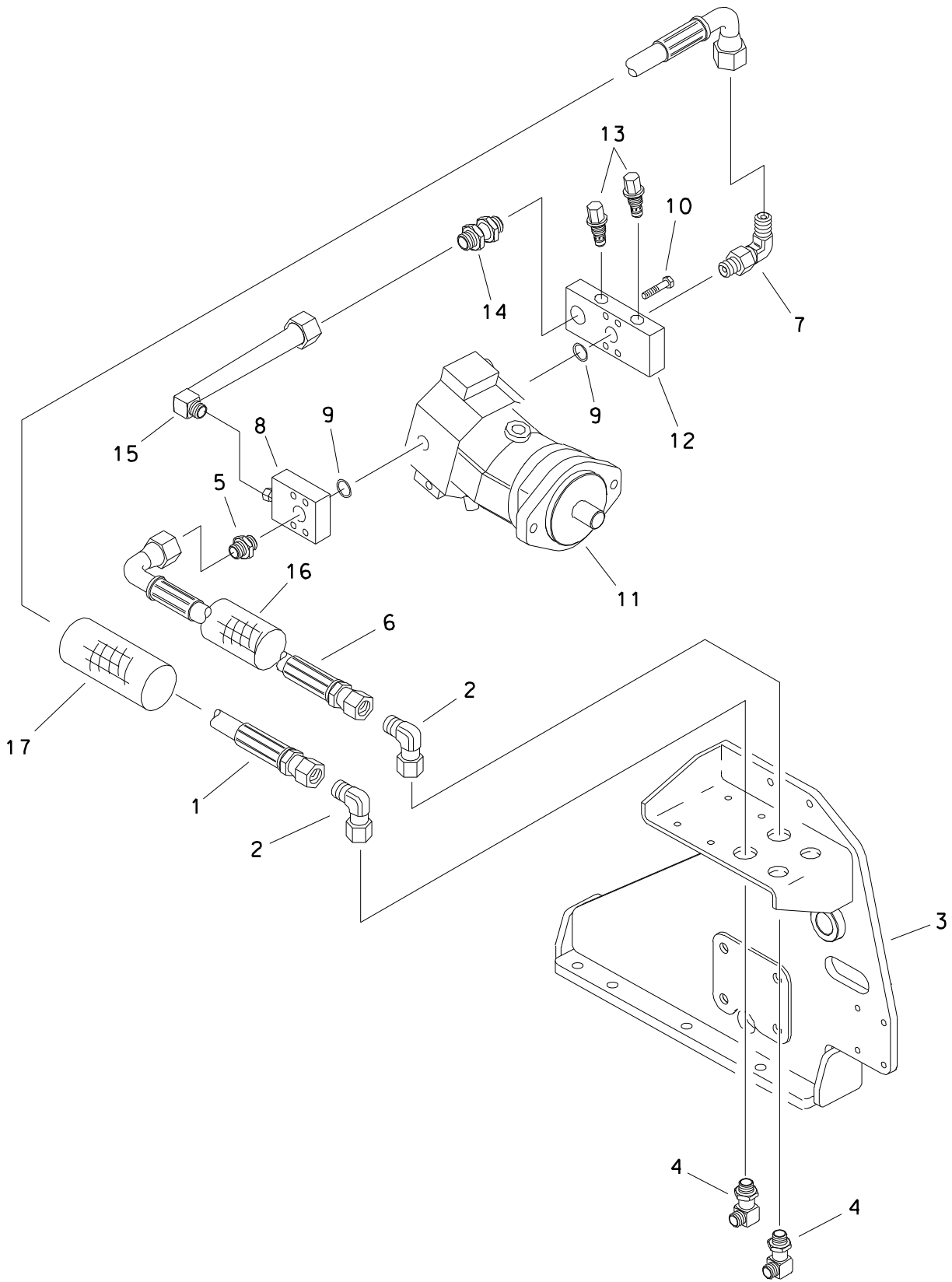
ROTATION TEST PORTS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	158-439	1	HYDRAULIC PUMP	
2.	159-156	1	QDC ADAPTER (02-040F)	
3.	154-265	1	UN RUN TEE (040FX-040-040)	
4.	154-220	1	CONNECTOR (040-06S)	
5.	159-147	1	QDC ADAPTER (02-06S)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

ROTATION HYDRAULICS



ROTATION HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	515-732	1	HOSE (160FX90M-40"-6000)	
2.	154-290	2	UNION (160-160FX90)	
3.	350-752	-	RIGHT CARRIAGE SIDE	
4.	154-419	2	BK CONNECTOR (160-16090BK)	
5.	154-281	1	CONNECTOR (16S-160)	
6.	515-731	1	HOSE (160FX90-21"-6000)	
7.	154-287	1	CONNECTOR (16S-16090)	
8.	149-376	1	ADAPTER MANIFOLD	PART OF KIT 149-627
9.	157-029	2	O-RING (219 D90)	PART OF KIT 149-627
10.	106-804	8	SCREW (7/16-NC X 2", SOC, GD8)	USES LOCTITE 242 - TORQUE TO 85 FT. LBS.
11.	158-012	-	HYD MOTOR	
12.	149-375	-	CARTRIDGE MANIFOLD ASS'Y	PART OF KIT 149-402
	149-589	1	CARTRIDGE MANIFOLD	PART OF KIT 149-627
13.	149-433	-	HYDRAULIC VALVE	TORQUE TO 150 FT. LBS.
	500-957	-	SEAL REPAIR KIT	FITS 149-433
	149-456	-	O-RING (-023 D90)	FITS 149-433
	155-750	-	O-RING (022 D90)	FITS 149-433
	157-508	-	BACKUP RING (Q22 D90)	FITS 149-433
	149-566	2	HYDRAULIC VALVE	TORQUE TO 80-90 FT. LBS, TIGHTEN ONLY AT BASE WITH DEEP SOCKET
	191-031	-	SEAL REPAIR KIT	FITS 149-566
14.	149-377	1	HYDRAULIC ADAPTER, SPECIAL	PART OF KIT 149-627
15.	149-425	1	UNION (160-16090, SPECIAL)	PART OF KIT 149-627
16.	115-680	1	ABRASION SLEEVE (2.07" X 21")	
17.	115-715	1	ABRASION SLEEVE (2.07" X 42")	

FOOTNOTES

190-965 RELIEF KIT, INCLUDES REFERENCE PART NUMBERS 10, 13

PART NUMBER 149-368 (2) NOT SHOWN

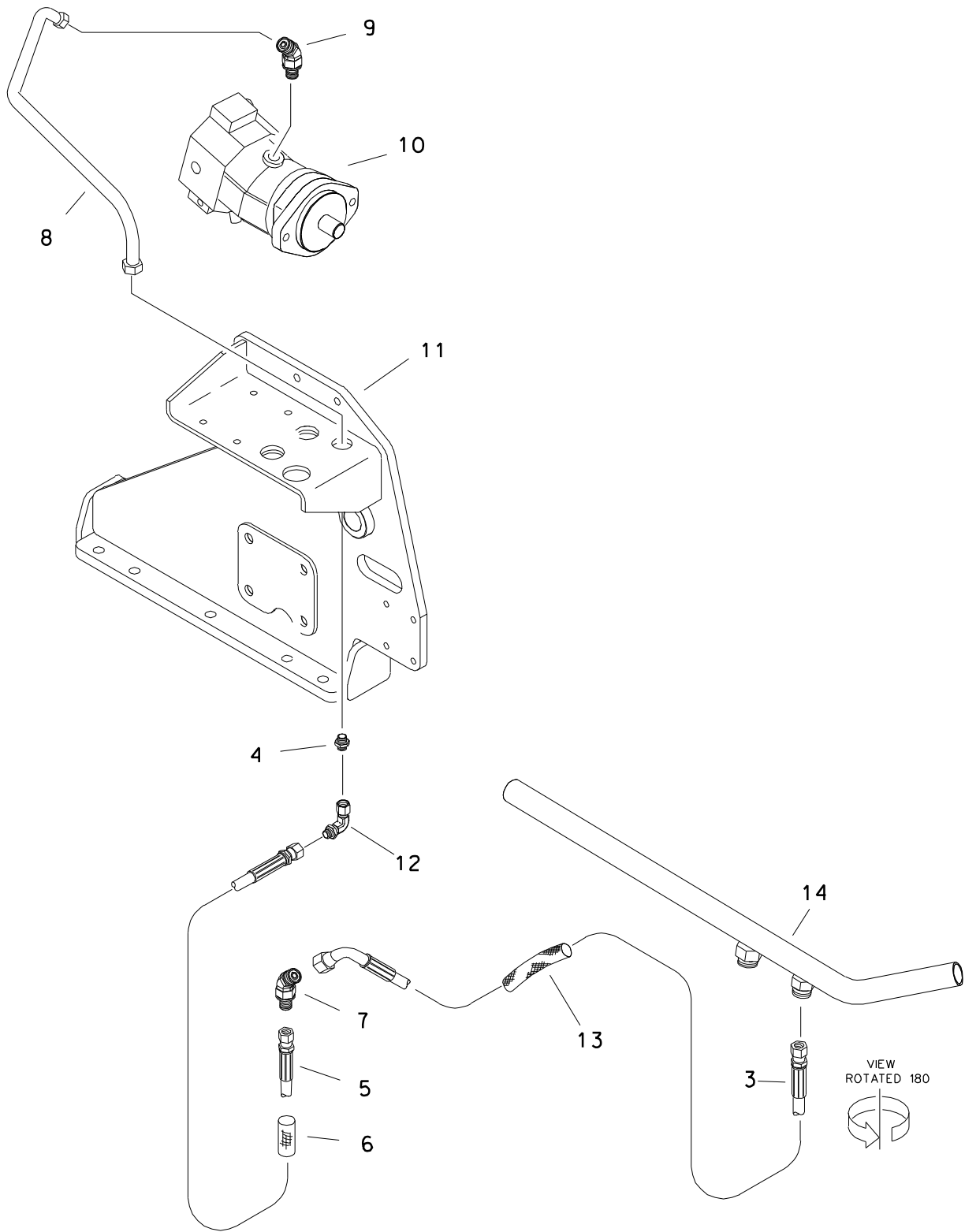
191-005 RELIEF KIT, INCLUDES REFERENCE PART NUMBERS 10,13 & 149-627

NOT SHOWN: 149-627 VALVE BODY ASS'Y, INCLUDES REFERENCE PART NUMBERS 8,9,12,14,15.

NOTE:

REFER TO O-RING CHART (800-310) IN BACK OF BOOK FOR REPLACEMENT OF O-RINGS

ROTATION MOTOR / CASE DRAIN HYDRAULICS



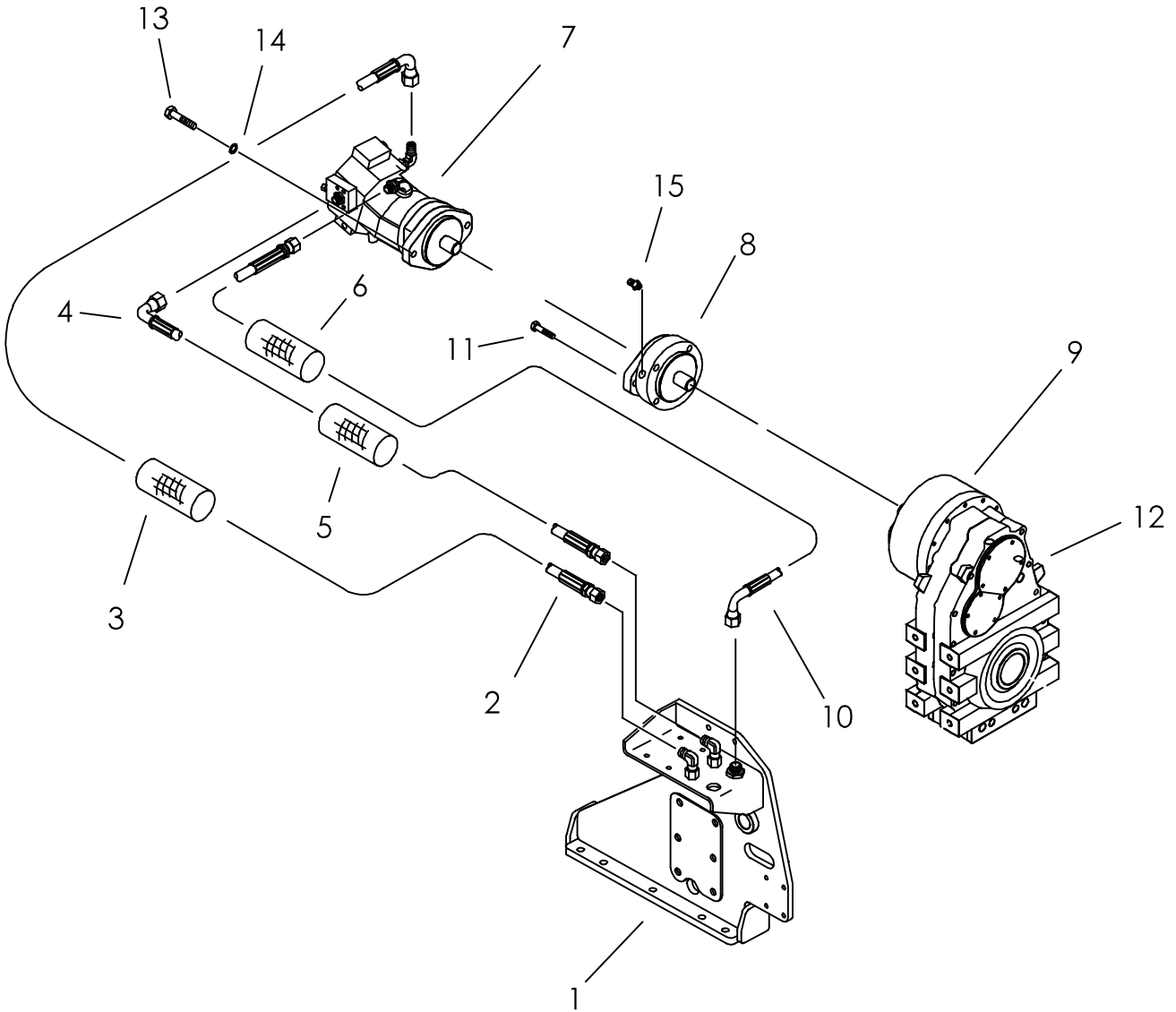
ROTATION MOTOR / CASE DRAIN HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-614	1	HYD RESERVOIR	
2.	154-286	1	CONNECTOR (120-16S90)	
3.	155-470	1	HOSE (120FX90M-90"-3000)	
4.	514-004	1	BK CONNECTOR (120-120BK)	
5.	515-431	1	HOSE (120FX-210"-3000)	
6.	116-634	1	ABRASION SLEEVE (1.59" X 65")	
7.	154-448	1	BK CONNECTOR (120-12045BK)	
8.	156-890	1	HYD LINE (120FX-468.8")	
9.	154-338	1	CONNECTOR (12S-12090, XL)	
10.	158-012	1	HYD MOTOR	
	197-075		REBUILT 158-012 HYD. MOTOR	
	190-906		SEAL REPAIR KIT	
	157-750		SHAFT SEAL	
	217-745		CONTROL SOLENOID	
	499-176		CONNECTOR PLUG	
11.	350-752	-	RIGHT CARRIAGE SIDE	
12.	154-457	1	UNION (120-120FX90)	
13.	115-924	1	ABRASION SLEEVE (1.59" X 88")	
14.	156-876	-	HYD LINE (16)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR THE REPLACEMENT OF O-RINGS.

SPINDLE BRAKE



SPINDLE BRAKE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-752	-	RIGHT CARRIAGE SIDE	REUSE EXISTING SIDEPLATE & FITTINGS
2.	515-732	-	HOSE (160FX90M-40"-6000)	REUSE EXISTING HOSE
3.	115-715	-	ABRASION SLEEVE (2.07" X 42")	REUSE EXISTING ABRASION SLEEVE
4.	149-777	1	HOSE (160FX90S-26"-6000)	
5.	117-296	1	ABRASION SLEEVE (2.07" X 30")	
6.	117-678	1	ABRASION SLEEVE (1.75" X 29")	
7.	158-012	-	HYDRAULIC MOTOR	OBSOLETE REUSE EXISTING MOTOR & FITTINGS
	153-245	-	HYDRAULIC MOTOR	
8.	160-1099	1	MODULAR BRAKE	SEE FOOTNOTE 1 & 2
	500-1283	-	OIL SEAL	
	191-166	-	O-RING KIT (160-510)	
	191-167	-	GASKET KIT (160-510)	
	191-168	-	BEARING KIT (160-510)	
	191-169	-	STACK SERVICE KIT (160-510)	
	163-212	-	BLEEDER SCREW, DISC BRAKE	
9.	166-152	-	ROTATION GEARBOX PLANETARY	
10.	149-823	1	HOSE (120FX90L-26"-3000)	
11.	107-495	4	BLT (1/2-NC X 4.50", SOC) GD 8	USE 242 LOCTITE
12.	166-148	-	ROTATION DRIVE GEARBOX	REUSE EXISTING GEARBOX
13.	105-997	-	BOLT (5/8-NC X 1-3/4", SOC)	REUSE EXISTING BOLTS, USE 242 LOCTITE
14.	106-398	-	WASHER (M16, HARDENED)	REUSE EXISTING WASHERS
15.	154-411	1	CONNECTOR (04S-060)	SEE FOOTNOTE 2

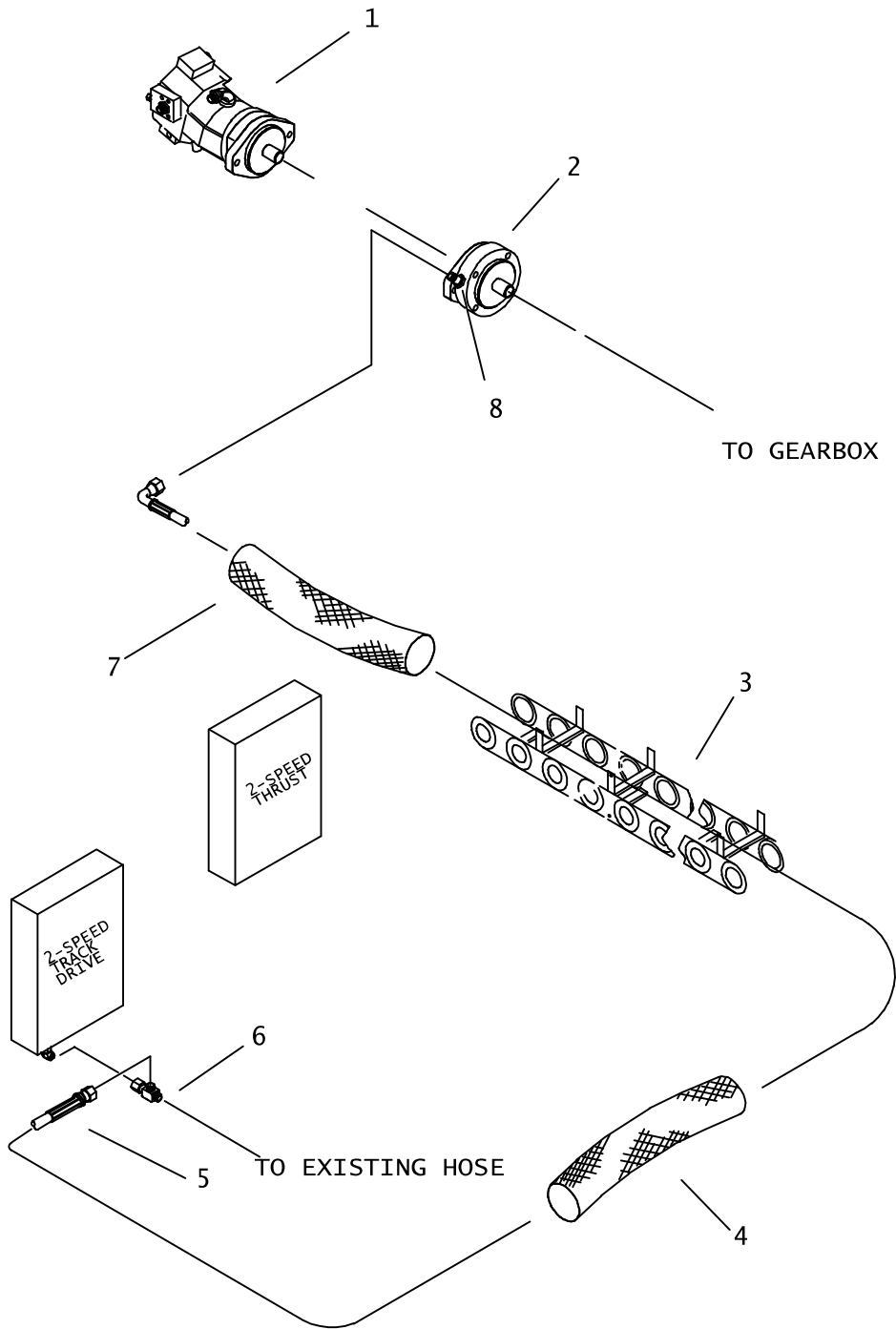
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FOOTNOTES:

- BRAKE IS SHIPPED DRY. BEFORE INSTALLING FILL WITH 5 OZ. OF THF LOCATION OF THE FILLER DRAIN PORT IS APPROXIMATELY MIDWAY BETWEEN FRONT & REAR OF THE BODY. PUT THE 5 OZ. OF THF IN ONE OF THESE PORTS.
- LOCATION OF THE PRESSURE/BLEEDER PORTS IS NEARER THE MOTOR MOUNT END OF THE BODY. ONE OF THESE PORTS WILL HAVE A BLEEDER VALVE IN IT. INSTALL THE CONNECTOR FITTING IN THE OTHER PORT AND POINT TOWARD HOSE TRACK SIDE OF CARRIAGE.

NOTE:

SPINDLE BRAKE HYDRAULICS



SPINDLE BRAKE HYDRAULICS

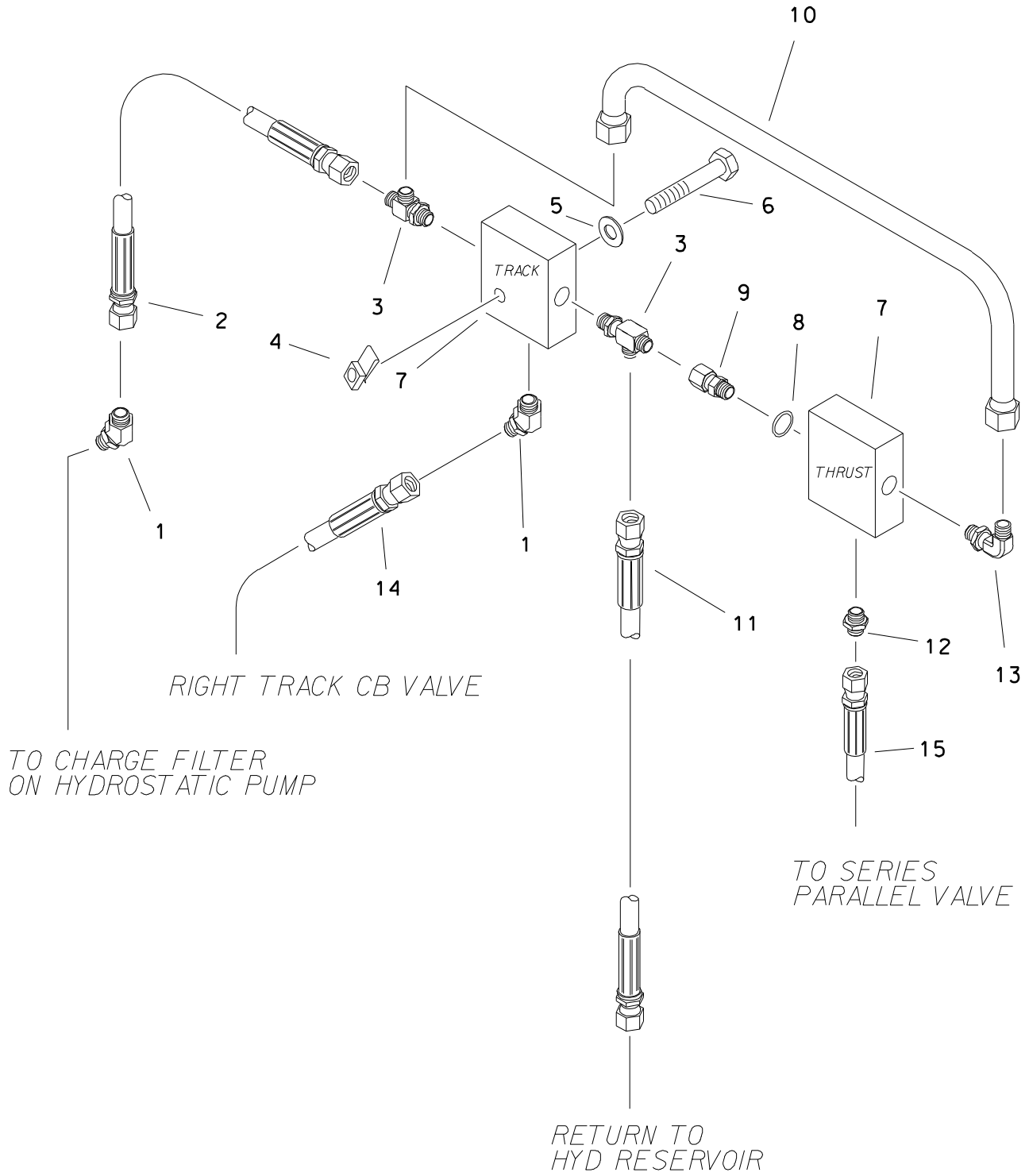
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	158-012	-	HYDRAULIC MOTOR	OBSOLETE
	153-245	-	HYDRAULIC MOTOR	
2.	160-1099	-	MODULAR BRAKE	
	500-1283	-	OIL SEAL	
	191-166	-	O-RING KIT	
	191-167	-	GASKET KIT	
	191-168	-	BEARING KIT	
	191-169	-	STACK SERVICE KIT	
	163-212	-	BLEEDER SCREW, DISC BRAKE	
3.	350-767	-	HOSE TRACK (5" X 150")	
4.	117-209	-	ABRASION SLEEVE (1.00" X 90")	
5.	149-824	1	HOSE (060FX90S-240"-3000)	
6.	154-344	1	UN RUN TEE (060FX-060-060)	
7.	117-676	1	ABRASION SLEEVE (1.00" X 30")	
8.	154-411	-	CONNECTOR (04S-060)	

NOT SHOWN:

FOOTNOTES:

NOTE:

2-SPEED TRACK AND THRUST



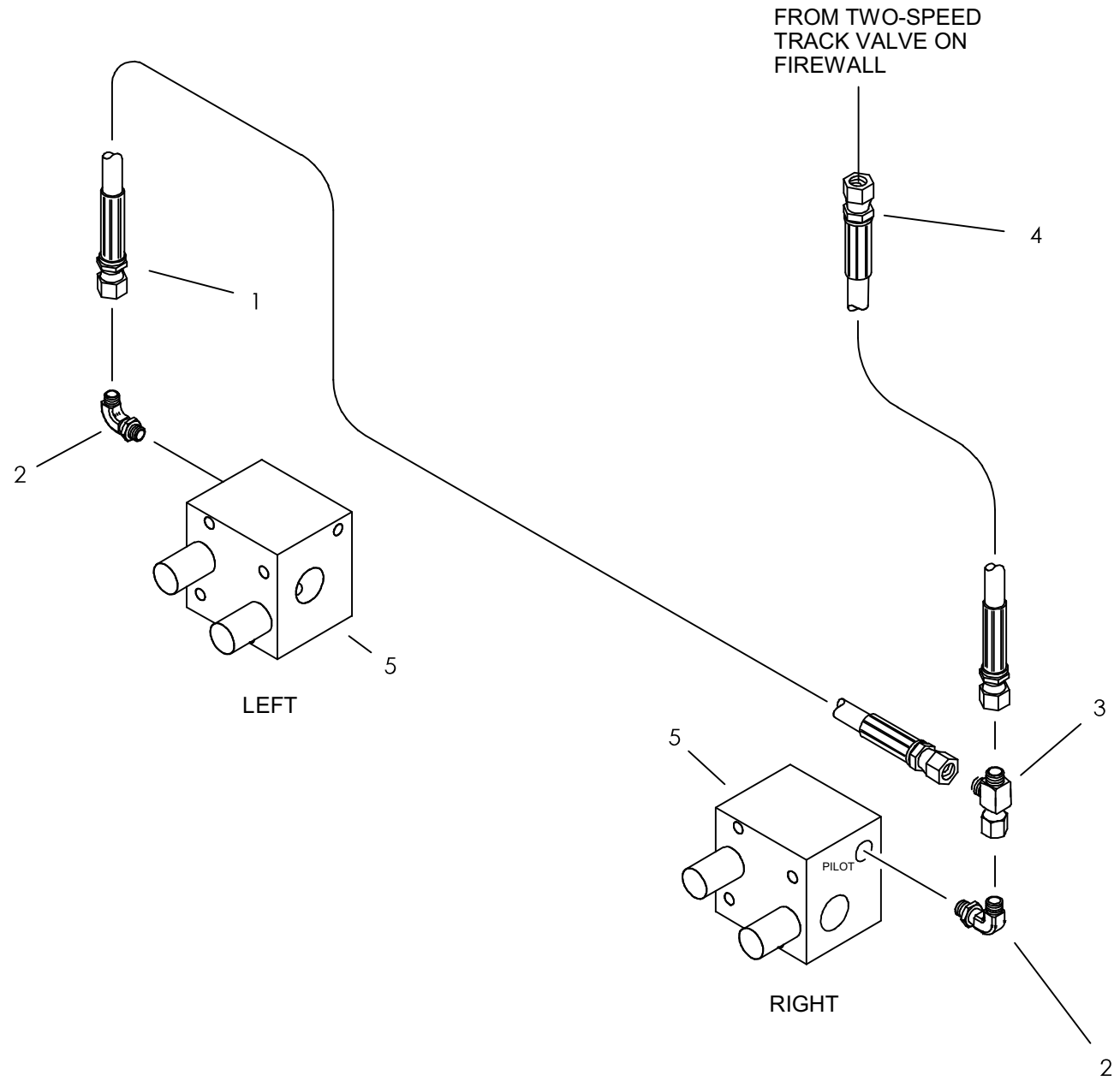
2-SPEED TRACK AND THRUST

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-224	2	CONNECTOR (06S-06045)	
2.	154-832	1	HOSE (060FX-23"-3000)	
3.	154-345	2	RUN TEE (06S-060-060)	
4.	106-574	4	CLIP NUT (M6-1.00)	
5.	105-095	4	WASHER (1/4")	
6.	107-025	4	SCREW (M6-1.0 X 50mm)	
7.	158-627	2	SOLENOID VALVE	
	500-756	1	SEAL REPAIR KIT	
	217-770	1	SOLENOID COIL	
	158-636	1	SOLENOID VALVE CARTRIDGE	
8.	155-705	1	O-RING (906 D90)	
9.	514-409	1	UNION (06J-060FX)	
10.	156-295	1	HYD LINE (060FX)	
11.	154-722	1	HOSE (060FX-32"-3000)	
12.	154-220	1	CONNECTOR (040-06S)	
13.	154-342	1	CONNECTOR (06S-06090)	
14.	154-806	1	HOSE (060FX-54"-3000)	
15.	154-692	1	HOSE (040FX-54"-3000)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

TRACK SHIFT



TRACK SHIFT

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-797	1	HOSE (060FX-48"-3000)	
2.	514-049	2	CONNECTOR (04S-06090)	
3.	154-344	1	UNION RUN TEE (060FX-060-060)	
4.	154-806	1	HOSE (060FX-54"-3000)	
5.	159-453	-	COUNTERBALANCE MANIFOLD	OBSOLETE, SERVICE CARTRIDGE

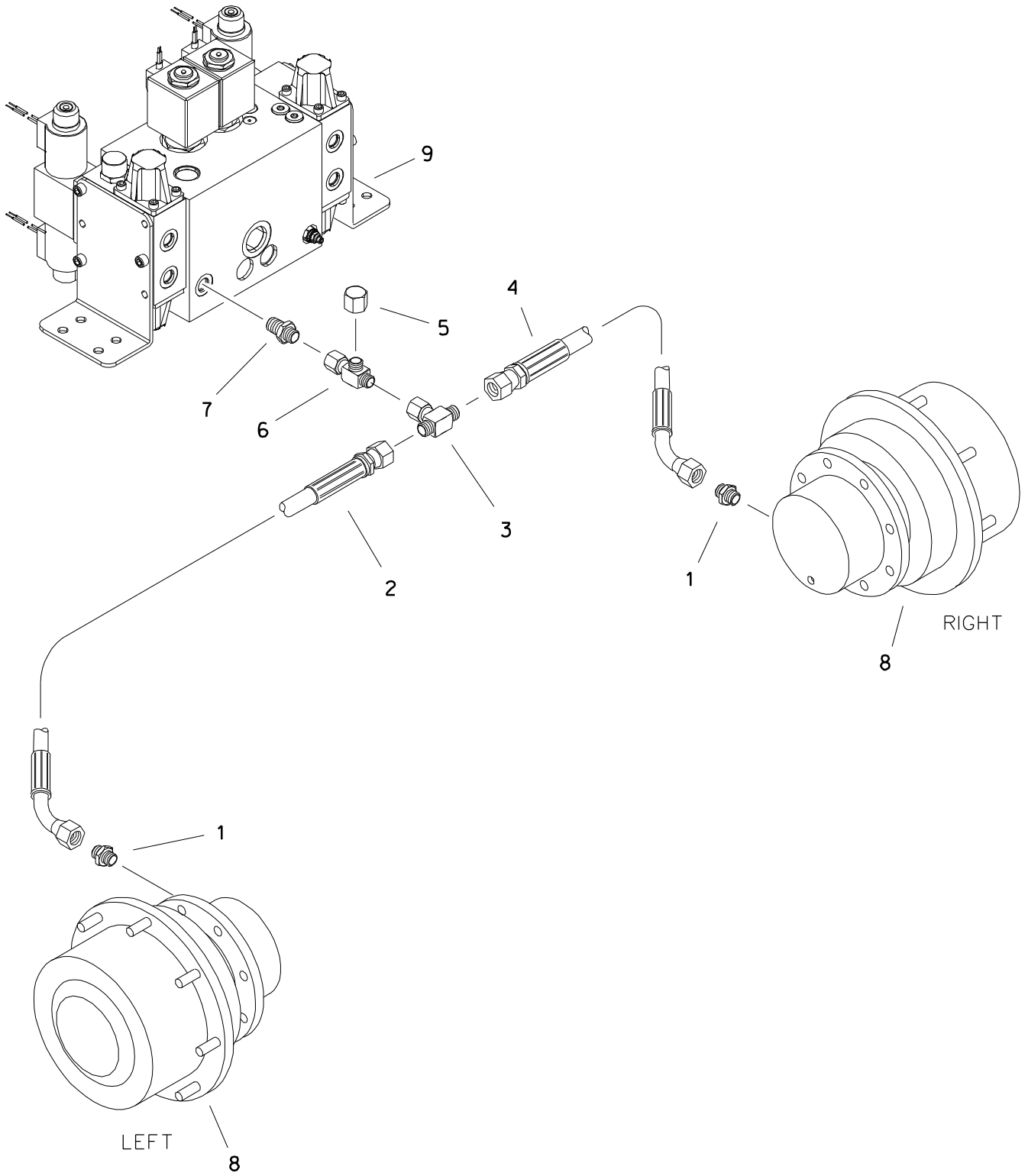
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FOOTNOTES:

NOTE:

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

TRACK BRAKE



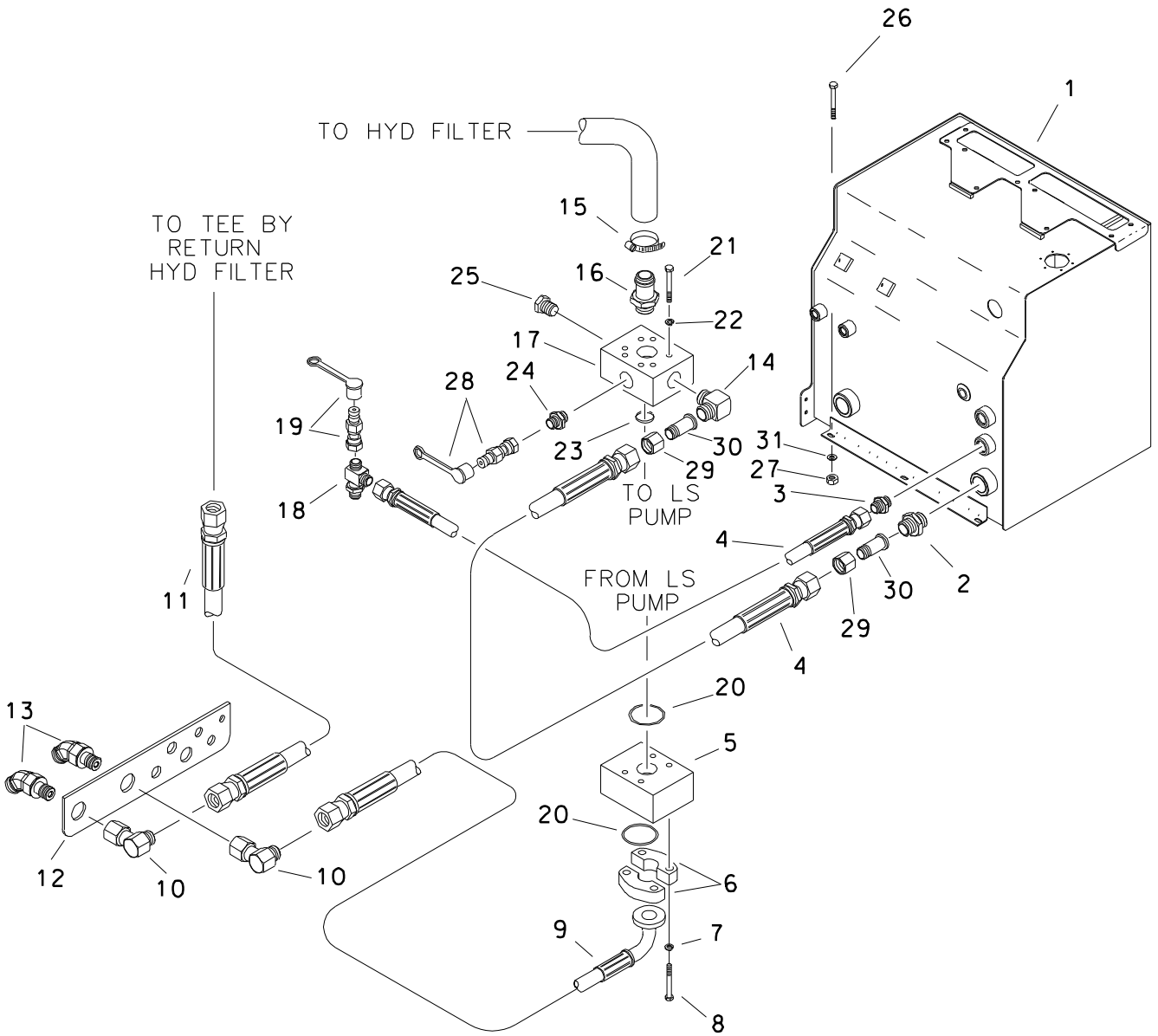
TRACK BRAKE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-411	2	CONNECTOR (04S-060)	
2.	515-188	1	HOSE (060FX90S-23"-3000)	
3.	154-348	1	UNION BR TEE (060FX-060-060)	
4.	154-738	1	HOSE (060FX90-34"-3000)	
5.	154-326	1	CAP (060F)	
6.	154-344	1	UNION RUN TEE (060FX-060-060)	
7.	154-221	1	CONNECTOR (06S-060)	
8.	166-218	2	PLANETARY GEARBOX (22.04:1)	
	157-613		INTERNAL SEAL	
9.	516-119	1	HYD CONTROL VALVE	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

THRUST TRACK DRIVE PUMP HYDRAULICS



THRUST TRACK DRIVE PUMP HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-614	-	HYDRAULIC RESERVOIR	
2.	154-497	1	CONNECTOR (160-20S)	
3.	154-308	1	CONNECTOR (100-12S)	
4.	154-698	2	HOSE (100FX-26"-2750)	
5.	354-441	1	MANIFOLD BLOCK	
6.	155-947	2	SPLIT FLANGE (16SF, PAIR)	
7.	105-072	4	LOCK WASHER (3/8")	INCL REF NO'S 7, 8, 9 AND 21
8.	105-081	4	BOLT (3/8-NC X 3-1/4")	
9.	515-653	1	HOSE (160FX-16FL90-27"-3000)	
10.	154-290	2	UNION (160-160FX90)	
11.	154-815	1	HOSE (160FX-48"-4000)	
12.	350-740	-	BULKHEAD PLATE	
13.	514-242	2	BK CONNECTOR (160-16045BK)	
14.	514-196	1	CONNECTOR (160-20S90)	
15.	110-250	1	WORM CLAMP (1-1/4" TO 2-1/8")	
16.	514-138	1	S/O COUPLER (24S-24H)	
17.	159-437	1	PUMP INLET MANIFOLD	
18.	154-317	1	RUN TEE (10S-100-100)	
19.	159-159	1	QDC ADAPTER (02-100FX)	
	159-148		DUST CAP (1/8")	
20.	157-029	2	O-RING (219 D90)	
21.	105-111	4	BOLT (1/2-NC X 4")	
22.	105-070	4	LOCK WASHER (.500")	
23.	157-015	1	O-RING (232 D70)	
24.	154-234	1	CONNECTOR (080-12S)	
25.	155-144	1	PLUG (20S)	
26.	106-992	6	FLG LCK SCREW (M8-1.25 X 25mm)	
27.	106-561	6	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
28.	159-158	1	QDC ADAPTER (02-080FX)	
	159-148		DUST CAP (1/8")	
29.	154-340	2	REDUCER NUT (160F)	
30.	154-442	2	REDUCER STEM (100)	
31.	105-118	6	WASHER (3/8")	

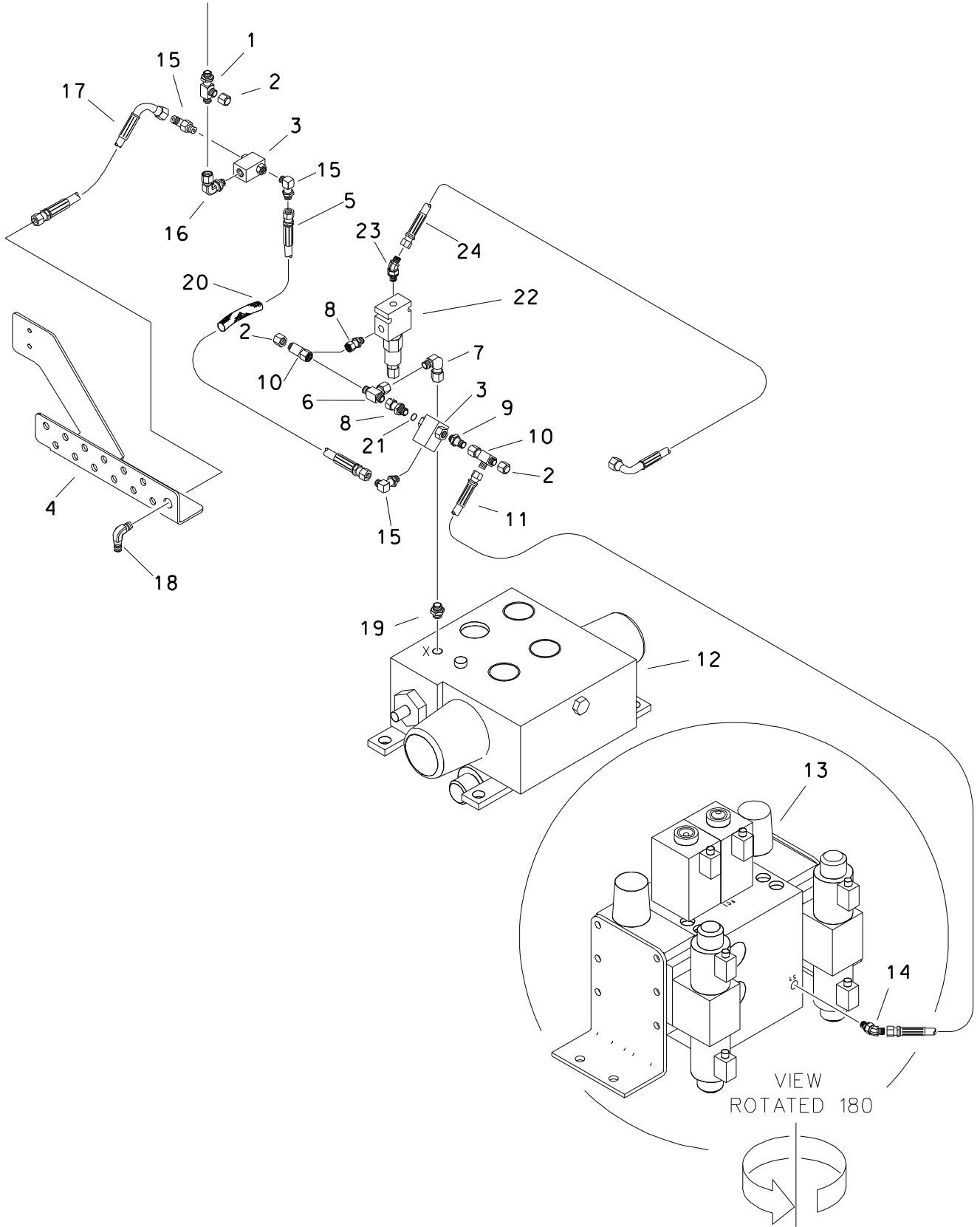
FOOTNOTES

NOTE

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

LOAD SENSE HYDRAULICS

ENDS WITH S/N 2S1110, 2S1112 & 2R3287
TO THRUST PUMP



LOAD SENSE HYDRAULICS
ENDS WITH S/N 2S1110, 2S1112 & 2R3287

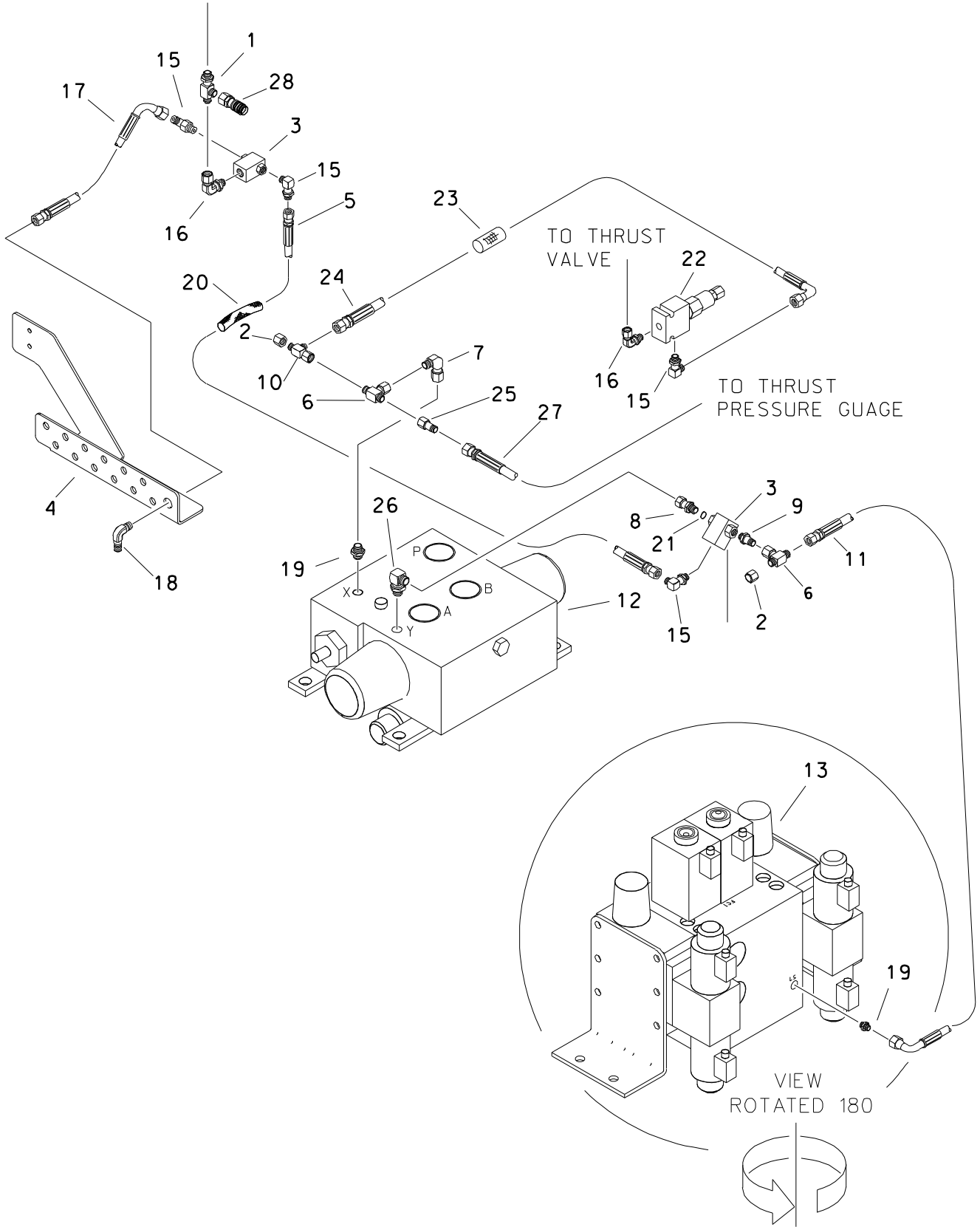
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-345	1	RUN TEE (06S-060-060)	
2.	154-326	3	CAP (060F)	
3.	158-600	2	HYD SHUTTLE VALVE	
4.	354-466	-	BULKHEAD PLATE	
5.	154-808	1	HOSE (060FX-74"-3000)	
6.	154-348	1	UNION BR TEE (060FX-060-060)	
7.	154-228	1	UNION (060-060FX90)	
8.	514-409	2	UNION (06J-060FX)	
9.	154-221	1	CONNECTOR (06S-060)	
10.	154-344	2	UNION RUN TEE (060FX-060-060)	
11.	515-089	1	HOSE (060FX-15"-3000)	
12.	516-092	-	THRUST VALVE (ELECTRIC)	
	157-440	-	THRUST VALVE (ELECTRIC)	
13.	516-119	-	HYD CONTRDL VALVE	
14.	514-414	1	CONNECTOR (04S-06045)	
15.	154-342	3	CONNECTOR (06S-06090)	
16.	154-343	1	UNION (06S-060FX90)	
17.	515-221	1	HOSE (060FX90S-28"-3000)	
18.	154-229	1	BK CONNECTOR (060-06090BK)	
19.	154-411	1	CONNECTOR (04S-060)	
20.	117-702	1	ABRASION SLEEVE (1.00" X 68")	
21.	155-705	1	O-RING (906 D90)	
22.	516-121	1	VALVE	
23.	154-224	1	CONNECTOR (06S-06045)	
24.	154-929	1	HOSE (060FX90-19"-3000)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

LOAD SENSE HYDRAULICS

BEGINS S/N 2S1111, 2S1113 & 2R3288
TO THRUST PUMP



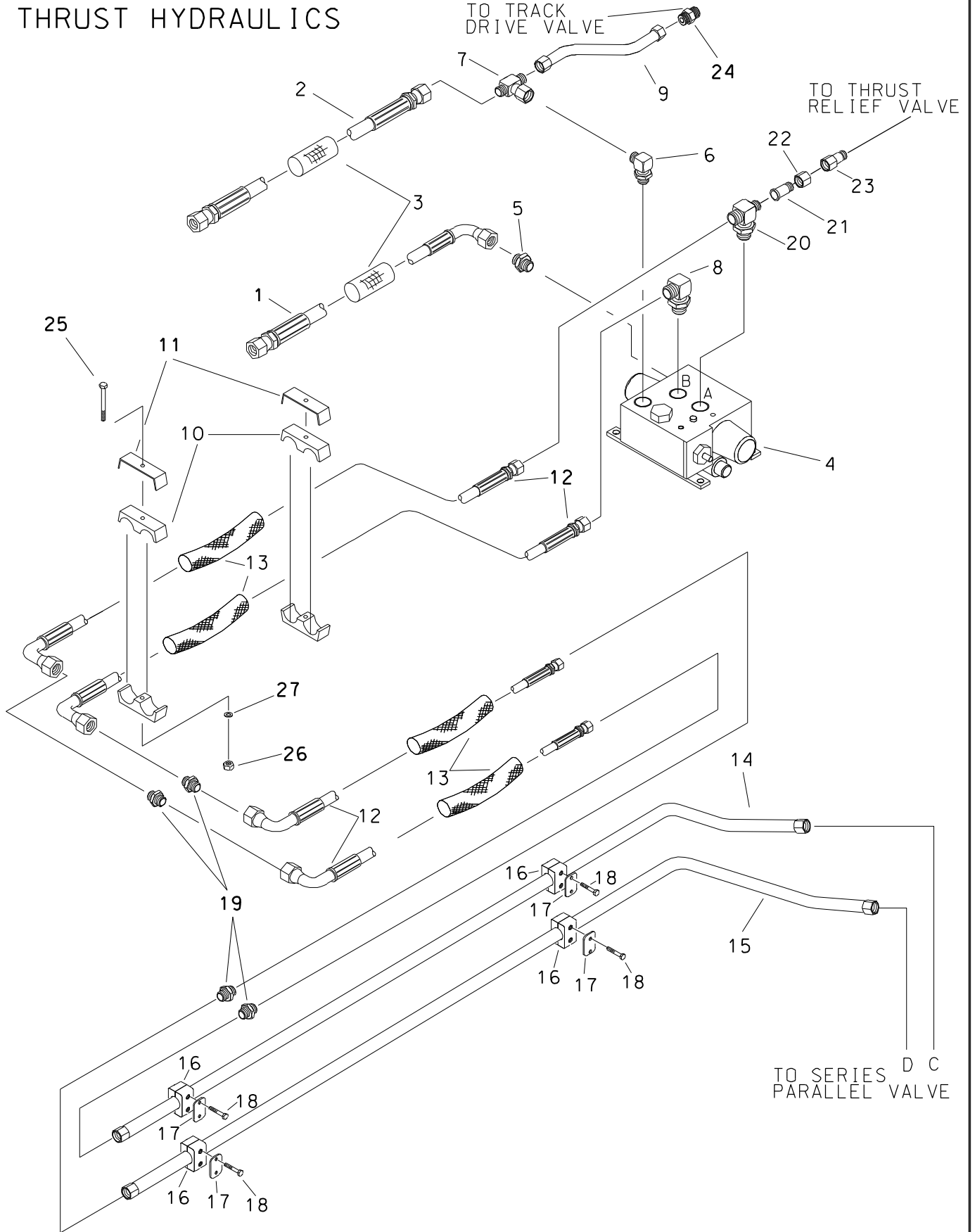
LOAD SENSE HYDRAULICS
BEGINS S/N 2S1111, 2S1113 & 2R3288

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-345	1	RUN TEE (06S-060-060)	
2.	154-326	2	CAP (060F)	
3.	158-600	2	HYD SHUTTLE VALVE	NOT SERVICABLE PER SUPPLIER
4.	354-466	-	BULKHEAD PLATE	
5.	154-808	1	HOSE (060FX-74"-3000)	
6.	154-348	1	UNION BR TEE (060FX-060-060)	
7.	154-228	1	CONNECTOR (060-060FX90)	
8.	514-409	1	UNION (06J-060FX)	
9.	154-221	1	CONNECTOR (06S-060)	
10.	154-344	2	UNION RUN TEE (060FX-060-060)	
11.	149-559	1	HOSE (060FX90M-20"-3000)	
12.	<u>516-092</u>	-	THRUST VALVE (ELECTRIC)	
	157-440	-	THRUST VALVE (ELECTRIC)	
13.	516-119	-	HYD CONTRDL VALVE	
	217-897	-	SOLENOID COIL	
	214-434	-	SOLENOID COIL	
	149-565	-	CONNECTOR (8N-120)	
14.	514-414	1	CONNECTOR (04S-06045)	
15.	154-342	4	CONNECTOR (06S-06090)	
16.	154-343	2	CONNECTOR (06S-060FX90)	
17.	515-221	1	HOSE (060FX90S-28"-3000)	
18.	154-229	1	BK CONNECTOR (060-06090BK)	
19.	154-411	3	CONNECTOR (04S-060)	
20.	117-702	1	ABRASION SLEEVE (1.00" X 68")	
21.	155-705	1	O-RING (906 D90)	
22.	516-121	1	VALVE	
23.	117-611	1	ABRASION SLEEVE (1.00" X 22")	
24.	515-188	1	HOSE (060FX90S-23"-3000)	
25.	154-373	1	REDUCER (040-060F)	
26.	514-049	1	CONNECTOR (04S-06090)	
27.	515-161	1	HOSE (040FX-160"-3000)	
28.	159-157	1	QDC ADAPTER (02-060F)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

THRUST HYDRAULICS



THRUST HYDRAULICS

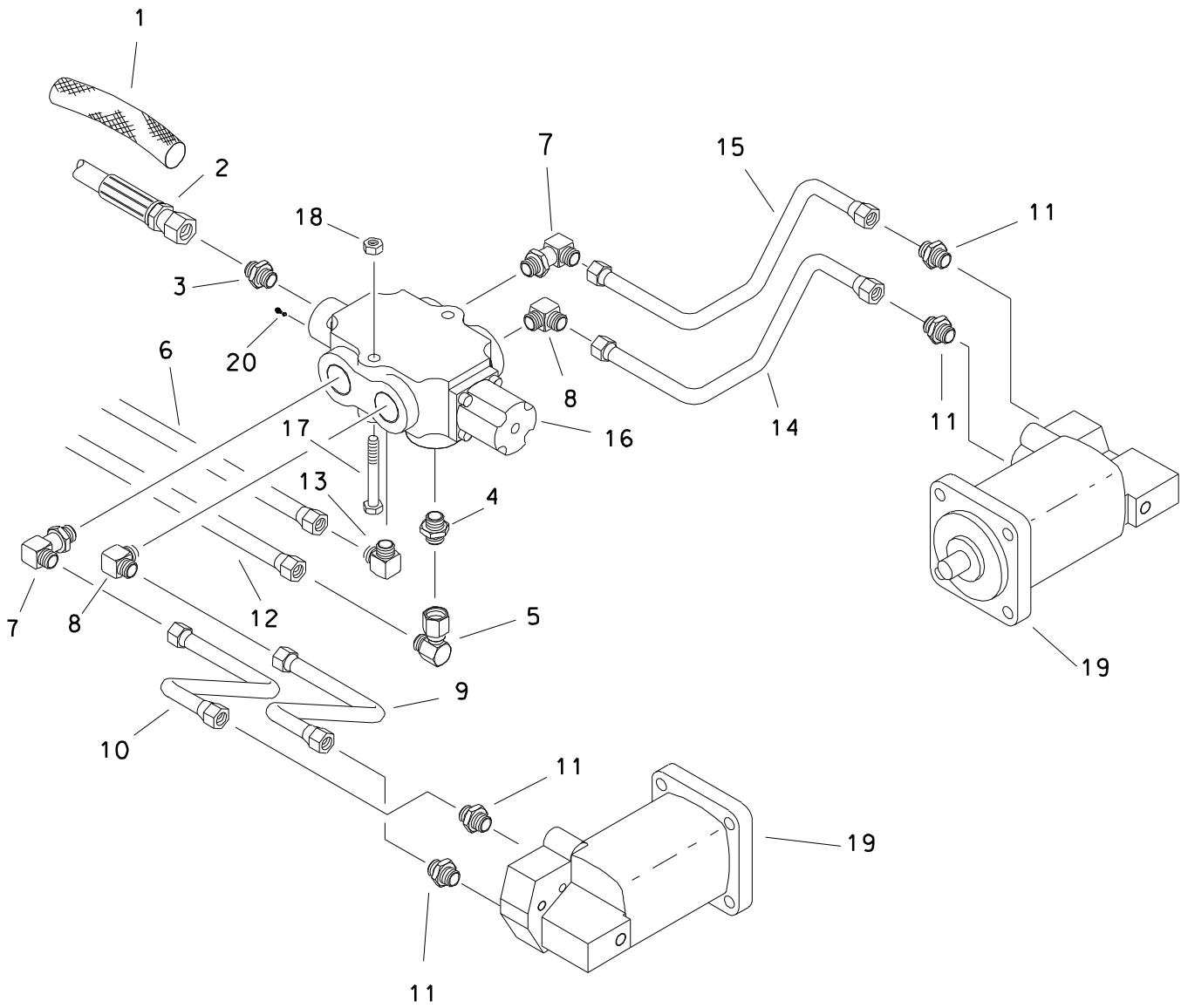
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	515-655	1	HOSE (160FX90-47"-3000)	
2.	515-652	1	HOSE (160FX-47"-3000)	
3.	115-715	2	ABRASION SLEEVE (2.07" X 42")	
4.	516-092	-	THRUST VALVE (ELECTRIC)	
	157-440	-	THRUST VALVE (ELECTRIC)	
5.	154-398	1	CONNECTOR (16S-160, XLG)	
6.	154-287	1	CONNECTOR (16S-16090)	
7.	154-446	1	UNION BR TEE (160FX-160-160)	
8.	154-289	1	CONNECTOR (16S-16090, XL)	
9.	156-896	1	HYD LINE (160FX-4.7")	
10.	110-359	2	BOLT-ON CLAMP (1-1/2" SET)	
11.	315-623	2	BACKUP SPACER	
12.	515-656	4	HOSE (160FX90-55"-3000)	
	149-045	1	HYD LINE (160FX-16090-53.7")	
	149-046	1	HYD LINE (160FX-16090-53.5")	
13.	117-289	4	ABRASION SLEEVE (2.07" X 55")	
14.	149-047	1	HYD LINE (160FX-160-69.4")	
15.	149-048	1	HYD LINE (160FX-160-73.2")	
16.	110-573	4	BOLT-ON CLAMP (1", PER SET)	
17.	322-289	4	BACKUP (BOLT-ON)	
18.	105-818	8	BOLT (1/4-NC X 1-1/2")	
19.	154-439	4	CONNECTOR (160-160)	
20.	154-347	1	BRANCH TEE (16S-160-160)	
21.	154-341	1	REDUCER STEM (080)	
22.	154-340	1	REDUCER NUT (160F)	
23.	154-262	1	REDUCER (060-080F)	
24.	154-281	1	CONNECTOR (16S-160)	
25.	106-602	2	SCREW (M8-1.25 X 80MM)	
26.	106-561	2	LOCKNUT (M8-1.25,PRV TRQ,10.9)	
27.	106-389	2	WASHER (M8)	

FOOTNOTES

NOTE

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR THE REPLACEMENT OF O-RINGS.

THRUST DRIVE HYDRAULICS



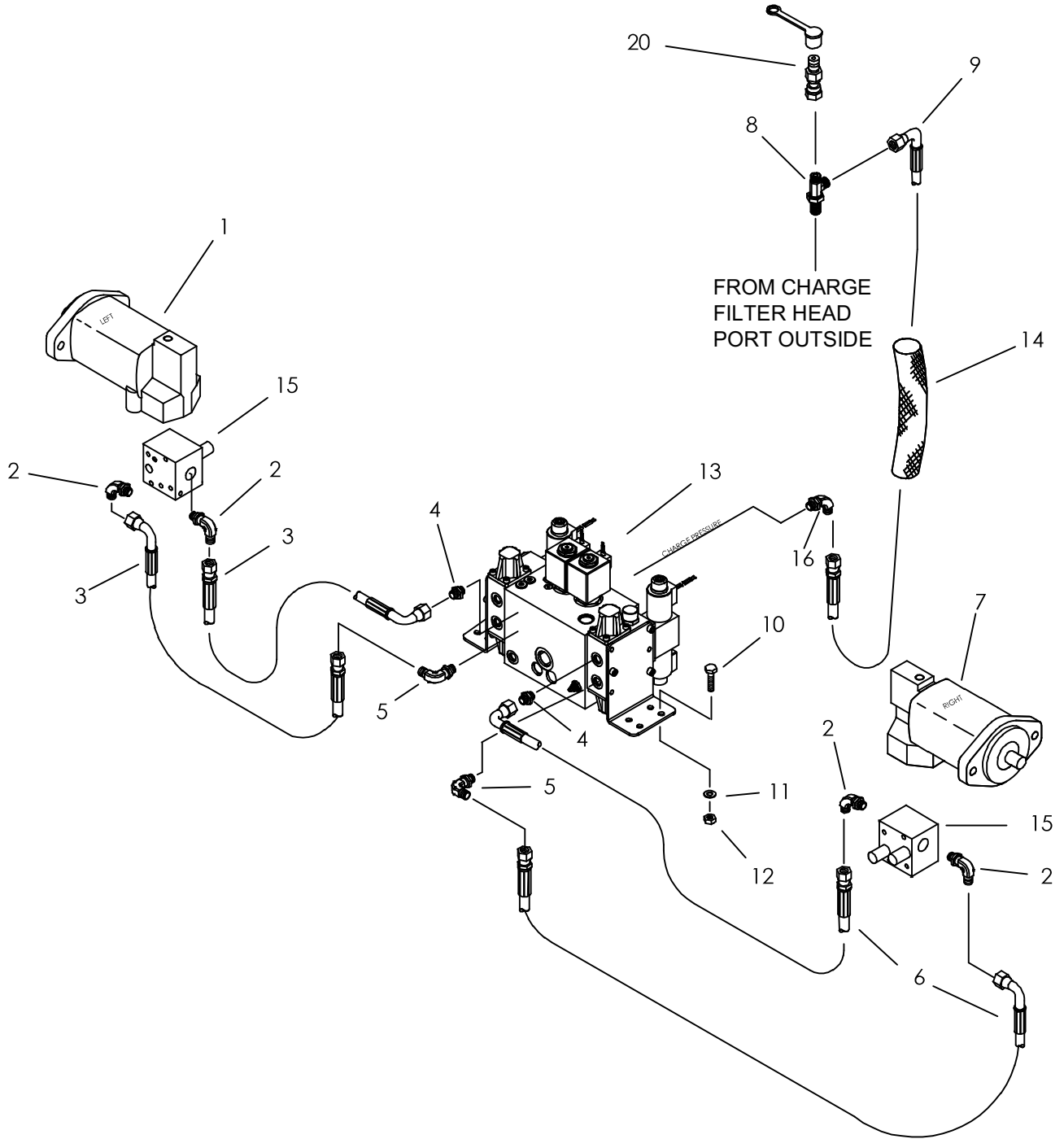
THRUST DRIVE HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	117-673	1	ABRASION SLEEVE (1.00" X 150")	
2.	154-950	1	HOSE (040FX-150"-3000)	
3.	154-278	1	CONNECTOR (04S-040)	
4.	154-281	1	CONNECTOR (16S-160)	
5.	154-290	1	UNION (160-160FX90)	
6.	149-047	1	HYD LINE (160FX)	
7.	154-338	2	CONNECTOR (12S-12090, XL)	
8.	154-270	2	CONNECTOR (12S-12090)	
9.	156-886	1	HYD LINE (120FX)	
10.	156-885	1	HYD LINE (120FX)	
11.	154-269	4	CONNECTOR (12S-120)	
12.	149-048	1	HYD LINE (160FX)	
13.	154-287	1	CONNECTOR (16S-16090)	
14.	156-884	1	HYD LINE (120FX)	
15.	156-883	1	HYD LINE (120FX)	
16.	149-343	1	HYDRAULIC VALVE	
	190-863		SEAL REPAIR KIT	
	500-698		END CAP	NOT DRILLED/TAPPED
	310-800		END CAP	DRILLED/TAPPED
17.	106-570	2	SCREW (M8-1.25 X 60mm)	
18.	106-561	2	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
19.	158-026	2	HYD MOTOR (15 CU/IN)	
20.	163-101	1	BLEEDER VALVE	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

TRACK DRIVE HYDRAULICS



TRACK DRIVE HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	158-951	1	HYD MOTOR	LEFT TRACK
2.	154-300	4	CONNECTOR (100-12S90)	
3.	515-520	2	HOSE (100FX90-15.5"-3000)	
4.	154-301	2	CONNECTOR (10S-100)	
5.	154-298	2	CONNECTOR (10S-10090)	
6.	515-597	2	HOSE (100FX90-17"-3000)	
7.	158-949	1	HYD MOTOR	RIGHT TRACK
8.	154-345	1	RUN TEE (06S-060-060)	
9.	515-151	1	HOSE (060FX90-96"-3000)	
10.	106-079	4	SCREW (M10-1.50 X 30mm)	
11.	106-396	4	WASHER (M10, HARDENED)	
12.	105-894	4	LOCKNUT (M10-1.50, PRV TRQ, 10.9)	
13.	516-119	1	HYD CONTROL VALVE	
14.	117-713	1	ABRASION SLEEVE (1.00" X 76")	
15.	159-453	2	COUNTERBALANCE MANIFOLD	OBSOLETE
	158-020		HYDRAULIC VALVE	
16.	154-224	1	CONNECTOR (06S-06045)	BACK PORT (NOT SHOWN)
17.	154-252	2	CONNECTOR (04S-04090)	
18.	154-265	1	UN RUN TEE (040FX-040-040)	
19.	154-278	2	CONNECTOR (04S-040)	
20.	159-157	1	QDC ADAPTER (02-060F)	

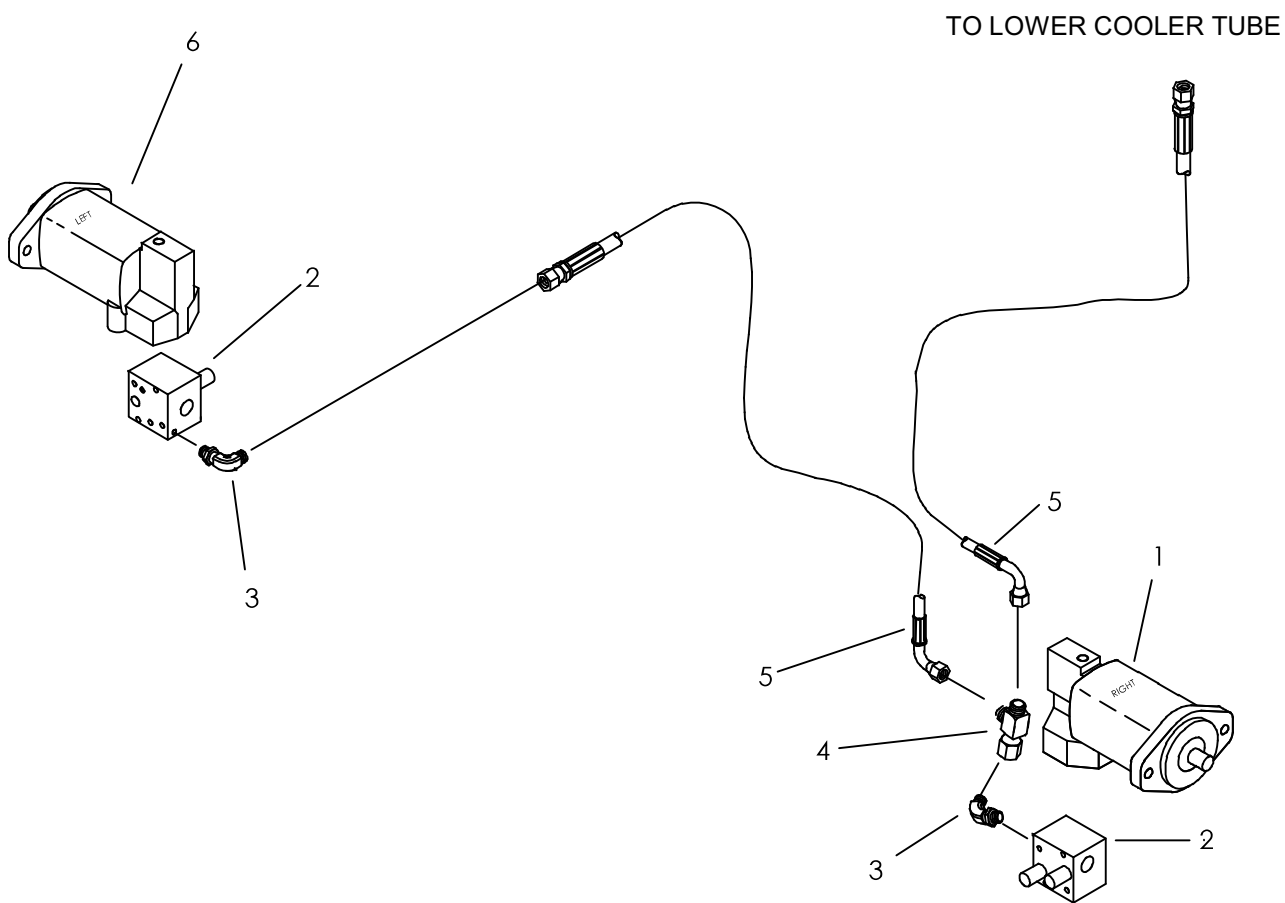
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FOOTNOTES:

NOTE:

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

TRACK CASE DRAIN HYDRAULICS



TRACK CASE DRAIN HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	158-949	-	HYDRAULIC MOTOR	
2.	159-453	-	COUNTERBALANCE MANIFOLD	OBSOLETE
3.	154-252	2	CONNECTOR (04S-04090)	
4.	154-265	1	UN RUN TEE (040FX-040-040)	
5.	154-728	2	HOSE (040FX90-36"-3000)	
6.	158-951	-	HYDRAULIC MOTOR	

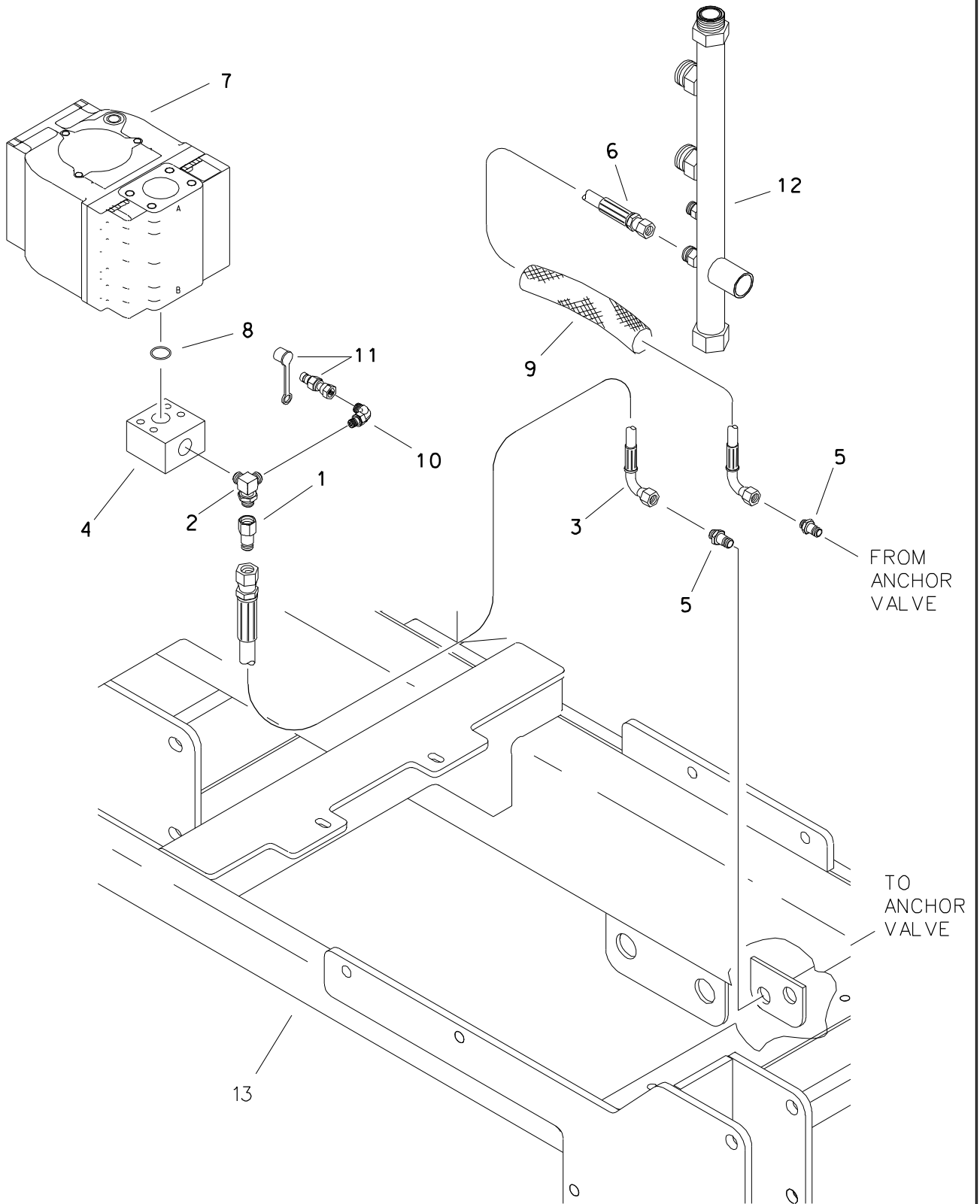
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FOOTNOTES:

NOTE:

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

ANCHOR SUPPLY HYDRAULICS



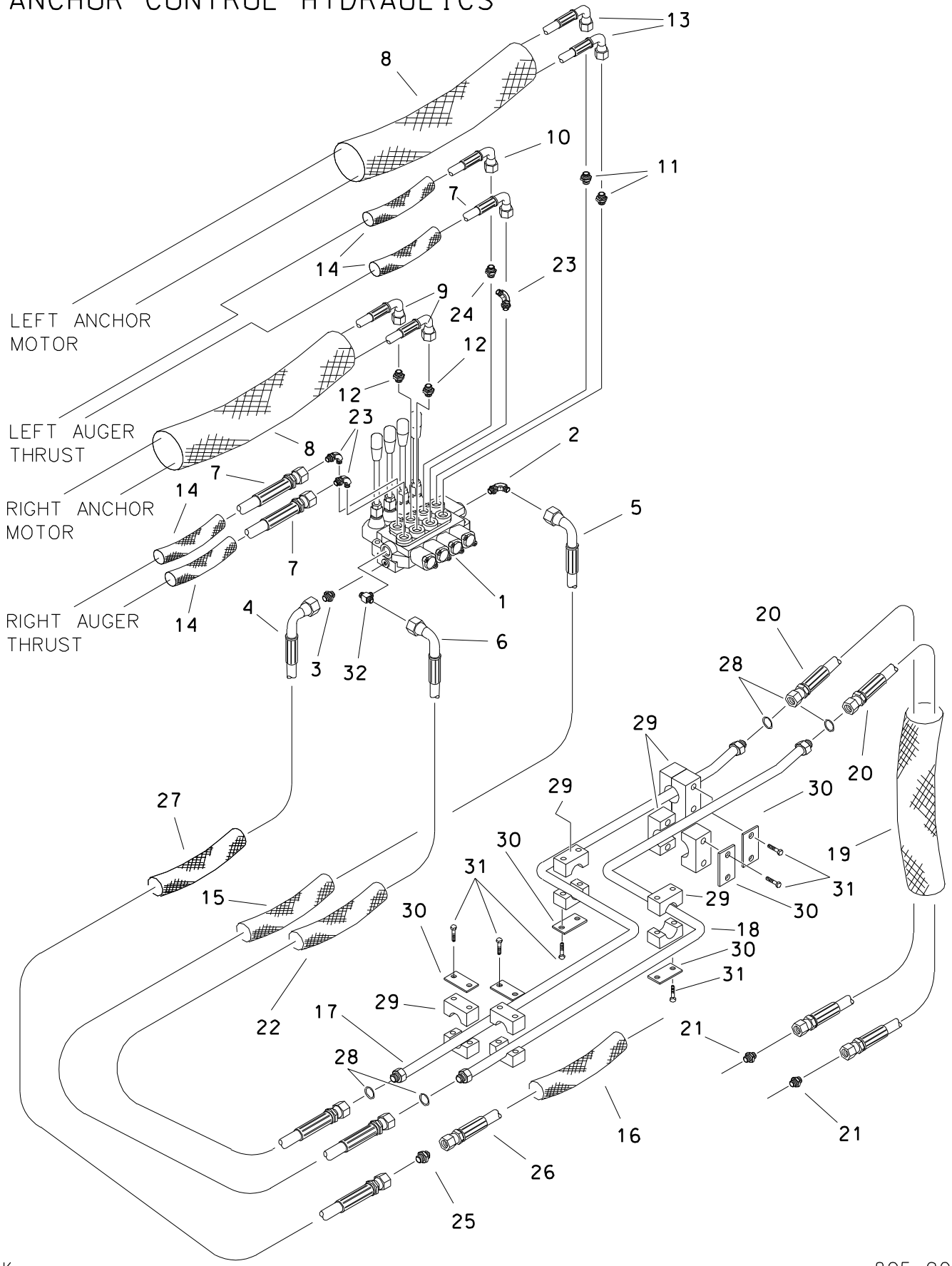
ANCHOR SUPPLY HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-441	1	REDUCER (100-120F)	
2.	154-500	1	CONNECTOR (12S-12090, 04SF)	
3.	515-454	1	HOSE (100FX90L-20"-3000)	
4.	354-441	1	MANIFOLD BLOCK	
5.	154-309	2	BK CONNECTOR (100-100BK)	
6.	515-690	1	HOSE (100FX90L-58"-3000)	
7.	158-467	-	HYDRAULIC PUMP	
	149-926	-	HYDRAULIC PUMP	
8.	157-029	1	O-RING (219 D90)	
9.	115-903	1	ABRASION SLEEVE (1.59" X 50")	
10.	154-252	1	CONNECTOR (04S-04090)	
11.	159-156	1	QDC ADAPTER (02-040F)	
	159-148	1	DUST CAP (1/8")	
12.	156-893	-	HYD LINE (240-240FX-96.6")	
13.	350-750	-	MAIN FRAME	

FOOTNOTES

NOTE:
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

ANCHOR CONTROL HYDRAULICS



ANCHOR CONTROL HYDRAULICS

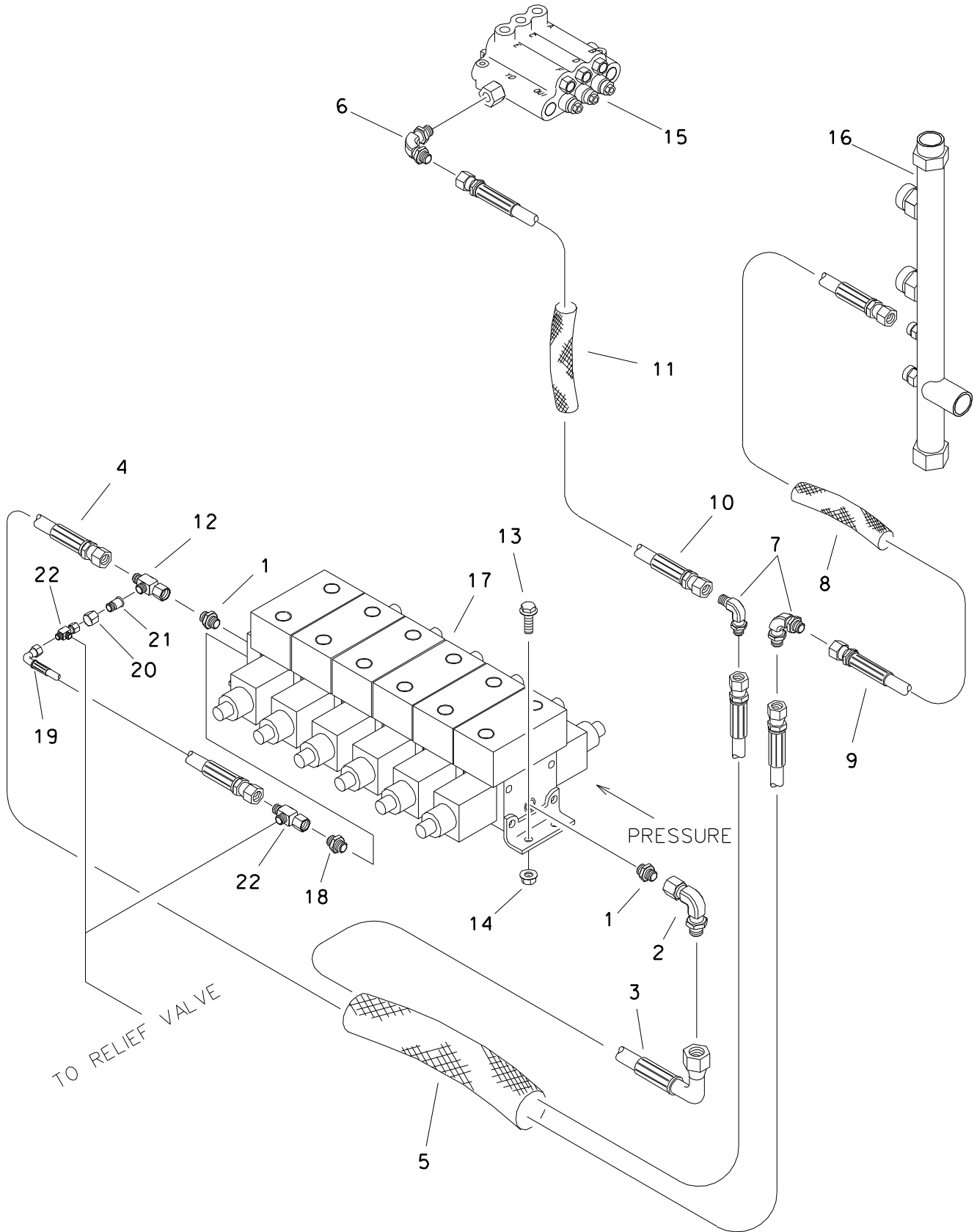
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	516-120	-	HYDRAULIC CONTROL VALVE	ANCHOR VALVE
2.	154-323	1	CONNECTOR (08S-10090)	
3.	156-174	1	CONNECTOR (06S-060)	
4.	154-846	1	HOSE (060FX45-70"-3000)	
5.	515-670	1	HOSE (100FX90-85"-3000)	
6.	515-669	1	HOSE (100FX90-74"-3000)	
7.	154-728	3	HOSE (040FX90-36"-3000)	
8.	115-715	2	ABRASION SLEEVE (2.07" X 42")	
9.	515-025	2	HOSE (080FX90-40"-3000)	
10.	515-593	1	HOSE (040FX90-38"-3000)	
11.	154-438	1	CONNECTOR (08S-080, LG)	
12.	154-233	2	CONNECTOR (08S-080)	
13.	154-838	2	HOSE (080FX90-44"-3000)	
14.	117-718	4	ABRASION SLEEVE (1" X 36")	
15.	115-817	1	ABRASION SLEEVE (1.59" X 84")	
16.	117-681	1	ABRASION SLEEVE (1.00" X 178")	
17.	156-923	1	HYD LINE (100)	
18.	156-924	1	HYD LINE (100)	
19.	115-899	1	ABRASION SLEEVE (2.54" X 54")	
20.	515-671	2	HOSE (100FX45-52"-3000)	
21.	154-309	2	BK CONNECTOR (100-100BK)	
22.	115-963	1	ABRASION SLEEVE (1.59" X 75")	
23.	154-276	3	CONNECTOR (040-08S90)	
24.	154-261	1	CONNECTOR (040-08S)	
25.	154-413	1	CONNECTOR (060-060)	
26.	155-481	1	HOSE (060FX-185"-3000)	
27.	117-713	1	ABRASION SLEEVE (1" X 76")	
28.	157-040	4	O-RING (016 D90)	
29.	110-879	8	BOLT-ON CLAMP (5/8", SET)	
30.	110-958	8	BACKUP PLATE	
31.	105-818	16	BOLT (1/4-NC X 1-1/2")	
32.	154-323	1	CONNECTOR (08S-10090)	ENDS W/ SN 2S4081
	149-117	1	BK BR TEE (12N-12090)	BEGINS W/ SN 2S4128

FOOTNOTES

NOTE:

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS

PIPELOADER SUPPLY & RETURN ENDS WITH S/N 2S4081



PIPELOADER SUPPLY & RETURN
 ENDS WITH S/N 2S4081

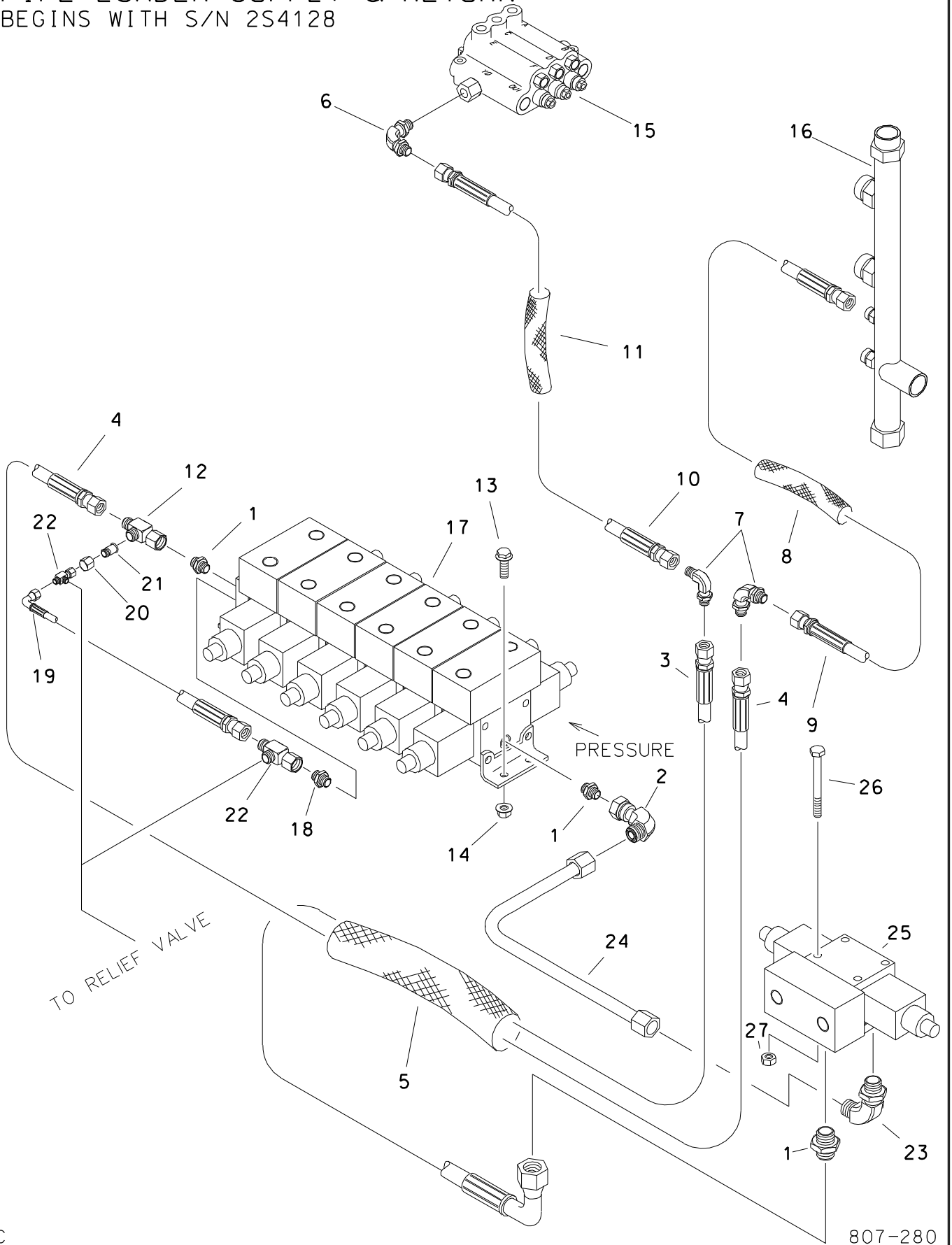
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-246	2	CONNECTOR (06S-080)	
2.	154-256	1	UNION (080-080FX90)	
3.	515-661	1	HOSE (080FX90-187"-3000)	
4.	515-660	1	HOSE (080FX-192"-3000)	
5.	117-304	1	ABRASION SLEEVE (2.07" X 176")	
6.	154-235	1	CONNECTOR (08S-08090)	
7.	154-396	1	BK CONNECTOR (080-08090BK)	
8.	117-656	1	ABRASION SLEEVE (1.59" X 45")	
9.	154-677	1	HOSE (080FX-62"-3000)	
10.	515-366	1	HOSE (080FX-52"-3000)	
11.	117-655	1	ABRASION SLEEVE (1.59" X 38")	
12.	154-266	1	UN RUN TEE (080FX-080-080)	
13.	106-159	4	FLG SCREW (1/4-NC X 3/4")	
14.	105-085	4	LOCKNUT (1/4-NC)	
15.	158-556	-	HYD CONTROL VALVE	SET-UP VALVE
16.	156-893	-	HYD LINE	
17.	516-077	-	HYD CONTROL VALVE	
	516-122	-	HYD CONTROL VALVE	PIPELOADER CONTROL VALVE
18.	154-220	1	CONNECTOR (040-06S)	
19.	154-726	1	HOSE (040FX90-15"-3000)	
20.	154-272	1	REDUCER NUT (080F)	
21.	154-248	1	REDUCER (040-080F)	
22.	154-265	2	UN RUN TEE (040FX-040-040)	FOR USE W/RELIEF VALVES PRIOR TO S/N 2S1484

FOOTNOTES

NOTE

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

PIPE LOADER SUPPLY & RETURN BEGINS WITH S/N 2S4128



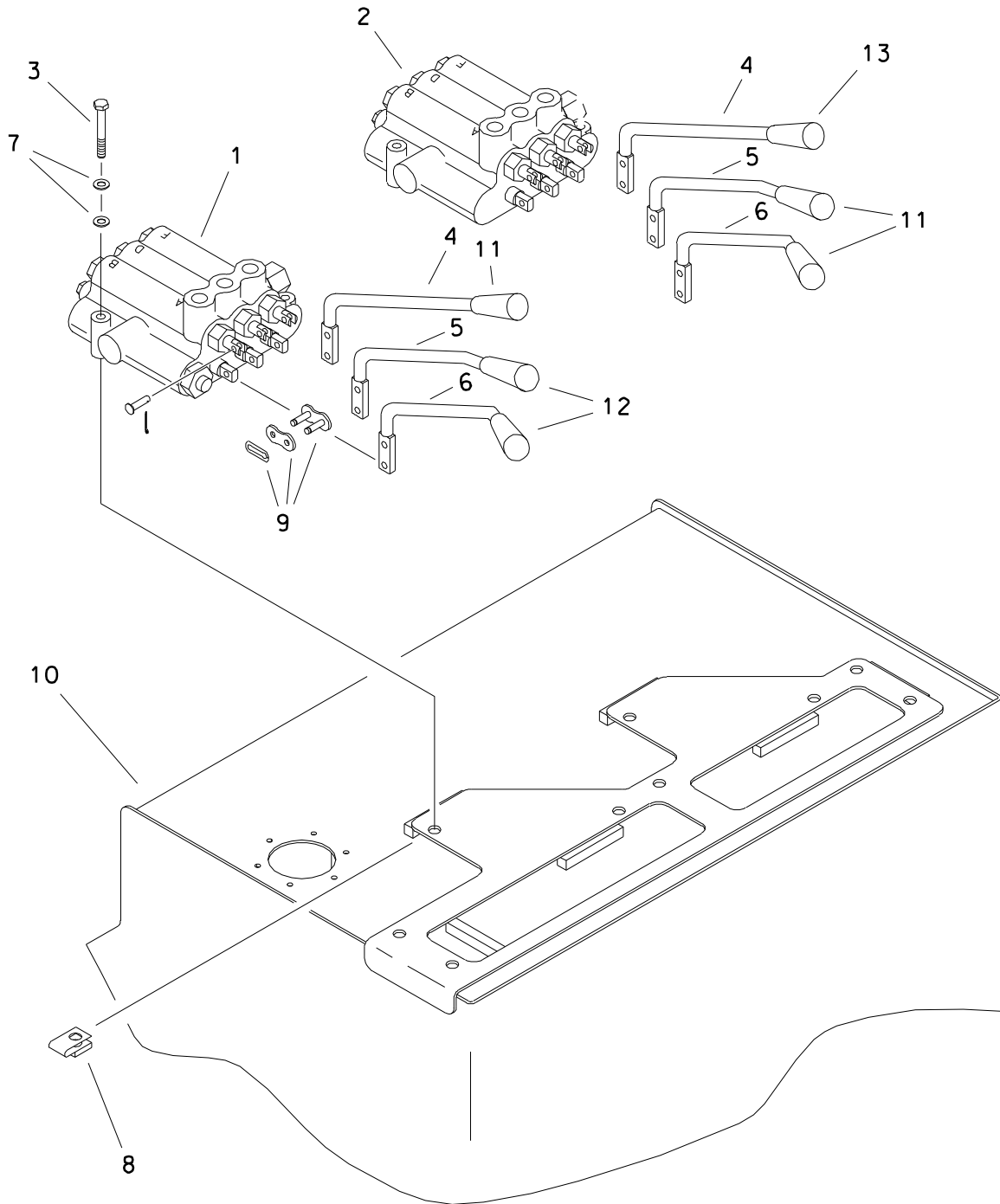
**PIPE LOADER SUPPLY & RETURN
 BEGINS WITH S/N 2S4128**

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-246	3	CONNECTOR (06S-080)	
2.	154-256	1	UNION (080-080FX90)	
3.	515-076	1	HOSE (080FX90-195"-3000)	
4.	515-660	1	HOSE (080FX-175"-3000)	
5.	117-304	1	ABRASION SLEEVE (2.07" X 176")	
6.	154-235	1	CONNECTOR (08S-08090)	
7.	154-396	1	BK CONNECTOR (080-08090BK)	
8.	117-656	1	ABRASION SLEEVE (1.59" X 45")	
9.	154-677	1	HOSE (080FX-62"-3000)	
10.	515-366	1	HOSE (080FX-52"-3000)	
11.	117-655	1	ABRASION SLEEVE (1.59" X 38")	
12.	154-266	1	UN RUN TEE (080FX-080-080)	
13.	106-159	4	FLG SCREW (1/4-NC X 3/4")	
14.	105-085	4	LOCKNUT (1/4-NC)	
15.	158-556	-	HYD CONTROL VALVE	SET-UP VALVE
16.	156-893	-	HYD LINE (240-240FX-96.6")	
17.	516-077	-	HYD CONTROL VALVE	
	516-122	-	HYD CONTROL VALVE	PIPELOADER VALVE
18.	154-220	3	CONNECTOR (040-06S)	
19.	154-726	1	HOSE (040FX90-15"-3000)	
20.	154-272	1	REDUCER NUT (080F)	
21.	154-248	1	REDUCER (040-080F)	
22.	154-265	2	UN RUN TEE (040FX-040-040)	FOR USE W/RELIEF VALVES PRIOR TO S/N 2S1484
23.	154-253	1	CONNECTOR (06S-08090)	
24.	149-621	1	HYD LINE (08)	
25.	516-098	1	SOLENOID VALVE (SINGLE)	PIPE LUBRICATOR VALVE
26.	106-595	2	SCREW (M6-1.00 X 60MM)	
27.	106-385	2	FLG LOCKNUT (M6-1.00)	

FOOTNOTES

NOTE
 REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

AUXILIARY VALVE HYDRAULICS

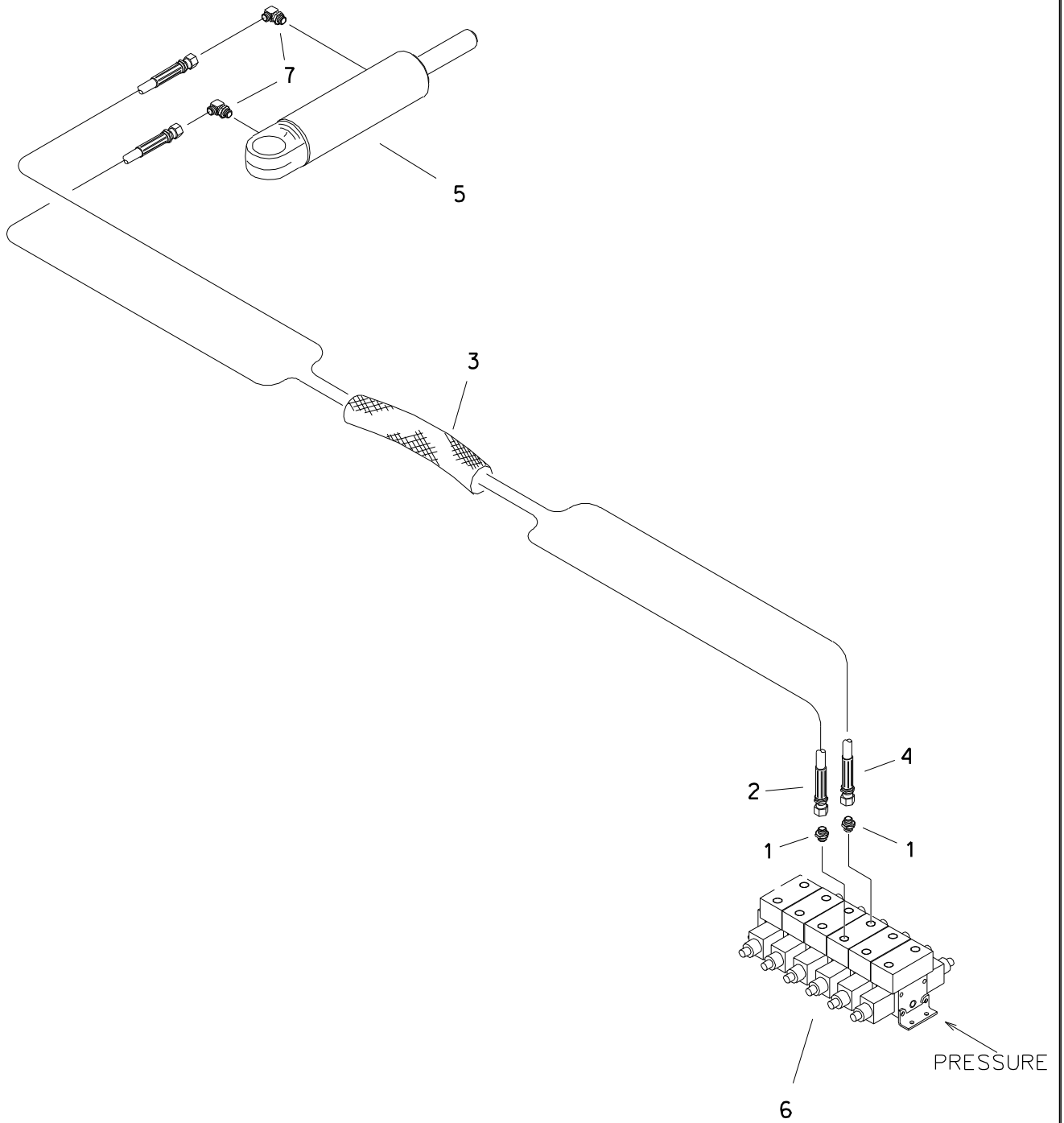


AUXILIARY VALVE HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	516-069	-	HYD CONTROL VALVE	ENDS WITH S/N _____
	153-587	1	HYD CONTROL VALVE	BEGINS WITH S/N _____
	191-359	-	SEAL REPAIR KIT	
	105-614	-	CLEVIS PIN (.199" X .80")	
	105-615	-	CLEVIS (.312-NF-M X 1.19")	
	499-085	-	CAP (5/16 UNF)	
2.	158-556	1	HYD CONTROL VALVE	
	500-646	-	SEAL REPAIR KIT	
	105-614	-	CLEVIS PIN (.199" X .80")	
	105-615	-	CLEVIS (.312-NF-M X 1.19")	
	499-085	-	CAP (5/16 UNF)	
3.	107-025	4	BOLT (M6-1.0 X 50mm)	
4.	365-485	2	CONTROL HANDLE	
5.	365-484	2	CONTROL HANDLE	
6.	365-483	2	CONTROL HANDLE	
7.	106-076	8	WASHER (1/4")	
8.	106-574	4	CLIP NUT (M6-1.00)	
9.	130-101	6	CONNECTOR LINK (#50)	
10.	350-614	-	HYD RESERVOIR	
11.	110-051	3	HANDLE (3/8-NC, BLACK)	
12.	110-442	2	HANDLE (3/8-NC, GREEN)	
13.	110-985	1	HANDLE (3/8-NC, BLUE)	

FOOTNOTES

FRONT WRENCH HYDRAULICS



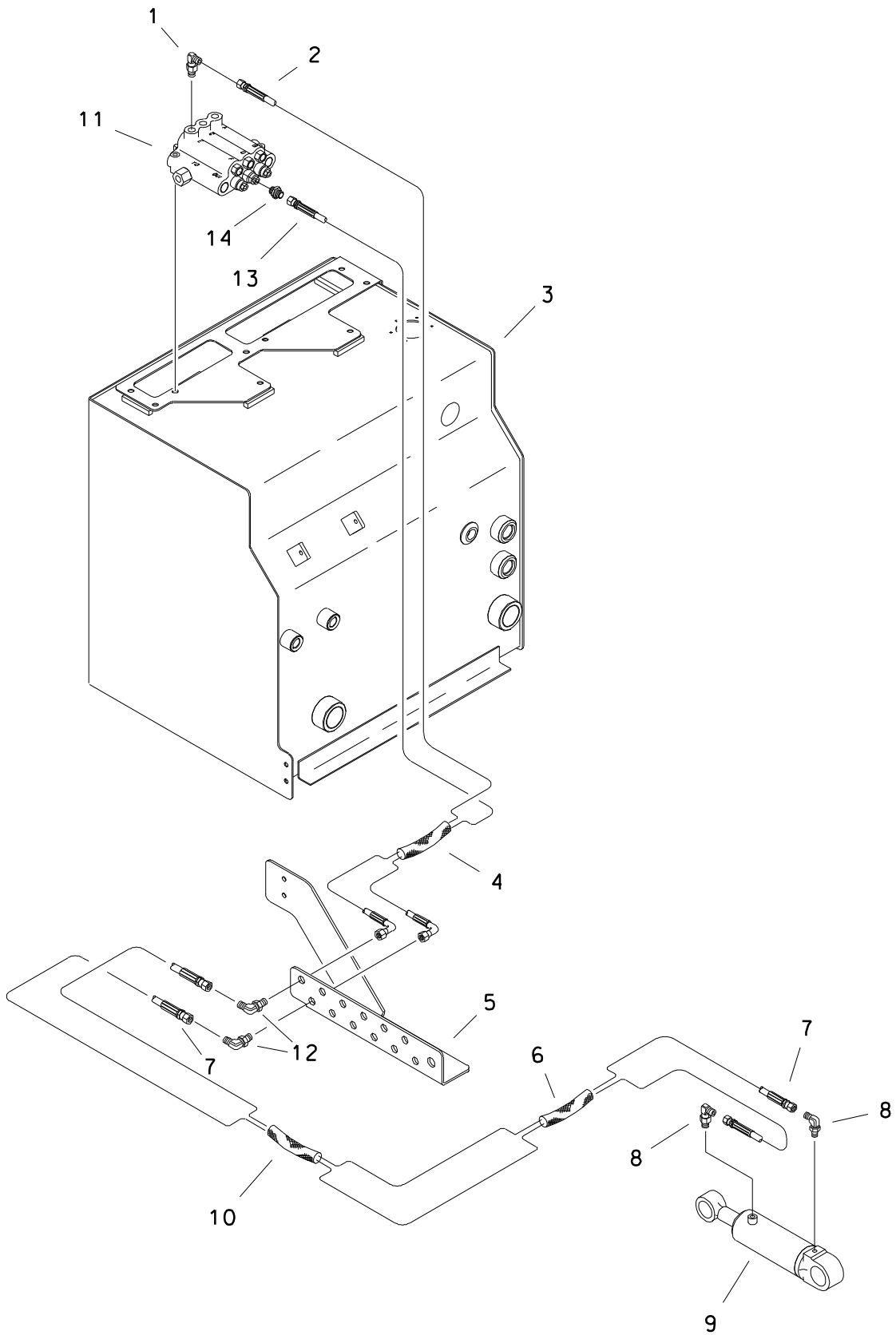
FRONT WRENCH HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-220	2	CONNECTOR (040-06S)	
2.	154-725	1	HOSE (040FX-90"-3000)	
3.	117-764	1	ABRASION SLEEVE (1.59" X 90")	
4.	515-435	1	HOSE (040FX-96"-3000)	
5.	151-173	1	CYL (2.0" X 1.00" X 3.000")	
6.	516-077	1	HYD CONTROL VALVE	
	516-122	1	HYD CONTROL VALVE	
7.	154-252	2	CONNECTOR (04S-04090)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

BACKUP WRENCH HYDRAULICS



BACKUP WRENCH HYDRAULICS

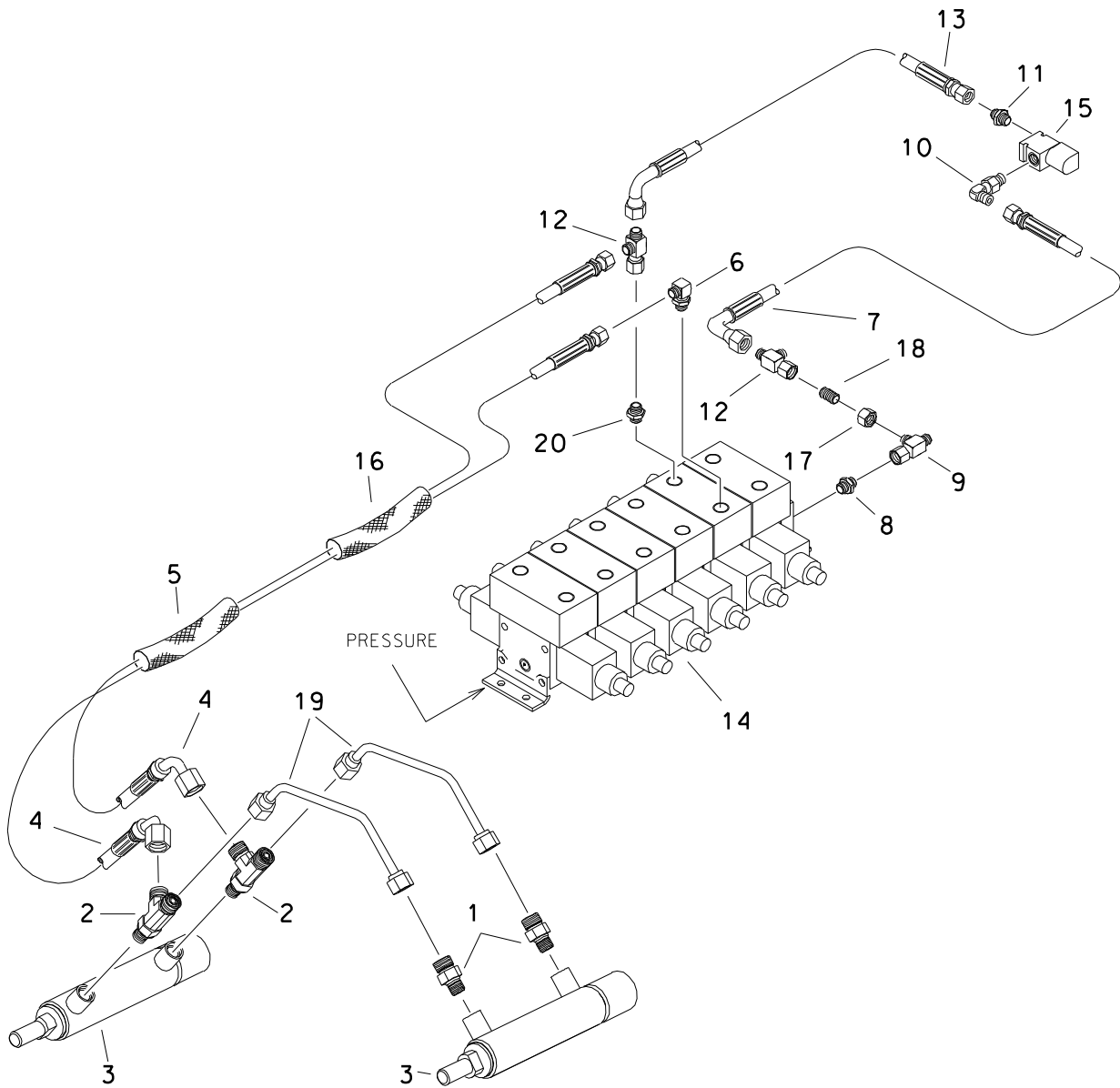
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-226	1	CONNECTOR (040-06S90)	
2.	154-729	1	HOSE (040FX90-44"-3000)	
3.	350-614	-	HYDRAULIC RESERVOIR	
4.	115-681	1	ABRASION SLEEVE (2.54" X 36")	
5.	354-466	-	BULKHEAD PLATE	
6.	115-777	1	ABRASION SLEEVE (1.59" X 15")	
7.	515-659	2	HOSE (040FX-226"-3000)	
8.	154-252	2	CONNECTOR (04S-04090)	
9.	151-027	1	CYL (2.0" X 1.00" X 3.000")	
10.	116-634	1	ABRASION SLEEVE (1.59" X 65")	
11.	158-556	-	HYDRAULIC CONTROL VALVE	
	500-646	-	SEAL REPAIR KIT	
12.	154-355	2	BK CONNECTOR (040-04090BK)	
13.	154-706	1	HOSE (040FX90S-40"-3000)	
14.	154-220	1	CONNECTOR (040-06S)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR THE REPLACEMENT OF O-RINGS.

BREAKOUT WRENCH HYDRAULICS

ENDS WITH S/N 2S1483



BREAKOUT WRENCH HYDRAULICS

ENDS WITH S/N 2S1483

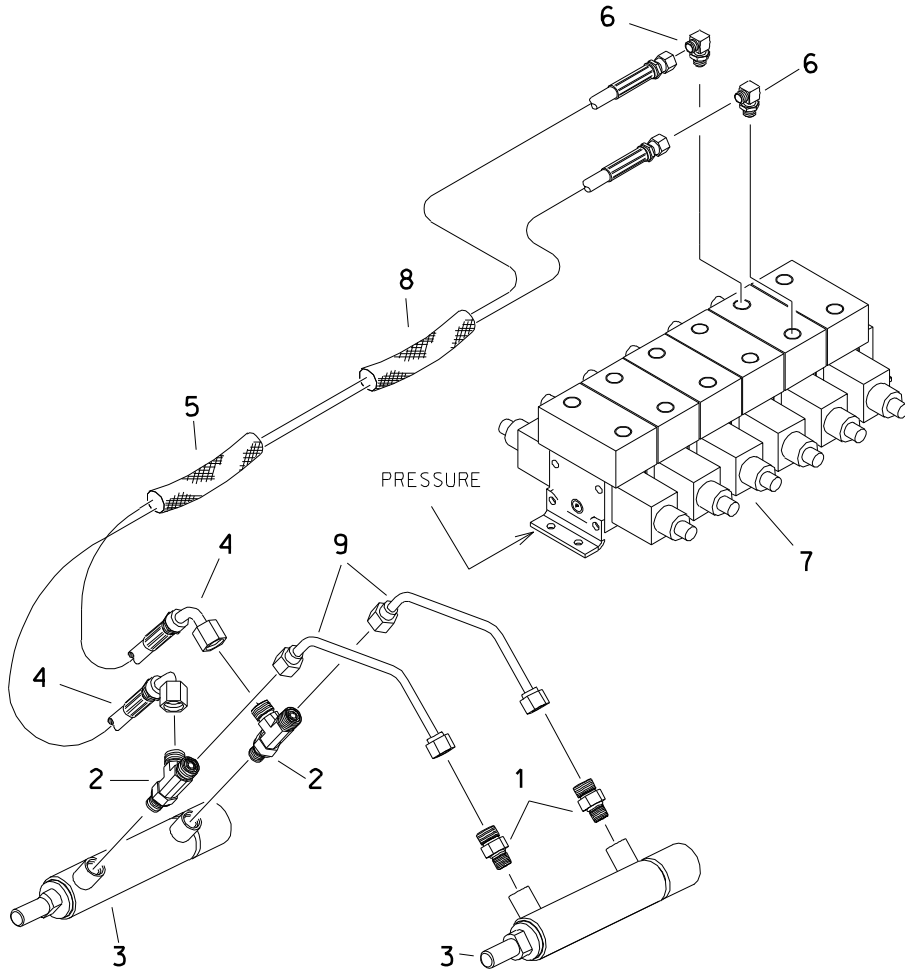
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-278	2	CONNECTOR (04S-040)	
2.	154-316	2	RUN TEE (04S-040-040)	
3.	151-155	2	CYL (1.0" X 0.437" X 3")	
4.	515-184	2	HOSE (040FX90-238"-3000)	
5.	115-777	1	ABRASION SLEEVE (1.59" X 15")	
6.	154-226	1	CONNECTOR (040-06S90)	
7.	154-802	1	HOSE (040FX90-26"-3000)	
8.	154-246	1	CONNECTOR (06S-080)	
9.	154-266	1	UN RUN TEE (080FX-080-080)	
10.	154-276	1	CONNECTOR (040-08S90)	
11.	154-261	1	CONNECTOR (040-08S)	
12.	154-265	2	UN RUN TEE (040FX-040-040)	
13.	515-041	1	HOSE (040FX90-20"-3000)	
14.	<u>516-077</u>	1	HYD CONTROL VALVE	
	516-122	1	HYD CONTROL VALVE	
15.	516-110	1	HYD VALVE	
	158-647	-	RELIEF VALVE CARTRIDGE (400PSI)	
	500-756	-	SEAL REPAIR KIT	
16.	117-290	1	ABRASION SLEEVE (2.07" X 58")	
17.	154-272	1	REDUCER NUT (080F)	
18.	154-248	1	REDUCER STEM (040)	
19.	156-925	2	HYD LINE (04)	
20.	154-220	1	CONNECTOR (040-06S)	

FOOTNOTES

NOTE

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

BREAKOUT WRENCH HYDRAULICS BEGINS WITH S/N 2S1484



BREAKOUT WRENCH HYDRAULICS BEGINS WITH S/N 2S1484

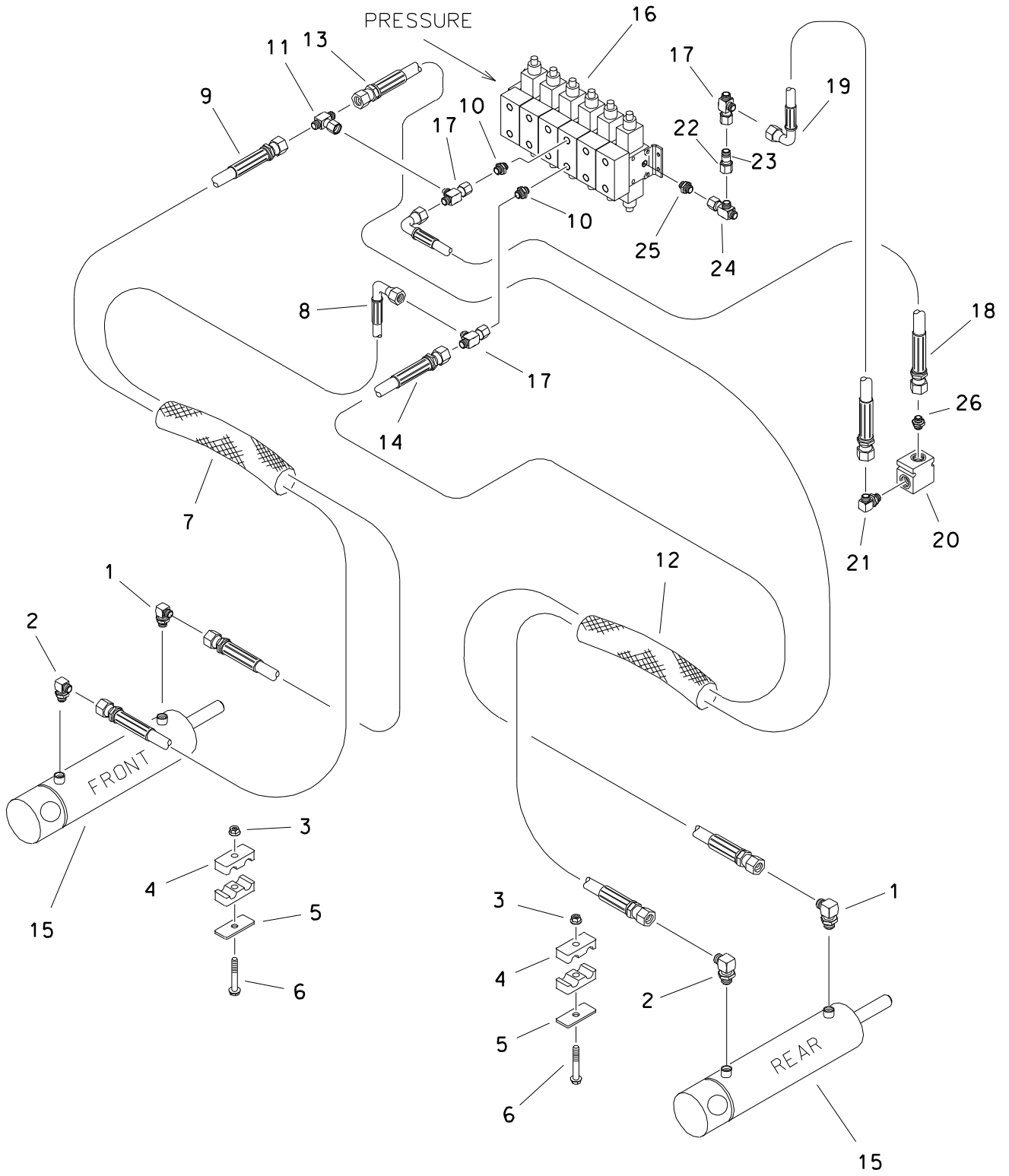
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-278	2	CONNECTOR (04S-040)	
2.	154-316	2	RUN TEE (04S-040-040)	
3.	151-155	2	CYL (1.0" X 0.437" X 3")	
4.	515-184	2	HOSE (040FX90-238"-3000)	
5.	115-777	1	ABRASION SLEEVE (1.59" X 15")	
6.	154-226	2	CONNECTOR (040-06S90)	
7.	516-122	1	HYD CONTROL VALVE	
8.	117-290	1	ABRASION SLEEVE (2.07" X 58")	
9.	156-925	2	HYD LINE (04)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

PIPE GRIPPER HYDRAULICS

ENDS WITH S/N 2S1483



PIPE GRIPPER HYDRAULICS

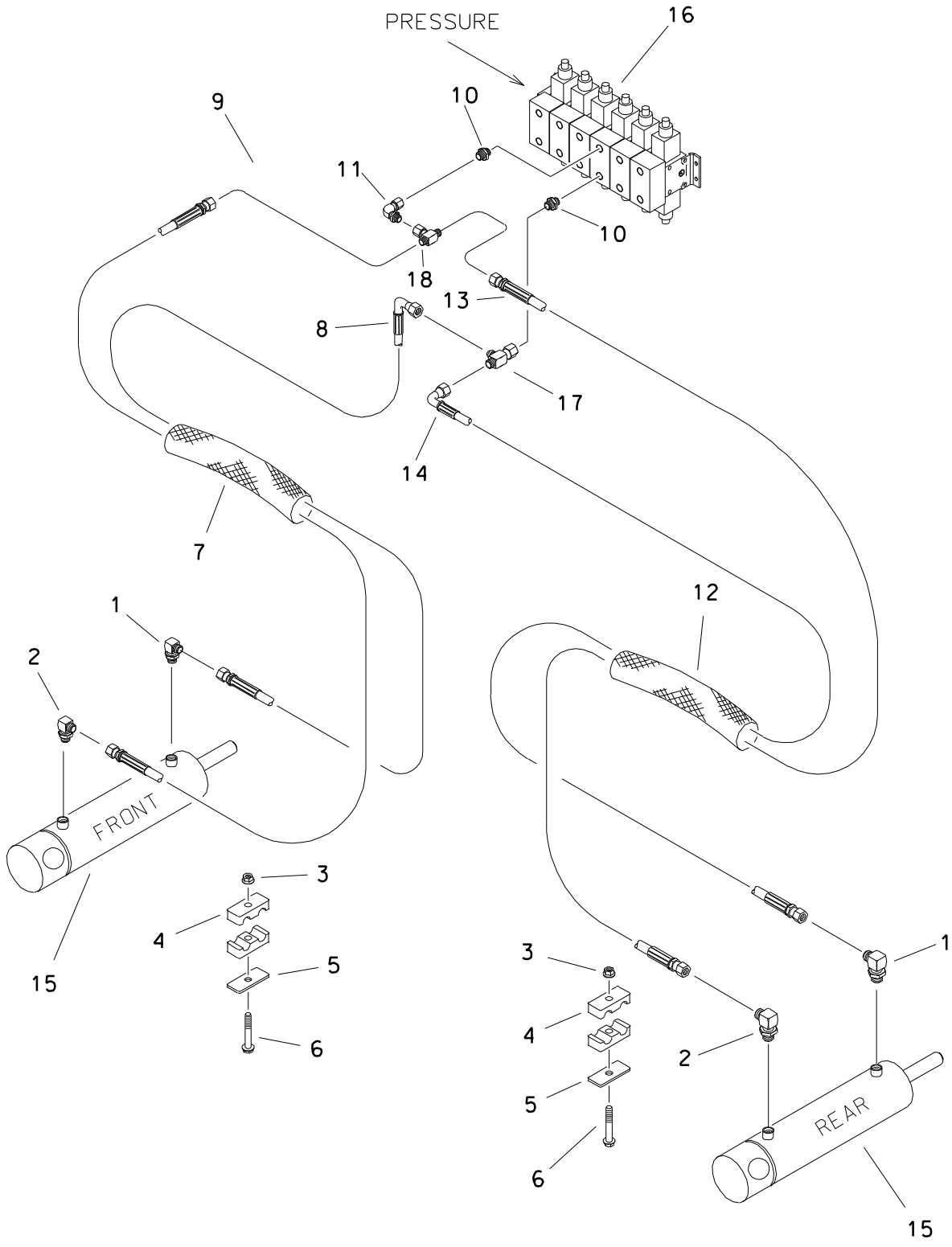
ENDS WITH S/N 2S1483

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-474	3	CONNECTOR (04S-04090, XL)	
2.	154-252	1	CONNECTOR (04S-04090)	
3.	106-561	2	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
4.	110-270	4	BOLT-ON CLAMP (9/16", HALF)	
5.	305-256	2	BACKUP SPACER	
6.	106-329	2	SCREW (M8-1.25 X 50mm)	
7.	115-817	1	ABRASION SLEEVE (1.59" X 84")	
8.	515-190	1	HOSE (040FX90-88"-3000)	
9.	154-684	1	HOSE (040FX-78"-3000)	
10.	154-220	2	CONNECTOR (040-06S)	
11.	154-379	1	UN BR TEE (040FX-040-040)	
12.	117-741	1	ABRASION SLEEVE (1.59" X 145")	
13.	154-950	1	HOSE (040FX-150"-3000)	
14.	515-395	1	HOSE (040FX-114"-3000)	NOT REPAIRABLE
15.	149-062	2	CYLINDER	
16.	516-077	-	HYD CONTROL VALVE	
	516-122	-	HYD CONTROL VALVE	
17.	154-265	3	UN RUN TEE (040FX-040-040)	
18.	154-743	1	HOSE (040FX90-23"-3000)	
19.	154-715	1	HOSE (040FX90-18"-3000)	
20.	516-110	1	HYD CONTROL VALVE	
	500-756	-	SEAL REPAIR KIT	
	158-647	-	RELIEF VALVE CARTRIDGE (1400 PSI)	
21.	154-276	1	CONNECTOR (040-08S90)	
22.	154-272	1	REDUCER NUT (080F)	
23.	154-248	1	REDUCER STEM (040)	
24.	154-266	-	UN RUN TEE (080FX-080-080)	
25.	154-246	-	CONNECTOR (06S-080)	
26.	154-261	1	CONNECTOR (040-08S)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

PIPE GRIPPER HYDRAULICS BEGINS WITH S/N 2S1484



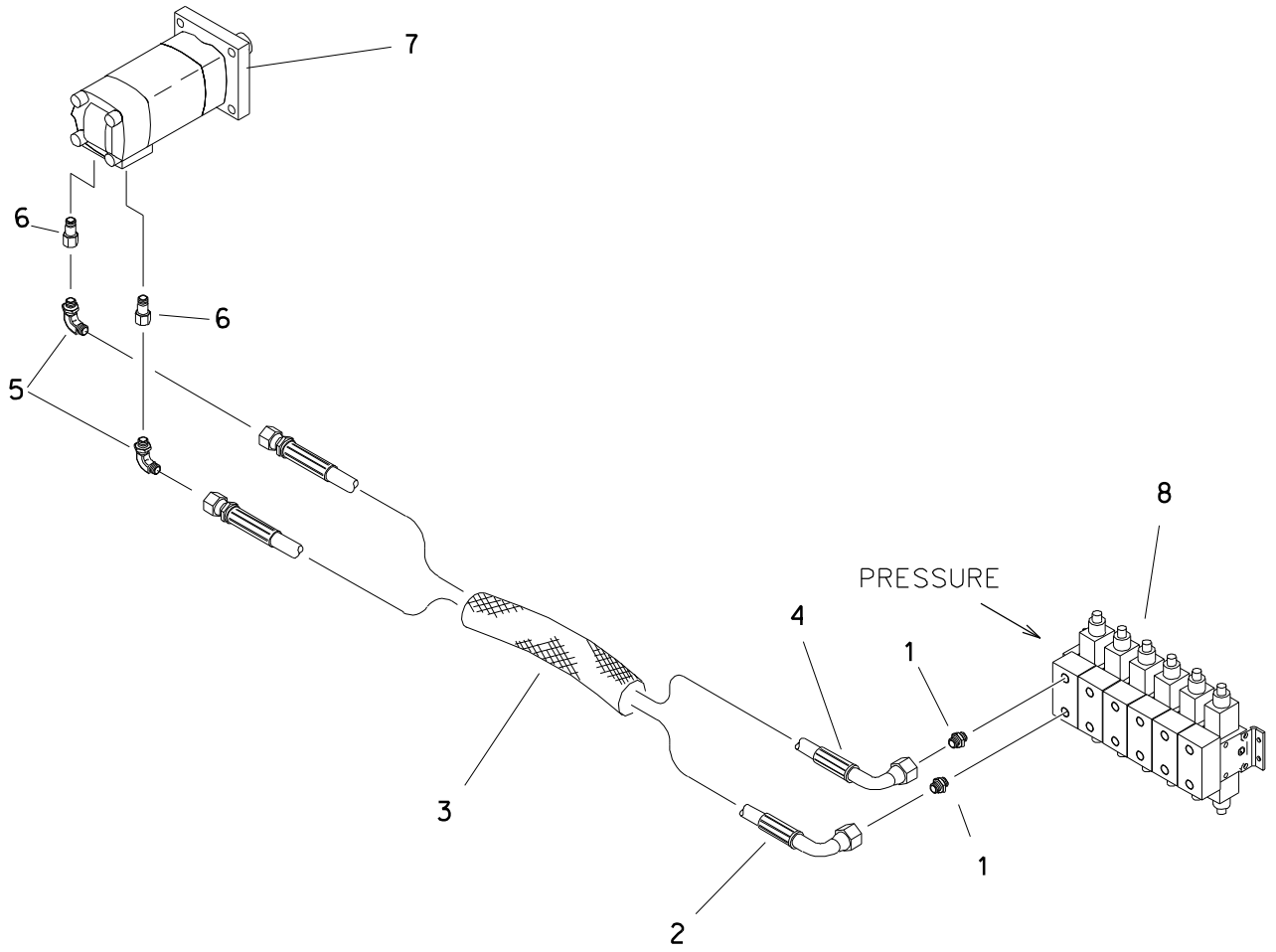
PIPE GRIPPER HYDRAULICS
 BEGINS WITH S/N 2S1484

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-474	2	CONNECTOR (04S-04090, XL)	
2.	154-252	2	CONNECTOR (04S-04090)	
3.	106-561	2	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
4.	110-270	4	BOLT-ON CLAMP (9/16", HALF)	
5.	305-256	2	BACKUP SPACER	
6.	106-329	2	SCREW (M8-1.25 X 50mm)	
7.	117-312	1	ABRASION SLEEVE (1.59" X 80")	
8.	515-190	1	HOSE (040FX90S-88"-3000)	
9.	154-684	1	HOSE (040FX-78"-3000)	
10.	154-220	2	CONNECTOR (040-06S)	
11.	154-255	1	UNION (040-040FX90)	
12.	117-741	1	ABRASION SLEEVE (1.59" X 145")	
13.	154-950	1	HOSE (040FX-150"-3000)	
14.	515-395	1	HOSE (040FX-114"-3000)	
15.	149-062	2	CYLINDER	NOT REPAIRABLE
16.	516-122	-	HYD CONTROL VALVE	
17.	154-265	1	UN RUN TEE (040FX-040-040)	
18.	154-379	1	UN BR TEE (040FX-040-040)	

FOOTNOTES

NOTE
 REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

PIPE SHUTTLE HYDRAULICS



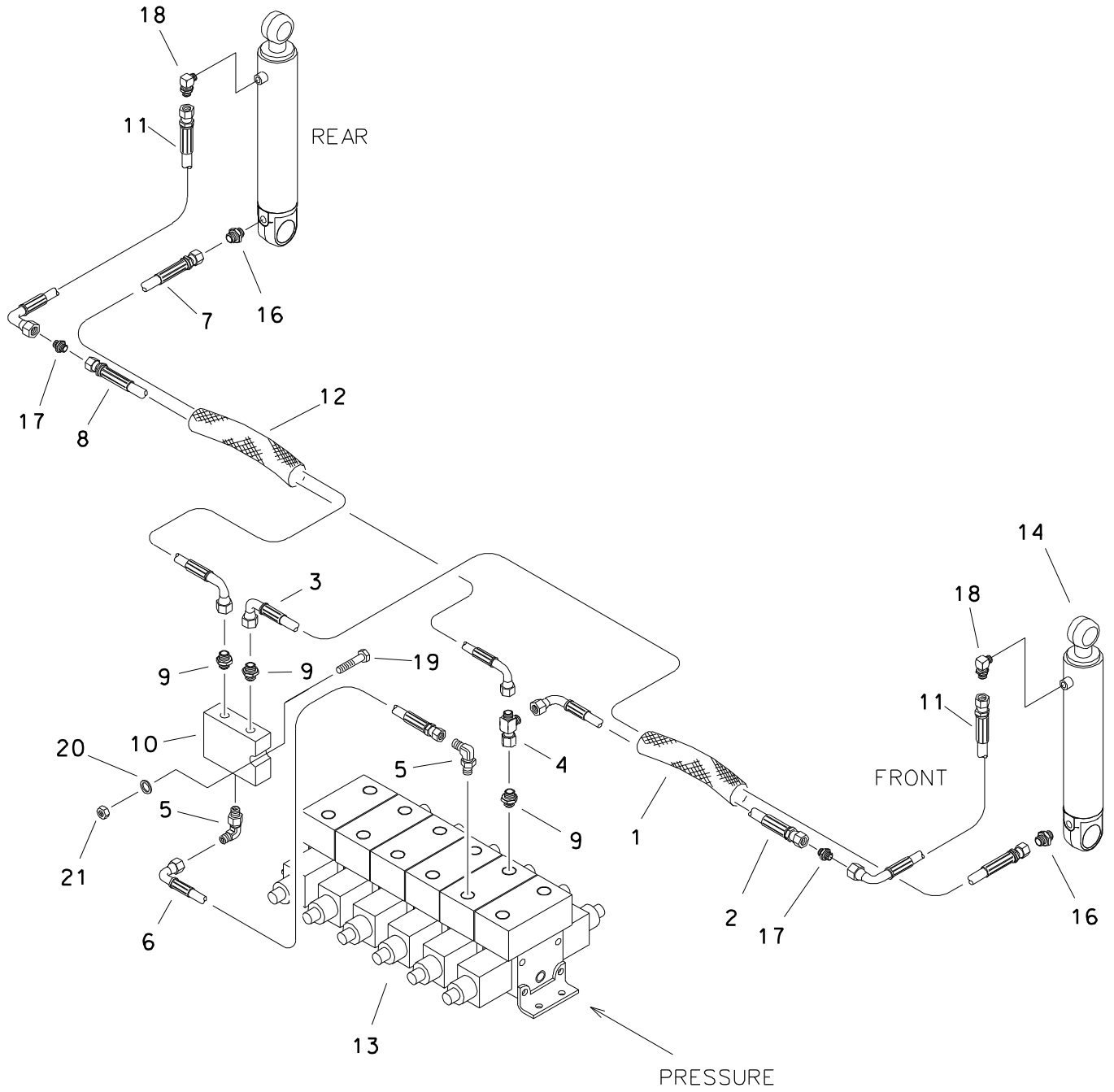
PIPE SHUTTLE HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-220	2	CONNECTOR (040-06S)	
2.	154-900	1	HOSE (040FX90S-62"-3000)	
3.	117-603	1	ABRASION SLEEVE (1.59" X 62")	
4.	515-030	1	HOSE (040FX90-64"-3000)	
5.	154-226	2	CONNECTOR (040-06S90)	
6.	155-129	2	REDUCER (12S-06SF)	
7.	158-022	1	HYD MOTOR	
	500-711		SEAL REPAIR KIT - REAR	
	500-758		SEAL REPAIR KIT - SHAFT	
8.	516-077	-	HYD CONTROL VALVE	
	516-122	-	HYD CONTROL VALVE	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

PIPE LIFTER HYDRAULICS



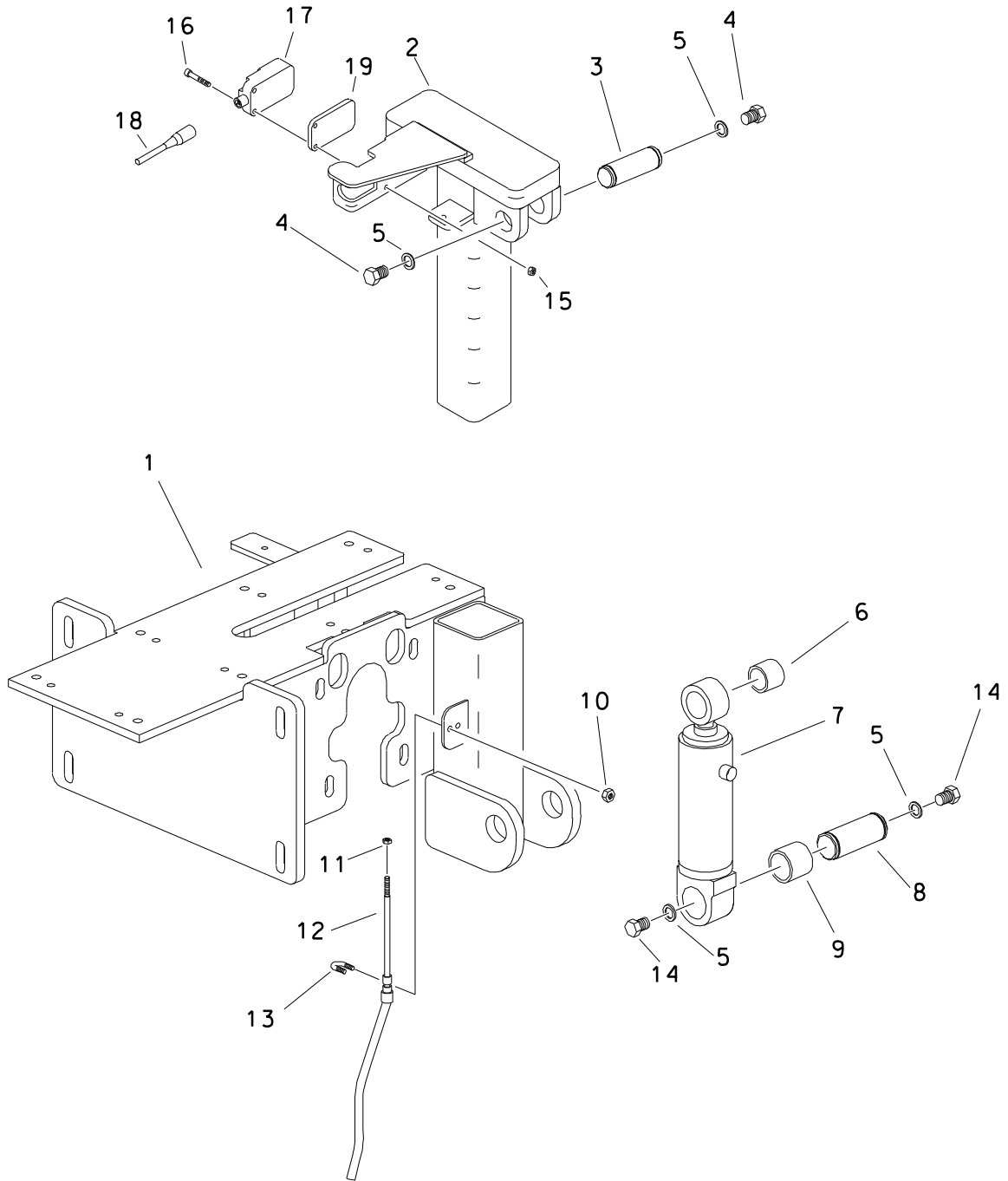
PIPE LIFTER HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	117-603	1	ABRASION SLEEVE (1.59" X 62")	
2.	154-900	1	HOSE (040FX90-62"-3000)	
3.	515-174	1	HOSE (040FX90-74"-3000)	
4.	154-265	1	UN RUN TEE (040FX-040-040)	
5.	154-226	2	CONNECTOR (040-06S90)	
6.	154-726	1	HOSE (040FX90-15"-3000)	
7.	515-239	1	HOSE (040FX90-116"-3000)	
8.	515-277	1	HOSE (040FX90-128"-3000)	
9.	154-220	3	CONNECTOR (040-06S)	
10.	516-087	1	FLOW DIVIDER	
11.	515-179	2	HOSE (040FX90-11"-3000)	
12.	115-447	1	ABRASION SLEEVE (1.59" X 120")	
13.	516-077	-	HYD CONTROL VALVE	
	516-122	-	HYD CONTROL VALVE	
14.	151-031	2	CYL (2.0" X 1.00" X 8.000")	
15.	154-900	1	HOSE (040FX90S-62"-3000)	
16.	154-403	2	CONNECTOR (04S-040, XL)	
17.	154-275	2	BK CONNECTOR (040-040BK)	
18.	154-252	2	CONNECTOR (04S-04090)	
19.	105-106	2	BOLT (1/4-NC X 2")	
20.	105-095	2	WASHER (1/4")	
21.	105-085	2	LOCKNUT (1/4-NC)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

ROW SELECT



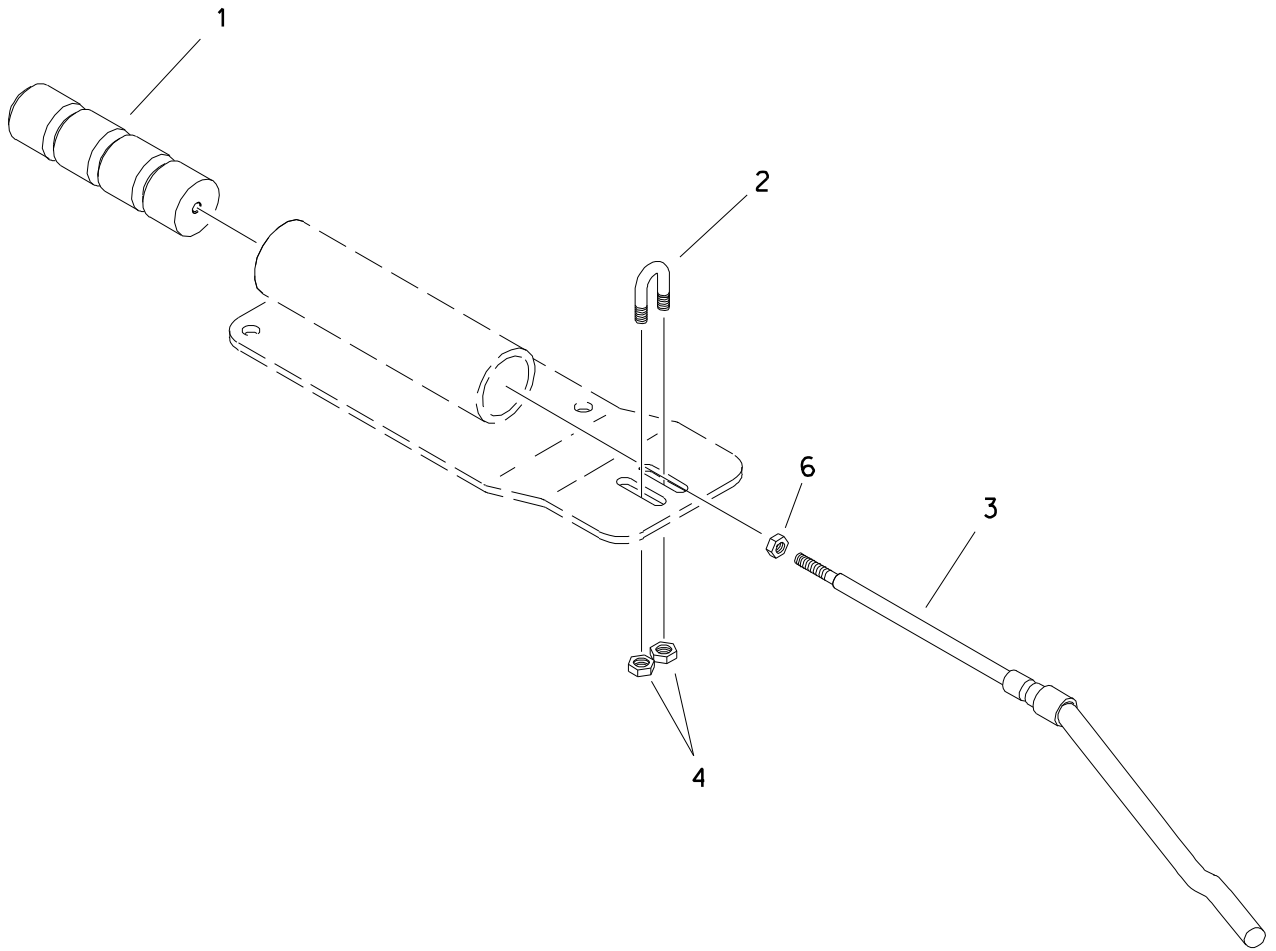
ROW SELECT

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-441	-	FRONT SUPPORT	USED AFTER SN 2S0111 SEE FOOTNOTE 1
	354-324	-	FRONT SUPPORT	USED PRIOR TO & INCLUDING SN 2S0111 SEE FOOTNOTE 1
2.	350-440	1	STOP TUBE	USED AFTER SN 2S0111 SEE FOOTNOTE 1
	354-349	-	STOP TUBE	USED PRIOR TO & INCLUDING SN 2S0111 SEE FOOTNOTE 1
3.	183-975	1	PIN (25.4mm X 68mm)	
4.	105-248	2	SCREW (M12-1.75 X 25mm, SOC)	
5.	105-884	4	WASHER (.531")	
6.	125-770	1	COMPOSITION BUSHING (1")	
7.	151-027	1	CYL (2.0" X 1.00" X 3.000")	
8.	179-227	1	CYL PIN (1.250")	
9.	125-771	1	COMPOSITION BUSHING (1.25")	
10.	105-186	2	NUT (#10-24)	
11.	106-138	2	NUT (M5-0.80)	
12.	196-294	-	CONTROL CABLE	
13.	106-630	1	U-BOLT (#10-24 X 5/16")	
14.	105-121	2	BOLT (1/2-NC X 1")	
15.	106-850	2	LOCKNUT (M5-.80)	
16.	107-465	2	SCREW (M5-0.80 X 30MM, SOC)	
17.	217-939	-	PROXIMITY SWITCH	USED PRIOR TO & INCLUDING SN 2S4081
	214-692	1	PROXIMITY SWITCH	USED AFTER SN 2S4081
18.	214-691	1	STRAIGHT JUMPER HARNESS	USED AFTER SN 2S4081
19.	107-451	1	SHIM	USED AFTER SN 2S4081

FOOTNOTES

1. ON MACHINES WITH PRIOR SN TO 2S0111, ORDER 354-324 FOR ITEM 1 & 354-349 FOR ITEM 2. ON MACHINES SN2S0111 AND LATER, ORDER 350-441 FOR ITEM 1 & 350-440 FOR ITEM 2.

ROW SELECT INDICATOR

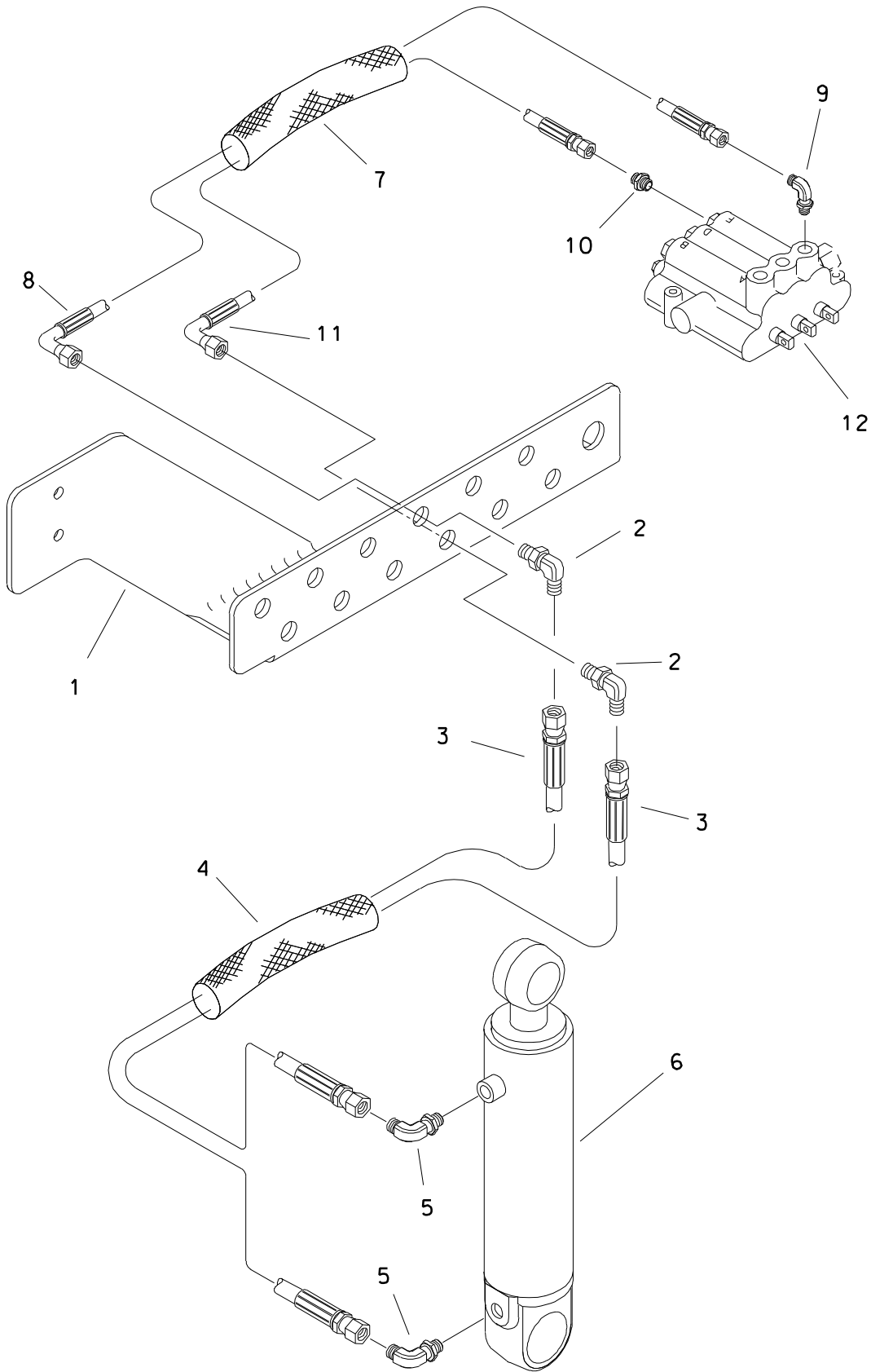


ROW SELECT INDICATOR

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-477	1	ROW SELECT INDICATOR	
2.	106-630	1	U-BOLT (#10-24 X 5/16")	
3.	196-294	1	CONTROL CABLE	
4.	105-186	2	NUT (#10-24)	
6.	106-138	1	NUT (M5-0.80)	

FOOTNOTES

ROW SELECT HYDRAULICS



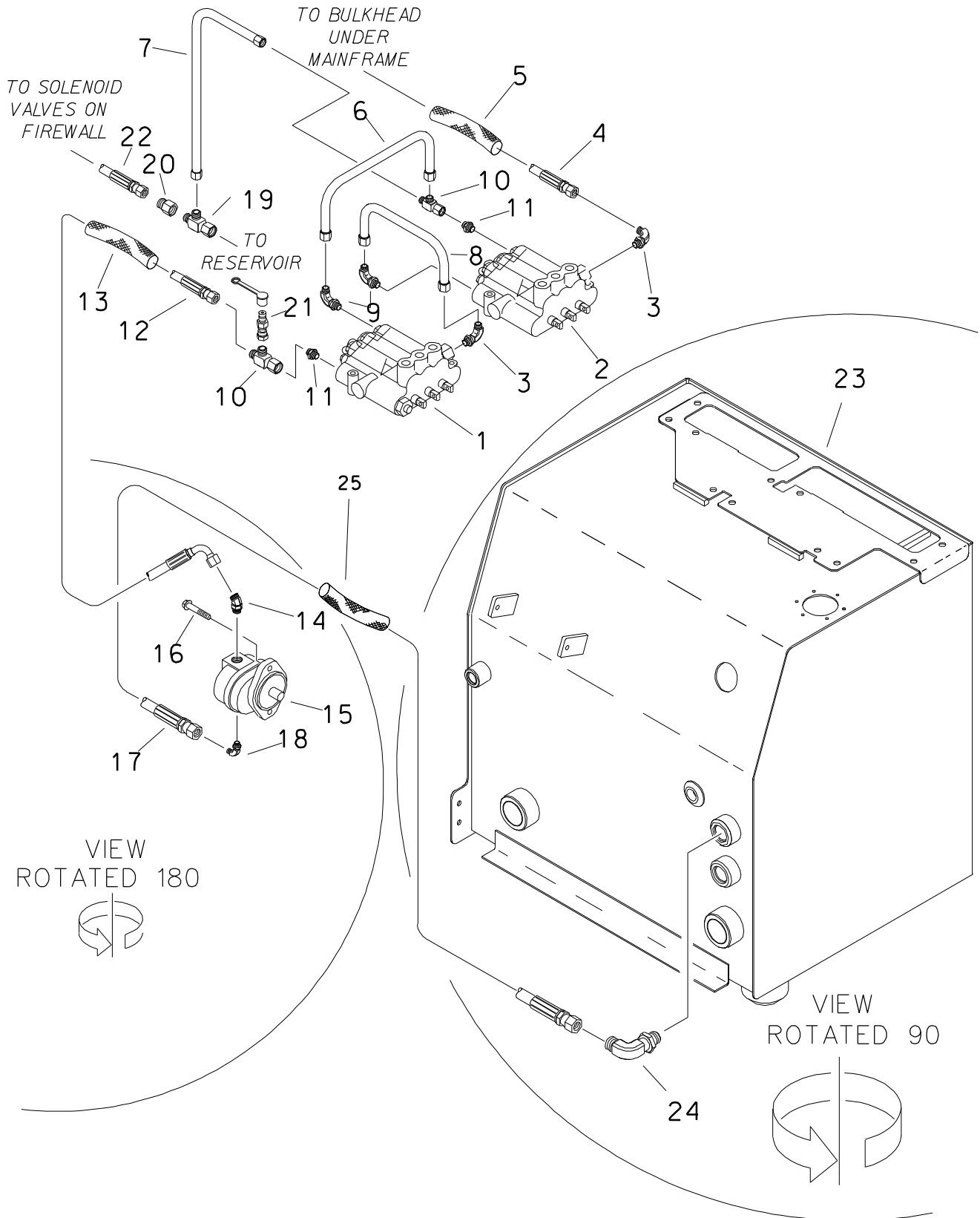
ROW SELECT HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-466	1	BULKHEAD PLATE	
2.	154-355	2	BK CONNECTOR (040-04090BK)	
3.	515-173	2	HOSE (040FX-272"-3000)	
4.	117-775	1	ABRASION SLEEVE (1.75" X 285")	
5.	154-252	2	CONNECTOR (04S-04090)	
6.	151-027	1	CYL (2.0" X 1.00" X 3.000")	
7.	117-651	1	ABRASION SLEEVE (2.38" X 45")	
8.	515-439	1	HOSE (040FX90S-50"-3000)	
9.	154-226	1	CONNECTOR (040-06S90)	
10.	154-220	1	CONNECTOR (040-06S)	
11.	515-447	1	HOSE (040FX90S-48"-3000)	
12.	516-069	-	HYD CONTROL VALVE	ENDS WITH S/N
	153-587	1	HYD CONTROL VALVE	BEGINS WITH S/N

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR THE REPLACEMENT OF O-RINGS.

SUPPLY & RETURN HYDRAULICS



SUPPLY & RETURN HYDRAULICS

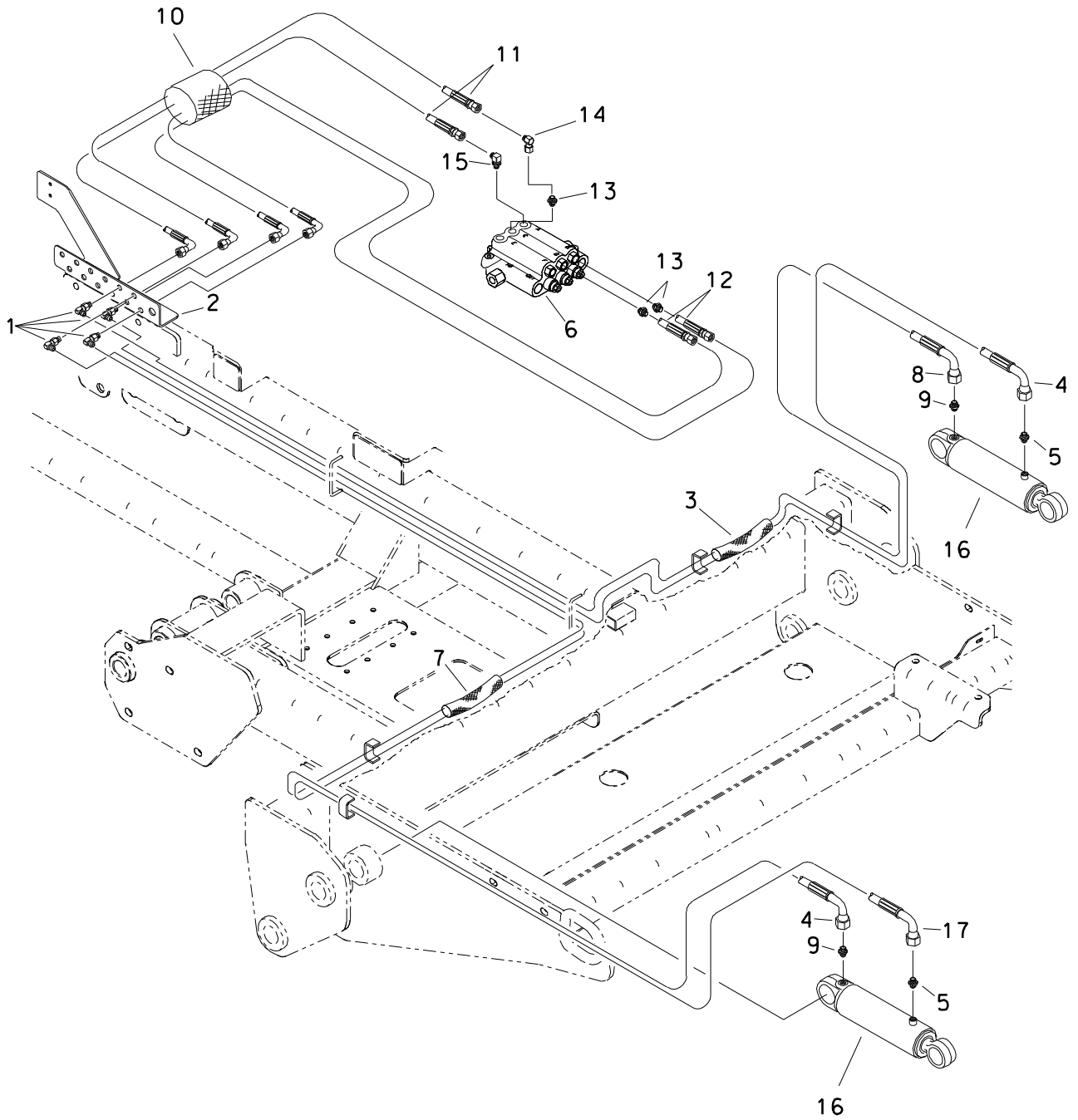
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	516-069	-	HYD CONTROL VALVE	SET-UP VALVE ENDS WITH S/N_____
	153-587	1	HYD CONTROL VALVE	BEGINS WITH S/N _____
	500-646	-	SEAL REPAIR KIT	
2.	158-556	1	HYD CONTROL VALVE	SET-UP VALVE
	500-646	-	SEAL REPAIR KIT	
3.	154-235	2	CONNECTOR (08S-08090)	
4.	515-366	1	HOSE (080FX-36"-3000)	
5.	117-655	1	ABRASION SLEEVE (1.59" X 38")	
6.	156-555	1	HYD LINE (080FX-8.6")	
7.	156-296	1	HYD LINE (080FX-302")	
8.	156-554	1	HYD LINE (080FX-5.6")	
9.	154-254	2	CONNECTOR (08S-08090, XL)	
10.	154-266	2	UN RUN TEE (080FX-080-080)	
11.	154-233	2	CONNECTOR (08S-080)	
12.	154-955	1	HOSE (080FX90-102"-3000)	
13.	115-902	1	ABRASION SLEEVE (1.59" X 100")	
14.	154-264	1	CONNECTOR (080-10S45)	
15.	158-461	1	HYDRAULIC PUMP	AUXILIARY PUMP
	500-966	-	SEAL REPAIR KIT	
16.	106-079	2	SCREW (M10-1.5 X 30mm)	
17.	154-862	1	HOSE (120FX-80"-2250)	
18.	154-286	1	CONNECTOR (120-16S90)	
19.	154-299	1	RUN TEE (08S-080-080)	COOLER RETURN
20.	154-262	1	REDUCER (06D-080F)	
21.	159-158	-	QDC ADAPTER (02-080FX)	
22.	154-722	-	HOSE (060FX-32"-3000)	
23.	350-614	-	HYD RESERVIOR	
24.	154-286	-	CONNECTOR (120-16S90)	
25.	115-817	1	ABRASION SLEEVE (1.59" X 84")	

FOOTNOTES

NOTE:

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

STABILIZER HYDRAULICS



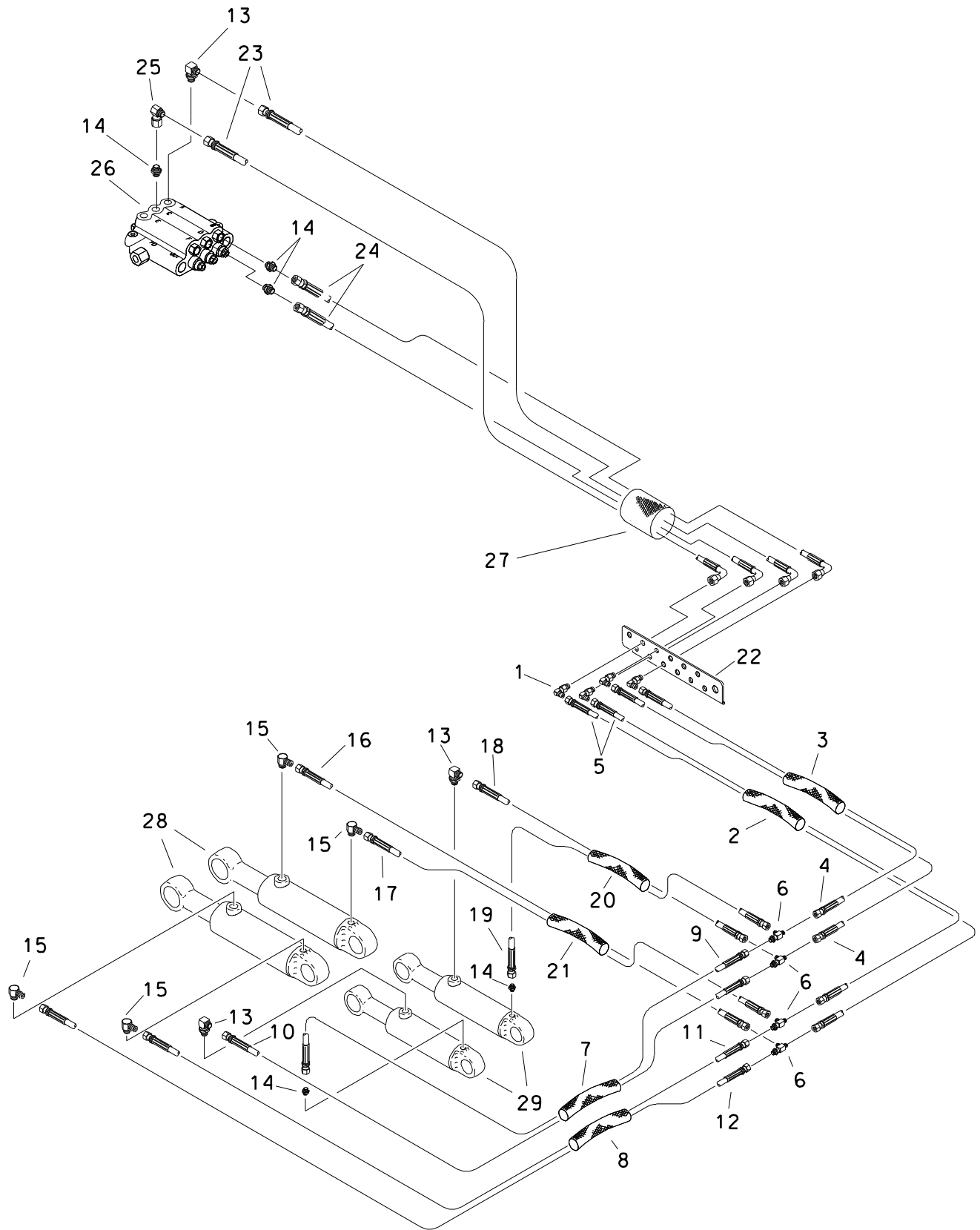
STABILIZER HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-355	4	BK CONNECTOR (040-04090BK)	
2.	354-466	-	BULKHEAD PLATE	
3.	116-633	1	ABRASION SLEEVE (1.59" X 115")	
4.	515-277	2	HOSE (040FX90-128"-3000)	
5.	154-261	2	CONNECTOR (040-08S)	
6.	516-069	-	HYD CONTROL VALVE	ENDS WITH S/N _____
	153-587	1	HYD CONTROL VALVE	BEGINS WITH S/N _____
7.	116-632	1	ABRASION SLEEVE (1.59" X 130")	
8.	515-239	1	HOSE (040FX90-116"-3000)	
9.	154-374	1	CONNECTOR (040-08S, ORF)	
10.	117-651	1	ABRASION SLEEVE (2.38" X 45")	
11.	515-439	2	HOSE (040FX90S-50"-3000)	
12.	515-447	2	HOSE (040FX90S-48"-3000)	
13.	154-220	3	CONNECTOR (040-06S)	
14.	154-225	1	CONNECTOR (060-08S45)	
15.	154-226	1	CONNECTOR (040-06S90)	
16.	151-187	2	CYLINDER ASSEMBLY	4" X 2" X 10"
17.	515-146	1	HOSE (040FX90S-140"-3000)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

FRAME TILT HYDRAULICS



FRAME TILT HYDRAULICS

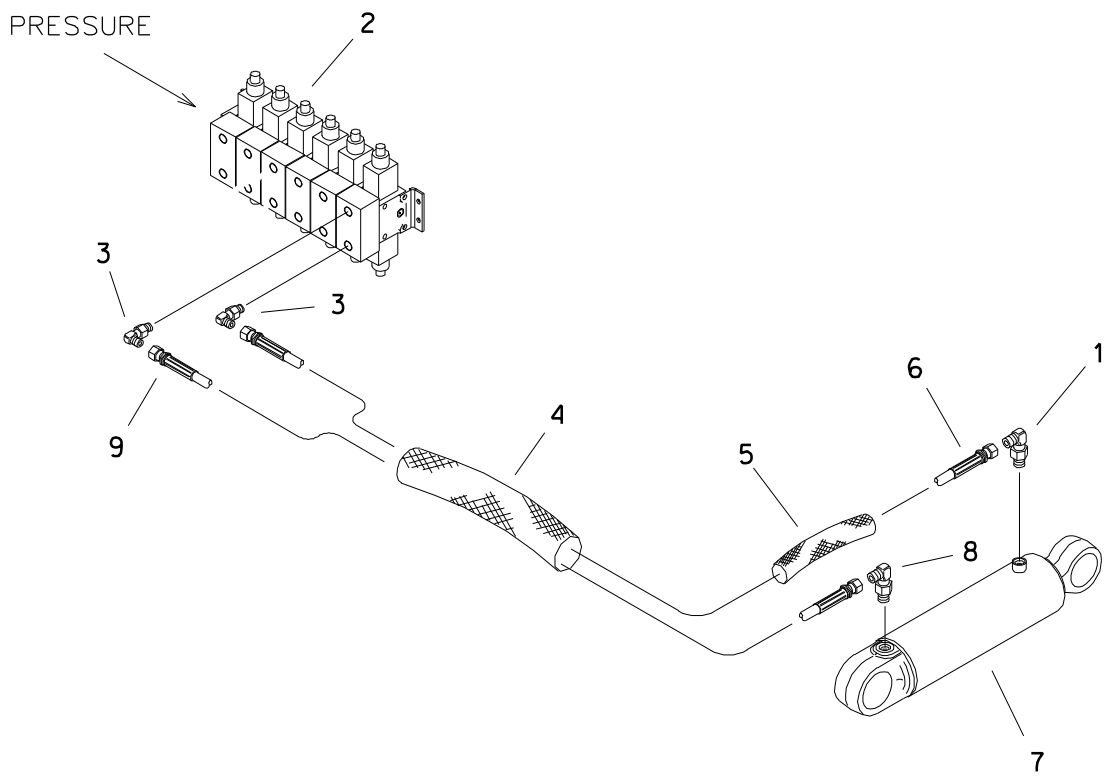
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-355	4	BK CONNECTOR (040-04090BK)	
2.	117-707	1	ABRASION SLEEVE (1.59" X 56")	
3.	117-657	1	ABRASION SLEEVE (1.59" X 54")	
4.	154-692	2	HOSE (040FX-54"-3000)	
5.	515-424	2	HOSE (040FX-56"-3000)	
6.	154-424	4	BK RUN TEE (040-040-040BK)	
7.	115-777	1	ABRASION SLEEVE (1.59" X 15")	
8.	117-679	1	ABRASION SLEEVE (1.59" X 32")	
9.	154-672	1	HOSE (040FX-15"-3000)	
10.	154-652	1	HOSE (040FX-20"-3000)	
11.	154-668	1	HOSE (040FX-32"-3000)	
12.	154-653	1	HOSE (040FX-40"-3000)	
13.	154-226	3	CONNECTOR (040-06S90)	
14.	154-220	5	CONNECTOR (040-06S)	
15.	154-276	4	CONNECTOR (040-08S90)	
16.	154-911	1	HOSE (040FX-36"-3000AR)	
17.	515-509	1	HOSE (040FX-28"-3000)	
18.	155-484	1	HOSE (040FX-16"-3000)	
19.	154-719	1	HOSE (040FX-10"-3000)	
20.	115-776	1	ABRASION SLEEVE (1.59" X 7")	
21.	117-708	1	ABRASION SLEEVE (1.59" X 28")	
22.	354-466	-	BULKHEAD PLATE	
23.	154-729	2	HOSE (040FX90-44"-3000)	
24.	154-706	2	HOSE (040FX90S-40"-3000)	
25.	154-255	1	UNION (040-040FX90)	
26.	158-556	-	HYDRAULIC CONTROL VALVE	
27.	115-681	1	ABRASION SLEEVE (2.54" X 36")	
28.	151-066	2	CYL (4.0" X 2.00" X 5.000")	
29.	151-070	2	CYL (3.0" X 1.75" X 8.000")	

FOOTNOTES

NOTE

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

SEAT ROTATION HYDRAULICS



SEAT ROTATION HYDRAULICS

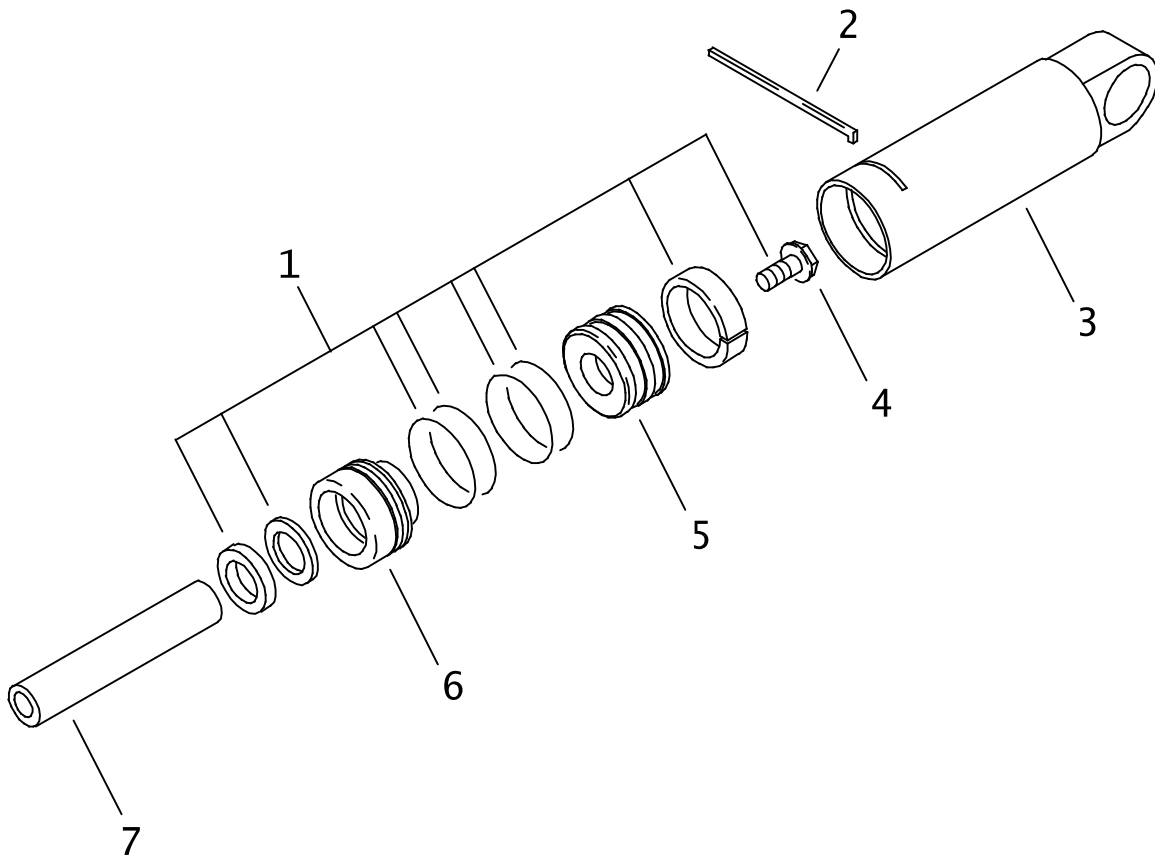
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-252	1	CONNECTOR (04S-04090)	
2.	516-077	1	HYD CONTROL VALVE	
	516-122	1	HYD CONTROL VALVE	
3.	154-226	2	CONNECTOR (04D-06S90)	
4.	117-692	1	ABRASION SLEEVE (1.59" X 218")	
5.	117-671	1	ABRASION SLEEVE (1.00" X 12")	
6.	515-659	1	HOSE (04DFX-226"-3000)	
7.	151-031	1	CYL (2.0" X 1.00" X 8.000")	
8.	154-401	1	CONNECTOR (04S-04090, ORF)	
9.	515-658	1	HOSE (04DFX-216"-3000)	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

HYDRAULIC CYLINDER

2.0" ID BARREL X 1.00" OD ROD X 3.0" STROKE



HYDRAULIC CYLINDER**2.0" ID BARREL X 1.00" OD ROD X 3.0" STROKE**

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	151-173		HYD CYL (2" X 1" X 3")	INCLUDES REF NO'S 1 THRU 7
1.	190-165	1	SEAL REPAIR KIT (2" X 1")	
2.	150-778	1	LOCK RING (2")	
3.	150-282	1	CYLINDER BARREL (2")	
4.	106-096	1	FLG BOLT (1/2-NC X 1-3/4", GD8)	SEE FOOTNOTE 1
5.	150-775	1	CYLINDER PISTON (2" X 1")	
6.	150-772	1	CYLINDER HEAD (2" X 1")	
7.	150-680	1	CYLINDER ROD (1")	

NOT SHOWN:

259-100	U-SEAL INSTALLER (1" - 1.499")
259-235	WIPER INSTALLER (1")
259-239	WIPER/SEAL INSTALLER (2")
259-241	PISTON INSTALLER (2")
259-188	CYL HEAD SPANNER - TWO PIN

FOOTNOTES

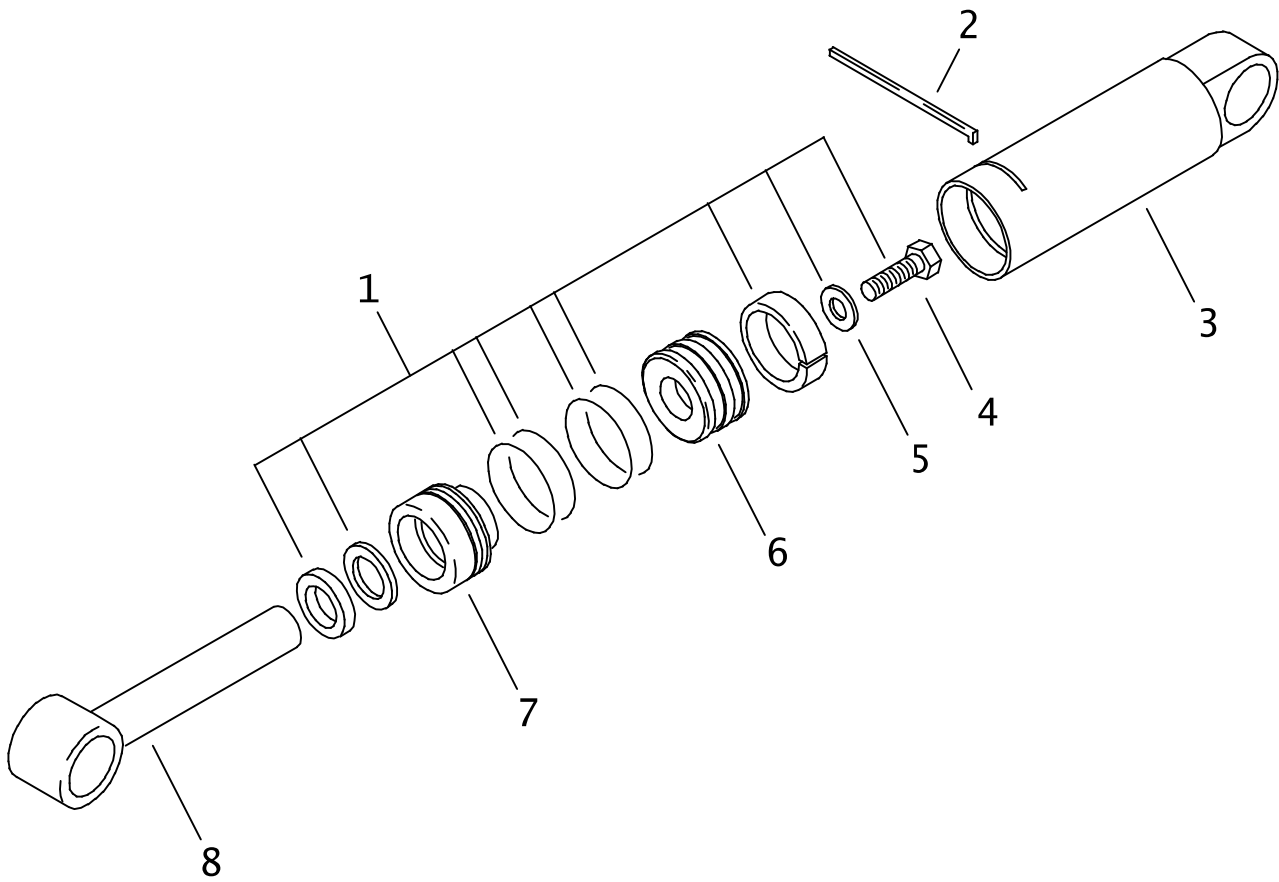
1. APPLY LOCTITE 271 OR 277. TORQUE TO 90-100 FT-LBS (120-135 NM)

NOTE:

C

806-686

HYDRAULIC CYLINDER (4.0" X 2.00" X 10.0")



HYDRAULIC CYLINDER

(4.0" X 2.00" X 10.0")

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	151-187		CYLINDER ASSEMBLY	INCLUDES REF NO.'S 1 THRU 7
1.	190-189	1	SEAL REPAIR KIT (4.0" X 2.0")	INCLUDES REF. NO.'S 4 & 5
2.	149-303	1	LOCK RING (4")	
3.	152-071	1	CYLINDER BARREL	
4.	106-145	1	BOLT (1-NC X 2-1/4", GD8)	SEE FOOTNOTE 1
5.	106-144	1	WASHER (1")	
6.	149-307	1	CYLINDER PISTON (4" X 2")	
7.	149-006	1	CYLINDER HEAD (4" X 2")	
8.	153-016	1	CYLINDER ROD	

NOT SHOWN:

259-040	U-SEAL INSTALLER (1.500"-UP)
259-239	WIPER/SEAL INSTALLER (2")
259-246	PISTON SEAL INSTALLER (4")
259-247	PISTON INSTALLER (4")
259-188	CYL HEAD SPANNER - TWO PIN

FOOTNOTES

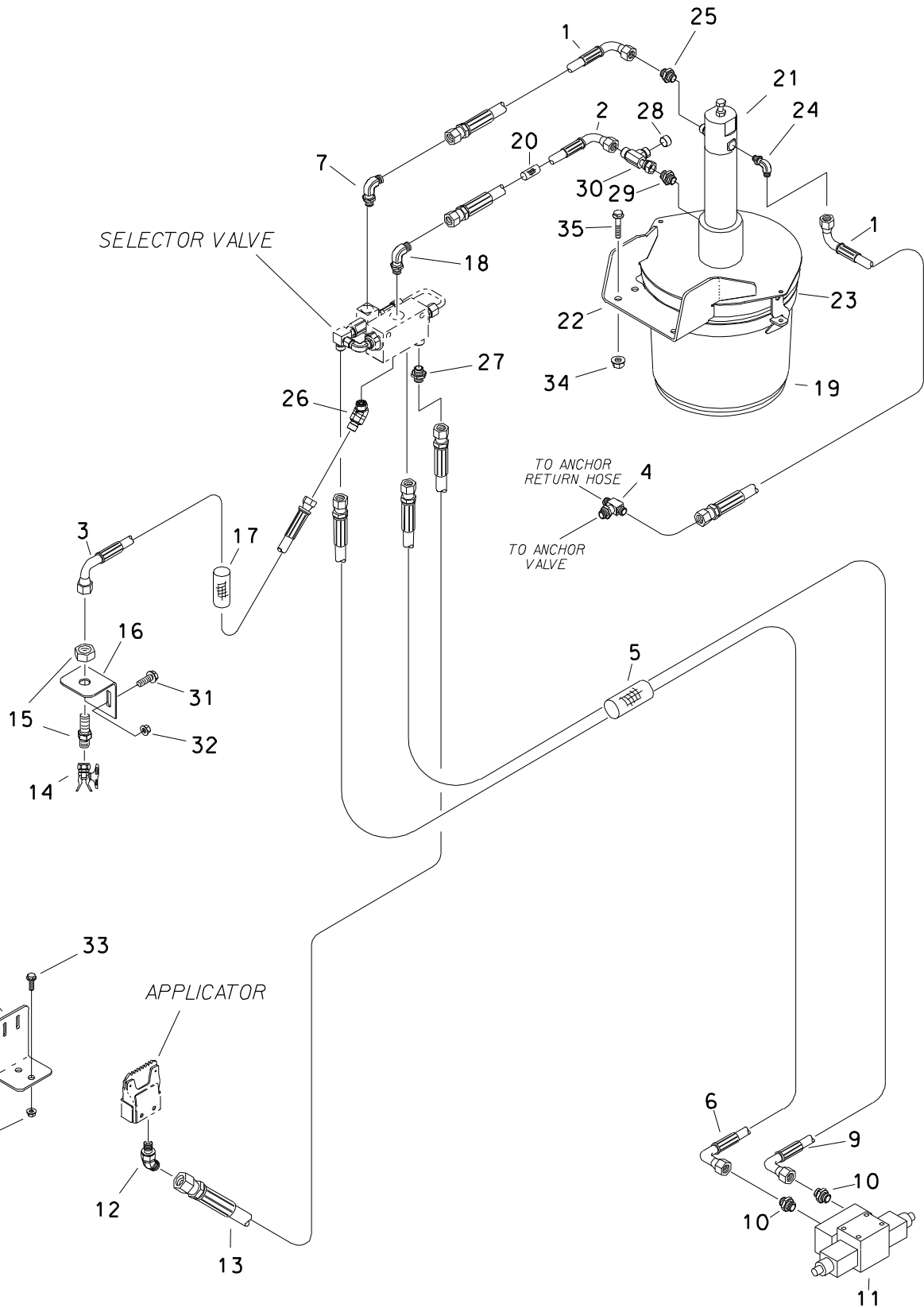
1 APPLY LOCTITE 271 OR 277. TORQUE TO 630-700 FT-LBS (855-950 NM)

NOTE:

D

806-688

AUTO-LUBER HYDRAULICS



AUTO-LUBER HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	149-827	2	HOSE (040FX90S-24"-3000)	
2.	149-826	1	HOSE (060FX90L-12"-3000)	
3.	149-825	1	HOSE (060FX90L-28"-3000)	
4.	149-117	1	BK BR TEE (08S-100-040BK)	
5.	115-963	1	ABRASION SLEEVE (1.59" X 75")	
6.	515-189	1	HOSE (040FX90L-88"-3000)	
7.	154-226	1	CONNECTOR (040-06590)	SEE FOOTNOTE D
8.	306-714	1	BRACKET, WIPER	
9.	515-190	1	HOSE (040FX90S-88"-3000)	
10.	154-220	2	CONNECTOR (040-065)	
11.	516-098	1	SOLENOID VALVE (SINGLE)	
12.	514-414	1	CONNECTOR (04S-06045)	
13.	515-751	1	HOSE (060FX-230"-3000)	
14.	149-399	1	SPRAY NOZZLE	
15.	514-163	1	BK CONNECTOR (060-060BK)	
16.	306-785	1	BRACKET	
17.	117-684	1	ABRASION SLEEVE (1.00 X 26")	
18.	154-342	1	CONNECTOR (06S-06090)	SEE FOOTNOTE C
19.	259-858	-	TOOL JNT LUBE, STD SPRY 2 GAL	
	256-031	-	TOOL JNT LUBE, SUMR SPRY 2 GAL	
20.	117-670	1	ABRASION SLEEVE (1.00" X 10")	
21.	350-398	-	GREASE PUMP PARTS ASS'Y	
22.	350-400	-	COVER	
23.	350-399	-	BASE	
24.	154-401	1	CONNECTOR (04S-04090, DRF)	
25.	154-278	1	CONNECTOR (04S-040)	
26.	154-224	1	CONNECTOR (06S-06045)	SEE FOOTNOTE A
27.	514-165	1	CONNECTOR (06S-060, DRF .078")	SEE FOOTNOTE B
28.	154-326	1	CAP (060F)	
29.	154-221	1	CONNECTOR (06S-060)	
30.	154-344	1	UN RUN TEE (060FX-060-060)	
31.	106-381	2	FLG LK SCREW (M8-1.25 X 25MM)	
32.	106-386	2	FLG LOCKNUT (M8-1.25)	
33.	106-724	2	FLG SCREW (M10-1.50 X 25MM)	
34.	106-387	6	FLG LOCKNUT (M10-1.50)	
35.	106-383	4	FLG LK SCREW (M10-1.50 X 30MM)	

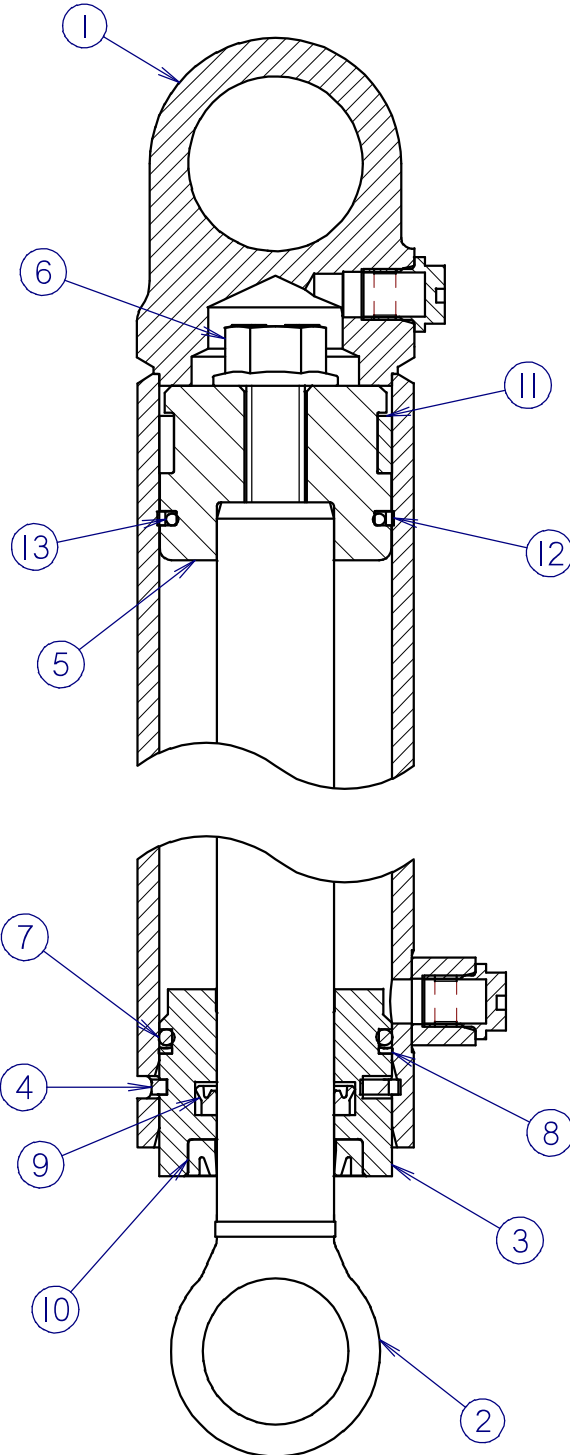
FOOTNOTES

- A. TO SPRAY NOZZLE
- B. TO REAR APPLICATOR
- C. GREASE IN FROM PUMP
- D. HYDRAULIC OIL OUT TO LUBE PUMP

NOTE

REFER TO O-RING CHART (800-301) ON BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

HYDRAULIC CYLINDERS (2.0" X 1.0")



HYDRAULIC CYLINDERS (2.0" X 1.0")

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	151-094	-	CYL (2.0 X 1.0 X 2.0)	SEE FOOTNOTES 1 & 2
1	152-029	1	CYLINDER BARREL (2.0 X 2.0)	
2	153-007	1	CYLINDER ROD (1.00 X 2.0)	
	149-667	-	CYL (2.0 X 1.0 X 2.5)	SEE FOOTNOTES 1 & 2
1	149-761	1	CYLINDER BARREL (2.0 X 2.5)	
2	149-728	1	CYLINDER ROD (1.00 X 2.5)	
	151-027	-	CYL (2.0 X 1.0 X 3.0)	SEE FOOTNOTES 1 & 2
1	150-282	1	CYLINDER BARREL (2.0 X 3.0)	
2	150-414	1	CYLINDER ROD (1.00 X 3.0)	
	151-038	-	CYL (2.0 X 1.0 X 4.0)	SEE FOOTNOTES 1 & 2
1	150-290	1	CYLINDER BARREL (2.0 X 4.0)	
2	150-421	1	CYLINDER ROD (1.00 X 4.0)	
	151-039	-	CYL (2.0 X 1.0 X 5.0)	SEE FOOTNOTES 1 & 2
1	150-291	1	CYLINDER BARREL (2.0 X 5.0)	
2	150-422	1	CYLINDER ROD (1.00 X 5.0)	
	151-044	-	CYL (2.0 X 1.0 X 6.0)	SEE FOOTNOTES 1 & 2
1	150-294	1	CYLINDER BARREL (2.0 X 6.0)	
2	150-424	1	CYLINDER ROD (1.00 X 6.0)	
	151-031	-	CYL (2.0 X 1.0 X 8.0)	SEE FOOTNOTES 1 & 2
1	150-285	1	CYLINDER BARREL (2.0 X 8.0)	
2	150-417	1	CYLINDER ROD (1.00 X 8.0)	
	151-076	-	CYL (2.0 X 1.0 X 10.0)	SEE FOOTNOTES 1 & 2
1	152-017	1	CYLINDER BARREL (2.0 X 10.0)	
2	150-444	1	CYLINDER ROD (1.00 X 10.0)	
	149-668	-	CYL (2.0 X 1.0 X 12.0)	SEE FOOTNOTES 1 & 2
1	150-286	1	CYLINDER BARREL (2.0 X 12.0)	
2	149-729	1	CYLINDER ROD (1.00 X 12.0)	
3	150-772	1	CYLINDER HEAD (2.0 X 1.00)	
4	150-778	1	LOCK RING (2.0)	
5	150-775	1	CYLINDER PISTON (2.0 X 1.00)	
6	106-096	1	FLG BOLT (1/2-NC X 1-3/4",GD8)	SEE FOOTNOTE 3
7	157-022	1	O-RING (224 D90)	
8	155-732	1	BACKUP RING (224 D90)	
9	157-540	1	U-SEAL (1.000")	
10	157-537	1	WIPER SEAL (1.000")	
11	125-774	1	WEAR RING	
12	157-534	1	BACKUP RING (131 D90)	
13	157-018	1	O-RING (131 D90)	

NOT SHOWN:

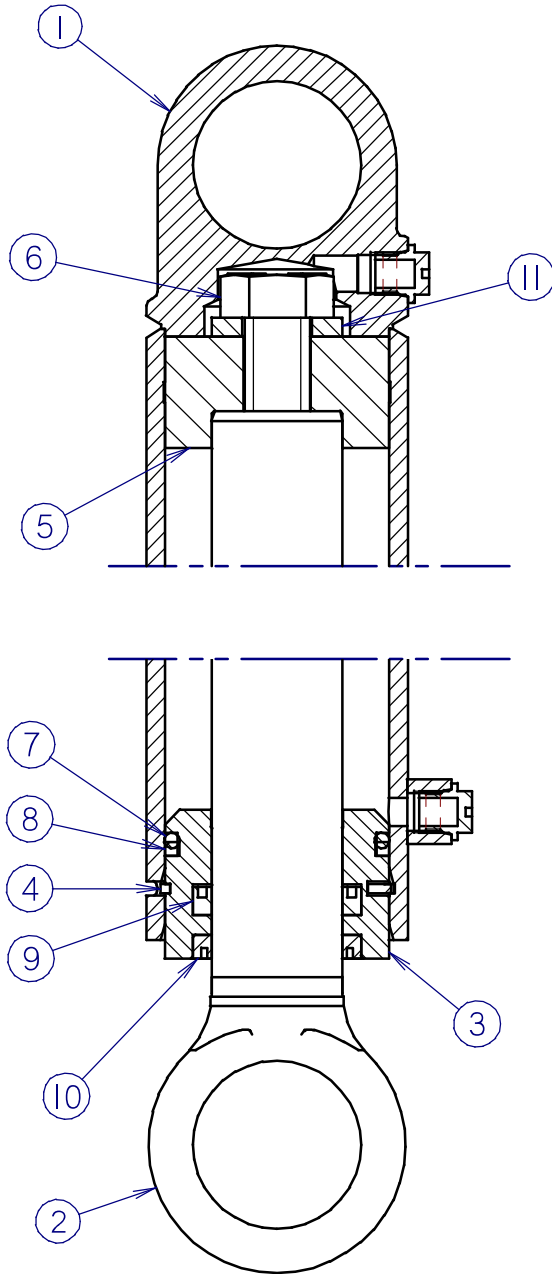
259-100	U-SEAL INSTALLER (1" - 1.499")
259-235	1.00 ROD WIPER TOOL
259-239	WIPER/SEAL INSTALLER (2")
259-241	PISTON INSTALLER (2")
259-188	CYL HEAD SPANNER - TWO PIN

FOOTNOTES:

- REF. #1 & #2 ARE SPECIFIC TO EACH CYLINDER, REF. #3 THRU #13 ARE COMMON FOR ALL THE ABOVE LISTED CYLINDERS
- SEAL REPAIR KIT P/N: 190-165
- APPLY LOCTITE 277 OR EQUIVALENT, TORQUE TO 90-100 FT-LBS

NOTE:

HYDRAULIC CYLINDERS (3.0" X 1.75")



HYDRAULIC CYLINDERS (3.0" X 1.75")

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	149-683	-	CYL (3.0 X 1.75 X 3.0)	SEE FOOTNOTES 1 & 2
1	150-299	1	CYLINDER BARREL (3.0 X 3.0)	
2	150-446	1	CYLINDER ROD (1.75 X 3.0)	
	149-684	-	CYL (3.0 X 1.75 X 4.0)	SEE FOOTNOTES 1 & 2
1	152-004	1	CYLINDER BARREL (3.0 X 4.0)	
2	153-015	1	CYLINDER ROD (1.75 X 4.0)	
	149-685	-	CYL (3.0 X 1.75 X 5.0)	SEE FOOTNOTES 1 & 2
1	152-068	1	CYLINDER BARREL (3.0 X 5.0)	
2	150-432	1	CYLINDER ROD (1.75 X 5.0)	
	151-058	-	CYL (3.0 X 1.75 X 6.0)	SEE FOOTNOTES 1 & 2
1	152-008	1	CYLINDER BARREL (3.0 X 6.0)	
2	150-428	1	CYLINDER ROD (1.75 X 6.0)	
	151-070	-	CYL (3.0 X 1.75 X 8.0)	SEE FOOTNOTES 1 & 2
1	152-014	1	CYLINDER BARREL (3.0 X 8.0)	
2	150-436	1	CYLINDER ROD (1.75 X 8.0)	
	149-686	-	CYL (3.0 X 1.75 X 10.0)	SEE FOOTNOTES 1 & 2
1	150-284	1	CYLINDER BARREL (3.0 X 10.0)	
2	149-732	1	CYLINDER ROD (1.75 X 10.0)	
	151-042	-	CYL (3.0 X 1.75 X 12.0)	SEE FOOTNOTES 1 & 2
1	150-293	1	CYLINDER BARREL (3.0 X 12.0)	
2	150-425	1	CYLINDER ROD (1.75 X 12.0)	
	151-083	-	CYL (3.0 X 1.75 X 16.0)	SEE FOOTNOTES 1 & 2
1	150-288	1	CYLINDER BARREL (3.0 X 16.0)	
2	153-004	1	CYLINDER ROD (1.75 X 16.0)	
	151-122	-	CYL (3.0 X 1.75 X 20.0)	SEE FOOTNOTES 1 & 2
1	150-667	1	CYLINDER BARREL (3.0 X 20.0)	
2	153-020	1	CYLINDER ROD (1.75 X 20.0)	
	149-687	-	CYL (3.0 X 1.75 X 24.0)	SEE FOOTNOTES 1 & 2
1	149-763	1	CYLINDER BARREL (3.0 X 24.0)	
2	149-733	1	CYLINDER ROD (1.75 X 24.0)	
	149-688	-	CYL (3.0 X 1.75 X 30.0)	SEE FOOTNOTES 1 & 2
1	149-764	1	CYLINDER BARREL (3.0 X 30.0)	
2	149-734	1	CYLINDER ROD (1.75 X 30.0)	
3	150-763	1	CYLINDER HEAD (3.0 X 1.75)	
4	150-911	1	LOCK RING (3.0)	
5	150-765	1	CYLINDER PISTON (3.0 X 1.75)	INCL. MOLDED-ON WEAR RING
6	106-122	1	BOLT (7/8-NC X 2-1/4", GD8)	SEE FOOTNOTE 3
7	155-734	1	O-RING (334 D90)	
8	155-733	1	BACKUP RING (334 D90)	
9	157-550	1	U-SEAL (1.750")	
10	157-549	1	WIPER SEAL (1.750")	
11	105-363	1	WASHER (7/8")	

FOOTNOTES

- REF. #1 & #2 ARE SPECIFIC TO EACH CYLINDER, REF. #3 THRU #11 ARE COMMON FOR ALL THE ABOVE LISTED CYLINDERS.
- SEAL REPAIR KIT P/N: 190-172
- APPLY LOCTITE 277 OR EQUIVALENT, TORQUE TO 410-460 FT-LBS

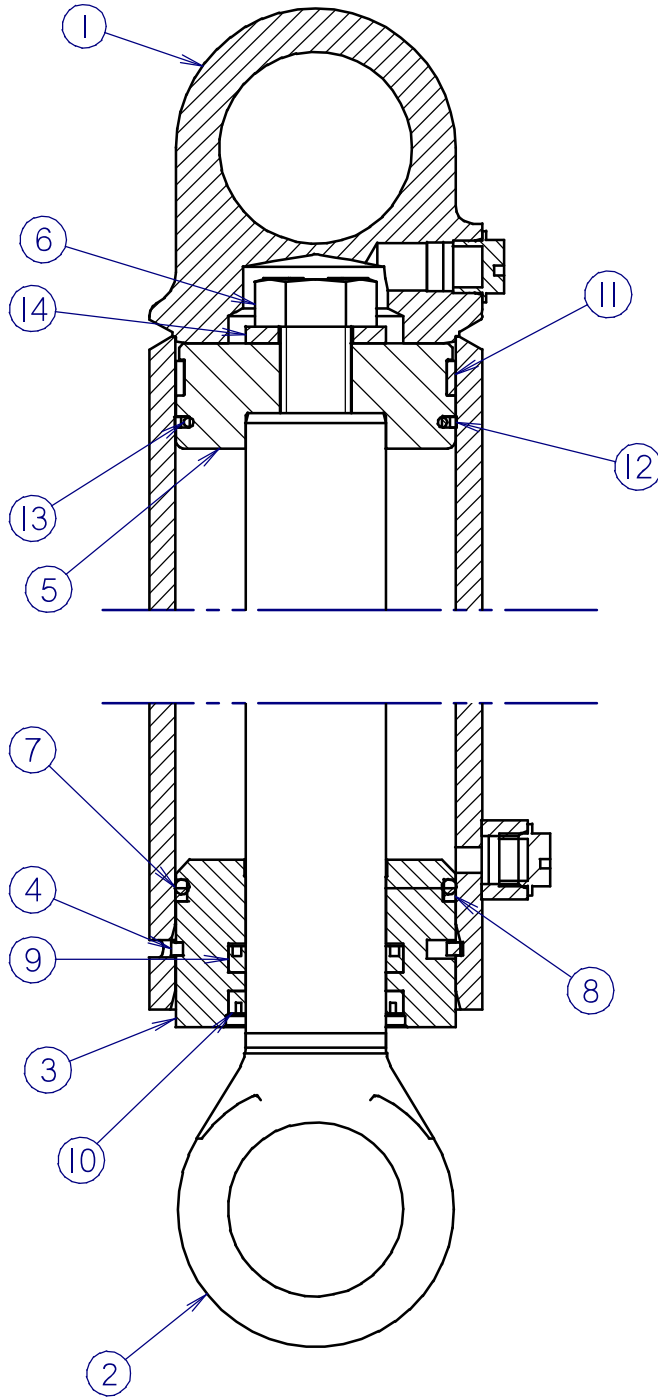
NOT SHOWN:

- 259-040 U-SEAL INSTALLER (1.5" - UP)
- 259-238 WIPER INSTALLER (1.75")
- 259-244 PISTON SEAL INSTALLER (3.5")
- 259-245 PISTON INSTALLER (3.5")
- 259-188 CYL HEAD SPANNER - TWO PIN

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809-366

HYDRAULIC CYLINDERS (4.0" X 2.0")



HYDRAULIC CYLINDERS (4.0" X 2.0")

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	149-698	-	CYL (4.0 X 2.0 X 4.0)	SEE FOOTNOTES 1 & 2
1	149-768	1	CYLINDER BARREL (4.0 X 4.0)	
2	153-021	1	CYLINDER ROD (2.00 X 4.0)	
	151-066	-	CYL (4.0 X 2.0 X 5.0)	SEE FOOTNOTES 1 & 2
1	152-012	1	CYLINDER BARREL (4.0 X 5.0)	
2	150-440	1	CYLINDER ROD (2.00 X 5.0)	
	149-699	-	CYL (4.0 X 2.0 X 6.0)	SEE FOOTNOTES 1 & 2
1	152-062	1	CYLINDER BARREL (4.0 X 6.0)	
2	149-735	1	CYLINDER ROD (2.00 X 6.0)	
	149-700	-	CYL (4.0 X 2.0 X 8.0)	SEE FOOTNOTES 1 & 2
1	152-030	1	CYLINDER BARREL (4.0 X 8.0)	
2	149-736	1	CYLINDER ROD (2.00 X 8.0)	
	149-701	-	CYL (4.0 X 2.0 X 10.0)	SEE FOOTNOTES 1 & 2
1	149-769	1	CYLINDER BARREL (4.0 X 10.0)	
2	153-016	1	CYLINDER ROD (2.00 X 10.0)	
	151-088	-	CYL (4.0 X 2.0 X 12.0)	SEE FOOTNOTES 1 & 2
1	150-298	1	CYLINDER BARREL (4.0 X 12.0)	
2	150-429	1	CYLINDER ROD (2.00 X 12.0)	
	149-702	-	CYL (4.0 X 2.0 X 16.0)	SEE FOOTNOTES 1 & 2
1	152-007	1	CYLINDER BARREL (4.0 X 16.0)	
2	149-737	1	CYLINDER ROD (2.00 X 16.0)	
	149-703	-	CYL (4.0 X 2.0 X 20.0)	SEE FOOTNOTES 1 & 2
1	149-770	1	CYLINDER BARREL (4.0 X 20.0)	
2	149-738	1	CYLINDER ROD (2.00 X 20.0)	
	149-704	-	CYL (4.0 X 2.0 X 24.0)	SEE FOOTNOTES 1 & 2
1	152-063	1	CYLINDER BARREL (4.0 X 24.0)	
2	149-739	1	CYLINDER ROD (2.00 X 24.0)	
3	149-006	1	CYLINDER HEAD (4.0 X 2.00)	
4	149-303	1	LOCK RING (4.0)	
5	149-307	1	CYLINDER PISTON (4.0 X 2.00)	
6	106-145	1	BOLT (1-NC X 2-1/4", GD8)	SEE FOOTNOTE 3
7	157-035	1	O-RING (342 D90)	
8	157-036	1	BACKUP RING (342 D90)	
9	157-559	1	U-SEAL (2.000")	
10	157-558	1	WIPER SEAL (2.000")	
11	125-793	1	WEAR RING	
12	157-570	1	BACKUP RING (238 D90)	
13	157-044	1	O-RING (238 D90)	
14	106-144	1	WASHER (1")	

FOOTNOTES

- REF. #1 & #2 ARE SPECIFIC TO EACH CYLINDER, REF. #3 THRU #14 ARE COMMON FOR ALL THE ABOVE LISTED CYLINDERS.
- SEAL REPAIR KIT P/N: 190-189
- APPLY LOCTITE 277 OR EQUIVALENT, TORQUE TO 630-700 FT-LBS

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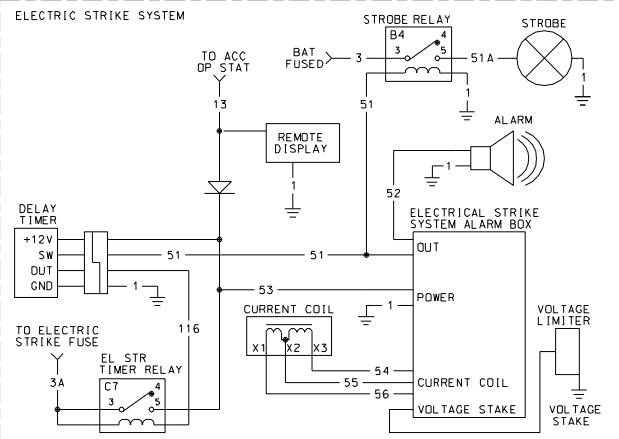
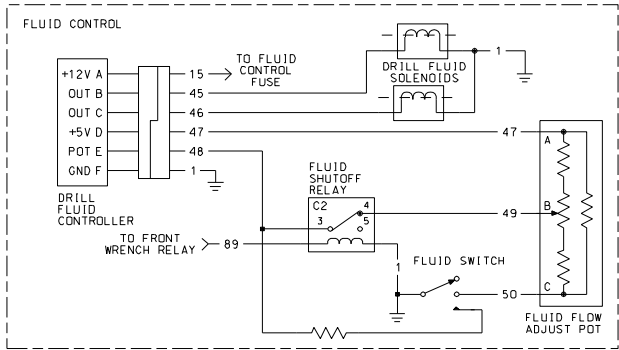
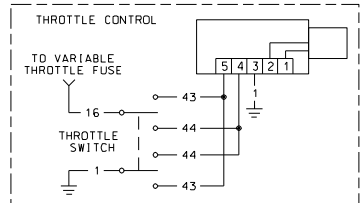
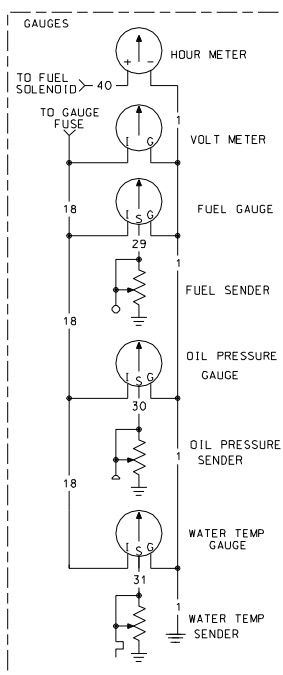
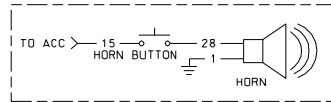
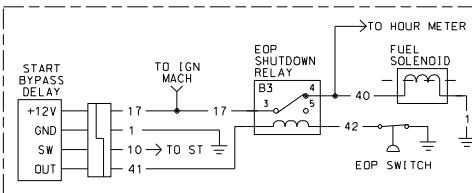
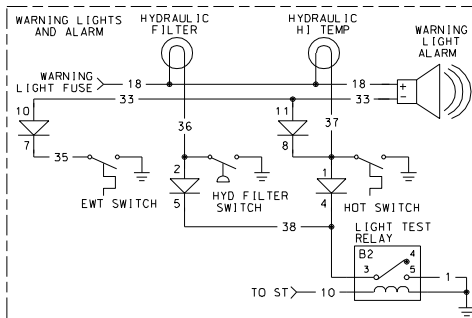
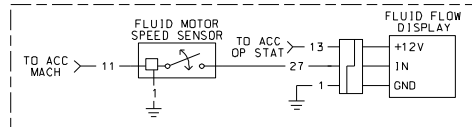
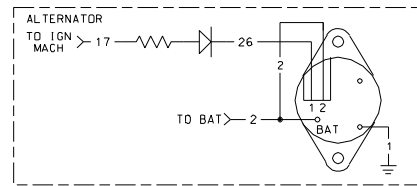
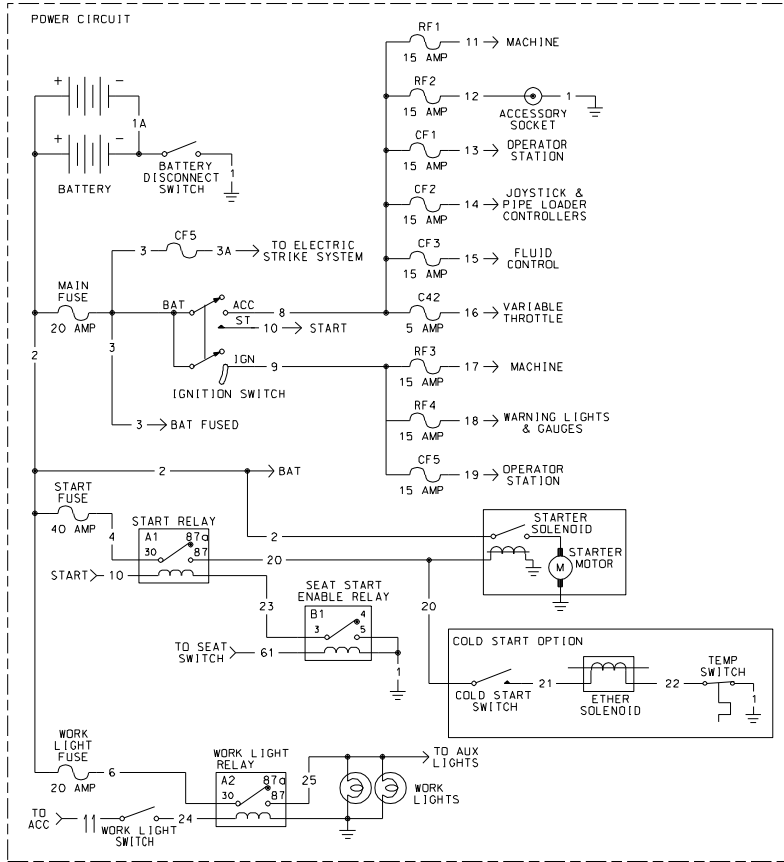
- 259-040 U-SEAL INSTALLER (1.5" - UP)
- 259-239 WIPER/SEAL INSTALLER (2")
- 259-246 PISTON SEAL INSTALLER (4")
- 259-247 PISTON INSTALLER (4")
- 259-188 CYL HEAD SPANNER - TWO PIN

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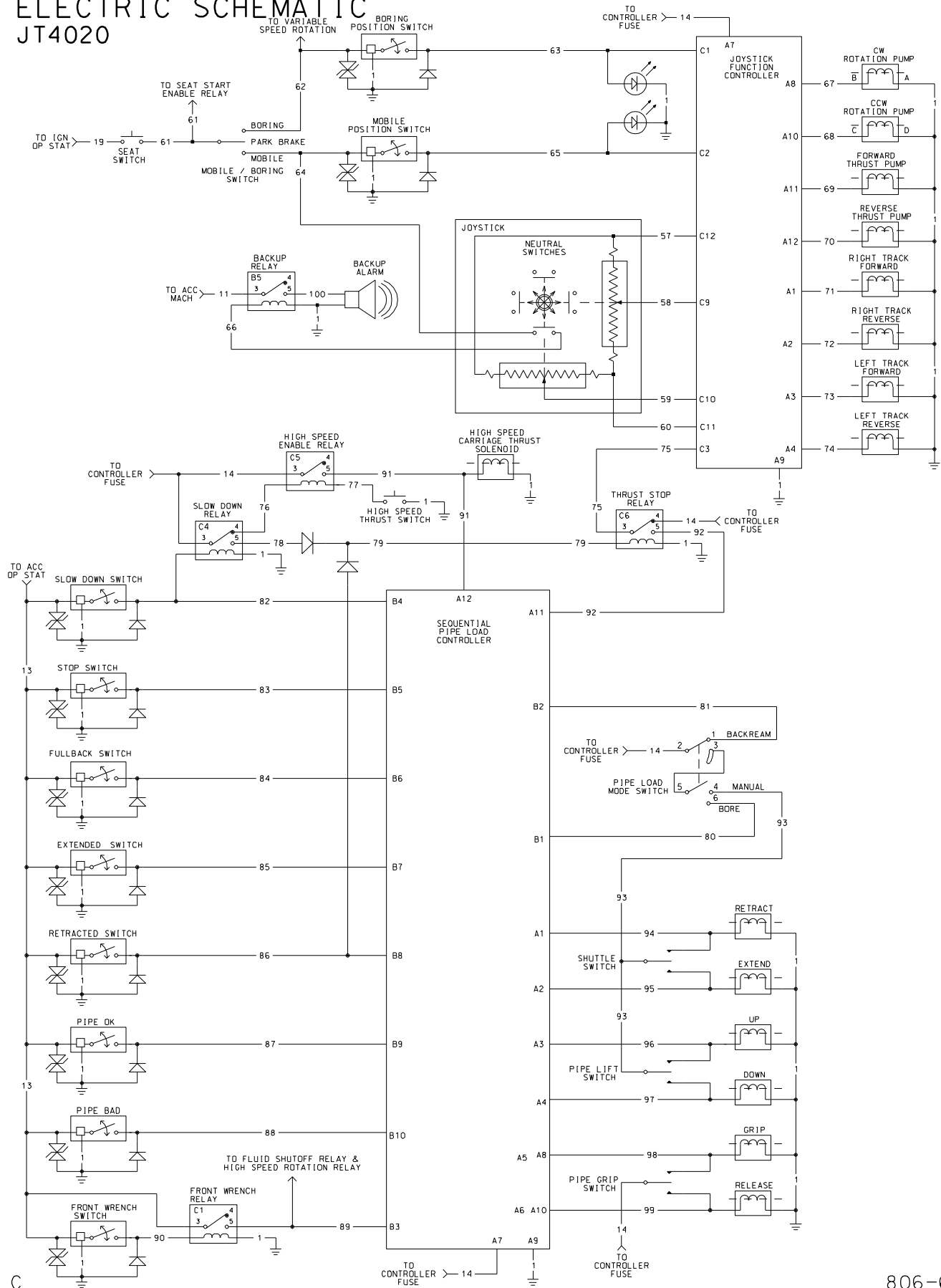
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ELECTRIC SCHEMATIC JT4020

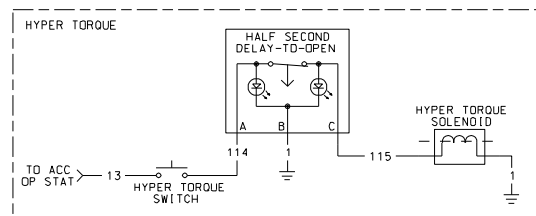
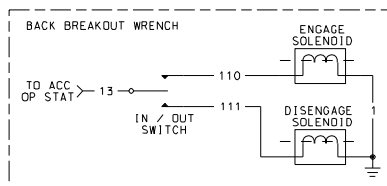
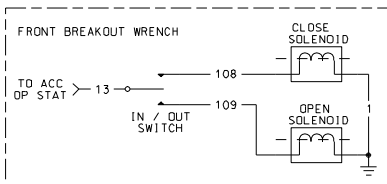
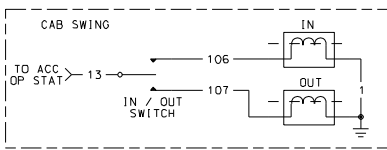
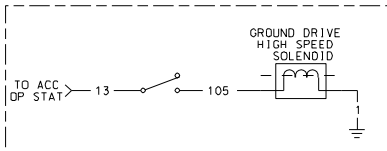
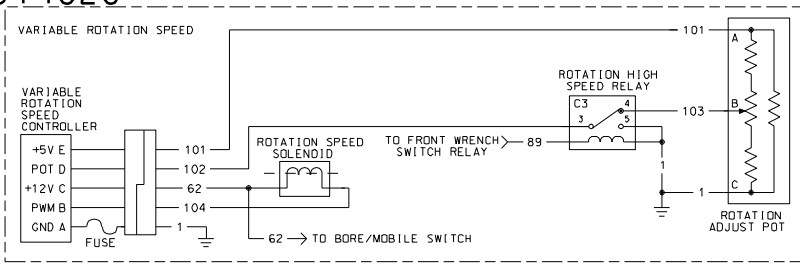


ELECTRIC SCHEMATIC JT4020



C

ELECTRIC SCHEMATIC JT4020



ELECTRIC SCHEMATIC

JT4020

CKT NO.	WIRE COLOR	FUNCTION
1.	BLK	SYSTEM GROUND
1A.	BLK	BATTERY NEGATIVE TO BATTERY DISCONNECT SWITCH
2.	RED	BATTERY POSITIVE TO FUSE BLOCK
3.	RED	FUSED BATTERY POWER
4.	RED/BLK	START FUSE TO START RELAY
5.		
6.	BLU	WORK LIGHT FUSE TO RELAY
7.		
8.	ORG	IGNITION SWITCH ACCESSORY CIRCUIT
9.	ORG/BLU	IGNITION SWITCH IGNITION CIRCUIT
10.	WHT/BLK	IGNITION SWITCH START CIRCUIT
11.	ORG	FUSED ACCESSORY CIRCUIT (MACHINE)
12.	ORG/BLU	ACCESSORY SOCKET CIRCUIT
13.	ORG	FUSED ACCESSORY CIRCUIT (OPERATORS STATION)
14.	ORG/WHT	JOYSTICK CONTROLLER CIRCUIT
15.	RED/WHT	FLUID CONTROL FUSE
16.	GRA/ORG	VARIABLE THROTTLE CIRCUIT
17.	ORG/GRN	FUSED IGNITION CIRCUIT (MACHINE)
18.	ORG/BRN	WARNING LIGHT & GAUGE CIRCUIT
19.	ORG/GRN	FUSED IGNITION CIRCUIT (OPERATORS STATION)
20.	PUR	START RELAY TO STARTER, START FUEL SOLENOID & COLD START OPTION
21.	BRN/ORG	COLD START SWITCH TO ETHER SOLENOID
22.	BLK	ETHER SOLENOID TO TEMP SWITCH
23.	GRN	START RELAY TO SEAT START ENABLE RELAY
24.	TAN/RED	WORK LIGHT SWITCH TO WORK LIGHT RELAY
25.	YEL	WORK LIGHT RELAY TO WORK LIGHTS
26.	ORG/BLU	RESISTOR - DIODE TO ALTERNATOR EXCITER CONNECTION
27.	TAN/WHT	FLUID MOTOR SPEED SENSOR TO FLUID FLOW DISPLAY
28.	TAN/BLU	HORN BUTTON TO HORN
29.	BRN	FUEL SENDER TO FUEL GAUGE
30.	BLU	OIL PRESSURE SENDER TO OIL PRESSURE GAUGE
31.	GRN	WATER TEMP SENDER TO WATER TEMP GAUGE
32.		
33.	BLU/RED	WARNING LIGHT ALARM (NEG) TO DIODES
34.		
35.	WHT/GRN	ENGINE WATER TEMP SWITCH TO LIGHT & DIODES
36.	GRA/YEL	HYDRAULIC FILTER SWITCH TO LIGHT & DIODES
37.	GRA/BLK	HYDRAULIC OIL TEMP SWITCH TO LIGHT & DIODES
38.	BLK/ORG	LIGHT TEST RELAY TO DIODES
39.		
40.	ORG/BLK	EOP SHUT DOWN RELAY TO FUEL SOLENOID & HOUR METER
41.	WHT/ORG	START BYPASS RELAY TO START BYPASS DELAY MODULE
42.	WHT/BLU	ENGINE OIL PRESSURE SWITCH TO EOP SHUT DOWN RELAY
43.	WHT/ ?	THROTTLE SWITCH TO LINEAR ACTUATOR
44.	GRN/ ?	THROTTLE SWITCH TO LINEAR ACTUATOR
45.	GRA	DRILL FLUID CONTROLLER TO SOLENOID ONE
46.	GRA/RED	DRILL FLUID CONTROLLER TO SOLENOID TWO
47.	BLU	DRILL FLUID CONTROLLER TO FLUID FLOW POT
48.	GRN	DRILL FLUID CONTROLLER TO FLUID SHUTOFF RELAY
49.	GRN	FLUID SHUTOFF RELAY TO FLUID FLOW POT & FLUID SWITCH
50.	BLK/YEL	FLUID FLOW POT TO FLUID SWITCH
51.	WHT/PUR	ELECTRIC STRIKE CONTROL TO DELAY TIMER AND STROBE RELAY
51A.	WHT/PUR	STROBE RELAY TO STROBE
52.	BRN	ELECTRIC STRIKE CONTROL TO LOCAL ALARM
53.	ORG/RED	ELECTRIC STRIKE CONTROL POWER
54.	RED	ELECTRIC STRIKE BOX TO CURRENT COIL X3
55.	BLK	ELECTRIC STRIKE BOX TO CURRENT COIL X2
56.	WHT	ELECTRIC STRIKE BOX TO CURRENT COIL X1

ELECTRIC SCHEMATIC

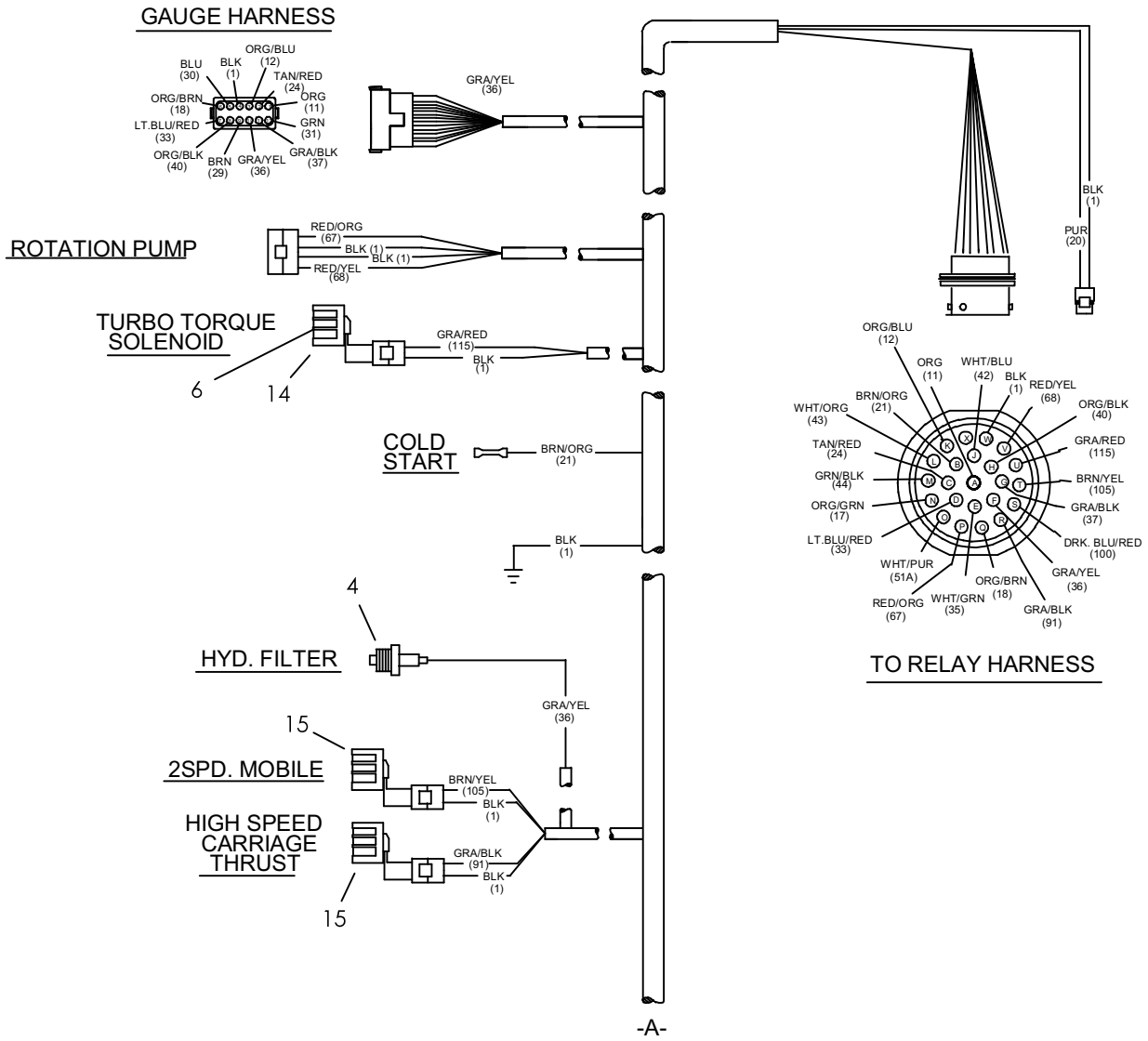
JT4020

CKT NO.	WIRE COLOR	FUNCTION
57.	BLU/ORG	JOYSTICK TO JOYSTICK CONTROLLER (5V)
58.	GRN/ORG	JOYSTICK TO JOYSTICK CONTROLLER (Y-AXIS)
59.	GRN/BLU	JOYSTICK TO JOYSTICK CONTROLLER (X-AXIS)
60.	BLK/ORG	JOYSTICK TO JOYSTICK CONTROLLER (GROUND)
61.	GRA/ORG	SEAT SWITCH TO MOBILE / BORING SWITCH & START RELAY
62.	TAN/RED	MOBILE / BORING SWITCH TO BORING POSITION SWITCH
63.	GRN/RED	BORE POSITION SWITCH TO JOYSTICK CONTROLLER
64.	YEL/BRN	MOBILE / BORING SWITCH TO MOBILE POSITION SWITCH
65.	BLU/BRN	MOBILE POSITION SWITCH TO JOYSTICK CONTROLLER
66.	GRA/GRN	JOYSTICK TO BACK-UP RELAY
67.	RED/ORG	JOYSTICK CONTROLLER TO CW ROTATION SOLENOID
68.	RED/YEL	JOYSTICK CONTROLLER TO CCW ROTATION SOLENOID
69.	WHT/GRN	JOYSTICK CONTROLLER TO FORWARD THRUST SOLENOID
70.	BLU/GRN	JOYSTICK CONTROLLER TO REVERSE THRUST SOLENOID
71.	GRA/GRN	JOYSTICK CONTROLLER TO RIGHT TRACK FORWARD SOLENOID
72.	PUR/GRN	JOYSTICK CONTROLLER TO RIGHT TRACK REVERSE SOLENOID
73.	TAN/GRN	JOYSTICK CONTROLLER TO LEFT TRACK FORWARD SOLENOID
74.	YEL/GRN	JOYSTICK CONTROLLER TO LEFT TRACK REVERSE SOLENOID
75.	WHT/BLK	THRUST STOP RELAY TO JOYSTICK CONTROLLER
76.	YEL	SLOW DOWN RELAY TO HIGH SPEED ENABLE RELAY
77.	PUR/GRN	HIGH SPEED ENABLE RELAY TO HIGH SPEED THRUST SWITCH
78.	WHT/BLU	SLOW DOWN RELAY TO DIODE
79.	RED	DIODE TO THRUST STOP RELAY
80.	GRN/BLU	PIPE LOAD MODE SWITCH TO PIPE LOAD CONTROLLER (BORE)
81.	GRA/BLU	PIPE LOAD MODE SWITCH TO PIPE LOAD CONTROLLER (BACKREAM)
82.	BLU/WHT	SLOW DOWN SWITCH TO PIPE LOAD CONTROLLER
83.	GRA/WHT	STOP SWITCH TO PIPE LOAD CONTROLLER
84.	TAN/WHT	FULLBACK SWITCH TO PIPE LOAD CONTROLLER
85.	GRN/RED	EXTENDED SWITCH TO PIPE LOAD CONTROLLER
86.	WHT/RED	RETRACTED SWITCH TO PIPE LOAD CONTROLLER
87.	PUR/ORG	PIPE OK SWITCH TO PIPE LOAD CONTROLLER
88.	BRN/ORG	PIPE BAD SWITCH TO PIPE LOAD CONTROLLER
89.	WHT/GRN	FRONT WRENCH RELAY TO PIPE LOAD CONTROLLER
90.	WHT	FRONT WRENCH SWITCH TO FRONT WRENCH RELAY
91.	GRA/BLK	PIPE LOAD CONTROLLER TO HIGH SPEED THRUST SOLENOID & ENABLE RELAY
92.	TAN/BLK	PIPE LOAD CONTROLLER TO THRUST STOP RELAY
93.	BRN/ORG	PIPE LOAD MODE SWITCH TO SHUTTLE, PIPE LIFT & PIPE GRIP SWITCHES
94.	BLU/YEL	SHUTTLE SWITCH TO RETRACT SOLENOID & PIPE LOAD CONTROLLER
95.	GRA/YEL	SHUTTLE SWITCH TO EXTEND SOLENOID & PIPE LOAD CONTROLLER
96.	PUR/YEL	PIPE LIFT SWITCH TO PIPE UP SOLENOID & PIPE LOAD CONTROLLER
97.	WHT/YEL	PIPE LIFT SWITCH TO PIPE DOWN SOLENOID & PIPE LOAD CONTROLLER
98.	YEL/RED	PIPE GRIP SWITCH TO PIPE GRIP SOLENOID & PIPE LOAD CONTROLLER
99.	YEL/BLU	PIPE GRIP SWITCH TO PIPE RELEASE SOLENOID & PIPE LOAD CONTROLLER
100.	BLU/RED	BACKUP RELAY TO BACKUP ALARM

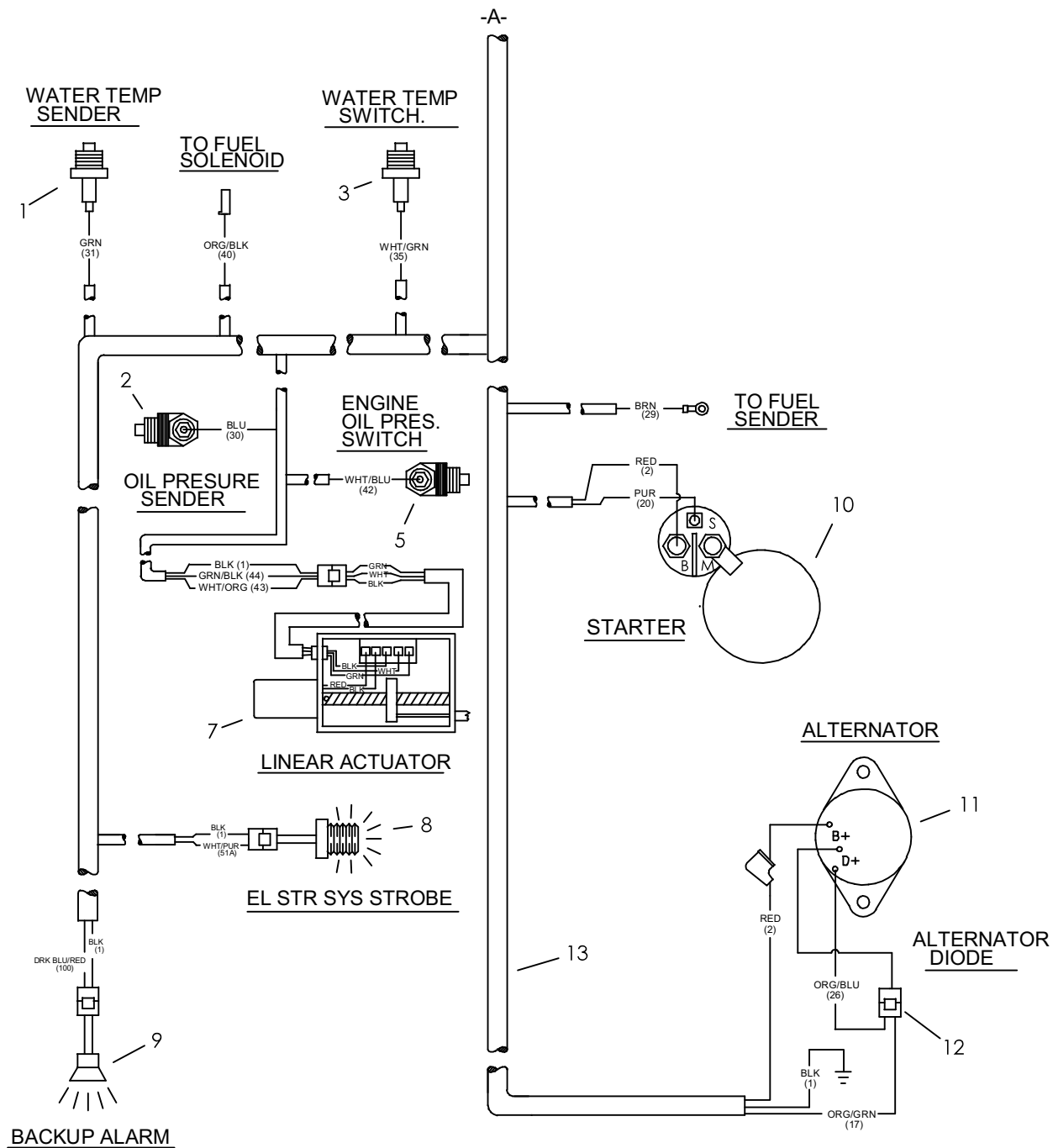
ELECTRIC SCHEMATIC JT4020

- 101. BLU/BLK ROTATION ADJUST POT TO ROTATION SPEED CONTROLLER
- 102. GRN/BLK ROTATION SPEED CONTROLLER TO HIGH SPEED RELAY
- 103. GRN/BLK HIGH SPEED RELAY TO ROTATION ADJUST POT
- 104. BLK/WHT ROTATION SPEED SOLENOID TO CONTROLLER
- 105. BRN/YEL MOBILE HIGH SPEED SWITCH TO SOLENOID
- 106. GRA/BLU CAB SWING SWITCH TO SWING IN SOLENOID
- 107. GRA/BLK CAB SWING SWITCH TO SWING OUT SOLENOID
- 108. BLU/BLK FRONT BREAKOUT WRENCH SWITCH TO WRENCH CLOSE SOLENOID
- 109. BLU/RED FRONT BREAKOUT WRENCH SWITCH TO WRENCH OPEN SOLENOID
- 110. TAN/BLK REAR BREAKOUT WRENCH SWITCH TO WRENCH ENGAGE SOLENOID
- 111. TAN/BLU REAR BREAKOUT WRENCH SWITCH TO WRENCH DISENGAGE SOLENOID
- 112.
- 113.
- 114. PUR/RED HYPER TORQUE SWITCH TO DELAY TIMER
- 115. GRA/RED HYPER TORQUE DELAY TIMER TO SOLENOID
- 116.
- 117.
- 118.
- 119.
- 120.

ELECTRICAL DIAGRAM ENGINE HARNESS



ELECTRICAL DIAGRAM ENGINE HARNESS



ELECTRICAL DIAGRAM ENGINE HARNESS

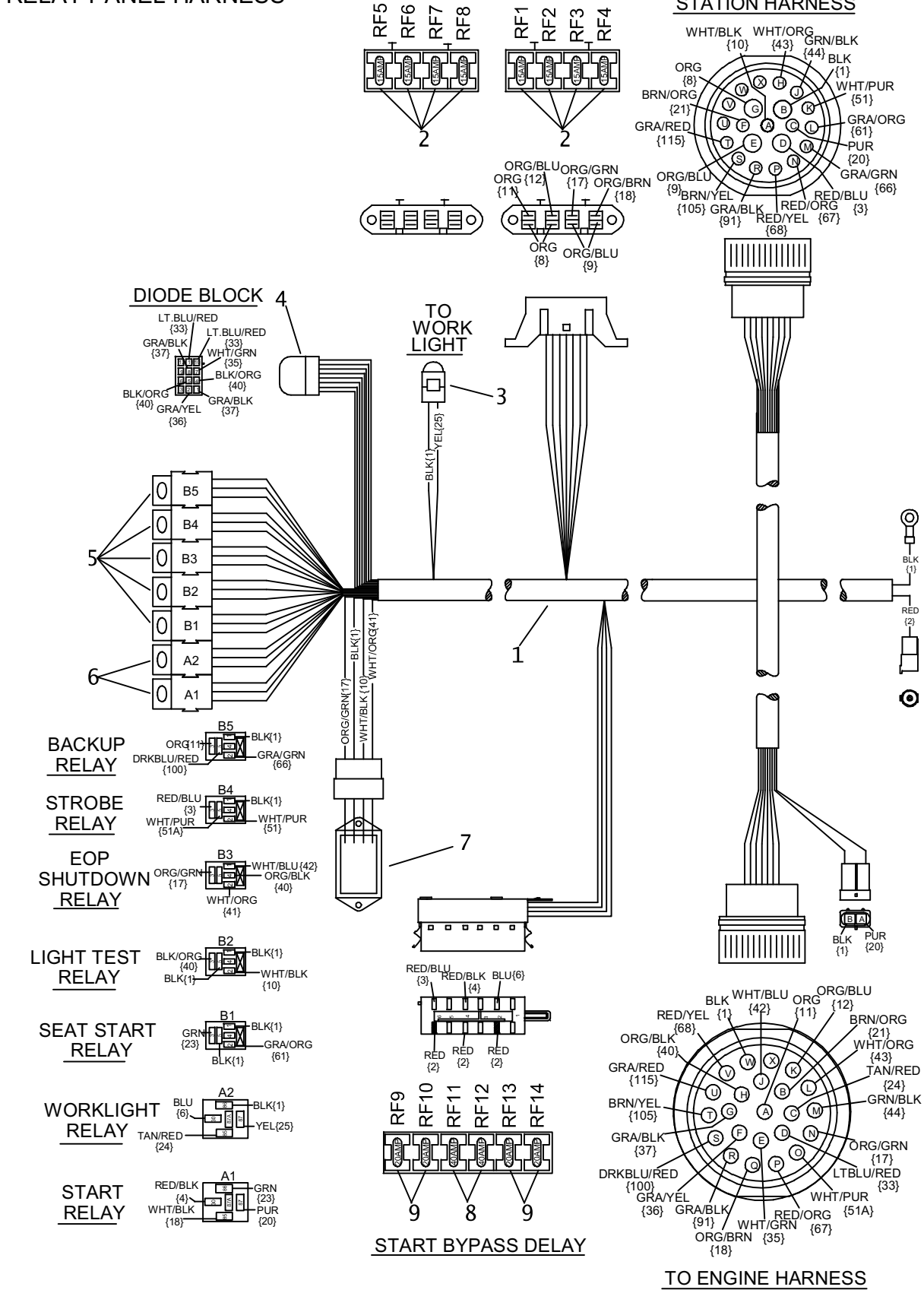
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	217-550	1	WATER TEMPERATURE SENDER	
2.	215-113	1	OIL PRESSURE SENDER	
	215-183	1	SENDER, OIL PRESSURE HD	
3.	217-575	1	HIGH TEMPERATURE SWITCH	
4.	N/A	1	RESTRICTION SWITCH	
5.	217-736	1	OIL PRESSURE SWITCH	
6.	214-209	1	2-WAY MALE CAP	
7.	215-231	1	LINEAR ACTUATOR	INCL CABLE & ROLL PIN & PIGTAIL
	214-299	1	ACTUATOR PIGTAIL	
	196-331	1	CABLE (LINEAR ACTUATOR)	
	501-358	-	ROLL PIN (3/32" X 3/4")	INCL BULB
8.	217-041	1	STROBE LIGHT	
	217-720	1	BULB (12V DC)	
9.	306-602	1	BACKUP ALARM	
10.	211-022	1	STARTER	
11.	217-451	1	ALTERNATOR	
12.	214-256	1	DIODE CONNECTOR	
13.	214-480	1	ENGINE HARNESS	
14.	217-947	1	COIL	
15.	217-770	1	SOLENOID COIL	

NOT SHOWN:

FOOTNOTES:

NOTE:

ELECTRICAL DIAGRAM RELAY PANEL HARNESS



ELECTRICAL DIAGRAM RELAY PANEL HARNESS

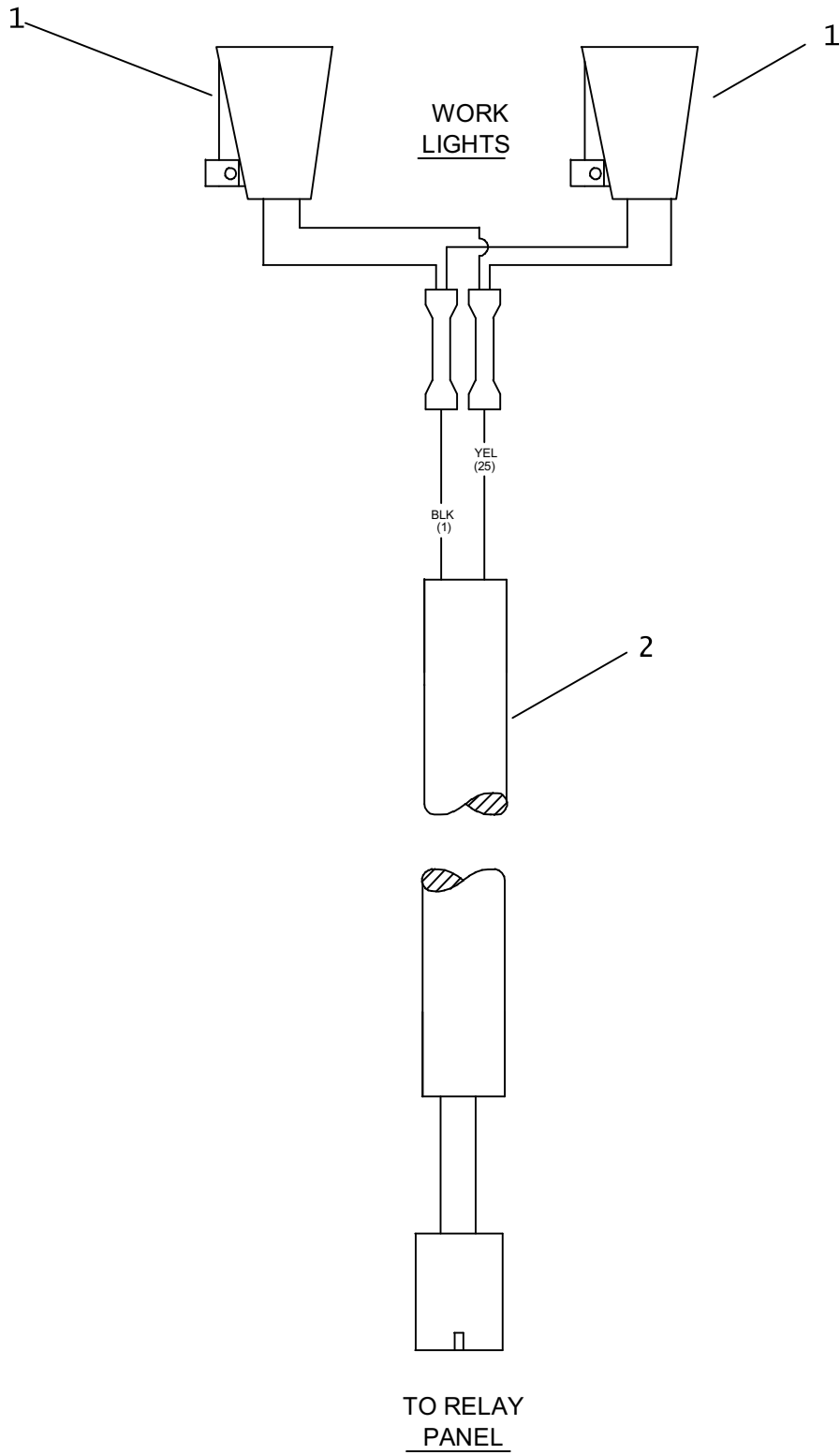
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	214-485	1	RELAY PANEL HARNESS	
2.	217-811	8	FUSE (ATC, 15 AMP)	
3.	214-398	1	WORK LIGHT HARNESS	
4.	216-521	1	DIODE BLOCK	
5.	217-710	5	MICRO RELAY (SPDT)	
6.	217-826	2	MINI RELAY (SPDT)	
7.	217-937	1	START BYPASS DELAY TIMER	
8.	217-791	2	FUSE (MAXI, 40 AMP)	
9.	217-805	4	FUSE (MAXI, 20AMP)	

NOT SHOWN:

FOOTNOTES:

NOTE:

ELECTRICAL DIAGRAM WORK LIGHT HARNESS



ELECTRICAL DIAGRAM WORK LIGHT HARNESS

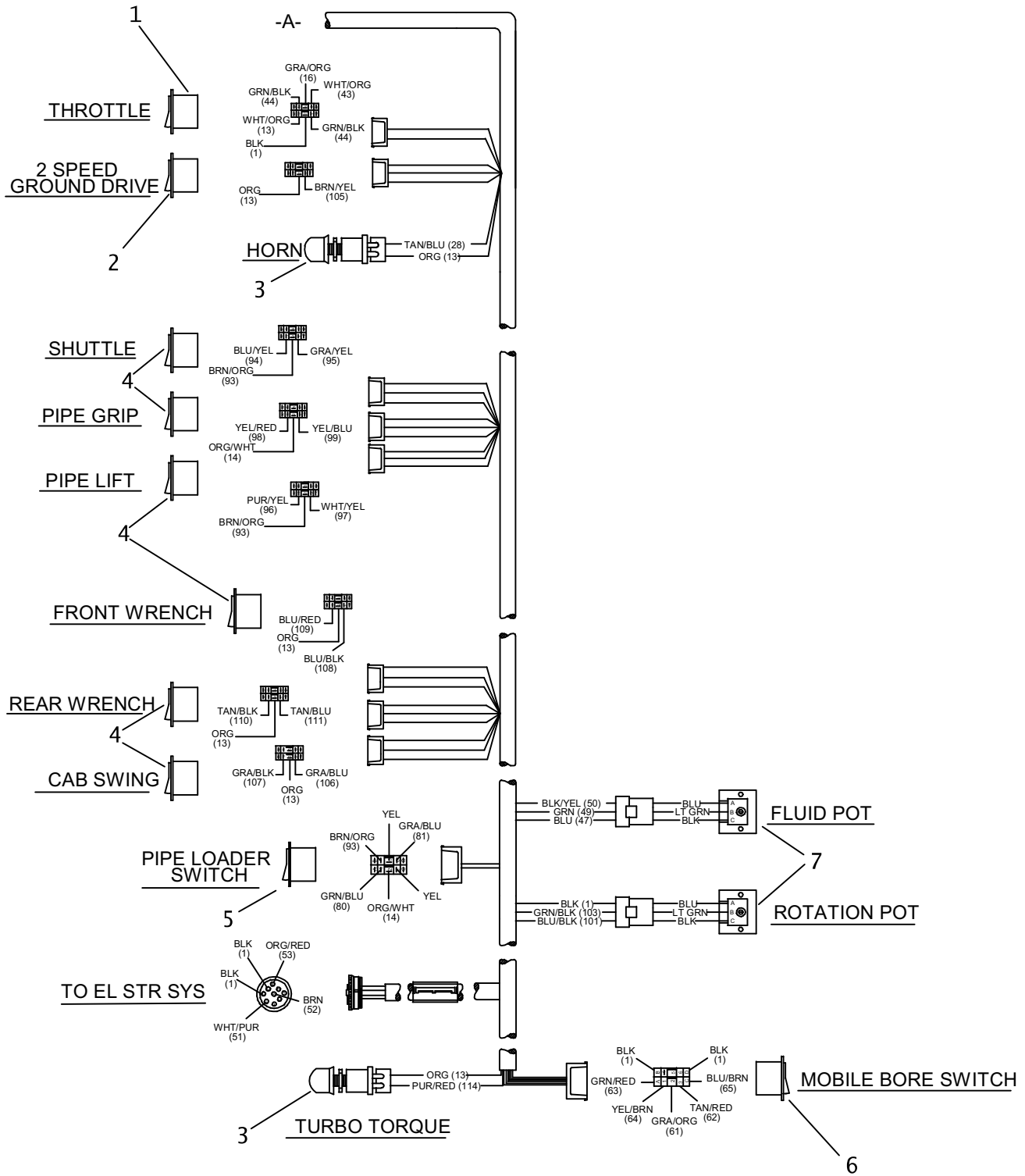
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	217-057	2	WORKING LIGHT - CLEAR	
2.	214-398	1	WORK LIGHT HARNESS	

NOT SHOWN:

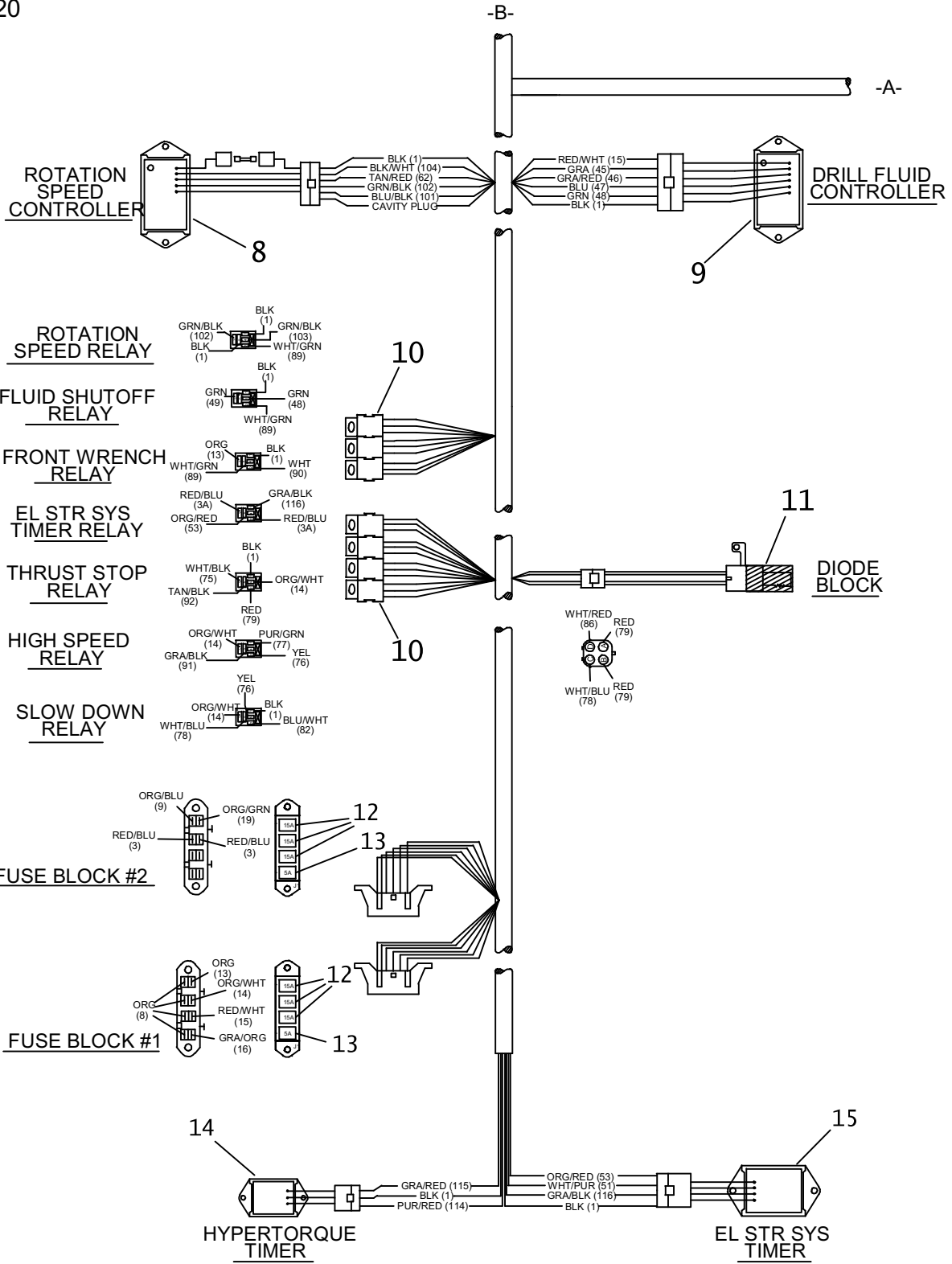
FOOTNOTES:

NOTE:

ELECTRICAL DIAGRAM OPERATOR STATION HARNESS JT4020

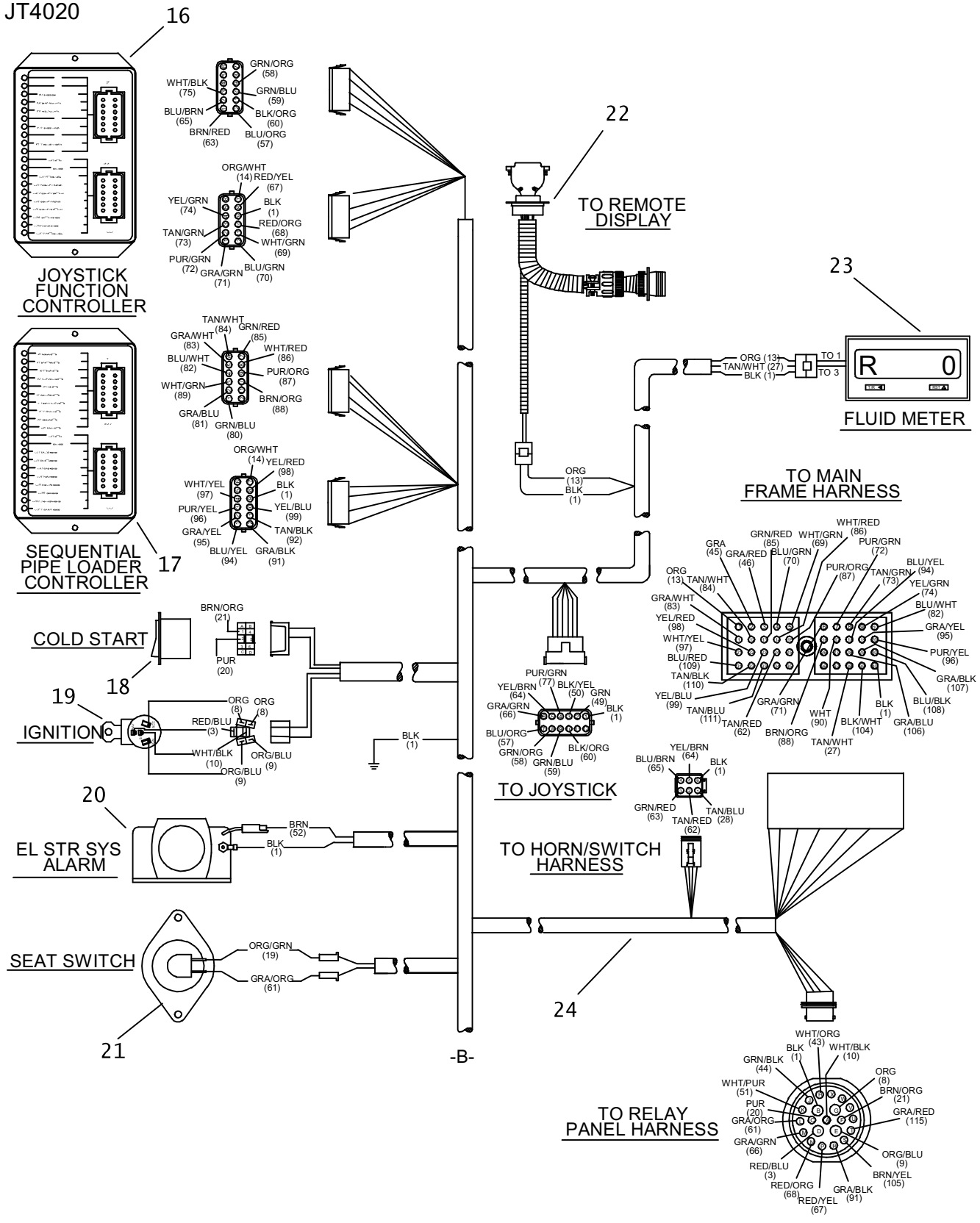


ELECTRICAL DIAGRAM OPERATOR STATION HARNESS JT4020



ELECTRICAL DIAGRAM OPERATOR STATION HARNESS

JT4020



ELECTRICAL DIAGRAM

OPERATOR STATION HARNESS

JT4020

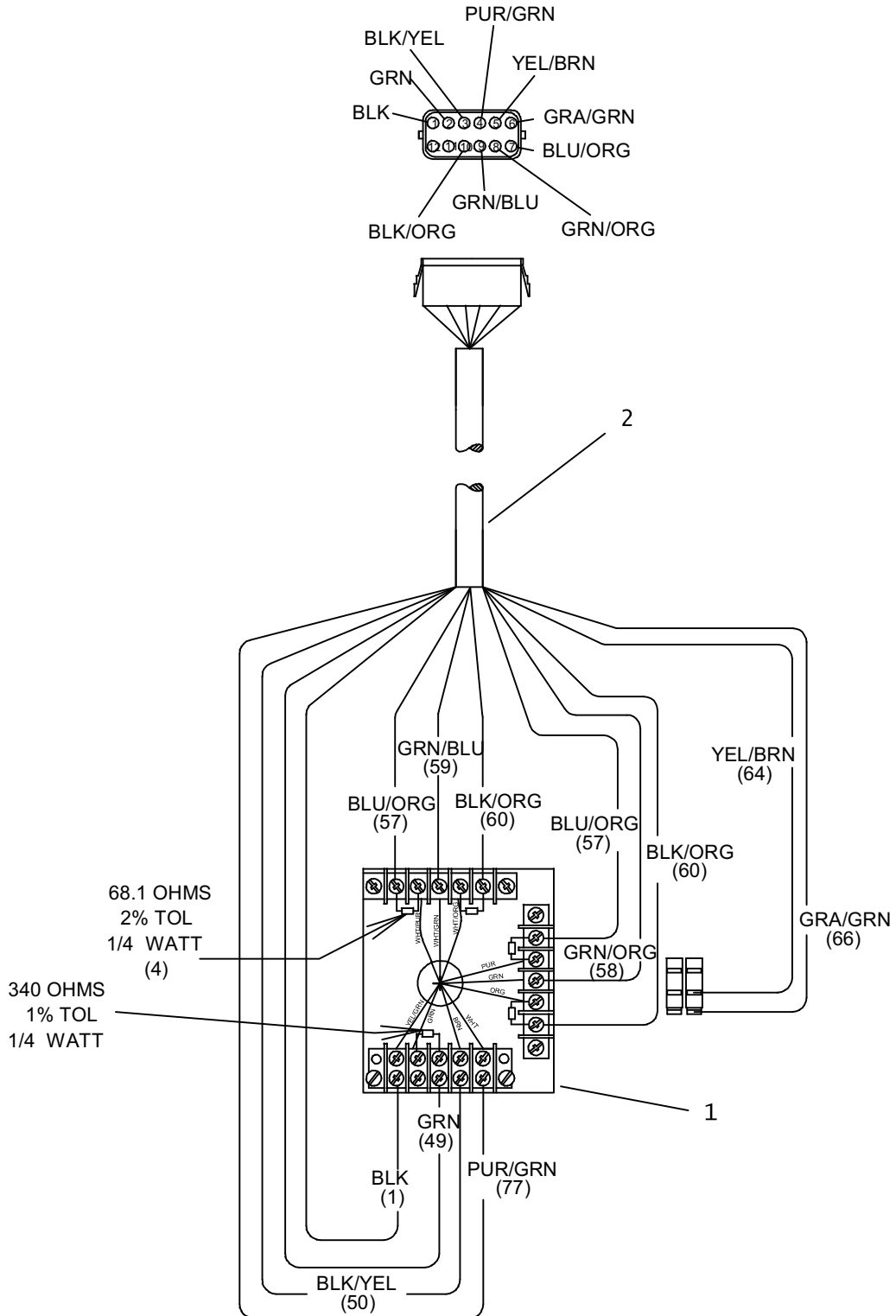
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	214-489	1	ROCKER SWITCH (DPDT, (ON)-OFF-(ON)	
2.	217-907	1	ROCKER SWITCH (DPDT) ON-ON	
3.	306-607	2	HORN BUTTON	
4.	217-911	6	ROCKER SWITCH (SPDT, (ON)-OFF-(ON)	
5.	217-912	1	ROCKER SWITCH (DPDT) ON-ON-ON	
6.	217-923	1	ROCKER SWITCH (DPDT) ON-OFF-ON	
7.	217-940	2	FLUID FLOW POTENTIOMETER	
8.	215-914	1	DRILL FLUID CONTROLLER	ROTATION SPEED CONTROLLER
9.	214-486	1	DRILL FLUID CONTROLLER	
10.	217-710	7	MICRO RELAY (SPDT)	
11.	214-449	1	DIODE CONNECTOR	
12.	217-811	6	FUSE (ATC, 15 AMP)	
13.	217-809	2	FUSE (ATC, 5 AMP)	
14.	217-208	1	TEN-SECOND DELAY TIMER RELAY	
15.	<u>214-430</u>	1	DELAY TIMER	
	214-502		DELAY TIMR	
16.	214-487	1	JOYSTICK CONTROLLER	
17.	214-488	1	PIPE LOADER CONTROLLER	OPTION
18.	217-917	-	ROCKER SWITCH (DPDT, (OFF)-(ON)	
19.	214-852	1	IGNITION SWITCH	
	214-961		KEY, PAIR	
	214-962		SWITCH MOUNTING NUT	
20.	214-416	1	HORN (ELECTRIC)	
21.	217-750	1	SEAT SWITCH	
22.	214-415	1	90D MODULE TO RIG CABLE	
23.	217-221	1	FLOW METER DISPLAY	
24.	214-483	1	OPERATOR STATION HARNESS	

NOT SHOWN:

FOOTNOTES:

NOTE:

ELECTRICAL DIAGRAM JOYSTICK HARNESS



ELECTRICAL DIAGRAM JOYSTICK HARNESS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	191-078	1	JOYSTICK AND HARNESS KI	INCLUDES JOYSTICK & HARNESS
	307-288	-	BOOT (RUBBER)	
	214-473	-	JOYSTICK 'HANDLE' {GRAY}	
	499-108	-	PUSH BUTTON	
	499-109	-	3 POSITION SWITCH	
	599-285	-	JT4020 JOYSTICK CONVERSION KIT	
	214-703	-	DUAL AXIS JOYSTICK	INCLUDES JOYSTICK & HARNESS
2.	214-482	1	JOYSTICK HARNESS	HARNESS ONLY
	217-279	1	JOYSTICK HARNESS	HARNESS ONLY

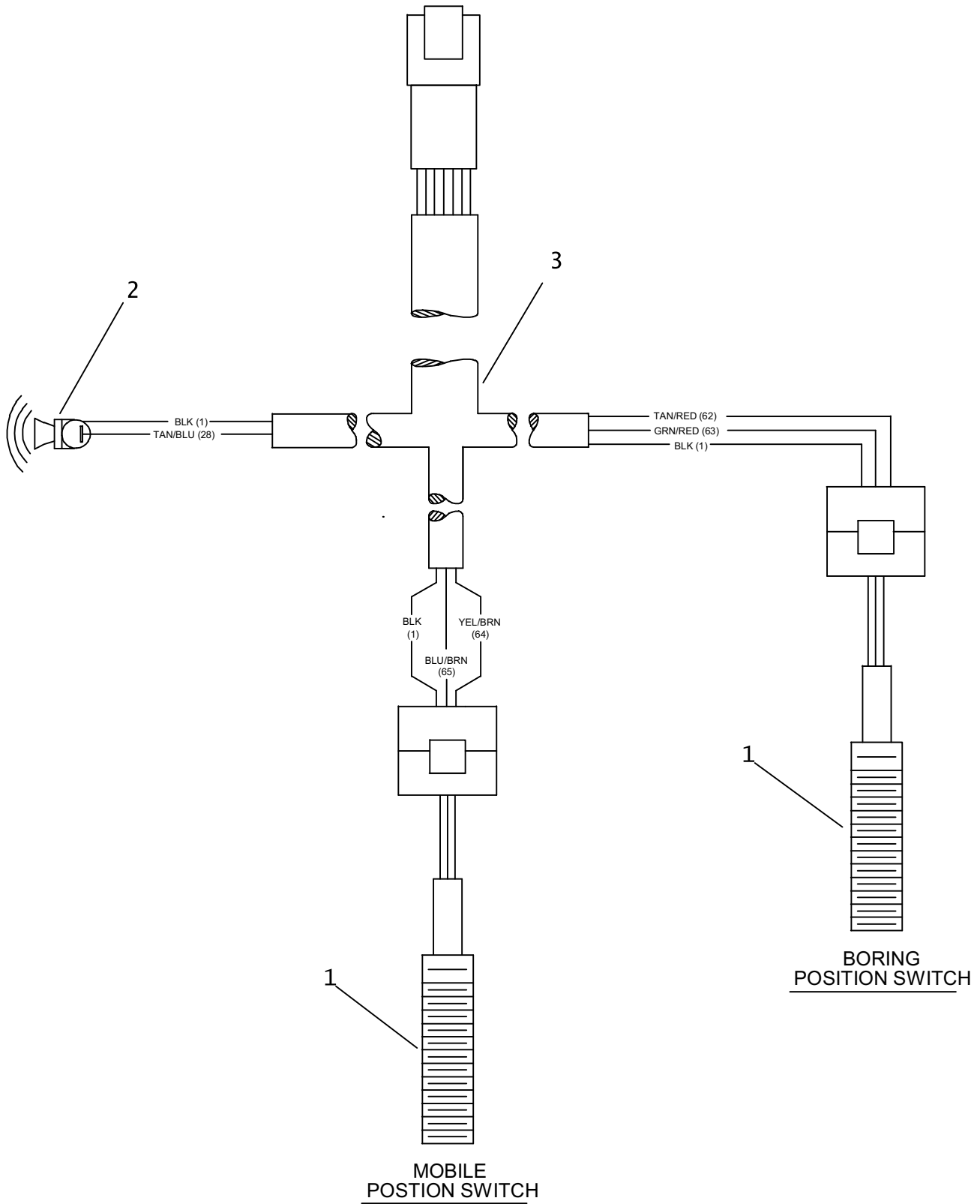
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FOOTNOTES:

NOTE:

ELECTRICAL DIAGRAM HORN/SWITCH HARNESS

TO OPERATOR
HARNESS



ELECTRICAL DIAGRAM HORN/SWITCH HARNESS

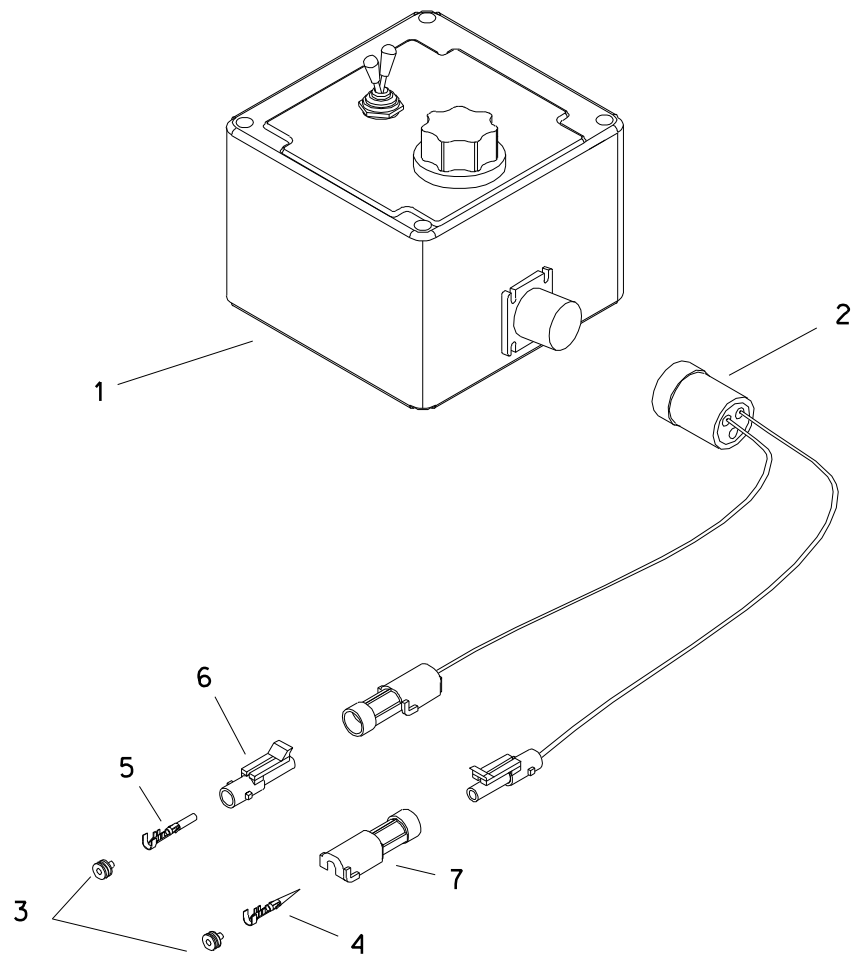
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	217-227	2	PROXIMITY SWITCH	
2.	214-416	1	HORN (ELECTRIC)	
3.	214-405	1	HORN/SWITCH HARNESS	

NOT SHOWN:

FOOTNOTES:

NOTE:

THRUST CONTROL KIT - JT4020

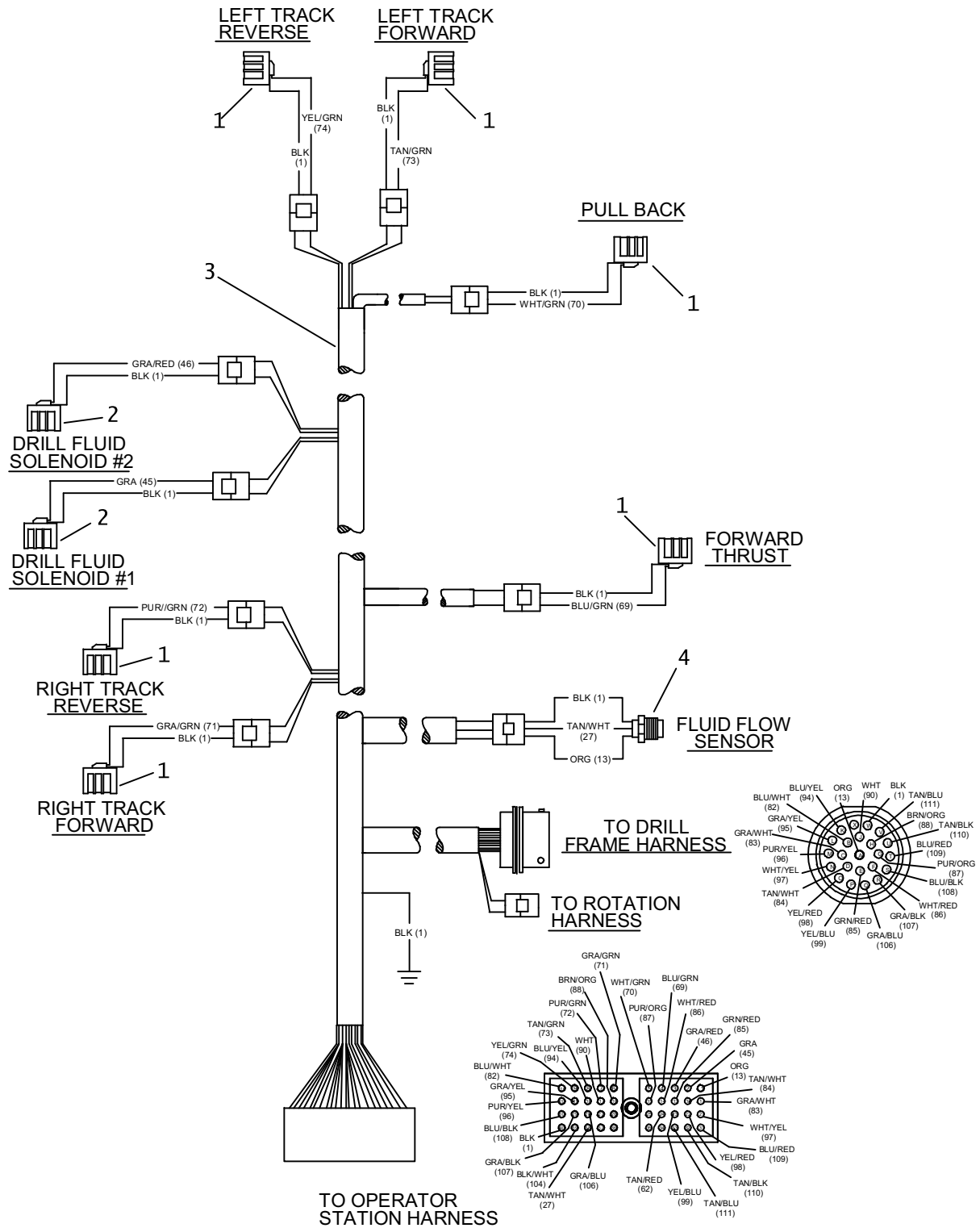


THRUST CONTROL KIT - JT4020

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	101-050	-	THRUST CONTROL KIT	CONTAINS REF NO. 1-7
1.	307-552	1	THRUST CONTROL BOX	
2.	214-673	1	VARIABLE THRUST HARNESS	
3.	157-645	2	WEATHER-PAC SEAL (2.80MM)	
4.	214-048	1	PACKARD WP TERMINAL FEMALE	
5.	214-104	1	PACKARD MALE TERMINAL	
6.	214-246	1	1-WAY MALE CONNECTOR	
7.	211-046	1	1-WAY FEMALE CONNECTOR	

FOOTNOTES

ELECTRICAL DIAGRAM MAIN FRAME HARNESS



ELECTRICAL DIAGRAM MAIN FRAME HARNESS

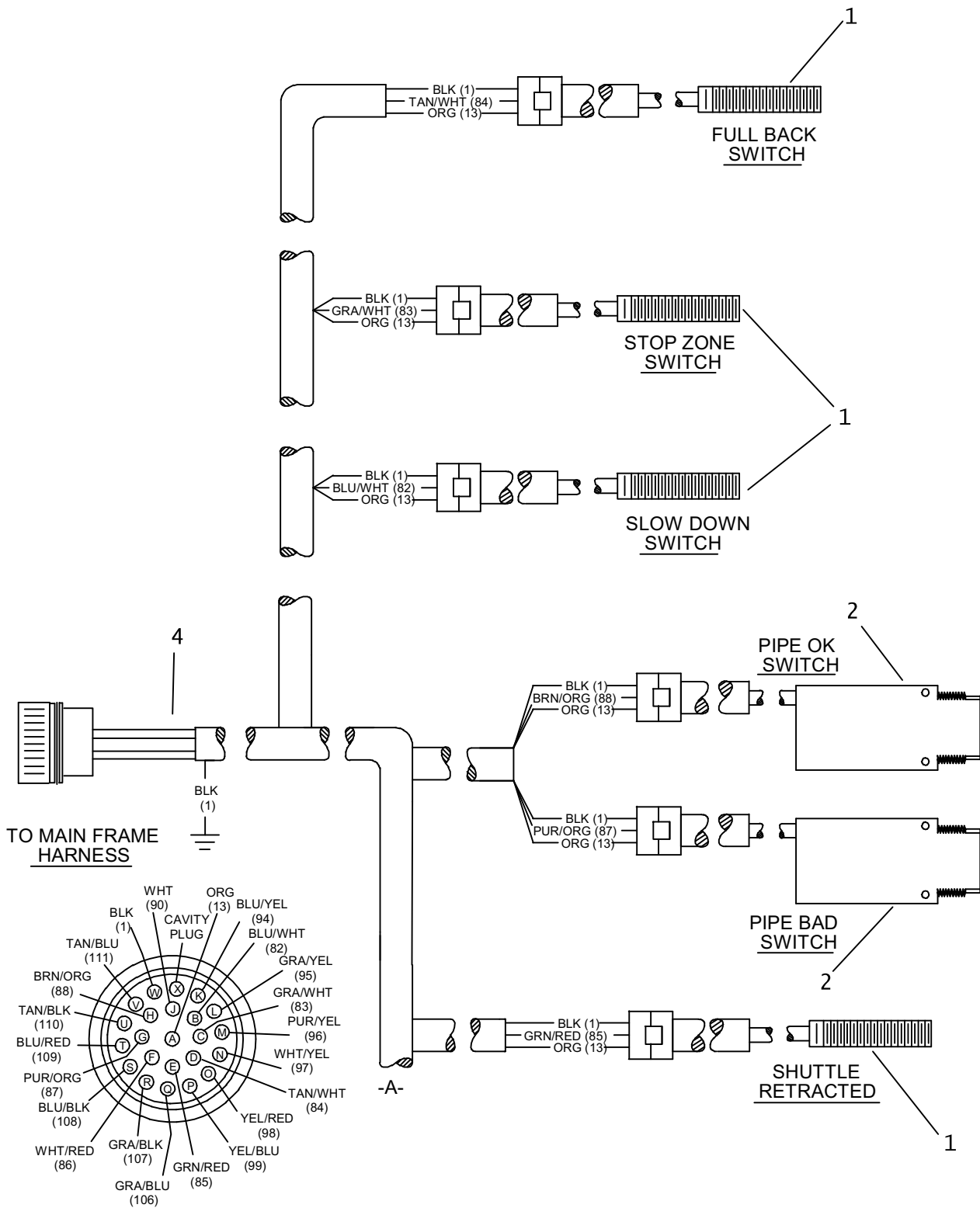
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	214-434	6	SOLENOID COIL	
2.	217-897	2	SOLENOID COIL	
3.	214-481	1	MAIN FRAME HARNESS	
4.	216-047	1	SPEED PICKUP	

NOT SHOWN:

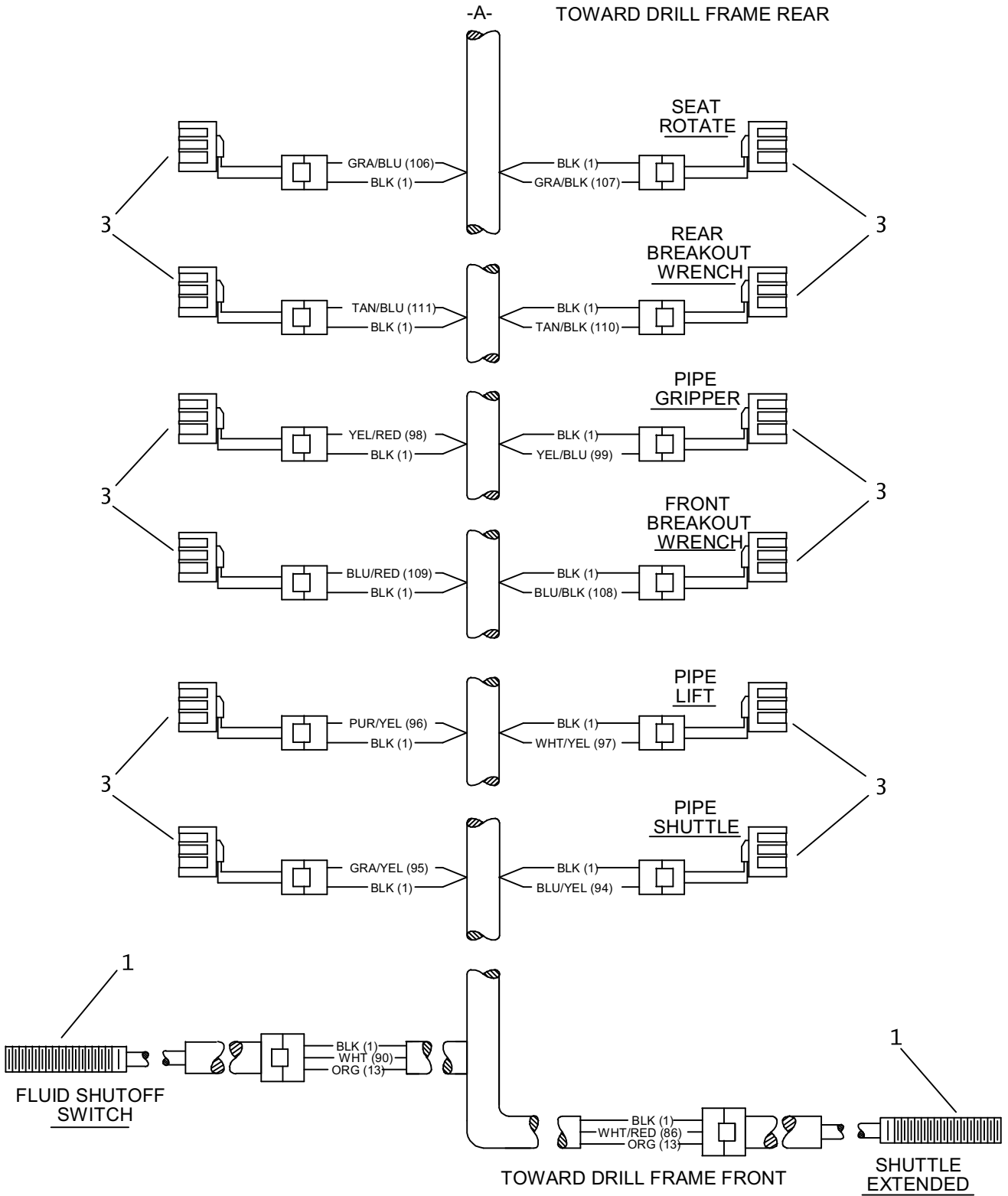
FOOTNOTES:

NOTE:

ELECTRICAL DIAGRAM DRILL FRAME HARNESS



ELECTRICAL DIAGRAM DRILL FRAME HARNESS



ELECTRICAL DIAGRAM DRILL FRAME HARNESS

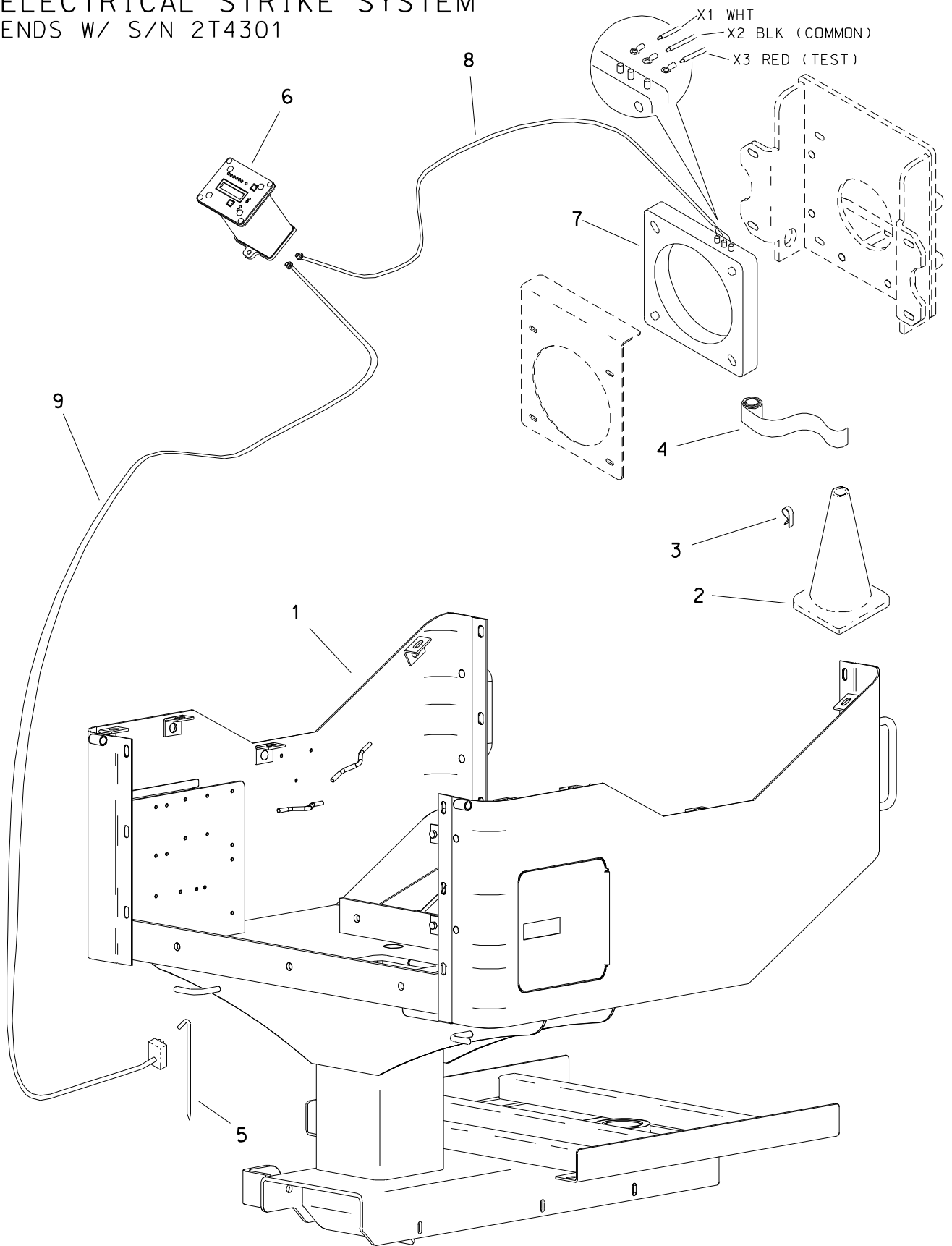
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	217-227	6	PROXIMITY SWITCH	
2.	214-504	2	PHOTO ELECTRIC SENSOR L-RANGE	
3.	214-435	12	SOLENOID COIL (12V)	
4.	214-484	1	DRILL FRAME HARNESS	

NOT SHOWN:

FOOTNOTES:

NOTE:

ELECTRICAL STRIKE SYSTEM
 ENDS W/ S/N 2T4301



ELECTRICAL STRIKE SYSTEM

ENDS W/ S/N 2T4301

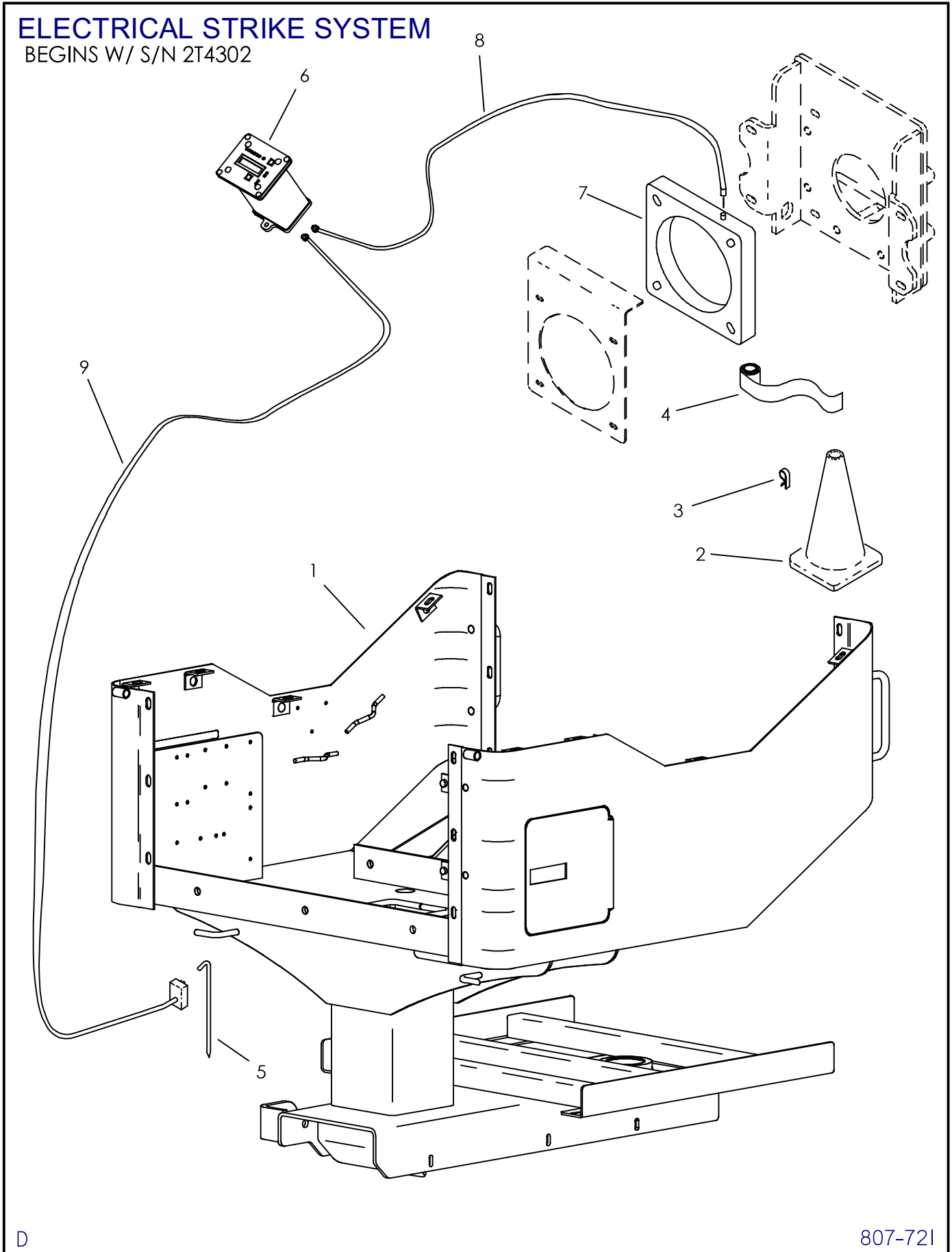
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-746	-	OPERATOR FRAME	
2.	259-210	8	TRAFFIC CONE-ORANGE	
3.	259-234	8	CONE CLIP	USED WITH REF NO.'S 2 & 4
4.	260-223	1	BARRIER TAPE (3" X 1000')	
5.	215-799	1	VOLTAGE STAKE	
6.	217-232	1	CONTROL MODULE	
	197-232	-	ESID MODULE REBUILT	REPLACEMENT FOR 217-232
7.	216-042	1	CURRENT TRANSFORMER	SEE FOOTNOTE 1
8.	214-092	1	CABLE - 11.4M	
9.	216-032	1	VOLT LIMITER (EL STR SYSTM)	

FOOTNOTES

1. REF 7 OBSOLETE, 216-042 REPLACED WITH 101-144.

ELECTRICAL STRIKE SYSTEM

BEGINS W/ S/N 2T4302



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807-721

ELECTRICAL STRIKE SYSTEM

BEGINS W/ S/N 2T4302

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-746	-	OPERATOR FRAME	
2.	259-210	8	TRAFFIC CONE - ORANGE	OBSOLETE
3.	259-234	8	CONE CLIP	OBSOLETE USED W/ REF NO.'S 2 & 4
4.	260-223	1	BARRIER TAPE (3" X 1000')	OBSOLETE
5.	215-799	1	VOLTAGE STAKE	
6.	217-241	1	ESID MODULE NEW (T)	
	197-079	-	ESID MODULE -REBUILT	REBUILT 217-241
7.	216-063	1	CURRENT TRANSFORMER	OBSOLETE
	211-084	1	CURRENT TRANSFORMER	
8.	214-542	1	CURRENT COIL CABLE	
9.	211-042	1	VOLTAGE LIMITER CABLE	

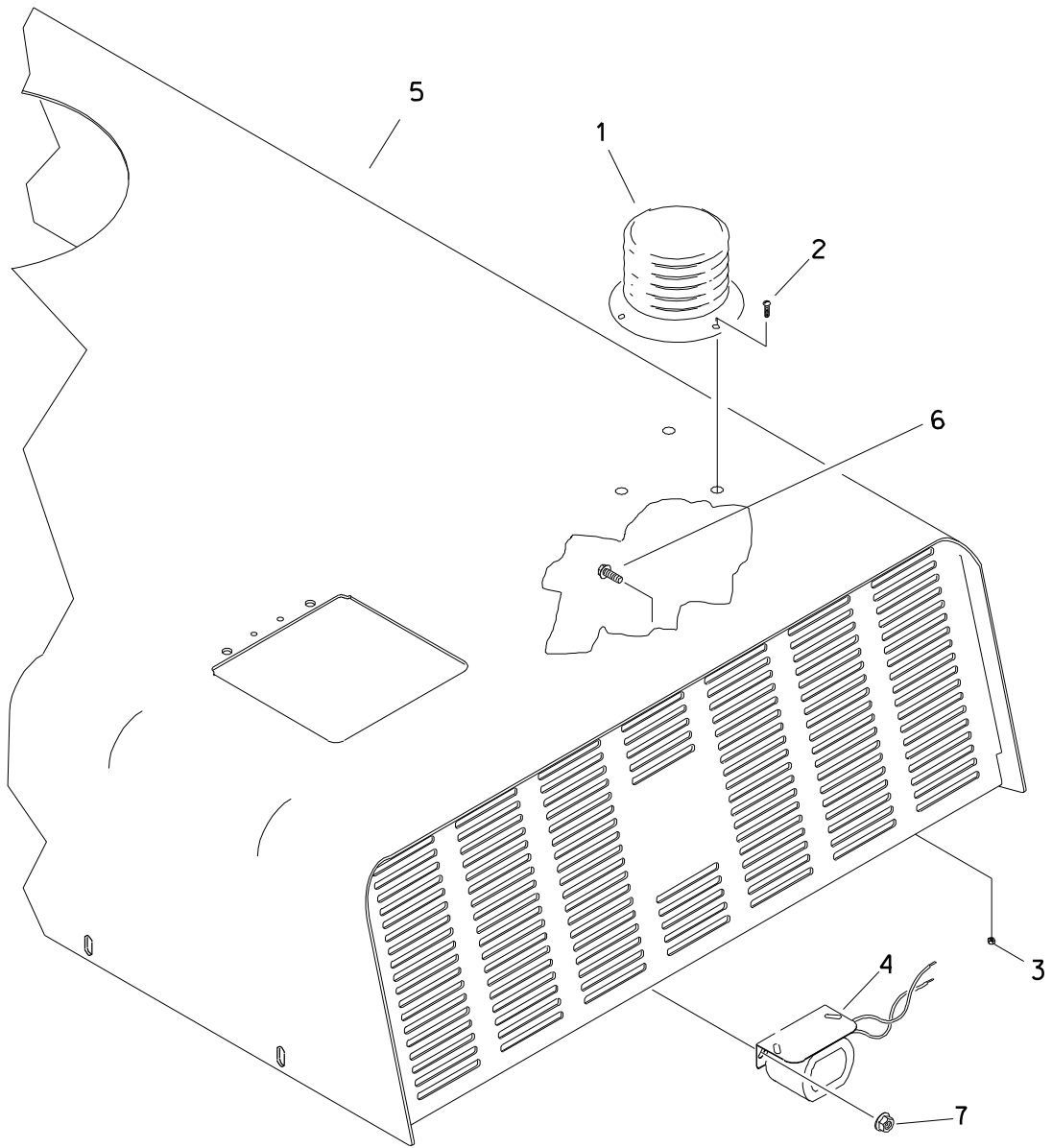
FOOTNOTES

NOTE:

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807-721

ALARM AND STROBE LIGHT ELECTRICAL STRIKE SYSTEM

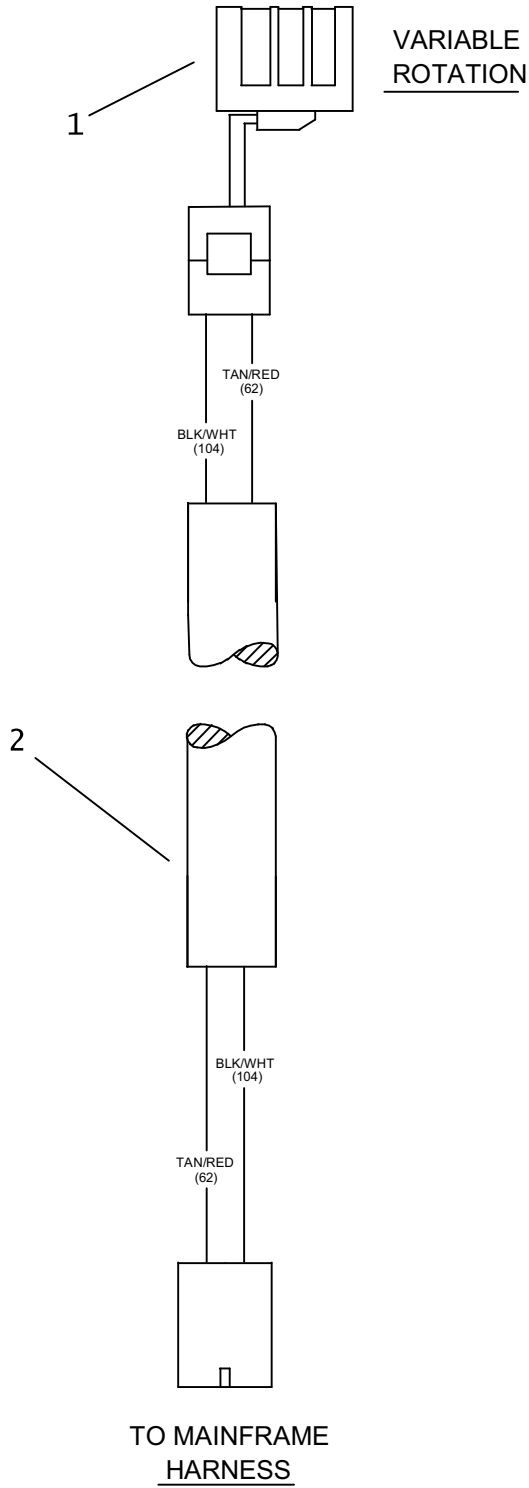


ALARM AND STROBE LIGHT ELECTRICAL STRIKE SYSTEM

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	217-041	1	STROBE LIGHT	INCL LENS & BULB
	217-720		BULB (12V DC)	
	217-124		LENS (AMBER)	
2.	105-185	3	BOLT (#10-24 X 1/2", RD SLT)	
3.	106-048	3	LOCKNUT (#10-24)	
4.	306-602	1	BACKUP ALARM	
5.	350-423	-	ENGINE PANEL (TOP)	
6.	106-162	2	FLG SCREW (M8-1.25 X 20MM)	
7.	106-561	2	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	

FOOTNOTES

ELECTRICAL DIAGRAM ROTATION HARNESS



ELECTRICAL DIAGRAM ROTATION HARNESS

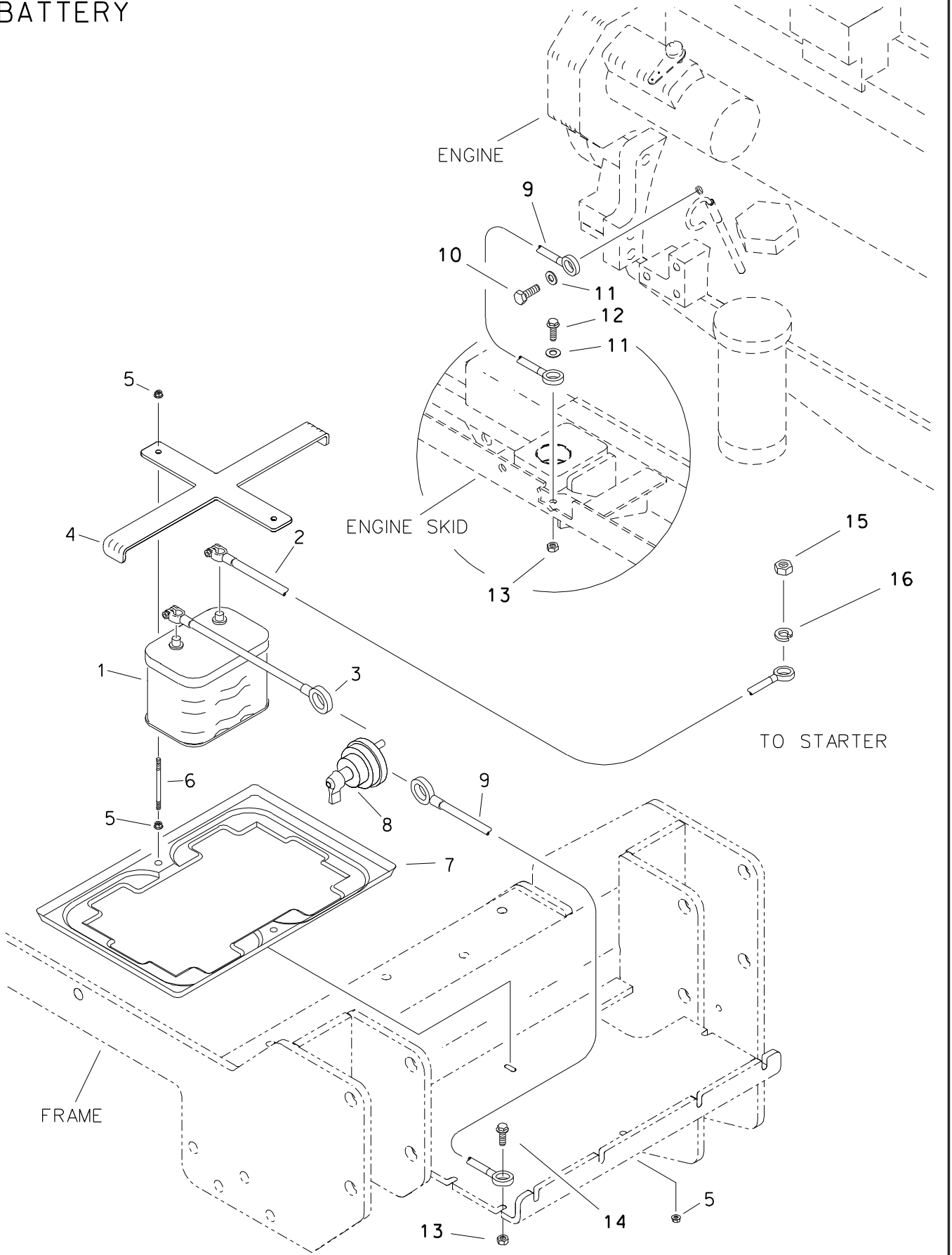
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	217-745	1	CONTROL SOLENOID	
2.	214-479	1	ROTATION HARNESS	

NOT SHOWN:

FOOTNOTES:

NOTE:

BATTERY



BATTERY

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	215-244	1	BATTERY	
2.	215-241	1	BAT CABLE (2/0 GA X 81.8", RED)	
3.	215-337	1	BATTERY CABLE (2/0 GA X 19", BLK)	
4.	347-857	1	DUAL BATTERY STRAP	
5.	105-832	6	FLG LOCKNUT (1/4-NC)	
6.	356-491	2	TIE-DOWN ROD (1/4-NC X 9.3")	
7.	362-784	1	BATTERY TRAY	
8.	217-819	1	BATTERY DISCONNECT SWITCH	
9.	215-314	2	BATTERY CABLE (1/0 GA X 22", BLK)	
10.	105-245	1	SCREW (M10-1.25 X 25MM)	
11.	105-118	2	WASHER (3/8")	
12.	106-991	1	FLG LK SCREW (M8-1.25 X 20MM)	
13.	106-561	2	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
14.	106-992	1	FLG LK SCREW (M8-1.25 X 25MM)	
15.	105-044	1	JAM NUT (1/2-NC)	
16.	105-070	1	LOCK WASHER (1/2")	

FOOTNOTES

PHOTO-ELECTRIC EYE

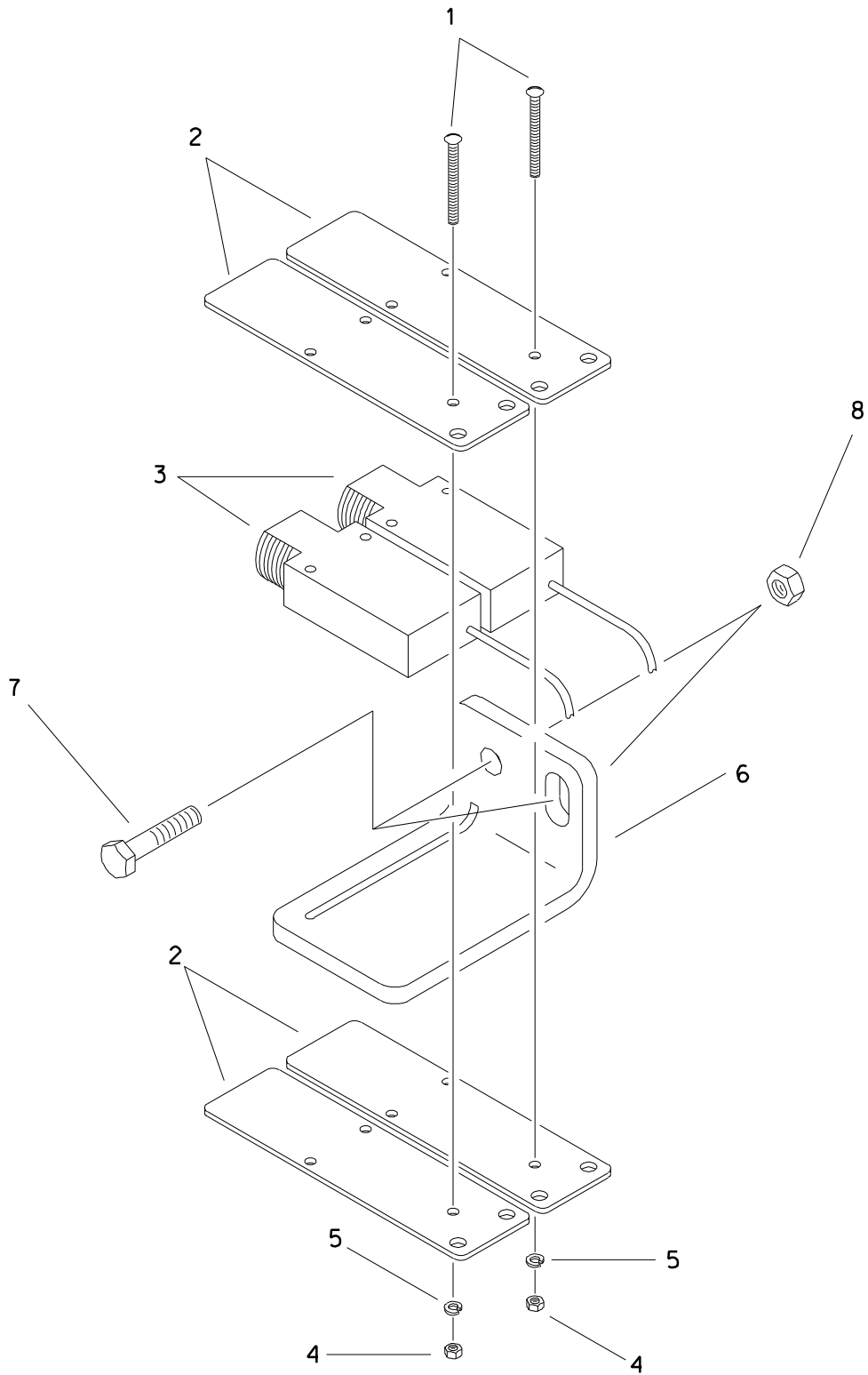


PHOTO-ELECTRIC EYE

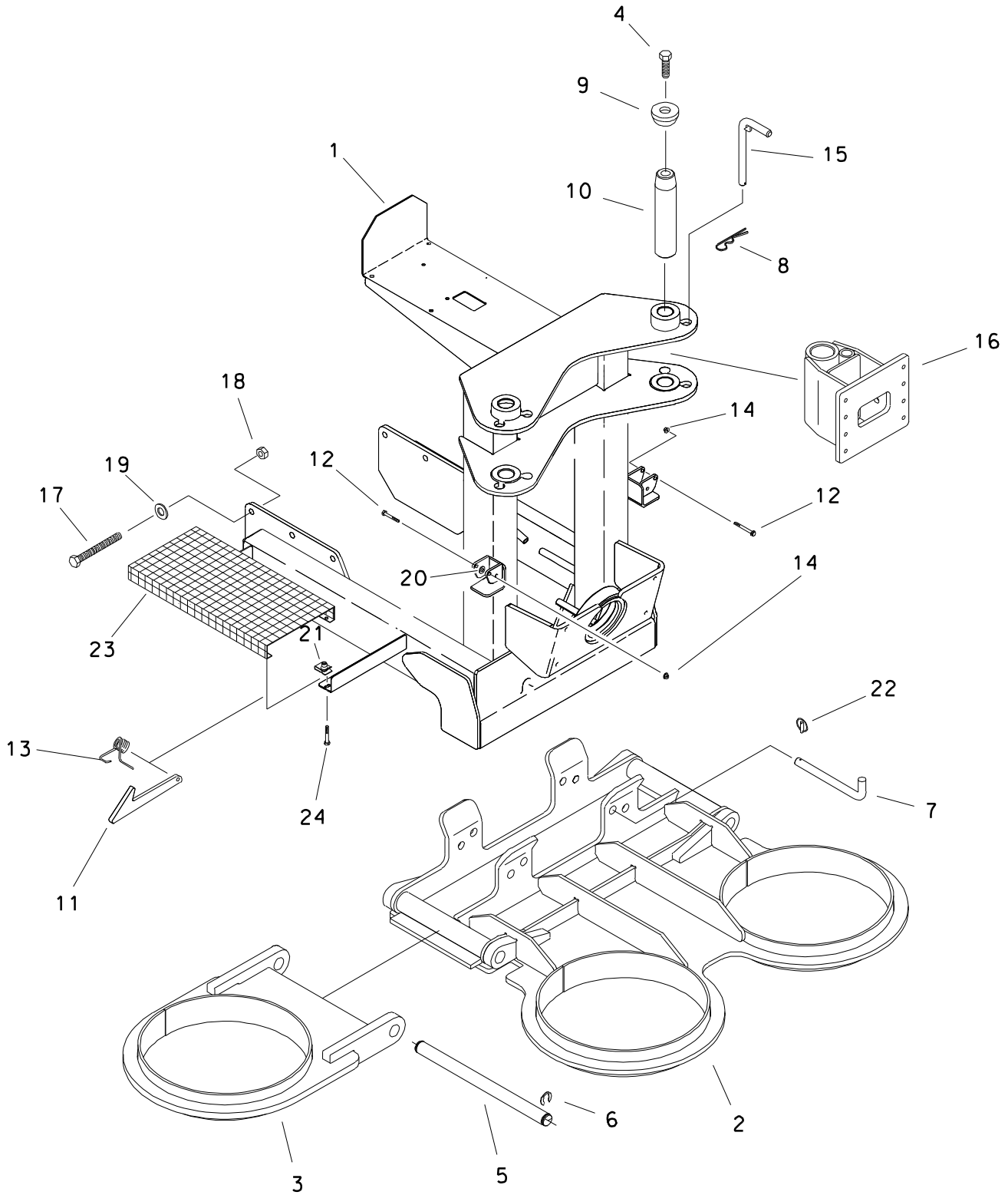
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	105-661	6	BOLT (#4-40 X 1.25")	
2.	343-293	4	COVER PLATE	
3.	214-504	2	PHOTO ELECTRIC SENSOR LONG RANGE	
4.	105-662	6	NUT (#4-40)	
5.	106-835	6	LOCK WASHER (#4-40, SS)	
6.	350-694	1	ELECTRIC EYE PLATE	
7.	106-992	2	FLG LK SCREW (M8-1.25 X 25MM)	
8.	106-561	2	LOCKNUT (M8-1.25,PRV TRQ,10.9)	

FOOTNOTES

NOTES:

ANCHOR SYSTEMS

AUGER ANCHOR BASE

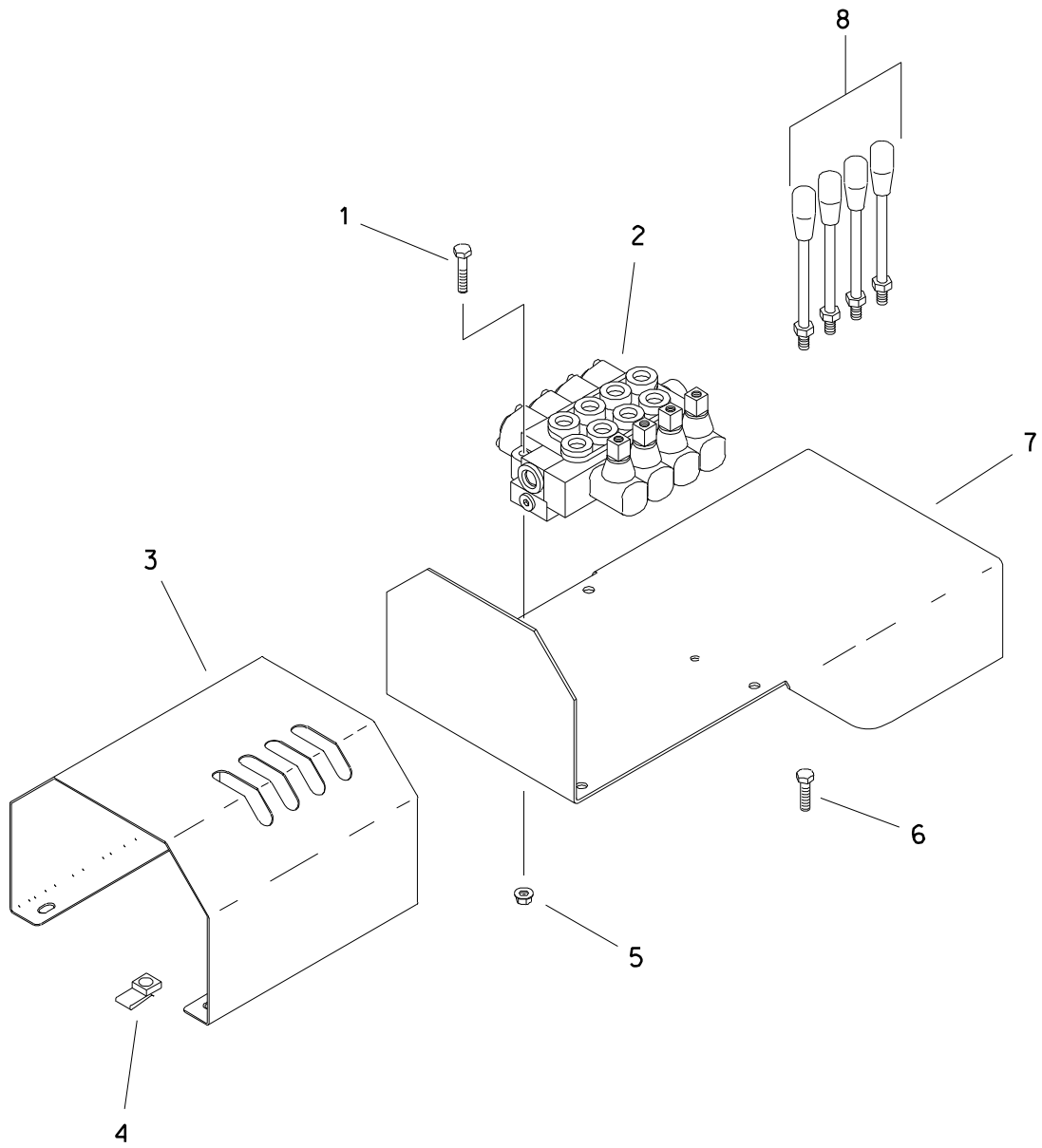


AUGER ANCHOR BASE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-770	-	ANCHOR ATTACHMENT FRAME	
2.	353-329	1	ANCHOR BASE	
3.	343-548	2	PIVOT	
4.	106-470	2	FLG SCREW (M16-2.00 X 40mm)	
5.	184-973	2	PIN	
6.	115-483	4	KLIP RING (1.25")	
7.	343-445	2	PIN (31.75MM X 262MM)	
8.	110-128	2	SPRING CLIP PIN (5/32" X 1")	
9.	181-975	2	TAPERED INSERT (1.75")	
10.	179-239	2	TAPERED PIN (44.4mm X 288mm)	
11.	350-371	2	LATCH	
12.	106-332	4	SCREW (M10-1.50 X 70mm)	
13.	115-580	2	TORSION SPRING	
14.	105-894	4	LOCKNUT (M10-1.50,PRV TRQ, 10.9)	
15.	350-516	2	PIN WLDM'NT	
16.	343-549	2	ARM	
17.	106-340	8	SCREW (M16-2.00 X 50mm)	
18.	106-545	8	LK NUT (M16-2.00, PRV TRQ, 10.9)	
19.	106-398	16	WASHER (M16, HARDENED)	
20.	105-884	6	WASHER (.531")	
21.	106-551	4	CLIP NUT (M8-1.25)	
22.	110-228	2	LYNCH PIN (7/16" X 2")	
23.	350-989	1	FLOOR TREADS	
24.	106-991	4	FLG LK SCREW (M8-1.25 X 20MM)	

FOOTNOTES

ANCHOR VALVE

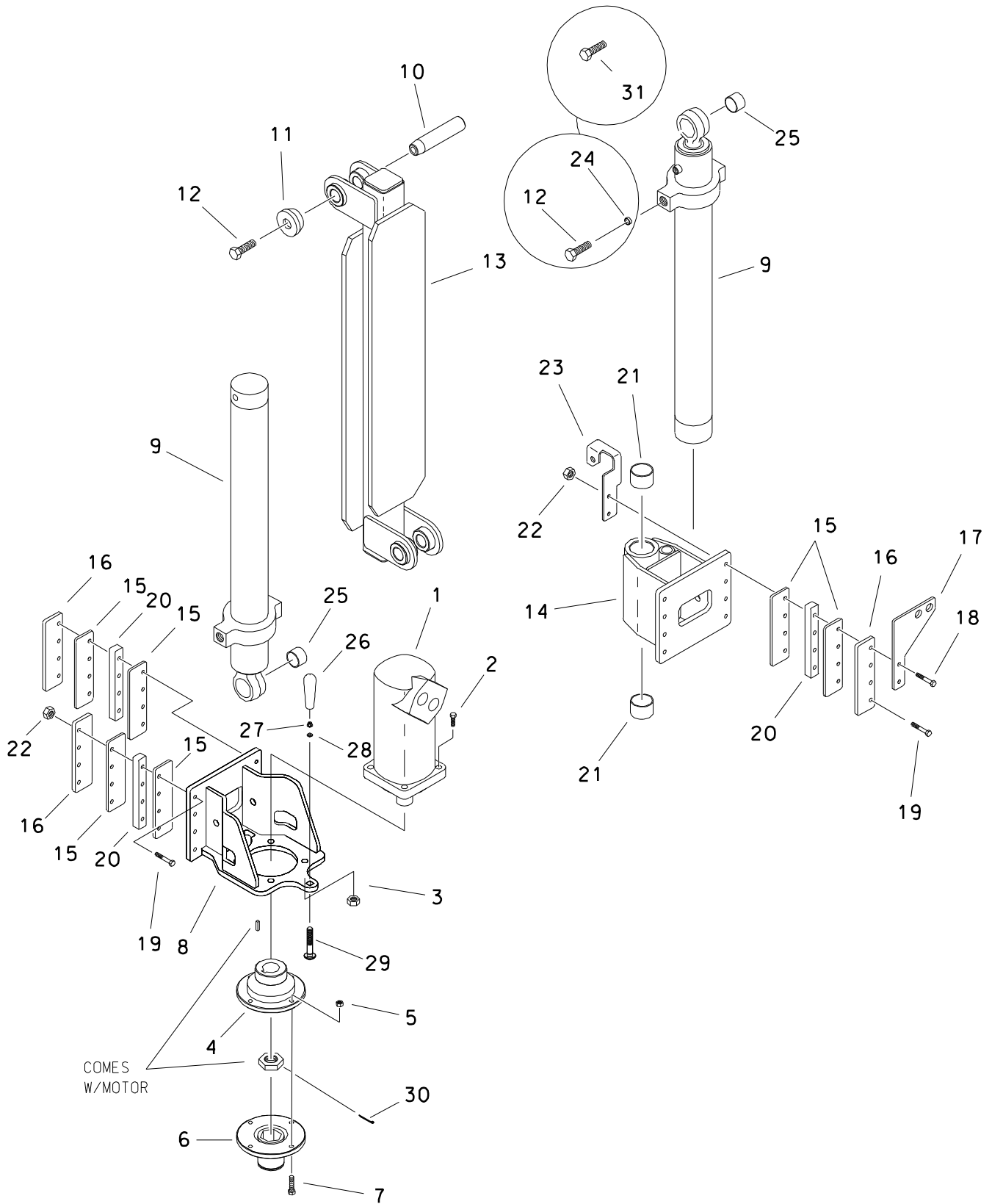


ANCHOR VALVE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	106-570	2	SCREW (M8-1.25 X 60MM)	
2.	516-120	1	HYD CONTROL VALVE	
	190-865		SEAL REPAIR KIT	
3.	343-216	1	COVER	
4.	106-551	4	CLIP NUT (M8-1.25)	
5.	106-561	2	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
6.	106-991	4	FLG LK SCREW (M8-1.25 X 20mm)	
7.	350-770	1	ANCHOR ATTACHMENT FRAME	
8.	365-493		HANDLES (M10-1.50 X 180mm, BLK)	

FOOTNOTES

LEFT AUGER ANCHOR DRIVE



LEFT AUGER ANCHOR DRIVE

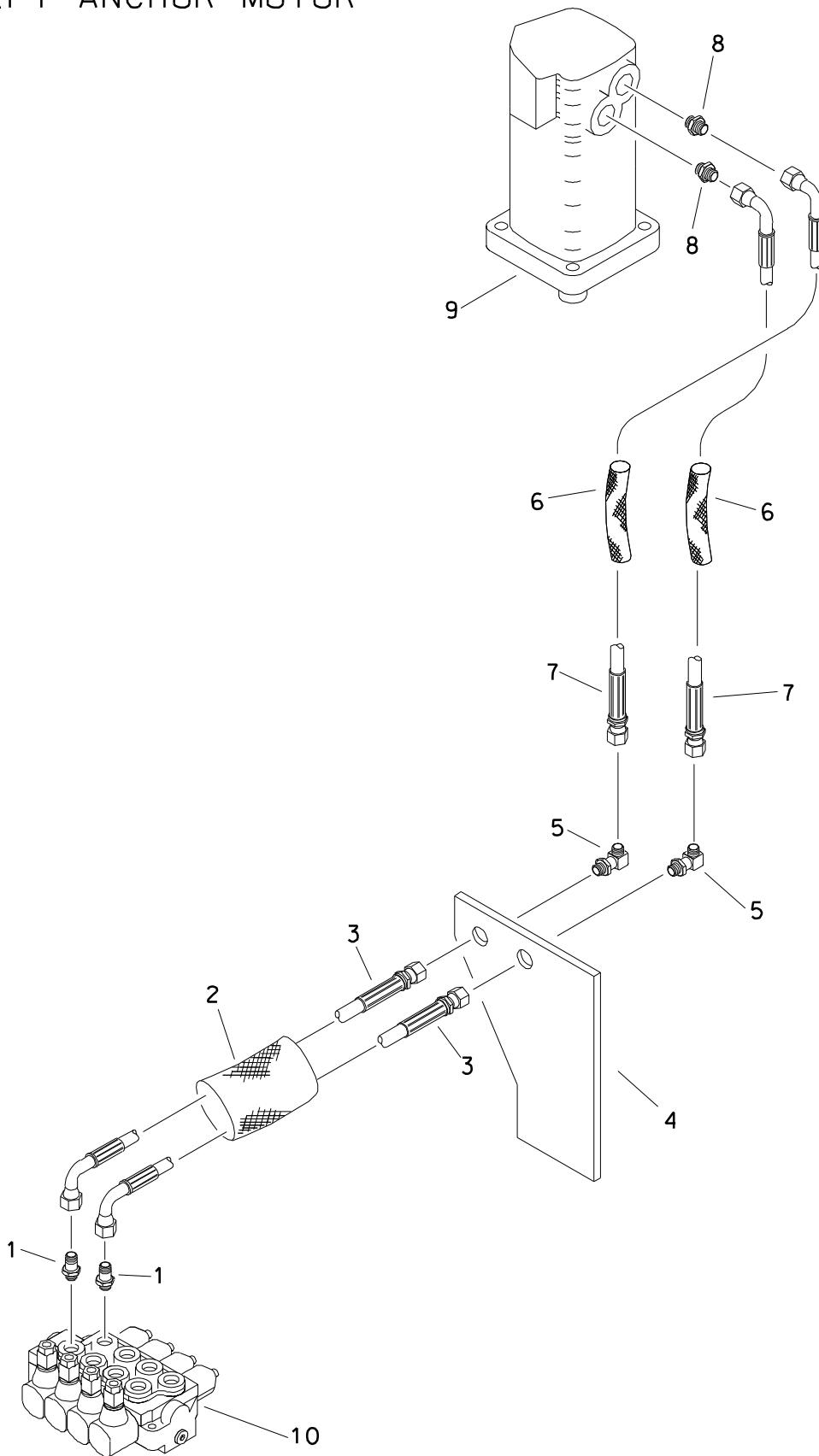
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	158-934	1	HYD MOTOR	INCL CASTLE NUT & KEY
	500-711		SEAL REPAIR KIT REAR	
	500-758		SEAL REPAIR KIT SHAFT	
	165-900		KEY (7/16" SQ X 1-1/4")	
	105-917		CASTLE NUT (1-1/4NF)	
	499-854		SHAFT AND BEARING KIT	
2.	106-334	4	SCREW (M12-1.75 X 50mm)	
3.	106-354	4	FLANGE NUT (M12-1.75)	
4.	350-225	1	FLANGE	
	178-882	1	FLANGE	
5.	105-894	4	LOCKNUT (M10-1.50, PRV TRQ, 10.9)	
6.	350-383	1	ANCHOR STAKE COUPLER ASS'Y	
7.	105-271	4	SCREW (M10-1.5 X 40mm)	
8.	359-816	1	MOTOR MOUNT	
9.	151-167	2	CYL (2" X 1.25" X 24")	SEE FOOTNOTE 2
	150-747	2	CYLINDER ASSEMBLY	SEE FOOTNOTE 1
10.	183-765	2	TAPERED PIN (31.7mm X 110mm)	
11.	181-982	2	TAPERED INSERT (1.25")	
12.	106-469	2	FLG SCREW (M12-1.75 X 30mm)	SEE FOOTNOTE 1
13.	359-799	1	MAST	
14.	343-549	1	ARM	
15.	343-989	8	GLIDE STRIP	
16.	356-066	4	CLAMP PLATE	
17.	343-237	1	BULKHEAD PLATE	
18.	107-305	2	SCREW (M10-1.50 X 75mm)	
19.	106-162	14	FLG SCREW (M8-1.25 X 20mm)	
20.	343-990	4	CARRIAGE SPACER BAR	
21.	125-773	2	COMPOSITION BUSHING (1.75")	
22.	106-266	16	FLG NUT (M10-1.50)	
23.	343-239	1	BULKHEAD PLATE	
24.	343-270	4	SLEEVE	SEE FOOTNOTE 1
25.	125-771	2	COMPOSITION BUSHING (1.25")	
26.	110-531	1	HANDLE (1/2-NC, BLACK)	
27.	105-833	1	FLG LOCK NUT (1/2-NC)	
28.	105-071	1	WASHER (1/2")	
29.	105-279	1	CARRIAGE BOLT (1/2-NC X 3")	
30.	105-501	1	COTTER PIN (.125" X 2.0")	
31.	106-471	4	FLG SCREW (M16-2.00 X 30MM)	SEE FOOTNOTE 2; APPLY LOCTITE 242

FOOTNOTES

1. EARLY STYLE CYLINDER, THAT USED FOUR M12 SCREWS (REF 12) AND SLEEVE (REF 26), ENDS WITH S/N..... IF REPLACING THIS CYLINDER SEE FOOTNOTE 2.

2. CURRENT CYLINDER, USING M16 BOLTS, BEGINS WITH S/N..... IF REPLACING EARLY CYLINDER ORDER NEW CYLINDER AND SCREWS (REF 35).

LEFT ANCHOR MOTOR



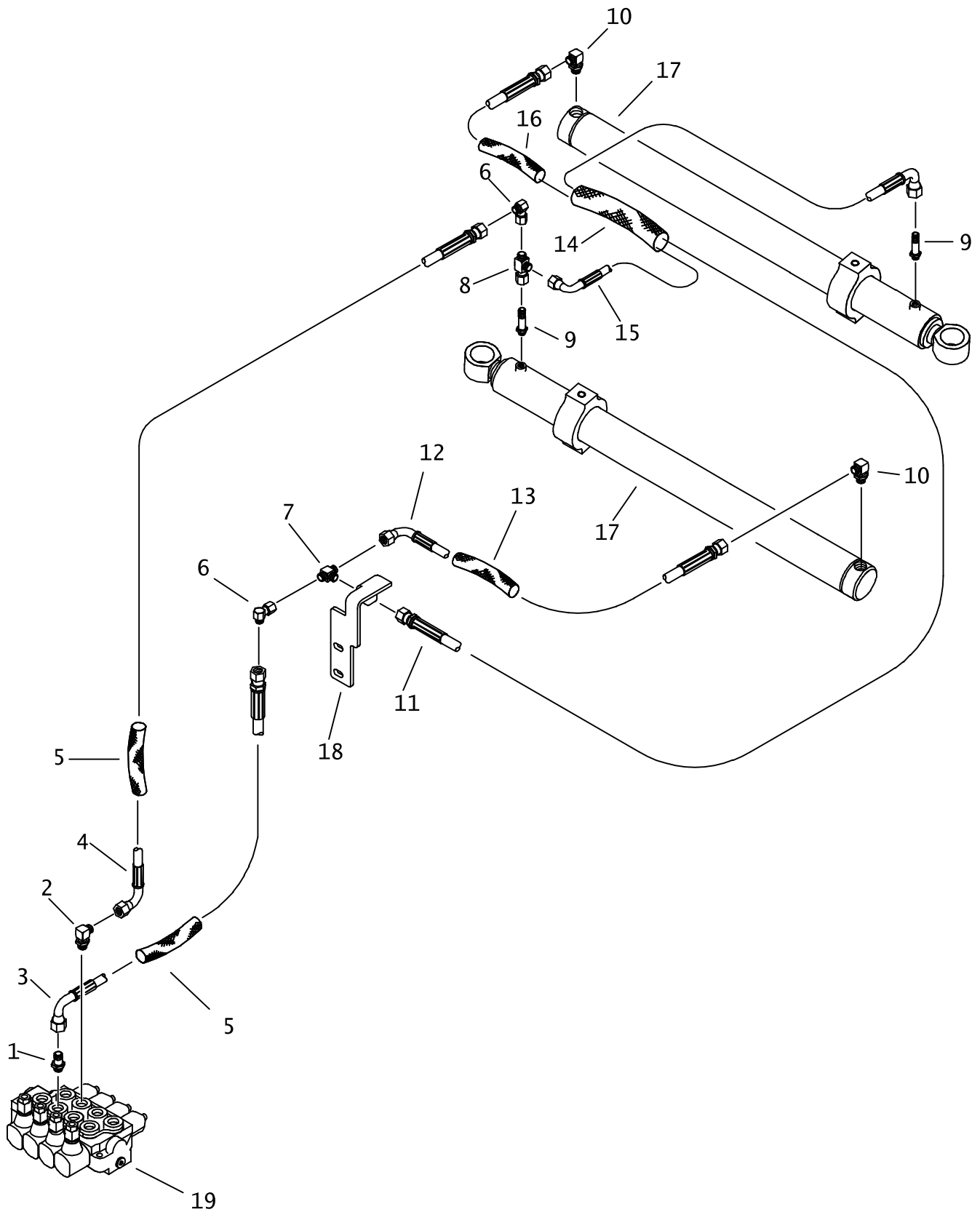
LEFT ANCHOR MOTOR

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-438	2	CONNECTOR (08S-080, LG)	
2.	115-715	1	ABRASION SLEEVE (2.07" X 42")	
3.	154-838	2	HOSE (080FX90-44"-3000)	
4.	343-237	1	BULKHEAD PLATE	
5.	154-396	2	BK CONNECTOR (080-08090BK)	
6.	117-215	2	ABRASION SLEEVE (1.25" X 46")	
7.	154-716	2	HOSE (080FX90-48"-3000)	
8.	154-234	2	CONNECTOR (080-12S)	
9.	158-934	1	HYD MOTOR	
	105-917		CASTLE NUT (1-1/4-NF)	
	165-900		KEY (7/16" SQ X 1.250")	
	499-854		SHAFT AND BEARING KIT	
	500-711		SEAL REPAIR KIT - REAR	
	500-758		SEAL REPAIR KIT - SHAFT	
10.	516-120	1	HYD CONTROL VALVE (4- SPOOL)	

FOOTNOTES

NOTE:
REFER TO O-RING CHART (800-301) IN THE BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS

ANCHOR DRIVE HYDRAULICS-LEFT



ANCHOR DRIVE HYDRAULICS-LEFT

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-261	1	CONNECTOR (040-08S)	
2.	154-276	1	CONNECTOR (040-08S90)	
3.	515-593	1	HOSE (040FX90-38"-3000)	
4.	154-728	1	HOSE (040FX90-36"-3000)	
5.	117-718	2	ABRASION SLEEVE (1" X 36")	
6.	154-255	2	UNION (040-040FX90)	
7.	154-424	1	BK RUN TEE (040-040-040BK)	
8.	154-265	1	UNION RUN TEE (040FX-040-040)	
9.	154-403	2	CONNECTOR (04S-040, XL)	
10.	154-252	2	CONNECTOR (04S-04090)	
11.	515-054	1	HOSE (040FX-74"-3000)	
12.	515-683	1	HOSE (040FX90-28"-3000)	
13.	117-684	1	ABRASION SLEEVE (1" X 26")	
14.	117-657	1	ABRASION SLEEVE (1.59" X 54")	
15.	515-682	1	HOSE (040FX90M-48"-3000)	
16.	117-676	1	ABRASION SLEEVE (1" X 30")	
17.	151-167	2	CYL (2.0" X 1.25" X 24.000")	
18.	343-238	1	BULKHEAD PLATE	
19.	516-120	-	HYD CONTROL VALVE	

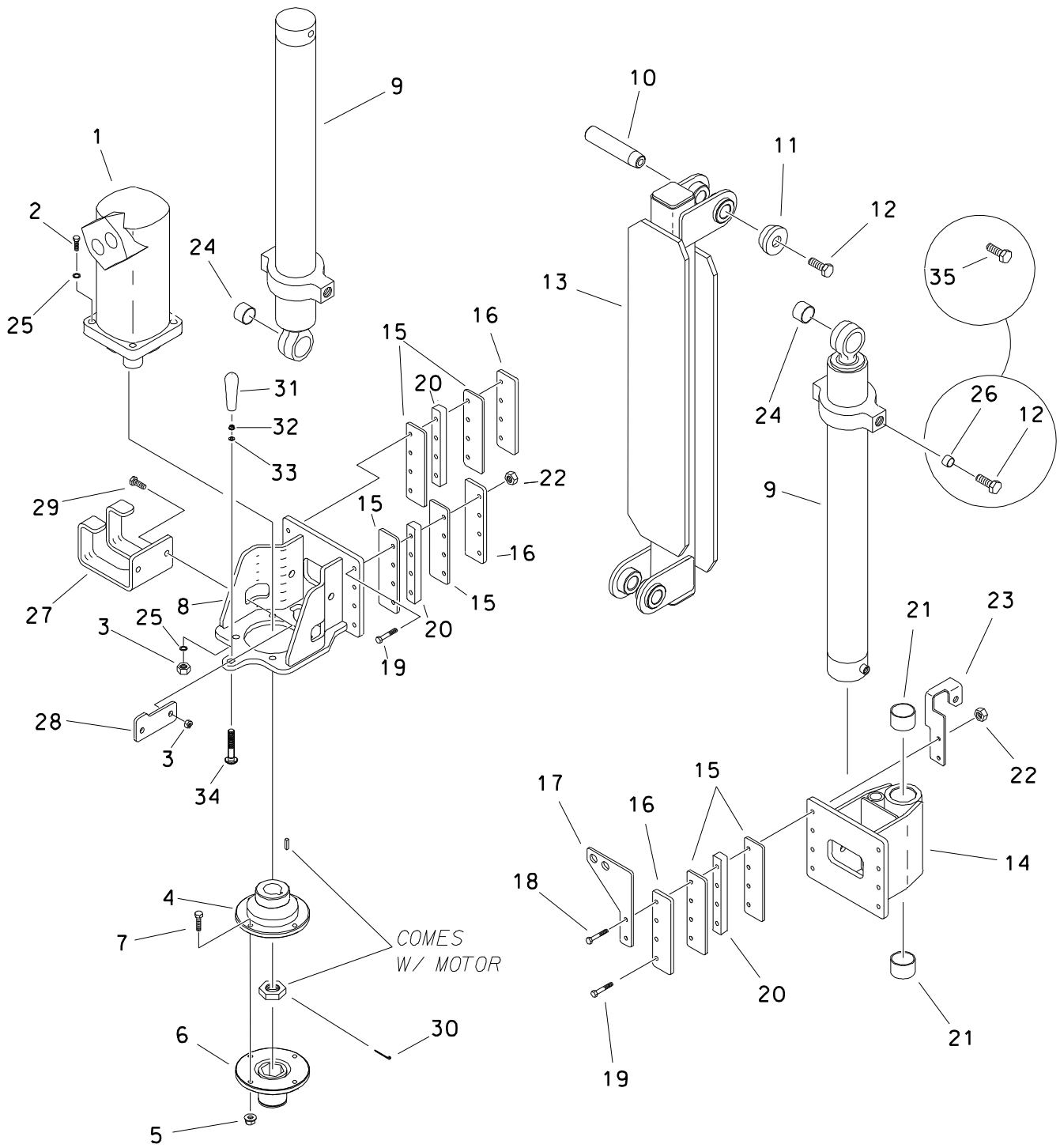
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FOOTNOTES:

NOTE:

REFER TO O-RINGS CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENTS OF O-RINGS.

RIGHT AUGER ANCHOR DRIVE



RIGHT AUGER ANCHOR DRIVE

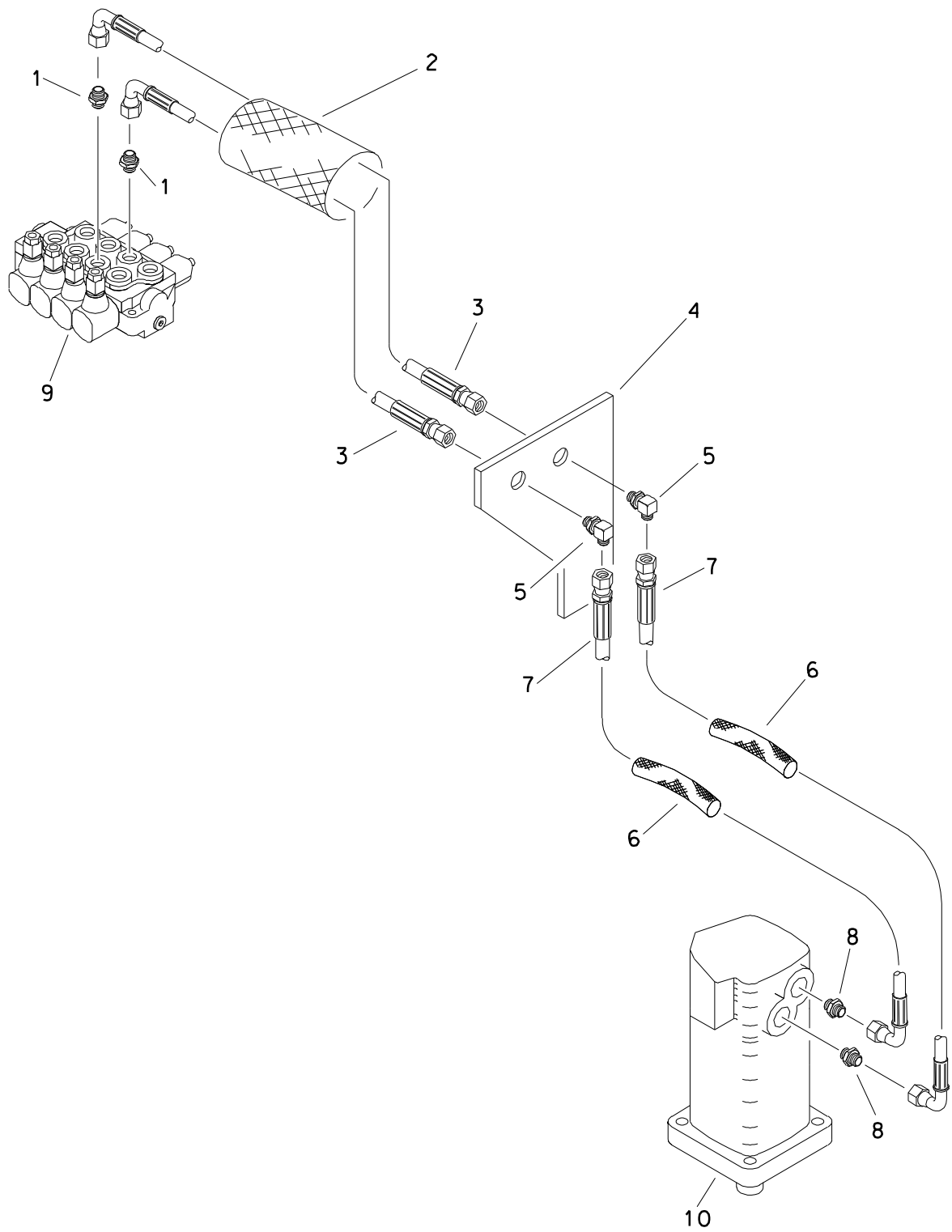
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	158-934	1	HYD MOTOR	INCL CASTLE NUT & KEY
	500-711	-	SEAL REPAIR KIT - REAR	
	500-758	-	SEAL REPAIR KIT - SHAFT	
	165-900	-	KEY (7/16" SQ X 1.250")	
	105-917	-	CASTLE NUT (1-1/4-NF)	
	499-854	-	SHAFT AND BEARING KIT	
2.	106-594	4	SCREW (M12-1.75 X 60mm)	
3.	106-685	6	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
4.	350-225	1	FLANGE	
	178-882	1	FLANGE	
5.	105-894	16	LOCKNUT (M10-1.5, PRV TRQ, 10.9)	
6.	350-239	1	FLANGED HEX DRIVER	
7.	105-271	4	SCREW (M10-1.5 X 40mm)	
8.	359-816	1	MOTOR MOUNT	
9.	151-167	2	CYL (2" X 1.25" X 24")	SEE FOOTNOTE 1
	150-747	2	CYLINDER ASSEMBLY	SEE FOOTNOTE 2
10.	183-765	2	TAPERED PIN (31.7mm X 110mm)	
11.	181-982	2	TAPERED INSERT (1.25")	
12.	106-469	2	FLG SCREW (M12-1.75 X 30mm)	SEE FOOTNOTE 1
13.	359-799	1	MAST	
14.	343-549	1	ARM	
15.	343-989	8	GLIDE STRIP	
16.	356-066	4	CLAMP PLATE	
17.	343-237	1	BULKHEAD PLATE	
18.	106-617	2	SCREW (M10-1.50 X 80mm)	
19.	106-332	14	SCREW (M10-1.50 X 70mm)	
20.	343-990	4	CARRIAGE SPACER BAR	
21.	125-773	2	COMPOSITION BUSHING (1.75")	
22.	105-894	16	LOCKNUT (M10-1.50, PRV TRQ, 10.9)	
23.	343-239	1	BULKHEAD PLATE	
24.	125-771	2	COMPOSITION BUSHING (1.25")	
25.	106-397	8	WASHER (M12, HARDENED)	
26.	343-270	4	SLEEVE	SEE FOOTNOTE 1
27.	354-969	1	ANCHOR BRACKET	
28.	354-970	1	MOUNT PLATE	
29.	106-333	2	SCREW (M12-1.75 X 40mm, 8.8)	
30.	105-501	1	COTTER PIN (.125" X 2.0")	
31.	110-531	1	HANDLE (1/2-NC, BLACK)	
32.	105-833	1	FLG LOCKNUT (1/2-NC)	
33.	105-071	1	WASHER (1/2")	
34.	105-279	1	CARRIAGE BOLT (1/2-NC X 3")	
35.	106-471	4	FLG SCREW (M16-2.00 X 30MM)	SEE FOOTNOTE 2; APPLY LOCTITE 242

FOOTNOTES

1. EARLY STYLE CYLINDER, THAT USED FOUR (4) M12 SCREWS (REF 12) AND SLEEVE (REF 26), ENDS WITH S/N-----, IF REPLACING THIS CYLINDER SEE FOOTNOTE 2.

2. CURRENT CYLINDER, USING M16 BOLTS, BEGINS WITH S/N-----, IF REPLACING EARLY CYLINDER ORDER NEW CYLINDER AND SCREWS (REF 35).

RIGHT ANCHOR MOTOR



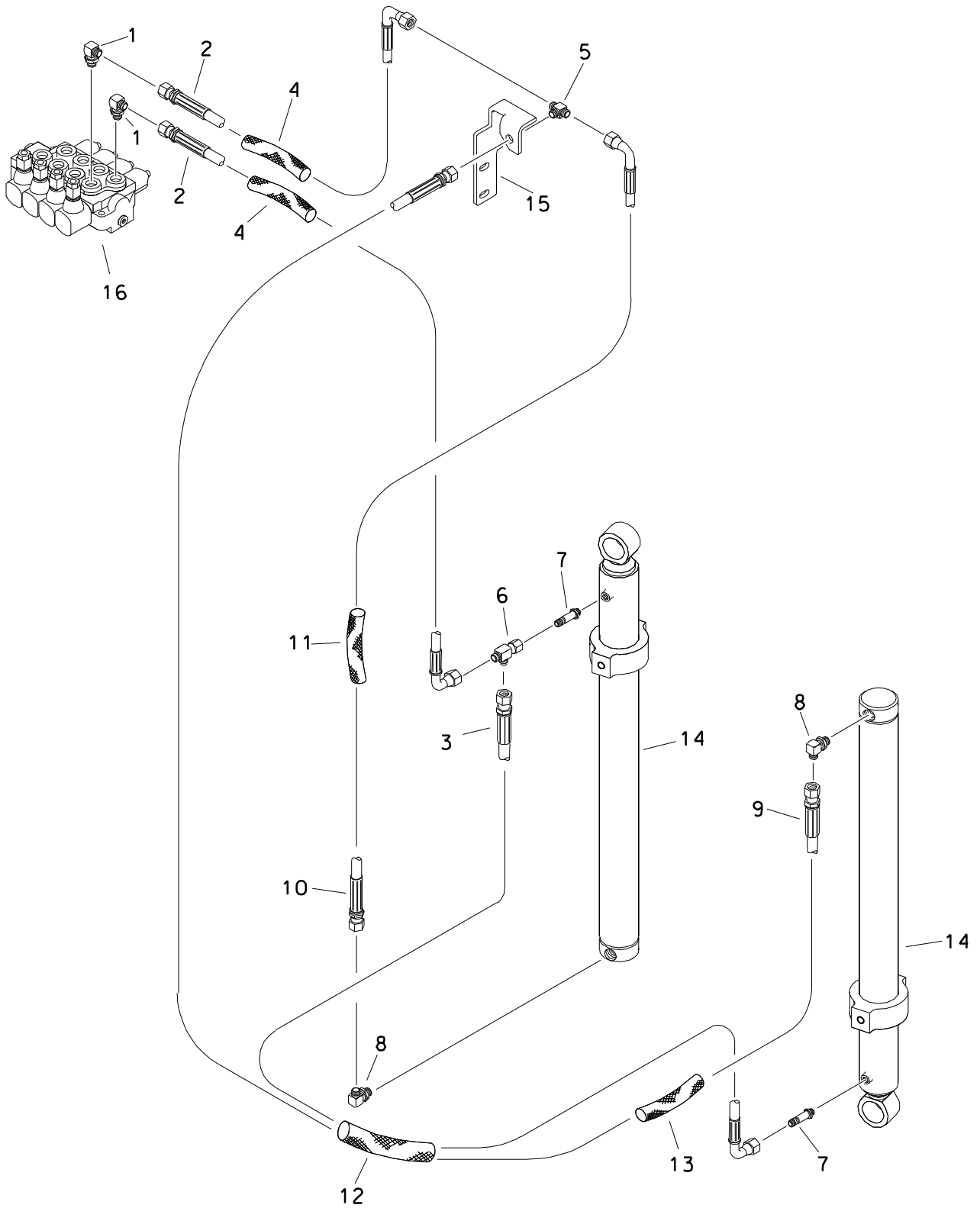
RIGHT ANCHOR MOTOR

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-233	2	CONNECTOR (08S-080)	
2.	115-715	1	ABRASION SLEEVE (2.07" X 42")	
3.	515-025	2	HOSE (080FX90-40"-3000)	
4.	343-237	1	BULKHEAD PLATE	
5.	154-396	2	BK CONNECTOR (080-08090BK)	
6.	117-215	2	ABRASION SLEEVE (1.25" X 46")	
7.	154-716	2	HOSE (080FX90-48"-3000)	
8.	154-234	2	CONNECTOR (080-12S)	
9.	516-120	1	HYD CONTROL VALVE (4- SPOOL)	
10.	158-934	1	HYD MOTOR	
	105-917		CASTLE NUT (1-1/4-NF)	
	165-900		KEY (7/16" SQ X 1.250")	
	499-854		SHAFT AND BEARING KIT	
	500-711		SEAL REPAIR KIT - REAR	
	500-758		SEAL REPAIR KIT - SHAFT	

FOOTNOTES

NOTE:
REFER TO O-RING CHART (800-301) IN THE BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS

ANCHOR DRIVE HYDRAULICS - RIGHT



ANCHOR DRIVE HYDRAULICS - RIGHT

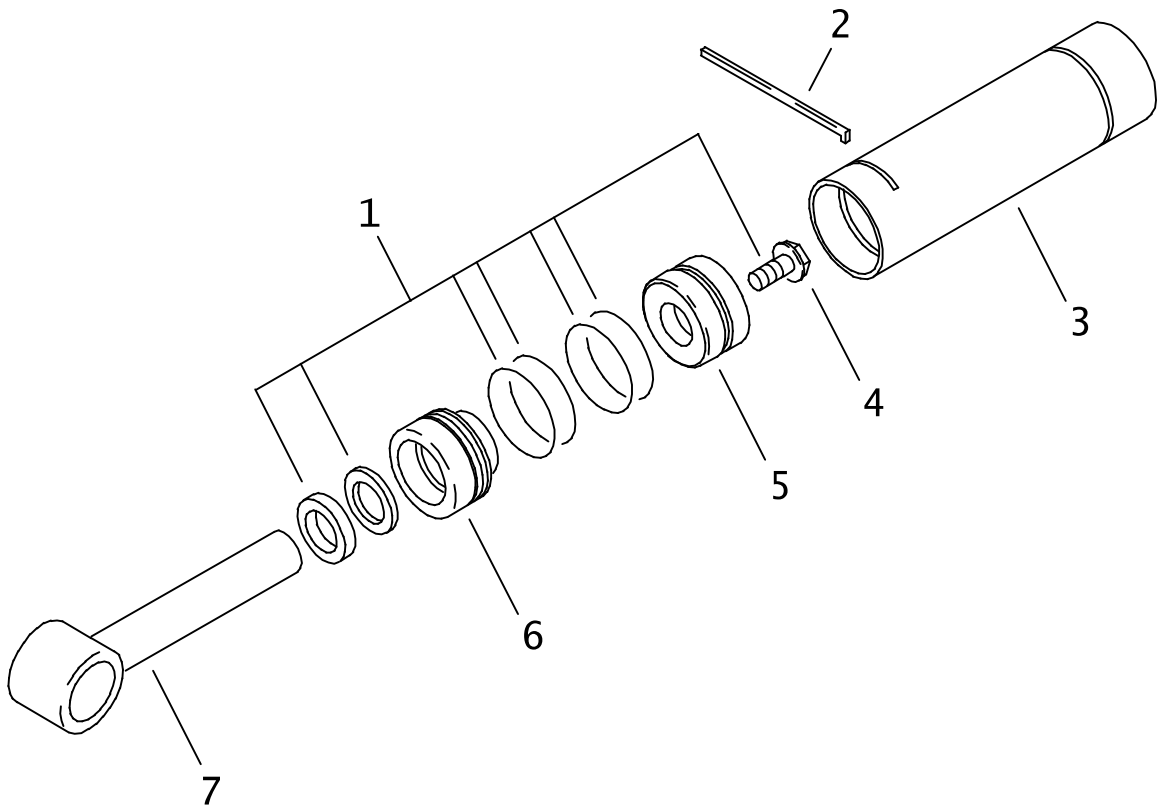
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-276	2	CONNECTOR (040-08S90)	
2.	154-728	2	HOSE (04FX90-36"-3000)	
3.	515-682	1	HOSE (040FX90M-48"-3000)	
4.	117-718	2	ABRASION SLEEVE (1" X 36")	
5.	154-424	1	BK RUN TEE (040-040-040BK)	
6.	154-265	1	UNION RUN TEE (040FX-040-040)	
7.	154-403	2	CONNECTOR (04S-040, XL)	
8.	154-252	2	CONNECTOR (04S-04090)	
9.	515-054	1	HOSE (040FX-74"-3000)	
10.	515-683	1	HOSE (040FX90-28"-3000)	
11.	117-684	1	ABRASION SLEEVE (1" X 26")	
12.	117-657	1	ABRASION SLEEVE (1.59" X 54")	
13.	117-676	-	ABRASION SLEEVE (1" X 30")	
14.	151-167	2	CYL (2.0" X 1.25" X 24.000")	
15.	343-239	-	BULKHEAD PLATE	
16.	516-120	-	HYD CONTROL VALVE	

FOOTNOTES

NOTE:
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RING

HYDRAULIC CYLINDER

2.0" X 1.25" X 24.0"



HYDRAULIC CYLINDER

2.0" X 1.25" X 24.0"

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	150-747		CYL (2" X 1.25" X 24")	
1.	190-169	1	SEAL REPAIR KIT (2.0" X 1.25")	INCLUDE REF NO'S 1 THRU 7
2.	150-778	1	LOCK RING (2")	INCLUDES REF NO'S 4 & 5
3.	151-170	1	CYLINDER BARREL	
4.	106-097	1	FLG BOLT (5/8-NC X 1-3/4", GD8)	SEE FOOTNOTE 1
5.	150-771	1	CYLINDER PISTON (2.0" X 1.25")	INCLUDES MOLDED-ON WEAR RING
6.	150-770	1	CYLINDER HEAD (2.0" X 1.25")	
7.	150-679	1	CYLINDER ROD (1.25")	

NOT SHOWN:

259-100	U-SEAL INSTALLER (1"-1.499")
259-236	WIPER INSTALLER (1.250")
259-239	WIPER/SEAL INSTALLER (2")
259-241	PISTON INSTALLER (2")
259-188	CYL HEAD SPANNER - TWO PIN

FOOTNOTES

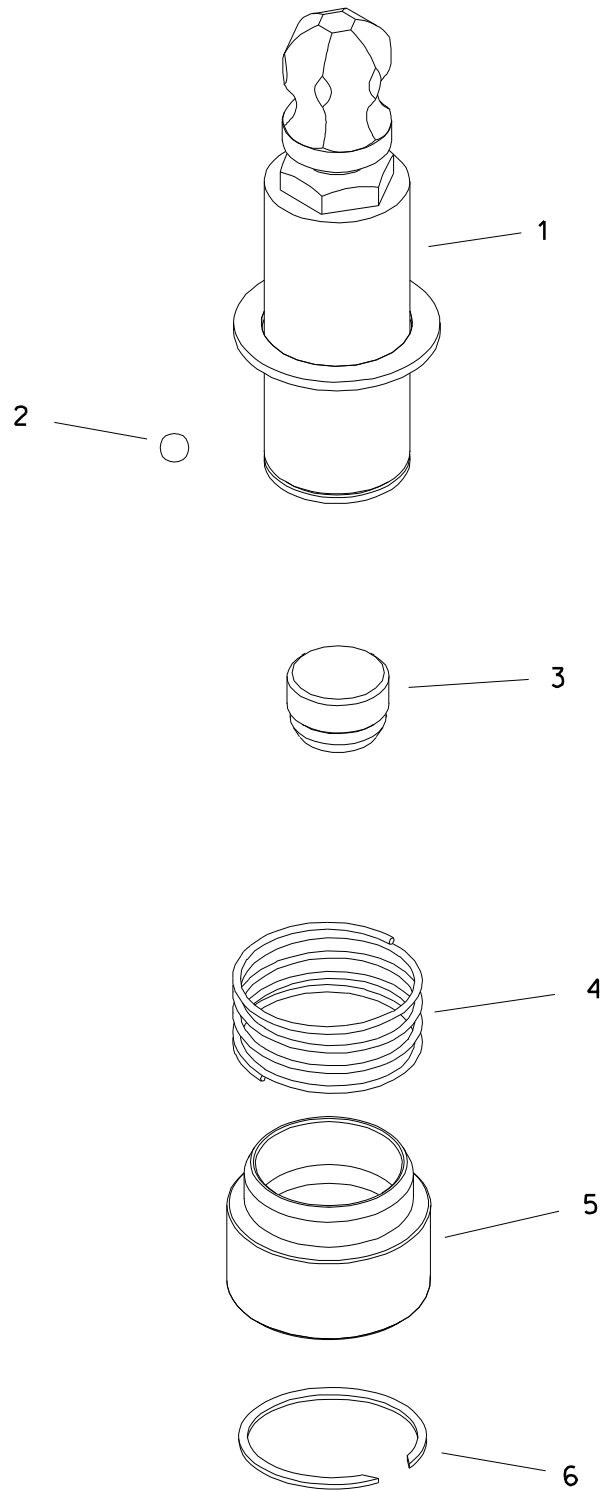
1. APPLY LOCTITE 271 OR 277. TORQUE TO 180-200 FT-LBS (245-270 N.M.)

NOTE:

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806-687

HEX COUPLER

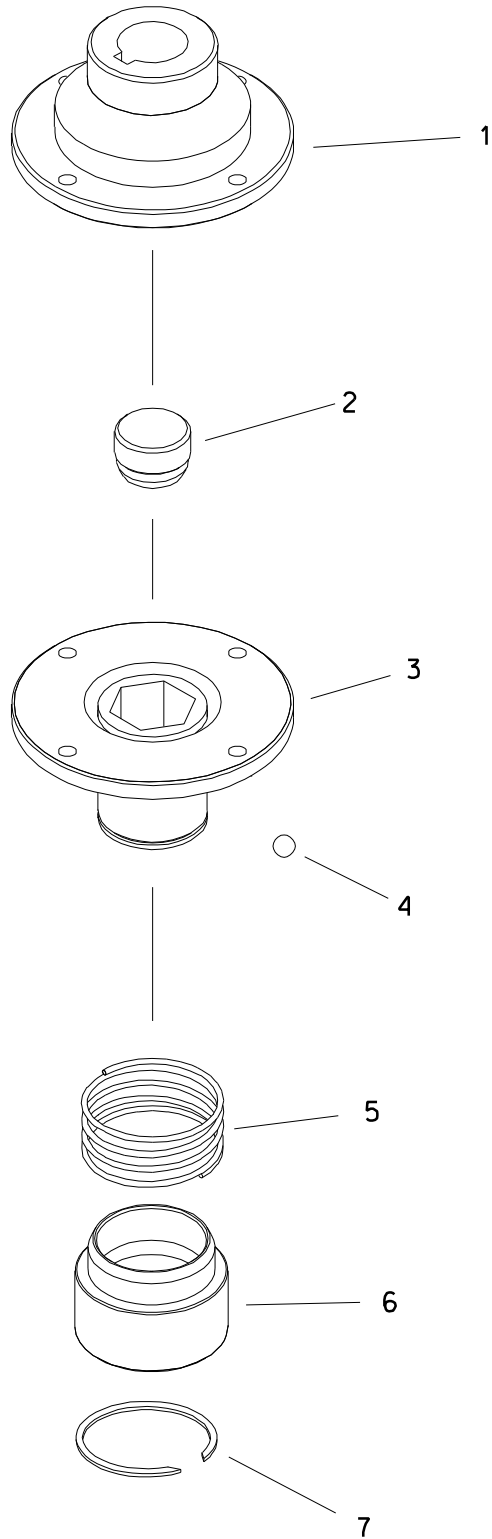


HEX COUPLER

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	350-384	-	HEX COUPLER PARTS ASS'Y	INCL REF NO'S 1 - 6
1.	350-295	1	EXTENSION HUB	
2.	125-084	6	DETENT BALL (1/2")	
3.	350-378	1	WEIGHT	
4.	117-134	1	COMPRESSION SPRING	
5.	350-242	1	LOCK COLLAR	
6.	501-028	1	EXTERNAL SNAP RING (2.437")	

FOOTNOTES

ANCHOR STAKE COUPLER

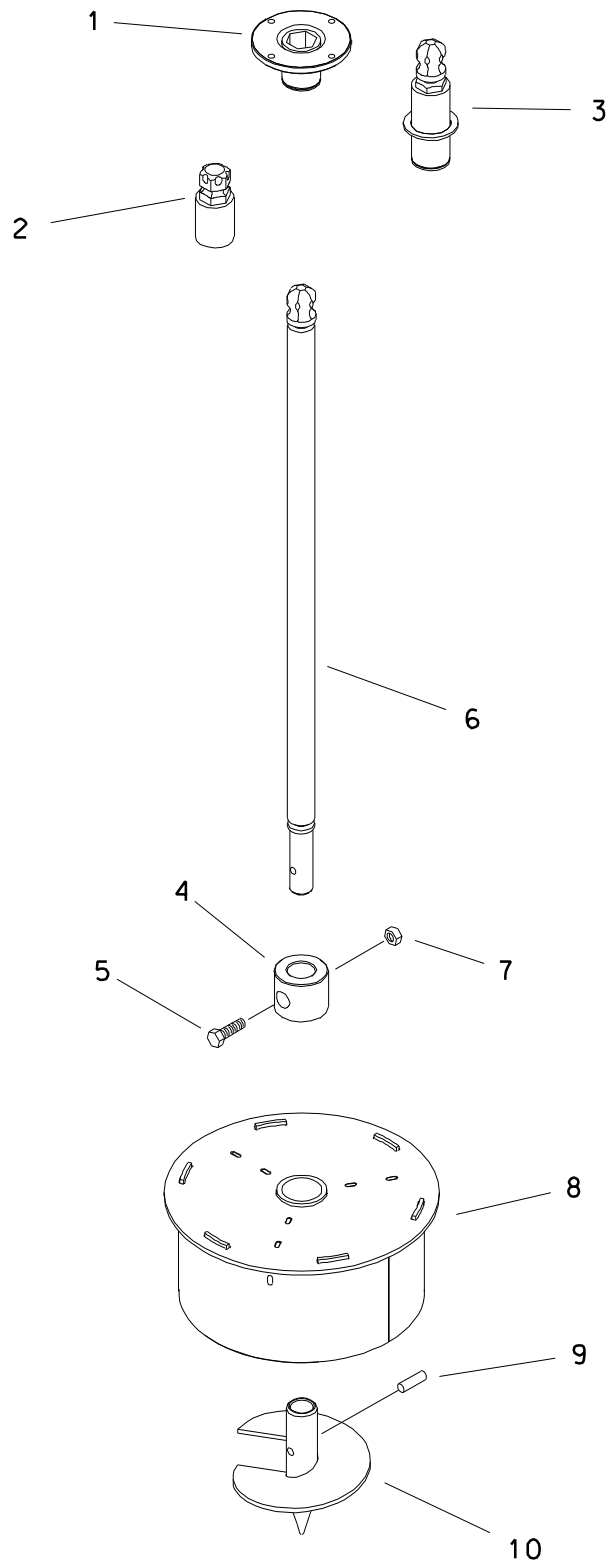


ANCHOR STAKE COUPLER

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	350-383	-	ANCHOR STAKE COUPLER PARTS ASS'Y	INCL REF NO'S 1 - 7
1.	350-225	1	FLANGE	
2.	350-378	1	WEIGHT	
3.	350-239	1	FLANGED HEX DRIVER	
4.	125-084	6	DETENT BALL (1/2")	
5.	117-134	1	COMPRESSION SPRING	
6.	350-242	1	LOCK COLLAR	
7.	501-028	1	EXTERNAL SNAP RING (2.437")	

FOOTNOTES

ANCHOR SHAFT



ANCHOR SHAFT

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	350-383	1	STAKE COUPLER PARTS ASS'Y	
2.	350-283	1	OFFSET COUPLER	
3.	350-384	1	HEX COUPLER PARTS ASS'Y	
4.	354-451	1	STOP TUBE	
5.	107-308	1	BOLT (M12-1.75 X 75mm)	
6.	343-300	1	HEX STAKE	
7.	106-685	1	LOCKNUT (M12-1.75,PRV TR0.10.9)	
8.	350-363	1	CENTERING CAP	
9.	183-860	1	ROLL PIN (1/2" X 1-7/8")	
10.	356-366	1	AUGER (150mm)	
	356-365	1	AUGER (225mm)	
	356-364	1	AUGER (380mm)	

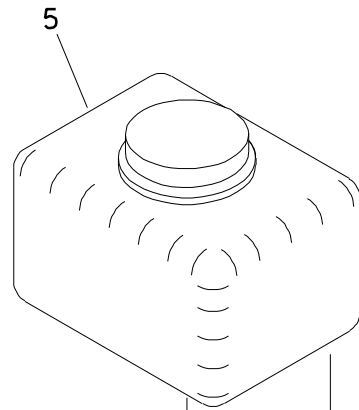
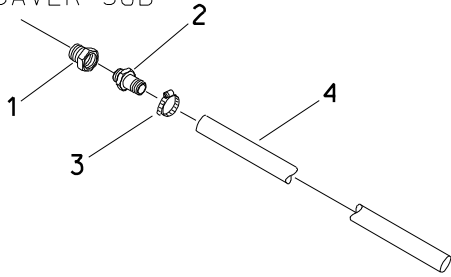
FOOTNOTES

NOTES:

FLUID SYSTEMS

ANTIFREEZE TANK

TO SAVER SUB



15

11

3

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12

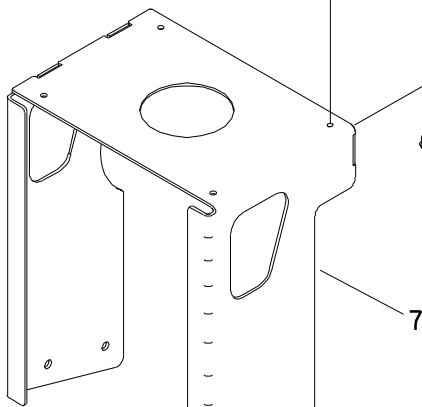
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TO MUD PUMP
INLET

6

7

14

16

ANTIFREEZE TANK

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	190-924		ANTIFREEZE KIT	SEE FOOTNOTE 1
1.	303-432	1	ADAPTER	
2.	155-136	2	S/O COUPLER (16N-16H)	
3.	110-353	3	WORM CLAMP (3/4" TO 1-1/2")	
4.	116-897	AR	BULK TUBING (1", SOLD PER 1")	USE 72"
5.	364-515	1	WATER TANK (8 GAL)	
	190-053		POLY-PATCH TANK REPAIR KIT	
	110-707		LID	
6.	105-836	4	FLG LOCK BOLT (1/4-NC X 1/2")	
7.	303-410	1	TANK SUPPORT WELDMENT	
8.	115-085	1	REDUCER (32N-16NF)	
9.	155-137	1	S/O COUPLER(16N-16H90)	
10.	116-460	AR	BULK HOSE (1", SOLD PER 1')	USE 1 @ 18"
11.	514-318	1	SHUT-OFF (16NF-16NF)	
12.	114-011	1	ALL THREAD (16N)	
13.	115-440	1	STREET ELBOW (16N-16NF90)	
14.	106-685	4	LOCKNUT(M12-1.75,PRV TRQ,10.9)	
15.	514-400	1	CONNECTOR (16NF-16NFBK, NYLON)	
	157-490	1	BK CONNECTOR (16NF, POLY)	SEE FOOTNOTE 2
16.	105-273	4	SCREW (M12-1.75 X 30mm)	

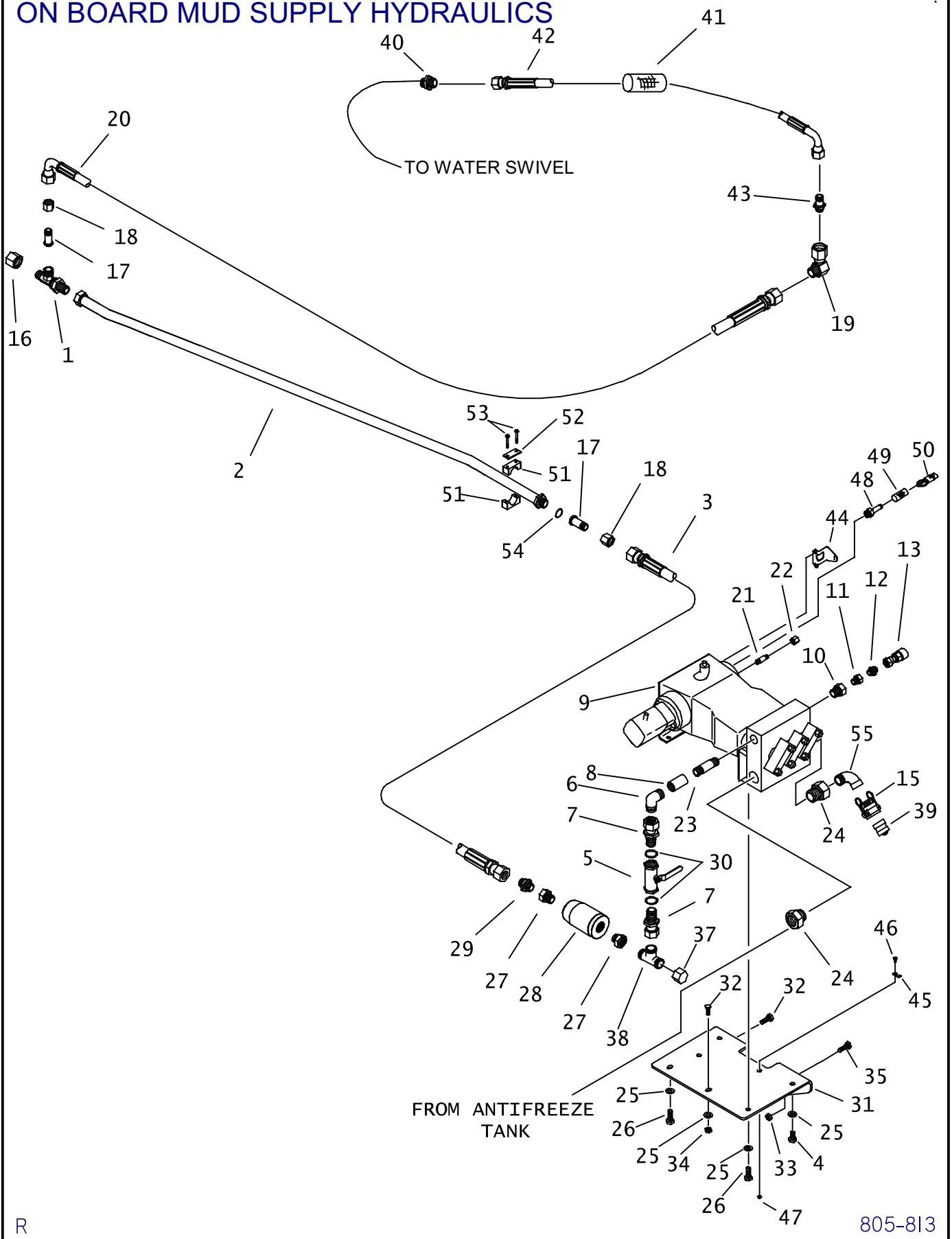
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159-486	1	FHC CAP (32)	FITS ON REF NO.8
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FOOTNOTES

1. REFER TO INSTRUCTIONS 051-255.
2. HOLES MAY REQUIRE MODIFICATION FOR NEW FITTINGS.

ON BOARD MUD SUPPLY HYDRAULICS



R

805-813

ON BOARD MUD SUPPLY HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	514-413	1	BK RUN TEE (240-240-240BK)	
2.	156-892	1	HYD LINE (240-240FX-96.6")	SEE FOOTNOTE 4
3.	149-162	1	HOSE (200FX-30"-3000)	
4.	105-400	3	BOLT (5/8-NC X 1-1/4")	
5.	120-078	1	SHUT-OFF VALVE (20SF-20SF)	
6.	149-081	-	CONNECTOR (20N-20090)	SEE FOOTNOTE 1
7.	149-082	2	CONNECTOR (20J-200FX)	
8.	115-231	1	COLLAR (20NF)	
9.	158-434	-	FLUID PUMP	70 GPM FLUID PUMP OPTION
10.	115-236	1	REDUCER (20N-16NF)	
11.	115-276	1	REDUCER (16N-08NF)	
12.	514-240	1	CONNECTOR (08N-08S)	
13.	159-088	1	QDC BODY (08-08SF)	
	190-186	1	SEAL REPAIR KIT	
15.	159-485	1	FHC BODY (32-32N)	
16.	149-083	1	CAP (240F)	
17.	149-086	2	NUT (240)	
18.	149-085	2	REDUCER STEM (200-240F)	
19.	514-422	1	CONNECTOR (200-200FX90)	
20.	149-089	1	HOSE (200FX90-196"-3000)	
21.	115-161	1	NIPPLE (08N-3-1/2")	
22.	514-106	1	CAP (08NF)	
23.	149-079	1	NIPPLE (20N X 4")	
24.	114-024	2	REDUCER (40N-32NF)	SEE FOOTNOTE 3 (ON NEXT PAGE)
25.	106-398	6	WASHER (M16, HARDENED)	
26.	105-456	2	BOLT (5/8-NC X 1-3/4",GD8)	
27.	515-678	2	REDUCER (32N-20NF)	
28.	370-251	1	CHECK VALVE (MUD)	
29.	514-151	1	CONNECTOR (20N-200)	
30.	155-702	2	O-RING (920 D90)	
31.	350-891	1	PUMP PLATE	
32.	106-470	2	FLG SCREW (M16-2.00 X 40mm)	
33.	106-685	1	LOCKNUT (M12-1.75,PRV TRQ,10.9)	
34.	106-545	2	LOCKNUT (M16-2.0,PRV TRQ,10.9)	
35.	106-632	1	FLG LK SCREW (M12-1.75 X 35mm)	
37.	514-450	1	CAP (20 NF)	SEE FOOTNOTE 1
38.	514-449	1	TEE (20N-200-20N)	
39.	149-120	1	DUST PLUG (32 FHC)	
40.	514-137	1	CONNECTOR (16N-200)	
41.	115-894	1	ABRASION SLEEVE (2.38" X 60")	
42.	149-088	1	HOSE (200FX90L-60"-3000)	
43.	514-096	1	BK CONNECTOR (200)	
44.	307-808	1	PUMP BRACKET	MOUNT USING EXISTING HARDWARE
45.	211-041	1	CONNECTOR CLIP	
46.	106-381	1	FLG LK SCREW (M8-1.25 X 25MM)	
47.	106-386	1	FLG LOCKNUT (M8-1.25)	
48.	216-047	1	SPEED PICKUP	
49.	216-026	AR	FLEX GUARD (.250")	USE 1 @ 20"
50.	215-224	1	3-WAY WP MALE CONNECTOR	SEE FOOTNOTE 2

FOOTNOTES

1. EARLY MODELS HAD 149-081 (20N-20090) IN PLACE OF 514-449 (TEE) & 514-450 (CAP).
2. 3 EA 214-104 AND 3EA 157-645 ARE NEEDED TO INSTALL 215-224

NOTE:

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

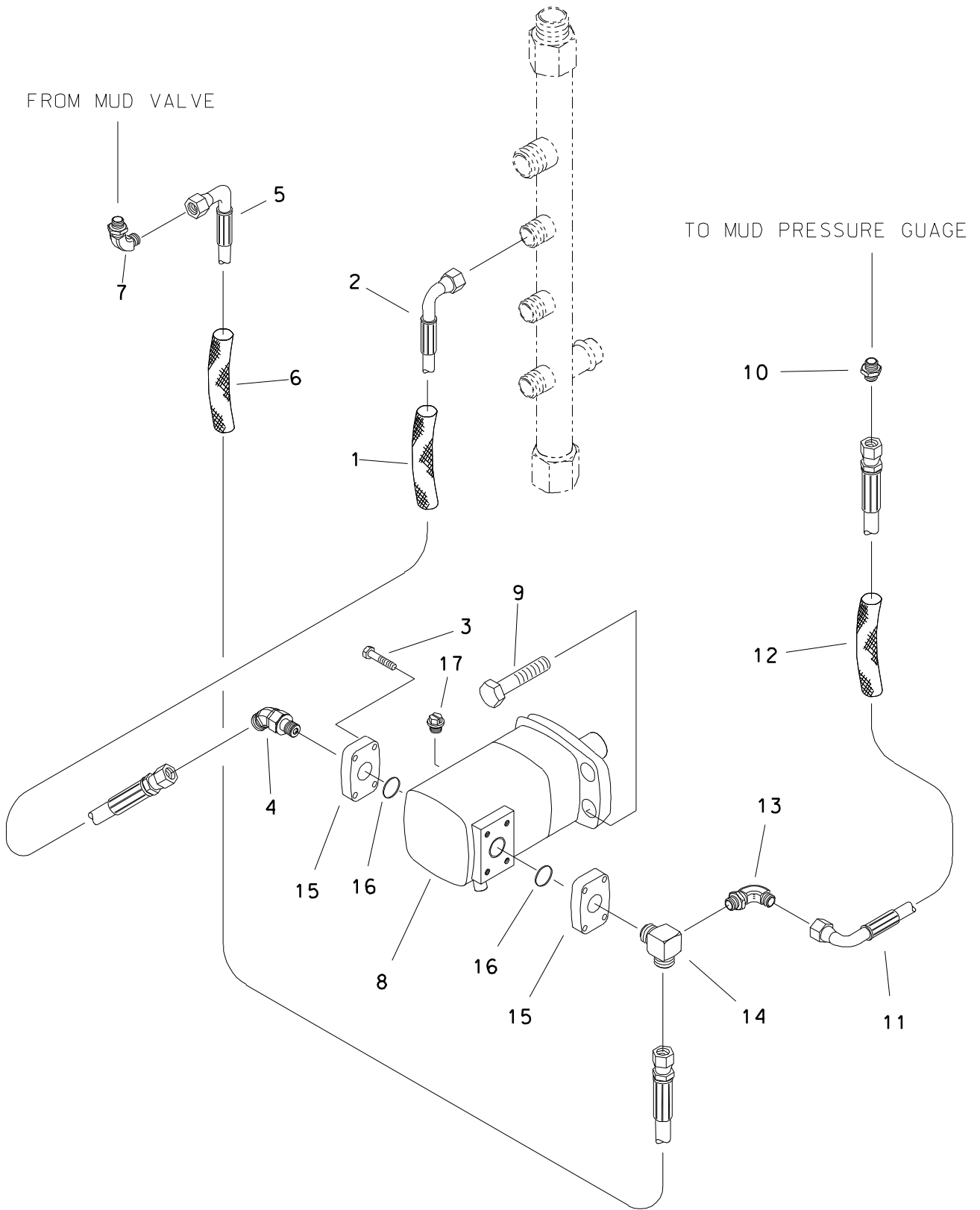
ON BOARD MUD SUPPLY HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
51.	111-008	1	BLT-ON CLP (1.5",SOLD PER SET)	
52.	322-362	1	BACKUP SPACER	
53.	105-224	2	BOLT (1/4-NC X 2-1/2")	
54.	157-130	1	O-RING (029 D90)	
55.	114-004	1	STREET ELBOW (32N-32NF90)	

FOOTNOTES

3. IF AN ANTIFREEZE TANK KIT IS NOT INSTALLED, A (114-008 PLUG 32N, SQ, GALV) WILL BE REQUIRED TO PLUG THE SECOND INLET.
4. NEED 154-326 CAP AND 157-038 O-RING TO CAP FITTING USED ON LATER MODELS FOR MUD PRESSURE SENSING.

MUD MOTOR HYDRAULICS



MUD MOTOR HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	115-938	1	ABRASION SLEEVE (1.59" X 66")	
2.	515-218	1	HOSE (120FX90-80"-3000)	
3.	105-918	8	BOLT (7/16-NC X 1-1/2", SOC)	
4.	154-286	1	CONNECTOR (120-16S90)	
5.	515-295	4	HOSE (120FX90S-72"-3000)	
6.	115-963	1	ABRASION SLEEVE (1.59" X 75")	
7.	154-270	1	CONNECTOR (12S-12090)	
8.	158-013	1	HYDRAULIC MOTOR	
	191-263	-	SEAL REPAIR KIT	
9.	105-282	4	BOLT (1/2-NC X 1-1/4", SOC)	
10.	154-335	4	CONNECTOR (040-040)	
11.	154-705	1	HOSE (040FX90-60"-3000)	
12.	117-714	1	ABRASION SLEEVE (1.00" X 54")	
13.	154-482	1	CONNECTOR (04N-04090)	
14.	514-015	1	CONNECTOR (120-16S90-04NF)	
15.	149-084	2	HEAD FLANGE (20HF-16SF)	
16.	157-078	2	O-RING (222 D90)	
17.	154-384	1	PLUG (06S)	SEE FOOTNOTE 1

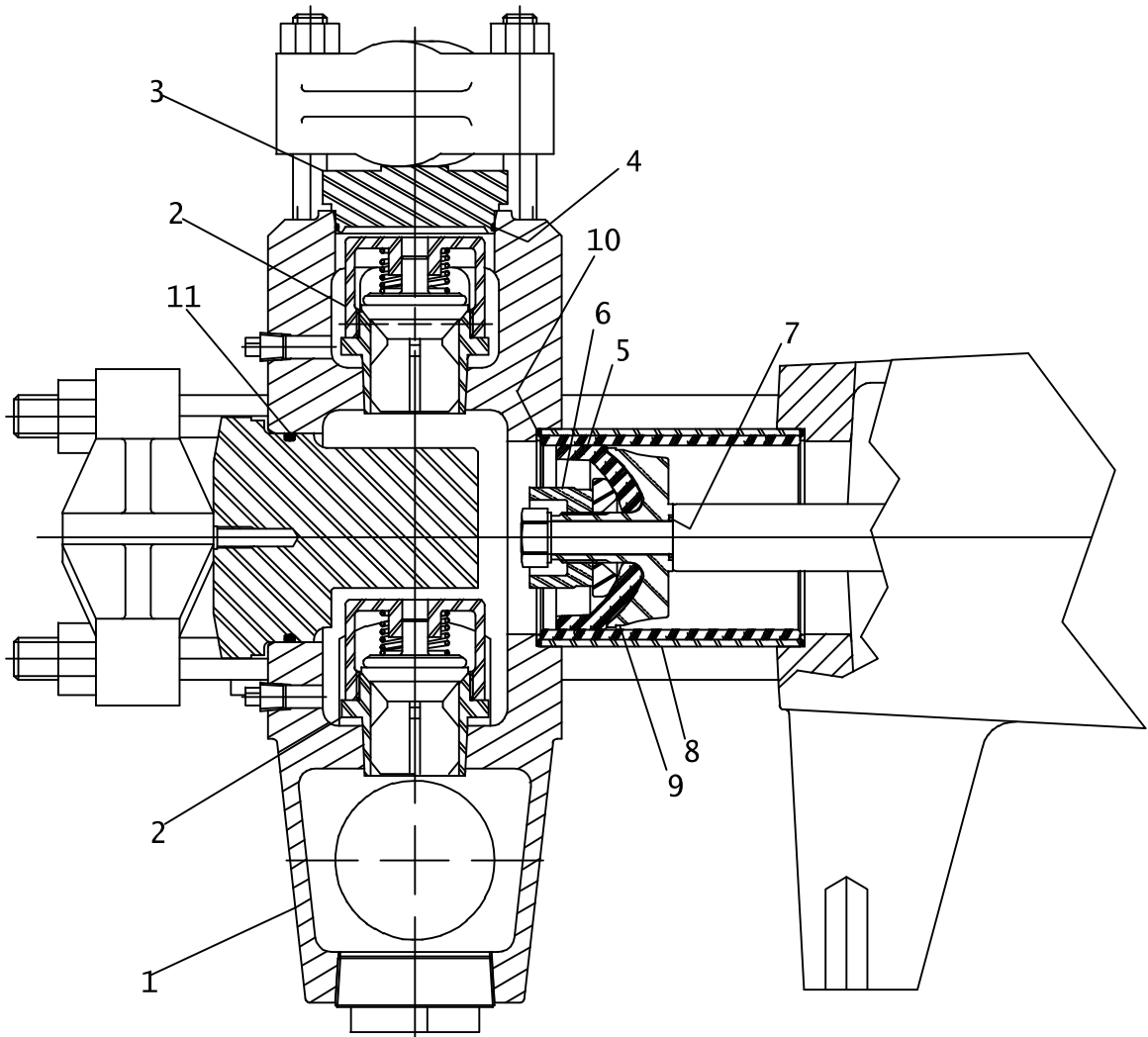
FOOTNOTES

1. PLUG 154-384, LOCATED ON SIDE B OF HYD. MOTOR (158-013).

NOTE

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

FLUID PUMP (FLUID END)
70 GPM



FLUID PUMP (FLUID END) 70 GPM

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	158-434		FLUID PUMP	INCL REF NO'S 1 - 11
	197-062		REBUILT 158-434 MUD PUMP	INCL REF NO'S 1 - 11
	158-017		MUD PUMP	
	190-783		L1122 A/R VALVE SERVICE KIT	INCL REF NO'S 2, 4 & 11
1.	499-035	1	FLUID CYLINDER	
2.	499-036	6	VALVE	
3.	499-037	3	VALVE COVER	
4.	157-190	3	O-RING (139 D90)	
5.	191-1008	1	PACKING REPAIR KIT	SEE FOOTNOTE 1
6.	499-039	3	PLUNGER NUT	
7.	155-778	3	O-RING (014 D70, VITON)	
8.	499-040	3	CYLINDER (2-3/4")	
9.	499-041	3	CUP HOLDER	
10.	499-042	6	CYLINDER GASKET	
11.	157-191	3	O-RING (233 D90)	

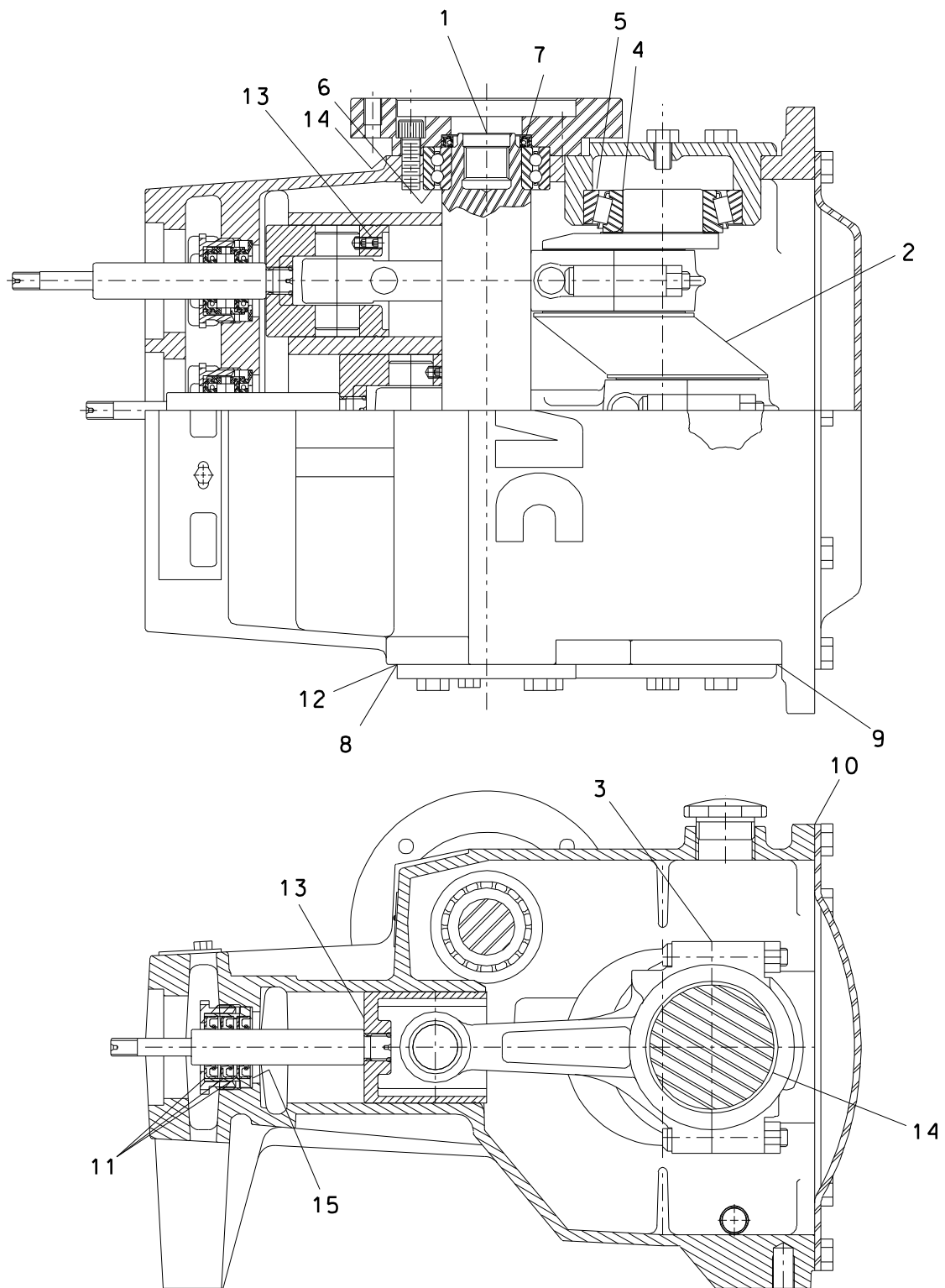
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FOOTNOTES:

KIT INCLUDES ALL PARTS, O-RINGS, GASKETS AND PLUNGER NUTS TO REBUILD ALL CYLINDERS

NOTE:

FLUID PUMP (POWER END)

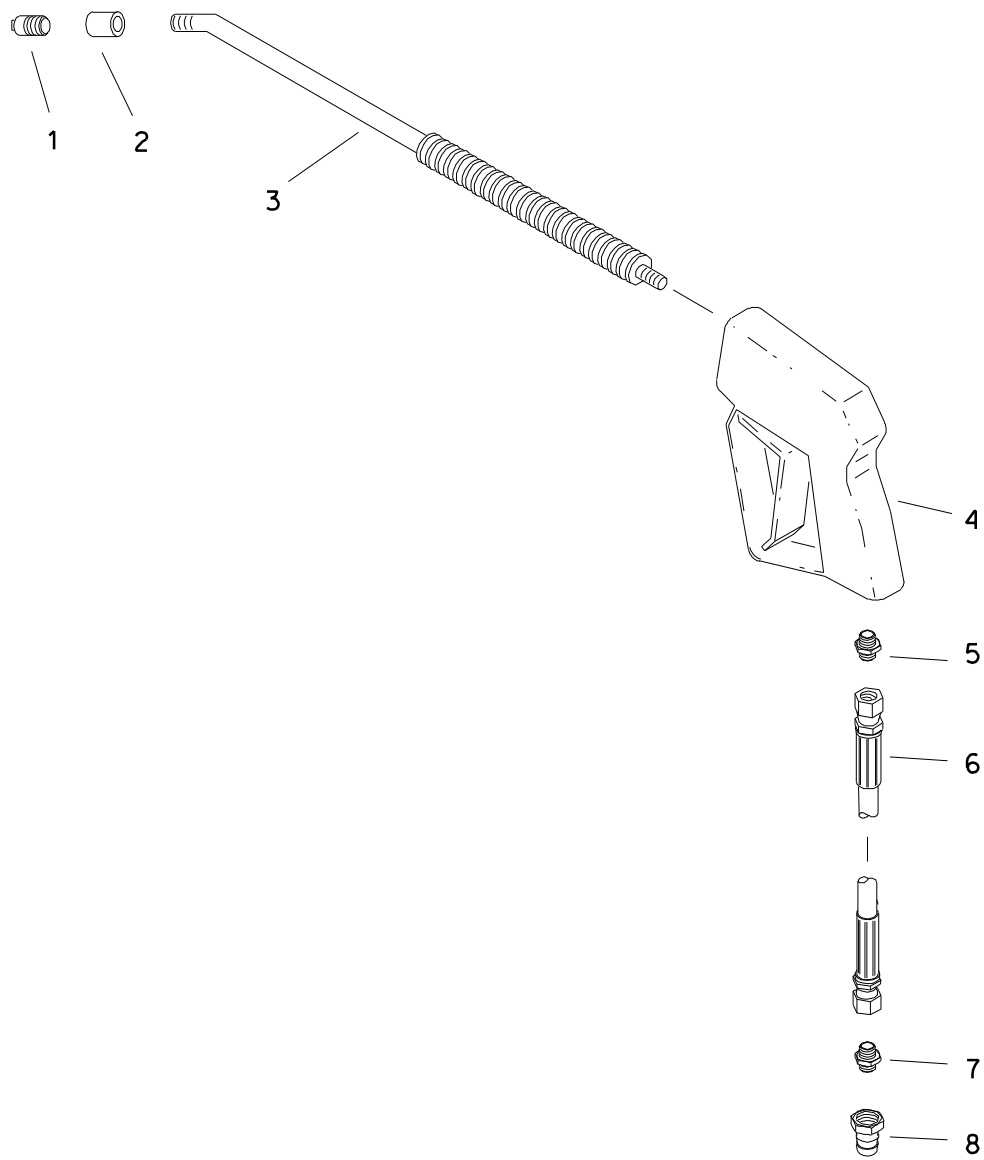


FLUID PUMP (POWER END)

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	158-434		FLUID PUMP	INCL REF NO'S 1 - 15
	197-062		REBUILT 158-434 FLUID PUMP	
	158-017		FLUID PUMP	INCL REF NO'S 1 - 15
1.	499-075	1	PINION SHAFT	
2.	499-076	1	ECCENTRIC GEAR	
3.	499-077	3	CONNECTING ROD	
4.	126-192	2	TAPERED BEARING (2.250")	
5.	126-193	2	TAPERED RACE (4.437")	
6.	125-144	2	BALL BEARING (1.968")	
7.	157-738	1	OIL SEAL, PINION SHAFT	
8.	165-884	2	GASKET, PINION CAP	
9.	165-885	2	GASKET, BEARING CAP	
10.	165-886	1	GASKET, BACKCOVER	
11.	157-739		INTERNAL SEAL (.")	
12.	165-887	6	SHIM	
13.	499-078	3	CROSSHEAD	
14.	126-194	6	ROD BEARING (PAIR)	
15.	165-888	3	SEAL HOLDER - GASKET	

FOOTNOTES

WASH WAND



WASH WAND

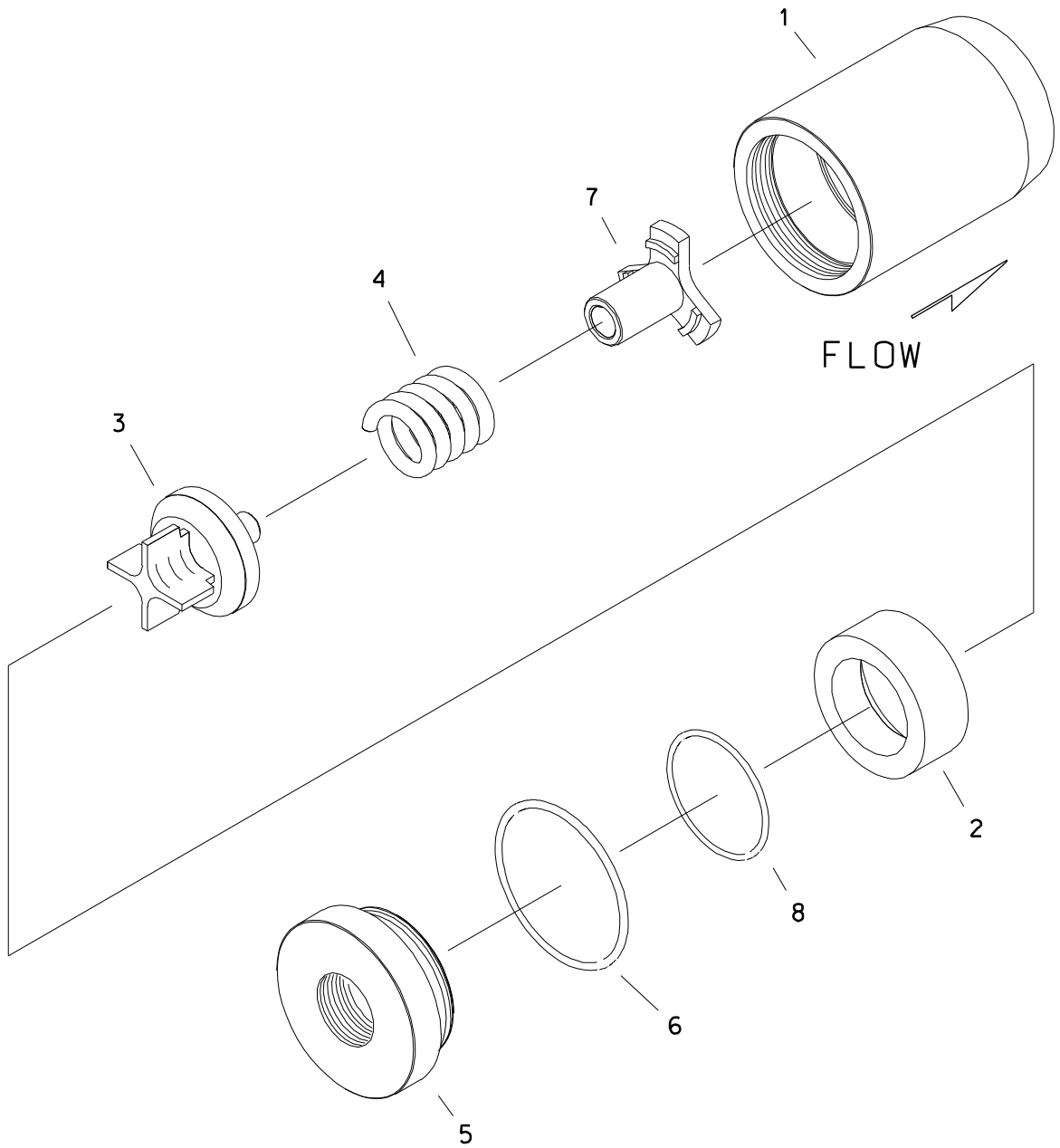
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	155-242	1	NOZZLE (04N, ORF .047", TC)	
2.	115-170	1	COLLAR (04NF)	
3.	259-353	1	WASH WAND (04N-36")	
4.	259-197	1	SPRAY GUN	
	190-179		SEAL REPAIR KIT	RHINO INDUSTRIES (190-938 CHAPPELL SUPPLY)
5.	514-141	1	CONNECTOR (06N-080)	
6.	154-753	1	HOSE (08OFX-600"-3000)	
7.	154-233	1	CONNECTOR (08S-080)	
8.	159-089	1	QDC ADAPTER (08-08SF)	
	190-186		SEAL REPAIR KIT	

FOOTNOTES

NOTE

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

MUD CHECK VALVE



MUD CHECK VALVE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	370-251	1	MUD CHECK VALVE PARTS ASS'Y	INCL REF NO.'S 1 THRU 8
	191-070	1	REPAIR KIT	INCL REF NO.'S 2,4,5,7,8
1.	370-252	1	VALVE BODY	
2.	370-253	1	SEAT INSERT	
	370-411	1	SEAT INSERT	
3.	370-254	1	WING VALVE	
4.	117-176	1	COMPRESSION SPRING	
	116-869	1	COMPRESSION SPRING	
5.	370-256	1	END CAP	
6.	149-057	1	O-RING (348 D70)	
7.	370-255	1	SPRING GUIDE	
8.	149-067	1	O-RING (341 D70)	

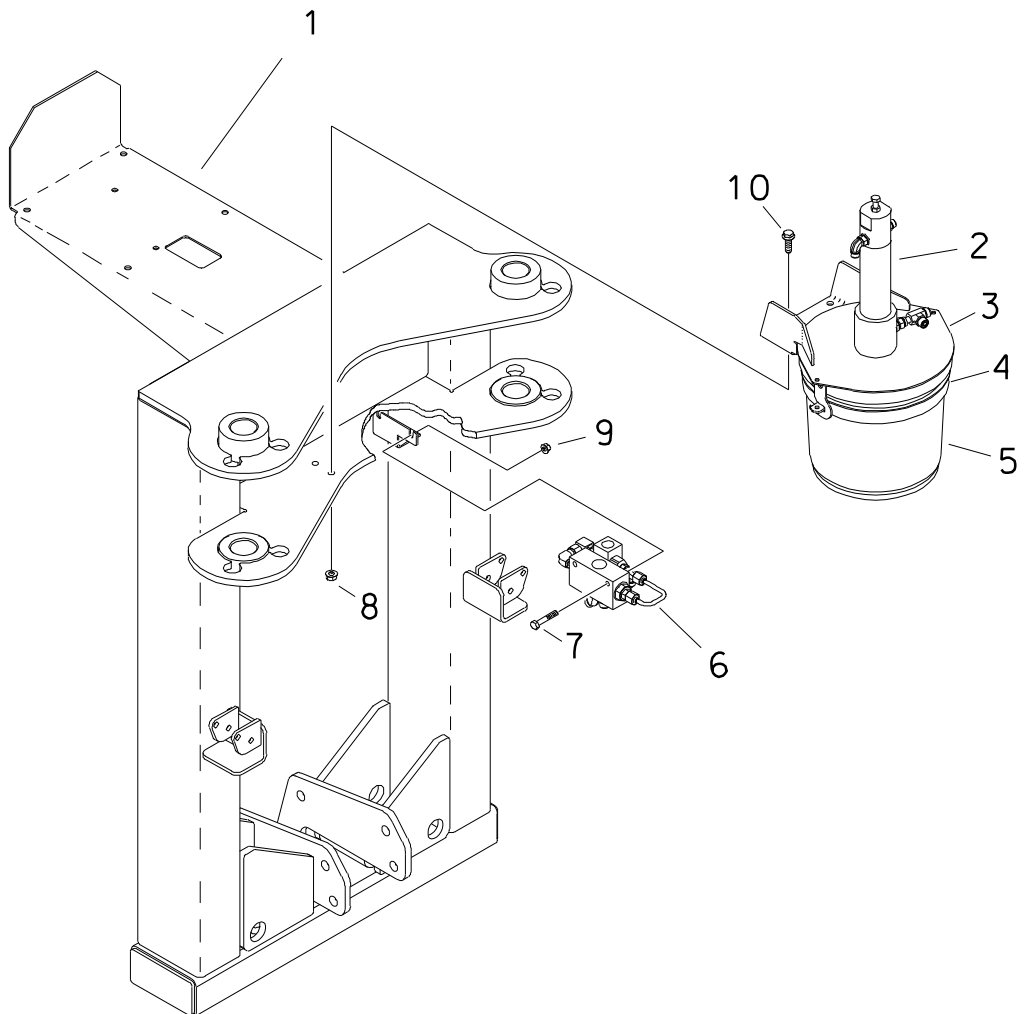
FOOTNOTES

NOTE

NOTES:

PIPE LOADER SYSTEMS

GREASE PUMP MOUNTING

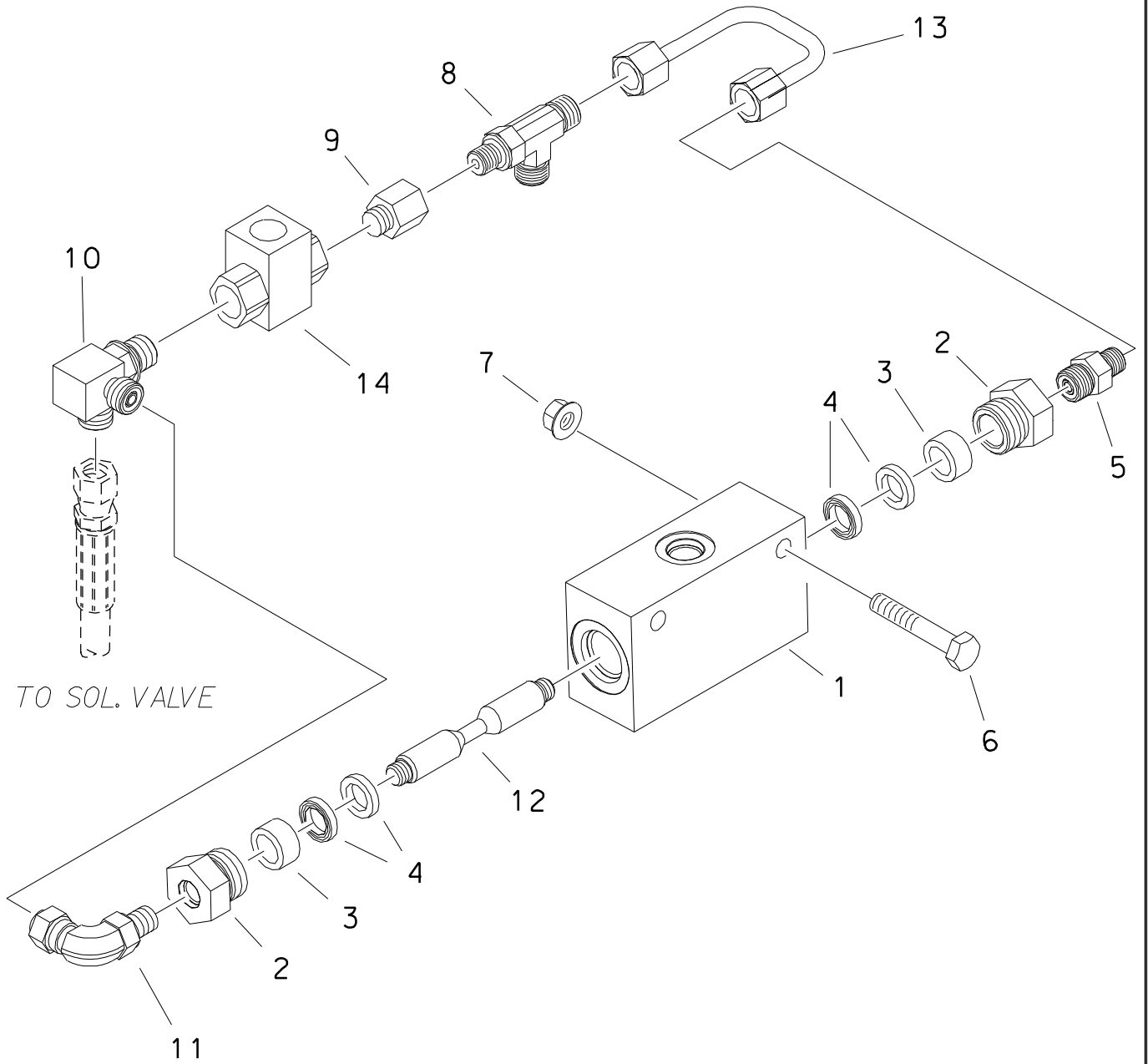


GREASE PUMP MOUNTING

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	343-194	-	PIVOT FRAME	USED ON JT2720
	350-770	-	ANCHOR ATTACHMENT FRAME	USED ON JT4020
2.	350-398	-	GREASE PUMP	
3.	350-400	-	COVER	
4.	350-399	-	BASE	
5.	259-858	-	TOOL JNT LUBE, STD SPRY 2 GAL	
	256-031	-	TOOL JNT LUBE, SUMR SPRY 2 GAL	
6.	N/A	-	VALVE SUB-ASS'Y	
7.	106-329	-	SCREW (M8-1.25 X 50MM)	
8.	106-387	4	FLG LOCKNUT (M10-1.50)	
9.	106-386	-	FLG LOCKNUT (M8-1.25)	
10.	106-383	4	FLG LK SCREW (M10-1.50 X 30MM)	

FOOTNOTES

SELECTOR VALVE



SELECTOR VALVE

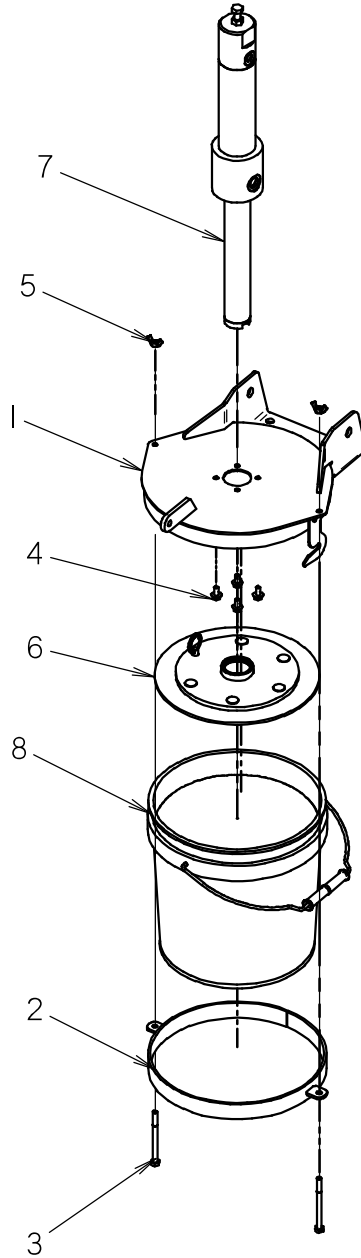
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	101-085		GREASER VALVE KIT	INCL. REF. 1-4 & 12
1.	343-291	1	VALVE BODY	
2.	149-152	2	REDUCER (10S-04SF)	
3.	343-292	2	SPACER	
4.	116-880	4	SEAL (POLY PAK)	
5.	154-278	1	CONNECTOR (04S-040)	
6.	106-329	2	SCREW (M8-1.25 X 50MM)	
7.	106-386	2	FLG LOCKNUT (M8-1.25)	
8.	154-316	1	RUN TEE (04S-040-040)	
9.	155-254	1	REDUCER (06S-04SF)	
10.	154-230	1	BRANCH TEE (06S-040-040)	
11.	514-257	1	UNION (04S-040FX90)	
12.	350-690	1	VALVE SPOOL	
13.	149-519	1	HYD LINE	
14.	158-600	1	HYD SHUTTLE VALVE	

FOOTNOTES

NOTE:

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

AUTO-LUBER ASSEMBLY



AUTO-LUBER ASSEMBLY

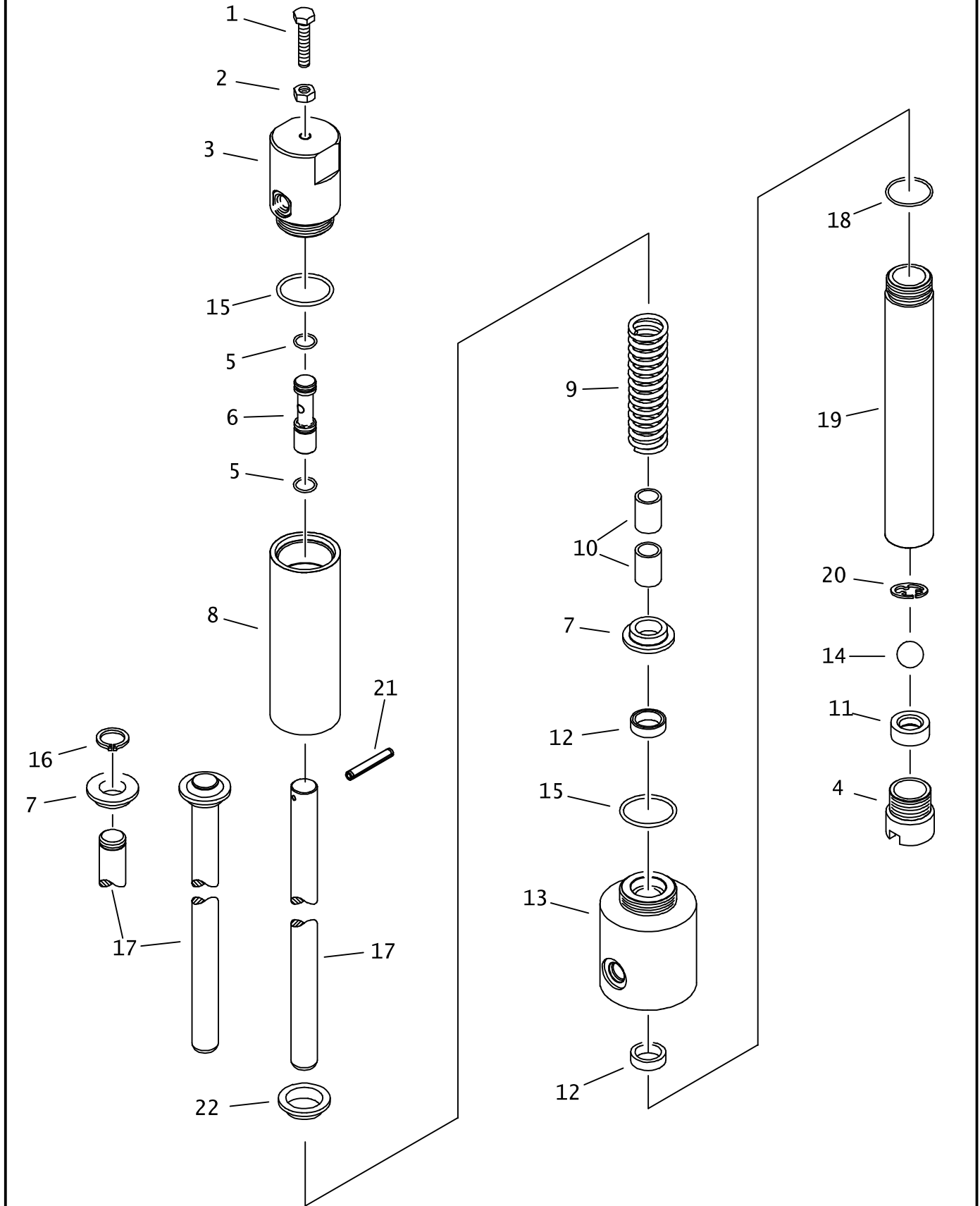
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1	350-400	1	COVER WELDMENT	
2	350-399	1	BASE	
3	105-297	2	BOLT (1/4-NC X 3-1/4")	
4	106-378	4	FLG LK SCREW (M6-1.00 X 12MM)	
5	195-339	2	WING NUT (1/4-NC)	
6	350-1932	1	TOOL JOINT LUBE FOLLOWER	
7	350-398	1	GREASE PUMP PARTS	
8	259-858	1	TOOL JNT LUBE, STD SPRY 2 GAL	
	256-031	-	TOOL JNT LUBE, SUMR SPRY 2 GAL	

NOT SHOWN:

FOOTNOTES:

NOTE:

GREASE PUMP



GREASE PUMP

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	350-398		GREASE PUMP PARTS	INCL REF NO'S 1-20
1.	107-492	1	SCREW (M8-1.25 X 35MM, ALL THD)	
2.	106-078	1	NUT (M8-1.25)	
3.	350-686	1	CYLINDER CAP	
4.	350-692	1	INLET TUBE	
5.	157-049	2	O-RING (113 D70)	
6.	350-421	1	ADJUSTING SPOOL	
7.	350-671	1	ROD GUIDE	SEE FOOTNOTE 2
8.	350-682	1	BARREL	
9.	117-228	1	COMPRESSION SPRING	
10.	125-424	2	BRONZE BUSHING (.750")	
11.	350-691	1	VALVE SEAT	SEE FOOTNOTE 1
12.	117-227	2	SEAL (POLY PAK)	
13.	350-687	1	PUMP BODY	
14.	125-125	1	DETENT BALL (.750")	
15.	155-702	2	O-RING (920 D90)	
16.	117-226	-	EXTERNAL SNAP RING (.750")	SEE FOOTNOTE 2
	115-545	-	EXTERNAL SNAP RING (.75")	
17.	350-689	-	PLUNGER	SEE FOOTNOTE 2
	308-603	-	PLUNGER	SEE FOOTNOTE 3
	166-280	1	PLUNGER	
18.	155-748	1	O-RING (916 D90)	
19.	350-693	1	PUMP BARREL	
20.	301-0196	1	RETAINER CLIP	SEE FOOTNOTE 4
21.	105-525	1	ROLL PIN (3/16" X 1/4")	SEE FOOTNOTE 3
22.	178-467	1	ROD CAP	SEE FOOTNOTE 3

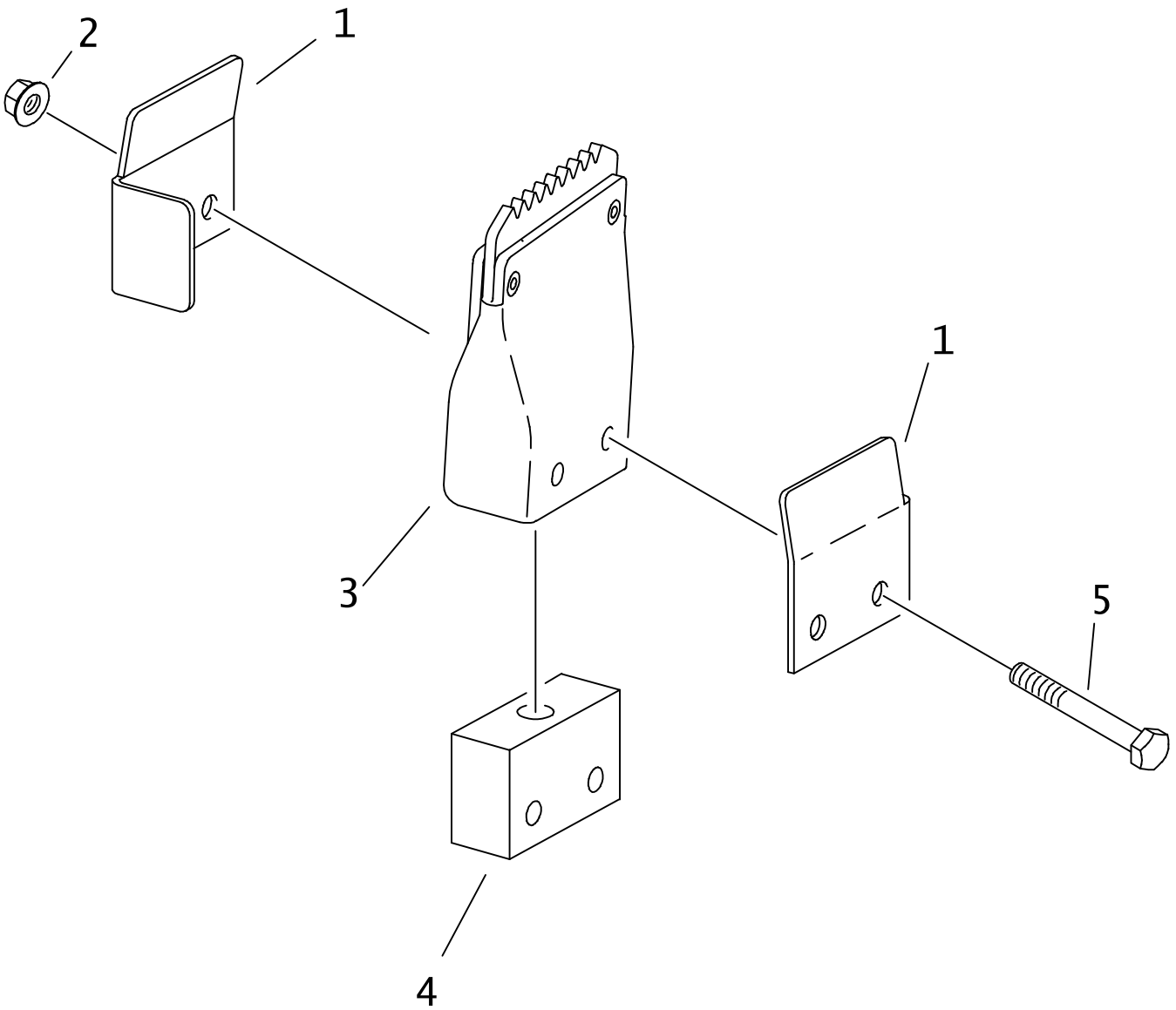
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FOOTNOTES:

1. INSTALL WITH SMALLER BEVEL TOWARD INSIDE OF PUMP
2. 308-603 PLUNGER IS A DIRECT REPLACEMENT OF 350-689 PLUNGER, 117-226 RETAINER RING, AND AN ADDITIONAL 350-671 ROD GUIDE.
3. USE 166-280, 178-467 & 105-525 TO SUPERSEDE 308-603
4. RETAINER CLIP 301-0196 SUPERSEDES CLIP 105-653

NOTE:

APPLICATOR



APPLICATOR

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	305-911	2	BRACKET, APPLICATOR	
2.	106-385	2	FLG LOCKNUT (M6-1.00)	
3.	306-423	1	WIPER PARTS ASS'Y	
	116-937	1	APPLICATOR	
	107-394	4	WASHER (.375", ALUMINUM)	
	107-395	2	RIVET (.156 X .500) SEMI-TUBUL	
4.	305-912	1	BASE, APPLICATOR	
5.	106-093	2	SCREW (M6-1.00 X 45MM)	

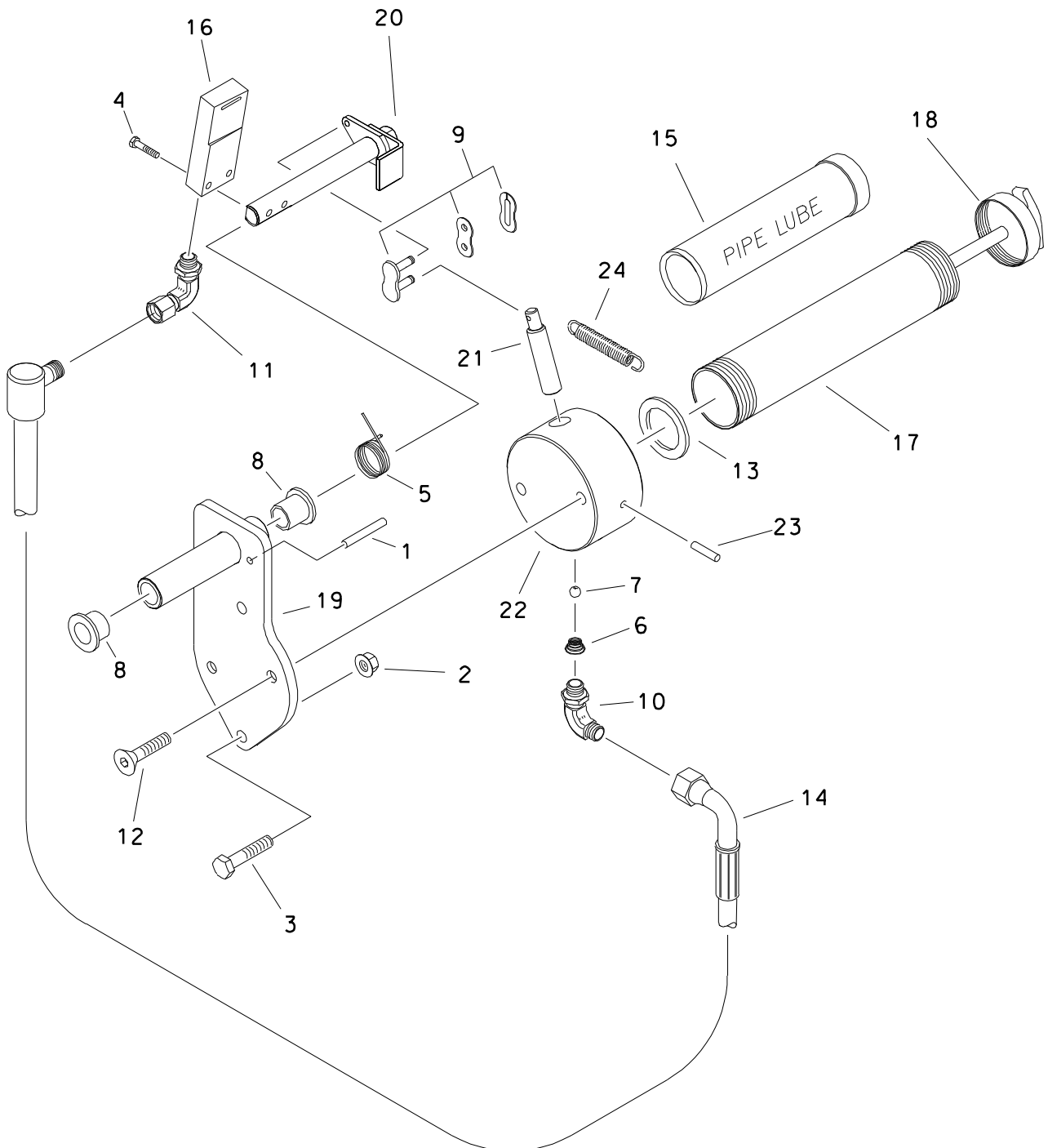
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FOOTNOTES:

NOTE:

THREAD LUBRICATOR

ENDS WITH S/N 2S4081



THREAD LUBRICATOR

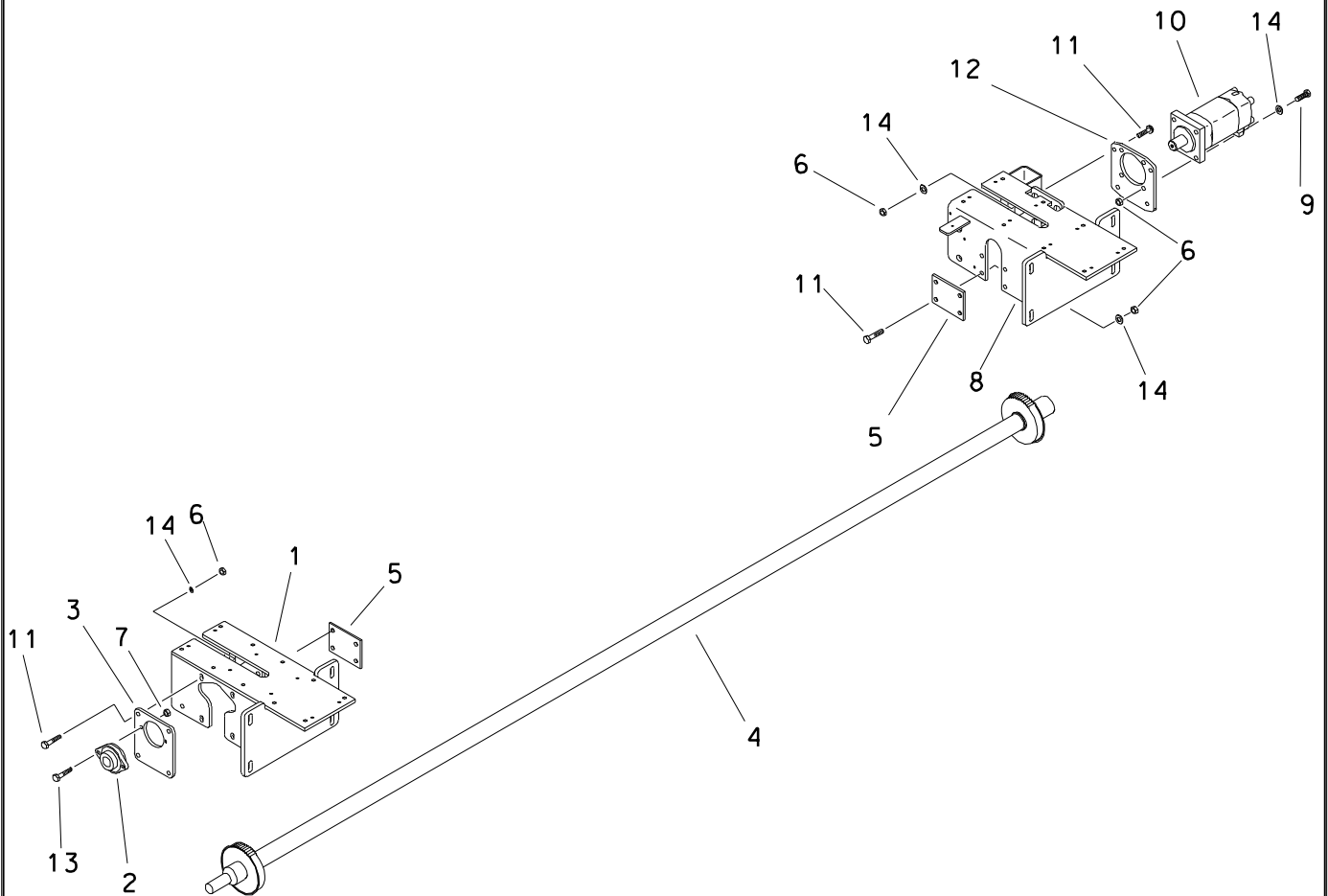
ENDS WITH S/N 2S4081

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	190-866		LUBRICATOR KIT	INCL REF NO'S 1 THRU 24
1.	105-510	1	ROLL PIN (1/4" X 1-1/2")	
2.	105-894	2	LOCKNUT (M10-1.5, PRV TRQ. 10.9)	
3.	105-876	2	SCREW (M10-1.50 X 35MM)	
4.	106-554	2	SCREW (M10-1.50 X 30MM, SOC)	
5.	117-141	1	TORSION SPRING	
6.	117-162	1	COMPRESSION SPRING (.438")	
7.	125-136	1	DETENT BALL (.187", CHROME)	
8.	125-806	2	BEARING BUSHING (.750" NYLINER)	
9.	130-331	1	CONNECTOR LINK (1-1/4")	
10.	154-342	1	CONNECTOR (06S-06090)	
11.	154-460	1	CONNECTOR (06S-06SF90)	
12.	106-293	2	SCREW (M10-1.5 X 35mm, CSK SOC)	
13.	157-716	1	GREASE SEAL	
14.	159-458	1	HOSE (060FX90790-31"-3000)	
15.	256-663	AR	GREASE (14 OZ CARTRIDGE)	
16.	350-396	1	GREASE APPLICATOR	
17.	359-869	1	GREASE BARREL	
18.	359-871	1	PLUNGER	
19.	350-448	1	PUMP BASE	
20.	350-447	1	PUMP SHAFT	
21.	354-988	1	PLUNGER	
22.	354-989	1	LUBER BASE	
23.	105-521	1	ROLL PIN (1/4" X 1")	
24.	117-186	1	EXTENSION SPRING (3.625")	

FOOTNOTES

NOTE
REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.

PIPE LOADER SHUTTLE DRIVE

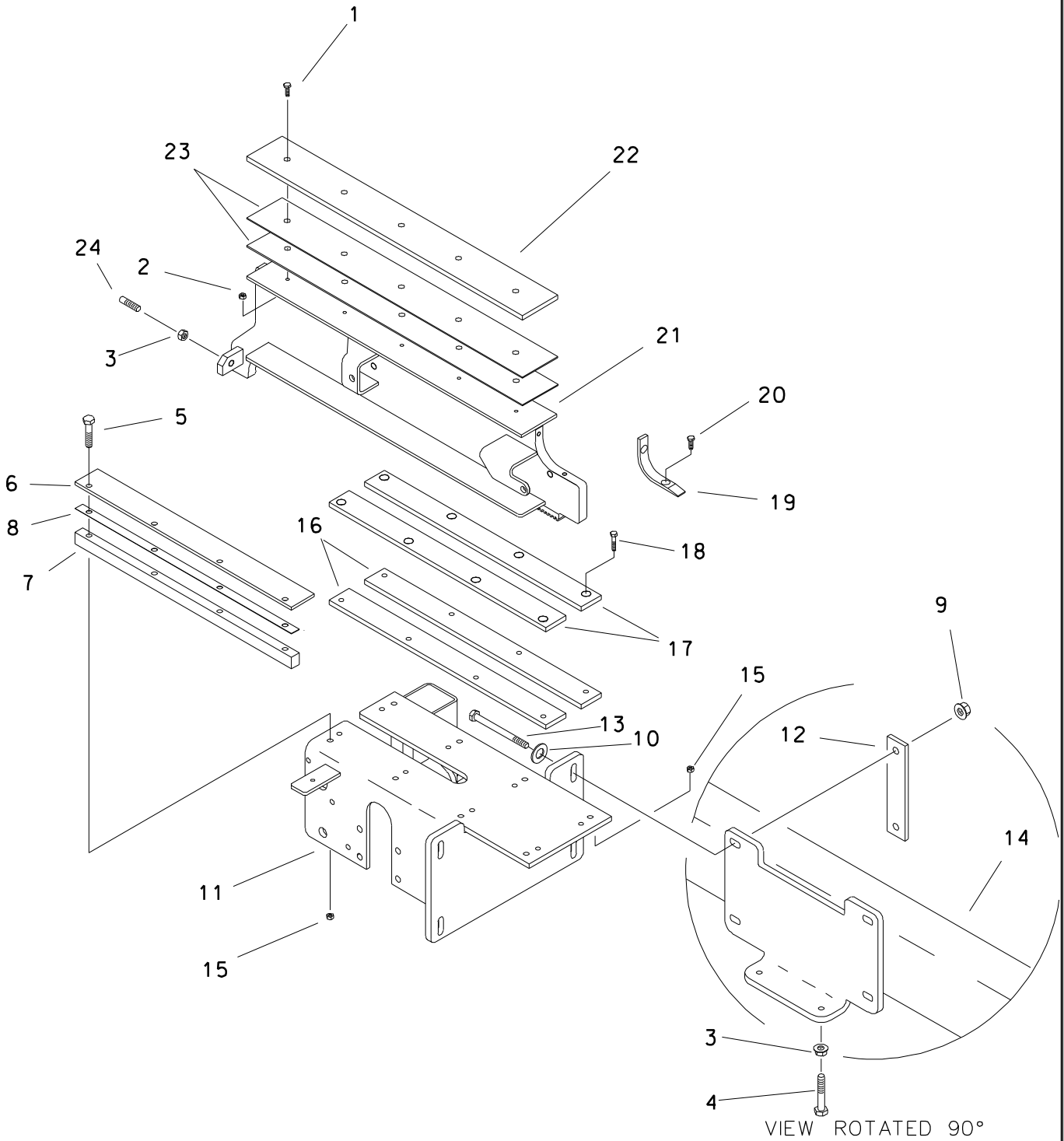


PIPE LOADER SHUTTLE DRIVE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-374	1	REAR SUPPORT	
2.	125-605	1	FLANGE BEARING (1.250", 2-BLT)	
3.	354-369	1	MOUNT PLATE	
4.	354-371	1	PINION SHAFT	
5.	354-358	2	COVER PLATE	
6.	106-685	21	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
7.	105-047	1	LOCKNUT (3/8-NC)	
8.	354-324	-	FRONT SUPPORT	USED PRIOR TO SN 2S0111
	350-441	1	FRONT SUPPORT	USED SN 2S0111 AND LATER
9.	106-334	4	SCREW (M12-1.75 X 50mm)	
10.	158-022	-	HYDRAULIC MOTOR	
	500-711	-	SEAL REPAIR KIT -REAR	
	500-758	-	SEAL REPAIR KIT - SHAFT	
11.	106-632	16	FLG LK SCREW (M12-1.75 X 35mm)	
12.	354-366	1	PLATE	
13.	105-249	2	CARRIAGE BOLT (3/8-NC X 1.250")	
14.	106-397	20	WASHER (M12, HARDENED)	

FOOTNOTES

FRONT PIPE LOADER SHUTTLE

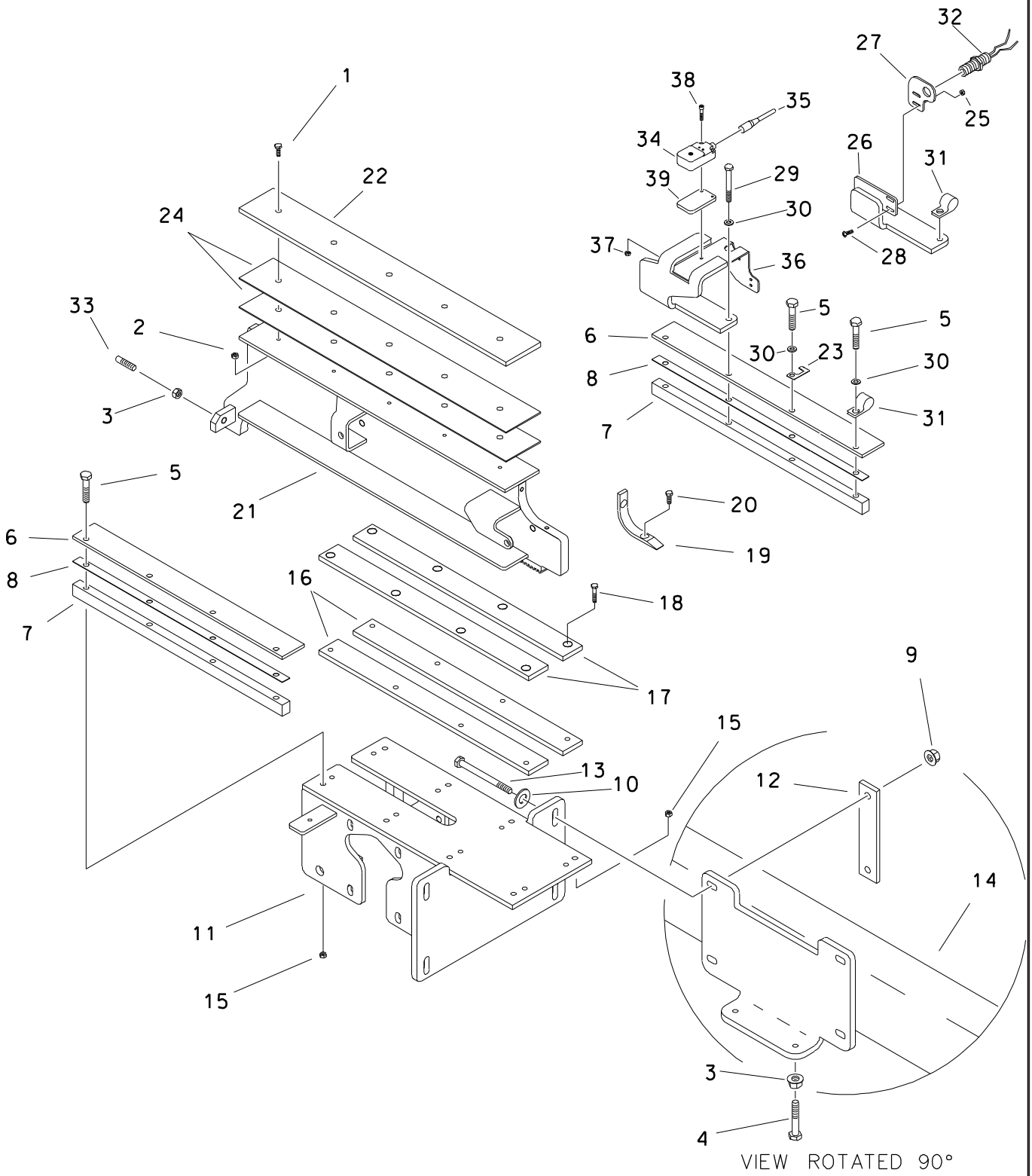


FRONT PIPE LOADER SHUTTLE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	107-312	5	SCREW (M6-1.00 X 25mm, BUT SOC)	
2.	106-237	5	LOCKNUT (M6-1.00, PRV TRQ, NLK)	
3.	106-089	4	NUT (M12-1.75, 10.9)	
4.	106-720	2	SCREW (M12-1.75 X 70mm)	
5.	106-570	8	SCREW (M8-1.25 X 60mm)	
6.	354-360	2	RETAINER BAR	
7.	354-359	2	SPACER BAR	
8.	354-361	4	SHIM	
9.	106-685	4	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
10.	106-397	8	WASHER (M12, HARDENED)	
11.	354-324	-	FRONT SUPPORT	USED PRIOR TO S/N 2S0111
	350-441	1	FRONT SUPPORT	USED S/N 2S0111 AND LATER.
12.	354-338	2	MOUNT PLATE	
13.	107-213	4	SCREW (M12-1.75 X 160mm)	
14.	350-507	-	DRILL FRAME	
15.	106-561	16	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
16.	354-877	2	SPACER BAR	
17.	354-367	2	BEARING PLATE	
18.	107-289	8	LOCK SCREW (M8-1.25 X 40mm, SOC)	
19.	354-362	1	WEAR PLATE	
20.	107-100	2	SCREW (M8-1.25 X 20mm, SOC, 10.9)	LOCTITE 242
21.	354-321	1	FRONT SHUTTLE	
22.	354-364	1	WEAR STRIP	
23.	350-699	2	PIPE SUPPORT SHIM	
24.	105-741	2	SET SCREW (M12-1.75 X 70MM, CUP)	

FOOTNOTES

REAR PIPE LOADER SHUTTLE

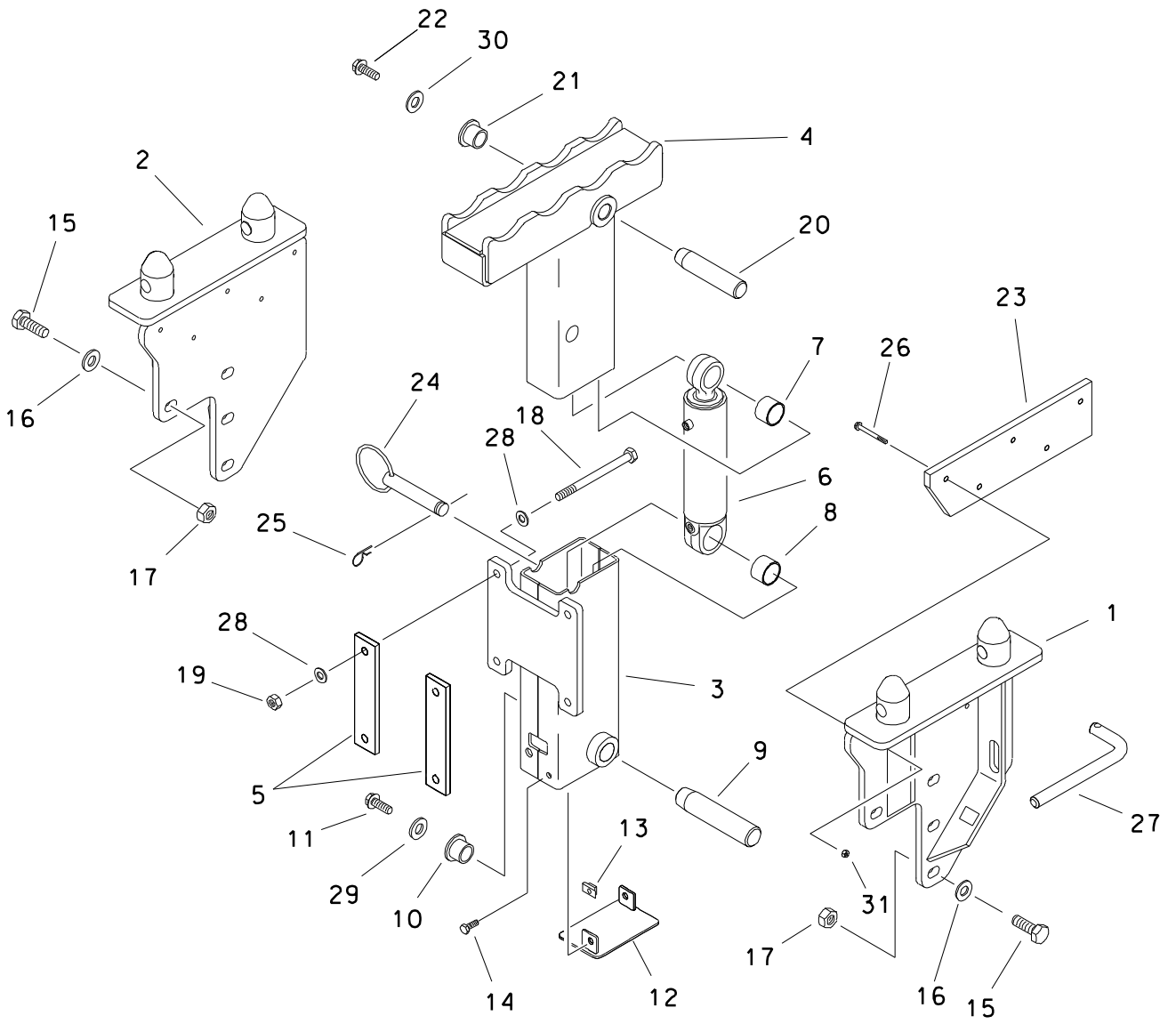


REAR PIPE LOADER SHUTTLE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	107-312	5	SCREW (M6-1.00 X 25mm, BUT SOC)	
2.	106-237	5	LOCKNUT (M6-1.00, PRV TRQ, NLK)	
3.	106-089	4	NUT (M12-1.75, 10.9)	
4.	106-720	2	SCW (M12-1.75 X 70mm)	
5.	106-570	6	BOLT (M8-1.25 X 60mm)	
6.	354-360	2	RETAINER BAR	
7.	354-359	2	SPACER BAR	
8.	354-361	4	SHIM	
9.	106-685	4	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
10.	106-397	4	WASHER (M12, HARDENED)	
11.	354-374	1	REAR SUPPORT	
12.	354-338	2	MOUNT PLATE	
13.	107-213	4	SCREW (M12-1.75 X 160mm)	
14.	350-507	-	DRILL FRAME	
15.	106-561	16	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
16.	354-877	2	SPACER BAR	
17.	354-367	2	BEARING PLATE	
18.	107-289	8	LOCK SCREW (M8-1.25 X 40mm, SOC)	
19.	354-362	1	WEAR PLATE	
20.	107-100	2	SCREW (M8-1.25 X 20mm, SOC, 10.9)	LOCTITE 242
21.	308-613	1	REAR SHUTTLE	
22.	354-364	1	WEAR STRIP	
23.	211-041	1	CONNECTOR CLIP	BEGINS WITH S/N 2S4081
24.	350-699	2	PIPE SUPPORT SHIM	
25.	106-048	2	LOCKNUT (#10-24)	ENDS WITH S/N 2S4080
26.	354-560	1	LIMIT SWITCH/STOP BRACKET	ENDS WITH S/N 2S4080
27.	354-915	1	PROXIMITY BRACKET	ENDS WITH S/N 2S4080
28.	106-049	2	BOLT (#10-24 X 3/4, PLPS)	ENDS WITH S/N 2S4080
29.	106-330	2	SCREW (M8-1.25 X 70mm)	
30.	106-389	2	WASHER (M8)	
31.	110-259	2	BOLT-ON CLAMP (.625")	
32.	217-939	1	PROXIMITY SWITCH	ENDS WITH S/N 2S4080
33.	105-741	2	SET SCREW (M12-1.75 X 70MM, CUP)	
34.	214-692	1	PROXIMITY SWITCH	BEGINS WITH S/N 2S4081
35.	214-691	1	STREIGHT JUMPER HARNESS	BEGINS WITH S/N 2S4081
36.	307-868	1	PROX BRACKET WELDMENT	BEGINS WITH S/N 2S4081
37.	106-850	2	LOCKNUT (M5-.80)	BEGINS WITH S/N 2S4081
38.	107-465	2	SCREW (M5-.80 X 30MM, SOC)	BEGINS WITH S/N 2S4081
39.	107-451	1	SHIM	BEGINS WITH S/N 2S4081

FOOTNOTES

PIPE LOADER LIFTERS

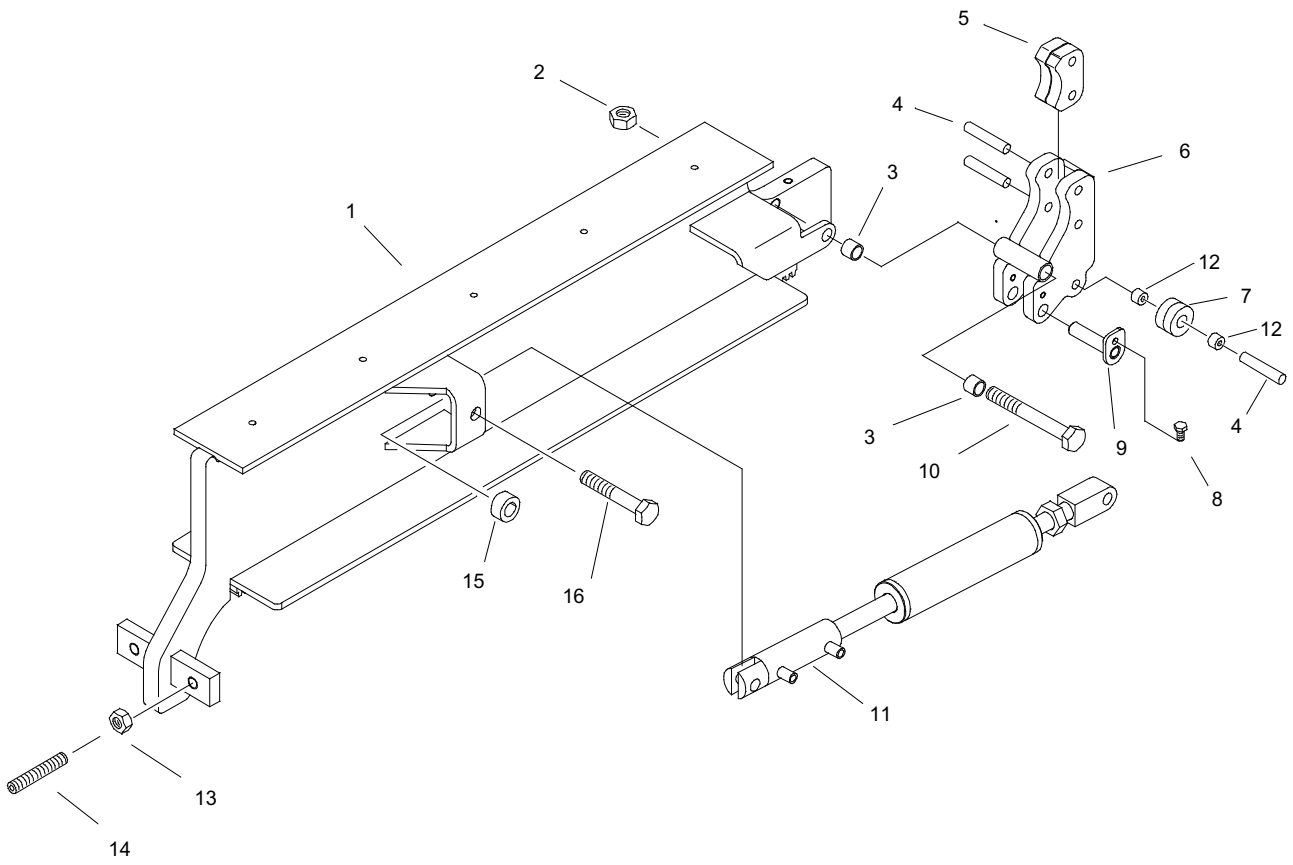


PIPE LOADER LIFTERS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-326	1	FRONT BOX SUPPORT	
2.	354-327	1	REAR BOX SUPPORT	
3.	354-336	2	LIFTER OUTER TUBE	
4.	354-337	2	PIPE LIFTER	
5.	354-338	4	MOUNT PLATE	
6.	151-031	2	CYL (2.0" X 1.00" X 8.000")	
7.	125-770	2	COMPOSITION BUSHING (1")	
8.	125-771	2	COMPOSITION BUSHING (1.25")	
9.	183-863	2	TAPERED PIN (31.7MM X 128MM)	
10.	181-982	2	TAPERED INSERT (1.25")	
11.	105-273	2	SCREW (M12-1.75 X 30mm)	
12.	356-297	2	STABILIZER CAP	
13.	106-551	4	CLIP NUT (M8-1.25)	
14.	106-991	4	FLG LK SCREW (M8-1.25 X 20mm)	
15.	106-340	8	SCREW (M16-2.00 X 50mm)	
16.	106-398	8	WASHER (M16, HARDENED)	
17.	106-442	8	FLG LOCKNUT (M16-2.00, PRV TRQ)	
18.	106-620	8	SCREW (M12-1.75 X 150mm)	
19.	106-685	8	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
20.	179-024	2	TAPERED PIN (25.4MM X 117MM)	
21.	181-981	2	TAPERED INSERT (1.00")	
22.	105-245	2	SCREW (M10-1.50 X 25mm)	
23.	354-396	1	PIPE SLIDE BAR	
24.	180-559	2	PULL PIN (1" X 4.625")	
25.	110-128	2	SPRING CLIP PIN (5/32" X 1")	
26.	107-289	5	LOCK SCREW3 (M8-1.25 X 40mm, SOC)	
27.	354-878	2	PIPE ROTATION PIN	
28.	106-391	16	WASHER (M12)	
29.	106-397	2	WASHER (M12, HARDENED)	
30.	106-396	2	WASHER (M10, HARDENED)	
31.	106-561	5	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	

FOOTNOTES

PIPE LOADER GRIPPER



PIPE LOADER GRIPPER

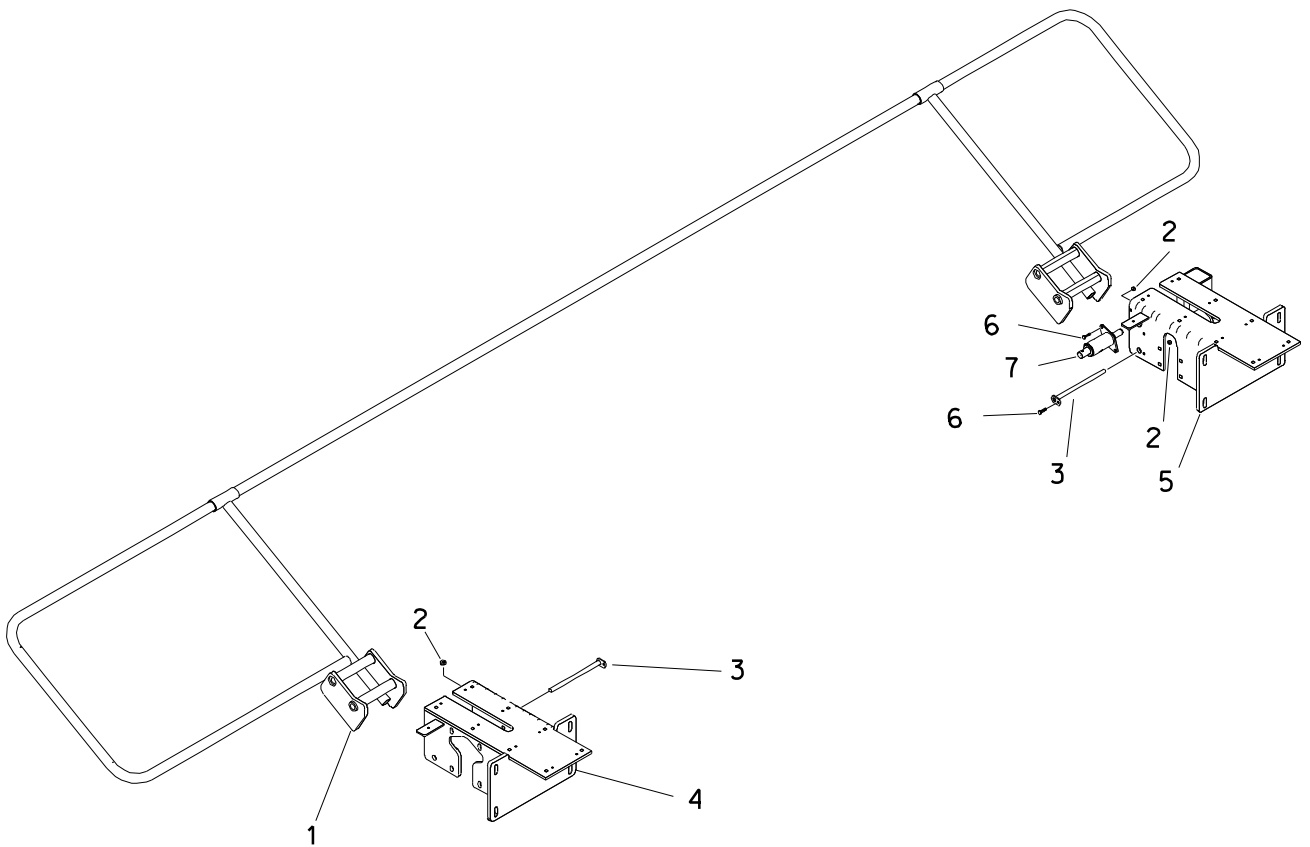
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-321	1	FRONT SHUTTLE	
	308-613	1	REAR SHUTTLE	
2.	105-044	1	JAM NUT (1/2-NC)	
3.	125-469	2	COMPOSITION BUSHING (.500")	
4.	105-507	3	ROLL PIN (3/8" X 2")	
5.	354-363	2	GRIPPER PLATE	
6.	354-322	1	ROD GRIPPER	
7.	370-154	1	ROLLER	
8.	106-378	1	FLG LK SCREW (M6-1.00 X 12mm)	
9.	354-376	1	PIN	
10.	105-549	1	BOLT (1/2-NC X 3-3/4", GD8)	
11.	191-161	1	GRIPPER CYLINDER	
12.	125-137	2	BALL BEARING (.375")	
13.	106-089	2	NUT (M12-1.75, 10.9)	
14.	105-741	2	SET SCREW (M12-1.75 X 70mm, CUP)	
15.	354-354	1	SPACER	
16.	105-076	1	BOLT (1/2-NC X 3")	

NOT SHOWN:

FOOTNOTES:

NOTE:

SHUTTLE GUARD

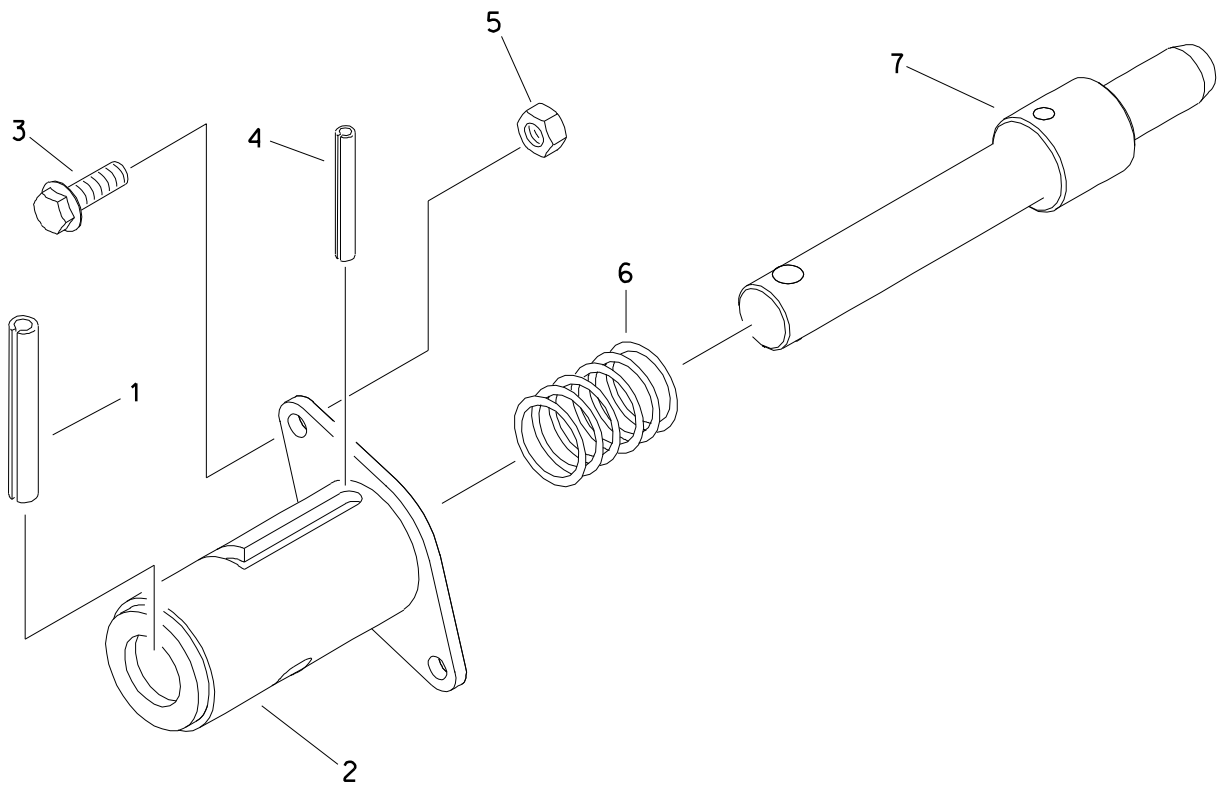


SHUTTLE GUARD

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-385	1	SHUTTLE GUARD	
2.	106-561	4	LOCKNUT (M8-1.25,PRV TORQ, 10.9)	
3.	354-384	2	GUARD PIN	
4.	354-374	1	REAR SUPPORT	
5.	354-324	1	FRONT SUPPORT	USED PRIOR TO SN 2S0111
	350-441	1	FRONT SUPPORT	USED SN 2S0111 AND AFTER.
6.	106-992	4	FLG LK SCREW (M8-1.25 X 25mm)	
7.	354-571	1	GUARD LOCK PIN	

FOOTNOTES

GUARD LOCK PIN



GUARD LOCK PIN

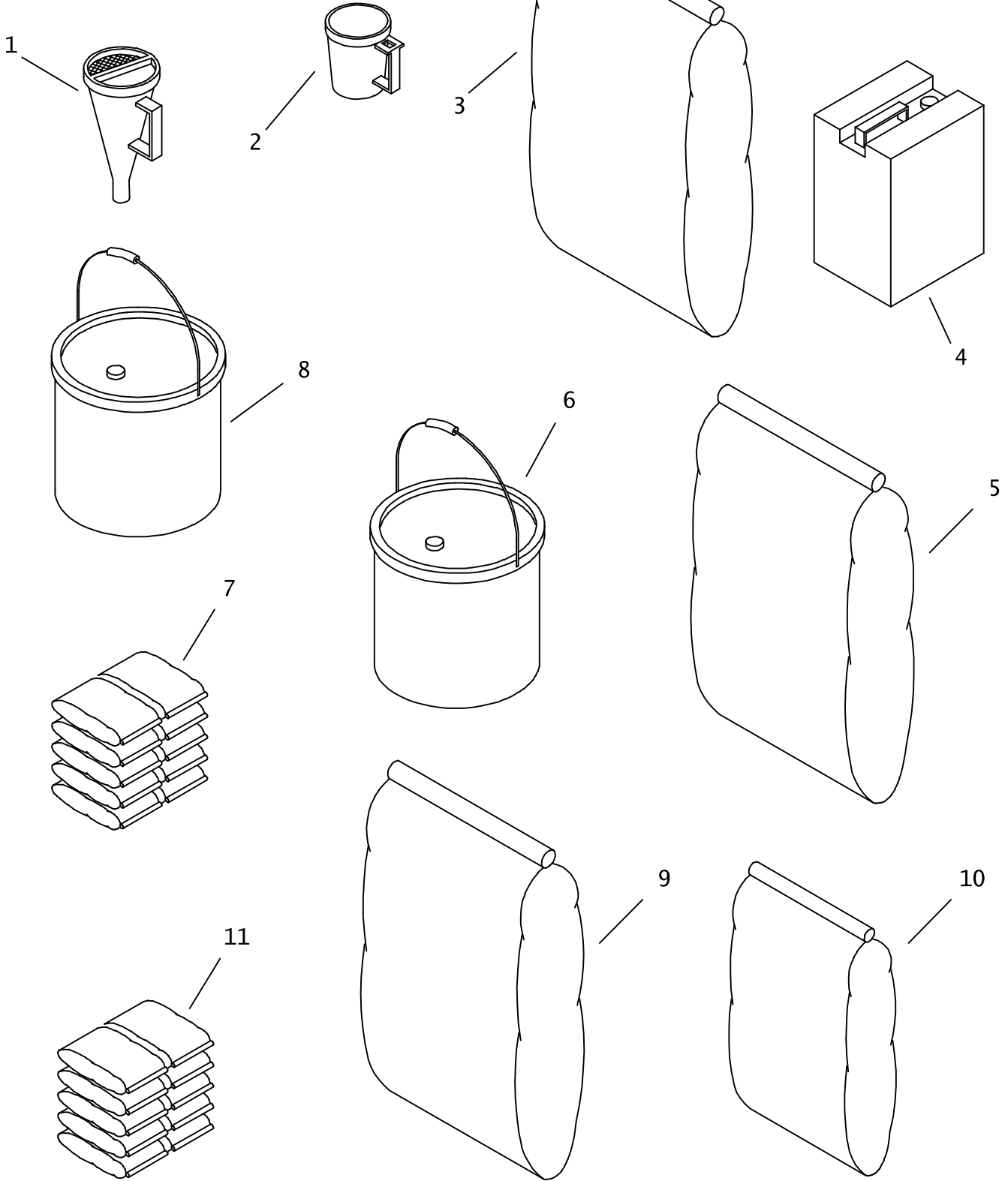
REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	354-571		GUARD LOCK PIN	INCL REF NO.'S 1 THRU 7
1.	105-561	1	ROLL PIN (3/8" X 2-3/4")	
2.	354-566	1	PIN HOUSING	
3.	106-992	2	FLG LK SCREW (M8-1.25 X 25mm)	
4.	105-503	1	ROLL PIN (1/4" X 2")	
5.	106-561	2	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
6.	115-560	1	COMPRESSION SPRING	
7.	178-095	1	LOCKOUT PIN	

FOOTNOTES

NOTES:

ACCESSORIES

FLUID MIXING ACCESSORIES



FLUID MIXING ACCESSORIES

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	259-195	1	VISCOSITY FUNNEL	
2.	259-196	1	VISCOSITY CUP	
3.	259-804	AR	BENTONITE, QUIK-GEL (50 LB)	
4.	259-805	AR	LIQUID POLYMER, EZ-MUD (5 GAL)	
5.	259-807	AR	BENTONITE, BORE-GEL (50 LB)	
6.	259-808	AR	VISCOSIFIER, LIQUI-TROL (5 GAL)	
7.	259-809	AR	POWDER POLYMER, QUIK-TROL (20 LB)	
8.	259-810	AR	WET AGENT, CON-DET (5 GAL)	
9.	259-821	AR	'PAC-R' FILTRATION CONTROL	
10.	259-822	AR	'BARAZAN D+' VISCOSIFIER	
11.	259-832	AR	'NO SAG' (20# BOX/10-2#BAGS)	

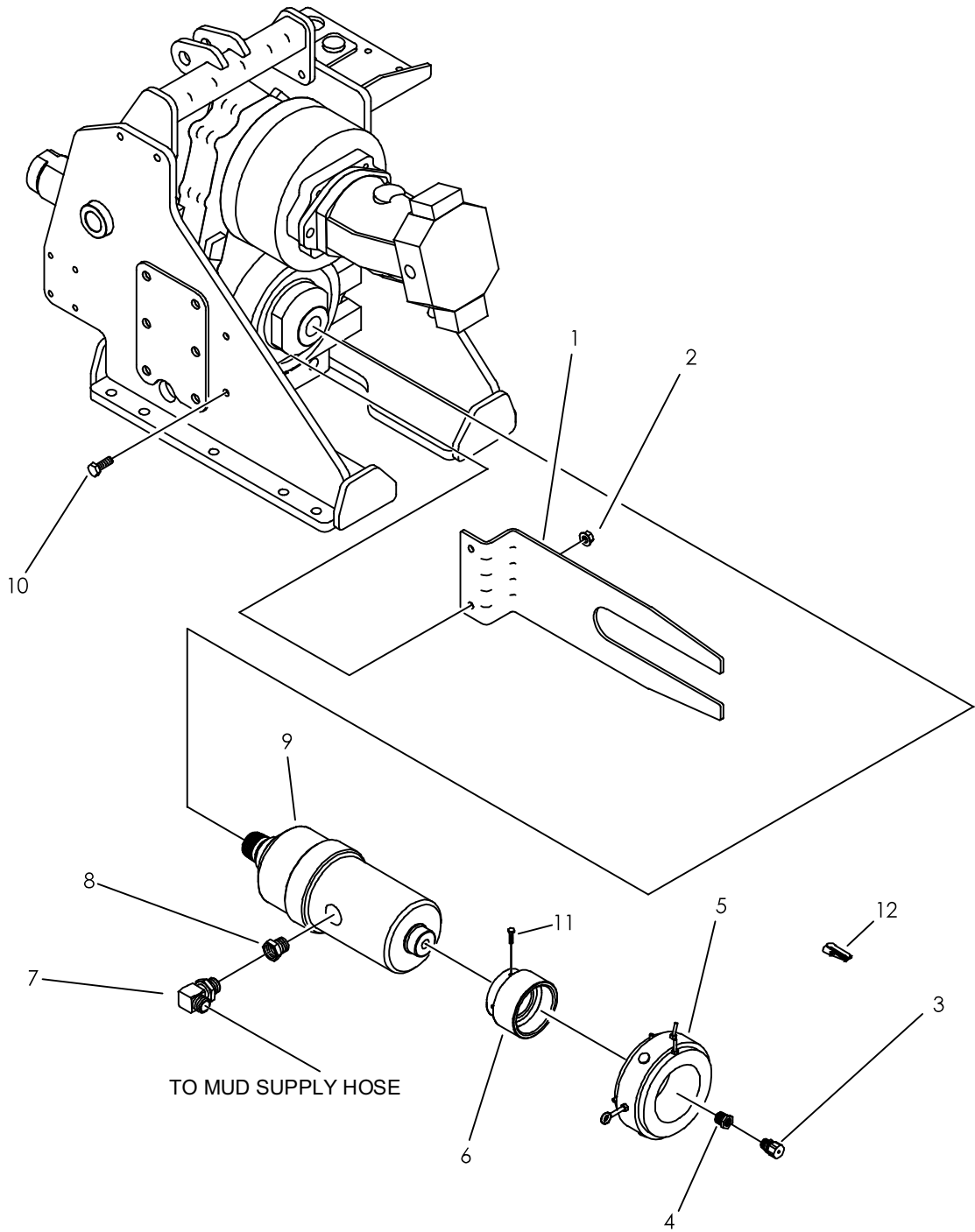
NOT SHOWN:

191-158	1	DRILLING FLUID TEST KIT
259-487	1	SHEAROMETER

FOOTNOTES:

NOTE:

WIRELINER KIT



WIRELINER KIT

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	<u>190-910</u>	-	WIRELINER KIT	
	100-082	-	WIRELINER KIT	INCLUDES REFERENCES 1 THRU 12
1.	350-631	1	BRACKET	
2.	106-685	2	LOCKNUT (M12-1.75, PRV TRQ, 10.9)	
3.	358-855	1	PACK-OFF FITTING (.125-.187)	
4.	115-156	1	REDUCER (08N-06NF)	
5.	214-548	1	COLLECTOR RING	
6.	350-630	1	COIL MOUNT	
7.	514-095	1	CONNECTOR (20S-20090)	
8.	514-446	1	REDUCER (24S-20SF)	
9.	350-476	1	WATER SWIVEL	
	190-1423		SEAL KIT	
10.	106-333	2	SCREW (M12-1.75 X 40MM, 8.8)	
11.	105-688	4	SCREW (M6-1.00 X 35MM)	
12.	105-693	1	ALLIGATOR CLIP (.312 X 2.343)	

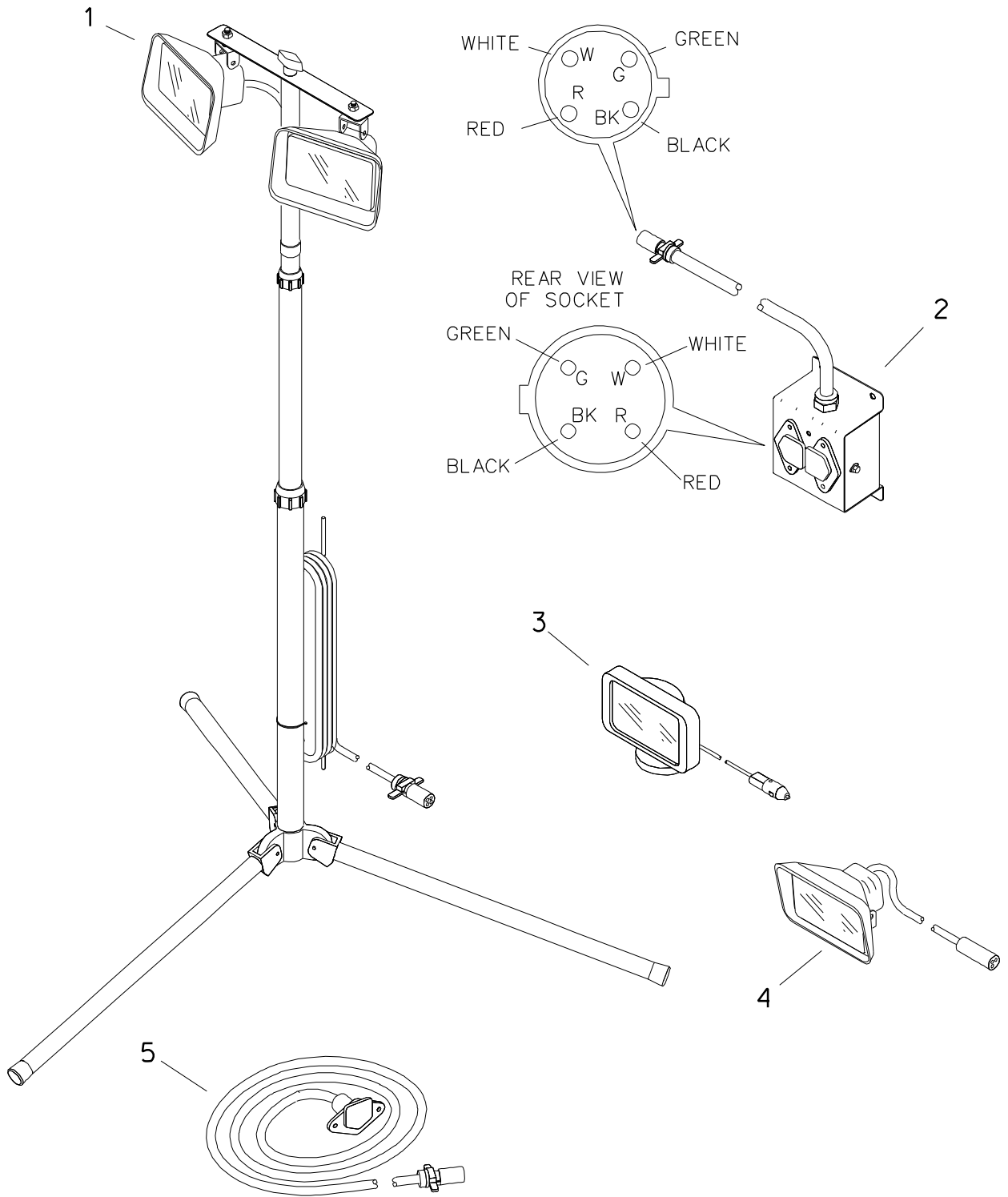
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FOOTNOTES:

NOTE:

REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS

WORKING LIGHT

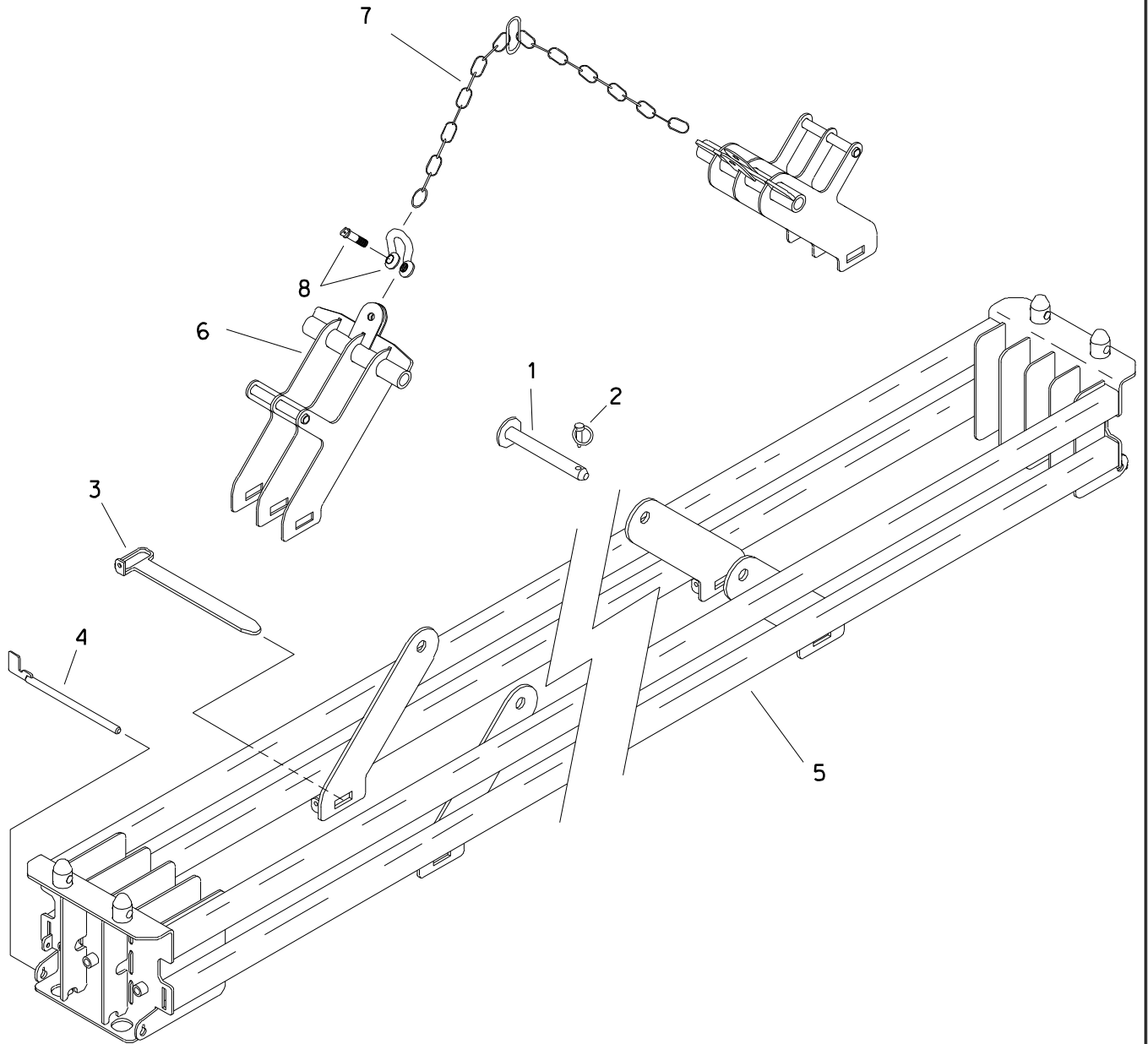


WORKING LIGHT

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	190-663	1	WORKING LIGHT CONVERSION KIT	INCL TRIPOD
	217-084	-	TRIPOD	
	217-094	1	DUAL LIGHT CABLE	
	217-080	2	WORKING LAMP (12V DC)	RECTANGULAR, MULTI-PURPOSE
	214-228	2	LIQUID-TIGHT FITTING	
	106-176	2	CONDUIT LOCKNUT (Ø8N)	
	110-373	1	BOLT-ON CLAMP (13/16")	
	106-162	1	FLG SCREW (M8-1.25 X 20mm)	
	106-386	1	FLG LOCKNUT (M8-1.25)	
	347-832	1	BRACKET (LIGHT KIT)	
	110-030	1	CABLE TIE (1/16" TO 4")	
	110-259	1	BOLT-ON CLAMP (.625")	
2.	190-664	1	LIGHT BOX KIT	
	347-833	1	LIGHT JUNCTION BOX	
	347-836	1	BACK PLATE	
	214-229	1	LIGHT HARNESS	JUNCTION BOX
	217-040	3	CONNECTOR (4-WAY, FM)	
	217-039	1	INDICATOR LIGHT (RED)	
	106-379	10	FLG LK SCREW (M6-1.00 X 20mm)	
	106-106	6	NUT (M6-1.00)	
	106-754	4	WELD NUT (M10-1.50)	
3.	217-098	1	WORK LAMP {12V DC, MAGNETIC}	
4.	190-665	1	LIGHT KIT (SINGLE)	
	217-080	1	WORKING LAMP (12V DC)	RECTANGULAR, MULTI-PURPOSE
	217-092	1	SINGLE LIGHT CABLE	
	214-228	1	LIQUID-TIGHT FITTING	
	106-176	1	CONDUIT LOCKNUT (Ø8N)	
5.	217-095	1	EXTENSION CABLE (15 M)	50 FT
	217-096	1	EXTENSION CABLE (30M {100'})	

FOOTNOTES

PIPE BOX



PIPE BOX

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	354-398	-	PIPE BOX PARTS ASSEMBLY	INCL REF NO'S 1 THRU 6
1.	354-347	2	PIPE BOX LIFT PIN	
2.	110-228	4	LYNCH PIN (7/16" X 2.0")	
3.	354-346	2	LIFT PLATE	
4.	354-378	2	BOX RETAINER PIN	
5.	354-330	1	PIPE BOX	
6.	354-379	2	LIFT PIN BLOCK	
7.	111-042	1	SLING CHAIN	
8.	110-040	2	ANCHOR SHACKLE (3/4")	

FOOTNOTES

MISCELLANEOUS

SAE Bolt and Nut Torque Value Chart

Grade 5: UNC or UNF Thread

Size	Hex nut, or bolt tapped into hex nut, or d&t hole		Hex top deformed locknut		Flange nut, locknut, or bolt tapped into flange nut or d&t* hole	
	ft•lb	N•m	ft•lb	N•m	ft•lb	N•m
1/4	12	16	8	11	20	27
5/16	25	34	15	20	45	60
3/8	40	54	25	34	75	100
7/16	65	90	40	55	125	170
1/2	100	135	60	80	190	260
9/16	150	200	90	125	270	370
5/8	200	270	120	165	370	500
3/4	350	475	210	285	650	880
7/8	560	760	340	460	1250	1425
1	840	1140	500	680	1580	2145
1-1/8	1030	1400	320	840	1950	3645
1-1/4	1460	1980	880	1195	2760	3475

Grade 8: UNC or UNF Thread

Size	Hex nut, or bolt tapped into hex nut, or d&t hole		Hex top deformed locknut		Flange nut, locknut, or bolt tapped into flange nut or d&t* hole	
	ft•lb	N•m	ft•lb	N•m	ft•lb	N•m
1/4	14	19	10	14	24	33
5/16	30	40	18	25	50	70
3/8	55	73	35	50	90	125
7/16	85	115	50	70	140	190
1/2	130	175	80	110	220	300
9/16	190	260	110	150	310	420
5/8	260	355	160	245	430	585
3/4	450	610	270	365	750	1015
7/8	730	990	440	600	1210	1640
1	1090	1480	650	880	1320	2465
1-1/8	1550	2100	930	1260	2580	3500
1-1/4	2180	2955	1310	1780	3640	4935

*drilled and tapped

Metric Bolt and Cap Screw Torque Values

Size	Class 4.8				Class 8.8 and 9.8				Class 10.9				Class 12.9			
	Lubricated		Dry		Lubricated		Dry		Lubricated		Dry		Lubricated		Dry	
	N•m	ft•lb	N•m	ft•lb	N•m	ft•lb	N•m	ft•lb	N•m	ft•lb	N•m	ft•lb	N•m	ft•lb	N•m	ft•lb
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	225	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1600	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

Do not use these values if a different torque value or tightening procedure is given for specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class fasteners.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to strength of original.

Make sure fastener threads are clean and that the threads are properly started. This will prevent them from cross threading or galling when tightened.

Tighten plastic insert or crimped type steel locknuts to approximately 50% of dry torque indicated on chart. Apply torque to the nut - not the bolt head. Tighten toothed or serrated type locknuts to full torque value.

LUBRICATED means coated with lubricant. DRY means plain or zinc plated without any type of lubricant.

Hydraulic Cylinder Bolt Torque Chart

Bolt Size (inch)	Bolt Part No.	Cylinder Repair Kit Part No.	Torque (ft•lb)	Torque (N•m)
1/2	106-096	190-165	90-100	120-135
5/8	106-097	190-166 & 190-169	180-200	245-270
3/4	106-098	190-167 & 190-170	290-325	395-440
7/8	106-122	190-172 & 190-174	410-640	550-625
1	106-145	190-175 & 190-189	630-700	855-950
1-1/8	106-146	190-177	770-850	1045-1170

As a general rule:

- 1/2-inch bolts are used in cylinders with 1-inch rods
- 5/8-inch bolts are used in cylinders with 1 1/4-inch rods
- 3/4-inch bolts are used in cylinders with 1 1/2-inch rods
- 7/8-inch bolts are used in cylinders with 1 3/4-inch rods
- 1-inch bolts are used in cylinders with 2-inch rods (one with 1 3/4-inch)
- 1-1/8-inch bolts are used in cylinders with 2-1/4-inch rods

IMPORTANT: Do not reuse cylinder piston bolts when rebuilding a hydraulic cylinder. Each cylinder repair kit contains a new bolt. Use it. Lubricate lightly and torque to value shown on chart.

SAE & ORS Hydraulic Fitting Replacement O-Ring Chart

Fraction Size	Dash Size	SAE (Port Seal O-Ring)		ORS (Face Seal O-Ring)	
		Thread Size	O-Ring P/N	Thread Size	O-Ring P/N
1/16	1	NA	NA	NA	NA
1/8	2	5/16 - 24	NA	NA	NA
3/16	3	3/8 - 24	NA	NA	NA
1/4	4	7/16 - 20	155-760	9/16 - 18	157-037
5/16	5	1/2 - 20	NA	NA	NA
3/8	6	9/16 - 18	155-705	11/16 - 16	157-038
1/2	8	3/4 - 16	155-706	13/16 - 16	157-039
5/8	10	7/8 - 14	155-707	1 - 14	157-040
3/4	12	1-1/16 - 12	155-709	1-3/16 - 12	157-017
7/8	14	1-3/16 - 12	155-747	NA	NA
1	16	1-5/16 - 12	155-748	1-7/16 - 12	155-714
1-1/4	20	1-5/8 - 12	155-702	1-11/16 - 12	NA
1-1/2	24	1-7/8 - 12	157-001	2 - 12	NA
2	32	2-1/2 - 12	NA	NA	NA
2-1/2	40	3 - 12	NA	NA	NA
3	48	3-1/2 - 12	NA	NA	NA

Thread size indicates the diameter of the threaded area in fractions of an inch and number of threads per inch.

NA = not a current CMW part numbered o-ring, or dash size does not occur in current CMW applications

SAE = straight thread fitting that seals by sandwiching a hard o-ring between a shoulder on the male part and an angular surface at the mouth of the female port.

ORS = o-ring face seal; a type of fitting that seals by compressing a hard, captive o-ring between two flat parallel faces, one grooved for the o-ring and the other plain to act as the sealing surface

JT4020

Related Publications

Component	Ass'y	P/N
Model:		
JT4020	Parts Manual	053-470
JT4020	Operators Manual	054-522
JT4020	Repair Guide (Service Manual)	055-520
JT4020	Supplementary Maint Guide - Trenchless	055-485
JT4020	Special Tools Guide	052-901
Engine:		
John Deere	Parts Manual - T6068TF150	194-781 053-061
John Deere	Operators Manual - T6068TF150	054-049
John Deere	Service (Shop) Manual - T6068TF150	054-049

Filters

Engine:		
Air Filter Parts Ass'y		159-373
Element (primary)		194-827
Element (secondary)		194-828
Oil Filter Element (spin-on) - John Deere		194-815
Fuel Filter Element (water trap, spin-on) - John Deere		194-816
Fuel Strainer (04H)		156-268
Hydraulic:		
Oil Filter Element (1-3/8-UNF, spin-on) - Charge		159-074
Element (1-1/2-UNF, spin-on, Replacement) - Return		159-079
Element (1-1/2-UNF, spin-on, Break-In) - Return		149-840

Optional Kits

O-ring Repair Kit - FLG, ORS & SAE (15 different O-rings)	190-051
O-ring Repair Kit - Field Service (46 different O-rings)	190-052



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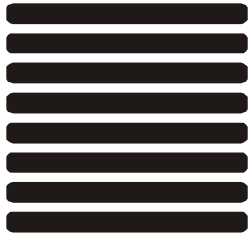
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