

# ***Ditch Witch***<sup>®</sup>

## **AT4020M1**

ISSUE NO. 13PL-05/19  
For Replacement Copy Order **P/N 053-092**

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This manual contains information concerning the following models:  
**AT/JT4020 Mach 1 Directional Drilling System**

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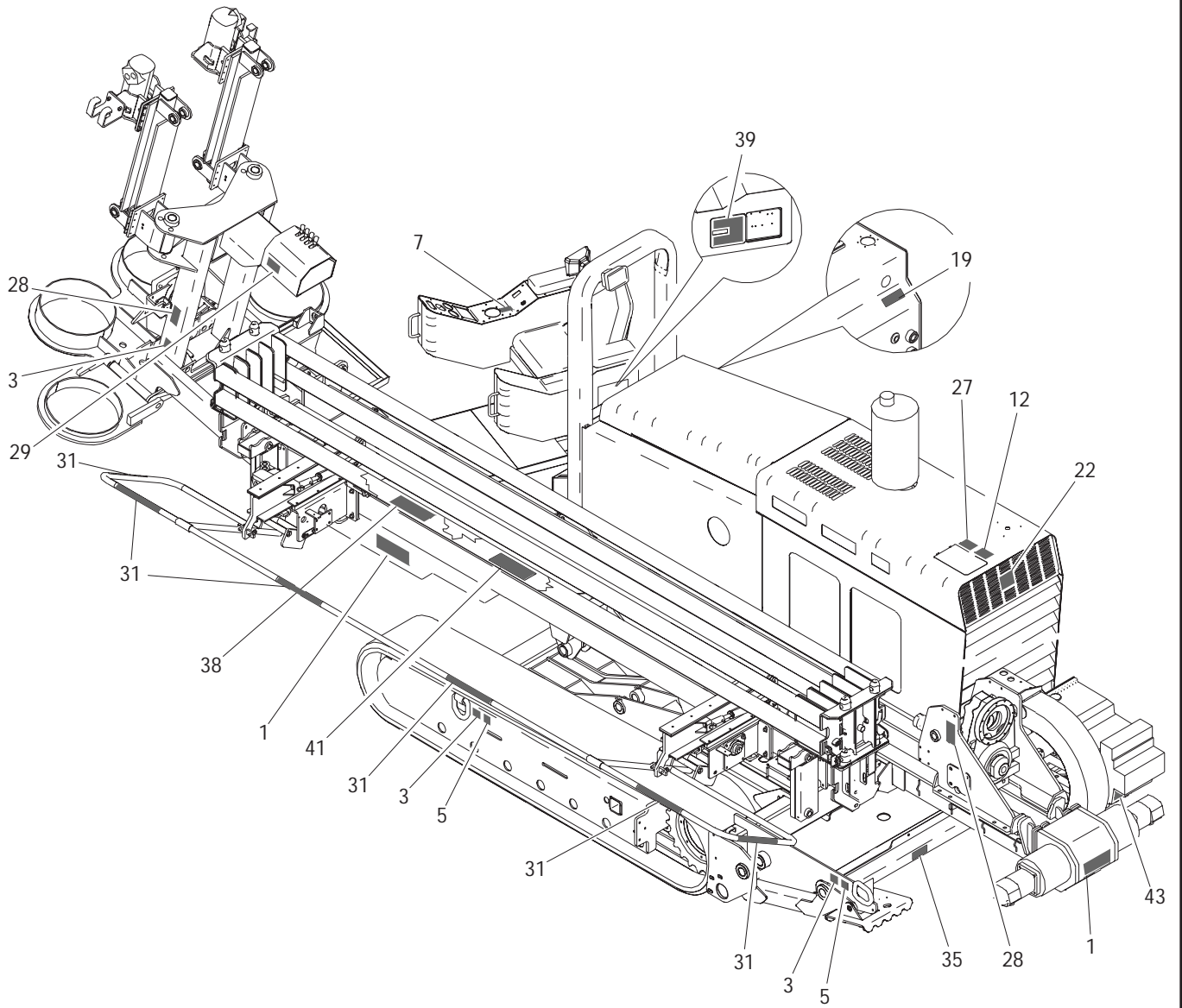
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# DECAL LOCATION JT4020AT





# 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.	194-083	-	ENGINE - DEERE DIESEL	
6.	354-597	-	ENGINE_SKID	USED WITH JT4020
	318-500	-	ENGINE_SKID	USED WITH AT42M1

### FOOTNOTES

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

# 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.	107-950	20	INSULATION STUD	SEE FOOTNOTE 2

NOT SHOWN:

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

NOTE:

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## CONSOLE GAUGES

JT42T2 / AT42T2

JT42T3 / AT42T3

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	211-011	-	RIGHT CONSOLE COVER	
2.	313-729	-	LEFT CONSOLE COVER	
3.	116-789	AR	RUBBER EDGE TRIM 1/8 " (12 GA)	USE 1 @ 86"
4.	116-789	AR	RUBBER EDGE TRIM 1/8 " (12 GA)	USE 1 @ 83"
5.	214-489	-	ROCKER SW (DPDT) (ON)-OFF-(ON)	THROTTLE
6.	217-908	1	ROCKER SWITCH (DPDT) ON-ON-ON	INNER SPINDLE ON-OFF-(MAN), AT ONLY
	110-962	-	FILLER PLUG	JT ONLY
7.	217-912	-	ROCKER SWITCH (DPDT) ON-ON-ON	BORE/BACKREAM
8.	217-907	-	ROCKER SWITCH (DPDT) ON-ON	OUTER SPINDLE BRAKE
9.	217-923	-	ROCKER SW (DPDT) ON-OFF-ON	MOBILE/BORE
10.	217-156	2	DIFFUSION LENS (GREEN)	
11.	214-566	-	POTENTIOMETER	DRILL FLUID POT. USE 242 LOCKTITE
12.	106-640	8	SCREW (M6-1.00 X 20MM, BUT SOC)	
13.	105-630	8	NUTSERT (M6X1.0).70-4.20THK	
14.	217-241	-	ESID MODULE	ELECTRICAL STRIKE SYSTEM
15.	217-911	-	ROCKER SWITCH (SPDT) ON-OFF-ON	SEAT ROTATE
16.	306-607	-	HORN BUTTON	HORN
	306-608	-	BUTTON COVER	
17.	214-852	1	IGNITION SWITCH	
	214-961	-	KEY, PAIR	
	214-962	-	SWITCH MOUNTING NUT	
18.	217-917	-	ROCKER SWTCH (DPDT) OFF-(ON)	COLD START
19.	217-206	-	BUTTON SWITCH (SPST)	ENGINE STOP
20.	215-1224	-	DUAL AXIS JOYSTICK	OBSOLETE, ENDS WITH S/N:_____ SEE FOOTNOTE 1
	215-1714	-	DUAL AXIS JOYSTICK	BEGINS WITH S/N:_____ SEE FOOTNOTE 1
21.	258-063	-	GAUGE (4000 PSI)	THRUST PRESSURE GAUGE
22.	258-061	-	HYD PRESSURE GAUGE (6000 PSI)	INNER/OUTER ROTATION PRESSURE GAUGE
23.	258-062	-	PRESSURE GAUGE (1500PSI)	MUD PRESSURE GAUGE
24.	214-701	-	STATUS LIGHT	"MUD ON" LED
25.	214-563	-	RED LED 12V	DIAGNOSTIC LIGHT
26.	214-840	-	GREEN LED (12V DC)	CONTROL CYCLE LIGHT
27.	217-221	-	FLOW METER DISPLAY	FOR REPLACEMENT SEE FOOTNOTE 2
28.	110-560	6	POP RIVET (3/16" X 1/2 ", ALUM)	
29.	106-205	6	WASHER (.191")	
30.	214-413	-	RIG RF CABLE 2130MM	
31.	348-896	1	COVER PLATE	COVER FOR HOLE WHEN REMOTE DISPLAY IS NOT INSTALLED.
32.	106-049	2	BOLT (#10-24 X 3/4 ", PLPS)	
33.	106-048	2	LOCKNUT (#10-24)	
34.	107-414	4	SCREW (M4-0.70 X 30MM, BUT SOC)	
35.	107-635	4	NUTSERT (M4 X 0.7)	
36.	211-089	-	4.5V-12.0V POTENTIOMETER	INNER SPINDLE POT., AT ONLY
37.	217-561	-	SPINDLE TACHOMETER (250 RPM)	OUTER SPINDLE TACH, AT ONLY
	111-067	-	EXPANSION PLUG (2.125")	JT ONLY
38.	214-489	-	ROCKER SW (DPDT) (ON)-OFF-(ON)	PIPE SHUTTLE
39.	217-907	-	ROCKER SWITCH (DPDT) ON-ON	REAR WRENCH

NOT SHOWN:

215-1787 1 JOYSTICK JUMPER SEE FOOTNOTE 1

FOOTNOTES:

1. EARLIER MACHINES BEFOR S/N BREAK WILL NEED TO USE JOYSTICK JUMPER 215-1787 TO CONNECT OLDER HARNESS TO 215-1714 JOYSTICK
2. USE REPLACEMENT KIT 190-2824 FLOW METER

NOTE:

# 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

# 2-POST ROPS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	309-190	1	2-POST ROPS	
2.	217-057	-	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)	
8.	107-687	4	CLIP NUT M8-1.25, LONG, WIDE	

FOOTNOTES

# ANCHOR VALVE & COVER MOUNT

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	214-697	-	STROBE LIGHT (12V, DC, GREEN)	INSTALL ELECTRICAL PLUG AFTER MOUNTING LIGHT
	217-297	-	STROBE LIGHT GREEN MED PROFILE	
	214-103	1	2-WAY MALE CONNECTOR	
	214-991	-	REPLACEMENT FLASH TUBE	
	217-303	-	REPLACEMENT LENS (GREEN)	
	157-645	2	WEATHER-PAC SEAL (2.80MM)	
	214-104	2	PACKARD MALE TERMINAL	
	217-301	-	BRUSH GUARD	
2.	309-254	1	VALVE COVER	
3.	106-383	4	FLG LK SCREW (M10-1.50 X 30MM)	
4.	149-952	-	HYD CONTROL VALVE (4-SPOOL)	
5.	106-330	3	SCREW (M8-1.25 X 70MM)	
6.	106-561	3	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	
7.	310-362	-	ANCHOR ATTACHMENT FRAME	SEE FOOTNOTE I
	327-1059	-	ANCHOR ATTACHMENT FRAME	
8.	106-389	3	WASHER (M8)	
9.	106-387	4	FLG LOCKNUT (M10-1.50)	
10.	217-007	1	WORKING LIGHT (CLEAR, RECT)	

NOT SHOWN:

FOOTNOTES:

I. USE ON 4020 WITH RACK AND PINION.

NOTE:

# FLANGED HEX DRIVER ASS'Y

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	309-582		FLANGED HEX DRIVER	INCLUDEDS REF NO. 1-6
1.	309-093	1	ANCHOR DRIVER	FOOTNOTE 2
2.	125-150	9	DETENT BALL (.875")	
3.	309-095	1	WEIGHT STOP	
4.	117-160	1	COMPRESSION RING	
5.	178-591	1	LOCK COLLAR	
6.	118-054	1	EXTERNAL SNAP RING	
	116-761	1	SPIRAL RETAINING RING	FOOTNOTE 1

NOT SHOWN:

FOOTNOTES:

1. USE WHEN INSTALLING UPDATED 309-093
2. UPDATED VERSION NECKED-DOWN FOR THICKER 116-761

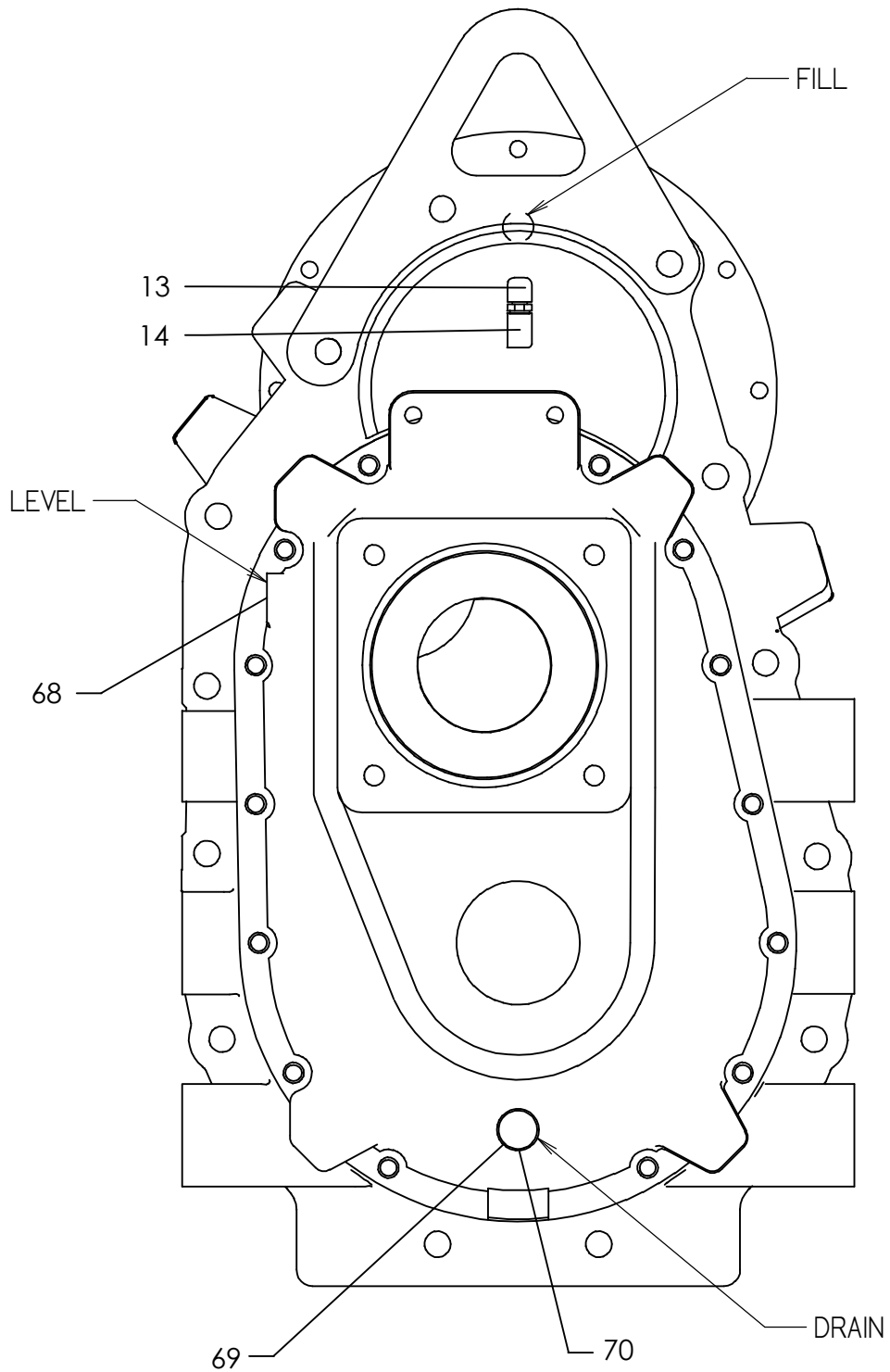
NOTE:

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**ROTATION GEARBOX**  
JT4020 ALL TERRAIN ONLY  
ENDS WITH S/N: CMWA40T3P70000017



# ROTATION GEARBOX

## JT4020 MACH 1 ONLY

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
35.	125-525	1	CONE	
36.	168-035	1	IDLER GEAR	
37.	126-170	2	TAPERED BEARING (2.250")	
38.	126-171	2	TAPERED RACE (3.740")	
39.	166-152	1	ROTATION GEARBOX PLANETARY	SEE FOOTNOTE 1
40.	168-034	1	INPUT PINION	
41.	125-308	1	TAPERED BEARING (3.000")	
42.	125-309	1	TAPERED RACE (5.000")	
43.	115-025	1	PLUG (08N, SQ FM, MAG)	
44.	115-161	1	NIPPLE (08N, 3-1/2")	
45.	514-106	-	CAP (08NF)	
46.	153-638	1	INTERNAL SEAL	
47.	106-755	14	SCREW (M10-1.50 X 30MM, SOC)	

NOT SHOWN:

FOOTNOTES:

1. APPLY LOCTITE SUPERFLEX RED HIGH TEMP RTV OR EQUIVALENT - 3/16 DIA. MIN. BEAD.
2. 126-172 SUPERSEDED BY 125-1009. TIMKEN® 32222M WILL NOT WORK IN THIS APPLICATION.

NOTE:

# HOSE TRACK

ENDS WITH S/N: CMWA40T3PB0000138  
CMWJ40T3CB0000136

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	105-047	8	LOCKNUT (3/8-NC)	
2.	105-117	6	WASHER (5/16")	
3.	105-600	4	CARRIAGE BOLT (3/8-NC X 1")	
4.	150-1787	-	HOSE BAG FOR 150-1750	4020 WITH RACK AND PINION ONLY
	117-919	-	HOSE BAG W/ELECT HARN PCK	USED ON 117-881 ONLY.
	117-991	-	HOSE BAG	
5.	150-1750	1	HOSE TRACK 4020 R&P	4020 WITH RACK AND PINION ONLY
	117-969	1	HOSE CARRIER	INCLUDES REF NO. 4 & 8.
	499-606	-	REPAIR SECTION, 4-LINK	SEE FOOTNOTE 1. FOR 117-969 AND 150-1750.
	499-604	-	BAR KIT	SEE FOOTNOTE 2. FOR 117-969 AND 150-1750.
	499-605	-	HARDWARE KIT	SEE FOOTNOTE 3. FOR 117-969 AND 150-1750.
	499-607	-	EXTENDER KIT	SEE FOOTNOTE 4. FOR 117-969 AND 150-1750.
	499-608	-	EASY OUT BAR KIT	SEE FOOTNOTE 6. FOR 117-969 AND 150-1750.
	499-567	-	MOUNTING BRACKET KIT	SEE FOOTNOTE 5.
	117-881	1	HOSE CARRIER	OBSOLETE
	499-563	-	REPAIR SECTION, 4-LINK	SEE FOOTNOTE 1. FOR 117-881 ONLY.
	499-564	-	BAR KIT	SEE FOOTNOTE 2. FOR 117-881 ONLY.
	499-565	-	HARDWARE KIT	SEE FOOTNOTE 3. FOR 117-881 ONLY.
	499-566	-	EXTENDER KIT	SEE FOOTNOTE 4. FOR 117-881 ONLY.
	499-568	-	EASY OUT BAR KIT	SEE FOOTNOTE 6. FOR 117-881 ONLY.
6.	107-566	4	CARRIAGE BOLT (3/8-NC X 1.50")	
7.	117-995	1	ABRASION SLEEVE (2.07" X 156")	SEE FOOTNOTE 7.
8.	110-333	1	BOLT-ON CLAMP (1")	SEE FOOTNOTE 7.
9.	117-378	1	BULK HOSE, LOW PRESSURE (-12)	USE 147.0". SEE FOOTNOTE 7.
10.	105-814	6	FLG LOCKNUT (3/8-NC)	
11.	300-8896	1	LEFT MOUNT BRACKET	
12.	300-8895	1	RIGHT MOUNT BRACKET	
13.	362-1408	2	CAP PLATE	
14.	362-1407	1	CENTER PLATE	
15.	105-081	6	BOLT (3/8-NC X 3-1/4")	

#### NOT SHOWN:

150-1701	A	HOSE (060FX-280"-3000)	
150-1700	B	HOSE (040FX45-282"-3000)	
150-1980	C	HOSE (040FX-282"-3000)	
150-1979	D	HOSE (080FX-289"-3000)	
150-1700	E	HOSE (040FX45-282"-3000)	AT ONLY
150-1709	F	HOSE(060FX45-302"-3000)	
215-1358	G	HOSE TRACK HARNESS	
150-1702	H	HOSE (160FX90S-299"-6000)	
150-1705	J	HOSE(200FX90L-300"-3000)	
150-1708	K	HOSE(200FX90S-283"-3000)	
150-1704	L	HOSE(200FX90S-287"-3000,SPEC)	
150-1702	M	HOSE (160FX90S-299"-6000)	

#### FOOTNOTES:

- 4-LINK REPAIR SECTION SUPPLIED ASSEMBLED WITH 8X LINK PINS AND SNAP RINGS SHIPPED LOOSE
- KIT CONTENTS: 8X ALUMINUM FLAT BARS, 32X 10-24 UNC SCREWS
- KIT CONTENTS: 8X LINK PINS, 8X LINK PIN SNAP RINGS
- KIT CONTENTS: 8X WINDOW EXTENDERS, 8X 1/4-20 UNC SCREWS AND NUTS
- KIT CONTENTS: 2X RIGHT AND LEFT MOUNTING BRACKETS, 8X LINK PINS, 8X LINK PIN SNAP RINGS
- KIT CONTENTS: 10X EASY-OUT BAR
- NOT USED ON 4020 WITH RACK AND PINION.

#### NOTE:

# HYDRAULIC CYLINDER (4.50" X 2.25" X 2.75")

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	151-212		CYLINDER ASSEMBLY	INCLUDES REF NO'S 2 THRU 8
1.	190-900	1	SEAL REPAIR KIT	
2.	150-711	1	LOCK RING	
3.	152-073	1	4.5 X 2.75 BARREL	
4.	106-146	1	BOLT (1-1/8-NC X 2-1/2", GD8)	SEE FOOTNOTE 1
5.	106-147	1	WASHER (1-1/8")	
6.	149-168	1	4.5 X 2.25 PISTON	SEE FOOTNOTE 2
7.	151-207	1	GLAND	
8.	153-753	1	CYLINDER ROD	

NOT SHOWN  
259-040 U-SEAL INSTALLER (1.500" - UP)

**FOOTNOTES**

1. USE LOCTITE 271 OR 277. TORQUE TO 770-850 FT-LBS (1045-1150 NM).
2. UNITIZED PISTON INCLUDES WEAR RINGS, SQUARE LOADER RING & PISTON SEAL.

NOTE:

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# REAR PIPE LOADER SHUTTLE

## AT42M1

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	106-640	14	SCREW (M6-1.00 X 20MM,BUT SOC)	
2.	307-623	1	PIPE SLIDE BEARING	
3.	315-112	1	PIPE SLIDE BEARING	
4.	106-237	14	LOCKNUT (M6-1.00,PRV TRQ,NLK)	
5.	313-685	1	SINGLE PIPE LOADER	
6.	307-594	1	SHUTTLE STOP	
7.	106-659	2	SCREW (M12-1.75 X 55MM)	
8.	106-685	2	LOCKNUT(M12-1.75,PRV TRQ,10.9)	
9.	178-414	1	SHOULDER PIN	
10.	117-116	1	COMPRESSION SPRING	
11.	105-095	1	WASHER (1/4")	
12.	105-085	1	LOCKNUT (1/4-NC)	
13.	313-684	1	REAR SHUTTLE	
14.	307-605	1	PLATE	
15.	307-621	2	SHUTTLE SLIDE BEARING	
16.	106-328	11	SCREW (M8-1.25 X 40MM)	
17.	106-561	12	LOCKNUT (M8-1.25,PRV TRQ,10.9)	
18.	107-213	4	SCREW (M12-1.75 X 160MM)	
19.	106-397	4	WASHER (M12, HARDENED)	
20.	307-592	1	REAR SHUTTLE SUPPORT	
	327-1064	1	REAR SHUTTLE SUPPORT	SEE FOOTNOTE I
21.	106-685	4	LOCKNUT(M12-1.75,PRV TRQ,10.9)	
22.	354-338	2	MOUNT PLATE	
23.	106-089	2	NUT (M12-1.75, 10.9)	
24.	107-701	2	SCREW (M12-1.75 X 100MM)	
	105-1079	2	SCREW (M12-1.75 X 140MM)	SEE FOOTNOTE I
25.	117-539	AR	SHIM	USE ONLY IF PLASTIC IS TOO THIN
26.	307-947	1	PLATE	
27.	106-850	2	LOCKNUT (M5-0.80)	
28.	107-451	AR	SHIM (.135")	USE ONLY IF GAP IS TOO LARGE
29.	215-1175	-	PROXIMITY SENSOR	
30.	107-465	2	SCREW (M5-0.80 X 30MM, SOC)	
31.	110-259	1	BOLT-ON CLAMP (.625")	
32.	106-389	1	WASHER (M8)	
33.	106-932	1	SCREW (M8-1.25 X 45MM)	

NOT SHOWN:

#### FOOTNOTES:

I. USE ON 4020 WITH RACK AND PINION

NOTE:

## PIPE BOX AT42T2 PIPE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	315-982		LARGE PIPE BOX ASS'Y	PARTS ASSEMBLY, INCLUDES ITEMS 1-12
	315-981		SMALL PIPE BOX PARTS ASS'Y	PARTS ASSEMBLY, INCLUDES ITEMS 1-10 & #13.
1.	308-084	1	LIFT PIN	
2.	110-228	5	LYNCH PIN (7/16"X2")	
3.	313-939	1	AT4020 PIPE BOX (TALL)	PART OF 315-982
	313-955	1	AT4020 PIPE BOX (SHORT)	PART OF 315-981
4.	314-574	1	LIFT PIN BLOCK	
5.	178-445	2	REAR PIN	
6.	308-091	1	FRONT PIN	
7.	308-086	4	SUPPORT PIN	
8.	308-868	1	SINGLE PIPE GUIDE	
9.	275-326	4	WARNING CRUSHING WEIGHT	USE 701-326 IN ALL FOREIGN KITS
10.	275-184	4	WARNING MOVING PARTS	USE 701-184 IN ALL FOREIGN KITS
11.	273-596	1	JT4020AT PIPE BOX MODEL-ID	
12.	273-373	1	LG PIPE BOX WEIGHTS	PART OF 315-982
13.	273-372	1	SM PIPE BOX WEIGHTS	PART OF 315-981

FOOTNOTES

# MUD PUMP PLUMBING

## 120 GPM

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	149-396	1	MUD PUMP	INCLUDES REF NO. 45, SEE NOT SHOWN
2.	153-390	1	HOSE (24JFX-240FX-38"-1250)	
3.	149-646	1	CYLINDER MOUNT (32N-24J)	
4.	151-211	1	CYL (1.25" X .50" X 4.00")	
5.	149-1001	1	SHUT-OFF (32NF-32NF)	
	191-069	-	BALL VALVE REPAIR KIT	
6.	106-334	1	SCREW (M12-1.75 X 50MM)	
7.	106-685	1	LOCKNUT(M12-1.75,PRV TRQ,10.9)	
8.	306-388	1	VALVE ARM	
9.	106-391	2	WASHER (M12)	
10.	105-512	1	COTTER PIN (3/32" Xf")	
11.	115-052	1	ELBOW (32N-32NF90)	
12.	515-680	2	NIPPLE (32N-2")	
13.	153-344	1	TEE (32NF-32NF-32NF)3000PSI	
14.	106-442	4	FLG LOCKNUT (M16-2.00,PRV TRQ)	
15.	115-064	1	REDUCER (32N-12NF)	
16.	159-088	1	QDC BODY (08-08SF)	
17.	155-706	1	O-RING (908 D90)	
18.	156-732	1	CONNECTOR (08J-080)	
19.	154-490	1	CONNECTOR (12N-08090)	
20.	114-017	1	STREET ELBOW (48N-48NF90)	
21.	514-386	1	FHC BODY (3-1/2" FHC X 3"NPT)	
22.	153-255	1	FHC PLUG (-56)	
23.	156-938	1	PLUG (32N)	
24.	106-018	1	JAM NUT (3/8-NF)	
25.	216-047	1	SPEED PICKUP	
26.	216-026	1	FLEX-GUARD (.250")	
27.	215-224	1	3-WAY WP MALE CONNECTOR	
28.	214-104	3	PACKARD MALE TERMINAL	
29.	157-645	3	WEATHER-PAC SEAL (2.80MM)	
30.	178-969	AR	SHIM (.062)	REFER TO SERVICE BULLETIN 052-596 FOR INSTALLATION REFER TO SERVICE BULLETIN 052-596 FOR INSTALLATION
31.	178-970	AR	SHIM (.100)	
32.	313-759	1	LANYARD	
33.	499-557	1	SIGHTGLASS	
34.	115-115	1	STREET ELBOW (08N-08NF90)	
35.	115-164	1	NIPPLE (08N-2")	
36.	514-106	1	CAP (08NF)	

## NOT SHOWN:

500-2160 FLUID CYLINDER SERVICE PART

## FOOTNOTES:

## NOTE:

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

## FLUID PUMP (POWER END)

### L1122 (70 GPM)

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	

NOT SHOWN:

FOOTNOTES:

NOTE:

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# HYDRAULICS

## OIL COOLER HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-371	1	CONNECTOR (12S-16045)	
2.	156-177	1	HYD LINE (-16)	CASE DRAIN
3.	354-464	1	TOP REAR COOLANT BRACKET	
4.	153-389	1	COOLER BY-PASS	COOLER TUBE
5.	157-261	1	SPECIAL TEE (16S-200-200)	
6.	157-251	1	HYD LINE (20)	VALVE DRAIN
7.	154-290	1	UNION (16D-160FX90)	
8.	157-243	1	COOLER SUPPLY TUBE	COOLER TUBE
9.	510-014	1	UNION (16J-160FX)	
10.	117-897	AR	BULK HOSE (1-1/2", SOLD PER 1")	USE 1 @ 14.5"
11.	117-897	AR	BULK HOSE (1-1/2", SOLD PER 1")	USE 1 @ 4.75"
12.	117-896	AR	BULK HOSE (1-1/4", SOLD PER 1")	USE 1 @ 8.50"
13.	154-265	1	UN RUN TEE (040FX-040-040)	
14.	159-156	1	ODC ADAPTER (02-040F)	
	159-148	1	DUST CAP (1/8")	
15.	322-362	3	BACKUP SPACER	
16.	105-224	2	BOLT (1/4-NC X 2-1/2")	
17.	111-008	2	BOLT-ON CLAMP (1-1/2", SET)	
18.	105-085	2	LOCKNUT (1/4-NC)	
19.	105-245	2	SCREW (M10-1.50 X 25mm)	
20.	110-573	1	BOLT-ON CLAMP (1", SOLD PER SET)	
21.	322-289	1	BACKUP (BOLT-ON)	
22.	514-422	1	CONNECTOR (200-200FX90)	
23.	514-094	1	CONNECTOR (16S-200)	
24.	110-852	1	BLT-ON CLP (1.2", SOLD PER SET)	
25.	105-833	1	FLG LOCKNUT (1/2-NC)	
26.	105-224	2	BOLT (1/4-NC X 2-1/2")	
27.	107-215	2	FLG LK BLT (1/4-NC X 2-1/4")	
28.	155-748	1	O-RING (916 D90)	
29.	157-037	2	O-RING (011 D90)	
30.	157-040	1	O-RING (016 D90)	
31.	157-039	1	O-RING (014 D90)	
32.	155-714	3	O-RING (021 D90)	
33.	111-028	2	T-BOLT CLAMP (1.75"-2.00")	
34.	154-327	1	CAP (080F)	
35.	318-890	4	T-BLT CLP BRIDG 1.875 - 2.188	
36.	153-751	1	HOSE (200FX90S-88"-3000)	SEE FOOTNOTE 1, AT ONLY
	514-177	-	CAP (200F)	JT ONLY
37.	117-567	1	ABRASION SLEEVE (2.38" X 86")	
38.	153-994	1	SPECIAL ELBOW (20S-24H, XL)	
39.	157-260	1	ELBOW (20H-200FX90, SPECIAL)	
40.	107-283	2	BOLT (1/4-NC X 3")	

# MAINFRAME BULKHEADS

ENDS WITH S/N CMWA40T3C7000014  
ENDS WITH S/N CMWJ40T3L7000025

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	115-899	1	ABRASION SLEEVE (2.54" X 54")	
2.	154-651	-	HOSE (040FX-66"-3000)	TO HARD LINE TO SERIES PARALLEL VALVE
3.	515-141	-	HOSE (080FX90-82"-3000)	TO PIPE LOADER VALVE
4.	153-395	1	BK CONNECTOR (200-20045)	
5.	154-448	1	BK CONNECTOR (120-12045BK)	
6.	515-750	-	HOSE (060FX-210"-3000)	FROM ROTATION MOTOR CASE DRAIN
7.	154-309	2	BK CONNECTOR (100-100BK)	
8.	515-671	-	HOSE (100FX45-52"-3000)	SEE GRAPHICS
9.	154-285	1	BK CONNECTOR (040-04045BK)	
10.	514-242	1	BK CONNECTOR (160-16045BK)	
11.	157-499	-	HOSE (200FX-47"-3000, SPECIAL)	TO THRUST VALVE, SUPPLY
12.	515-655	-	HOSE (160FX90-47"-3000)	FROM THRUST VALVE, RETURN
13.	154-815	-	HOSE (160FX-48"-4000)	TO RETURN LINE (BEFORE FILTERS)
14.	154-290	1	UNION (160-160FX90)	
15.	157-754	-	HOSE (200FX45-27"-3000, SPEC)	FROM LOAD SENSE PUMP
16.	514-422	1	CONNECTOR (200-200FX90)	
17.	515-690	-	HOSE (100FX90L-58"-3000)	TO COOLER TUBE
18.	154-393	2	BK CONNECTOR (080-08045BK)	
19.	515-454	-	HOSE (100FX90L-20"-3000)	FROM LOAD SENSE PUMP
20.	155-470	-	HOSE (120FX90M-90"-3000)	TO UPPER COOLER TUBE
21.	515-140	-	HOSE (080FX90-56"-3000)	FROM HYDRAULIC CONTROL VALVE ON HYD TANK
22.	154-692	-	HOSE (040FX-54"-3000)	FROM THRUST SHIFT SOLENOID VALVE
23.	105-431	1	JAM NUT (9/16-NF)	
24.	154-459	1	REDUCER STEM (060)	
25.	154-271	1	REDUCER NUT (120F)	
26.	515-741	1	HOSE (080FX90S-112"-3000)	FROM DRAIN ON LOADER VALVE
27.	154-739	1	HOSE (080FX-32"-3000)	

NOT SHOWN:

FOOTNOTES:

NOTE:

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

# OUTER ROTATION HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-419	1	BK CONNECTOR (160-16090BK)	
2.	154-389	3	BK CONNECTOR (160-160BK)	
3.	153-744	2	HOSE (160FX90S-229"-6000)	
	150-1702	2	HOSE (160FX90S-299"-6000)	SEE FOOTNOTE 2
4.	157-029	2	O-RING (219 D90)	
5.	157-364	1	HOSE (160FX90S-18.75"-6000)	
6.	153-743	1	HOSE (160FX-24"-6000)	
7.	155-184	1	PLUG (16S)	
8.	107-806	4	SCR (7/16-NC X 3.50, SOC, GD8)	USE LOCTITE 242, TORQUE TO 85 FT LB
9.	149-566	2	HYDRAULIC VALVE	SEE FOOTNOTE 1
	191-031	-	SEAL REPAIR KIT	
10.	154-287	2	CONNECTOR (16S-16090)	
11.	157-363	1	CARTRIDGE MANIFOLD	
12.	117-675	1	ABRASION SLEEVE (1.75" X 24")	
13.	117-564	1	ABRASION SLEEVE (1.75" X 15")	
14.	117-292	2	ABRASION SLEEVE (2.07" X 70")	
15.	107-535	4	SCR (7/16-NC X 3.75, SOC, GD8)	USE LOCTITE 242; TORQUE TO 85 FT LBS
16.	514-242	1	BK CONNECTOR (160-16045BK)	
17.	110-359	1	BOLT-ON CLAMP (1-1/2", SET)	
18.	300-5791	1	BACKUP SPACER	
19.	107-078	1	SCREW (M8-1.25 X 90MM)	
20.	106-561	1	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	

NOT SHOWN:

#### FOOTNOTES:

- TORQUE TO 80-90 FT LBS; TIGHTEN ONLY AT BASE DEEP SOCKET
- USE ON 4020 WITH RACK AND PINION

#### NOTE:

- \* REFER TO O-RING CHART (800-301) IN BACK OF THE BOOK FOR REPLACEMENT OF O-RINGS.
- \* SEE PARTS PAGE ID0203288 FOR S/N BEGINING WITH CMWJ40T3E80000063 & ENDING WITH S/N CMWJ40T3E80000082

# SPINDLE BRAKE

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-252	1	CONNECTOR (04S-04090)	
2.	515-543	1	HOSE (040FX-21"-3000)	
3.	117-607	1	ABRASION SLEEVE (1.00" X 21")	
4.	154-355	1	BK CONNECTOR (040-04090BK)	
5.	153-748	1	HOSE (040FX45-212"-3000)	
6.	117-693	1	ABRASION SLEEVE (1.00" X 60")	
7.	154-355	1	BK CONNECTOR (040-04090BK)	
8.	354-466	-	BULKHEAD PLATE	

FOOTNOTES

# LOAD SENSE HYDRAULICS

## ENDS WITH S/N CMWJ40T3P70000019

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-345	2	RUN TEE (06S-060-060)	
2.	154-326	3	CAP (060F)	
3.	158-600	2	HYD SHUTTLE VALVE	NOT SERVICABLE PER SUPPLIER
4.	354-466	-	BULKHEAD PLATE	
5.	514-409	2	UNION (06J-060FX)	
6.	154-348	2	UNION BR TEE (060FX-060-060)	
7.	154-228	1	CONNECTOR (060-060FX90)	
8.	159-157	1	QDC ADAPTER (02-060F)	
	159-148	-	DUST CAP (1/8")	
9.	154-221	1	CONNECTOR (06S-060)	
10.	154-344	1	UNION RUN TEE (060FX-060-060)	
11.	149-559	1	HOSE (060FX90M-20"-3000)	
12.	157-440	-	THRUST VALVE (ELECTRIC)	SEE FOOTNOTE 4
	150-1458	-	THRUST VALVE (ELECTRIC)	SEE FOOTNOTE 5
	500-1290	-	THRUST VALVE COIL	
13.	153-639	-	HYD CONTROL VALVE	SEE FOOTNOTE 6
	217-897		SOLENOID COIL (LARGE)	
	214-434		SOLENOID COIL (SMALL)	
	149-565		3-WAY CARTRIDGE VALVE	
	150-1525		PROPORTIONAL VALVE	
	150-2032		PRESSURE COMPENSATOR VALVE	
	150-2033		SEAL KIT	
	500-2196		SPOOL CAP (O-RING)	
14.	158-661	1	HYD CONTROL VALVE	
	500-757	-	SEAL REPAIR KIT	
	214-491	-	COIL, 12V	
15.	154-342	1	CONNECTOR (06S-06090)	
16.	106-237	2	LOCKNUT (M6-1.00,PRV TRQ,NLK)	
17.	154-738	1	HOSE (060FX90-34"-3000)	
18.	154-229	1	BK CONNECTOR (060-06090BK)	
19.	154-411	2	CONNECTOR (04S-060)	
20.	117-702	1	ABRASION SLEEVE (1.00" X 68")	
21.	155-705	2	O-RING (906 D90)	
22.	153-328	1	HYDRAULIC VALVE	SEE FOOTNOTE 3, AT ONLY
	516-121	1	VALVE	JT ONLY
	155-074	-	PLUG (08S, SOC, FM)	SEE FOOTNOTE 2
23.	117-411	1	ABRASION SLEEVE (1.00" X 32")	
24.	153-305	1	HOSE (060FX-31"-3000)	AT ONLY
	515-188	1	HOSE (060FX90S-23"-3000)	JT ONLY
25.	154-373	1	REDUCER (040-060F)	

NOT SHOWN:

### FOOTNOTES:

- VALVE MOUNT BRACKET BOLTS DOWN TO FRAME ALONG WITH GROUND DRIVE VALVE BRACKET HARDWARE.
- TORQUE FACTORY PLUG (NO O-RING) TO 24 LB-FT.  
TORQUE SERVICE PLUG (WITH O-RING) TO 72 LB-FT.
- THE PLUG THAT COMES INSTALLED IN THE VALVE MAY HAVE TO BE MOVED TO THE "A" PORT.
- ENDS WITH S/N: CMWJ42T2J60000023; CMWA42T2E60000029; CMWA40T3P60000002; CMWJ40T3T60000001.
- BEGINS WITH S/N: CMWA40T3K60000003; CMWJ40T3P60000002.
- 153-639 HYD CONTROL VALVE IS SUPERSEDED BY 150-1815 HYD CONTROL VALVE.

NOTE:

## INNER ROTATION HYDRAULICS

### JT4020 ALL TERRAIN ONLY

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	153-663	2	HOSE (160FX-20FL90S-36.5-3000)	USE 1 @ 74"
2.	153-612	-	HYDRAULIC MOTOR	
	191-263	-	SEAL REPAIR KIT	
3.	159-036	2	SPLIT FLANGE (20F, SET)	
4.	153-665	1	HOSE (160FX90L-200FX-15"-3000)	
5.	514-422	3	CONNECTOR (200-200FX90)	
6.	150-4494	2	BK CONNECTOR (200-20090BK)	
7.	313-958	-	CARRIAGE	
8.	157-752	1	HOSE (200FX90S-217"-3000,SPEC)	
9.	153-746	1	HOSE (200F90L-230"-3000)	
10.	514-096	2	BK CONNECTOR (200-200BK)	
11.	153-664	1	HOSE (160FX-200FX45-20.5-3000)	
12.	154-289	2	CONNECTOR (16S-16090,XL)	
13.	153-773	-	HYDRAULIC VALVE	USES SEAL KIT 500-2312, 500-2313 & 500-2314
14.	154-287	1	CONNECTOR (16S-16090)	
15.	154-398	1	CONNECTOR (16S-160,XLG)	
16.	115-894	1	ABRASION SLEEVE (2.38" X 60")	
17.	117-705	1	ABRASION SLEEVE (2.38" X 78")	
18.	115-731	2	ABRASION SLEEVE (2.38" X 34")	
19.	117-565	1	ABRASION SLEEVE (1.75" X 19")	
20.	117-564	1	ABRASION SLEEVE (1.75" X 15")	

NOT SHOWN:

FOOTNOTES:

NOTE:

# TRACK DRIVE HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	153-593	1	HYDRAULIC MOTOR	LEFT TRACK
2.	154-270	4	CONNECTOR (12S-12090)	
3.	153-758	2	HOSE (120FX90S-14"-3000)	
4.	154-247	2	CONNECTOR (10S-120)	
5.	154-273	2	CONNECTOR (10S-12090)	
6.	153-759	1	HOSE (120FX90M-16"-3000)	
7.	153-592	1	HYDRAULIC MOTOR	RIGHT TRACK, USE SEAL KIT 500-752
8.	149-847	-	CROSS (06S-060-060-080)	
9.	154-757	1	HOSE (060FX-86"-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.	153-639	1	HYD CONTROL VALVE	SEE FOOTNOTE 1
	500-2196		SPOOL CAP (O-RING)	
14.	117-398	1	ABRASION SLEEVE (1.00" X 86")	
15.	153-767	2	COUNTERBALANCE MANIFOLD	
16.	154-344	1	UN RUN TEE (060FX-060-060)	
17.	515-583	-	HOSE (060FX90-12"-3000)	
18.	156-174	1	CONNECTOR (06S-060)	BACK PORT (NOT SHOWN)
19.	153-928	1	HOSE (120FX90L-16"-3000)	

NOT SHOWN:

FOOTNOTES:

1. 153-639 HYD CONTROL VALVE IS SUPERSEDED BY 150-1815 HYDRAULIC CONTROL VALVE

NOTE:

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

# WRENCH ROTATE HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	153-410	-	HYDRAULIC VALVE	
2.	151-031	-	CYL (2.0" X 1.0" X 8.0")	
3.	514-049	2	CONNECTOR (04S-06090)	
4.	154-227	-	CONNECTOR (060-08S90)	
5.	154-996	1	HOSE (060FX-58"-3000)	
6.	154-797	1	HOSE (060FX-48"-3000)	
7.	117-326	1	ABRASION SLEEVE (1.00" X 58")	
8.	117-416	1	ABRASION SLEEVE (1.00" X 50")	

FOOTNOTES

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

# RIGHT ANCHOR THRUST CYLINDER

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	154-276	2	CONNECTOR (040-08S90)	
2.	309-205	1	BULKHEAD PLATE	
3.	154-728	2	HOSE (040FX90-36"-3000)	
4.	117-655	1	ABRASION SLEEVE (1.59" X 38")	
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 (1.00" X 26")	
12.	117-657	1	ABRASION SLEEVE (1.59" X 54")	
13.	117-676	1	ABRASION SLEEVE (1.00" X 30")	
14.	150-747	2	CYLINDER ASSEMBLY	
15.	515-682	1	HOSE (040FX90M-48"-3000)	
16.	158-064	-	HYD CONTROL VALVE (4-SPOOL)	

NOT SHOWN:

FOOTNOTES:

NOTE:

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

# SHUTTLE STOP HYDRAULICS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	354-466	1	BULKHEAD PLATE	
2.	154-355	2	BK CONNECTOR (040-04090BK)	
3.	515-161	2	HOSE (040FX-160"-3000)	
4.	117-741	1	ABRASION SLEEVE (1.59" X 145")	
5.	154-401	2	CONNECTOR (04S-04090, ORF)	
6.	150-727	1	CYL (1.0" X .500" X 4.0")	
7.	117-789	-	HOSE BAG (4.000" X 36")	
8.	515-447	2	HOSE (040FX90S-48"-3000)	
9.	154-226	2	CONNECTOR (040-06S90)	
10.	149-882	-	HYD CONTROL VALVE (5-SPool)	

### FOOTNOTES

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

# GRIPPER HYDRAULICS

- 1. 150-731 2 CYL ASS'Y
- 2. 154-474 2 CONNECTOR (04S-04090,XL)
- 3. 154-252 2 CONNECTOR (04S-04090)
- 4. 157-362 2 HOSE (040FX90L-11"-3000)
- 5. 515-598 2 HOSE (040FX90-12"-3000)
- 6. 154-355 2 BK CONNECTOR (040-04090BK)
- 7. 154-275 2 BK CONNECTOR (040-040BK)
- 8. 313-684 - REAR SHUTTLE
- 9. 157-037 4 O-RING (011 D90)
- 10. 154-255 2 UNION (040-040FX90)
- 11. 153-365 4 HOSE (040FX90S-34"-3000)
- 12. 306-746 2 HOSE TRACK
- 13. 117-412 4 ABRASION SLEEVE (1.25" X 34")
- 14. 313-683 - FRONT SHUTTLE
- 15. 153-671 1 HYD LINE TOP
- 16. 153-672 1 HYD LINE BOTTOM
- 17. 153-667 1 SPECIAL TEE (06S,ORF-060-060)
- 18. 154-344 1 UN RUN TEE (060FX-060-060)
- 19. 156-067 1 CONNECTOR (06S-060, ORF .031")
- 20. 157-764 - HYDRAULIC VALVE
- 21. 149-427 1 HYD LINE TOP
- 22. 149-428 1 HYD LINE BOTTOM
- 23. 110-998 6 CLAMP HALVES (3/8") PAIR
- 24. 105-117 2 WASHER (5/16")
- 25. 105-197 2 BOLT (1/4-NC X 1")
- 26. 106-640 8 SCREW (M6-1.00 X 20MM, BUT SOC)
- 27. 105-284 16 WASHER (3/16")
- 28. 106-237 8 LOCKNUT (M6-1.00,PRV TRQ,NLK)
- 29. 106-598 2 WASHER (9/16" HARDENED)

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## 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" - UPI)
- 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

# ELECTRICAL SCHEMATIC

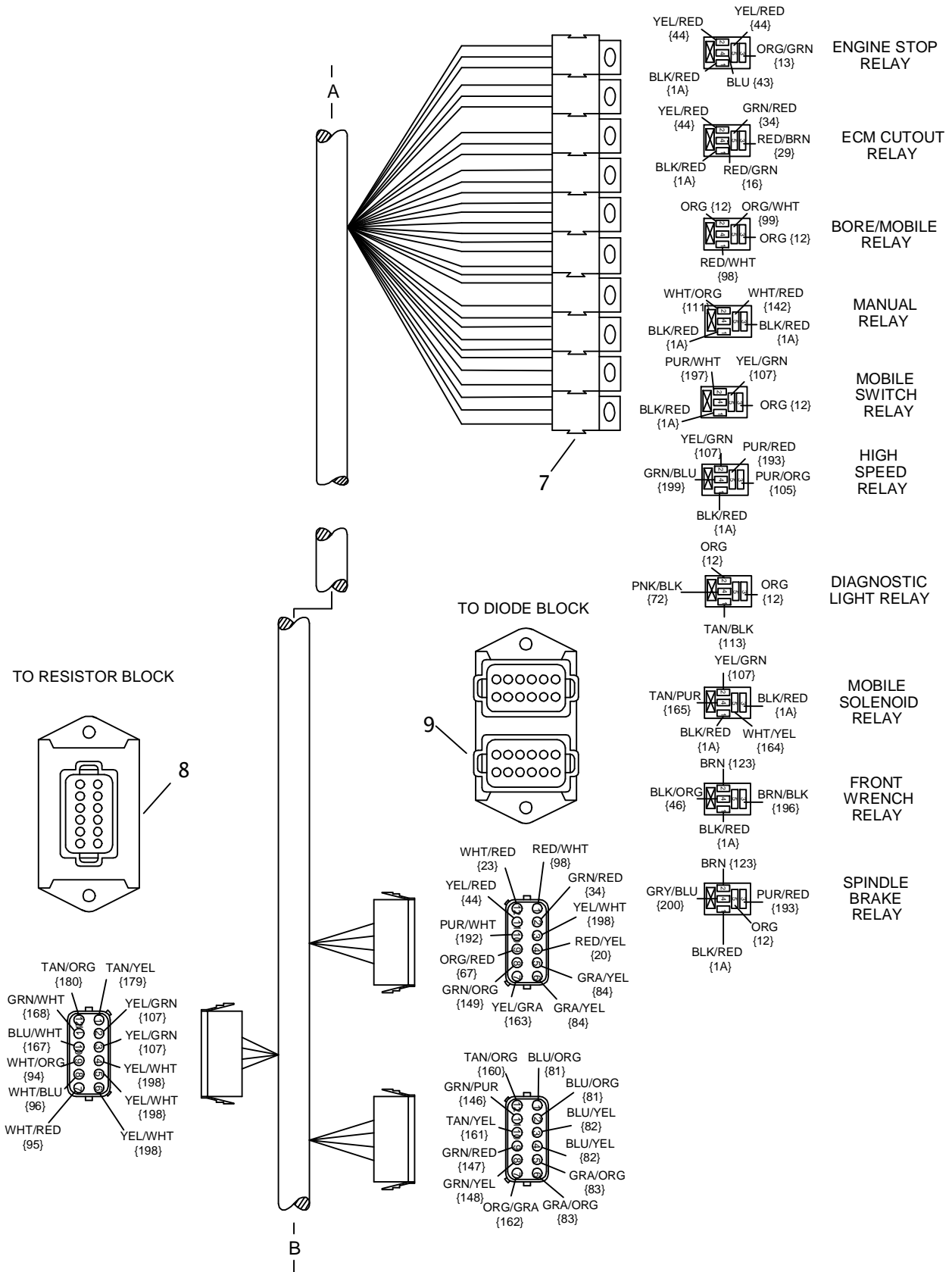
## JT4020 ALL TERRAIN

### 1000 -- POWER

REF.	DESCRIPTION	WIRE DESCRIPTION	NOTES
1001	BATTERY	1. BLK, 2. RED	
1002	BATTERY DISCONNECT	1. BLK	
1003	MAIN FUSE	2. RED, 3. RED	
1004	START FUSE	2. RED, 4. RED/BLK	
1005	WORKLIGHT FUSE	2. RED, 6. BLU	
1006	IGN SWITCH	3. RED, 9. ORG, 10. ORG/BLU, 11. WHT/BLK	
1007	START RELAY	4. RED/BLK, 24. PUR, 11. WHT/BLK 139. WHT/DRG	
1008	ACCESSORY SOCKET FUSE	3. RED, 14. RED/WHT	
1009	ACCESSORY SOCKET	1A. BLK/RED, 14. RED/WHT	
1010	TRACCOM FUSE	3. RED, 151. BLU/RED	
1011	E.S.I.D. FUSE	9. ORG, 20. RED/YEL	
1012	GAUGES FUSE	9. ORG, 19. ORG/BRN	
1013	VARIABLE THROTTLE FUSE	9. ORG, 21. RED/DRG	
1014	SENSORS FUSE	9. ORG, 18. RED/BLK	
1015	ECM CUTOFF FUSE	9. ORG, 29. RED/BRN	
1016	ECM CONTROL FUSE	9. ORG, 17. RED/BLU	
1017	ACC FUSE	9. ORG, 12. ORG	
1018	IGN FUSE	10. ORG/BLU, 13. ORG/GRN	
1019	WARNING LIGHTS	10. ORG/BLU, 22. GRA/ORG	
1020	TO START	11. WHT/BLK	
1021	TO BATTERY FUSED	3. RED	
1022	TO BATTERY	2. RED	
1023	TO HOURMETER	45. ORG/BLK	
1024	TO SEAT SWITCH DELAY TIMER	23. WHT/RED	
1025	TO WORK LIGHTS	6. BLU	
1026	COLD START SWITCH	24. PUR, 25. BRN/DRG	
1027	TO COLD START SOLENOID	25. BRN/ORG, 26. BLK	
1028	COLD START TEMP. SWITCH	1. BLK, 26. BLK	
1029	STARTER SOLENOID	24. PUR, CHASSIS GROUND	
1030	STARTER MOTOR	2. RED, CHASSIS GROUND	
1031	TO TRACCOM	151. BLU/RED	
1032	TO ELECTRICAL STRIKE & REMOTE DISPLAY	20. RED/YEL	
1033	TO GAUGES	19. ORG/BRN	
1034	TO VARIABLE THROTTLE	21. RED/DRG	
1035	TO SENSORS	18. RED/BLK	
1036	TO ECM CUTOFF RELAY	29. RED/BRN	
1037	ECM CONTROL	17. RED/BLU	
1038	TO ACC	12. ORG	
1039	TO IGN	13. ORG/GRN	
1040	TO WARNING LIGHTS	22. GRA/ORG	
1041	TO ECM	16. RED/GRN	
1042	ECM CUTOFF RELAY	1A. BLK/RED, 16. RED/GRN, 29. RED/BRN 34. GRN/RED, 44. YEL/RED	
1043	FUEL SOLENOID	45. ORG/BLK, CHASSIS GROUND	
1044	TO ENGINE STOP SWITCH	44. YEL/RED	
1045	ENGINE STOP SWITCH	13. ORG/GRN, 44. YEL/RED	
1046	ENGINE STOP RELAY	1A. BLK/RED, 13. ORG/GRN, 43. BLU 44. YEL/RED, 166. WHT	
1047	START BYPASS DELAY TIMER	1A. BLK/RED, 13. ORG/GRN, 11. WHT/BLK 40. GRN	
1048	E.O.P. FUEL SHUTDOWN RELAY	36. WHT/BLU, 40. GRN, 43. BLU, 45. ORG/BLK	
1049	ENGINE OIL PRESSURE SWITCH	36. WHT/BLU, CHASSIS GROUND	
1050	LATCH RELEASE RELAY	1A. BLK/RED, 11. WHT/BLK, 44. YEL/RED 166. WHT	



# ELECTRICAL DIAGRAM OPERATOR STATION HARNESS



# ELECTRICAL DIAGRAM

## MAIN FRAME HARNESS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	214-434	8	SOLENOID COIL (SMALL)	SEE FOOTNOTE 1
2.	217-897	1	SOLENOID COIL (LARGE)	
3.	217-918	1	ROCKER SW (DPDT) ON-ON	
	217-925	1	ROCKER SWITCH (ACTUATOR)	
	217-137	1	ICON (WHT) OFF-STOP	
	217-158	1	DIFFUSION LENS (WHITE)	
	217-136	1	ICON (WHT) ON-START	
	217-156	1	DIFFUSION LENS (GREEN)	
4.	216-047	1	SPEED PICKUP	
5.	217-255	1	AT/JT MAIN FRAME HARNESS	

### FOOTNOTES

1. THRUST LIMITER SOLENOID REPLACED BY 214-209 IN JT4020 MACH 1



# BATTERY

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	215-244	2	BATTERY	
2.	362-784	1	BATTERY TRAY	
3.	347-857	1	DUAL BATTERY STRAP	
4.	105-832	6	FLG LOCKNUT (1/4-NC)	
5.	356-491	2	TIE-DOWN ROD (1/4-NC X 9.3")	
6.	105-044	1	JAM NUT (1/2-NC)	
7.	105-070	1	LOCK WASHER (1/2")	
8.	215-241	1	BAT CABLE (2/0 GA X 81.8", RED)	
9.	215-361	1	BAT CABLE (2 GA X 23.6", RED)	
10.	215-360	1	BAT CABLE (2 GA X 23.6", BLK)	
11.	106-384	2	FLG LK BOLT (3/8-NC X 3/8")	
12.	215-337	1	BAT CABLE (2/0 GA X 19", BLK)	
13.	217-819	1	BAT DISCONNECT SWITCH	
14.	215-314	1	BAT CABLE (1/0 GA X 22", BLK)	
15.	106-381	1	FLG LK SCREW (M8-1.25 X 25MM)	
16.	106-561	1	LOCKNUT (M8-1.25, PRV TRQ, 10.9)	

## FOOTNOTES

# ELECTRICAL DIAGRAM

## LOAD SENSE VALVE HARNESS

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
1.	214-845	1	LOAD SENSE VALVE HARNESS	
2.	214-491	1	COIL, 12V	
3.	217-804	1	START BYPASS DELAY	

FOOTNOTES

# HEATED HOSE KIT

REF NO.	PART NUMBER	QTY	DESCRIPTION	REMARKS
	101-088		JT27M1 HEATED HOSE KIT	USE REF.'S 1, 2, 3, & 5
	101-089		HEATED HOSE KIT	USE REF.'S 1, 2, 4, & 5
1.	153-585	1	HOSE (060FX-18"-3000,SPCL)	
2.	117-549	1	INSULATOR (1" ID X 5.00")	
3.	214-843	1	GREASER JUMPER HARNESS	USED ON JT2720 MACH 1 ONLY
4.	154-228	1	UNION (060-060FX90)	USED ON JT1720 MACH 1 & JT4020 MACH 1 ONLY
5.	110-030	4	CABLE TIE (1/16" TO 4")	
6.	154-224	1	CONNECTOR (06S-06045)	

NOT SHOWN:

FOOTNOTES:

NOTE:  
REFERE TO INSTALLATION INSTRUCTION 051-291.

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