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This reference covers the following Fadal machine models:

VMC 2520R-II

VMC 2520

West Coast Tech. Center..... (844) 323-2526
Sales / Service / Parts / Tech. Support / Applications Support

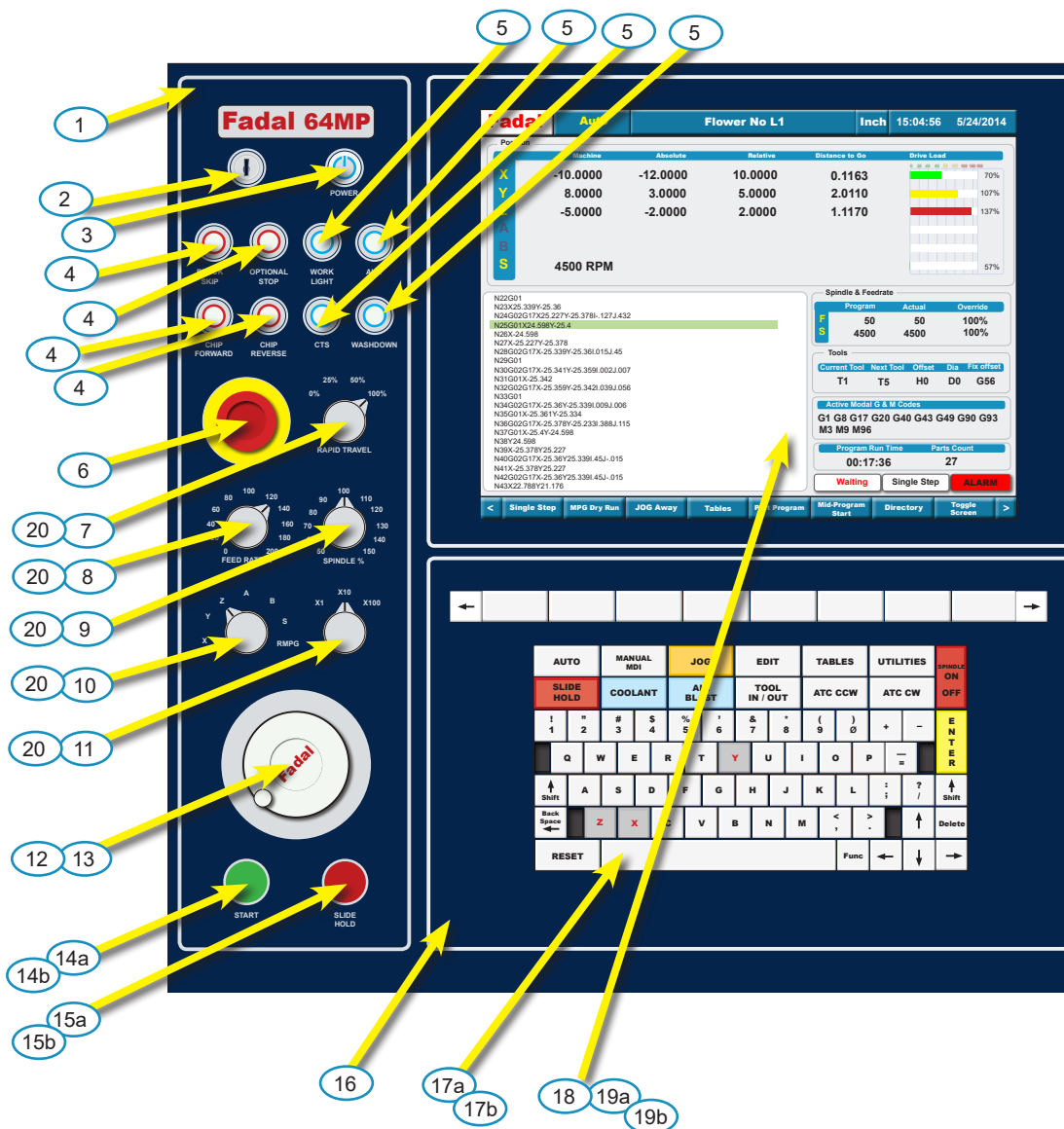
www.fadal.com
3100 E. Cedar St., Ste-7, Ontario, CA. 91761 USA

The content of this manual has been reviewed for accuracy and is applicable to current Fadal hardware and software products as described herein. Differences may exist and we cannot guarantee that they are completely covered in this document. The information in this document is reviewed regularly and any necessary changes will be incorporated in the next revision. We welcome any suggestions for improvement.

Material is subject to change without notice.

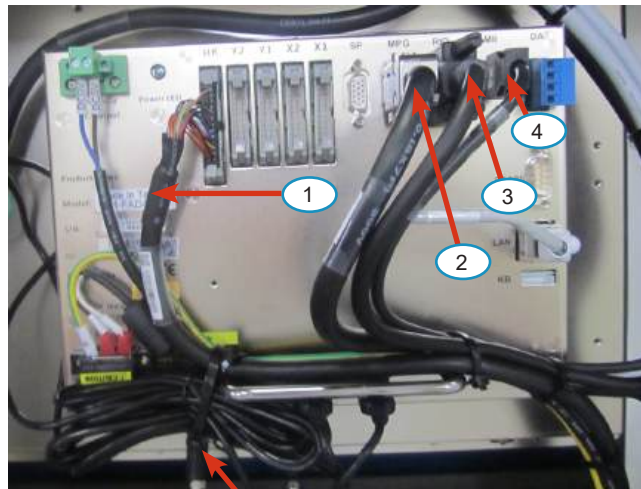
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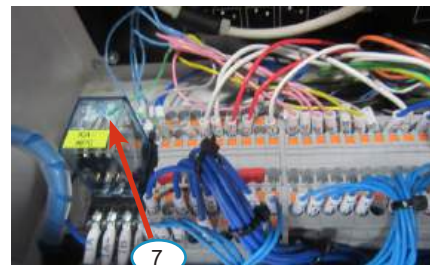


Item	Part Number	Description
1	CTR-02005	PANEL,64MP [NO SWITCHES]
2	SWT-00014	KEYLOCK SWITCH;64MP PENDANT
3	SWT-00006	SWITCH;POWER ON/OFF;PENDANT
4	SWT-00015	PUSH-BUTTON SWITCH;RED LED;SPDT
5	SWT-00016	PUSH-BUTTON SWITCH;BLUE LED;SPDT
6	SWT-00048	E-STOP KNOB/RELEASE,[NO SWITCHES] 64MP
6	SWT-00049	E-STOP SWITCHES,[NO KNOB] 64MP
7	SWT-00018	SELECTOR SWITCH;RAPID TRAVEL;4 POSITION
8	SWT-00019	SELECTOR SWITCH,FEEDRATE%;16 POSITION
9	SWT-00020	SELECTOR SWITCH;SPINDLE RPM;21 POSITION
10	SWT-00021	SELECTOR SWITCH;AXIS - XYZABSR;7 POSITION
11	SWT-00022	SELECTOR SWITCH;JOG RATE;3 POSITION
12	MPG-02002	MPG UNIT;24VDC;64MP PENDANT
13	MPG-02003	KNOB;MPG UNIT;64MP PENDANT NLA, USE MPG-02002
14	SWT-00023	PUSH BUTTON,START;GREEN [NO SWITCHES]
14	SWT-00050	START SWITCHES, 64MP [NO BUTTON]
15	SWT-00024	PUSH BUTTON,SLIDE HOLD;RED [NO SWITCHES]
15	SWT-00051	SLIDE HOLD SWITCHES,64MP [NO BUTTON]
16	CTR-02006	PANEL,64MP;KEYBOARD/MONITOR
17	KBD-00001	KEYBOARD,64MP;VMC2015-VMC8030B-II/50T
17	KBD-00003	KEYBOARD KEYS; SET, 64MP, [KEYS ONLY]
18	CTR-02008	MONITOR,15 INCH VGA;64MP PENDANT
19	CTR-02000	CONTROL UNIT/MONITOR;64MP 4-AXIS W/SFTW
19	CTR-02001	CONTROL UNIT/MONITOR;64MP 5-AXIS NO SFTW
20	SWT-00037	KNOB,SELECTOR SWITCHES

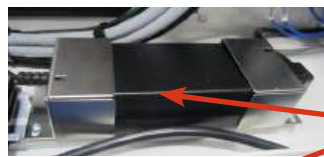
64MP PENDANT - Front Panel



Item	Part Number	Description
1	WIR-02153	CABLE,CTR TO SWITCH PANEL;26P IDC 18 IN
2	WIR-02152	CABLE,CNTR TO MPG;15P DSUB;[VGA] 18 IN
3	WIR-02111	CABLE,RIO INPUT/OUTPUT;9PIN DSUB
4	WIR-02051	AMP TO CONTROL,MECHATROLINK;USB 11 FT
5	PCB-02008	PCB,INTERFACE;PENDANT SWITCH PANEL
6	ELE-04007	PORT,USB/AC OUTLET [PENDANT]
7	RLY-00046	RELAY,ICECUBE;24VDC OMRON [MPG]
8	CTR-02011	HANDLE,PENDANT CABINET
9	PWR-00002	POWER SUPPLY; 24VDC
10	SEL-00068	EDGE PROTECTOR,PENDANT POCKET;PER FT
11	WIR-02181	CABLE,KEYBOARD TO CONTROL;64MP;5-COND



6

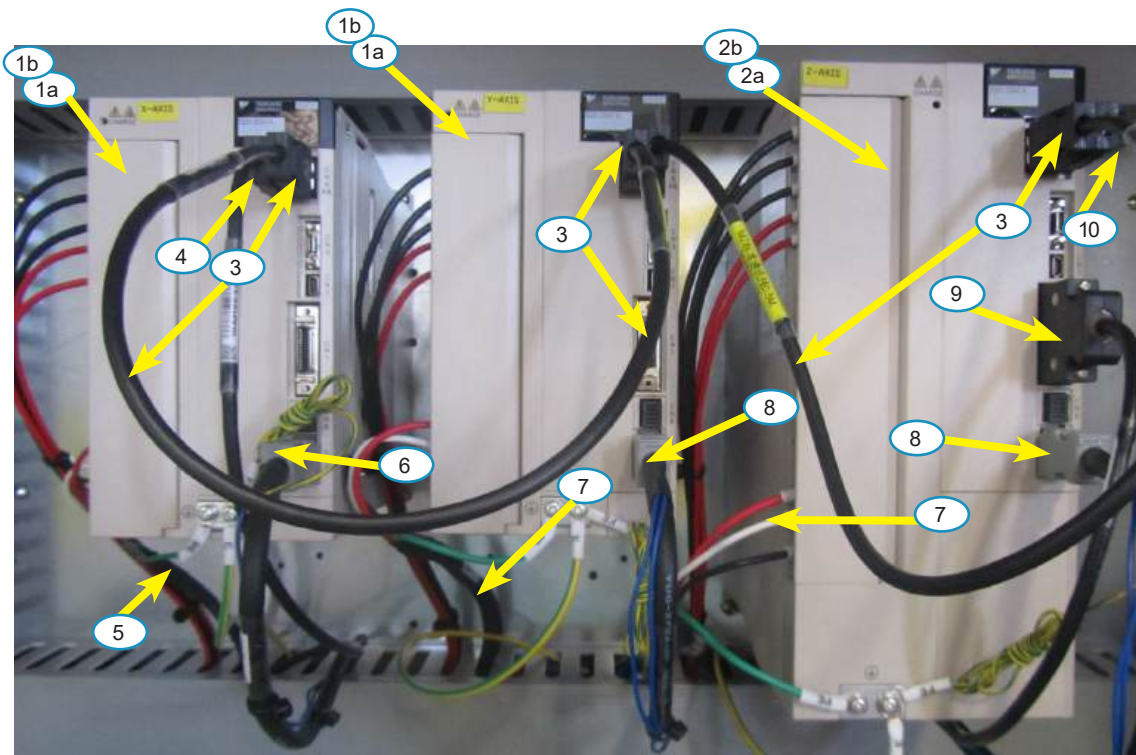


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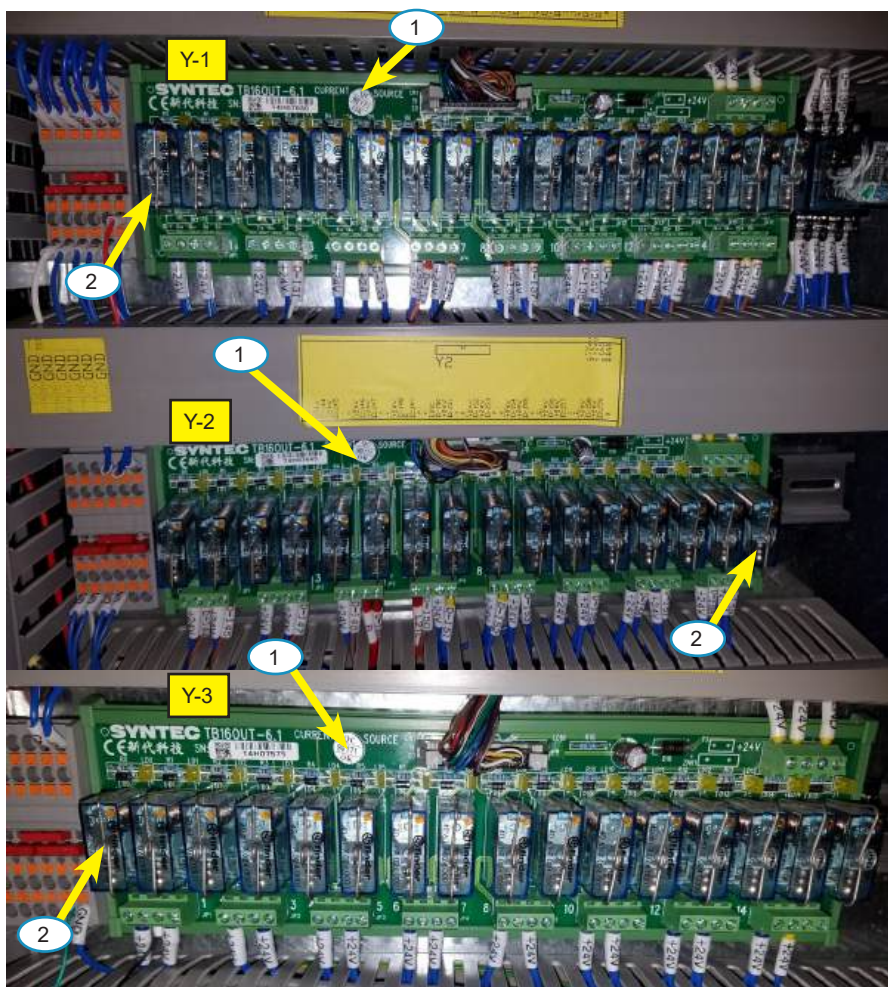


64MP PENDANT - FRONT & INTERIOR

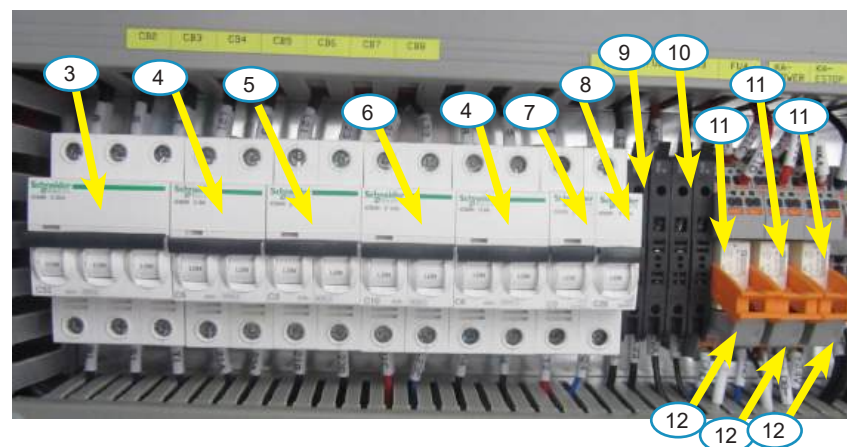
Item	Part Number	Description
1a	AMP-02003	AMPLIFIER, YASKAWA 200A, S5
1b	AMP-02015	AMPLIFIER, YASKAWA 200A, S7
2a	AMP-02004	AMPLIFIER, YASKAWA 330A, S5
2b	AMP-02016	AMPLIFIER, YASKAWA 330A, S7
3	WIR-02050	CABLE, USB-USB; MECHATROLINK; 18 IN AMP-AMP
4	WIR-02051	CABLE, USB-USB; MECHATROLINK; 11 FT CTR-AMP
5	WIR-02141	CABLE, MOTOR; PWR; 10M/90 X AXIS; 2520-4020B-II
6	WIR-02139	CABLE, MOTOR; ENC; 10M/90 X AXIS; 2520-4020B-II
7	WIR-02142	CABLE, MOTOR; PWR; 5M/90 Y,Z AXIS; 2520-4020B-II
8	WIR-02140	CABLE, MOTOR; ENC; 5M/90 Y,Z AXIS; 2520-4020B-II
9	WIR-02137	CABLE, Z-BRAKE; AMP TO E-STOP; 2520-4020B-II
10	WIR-02175	PULLUP RESISTOR, MECHATROLINK NETWORK



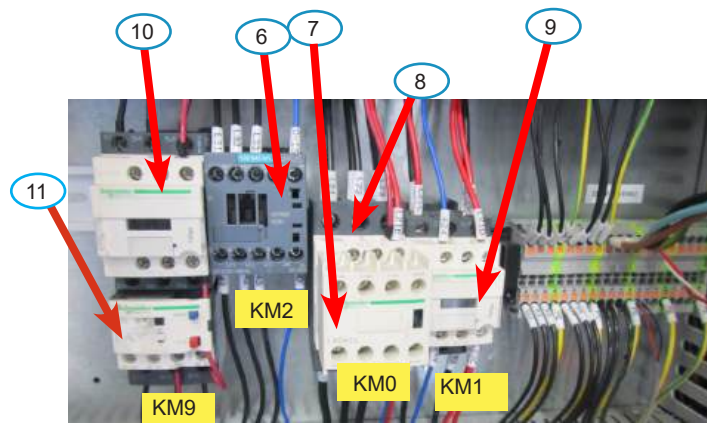
ELECTRICAL CABINET - AMPS



Item	Part Number	Description
1	PCB-02010	PCB,OUTPUT BOARD;Y1,Y2,Y3
2	RLY-00023	RELAY,MINI-ICECUBE;FINDER SPST
3	CBR-00032	CIRCUIT BREAKER,3-POLE;400V 32A SCHNEIDER
4	CBR-00033	CIRCUIT BREAKER,2-POLE;400V 6A SCHNEIDER
5	CBR-00034	CIRCUIT BREAKER,2-POLE;400V 3A SCHNEIDER
6	CBR-00035	CIRCUIT BREAKER,2-POLE;400V 10A SCHNEIDER
7	CBR-00036	CIRCUIT BREAKER,1-POLE;400V 6A SCHNEIDER
8	CBR-00037	CIRCUIT BREAKER,1-POLE;400V 20A SCHNEIDER
9	CBR-00019	FUSE,6X30MM 7A AGC-7 [FU-1, FU-2]
10	CBR-00020	FUSE,6X30MM 2A AGC-2 [FU-3, FU-4]
11	RLY-00040	RELAY,ESTOP;24VDC 2PDT 8A
12	RLY-00040-S	RELAY SOCKET BASE

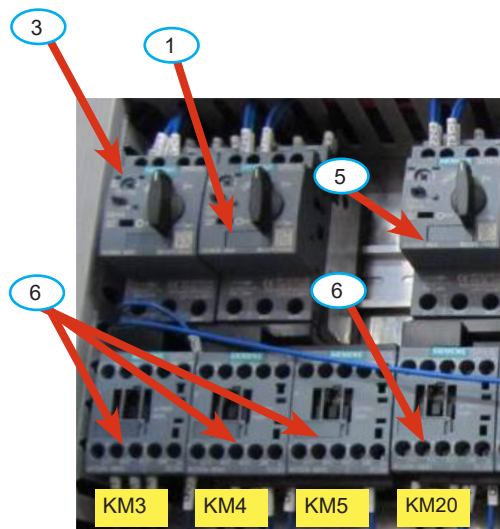
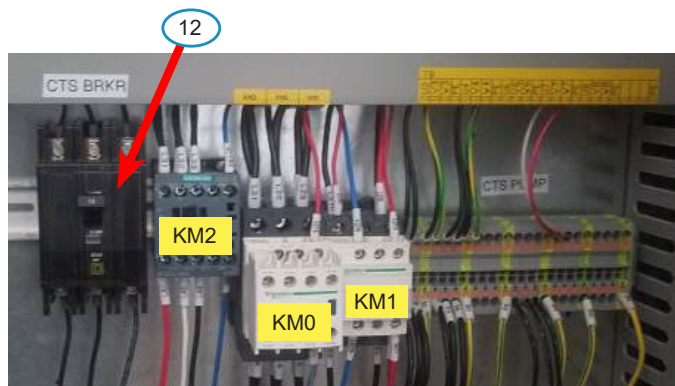


ELECTRICAL CABINET - OUTPUTS



Item	Part Number	Description
1	RLY-00034	OVERLOAD, CONTACTOR; 1.1-1.6A; SMNS
2	RLY-00038	OVERLOAD, CONTACTOR; 1.8-2.5A SMNS
3	RLY-00035	OVERLOAD, CONTACTOR; 2.8-4.0A SMNS
4	RLY-00039	OVERLOAD, CONTACTOR; 4.5-6.3A SMNS
5	RLY-00031	OVERLOAD, CONTACTOR; 7.0-10A SMNS
6	RLY-00030	CONTACTOR, SIEMENS; 1BB42
7	RLY-00024	CONTACTOR, 3-POLE; 220V COIL
8	RLY-00033	CONTACT BLOCK; [FITS RLY-00024]
9	RLY-00037	CONTACTOR, 12A; SCHNEIDER
10	RLY-00003	*CONTACTOR, AC240VAC 3-PH COIL
11	RLY-00032	*OVERLOAD, 9.0 TO 13.0A; FITS RLY-00003
12	CBR-00040	**CIRCUIT BREAKER; 200VAC, 15A, 3-POLE

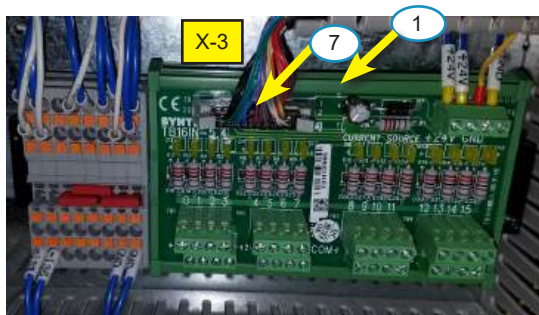
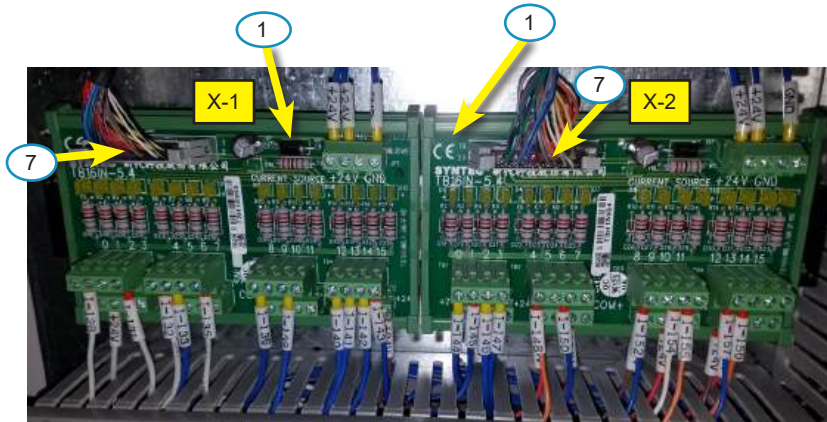
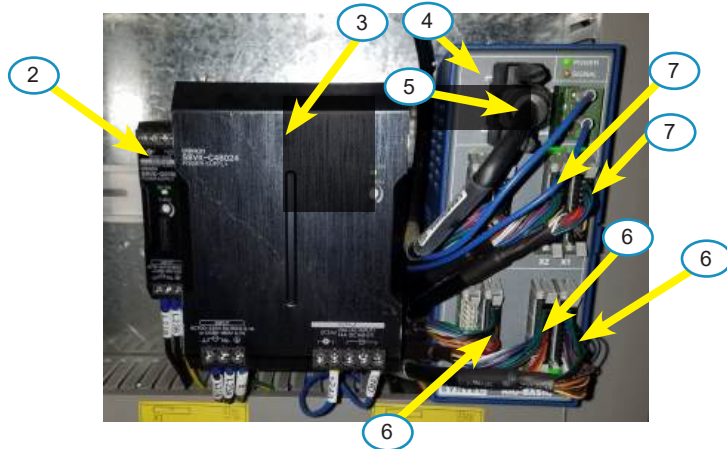
*ChipBlaster Unit
**PolarJet Unit



KM0	E-Stop Power Interrupt: Items 7, 8
KM1	E-Stop Servo Interrupt: Item 9
KM2	Chiller unit: Item 6
KM3	Coolant Pump: Items 3, 6
KM4, KM5*	Conveyor: Items 1, 6, 6
KM20* **	Washdown Pump(s): Items 5, 6
KM9*	Coolant-Thru Spindle: Items 10, 11

* Many items shown are Option , and not standard equipment
** Individual Contactor & Overload required for each ear washdown pumps

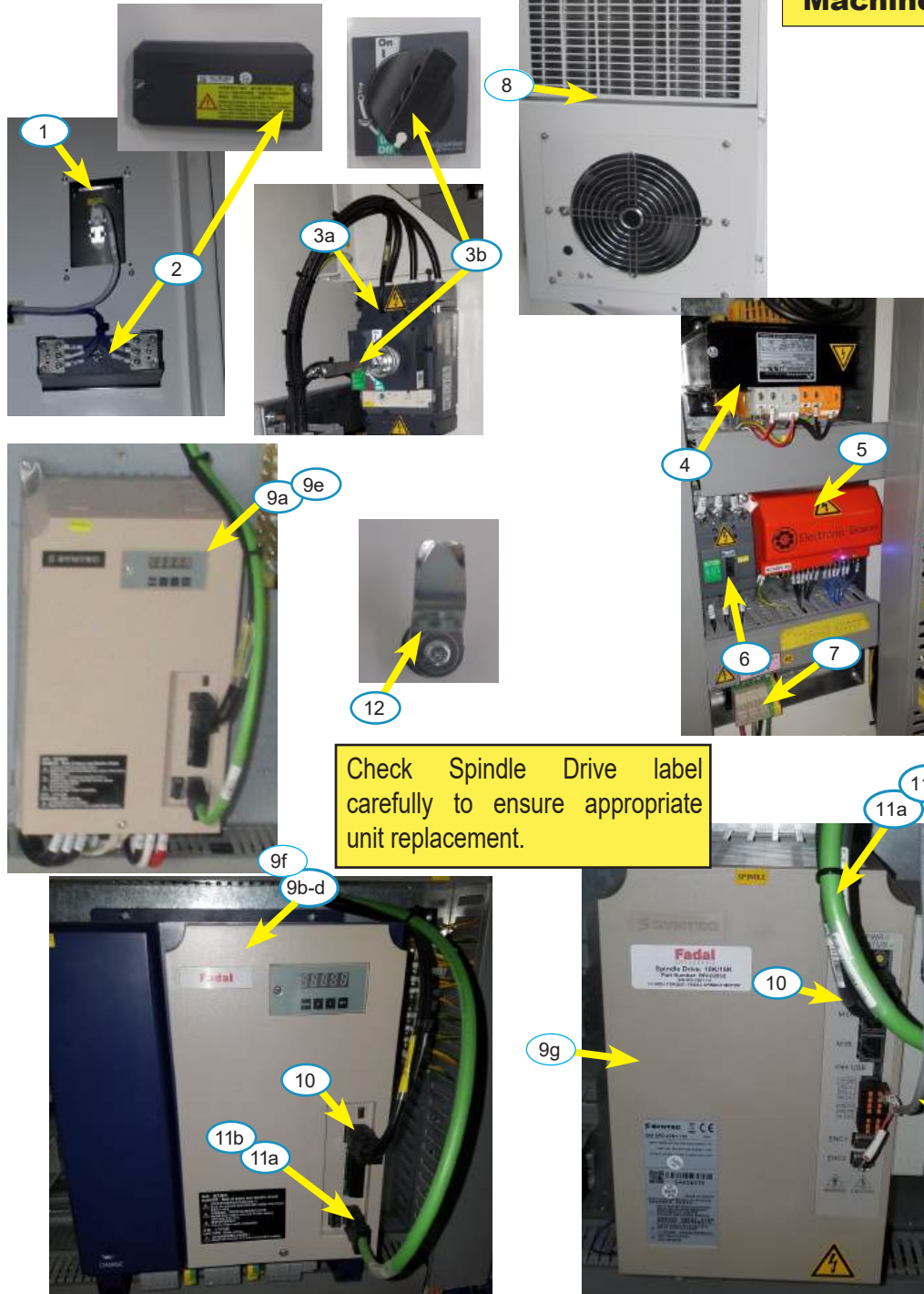
ELECTRICAL CABINET - OUTPUTS



Item	Part Number	Description
1	PCB-02009	PCB,INPUT INTERFACE;TB16IN;X1,X2,X3 SERIES II
2	PWR-00012	POWER SUPPLY,OMRON;5VDC
3	PWR-00011	POWER SUPPLY,OMRON;24VDC
4	CTR-02005	CONTROLLER,I/O SYNTEC RIO
5	WIR-02111	CABLE,RIO INPUT/OUTPUT 9-PIN DSUB 5.5M
6	WIR-02112	CABLE,RIO OUTPUT;20P IDC 3.5M Y1-Y4
7	WIR-02113	CABLE,RIO INPUT;20P IDC 0.6M X1-X4

ELECTRICAL CABINET - INPUTS

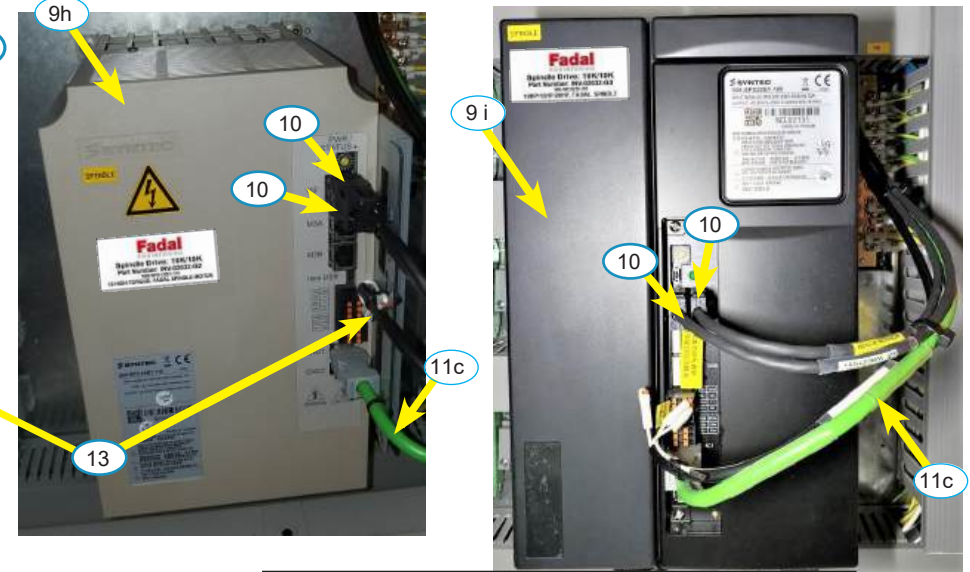
SERIES II Machines



Item	Part Number	Description
1	ELE-04003	PORT,ETHERNET; RJ45
2	ELE-04008	BATTERY BOX,3 D-CELL;ENCODER BACKUP
3a	CBR-00039	MAIN POWER DISCONNECT SWITCH / BREAKER ASSY.
3b	CBR-00039B	MAIN POWER DISCONNECT SWITCH ROTARY EXTENSION
4	TRN-00004	TRANSFORMER;230V TO 120V;2520-4020B-II
5	ATC-02067	BRAKING CONTROL,DATC ARM MOTOR;2520-4020B-II
6	CBR-00031	CIRCUIT BREAKER; CHILLER / SPINDLE DRIVE
7	WIR-02035	TERMINAL BLOCK,DIN RAIL;3-POLE
8	FAN-02007	CABINET COOLER;HEAT EXCHANGER;2520-4020
9	INV-02021	SPINDLE DRIVE.10HP; FADAL MOTOR, 10K
9	INV-02022* **	SPINDLE DRIVE,15HT; FADAL MOTOR, 10K/15K USE INV-2032-G3
9	INV-02023* **	USE INV-02032-G3
9	INV-02024* **	SPINDLE DRIVE,20VHT; FADAL MOTOR, 10K USE INV-02032-G3
9	INV-02001	SPINDLE DRIVE,10 HP; BALDOR MOTOR, 10K
9	INV-02002* **	SPINDLE DRIVE,15HT; BALDOR MTR, 10K/15K USE INV-02032-G3
9	INV-02032-G1	SPINDLE DRV,15HT; FADAL MTR,10K/15K [GEN 1] NLA: USE INV-02032-G3
9	INV-02032-G2	SPINDLE DRV,15HT; FADAL MTR,10K/15K [GEN 2] NLA: USE INV-02032-G3
9	INV-02032-G3*	SPINDLE DRIVE,15HT/20VHT;FADAL MTR,10K/15K [GEN 3]
10	WIR-02057	CABLE,USB-USB;MECHATROLINK;6 FT INV-AMP
11	WIR-02039	CABLE,ENCODER;BALDOR SPINDLE MTR TO DRV
11	WIR-02150	CABLE,ENCODER;FADAL MOTOR TO DRV
11	WIR-02150-SYN	CABLE,ENCODER;FADAL MOTOR TO DRV, SYNTEC
12	DOR-02018	CABINET DOOR LATCH
13	WIR-02049	CABLE; 18 AWG, 2-COND., PER FOOT [ORIENTATION SIGNAL]

*Specify if spindle motor is Baldor or Fadal, Standard(10hp), HT(15hp), or optional VHT(20hp) type. Provide machine serial number for proper settings.

**Re-manufactured offered pending availability.

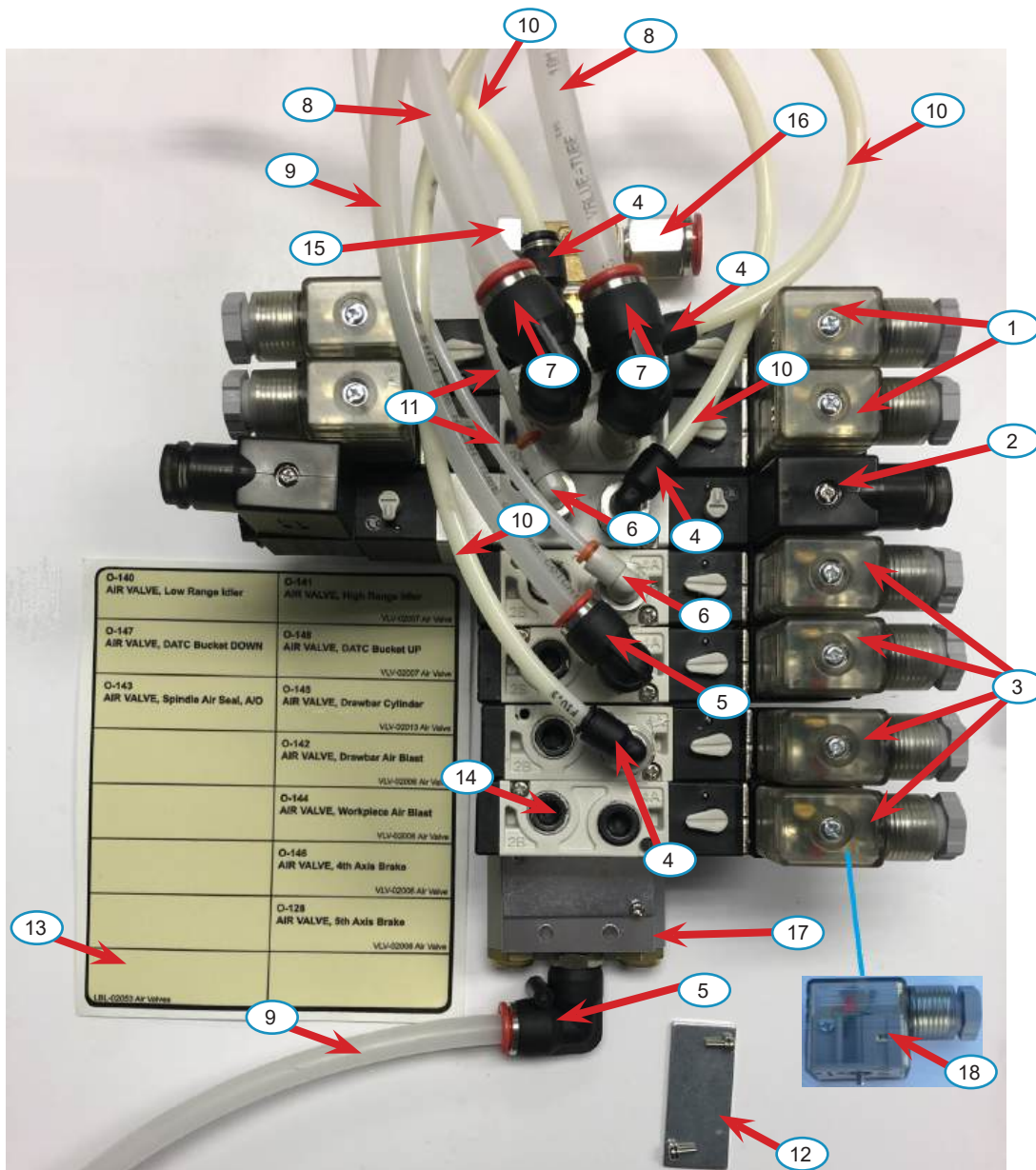


ELECTRICAL CABINET - MAIN



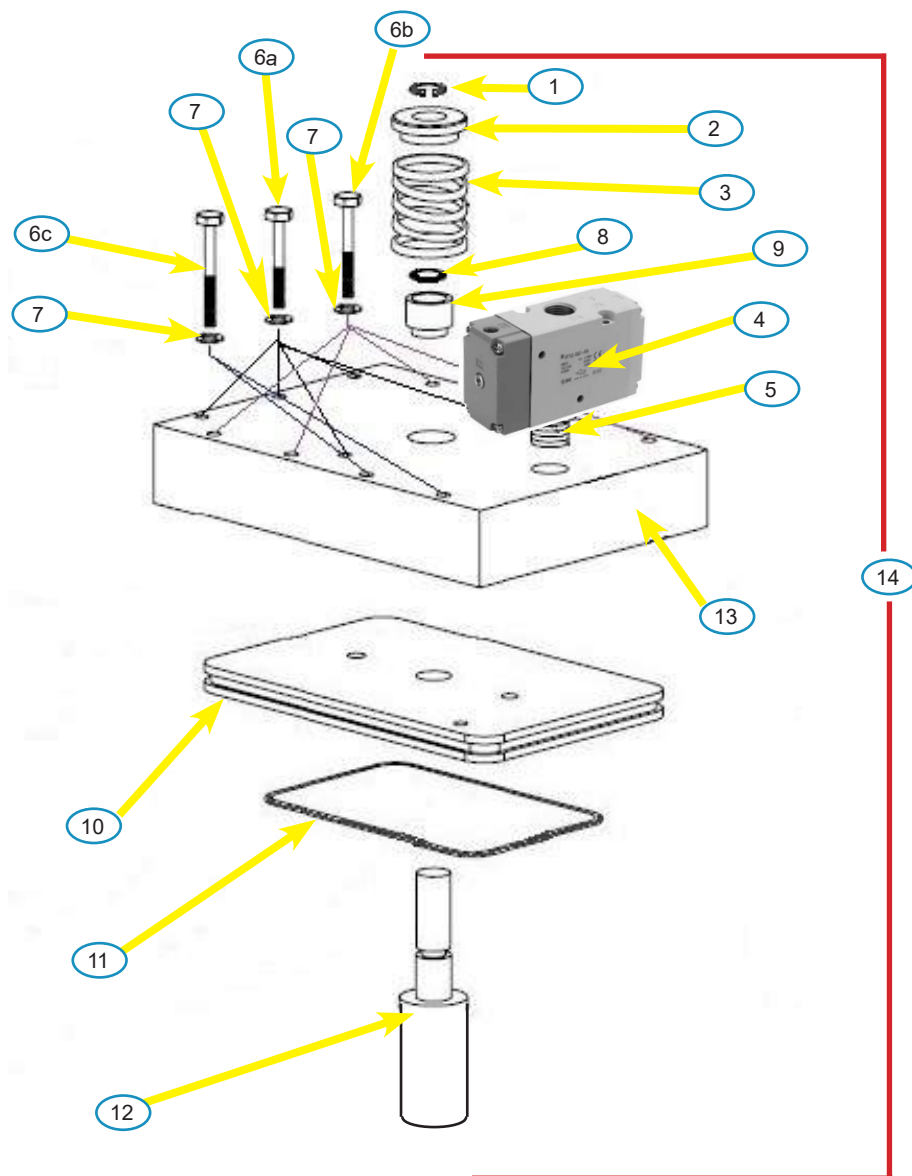
Item	Part Number	Description
1	ELE-04002	HABOR CHILLER UNIT,220V
2	PCB-02015	PCB,CONTROL;HABOR CHILLER
3	HDW-02114	FILTER-SCREEN,HABOR CHILLER
4	HDW-02115	CAP,OIL RESERVOIR;HABOR CHILLER
5	PCB-02016	PCB,RELAY;HABOR CHILLER
6	RLY-00004	OVERLOAD,1.0 TO 1.6A; FITS RLY-00003
7	RLY-00005	OVERLOAD,1.6 TO 2.5A; FITS RLY-00003
8	RLY-00003	CONTACTOR,240VAC 3PH-AC220V COIL
9	FAN-02012	FAN BLADE,HABOR CHILLER
10	PMP-02033	CHILLER PUMP/FAN MOTOR,HABOR CHILLER
11	PLM-02117	AIR GUN,COILED HOSE 1/4
12	PLM-02119	BRACKET, AIR HOSE/WASHDOWN HOSE
13	PLM-02118	SPRAY NOZZLE; OPERATOR WASHDOWN
14	PLM-02176	COILED HOSE, OPERATOR WASHDOWN
15	HDW-02066	AIR TANK,RESERVE
16	ELE-04011	WORKLIGHT,CAN;4 INCH ARM;24VDC 70W
17	ELE-04006	BULB,24VDC 70W
18	DOR-02044	LATCH,CAGE DOOR
19	ELE-04031	WORKLIGHT,LED CAN;LONG ARM-18 INCH;24VDC
20	ELE-04032	LED MODULE, [FITS ELE-04031]
21a	REG-02012	REGULATOR,WATER SEPARATOR; MM
21b	REG-02012-B	REGULATOR,WATER SEPARATOR; BOWL
22	SWT-00067	PRESSURE SWITCH,REGULATOR;DANFOSS
23	PLM-02084	TUBING,10MM WHITE 250PSI NYLON;PER METER
24	REG-02013	GAUGE,AIR PRESSURE; 0-150PSI 1/8
25	REG-02014	OILER,AIR LUBE MM
26a	REG-02015	FILTER; MM
26b	REG-02015-B	FILTER; BOWL
27	REG-02008	REGULATOR, MAIN AIR PRESSURE; COMPLETE ASSY.
28	PLM-02195	TUBING; 12MM
29	PLM-02196	FITTING; 12MM QD X 3/8 MIPT, STRAIGHT
30	PLM-02194	FITTING; 3/8 MIPT X 3/8 MIPT, ELBOW
31	PLM-02197	FITTING; 12MM QD X 3/8 MIPT, ELBOW
32	VLV-02040	CHECK VALVE; 3/8 FIPT
33	PLM-02105	BALL VALVE; 1/4 FIPT X 1/4 MIPT
34	PLM-02198	FITTING; 8MM QD X 1/4 MIPT, ELBOW
35	PLM-02200	COILED HOSE; OPERATOR WASHDOWN
36	PLM-02201	SPRAY NOZZLE; OPERATOR WASHDOWN
37	PLM-02171	FITTING; 10MM QD X 1/2 MIPT, ELBOW

CHILLER CAGE - MISC



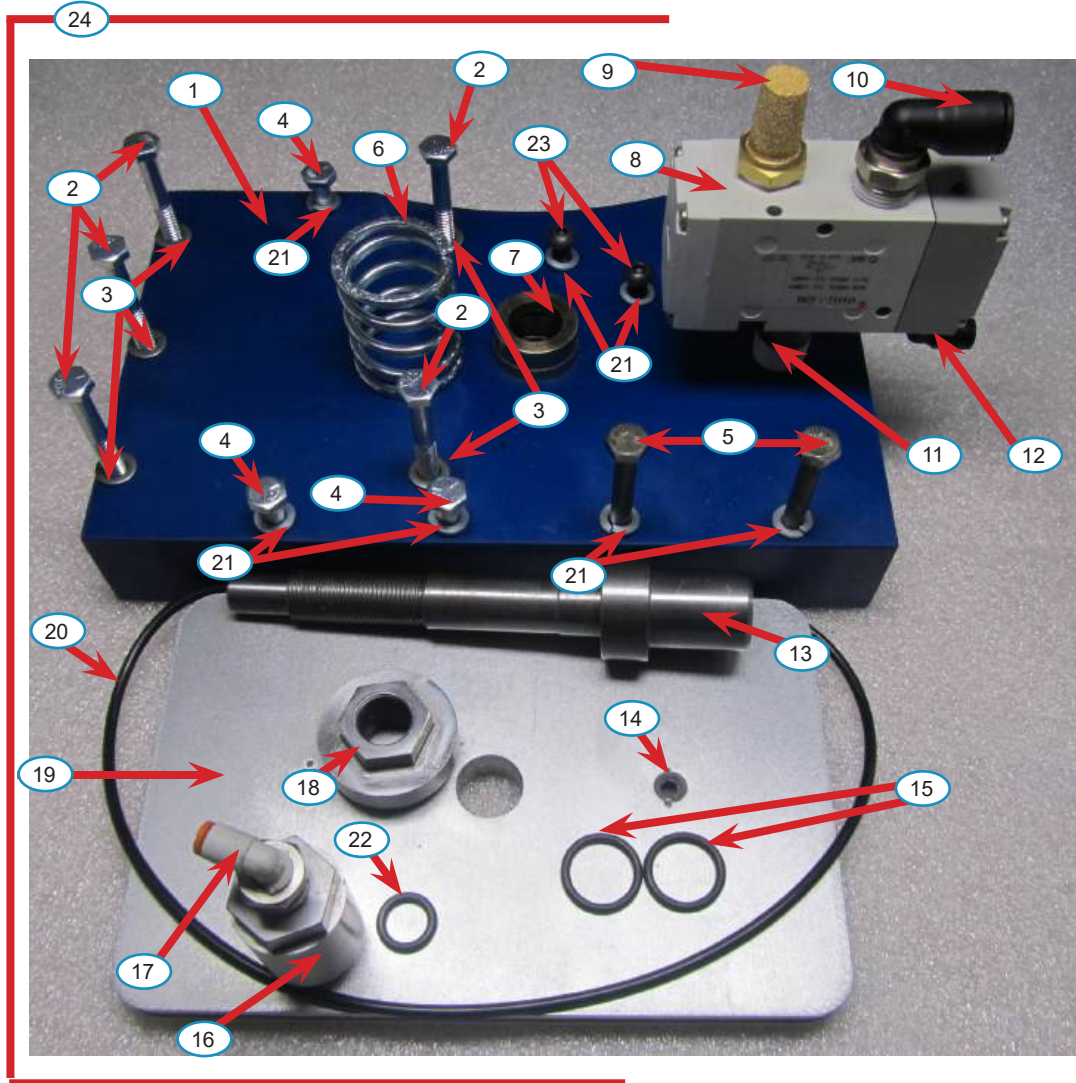
Item	Part Number	Description
1	VLV-02007	AIR VALVE,24VDC 5-WAY; DUAL
2	VLV-02013	VALVE,DUAL;CTR EXH;AIR SEAL/DBCYL;24VDC
3	VLV-02006	AIR VALVE, 24VDC 5-WAY; SINGLE
4	PLM-02092	FITTING,6MM QD X 1/4MPT ELL
5	PLM-02176	FITTING,8MM QD X 1/4 MIPT ELL
6	PLM-02010	FITTING,5/32QD/4MMQD X 1/4MIPT ELL
7	PLM-02098	FITTING,10MM QD X 1/4NPT MALE ELL
8	PLM-02084	TUBING,10MM WHITE 250PSI NYLON;PER METER
9	PLM-02143	TUBING,8MM BLACK;PER FT
10	PLM-02083	TUBING,6MM WHITE 250PSI NYLON;PER METER
11	PLM-02082	TUBING,4MM WHITE 250PSI NYLON;PER METER
12	VLV-02014	COVER PLATE/GASKET;VALVE MANIFOLD
13	LBL-02053	LABEL,AIR VALVE PACK;5 X 6
14	PLM-02017	PLUG,1/4 MIPT HEXDRIVE
15	PLM-02104	FITTING; 10MM QD X 1/4 MIPT, STR
16	PLM-02199	FITTING; 12MM QD X 1/4 MIPT, STR
17	VLV-02041	AIR MANIFOLD; 8-WAY
18	VLV-02042	AIR VALVE COIL CONNECTOR

AIR VALVES



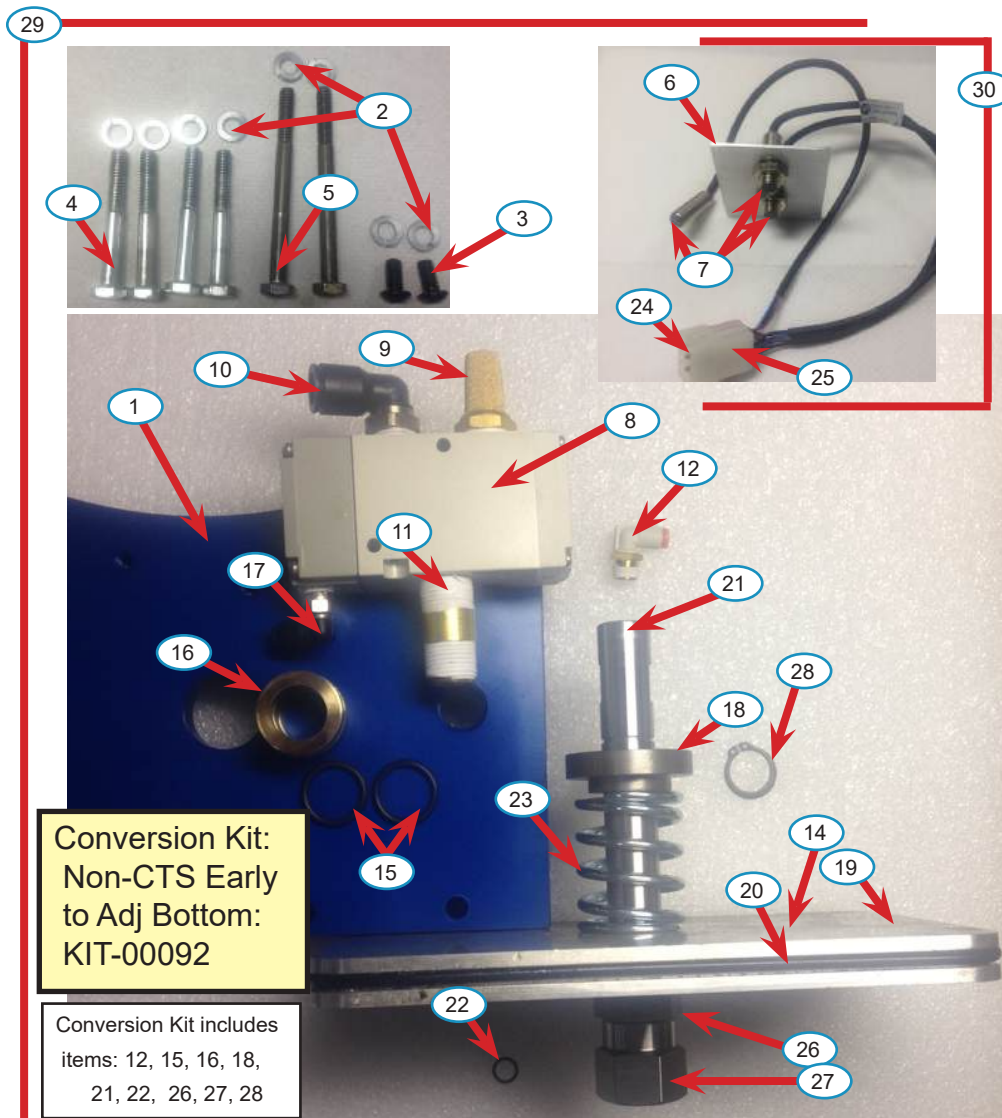
Item	Part Number	Description
1	HDW-02015	RETAINING CLIP; DRAWBAR CYLINDER SHAFT
2	DRB-02007	SPRING CAP SERIES II NON-CTS
3	HDW-02006	SPRING,DB CYLINDER RETURN
4	VLV-02000	AIR VALVE,DB CYLINDER
5	PLM-02019	PIPE NIPPLE,3/8 MIPT X 1 INCH
6a	SCR-00015	SCREW,1/4-20 X 1.75 HEXCAP [5 REQD]
6b	SCR-00016	SCREW,1/4-20 X 2 HEXCAP [4 REQD]
6c	SCR-00017	SCREW,1/4-20 X 3 HEXCAP [2 REQD]
7	SCR-00003	LOCKWASHER,1/4 [11 REQD]
8	SEL-00007	O'RING,-115; VITON .687 ID X 3/32 [2 REQD]
9	DRB-02056	BUSHING; DRAWBAR PISTON SHAFT
10	DRB-02006	PISTON PLATE,SERIES II [NO MAGNET]
11	SEL-00017	O'RING,DBCYL 7.25ID X 3/32
12	DRB-02003	SHAFT,DB CYLINDER SERIES II NON-CTS
13	DRB-02002	HOUSING,DRAWBAR CYLINDER;WIDE
14	DRB-02000	DRAWBAR CYLINDER ASSY [USE DRB-02051]

DRAWBAR CYLINDER [Early]



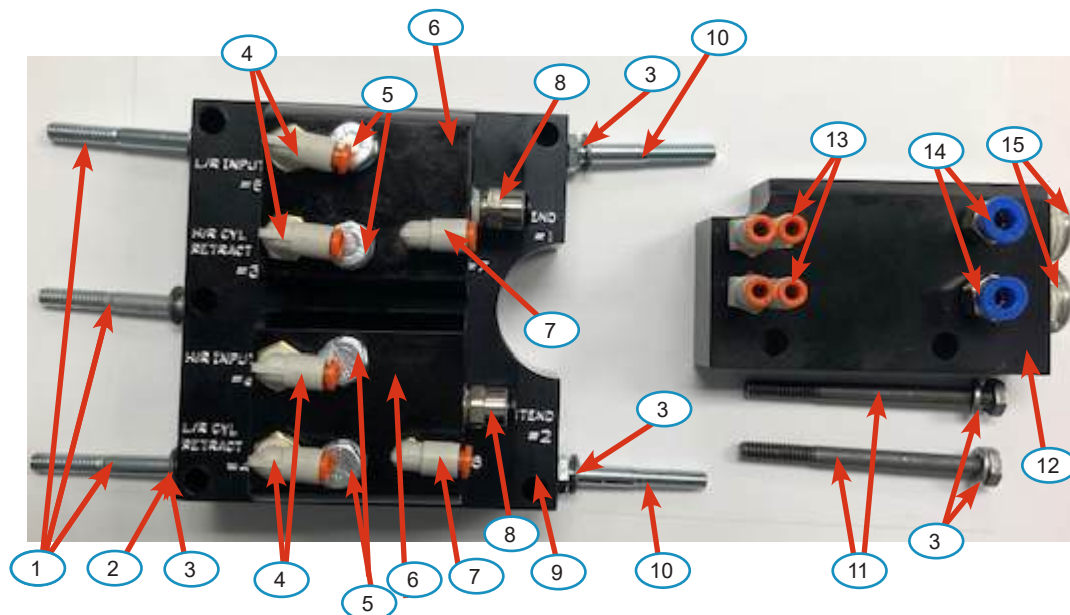
Item	Part Number	Description
1	DRB-02002	HOUSING,DRAWBAR CYL;WIDE [BLUE]
2	SCR-00015	SCREW,1/4-20 X 1.75 HEXCAP [5 REQD]
3	SCR-00271	WASHER,1/4 [OD 0.500] 0.060 THICK-SS [5 REQD]
4	SCR-00016	SCREW,1/4-20 X 2 HEXCAP [4 REQD]
5	SCR-00017	SCREW,1/4-20 X 3 HEXCAP [2 REQD]
6	HDW-02006	SPRING,DB CYLINDER RETURN
7	DRB-02056	BUSHING; DRAWBAR PISTON SHAFT, 9.5" CYL.
8	VLV-02000	AIR VALVE,DB CYLINDER
9	PLM-02050	MUFFLER,3/8 MIPT
10	PLM-02087	FITTING,10MM QD X 3/8NPT MALE ELL
11	PLM-02049	PIPE NIPPLE,3/8 MIPT X 1.5 INCH
12	PLM-02091	FITTING,6MM QD X 1/8MIPT ELL
13	DRB-02035	[USE KIT-00092]
14	PLM-02028	PLUG,1/8 MIPT HEXDRIVE
15	SEL-00007	O'RING,-115; VITON .687 ID X 3/32
16	DRB-02034	[USE KIT-00092]
17	PLM-02010	FITTING,5/32QD/4MMQD X 1/4MIPT ELL
18	DRB-02033	[USE KIT-00092]
19	DRB-02006	PISTON PLATE, NO MAGNET; 40T [NON-CTS/CTS]
20	SEL-00017	O'RING,DBCYL 7.25ID X 3/32
21	SCR-00003	LOCKWASHER,1/4 [8 REQD]
22	SEL-00026	O'RING,-111 VITON;0.437 X 3/32
23	SCR-00165	SCREW,BUTTONHEAD;1/4-20 X 1/2
24	DRB-02000	DRAWBAR CYLINDER ASSY [USE DRB-02051]

DRAWBAR CYLINDER-UPPER THREADED PISTON

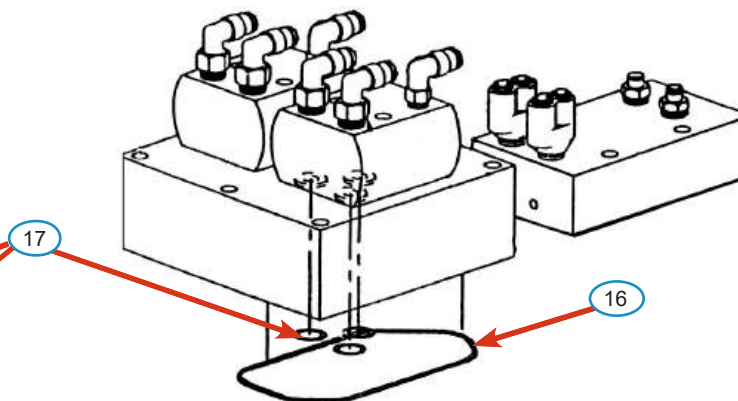
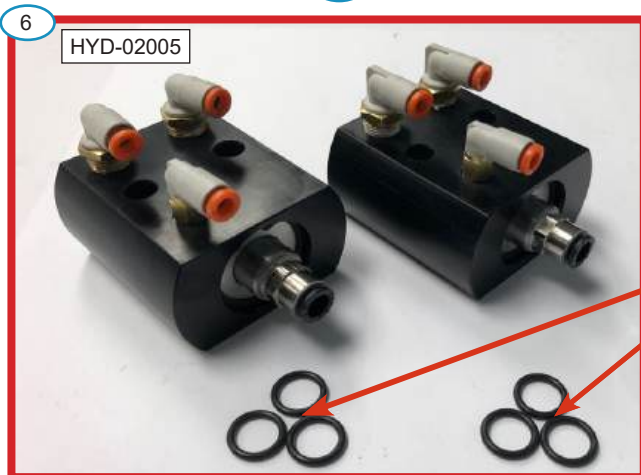


Item	Part Number	Description
1	DRB-02002	HOUSING,DRAWBAR CYL;WIDE [BLUE]
2	SCR-00003	LOCKWASHER,1/4 [8 REQD]
3	SCR-00165	SCREW,BUTTONHEAD;1/4-20 X 1/2
4	SCR-00016	SCREW,1/4-20 X 2 HEXCAP [4 REQD]
5	SCR-00017	SCREW,1/4-20 X 3 HEXCAP [2 REQD]
6	SMT-00226	BRACKET,DRAWBAR DOWN/UP SENSOR
7	SWT-00001	PROXIMITY SWITCH,W/LED;8MM 3-WIRE
8	VLV-02000	AIR VALVE,DB CYLINDER
9	PLM-02050	MUFFLER,3/8 MIPT
10	PLM-02087	FITTING,10MM QD X 3/8NPT MALE ELL
11	PLM-02049	PIPE NIPPLE,3/8 MIPT X 1.5 INCH
12	PLM-02012	FITTING,4MMQD X 1/8MIPT ELL
14	PLM-02028	PLUG,1/8 MIPT HEXDRIVE
15	SEL-00007	O'RING,-115; VITON .687 ID X 3/32
16	DRB-02056	BUSHING; DRAWBAR PISTON SHAFT, 9.5" CYL.
17	PLM-02091	FITTING,6MMQD X 1/8MIPT ELL
18	DRB-02036	SPRING PAD,DBCYL SHAFT;NON-CTS/CTS
19	DRB-02006	PISTON PLATE,SERIES II [NO MAGNET]
20	SEL-00017	O'RING,DBCYL 7.25ID X 3/32
21	DRB-02046	SHAFT,DRAWBAR CYLINDER;NON-CTS/CTS THD'D
22	SEL-00130	O'RING,DBCYL SHAFT;1.2MM X 7.0MM ID
23	HDW-02006	SPRING,DB CYLINDER RETURN
24	CNX-00007	PIN,MALE AWG16 MOLEX
25	CNX-00006	PLUG,6-PIN MOLEX F
26	DRB-02048	LOCKNUT,DBCYL SHAFT;NON-CTS/CTS
27	DRB-02047	ENDCAP,BOTTOM;DBCYL SHAFT;NON-CTS
28	HDW-02015	RETAINING CLIP; DRAWBAR CYLINDER SHAFT
29	DRB-02051	DRAWBAR CYLINDER ASSEMBLY [NON-CTS]
30	SWT-00083	DBCYL PROXIMITY SWITCH ASSEMBLY [3]

DRAWBAR CYLINDER-LOWER THREADED PISTON

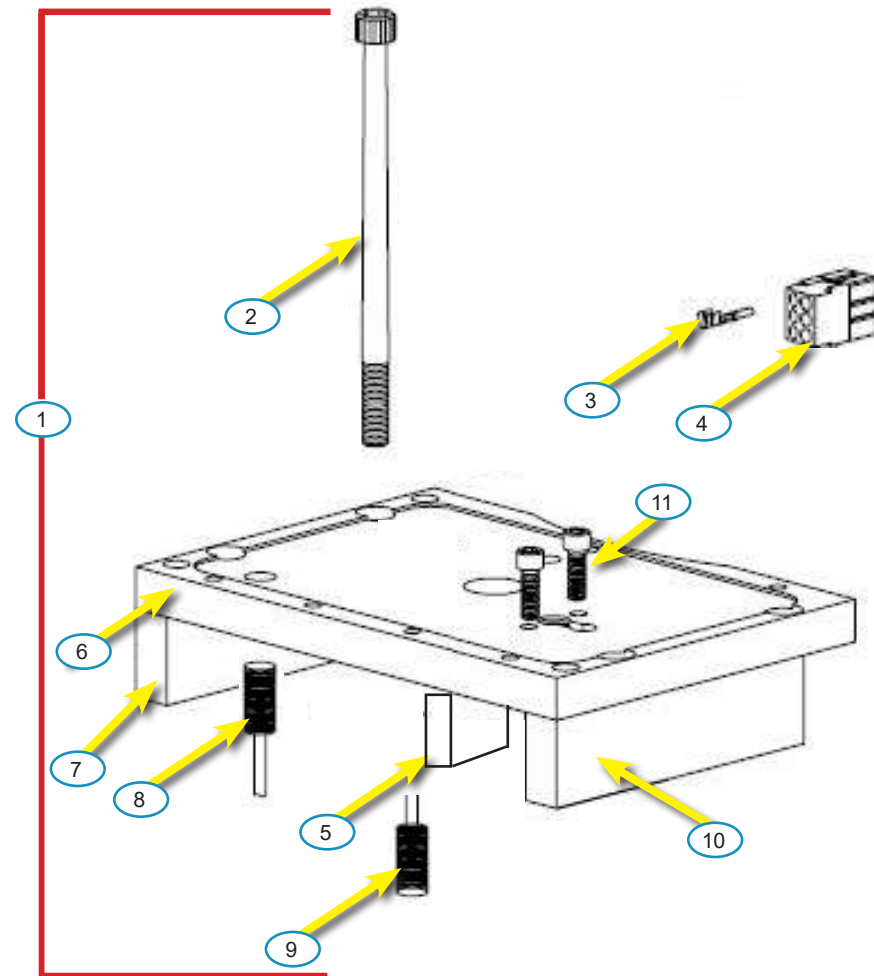


Item	Part Number	Description	
1	SCR-00016	SCREW, 1/4-20 X 2 HEXCAP	[4 REQ'D]
2	SCR-00098	FLATWASHER, 1/4 ZINC	[3 REQ'D]
3	SCR-00003	LOCKWASHER, 1/4	[10 REQ'D]
4	PLM-02012	FITTING, 5/32QD/4MMQD X 1/8NPT ELL	[4 REQ'D]
5	SCR-00014	SCREW, 1/4-20 X 1.5 HEXCAP	[4 REQ'D]
6	HYD-02005	HYDRAULIC ACTUATOR ASSEMBLY	[PK/2]
7	PLM-02015	FITTING, 5/32QD/4MMQD X 10-32 ELL	[2 REQ'D]
8	PLM-02093	FITTING, 6MMQD X 1/8NPT STR	[2 REQ'D]
9	HYD-02000	RESERVOIR, HYDRAULIC ACTUATORS	
10	SCR-00015	SCREW, 1/4-20 X 1.75 HEXCAP	[5 REQ'D]
11	SCR-00017	SCREW, 1/4-20 X 3 HEXCAP	[2 REQ'D]
12	HYD-02004	SEPARATOR BLOCK, HYDRAULIC ACTUATORS	
13	PLM-02014	FITTING, 5/32QD/4MMQD X 1/8NPT WYE	[2 REQ'D]
14	PLM-02093	FITTING, 6MMQD X 1/8MIPT STR	[2 REQ'D]
15	PLM-02024	PLUG, 1/2 MIPT; HEXDRIVE BRASS	[2 REQ'D]
16	SEL-00010	O-RING, -151 VITON; 3.0 ID X 3/32	[2 REQ'D]
17	SEL-00021	O-RING, -012 VITON; 3/8 ID X 1/16	[6 REQ'D]



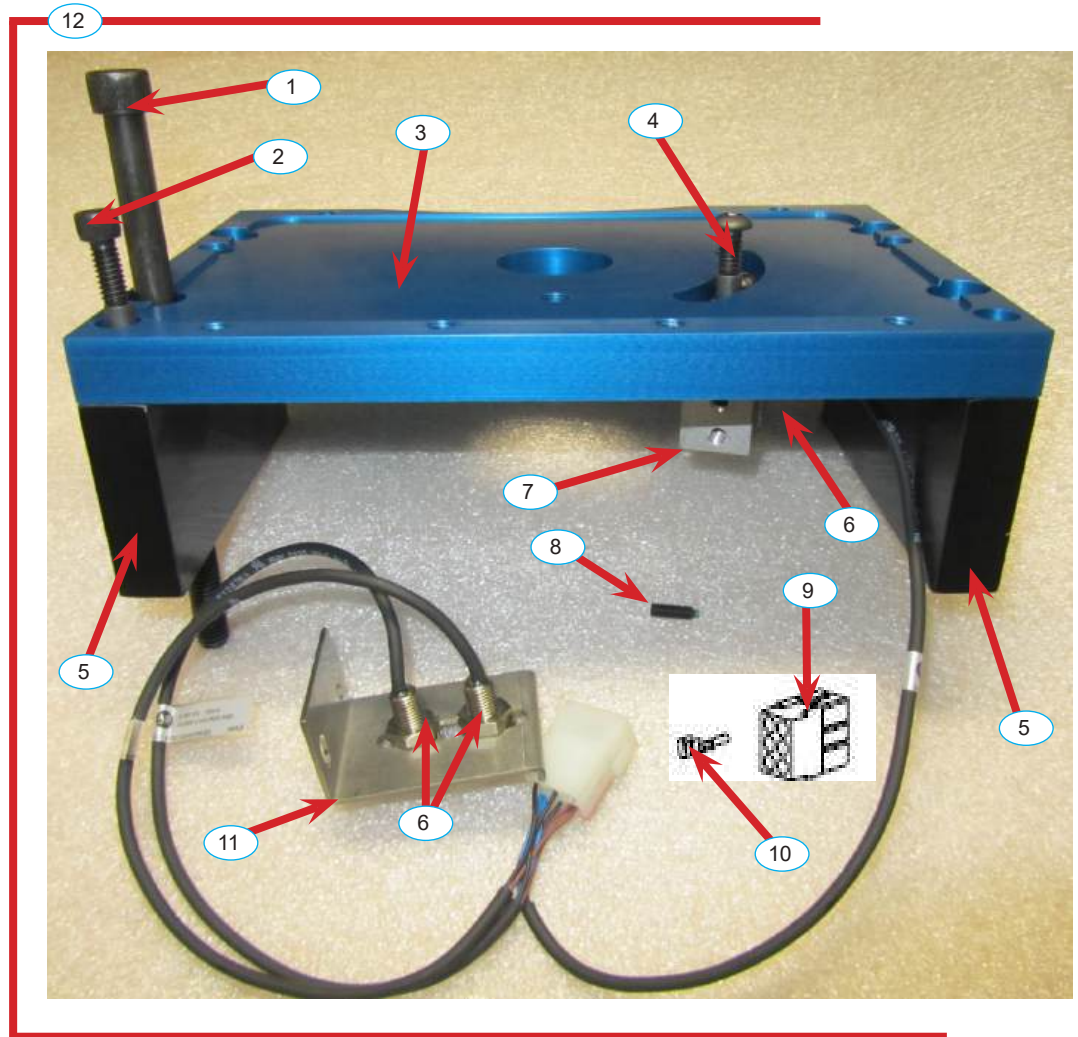
HYDRAULIC ACTUATORS

Item	Part Number	Description
1	ORB-02000	ORIENTATION BRIDGE ASY, NON-CTS 40T
2	SCR-00024	SCREW, 3/8-16 X 6 SHCS [4 REQ]
3	CNX-00007	PIN, MALE; AWG16
4	CNX-00006	PLUG, 6-PIN MOLEX F
5	ORB-02003	BLOCK, ORIENT SWITCH MOUNT 8MM
6	ORB-02001	ORIENT BRIDGE PLATE
7	ORB-02002	LEG, OBRIDGE; LEFT
8	SWT-00002	SENSOR, REED; 12MM
9	SWT-00001	SENSOR, PROX; 8MM
10	ORB-02006	LEG, RIGHT; SENSOR PORTHOLE
11	SCR-00043	SCREW, 1/4-20 X 3/4 SHCS [6 REQ]



Early ORIENT BRIDGE

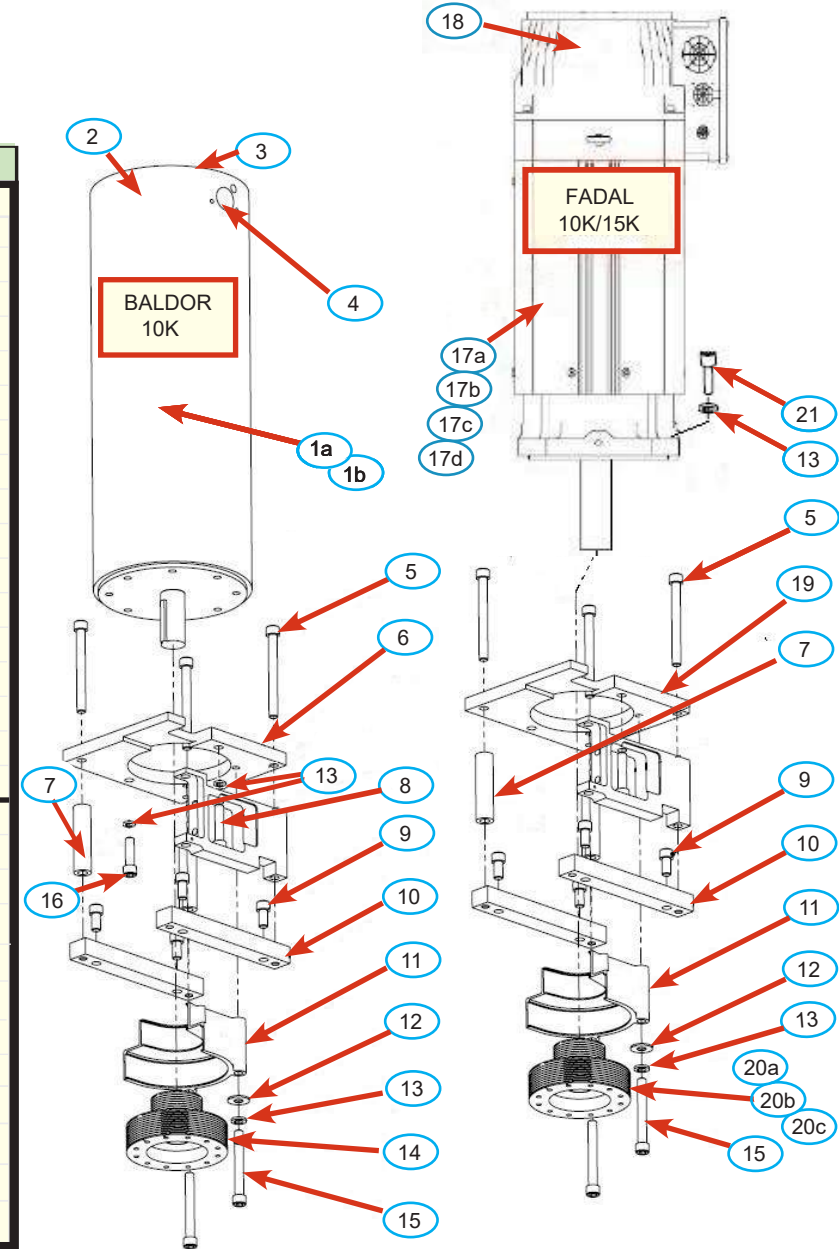
Item	Part Number	Description
1	SCR-00024	SCREW,3/8-16 X 6 SHCS [4 REQ]
2	SCR-00043	SCREW,1/4-20 X 3/4 SHCS [4 REQ]
3	ORB-02007	ORIENT BRIDGE PLATE [BLUE]
4	SCR-00219	SCREW,1/4-20 X 5/8 BUTTONHEAD [2 REQ]
5	ORB-02002	LEG, OBRIDGE;LEFT/RIGHT
6	SWT-00001	SENSOR,PROX;8MM [3 REQ]
7	ORB-02003	BLOCK,ORIENT SWITCH MOUNT 8MM
8	SCR-00162	SETSCREW,NYLON TIP;10-32 X 1/2
9	CNX-00006	PLUG,6-PIN MOLEX F
10	CNX-00007	PIN,MALE;AWG16
11	SMT-00164	BRACKET,DUAL SENSOR;DBCYL
12	ORB-02000	ORIENTATION BRIDGE ASSY, [SRS II NON-CTS]



ORIENTATION BRIDGE

Item	Part Number	Description
BALDOR MOTOR		
1a	MTR-02001	*SPINDLE MOTOR,10HP w/ENCODER [NO PLY]
1b	MTR-02002	*SPINDLE MOTOR,15HT w/ENCODER [NO PLY]
2	ENC-02001	ENCODER,ACCUCODER 1000L [BALDOR]
3	FAN-02001	FAN MOTOR,6X6 BALDOR MOTOR
4	MTR-02003	BLOCK,JUNCTION BOX MOUNT
5	SCR-00051	SCREW,1/2-13 X 5 SHCS
6	MTR-02004	PLATE,MOTOR;10HP/15HT BALDOR
7	MTR-02005	STAND-OFF TUBE;4.0 10K/15K [2 REQD]
8	SCR-00011	SCREW,1/2-13 X 2.25 HEXCAP
9	SCR-00030	SCREW,1/2-13 X 1 SHCS [4 REQD]
10	MTR-02006	MOUNT BAR,NON-VULCANIZED
11	BEL-02001	BELT GUIDE,SPINDLE MOTOR
12	SCR-00001	HARDWASHER,1/2 ID [3/4 OD -125 THK] [DISCONTINUED]
13	SCR-00002	LOCKWASHER, 1/2
14	PUL-02001	PULLEY,SPINDLE MOTOR;BALDOR 10K
15	SCR-00013	SCREW,1/2-13 X 4 SHCS
16	SCR-00010	SCREW,1/2-13 X 1.75 HEXCAP
FADAL MOTOR		
17a	MTR-02034	*SPINDLE MOTOR,FADAL 10HP [NO PULLEY]
17b	MTR-02035-G1	*SPINDLE MOTOR,FADAL 10K/15K 15HT [GEN. 1] [NO PULLEY]
17c	MTR-02035-G2	*SPINDLE MOTOR,FADAL 10K/15K 15HT,W/WOODRUFF KEY,SYN. ENC. [GEN. 2] [NO PULLEY]
17d	MTR-02036	*SPINDLE MOTOR,FADAL 10K/15K 15HT, 48 MM SHAFT, SYN. ENC. [NO PULLEY]
18	FAN-02013	FADAL SPINDLE MOTOR COOLING FAN
19	MTR-02010	PLATE, MOTOR; FADAL 10HP, 15HT [10K/15K]
20a	PUL-02005	PULLEY,FADAL MOTOR;10K/15K W/KEY
20b	PUL-02005-M	PULLEY,FADAL MOTOR;10K/15K W/METRIC KEY (STEPPED)
20c	PUL-02005-WKY	PULLEY,FADAL MOTOR;10K/15K W/WOODRUFF KEY
20d	PUL-02015M/48	PULLEY,FADAL MOTOR, 48 MM; 10K/15K [FITS MTR-02036]
21	SCR-00221	SCREW,1/2-13 X 1.25 HEXCAP, GR5

* SPINDLE MOTOR CAN BE ORDERED WITH PULLEY AND BALANCED FOR AN ADDITIONAL CHARGE

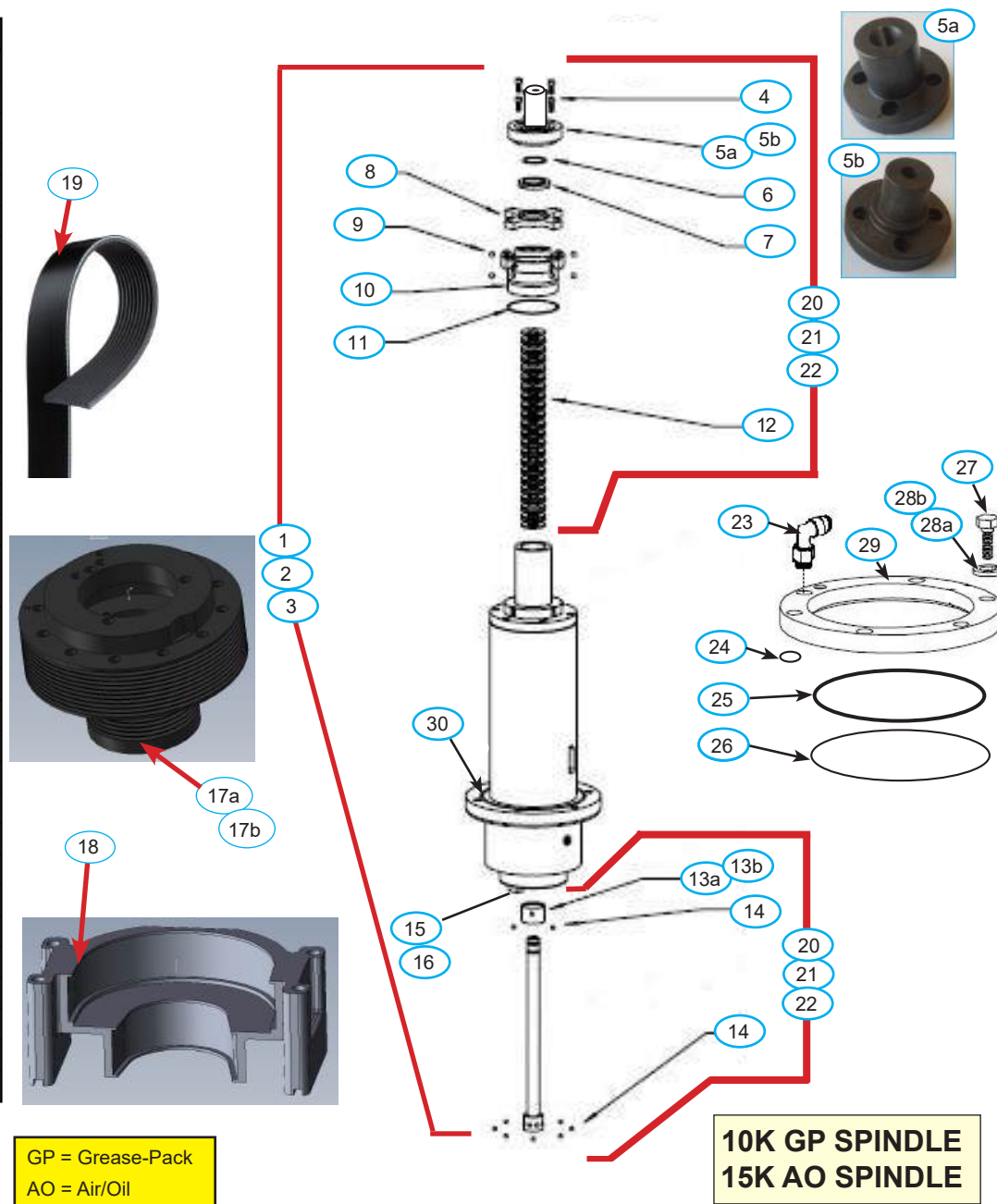


SPINDLE MOTOR

Item	Part Number	Description
1	SPN-02022	SPINDLE ASSEMBLY, 10K, GREASE PACK, DUAL RANGE
2	SPN-02004*	SPINDLE ASSEMBLY, 15K, AIR/OIL, DUAL RANGE
3	SPN-02005*	SPINDLE ASSEMBLY, 15K, GREASE PACK, DUAL RANGE
4	SCR-00167	SCREW, M4-0.7 X 14MM SHCS
5a	DRB-02004	KNOCKOOUT CAP; 10K/15K, NON-CTS, 40 TAPER
5b	DRB-02015	KNOCKOOUT CAP; 10K/15K, CTS, 40 TAPER
6	SEL-00029	O-RING, VITON, 16MM ID X 2MM
7	DRB-02012	RETAINER CLIP, LDB, 40 TAPER [PK/2]
8	DRB-02011	SPIDER, LDB, 40 TAPER
9	BRG-02013	BALL, 1/4 HARDENED [4 REQUIRED]
10	DRB-02026	SPRING PILOT, SERIES ii [TALL]
11	SEL-00009	O-RING, VITON; 1.125 ID X 3/32
12	DRB-02017	BELLEVILLE SPRING WASHERS, DRAWBAR [PK/44]
13a	DRB-02008	FLOATER, 40T, LONG [26MM]
13b	DRB-02043	FLOATER, 40T, SHORT [21MM]
14	BRG-02012	BALL, 3/16 HARDENED [10 REQUIRED]
15	SPN-02026	SPINDLE NOSE KEY, SHORT
16	SPN-02027	SPINDLE NOSE KEY, LONG
17a	PUL-02002	PULLEY, SPINDLE; 10K/15K W/ PIN
17b	PUL-02006	PULLEY, SPINDLE; 10K/15K NO PIN
18	BEL-02002	BELT GUIDE; SPINDLE
19	BEL-02000	BELT; POZI-DRIVE; 10K/15K
20	DRB-02023	DRAWBAR KIT, 40T, 10K, SERIES II; NON-COOLANT-THRU [16.8]
21	DRB-02027/10K	DRAWBAR KIT, 40T, 10K; NON-CTS/CTS COMPATIBLE [ITEMS 4-14]
22	DRB-02027/15K	DRAWBAR KIT, 40T, 15K; NON-CTS/CTS COMPATIBLE [ITEMS 4-14]
23	PLM-02097	FITTING, 10MM QD X 1/8NPT ELL**
24	SEL-00021	O-RING, VITON; 3/8 ID X 1/16
25	SEL-00012	O-RING, VITON; 4.50 ID X 1/8
26	SEL-00004	O-RING, VITON; 4.75 X 1/16
27	SCR-00061	SCREW, 3/8-16 X 1.25 GR8 SHCS
28a	SCR-00118	WASHER, BRONZE ; 3/8 ID [USE W/ ALUMINUM RING]
28b	SCR-00004	LOCK WASHER; 3/8 ID [USE W/ STEEL RING]
29	SPN-02002	RETAINING RING, ADAPTER; SPINDLE
30	SEL-00011	O-RING, 160; VITON, 5.25 ID X 3/32

* OPTIONAL

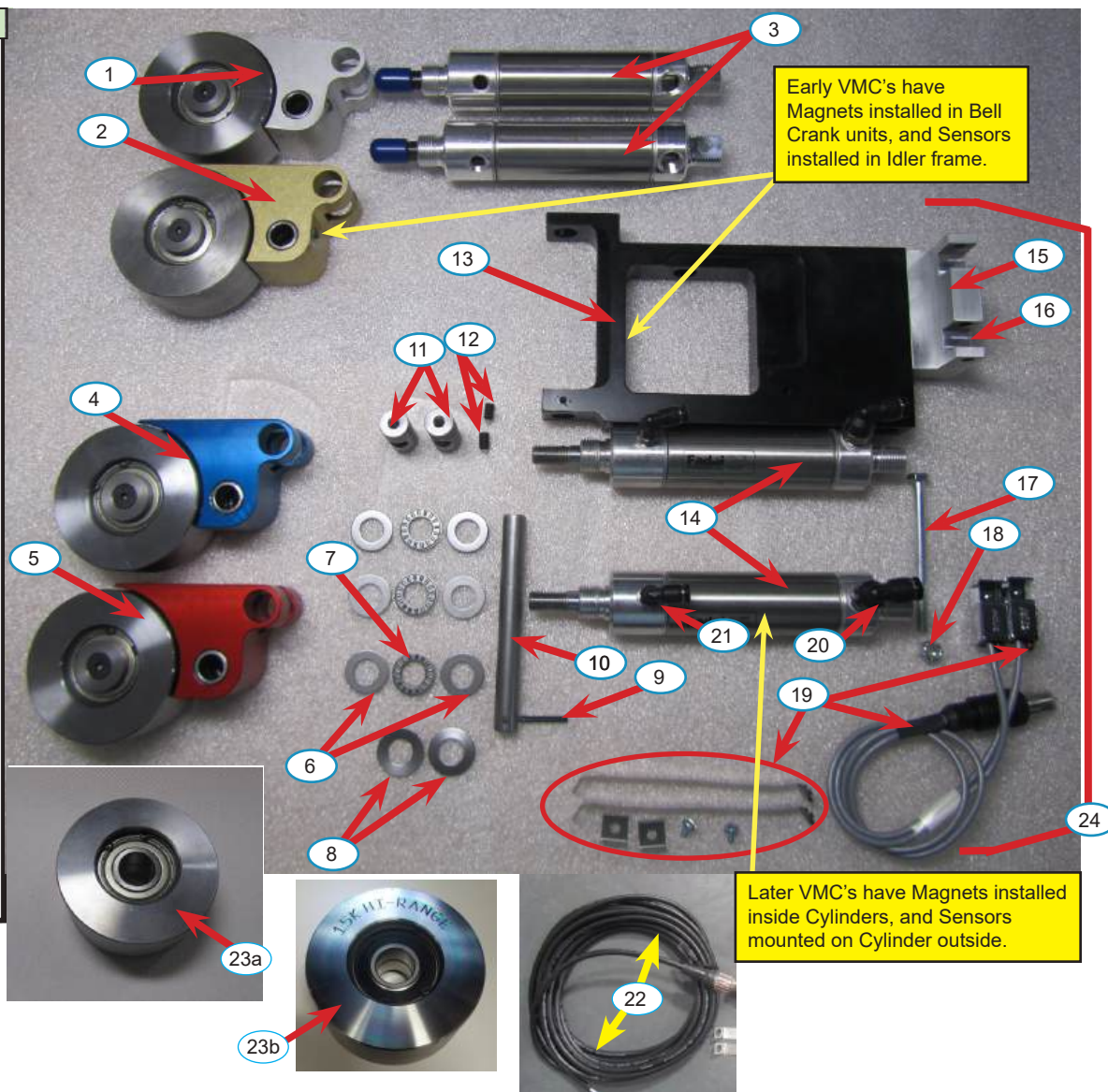
**NOTE: Relocated to right side of headstock casting on some 2018 & all later year models [See Pg. 20]



GP = Grease-Pack
AO = Air/Oil

**10K GP SPINDLE
15K AO SPINDLE**

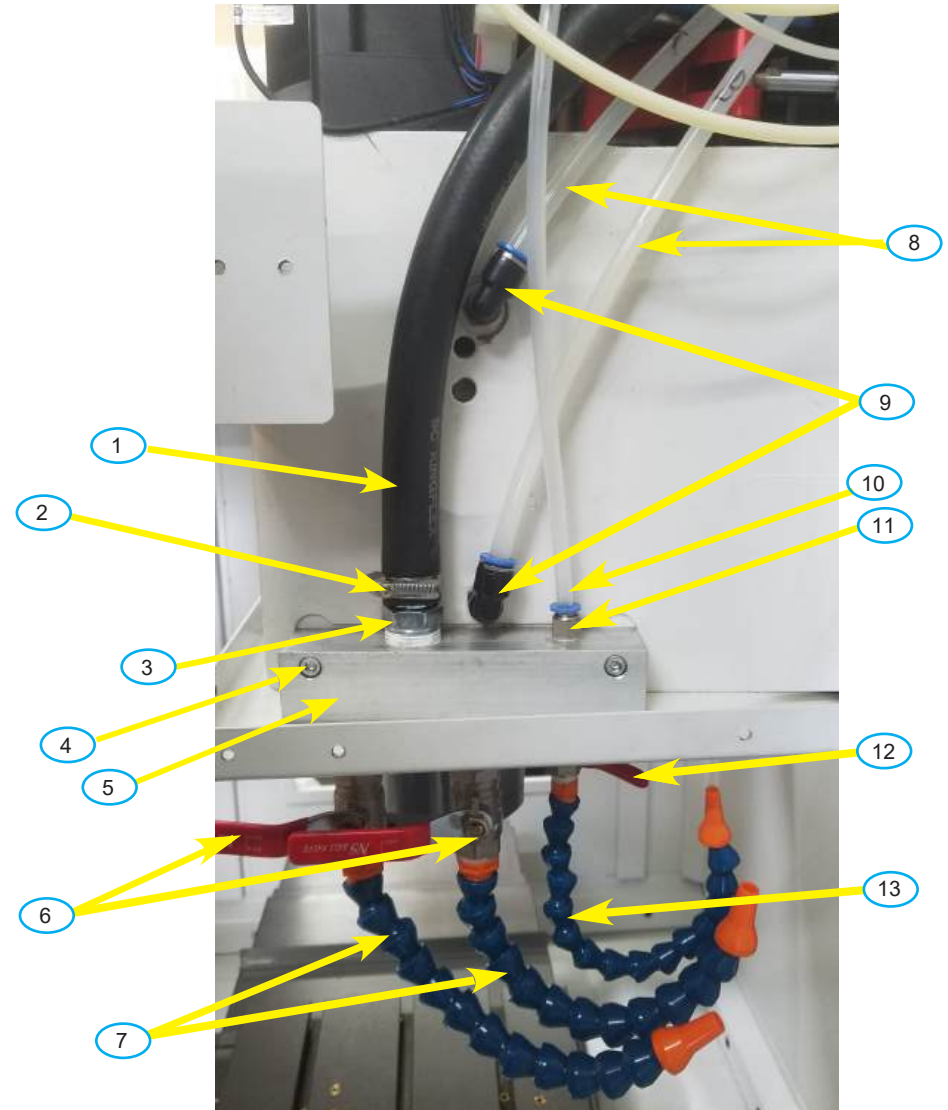
Item	Part Number	Description
For early VMC models with IDL-02000 assembly:		
1	IDL-02011	IDLER BELL CRANK/ROLLER ASSY;SILVER-UPPER
2	IDL-02010	IDLER BELL CRANK/ROLLER ASSY;GOLD-LOWER
3	CYL-02005	CYLINDER,HYD;[NO MAGNET] <i>NLA: USE CYL-02007</i>
For later VMC models with IDL-02013 assembly:		
4	IDL-02016	IDLER BELL CRANK/ROLLER ASSY; BLUE-UPPER
5	IDL-02017	IDLER BELL CRANK/ROLLER ASSY; RED-LOWER
6	BRG-02002	THRUST WASHER,IDLER PIVOT [6 REQ'D]
7	BRG-02001	THRUST BEARING,IDLER PIVOT [3 REQ'D]
8	HDW-02003	BELLEVILLE SPRING
9	HDW-02002	PIN,ROLL; 1/8 DIA X 1
10	IDL-02003	SHAFT,PIVOT;IDLERS
11	IDL-02007	ROD END,CYLINDER PIVOT
12	SCR-00039	SETSCREW,1/4-20 X 3/8 NYLON TIP
13	IDL-02015	FRAME,IDLER ASSY [10HP, 15HT OR 20VHT]
14	CYL-02007	CYLINDER,HYD;2-PORT [w/MAGNET]
15	IDL-02005	MOUNT BRACKET,CYLINDERS
16	SCR-00043	SCREW, 1/4-20 X 3/4 SHCS
17	SCR-00018	SCREW,1/4-20 X 3.25 HEXCAP
18	SCR-00036	NUT,1/4-20 NYLOCK
19	SWT-00031	SENSORS/HARNESS,MAGNETIC IDLER CYL
20	PLM-02092	FITTING,6MM QD X 1/4MPT ELL
21	PLM-02012	FITTING,5/32QD/4MMQD X 1/8MIPT ELL
22	WIR-02160	CABLE/CONNECTOR,IDLER CYLINDERS;5M
23a	IDL-02012	IDLER ROLLER W/BEARINGS [HI OR LOW]
23b	IDL-02012-15K	IDLER ROLLER W/BEARINGS [15K HI RANGE]
24	IDL-02013	COMPLETE IDLER ASSY [INCL. ITEMS #4-#21]



IDLER ASSEMBLY

Item	Part Number	Description
1	PLM-02071	HOSE, 3/4", BRAIDED
2	HDW-02011	HOSE CLAMP; WORM, 1"
3	PLM-02182	FITTING; 3/4" BARB X 3/4" MIPT
4	SCR-00188	SCREW, M6-1.0 X 40MM SHCS [2 REQ]
5	CNT-02031	COOLANT MANIFOLD BLOCK
6	PLM-02165	BALL VALVE, 1/2 X 1/2NPT, LEVER HANDLE
7	PLM-02146	1/2 PT FLEXLINE [12 LINKS]
8	PLM-02084	10MM TUBING
9	PLM-02087	FITTING, 10MM QD X 3/8NPT ELL *
10	PLM-02143	TUBING, 8MM
11	PLM-02184	FITTING, 8MMQD X 1/4MIPT STR
12	PLM-02183	1/4FIPT X 1/4FIPT, LEVER HANDLE
13	PLM-02134	1/4 PT FLEXLINE [15 LINKS]

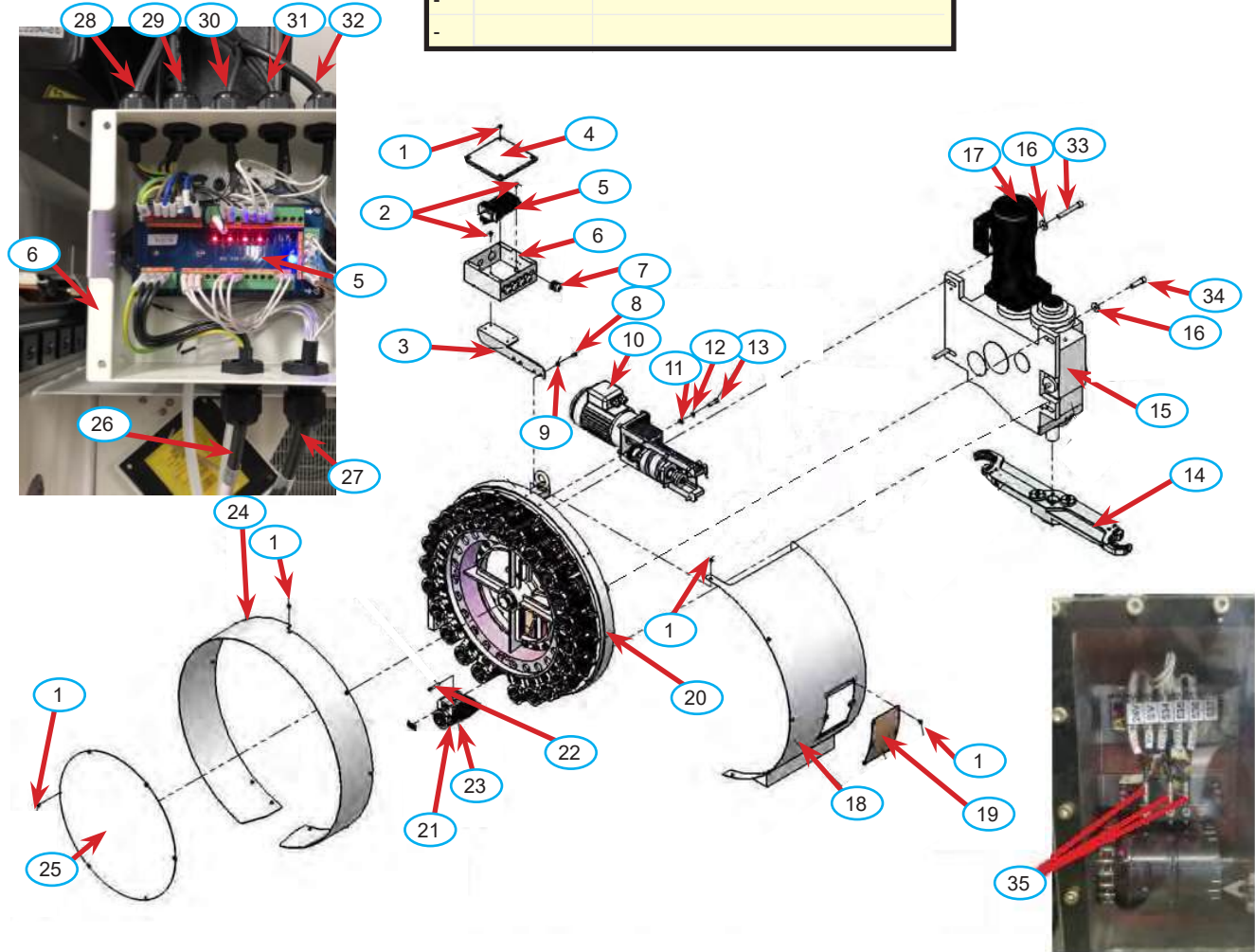
**NOTE: Upper fitting relocated from upper spindle retaining ring on some 2018 & all later year models [See pg. 18]*



HEAD PLUMBING

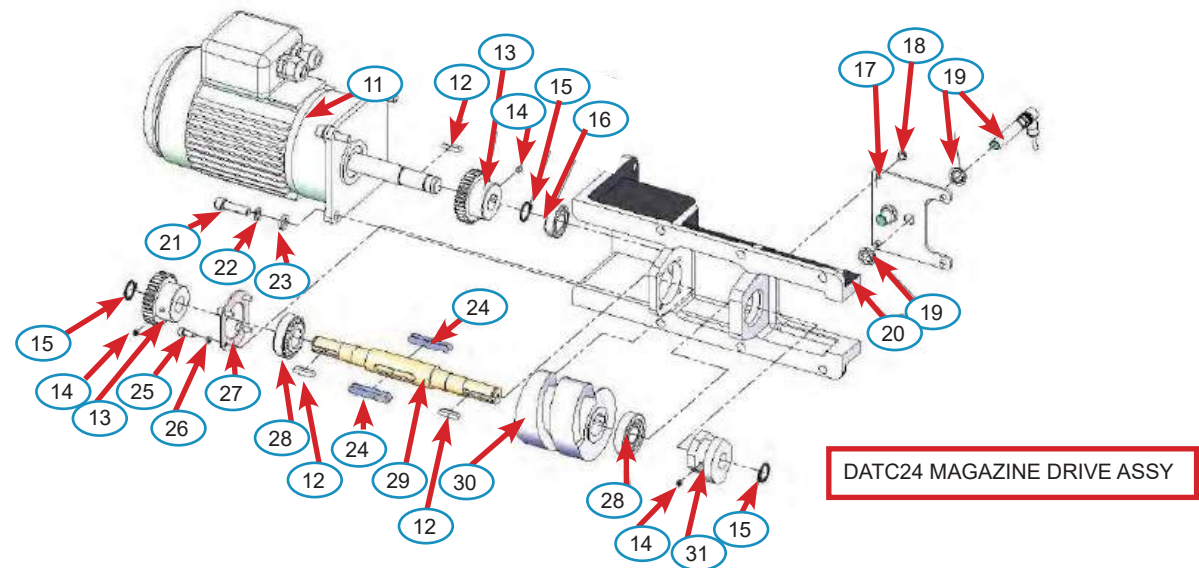
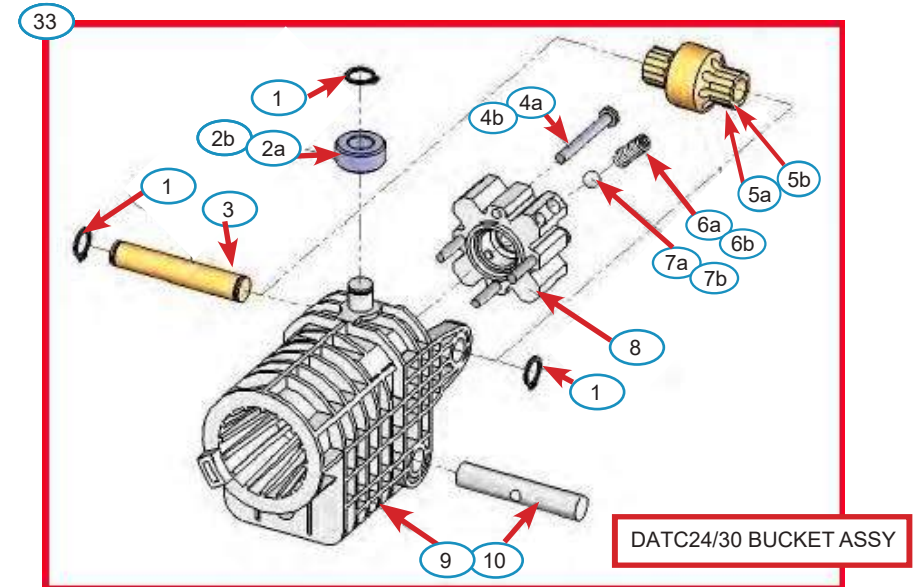
Item	Part Number	Description
1	SCR-00171	SCREW,M5-0.8 X 8MM PANHDCS
2	SCR-00152	SCREW,M5-0.8 X 10MM SHCS
3	ATC-02079	SUPPORT,JUNCTION BOX
4	CVR-02112	COVER,JUNCTION B
5	PCB-02011	INTERFACE BOARD,DATC
6	ELE-04030	JUNCTION BOX,ELECTRICAL
7	CNX-00043	CABLE STRAIN RELIEF
8	SCR-00067	SCREW,M6-1.0 X 10MM SHCS
9	SCR-00140	FLATWASHER,M6
10	[SEE PG. 22]	MAGAZINE DRIVE ASSEMBLY
11	SCR-00141	FLATWASHER,M8
12	SCR-00139	LOCKWASHER,M8
13	SCR-00060	SCREW,M8-1.25 X 30MM SHCS
14	[SEE PG. 24]	TOOL ARM ASSEMBLY
15	ATC-02080	TRANSMISSION ASSEMBLY
16	SCR-00147	WASHER,THICK;M12
17	MTR-02061	ARM MOTOR,DATC24
18	ATC-02081	FRONT COVER,MAGAZINE DATC24
19	ATC-02082	SENSOR WINDOW, DATC24
20	[SEE PG. 23]	MAGAZINE ASSEMBLY
21	[SEE PG. 22]	TOOL BUCKET ASSEMBLY
22	SCR-00188	SCREW, M6-1.0 X 40MM SHCS
23	LBL-02076	BUCKET NUMBERS [SET/24]
24	ATC-02083	COVER EXTENSION, DATC24
25	ATC-02084	MAGAZINE WINDOW, DATC24
26	WIR-02200	CABLE,3-PH PWR; CNTRL TO ATC
27	WIR-02201	CABLE, ATC SENSORS TO CNTRL
28	WIR-02202	CABLE, PWR TO MAGAZINE MTR
29	WIR-02203	CABLE, PWR TO DATC ARM MTR
30	WIR-02204	CABLE,BUCKET UP/DOWN SENSR
31	WIR-02205	CABLE,INDEX/ORIGIN SENSOR
32	WIR-02206	CABLE, ROTATION SENSOR
33	SCR-00302	SCREW, M12-1.75X90L [2 REQ'D]

Item	Part Number	Description
34	SCR-00247	SCREW,M12-1.75X45L [2 REQ'D]
35	SWT-00025	SENSOR; ATC 24/30, ARM POS.
-		
-		



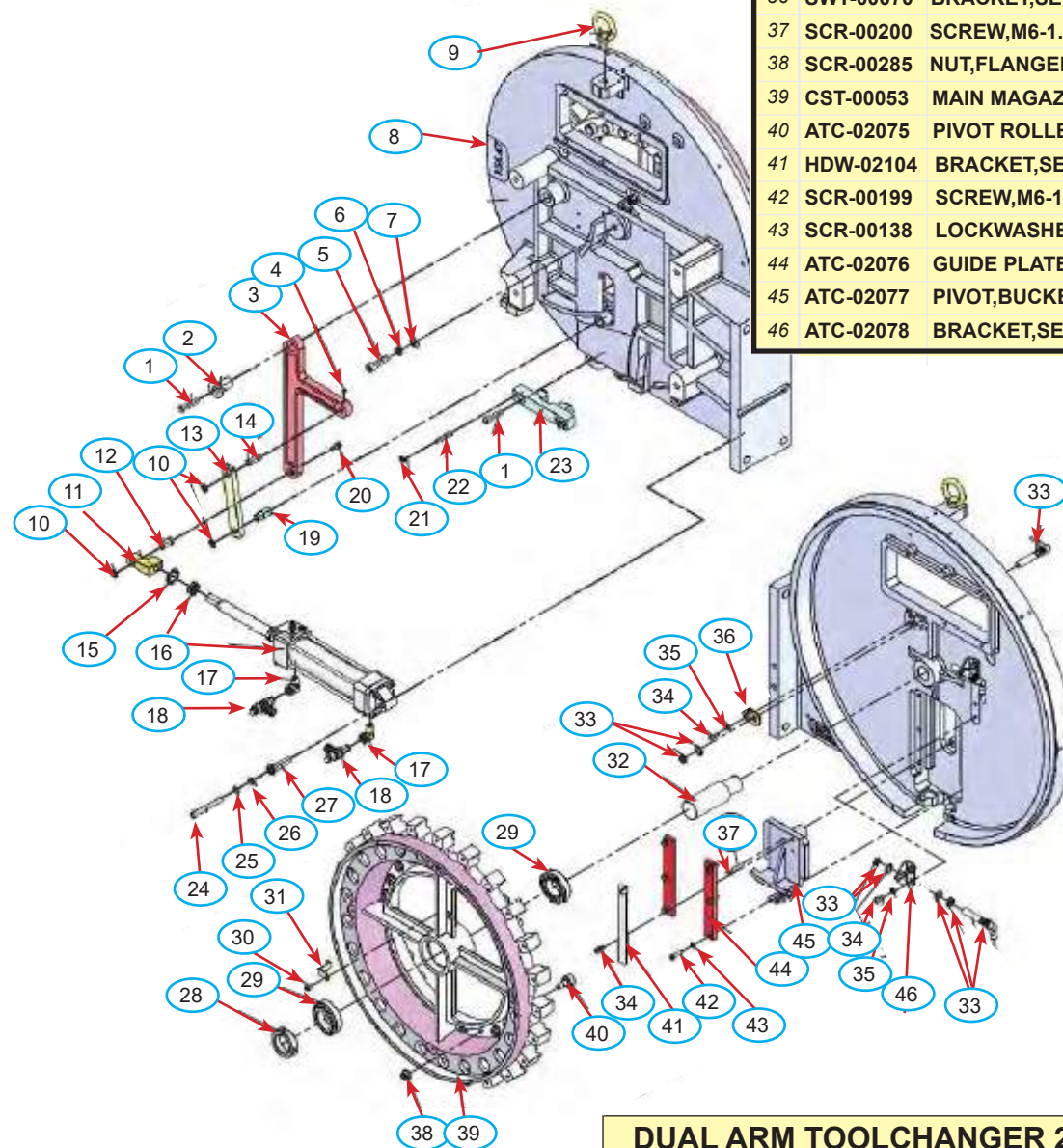
DUAL ARM TOOLCHANGER 24

Item	Part Number	Description
1	HDW-02055	RETAINING RING, M12
2a	ATC-02022-24	ROLLER, GUIDE;DATC24 BUCKET
2b	ATC-02022-30	ROLLER, GUIDE;DATC30 BUCKET
3	ATC-02023	PIN, BUCKET DRIVE; MAGAZINE ASSY
4a	SCR-00319	SCREW, M5-0.8 X 45MM, PHILLIPS [24T]
4b	SCR-00318	SCREW, M4-0.7 X 8MM, PHILLIPS [30T]
5a	ATC-02024-24	ROLLER, DRIVE; ATC BUCKET PIVOT-24T ATC
5b	ATC-02024-30	ROLLER, DRIVE; ATC BUCKET PIVOT-30T ATC
6a	HDW-02056-BT	SPRING, TOOL RETENTION; BT ATC
6b	HDW-02056-CT	SPRING, TOOL RETENTION; CT ATC
7a	ATC-02050	BALL, STEEL; TOOL RETENTION; ATC24/30, CT
7b	HDW-02057	BALL, STEEL; TOOL RETENTION; ATC24/30, BT
8	ATC-02003	ENDSOCKET, TOOL BUCKET, DATC24
9	ATC-02010	TOOL BUCKET, DATC24/30; CAT/BT
10	ATC-02026	PIN, TOOL BUCKET; DATC24
11	MTR-02060	MOTOR, MAGAZINE; DATC24
12	HDW-02047	KEY, DRIVE GEAR; MAGAZINE MOTOR
13	HDW-02059	GEAR, MAGAZINE MOTOR/DRIVE SHAFT [24T]
14	SCR-00174	SETSCREW, M5-0.8 X 5MM
15	HDW-02060	RETAINING RING, M18
16	BRG-02047	BEARING, MAGAZINE DRIVE; DATC24
17	HDW-02061	BRACKET, SENSOR; MAGAZINE INDEX
18	SCR-00171	SCREW, M5-0.8 X 8MM PANHEAD SHCS
19	SWT-00007	SENSOR, DATC; 12MM 24VDC
20	ATC-02027	MOTOR MOUNT, MAGAZINE DRIVE; DATC24
21	SCR-00175	SCREW, M8-1.25 X 30MM SHCS
22	SCR-00139	LOCKWASHER, M8
23	SCR-00141	FLATWASHER, M8
24	HDW-02067	KEY, DRIVE; 8MM X 7MM X 50MM
25	HDW-02068	GEAR, MAGAZINE MOTOR/DRIVE SHAFT [30T]
26	SCR-00179	SCREW, M5-0.8 X 12MM SHCS
27	SCR-00180	LOCKWASHER, M5
28	BRG-02048	BEARING COVER, DATC MAGAZINE DRIVE
29	BRG-02049	BEARING, MAGAZINE DRIVE
30	ATC-02030	SHAFT, CAM DRIVE; DATC24 SERIES I / II
31	ATC-02012	WORM DRIVEGEAR, DATC MAGAZINE [24T]
32	ATC-02032	CAM INDEXER, MAG. SENSOR; SRS I / II [24T]
33	ATC-02174	TOOL BUCKET ASSEMBLY



DUAL ARM TOOLCHANGER 24

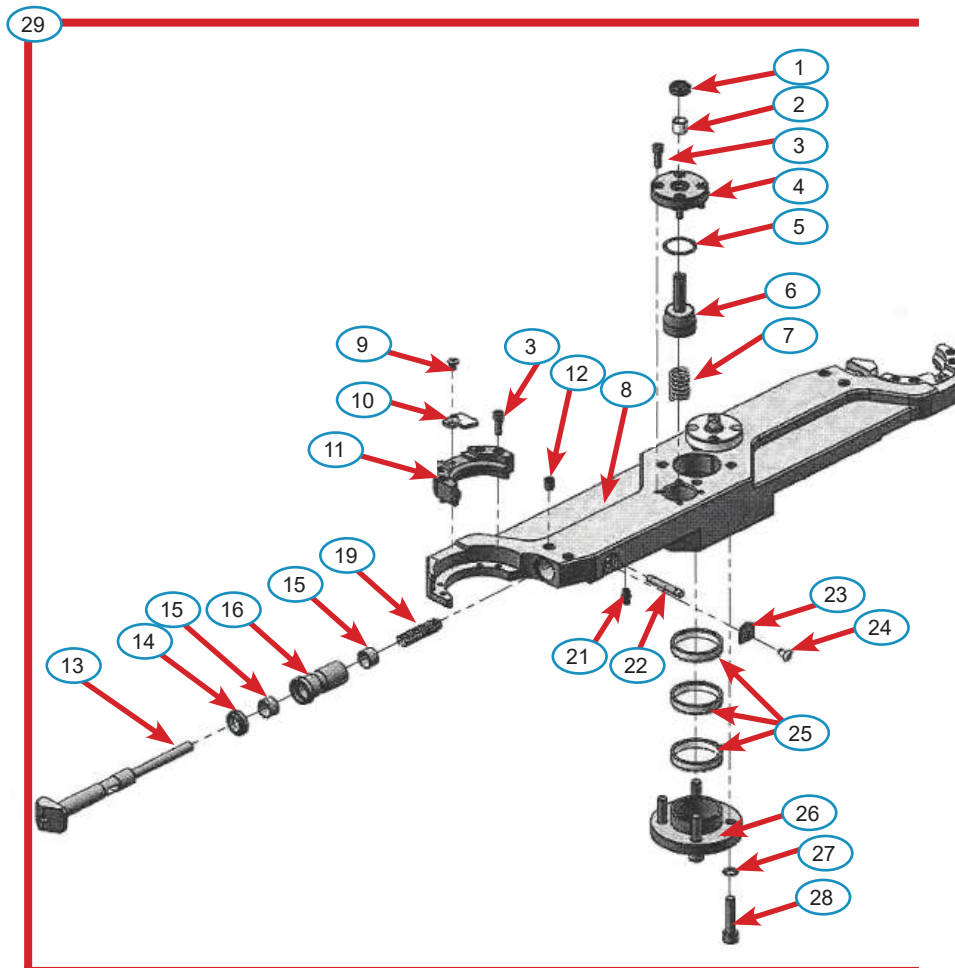
Item	Part Number	Description
1	SCR-00087	SCREW,M8-1.5 X 35MM SOCAP
2	HDW-02098	PIVOT BEARING,LEVER
3	ATC-02071	LEVER,AIR CYLINDER;DATC
4	SCR-00149	SETSCREW,M6-1.0 X 6MM
5	SCR-00117	SCREW,M10-1.5 X 40MM SOCAP
6	SCR-00187	LOCKWASHER,M10
7	SCR-00205	FLATWASHER,M10
8	CST-00052	CASTING,BACK PLATE;DATC24
9	HDW-02099	EYEHOOK,M12
10	HDW-02100	RETAINING RING,12MM
11	CYL-02034	ENDCAP,AIR CYLINDER;DATC24
12	CYL-02035	PIVOT SHAFT,AIR CYLINDER
13	ATC-02072	LEVER,BUCKET DOWN;DATC24
14	HDW-02101	PIN,BUCKET DOWN LEVER
15	HDW-02102	BELLEVILLE WASHER,M16
16	CYL-02036	CYLINDER,BUCKET UP/DN DATC
17	PLM-02164	FITTING,STREET ELL,1/4 PT
18	VLV-02033	VALVE,FLOW CONTROL
19	HDW-02103	PIVOT PIN,BUCKET DN LEVER
20	SCR-00064	SCREW,M6-1.0 X 16MM SOCAP
21	SCR-00284	NUT,FLANGED;M8-1.25
22	SCR-00233	SETSCREW,M8-1.25 X 40MM
23	ATC-02073	CLAMP,TOOL BUCKET POSITION
24	SCR-00239	SCREW,M8-1.25 X 70MM SOCAP
25	SCR-00139	LOCKWASHER,M8
26	SCR-00141	FLATWASHER,M8
27	CYL-02037	PIVOT PIN,AIR CYLINDER;DATC
28	BLS-02030	NUT,M40-1.5
29	BRG-02108	BEARING,MAGAZINE SPINDLE
30	SCR-00067	SCREW,M6-1.0 X 10MM SOCAP
31	SWT-00068	BRACKET,SENSOR
32	ATC-02074	SHAFT,MAGAZINE SPINDLE
33	SWT-00069	SENSOR,M12 24VDC



Item	Part Number	Description
34	SCR-00136	SCREW,M6-1.0 X 12MM SOCAP
35	SCR-00140	FLATWASHER,M6
36	SWT-00070	BRACKET,SENSOR
37	SCR-00200	SCREW,M6-1.0 X 35MM SOCAP
38	SCR-00285	NUT,FLANGED;M10-1.25
39	CST-00053	MAIN MAGAZINE
40	ATC-02075	PIVOT ROLLER,MAGAZINE;DATC
41	HDW-02104	BRACKET,SENSOR;TOOL DOWN
42	SCR-00199	SCREW,M6-1.0 X 20MM SOCAP
43	SCR-00138	LOCKWASHER,M6
44	ATC-02076	GUIDE PLATE,PIVOT;BUCKET DN
45	ATC-02077	PIVOT,BUCKET DOWN
46	ATC-02078	BRACKET,SENSOR;TOOL

DUAL ARM TOOLCHANGER 24

Item	Part Number	Description
1	SEL-00031	LIP SEAL,18MM OD X 10MM ID X 7MM L
2	BRG-02045	BEARING,12MM OD X 10MM ID X 10MM L
3	SCR-00168	SCREW,M5-0.8 X 16L SHCS
4	ATC-02013	PLUNGER COVER
5	SEL-00033	O'RING
6	ATC-02014	PLUNGER,DATC ARM
7	HDW-02049	SPRING,DATC ARM PLUNGER
8	ATC-02028	ARM CASTING,DATC24 4020B-II 530MM
9	SCR-00128	SCREW,M5-0.8 X 8MM FLATHEAD SHCS
10	ATC-02006	KEY,TOOL;DATC24 CAT[2520-4020B-II] 1 EA
10	ATC-02007	KEY,TOOL;DATC24 BT [2520-4020B-II] 1 EA
11	ATC-02001	GRIPPER,DATC;CAT40 [1 EA] 2520/4020B-II
11	ATC-02002	GRIPPER,DATC;BT40 [1 EA] 2520-4020B-II
12	SCR-00170	SETSCREW,M8-1.25 X 10MM CUP POINT
13	ATC-02029	LATCH ROD,DATC ARM;2520R/4020B-II
14	SEL-00032	LIP SEAL,22MM OD X 14MM ID X 7MM L
15	BRG-02046	BEARING,14MM OD X 16MM ID X 10MM L
16	ATC-02017	TUBE,BEARING HOLDER DATC ARM
19	HDW-02051	SPRING,LATCH ROD;DATC 2520R-8030B-II
21	HDW-02053	ZERK FITTING,DATC ARM;GREASE
22	HDW-02054	PIN,DATC LATCH ROD;2520-4020B-II
23	ATC-02018	COVER,LATCH ROD PIN
24	SCR-00171	SCREW,M5-0.8 X 8MM PANHEAD SHCS
25	ATC-02019	TAPERLOCK RINGS,DATC24
26	ATC-02020	TAPERLOCK HOUSING,DATC24
27	HDW-02050	M8 SPRING WASHER
28	SCR-00172	SCREW,M8-1.25 X 35MM SHCS
29	ATC-02057	ARM ASSY, DATC24/30 [NO GRIPPERS]



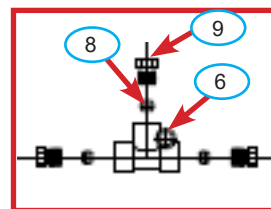
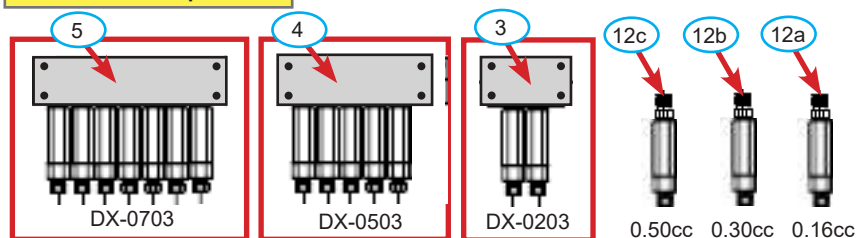
DUAL ARM TOOLCHANGER 24

Item	Part Number	Description
1	LUB-02031	WAYLUBE PUMP
2	LUB-02030	PRESSURE GAUGE; 0-500 PSI
3	LUB-02034-2	MANIFOLD; DX, 2-PORT [NO INJECTORS]
4	LUB-02034-5	MANIFOLD; DX, 5-PORT [NO INJECTORS]
5	LUB-02034-7	MANIFOLD; DX, 7-PORT [NO INJECTORS]
6	LUB-02047	COMPRESSION TEE; 6MM
7	LUB-02048	OIL LINE, COPPER; 6MM X 6' [NOT SHOWN]
8	LUB-02049	FERRULE; 6MM
9	LUB-02050	COMPRESSION NUT; 6MM
10	LUB-02054	FERRULE; 4MM (5/32)
11	LUB-02055	COMPRESSION NUT; 4MM (5/32)
12a	LUB-02035-16	LUBE INJECTOR, DX TYPE; 0.16 CC
12b	LUB-02035-30	LUBE INJECTOR, DX TYPE; 0.30 CC
12c	LUB-02035-50	LUBE INJECTOR, DX TYPE; 0.50 CC

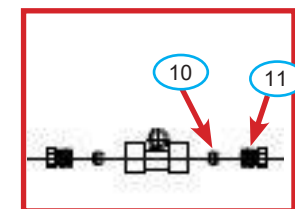


2520R-II DX Series Configuration
DX-0703 (2), DX-0503 (3), DX-0203 (2)

DX Series - 0.3cc per Port



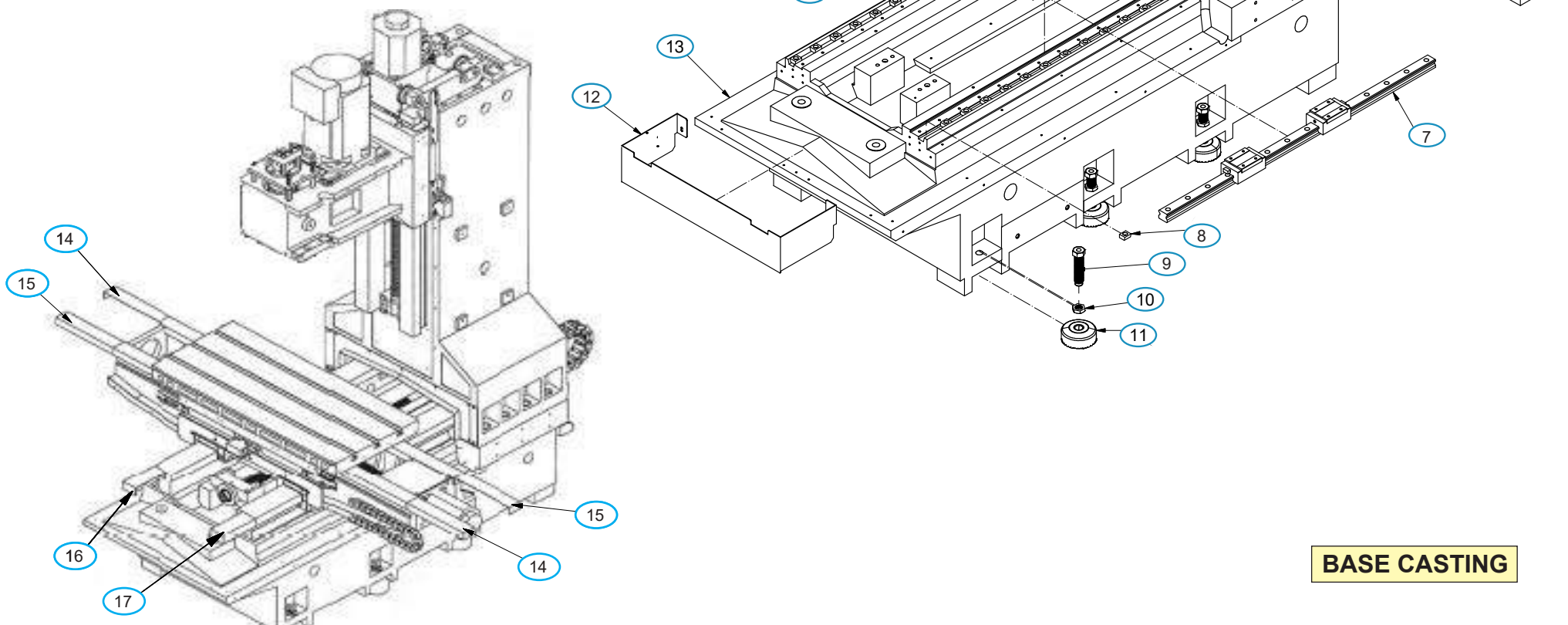
6mm



4mm

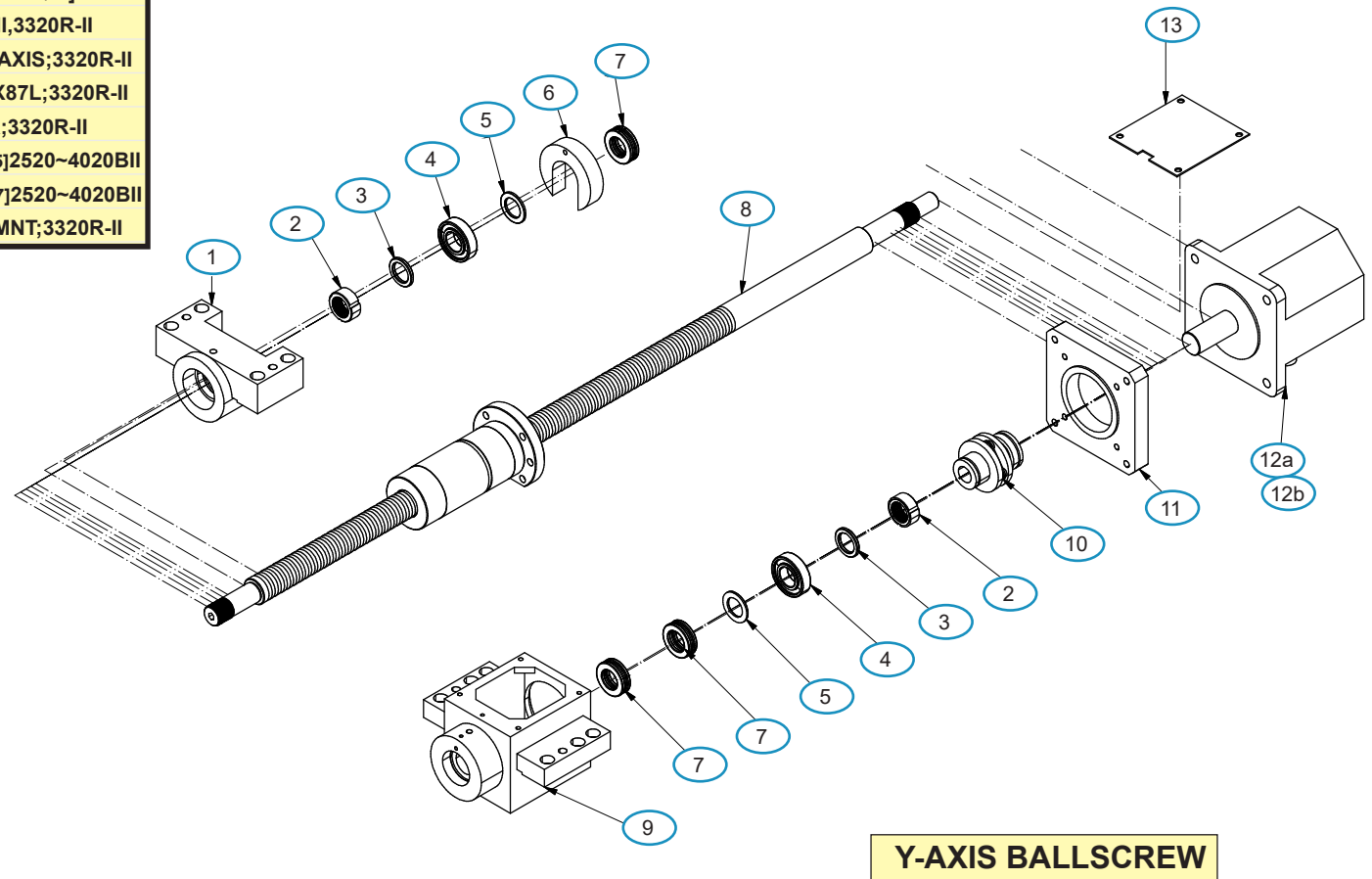
LUBRICATION SYSTEM

Item	Part Number	Description
1	SEE PAGE 27	BALLSCREW ASSY,Y-AXIS;2520/3320R-II
2	BLS-02040	HARD STOP PAD,Y-AXIS;2520/3320R-II
3	BLS-02042	BRACKET,Y-AXIS HARD ST94-38x24x18OP[REAR]
4	CVR-02071	CABLE CARRIER, Y-AXIS; 2520/3320R-II
5	CVR-02064	BRACKET,CABLE CARRIER Y-AXIS 2520RII
6	SMT-00115	DRIP TRAY,Y-AXIS REAR;2520/3320R-II
7	BRG-02050	LINEAR ROLLER GUIDE/TRUCKS,Y;2520RII
8	SCR-00183	NUT,ROLLER GUIDE KR ADJUSTMENT
9	HDW-02063	LEVELING SCREW,2520/4020B-II
10	HDW-02064	LOCKNUT,LEVELING SCREW;2520R-II
11	HDW-02065	FOOTPAD,LEVELING SCREW;2520R-II
12	SMT-00110	SHIELD,2520R-II ~ 4020B-II BASE
13	CST-00014	BASE CASTING,2520/3320R-II
14	CVR-02144	X-AXIS WAY COVER EXTENSION SUPPORT BRACKETS; [SET]
15	CVR-02145	Y-AXIS WAY COVER EXTENSION SUPPORT BRACKETS; [SET]

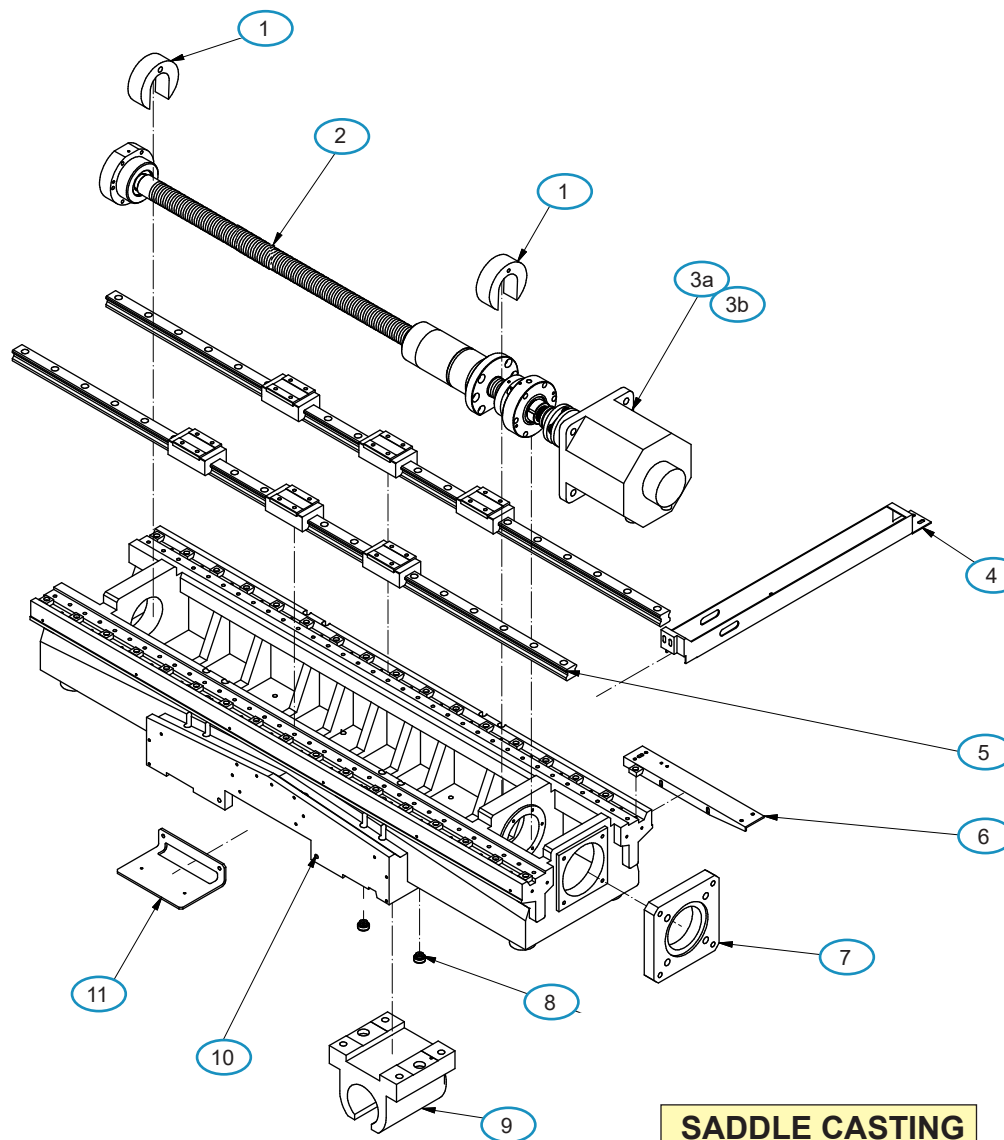


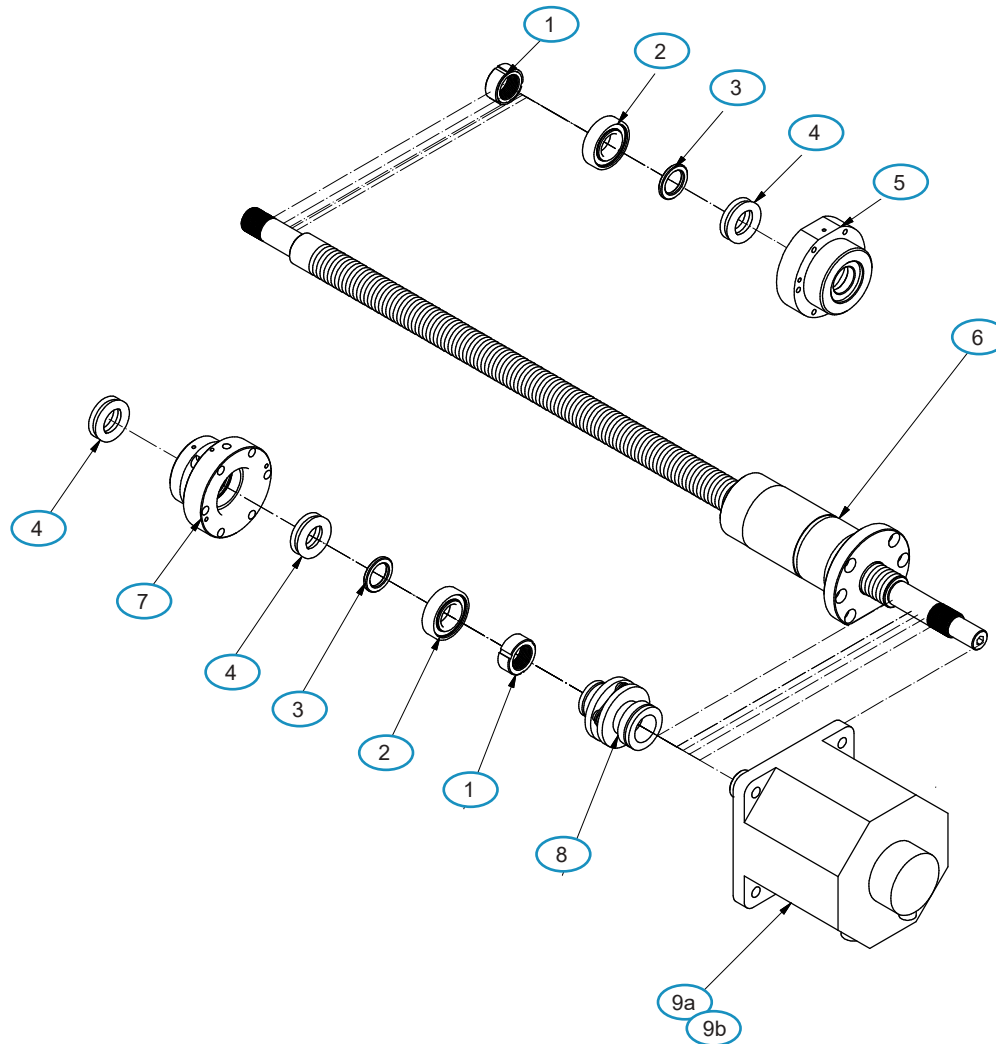
BASE CASTING

Item	Part Numb	Description
1	BLS-02052	BLOCK, TAIL BEARING MOUNT; Y-AXIS
2	BLS-02050	JAM NUT, BALLSCREW [M30 - 1.5]
3	BLS-02053	BRG SPACER, XYZ-AXIS; 2520/3320/4020B
4	BRG-02033	THRUST BEARING, XYZ AXIS; [2 REQ'D]
5	BRG-02052	SPACER, BEARING; Y-AXIS; 3320R-II
6	BLS-02063	HARD STOP PAD, TAIL Y-AXIS; 3320R-II
7	BRG-02032	BALL BEARING, XYZ AXIS; [3 REQ'D]
8	BLS-02013	BALLSCREW, Y-AXIS; 2520R-II, 3320R-II
9	BLS-02051	BLOCK, BEARING MOUNT; Y-AXIS; 3320R-II
10	CPL-00005	MOTOR COUPLER, 25M/35MX87L; 3320R-II
11	MTR-02064	MOUNT PLATE, AXIS MOTOR; 3320R-II
12a	MTR-02052	MOTOR, X/Y AXIS; YSKW[SIG.5] 2520~4020BII
12b	MTR-02118	MOTOR, X/Y AXIS; YSKW[SIG.7] 2520~4020BII
13	CVR-02070	COVER PLATE, Y-AXIS BRG MNT; 3320R-II



Item	Part Number	Description
1	BLS-02060	PAD,HARDSTOP;X-AXIS THRUST;2520R-II
2	[SEE PG.29]	BALLSCREW ASSEMBLY,X-AXIS 2520R-II
3a	MTR-02052	MOTOR,X/Y AXIS;YSKW;2520~4020B-II [SIG.5]
3b	MTR-02118	MOTOR,X/Y AXIS;YSKW;2520~4020B-II [SIG.7]
4	SMT-00116	GUIDE TROUGH,CABLE CARRIER;2520R
5	BRG-02024	CROSS-ROLLERWAY/2 TRKS;X-2520R-II
6	CST-00025	SADDLE EXTENSIONS,X-AXIS;2520R-II
7	MTR-02070	MOTOR MOUNT PLATE,X-AXIS;2520R-II
8	HDW-02073	LOCATING PIN,MOUNT BLOCK;
9	BLS-02062	Y-BALLSCREW BLOCK,MOUNT;3320R-II
10	CST-00024	SADDLE CASTING,2520R-II
11	LUB-02063	BRACKET,MANIFOLD MOUNT;2520R-II

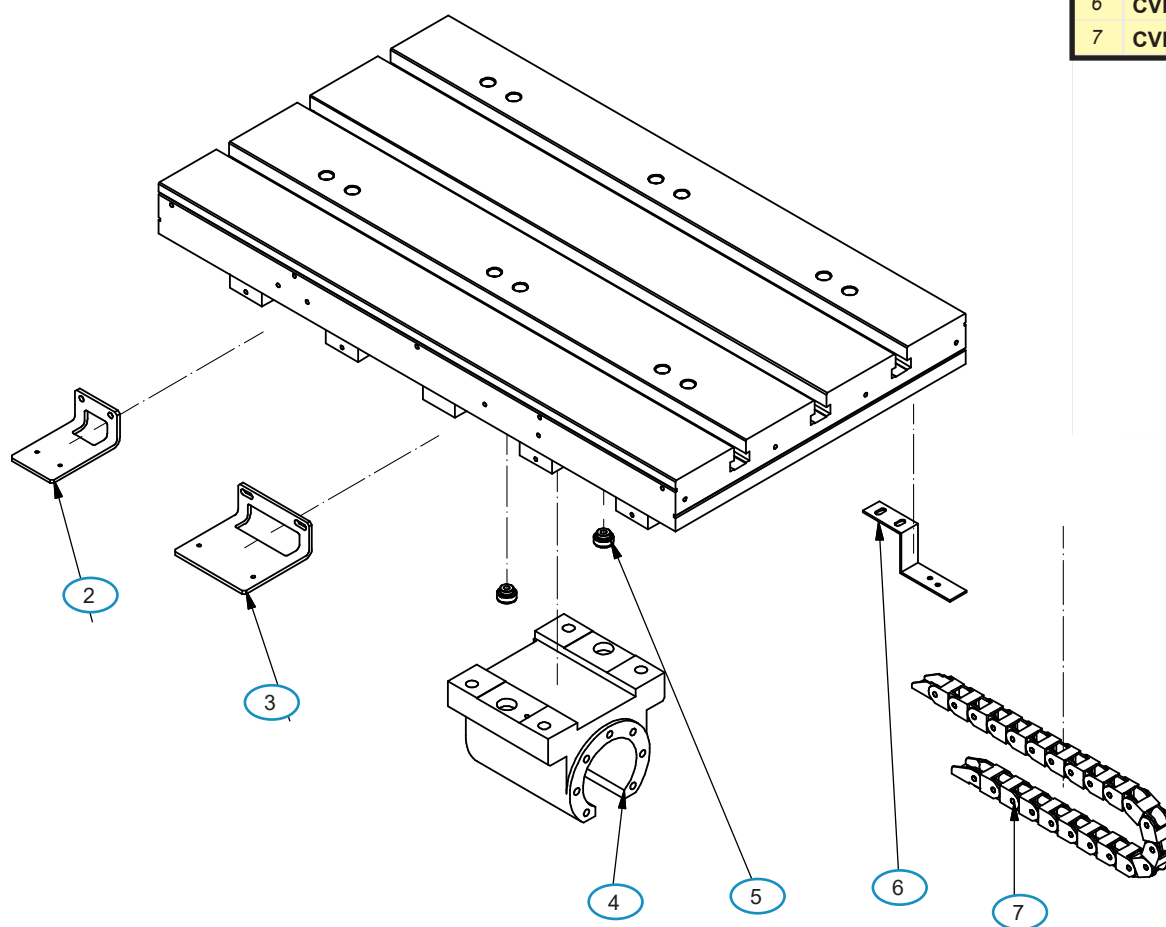




Item	Part Number	Description
1	BLS-02050	JAM NUT,BALLSCREW [M30 - 1.5]
2	BRG-02033	THRUST BEARING,XYZ AXIS;[2 REQ'D]
3	BLS-02053	BRG SPACER,XYZ-AXIS;2520/3320/4020B-II
4	BRG-02032	BALL BEARING,XYZ AXIS;[3 REQ'D]
5	BLS-02056	BEARING BLOCK,X-AXIS;2520/3320R-II
6	BLS-02012	BALLSCREW,X-AXIS;2520R-II
7	BLS-02055	BEARING BLOCK,THRUST;X-AXIS;2520R-II
8	CPL-00005	MOTOR COUPLER,25M/35MX87L;2520R-II
9a	MTR-02052	MOTOR,X/Y AXIS;YSKW 30A3A2S [SIG.5]
9b	MTR-02118	MOTOR,X/Y AXIS;YSKW 30A7A2S [SIG.7]

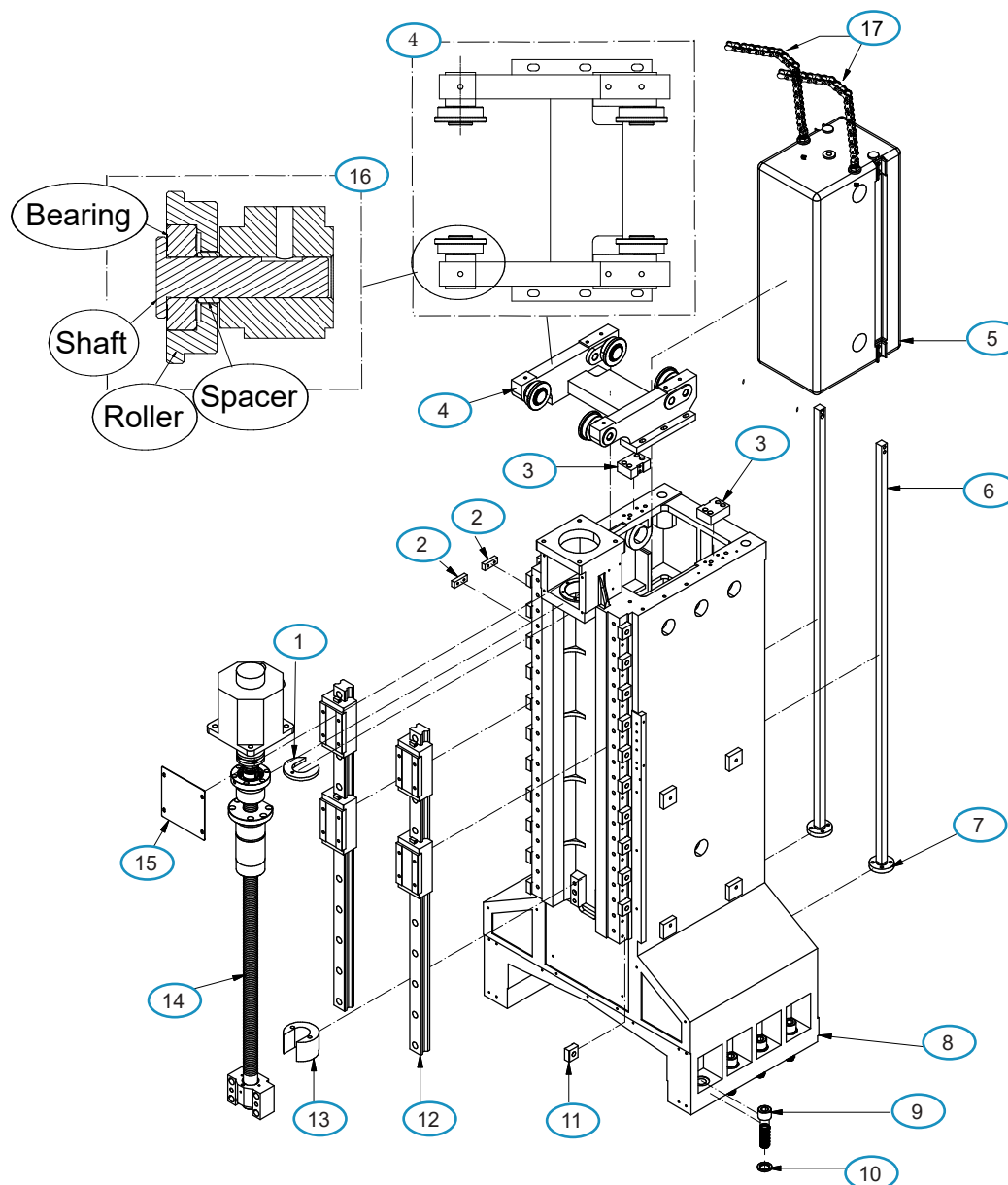
X-AXIS BALLSCREW

Item	Part Number	Description
1	CST-00020	TABLE CASTING,2520R-II
2	LUB-02059	BRACKET,LUBE MANIFOLD;LEFT;2520R-II
3	LUB-02060	BRACKET,LUBE MANIFOLD;RIGHT;2520R-II
4	BLS-02064	BLOCK,BALLNUT MOUNT;2520R-II
5	HDW-02073	LOCATING PIN,BALLNUT MOUNT;2520R-II
6	CVR-02074	BRACKET,CABLE CARRIER;X;2520R-II
7	CVR-02072	CABLE CARRIER,X-AXIS;2520/3320R-II

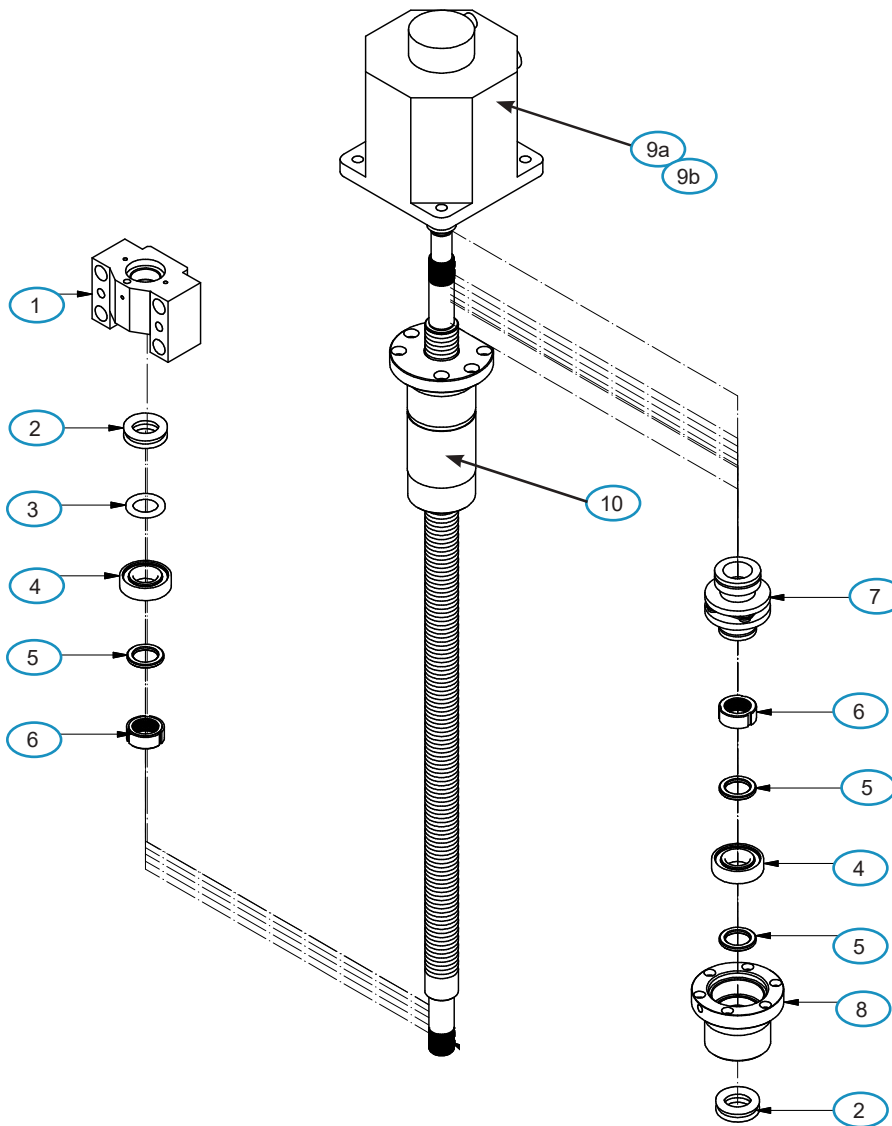


TABLE

Item	Part Number	Description
1	BLS-02065	PAD,HARDSTOP;Z-AXIS THRUST;3320R-II
2	ATC-02033	MOUNT KEYS,DATC;2520/3320/4020B-II
3	CWT-00013	MOUNT BLOCKS,CWT;2520/3320/4020B-II
4	CWT-00014	CWT ROLLER BRACKET ASSEMBLY
5	CWT-00016	CWT BLOCK,2520/3320/4020B-II
6	CWT-00015	CWT GUIDE ROD,STD Z;2520/3320/4020BII
7	CWT-00017	SUPPORT PADS,CWT GUIDE ROD;3320R
8	CST-00017	COLUMN CASTING;STD Z;2520/3320R-II
9	SCR-00181	SCREW,M26
10	SCR-00182	PLATE WASHER,26MM X 40MM X 5MM
11	SCR-00185	SQUARENUT;ROLLERWAY ADJUSTMENT
12	BRG-02052	LINEAR ROLLERWAY/TRKS;STD Z 3320R
13	BLS-02066	PAD,HARDSTOP;Z-AXIS TAIL;3320R-II
14	[SEE PG. 32]	STD Z-AXIS BALLSCREW ASSEMBLY
15	CVR-02069	COVER PLATE,Z-AXIS BRG MOUNT;3320R
16	CWT-00019	COUNTERWEIGHT ROLLER ASSEMBLY
17	CWT-00020	COUNTERWEIGHT CHAIN (PAIR)



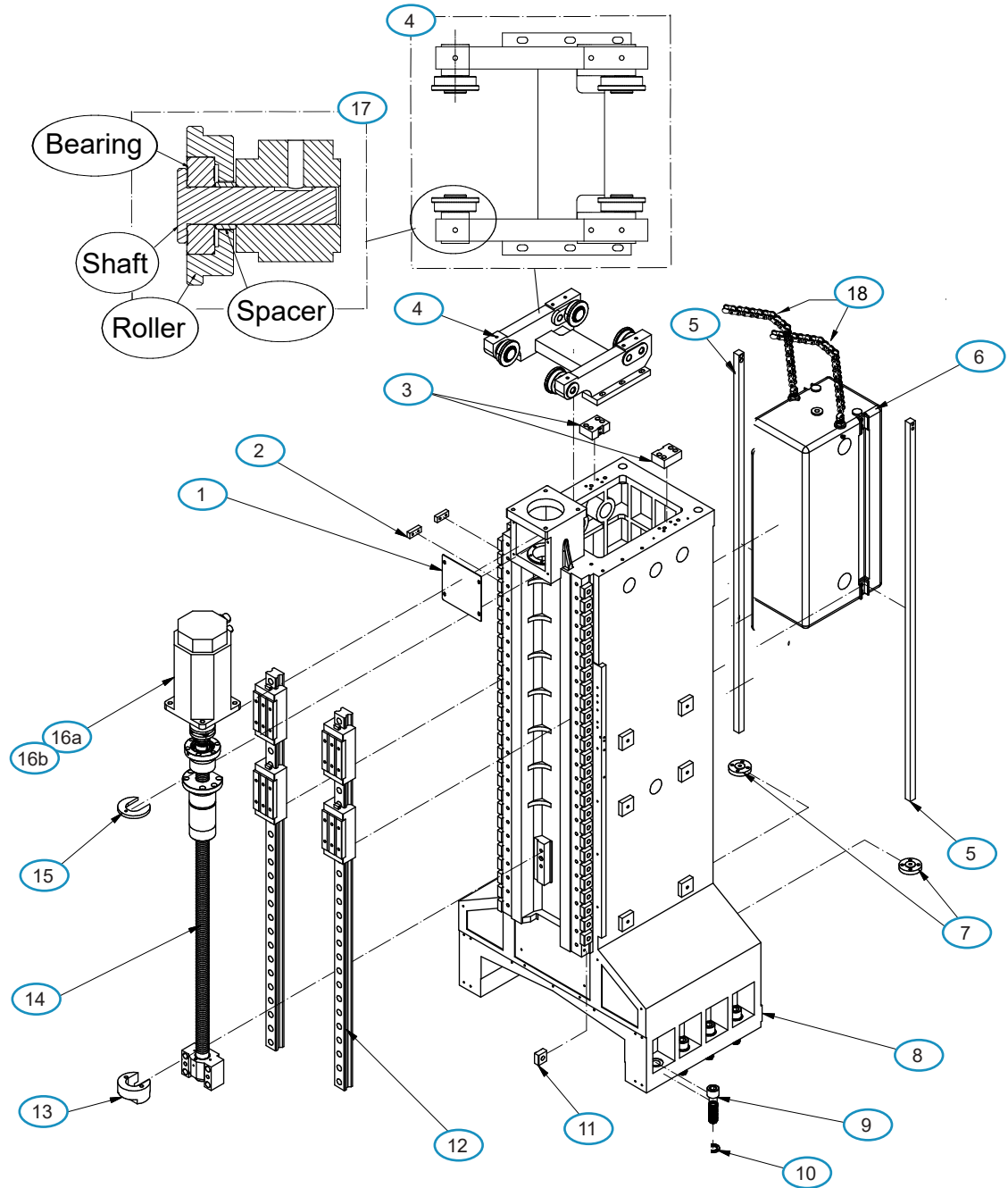
COLUMN AND COUNTERWEIGHT - STANDARD Z



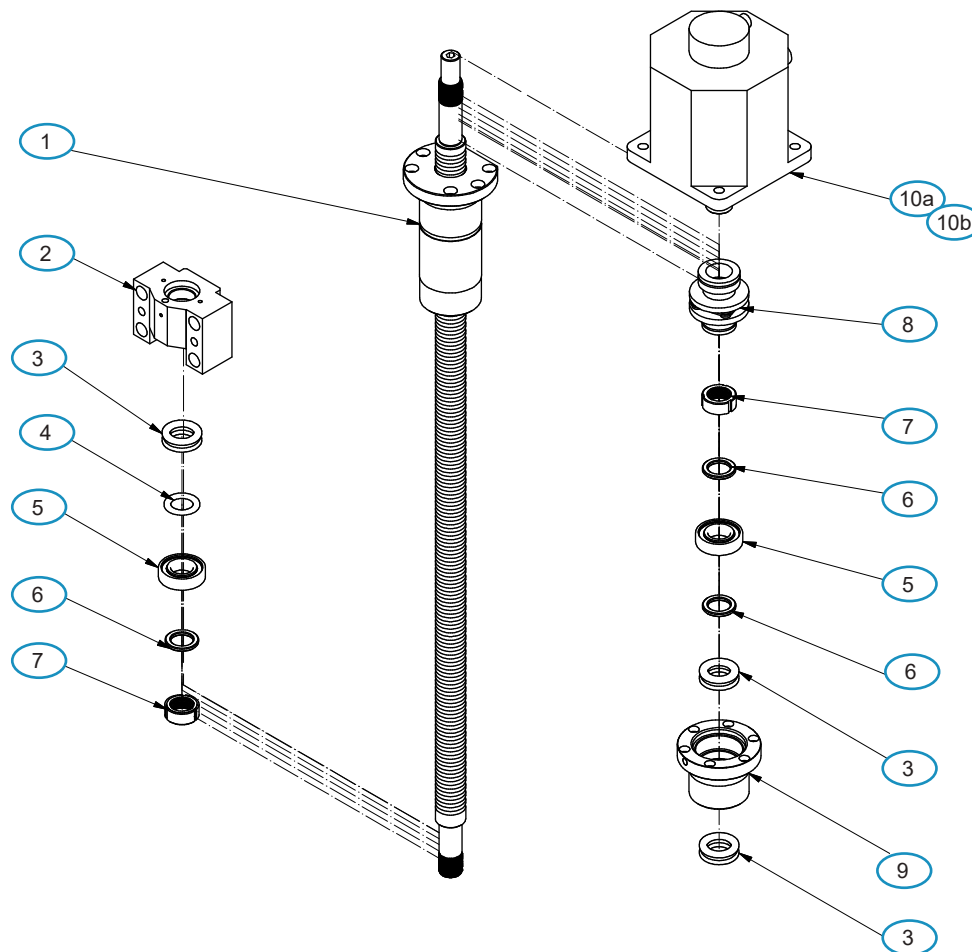
Item	Part Number	Description
1	BLS-02058	BEARING BLOCK,Z TAIL BRG;3320R-II
2	BRG-02032	BALL BEARING;XYZ AXIS,[3 REQ'D]
3	BRG-02052	SPACER,BEARING;YZ-AXIS;2520/3320R-II
4	BRG-02033	THRUST BEARING,XYZ AXIS;[2 REQ'D]
5	BLS-02053	BRG SPACER,XYZ-AXIS;2520/3320R-II
6	BLS-02050	JAM NUT,BALLSCREW [M30 - 1.5]
7	CPL-00005	MOTOR COUPLER,25M/35MX87L 2520R-II
8	BLS-02057	BEARING BLOCK,Z THRUST BRG;2520R-II
9a	MTR-02053	MOTOR,Z AXIS;YSKW,30A3A2E,W/BRK [SIG.5]
9b	MTR-02119	MOTOR,Z AXIS;YSKW,30A7A2E,W/BRK [SIG.7]
10	BLS-02014	BALLSCREW,STD Z;2520R-II

STANDARD Z-AXIS BALLSCREW

Item	Part Number	Description
1	CVR-02069	COVER PLATE,Z-AXIS BRG MOUNT;3320R
2	ATC-02033	MOUNT KEYS,DATC;2520/3320/4020B-II
3	CWT-00013	MOUNT BLOCKS,CWT;2520/3320/4020B-II
4	CWT-00014	COMPLETE CWT ROLLER BRACKET ASSY.
5	CWT-00016	CWT BLOCK,2520/3320/4020B-II
6	CWT-00015	CWT GUIDE ROD,STD Z;2520/3320/4020BII
7	CWT-00017	SUPPORT PADS,CWT GUIDE ROD;3320R
8	CST-00019	COLUMN CASTING;EXTD Z;2520/3320R-II
9	SCR-00181	SCREW,M26
10	SCR-00182	PLATE WASHER,26MM X 40MM X 5MM
11	SCR-00185	SQUARENUT;ROLLERWAY ADJUSTMENT
12	BRG-02056	LINEAR ROLLERWAY/TRKS;EXTD Z 3320
13	BLS-02067	PAD,HARDSTOP;EXT Z-AXIS TAIL;3320R
14	[SEE PG. 34]	EXTD Z-AXIS BALLSCREW ASSEMBLY
15	BLS-02065	PAD,HARDSTOP;Z-AXIS THRUST;3320R-II
16a	MTR-02053	MOTOR,Z AXIS;YSKW 30A3A2E,W/BRK [SIG.5]
16b	MTR-02119	MOTOR,Z AXIS;YSKW 30A7A2E,W/BRK [SIG.7]
17	CWT-00019	COUNTERWEIGHT ROLLER ASSEMBLY
18	CWT-00020	COUNTERWEIGHT CHAIN (PAIR)

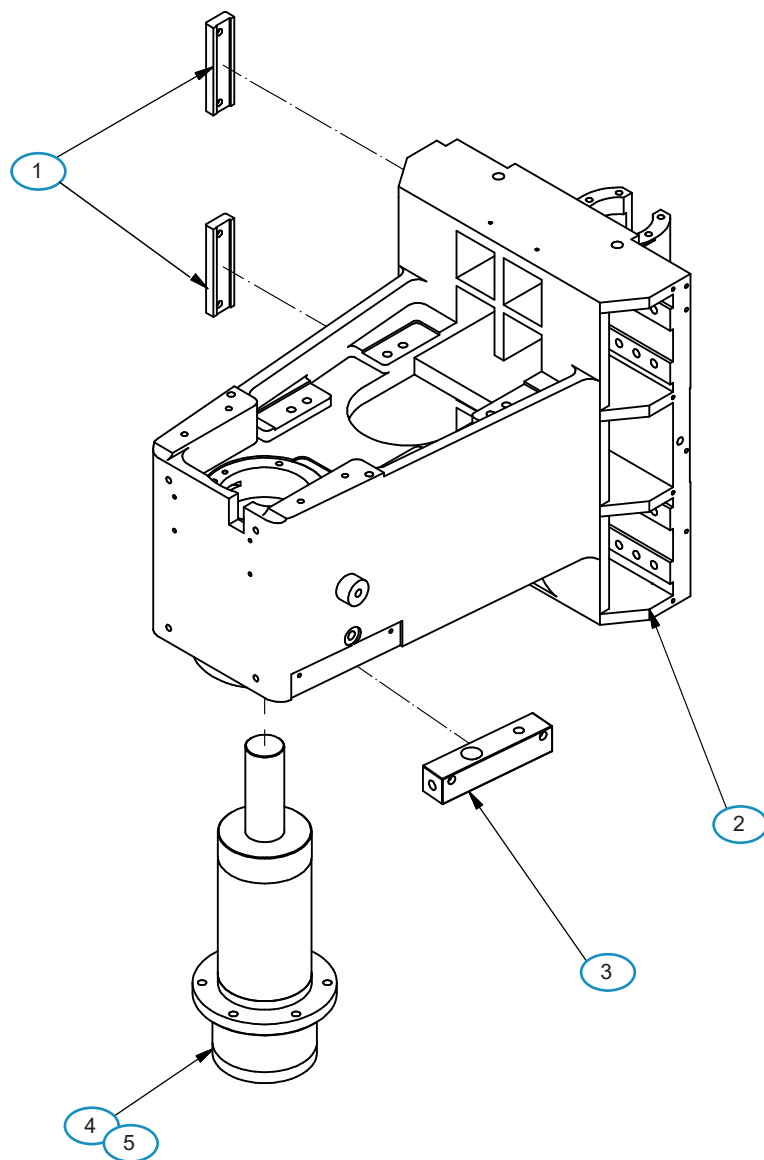


COLUMN AND COUNTERWEIGHT - EXTENDED Z



Item	Part Number	Description
1	BLS-02024	BALLSCREW,EXTD Z;2520/3320R-II
2	BLS-02058	BEARING BLOCK,Z TAIL BRG;2520R-II
3	BRG-02032	BALL BEARING;XYZ AXIS,[3 REQ'D]
4	BRG-02052	SPACER,BEARING;YZ-AXIS;2520/3320R-II
5	BRG-02033	THRUST BEARING,XYZ AXIS;[2 REQ'D]
6	BLS-02053	BRG SPACER,XYZ-AXIS;2520/3320R-II
7	BLS-02050	JAM NUT,BALLSCREW [M30 - 1.5]
8	CPL-00005	MOTOR COUPLER,25M/35MX87L 2520R-II
9	BLS-02057	BEARING BLOCK,Z THRUST BRG;2520R-II
10a	MTR-02053	MOTOR,Z AXIS;YSKW,30A3A2E,W/BRK [SIG.5]
10b	MTR-02119	MOTOR,Z AXIS;YSKW,30A7A2E,W/BRK [SIG.7]

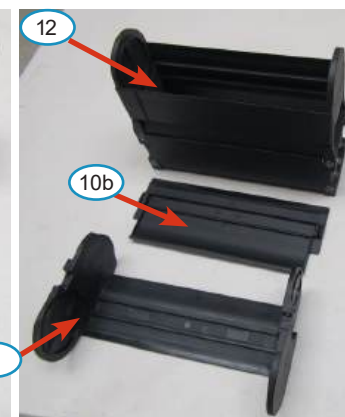
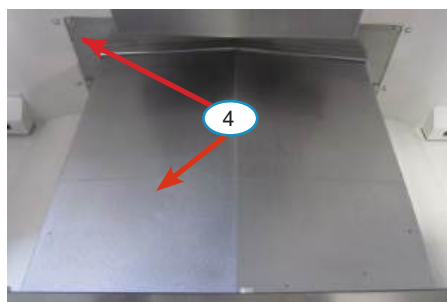
EXTENDED Z-AXIS BALLSCREW



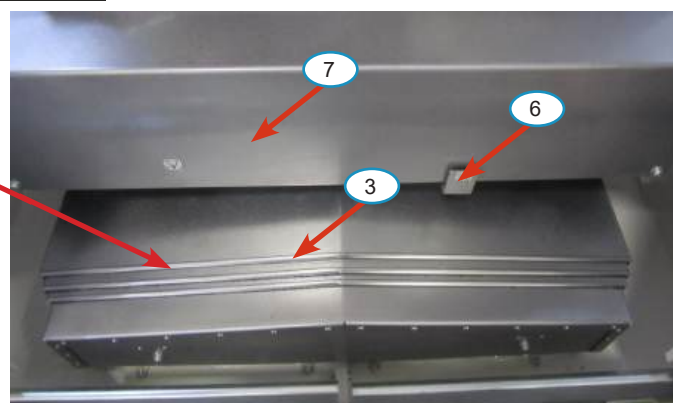
Item	Part Number	Description
1	BRG-02055	ROLLERWAY LOCK BLOCK, 2520/3320R-II
2	CST-00017	HEAD CASTING, 2520/3320R-II
3	CNT-02031	BLOCK,COOLANT MANIFOLD,2520 TO 8030B-II
4	SPN-02004	SPINDLE,15K AIR/OIL;POZI-DRIVE
5	SPN-02022	SPINDLE,MLB;10K GP DUAL RANGE;W/PULLEY

HEADSTOCK

Item	Part Number	Description
1	CVR-02036	WAYCOVER,X-AXIS 2520R-II;[LEFT]
2	CVR-02037	WAYCOVER,X-AXIS 2520R-II;[RIGHT]
3	CVR-02039	WAYCOVER,Y-AXIS 2520R-II;[FRONT]
4	CVR-02038	WAYCOVER,Y-AXIS 2520R-II;[REAR]
5	CVR-02040	WAYCOVER,Z-AXIS 2520R-II
6	SMT-00146	INDICATOR,X-AXIS HOME;2520R-II
7	CVR-02082	COVER, TABLE FRONT;2520R-II
8	CVR-02131	COVER, TABLE BACK;2520R-II



Item	Part Number	Description
9	CVR-02025	E-CHAIN KIT; LINK BODY 1 EA
10a	CVR-02027	E-CHAIN LINK COVER; OUTSIDE 1 EA
10b	CVR-02132	E-CHAIN LINK COVER; INSIDE 1 EA
11	CVR-02024	E-CHAIN KIT;HEAD END BRACKET
12	CVR-02023	E-CHAIN KIT;CABT END BRACKET
13	CVR-02022	E-CHAIN,CABT TO HEAD;W/BOTH BRKTS
1	CVR-02110	WAYCOVER WIPER [PR/FT]

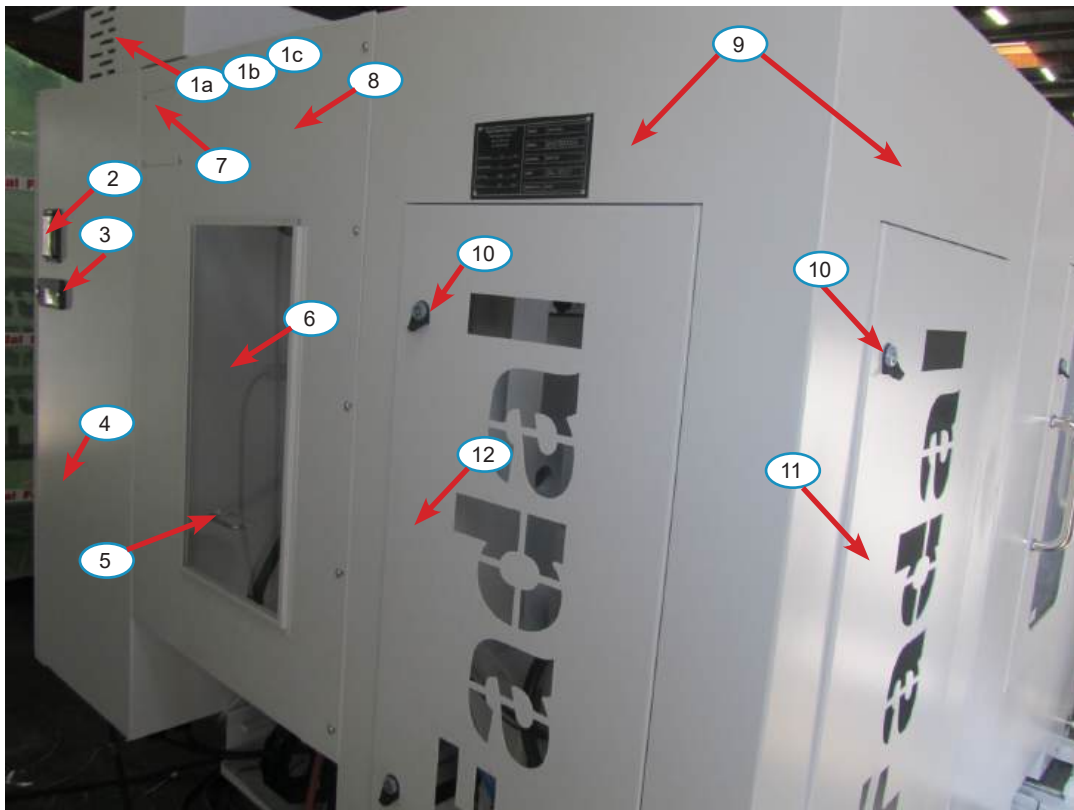


WAYCOVERS

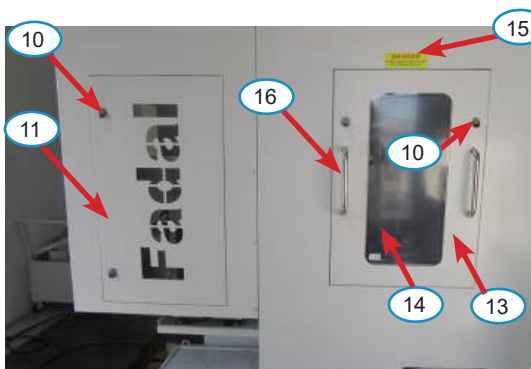


Item	Part Number	Description
1	LBL-02015	LABEL,FRONT;"FADAL" 48 X 13
2	SMT-00147	ENCLOSURE,LEFT FRONT/SIDE 2520R-II
3	DOR-02057	FRONT DOOR PANEL, LEFT;2520R-II
4	LBL-02014	LABEL,HEAD;"FADAL" 22 X 6
5	SMT-00144	HEADCOVER,FRONT;2520/3320/4020B-II
6	LBL-02011	HEAD STRIPES,DIAG;6.5 X 13
7	CVR-02022	E-CHAIN,CABT TO HEAD;2520R-II;W/BRKTS
8	SMT-00148	ENCLOSURE,RIGHT FRONT/SIDE 2520R-II
9	DOR-02058	FRONT DOOR PANEL, RIGHT;2520R-II
10	ELE-04009	STACKLITE,RYG 24V 10W
11	SMT-00145	BOOM SUPPORT,PENDANT;2520/3320R-II
12	SWT-00005	SWITCH,TOOL RELEASE [HEAD]
13	LBL-02022	LABEL;"LOAD TOOLS" 3 X 4
14	DOR-02013	HANDLE,FRONT DOOR;2520R-II [1 EA]
15	DOR-02012	LATCH,FRONT DOOR;2520R/3320R/4020B-II
16	DOR-02056	DOOR LEDGE,BOTTOM,SS;2520R-II
17	PLM-02118	NOZZLE,COILED HOSE; WASHDOWN
18	PLM-02117	AIR GUN,COILED HOSE;1/4 IN
19	PLM-02119	BRACKET,COILED HOSE OR WASHDOWN
20	CNT-02034	SIGHT GLASS,COOLANT LEVEL;TANK
21	LBL-02028	"VMC2520R-II" 2 X 16 RED
22	ELE-04024	LATCHING INTERLOCK; FRONT DOOR, 24VDC
23	WIR-02018	CABLE; FRONT DOOR INTERLOCK

MACHINE ENCLOSURE - FRONT



Item	Part Number	Description
1a	INV-02009	REGEN RESISTOR; 400W, 12.5 OHM [X,Y,Z AXIS]
1b	INV-02010	REGEN RESISTOR; 1500W, 10 OHM [SPINDLE]
1c	INV-02016	CAGE,REGEN RESISTORS;22 x 10 X 6
2	ELE-04003	PORT,ETHERNET;RJ45
3	ELE-04008	BATTERY BOX,3-D CELL [ENCODER BACKUP]
4	SMT-00149	ELECTRICAL CABINET,W/O DOOR;2520R-II
5	DOR-02059	HANDLE,ACCESS DOOR-LUBRICATION CABT
6	DOR-02050	ACCESS DOOR,LUBRICATION CABINET;28 X 15
7	SMT-00140	ACCESS PANEL,7 X 6
8	SMT-00151	LUBRICATION CABINET,2520R-II
9	SMT-00152	CHILLER CABINET,2520R-II
10	DOR-02044	LATCH,CAGE DOOR
11	DOR-02060	DOOR,CHILLER CABINET; 23.5 X 41 'FADAL'
12	DOR-02051	DOOR,CHILLER CABINET; 19.5 X 41 'FADAL'
13	DOR-02102	SIDE DOOR PANEL; 2520R-II
14	DOR-02006	WINDOW,SIDEDOOR;2520-4020 SERIES II
15	LBL-02001	LABEL,"DANGER"- "DO NOT OPERATE" 9 X 3
16	DOR-02010	HANDLE,SIDE DOOR;2520R/3320R/4020B-II
17	LBL-02003	LABEL,SIDE PANEL;"WARNING" 7 X 3
18	DOR-02042	TWISTKNOB,MAIN POWER DISCONNECT
19	ELE-04004	HEAT EXCHANGER;4020-8030B CONTROL CABT 220V
20	LBL-02008	LABEL,"HEAT EXCHANGER" INSTRUCTIONS
21	LBL-02006	LABEL,ELECT BOX;"ELECTRIC SYMBOL" 3 INCH
22	DOR-02043	CABINET LATCH,DOOR
23	SMT-00150	DOOR,ELECTRICAL CABINET;2520R-II
24	REG-02008	REGULATOR,MAIN AIR,COMPLETE ASSY;2015~4020B-II
25	SWT-00067	PRESSURE SWITCH,REGULATOR
26	PLM-02084	TUBING,10MM WHITE 250PSI NYLON;PER METER
27	SEL-00068	LIP SEAL EDGING,SIDE WINDOW;PER FT



Left Side

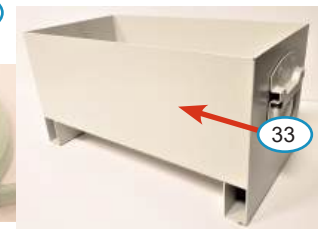
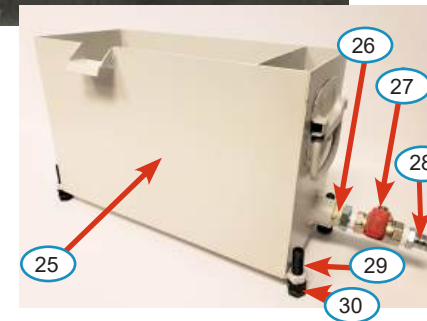
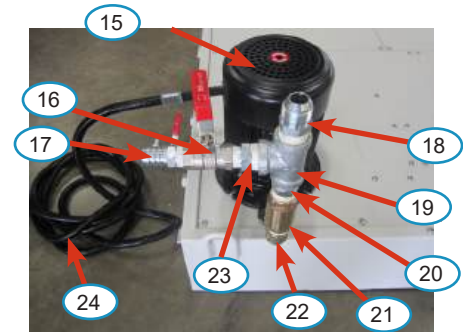
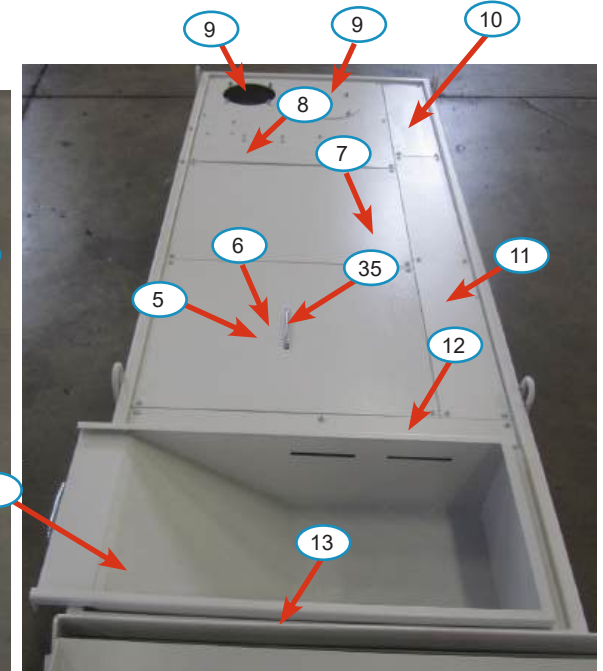
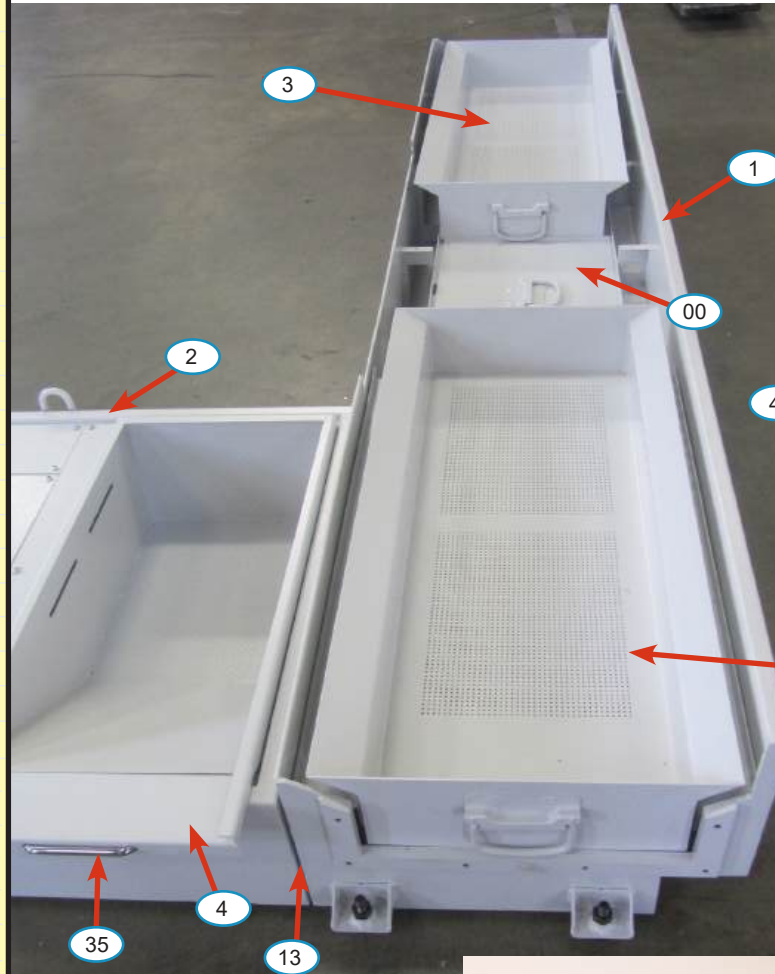


Right Side



MACHINE ENCLOSURE - REAR/SIDES

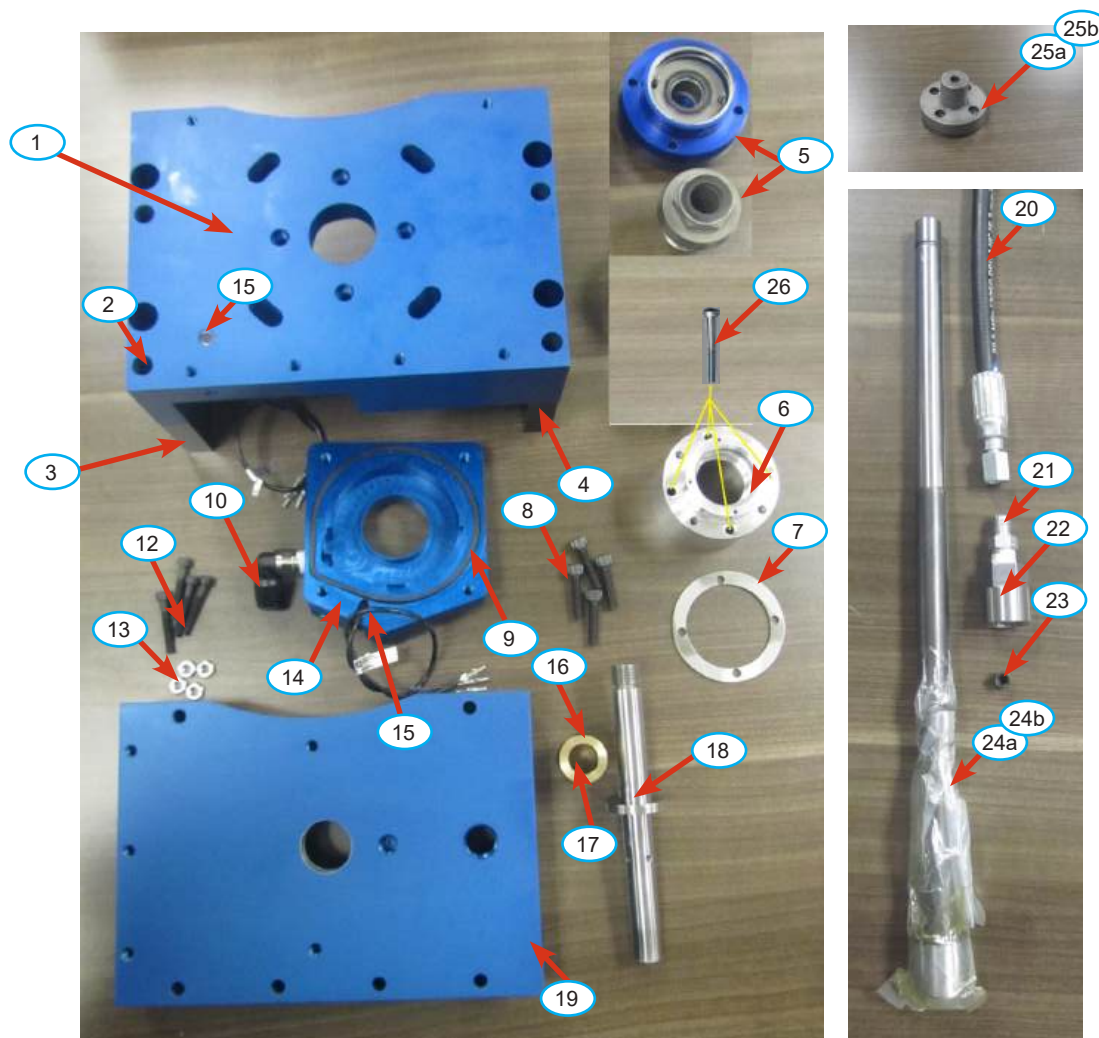
Item	Part Number	Description
1	CNT-02053	COOLANT TANK,FRONT;2520R-II
2	CNT-02052	COOLANT TANK,REAR;2520R-II
3	CNT-02042	CHIP DRAWER,FRONT;R/L 2520R-II
4	CNT-02054	CHIP DRAWER,SIDE;2520R-II
5	CNT-02044	BASKET/COVER,FINE CHIPS;3320/4020BII
6	CNT-02045	COVER,16 X 19;2520/3320/4020B-II
7	CNT-02046	COVER,15.5 X 19;2520/3320/4020B-II
8	CNT-02047	COVER,19.5 X 19;2520/3320/4020B-II
9	CNT-02032	COVER PLATE,7 INCH;COOLANT PUMPS
10	CNT-02055	COVER,17 X 4.5;2520R-II
11	CNT-02056	COVER,34 X 4.5;2520R-II
12	CNT-02057	COVER, 23.5 X 2;2520R-II
13	SEL-00030	GASKET; COOLANT TANK [2 REQD]
14	CNT-02034	SIGHT GLASS,COOLANT LEVEL;TANK
15	PMP-02024	PUMP,FLOOD;2520R/3320R/4020B-II
16	PLM-02165	BALL VALVE,1/2 MIPT X 1/2 FIPT;LEVER
17	PLM-02168	ADAPTER, 3/4 BARB X 1/2 MIPT
18	PLM-02167	ADAPTER, 3/4 MIPT X 3/4 JIC MALE
19	PLM-02150	TEE,3/4 FIPT
20	PLM-02151	NIPPLE, 3/4 MIPT
21	PLM-02128	CHECK VALVE;3/4FIPT X 3/4FIPT
22	PLM-02129	FITTING,3/4MIPT X 3/4MIPT ELBOW
23	PLM-02166	ADAPTER, 3/4 MIPT X 1/2 FIPT STR
24	WIR-02198	HARNESS,FLOOD PUMP;W/CONNECTOR
25	CNT-02080	OIL SEPARATOR TANK W/ SPILLWAY
26	PLM-02187	BUSHING,PIPE; 3/4MIPT X 1/2MIPT
27	PLM-02165	BALL VALVE; 1/2FIPT X 1/2FIPT
28	PLM-02188	BARB FITTING; 1/2MIPT X 5/8" BARB
29	SCR-00329	SCREW; M12-1.75 X 50MM, HEX
30	SCR-00298	HEX NUT; M12-1.75
31	PLM-02189	HOSE; 5/8" ID
32	HDW-02011	HOSE CLAMP; 1"
33	CNT-02081	OIL SEPARATOR DISCHARGE TANK
34	CNT-02082	CENTER COVER/CHIP DRAWER STOP
35	CNT-02084	HANDLE; COOLANT TANK COVER



COOLANT TANKS

OPTIONS

OPTIONS INDEX	Page No.
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COOLANT-THRU-SPINDLE PUMP UNIT: Polar-Jet	45
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6 INCH HIGH SPEED ROTARY; FR-6A	51
8 INCH STANDARD ROTARY; FR-8D	52
8 INCH TILTING ROTARY; FTR-8D	



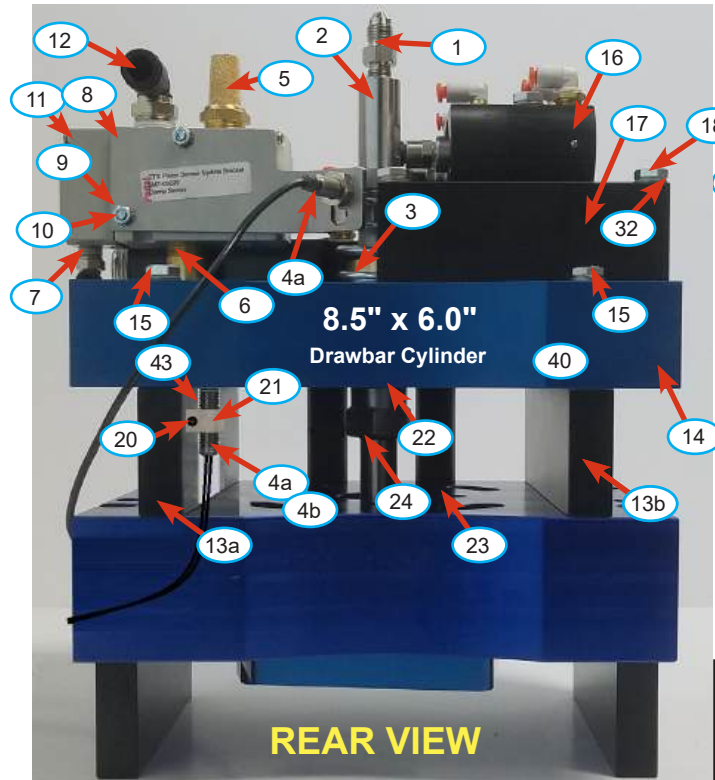
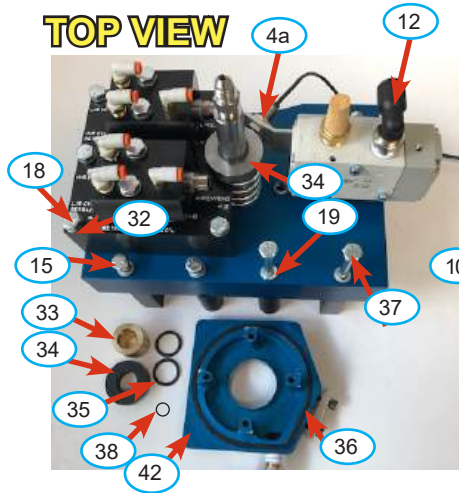
Item	Part Number	Description
1	ORB-02004	ORIENTATION BRIDGE PLATE; CB COOLANT-THRU-SPINDLE
2	SCR-00043	SCREW; 1/4-20 X 3/4 SHCS
3	ORB-02002	LEG. ORIENTATION BRIDGE; LFT/RT
4	ORB-02006	LEG. ORIENTATION BRIDGE; RT [DISCONTINUED USE ORB-02002]
5	CTS-00007	ROTARY UNION; CB COOLANT-THRU-SPINDLE
6	CTS-00009	SEAL BASE, CB COOLANT-THRU-SPINDLE
7	CTS-00010	JACKING PLATE, CB COOLANT-THRU-SPINDLE
8	SCR-00044	SCREW; 1/4-20 X 1 SHCS
9	SEL-00015	SQUARE O-RING, 3/32 X 3.5 DIA
10	PLM-02098	FITTING; 10MM QD X 1/4NPT ELL
11	PLM-02084	TUBING; BLACK, NYLON, 10MM [NOT SHOWN]
12	SCR-00076	SCREW; 10-32 X 1.25 SHCS
13	SCR-00008	NUT; 10-32 BRITE
14	CTS-00008	DRAIN TRAP; CB COOLANT-THRU-SPINDLE
15	SWT-00001	PROXIMITY SWITCH; 8MM, 3 WIRE
16	DRB-02055	BUSHING; DRAWBAR PISTON
17	SEL-00016	O-RING
18	DRB-02014	DISCONTINUED - USE KIT-00095 [SEE PAGE 42]
19	DRB-02013	HOUSING; DRAWBAR CYLINDER, COOLANT-THRU-SPINDLE
20	HYD-00008	HYDRAULIC HOSE; 3000PSI 1/4 JIC, 25 FT.
21	PLM-02076	FITTING; HYDRAULIC, 1/4 JIC A 1/4 NPT
22	CTS-00006	DISCONTINUED - USE KIT-00095 [SEE PAGE 42]
23	PLM-02028	PLUG; 1/8 MPT, HEXDRIVE
24a	DRB-02027/10K	DRAWBARR ASSEMBLY; 16.5, 10K [USE W/ DRB-02015] *
24b	DRB-02022	DRAWBARR ASSEMBLY; [USE W/ DRB-02015-2] *
25a	DRB-02015	KNOCK-OUT CAP;CTS, W/ O-RING [USE W/ DRB-02027]
25b	DRB-02015-2	KNOCK-OUT CAP;CTS, NO O-RING [USE W/ DRB-02022]
26	SCR-00288	SCREW, M4-.7 X 40MM, SHCS [4 REQUIRED]

* Provide spindle information from spindle mounting flange

COOLANT THRU SPINDLE - Early

STANDARD DRAWBAR CYLINDER

TOP VIEW



KIT-00095 Update Kit

Includes Items: 1, 2, 4a, 8, 9, 13a, 15,
19-24, 33-35, 37-41, 44

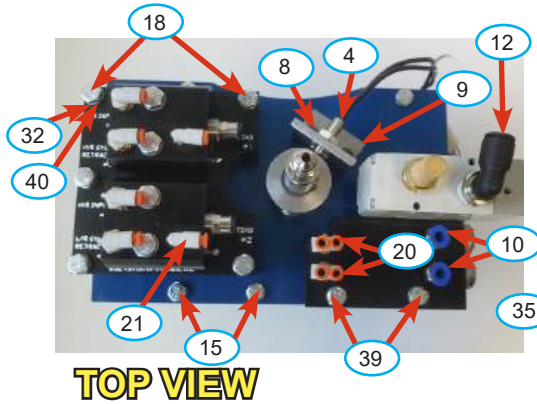
For CTS Machines w/ 8.5" x 6" DBCYL [#14]

Requires Software Version 3.0 or Later

Item	Part Number	Description
1	PLM-02161	FITTING, HYDRAULIC; 1/4 JIC X 1/8 NPT
2	DRB-02046-12	SHAFT; CTS/NON-CTS THREADED
3	HDW-02006	SPRING, DRAWBAR CYL RETURN
4a	SWT-00001	PROXIMITY SWITCH, 8MM; 3 WIRE
4b	SWT-00002	HALL EFFECT SWITCH, 12MM; 2 WIRE
5	PLM-02050	MUFFLER, 3/8 MIPT
6	PLM-02049	PIPE NIPPLE, 3/8 MIPT X 1.5 INCH
7	PLM-02091	FITTING, 6MM QD X 1/8 MIPT ELL
8	SMT-00226	BRACKET, DRAWBAR UP SENSOR
9	SCR-00124	KEPSNUT, M4-0.7 [2 REQUIRED]
10	SCR-00288	SCREW, M4-0.7 X 40MM SHCS [2 REQD]
11	VLV-02000	AIR VALVE, DRAWBAR CYLINDER
12	PLM-02091	FITTING, 10MM QD X 3/8NPT ELL
13a	ORB-02010-L	STOP/SPACER, DRB CYL PLATE, LEFT
13b	ORB-02010	STOP/SPACER, DRB CYL PLATE
14	DRB-02013	HOUSING, DRAWBAR CYL, CTS [6 x 8.5]
15	SCR-00289	SCREW, 1/4-20 X 3.75; HEXCAP [5 REQD]
16	HYD-02005	HYDRAULIC ACTUATOR ASSY [SET OF 2]
17	HYD-02000	RESERVOIR, HYDRAULIC ACTUATORS
18	SCR-00015	SCREW, 1/4-20 X 1.75 HEXCAP
19	SCR-00006	LOCKWASHER, 1/4 [10 REQUIRED]
20	SCR-00055	SCREW; 1/4-20 X 5/8, SHCS
21	SWT-00085	CLAMP; DOWN SENSOR
22	DRB-02048-12	LOCKNUT, DBCYL SHAFT; CTS/NON-CTS
23	ORB-02011	SPACER TUBE, DRB-OBRIIDGE [2 REQD]
24	DRB-02049-12	ENDSHAFT, BOTTOM; DBCYL; CTS ONLY
25	CTS-00007	ROTARY UNION, CB COOLANT-THRU
26	CTS-00009	SEAL BASE, CB COOLANT-THRU
27	CTS-00010	JACKING PLATE, CB COOLANT-THRU
28	DRB-02027/10K	DRAWBAR KIT; 40T, 10K, CTS/NON-CTS COMPATIBLE, 16.5 [DRB-02015]
29	DRB-02027/15K	DRAWBAR KIT; 40T, 15K, CTS/NON-CTS COMPATIBLE, 16.5 [DRB-02015]
30	DRB-02015	KNOCK-OUT CAP; COOLANT-THRU
31	SCR-00126	SETScrew, 10-32 X 1.25 CUP PT [4 REQ]
32	SCR-00098	FLATWASHER, 1/4 ZIN
33	DRB-02055	BUSHING; DRAWBAR PISTON SHAFT
34	DRB-02007	SPRING PAD, DBCYL SHAFT; CTS-EARLY
35	SEL-00007	O'RING, -115; VITON .687 ID X 3/32 [2 REQ]
36	SEL-00015	SQUARE O'RING, 3/32 X 3.50 DIA
37	SCR-00290	SCREW, 1/4-20 X 5; HEXCAP [2 REQD]
38	SEL-00130	O'RING, VITON; 7MM ID X 1.2MM THICK
39	SEL-00029	O'RING, VITON; 16MM ID X 2MM [KO CAP]
40	DRB-02006	PISTON PLATE, NO MAG; CTS [Ref Pg. 13]
41	HDW-02015	CLIP, RETAINING; DB CYL SHAFT
42	CTS-00008	DRAIN TRAP, COOLANT-THRU
43	SWT-00003	SLEEVE, ADAPTER, 8MM TO 12MM
44	TOL-02040	ALIGNMENT TOOL; CTS INSTALLATION

COOLANT THRU SPINDLE: GEN 1 Update Kit KIT-00095

WIDE DRAWBAR CYLINDER VERSION

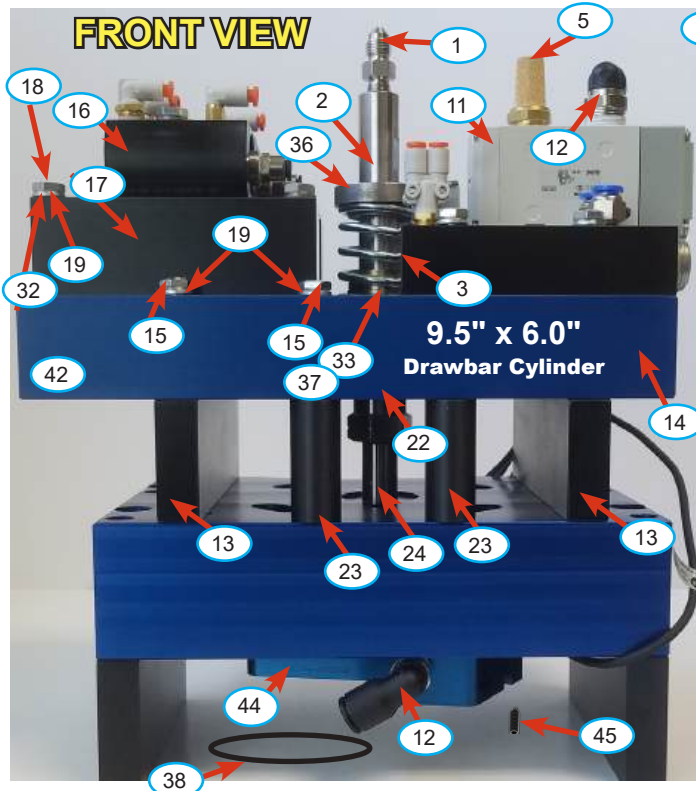
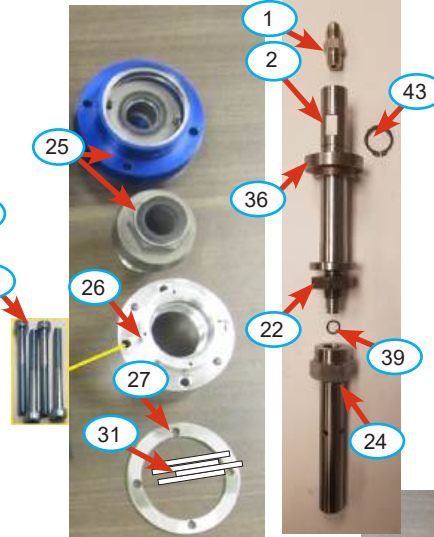


TOP VIEW

KIT-00094 Update Kit

Includes Items: 1, 2, 4, 8, 9, 13, 15, 19,
22-24, 33, 34, 36, 37, 39-41, 43
For CTS Machines w/ 9.5" x 6" DBCYL [#14]

Requires Software Update 3.0 or Later



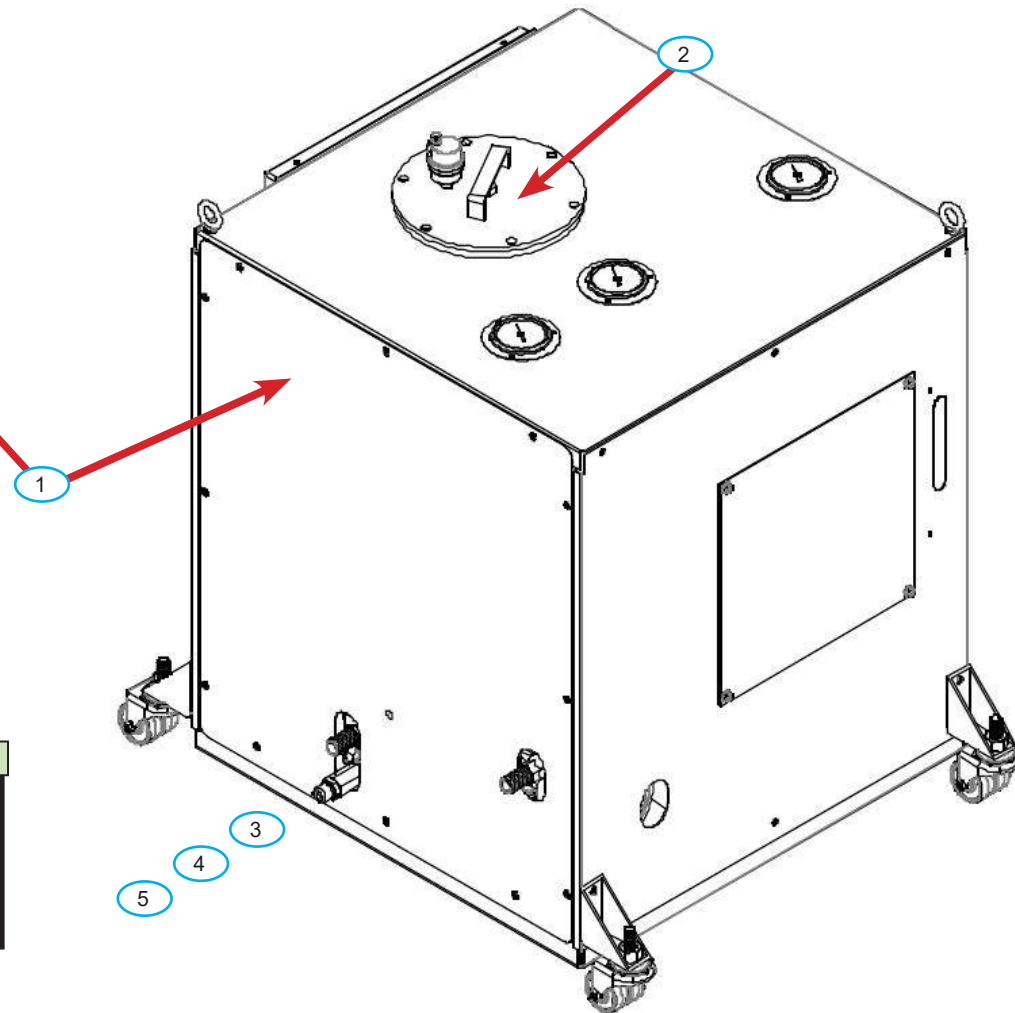
FRONT VIEW

9.5" x 6.0"
Drawbar Cylinder



Item	Part Number	Description
1	PLM-02161	FITTING, HYDRAULIC; 1/4 JIC X 1/8 NPT
2	DRB-02046-12	SHAFT; CTS/NON-CTS THREADED
3	HDW-02006	SPRING, DRAWBAR CYL RETURN
4	SWT-00001	PROXIMITY SWITCH, 8MM; 3 WIRE
5	PLM-02050	MUFFLER, 3/8 MIPT
6	PLM-02049	PIPE NIPPLE, 3/8 MIPT X 1.5 INCH
7	PLM-02012	FITTING, 4MM QD X 1/8 MIPT ELL
8	SCR-00165	SCREW, BUTTONHD; 1/4-20 X 1/2 [2 REQ]
9	SMT-00226	BRACKET; DRAWBAR DOWN/UP SENSOR
10	PLM-02093	FITTING, 6MM QD X 1/8 MIPT STR
11	VLV-02000	AIR VALVE, DRAWBAR CYLINDER
12	PLM-02087	FITTING, 10MM QD X 3/8 NPT ELL
13	ORB-02010	STOP/SPACER, DRAWBAR CYLINDER PLATE
14	DRB-02002	HOUSING, DRAWBAR CYLINDER, CTS-WIDE [6 x 9.5]
15	SCR-00289	SCREW, 1/4-20 X 3.75; HEXCAP [5 REQUIRED]
16	HYD-02005	HYDRAULIC ACTUATOR ASSY [SET OF 2]
17	HYD-02000	RESERVOIR, HYDRAULIC ACTUATORS
18	SCR-00015	SCREW, 1/4-20 X 1.75 HEXCAP
19	SCR-00006	LOCKWASHER, 1/4 [10 REQUIRED]
20	PLM-02014	FITTING, 5/32 QD/4MM QD X 1/8 NPT WYE
21	PLM-02015	FITTING; 5/32 QD/4MM QD X 10-32 ELL
22	DRB-02048-12	LOCKNUT, DBCYL SHAFT; CTS/NON-CTS
23	ORB-02011	SPACER TUBE, DRB-OBRIIDGE [2 REQD]
24	DRB-02049-12	ENDSHAFT, BOTTOM; DBCYL; CTS ONLY
25	CTS-00007	ROTARY UNION, CB COOLANT-THRU
26	CTS-00009	SEAL BASE, CB COOLANT-THRU
27	CTS-00010	JACKING PLATE, CB COOLANT-THRU
28a	DRB-02027/10K	DRAWBAR KIT; 40T, 10K, CTS/NON-CTS COMPATIBLE, 16.5 [DRB-02015]
28b	DRB-02027/15K	DRAWBAR KIT; 40T, 15K, CTS/NON-CTS COMPATIBLE, 16.5 [DRB-02015]
29	HYD-00008	HYDRAULIC HOSE; 3000PSI 1/4-JIC25FT
30	DRB-02015	KNOCK-OUT CAP; COOLANT-THRU
31	SCR-00126	SETScrew; 10-32 X 1.25 CUP PT [4 REQUIRED]
32	SCR-00098	FLATWASHER, 1/4 ZINC [5 REQUIRED]
33	DRB-02056	BUSHING; DRAWBAR PISTON SHAFT
34	TOL-02040	ALIGNMENT TOOL; COOLANT-THRU
35	SCR-00288	SCREW; M4-.7X40MM, SHCS [Ref Pg. 41]
36	DRB-02036	SPRING PAD, DBCYL SHAFT; CTS
37	SEL-00007	O'RING, -115; VITON .687 ID X 3/32 [2 REQUIRED]
38	SEL-00015	SQUARE O'RING, 3/32 X 3.50 DIA
39	SCR-00290	SCREW, 1/4-20 X 5; HEXCAP [2 REQUIRED]
40	SEL-00130	O'RING, VITON; 7MM ID X 1.2MM THICK
41	SEL-00029	O'RING, VITON; 16MM ID X 2MM [KO CAP]
42	DRB-02006	PISTON PLATE, NO MAGNET, CTS [Ref Pg. 13]
43	HDW-02015	RETAINING CLIP; DRAWBAR CYLINDER SHAFT
44	CTS-00008	DRAIN TRAP, COOLANT-THRU
45	SCR-00162	SET SCREW, NYLON TIP, 10-32 X 1/2

COOLANT THRU SPINDLE: GEN 2
Update Kit KIT-00094

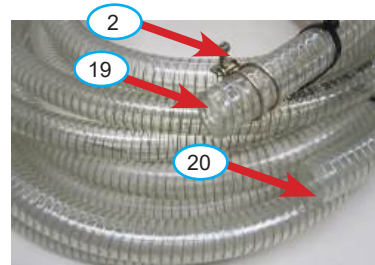
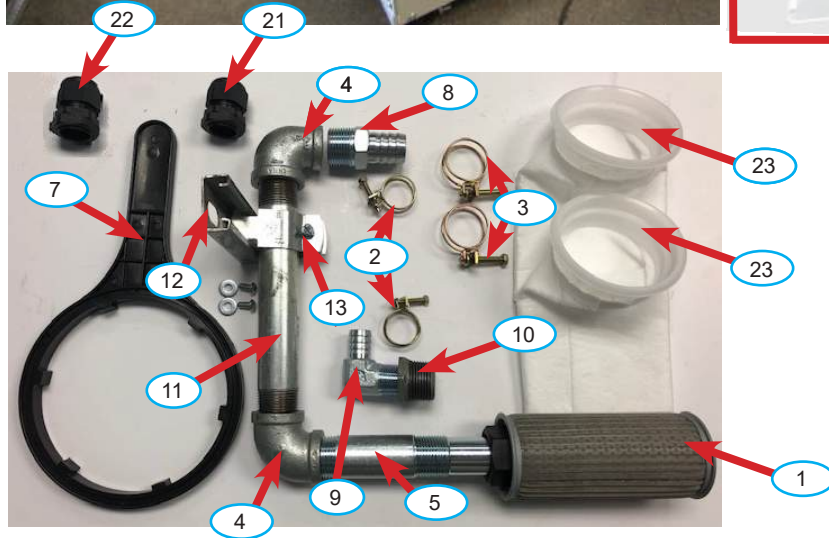
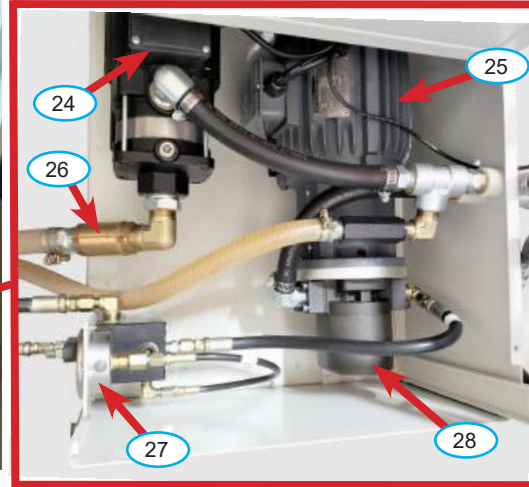
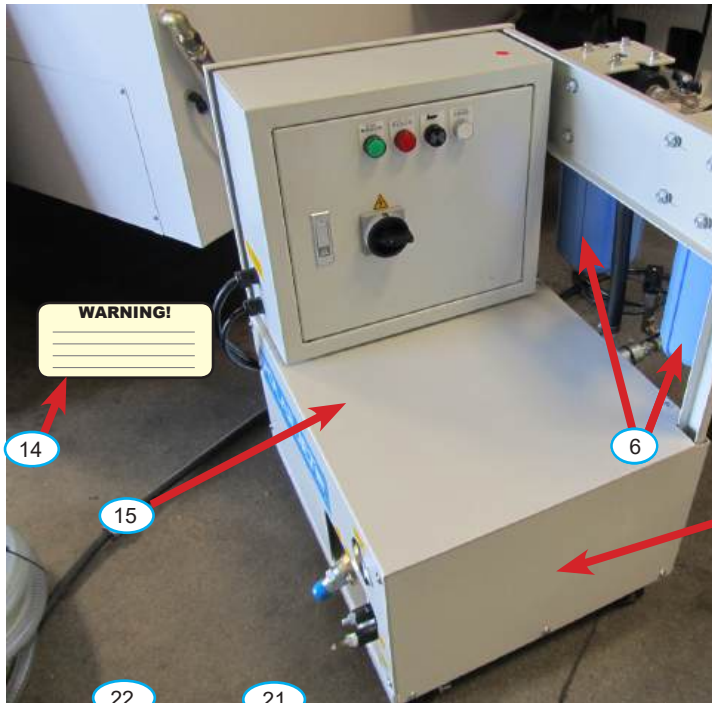


Item	Part Number	Description
1	PMP-02020	CHIPBLASTER SYSTEM,0-500PSI;230V
2	PMP-02021	CHIPBLASTER FILTER KIT - 2 PACK
3	PLM-02077	FITTING,BUSHING;BRASS 1/2 M X 1/4 F
4	PLM-02076	FITTING,HYDR;1/4 FLARE JIC X 1/4 F
5	HYD-02008	HYDRAULIC HOSE,CTS;1/4JIC X 7.6M

WARNING!

LBL-02077

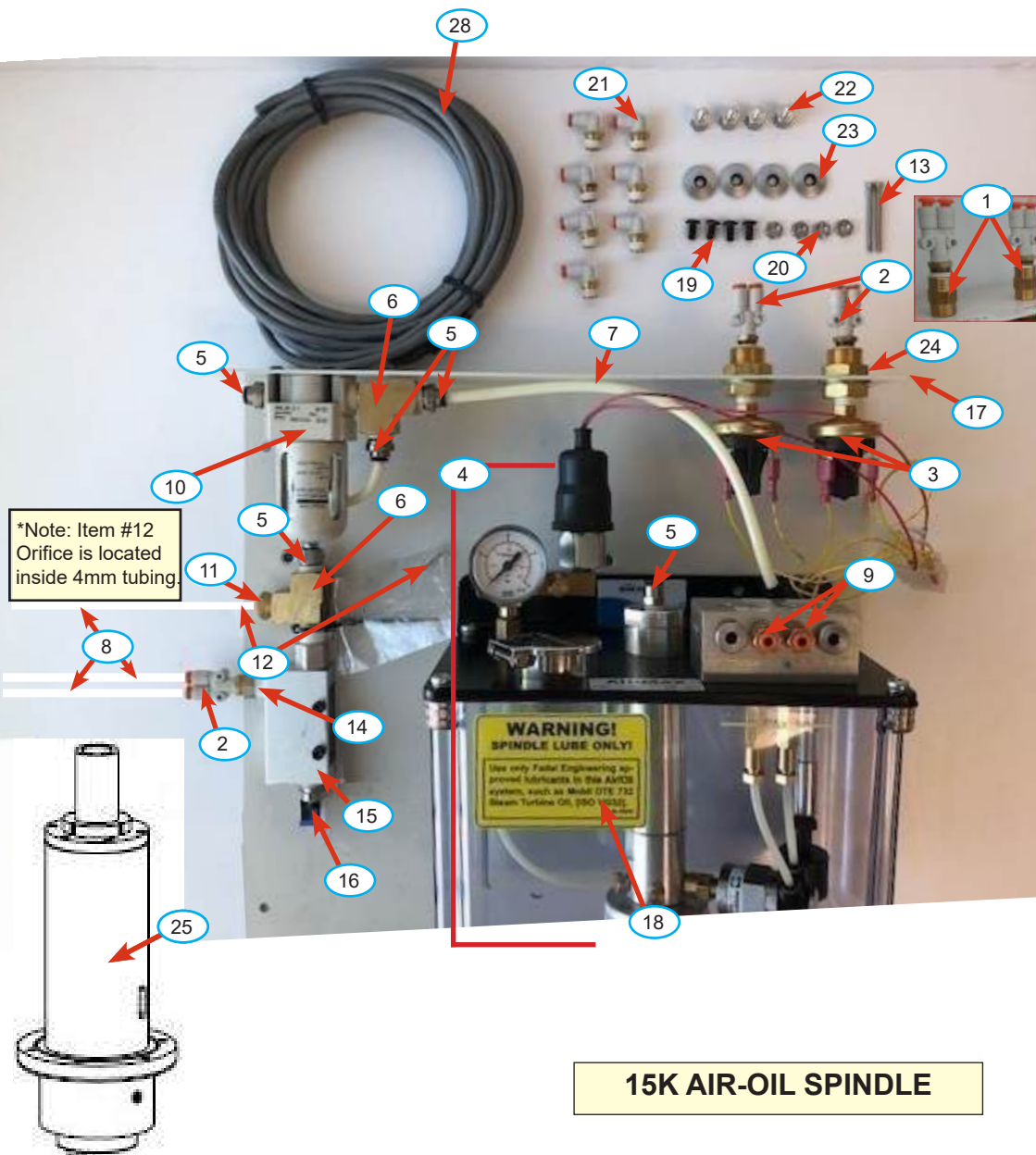
**COOLANT-THRU-SPINDLE
CHIPBLASTER SYSTEM**



Item	Part Numb	Description
1	CTS-00013	FILTER CARTRIDGE,POLAR-JET;MF-08
2	HDW-02011	HOSECLAMP,WORM 1
3	HDW-02012	HOSECLAMP,WORM 1 1/2
4	PLM-02052	ELBOW, 1 INCH FIPT
5	PLM-02163	PICKUP TUBE/FILTER SUPPORT
6	CTS-00014	FILTER CANNISTER ASSY.,POLAR-JET
7	TOL-02063	TOOL,FILTER CARTRIDGE;POLAR-JET
8	PLM-02021	ADAPTER, 1 INCH BARB X 1 INCH MIPT
9	PLM-02182	ADAPTER, 3/4 BARB X 3/4 MIPT ELL
10	PLM-02179	BUSHING, 1 IN MIPT X 3/4 FIPT
11	PLM-02177	PIPE NIPPLE, 1 INCH X 8 INCH
12	PLM-02079-1	PIPE STRUT [1.5" CHANNEL] X 4"
13	PLM-02079-2	STRUT CLAMP; 1" OD
14	LBL-02077	LABEL,"WARNING"-WARRANTY
15	CNT-02060	COOLANT PUMP SYSTEM,POLAR-JET
16	PLM-02162	FITTING,3/8" JIC BULKHEAD ELL W/NUT
17	HYD-02038	HOSE,HYDRAULIC;3/8JIC X 3500MM;STR
18	HYD-02008	HOSE,HYDRAULIC;1/4 JIC X 7.6M
19	PLM-02071	SPRING HOSE,3/4 IN [PER FT]
20	PLM-02022	SPRING HOSE,1 IN [PER FT]
21	WIR-02169	CABLE STRAIN RELIEF,10MM
22	WIR-02196	CABLE STRAIN RELIEF, 18MM
23	CTS-00015	FILTER BAG (2 PACK)
24	PMP-02034	TRANSFER PUMP
25	MTR-02126	MOTOR; HIGH PRESS. COOLANT PUMP
26	PLM-02169	CHECK VALVE
27	CTS-00018	PRESSURE GUAGE; 1000 PSI / 70 kg/cm ²
28	PMP-02035	HIGH PRESSURE PUMP

COOLANT-THRU-SPINDLE POLARJET SYSTEM

Item	Part Number	Description
1	PLM-02095	BRASS COUPLER, 1/8 FPT
2	PLM-02014	FITTING, 5/32 QD/4MM QD X 1/8 MIPT WYE
3	SWT-00009	PRESSURE SWITCH, 25 PSI AIR/OIL
4	LUB-02011	LUBRICATION PUMP, AIR/OIL SPINDLE
5	PLM-02094	FITTING, 6MM QD X 1/4 MPT STR
6	PLM-02090	RIGHT ANGLE TEE; 1/4 MIPT X 1/4 FIPT
7	PLM-02083	TUBING, 6MM, 250 PSI NYLON
8	PLM-02000	TUBING, 4MM [5/32] 250 PSI NYLON
9	PLM-02013	FITTING, 5/32 QD/4MM QD X 1/8 MIPT STR
10	REG-02003	COALESCING FILTER, AIR/OIL SMC
11	PLM-02011	FITTING, 5/32 QD/4MM QD X 1/4 MIPT STR
12	SPN-02001	ORIFICE, 5/32 INSERT; AIR SEAL *
13	SCR-00327	SCREW, M3 X 37.5 W/ LOCK WASHER, PHILLIPS
14	PLM-02041	BUSHING, 1/4 FIPT TO 1/8 MIPT
15	PMP-02018	VACUUM PUMP, AIR OIL
16	PLM-02104	FITTING, 10MM QD X 1/4 MIPT STR
17	SMT-00055	MOUNTING PLATE, AIR-OIL PUMP/SWTS
18	LBL-02040	LABEL, SPINDLE LUBE; AIR-OIL
19	SCR-00041	SCREW, 10-32 X 3/8 BUTTONHEAD SHCS
20	SCR-00008	NUT, 10-32 BRITE
21	PLM-02012	FITTING, 5/32 QD/4MM QD X 1/8 MIPT ELL
22	SEL-00069	CUP WASHER, SEALING; 0.75 OD X 0.25 ID
23	HDW-02045	STANDOFF, MALE/FEM; 10-32 X 1/2 LONG;
24	PLM-02170	BULKHEAD FITTING, BRASS; 1/8 FIPT
25	SPN-02004	SPINDLE ASSY, 15K AIR-OIL DUAL RANGE
26	VLV-02006	AIR VALVE, 24VDC, 5 WAY, SINGLE
27	PLM-02092	FITTING, 6MM QD X 1/4 MPT, ELL
28	WIR-02063	CABLE; 6 COND., 22 AWG, SHIELDED [PER/ FT]



15K AIR-OIL SPINDLE

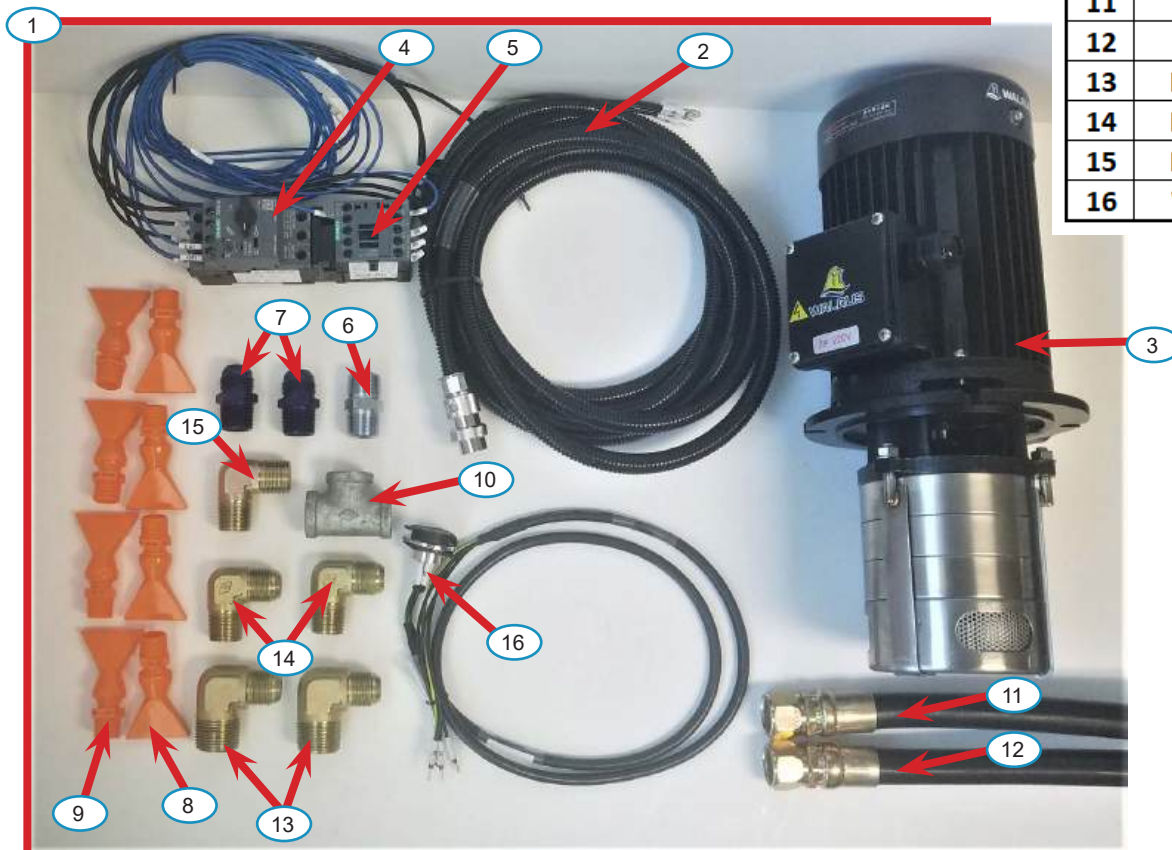


Item	Part Number	Description
1	PRB-02000	TOOLSETTER,WIRELESS;NO TIP VOTS90
2	PRB-02001	CONTACT DISK,TOOLSETTER
3	PRB-02002	PROBE,SPINDLE; NO STUD/TIP;VOP40
4	PRB-02003	PROBE STYLUS, SS
5	PRB-02004	RECEIVER KIT, 24V TOOLSETTER/PROBE
6	PRB-02005	CABLE; RECEIVER W/GUARD
7	PRB-02006	CRASHPIN,VOTS TOOLSETTER
8	PRB-02015	PROBE STYLUS,CERAMIC W/ RUBY TIP
9	PRB-02008	ACCESSORY PKG, [INSTALLATION]
10	PRB-02009	ADAPTER,VOP40 TO BT-30
11	PRB-02010	ADAPTER,VOP40 TO BT-40
12	PRB-02011	ADAPTER,VOP40 TO CT-40
13	PRB-02017	REMOTE CONTROL [ONLY]
14	PRB-02013	BATTERY CAP
15	ELE-04012	BATTERY,1/2AA; 3.6V [2 REQ]
16	ELE-04013	BATTERY,CR123A; 3.6V [EARLY]
17	PRB-02016	CRASHPIN,VOP40 TOUCH PROBE
18	PRB-02010	BT SHANK ASSEMBLY

PROBE/PRESETTER

Item	Part Number	Description
1	KIT-00093	KIT; WASHDOWN, SIDE/REAR
2	WIR-02108	CABLE; PUMP TO CABINET
3	PMP-02011	PUMP; 230VAC, 3PH, VERT.
4	RLY-00031	OVERLOAD; 7-10A [SIEMENS]
5	RLY-00030	CONTACTOR; SIEMENS, SRS II *
6	PLM-02151	FITTING; 3/4 MIPT NIPPLE
7	PLM-02167	FITTING; 3/4 MIPT X 3/4 JIC STRAIGHT [2 REQ]
8	PLM-02137	FLARE NOZZLE; 1 1/4 X 3/8 BALL [EACH]
9	PLM-02138	ADAPTER, FLARE NOZZLE; 1/2 PT X 3/8 BALL [EACH]
10	PLM-02020	PIPE TEE; 3/4 FIPT X 3/4 FIPT X 3/4 FIPT
11	HYD-02073	HYDRAULIC HOSE; 3/4 JIC X 137" LENGTH
12	HYD-02072	HYDRAULIC HOSE; 3/4 JIC X 52" LENGTH
13	PLM-02205	FITTING; 1" NPT X 3/4 JIC, ELL
14	PLM-02206	FITTING; 3/4 NPT X 3/4 JIC, ELL
15	PLM-02184	FITTING; 3/4 MIPT X 3/4 MIPT ELL
16	WIR-02109	CABLE, POWER; RELAY TO RECEPTACLE PUMP]

* See also Page 6

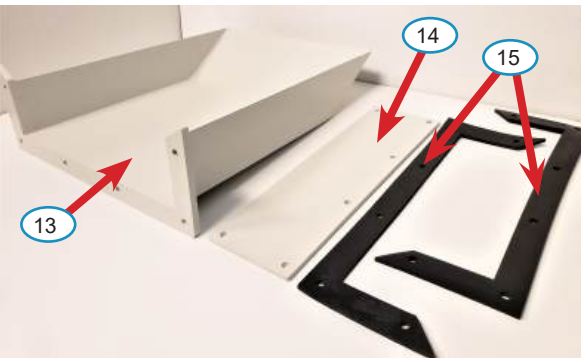
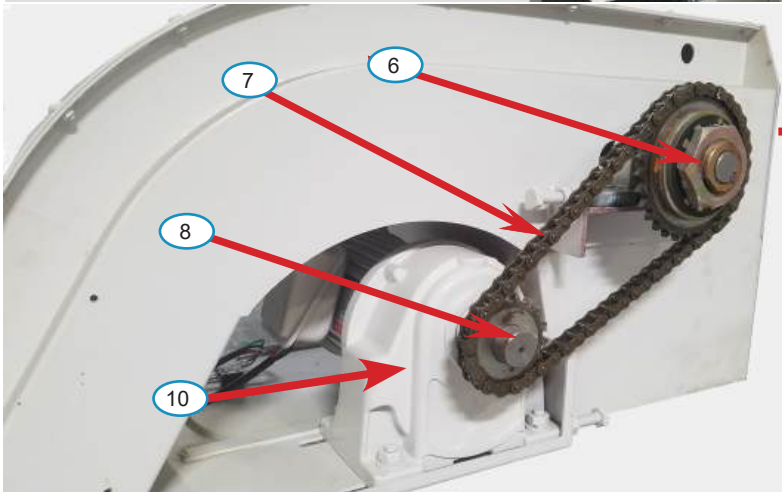


KIT-00093 WASHDOWN PUMP

****NOTE:** Rear & Side Washdowns each require an individual kit.



Item	Part Number	Description
1	CNV-02014	SUPPORT BEARING ASSEMBLY
2	MTR-02029	DRIVE MOTOR
3	WIR-02211	CABLE (TERMINAL BLOCK TO MOTOR)
4	WIR-02212	TERMINAL BLOCK
5	WIR-02213	POWER CABLE [W/ CONNECTOR]
6	CNV-02015	TORQUE LIMITER [CLUTCH]
7	HDW-02116	DRIVE CHAIN
8	CNV-02016	SPROCKET
9	CNV-02013	CASTER
10	CNV-02017	GEAR REDUCER
11	CNV-02018	CHAIN COVER
12	CNV-02009	CHIP CONVEYOR - COMPLETE
13	CNV-02019	FRONT COOLANT TANK EXTENSION
14	CNV-02020	FRONT COOLANT TANK END CAP
15	CNV-02021	GASKET; END CAP, EXTENSION

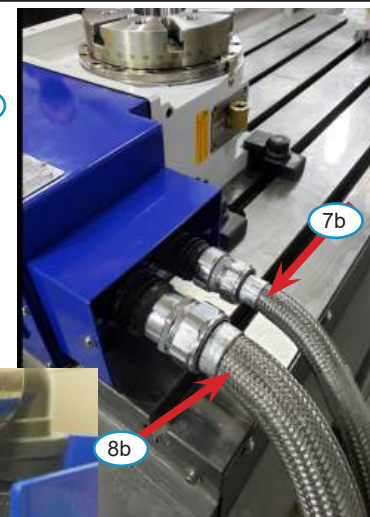
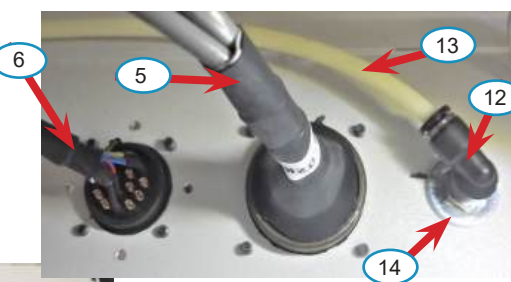
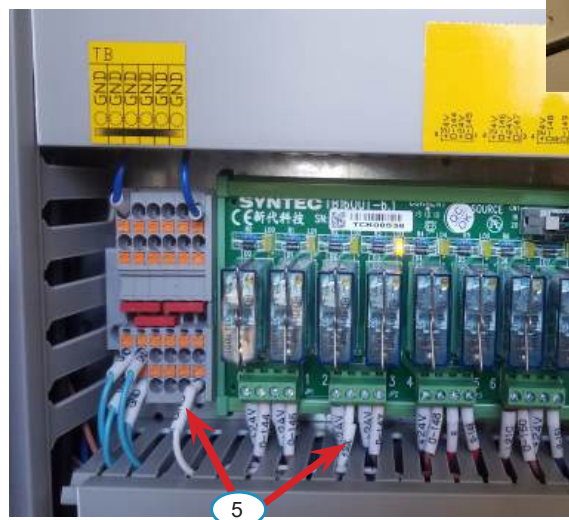
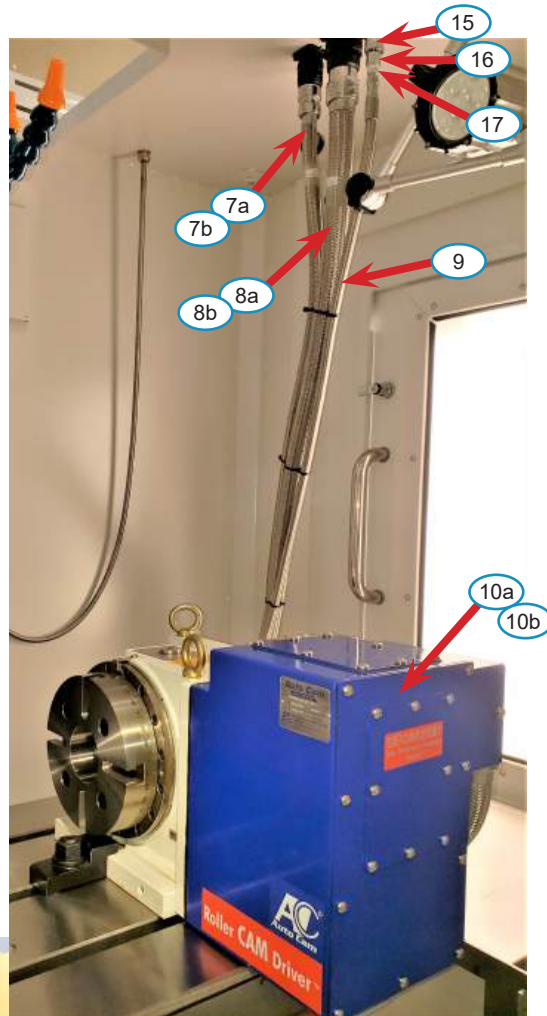
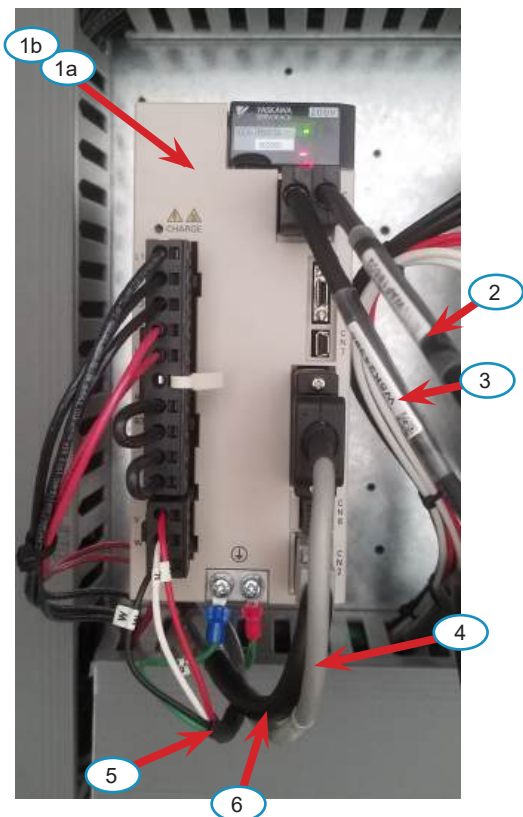


CHIP CONVEYOR



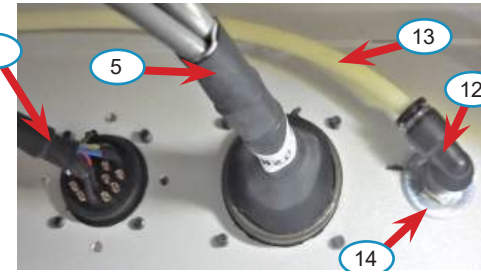
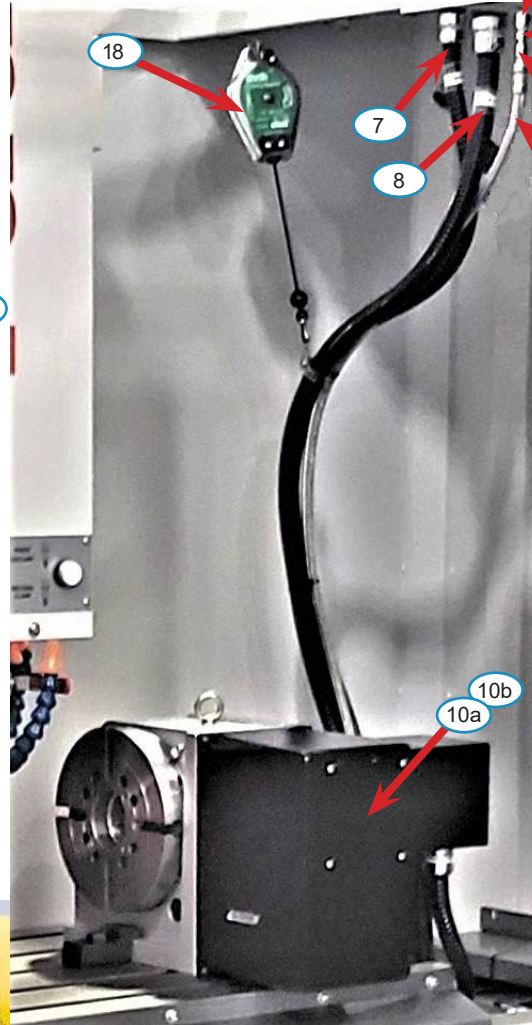
Item	Part Number	Description
1	MPG-02001	REMOTE MPG W/ CABLE, CONNECTOR & BRACKET

REMOTE MPG

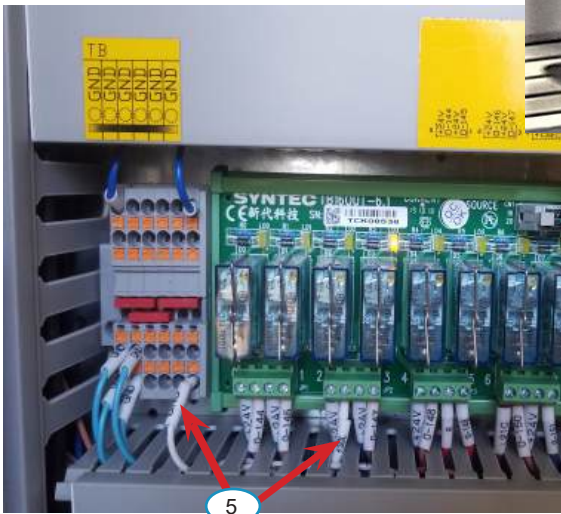


Item	Part Number	Description
1a	AMP-02001	AMPLIFIER, YASKAWA, 1000W [SIG. 5]
1b	AMP-02013	AMPLIFIER, YASKAWA, 1000W [SIG. 7]
2	WIR-02050	CABLE,USB-USB;MECHATROLINK;18 IN AMP-AMP
3	WIR-02051	CABLE,USB-USB;MECHATROLINK;11 FT CTR-AMP
4	WIR-02020	CABLE, AMP-TERMINAL BLOCK, BATTERY BKP
5	WIR-02119	HARNESS, A-AXIS POWER, AMP TO BULKHEAD
6	WIR-02010	HARNESS, A-AXIS ENCODER, AMP TO BULKHEAD
7a	WIR-02012	CABLE; A-AXIS ENCODER, BULKHEAD TO ROTARY
7b	WIR-02012-STR	CABLE; A-AXIS ENCODER,BULKHEAD TO ROTARY [STRAIGHT]
8a	WIR-02013	CABLE; A-AXIS POWER, BULKHEAD TO ROTARY
8b	WIR-02013-STR	CABLE; A-AXIS POWER, BULKHEAD TO ROTARY [STRAIGHT]
9	PLM-02191	AIR HOSE; 1/4JIC, STEEL BRAIDED
10a	ROT-02092	ROTARY TABLE: FR-6A,HIGH SPEED [W/OUT MOTOR]
10b	ROT-02092/MTR	ROTARY TABLE: FR-6A,HIGH SPEED [W/ MOTOR]
11	PLM-02186	REDUCER; 3/8"NPT - 1/4" NPT
12	PLM-02092	FITTING; 6MM QD X 1/4MPT ELL
13	PLM-02083	TUBING; NYLON, 6MM
14	SCR-00328	WASHER; 25MM X 14MM X 2.5MM
15	PLM-02192	FITTING; PUSH CONNECT SOCKET HOSE COUPLING
16	PLM-02193	FITTING; QUICK DISCONNECT HOSE COUPLING
17	PLM-02190	FITTING; 1/4 JIC - 1/4 FIPT

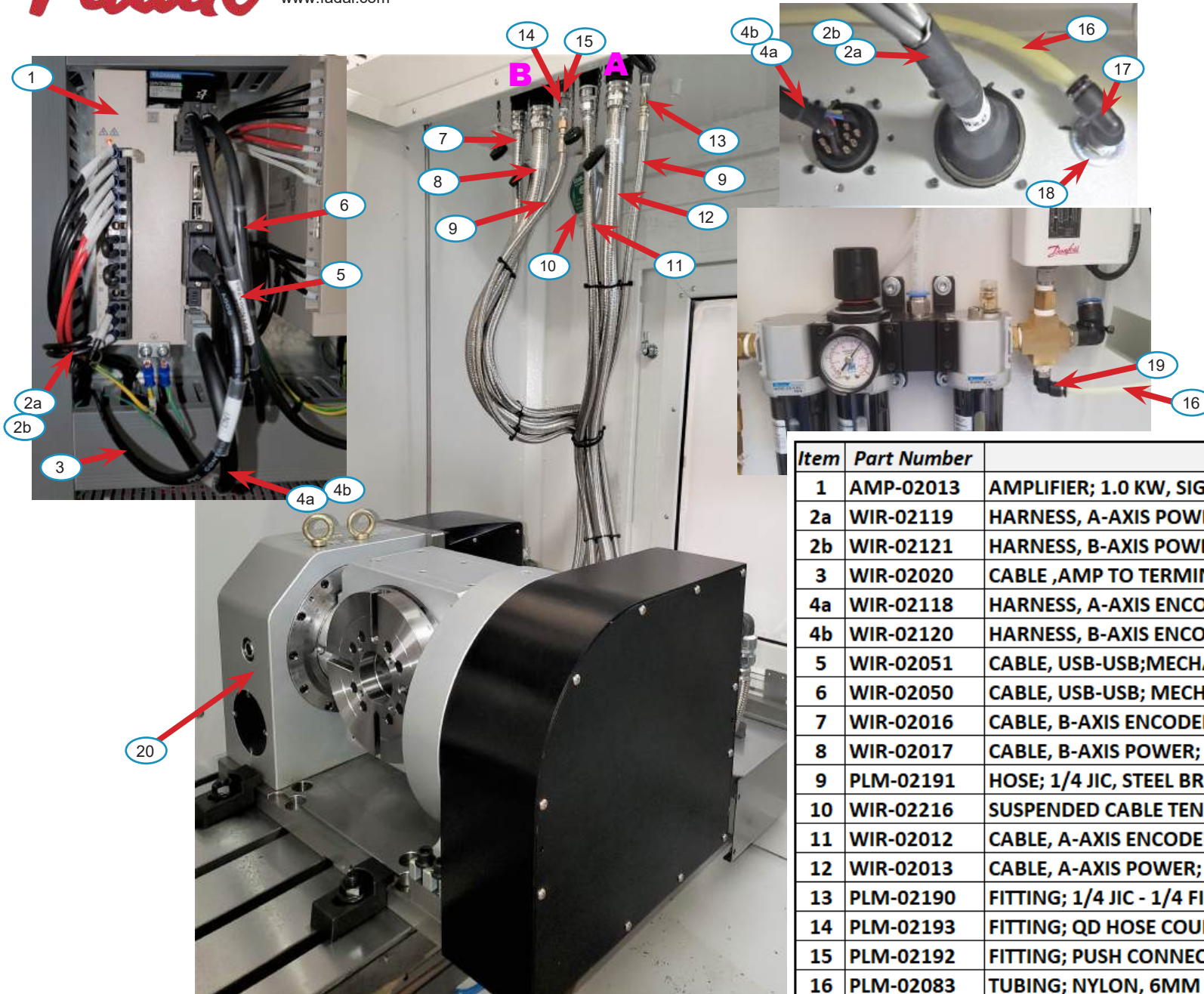
6" ROTARY - HIGH SPEED



Item	Part Number	Description
1	AMP-02001	AMPLIFIER,YASKAWA, 1.5KW [SIG. 7]
2	WIR-02013	CABLE, USB-USB; MECHATROLINK 18" AMP-AMP
3	WIR-02050	CABLE, USB-USB; MECHATROLINK 11' CTR-AMP
4	WIR-02020	CABLE ,AMP TO TERMINAL BLOCK; BATTERY BKP
5	WIR-02119	HARNESS, A-AXIS POWER; AMP TO BULKHEAD
6	WIR-02010	HARNESS, A-AXIS ENCODER; AMP TO BULKHEAD
7	WIR-02012	CABLE; A-AXIS ENCODER, BULKHEAD TO ROTARY
8	WIR-02013	CABLE, A-AXIS POWER; BULKHEAD TO ROTARY
9	PLM-02191	HOSE; 1/4 JIC, STEEL BRAIDED
10a	ROT-02056	ROTARY TABLE; FR-8D [W/OUT MTR]
10b	ROT-02056/MTR	ROTARY TABLE; FR-8D [W/ MTR]
11	PLM-02186	REDUCER; 3/8 NPT - 1/4 NPT
12	PLM-02092	FITTING; 6MM QD X 1/4 MPT ELL
13	PLM-02083	TUBING; NYLON, 6MM
14	SCR-00328	WASHER; 25MM X 14MM X 2.5MM
15	PLM-02192	FITTING; PUSH CONNECT SOCKET HOSE COUPLING
16	PLM-02193	FITTING; QUICK DISCONNECT HOSE COUPLING
17	PLM-02190	FITTING; 1/4 JIC - 1/4 FIPT
18	WIR-02216	SUSPENDED CABLE TENSIONER, ADJUSTABLE



8" ROTARY



8" TILTING ROTARY

Item	Part Number	Description
1	AMP-02013	AMPLIFIER; 1.0 KW, SIG. 7
2a	WIR-02119	HARNESS, A-AXIS POWER; AMP TO BULKHEAD
2b	WIR-02121	HARNESS, B-AXIS POWER; AMP TO BULKHEAD
3	WIR-02020	CABLE ,AMP TO TERMINAL BLOCK; BATTERY BKP
4a	WIR-02118	HARNESS, A-AXIS ENCODER ;AMP TO BULKHEAD
4b	WIR-02120	HARNESS, B-AXIS ENCODER; AMP TO BULKHEAD
5	WIR-02051	CABLE, USB-USB;MECHATROLINK 11', CTR-AMP
6	WIR-02050	CABLE, USB-USB; MECHATROLINK 18" AMP-AMP
7	WIR-02016	CABLE, B-AXIS ENCODER; BULKHEAD TO ROTARY
8	WIR-02017	CABLE, B-AXIS POWER; BULKHEAD TO ROTARY
9	PLM-02191	HOSE; 1/4 JIC, STEEL BRAIDED
10	WIR-02216	SUSPENDED CABLE TENSIONER, ADJUSTABLE
11	WIR-02012	CABLE, A-AXIS ENCODER; BULKHEAD TO ROTARY
12	WIR-02013	CABLE, A-AXIS POWER; BULKHEAD TO ROTARY
13	PLM-02190	FITTING; 1/4 JIC - 1/4 FIPT
14	PLM-02193	FITTING; QD HOSE COUPLING
15	PLM-02192	FITTING; PUSH CONNECT SOCKET HOSE COUPLING
16	PLM-02083	TUBING; NYLON, 6MM
17	PLM-02092	FITTING; 6MM QD X 1/4MPT ELL
18	SCR-00328	WASHER; 25MM X 14MM X 2.5MM
19	PLM-02172	FITTING, 6MM QD X 3/8 MALE NPT, ELL
20	ROT-02061	TILTING ROTARY TABLE, 4/5TH;[FTR-8D];[W/ CABLES/MTRS