Spare Parts List

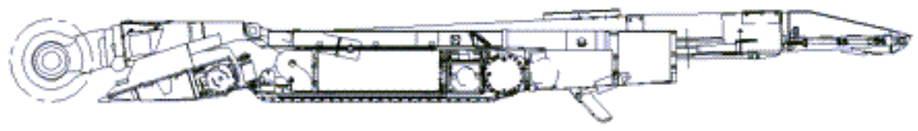
BUCYRUS - CONTINUOUS MINER

ID - No.: 907793

Serial number: 423182

Jim Walters Resources

30M-3



Bucyrus America, Inc.

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MODIFICATION [MAIN FRAME]
REVISION: 00
03.10.2011

LISTNUMBER : 655326
SAP-No.: 655326
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	1	EA	FRAME [MAIN]	655322	655322		13-01-003
2	1	EA	PLATE [INLET]	655325	655325		

Book Name "423182"

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ASSEMBLY [TOP COVERS]
REVISION: 02
03.14.2011

LISTNUMBER : 854775
SAP-No.: 854775
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
79	2	EA	WASHER [LOCK] 1/2"	301598	E-37708013		
80	4	EA	WASHER [LOCK SPRING] 5/8"	167690	J-23356		
81	172	EA	WASHER [LOCK] 3/4"	218021	L-S5-12		
82	21	EA	WASHER [LOCK SPRING] 1"	173011	J-23361		
83	4	EA	BOLT [SH] 3/8" X 3/4"	188437	J-62018		
84	2	EA	BOLT [SH] 3/4" X 1 3/4"	193714	0000 008 390 16 17		
85	2	EA	BOLT [HH] 1/2" X 1 3/4"	210026	L-S1-8C-14		
86	18	EA	BOLT [HH] 1" X 2 3/4"	222074	L-S1-16C-22		
87	2	EA	BOLT [HH] 3/4" X 1 1/2"	236092	L-S1-12C-12		
88	22	EA	BOLT [HH] 3/4" X 1 3/4"	245235	L-S1-12C-14		
89	2	EA	BOLT [HH] 3/4" X 2"	241602	L-S1-12C-16		
90	3	EA	BOLT [HH] 3/4" X 3"	214429	L-S1-12C-24		
91	2	EA	BOLT [SH] 5/8" X 1 3/4"	188251	J-66844		
92	2	EA	BOLT [HH] 5/8" X 1"	224398	L-S1-10C-8		
93	141	EA	BOLT [HH] 3/4" X 1 3/8"	224258	L-S1-12C-11		
94	2	EA	BOLT [SH] 3/8" X 1 1/4"	174877	J-61657		
95	3	EA	BOLT [HH] 1" X 2 1/2"	237500	L-S1-16C-20		
96	6	EA	BOLT [SH] 5/8" X 1 1/2"	192900	J-62576		
97	2	EA	BOLT [SH] 3/4" X 2"	302781	E-37546819		
98	1	EA	PROCEDURE [R.H. COVER]	655685	655685		
99	1	EA	PROCEDURE [L.H. COVER]	655679	655679		
100	1	EA	BRACKET [TOP COVERS]	865088	865088		

Book Name "423182"

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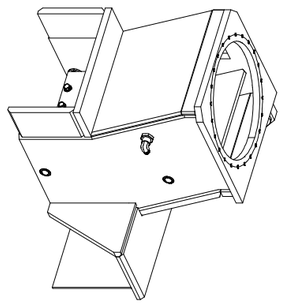
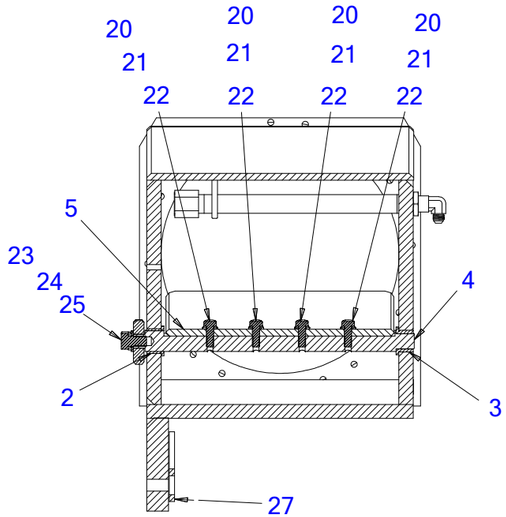
ASSEMBLY [L.H. SIDE SPRAY]
REVISION: 01
03.14.2011

LISTNUMBER : 390970
SAP-No.: 390970
WEIGHT LBS :

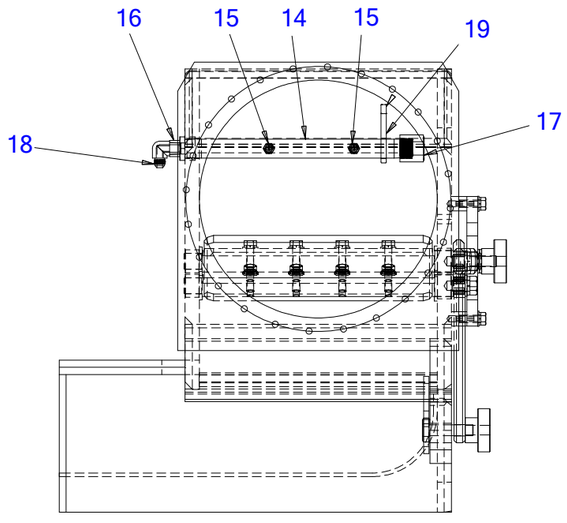
ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	1	EA	COVER [L.H. SPRAY]	390974	390974		
2	1	EA	BAR [COVER MOUNTING]	390973	390973		
3	4	EA	WASHER [LOCK SPRING] 3/4"	168566	J-23358		
4	4	EA	BOLT [HH] 3/4" X 2"	241602	L-S1-12C-16		
5	1	EA	BASE [MOUNTING]	389510	389510		

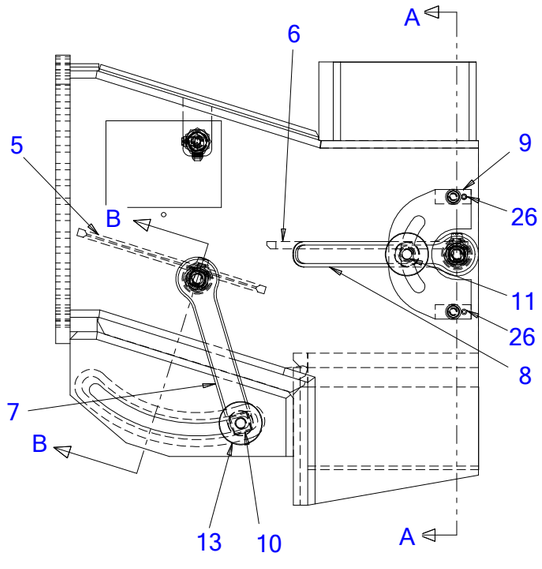


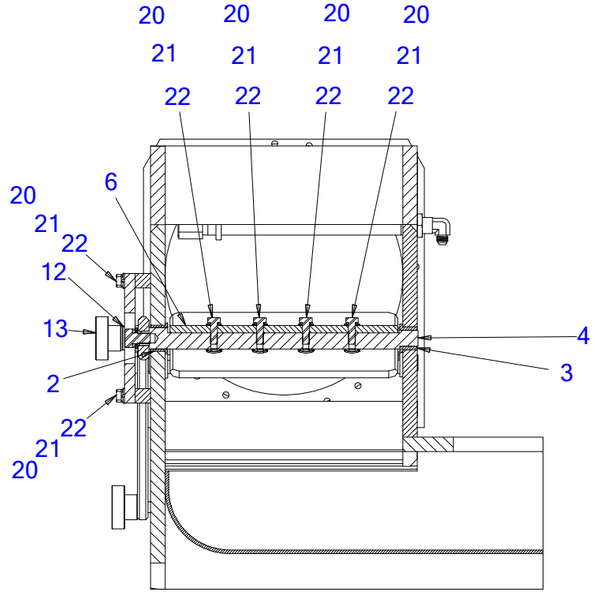


SECTION B - B

NOTE:
ITEMS 10 AND 11 LOCKTITE 242 TO BE USED. DO NOT WELD.







SECTION A- A

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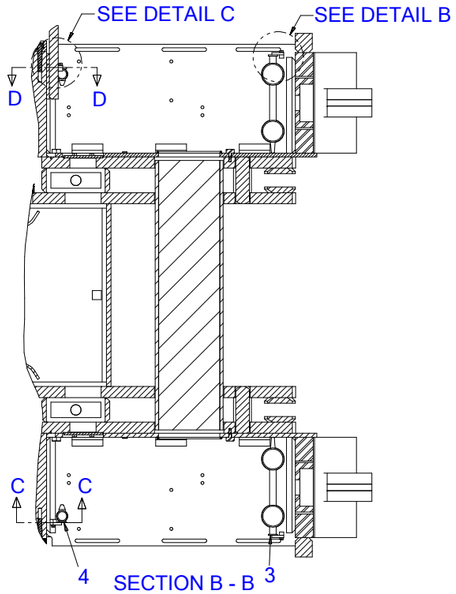
ASSEMBLY [L.H. TOP COVER SPRAY]
REVISION: 01
03.14.2011

LISTNUMBER : 655341
SAP-No.: 655341
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	1	EA	MOUNT [TP CONE SPRAY L.H.]	390975	390975		
2	1	EA	COVER [TP CONE SPRAY L.H.]	390977	390977		
3	2	EA	WASHER [LOCK] 3/4"	218021	L-S5-12		
4	2	EA	BOLT [HH] 3/4" X 1 3/4"	245235	L-S1-12C-14		
5	1	EA	ASSEMBLY [NOZZLE]	368009	368009		
6	2	EA	WASHER [LOCK] M12	169335	J-481918		
7	2	EA	BOLT [SH] M12	126890	0000 000 218 14 50		



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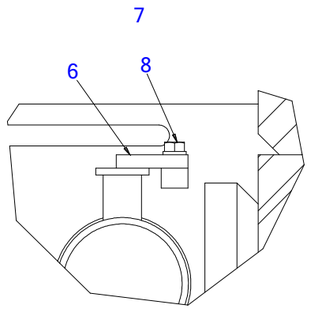
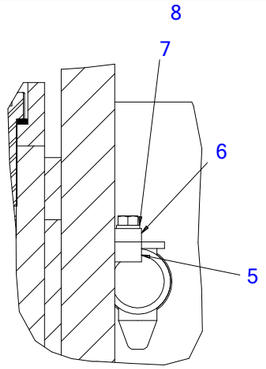
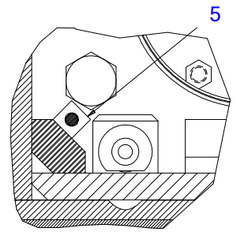


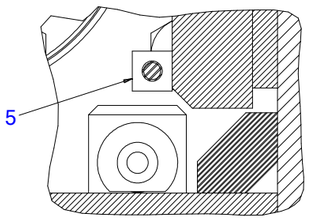
DETAIL B



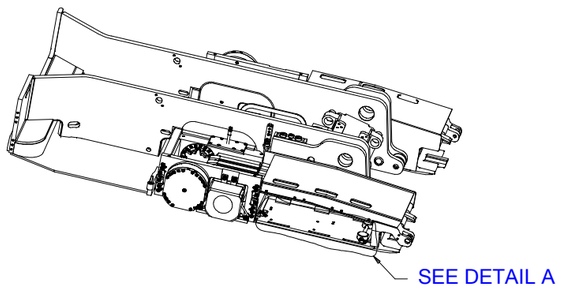
DETAIL C

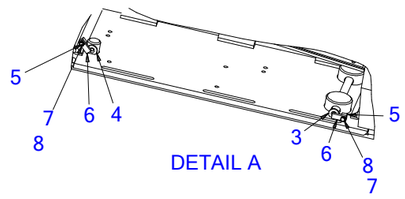


SECTION C - C

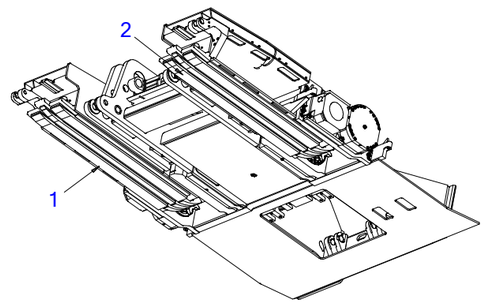


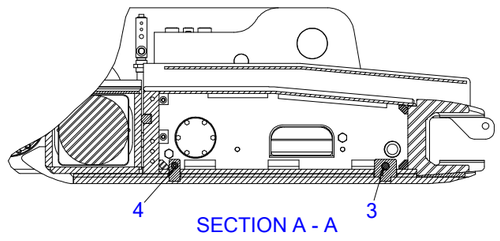
SECTION D - D



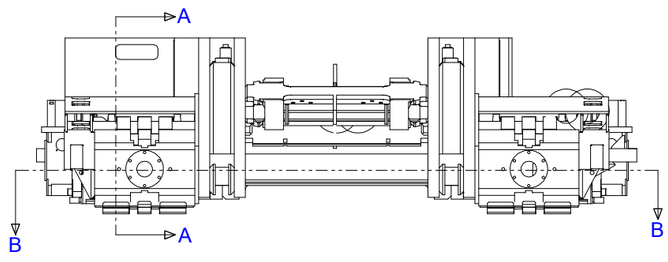


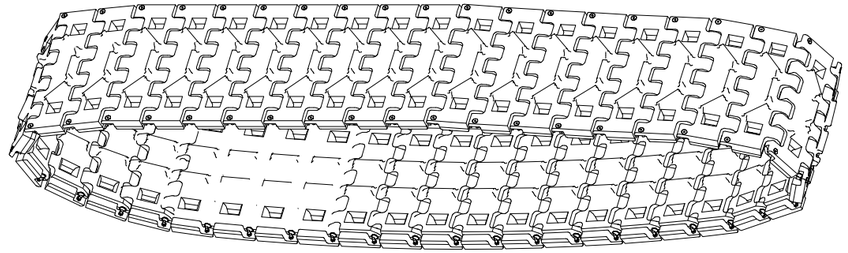
DETAIL A

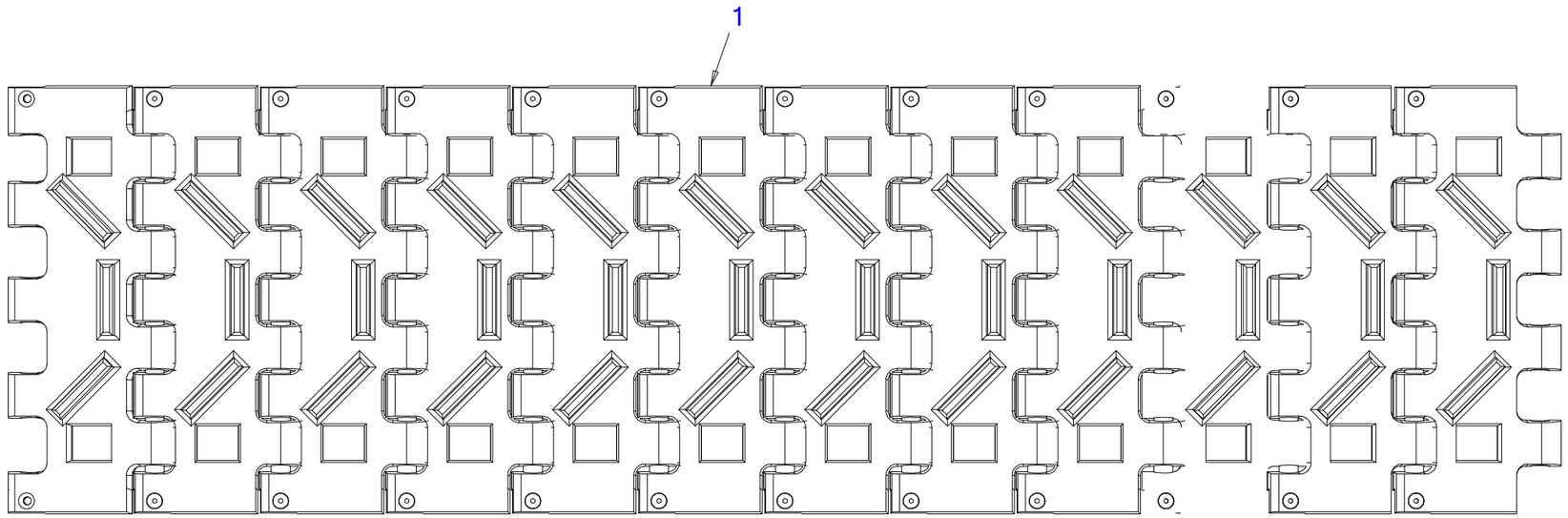


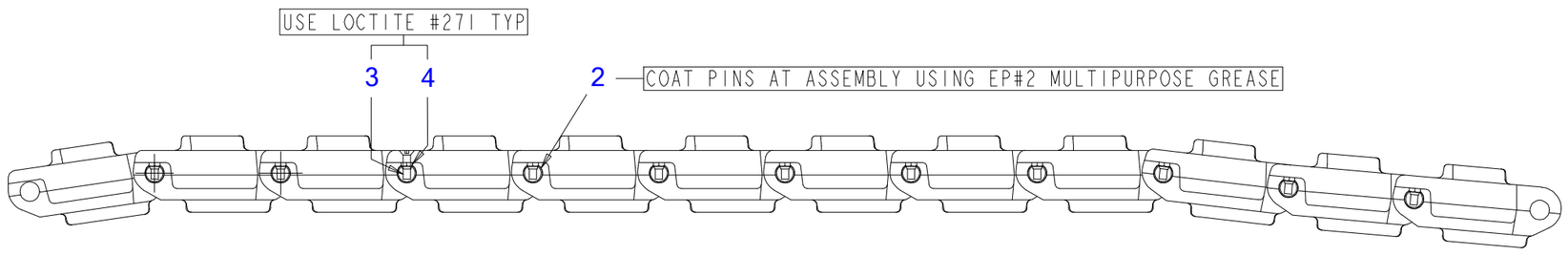


SECTION A - A



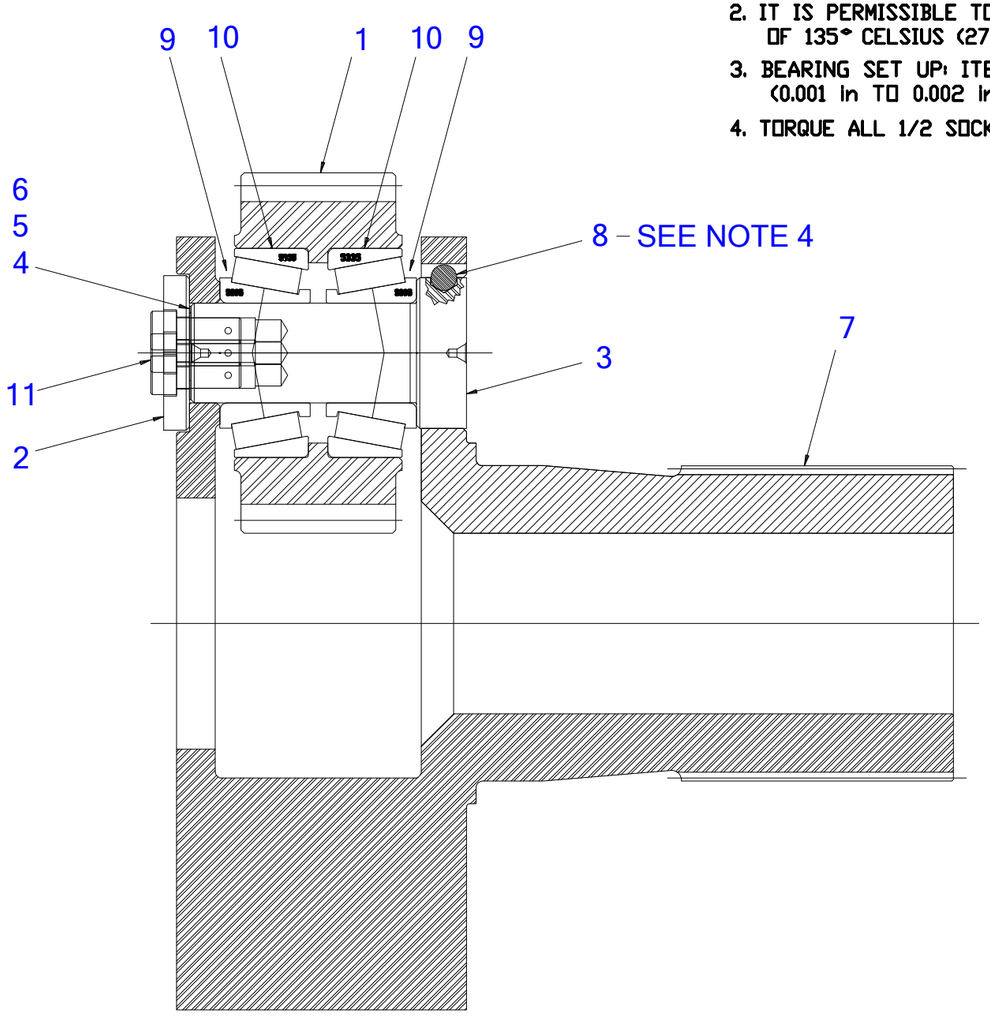




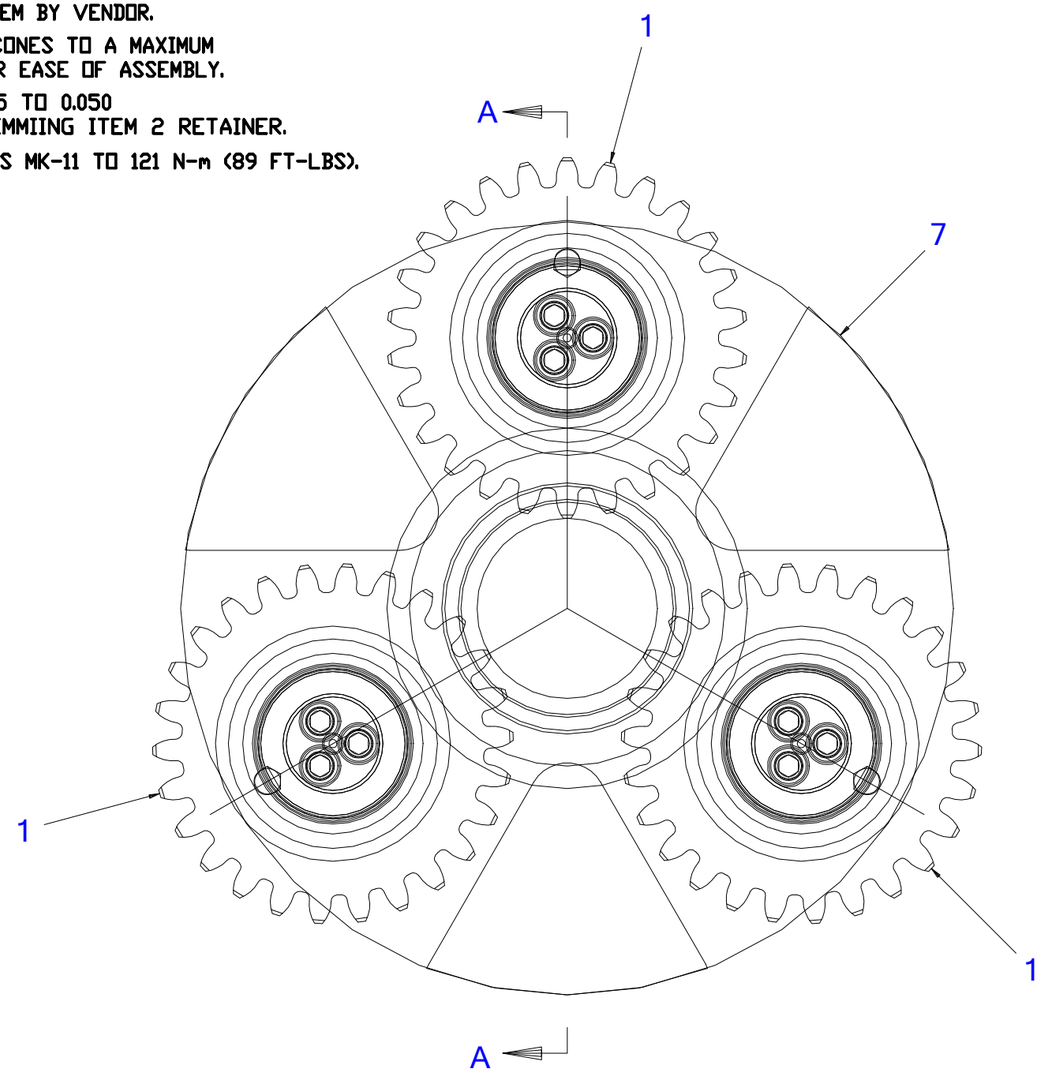


NOTES:

1. BEFORE ASSEMBLY ALL PARTS ARE TO BE CLEANED OF ANY SUBSTANCE PLACED ON THEM BY VENDOR.
2. IT IS PERMISSIBLE TO PREHEAT BEARING CONES TO A MAXIMUM OF 135° CELSIUS (275 ° FAHRERHEIT) FOR EASE OF ASSEMBLY.
3. BEARING SET UP: ITEM'S-9 & 10 TO 0.025 TO 0.050 (0.001 In TO 0.002 In) END PLAY BY SHIMMIING ITEM 2 RETAINER.
4. TORQUE ALL 1/2 SOCKET HEAD CAP SCREWS MK-11 TO 121 N-m (89 FT-LBS).



SECTION A - A



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ASSEMBLY [TRAM GEAR CASE L.H.]
REVISION: 02
03.18.2011

LISTNUMBER : 174665
SAP-No.: 174665
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
40	1	EA	O-RING	171786	J-69470		
41	1	EA	O-RING	167878	J-68207		
42			O-RING	171172	J-166356		
43	1	EA	O-RING	171540	J-68797		
44	1	EA	O-RING	167747	J-68561		
45	1	EA	O-RING	172330	J-68766		
46	1	EA	PIN [DOWEL] 1/2" X 1"	173299	J-66084		
47	1	EA	PIN [DOWEL] 1" X 4"	169203	J-63659		
48	14	EA	SCREW [HHC] 1/2" X 1 1/4"	180520	J-68019		
49	6	EA	SCREW [HHC] 5/8" X 1 1/2"	173195	J-67795		
50	10	EA	SCREW [SHC] 1/2" X 1 1/4"	167687	J-70641		
51	33	EA	BOLT [SH] 3/4 X 2"	173764	J-70803		
52	18	EA	BOLT [SH] 3/4" X 5 1/2"	203743	J-564A842MK003		
53	18	EA	BOLT [SH] 3/4" X 8 1/2"	173366	J-70802		
54	6	EA	WASHER [LOCK SPRING] 5/8"	167690	J-23356		
55	1	EA	FITTING [RELIEF] 1/8"	167553	J-67698		
56	1	IN	WIRE [SOFT BRASS]	168013	J-9-0169-050		
57	1	EA	INSTRUCTIONS [LOCKWIRE]		J-511A060		
58	2	EA	BOLT [SH] 1" X 3"	180119	J-66887		
59	1	EA	PLUG [3/4"]	173146	J-70592		
60	2	EA	SEAL	167602	J-487095		
61	3	EA	PLUG [PIPE] 1/2"	167605	J-63145		
62	4	EA	PLUG [1/4"]	172779	J-63143		
63	4	EA	WASHER [1"]	173420	J-67000		
64	2	EA	BOLT [SH] 1" X 4"	180120	J-66890		
66	1	EA	SIGHT GLASS [OIL LEVEL]	167666	J-499004		
67	1	EA	O-RING	172426	J-64514		
68	1	EA	RETAINER [BEARING]	180830	J-491472		
69	6	EA	BOLT [1/2" X 1"]	167543	J-438855		
70	1	EA	PLUG [3/4"]	167699	J-63146		
71	2	EA	BEARING	167733	J-70939		
72	3	EA	SHIM [.005]	172961	J-491478		
73	3	EA	SHIM [.007]	172928	J-491479		
74	1	EA	SHIM [.020]	172893	J-491480		
75	1	EA	IDLER	390806	J-491467		
76	2	EA	CLAMP [BAR]	175464	J-492186		
77	REF		RING [SNAP]				
78	REF		PLUG [SHAFT]				
79	REF		O-RING				

Book Name "423182"

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INSTALLATION [TRAM DRIVE]
REVISION: 03
03.21.2011

LISTNUMBER : 380455
SAP-No.: 380455
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	2	EA	ADAPTER [NIPPLE]	256728	J-566G218MK002		
2	2	EA	ADAPTER [UNION]	256738	J-27196		
3	2	EA	ADAPTER [NIPPLE]	169850	J-499157		
4	1	EA	MANIFOLD [R.H. TANK]	256642	J-565G879MK001		
5	1	EA	MANIFOLD [L.H. TANK]	256643	J-565G879MK002		
6	2	EA	PLUG [SQHD] 1 1/2"	188349	J-27653		
7	18	EA	WASHER	181031	J-483430		
8	2	EA	BOLT [SH] 1" X 3 1/2"	169163	J-71361		
9	16	EA	BOLT [SH] 1" X 5 1/2"	281491	281491		
10	8	EA	BLOCK	180644	J-492010		
11	8	EA	WASHER	173713	J-66982		
12	8	EA	BOLT [SH] 3/4" X 4"	173123	J-66867		
13	2	EA	ADAPTER [NIPPLE]	339012	DBT339012		
14	2	EA	COUPLING [PIPE] 3/4"	174302	J-26958		
15	2	EA	BUSHING [FS HEX] 3/4" X 1/2"	169495	J-27226		
16	2	EA	PLUG [VENT]	171751	J-486861		

Book Name "423182"

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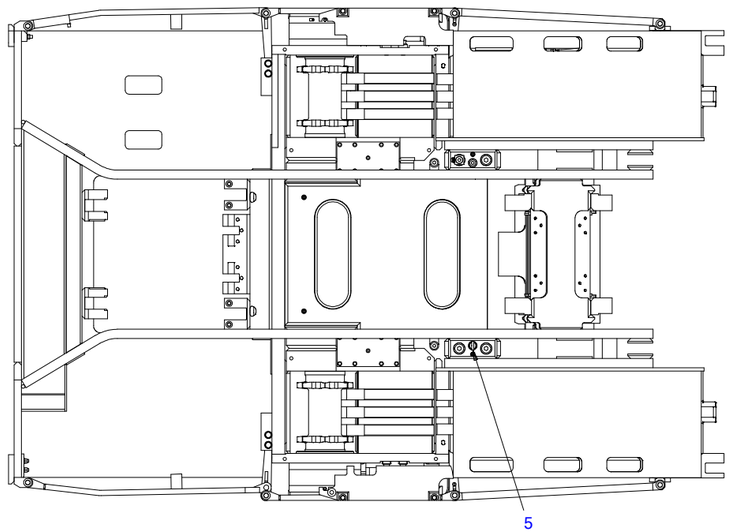
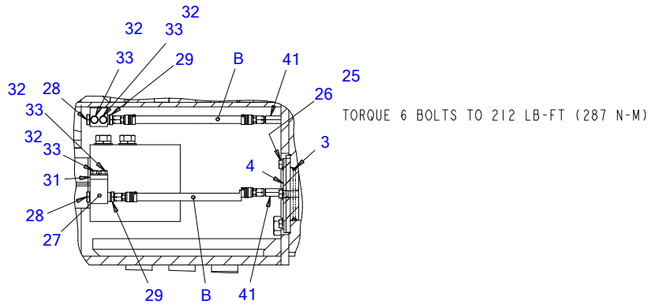
INSTALLATION [GATHERING HEAD]
REVISION: 01
03.21.2011

LISTNUMBER : 275454
SAP-No.: 275454
WEIGHT LBS :

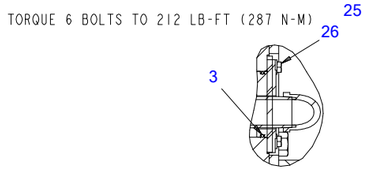
ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	2	EA	BUSHING [PIVOT]	181021	J-487203		
2	2	EA	BUSHING [PIVOT]	181015	J-487201		
3	2	EA	BUSHING [PIVOT]	180835	J-487202		
4	8	EA	BUSHING	181035	J-487194		
5	2	EA	PIN [PIVOT]	181014	J-491446		
6	2	EA	PIN [CYLINDER]	180760	J-491779		
7	2	EA	PIN [CYLINDER]	180806	J-491780		
8	1	EA	RETAINER [PIVOT PIN]	175459	J-492172		
9	2	EA	KEEPER	168767	J-491805		
10	6	EA	BOLT [HH] 3/4" X 2"	180124	J-67242		
11	4	EA	WASHER [LOCK] 5/8"	167690	J-23356		
12	4	EA	BOLT [HH] 5/8" X 1 3/4"	172705	J-68041		
13	2	EA	PIN [SPIROL]	172034	J-68918		





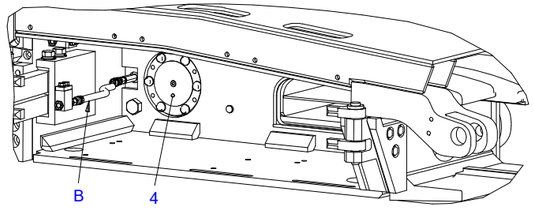
DETAIL A

TORQUE 6 BOLTS TO 212 LB-FT (287 N-M)

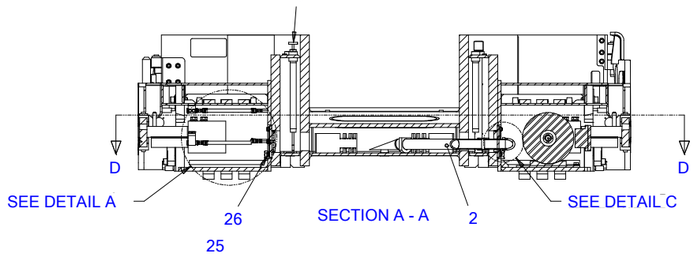


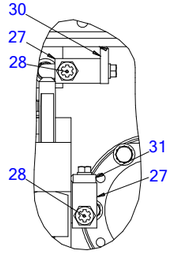
DETAIL C

5

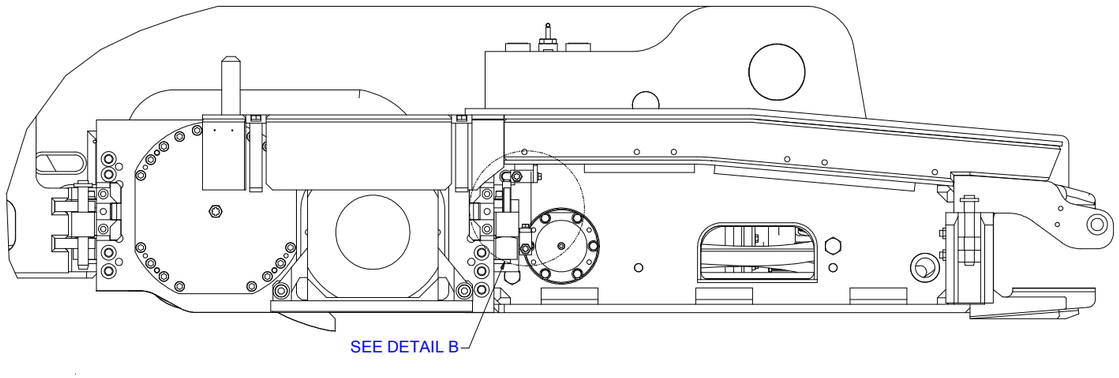


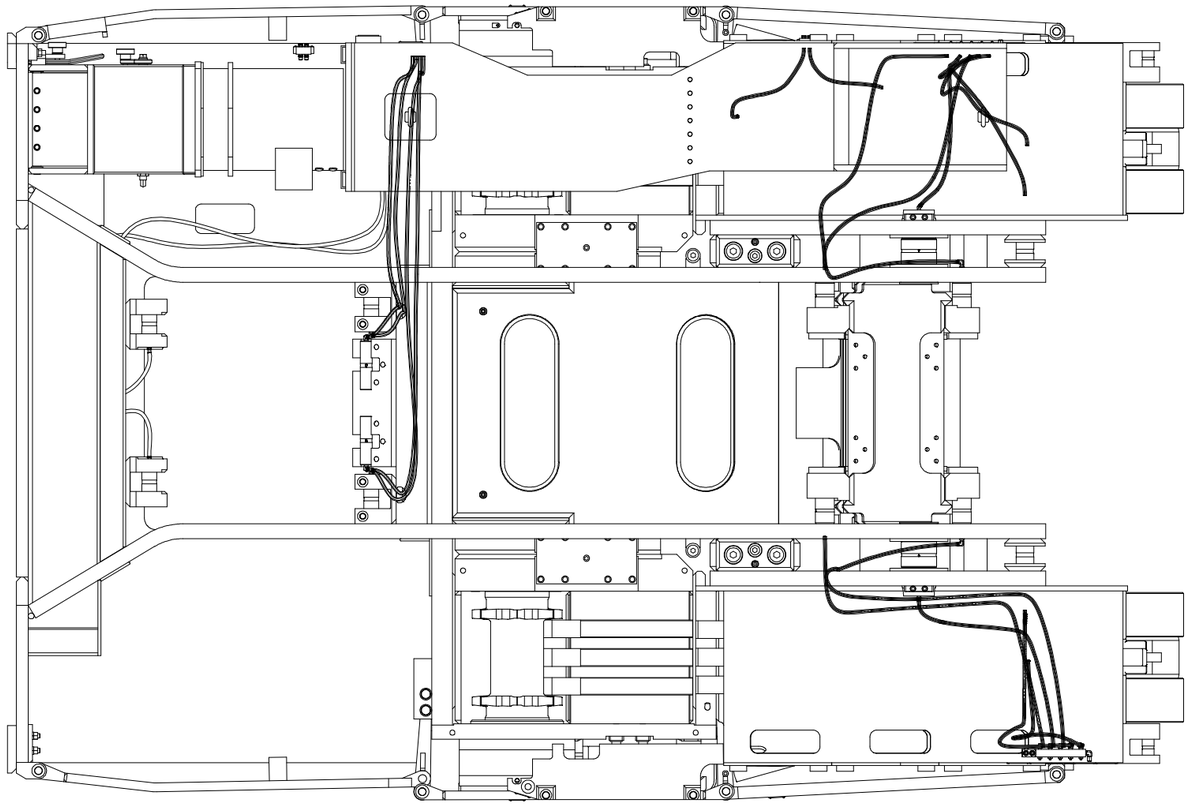
RIGHT HAND CRAWLER FRAME



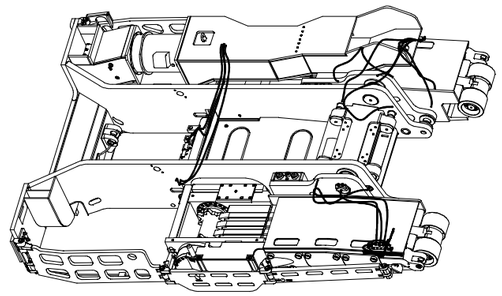


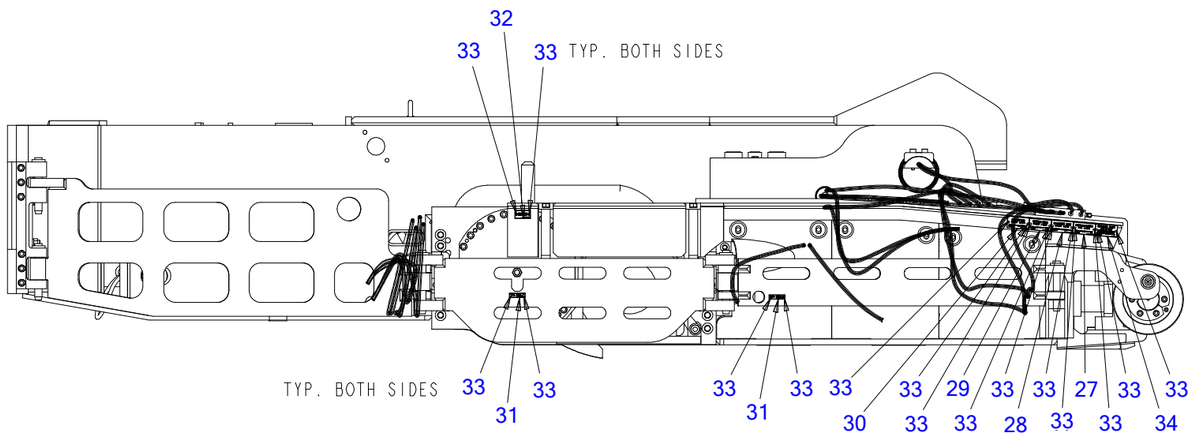
DETAIL B

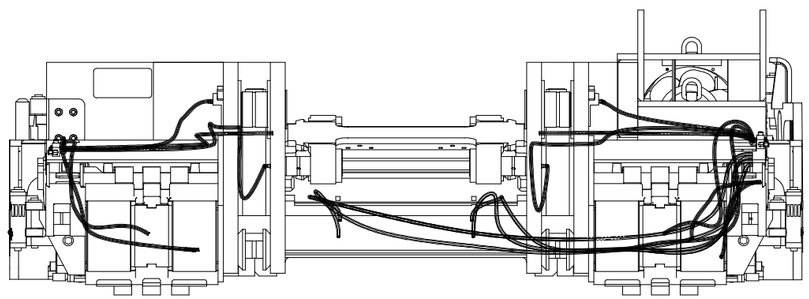




TORQUE ALL 1/2" CAP SCREWS TO
92 LB-FT (125 N-m) DRY.







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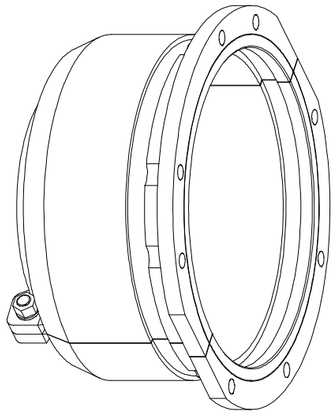
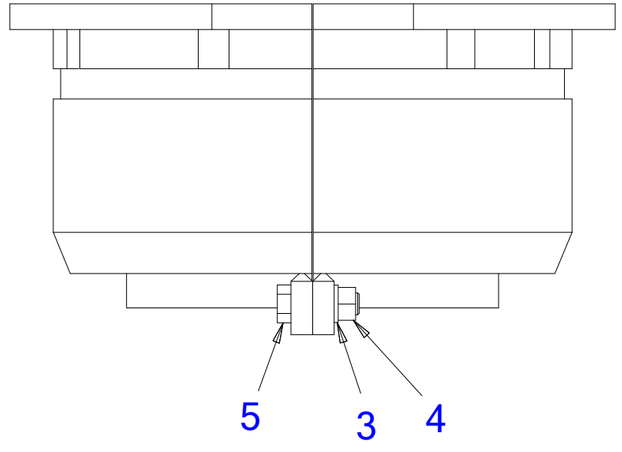
FRAME [CUTTER HEAD]
REVISION: 01
03.28.2011

LISTNUMBER : 655279
SAP-No.: 655279
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	1	EA	FRAME [SUPPORT]	655515	655515		13-03-002

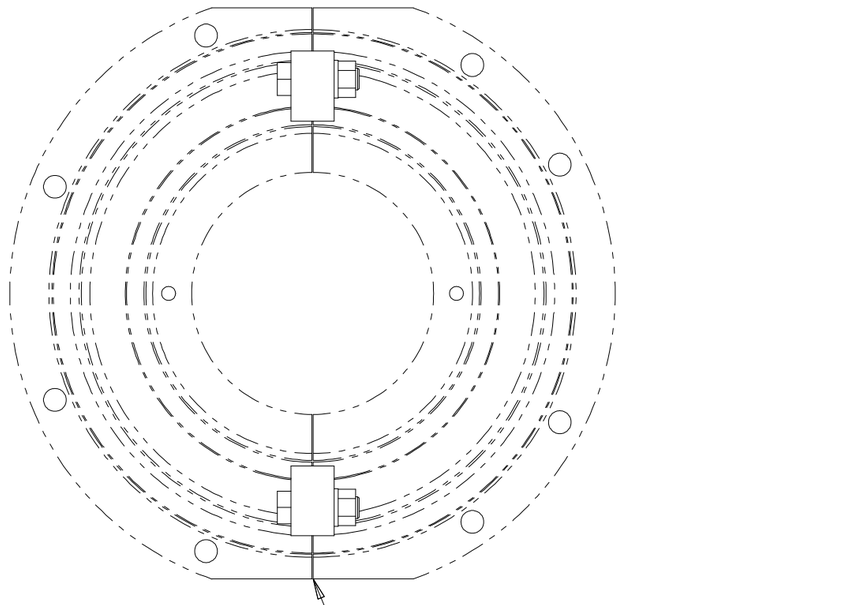
Book Name "423182"

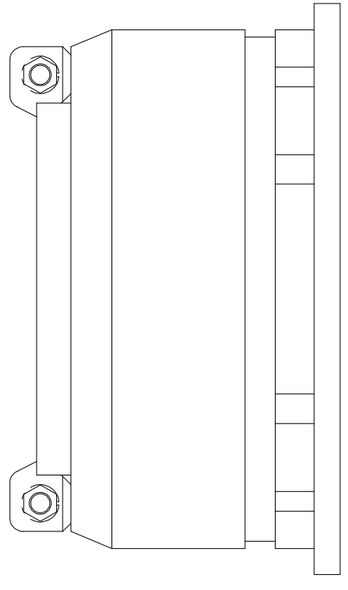




NOTE:

TORQUE M16 BOLTS TO 224 LB-FT (305 Nm) DRY.





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SUB-ASSEMBLY [GEAR R.H. 61-TOOTH]
REVISION: 00
03.27.2011

LISTNUMBER : 174822
SAP-No.: 174822
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	1	EA	CARRIER [INSIDE BEARING]	169188	J-486473		
2	1	EA	SEAL [DUO CONE]	301016	J-566A847MK001		
3	2	EA	CUP	171959	J-70776		
4	2	EA	CONE	167834	J-70777		
5	1	EA	SEAL [CARRIER]	391586	J-486531		
6	3	EA	SHIM [MINIMUM PURCHASE 5 PIECES] .005	171133	J-486568		
7	3	EA	SHIM [MINIMUM PURCHASE 5 PIECES] .007	171134	J-486569		
8	1	EA	SHIM [MINIMUM PURCHASE 5 PIECES] .020	172037	J-486570		
9	1	EA	RETAINER [BEARING]	180627	J-486567		
10	5	EA	SHIM [MINIMUM PURCHASE 5 PIECES] .005	171137	J-486534		
11	5	EA	SHIM [MINIMUM PURCHASE 5 PIECES] .007	171136	J-486533		
12	1	EA	SHIM [MINIMUM PURCHASE 5 PIECES] .020	171889	J-486532		
13	1	EA	RETAINER [BEARING]	180772	J-486529		
14	1	EA	RETAINER [BEARING]	180651	J-486551		
15	3	EA	SHIM [MINIMUM PURCHASE 5 PIECES] .005	171135	J-486571		
16	3	EA	SHIM [MINIMUM PURCHASE 5 PIECES] .007	171539	J-486572		
17	1	EA	SHIM [MINIMUM PURCHASE 5 PIECES] .020	172792	J-486573		
18	12	EA	BOLT [SPECIAL] 1/2" X 1"	167543	J-438855		
19	1	EA	CUP	171432	J-70774		
20	1	EA	CONE	171410	J-70775		
21	1	EA	O-RING	169185	J-69991		
22	1	EA	CUP	171438	J-70772		
23	1	EA	CONE	171430	J-70773		
25	12	EA	SCREW [HHC] 1/2" X 1 1/4"	180520	J-68019		
26	2	EA	PIN [DOWEL] 1/' X 1 1/4"	171515	J-62536		
27	16	EA	BOLT [HH] 1/2" X 1 1/2"	180652	J-70373		
28	1	FT	WIRE [SOFT BRASS]	168013	J-9-0169-050		
29	1	EA	INSTALLATION INSTRUCTIONS [GEAR CASE]		J-566A375		

Book Name "423182"

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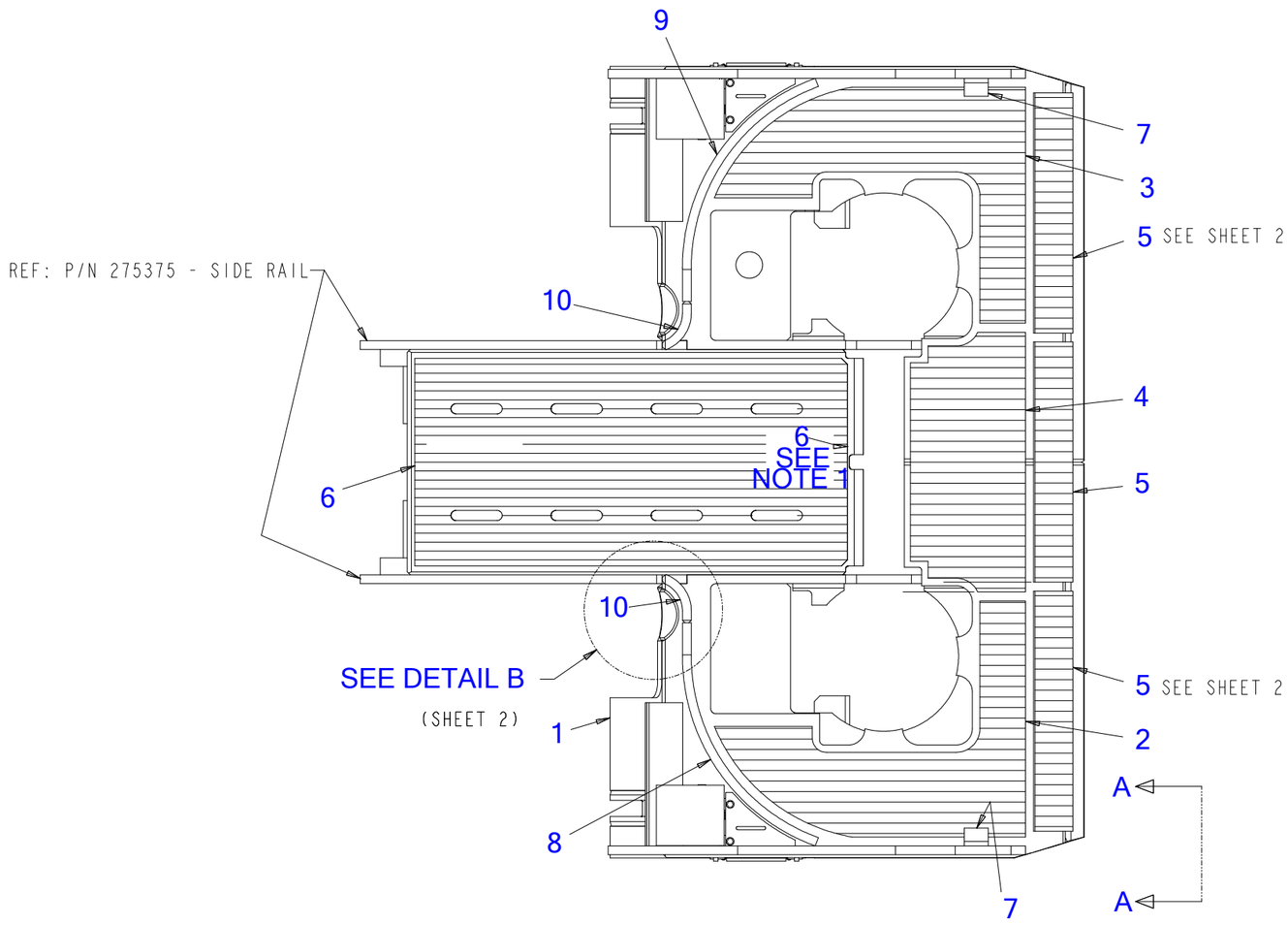
INSTALLATION [CUTTING HEAD WEAR PLATE]
REVISION: 02
03.27.2011

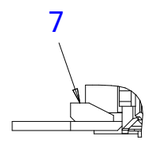
LISTNUMBER : 282401
SAP-No.: 282401
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	4	EA	PLATE [WEAR]	282385	J-567G880MK001		
2	4	EA	PLATE [WEAR]	282387	J-567G880MK003		
3	4	EA	PLATE [WEAR]	282386	J-567G880MK002		
6	4	EA	PLATE [WEAR]	282391	J-567G880MK007		
7	4	EA	PLATE [WEAR]	282390	J-567G880MK006		
8	2	EA	CUTTING HEAD [WEAR SHOE]	282400	J-567G882MK001		
9	2	EA	PLATE [WEAR]	282392	J-567G880MK008		

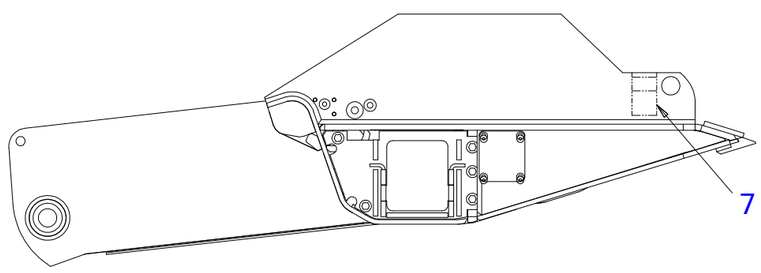


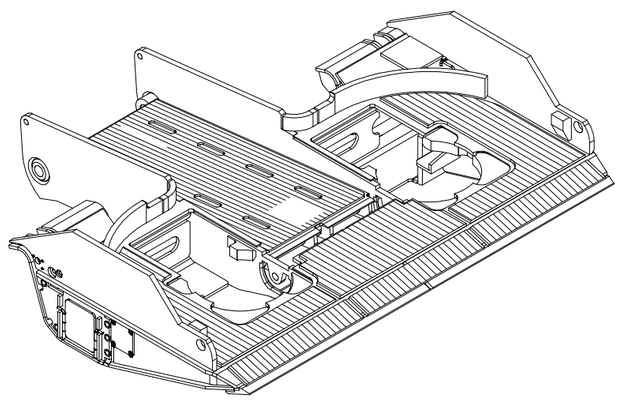
NOTES:

1. ENSURE THAT WEAR PLATE ITEM 6 CLEARS SPROCKET SLOT BY 1/4".



VIEW A - A





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ASSEMBLY [COVER L.H.]
REVISION: 00
03.29.2011

LISTNUMBER : 202283
SAP-No.: 202283
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
2	1	EA	PLATE [HANDLE COVER]	360304	360304		
3	2	EA	MOUNTING [FLANGE]	360305	360305		
4	1	EA	POST [SUPPORT]	360306	360306		
5	2	EA	WASHER [5/8"]	173745	J-66993		
6	2	EA	BOLT [HH] 5/8" X 1 1/4"	167539	J-68003		

Book Name "423182"

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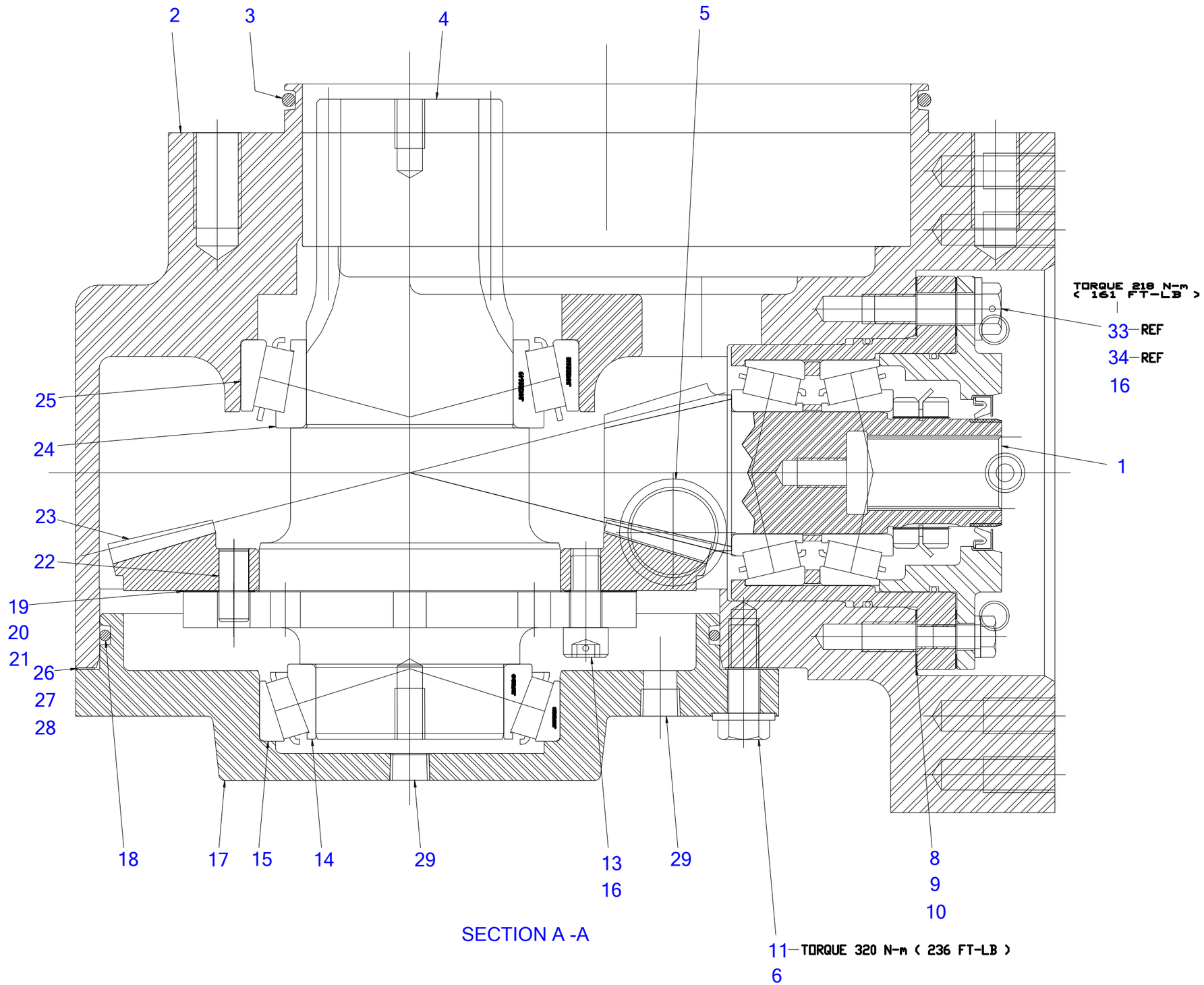
ASSEMBLY [CINCINNATI FOOT SHAFT]
REVISION: B
03.29.2011

LISTNUMBER : 174857
SAP-No.: 174857
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
5	1	EA	SPROCKET [5-TOOTH]	174661	DBT174661		
6	2	EA	SHAFT	167623	J-486557		
7	2	EA	CLAMP [RING]	167624	J-486558		
11	2	EA	BOLT [SH] 1" X 1 1/2"	167644	J-66882		
12	4	EA	O-RING	167753	J-68795		
14	8	EA	PLUG [PIPE] 1/8"	168555	J-63142		

Book Name "423182"


2
3
4
5
TORQUE 218 N-m
< 161 FT-LB >
33 REF
34 REF
16
25
24
1
23
22
19
20
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27
28
18
17
15
14
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13
16
29
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9
10
11
6
TORQUE 320 N-m (236 FT-LB)

SECTION A -A

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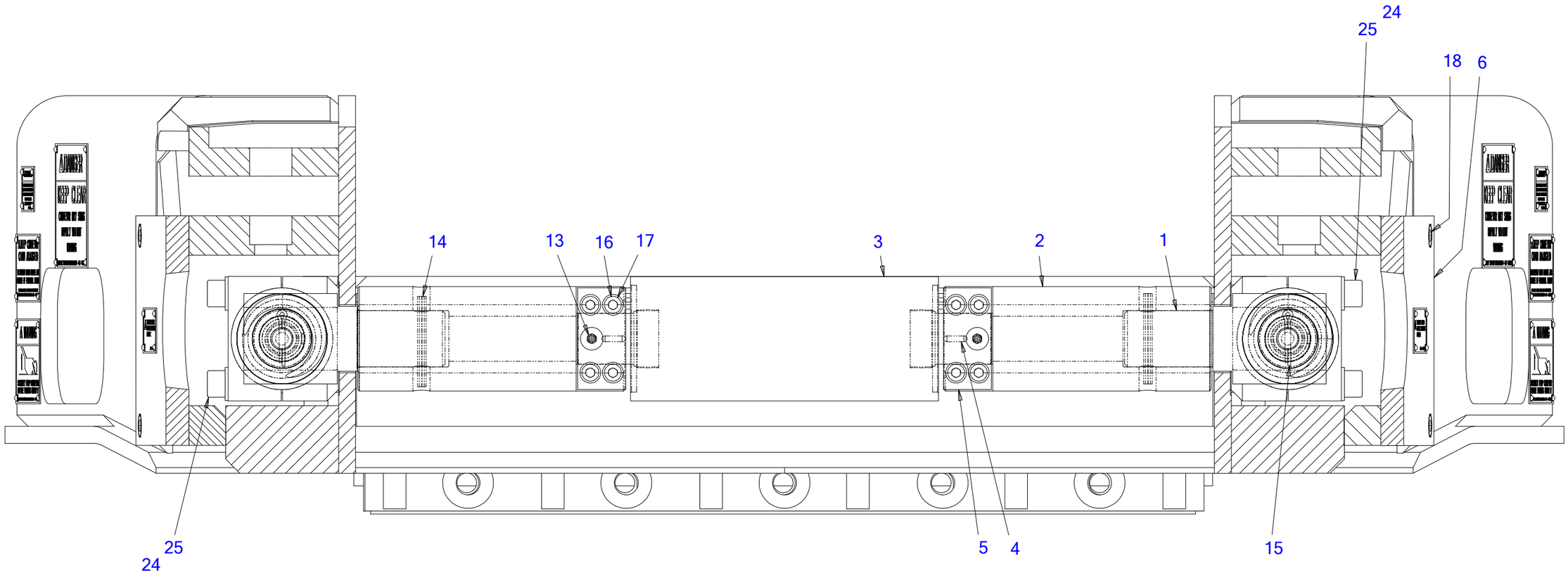
CONVEYOR [EXTENDED INTERMEDIATE]
REVISION: 02
03.30.2011

LISTNUMBER : 904696
SAP-No.: 904696
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
3	1	EA	SWING CYLINDER [L.H.]	620251	620251		
4	1	EA	SWING CYLINDER [R.H.]	280775	6951 002 027 00 00		
5	1	EA	CLEVIS [LIFT]	280783	6951 002 028 00 00		
9	2	EA	PLATE [WEAR]	280819	6951 002 023 02 00		
12	2	EA	GUARD [HOSE]	336213	DBT336213		
13	1	EA	PLATE [REAR WEAR]	280824	6951 002 021 01 00		
14	1	EA	PLATE [WEAR]	400377	DBT400377		
15	1	EA	PLATE [FRONT WEAR]	280828	6951 002 021 03 00		



SECTION A - A

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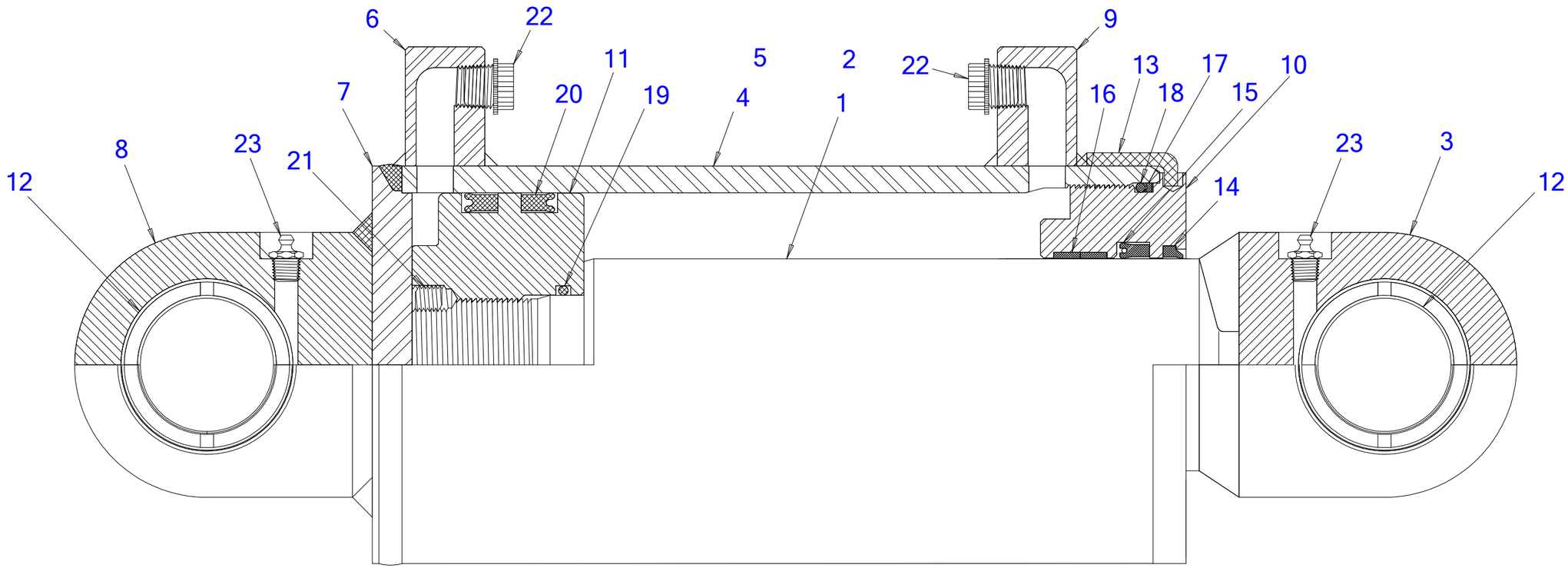
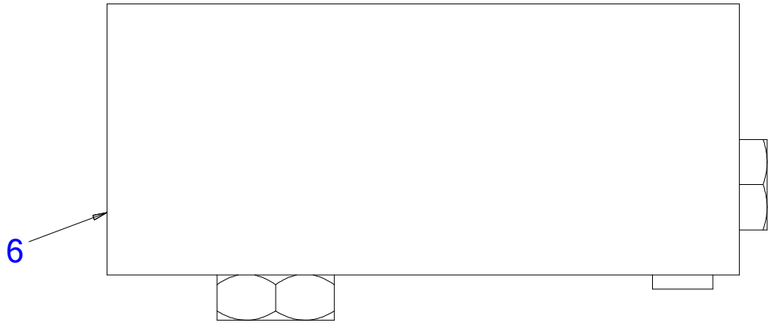
ASSEMBLY [CONVEYOR TAKE-UP CYLINDER]
REVISION: A
03.30.2011

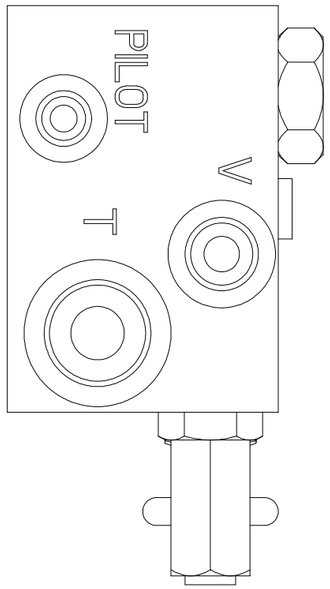
LISTNUMBER : 175478
SAP-No.: 175478
WEIGHT LBS :

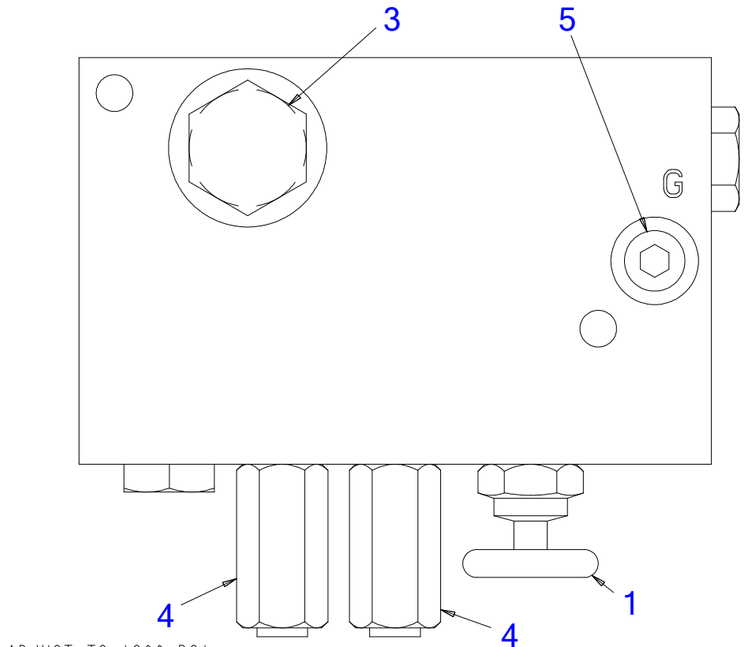
ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
2	1	EA	SUPPORT [SHAFT SPRING]	180054	J-565G141MK001		
3	3	EA	RING [WEAR]	261474	J-499526		
4	1	EA	SPRING [COMPRESSION]	175477	J-499523		
5	1	EA	CYLINDER [CONVEYOR TAKE-UP]	174669	J-499525		

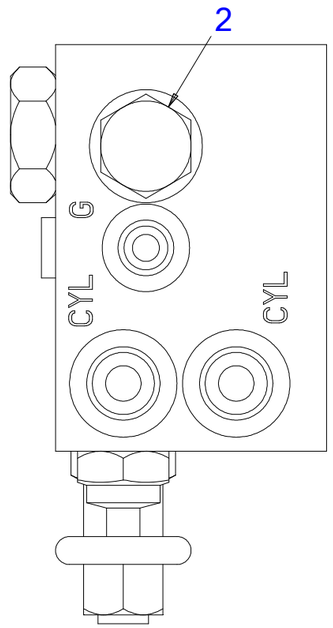


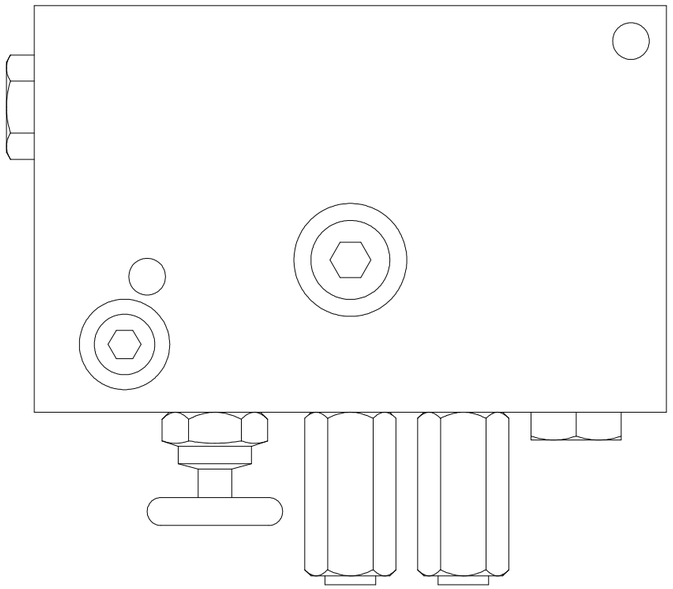
NOTE: ITEM 25 - SEAL KIT, INCLUDES ITEM 13 THRU 21.

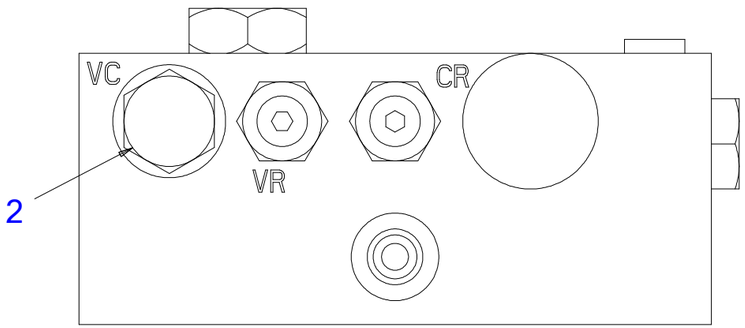


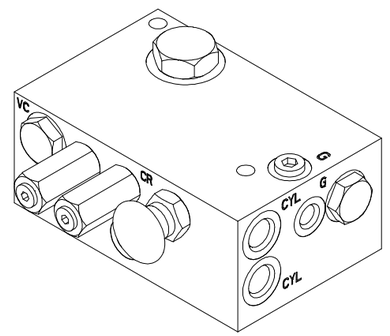


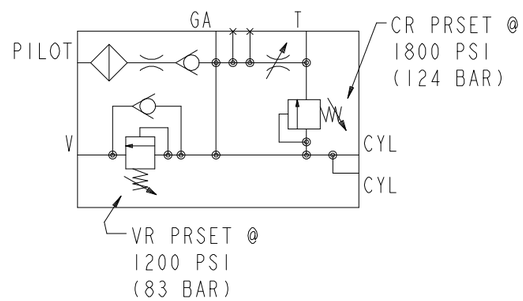


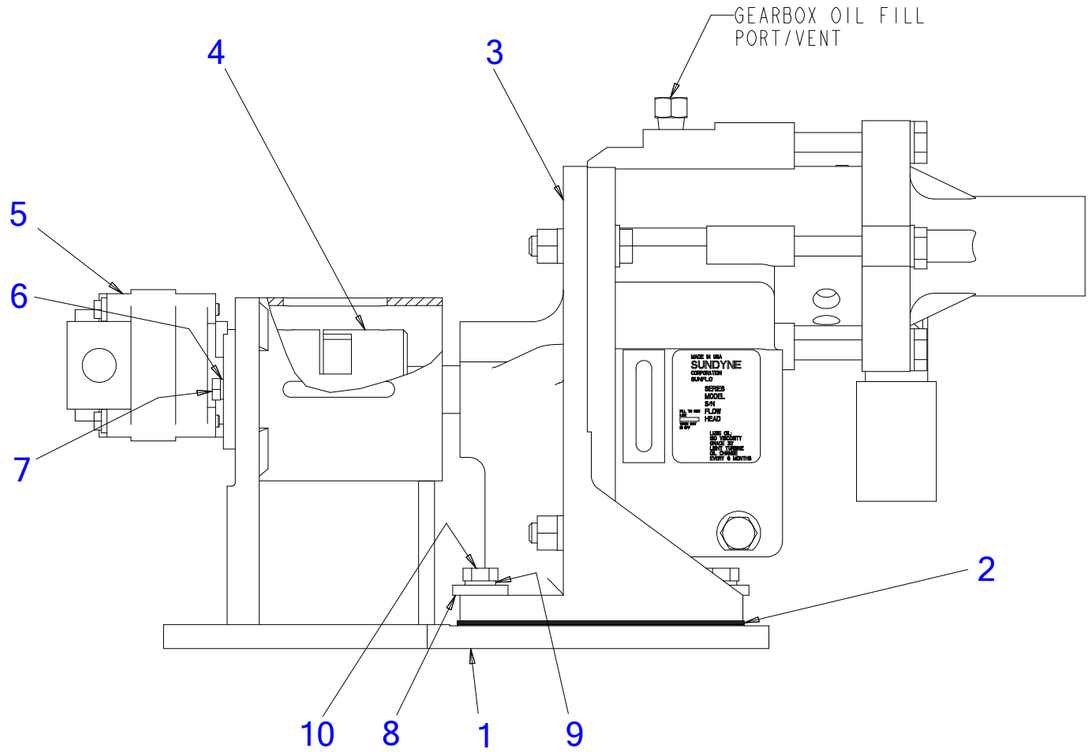


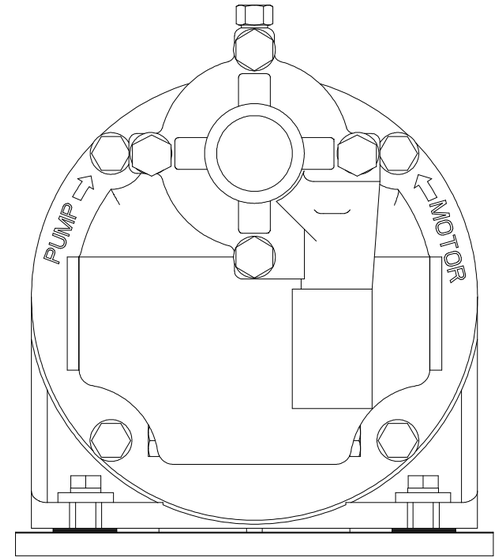


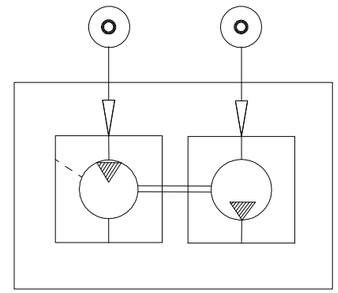


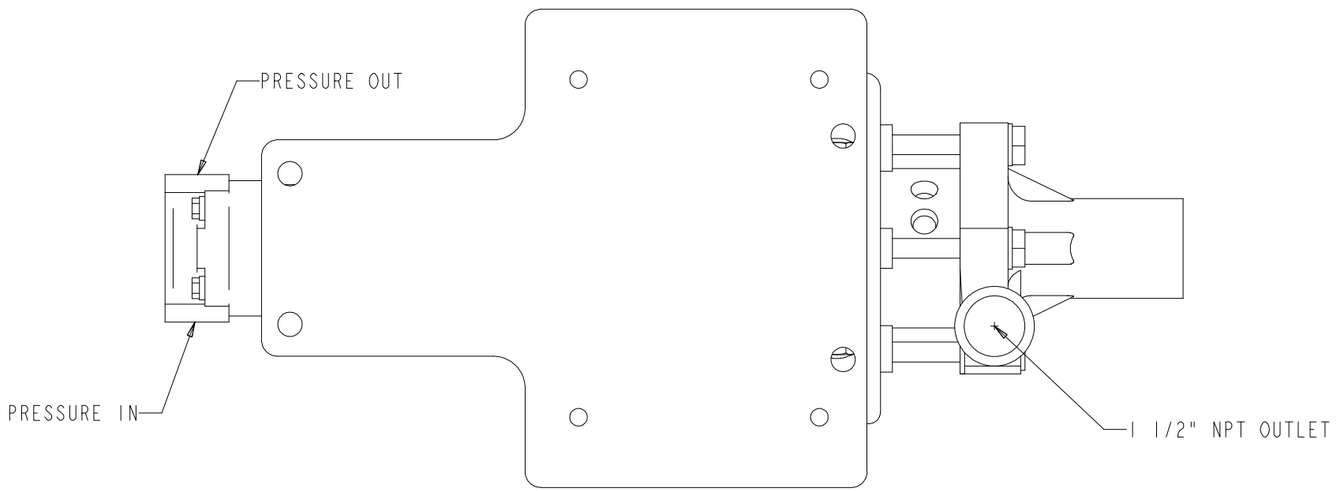


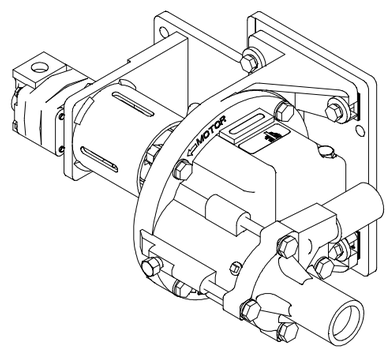



GEARBOX OIL FILL
PORT/VENT
4
3
5
6
7
2
10
8
1
9


PUMP
MOTOR




PRESSURE OUT
PRESSURE IN
1 1/2" NPT OUTLET


HYDROMOTOR

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COMPONENT LAYOUT [30M-3]
REVISION: 00
03.22.2011

LISTNUMBER : 1508302
SAP-No.: 1508302
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
118	8	EA	NUT [HH] 5/8"	172784	J-63070		
119	3	EA	BOLT [HH] 5/8" X 2"	229764	L-S1-10C-16		
120	1	EA	VALVE ASSEMBLY [3-UNIT SOLENOID BLOCK]	908289	908289		13-06-050
121	12	EA	WASHER [LOCK] M16	221832	L-S105-16		
122	14	EA	BOLT [SH] M16	126919	0000 000 218 15 85		
123	1	EA	VALVE ASSEMBLY [JET PUMP]	908291	908291		13-06-051
124	4	EA	BOLT [SH] 5/8" X 7"	906960	906960		
125	1	EA	NAMEPLATE [SOLENOID COILS BP FIRE DS]	908293	908293		
126	1	EA	NAMEPLATE [SOLENOID CONNECTOR]	1508305	1508305		
127	1	EA	ASSEMBLY [VALVE BANK W/ANTI-CHATTER MAINT]	908299	908299		13-06-052
128	1	EA	VALVE ASSEMBLY [PILOT RELIEF]	1508399	1508399		13-06-053
129	1	EA	ASSEMBLY [PILOT PRESSURE REDUCING VALVE]	1508402	1508402		13-06-054
130	1	EA	NAMEPLATE [PILOT RELIEF VALVE]	849219	849219		
131	1	EA	NAMEPLATE [PILOT PRESSURE REDUCING VALVE]	654458	654458		
132	4	EA	BOLT [HH] 1/4" X 1 3/4"	267814	L-S1-4C-14		
133	1	EA	NUT [HH] 1/2"	180072	J-63069		
134	1	EA	NAMEPLATE [L.H. CENTER HEAD SPRAY PRESSURE]	865134	865134		
135	1	EA	NAMEPLATE [R.H. CENTER HEAD SPRAY PRESSURE]	865135	865135		
136	2	EA	ADAPTER [STRAIGHT]	175956	J-69272		
137	1	EA	NAMEPLATE [MAIN CONTROL VALVE]	1508407	1508407		
138	1	EA	ASSEMBLY [CYCLONE SEPARATOR]	1508409	1508409		13-06-055
139	1	EA	VALVE ASSEMBLY [Y-STRAINER W /CHECK VALVE]	1508405	1508405		13-06-056
140	2	EA	SCR PAN M.164 X 1.5 UNC	1233190	1233190		
141	4	EA	WASHER [SPRING LOCK] 3/4"	168566	J-23358		
142	4	EA	BOLT [HH] 3/4" X 2"	241602	L-S1-12C-16		

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VALVE ASSEMBLY [DUST/COOLING]
REVISION: 00
03.23.2011

LISTNUMBER : 655433
SAP-No.: 655433
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	4	EA	ADAPTER [STRAIGHT]	177870	J-185379		
2	1	EA	ADAPTER [STRAIGHT]	188140	J-185730		
3	1	EA	ADAPTER [STRAIGHT]	282778	DBT282778		
4	2	EA	ADAPTER [90 DEGREE]	174178	J-188987		
5	1	EA	ADAPTER [90 DEGREE]	174166	J-185384		
6	1	EA	ADAPTER [45 DEGREE]	188126	J-185390		
7	1	EA	ADAPTER [45 DEGREE]	195110	J-456906		

Book Name "423182"

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ASSEMBLY [FILTER 10uM PRESSURE OIL]
REVISION: 01
03.24.2011

LISTNUMBER : 380187
SAP-No.: 380187
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	2	EA	BUSHING [REDUCER] 1 1/2" X 3/4"	330079	DBT330079		
2	2	EA	ADAPTER [90 DEGREE]	174165	J-185383		

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MANIFOLD ASSEMBLY [PRESSURE GAUGES]
REVISION: 00
03.31.2011

LISTNUMBER : 1057980
SAP-No.: 1057980
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	2	EA	ADAPTER [STRAIGHT]	174173	J-187806		
2	2	EA	ADAPTER [45 DEGREE]	188102	J-462037		

Book Name "423182"

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VALVE ASSEMBLY [FIRE VALVE]
REVISION: 01
03.22.2011

LISTNUMBER : 1057979
SAP-No.: 1057979
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	2	EA	BUSHING [REDUCER] 1" X 3/4"	330078	J-69999		
2	1	EA	ADAPTER [90 DEGREE]	170351	J-445549		
3	1	EA	ADAPTER [TEE]	175673	J-451823		
5	3	EA	ADAPTER [45 DEGREE]	188142	J-451820		
6	2	EA	ADAPTER [90 DEGREE]	174165	J-185383		

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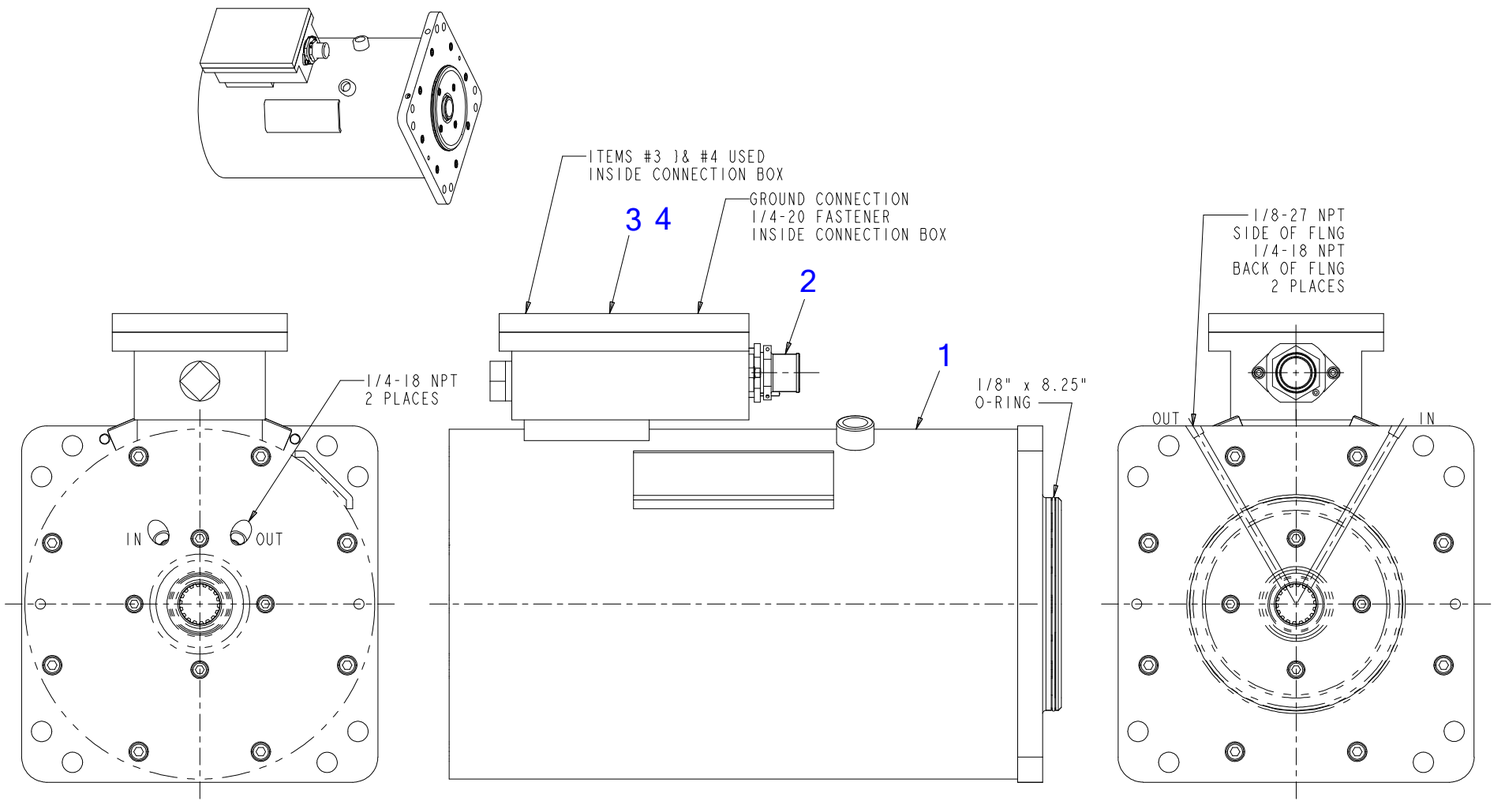
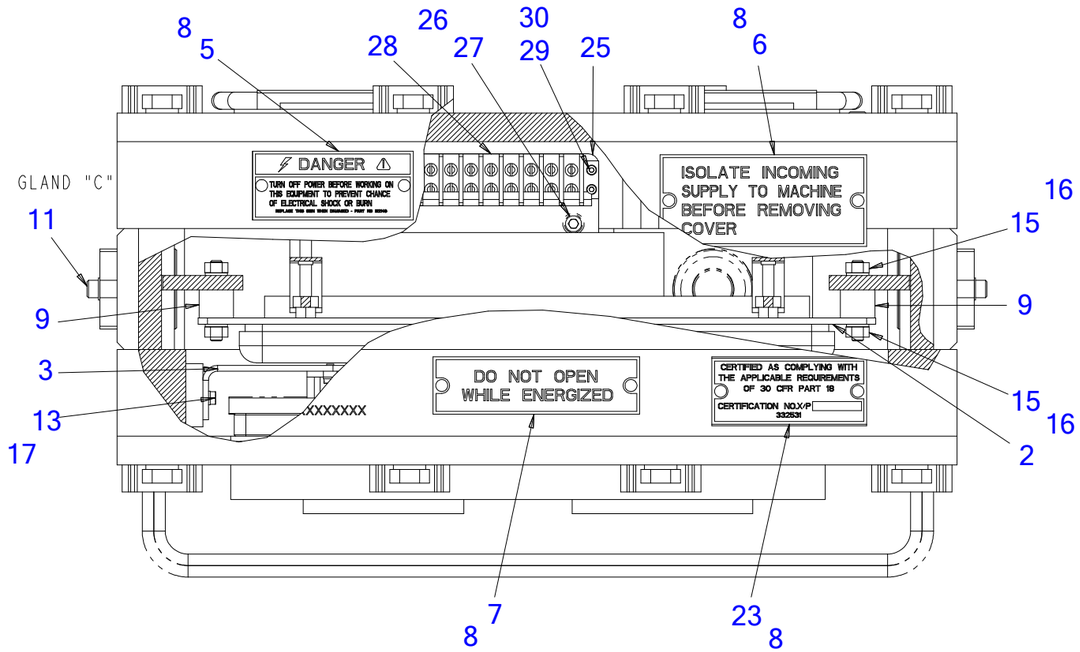
VALVE ASSEMBLY [PILOT RELIEF]
REVISION: 00
03.22.2011

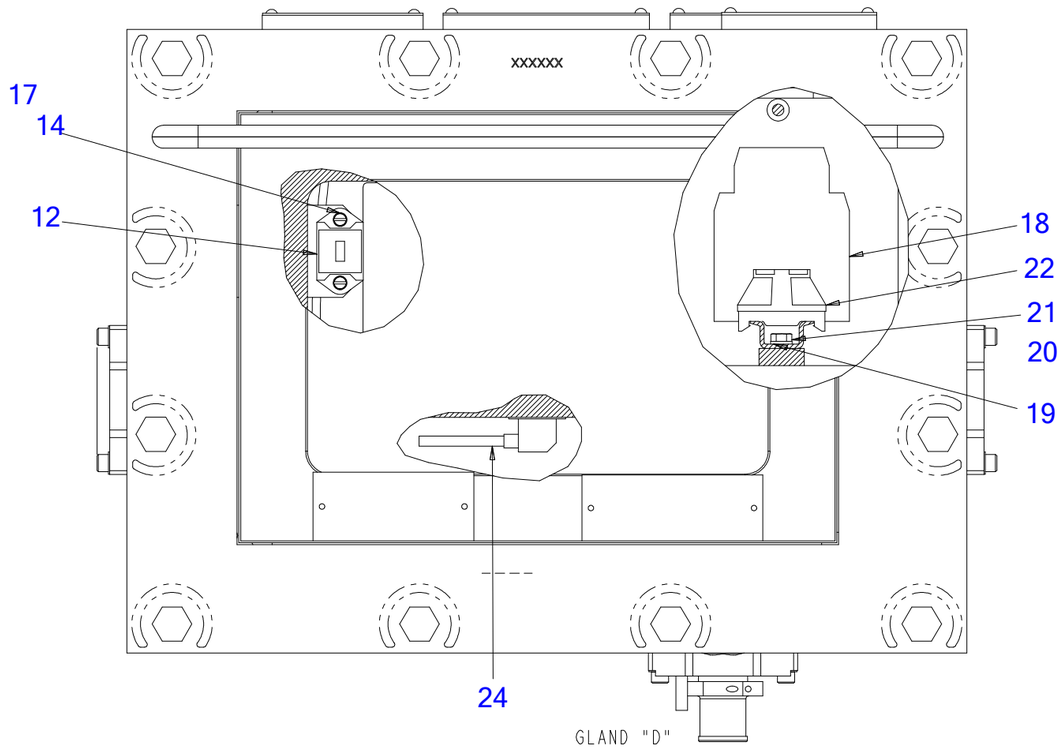
LISTNUMBER : 1508399
SAP-No.: 1508399
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	1	EA	ADAPTER [STRAIGHT]	175758	J-423190		
2	1	EA	ADAPTER [90 DEGREE]	175072	J-431935		
3	1	EA	ADAPTER [TEE]	1058413	1058413		
4	1	EA	ADAPTER	176927	J-514934		

Book Name "423182"


ITEMS #3)& #4 USED
INSIDE CONNECTION BOX
3 4
GROUND CONNECTION
1/4-20 FASTENER
INSIDE CONNECTION BOX
2
1
1/8" x 8.25"
O-RING
1/4-18 NPT
2 PLACES
IN
OUT
1/8-27 NPT
SIDE OF FLNG
1/4-18 NPT
BACK OF FLNG
2 PLACES
OUT
IN





NOTE:
P/N (312963) GLAND ASSEMBLY CAN BE INSERTED AS NEEDED TO ANY NOMINAL 1-3/4" GLAND HOLES DUE TO ANY MOUNTING INTERFERENCES.

GLAND	GLAND SIZE	CABLE	CABLE O.D.	DESTINATION	HOSE ID	ITEM NO.
A	1-3/4 BORE	PLUG	- -	- -	- -	11
B	1-3/4 BORE	PLUG	- -	- -	- -	11
C	1-3/4 BORE	PLUG	- -	- -	- -	11
D	1-3/4 BORE	24C #14 SDN	0.82 NOM	CONTROL CASE	1"	10

NOTE: 1) DISPLAY IS TO BE USED WITH POWER SUPPLY 317328 LOCATED ON SWINGING PANEL.
2) MOUNTING CLIPS ARE SUPPLIED WITH DISPLAY
3) DISPLAY SHOWN AS REF ONLY
4) FOR P/N OF PROGRAMMED DISPLAY, SEE MACHINE SALES ORDER

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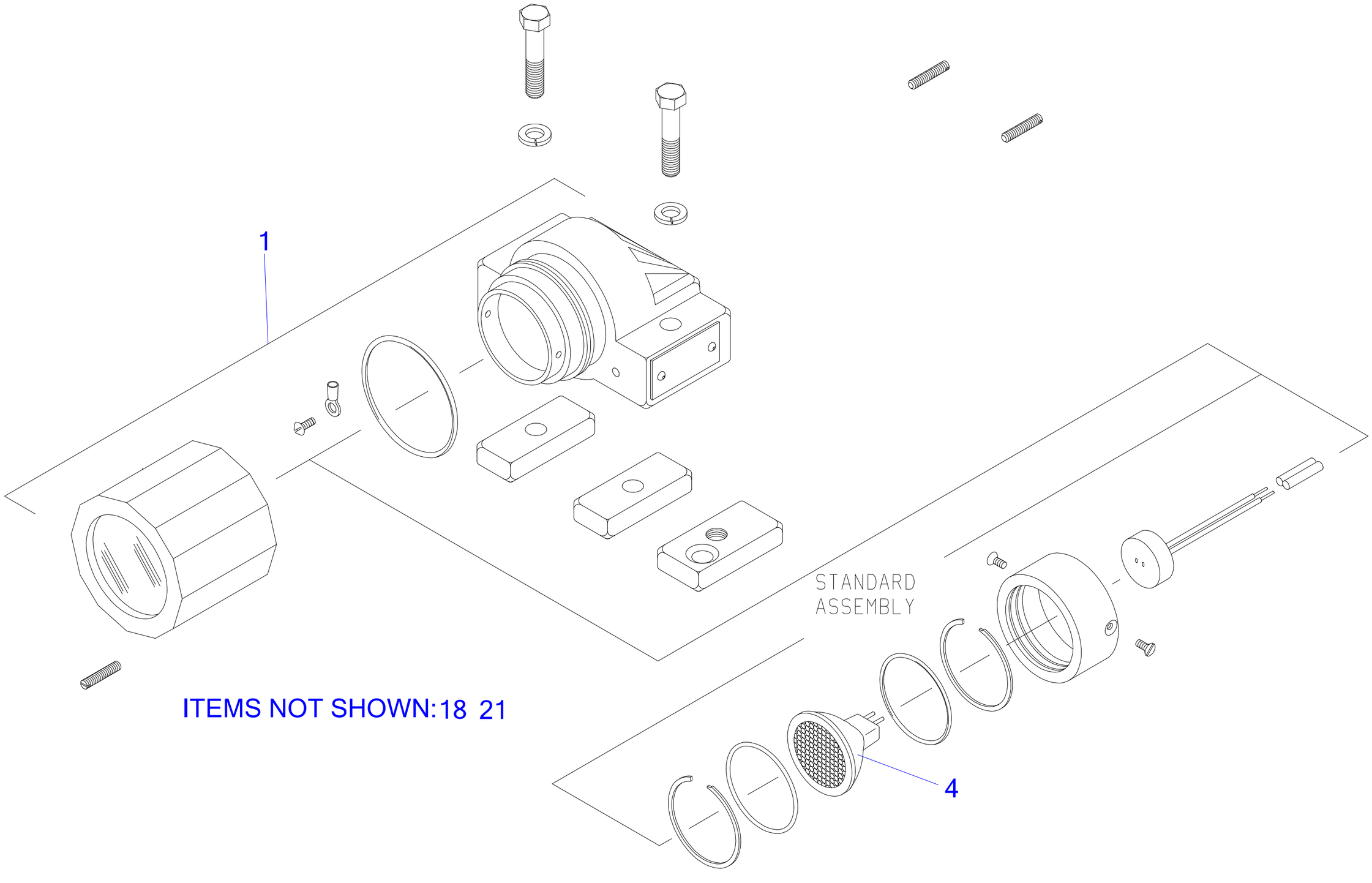
ELECTRICAL [LOOSE EQUIPMENT LIST]
REVISION: 01
03.31.2011

LISTNUMBER : 605904
SAP-No.: 605904
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	2	EA	TRANSMITTER PENDANT [TX-944]	337163	337163		
2	4	EA	ALKALINE BATTERY [9-VOLT]	173226	J-489993		
3	1	EA	CABLE [DOWNLOAD/DEBUG]	357245	357245		
4	1	EA	PENDANT [E-TRAM]	358681	J-489992		13-07-015
5	1	EA	INFRARED [HAND HELD P-940]	269750	J-564G530MK001		

Book Name "423182"



ITEMS NOT SHOWN:18 21

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ASSEMBLY [CONTROL CASE W/FAN]
REVISION: 00
03.31.2011

LISTNUMBER : 906829
SAP-No.: 906829
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	1	EA	CONTROL CASE [30M-3]	620890	620890		13-07-026
2	1	EA	ASSEMBLY [RIGHT WALL]	362199	DBT362199		13-07-029
3	1	EA	CIRCUIT BREAKER [SWITCH ARM]	331339	DBT331339		
4	1	EA	OPERATOR STOP [30M-3]	331342	DBT331342		
5	16	EA	WASHER [LOCK] B10	379559	DBT379559		
6	4	EA	BOLT [SH] M10 X 30	126849	0000 000 218 13 03		
7	10	EA	NUT [HH] M10	126993	0000 000 230 29 99		
8	4	EA	ROD [ALL THREAD] M8	331346	DBT331346		
9	8	EA	NUT [HH] M8	126996	0000 000 230 30 11		
10	3	EA	BOLT [SH] M10 X 25	133684	0000 000 218 13 45		
11	1	EA	BAR [SWITCH]	310220	DBT310220		
12	1	EA	OPERATOR [STOP]	331347	DBT331347		
13	25	EA	WASHER [LOCK] M6	169208	J-71260		
14	9	EA	BOLT [SH] M6 X 16	126809	0000 000 218 11 23		
15	1	EA	MOUNTING [TERMINAL BOARD]	346159	DBT346159		
16	4	EA	BOLT [CSK] M6 X 12	126706	0000 000 213 55 93		
17	9	EA	TERMINAL BLOCK [12 POINT]	289843	E-30153647		
18	40	EA	WASHER [LOCK] A3	351353	0000 006 506 94 29		
19	36	EA	BOLT [SH] M3 X 16	239530	L-02251204		
20	1	EA	ASSEMBLY [REAR WALL	336607	DBT336607		13-07-030
21	1	EA	CABLE TIE [BRACKET]	336473	DBT336473		
22	1	EA	ASSEMBLY [LEFT WALL]	362198	DBT362198		13-07-031
23	1	EA	PLATE	310156	DBT310156		
24	4	EA	TERMINAL STRIP [24 CKTS]	317326	DBT317326		
25	20	EA	BOLT [SH] M3 X 8	129453	0009 122 841 44 01		
26	12	EA	STANDOFF [M3 X 10mm]	879353	879353		
27	12	EA	STANDOFF [M3 X 25]	336483	DBT336483		
28	1	EA	TRANSFORMER [CONTROL]	256194	J-565G881MK001		
29	4	EA	WASHER [LOCK] M5	201275	J-71327		
30	4	EA	BOLT [SH] M5 X 10	126789	0000 000 218 10 56		
31	2	EA	BAR [FRONT WEDGE]	620855	620855		
32	2	EA	BUSHING [SPACER]	336522	DBT336522		
33	2	EA	WEDGE [UPPER REAR]	620859	620859		
34	10	EA	WASHER [SPRING] VSKZ 12	127331	0000 000 312 83 51		
35	2	EA	SHOULDER BOLT [SH] 12mm X 30mm	849174	849174		
36	6	EA	WASHER [FLAT] A13	109763	B99-912-077-00		
37	4	EA	SHOULDER BOLT [SH] 12mm X 20mm	365985	DBT365985		
38	1	EA	ASSEMBLY [STANDOFF INSULATOR]	310208	DBT310208		13-07-032
39	1	EA	SUPPORT PLATE [HOUR METER]	310200	DBT310200		

Book Name "423182"

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ASSEMBLY [REAR WALL]
REVISION: 01
06.06.2007

LISTNUMBER : 336607
SAP-No.: 336607
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
2	1	EA	TRANSFORMER	297137	E-1180059		
3	1	EA	BRACKET	310154	DBT310154		
4	2	EA	CONTACTOR [VACUUM]	188363	J-481718		
5	1	EA	CONTACTOR [VACUUM]	167622	J-489428		
6	2	EA	ANGLE	310198	DBT310198		
7	1	EA	ANGLE [MOUNTING]	336606	DBT336606		
8	1	EA	TRANSFORMER [SCRUBBER]	354827	DBT354827		
9	2	EA	TRANSFORMER [CUTTER]	193497	J-564G448MK001		
10	4	EA	STANDOFF	336483	DBT336483		
11	1	EA	BLOCK [TERMINAL]	289843	E-30153647		
12	21	EA	WASHER [LOCK]	169208	J-71260		
13	4	EA	WASHER [FLAT]	331956	DBT331956		
14	8	EA	WASHER [LOCK]	379559	DBT379559		
15	4	EA	WASHER [LOCK]	351353	0000 006 506 94 29		
16	15	EA	BOLT [SH]	126804	0000 000 218 11 08		
17	4	EA	BOLT[SH]	129537	01 470		
18	4	EA	BOLT [SH]	126864	0000 000 218 13 85		
19	4	EA	BOLT [SH]	239530	L-02251204		
20	6	EA	BOLT [SH]	126809	0000 000 218 11 23		
21	2	EA	WASHER [LOCK]	351353	0000 006 506 94 29		
22	2	EA	BOLT [SH]	363319	DBT363319		

Book Name "423182"

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ASSEMBLY [USB PORT]
REVISION: 00
10.29.2007

LISTNUMBER : 396739
SAP-No.: 396739
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	1	EA	BRACKET [USB]	396730	DBT396730		
2	1	EA	RECEPTACLE [USB]	396728	DBT396728		
3	4	EA	WASHER [LOCK]	351353	0000 006 506 94 29		
4	4	EA	BOLT [SH]	129453	0009 122 841 44 01		
5	1	EA	MEMORY KEY [USB]	396729	DBT396729		

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ASSEMBLY [USB BOARD]
REVISION: 00
07.21.2009

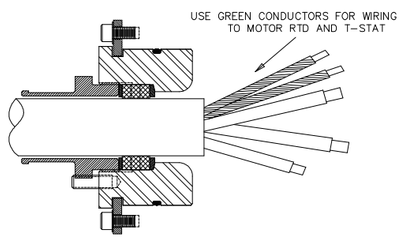
LISTNUMBER : 842074
SAP-No.: 842074
WEIGHT LBS :

ITEM	QTY	UNIT	DESCRIPTION	SAP-No.	PART NO.	WEIGHT Lbs	PAGE NO.
1	1	EA	MOUNT [USB BOARD]	842073	842073		
2	1	EA	BOARD [USB BREAKOUT]	849160	849160		
3	2	EA	WASHER [LOCK] M4	210964	L-B700-003-A		
4	2	EA	BOLT [SH] M4 X 8	126761	0000 000 218 00 72		

Book Name "423182"

NON-TRAM MOTOR WIRING:

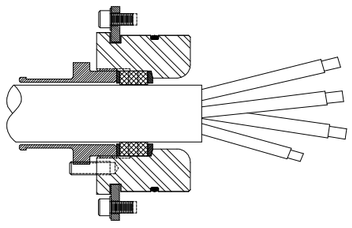
1. WIRE THE THREE (3) POWER CONDUCTORS PER THE DIAGRAMS SHOWN ON THIS SHEET. NOTICE THAT PHASE 1 OF CABLE DOES NOT ALWAYS WIRE TO PHASE 1 OF MOTOR LEAD.
2. USE THE GREEN WIRES WITHIN THE CABLE TO WIRE TO THE RTD LEADS AS SHOWN ON THIS SHEET.



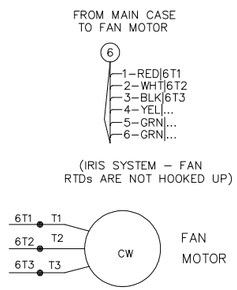
CUTTER CABLE – #1/0-3COND GGC (GRN COND's #5)
CLA, PUMP CABLE – #4-3COND GGC (GRN COND's #8)
FAN CABLE – #8-3COND GGC (GRN COND's #10)

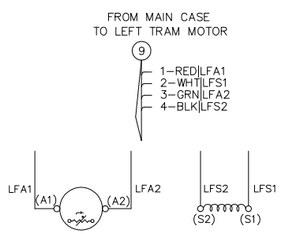
TRAM MOTOR WIRING:

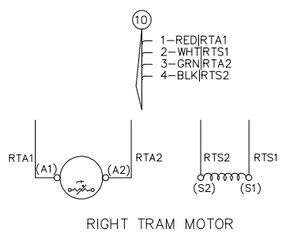
1. WIRE THE FOUR (4) POWER CONDUCTORS PER THE DIAGRAMS SHOWN ON THIS SHEET.
2. THE RTDS ARE NOT WIRED TO TRAM CABLE.

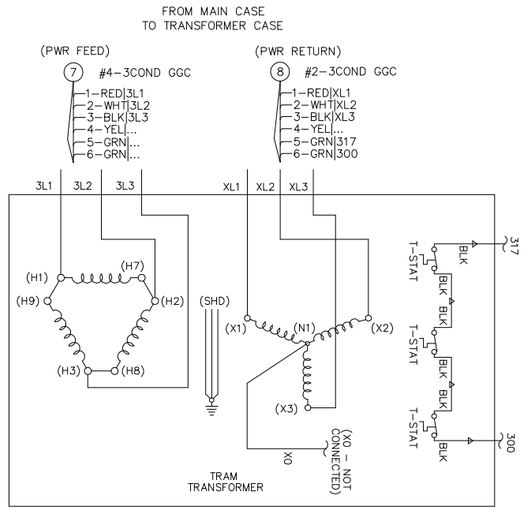


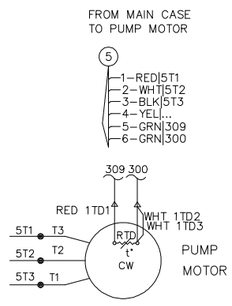
TRAM CABLE – 35MM2 (#2 AWG) POWER

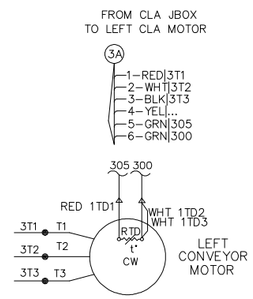


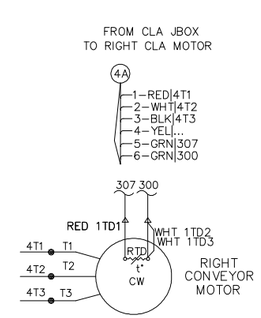


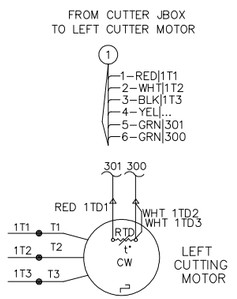


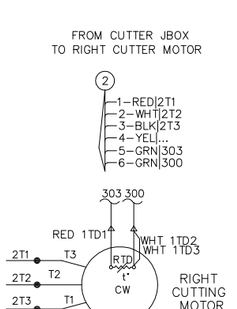












NOTES:

★ 1. WIRES WITH THIS NOTATION SHALL BE WIRED WITH #16AWG LIGHT BLUE – BUCYRUS P/N 394089. THESE WIRES ARE INTRINSICALLY SAFE CIRCUITS THAT HAVE BEEN APPROVED THAT THEY CANNOT CREATE AN ARC OF SUFFICIENT TEMPERATURE TO IGNITE GAS. ANY SUBSTITUTION OR ELIMINATION OF PARTS WILL VOID THE MACHINE AND CREATE A HAZARDOUS CONDITION. THESE I.S. WIRES SHALL BE BUNDLED TO KEEP THEM SEPARATE FROM NON-I.S. CONTROL WIRES.

2. WIRES WITH THIS NOTATION SHALL BE WIRED WITH #12AWG BLACK – MUST BE CSA APPROVED – BUCYRUS P/N 865381.
3. WIRES WITH THIS NOTATION SHALL BE WIRED WITH #12AWG WHITE – MUST BE CSA APPROVED – BUCYRUS P/N 865382.
4. WIRES WITH THIS NOTATION SHALL BE WIRED WITH #16AWG BLACK – MUST BE CSA APPROVED – BUCYRUS P/N 865383.
5. WIRES WITH THIS NOTATION SHALL BE WIRED WITH #16AWG WHITE – MUST BE CSA APPROVED – BUCYRUS P/N 865384.
6. WIRES WITH THIS NOTATION SHALL BE WIRED WITH #16AWG GREEN – MUST BE CSA APPROVED – BUCYRUS P/N 865385.
7. WIRES WITH THIS NOTATION SHALL BE WIRED WITH #16AWG ORANGE – MUST BE CSA APPROVED – BUCYRUS P/N 865386.
8. ALL CURRENT TRANSFORMERS (CTs) MUST BE LOCATED AND TYE-WRAPPED IF NECESSARY TO TO AVOID THE TOROID BEING DAMAGED TO VIBRATION OR COMING IN CONTACT WITH EXPOSED TERMINALS.
9. ALL CABLE JACKETS SHALL PROTRUDE THROUGH THE GLAND ASSY STUFFING BOX A MINIMUM DISTANCE OF 1/4"(6.35mm).

Installation and start-up

inclined face

On inclined faces secure all component parts by chains, e.g. to the support.

environmental acceptability

When working with oils, greases and other chemical substances, observe the safety regulations applicable to the product. Safety regulations can be found on the container or on the Material Safety Data Sheet (MSDS) for the product.

Dispose of cleaning rags, etc. which have been soiled with oil, grease or other chemical substances in an environmentally safe manner.

controls

When starting up machine, do not operate any controls located inside the operator's compartment (optional) from outside the compartment.

starting procedures

Follow the starting procedure instructions in the operations manual.

red zone

Do not operate any levers, pedals or controls if anyone is in the red zone. (See Red Zone in Chapter 5 of this manual)

Operation

training

Operate the machine only if you have a profound knowledge of the control elements and their functions. It is necessary that you have been task trained on the respective Continuous Miner.

before start-up

Before start-up, ensure that there are no persons or obstructions in your line of travel or in the articulation area when steering the unit.

protective devices

Check that all protective devices are installed on the machine and function properly.

traveling

Use extreme caution when traveling in close quarters or in congested or blind-travel areas.

passengers

Never carry passengers. Passengers may be thrown off the machine or crushed between the machine and outside objects.

safety rules

Always follow all safety rules of each particular mine when operating the machine.

problems and malfunctions

If problems or malfunctions are encountered while operating the unit, the machine must be properly shutdown and the problem corrected immediately.

WARNING!
The load holding valves on the cutter head and conveyor cylinders are preset and DO NOT require adjustment. Adjustment of these valve may result in very serious injury or even death.

IMPORTANT!
The two inch locking ball valve must be locked open in normal operation.

DANGER!
The area under and around the raised cutter head is dangerous. Securely block the head before performing maintenance on or below it. Failure to block the raised cutter head could result in serious injury or even death.

DANGER!
Do not adjust, modify, or remove the load holding cartridge valve mounted in the cutter head cylinders. It is a safety feature to prevent accidental lowering of the cutter head.

DANGER!
This load holding valve, like those on the stabilizer cylinders is preset. DO NOT ADJUST IT. If it malfunctions, replace it immediately.

WARNING!
You could be seriously injured or killed by falling loads. Block the miner before performing maintenance and always observe the safe working load limits of all lifting and blocking devices.

NOTICE!
To jack-knife the miner, the stabilizer shoe is first lowered with the bypass valve opened. The cutter head is then lowered with the bypass opened. At this point, the machine can be inspected, adjustments can be made to the crawler tracks, and the tram voltage can be adjusted.

DANGER!
Never run the conveyor without the needle valve closed. Injury or death may occur.

WARNING!
This section is intended only to familiarize the user with the electrical components of the continuous miner. All electrical maintenance should only be performed by a qualified electrician with knowledge of the functions of the components involved.

WARNING!
Before removing the cover from the controller case or attempting any maintenance or troubleshooting, the main power must be disconnected and locked out at the main power center.

IMPORTANT!
Hang trailing cables to prevent damage from moving equipment!

machine electrical components

Electronic components must be stored at temperatures between -10° C and 55° C (14° F and 131° F).

traction drives

The traction drives should be stored at -10 to 50 °C (14 to 122 °F).

Major problems with condensation can occur if a drive is stored in a cold environment and is then taken into a deep mine where the temperature is much higher. Even though the humidity may be at an acceptable level, condensation will occur on the cold drive. Slight exposure to a condensing environment is not harmful provided the drive is completely dry before electrical power is applied.

random sample inspection

After a storage period of approximately two years, a random sample inspection must be performed to determine whether the measures taken and the method of storage has prevented damage.
On request, the inspection can be carried out by Bucyrus America, Inc.

natural aging

Even with proper storage, seals and hoses are subject to natural ageing. Do not use these parts if they have been stored for more than two years.

HFA fluids

Instructions on the storage of concentrates for hydraulic fluids can be found, if required, in chapter 6 in this operating manual.

IMPORTANT!
Take care to insure that new maintenance supplies are stored separately from existing stock and that removal takes place on the "first in, first out" principle.

Long-term storage of spare components

hydraulic components

If a component is to be stored more than six months, the hydraulic component must be completely filled with a corrosion inhibiting fluid. Fill the hollow areas of hydraulic components (e.g. the piston chambers) in horizontal position (ports facing upwards) until they start to overflow then seal the ports with plastic or steel plugs.

miscellaneous components

Store the electrical equipment, electronic components, spare parts of rubber or plastic – such as seals and hoses – and hydraulic fluids only in closed rooms at temperatures of 15° C to 25°C (60° F to 77° F).

motors

Refer to the motor manufacturer's storage procedure guide in your Bucyrus America, Inc. parts manual.

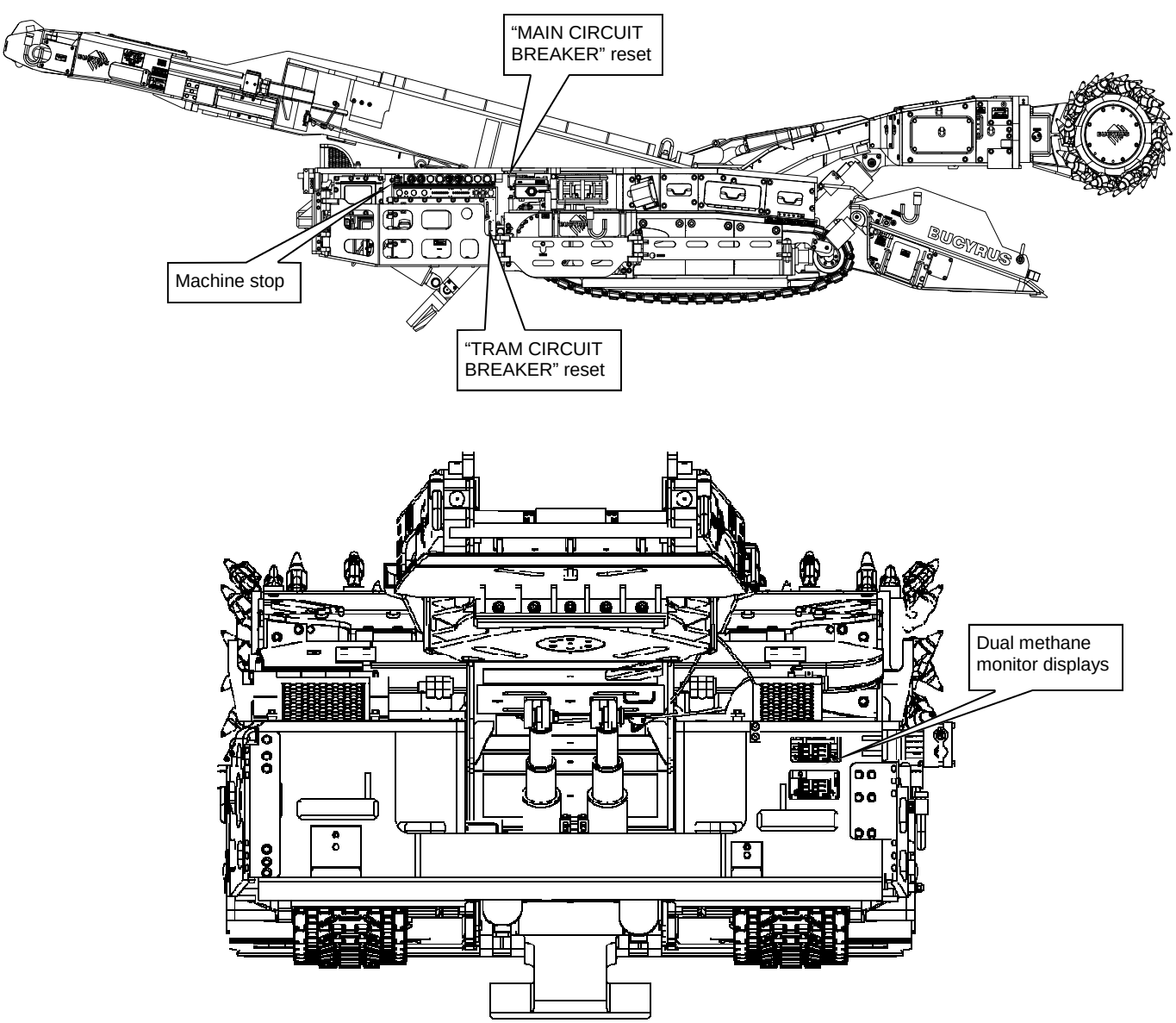
fan assembly

Rotate the impeller 1-1/4 turn once per month to prevent dimpling of the motor bearings rollers.

plastic deformation

In order to prevent plastic deformation of the seal elements, cylinders must be stored in an upright position. Some cylinders must be removed so that they can be stored upright.

Fig. 6: Safety features on the Continuous Miner



Gauge panel

There is a gauge panel (Fig. 13) consisting of nine (9) gauges located above the operator's station that is used to monitor hydraulic and water pressure throughout the miner.

"LH HEAD SPRAY PRESSURE"

The first gauge from the operator's left on the row of gauges is "LH HEAD SPRAY PRESSURE." This gauge is used to monitor the water pressure at the left hand cutter head spray manifold in the dust suppression system. The gauge settings are dependent on the individual mine requirements. Consult the schematic in the Bucyrus America, Inc. Parts Manual for your machine.

"RH HEAD SPRAY PRESSURE"

The second gauge from the operator's left on the top row of gauges is "RH HEAD SPRAY PRESSURE." This gauge is used to monitor the water pressure at the right hand cutter head spray manifold in the dust suppression system. The gauge settings are dependent on the individual mine requirements. Consult the schematic in the Bucyrus America, Inc. Parts Manual for your machine.

"OUTBY WATER FILTER PRESSURE"

The third gauge from the operator's left on the row of gauges is "OUTBY WATER FILTER PRESSURE." This gauge monitors the pressure of the supply water coming into the water system from the mine. The pressure should be a minimum of 250 psi under dynamic conditions and should not exceed 500 psi. If the pressure exceeds 500 psi, immediately adjust the supply water pressure or shutdown the machine (see Shutdown procedure in this chapter).

"MAIN PRESSURE"

The fourth gauge from the operator's left on the row of gauges is "MAIN PRESSURE." This gauge is used to measure the pressure in main flow - primary pressure circuit. See the Main flow - primary pressure circuit in the Hydraulic section of this chapter for further information.

"PILOT CIRCUIT PRESSURE"

The fifth gauge from the operator's left on the row of gauges is "PILOT CIRCUIT PRESSURE." This gauge is used to monitor the supply pressure for all pilot functions. See the Pilot pressure circuit in the Hydraulic section of this chapter for further information.

"ACCUMULATOR PRESSURE"

The sixth gauge from the operator's left on the top row of gauges is "ACCUMULATOR PRESSURE." This gauge is used to monitor the accumulator pressure. The purpose of the accumulator is to store the necessary pilot pressure to allow remote operation of the fire suppression and breaker on/off control valves (optional) when the pump is not operational. The accumulator pressure should closely track the pilot circuit pressure. If the accumulator does not hold pressure when the pump is shut down, call maintenance. See the accumulator circuit in the Hydraulic section of this chapter for further information.

"GH FLOAT PRESSURE"

The seventh gauge from the operator's left on the row of gauges is "GH FLOAT PRESSURE." This gauge is used to monitor the pressure in the gathering head circuit during gathering head float operations. See the Gathering head raise/hold/float-lower circuit in the Hydraulic section of this chapter for further information.

Pendant functions

"MACHINE STOP" Depressing the "MACHINE STOP" button will immediately stop all motors.

"PUMP START/ENABLE" The "PUMP START/ENABLE" button is used with the "PUMP ON" button to start the pump motor.

"PUMP ON" The "PUMP ON" button is used to turn on and off the pump motor. When pressed by itself, "PUMP ON" will turn off the pump motor.

When used in conjunction with "PUMP START ENABLE", "PUMP ON" will start the pump motor:

- ☞ Press and hold the "PUMP START/ENABLE" button.
- ☞ Press the "PUMP ON" button. Hold both buttons in until the pump starts (approximately one second).
- ☞ Release the buttons.

"TRAM" Press "TRAM" to activate the tramming function. Once "TRAM" is pressed, the "TRME" LED lights yellow for a preprogrammed number of seconds. If tram buttons are not used within this programmed time period, the LED extinguishes and tramming is disabled.

"TRAM FWD" After pressing "TRAM ENABLE", press the right "TRAM FWD" button to tram the right track forward, press the left "TRAM FWD" button to tram the left track forward, or press both "TRAM FWD" buttons together to tram both tracks forward.

"TRAM REV" After pressing "TRAM ENABLE", press the right "TRAM REV" button to tram the right track in reverse, press the left "TRAM REV" button to tram the left track in reverse, or press both "TRAM REV" buttons together to tram both tracks in reverse.

"CUTTER RAISE" When pressed, the "CUTTER RAISE" button raises the cutter head. The pump motor must be on for this button to be active.

"CUTTER LOWER" When pressed, the "CUTTER LOWER" button lowers the cutter head. The pump motor must be on for this button to be active.

LED lights There are four (4) LED lights across the top of the pendant:

"MODE": LED blinks green when power is present, indicating the unit has power and is on.

"TRME": Yellow LED indicates that tram action is enabled.

"TRML": Red LED indicates that tram left command is being sent.

"TRMR": Red LED indicates that tram right command is being sent.

Pillaring red zones (Fig. 30) Remote control offers a significant safety advantage in partial or complete removal of the pillars in retreat mining because it places the operator further away from potential collapsing roof.

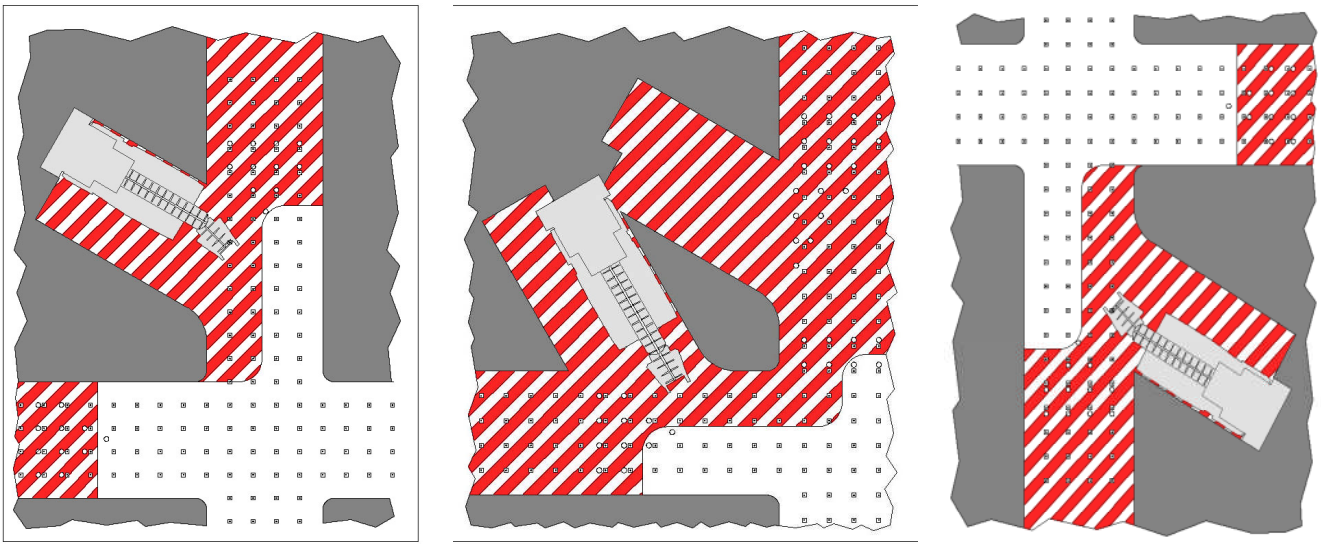
Much of the area around the miner must be considered a red zone, mostly because of extensive unsupported roof and the need for temporary supports under weakened roof. With remote control, the operator can position himself safely away from the miner while still retaining a good view of the mining cycle.

A red zone around the miner is no longer applicable when working in the opposite right hand pillar, as the operator is now excluded from the entire working area because of failing roof considerations, even with the existence of temporary roof supports

When making an additional end cut into the pillar, creating a fender of coal between the two cuts, additional temporary roof supports are installed.

Because of roof pressures, the fender will tend to slough its ribs in the process of eventually crushing. Hence, the operator must stay away from this fender as well as avoiding the entry and crosscut areas as shown.

Fig. 30: Pillaring red zones



Pillaring in a left hand cut red zone

Pillaring in a end cut red zone

Pillaring in a right hand cut red zone

Mining operations

It is presumed that the operator of this machine is experienced in continuous mining techniques. This section of the manual will present some basic rudiments of Continuous Miner mining operations, but should not be considered in any way as a complete how-to of mining techniques. It is recognized that each mine will have their own methods and techniques which work best for them.

One of the keys to good productivity with a Continuous Miner is to know the correct depth of sump which, when the cutting cycle is completed with shear-down, gives enough coal to adequately fill one haulage vehicle.

Another important factor is to do as much advance cutting as possible, while awaiting the haulage vehicle, to load up the gathering head pan. When the vehicle arrives, the gathering head can then work at maximum efficiency to load out the accumulated coal while the remainder of the cutting cycle is being completed.

The following discussion outlines the various steps of an efficient Continuous Miner mining cycle.

Preparation of the face for the next cut

The first view in Fig. 31 shows a continuous miner approaching a freshly cut face. The operator has the cutter head lowered to prepare for making a 2 to 3 inch deep sump cut at the bottom of the face. This is done to make clearance for the gathering head blade when the miner is sumping at the top of the face. In this manner, the miner can make a deeper sump into the top of the face.

The next view in the figure shows the miner having made a 30 inch sump cut at the bottom of the face. The operator will now back the miner out of the cut and raise the cutter head to the mine roof.

In the final view, the operator has backed out of the bottom cut and raised the cutter head to the roof, positioning the miner for making a top sump.

Fig. 41: Cylinder locations

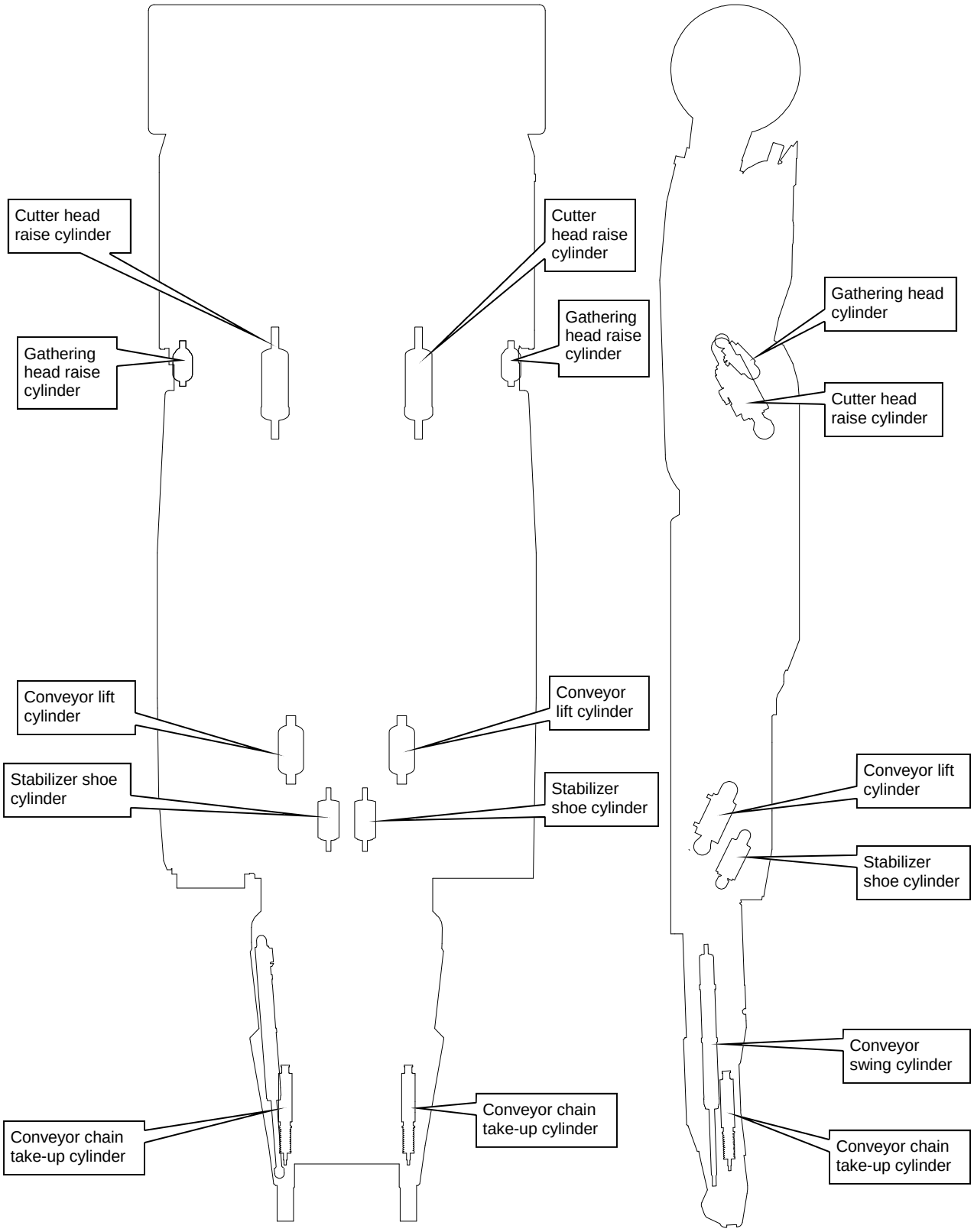
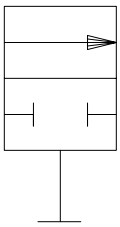
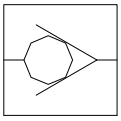


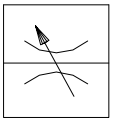
Fig. 48: Valve hydraulic symbols



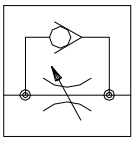
Ball valve



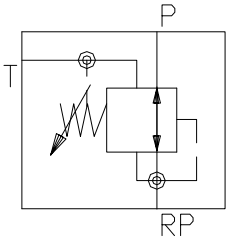
Check valve



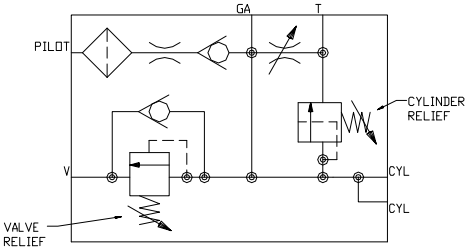
Flow control valve



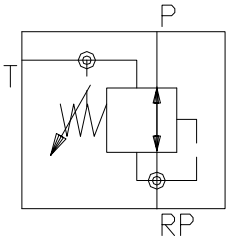
Flow control valve with internal check



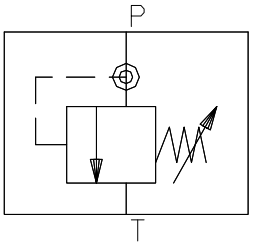
Pressure reducing/ relieving valve



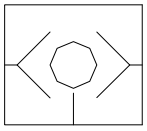
Gathering head float valve



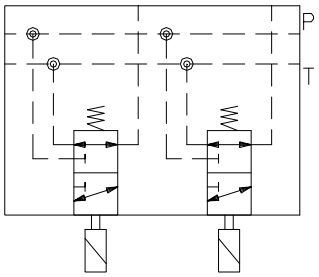
Pressure reducing/ relieving valve



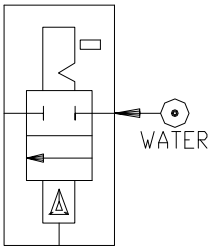
Relief valve



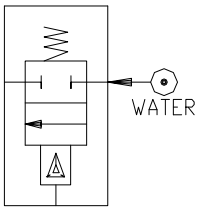
Shuttle valve



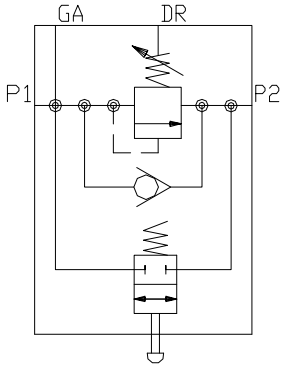
Solenoid valve 2-unit



Water valve, hydraulically piloted, detented



Water valve, hydraulically piloted



Anti-chatter/maintenance valve/auto stab valve

Gathering head raise/hold/float-lower circuit

Oil is supplied by hydraulic pump A1 through a 10 micron by-passing pressure filter to the gathering head working section on the main control valve. By manual or remote solenoid control, the spool allows oil to enter the gathering head raise circuit. When raising the gathering head pan, oil free flows through the gathering head float valve (check valve) and splits to both cylinders. At any time during raising the gathering head, the operator can stop the gathering head pan and the pan will hold in position.

The gathering head lower function is controlled through the working section of the main control valve and through the gathering head float valve block. The spool in the main control valve is open to tank, which allows control of the gathering head lower to be controlled by the gathering head float valve block. the counterbalance valve stamped “VR” is set to relieve at 1,200 psi to allow the gathering head to drift down at a controlled rate of speed. This valve is adjustable and the rate of retract speed for the cylinders can be increased by decreasing the pressure setting of the valve. Conversely, the retract speed for the cylinders can be decreased by increasing the pressure setting of the valve. the oil from the gathering head cylinders returns to the gathering head working section of the main control valve then through a 10 micron bypassing return filter to tank.

The counterbalance valve that is stamped “CR” is set to relieve at 1,800 psi. This fixed setting will relieve pressure directly to the tank in the event of a forced movement of the gathering head to grade level. This can occur if the cutter head is lowered onto a raised gathering pan or by some other external force.

The gathering head raise cylinders are single acting. Each has a dry pocket providing additional stoke beyond its pressure-extend limit in the event that the gathering head is trammed into an obstruction forcing it to raise beyond its normal travel limit. When in the float condition, the cylinders carry some of the gathering head pan weight to prevent the gathering head leading edge from digging into the soft bottom of the mine and moves the machine’s center of gravity forward when mining.

The pilot pressure oil supply for the gathering head float comes from hydraulic pump A2 through a 10 micron by-passing pressure filter to the relief valve set 600 psi and splits going to conveyor chain take-up circuit (optional) and through a 3 micron non by-passing filter, then through the pilot pressure manifold to the gathering head float valve. The pilot pressure oil is make-up oil for the gathering head cylinders.

When the pan goes over a roll, it may raise quickly, extend the gathering head cylinders, and create a vacuum in the pilot oil supply. In extreme cases, the pilot pressure may decrease to the point where the solenoid controlled main control valve may not have sufficient pilot pressure to shift. It is, therefore, possible to experience a momentary loss of radio control fo the machine.

To minimize the chance of this occurrence, a restrictor orifice is installed in the pilot supply for the valve block. This orifice is protected from contamination by an upstream filter. A downstream check valve keeps system pressure from entering the pilot pressure lines. An adjustable needle valve allows for the bleeding off of pressure for maintenance. A gauge is incorporated into the valve block for maintenance and troubleshooting.

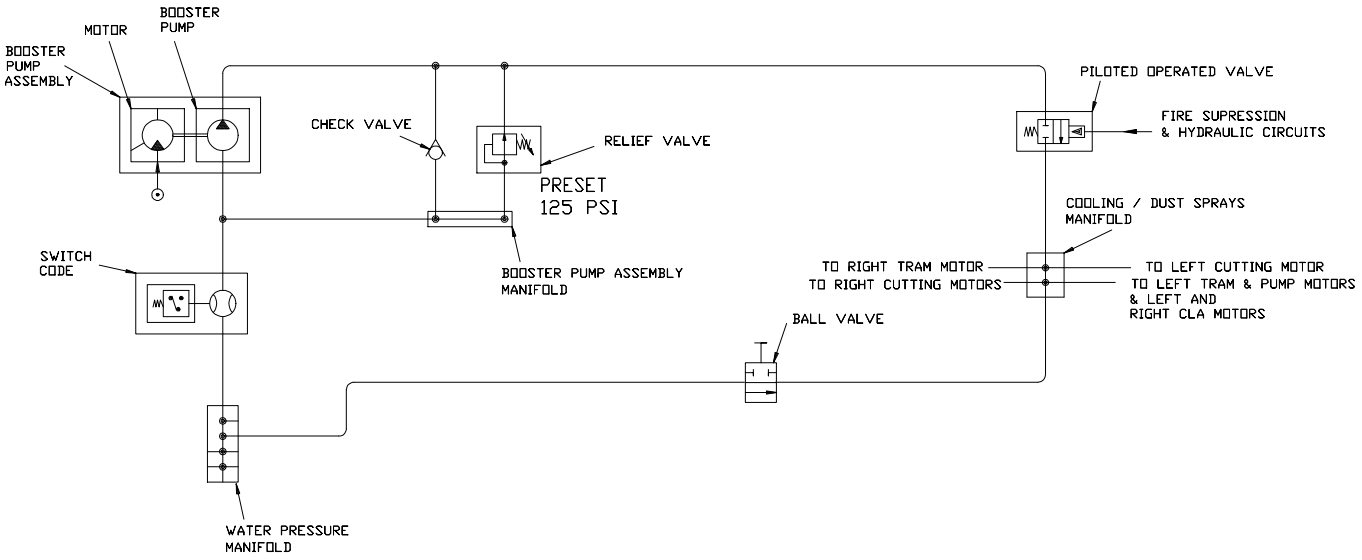
Dust-cooling water supply circuit

The dust-cooling water circuit utilizes water supplied from the water distribution manifold and passes through the switch code and booster pump assembly. A check valve and a relief valve, pre-set at 9 bar (125 psi), are connected to the booster pump assembly manifold. Water then passes through a pilot operated valve before entering the secondary dust-cooling pressure manifold, which distributes water to four dust-cooling circuits: 1. right tram motor 2. right cutting motor 3. left cutting motor 4. left tram and pump motors and right CLA motor.

For the hydraulic portion of this circuit, see the Hydraulic section of this chapter. The dust-cooling water circuit is protected by a relief valve that is set at 24 bar (125 psi).

The dust-cooling circuit described above is for a typical Bucyrus 30M3L series miner. The circuit for your machine may vary depending on your dust plan and unique requirements. Always refer to the schematic in the Bucyrus parts book for your machine.

Fig. 62: Dust-cooling water supply circuit



Controller case - left wall

The left wall of the controller case (Fig. 71) is accessed by opening the cover of the controller enclosure and then opening the swing panel. Typically mounted on the left wall are three vacuum contactors and three motors mates.

IMPORTANT!
This component location information is typical. Always verify component layout with the information in the Bucyrus parts book for your machine.

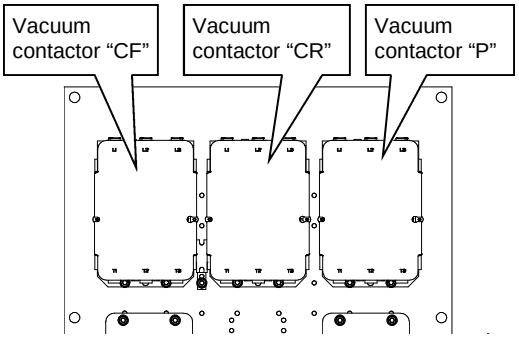
vacuum contactor “CF” Vacuum contactor “CF” is the forward contactor for the left and right gathering head motors.

vacuum contactor “CR” Vacuum contactor “CR” is the reverse contactor for the left and right gathering head motors.

vacuum contactor “P” Vacuum contactor “P” is the contactor for the pump motor.

From the vacuum contactors, each leg of the motor is fed to a motor mate. Each motor mate is triple output inductive current transducer. It takes the current from each leg of the motor and reduces it to a 4 to 20mA output that is sent to the control system.

Fig. 71: Controller case left wall



Control of the power center trip relay, “PCT”

The power supply module contains a special relay for controlling the external pilot relay (outby machine stop relay). The processor module can send a control message to the power supply at any time to drive the pilot relay output and trip the main power supply to the machine.

The schematic shown in Fig. 79 is typical. Always refer to the schematic in the Bucyrus parts book for your machine.

Fig. 79: Power center trip relay control circuit

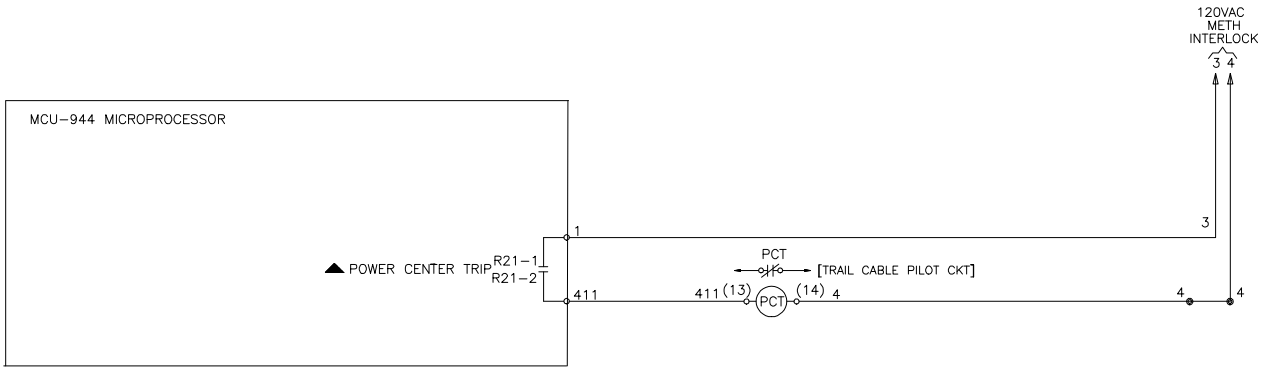
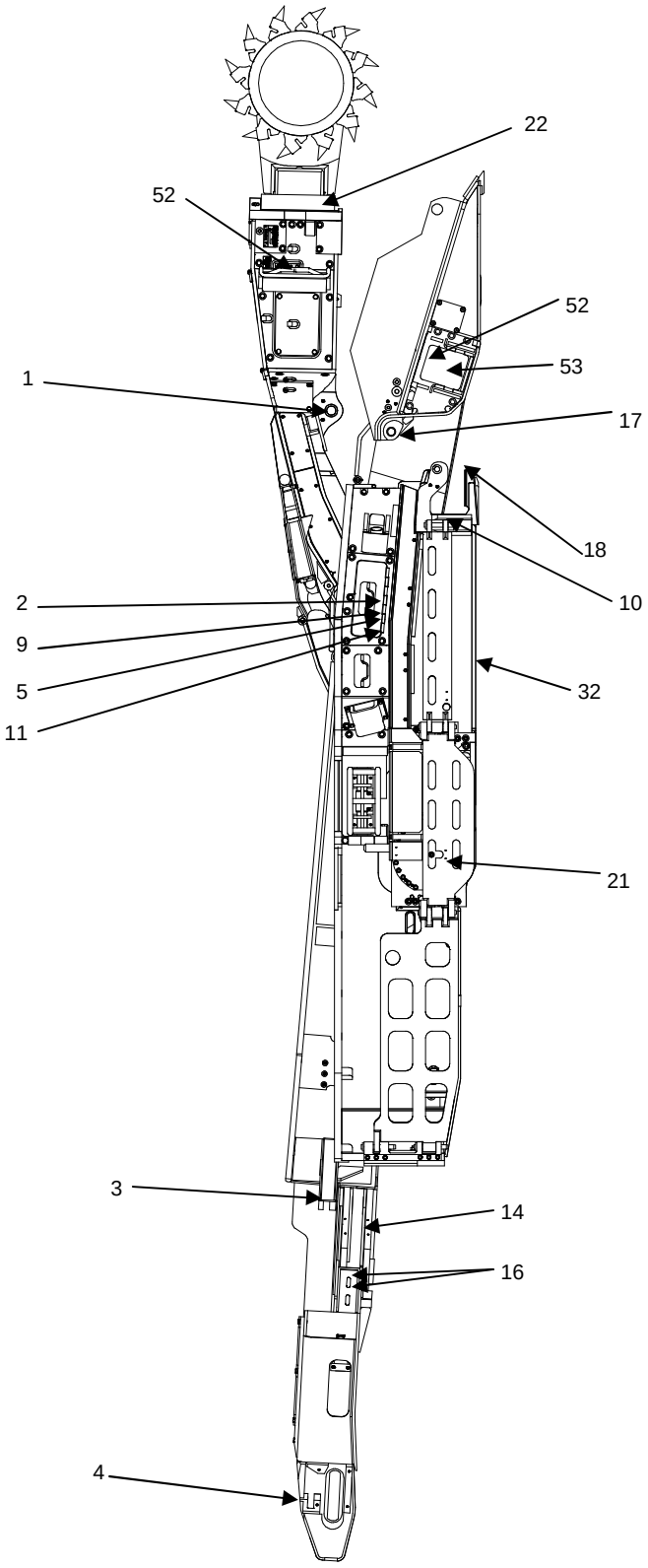


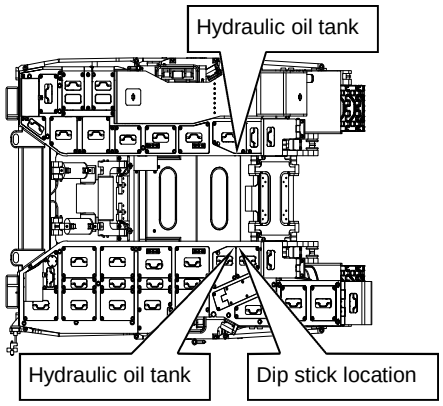
Fig. 87: Lubrication and maintenance chart, continued



hydraulic oil level

With all of the machine cylinders in the fully collapsed position, check the hydraulic oil level (Fig. 104). Remove dipstick from tank and wipe clean. Insert dipstick back into tank and remove. The oil should be level with the full line indicated on dipstick. If oil level is low, add oil until full level is met.

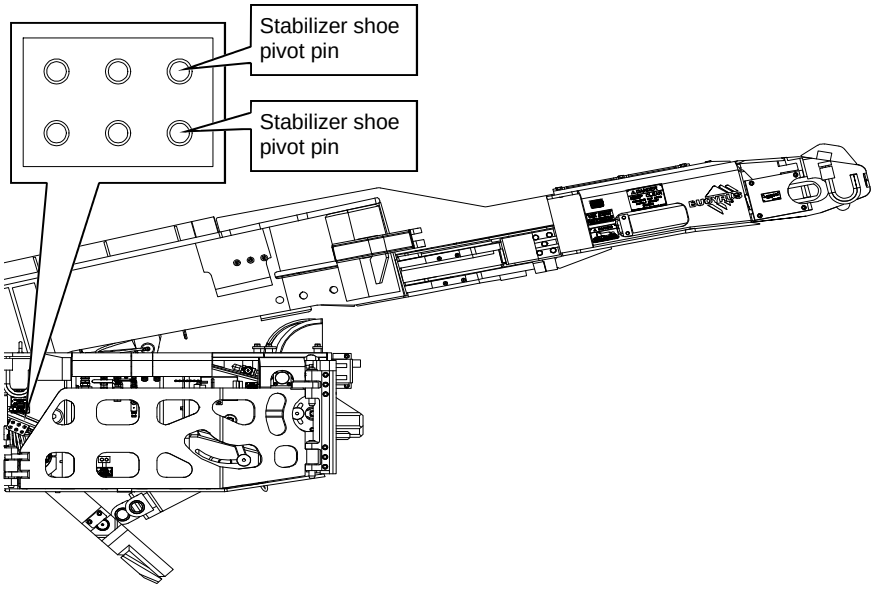
Fig. 104: Hydraulic oil tank level



stabilizer shoe pivot pins

Lubricate the stabilizer shoe pivot pins through the two (2) grease fittings located on left rear lubrication block (Fig. 105). Pump approximately 3 cu. in (50 cu. cm) of grease into each fitting.

Fig. 105: Stabilizer shoe pivot pin lubrication



radio remote batteries

Check batteries in the radio remote. A blinking light on the radio remote indicates batteries are running low and should be replaced.

Every three months

IMPORTANT!
For motor bearings that require high temperature lithium complex grease (Spec. 100-15), Bucyrus provides a special “button” style lubrication fitting (Fig. 129) to prevent the accidental use of multi-purpose lithium complex grease at these locations.

cutter motor bearings

Lubricate the left and right cutter head motor bearings with high temperature lithium complex grease through the two grease fittings located on each side of the cutter head (Fig. 119) using the following procedure:

- ☞ Open the cover (Fig. 119) to access the motor.
- ☞ Inspect the grease fittings on the exit side of the front and rear motor bearing.

  If the exit side motor bearing ports are equipped with spring loaded relief fittings, then

  - ☞ Lubricate both motor bearings until new grease appears out of the relief ports on the exit side of the bearing.
  - ☞ Operate the motor for five (5) minutes and then inspect for grease leaks in the bearing area.

  If the exit side motor bearing ports are equipped with plugs, then:

  - ☞ Remove the plug and lubricate both motor bearings until new grease appears out of the relief ports on the exit side of the bearing.
  - ☞ Operate the motor for five (5) minutes and then inspect for grease leaks in the bearing area.
  - ☞ Replace the plugs in the ports.

NOTICE!
Incorrect grease or over greasing of the electric motor may cause serious damage to the motor. Follow the greasing procedure outlined above.

Relief valve replacement

- ☞ Pilot relief valve replacement: Set the pilot relief to 35 bar (500 psi), per Step 3, making sure that the conveyor chain take-up knob is closed (turn clockwise to close).

- ☞ Conveyor chain take-up valve replacement: Set the pilot relief to 12 bar (175 psi), per Step 4, making sure the conveyor chain take-up needle valve is closed (turn clockwise to close).

Main control valve working port relief adjustment

Each valve bank section has two (2) working port reliefs except for the gathering head section and the booster pump/high speed raise sections. When the handle is pulled (spool in), oil is directed to the work port and relief closest to the handle; this is “A” port. When the handle is pushed in (spool out), oil is directed to the work port and relief farthest from the handle; this is ‘B” port.

WARNING!
Always allow cylinder functions to bottom out (stop moving) before adjusting any pressure. Pressure adjustments will only be accurate when the cylinder is in this condition.

Main control valve adjustment

IMPORTANT!
The main relief is set higher than the port reliefs and will only relieve if a spike occurs in the system or if the port relief does not function properly. This provides protection of the main pump section, A1.

CAUTION!
Do not adjust the main relief over 207 bar (3,000 psi). Destruction of the valve bank and the main pump could result.

CAUTION!
Always be alert for any unintended machine movement.

IMPORTANT!
Reference the Hydraulic section in this chapter for individual circuit information. Always refer to the hydraulic schematic in your Bucyrus America, Inc. parts manual for your miner.

WARNING!
Two people are required to adjust pressure settings. One person will make the adjustments while the second person must remain at the machine stop at all times during the adjustment procedure. Failure to do so may result in serious injury or death.

Conveyor chain tension adjustment

The conveyor chain is tensioned with a hydraulic take-up cylinder. If the chain tension is not being maintained, then:

1. The conveyor chain take-up valve may need to be adjusted. See the Conveyor chain take-up valve adjustment procedure (Pilot/ auxiliary pump circuit relief valve adjustments) in this section. If the valve adjustment is correct, then

2. The cylinder may be fully extended and, therefore, unable to take up any more chain slack. Remove a link from the chain or replace chain as necessary.

center cutter drum removal

Center cutter drum removal and installation

To remove the center cutter drum (Fig. 138):

- ☞ Lower the gathering head until it touches the floor. Lower the conveyor assembly until it is level with the floor.
- ☞ Slowly rotate the cutter head until on of the center drum seams appears directly in front and one appears directly in the rear of the cutter head.
- ☞ Lower the cutter head assembly until it is resting on the floor.
- ☞ Disconnect and lockout the trailing cable. Follow all Mine, State, and Federal lockout/tagout procedures.

WARNING!
Failure to follow all Mine, State, and Federal lockout/tagout procedures may result in machine damage or serious injury or death of personnel.

- ☞ Remove the twenty-four (24) socket head bolts from that secure the two halves of the center drum to each other. Make sure to collect the bolts, the forty-eight (48) flat washers, and the twenty-four nuts for use in reassembly.
- ☞ Attach a lifting device to the top half of the center drum and lift the it off of the assembly. It may be necessary to use a pry bar or other force to break the seal between the top and bottom halves of the center drum before the top half can be lifted off.

WARNING!
You could be seriously injured or killed by falling loads. Observe the safe working load limits of all lifting and blocking devices and stay clear of suspended loads.

- ☞ Remove the four (4) alignment keys from the bottom half of the center drum and store for use in reassembly.
- ☞ Connect the trailing cable to energize the machine.
- ☞ Slowly raise the cutter head assembly until it is clear of the bottom half of the center drum.
- ☞ Slowly tram the miner backwards away from the bottom half of the center drum.

cutter drum drive gear case removal

The cutter head gear case may be removed with cutter drum installed but it is easier with it removed.

To remove the cutter drum drive gear case (Fig. 144):

☞ Disconnect and lockout the trailing cable. Follow all Mine, State, and Federal lockout/tagout procedures.

WARNING!
Failure to follow all Mine, State, and Federal lockout/tagout procedures may result in machine damage or serious injury or death of personnel.

☞ Remove the cutter head center drum (see Center cutter drum removal procedure in this chapter).

☞ Remove the cutter head end drums (see End drum removal procedure in this chapter).

☞ Remove the spray blocks by removing the cap screws that secure them to the miner.

☞ Ensure that the cutter head assembly is adequately blocked.

☞ Securely block the cutter head gear case so that it will not fall when it is unbolted from the frame.

WARNING!
Observe the safe working load limits of all lifting and blocking devices. You can be seriously injured or killed by falling loads.

IMPORTANT!
During the removal of the cap screws that secure the gear case to the frame, it may be necessary to adjust the blocking under the gear case. Ensure that the gear case is securely blocked at all times and that it does not shift as it is unbolted.

☞ Carefully loosen and remove the forty (40) capscrews that secure the cutter head gear case to the cutter head support frame.

☞ Connect the trailing cable to energize the miner.

WARNING!
Stand clear of the miner and the gear case while tramming the miner. You could be seriously injured or killed by falling loads.

WARNING!
Do not attempt to start the cutter head motors. You could be seriously injured or killed.

CAUTION!
Use care when tramming the miner away from the gear case. While each cutter motor is supported by a bracket at the rear of the motor, excessive bumping could cause the motor to fall.

Gathering head gear case and pot removal and installation

gathering head gear case and pot removal

To remove a gathering head gear case and pot (Fig. 148):

- ☞ Disconnect the conveyor chain (See Conveyor chain removal procedure in this chapter).
- ☞ Disconnect and lock out the electrical power to the miner. Follow all applicable mine, State, and Federal regulations regarding lockout/tagout procedures.

WARNING!
Failure to follow all Mine, State, and Federal lockout/tagout procedures may result in machine damage or serious injury or death of personnel.

- ☞ Remove the gathering head motor (see Gathering head motor removal procedure in this chapter).
- ☞ Securely block the input gear case in position to prevent the gear case from falling when the capscrews that secure it are removed.

WARNING!
You could be seriously injured or killed by falling loads. Observe the safe working load limits of all lifting and blocking devices and keep a safe distance from suspended loads.

- ☞ Disconnect any oil fill lines connected to the pot.
- ☞ Attach a lifting device to the top surface of the pot and input gear case.

WARNING!
You could be seriously injured or killed by falling loads. Observe the safe working load limits of all lifting and blocking devices and keep a safe distance from suspended loads.

- ☞ Remove the CLA (see CLA removal procedure in this chapter).
- ☞ Remove all covers from over the pot assembly (Fig. 149).
- ☞ Foot shaft connector must be detached from output shaft on pot.
- ☞ Loosen the pot case attachment from the frame by removing the capscrews that secure the corners of the pot. Removing these screws will also remove the three wedge blocks which secure the pot in position (Fig. 150).
- ☞ Remove the foot shaft cover (Fig. 150).
- ☞ Remove foot shaft locking collar and slide splined coupling off pot output shaft.
- ☞ Lift the pot and input case from the gathering head frame.

☞ Disconnect and plug the hydraulic hose from the cylinder.

WARNING!
Never disconnect a hydraulic hose if the circuit is pressurized or if there is a load on the circuit. If a hose is disconnected while the circuit is pressurized or under load, the load will fall. Machine damage or serious injury or death to personnel may result.

☞ Remove the two (2) capscrews that secure the pin retainer plate to the frame and remove the retainer plate.

☞ Remove the pin from the clevis.

☞ The cylinder is now free and can be lifted off of the machine.

tram drive gear case installation

To install the tram gear case (Fig. 156);

- ☞ Ensure that the crawler frame mounting area is cleared of dirt and debris. Pay special attention to the keyways and the bore in the inner face of the main frame. Apply a light coating of Molykote G-N past to aid re-installation.
- ☞ Ensure that the mounting faces on both the tram drive gear case and the crawler frame are clean.
- ☞ Coat the mounting keys on the gear case and the bearing carrier on the inboard end of the main gear case with Molykote G-N paste. The bearing carrier serves as a plug to fit into the bore in the main frame.
- ☞ Slowly maneuver the gear case into position next to the machine, aligning the keys on the gear case with the keyways/slots on the frame.

IMPORTANT!
If the miner and the gear case assembly are not both level and aligned correctly, installing the gear case assembly into the machine will be very difficult.

- ☞ Slowly push the gear case assembly into the crawler frame, allowing the keys on the gear case to engage the keyways in the main frame. Be sure that cap screw mounting holes line up.
- ☞ Install the nine (9) socket head capscrews and washers and torque appropriately.
- ☞ Install the wedge blocks and secure with capscrews. Tighten to the correct torque.
- ☞ Install four set screws into the jacking holes and tighten to the correct torque.
- ☞ Reconnect all water and lubrication lines to the gear case.
- ☞ Reconnect the electrical leads to the motor.
- ☞ Check the oil level in the gear case and add high demulsibility, extreme pressure gear oil (Spec. 100-15) as required.
- ☞ Reconnect the crawler chain (see Crawler chain installation procedure in this chapter).

conveyor chain installation

To install the conveyor chain (Fig. 163):

☞ Ensure that the cutting head is adequately blocked.

WARNING!
Observe the safe working load limits of all blocking devices. You can be seriously injured or killed by falling loads.

☞ Lay the new chain, uncoiled and upside down, behind the conveyor with the nearest end near the tail roller.

NOTICE!
The conveyor chain does not have a right or wrong running directions, only a correct up and down side. The flat side of the flight chains must run on the deck.

☞ Connect the pulling cable (attached to the old chain still in the machine) to the nearest end of the new conveyor chain.

☞ Pull the conveyor chain under the tail roller and through the return deck, stopping when the chain reaches the foot shaft.

☞ Pull the conveyor chain up over the foot shaft sprocket and lay it in the gathering pan.

☞ Disconnect the pulling cable from the front end of the chain and run it along the top conveyor deck to the back of the miner.

☞ Connect the pulling cable to the other end of the conveyor chain on the mine floor. Pull it over the tail roller, through the conveyor deck, and up to the other end of the chain on the gathering pan.

☞ Connect the chain using a connecting pin and two retaining pins. bend the retaining pins opposite the direction of conveyor chain travel.

☞ Close the bleed valve in the conveyor chain take-up circuit so that the circuit can be pressurized when power is reapplied.

WARNING!
Make sure all personnel are clear of the miner before performing the following checks. Do not stand behind the conveyor when the chain is running.

☞ Connect the trailing cable to energize the miner.

☞ Start the pump motor.

☞ Swing the discharge conveyor full right and left to ensure that the chain is clear.

☞ Turn on the gathering head motors to run the conveyor. Elevate the conveyor full up and down and swing the discharge conveyor full left and right and check that the chain is running smoothly.

☞ 15. Slide the insert of each end of the tail roller.

☞ 16. The tail roller should now be free of the conveyor.

Fig. 166: Conveyor tail roller removal and installation

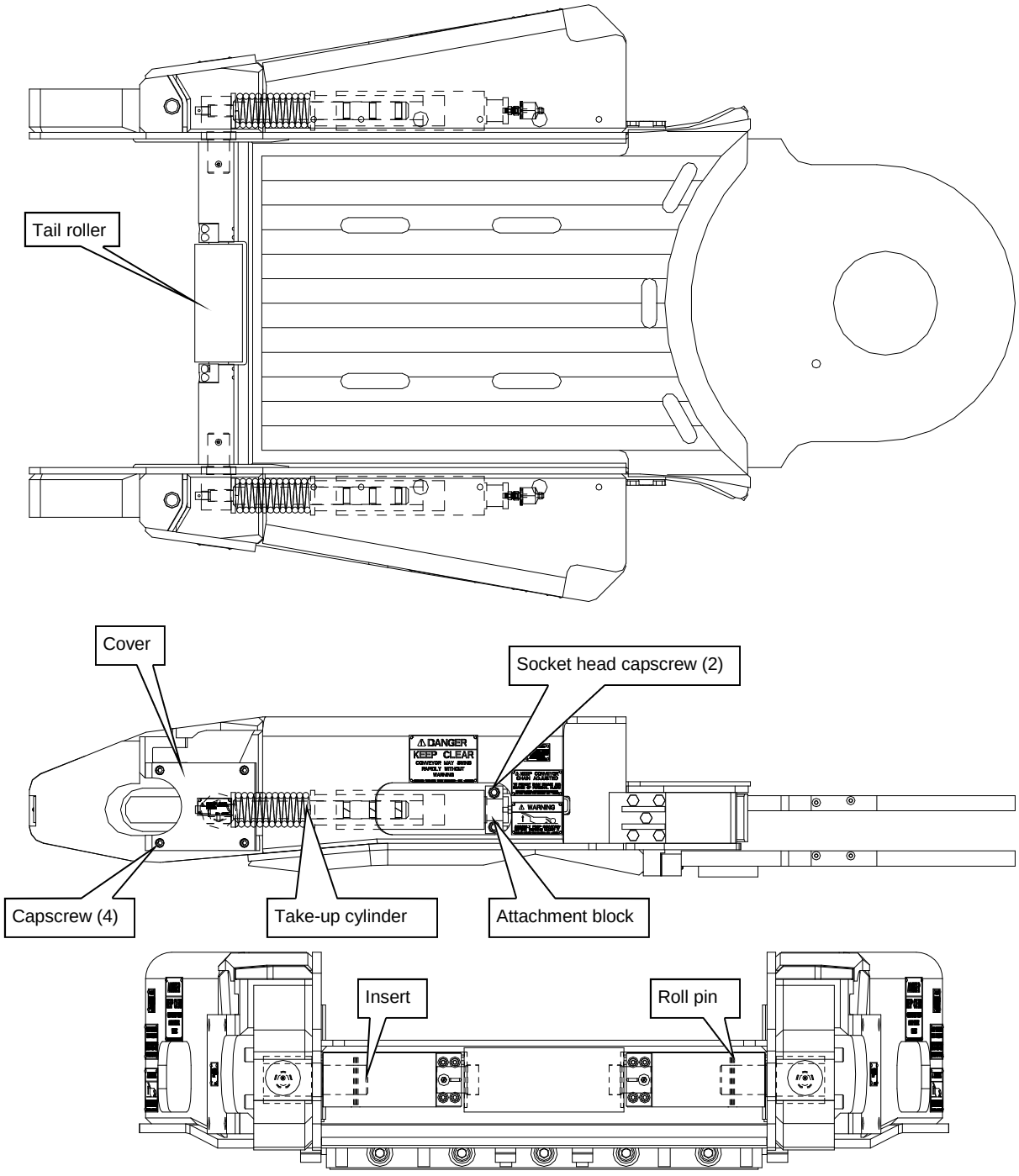


Table 5: Flow chart III for troubleshooting incorrect flow

No Flow		Low Flow		Excessive Flow	
Cause	**Remedy**	**Cause**	**Remedy**	**Cause**	**Remedy**
Pump not receiving fluid	A	Flow control set too low	D	Flow control set too high	D
Pump drive motor not operating	E	Relief or unloading valve set too low	D	RPM of pump drive motor incorrect	H
Pump to drive coupling sheared	C	Flow by-passing thru partially open valve	E of F	Improper size pump used for replacement	H
Pump drive motor turning in wrong direction	G	External leak in system	B		
Directional control set in wrong position	F	RPM of pump drive motor incorrect	H		
Entire flow passing over relief valve	D	Worn pump, valve, motor, cylinder, or other component	E		
Damaged pump	C	Pilot filter clogged	A		
Improperly assembled pump	E				
Pilot filter clogged	A				

Remedies

A. Any or all of the following:

- ☞ replace dirty filters
- ☞ clean clogged inlet line
- ☞ clean reservoir breather vent
- ☞ fill reservoir to proper level

B. Any or all of the following:

- ☞ tighten leaky inlet connections
- ☞ bleed air from system

C. All of the following:

- ☞ check for damaged pump or pump drive
- ☞ replace and align coupling

D. ☞ adjust setting on valve

E. ☞ overhaul or replace part

F. Any or all of the following

- ☞ check position of manually operated controls
- ☞ check electrical circuit on solenoid operated controls
- ☞ repair or replace pilot pressure pump

G. ☞ reverse rotation

H. ☞ replace with correct unit

Table 12, continued: MCU Status LEDs

LED	Description
R16-1	Display TX
R16-2	Display RS
R17-1	TR Pendant TX received
R17-2	Not used
R18-1	MCU945 TX to traction drive
R18-2	MCU945
R19-1	Off machine comm TX
R19-1	Off machine comm RX
R20-1	Download/debug TX
R20-2	Download/debug RX
R21-1	Not used
R21-2	Not used
R22-1	+5V -**Extremely important to function of MCU**
R22-2	+12V - **Extremely important to function of MCU**
R22-3	Umbilical (pendant activity)
Near rotary switch-1	Hardware failure (toggle)
Near rotary switch-2	Modbus comm error (toggle)
Near rotary switch-4	IR pendant comm error (toggle)
Near rotary switch-5	Writ to EEPROM (Toggle)

Table 17, continued: Alarm codes

Code #	Description
A098	Machine voltage below allowable range (<80% Vnom)
A099	Machine voltage above allowable range (>117% Vnom)
A100	Future use
A101	Right tram motor overload
A102	Left tram motor overload
A103	Tram enable switch held more than 3 se. with tram
A104	Tram enable switch stuck
A105	Future use
A106	Future use
A107	Future use
A108	Future use
A109	Future use
A110	Future use
A111	Future use
A112	Tram shutdown - left drive Phase A over current
A113	Tram shutdown - left drive Phase B over current
A114	Tram shutdown - left drive bus over voltage
A115	Tram shutdown - left drive over temperature
A116	Tram shutdown - right drive Phase A over current
A117	Tram shutdown - right drive Phase B over current
A118	Tram shutdown - right drive bus over voltage
A119	Tram shutdown - right drive over temperature
A120	Right drive limited - loss of voltage feedback
A121	Left drive limited - loss of voltage feedback
A122	Future use
A123	Future use
A124	Future use
A125	Future use
A126	Future use
A127	FCR data link loss
A128	Teach/Learn successful
A129	Teach/Learn failed

Technical data

loading unit	Loading method	3 finger CLA
	Conveyor width	approx. 38 in (965 mm)
	Conveyor speed	approx. 483 fpm (147 m/min)
	Conveyor depth	8 in (203 mm)
	Loading capacity	15 to 39 TPM (14 to 35 tonnes/min)
	Horse Power on Conveyor through CLAs	2X65 HP/48 kW (one-hour rating)
traction unit	Crawler chain width	22 in (559 mm)
	Crawler assembly length	9 ft 2 in (2,794 mm)
	Ground pressure (average)	< 32 psi (221 kPa)
	Crawler speed	0 - 85 fpm (0 - 26 m/min)
	Traction horse power	2X75 hp/60 kW DC (one-hour rating)
electrical system	Machine voltage (no load)	IEC, 1140 VAC
	Machine voltage (under load)	1000 VAC
	Control system	Processor based/ radio remote control
hydraulic system	Hydraulic pump unit, triple gear pump	2,200 psi (152 bar) Working pressure
	Horse Power on Hydraulic Pump	1X65 HP (48 kW) (one-hour rating)
total installed horse power	Continuous rating (without blowing system)	765 HP (570 kW)
	One hour rating (without blowing system)	905 HP (675 kW)

(6) Overview of Remote Equipment

“TITO”
(Remote Control Console)

“BRICK”
(Remote Control Console)

“LARGE BRICK”
(Remote Control Console)

Step (2) TITO Cleaning

Expunge heavy debris from the switch assembly with a Soft Bristle Cleaning Brush.
Wash the transmitter with warm soapy water.
Inspect the switch seals for signs of deterioration. Seals exhibiting wear require the equipment to be scheduled for factory
Note: these seals are the primary seal, a secondary seal within the switch itself and an internal neoprene seal operate as a barrier to moisture ingress.
Dry the transmitter with light compressed air or cloth.

Do not use caustic solvents or displacement solutions as this may cause premature seal failure.

Do not use metal implements to dig out coal, mud or soapstone that may be found in the charge receptacle.

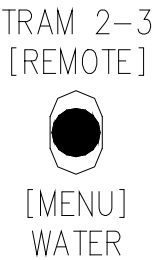
Step (3) TITO Reassembly

Ensure all switch seals are tight. If a seal appears loose, tighten the seal to the recommended torque of 2.5Nm.
Ensure all switch plate M2 bolts are tight. If an M2 bolt appears loose, tighten the bolt to the recommended torque of 1.5Nm. Do NOT over tighten these bolts as this may break the enclosure seal.
Install the engraved plate.
Install the comfort knobs as depicted. Tighten the grub screw to the recommended torque of 2.5Nm.
Install the switch caps
Install the switch guard. Tighten the switch guard M3 bolts to the recommended torque of 2.5Nm.
After reassembly, test the unit on the Remote Control Battery

Remote Console Tram Enable

Normally the pump motor must be running in order to control machine

To enable machine tramming the
key must be pressed and released. This enables the tram function. Once enabled, the tram levers can be used to drive left and right tramming tracks forwards and backwards. If the tram levers are released for a continuous period of 5 seconds, the tram b
again. To re enable the tram function, the k
and released again.



Remote Console

Tram tracks on the mach
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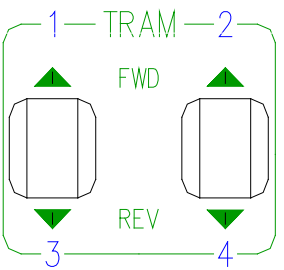
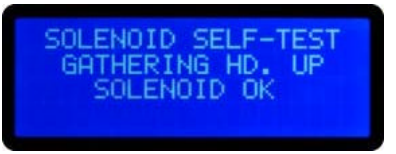


To Enter the System Menu

At any time, press the key and the key together on the remote console. The system will then switch from REMOTE MODE to SYSTEM MENU MODE. Note that all functions and motors will be shut down and disabled when the system menu is selected.

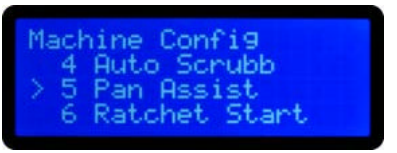
If the system finds that the coil is normal, it displays SOLENOID OK n moves on to the



If the system believes that a solenoid coil is open circuit, it will pause the test at that solenoid and display SOLENOID OPEN. The number **LEFT TRAM REVERSE**) must be pressed to continue the test.

If the system finds a solenoid coil that is short circuit, it pauses the test and displays the SOLENOID SHORT message for the solenoid. The **LEFT TRAM REVERSE**) must be pressed to continue

The system will continue testing until all solenoids have been checked. Each time a fault is detected the system will pause until prompted to continue. After all solenoids have been checked the system will automatically return to the Menu.



When this option is enabled, the control system automatically starts the scrubber fan 3 seconds after the cutter motors are started and automatically turns off the fan 10 seconds after s are shut down

This option must be that are fitted with the PAN ASSIST hydraulic system. When the option is enabled, the control system will continue to drive the Pan Float solenoid after the operator releases the key is pressed.

Ratchet Start The control system provides two independent cutter contactor relay outputs. When this option is enabled, the control system alternates which output is started first on successive cutter motor start sequences.

When the control system loses main power, the battery backup power supply will provide power in BATTERY STANDBY MODE. The duration that the system will remain without turning itself off is determined by the Battery Timeout param

Pump Lock Aux 1 This parameter allows the user to specify if the pump must be running in order for the Auxiliary Output #1 to be available. If , the operator must first start the pump motor before the Auxiliary Output #1 can b

Fault Number	Fault Name
	RC HANDSET LOW BATTERY
	Explanation
	The remote console has reported a low battery event.
	Possible Causes
	The remote has not been The battery needs to be replaced
	Checks to Carv Out
	Charge the remote for at least 5 hours. Check voltage level of the remote Replace transmitter.
Fault Number	**Fault Name**
	VOLTAGE TRANSDUCER
	Explanation
	The signal from the voltage transducer was not healthy (healthy level is between 4mA and 20mA).
	Possible Causes
	Supply to transducer (24VDC) is not Broken or short circuit signal wire from transducer to the Super Simpson nternal transducer failure Internal failure of the Super Simpson..
	Checks to Carv Out
	Check 24VDC is present at transducer Check signal line from transducer to the Super Simpson Replace the transducer 4. Replace the Super Simpson. (if signal 4mA from transducer)
Fault Number	**Fault Name**
	PUMP MOTORMATE FAILURE

Fault Number	Fault Name
	RIGHT GATHERING HEAD MOTORMATE FAILURE PHASE C
	Explanation
	from motor mate is not healthy (healthy is between 4 mA and 20 mA)
	Possible Causes
	24VDC supply to the motor mate One or more signal lines have gone open signal lines have been Motor Mate is faulty Super Simpson is faulty (interface to the Motor Mate)
	Checks to Carv Out
	Check 24 VDC supply wiring is OK (+24 VDC line is provided by output pin X4 2. Check that each signal line is not open or short circuit 3. Replace the Motor Mate 4. Replace the Super Simpson
Fault Number	**Fault Name**
	SCRUBBER MOTORMATE FAILURE PHASE A
	Explanation
	from motor mate is not healthy (healthy is between 4 mA and 20 mA)
	Possible Causes
	24VDC supply to the motor mate One or more signal lines have gone open signal lines have been Motor Mate is faulty is faulty (interface to the Motor Mate)

	Explanation
	Motor thermistor is reading over allowed operating temperature.
	Possible Causes
	Motor is damaged. Motor Thermistor is faulty. Thermistor module is faulty
	Checks to Carv Out
	1. Check thermistor circuit resistance and verify that thermistor module is correctly reporting that value. 2. Check if thermistor reading is rapidly fluctuating, if so thermistor is damaged or noise in the circuit. Replace Thermistor module.
Fault Number	**Fault Name**
	FAN THERMAL OVERLOAD
	Explanation
	The motor has been operator at a current level above the recommended FLA
	Possible Causes
	The motor is faulty. Mate is Faulty. Super Simpson is Faulty.
	Checks to Carv Out
	1. Verify actual operating current Check that motor mate is reporting actual operating current. 3. Replace pump motor, motor mate, or super simpson.

Fault Number	Fault Name
	TEMPERATURE WARNING
	Explanation
	Thermistor reported temperature is within ten degrees of trip temperature.
	Possible Causes
	RTD circuit is above 150 Measure RTD resistance and compare to RTD failure (DO NOT Cable damage Thermistor Module Failure (L0LH09)
	Checks to Carv Out
	1.Check condition of wiring to RTD circuit and measure RTD stance and compare Note: Check connections Motor cable junction boxes. 2.Connect spare RTD circui terminal enclosure. 3. Replace Thermistor Module (L0LH09) .Check pilot cores in motor supply cable. s are damaged replace cable.
Fault Number	**Fault Name**
	PUMP PT100 SHORT CIRCUIT
	Explanation
	PT100 resistance detected as less than 60
	Possible Causes
	PT100 wiring has been short circuited Thermistor Module Failure (L0LH09)
	Checks to Carv Out
	1. Check motor.

	signal lines have been Motor Mate is faulty is faulty (interface to the Motor Mate)
	Checks to Carv Out
	Check 24 VDC supply wiring is OK (+24 VDC line is provided by output pin X4 2. Check that each signal line is not open or short circuit 3. Replace the Motor Mate 4. Replace the Super Simpson

Fault Number	Fault Name
	RH VFD UNDERVOLTAGE
	Explanation
	VFD has reported low input voltage
	Possible Causes
	1.Voltage below 750V 2.Drive has faulty DC Bus voltage Circuit
	Checks to Carv Out
	1.Verify machine voltage and Rectifier unit 2.Replace rectifier. 3. Replace Drive.
Fault Number	**Fault Name**
	RH VFD HEATSINK TRIP
	Explanation
	VFD has reported heatsink temperature
	Possible Causes
	1. Low Coolant Flow 2 Poor Thermal Contact with Drive Base and Enclosure
	Checks to Carv Out
	1.Check Coolant flow and level. 2.Check proper installation of drive.
Fault Number	**Fault Name**
	RH VFD SHORT CIRCUIT
	Explanation
	VFD has reported a short circuit fault
	Possible Causes
	Drive has stalled for 1 minute Motor Winding Faulty Terminal to Terminal wiring fault condition
	Checks to Carv Out
	Replace Drive 2. Replace Motor

	Explanation
	The motor temperature has been detected within ten degrees of the trip temperature
	Possible Causes
	Measure RTD resistance and compare to RTD failure (DO NOT Cable damage Thermistor Module Failure (L0LH09)
	Checks to Carv Out
	1.Check condition of wiring to RTD circuit and measure RTD resistance and compare Note: Check connections Motor cable junction boxes. 2.Connect spare RTD circui terminal enclosure. 3. Replace Thermistor Module (L0LH09) .Check pilot cores in motor supply cable. If pilot cores are damaged replace cable.

Fault Number	Fault Name
	VOLTAGE ON RUN CIRCUIT
	Explanation
	When the pump should be off, 120VAC ACTIVE voltage was detected at the output of the internal pump run relay from the receiver). This voltage energized the pump run circuit illegally. The Out Stop was tripped to prevent the pump motor from starting
	Possible Causes
	120VAC ACTIVE has shorted to the X1 output (Pump Run Circuit) The internal pump run relay (X1 is faulty (closed illegally). Receiver needs to be replaced. (or input to receiver) is faulty
	Checks to Carv Out
	wiring between relay output and pump contactor that 120VAC is coming from Super Simpson Replace Super Simpson
Fault Number	**Fault Name**
	VOLTAGE ON LEFT CUTTER RUN CIRCUIT
	Explanation
	When the cutters should be off, 120VAC ACTIVE voltage was detected at the output of the internal left cutter run relay (Output receiver). This voltage ed the left cutter run circuit illegally. Stop was tripped to prevent the left cutter motor from starting
	Possible Causes
	120VAC ACTIVE has shorted to the X1 output (Left Cutter Run Circuit)

Fault Number	Fault Name
	RIGHT TRACTION DRIVE COMMS
	Explanation
	The receiver is not able to communicate e right traction The traction is disabled and cannot be started
	Possible Causes
	Communication wires between the receiver and thermistor module are broken or There is no 120VAC power supply or 24VDC power supply to the drive The traction drive unit is Receiver is faulty.
	Checks to Carv Out
	1. Check the integrity of the daisy chai cable and its internal wires 2. Check all modules are properly ected to the daisy chain cable the 24VDC supply to module. ace the module.
Fault Number	**Fault Name**
	RIGHT TRACTION DRIVE WRONG SOFTWARE VERSION
	Explanation
	The software that is installed in the wrong version. The version that is installed cannot be used with this control The traction is disabled and cannot be started
	Possible Causes
	Wrong software version installed in the
	Checks to Carv Out
	Replace the drive.
Fault Number	**Fault Name**

	Overload of the hydraulic system that is mechanical loading of the pump motor shaft Serious failure of the pump motor
	Checks to Carv Out
	Verify proper functionality of the motor. Check motor mate reading versus hand 3. Replace motor mate 4. Replace Super Simpson
Fault Number	**Fault Name**
	PUMP MOTOR OVER TEMPERATRUE
	Explanation
	The temperature of the motor the pump motor is over t temperature threshold. Pump is shutdown. This fault is only available if a thermistor module is installed in the system
	Possible Causes
	Cooling system of the pump motor is impeded by debris or other factors, preventing adequate cooling. Internal failure of the motor is causing the motor to become unusually hot Failure of thermistor in pump motor or in the wiring from the thermistor to the system thermistor module Thermistor module is faulty
	Checks to Cary
	1. Verify state of coolant flow and proper functionality of motor. Check the resistance reported by thermistor module versus a hand held 3. Replace Thermistor module

	Checks to Carv Out
	1. Check proper functionality of cutter 2. Verify motor mate feedback against Replace motor mate. 4. Replace Super Simpson
Fault Number	**Fault Name**
	RIGHT CUTTER MOTOR INSTANTANEOUS OVERLOAD
	Explanation
	While the cutter motors were running current measured in the right exceeded the instantaneo threshold. The cutter motors were
	Possible Causes
	Failure of gearbox that is overloading or jamming the motor shaft Heavy cutting loads are c overloading of the motor
	Checks to Carv Out
	1. Check proper functionality of cutter 2. Verify motor mate feedback against hand held meter. Replace motor mate. 4. Replace Super Simpson

Fault Number	Fault Name
	RIGHT CONVEYOR MOTOR PHASE IMBALANCE
	Explanation
	While the conveyors were running a gnificant difference in the motor phase currents was detected. Normally all three phase currents for a motor sh approximately equal. The conveyor were shutdown.
	Possible Causes
	Motor power conductor is broken Serious motor failure Mate is faulty Receiver is faulty (inputs from motor mate)
	Checks to Carv Out
	1. Check proper functionality of motor. 2. Verify motor mate feedback against hand held meter. Replace motor mate. 4. Replace Super Simpson
Fault Number	**Fault Name**
	RIGHT CONVEYOR MOTOR INSTANTANEOUS OVERLOAD
	Explanation
	While the conveyor motors were running the current measured in the exceeded the instantaneous threshold. The conveyor
	Possible Causes
	gearbox that is overloading or jamming the motor shaft ausing overloading of rious failure of the convevor
	Checks to Carv Out

Fault Number	Fault Name
	PUMP MULTIPLE INSTANTANEOUS OVERLOADS
	Explanation
	While the pump motor was running the current measured in the motor exceeded the instantaneous overload threshold pump motor was shutdown. happened multiple times and the motor now requires a longer cool down period
	Possible Causes
	Failure of pump gearbox that is overloading or jamming the pump motor Overload of the hydraulic system that is mechanical loading of the pump motor shaft Serious failure of the pump motor
	Checks to Carv Out
	Verify proper functionality of motor. 2. Verify motor mate feedback versus hand 3. Replace motor mate 4. Replace Super Simpson
Fault Number	**Fault Name**
	LEFT CONVEYOR MULTIPLE INSTANT OVERLOADS
	Explanation
	While the conveyor motor was running the current measured in the motor exceeded the instantaneous overload threshold conveyor was shutdown. happened multiple times and the motor now requires a longer cool down period
	Possible Causes
	gearbox that is overloading or

Fault Number	Fault Name
	REAR METHANE SENSOR
	Explanation
	The methane sensor is reporting that serial communication errors.
	Possible Causes
	The sensor has suffered an internal failure
	Checks to Carv Out
	1. Replace methane sensor.
Fault Number	**Fault Name**
	PUMP MOTOR OVER TEMPERATURE WARNING
	Explanation
	The pump motor has nearly reached its maximum operating temperature
	Possible Causes
	The motor has a cooling problem The motor has a serious failure The motor thermistor is faultv The thermistor module has failed
	Checks to Carv Out
	1. Check proper coolant level 2. Check resistance reading from thermistor module versus hand held meter 3. Replace thermistor module
Fault Number	**Fault Name**
	LEFT CUTTER MOTOR OVER TEMPERATURE WARNING
	Explanation
	motor has nearly maximum operating temperature
	Possible Causes
	The motor has a cooling problem

	The motormate is faulty The receiver is faulty
	Checks to Carv Out
	1. Check 120VAC on X1 2. Check motor mate feedback with hand 3. Replace motor mate. 4. Replace Super Simpson.
	Fault Name
	ILLEGAL LEFT CONVEYOR
	Explanation
	While the motor should have been off, current feedback was detected. The control system assumed the contactor had closed illegally and removed power from the machine by activating the out
	Possible Causes
	LEFT CONVEYOR CONTACT SHORT 2.MOTORMATE FAULTY 3.RECEIVER FAULTY
	Checks to Carv Out
	1. Check that contactor is closed 2. Check wiring to contactor for 120VAC 3. Verify motor mate feedback Replace motor mate. 5. Replace Super Simpson.
Fault Number	**Fault Name**
	ILLEGAL RIGHT CONVEYOR
	Explanation
	While the motor should have been off, current feedback was detected. The control system assumed the contactor had illegally and removed power from the machine by activating the out

	Explanation
	Motor current was detected when no tram command had been issued
	Possible Causes
	Drive is not responsive to tram commands Motor Mate is Faulty
	Checks to Carv Out
	Verify motor mate feedback with hand held Replace Drive or motor mate
	Fault Name
	ILLEGAL RIGHT TRACTION CURRENT FEEDBACK
	Explanation
	Motor current was detected when no tram command had been issued
	Possible Causes
	Drive is not responsive to tram commands Motor Mate is Faulty
	Checks to Carv Out
	Verify motor mate feedback with hand held Replace Drive or motor mate

	Possible Causes
	Motor being run at high current level for long period of time Relay amperage setting is too low Relay is faulty Broken wiring Receiver is faulty
	Checks to Carv Out
	relay is set correctly and motor is operating at normal levels Check 110VAC from relay to receiver. Check wire continuity from relay to receiver Replace receiver.
Fault Number	**Fault Name**
	RIGHT TRAM OVERLOAD RELAY OPEN
	Explanation
	overload relay was detected as
	Possible Causes
	Motor being run at high current level for long period of time Relay amperage setting is too low Relay is faulty Broken wiring Receiver is faulty
	Checks to Carv Out
	Verify relay is set correctly operating at normal levels Check 110VAC from relay to receiver. Check wire continuity from relay to receiver Replace receiver.
Fault Number	**Fault Name**
	CB2 OPEN DURING FAN START
	Explanation
	Circuit Breaker was detected as open during fan motor start
	Possible Causes

Fault Number	Fault Name
	RIGHT VFD IGBT OVER TEMPERATURE
	Explanation
	Possible Causes
	Checks to Carv Out
Fault Number	Fault Name
	RIGHT VFD EXTERNAL
	Explanation
	Possible Causes
	Checks to Carv Out
Fault Number	Fault Name
	RIGHT VFD INSTANT
	Explanation
	The inverter has detected an overload
	Possible Causes
	Motor has stalled for 1 minute Failure in motor winding Poor connection at motor terminals
	Checks to Carv Out
	Remove cause of motor stall condition Check all motor terminals Reduce load on the motor.
Fault Number	
	RIGHT VFD MOTOR THERMOSTAT TRIP
	Explanation

Fault Number	Fault Name
	LEFT RMS UNPLANNED
	Explanation
	Possible Causes
	Checks to Carv Out
Fault Number	Fault Name
	LEFT RMS EMERGENCY TRAM
	Explanation
	Possible Causes
	Checks to Carv Out
Fault Number	Fault Name
	LEFT RMS NOT IN READY
	Explanation
	Drive is not reporting ready state during
	Possible Causes
	Checks to Carv Out
	If problem persists replace the drive.
Fault Number	Fault Name
	RIGHT RMS LOW LINE
	Explanation
	Possible Causes
	Checks to Carv Out