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Illustrated Parts Manual

For Commercial Use Only



Long-Range Floorkeeper® Automatic Scrubber

Catalog No.
99328 & 99332

For Operations & Maintenance see L9332FD

Effective 12/6/2005

NOTES

This illustrated parts book covers:

MODEL	99328	99332
SIZE	28"	32"
VOLTS (CHARGER)	36V	36V
AMPS	20	20
CAPACITY	20 GAL. (79l)	20 GAL (79l)
SERIES	D	D

All specifications are subject to change without notice.

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Long-term buyer protection warranties

Tornado® Standard Warranty Program*	
Warranties do not cover components subject to normal wear or abuse and misuse, and have other limitations not specified here. For full details, contact your Authorized Tornado Distributor, Service Center, or the Tornado Technical Service Department. Tornado sales and service representatives are not authorized to waive or alter the terms of this warranty, or to increase the obligations of Tornado under the warranty.	10 Years: <i>All plastic tanks and rotationally-molded bodies^{1) 2)}</i>
	2 Year: <i>Parts on all Tornado and Tornado/Karcher cleaning equipment^{1) 2) 3)}</i>
	1 Year: <i>Labor on all Tornado and Tornado/Karcher cleaning equipment²⁾</i>
	1 Year: <i>Warranty on batteries and chargers, one year pro-rated.</i> ** 6 Month Warranty on Gel Batteries <i>All battery warranties are handled by the battery manufacturer, please call customer service for more information.</i>

Thank you for choosing Tornado products. We are proud to offer the most complete line of commercial and industrial cleaning equipment in the industry. Our reputation for quality, innovation and durability is unsurpassed.

* Effective January 1st, 2006. Terms subject to change without notice.

- 1) Windshear™ Blower-Dryer, Insulation Blowers, T191, T201, T12/1, CV 30, CV 38, CW 50, CW 100, Pro PAC Vacs, Duo-Upright Carpetkeepers™, Gas & Electric Pressure Washers, and all chargers are warranted for 1 (one) year for both parts and labor.
- 2) Warranties on all riding sweepers including the ICC1, KM 100/100 R, KMR 1250, and KMR 1700 are 24 months parts/6 months labor OR 1000 hours of operation, whichever comes first. Warranties on the 75/140 & 90/140 are 24 months parts/12 months' labor OR 1,000 hours of operation whichever comes first.
- 3) All non-wear item parts purchased after warranty expiration are warranted for 90 days.
- 4) Warranty starts from the date of sale to the consumer or, at Tornado's discretion, 6 months after dealer purchased the unit from Tornado, whichever comes first.

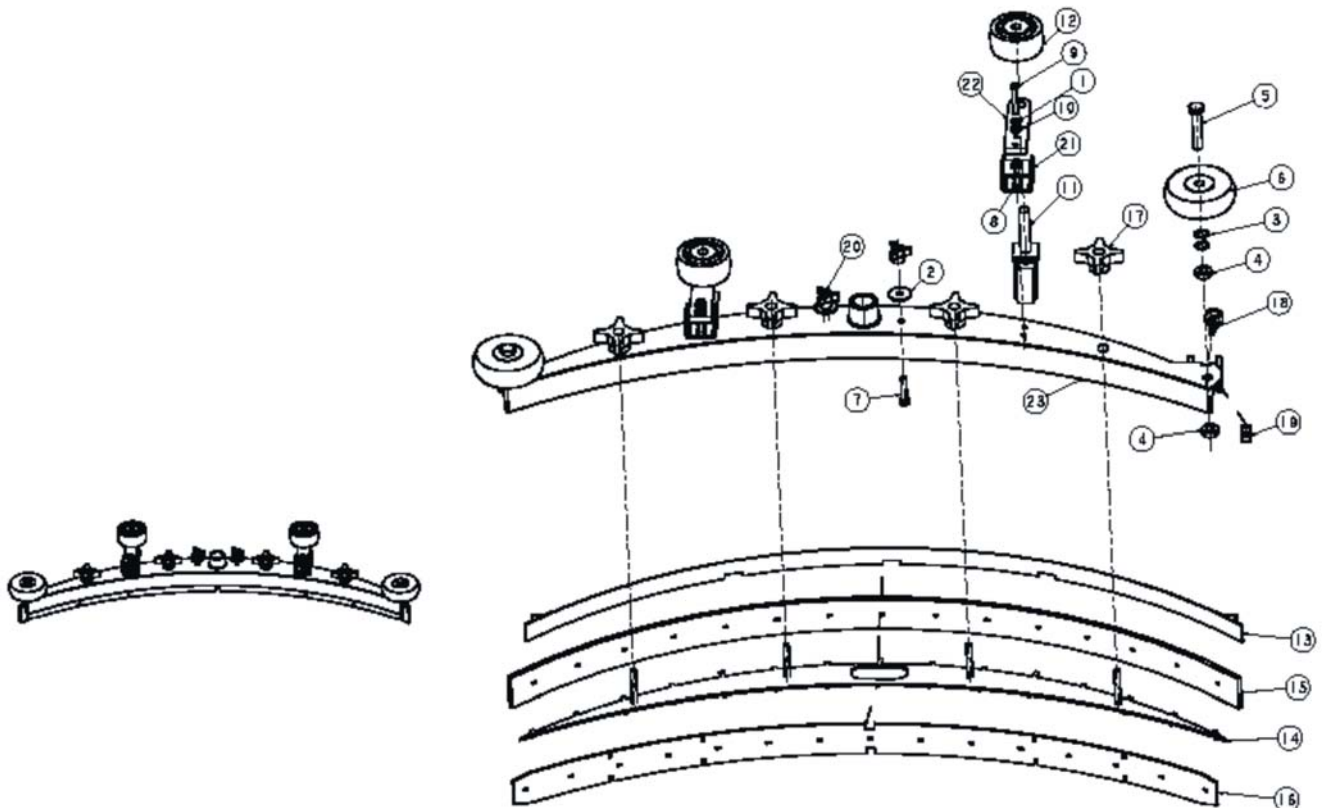
Note: Tornado, The Latest Dirt, Floorkeeper, Carpetkeeper, Carpetrinser, Carpetrinser/Dryer, Headmaster, Taskforce, PAC-VAC, T-Lite, Glazer, Windshear, Max-Vac, CV 30, CV 38, and Trot-Mop are trademarks of Tornado Industries.

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#99328 & 99332 SQUEEGEE ASSEMBLY – PARTS LIST

(Ref. Drawing 32432)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	01574	WASHER-LOCK(H/S)1/4"
2	2	03321	WASHER-PLAIN .391 ID (ZP)
3	2	07723	WASHER-SPRING 1/2" (3-WAVE)
4	1	10513	NUT-HEX JAM 1/2-13 (ZP)
5	1	14500	SCREW-HEX HD CAP 1/2-13 X 2-1/2 (ZP)
6	1	14817	WHEEL 4 X 1-1/4
7	2	16031	SCREW-HEX HD CAP 5/16-18 X 1-1/2 (ZP)
8	2	17508	NUT-FINISHED HEX 1/4-20 (SS)
9	2	18641	SCREW-HEX HD CAP 1/4-20 X 1-3/4 (ZP)
10	2	18885	WASHER-PLAIN 1/4 ID (SS)
11	2	19194	CASTER
12	2	31524	WHEEL-BUMPER ADJUSTMENT BLK 3.00 O.D. W/SET SCW
13	2	32275	WELDMENT-RETAINING BAND
14	2	32278	WELDMENT-BASE PLATE
15	2	32280	SQUEEGEE BLADE-REAR LINATEX
16	4	32281	SQUEEGEE BLADE-FRONT LINATEX
17	2	32283	KNOB-SQUEEGEE ASSEMBLY 5/16"-18
18	2	32284	CONTROL KNOB-TURNSCREW
19	2	32285	NUT-EXTRUDED (CLIP)
20	4	32429	KNOB-SQUEEGEE PARABOLIC SMALL MOUNT
21	4	32444	BRACKET-CASTER
22	2	32445	CASTER-MOUNTING ARM
23	2	32499	SQUEEGE CASTING



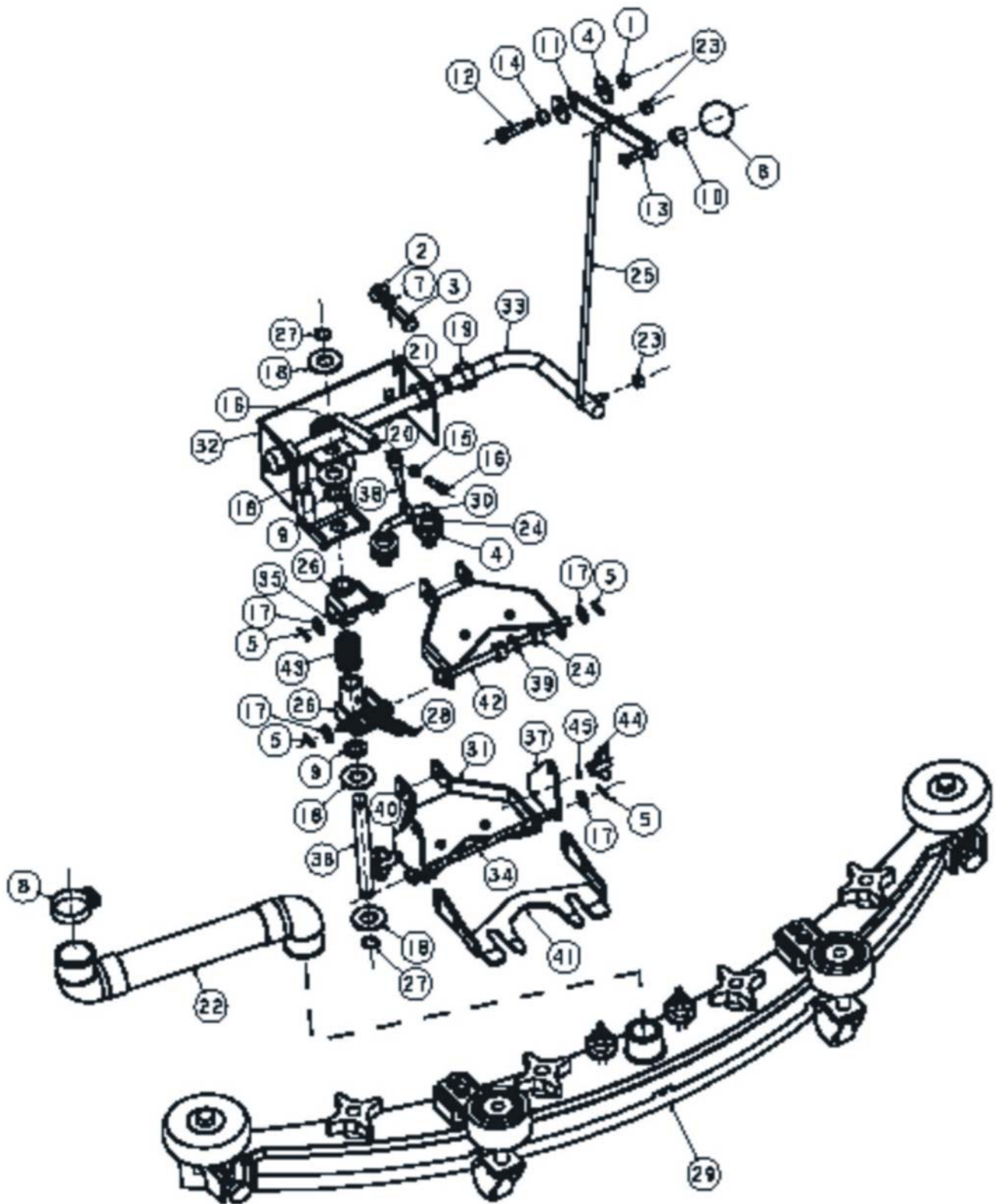
Replacement Blade Part Numbers:

Standard K62732150

Oil Resistant K62732090

Non-Marking Oil-Resistant K62732060

SQUEEGEE MOUNT ASSEMBLY – EXPLODED VIEW



SQUEEGEE MOUNT ASSEMBLY PARTS LIST
(Ref. Drawing 31949)

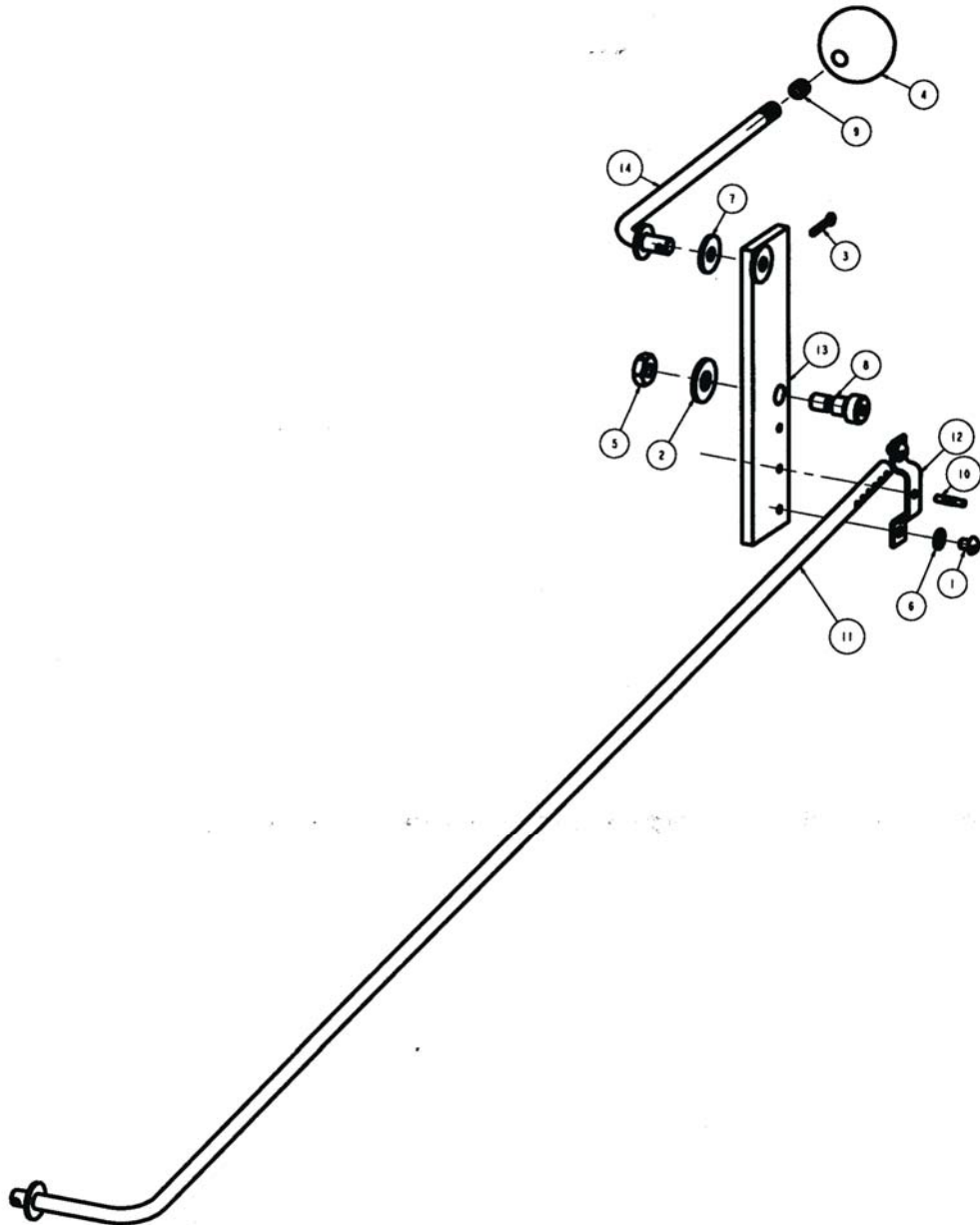
ITEM	QTY	PART #	DESCRIPTION
1	1	00067	NUT - LOCK 5/16-18
2	7	02568	WASHER, PLAIN 5/16
3	7	03320	SCREW, HEX-HEAD CAP 3/8-16 X 1
4	6	03321	WASHER, PLAIN .391
5	8	03395	PIN-COTTER 3/32 DIA X 3/4 E/P
6	1	03418	KNOB, HANDLE
7	9	03536	WASHER, LOCK 3/8
8	1	14858	CLAMP, WORM-SCREW HOSE
9	2	15638	WASHER-PLAIN 5/8 ID (ZP)
10	1	15666	SPACER, SQUEEGEE LIFT
11	1	15684	LEVER, SQUEEGEE LIFT
12	1	15869	SCREW - SOCKET HD SHOULDER 3/8D x 1.00
13	1	16069	SCREW - FLAT HEAD SOCKET CAP
14	1	16796	SPACER
15	2	17245	WASHER, PLAIN 17/64
16	3	17834	SCREW, SOCKET-HEAD CAP
17	8	19374	WASHER-PLAIN 1/4 ID (SS)
18	2	30452	WASHER, PLAIN .696
19	4	31323	COLLAR-5/8" I.D. W/SET SCREW (STEEL)
20	1	31931	PIVOT ARM, SHORT
21	2	31946	BEARING, NYLINER SNAP-IN 5/8"
22	1	31947	U-BOLT, 3/8-16
23	1	31957	HOSE, 1.5" X 7" WITH TWO 90-DEGREE CUFFS
24	2	32035	COLLAR, 1/4" I.D. W/SETSCREW
25	2	32146	COLLAR 3/8" I.D. W/SETSCREW
26	1	32426	LINK-LIFT LEVER
27	2	32428	PIVOT ASSEMBLY
28	2	32430	RING-RETAINING EXT. 5/8" STAINLESS STEEL
29	1	32431	SPRING - SQUEEGEE LIFT
30	1	32432	SUB ASSY - SQUEEGEE
31	1	32433	U-BOLT 3/8-16 X 3/8" DIA (Z/P)
32	2	32435	PIVOT - LINK
33	1	32451	ROD-MAIN LIFT 5/8" DIA
34	1	32452	PIN-PIVOT (LONG)
35	2	32453	PIN-PIVOT (SHORT)
36	1	32454	SHAFT-SQUEEGEE PIVOT
37	1	32455	BRACKET - VERTICAL
38	1	32457	CABLE-LIFTING 3/32 STEEL 3.39 LENGTH
39	2	32458	SPRING TAB
40	1	32503	BRACKET - VERTICAL
41	1	32517	ROCKER BRACKET
42	1	32520	PIN-PIVOT (TOP)
43	1	K53322060	HELICAL SPRING
44	2	K63101290	KNOB, TWO-EAR
45	2	K73120030	WASHER

* ITEM NOT SHOWN

SOLUTION CONTROL ASSEMBLY PARTS LIST

(Ref. Drawing 31180)

ITEM	QTY	PART #	DESCRIPTION
1	2	01858	SCREW - SLOTTED ROUND HEAD MACHINE #10-24 x 1/4
2	1	02568	WASHER-PLAIN 5/16
3	1	03395	PIN, COTTER
4	1	03418	KNOB, HANDLE
5	1	05282	NUT - HEAVY HEX JAM 5/16-18
6	2	11007	WASHER - LOCK (I/T) *10
7	2	14142	WASHER - PLAIN .265
8	1	15677	SCREW - SOCKET HD SHOULDER 3/8D x 3/8
9	1	15737	SCREW, SET 5/16-18 UNC X .25
10	1	15738	PIN, GROOVE, TYPE 5
11	1	16801	ROD, VALVE S/A
12	1	16804	KEEPER, ROD VALVE
13	1	16805	ROCKER PLATE
14	1	31222	ROD, KNOB S/A

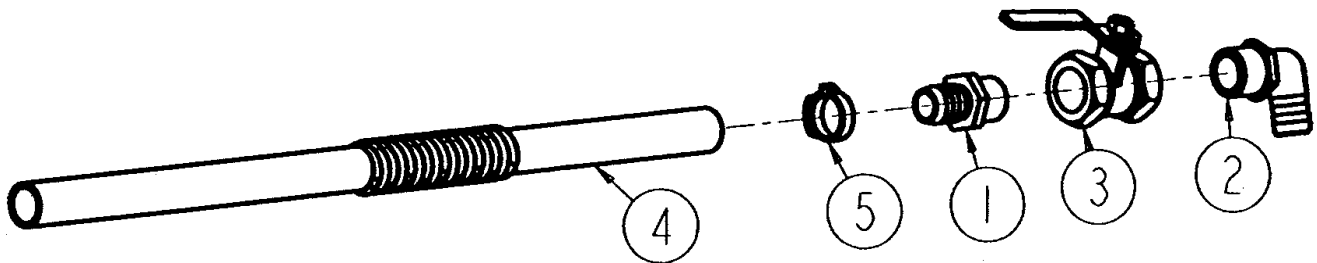


DRAIN VALVE AND SOLUTION VALVE ASSEMBLIES – PARTS LISTS

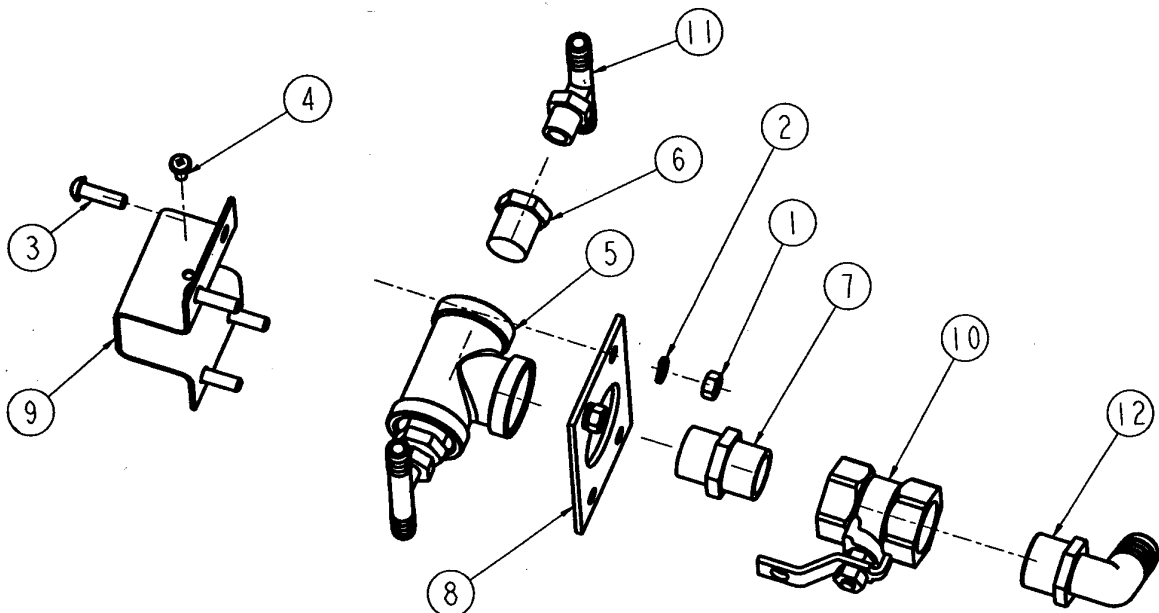
(Ref. Drawings 31074 & 31075)

DRAIN VALVE ASSEMBLY

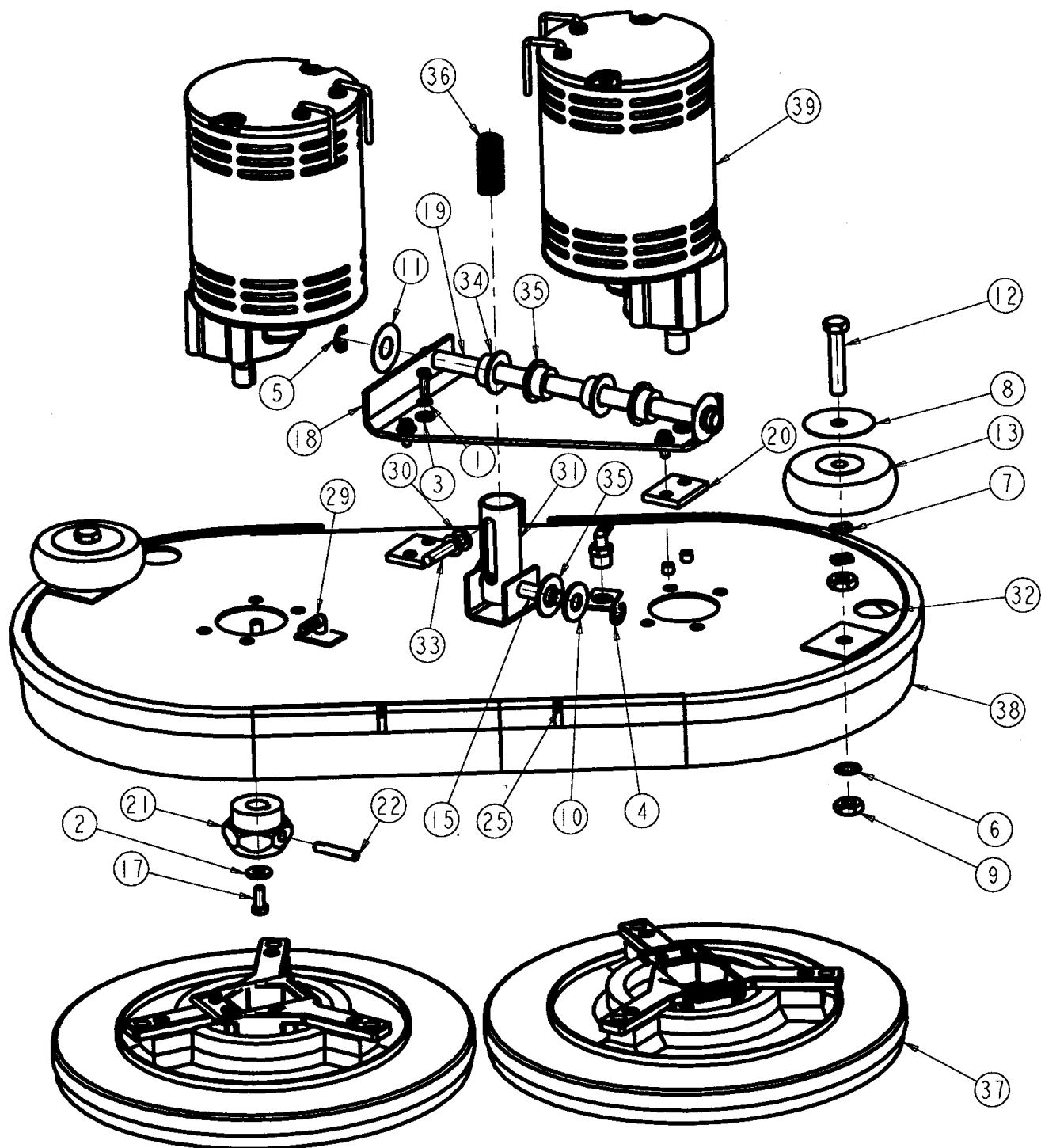
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	15740	FITTING, BARB
2	1	16680	FITTING, BARBED ELBOW
3	1	16681	VALVE, DRAIN
4	1	16682	HOSE – W/BELLOWS SECTION
5	1	31144	CLAMP, HOSE



ITEM	QTY	PART #	DESCRIPTION
1	2	01497	NUT - FINISHED HEX 1/4-20
2	4	01574	LOCK WASHER 1/4"
3	4	02053	SCREW - PHILLIPS ROUND HEAD MACHINE 1/4-20 X 1/8
4	1	03261	SCREW, TCT PANHEAD, #10-32 X 3/8
5	1	11323	PIPE TEE
6	2	13491	3/8 - 16 UNC GRADE5
7	1	15721	NIPPLE, 3/4 PLASTIC
8	1	15770	FLAT, MOUNTING
9	1	15771	CLAMP
10	1	16070	VALVE, SOLUTION
11	2	16446	FITTING, BARB, MINI TEE
12	1	16680	FITTING, BARBED ELBOW

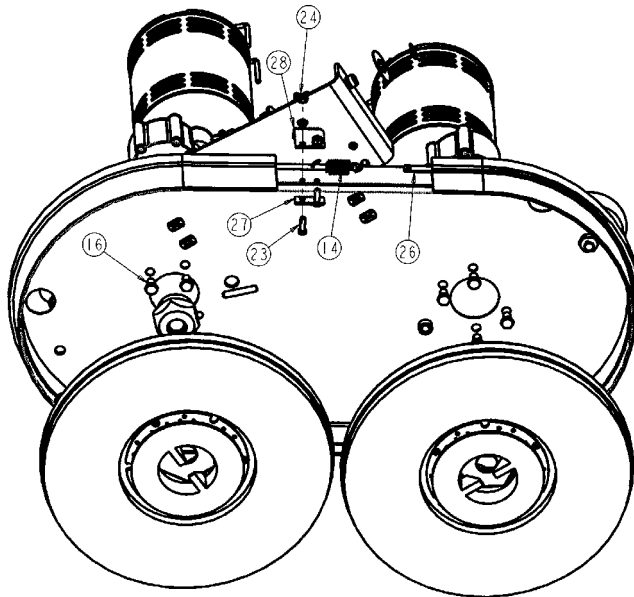


#99328 BRUSH MOTOR ASSEMBLY – EXPLODED VIEW
 (Ref. drawing 30877)

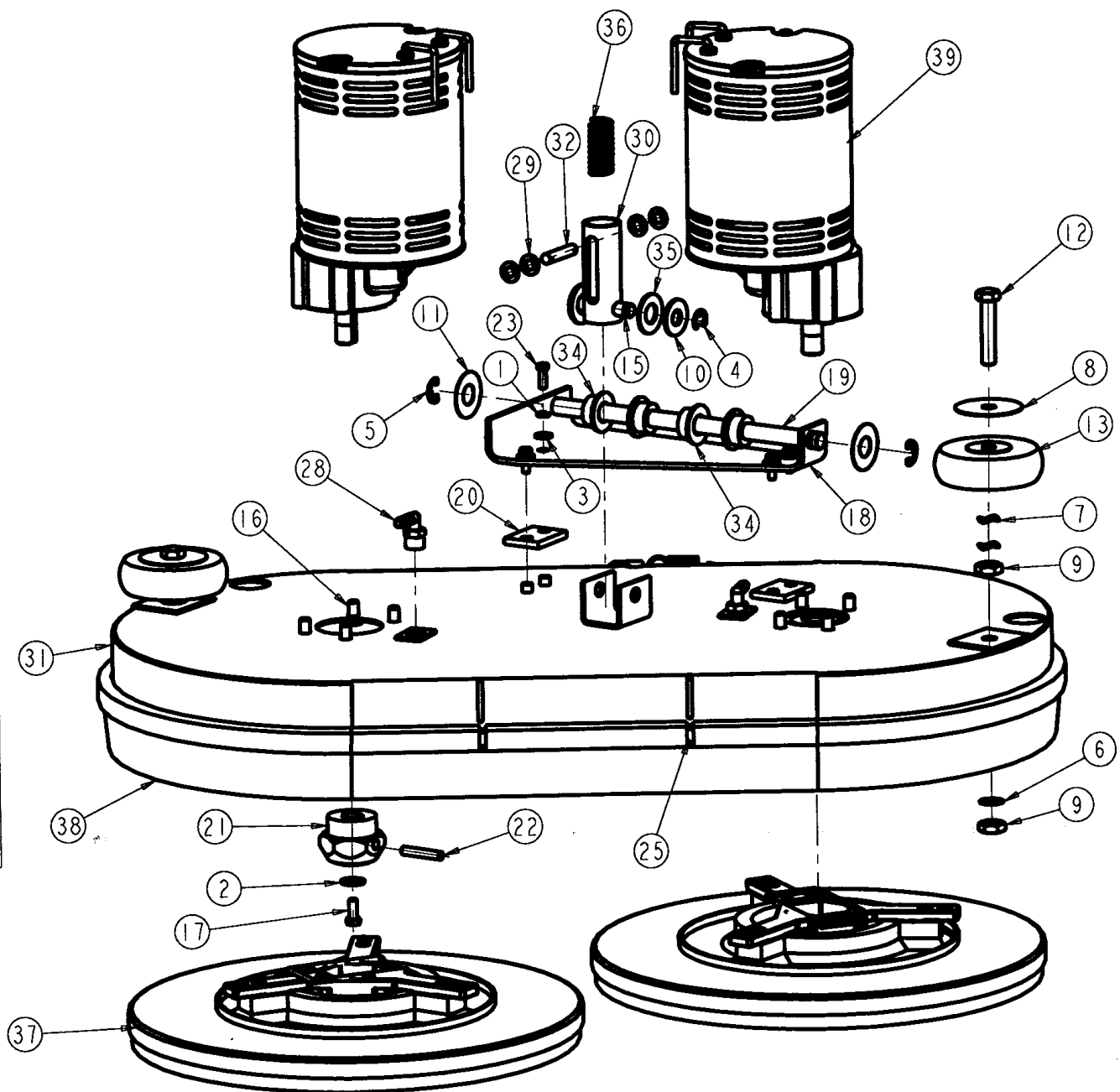


(Ref. drawing 30877)

ITEM	QTY	PART #	DESCRIPTION
1	6	01574	LOCK WASHER ¼"
2	2	02568	WASHER, PLAIN 5/16"
3	4	03218	WASHER, PLAIN ¼"
4	2	03470	RETAINING RING, EXTERNAL "E" ½" (HEAVY DUTY)
5	2	03472	RING, RETAINING, 5/8"
6	2	06387	LOCK WASHER
7	4	07723	WASHER, SPRING ½'
8	2	10436	COVER, RUB WHEEL
9	4	10513	NUT, HEX JAM
10	2	12957	WASHER, PLAIN ½"
11	2	13739	WASHER, PLAIN .760
12	2	14500	SCREW, HEX-HEAD CAP 1/2-13 X 2-1/2
13	2	14817	WHEEL, 4 X 1-1/4
14	1	16472	SPRING, EXTENSION
15	1	16558	PIN, ACTUATOR TUBE
16	8	16671	SCREW, HEX-HEAD CAP 3/8-16 X 5/8
17	2	16672	SCREW, HEX-HEAD CAP 5/16-18 X 3/4
18	1	16727	BRACKET
19	1	16734	SHAFT, GROOVED
20	2	16736	ABSORBER BLOCK
21	2	16737	DRIVE HEAD, 3/8-16 UNC GRADE5
22	2	17093	SET SCREW 5/16-18 X 1-3/4" LG.
23	6	17160	SCREW, HEX HEAD CAP 1/4-20 X 3/4
24	2	17508	NUT, FINISHED HEX 1/4-20
25	2	17733	KEEPER
26	1	17736	STRAP, BUMPER
27	1	17751	FLAT W/2 HOLES
28	1	11752	RESTRAINER
29	2	18486	FITTING, PLASTIC ELBOW
30	4	30316	SPACER, WHEEL
31	1	30757	ACTUATOR TUBE
32	1	30792	28 BRUSH COVER WELDMENT
33	1	31092	PIN, BRUSH SHAFT
34	4	31323	SHAFT COLLAR W/SET SCREW
35	6	31837	RUBBER WASHER, .75 I.D.
36	1	32402	SPRING – BRUSH PAD
37	2	99152	PAD HOLDER ASSEMBLY
38	1	31284	BUMPER
39	2	32082	BRUSH MOTOR ASSEMBLY W/CONNECTORS



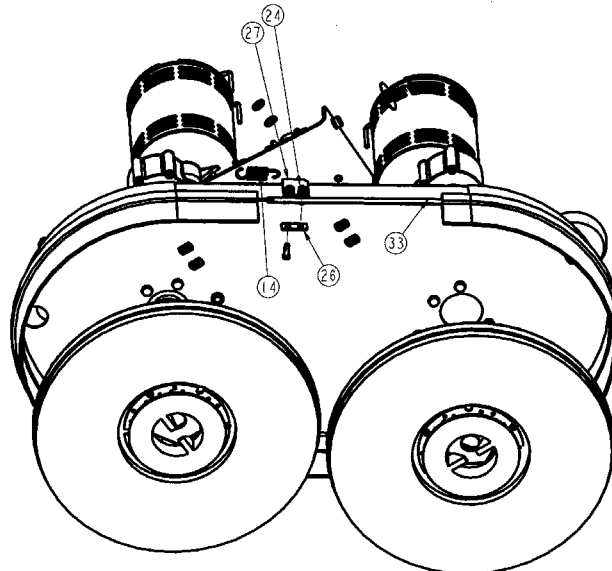
(Ref drawing 30913)



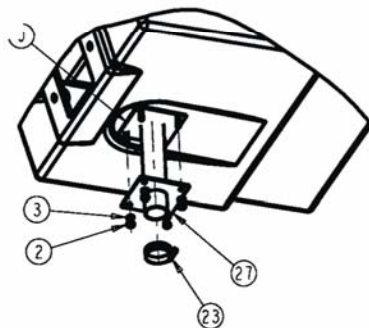
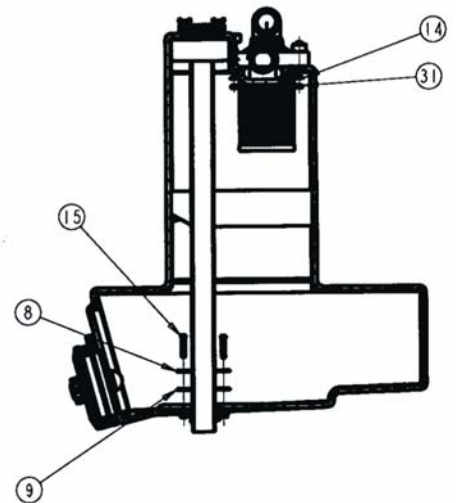
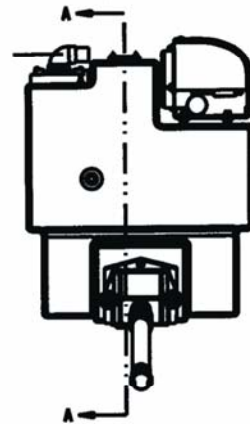
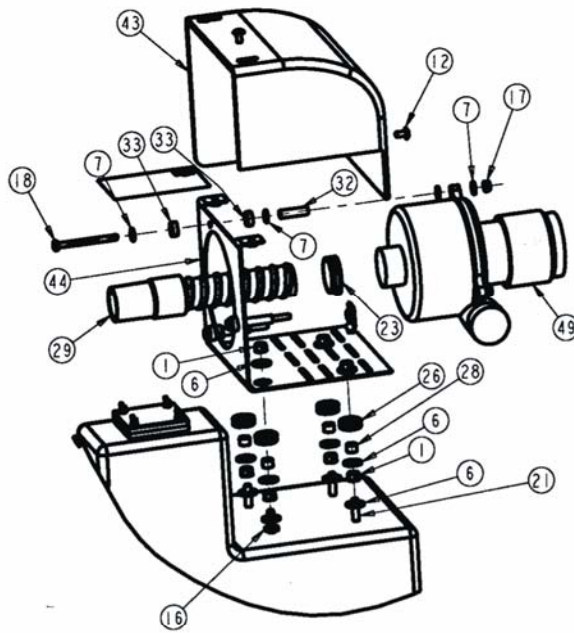
#99332 BRUSH MOTOR ASSEMBLY PARTS LIST

(Ref. Drawing 30913)

ITEM	QTY	PART #	DESCRIPTION
1	6	01574	LOCK WASHER 1/4"
2	2	02568	WASHER, PLAIN 5/16
3	4	03218	WASHER, PLAIN 1/4
4	2	03470	"E" RING, RETAINING EXTERNAL 1/2" (HEAVY DUTY)
5	2	03472	RING, RETAINING. 5/8
6	2	06387	LOCK WASHER
7	4	07723	WASHER, SPRING 1/2'
8	2	10436	COVER, RUB WHEEL
9	4	10513	NUT, HEX JAM
10	2	12957	WASHER, PLAIN 1/2
11	2	13739	WASHER, PLAIN .760
12	2	14500	SCREW, HEX-HEAD CAP 1/2-13 X 2-1/2
13	2	14817	WHEEL, 4 X 1-1/4
14	1	16472	SPRING, EXTENSION
15	1	16558	PIN, ACTUATOR TUBE
16	8	16671	SCREW, HEX-HEAD CAP 3/8-16 X 5/8
17	2	16672	SCREW, HEX-HEAD CAP 5/16-18 X 3/4
18	1	16727	BRACKET
19	1	16734	SHAFT, GROOVED
20	2	16736	ABSORBER BLOCK
21	2	16737	DRIVE HEAD, 3/8-16 UNC GRADE 5
22	2	17093	SET SCREW 5/16-18 X 1-3/4' LG.
23	6	17160	SCREW, HEX HEAD CAP 1/4-20 X 3/4
24	2	17508	NUT, FINISHED HEX 1/4-20
25	2	17733	KEEPER
26	1	17751	FLAT W/2 HOLES
27	1	17752	RESTRAINER
28	2	18486	FITTING, PLASTIC ELBOW
29	4	30316	SPACER, WHEEL
30	1	30757	ACTUATOR TUBE
31	1	30783	32 BRUSH COVER WELDMENT
32	1	31092	PIN, BRUSH SHAFT
33	1	31286	STRAP, BUMPER
34	4	31323	SHAFT COLLAR W/ SET SCREW
35	6	31837	RUBBER WASHER, .75 I.D.
36	1	32402	SPRING - BRUSH PAD
37	2	98566	PAD HOLDER ASSEMBLY
38	1	31285	BUMPER
39	2	32082	BRUSH MOTOR ASSEMBLY, W/CONNECTOR

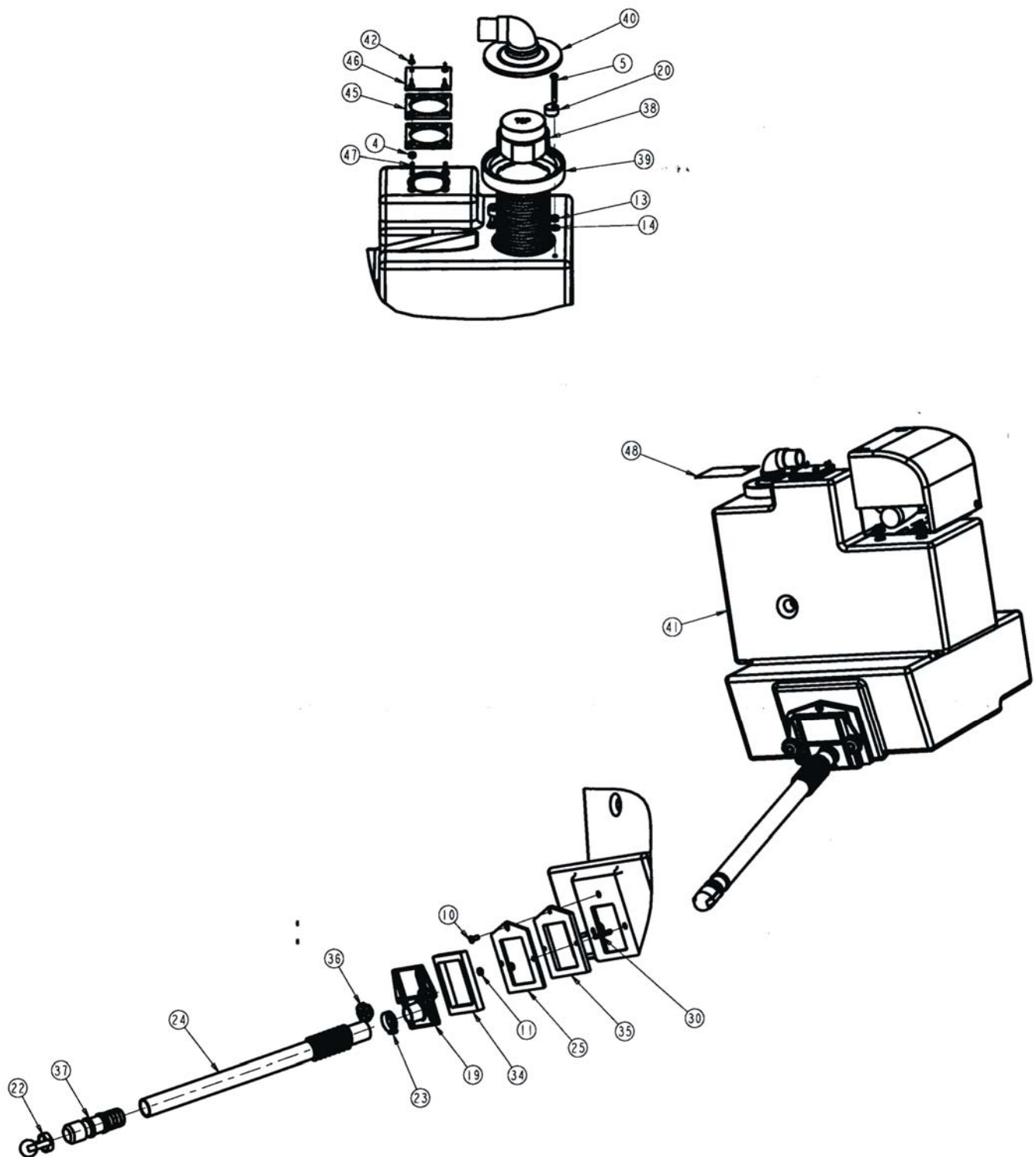


RECOVERY (VACUUM) TANK DIAGRAM 1 (Ref. Drawing 30868)



RECOVERY (VACUUM) TANK DIAGRAM 2

(Ref. Drawing 30868)



RECOVERY (VACUUM) TANK ASSEMBLY PARTS LIST

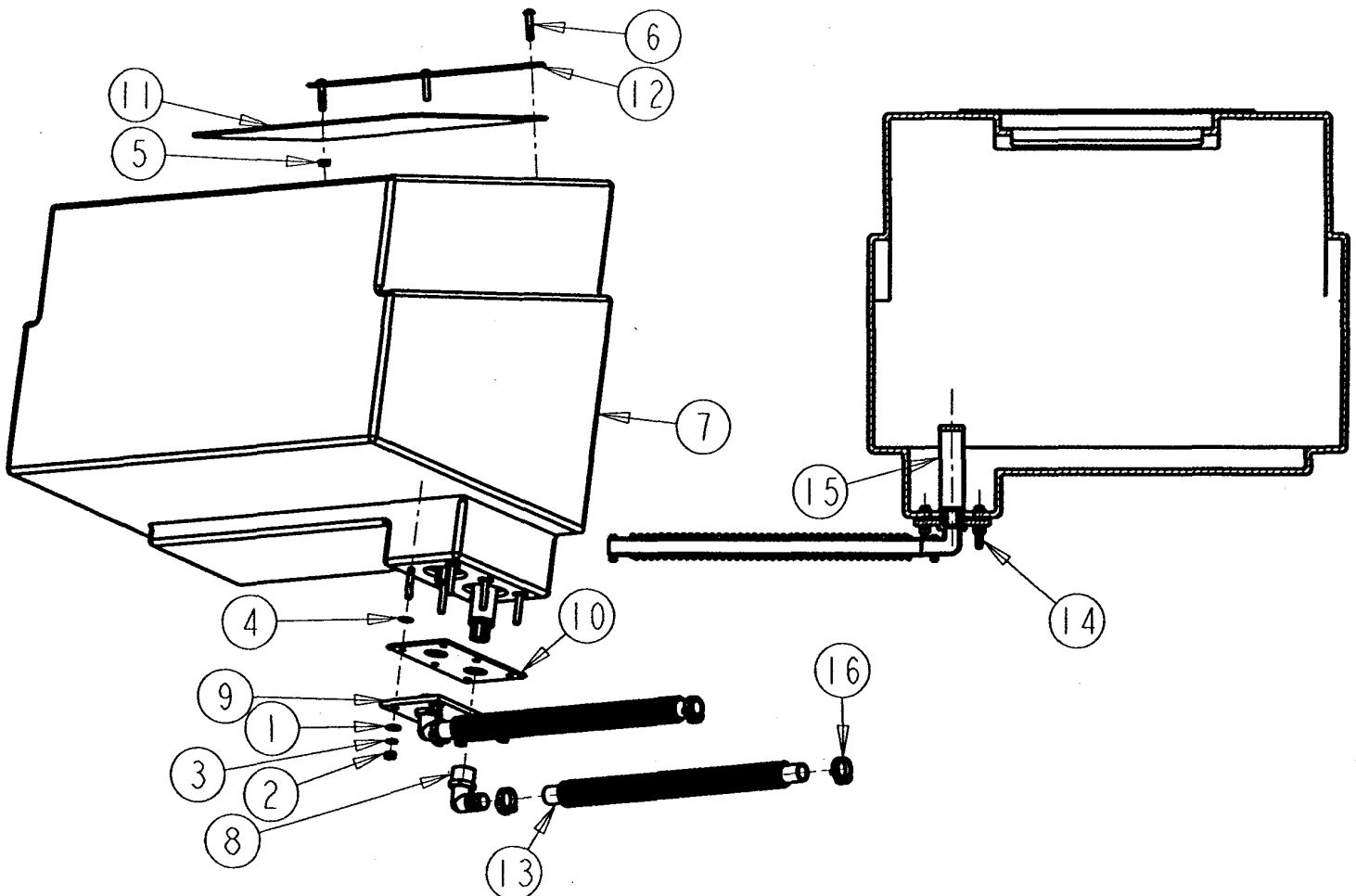
(Ref. Drawing 30868)

ITEM	QTY	PART #	DESCRIPTION
1	8	00067	NUT - LOCK 5/16-18
2	4	01497	NUT - FINISHED HEX 1/4-20
3	4	01574	LOCK WASHER 1/4"
4	4	01604	NUT-FINISHED HEX #10-32 (ZP)
5	2	01979	SCREW, PHILLIPS ROUND-HEAD MACHINE 1/4-20 X 2.00
6	12	02568	WASHER, PLAIN 5/16
7	12	03218	WASHER, PLAIN 1/4
8	1	03397	FLANGE, STAND PIPE
9	2	03419	GASKET, STAND PIPE
10	1	03922	SCREW-FLAT HD.SOCKET CAP 5/16-18 X 3/4"
11	2	05282	NUT, HEAVY HEX JAM 5/16-18
12	3	06192	SCREW-PHIL. TRUSS HD 1/4-20 X 1/2 (ZP)
13	2	07533	NUT, HEX LOCK 1/4-20
14	4	07741	WASHER, SEALING 1/4
15	4	07744	SCREW, HEX-HEAD MACHINE 1/4-20 X 1-5/16
16	4	10260	WASHER, SEALING
17	3	13854	LOCK NUT, 1/4-20
18	3	15181	SCREW, HEX-HEAD CAP 1/4-20 X 3.00
19	1	15535	TANK DRAIN PLATE
20	2	15776	RETAINING KNOB
21	4	16031	SCREW, HEX HEAD CAP 5/16-18 X 1-1/2
22	1	16089	STOPPER, RETAINED
23	3	16091	CLAMP
24	1	16620	HOSE W/BELLOWS SECTION
25	1	16621	DRAIN BACKING PLATE
26	4	16678	GROMMET
27	1	16784	STAND-PIPE ASSEMBLY
28	4	16796	SPACER
29	1	16874	HOSE 1-1/2" x 9" VINYL BLACK
30	2	17093	SET SCREW 5/16-18 X 1-3/4' LG.
31	2	17508	NUT, FINISHED HEX 1/4-20
32	3	17608	SPACER, VAC MOTOR
33	6	17610	WASHER, ISOLATOR
34	1	17646	GASKET, DRAIN PLATE
35	1	17647	GASKET, BACKING PLATE
36	2	18119	NUT, THUMB 5/16-18
37	1	18563	DRAIN HOSE, NOZZLE
38	1	18771	FLOAT
39	1	18772	FLOAT CAGE
40	1	18965	ASSEMBLY, FLOAT COVER
41	1	19127	RECOVERY TANK 24"-28"
42	4	19975	NUT,WING (10-32) ZINC PL
43	1	30776	COVER, MOTOR
44	1	31183	WELDMENT, MOTOR MOUNT
45	2	31228	GASKET-COVER
46	1	31229	PLATE-COVER
47	4	31530	SCREW-PHIL. FLAT HD MACH #10-32 X 1-1/4" (BLK.OX)
48	1	31828	DECAL-RECHARGING DIAGRAM
49	1	32098	ASS'Y VAC MOTOR W/CONNTR
50	1	18706	WIRE TIE, 15" (BLACK)
*51	1	32168	HOSE-BELLOWS 2"-1-1/2" X 20" LG. EPDM/BLK
			* NOT SHOWN

SOLUTION TANK ASSEMBLY

(Ref. Drawing 30867)

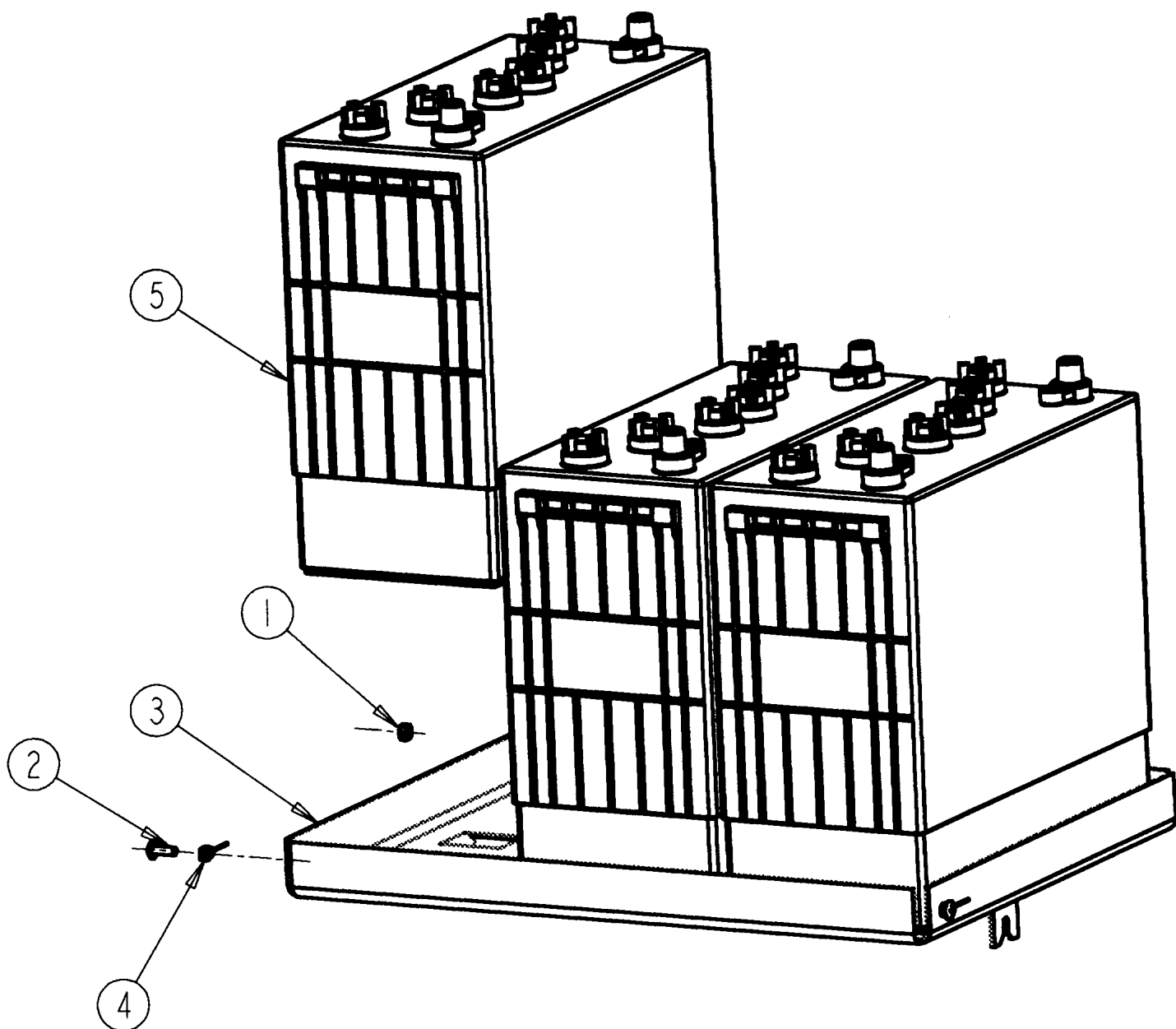
ITEM	QTY	PART #	DESCRIPTION
1	6	00851	WASHER - PLAIN 1/4"
2	6	01497	NUT - FINISHED HEX 1/4-20
3	6	01574	LOCK WASHER 1/4"
4	2	07741	WASHER - SEALING 1/4
5	3	13854	LOCK NUT, 1/4-20
6	3	15461	SCREW - SLOTTED ROUND HEAD MACHINE 1/4-20 x 1-1/4
7	1	16679	SOLUTION TANK, 25 GAL.
8	2	16680	FITTING, BARBED ELBOW
9	1	16798	MOUNTING PLATE
10	1	16799	GASKET
11	1	16800	COVER, SOLUTION TANK
12	1	16803	MOUNTING STRIP
13	2	17262	HOSE W/BELLOWS
14	6	18641	SCREW - HEX HEAD CAP 1/4-20 X 1-3/4
15	2	19096	FILTER - SOLUTION BLADDER PUMP
16	4	31144	CLAMP, HOSE



BATTERY ASSEMBLY PARTS LIST

(Ref. Drawing 30862)

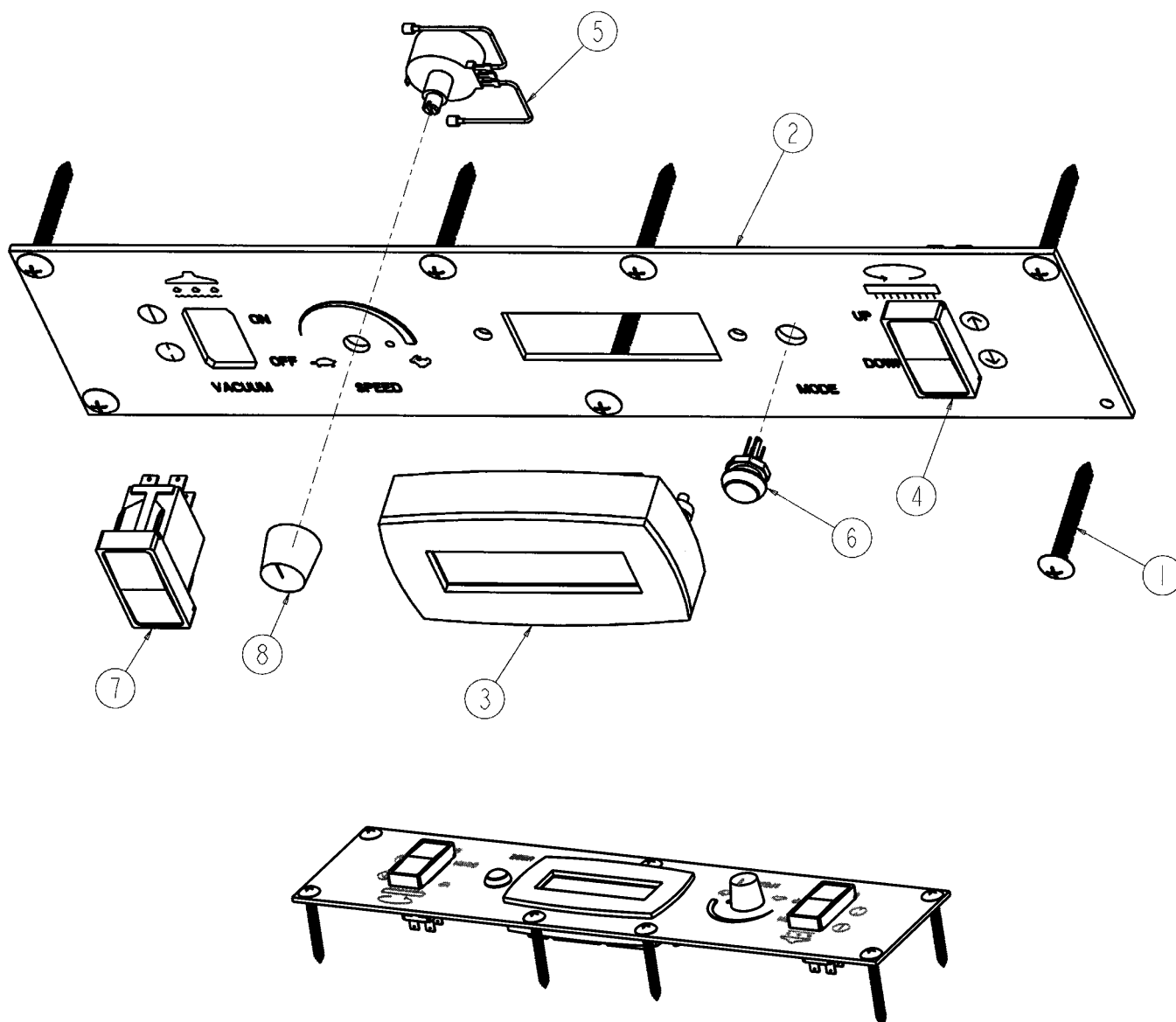
ITEM	QTY	PART #	DESCRIPTION
1	2	16129	NUT - HEX LOCK (KEPS) 1/4-20
2	2	16619	SCREW - PHILLIPS TRUSS HEAD MACHINE 1/4-20 X 3/4
3	1	31518	BATTERY TRAY - 3
4	2	18359	CABLE ASSEMBLY
5	3	99512	BATTERY



CONTROL PANEL ASSEMBLY PARTS LIST

(Ref. Drawing 30863)

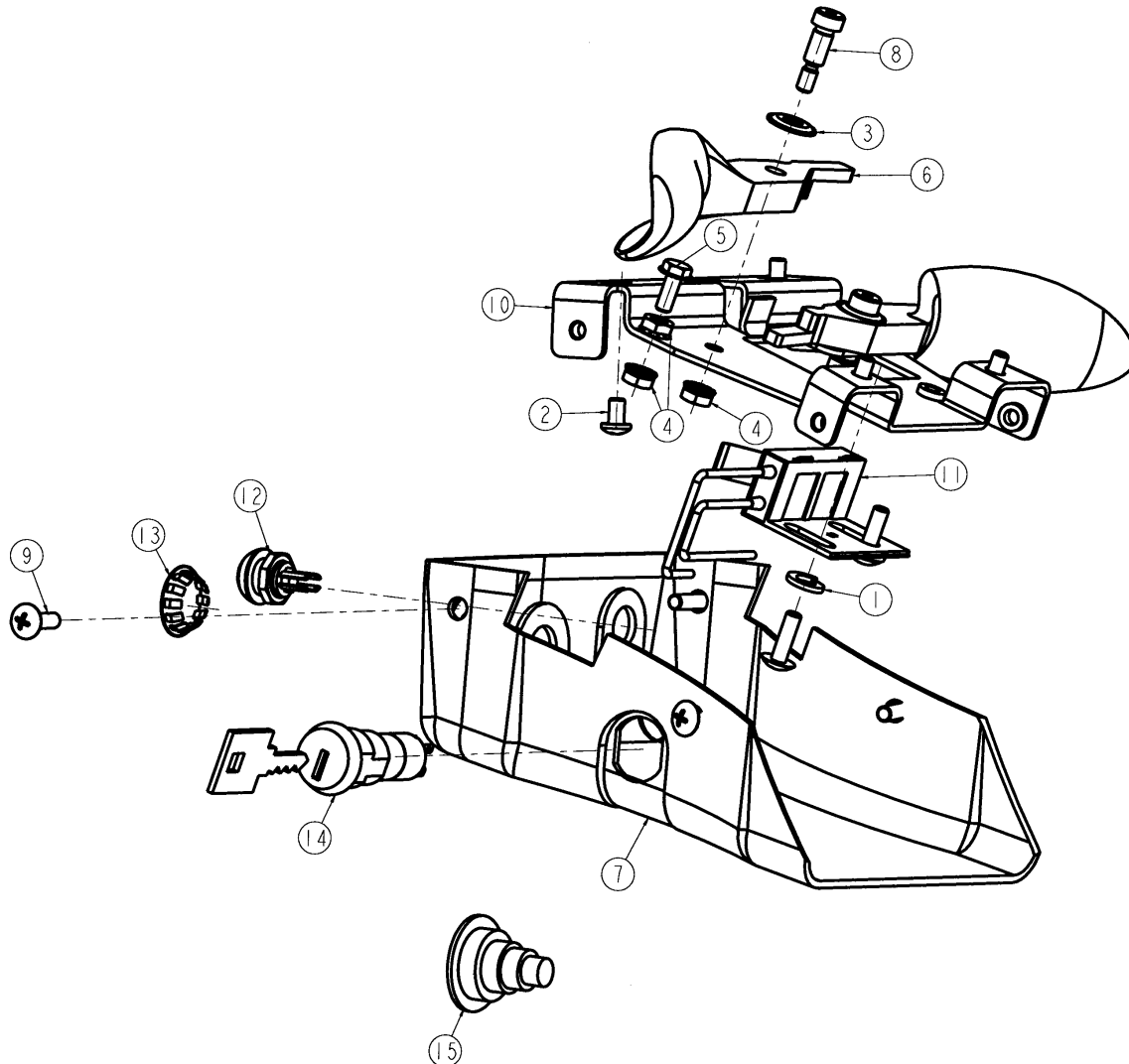
ITEM	QTY	PART NUMBER	DESCRIPTION
1	7	18253	SCREW-T.F. PAN HEAD *8-16 X 3/4"
2	1	30977	CONTROL PANEL (L/R)
3	1	30978	SPEED CONTROLLER, DIGITAL
4	1	31476	MOMENTARY SWITCH
5	1	31502	POTENTIOMETER
6	1	32087	MOMENTARY BUTTON SWITCH
7	1	32147	VAC MOTOR CONTROL SWITCH
8	1	32172	CONTROL KNOB



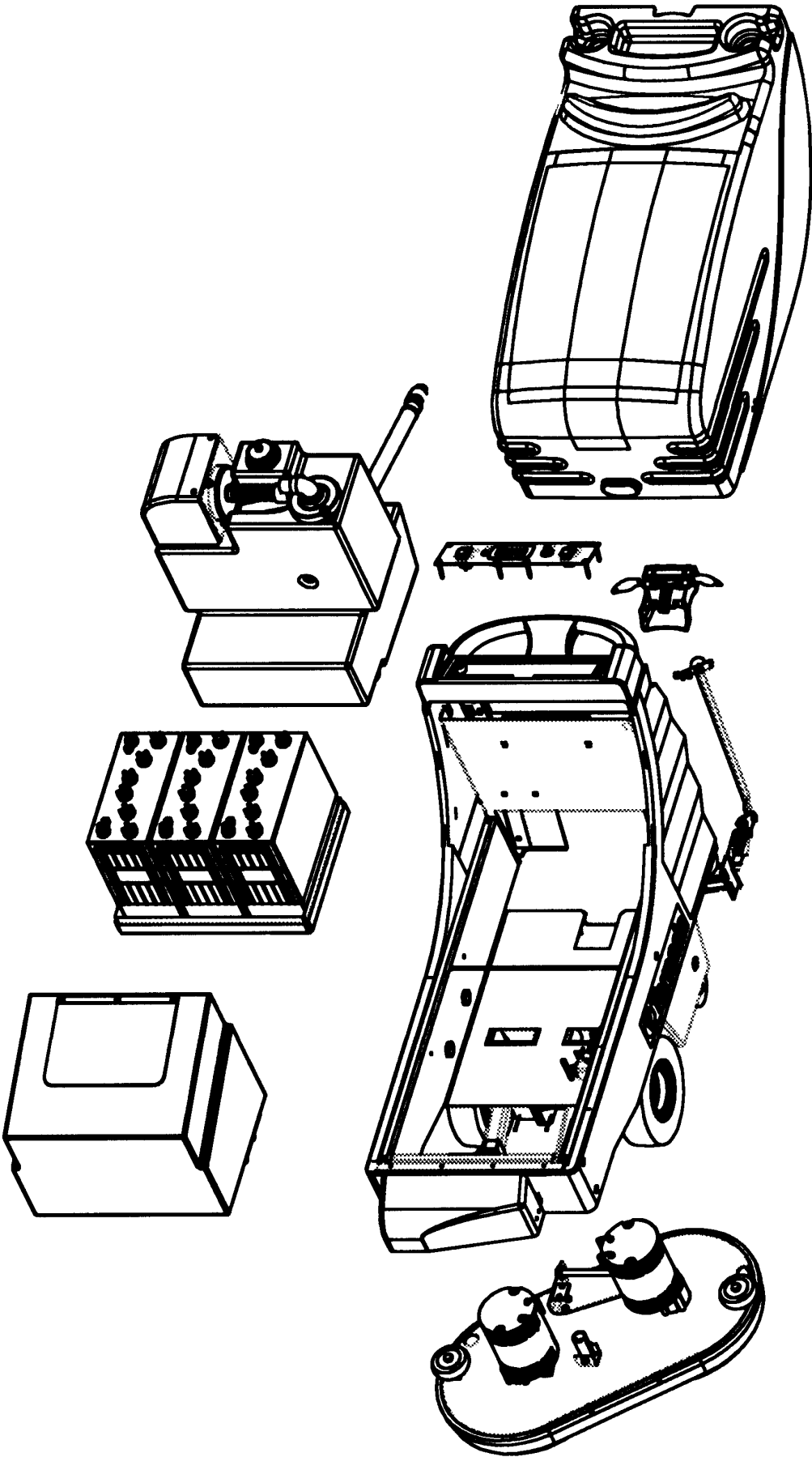
TRIGGER ASSEMBLY PARTS LIST

(Ref. Drawing 31500)

ITEM	QTY	PART #	DESCRIPTION
1	2	01574	LOCK WASHER 1/4"
2	4	02007	SCREW – PHILLIPS PAN HEAD MACHINE #10-32 X 5/16
3	1	04054	PLUG-HOLE 11/16"DIA. STEEL
4	2	07741	WASHER – SEALING 1/4
5	6	10892	NUT – HEX LOCK
6	2	17957	SCREW – HEX HEAD CAP, #10-24 X 1/2
7	2	19358	PADDLE LEVER
8	1	19690	HOUSING
9	2	19692	SCREW – SOCKET HEAD SHOULDER 1/4DIA x 1/2"
10	6	30436	SCREW – PHILLIPS TRUSS HEAD MACHINE #10-32 X 5/8
11	1	31496	BRACKET ASS'Y
12	1	31499	SWITCH, NORMALLY OPEN
13	1	31967	KEY SWITCH
14	2	32087	REVERSE BUTTON SWITCH (MOMENTARY)
15	1	31968	LEAD-18 GA. X 4" BLACK MALE 1/4"
16	1	31969	LEAD-18 GA. X 4" RED FEMALE 1/4"
17	8	00696	WASHER-PLAIN #10 ID (ZP)

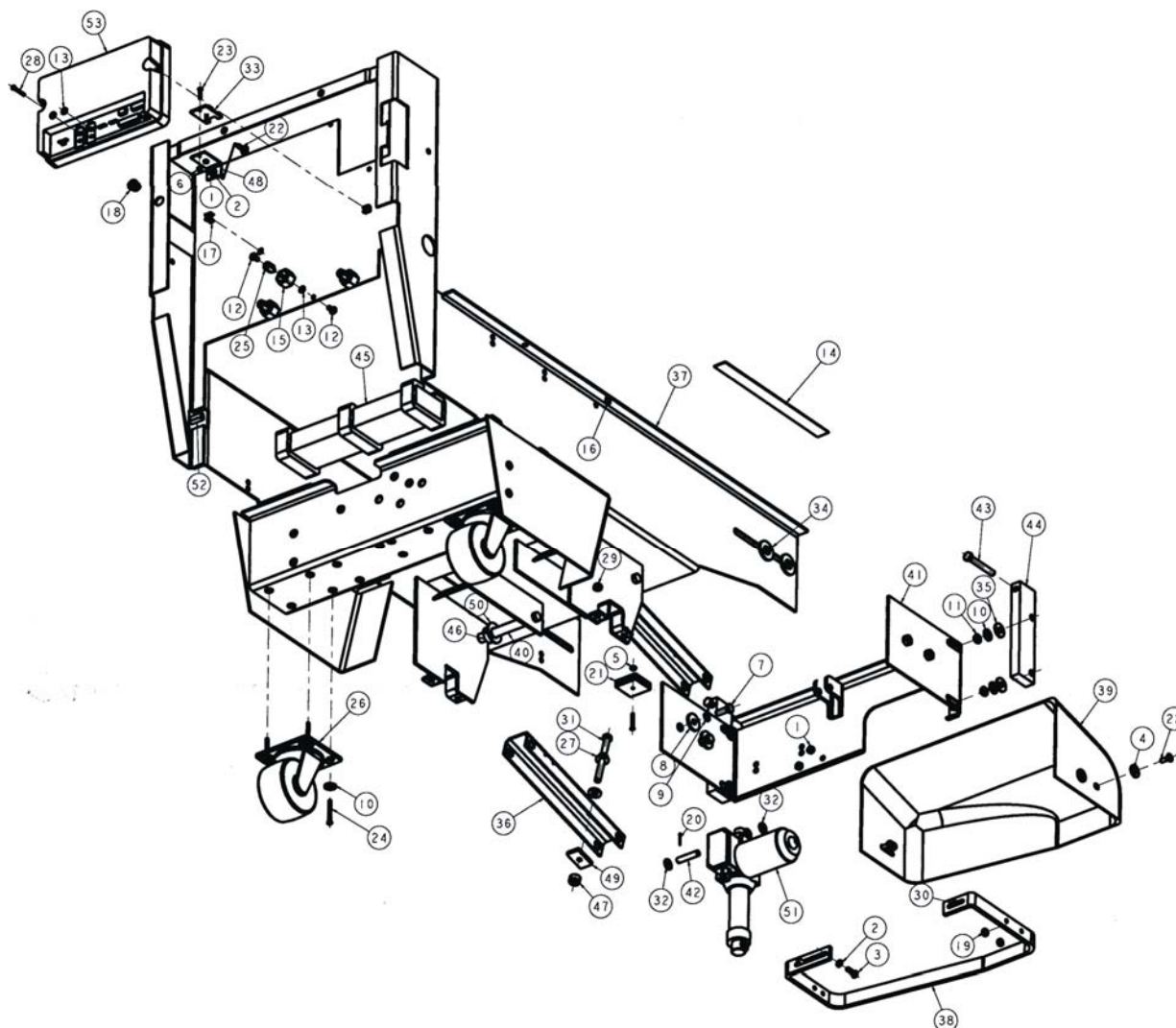


MAIN VIEW "A" – MAJOR SUBASSEMBLIES



MAIN VIEW "B" – EXPLODED VIEW

(Ref. Drawing 31192)



MAIN VIEW "B" PARTS LIST

(Ref. Drawing 31192)

ITEM	QTY	PART #	DESCRIPTION
1	5	01497	NUT, FINISHED HEX 1/4-20
2	6	01574	LOCK WASHER 1/4
3	3	02053	SCREW, PHILLIPS ROUND-HEAD MACHINE 1/4-20 X 7/8"
4	8	02568	WASHER, PLAIN 5/16"
5	1	02956	NUT, HEX LOCK (KEPS) #8-32
6	2	02958	BOLT, 3/8-16 UNC GRADE 5
7	11	03320	SCREW, HEX-HEAD CAP 3/8-16 X 1.0"
8	10	03321	WASHER, PLAIN .391
9	4	03536	WASHER, LOCK 3/8
10	19	03736	WASHER, PLAIN 3/8"
11	4	03868	NUT, HEX JAM LOCK (NYLON INSERT) 3/8-16
12	6	04442	SCREW, PHILLIPS PAN-HEAD MACHINE 1/4-20 X 1/2"
13	2	07870	WASHER, LOCK (I/T) 1/4"
14	2	14835	STRIP, TANK RUBBER
15	3	15345	BUSHING, INSULATOR
16	2	15365	FASTENER, ROD

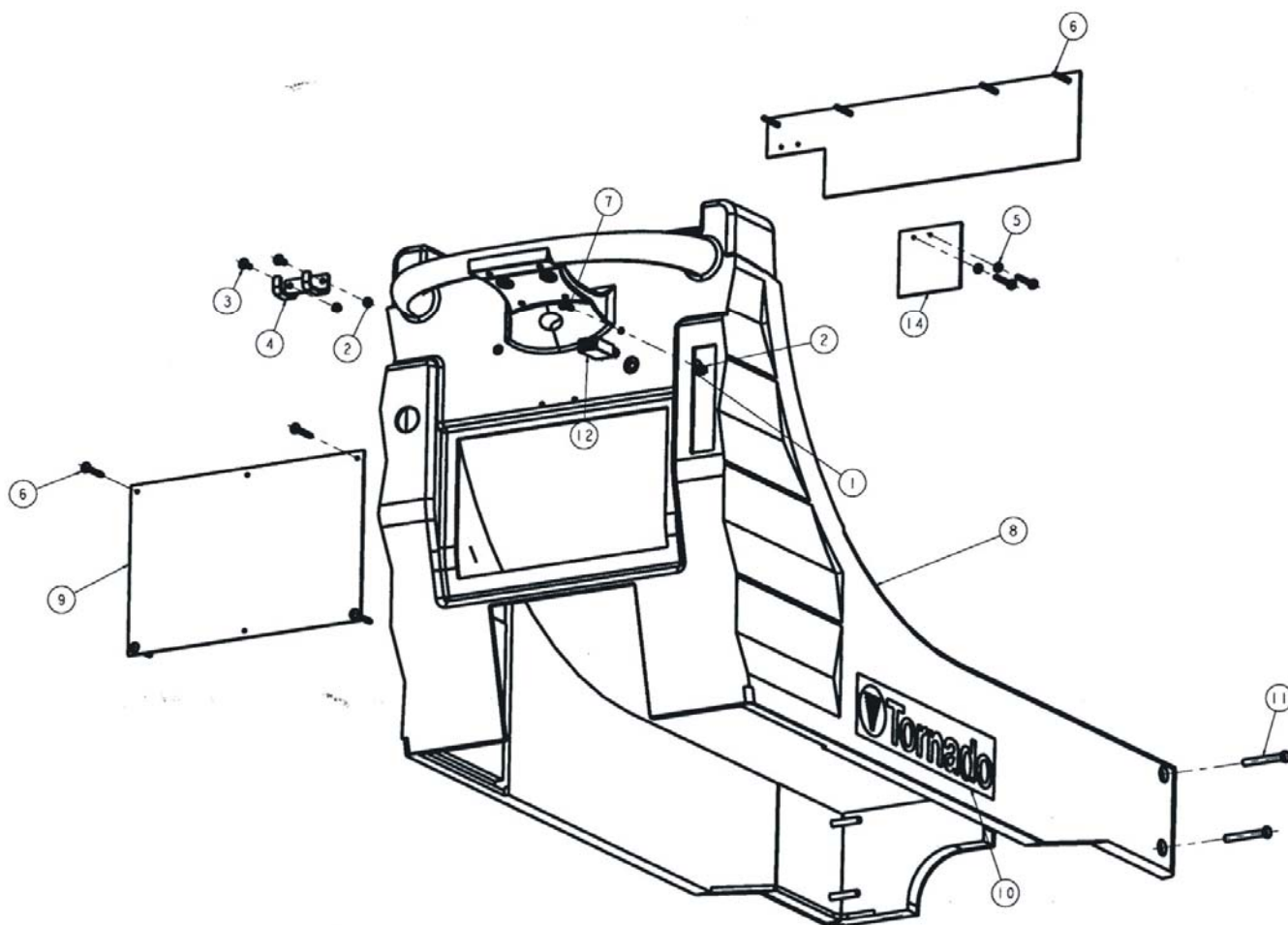
17	2	15642	NUT, RETAINER #8-32
18	1	16068	BUSHING, SNAP
19	4	16129	NUT, HEX LOCK (KEPS) 1/4-20
20	2	16255	COTTER PIN 1/16 x 3/4
21	2	16470	BUMPER PAD
22	6	16619	SCREW, PHILLIPS TRUSS-HEAD MACHINE 1/4-20 X 3/4"
23	2	16924	SCREW, PHILLIPS PAN-HEAD #6-32 X 3/4"
24	8	17575	SCREW, HEX-HEAD CAP 3/8-16 X 3/4"
25	3	18712	STANDOFF, 1/4-20 (M/F)
26	2	18773	CASTER
27	1	18874	NUT, HEX FLANGE 3/8-16
28	3	18897	SCREW, PHILLIPS FLAT-HEAD MACHINE #8-32 X 1-1/4"
29	4	19513	NUT, HEX LOCK (NYLON INSERT) 5/16-18
30	1	19945	SCREW-TRUSS HEAD 1/4-20 X 5/8"
31	1	19956	SCREW, HEX-HEAD CAP 3/8-16 X 4.0"
32	6	30316	SPACER, WHEEL
33	1	30445	PLATE, CHARGER
34	4	30452	WASHER, PLAIN .696
35	4	30581	SPACER, BRUSH ROD
36	2	30766	ARM, BRUSH
37	1	30778	FRAME WELDMENT
38	1	30924	BRACKET, BRUSH MOTOR
39	1	30954	COVER, BRUSH MOTOR
40	2	31019	PIN, BRUSH
41	1	31085	WELDMENT, FRONT BRACKET
42	1	31092	PIN-BRUSH SHAFT
43	2	31127	SCREW, HEX-HEAD CAP 3/8-16 X 2-3/4
44	2	31197	SPACER BLOCK
45	3	31227	BLOCK W/GASKET ASSEMBLY
46	3	31323	SHAFT COLLAR W/SET SCREW
47	1	31325	RUBBER BUMPER 3/4"
48	1	31827	BRACKET, BATTERY
49	1	31834	THREADED BLOCK
50	4	31837	RUBBER WASHER 0.75" I.D.
51	1	32083	ASS'Y ACTUATOR W/ CONNTR
52	1	32145	WEAR STRIP
53	1	32296	SPEED CONTROLLER/TRIO
*54	2	17262	HOSE, BELLOWS 5/8 X 15" LONG
*55	2	31331	HOSE, 3/8" ID X 30" LONG, CLEAR (NYLON BRAID)
*56	2	31332	HOSE, 3/8" ID X 17" LONG, (CLEAR VINYL)
*57	1	14560	WIRE TIE- 7"(WHITE)
*58	2	31331	HOSE 3/8"ID X 30" LG CLR NYLON BRAID
*59	2	31332	HOSE 3/8"ID X 18" LG VINYL CLEAR
*60	1	80428	POLYETHYLN.SHT.(3'X100') (CUT TO 36"X 1"AT TORNADO)
*61	1	99515	BATTERY CHARGER-36V/20A SB-50 (GREY) CONN

* = ITEM NOT SHOWN

MAIN VIEW "C" PARTS LIST

(Ref. Drawing 31192)

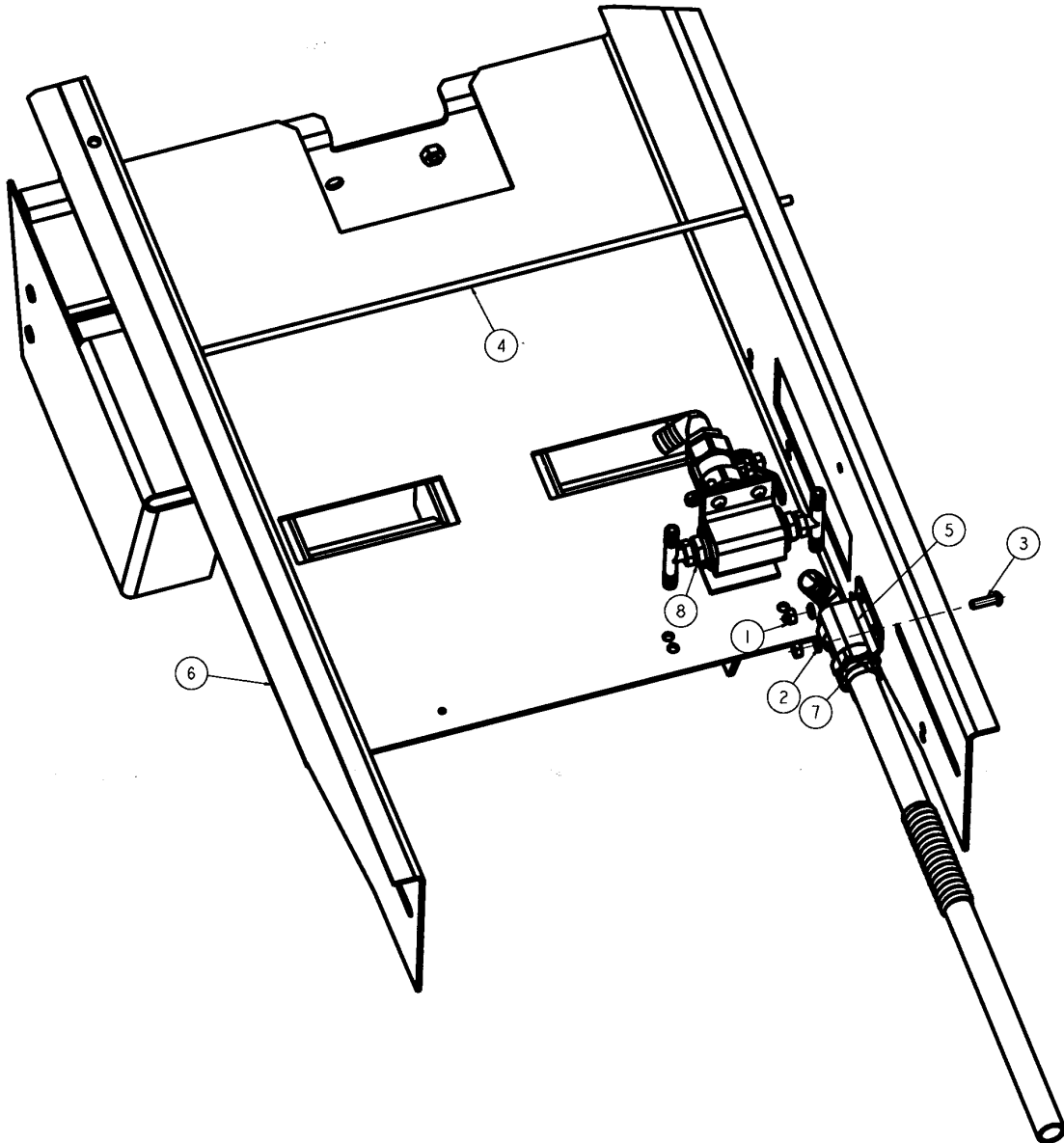
ITEM	QTY	PART #	DESCRIPTION
1	2	14142	WASHER-PLAIN .265 ID (ZP)
2	4	16129	NUT-HEX.LOCK(KEPS) 1/4-20
3	2	16619	SCREW-PHIL. TRUSS HD 1/4-20 X 3/4 (ZP)
4	1	17273	BRACKET-DRAIN HOSE RETAINING
5	2	17850	WASHER-PLAIN #10 ID (SS)
6	10	18253	SCREW-T.F.PLT60,PAN HEAD # 8-16 X 3/4"
7	2	18678	SCREW-FLAT HEAD CAP 1/4-20 X 1"(SS)
8	1	30768	BOTTOM COVER-ROTO
9	1	30788	PANEL-ELECTRICAL ACCESS BLACK
10	2	30818	DECAL-TORNADO W/ LOGO 3.50 WIDE X 15.50 LG. BL
11	2	31127	SCREW-HEX HD CAP 3/8-16 X 2-3/4 (ZP)
12	1	31772	CIRCUIT BREAKER 70AMPS BLACK
13	1	31829	SPLASH PLATE - ABS
14	1	31830	RUBBER-SPLASH GUARD



MAIN VIEW "D" PARTS LIST

(Ref. Drawing 31192)

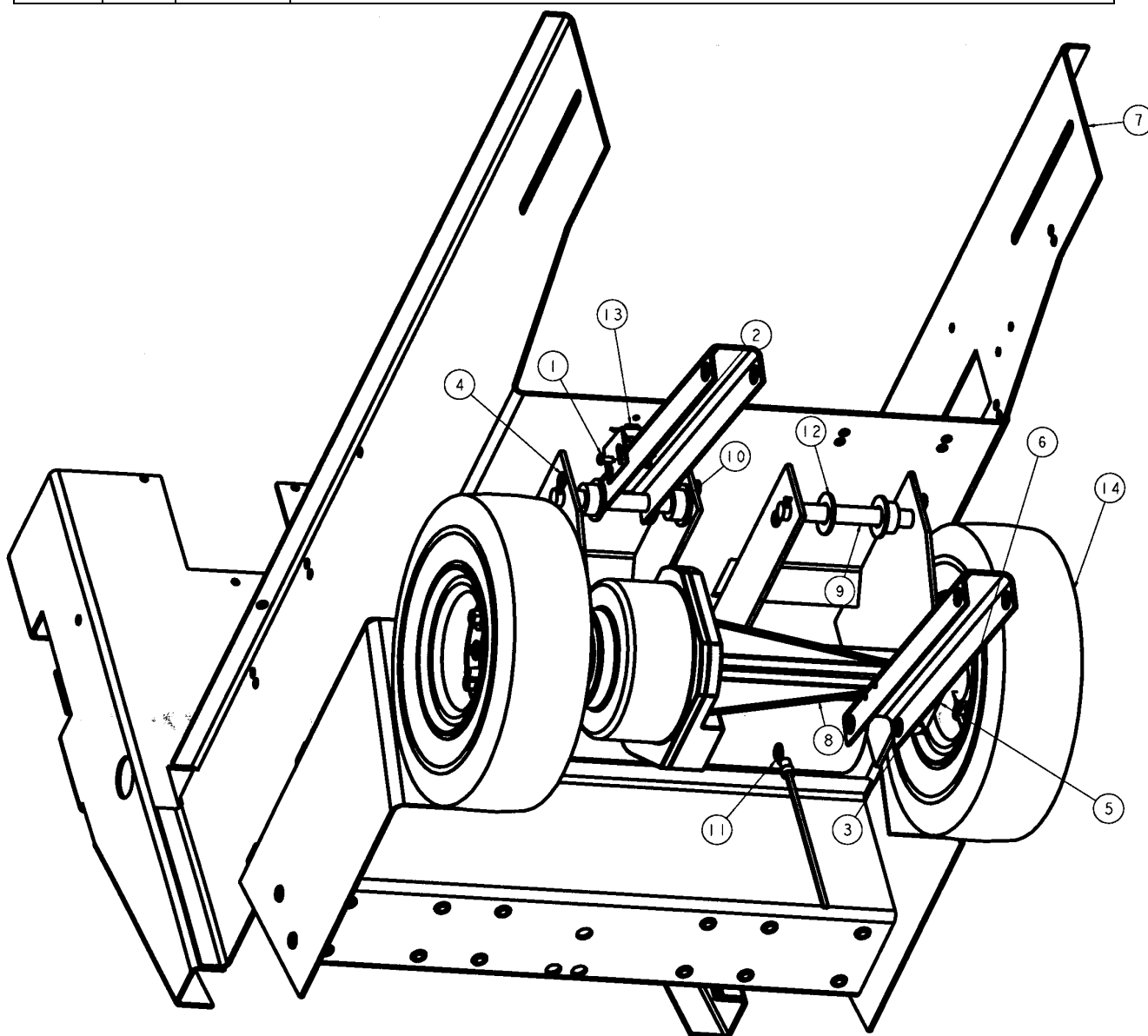
ITEM	QTY	PART #	DESCRIPTION
1	3	01497	NUT-FINISHED HEX 1/4-20 (NICK)
2	2	01574	WASHER-LOCK(H/S)1/4"
3	2	02053	SCREW-PHIL. RND HD MACH 1/4-20 X 7/8 (NICK)
4	1	16824	ROD
5	1	17290	CLAMP
6	1	30778	WELDMENT, FRAME
7	1	31074	ASSY, DRAIN VALVE
8	1	31075	ASSY, VALVE SOLUTION CONTROL



MAIN VIEW "E" PARTS LIST

(Ref. Drawing 31192)

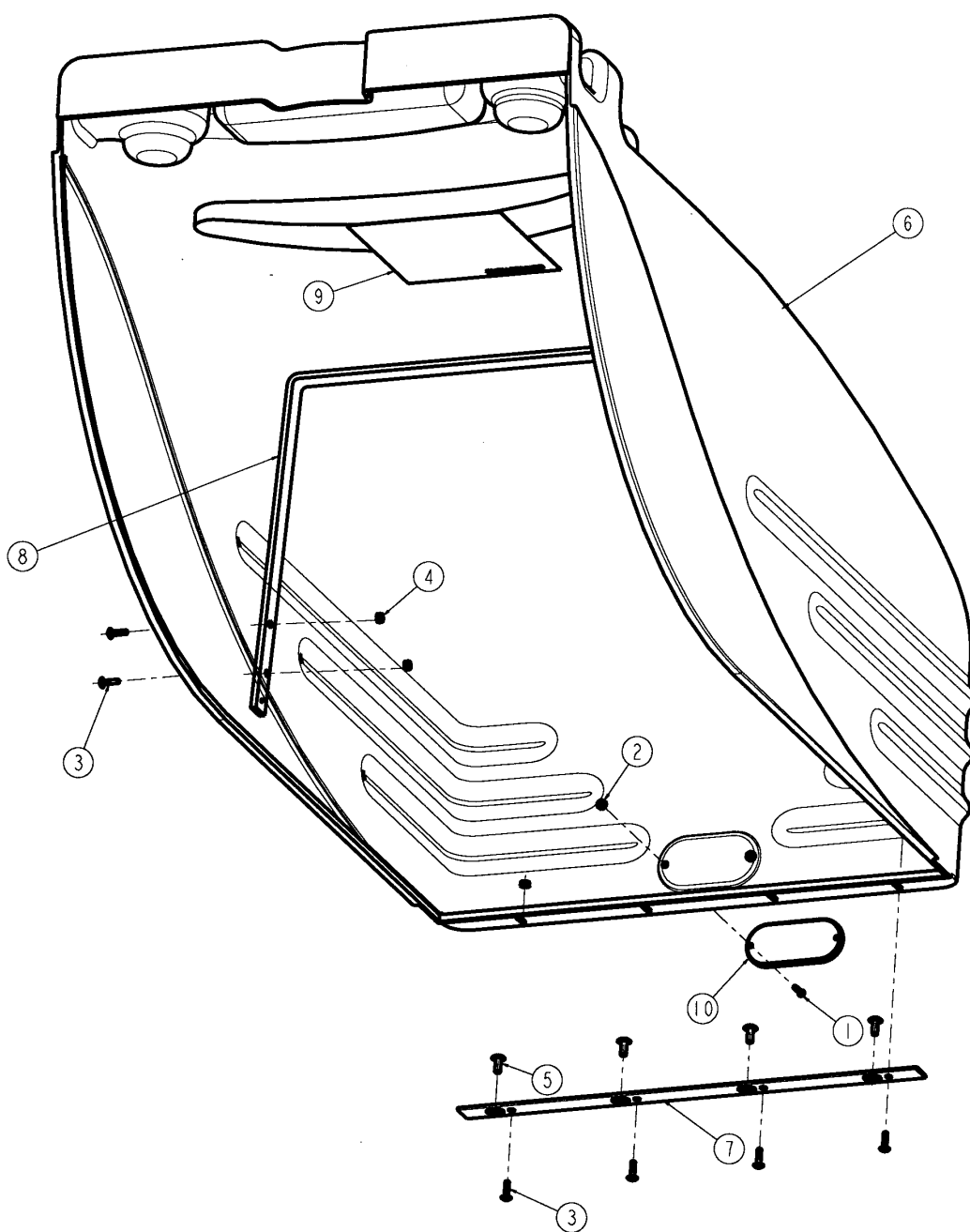
ITEM	QTY	PART #	DESCRIPTION
1	2	03660	SCREW-PHIL. PAN HD MACH #10-24 X 7/16 (ZP)
2	2	10894	NUT-HEX.LOCK(P/T) #10-24
3	4	16654	SCREW-HEX HD CAP 5/16-18 X 7/8 (ZP)
4	5	19666	BRIDGE PIN 1/2"DIA.
5	2	30765	BRACKET-TRANSAXLE
6	2	30766	BRACKET-ARM (BRUSH)
7	1	30778	WELDMENT, FRAME
8	1	30848	TRANSAXLE-36VDC 20:1 GEAR RATIO
9	2	31019	PIN-BRUSH 5.50 LG
10	3	31323	COLLAR-5/8" I.D. W/SET SCREW (STEEL)
11	1	31492	GROUNDING STRAP ASSY
12	5	31837	WASHER - RUBBER .75 I.D. X 1.50 O.D./BLK
13	1	32084	ASS'Y MOUNTING SWITCH W/ CONNECTOR
14	2	32131	WHEEL 11-1/2" DIA. AIR FILLED W/O FLANGE



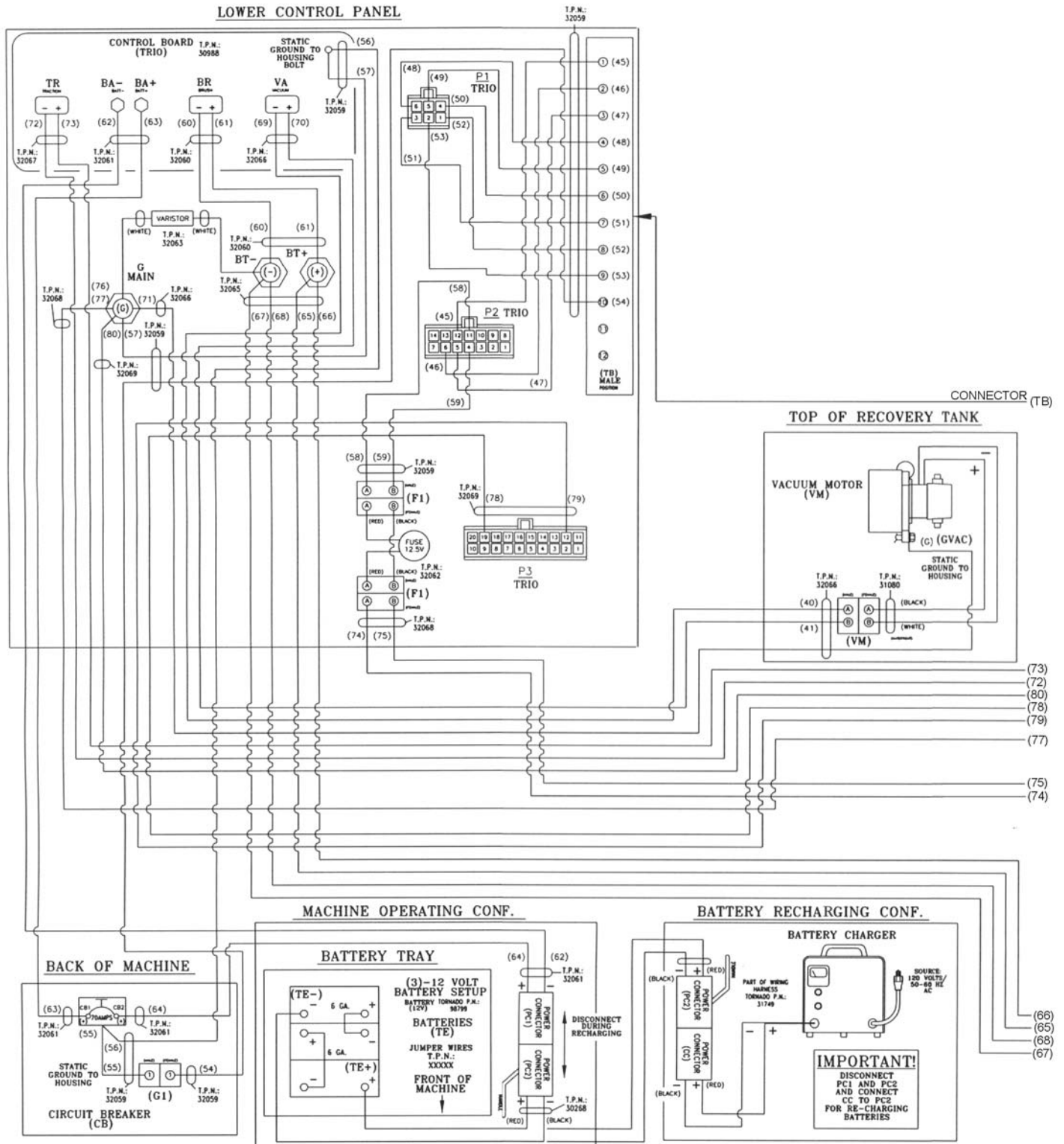
COVER ASSEMBLY PARTS LIST

(Ref. Drawing 31186)

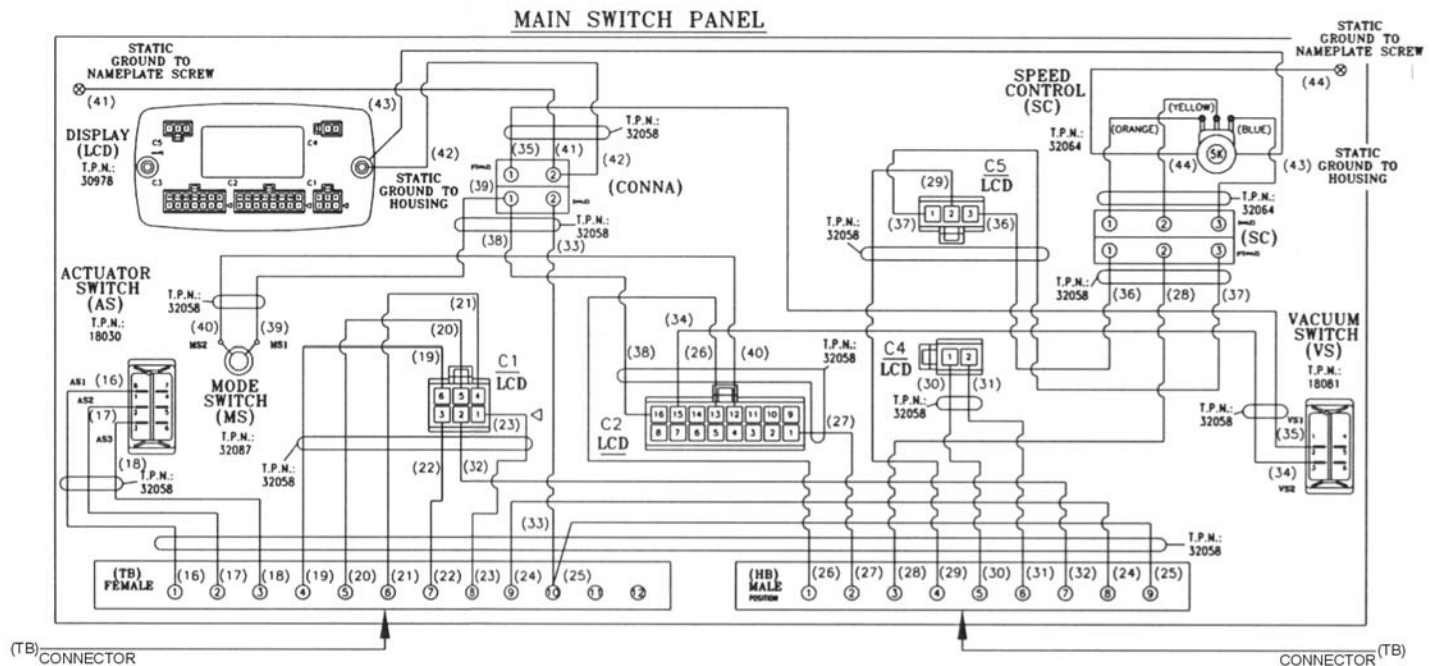
ITEM	QTY	PART #	DESCRIPTION
1	2	00600	SCREW – SLOTTED ROUND HEAD MACHINE #8-32 X $\frac{3}{4}$
2	2	02956	NUT – HEX LOCK (KEPS) #8-32
3	8	04735	SCREW – PHILLIPS TRUSS HEAD MACHINE #10-24 X $\frac{3}{4}$
4	8	10892	NUT – HEX LOCK
5	4	19945	SCREW – PHILLIPS TRUSS HEAD MACHINE $\frac{1}{4}$ -20 X $\frac{5}{8}$ "
6	1	30767	COVER, TOP
7	1	30774	HINGE 21" LONG
8	1	31082	TOP-COVER BRACKET
9	1	31318	DECAL - CONNECTIONS
10	1	31783	REFLECTOR



MAIN WIRING DIAGRAM (Ref. Drawing 32090) **Section A**



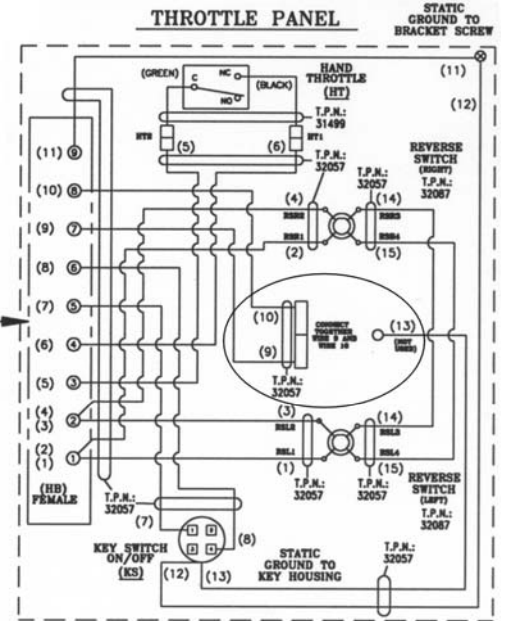
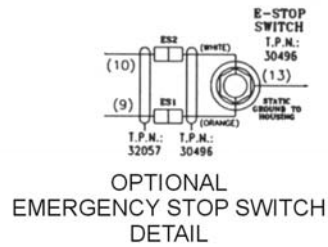
MAIN WIRING DIAGRAM (Ref. Drawing 32090) **Section B**



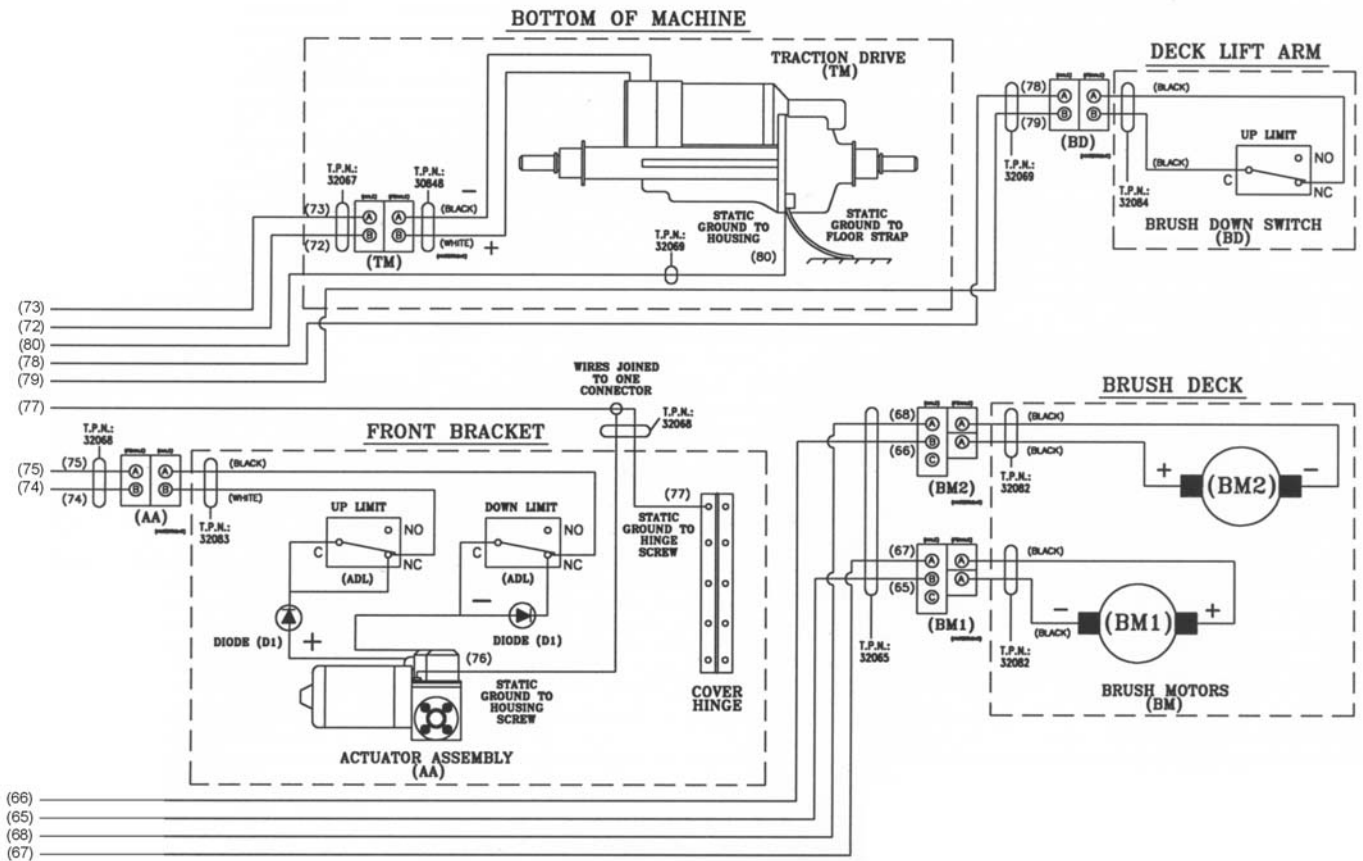
WIRING HARNESS PART NUMBERS

HARNESS PART #	DESCRIPTION
32057	THROTTLE CONTROL
32058	CONTROL PANEL
32059	TRIO MOTHERBOARD GROUND
32060	TRIO TO BRUSH INSULATOR BLOCK
32061	TRIO, RECHARGER, & CIRCUIT BREAKER
32062	RESETTABLE FUSE
32063	VARIATOR
32064	POTENTIOMETER
32065	BRUSH MOTOR TO REAR INSULATOR BLOCK
32066	TRIO TO VAC MOTOR
32067	TRIO TO TRANSAXLE
32068	TRIO TO ACTUATOR
32069	TRIO TO BRUSH MOTORS
32079	COMPLETE WIRING HARNESS KIT

MAIN WIRING DIAGRAM (Ref. Drawing 32090) Section C



(TB) CONNECTOR



WIRE IDENTIFICATION TABLE

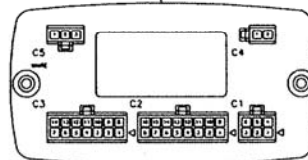
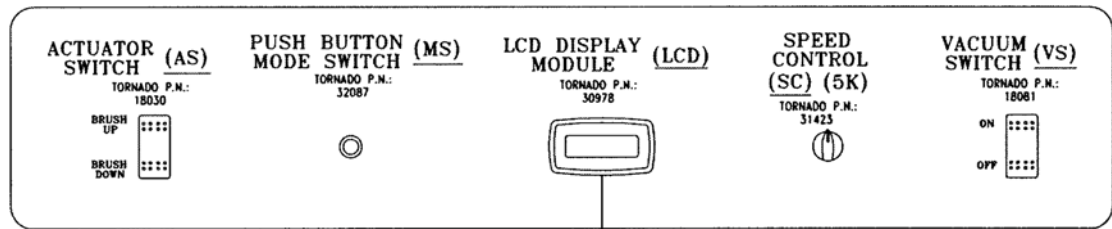
COMPLETE WIRING KIT 32079

TABLE A

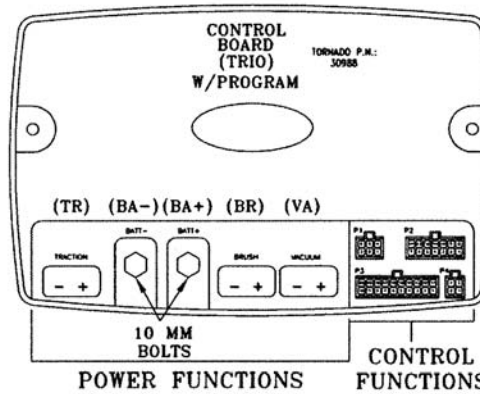
WIRE NO'S	HARNESS TORNADO P.N.	AWG	TYPE	COLOR	FROM CONNECTOR	FROM MACHINE LOCATION	FROM CONNECTOR	TO MACHINE LOCATION
1	32057	18	UL1569	BLUE	HB (POSITION 1)	THROTTLE PANEL	RSL1	THROTTLE PANEL
2	32057	18	UL1569	BLUE	HB (POSITION 1)	THROTTLE PANEL	RSR1	THROTTLE PANEL
3	32057	18	UL1569	GREEN	HB (POSITION 2)	THROTTLE PANEL	RSL3	THROTTLE PANEL
4	32057	18	UL1569	BROWN	HB (POSITION 2)	THROTTLE PANEL	RSR2	THROTTLE PANEL
5	32057	18	UL1569	YELLOW	HB (POSITION 3)	THROTTLE PANEL	HT2	THROTTLE PANEL
6	32057	18	UL1569	WHITE	HB (POSITION 4)	THROTTLE PANEL	HT1	THROTTLE PANEL
7	32057	18	UL1569	BLACK	HB (POSITION 5)	THROTTLE PANEL	KS1	THROTTLE PANEL
8	32057	18	UL1569	RED	HB (POSITION 6)	THROTTLE PANEL	KS2	THROTTLE PANEL
9	32057	18	UL1569	ORANGE	HB (POSITION 7)	THROTTLE PANEL	ES1	THROTTLE PANEL
10	32057	18	UL1569	WHITE	HB (POSITION 8)	THROTTLE PANEL	ES2	THROTTLE PANEL
11	32057	18	UL1569	WHITE	HB (POSITION 9)	THROTTLE PANEL	GROUND BRACKET	THROTTLE PANEL
12	32057	18	UL1569	WHITE	GROUND BRACKET	THROTTLE PANEL	GROUND KEY SWITCH	THROTTLE PANEL
13	32057	18	UL1569	WHITE	GROUND KEY SWITCH	THROTTLE PANEL	GROUND E STOP	THROTTLE PANEL
14	32057	18	UL1569	RED	RSR3	THROTTLE PANEL	RSL3	THROTTLE PANEL
15	32057	18	UL1569	GREEN	RSR4	THROTTLE PANEL	RSL4	THROTTLE PANEL
16	32058	18	UL1569	GREEN	TB (POSITION 1)	MAIN SWITCH PANEL	AS1	MAIN SWITCH PANEL
17	32058	18	UL1569	PURPLE	TB (POSITION 2)	MAIN SWITCH PANEL	AS2	MAIN SWITCH PANEL
18	32058	18	UL1569	YELLOW	TB (POSITION 3)	MAIN SWITCH PANEL	AS3	MAIN SWITCH PANEL
19	32058	18	UL1569	GREEN	TB (POSITION 4)	MAIN SWITCH PANEL	C1 (LCD)(POSITION 5)	MAIN SWITCH PANEL
20	32058	18	UL1569	YELLOW	TB (POSITION 5)	MAIN SWITCH PANEL	C1 (LCD)(POSITION 5)	MAIN SWITCH PANEL
21	32058	18	UL1569	BLUE	TB (POSITION 6)	MAIN SWITCH PANEL	C1 (LCD)(POSITION 4)	MAIN SWITCH PANEL
22	32058	18	UL1569	GREEN	TB (POSITION 7)	MAIN SWITCH PANEL	C1 (LCD)(POSITION 3)	MAIN SWITCH PANEL
23	32058	18	UL1569	RED	TB (POSITION 8)	MAIN SWITCH PANEL	C1 (LCD)(POSITION 1)	MAIN SWITCH PANEL
24	32058	18	UL1569	WHITE	TB (POSITION 9)	MAIN SWITCH PANEL	HB (POSITION 8)	MAIN SWITCH PANEL
25	32058	18	UL1569	WHITE	TB (POSITION 10)	MAIN SWITCH PANEL	HB (POSITION 9)	MAIN SWITCH PANEL
26	32058	18	UL1569	BLUE	HB (POSITION 1)	MAIN SWITCH PANEL	C2 (LCD)(POSITION 13)	MAIN SWITCH PANEL
27	32058	18	UL1569	GREEN	HB (POSITION 2)	MAIN SWITCH PANEL	C2 (LCD)(POSITION 1)	MAIN SWITCH PANEL
28	32058	18	UL1569	YELLOW	HB (POSITION 3)	MAIN SWITCH PANEL	SC (POSITION 2)	MAIN SWITCH PANEL
29	32058	18	UL1569	WHITE	HB (POSITION 4)	MAIN SWITCH PANEL	C5 (LCD)(POSITION 2)	MAIN SWITCH PANEL
30	32058	18	UL1569	BLACK	HB (POSITION 5)	MAIN SWITCH PANEL	C4 (LCD)(POSITION 1)	MAIN SWITCH PANEL
31	32058	18	UL1569	RED	HB (POSITION 6)	MAIN SWITCH PANEL	C4 (LCD)(POSITION 2)	MAIN SWITCH PANEL
32	32058	18	UL1569	ORANGE	HB (POSITION 7)	MAIN SWITCH PANEL	C1 (LCD)(POSITION 2)	MAIN SWITCH PANEL
33	32058	18	UL1569	BLUE	TB (POSITION 10)	MAIN SWITCH PANEL	CONNA (POSITION 2)	MAIN SWITCH PANEL
34	32058	18	UL1015	BLUE	VS2	MAIN SWITCH PANEL	C2 (LCD)(POSITION 15)	MAIN SWITCH PANEL
35	32058	18	UL1015	BROWN	VS3	MAIN SWITCH PANEL	CONNA (POSITION 1)	MAIN SWITCH PANEL
36	32058	18	UL1569	ORANGE	SC (POSITION 1)	MAIN SWITCH PANEL	C5 (LCD)(POSITION 3)	MAIN SWITCH PANEL
37	32058	18	UL1569	BLUE	SC (POSITION 3)	MAIN SWITCH PANEL	C5 (LCD)(POSITION 1)	MAIN SWITCH PANEL
38	32058	18	UL1015	BROWN	CONNA (POSITION 1)	MAIN SWITCH PANEL	C2 (LCD)(POSITION 16)	MAIN SWITCH PANEL
39	32058	18	UL1015	BROWN	CONNA (POSITION 1)	MAIN SWITCH PANEL	MS1	MAIN SWITCH PANEL
40	32058	18	UL1569	WHITE	MS2	MAIN SWITCH PANEL	C2 (LCD)(POSITION 12)	MAIN SWITCH PANEL
41	32058	18	UL1569	WHITE	CONNA (POSITION 2)	MAIN SWITCH PANEL	GROUND NL1	MAIN SWITCH PANEL
42	32058	18	UL1015	WHITE	CONNA (POSITION 2)	MAIN SWITCH PANEL	GROUND LCD	MAIN SWITCH PANEL
43	32058	18	UL1015	WHITE	GROUND LCD	MAIN SWITCH PANEL	GROUND POT	MAIN SWITCH PANEL
44	32058	18	UL1569	WHITE	GROUND POT	MAIN SWITCH PANEL	GROUND NL2	MAIN SWITCH PANEL
45	32059	18	UL1569	GREEN	TB (POSITION 1)	LOWER CONTROL PANEL	P2 (TRIO)(POSITION 12)	LOWER CONTROL PANEL
46	32059	18	UL1015	PURPLE	TB (POSITION 2)	LOWER CONTROL PANEL	P2 (TRIO)(POSITION 5)	LOWER CONTROL PANEL
47	32059	18	UL1015	YELLOW	TB (POSITION 3)	LOWER CONTROL PANEL	P2 (TRIO)(POSITION 6)	LOWER CONTROL PANEL
48	32059	18	UL1569	GREEN	TB (POSITION 4)	LOWER CONTROL PANEL	P1 (TRIO)(POSITION 6)	LOWER CONTROL PANEL
49	32059	18	UL1569	YELLOW	TB (POSITION 5)	LOWER CONTROL PANEL	P1 (TRIO)(POSITION 5)	LOWER CONTROL PANEL
50	32059	18	UL1015	BLUE	TB (POSITION 6)	LOWER CONTROL PANEL	P1 (TRIO)(POSITION 4)	LOWER CONTROL PANEL
51	32059	18	UL1015	GREEN	TB (POSITION 7)	LOWER CONTROL PANEL	P1 (TRIO)(POSITION 3)	LOWER CONTROL PANEL
52	32059	18	UL1569	RED	TB (POSITION 8)	LOWER CONTROL PANEL	P1 (TRIO)(POSITION 1)	LOWER CONTROL PANEL
53	32059	18	UL1569	WHITE	TB (POSITION 9)	LOWER CONTROL PANEL	P1 (TRIO)(POSITION 2)	LOWER CONTROL PANEL
54	32059	18	UL1015	WHITE	TB (POSITION 10)	LOWER CONTROL PANEL	G1 (POSITION 1)	LOWER CONTROL PANEL
55	32059	18	UL1015	WHITE	G1 (POSITION 1)	LOWER CONTROL PANEL	GROUND C.B.	LOWER CONTROL PANEL
56	32059	18	UL1569	WHITE	GROUND C.B.	LOWER CONTROL PANEL	GROUND TRIO	LOWER CONTROL PANEL
57	32059	18	UL1569	WHITE	GROUND TRIO	LOWER CONTROL PANEL	GROUND MAIN	LOWER CONTROL PANEL
58	32059	18	UL1569	WHITE	P2 (TRIO)(POSITION 11)	LOWER CONTROL PANEL	F1 (POSITION A)	LOWER CONTROL PANEL
59	32059	18	UL1569	WHITE	P2 (TRIO)(POSITION 4)	LOWER CONTROL PANEL	F1 (POSITION B)	LOWER CONTROL PANEL
60	32060	10	UL1569	BLACK	BR-	LOWER CONTROL PANEL	BT-	LOWER CONTROL PANEL
61	32060	10	UL1569	RED	BR+	LOWER CONTROL PANEL	BT+	LOWER CONTROL PANEL
62	32061	6	UL1569	BLACK	BA-	LOWER CONTROL PANEL	PC1-	BATTERY TRAY
63	32061	6	UL1569	RED	BA+	LOWER CONTROL PANEL	CB1	BACK OF MACHINE
64	32061	6	UL1569	BLACK	CB2	LOWER CONTROL PANEL	PC1+	BATTERY TRAY
65	32065	8	UL2501	BLACK1	BT+	LOWER CONTROL PANEL	BM1-	BRUSH DECK
66	32065	8	UL2501	BLACK2	BT+	LOWER CONTROL PANEL	BM2+	BRUSH DECK
67	32065	8	UL2501	BLACK3	BT-	LOWER CONTROL PANEL	BM1+	BRUSH DECK
68	32065	8	UL2501	YELLOW/GREEN ST	BT-	LOWER CONTROL PANEL	BM2-	BRUSH DECK
69	32066	14	UL2501	BLACK	VA-	LOWER CONTROL PANEL	VM-	TOP OF RECOVERY TANK
70	32066	14	UL2501	RED	VA+	LOWER CONTROL PANEL	VM+	TOP OF RECOVERY TANK
71	32066	14	UL2501	WHITE	GROUND MAIN	LOWER CONTROL PANEL	GROUND VAC MOTOR	TOP OF RECOVERY TANK
72	32067	10	UL1015	BLACK	TR-	LOWER CONTROL PANEL	TM+	BOTTOM OF MACHINE
73	32067	10	UL1015	RED	TR+	LOWER CONTROL PANEL	TM-	BOTTOM OF MACHINE
74	32068	16	UL2501	RED	F1 (POSITION A)	LOWER CONTROL PANEL	AA2 (POSITION B)	FRONT BRACKET
75	32068	16	UL2501	BLACK	F1 (POSITION B)	LOWER CONTROL PANEL	AA1 (POSITION A)	FRONT BRACKET
76	32068	16	UL1015	WHITE	GROUND MAIN	LOWER CONTROL PANEL	GROUND ACTUATOR	FRONT BRACKET
77	32068	16	UL1015	GREEN	GROUND MAIN	LOWER CONTROL PANEL	GROUND HINGE	FRONT BRACKET
78	32069	18	UL2509	BLACK	P3 (TRIO)(POSITION 19)	LOWER CONTROL PANEL	BD (POSITION A)	DECK LIFT ARM
79	32069	18	UL2509	RED	P3 (TRIO)(POSITION 12)	LOWER CONTROL PANEL	BD (POSITION B)	DECK LIFT ARM
80	32069	18	UL2509	WHITE	GROUND MAIN	LOWER CONTROL PANEL	GROUND TRANSAXLE	DECK LIFT ARM

WIRING HARDWARE LOCATIONS & IDENTIFICATION

MAIN SWITCH PANEL FRONT VIEW

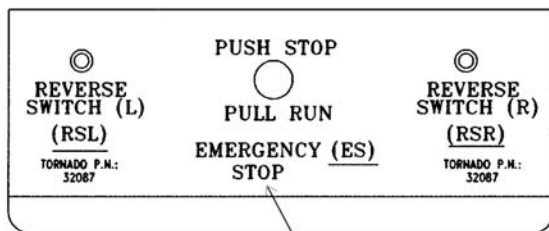


LCD MODULE
BACK VIEW



TRIO MODULE
FRONT VIEW

THROTTLE PANEL
FRONT VIEW



E-STOP SWITCH IS OPTIONAL

THROTTLE PANEL
SIDE VIEW

