



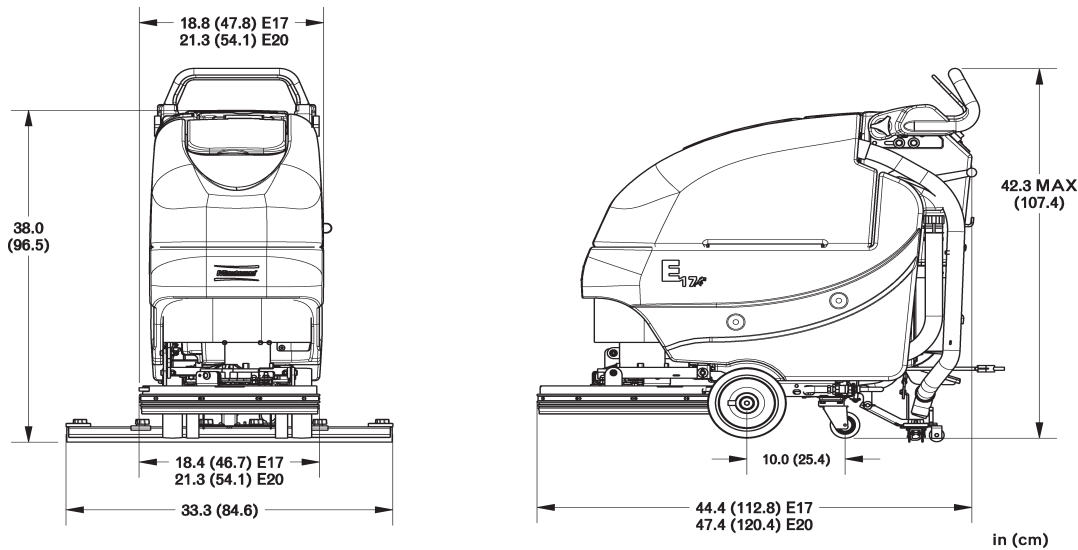
Parts Manual
E17/E20 Floor Scrubber
Disc Brush Drive

Technical Specifications

Model E17/E20

Model No. E17BD / E17BDCE / E17BDQP / E17BDQPCE
 E17BDQPG / E17BDQPGCE
 E20BD / E20BDCE / E20BDQP / E20BDQPCE
 E20BDQPG / E20BDQPGCE

	E17	E20
Current (Max)	32 amps	32 amps
Battery Capacity (Lead Acid)	105Ah @20 hr	105Ah @20 hr
Battery Capacity (Gel)	95Ah @20 hr	95Ah @20 hr
Sound Level	69 dBA	69 dBA
Cleaning path width	17 in (43 cm)	20 in (51 cm)
Squeegee width	33 in (84 cm)	33 in (84 cm)
Theoretical productivity (Brush Drive)	12,750 ft ² /hr (1,185 m ²)	15,000 ft ² /hr (1,394 m ²)
Working speed (Brush Drive)	1.7 mph (2.7 km per hr)	1.7 mph (2.7 km per hr)
Rated voltage	24 volts	24 volts
Vacuum flow	65 cfm (110 m ³ /hr)	65 cfm (110 m ³ /hr)
Vacuum waterlift	45 inches (112mbar)	45 inches (112mbar)
Vacuum power	.60 HP (450 W)	.60 HP (450 W)
Brush type	Disc	Disc
Brush motor(s) power	3/4 HP (560W)	3/4 HP (560W)
Number of brushes	1	1
Brush RPM	180 RPM	180 RPM
Aqua-Stop equipped	Coming Soon	Coming Soon
Solution capacity	12Gal (45 liters)	12 Gal (45 liters)
Recovery capacity	13 Gal (49 liters)	13 Gal (49 liters)
Working Grade	2%	2%
Weight with batteries	306 lbs (139 kg)	313 lbs (142 kg)
Weight without batteries	196 lbs (89 kg)	203lbs (92 kg)
Dimensions (LxWxH)	44.4 x 18.8 x 42.3 (112.8 x 47.8 x 107.4 cm)	47.4 x 21.3 x 42.3 (120.4 x 54.1 107.4 cm)



For Safety When Servicing or Maintaining Machine

- Stop on level surface.
- Disconnect the power to the machine by pulling the red Battery Connector located under the recovery tank near the batteries.
- Avoid moving parts. Do not wear loose jackets, shirts, or sleeves when working on machine.
- Avoid contact with battery acid. Battery acid can cause burns. When working on or around batteries, wear protective clothing and safety glasses. Remove metal jewelry. Do not lay tools or metal objects on top of batteries.
- Do not clean machine with a pressure washer.
- Authorized personnel must perform repairs and maintenance. Use Minuteman supplied replacement parts.



DECLARATION OF CONFORMITY

MANUFACTURER'S NAME: Minuteman International Inc.

MANUFACTURER'S ADDRESS: 111 South Rohlwing Road
Addison, IL. 60101

EQUIPMENT DESCRIPTION: E17/ E20 Walk-Behind Scrubber

EQUIPMENT MODEL DESIGNATION: E17BDQPCE, E17BDQPGCE,
E17BDCE, E20BDCE, E20BDQPCE,
E20BDQPGCE

Application of Council Directives: 98/37/EC, 89/336/EEC

Harmonized standards complied with: EN 60335-2-72, EN 60335-1,
EN 61000-6-2, EN 61000-6-3

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

SIGNATURE:

DATE:

9.11.2007

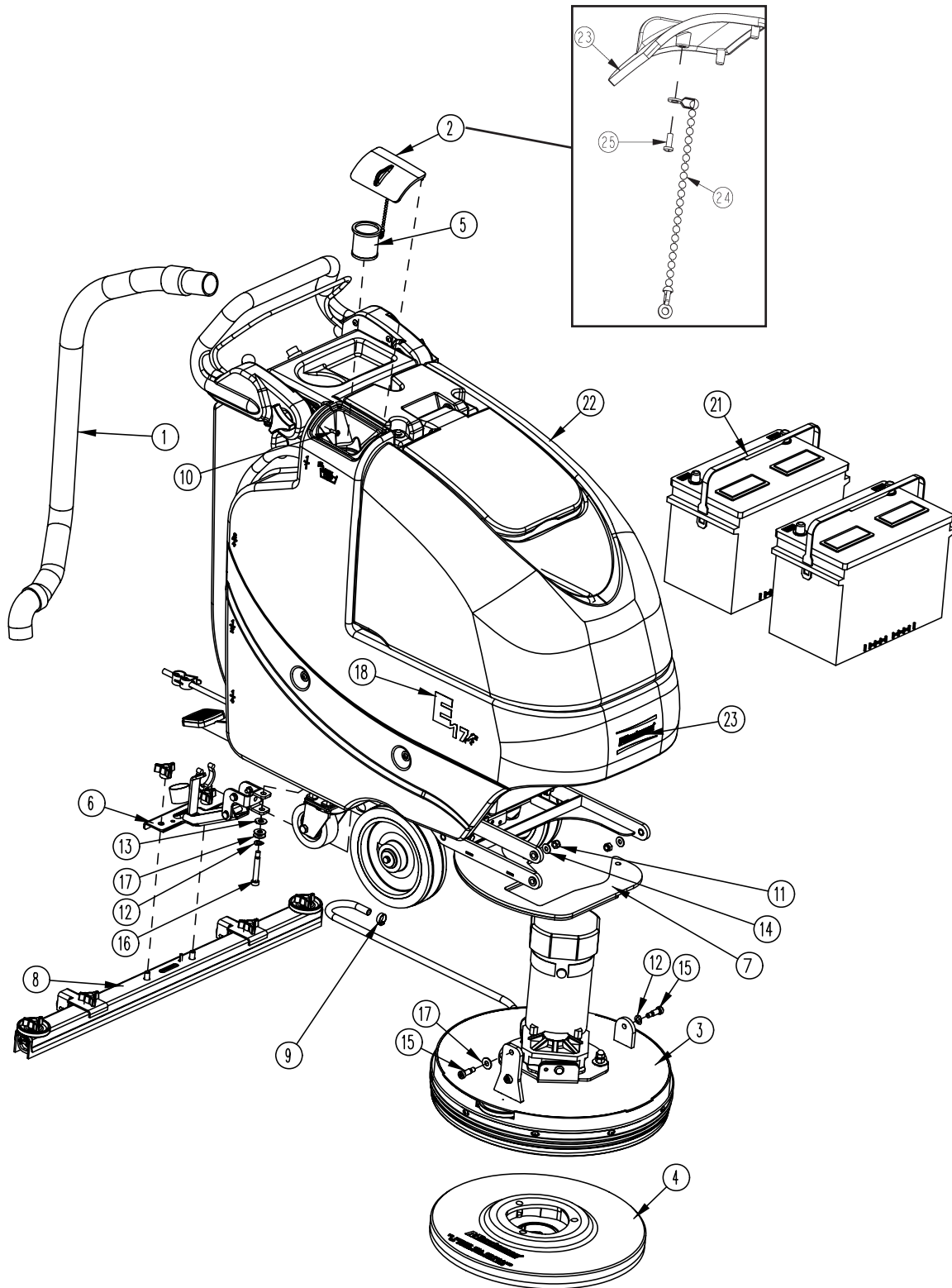
**PRINTED NAME:
TITLE:**

**Ruediger Schroeder
Exec. VP and COO**

Form: ECO 200 *

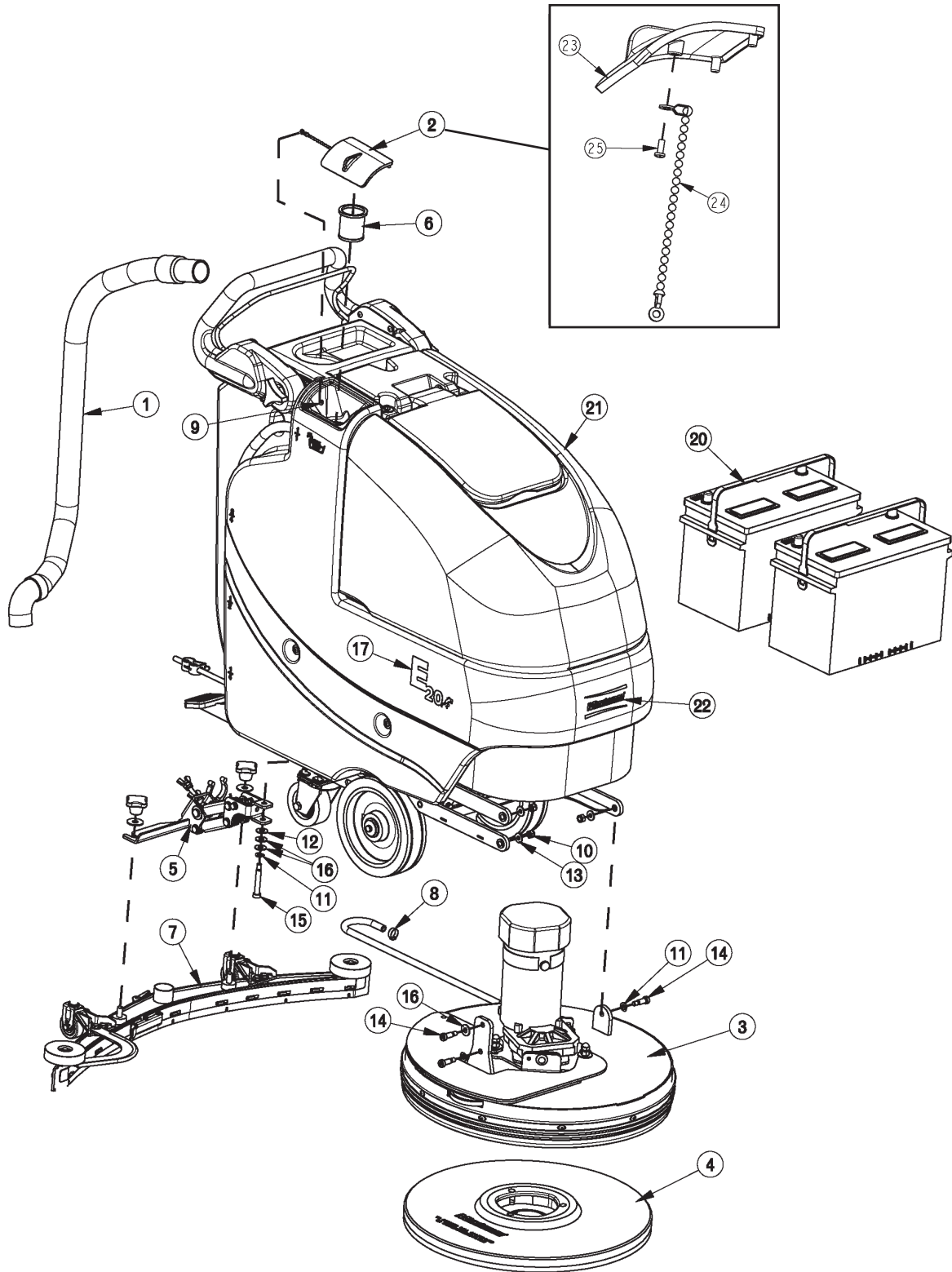
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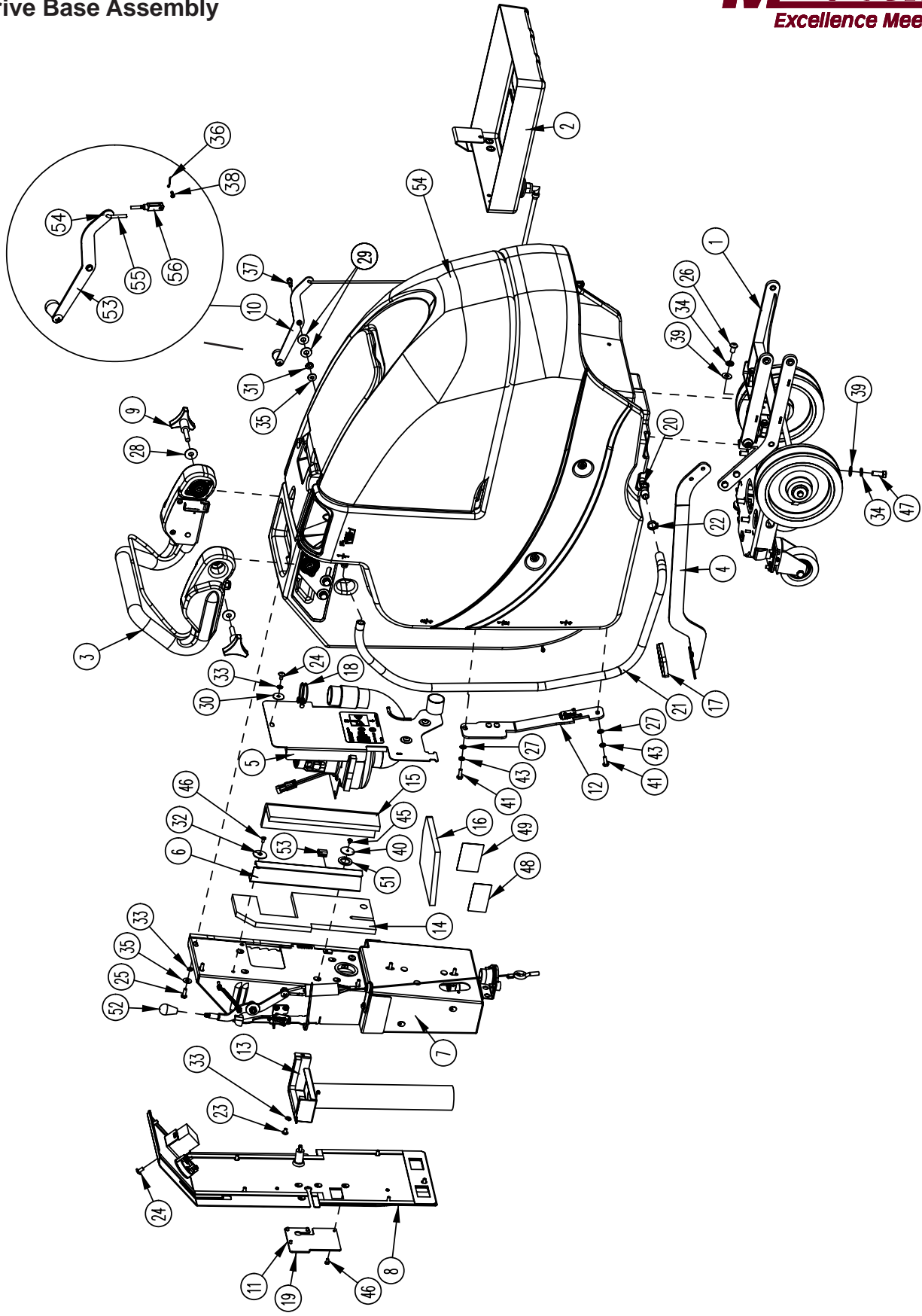
BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172010	1	HOSE, CLEAR VAC W/ 45 CUFF
2	172018	1	SOLUTION TANK LID ASSY
3	172090	1	BRUSH DECK ASSY 17"
4	172117-2	1	17" PAD DRIVER
5	172159	1	FILTER, FILL PORT, ES1720
6	172170	1	BD SQUEEGEE LIFT MECH ASSY
7	172268	1	E17 BRUSH DECK PLATE (OPTIONAL)
8	210080	1	SQUEEGEE ASY COMP 20" STR
9	450076	1	CLAMP-CRIMP 185R SS
10	711118	1	SCR-ST-A 10 X .75 SS
11	711374	4	NUT-NYLOC 5/16-18
12	711523	3	WSR-WAVE .37X .68 X .08
13	711569	1	WSR-FLT .390 X .880 X .062 NYL
14	711575	3	WSR-FLT .31x.75x.06ST
15	712081	3	SHOULDER BLT 5/16-18 X 3/8 X .75
16	712143	1	BLT-SHLD 3/8 X 2.0, 5/16-18
17	712301	3	WSR-FLAT .37 X .87 X .06
18	715917	2	DECAL, E17
19	740164-1	1	JUMPER CABLE ASSY, RED 4G 12"
20	747649	1	CABLE ASSY, BATTERY E17
21	956712	2	BATTERY, 12V 115AH WET
21G	956100	2	GEL BATTERY 12V 100AH
22	172001BD-120	1	BRUSH DRV MAIN ASSY-120V CHARGER
22CE	172001BD-230	1	BRUSH DRV MAIN ASSY-230V CHARGER
23	715914W	1	DECAL, MINUTEMAN W/SWOOSHES, WHITE
24	172008	1	SOLUTION TANK LID
25	172123	1	CHAIN, BEADED SS W/EYELETS
26	712145	1	SCR-MC 6-32 X .37 PPH SS

OPTIONAL BRUSHES		
ITEM	PART NO.	DESCRIPTION
4.1	172117-1	BRUSH, 17" NYLON
4.2	172117-3	BRUSH, 17" NYLO GRIT
4.3	172117-4	BRUSH, 17" STRATA GRIT
4.4	172117-5	BRUSH, 17" DYNA-SCRUB 500GR



BILL OF MATERIAL - 120/230			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172010	1	HOSE, CLEAR VAC W/ 45 CUFF
2	172018	1	SOLUTION TANK LID ASSY
3	172100	1	BRUSH DECK ASSY 20"
4	172120-2	1	20" PAD DRIVER - 120V
4CE	172520-2	1	20" PAD DRIVER - 230V
5	172150	1	SQUEEGEE LIFT MECH ASSY
6	172159	1	FILTER, FILL PORT, ES1720
7	172270	1	SQUEEGEE, 34" (860)
8	450076	1	CLAMP-CRIMP 185R SS
9	711118	1	SCR-ST-A 10 X .75 SS
10	711374	3	NUT-NYLOC 5/16-18
11	711523	3	WSR-WAVE .37X .68 X .08
12	711569	1	WSR-FLT .390 X .880 X .062 NYL
13	711575	3	WSR-FLT .31x.75x.06ST
14	712081	3	SHOULDER BLT 5/16-18 X 3/8 X .75
15	712143	1	BLT-SHLD 3/8 X 2.0, 5/16-18
16	712301	3	WSR-FLAT .37 X .87 X .06
17	715920	2	DECAL, E20
18	740164-1	1	JUMPER CABLE ASSY, RED 4G 12"
19	747649	1	CABLE ASSY, BATTERY E17
20	956712	2	BATTERY, 12V 115AH
20G	956100	2	GEL BATTERY 12V 100AH
21	172001BD-120	1	E20 BRUSH DRV MAIN ASSY-120V CHARGER
21CE	172001BD-230	1	E20BRUSH DRV BASE ASSY-230V CHARGER
22	715914W	1	DECAL, MINUTEMAN W/SWOOSHES, WHITE
23	172008	1	SOLUTION TANK LID
24	172123	1	CHAIN, BEADED SS W/ EYELETS
25	712145	1	SCR-MC 6-32 X .37 PPH SS

OPTIONAL BRUSHES		
ITEM	PART NO.	DESCRIPTION
4.1	172120-1	BRUSH, 20" NYLON
4.2	172120-3	BRUSH, 20" POLY GRIT
4.3	172120-4	BRUSH, 20" STRATA GRIT
4.4	172120-5	BRUSH, 20" DYNA-SCRUB 500GR
4CE.1	172520-1	BRUSH, 20" NYLON
4CE.2	172520-3	BRUSH, 20" POLY GRIT
4CE.3	172520-4	BRUSH, 20" STRATA GRIT
4CE.4	172520-5	BRUSH, 20" DYNA-SCRUB 500GR

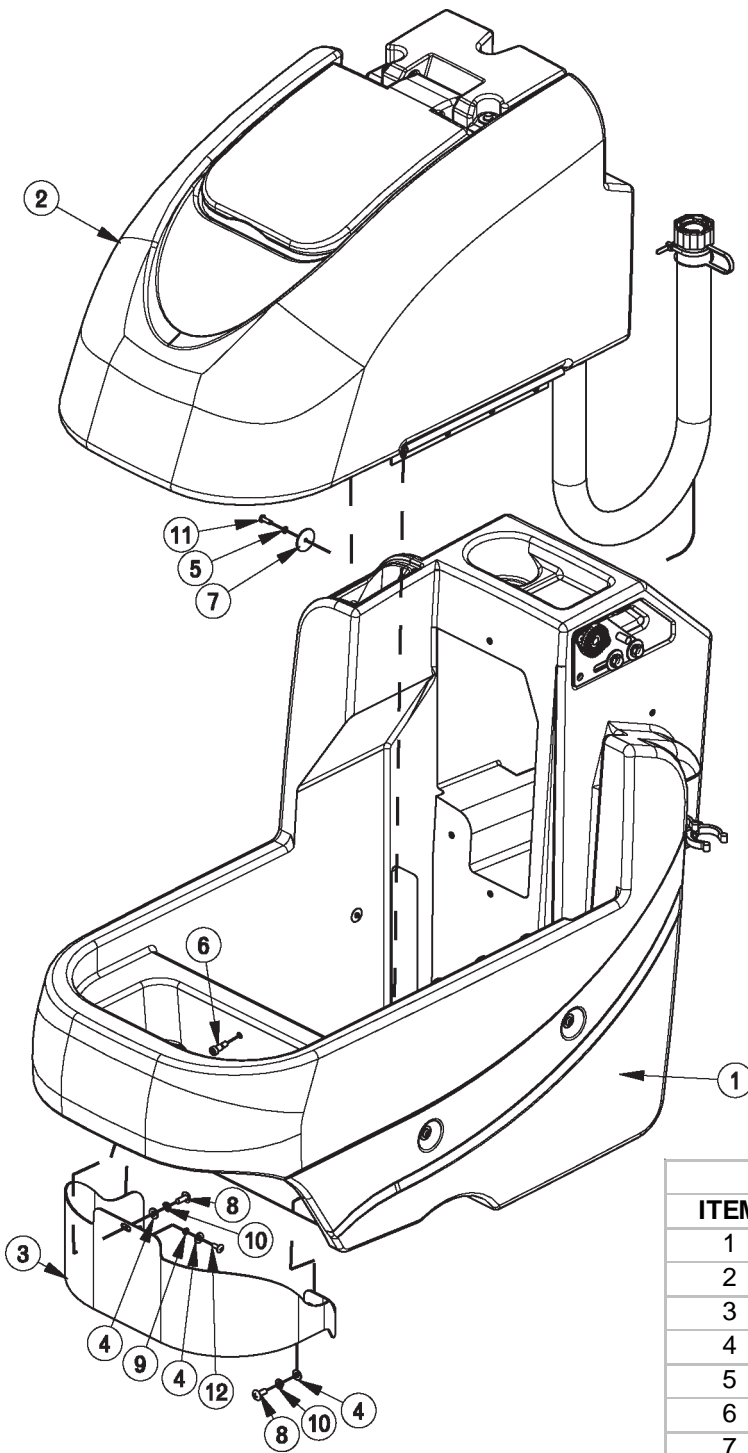


Brush Drive Base Assembly BOM



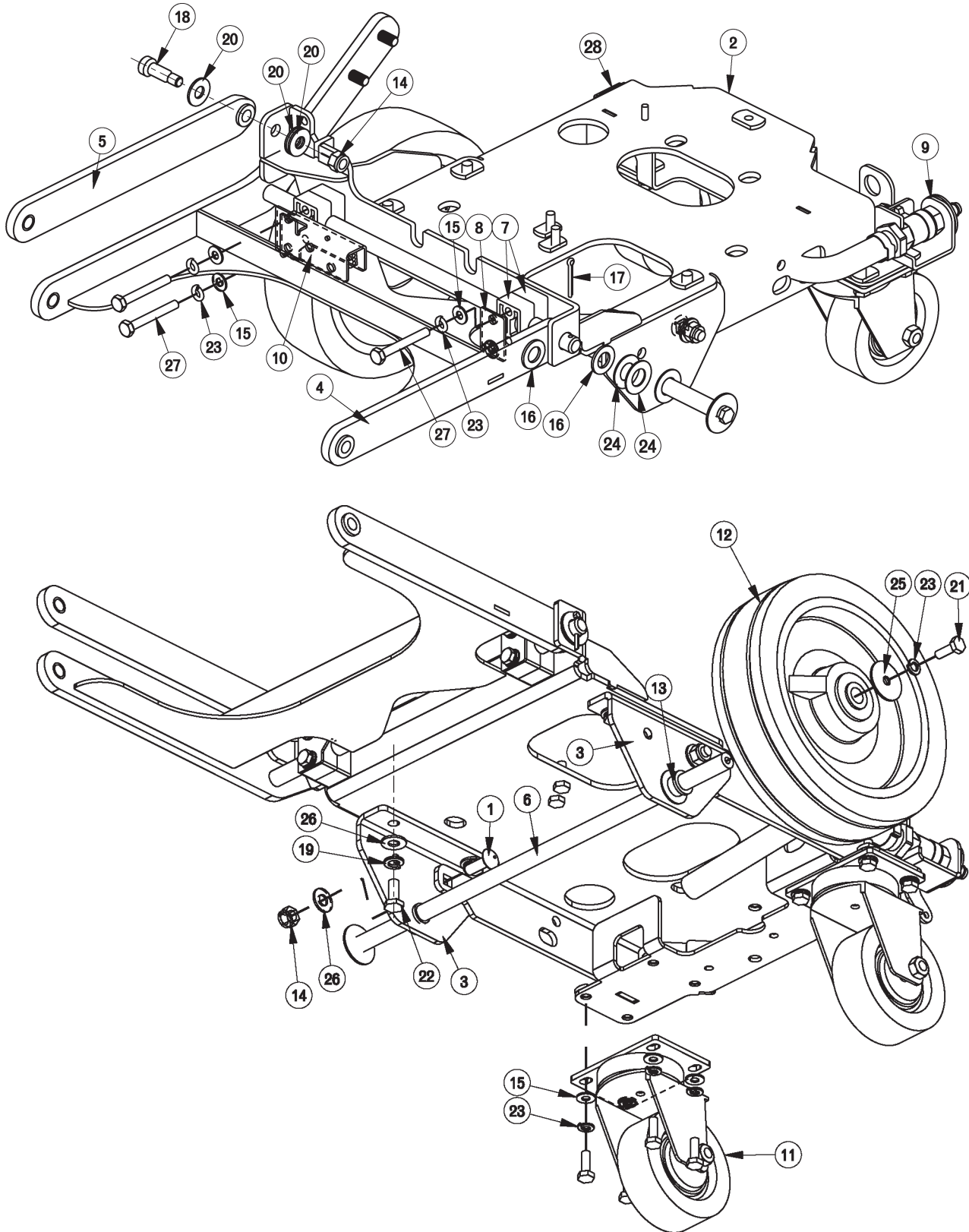
BILL OF MATERIAL - 172001BD-120/230

ITEM	PART NO.	REQ'D	DESCRIPTION	ITEM	PART NO.	REQ'D	DESCRIPTION
1	172002	1	E17 BD CHASSIS ASSY	29	711508	2	WSR-FLAT .44X 1.0X .08
1A	172002-1	1	E20 BD CHASSIS ASSY	30	711519	3	WSR- FLAT .25 X 1.01 X .06
2	172012	1	BATTERY TRAY ASSY	31	711523	1	WSR-WAVE .37X .68 X .08
3	172016	1	E1720 BD HANDLE ASSY	32	711543	1	WSR-HELICAL #10
4	172032	1	LIFT PEDAL WMT	33	711544	9	WSR-HELICAL 1/4
5	172050	1	VAC MOTOR ASSY	34	711546	6	WSR-HELICAL 3/8
6	172055	1	BKT, VAC AREA INSIDE COVER	35	711575	6	WSR-FLT .31x.75x.06ST
7	172070-120	1	ELEC BOXBD ASSY 120V	36	711803	1	COTTER PIN
7CE	172070-230	1	ELEC BOXBD ASSY 230V	37	712041	1	BLT- SHLDR .31 X .375 X 1/4-20
8	172073	1	BD ELEC BOX COVER ASSY	38	712117	1	CLEVIS PIN 3/16
9	172085	2	KNOB, 3/8-16 STUD, 3 LOBE	39	712301	6	WSR-FLAT .37 X .87 X .06
10	172112	1	SOL CONTROL ASSY	40	712312	2	WSR-FLAT .187 X 1.25
11	172129	1	BKT, PWR CORD MOUNT	41	712562	2	BOLT-HH 1/4-20X3/4 SS
12	172157	1	LIFT PEDAL STOP ASSY	42	712683	2	NUT, HEX 5/16-18 NYLOC SS
13	172179	1	CHARGER INLET ASSEMBLY	43	712758	2	WSR-HELICAL 1/4 SS
14	172184	1	FOAM COVER, REAR 1	44	712772	2	WSR-FLAT .344 x .75 x .06 SS
15	172185	1	FOAM COVER, REAR 2	45	712800	1	SCR-MC 10-24 X .25 ST PL
16	172187	1	FOAM COVER, FRONT 2	46	712810	5	SCR-MC 10-24 X .37 ST PL
17	210142	1	PEDAL PAD	47	713042	4	BLT-HH 3/8-16 X 1 #5
18	260203	1	WIRE GRIP HOSE CLAMP	48	715029	1	DECAL-NAME PLATE SERIAL
19	293080	1	STRAIN RELIEF-HEYCO 1207	49	715047	1	DECAL-CLEAR LAMINATE 2X3
20	342440	1	FITTING, TEE 3/4MPT 1/2BARB	50	715950	1	LABEL, PATENT NUMBERS
21	430156	1	HOSE, 1/2 X 42 CLEAR	51	717025	1	WSR-FLAT 13/16ID X 1.25 X .08
22	450093	2	CRIMP CLAMP 3/4" STEPLESS	52	760592	1	KNOB, OVAL TAPERED
23	710177	1	SCR-MC 1/4-20 X .37 ST PL	53	809443	1	CLIP-WIRE & CORD
24	710178	10	SCR-MC 1/4-20 X .50 TRUSS STPL	54	172001BASE	1	E1720 BASE ASSY
25	710380	5	SCR-MC RD HD 1/4-20 X .75 STL PL	55	172115	1	SOL CNTRL LEVER ASSY
26	710985	2	SCR-SC 3/8-16 X .62 ST PL	56	172122	1	NUT, PUSH-ON WSR CAP, 3/16
27	711504	2	WSR-FLAT 1/4 ID SS	57	172069	1	ROD, SOL CTRL, ES1720
28	711507	2	WSR-FLAT .37 X 1.12 X .06	58	172062	1	YOKE, 3/16 CLEVIS, 10-32, LONG

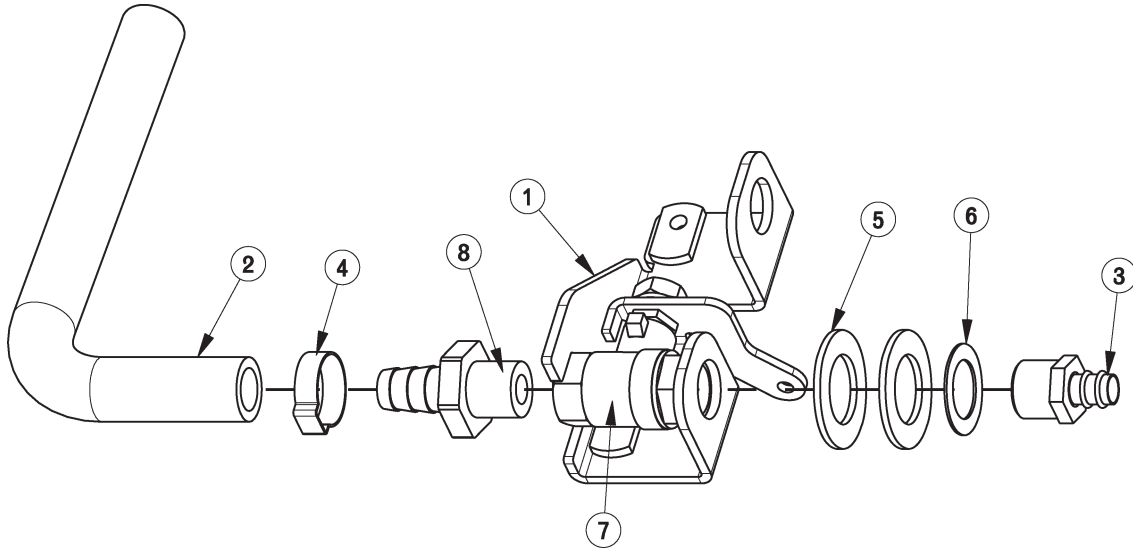


BILL OF MATERIAL - 172001BASE

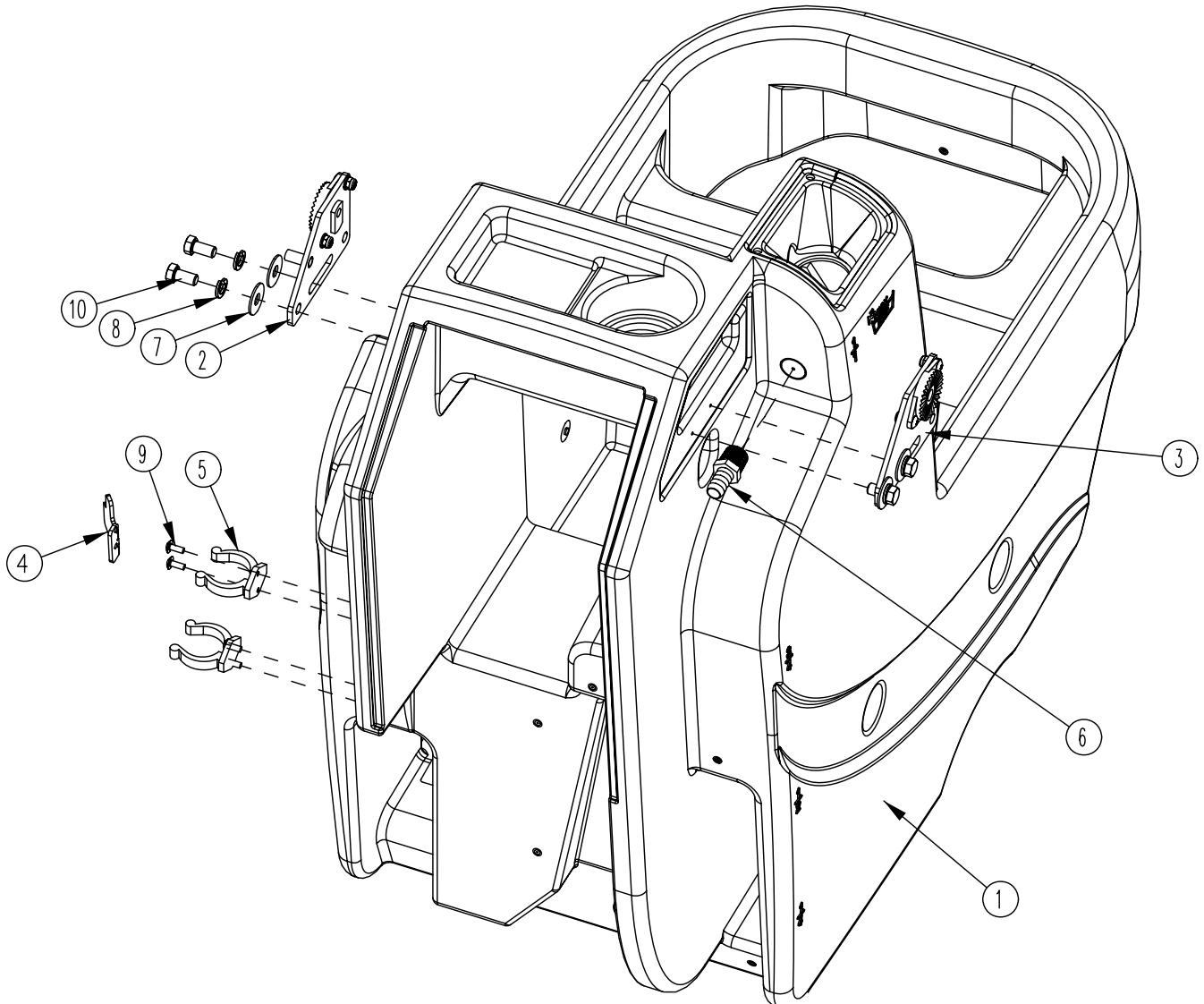
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172013	1	SOL TANK ASSY, E1720
2	172014	1	REC TANK ASSY
3	172144	1	PANEL, FRONT 1720
4	711504	3	WSR-FLAT 1/4 ID SS
5	711543	4	WSR-HELICAL #10
6	712041	1	BLT- SHLDR 1/4-20 X .44 X .37
7	712312	4	WSR-FLAT .187 X 1.25
8	712565	2	SCR-MC 1/4-20X.63 SS TR HD
9	712757	1	WSR - HELICAL #10 SS
10	712758	2	WSR-HELICAL 1/4 SS
11	712812	4	SCR-MC 10-24 X .62 PPH ST PL
12	712822	1	SCR-MC TR HD 10-24 X .50 SS



BILL OF MATERIAL - 172002 / 172002-1			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	70-516-16	2	BLT-CAR 5/16-18 X 1.00
2	172020	1	MAIN FRAME WMNT, ES1720
3	172024	2	WHEEL BRACKET, ES1720
4	172025	1	DECK LIFT ASSY
5	172030	1	BAR, UPPER DECK LIFT W/ BUSH
6	172035	1	WHEEL ROD, ES1720
7	172038	4	BEARING BLOCK
8	172039	1	BEARING BLOCK PLATE
9	172064	1	SOLUTION VALVE ASSY
10	172110	1	DECK SWITCH ASSY
11	172167	2	CASTER, 3-1/2 POLYURETHANE
12	172130	2	WHEEL 8 X 2.0 X .5 BORE, E17
12A	172265	2	WHEEL, 8 X 2 X .5, 75A, E20
13	260041	2	OILITE FLANGE BUSHING
14	711374	3	NUT-NYLOC 5/16-18
15	711504	12	WSR-FLAT 1/4 ID SS
16	711592	2	WSR-FLAT .50 X .9 X .075 NYL
17	711809	1	COTTER PIN, 1/8 X 1.0
18	712081	1	SHOULDER BLT 5/16-18 X 3/8 X .75
19	712140	4	WSR-HELICAL 5/16 SS
20	712301	3	WSR-FLAT .37 X .87 X .06
21	712562	12	BOLT-HH 1/4-20X3/4 SS
22	712575	4	BLT-HH 5/16-18 X .75 SS
23	712758	14	WSR-HELICAL 1/4 SS
24	712760	4	WSR-FLAT .56X1.06X.04 SS
25	712761	2	WSR-FLAT .28 X 1.25 X .059SS
26	712772	6	WSR-FLAT .344 x .75 x .06 SS
27	713007	4	BLT-HH 1/4-20 X 2 #5
28	809444	1	CLIP-CORD

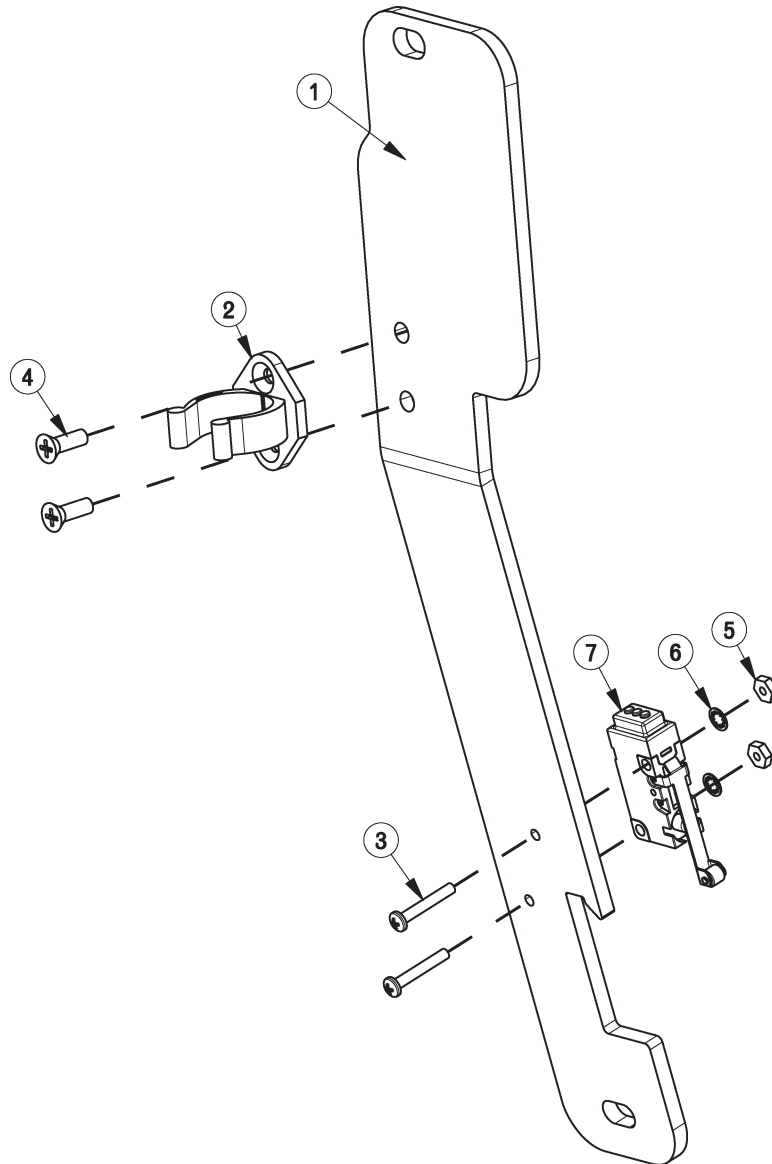


BILL OF MATERIAL - 172064			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172063	1	BKT, SOL VALVE MOUNT
2	172158	1	HOSE, 1/2"ID X 7.5" NYLOBRAID
3	320265	1	FITTING DUBL 3/8HBx3/8MPT
4	383347	1	CRIMP CLAMP 1/2 HOSE SS 185R
5	711512	2	WSR-FLAT .75X1.37X.08
6	711513	1	WSR-FLAT .69 X 1.06 X .03 SS
7	809415	1	VALVE, 3/8 FPT, 45 OPEN/CLOSE
8	827008	1	FITTING, 3/8 MPT 1/2 HOSE

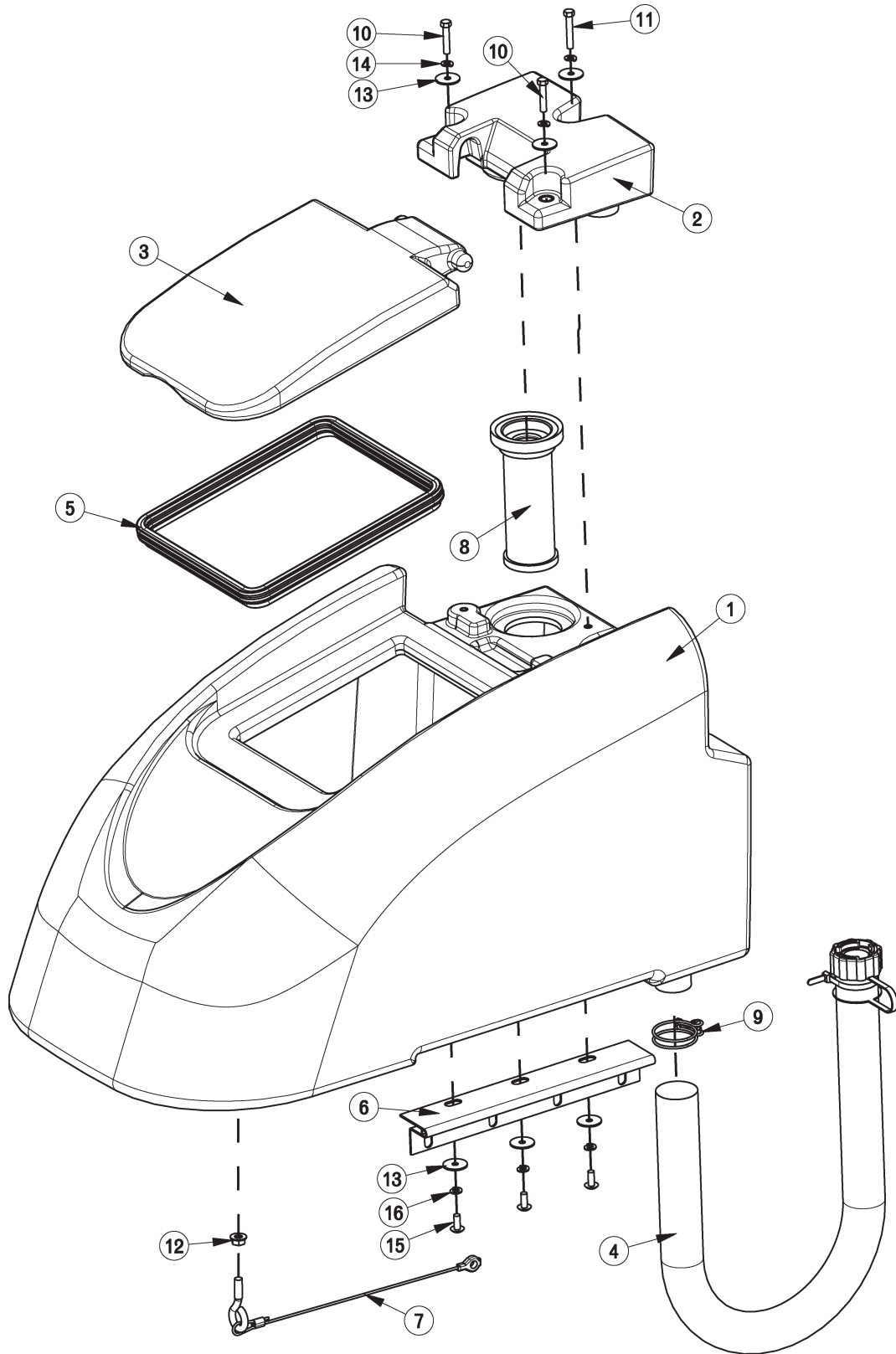


BILL OF MATERIAL - 172013-120/230

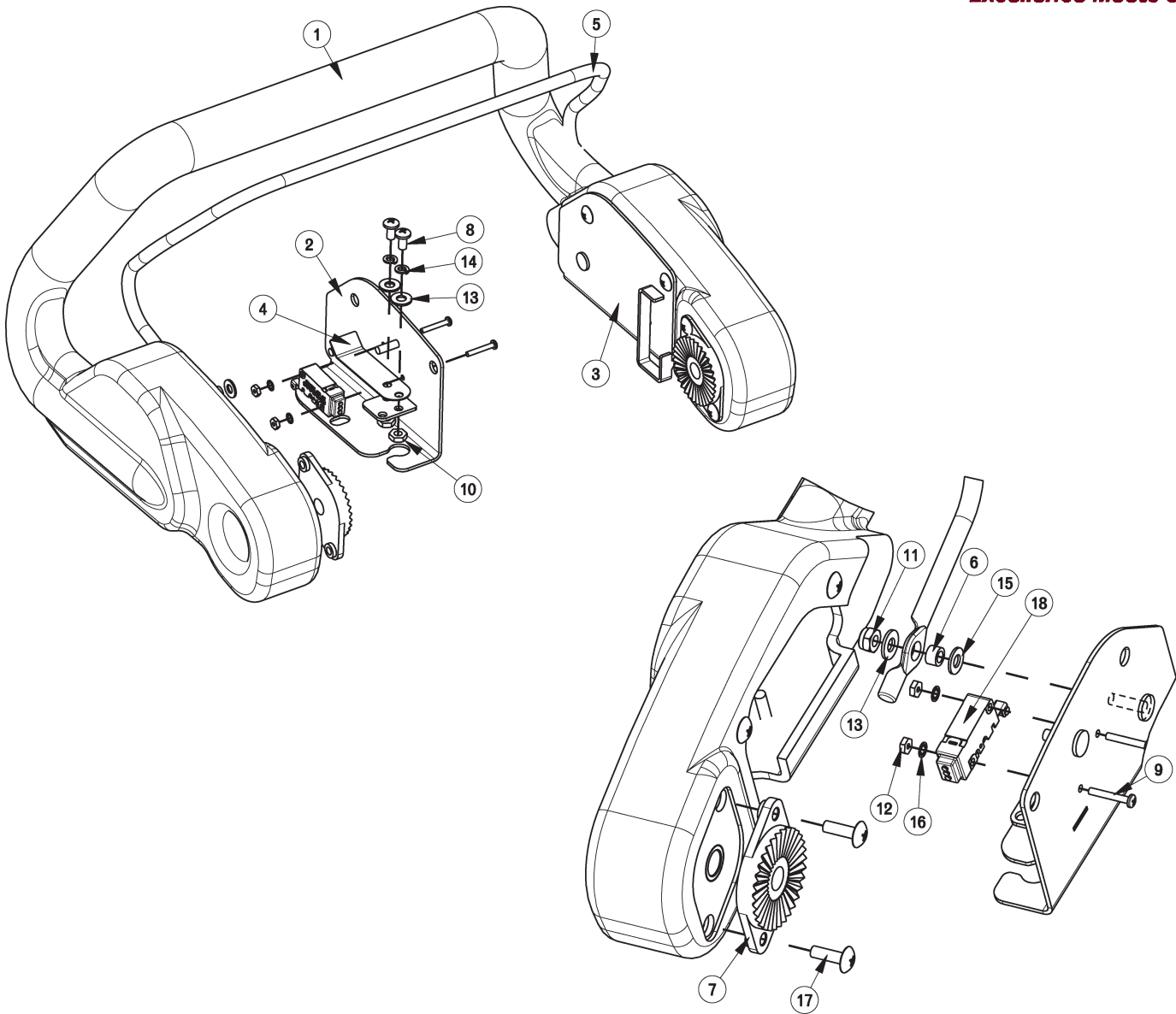
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172003	1	SOLUTION TANK, ES1720
2	172080	1	HANDLE MOUNT ASSY, LEFT
3	172082	1	HANDLE MOUNT ASSY, RIGHT
4CE	172341	1	HOOK, DRAIN HOSE WITH TWIST VALVE
5	260579	2/ 1CE	TOOL CLIP, 1.5" HOSE
6	342438	1	FITTING, 1/2 MPT 1/2 HB BRASS
7	711507	4	WSR-FLAT .37 X1.12 X.06
8	711546	4	WSR-HELICAL 3/8
9	712822	4	SCR-MC TR HD 10-24 X.50 SS
10	713041	4	BLT-HH 3/8-16 X3/4 #5



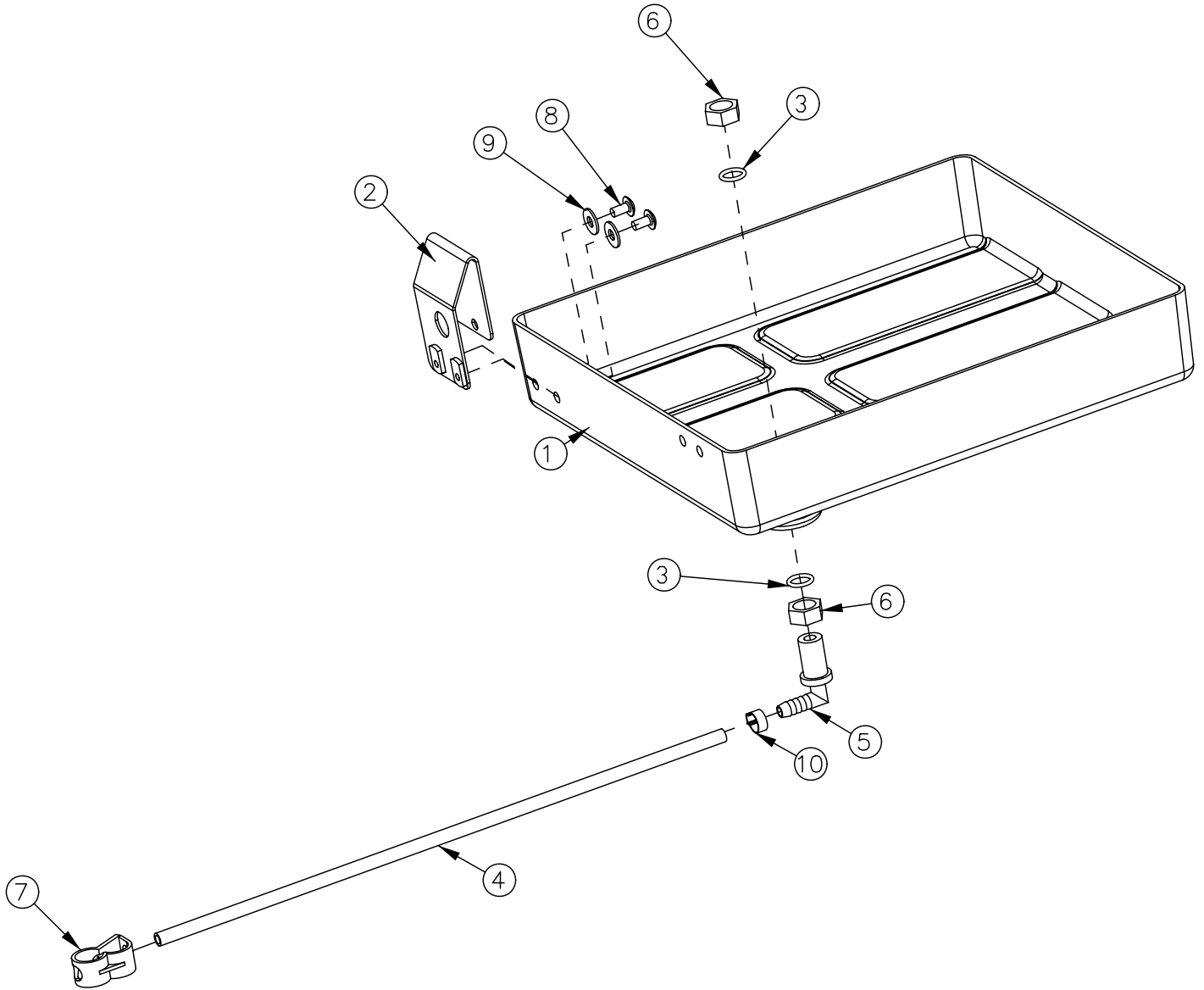
BILL OF MATERIAL - 172157			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172036	1	BKT, PEDAL STOP
2	172065	1	CLIP, FOR 1/2" ID HOSE
3	710493	2	SCR-MC 4-40 X .75 PAN HD
4	710530	2	SCR-MC FL HD 8-32 X .50 BRS
5	711428	2	NUT-HEX 4-40
6	712326	2	WSR-INT LOCK #4
7	747603-2	1	SWITCH ASY, MICRO ROLLER W/PACK/CONDUIT



BILL OF MATERIAL - 172014-120/230			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172004	1	ES1720 RECOVERY TANK
2	172005	1	ES1720 VACUUM MANIFOLD
3	172007	1	ES1720 LID
4	172011	1	HOSE, PINCH-OFF W/ CAP, 36"
4CE	97090096	1	DRAIN HOSE ASSY, RECOVERY TANK
5	172017	1	GASKET, LID
6	172049	1	HINGE, RECOVERY TANK
7	172067	1	REC TANK CABLE ASSY 11.625
8	172132	1	SCREENED FLOAT
9	172329	1	CLAMP-HOSE 1.56" 102122 MURRAY
10	711210	2	BLT-HH 1/4-20 X 1.25 STPL
11	711212	1	BLT-HH 1/4-20 X 1.50 STPL
12	711379	1	NUT, FLANGED WIZZ 5/16-18
13	711519	6	WSR- FLAT .25 X 1.01 X .06
14	711544	3	WSR-HELICAL 1/4
15	712565	3	SCR-MC 1/4-20X.63 SS TR HD
16	712758	3	WSR-HELICAL 1/4 SS

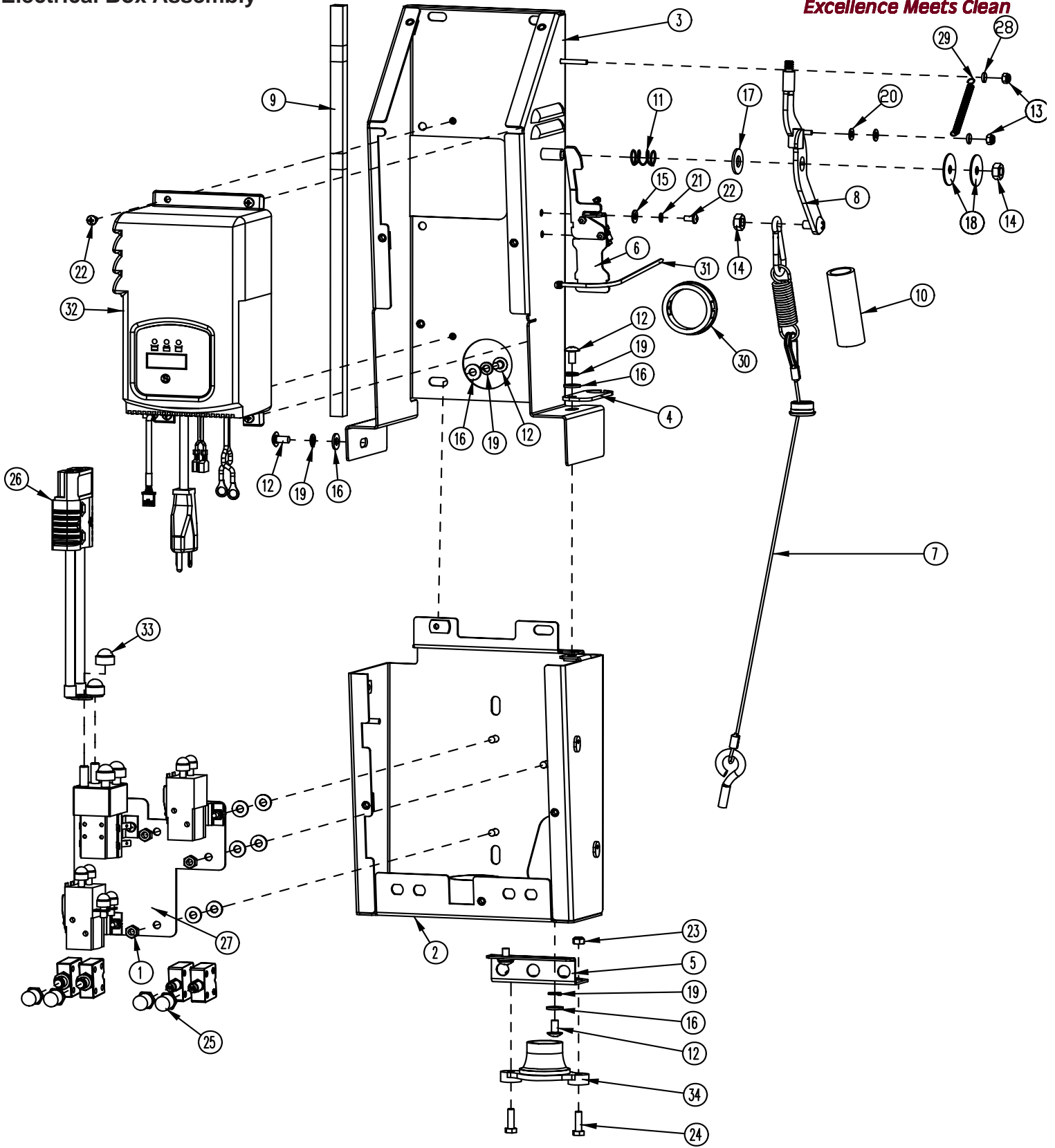


BILL OF MATERIAL - 172016			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172006	1	ES1720 HANDLE
2	172053	1	BAIL PLATE WMT RH
3	172054	1	BAIL PLATE WMT LH
4	172057	2	ES1720 LEAF SPRING
5	172059	1	ES1720 BAIL, HANDLE
6	172074	2	SPACER, 5/16OD X 17GA, ALUM
7	270143	2	HANDLE PIVOT JAW
8	710353	4	SCR-MC RD HD 10-32 X .37 STL
9	710493	2	SCR-MC 4-40 X .75 PAN HD
10	711310	4	NUT, HEX 10-32 ST PL
11	711350	2	NUT-NYLOC 10-32
12	711428	2	NUT-HEX 4-40
13	711503	6	WSR, FLAT#10
14	711543	4	WSR-HELICAL #10
15	712320	2	WSR-NYLON .22 X .45 X .04
16	712326	2	WSR-INT LOCK #4
17	712830	10	SCR-MC 10-24 X .62 STLZ TR HD
18	747603-1	1	SWITCH ASY, MICRO ROLLER W/PACK/CONDUIT
19	747632	1	CABLE ASY, 5 COND 18G CONSOLE

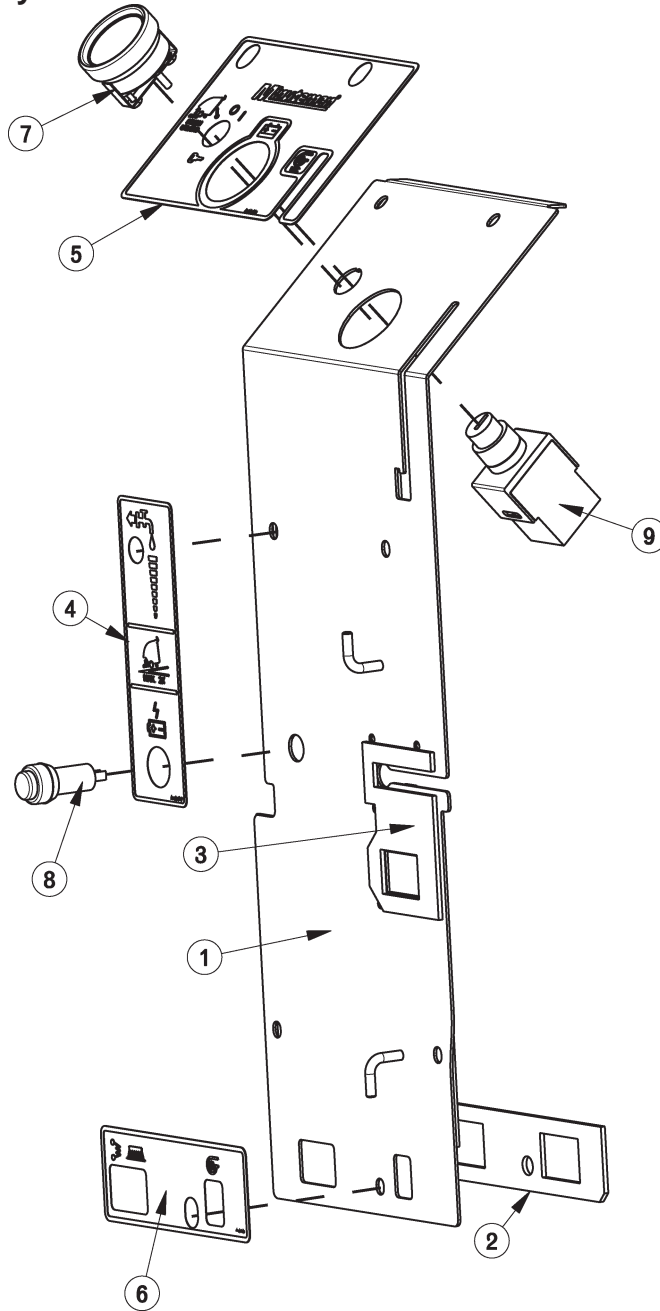


BILL OF MATERIAL - 172012			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172116	1	ES1720 BATTERY BOX
2	172213	1	BKT, SPACER FOR BATTERIES
3	210414	2	O RING 2-113
4	260224	1	18" HOSE
5	320271	1	NOZZLE BODY-ELBOW
6	320272	2	NOZZLE BODY LOCKNUT
7	320273	1	HOSE SHUT-OFF CLAMP
8	710178	2	SCR-MC 1/4-20 X .50 TRUSS STPL
9	711575	2	WSR-FLT .31x.75x.06ST
10	828490	1	CRIMP CLAMP 140R

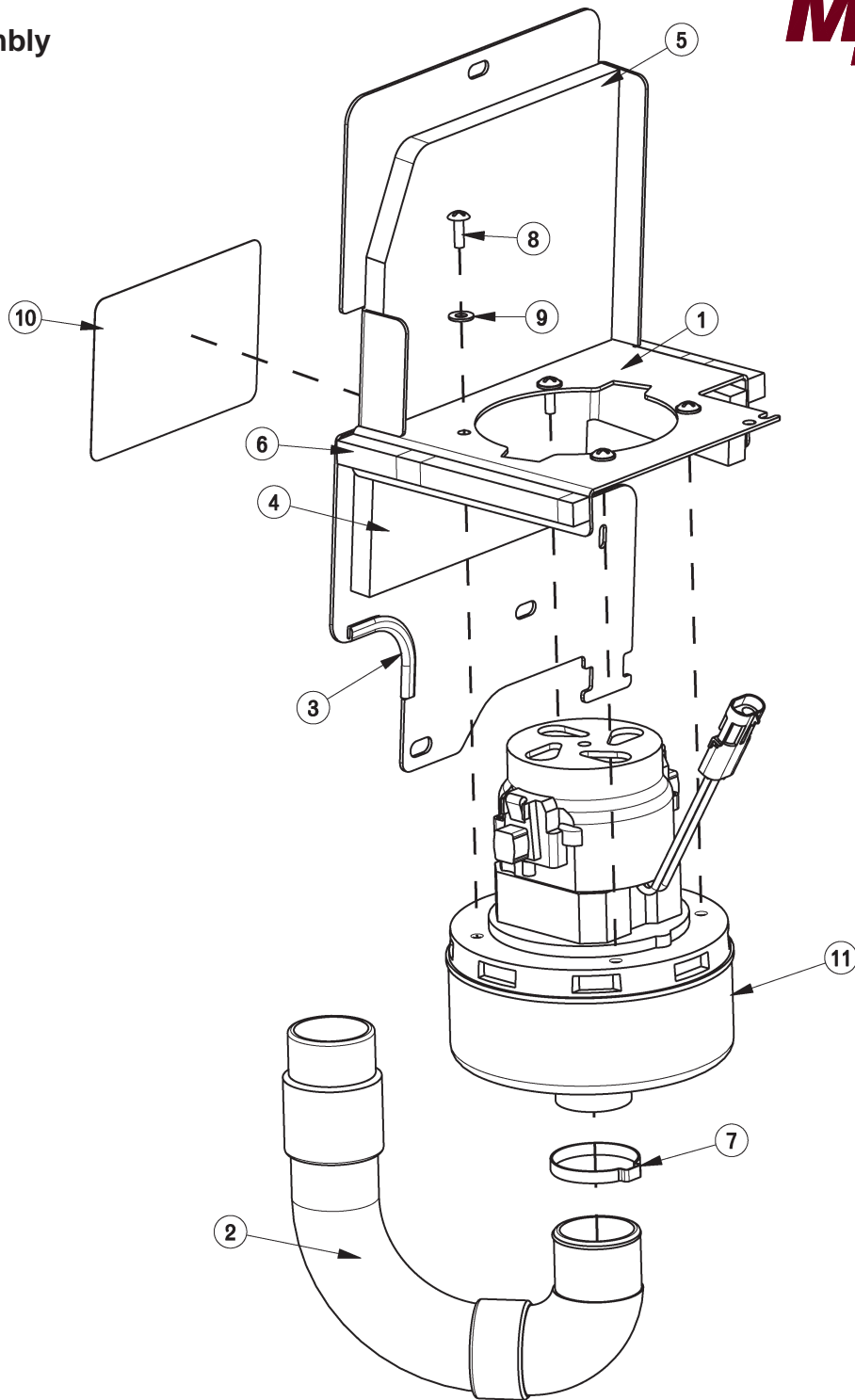
Electrical Box Assembly



BILL OF MATERIAL - 172070-120/230			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	369-416	3	NUT-HEX 1/4-20 NYLOC SERATED
2	000719	1	PACER-ISL 90
3	172077	1	ELEC BOX-BOT HALF WMT
4	172088	1	ELEC BOX-TOP HALF WMT
5	172107	1	BKT, UPPER BUSHING MOUNT
6	172128	1	BKT, LOWER BUSHING MOUNT
7	172141	1	VAC SWITCH ASSY
8	172149	1	CABLE ASSY, SQUEEGEE LIFT
9	172152	1	VAC LEVER WMT
10	172188_	1	FOAM TAPE, 1/2" SQ X 16.5"
11	172331	1	PIPE, 3/4 X 3.0 SCHD 40 PVC
12	670093	1	SPRING, COMPRESSION
13	710178	5	SCR-MC 1/4-20 X .50 TRUSS STPL
14	711372	2	NUT-NYLOC 8-32 STL ZINC
15	711383	2	NUT-HEX CLR LOC 5/16-18
16	711503	2	WSR, FLAT#10
17	711505	11	1/4 FLAT WASHER, STEEL
18	711508	1	WSR-FLAT .44X 1.0X.08
19	711516	2	WSR- FLAT .31 X 1.25 X .05
20	711544	5	WSR-HELICAL 1/4
21	712320	2	WSR-NYLON .22 X .45 X .04
22	712757	2	WSR - HELICAL #10 SS
23	712810	6	SCR-MC 10-24 X .37 ST PL
24	717018	2	NUT-NYLOC M6 X 1.0
25	717022	2	BOLT-HH M6X1.0 X 20
26	742748	4	CIRCUIT BREAKER BOOT
27	747637	1	WIRE ASY, MACHINE-BATTERY E1720
28	747670	1	ELEC PANEL ASSY, E1720TD
29	760134	2	MOUNT RING
30	762084	1	SPRING-EXT .25OD X 2" F.L. MUSIC
31	762400	1	HEYCO BUSHING 2.00"
32	828062	1	CABLE TIE LARGE
33	957745	1	CHARGER,24VDC 12A ON-BOARD 120VAC
33A	957753	1	CHARGER,24VDC 12A ON-BOARD 230VAC
34	15592033	2	CAP, SAFETY NUT COVER M8
35	90508391	1	BUSHING, CABLE GUIDE, HAKO

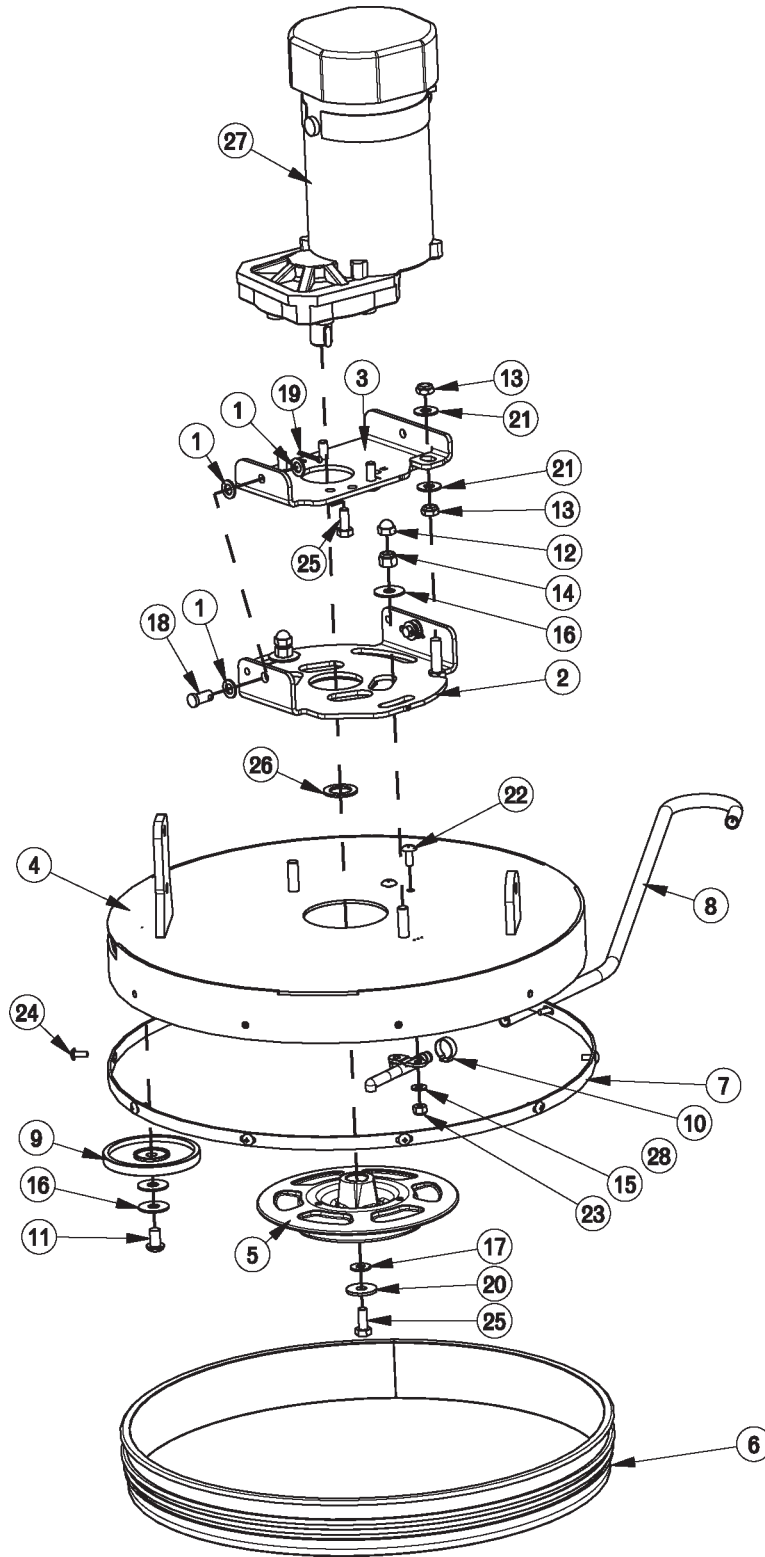


BILL OF MATERIAL - 172073			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172181	1	ELEC BOX, COVER, WMT
2	172193	1	GASKET, CB OUTLINE
3	172194	1	GASKET, CHARGER CORD PLATE
4	715672	1	DECAL, 1720 BD ELEC BOX
5	715673	1	DECAL, 1720 BD DASHBOARD
6	715675	1	DECAL, BD CIRC BKRS
7	740216	1	VOLT METER
8	747614	1	CHARGE STATUS INDICATOR
9	747617-1	1	KEYSWITCH ASY, KEYSWITCH + WIR

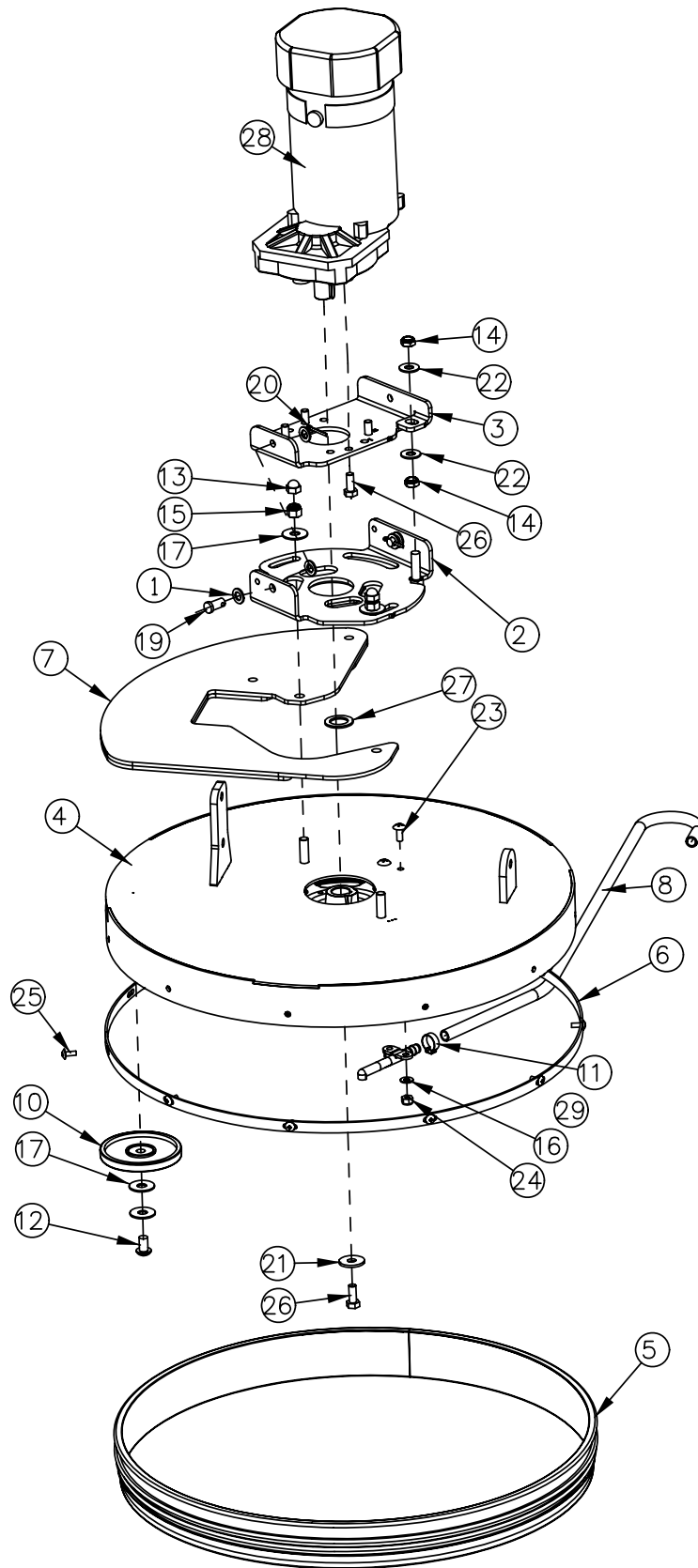


BILL OF MATERIAL - 172050

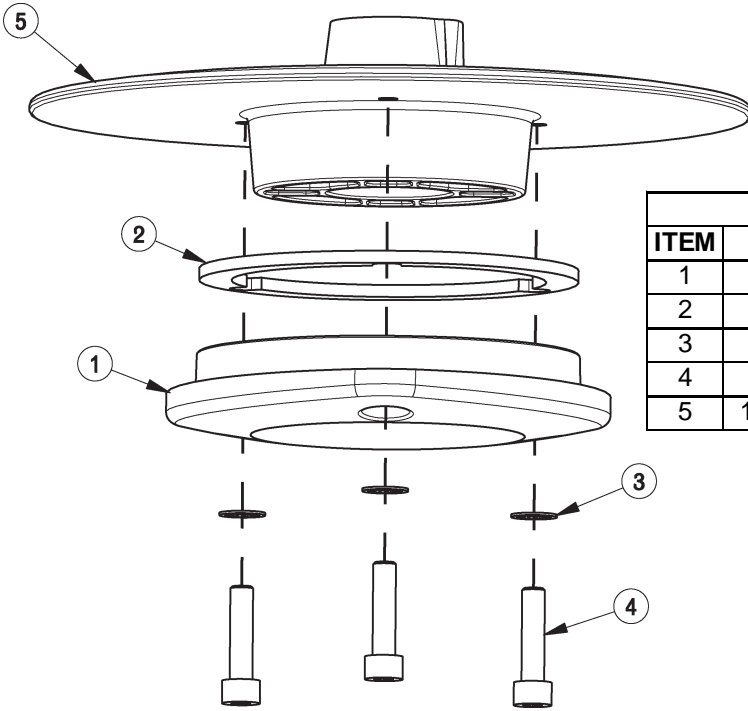
ITEM	PART NO.	REQ'D	DESCRIPTION	ITEM	PART NO.	REQ'D	DESCRIPTION
1	172045	1	VAC MOUNT WMT, ES1720	7	450095	1	CRIMP CLAMP, 1.75"
2	172048	1	HOSE, STRETCH 13"	8	711160	4	#10 X 5/8 HI-LO
3	172124	1	EDGE TRIM, .063 X 3.0, BLACK	9	711503	4	WSR, FLAT#10
4	172186	1	FOAM COVER, FRONT 1	10	715676	1	DECAL, BATT CABLE ROUTE, E1720
5	172187	1	FOAM COVER, FRONT 2	11	747607-1	1	VAC MOTOR ASY, E1720
6	172188	2	FOAM TAPE, 1/2" SQ X 16.5"				



BILL OF MATERIAL - 172090			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	81-166-A	6	SPECIAL WASHER
2	172040	1	DECK ANGLE ADJUST WMT
3	172044	1	PLATE, MOTOR MOUNT
4	172091	1	DECK COVER WMT 17"
5	172095	1	E20 BRUSH HUB ASSY
6	172118	1	17" DECK SKIRT
7	172119	1	RETAINER, 17" DECK SKIRT
8	172216	1	HOSE-WIRE REINF 3/8 X 29"
9	210153	1	ROLLER WHEEL
10	450076	1	CLAMP-CRIMP 185R SS
11	710985	1	SCR-SC 3/8-16 X .62 ST PL
12	711354	2	NUT-ACORN 3/8-16 ST NI
13	711375	2	NUT-NYLOC 3/8-16 X 1/2 NUT
14	711380	2	NUT-NYLOC 3/8-16 NUT
15	711504	2	WSR-FLAT 1/4 ID SS
16	711507	4	WSR-FLAT .37 X 1.12 X .06
17	711545	1	WSR-HELICAL 5/16
18	711679	2	CLEVIS PIN 3/8 X 3/4
19	711809	2	COTTER PIN, 1/8 X 1.0
20	711855	1	WSR-FLT .37X1.12X10 STL Z HARD
21	712301	2	WSR-FLAT .37 X .87 X .06
22	712565	2	SCR-MC 1/4-20X.63 SS TR HD
23	712667	2	NUT, HEX 1/4-20 NYLOC SS
24	712822	10	SCR-MC TR HD 10-24 X .50 SS
25	717024	5	BOLT-HH M8X1.25 X 20
26	717025	1	WSR-FLAT 13/16ID X 1.25 X .08
27	747600	1	MOTOR, OFFSET PM GEAR, 550W
28	90311663	1	HAKO SOL FEED NOZZLE

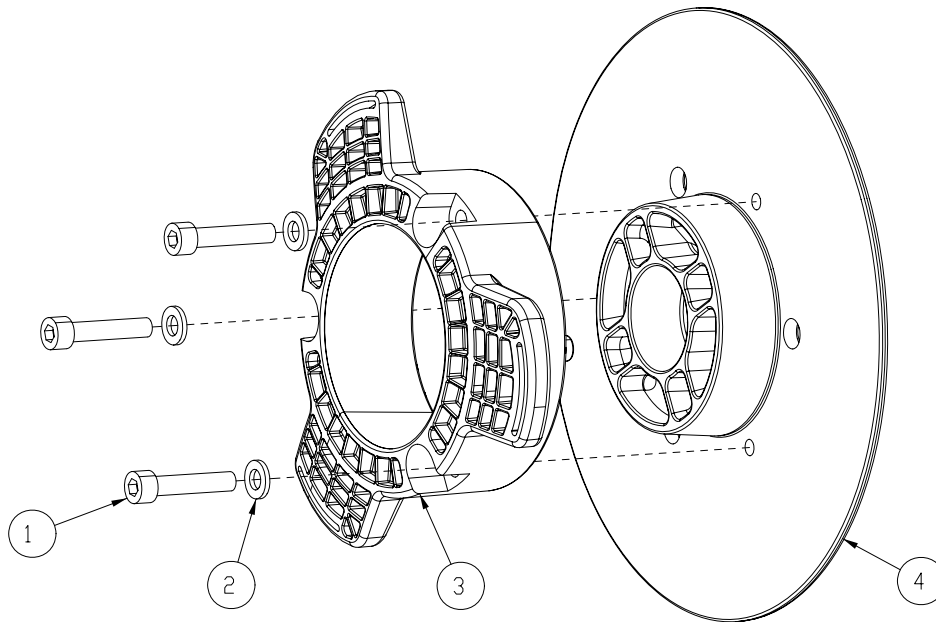


BILL OF MATERIAL - 172100			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	81-166-A	6	SPECIAL WASHER
2	172040	1	DECK ANGLE ADJUST WMT
3	172044	1	PLATE, MOTOR MOUNT
4	172101	1	DECK COVER WMT 20"
5	172121	1	20" DECK SKIRT
6	172125	1	RETAINER, 20" DECK SKIRT
7	172208	1	E20 BRUSH DECK PLATE
8	172216	1	HOSE-WIRE REINF 3/8 X 29"
9	172510	1	HUB ASSEMBLY, DISC DECK
10	210153	1	ROLLER WHEEL
11	450076	1	CLAMP-CRIMP 185R SS
12	710985	1	SCR-SC 3/8-16 X .62 ST PL
13	711354	2	NUT-ACORN 3/8-16 ST NI
14	711375	2	NUT-NYLOC 3/8-16 X 1/2 NUT
15	711380	2	NUT-NYLOC 3/8-16 NUT
16	711504	2	WSR-FLAT 1/4 ID SS
17	711507	4	WSR-FLAT .37 X 1.12 X .06
18	711545	1	WSR-HELICAL 5/16
19	711679	2	CLEVIS PIN 3/8 X 3/4
20	711809	2	COTTER PIN, 1/8 X 1.0
21	711855	1	WSR-FLT .37X1.12X.10 STL Z HARD
22	712301	2	WSR-FLAT .37 X .87 X .06
23	712565	2	SCR-MC 1/4-20X.63 SS TR HD
24	712667	2	NUT, HEX 1/4-20 NYLOC SS
25	712822	11	SCR-MC TR HD 10-24 X .50 SS
26	717024	5	BOLT-HH M8X1.25 X 20
27	717025	1	WSR-FLAT 13/16ID X 1.25 X .08
28	747600	1	MOTOR, OFFSET PM GEAR, 550W
29	90311663	1	HAKO SOL FEED NOZZLE



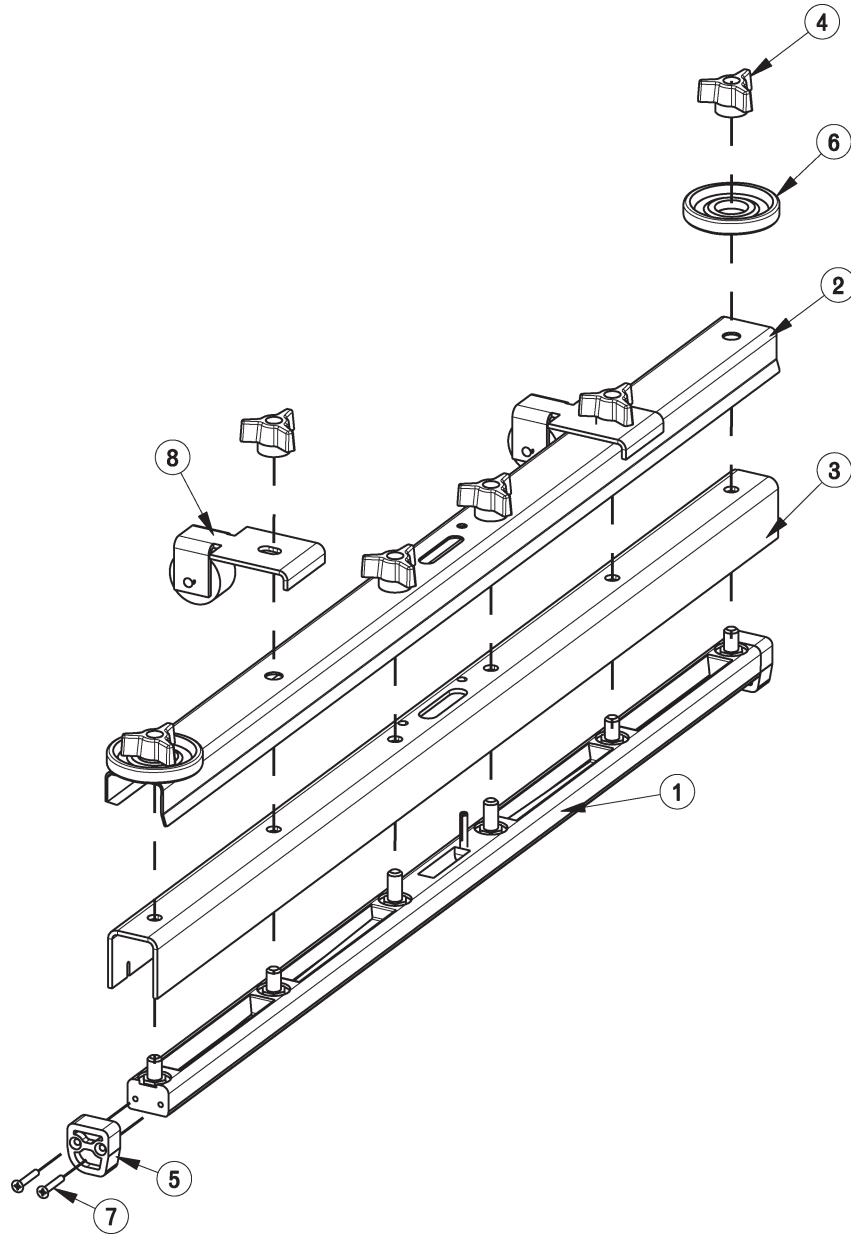
E17 Brush Hub Assembly

BILL OF MATERIAL - 172095			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172097	1	ES1720 BRUSH HUB BASE
2	172133	1	BRUSH HUB SPACER
3	711554	3	WSR-INTERNAL LOCK 1/4 ID
4	717026	3	SCR-SC SHCS M6X1.0 X 25 STL Z
5	172096MCH	1	BASE, DRIVE HUB WITH KEYWAY



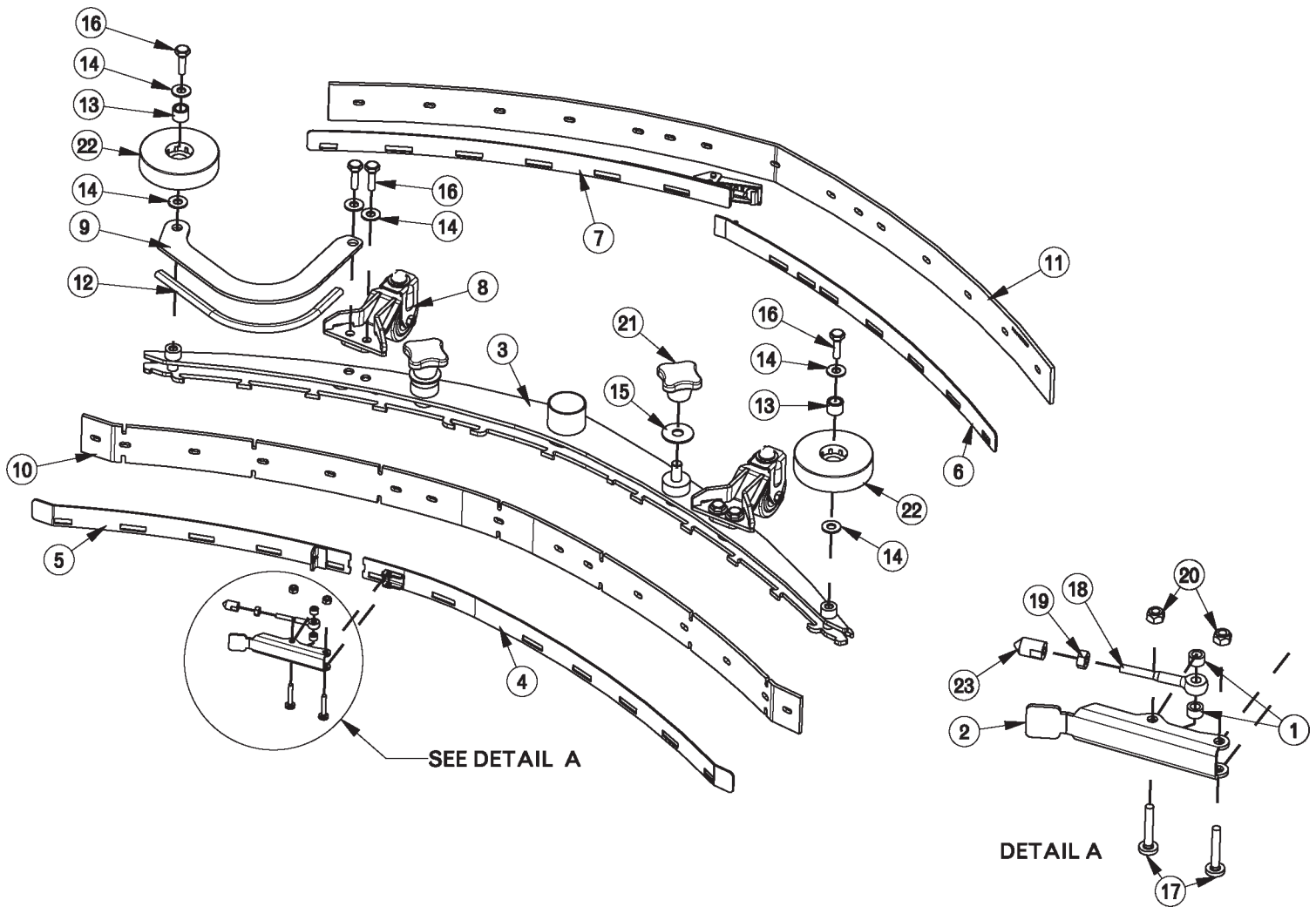
New Style E20 Brush Hub Assembly

BILL OF MATERIAL - 172510			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	11127000	3	SCR-SHCS M6X30 SS, ISO4762
2	12310256	3	WSR-FLT 6.4X12X1.6, SS DIN125
3	90541814	1	DRIVE HUB, PLASTIC 3 LOBE
4	172096MCH	1	BASE, DRIVE HUB WITH KEYWAY



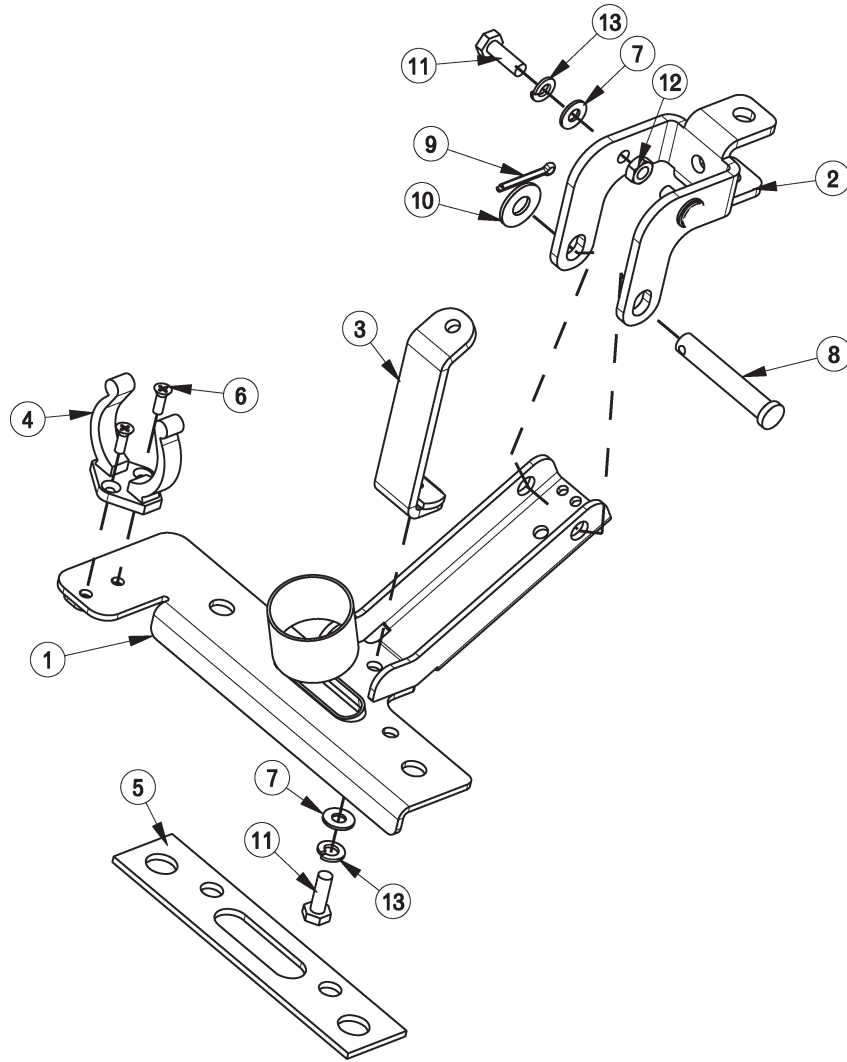
BILL OF MATERIAL 470030			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	210023	1	SQUEEGEE CASTING ASY
2	210024	1	SQUEEGEE MOUNT BKT
3	210065	1	SQUEEGEE BLADE 200 GUM
4	430074	6	ADJUSTING NUT 17B/E
5	430076	2	NYLON SQUEEGEE INSERT
6	430085	2	SQUEEGEE BUMPER WHEEL
7	712517	4	SCR-MC 8-32 X 1" ST PL - PH
8	831400	2	WHEEL ASSY

E20 Rear Squeegee Assembly (Curved)

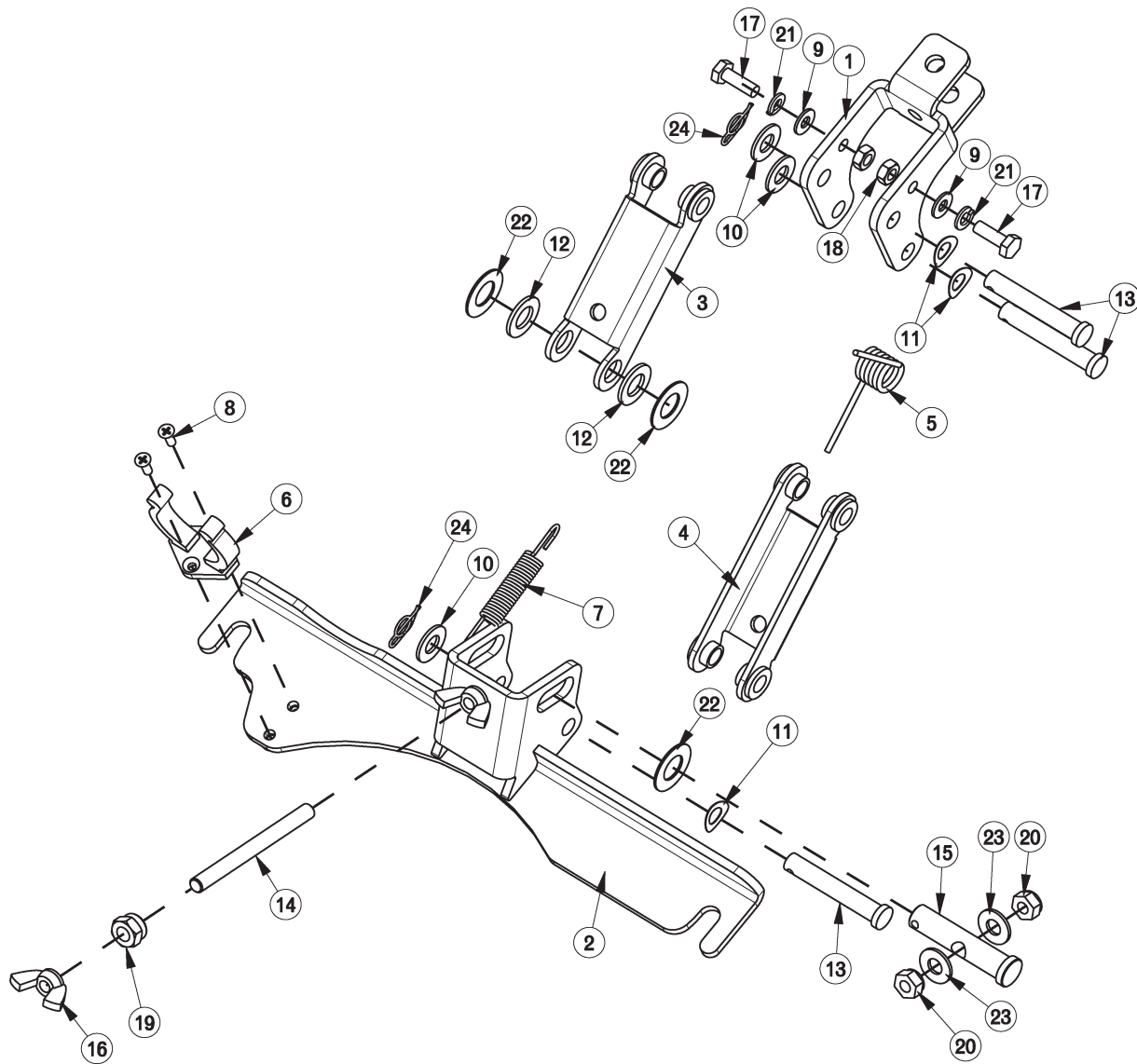


BILL OF MATERIAL - 172270

ITEM	PART NO.	REQ'D	DESCRIPTION	ITEM	PART NO.	REQ'D	DESCRIPTION
1	172074	2	SPACER, 5/16OD X 17GA, ALUM	12	172274	1	EDGE TRIM 5/16 X 10" BLACK
2	172234	1	LEVER, 90535758	13	430322	2	BUSHING .435 X .625 X .50
3	172235	1	SQUEEGEE WMT, 34" (860)	14	712772	8	WSR-FLAT .344 x .75 x .06 SS
4	172240	1	STRAP WMT, FRONT LEFT	15	712773	2	WSR FLAT .438 X 1.25 X .07 SS
5	172241	1	STRAP WMT, FRONT	16	11039567	6	BLT-HH M8 X 25 SS DIN933
6	172245	1	STRAP WMT, REAR	17	11175494	2	SCR-MC M5 X 25 SS DIN7985
7	172246	1	STRAP WMT, REAR	18	11518313	1	BLT-EYE M5 X 40 SS
8	172250	2	SQUEEGEE CASTER ASSY	19	12022430	1	NUT-HEX M5 SS DIN934
9	172271	1	BUMPER, 34" SQG	20	12040283	2	NUT-HEX M5 NYLOC SS DIN985
10	172272	1	FRNT SQG BLADE 34", 1/8 PU	21	17133026	2	KNOB, M10 STAR HANDLE
10A	172282	1	SQUEEGEE, FRONT BLADE 34", 1/8 LINATEX	22	90336637	2	WHEEL, 3.15OD
11	172273	1	REAR SQG BLADE 34", 1/8 PU	23	90513631	1	PIN, THD 90513631
11A	172283	1	SQUEEGEE, REAR BLADE 34", 1/8 LINATEX				



BILL OF MATERIAL - 172170			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172171	1	SQUEEGEE MECH WMT
2	172173	1	BKT, MAIN SQUEEGEE HINGE
3	172175	1	BKT, STANDOFF
4	260579	1	TOOL CLIP, 1.5" HOSE
5	430073	1	GASKET DIE CUT PS BACK
6	710530	2	SCR-MC FL HD 8-32 X .50 BRS
7	711504	3	WSR-FLAT 1/4 ID SS
8	711678	1	CLEVIS PIN 3/8 X 2-1/4
9	711809	1	COTTER PIN, 1/8 X 1.0
10	712301	1	WSR-FLAT .37 X .87 X .06
11	712562	3	BOLT-HH 1/4-20X3/4 SS
12	712665	2	NUT-HEX 1/4-20 SS
13	712758	3	WSR-HELICAL 1/4 SS

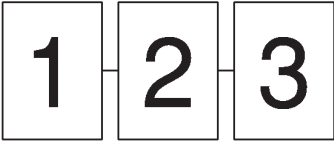


BILL OF MATERIAL - 172150

ITEM	PART NO.	REQ'D	DESCRIPTION	ITEM	PART NO.	REQ'D	DESCRIPTION
1	172134	1	BKT, MAIN SQUEEGEE HINGE	13	711678	3	CLEVIS PIN 3/8 X 2-1/4
2	172155	1	SQUEEGEE MOUNT WMT	14	712147	1	ROD-THD 5/16-18 X 3.5 SS
3	172196	1	SQ TOP LINK W/ BUSHING	15	712148	1	CLEVIS PIN, 1/2 x 2.25 W/ HOLE
4	172197	1	SQ BOT LINK W/ BUSH	16	712157	2	NUT- WING 5/16-18 SS
5	172261	1	TORSION SPRING	17	712562	2	BOLT-HH 1/4-20X3/4 SS
6	260579	1	TOOL CLIP, 1.5" HOSE	18	712665	2	NUT-HEX 1/4-20 SS
7	430051	1	RETURN SPRING-3.00"	19	712680	1	NUT-HEX 5/16-18 SS
8	710530	2	SCR-MC FL HD 8-32 X .50 BRS	20	712683	2	NUT, HEX 5/16-18 NYLOC SS
9	711504	2	WSR-FLAT 1/4 ID SS	21	712758	2	WSR-HELICAL 1/4 SS
10	711515	3	WSR-FLAT .406 X .812 X .0625	22	712760	3	WSR-FLAT .56X1.06X.04 SS
11	711523	3	WSR-WAVE .37X .68 X .08	23	712772	2	WSR-FLAT .344 x .75 x .06 SS
12	711592	2	WSR-FLAT .50 X .9 X .075 NYL	24	3400125	2	PIN-COTTER 3/8 RUE RING

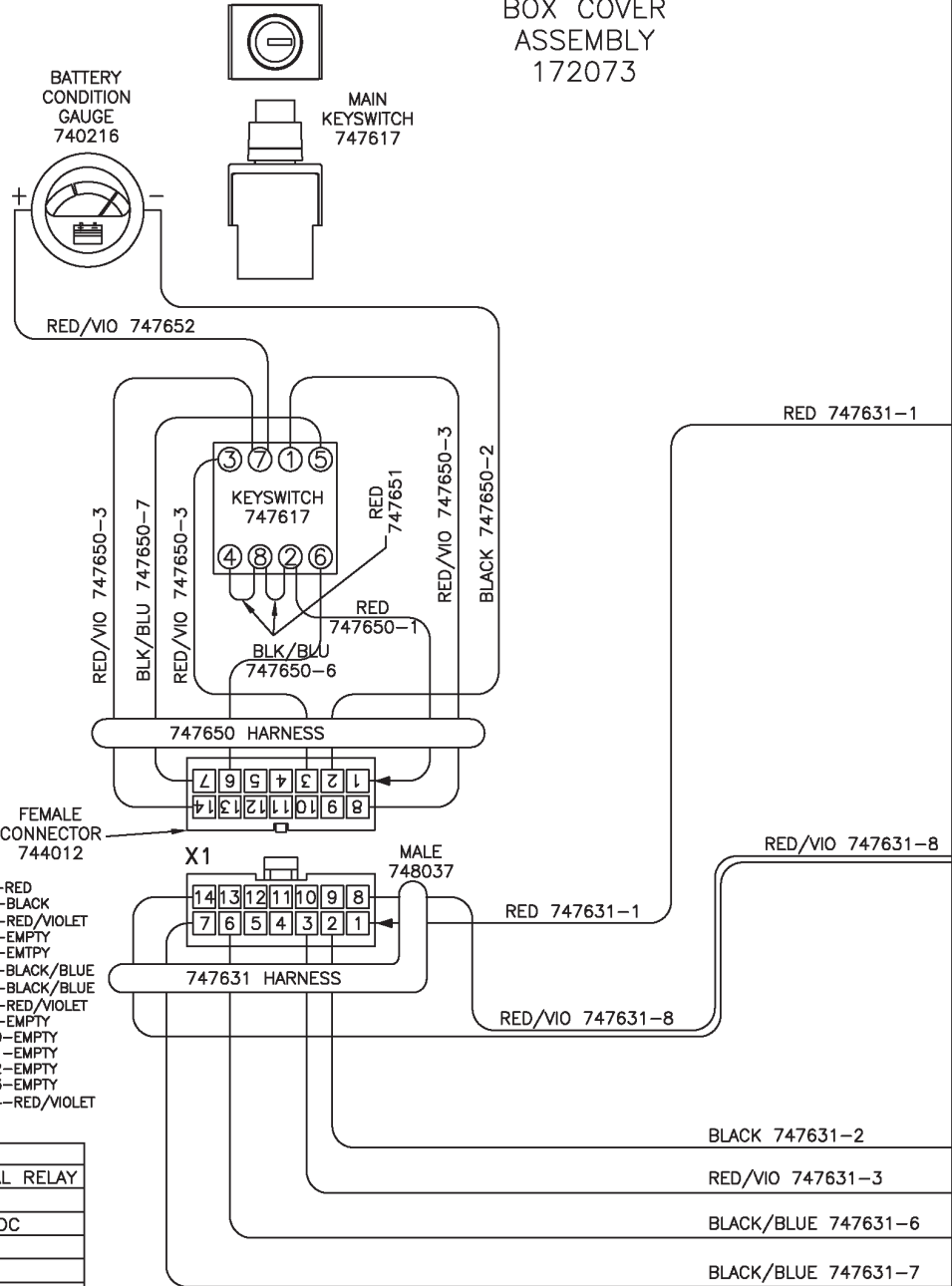
1 Wiring Diagrams

PAGE LAYOUT



PAGES GO TOGETHER AS SHOWN TO SEE THE ENTIRE SCHEMATIC AS ONE.

ELECTRICAL BOX COVER ASSEMBLY 172073



CONNECTOR NUMBERS AND NAMES

CONNECTOR #	DESCRIPTION
X1	KEYSWITCH
X2	OPERATOR HANDLE SWITCH
X3	CHARGER STATUS INDICATOR
X4	VACUUM SWITCH
X5	BATTERY CONNECTOR
X6	VACUUM MOTOR
X7	BRUSH MOTOR SWITCH
X8	BRUSH UNLOAD SWITCH
X9	OPTIONAL: SOLENOID SWITCH
X10	OPERATOR HANDLE CABLE
X11	OPERATOR HANDLE CABLE
X12	-
X13	-
X14	-
X15	ACCESSORY CONNECTION
X16	ACCESSORY CONNECTION
X17	OPTIONAL (747656 GREY/RED)
X18	OPTIONAL (747657 GREY/BLACK)

- 1-RED
- 2-BLACK
- 3-RED/VIOLET
- 4-EMPTY
- 5-EMPTY
- 6-BLACK/BLUE
- 7-BLACK/BLUE
- 8-RED/VIOLET
- 9-EMPTY
- 10-EMPTY
- 11-EMPTY
- 12-EMPTY
- 13-EMPTY
- 14-RED/VIOLET

X1:MAIN KEYSWITCH ASSEMBLY: 747617-1

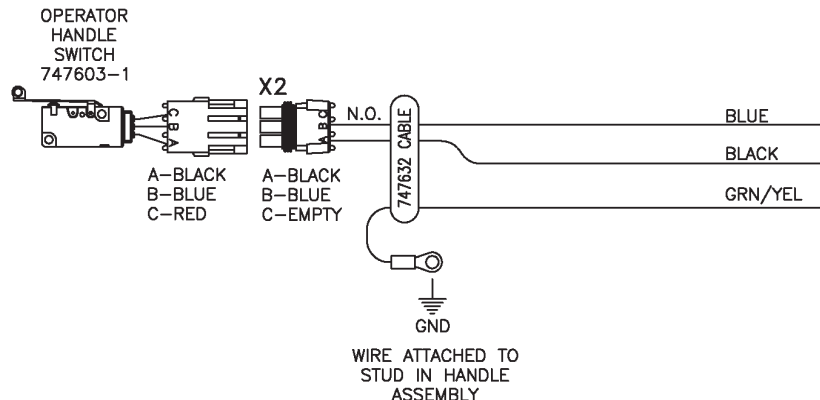
PIN #	COLOR	WHERE TO/FROM
1	RED	X13: BATTERY CHARGER INTERNAL RELAY
2	BLACK	RELAY COILS: 0V
3	RED/VIOLET	BRUSH MOTOR RELAY COIL: 24VDC
4	EMPTY	-
5	EMPTY	-
6	BLACK/BLUE	BRUSH RELAY NORMALLY CLOSED
7	BLACK/BLUE	BRUSH UNLOAD SWITCH P:B
8	RED/VIOLET	X12: MAIN RELAY COIL: 24VDC
9	EMPTY	-
10	EMPTY	-
11	EMPTY	-
12	EMPTY	-
13	EMPTY	-
14	RED/VIOLET	X12: MAIN RELAY COIL: 24VDC

BATTERY CHARGER: 957745 or 957753

	COLOR	WHERE TO/FROM
X13	RED	X13: KEYSWITCH P:1
X14	BLACK	X14: CONTROL CB 4.0A
14GA	RED	MAIN RELAY + (REAR LEFT POST)
14GA	BLACK	MAIN RELAY - (FRONT LEFT POST)

OTHER WIRE COLORS

-	RED	BATTERY 24VDC: +
-	BLACK	BATTERY 0VDC: -
-	GREEN/YELLOW	GROUND
-	BLACK/BLUE	BRUSH UNLOAD CIRCUIT
-	RED/BLACK	BRUSH UNLOAD CIRCUIT:MICRO SWITCH
-	RED/VIOLET	24VDC AFTER MAIN KEYSWITCH
X15	GREY/RED	OPTIONAL POWER 24VDC: 3A MAX
X16	GREY/BLACK	OPTIONAL POWER 0VDC: 3A MAX

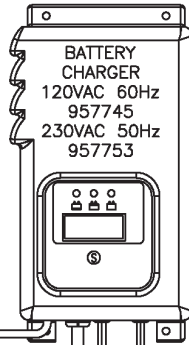


2

ELECTRICAL BOX ASSEMBLY
172070-120
172070-230

CHARGER STATUS INDICATOR
747614

X3

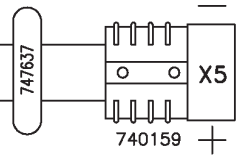


CABLE + BOARD
747614-1

TO BATTERY PACK

BLACK 747637-2

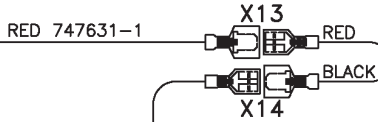
RED 747637-1



TO 120VAC 60Hz or 230VAC 50Hz

RELAY NUT COVER
MAIN RELAY M8 15592033 (4)
VACUUM RELAY M6 15592025 (2)
BRUSH MOTOR RELAY M6 155925025 (4)

*RELAY TERMINALS ARE METRIC
MAIN RELAY:M8 TORQUE TO 8-9.5Nm
VACUUM & BRUSH RELAY:M6 TORQUE TO 3.6-3.9Nm

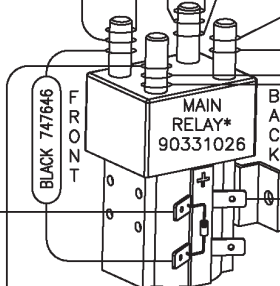


INTERNAL INHIBIT RELAY

BLACK
RED

RED 747642

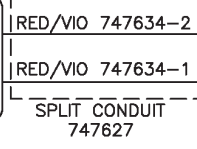
RED/VIO 747631-8



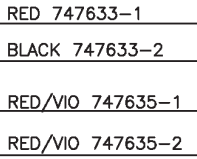
BLACK 747646

BLACK 747647

DIODE 740482



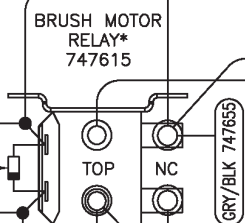
SPLIT CONDUIT 747625



BLACK 747631-2

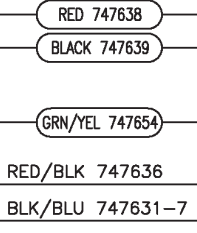
RED/VIO 747631-3

BLK/BLU 747631-6



DIODE 740482

GRY/BLK 747655



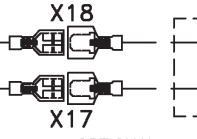
RED/VIO 747631-3

BLK/BLU 747631-7

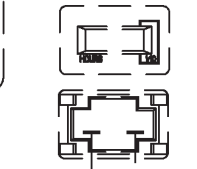
GRY/RED 747631-3

GRY/BLK 747657

GRY/RED 747656



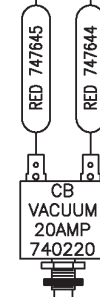
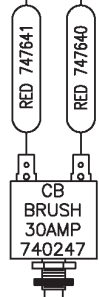
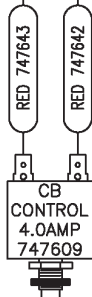
OPTIONAL HOUR METER 747624 K-E1720HM



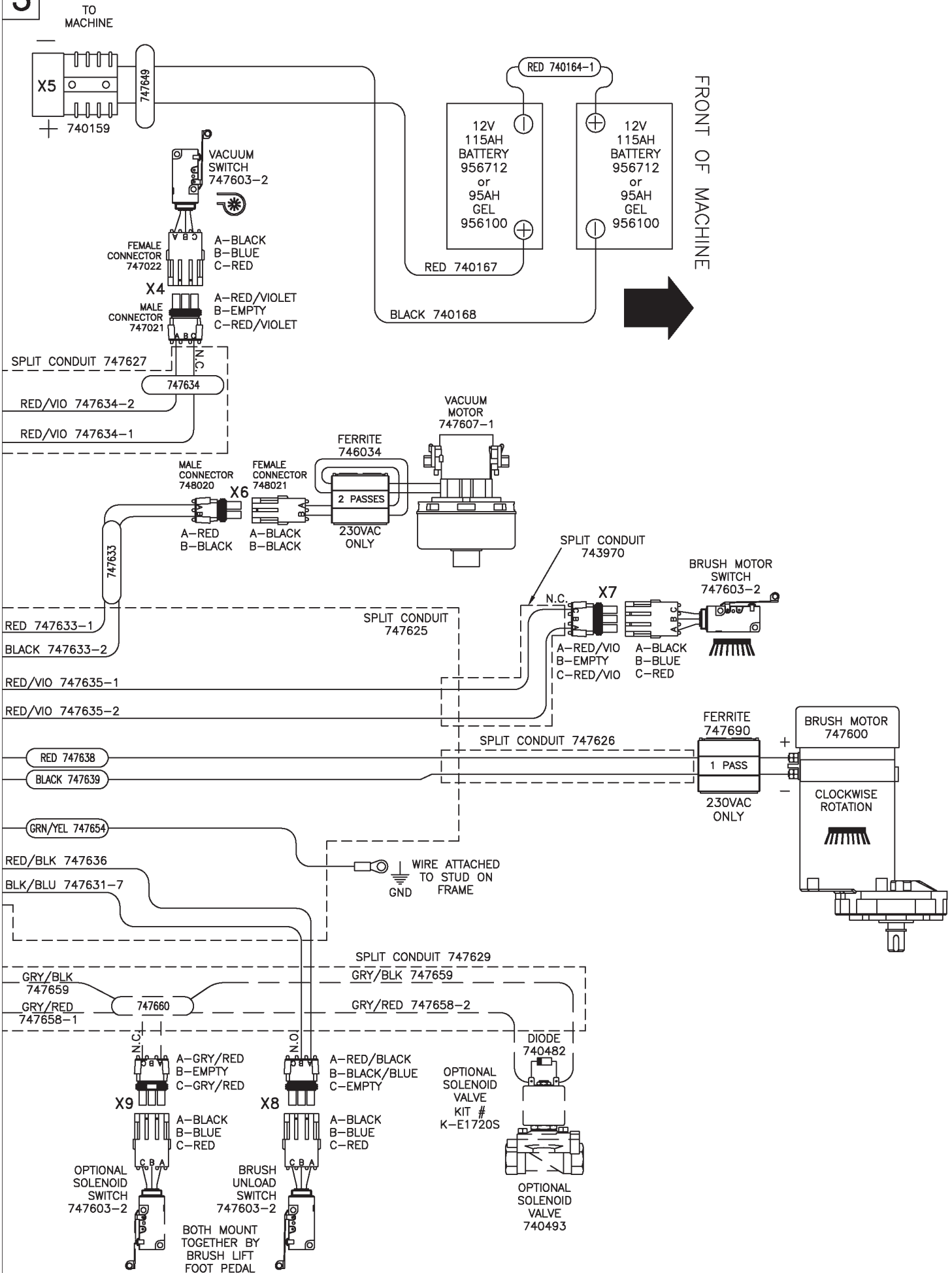
GRY/BLK 747656

WIRES ATTACHED TO STUD IN ELECTRICAL BOX
GND

ACCESSORY CONNECTION BLACK TAPED



3



Minuteman International Made Simple Commercial Limited Warranty



REVISION F
EFFECTIVE 6/1/2009

Minuteman International, Inc. warrants to the original purchaser/user that the product is free from defects in workmanship and materials under normal use. Minuteman will, at its option, repair or replace without charge, parts that fail under normal use and service when operated and maintained in accordance with the applicable operation and instruction manuals. All warranty claims must be submitted through and approved by factory authorized repair stations.

This warranty does not apply to normal wear, or to items whose life is dependent on their use and care, such as belts, cords, switches, hoses, rubber parts, electrical motor components or adjustments. Parts manufactured by Minuteman are covered by and subject to the warranties and/or guarantees of their manufacturers. Please contact Minuteman for procedures in warranty claims against these manufacturers.

Special warning to purchaser — Use of replacement filters and/or prefilters not manufactured by Minuteman or its designated licensees, will void all warranties expressed or implied. A potential health hazard exists without original equipment replacement.

All warranted items become the sole property of Minuteman or its original manufacturer, whichever the case may be.

Minuteman disclaims any implied warranty, including the warranty of merchantability and the warranty of fitness for a particular purpose. Minuteman assumes no responsibility for any special, incidental or consequential damages.

This limited warranty is applicable only in the U.S.A. and Canada, and is extended only to the original user/purchaser of this product. Customers outside the U.S.A. and Canada should contact their local distributor for export warranty policies. Minuteman is not responsible for costs or repairs performed by persons other than those specifically authorized by Minuteman. This warranty does not apply to damage from transportation, alterations by unauthorized persons, misuse or abuse of the equipment, use of non-compatible chemicals, or damage to property, or loss of income due to malfunctions of the product.

If a difficulty develops with this machine, you should contact the dealer from whom it was purchased.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state. Some states do not allow the exclusion or limitation of special, incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

Cord Electric Group: Three years parts, two years labor, ninety days travel (Not to exceed two hours)

Exceptions.....

Model	Parts	Labor	Poly	Travel
Port A Scrub	1yr	6months	10yrs	0
MPV 13	1yr	0	0	0
MPV 14 & 18	2yrs	1yr	0	0
V Series Upright Vacuums	1yr	1yr	0	0
Rapid Air Blower	1yr	1yr	10yrs	0
Explosion Proof Vacuum	1yr	1yr	0	0
X12, X12H & TRS 14	1yr	1yr	10yrs	0
E17 & E20 Electric Scrubbers	1yr	6month	10yrs	0
Pneumatic Vacuums	3yr	1yr	0	0

Description	Parts	Labor	Poly	Travel
Battery Operated Group	3yrs	2yrs	10	90 days
Sweepers	1yr	1yr	10	90 days
Internal Combustion Group	1yr	1yr	10	90 days

Not to exceed two hours

Exception: PAS 14B **1yr** **1yr** **10yr** **0**

Battery Chargers:

Replacement Parts:

Batteries:

Polyethylene Plastic Tanks:

One year replacement

Ninety days

0-3 months replacement, 4-12 months pro-rate

Tanks have 10yr warranty, no additional labor