

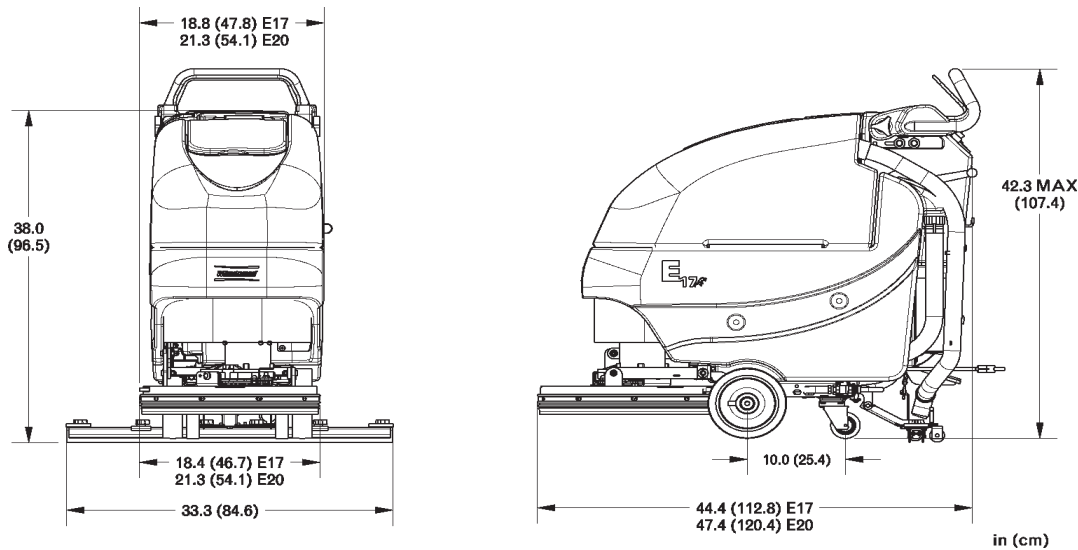
**Parts Manual**  
**E17/E20 Floor Scrubber**  
**Disc Brush Drive**

# Technical Specifications

**Model** E17/E20

**Model No.** E17BD / E17BDCE / E17BDQP / E17BDQPCE  
 E17BDQPG / E17BDQPGCE / E17BDQPG-KT  
 E20BD / E20BDCE / E20BDQP / E20BDQPCE  
 E20BDQPG / E20BDQPGCE / E20BDZ

	<b>E17</b>	<b>E20</b>
<b>Current (Max)</b>	32 amps	32 amps
<b>Battery Capacity (Lead Acid)</b>	115Ah @20 hr	115Ah @20 hr
<b>Battery Capacity (Gel)</b>	100Ah @20 hr	100Ah @20 hr
<b>Sound Level</b>	69 dBA	69 dBA
<b>Cleaning path width</b>	17 in (43 cm)	20 in (51 cm)
<b>Squeegee width</b>	33 in (84 cm)	34 in (86 cm)
<b>Theoretical productivity</b>	12,750 ft <sup>2</sup> /hr ( 1,185 m <sup>2</sup> )	15,000 ft <sup>2</sup> /hr ( 1,394 m <sup>2</sup> )
<b>Working speed</b>	1.7 mph (2.7 km per hr)	1.7 mph (2.7 km per hr)
<b>Rated voltage</b>	24 volts	24 volts
<b>Vacuum flow</b>	65 cfm (110 m <sup>3</sup> /hr)	65 cfm (110 m <sup>3</sup> /hr)
<b>Vacuum waterlift</b>	45 inches ( 112mbar)	45 inches ( 112mbar)
<b>Vacuum power</b>	.60 HP (450 W)	.60 HP (450 W)
<b>Brush type</b>	Disc	Disc
<b>Brush motor(s) power</b>	3/4 HP (560W)	3/4 HP (560W)
<b>Number of brushes</b>	1	1
<b>Brush RPM</b>	180 RPM	180 RPM
<b>Aqua-Stop equipped</b>	Coming Soon	Coming Soon
<b>Solution capacity</b>	12Gal (45 liters)	12 Gal (45 liters)
<b>Recovery capacity</b>	13 Gal (49 liters)	13 Gal (49 liters)
<b>Working Grade</b>	2%	2%
<b>Weight with batteries</b>	306 lbs (139 kg)	313 lbs (142 kg)
<b>Weight without batteries</b>	196 lbs (89 kg)	203lbs (92 kg)
<b>Dimensions (LxWxH)</b>	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

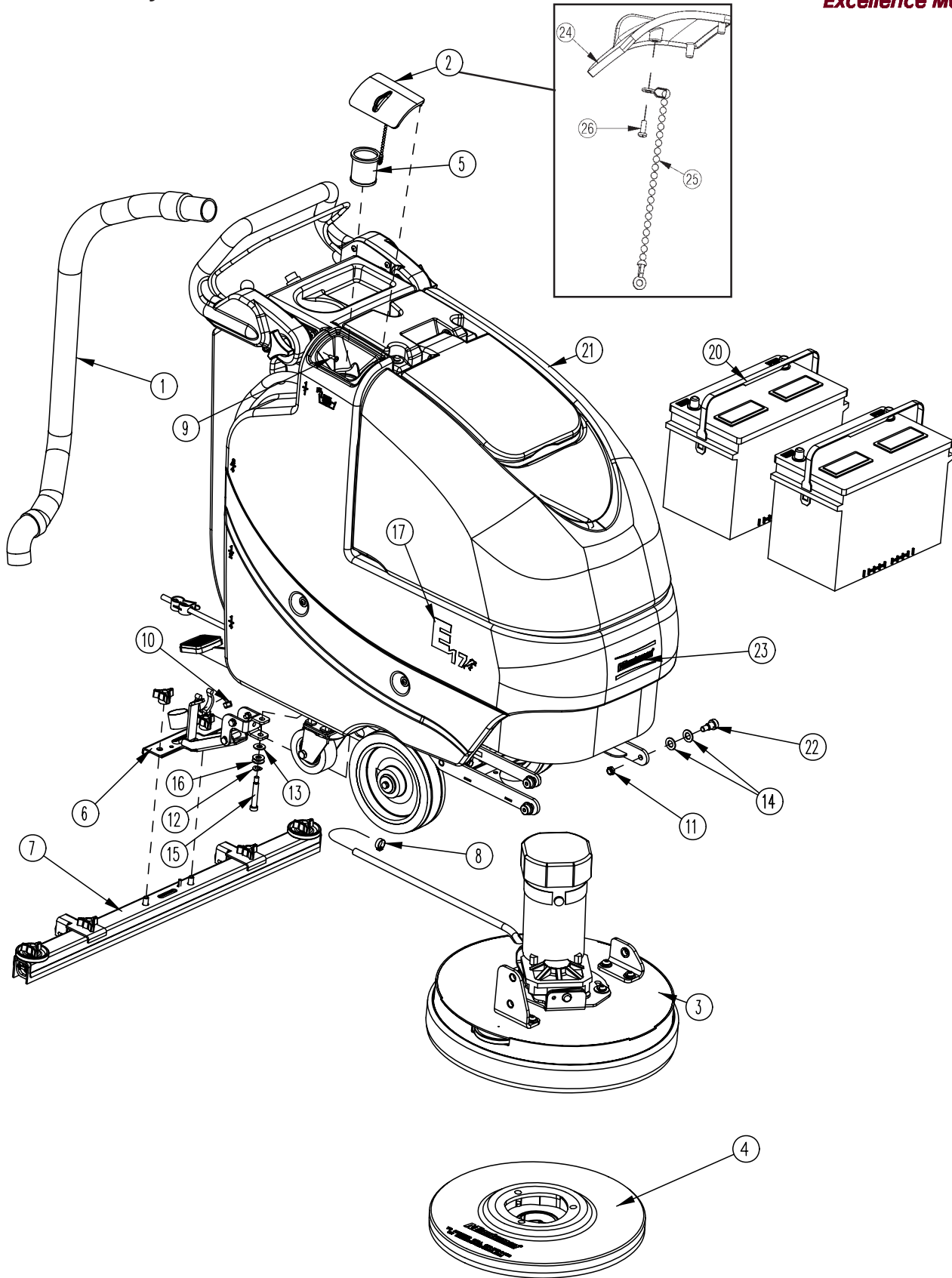
**PRINTED NAME:  
TITLE:**

**Ruediger Schroeder  
Exec. VP and COO**

Form: ECO 200 \*

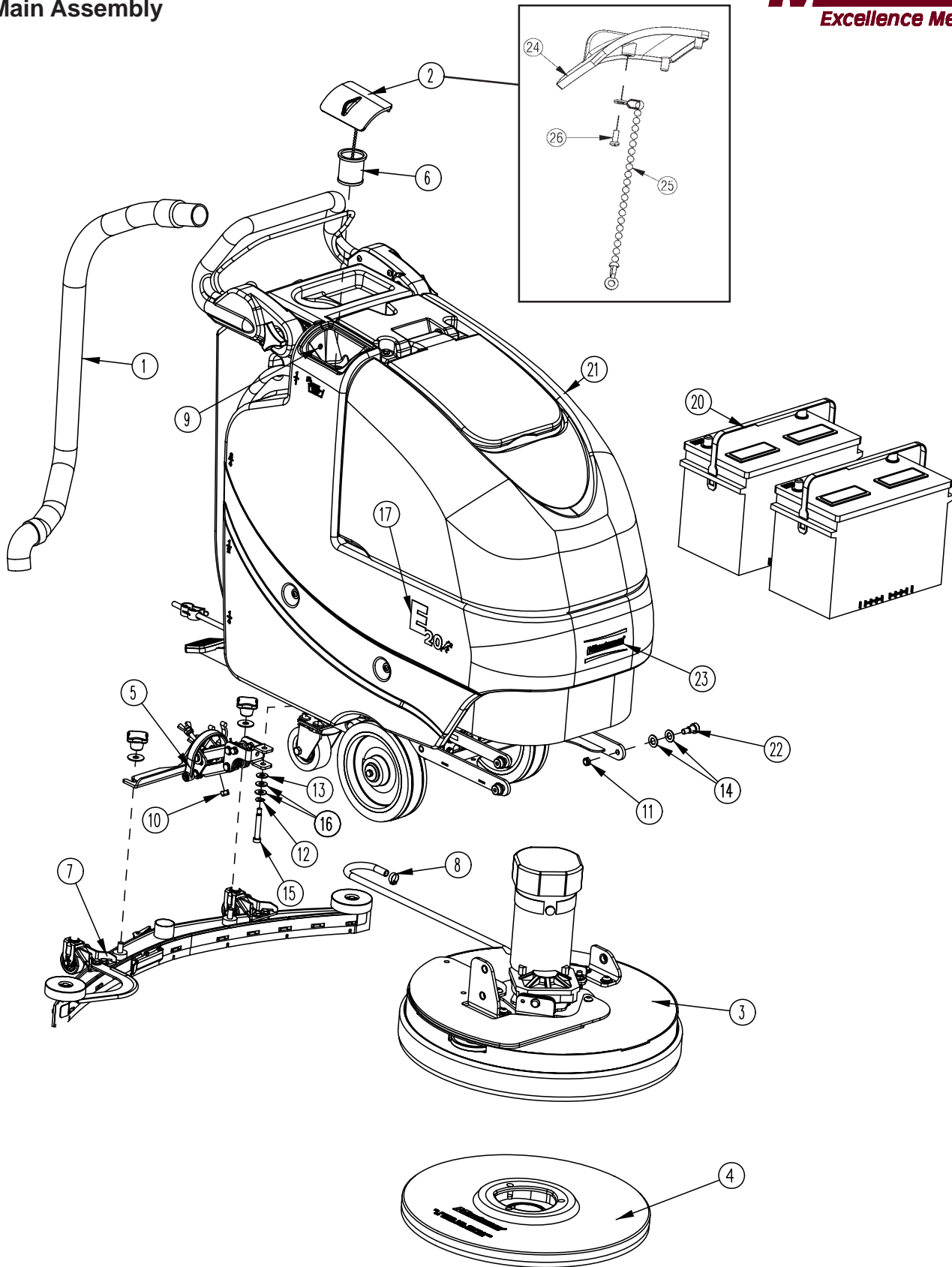
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BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172010	1	HOSE, CLEAR VAC W/ 45 CUFF
2	172018	1	SOLUTION TANK LID ASSY
3	172090	1	BRUSH DECK ASSY 17"
4	172117-2	1	17" PAD DRIVER - SEE BELOW FOR RETAINER
5	172159	1	FILTER, FILL PORT, ES1720
6	172170	1	BD SQUEEGEE LIFT MECH ASSY
6KT	172150	1	SQUEEGEE LIFT MECH ASSY
7	210080	1	SQUEEGEE ASY COMP 20" STR
7KT	172530-1	1	SQUEEGEE ASSY BD 30" (760)
8	450076	1	CLAMP-CRIMP 185R SS
9	711118	1	SCR-ST-A 10 X .75 SS
10	711374	1	NUT-NYLOC 5/16-18
11	711375	3	NUT-NYLOC 3/8-16 X 1/2 NUT
12	711523	1	WSR-WAVE .37X .68 X .08
13	711569	1	WSR-FLT .390 X .880 X .062 NYL
14	711592	6	WSR-FLAT .506 X .9 X .064 NYL
15	712143	1	BLT-SHLD 3/8 X 2.0, 5/16-18
16	712301	2	WSR-FLAT .37 X .87 X .06
17	715917	2	DECAL, E17
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	BRUSH DRV MAIN ASSY-120V CHARGER
21CE	172001BD-230	1	BRUSH DRV MAIN ASSY-230V CHARGER
22	712099PLT	3	BLT - SHLDR 1/2 X 1/2 ZINC PLT
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

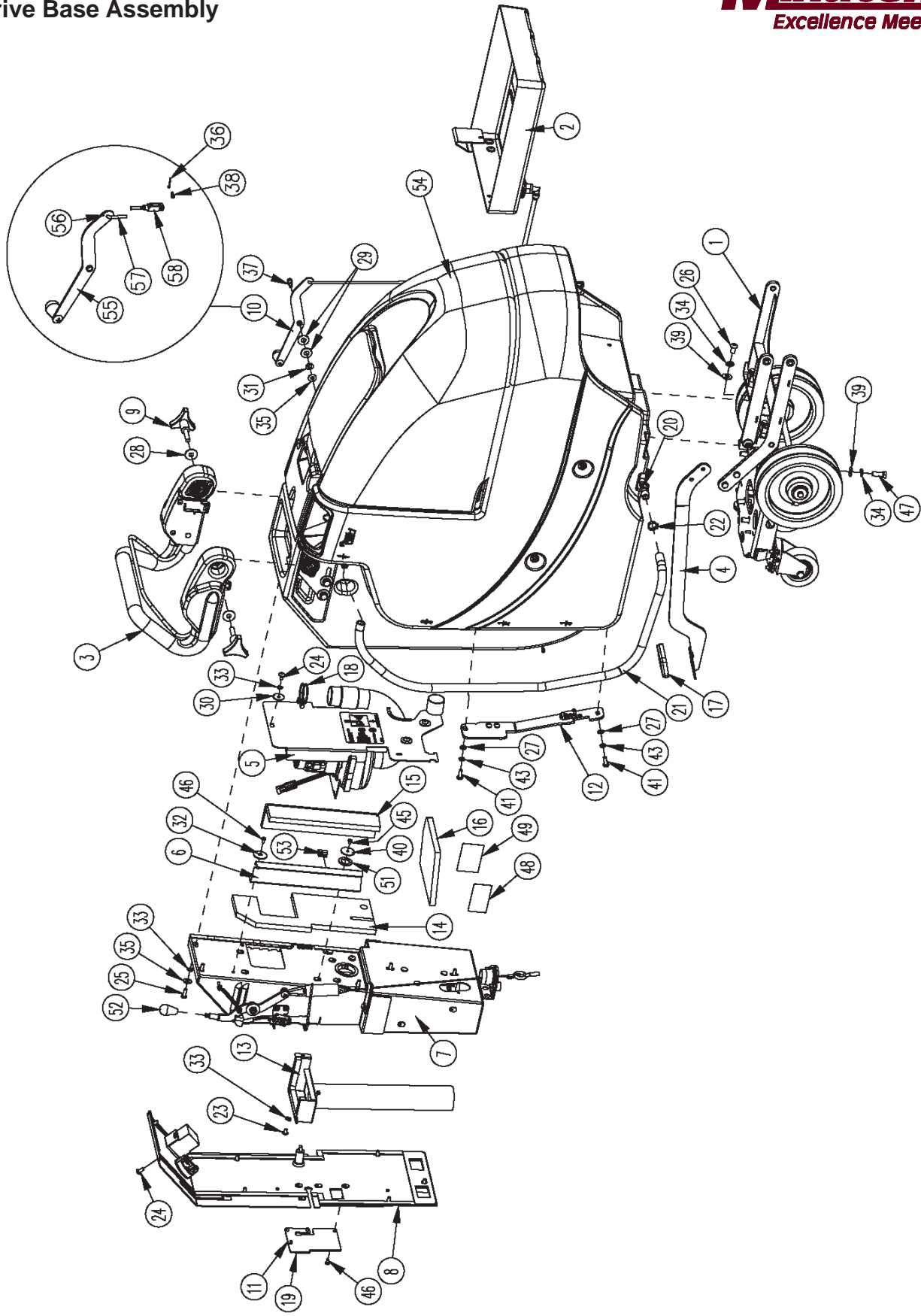
OPTIONAL BRUSHES		
ITEM	PART NO.	DESCRIPTION
OPT-1	762394	PAD RETAINER, FIXED - NOT SHOWN
OPT-2	762370	PAD RETAINER, REMOVEABLE - NOT SHOWN
OPT-3	172117-1	BRUSH, 17" NYLON
OPT-4	172117-3	BRUSH, 17" NYLO GRIT
OPT-5	172117-4	BRUSH, 17" STRATA GRIT
OPT-6	172117-6	BRUSH, 17" SCRUB-GRIT2 120GR



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	172100	1	BRUSH DECK ASSY 20"
4	172520-2	1	20" PAD DRIVER - 230V - SEE BELOW FOR RETAINER
5	172150	1	SQUEEGEE LIFT MECH ASSY
6	172159	1	FILTER, FILL PORT, ES1720
6A	172159-1	1	FILTER, FILL PORT 4"
7	172534-1	1	SQUEEGEE, 34" (860)
8	450076	1	CLAMP-CRIMP 185R SS
9	711118	1	SCR-ST-A10 X .75 SS
10	711374	1	NUT-NYLOC 5/16-18
11	711375	3	NUT-NYLOC 3/8-16 X 1/2 NUT
12	711523	1	WSR-WAVE .37X .68 X .08
13	711569	1	WSR-FLT .390 X .880 X .062 NYL
14	711592	6	WSR-FLAT .506 X .9 X .064 NYL
15	712143	1	BLT-SHLD 3/8 X 2.0, 5/16-18
16	712301	2	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	BRUSH DRV MAIN ASSY-120V CHARGER
21CE	172001BD-230	1	BRUSH DRV MAIN ASSY-230V CHARGER
22	712099PLT	3	BLT - SHLDR 1/2 X 1/2 ZINC PLT
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	762394	PAD RETAINER, FIXED
4.2	762370	PAD RETAINER, REMOVEABLE
4.3	172520-1	BRUSH, 20" NYLON
4.4	172520-2	PAD DRIVER, 20"
4.5	172520-3	BRUSH-DISC, 20" NYLO-GRIT 80GR, GREEN
4.6	172520-6	DISC BRUSH 20", SCRUB GRIT 2, 120GR RED



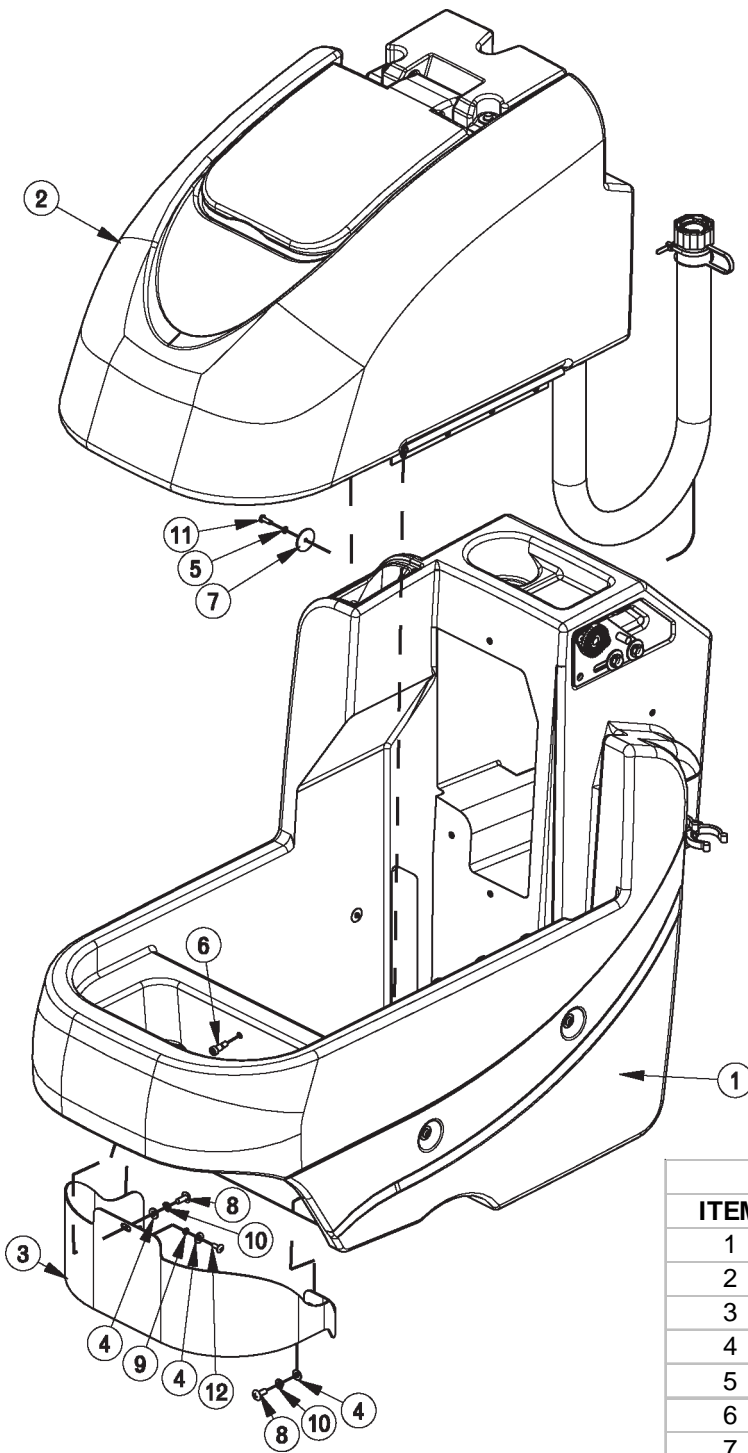


# Brush Drive Base Assembly BOM



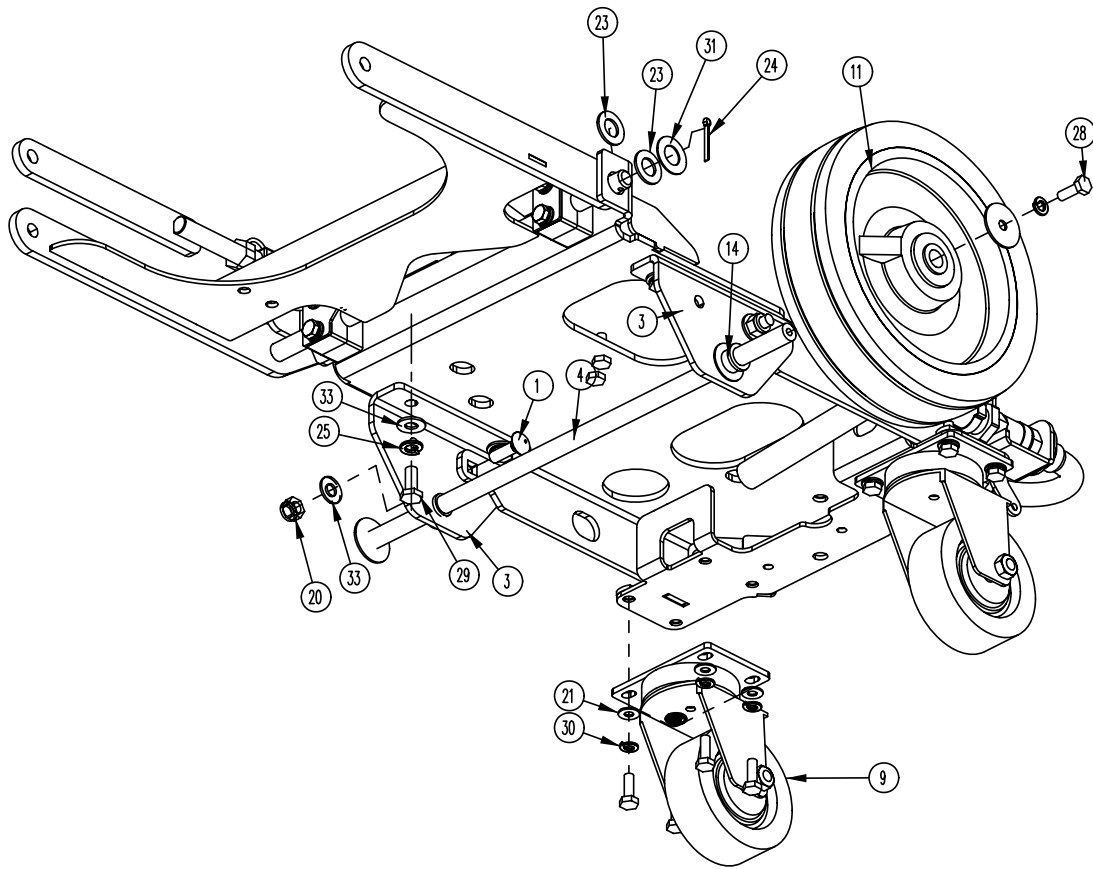
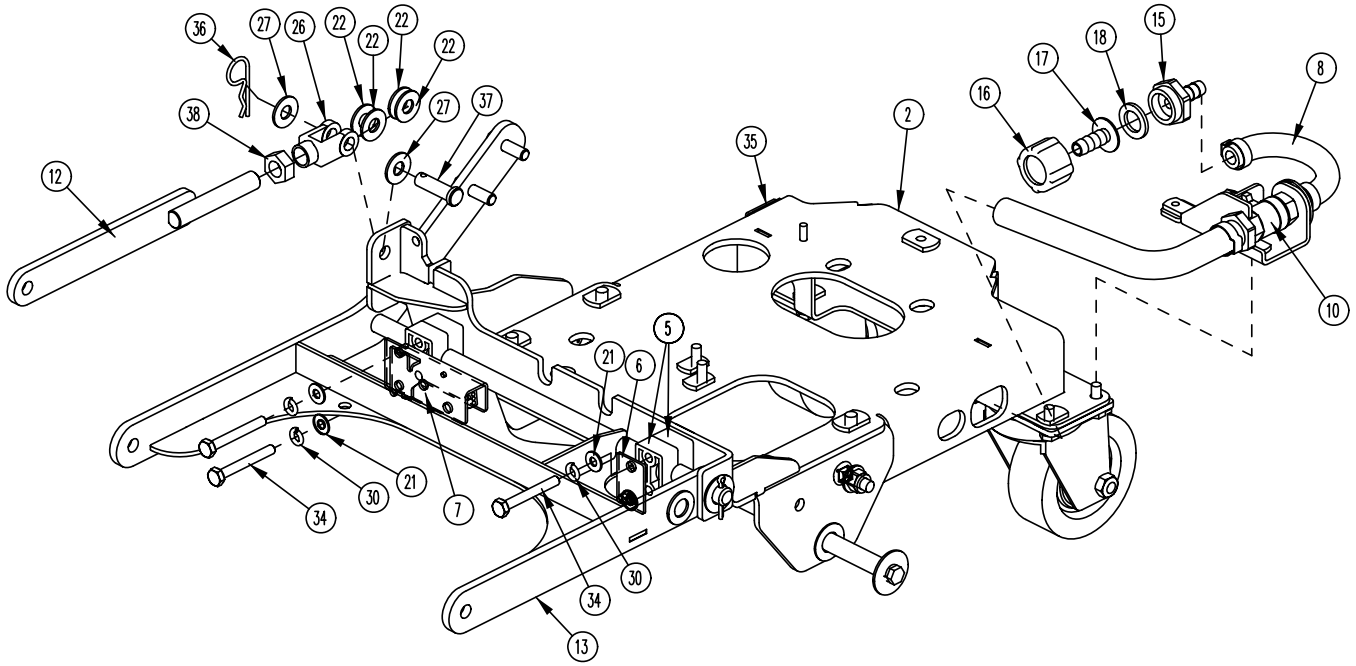
## BILL OF MATERIAL - 172001BD-120/230

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 BOX BD ASSY 120V	36	711803	1	COTTER PIN
7CE	172070-230	1	ELEC BOX BD 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	52A	172299	1	KNOB, 5/16-18 X 1-1/2 X 3" B.I
24	710178	10	SCR-MC 1/4-20 X .50 TRUSS STPL	53	809443	1	CLIP-WIRE & CORD
25	710380	5	SCR-MC RD HD 1/4-20 X .75 STL PL	54	172001BASE	1	E1720 BASE ASSY
26	710985	2	SCR-SC 3/8-16 X .62 ST PL	55	172115	1	SOL CNTRL LEVER ASSY
27	711504	2	WSR-FLAT 1/4 ID SS	56	172122	1	NUT, PUSH-ON WSR CAP, 3/16
28	711507	2	WSR-FLAT .37 X 1.12 X .06	57	172069	1	ROD, SOL. CTRL, ES1720
				58	172062	1	YOKE, 3/16 CLEVIS, 10-32, LONG

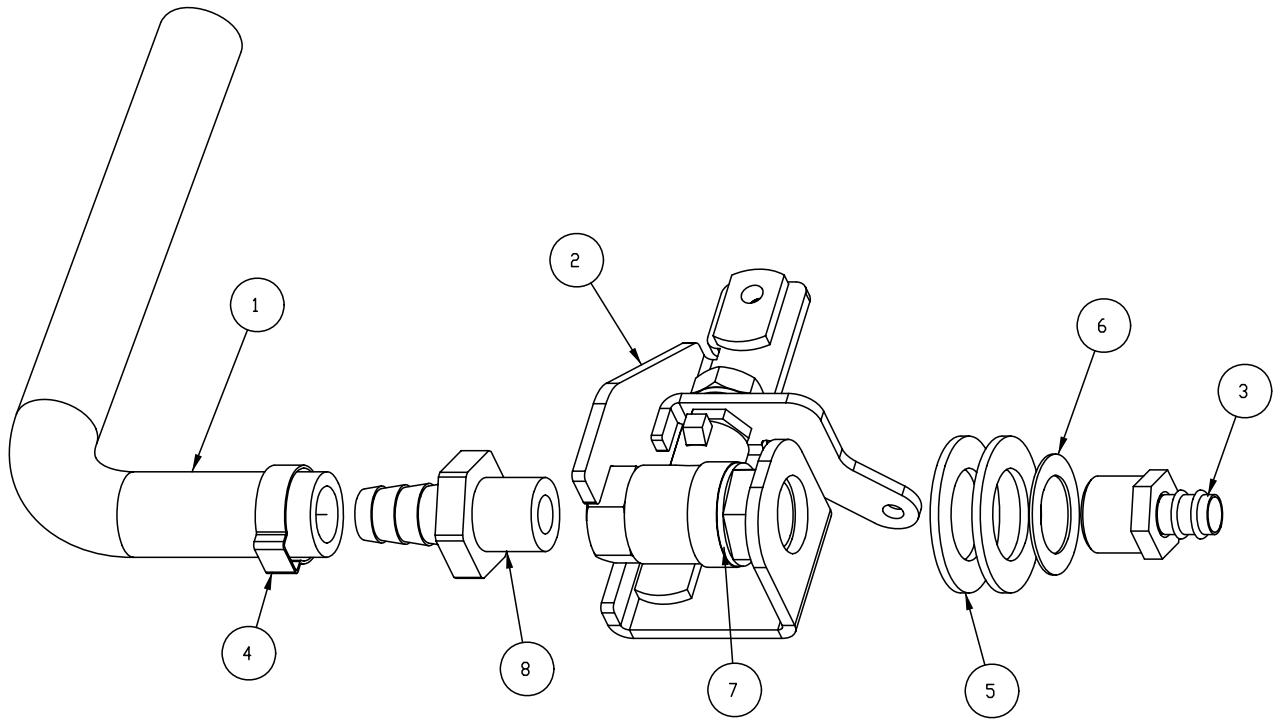


**BILL OF MATERIAL - 172001BASE**

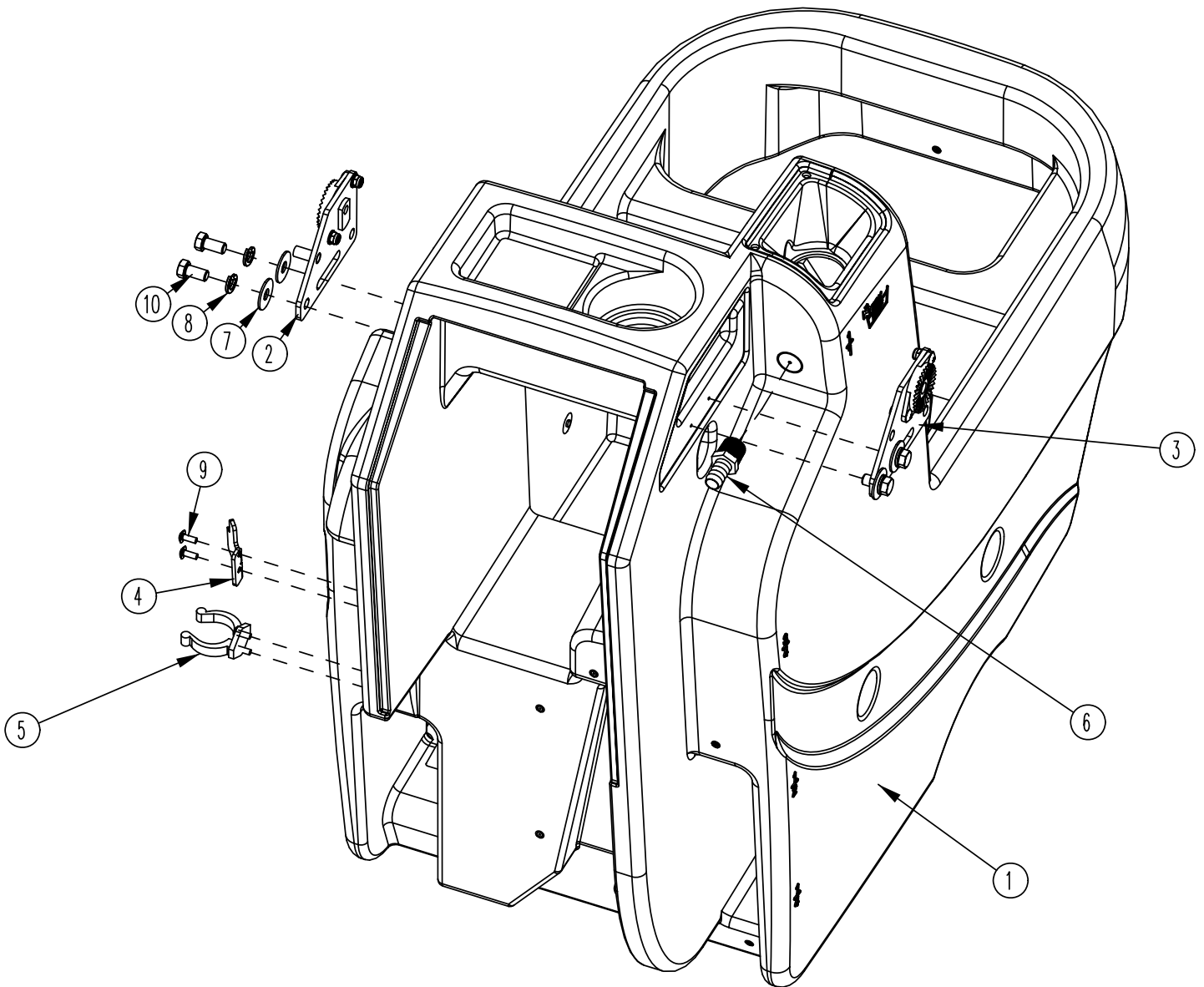
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172013	1	SOL TANK ASSY, E1720
2	172014	1	REC TANK ASSY
3	172144	1	PANEL, FRONT 1720
4	711504	3	WSR-FLAT 1/4 ID SS
5	711543	4	WSR-HELICAL #10
6	712041	1	BLT- SHLDR 1/4-20 X .44 X .37
7	712312	4	WSR-FLAT .187 X 1.25
8	712565	2	SCR-MC 1/4-20X.63 SS TR HD
9	712757	1	WSR - 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			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	70-516-16	2	BLT-CAR 5/16-18 X 1.00 ZP
2	172020	1	MAIN FRAME WMT , E1720
3	172024	2	WHEEL BRACKET , ES1720
4	172035	1	WHEEL ROD, ES1720
5	172038	4	BEARING BLOCK
6	172039	1	BEARING BLOCK PLAT E
7	172110	1	DECK SWIT CH ASSY
8	172164	1	HOSE-WIRE REINF 3/8 X 5.5"
9	172167	2	CASTER, 3-1/2 POLYURETHANE
10	172264	1	SOLUTION VALVE ASSY
11	172265	2	WHEEL, 8 X 2 X .5, 75A
12	172368	1	UPPER LIFT ARM
13	172370	1	DISC DECK LIFT WMT , E1720
14	260041	2	OILITE FLANGE BUSHING
15	342441	1	FIT TING, MGHT X 3/8HB PP
16	342442	1	FIT TING, FGHT NUT PP
17	342443	1	FIT TING 3/8HB INSERT PP
18	342444	1	WSR-FILTER, GARDEN HOSE SIZE
19	450076	2	CLAMP-CRIMP 185R SS
20	711374	2	NUT-NYLOC 5/16-18
21	711504	12	WSR-FLAT 1/4 ID SS
22	711569	4	WSR-FLT .390 X .880 X .062 NYL
23	711592	2	WSR-FLAT .506 X .9 X .064 NYL
24	711809	1	COT TER PIN, 1/8 X 1.0
25	712140	4	WSR-HELICAL 5/16 SS
26	712265	1	CLEVIS-YOKE, 1/2-20 W/ .375 PIN
27	712301	2	WSR-FLAT .37 X .87 X .06
28	712562	12	BOLT-HH 1/4-20X3/4 SS
29	712575	4	BLT-HH 5/16-18 X .75 SS
30	712758	14	WSR-HELICAL 1/4 SS
31	712760	3	WSR-FLAT .56X1.06X.04 SS
32	712761	2	WSR-FLAT .28 X 1.25 X .059SS
33	712772	6	WSR-FLAT .344 x .75 x .06 SS
34	713007	4	BLT-HH 1/4-20 X 2 #5
35	809444	1	CLIP-CORD
36	833374	1	PIN, HAIRPIN COT TER 3/8
37	833833	1	PIN-CLEVIS 3/8 X 1.25
38	3400449	1	NUT-HEX JAM 1/2-20 ZP

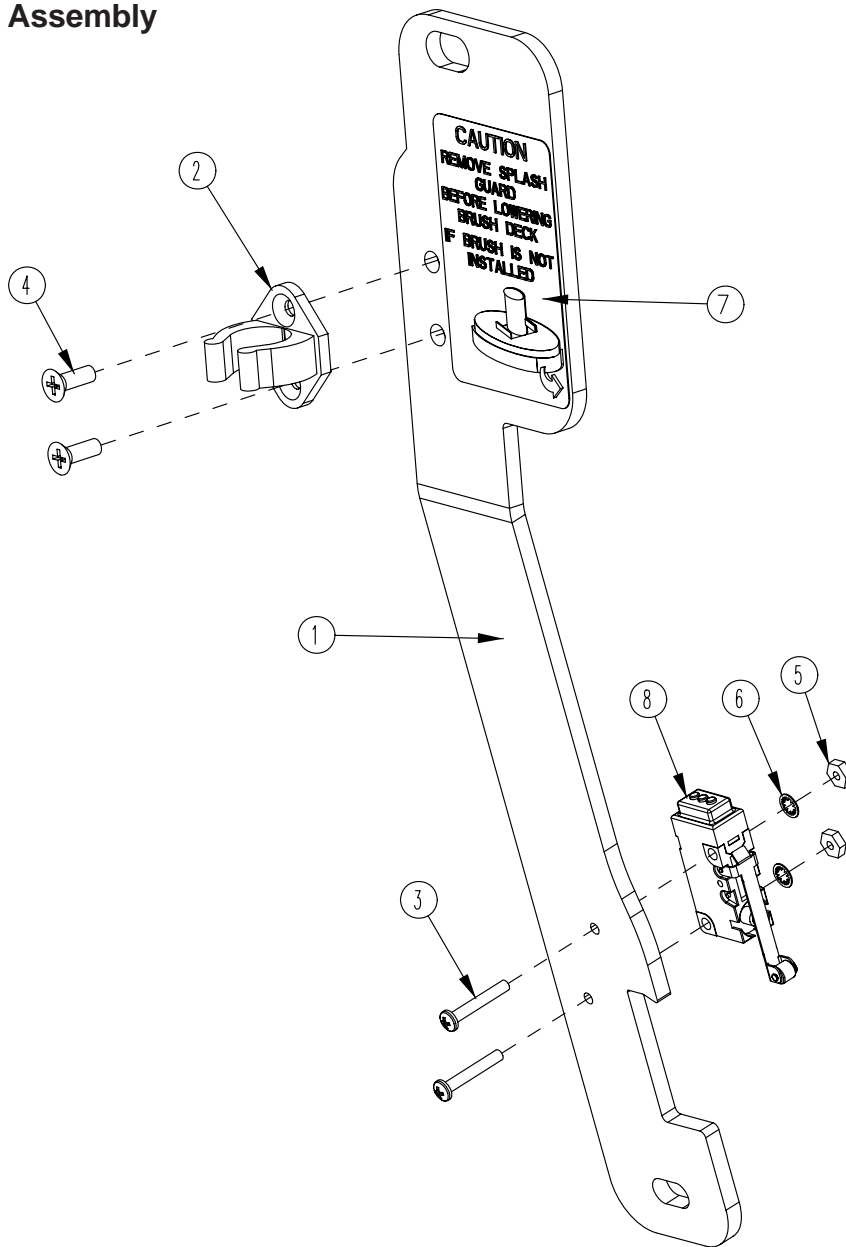


BILL OF MATERIAL - 172264			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172158	1	HOSE, 1/2"ID X 7.5" NYLOBRAID
2	172263	1	BKT, SOL VALVE MOUNT
3	320265	1	FITTING DUBL 3/8HBx3/8MPT
4	383347	1	CRIMP CLAMP 1/2 HOSE SS 185R
5	711512	2	WSR-FLAT .75X1.37X.08
6	711513	1	WSR-FLAT .69 X 1.06 X .03 SS
7	809415	1	VALVE, 3/8 FPT, 45 OPEN/CLOSE
8	827008	1	FITTING, 3/8 MPT 1/2 HOSE



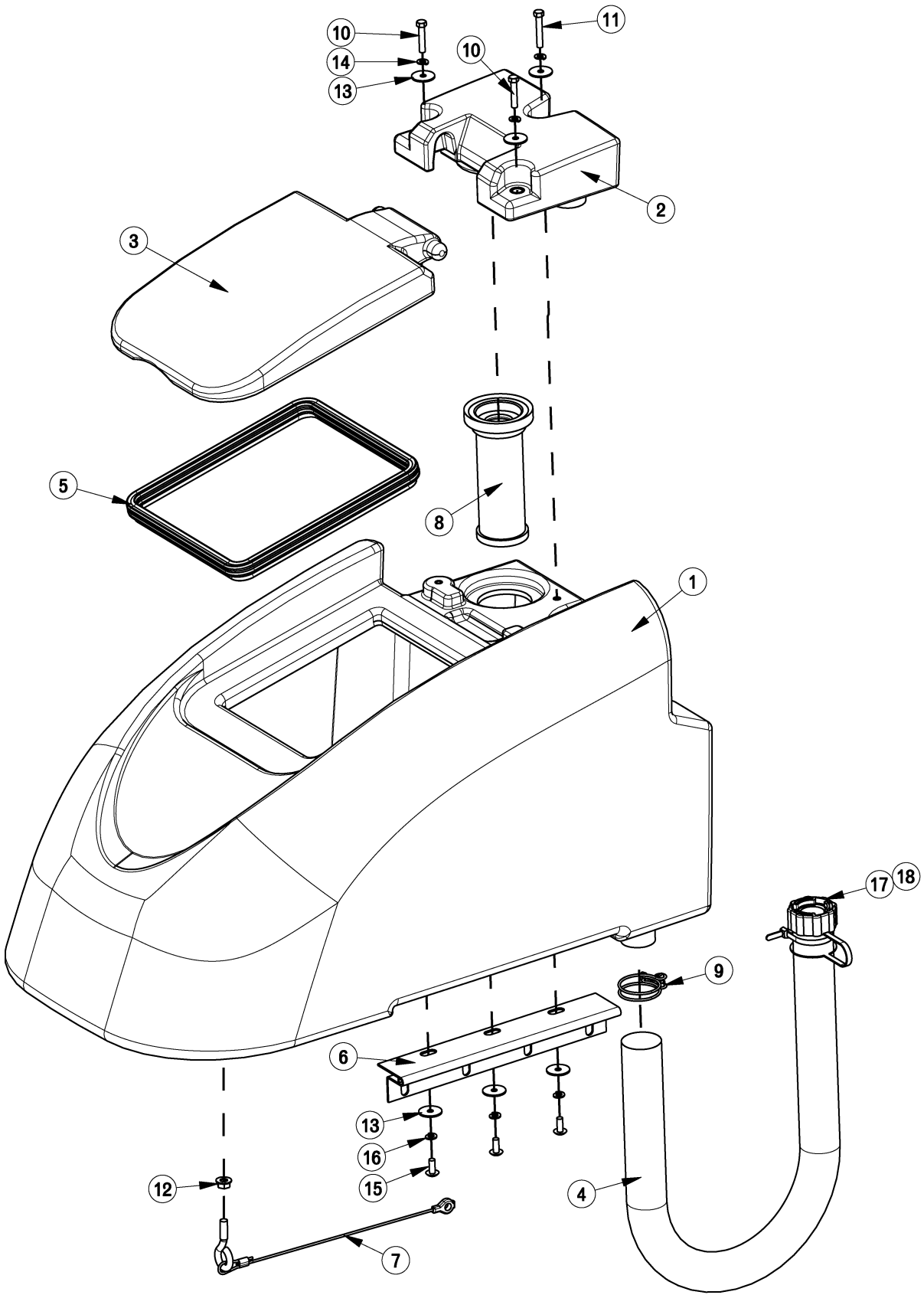
BILL OF MATERIAL - 172013			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172003	1	SOLUTION TANK
2	172080	1	HANDLE MOUNT ASSY, LEFT
3	172082	1	HANDLE MOUNT ASSY, RIGHT
4	172341	1	HOOK, DRAIN HOSE WITH TWIST VALVE
5	260579	1	TOOL CLIP, 1.5" HOSE
6	342438	1	FITTING, 1/2 MPT 1/2 HB BRASS
7	711507	4	WSR-FLAT .37 X 1.12 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 X 3/4 #5

# Lift Pedal Stop Assembly

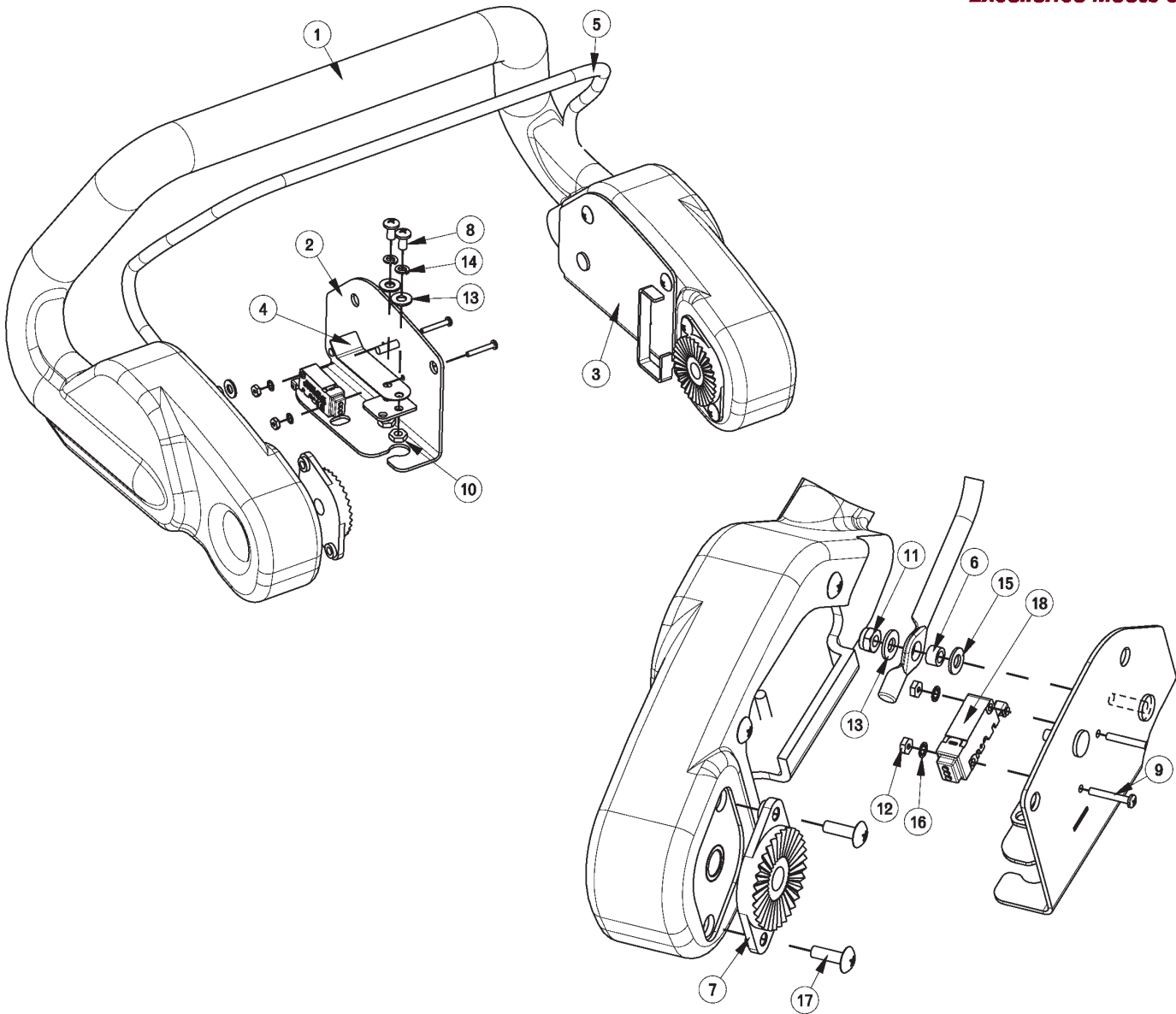


BILL OF MATERIAL - 172157			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172036	1	BKT, PEDAL STOP
2	172065	1	CLIP, FOR 1/2" ID HOSE
3	710493	2	SCR-MC 4-40 X .75 PAN HD
4	710530	2	SCR-MC FL HD 8-32 X .50 BRS
5	711428	2	NUT-HEX 4-40
6	712326	2	WSR-INT LOCK #4
7	715685	1	DECAL, REMOVE SPLASH GUARD
8	747603-2	1	SWIT CH ASY, MICRO ROLLER W/PACK/CONDUIT

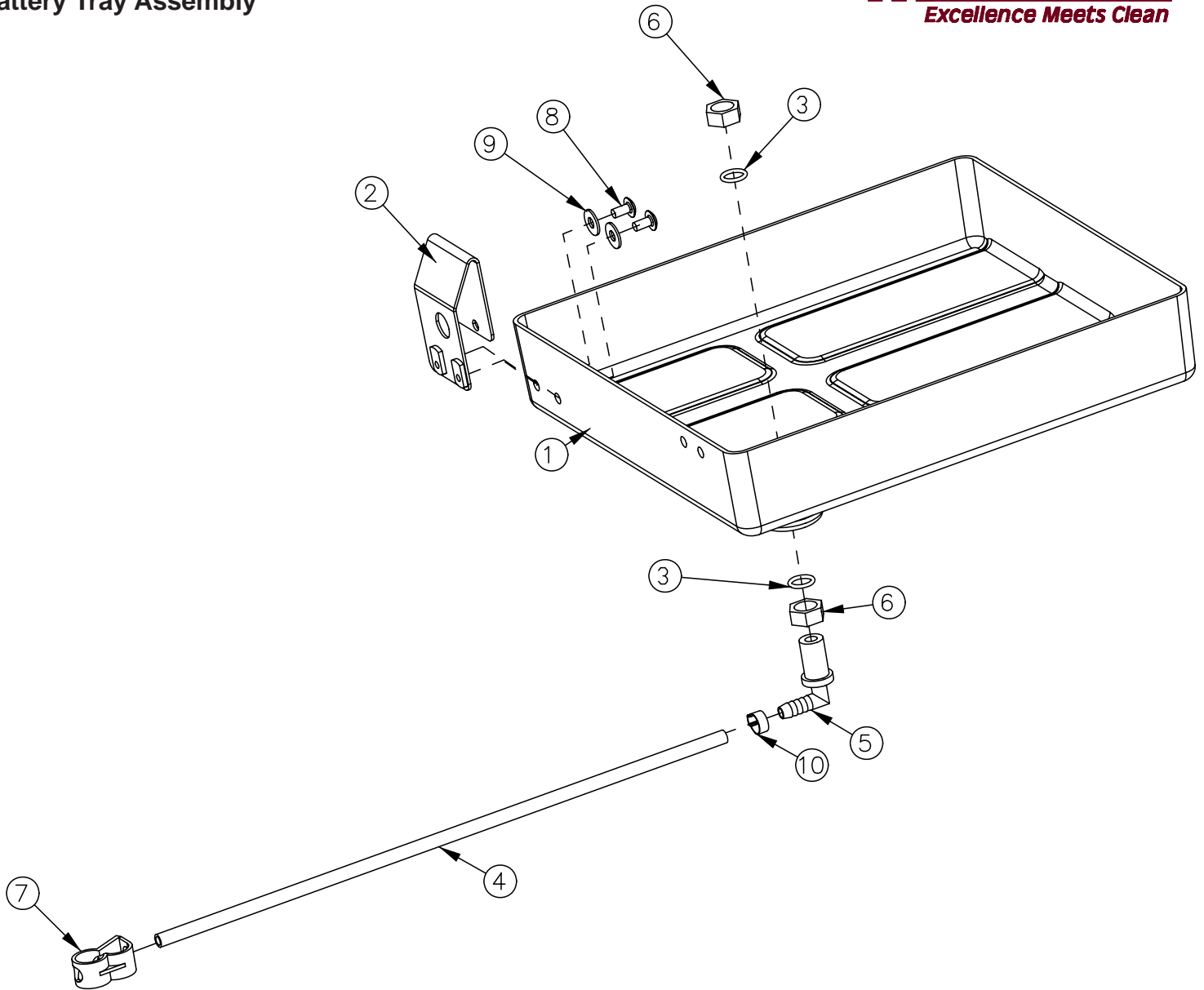




BILL OF MATERIAL - 172014			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172004	1	ES1720 RECOVERY TANK
2	172005	1	ES1720 VACUUM MANIFOLD
3	172007	1	ES1720 LID
4	97090096	1	DRAIN HOSE ASSY, RECOVERY TANK
5	172017	1	GASKET, LID
6	172049	1	HINGE, RECOVERY TANK
7	172394	1	REC TANK CABLE ASSY 11.625
8	172132	1	SCREENED 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
17	15282072	1	REPLACEMENT O-RING (NOT SHOWN)
18	90304528	1	REPLACEMENT CAP



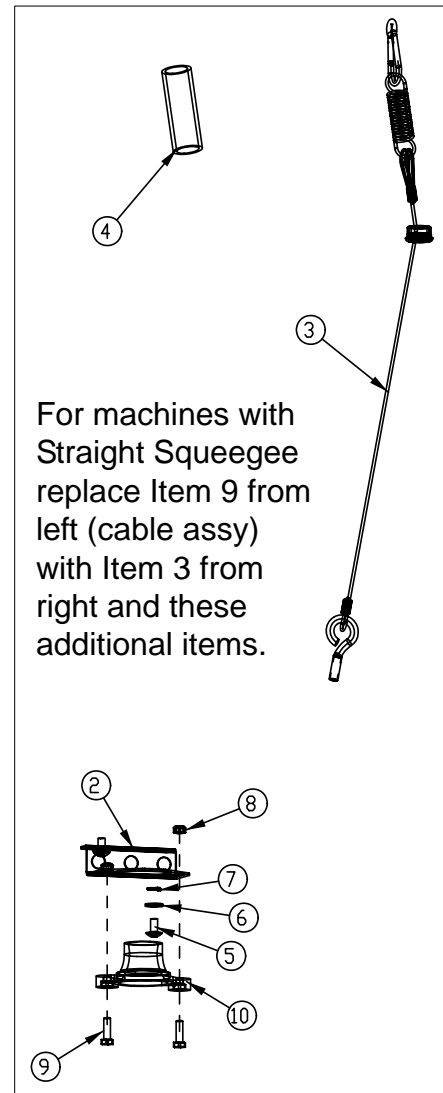
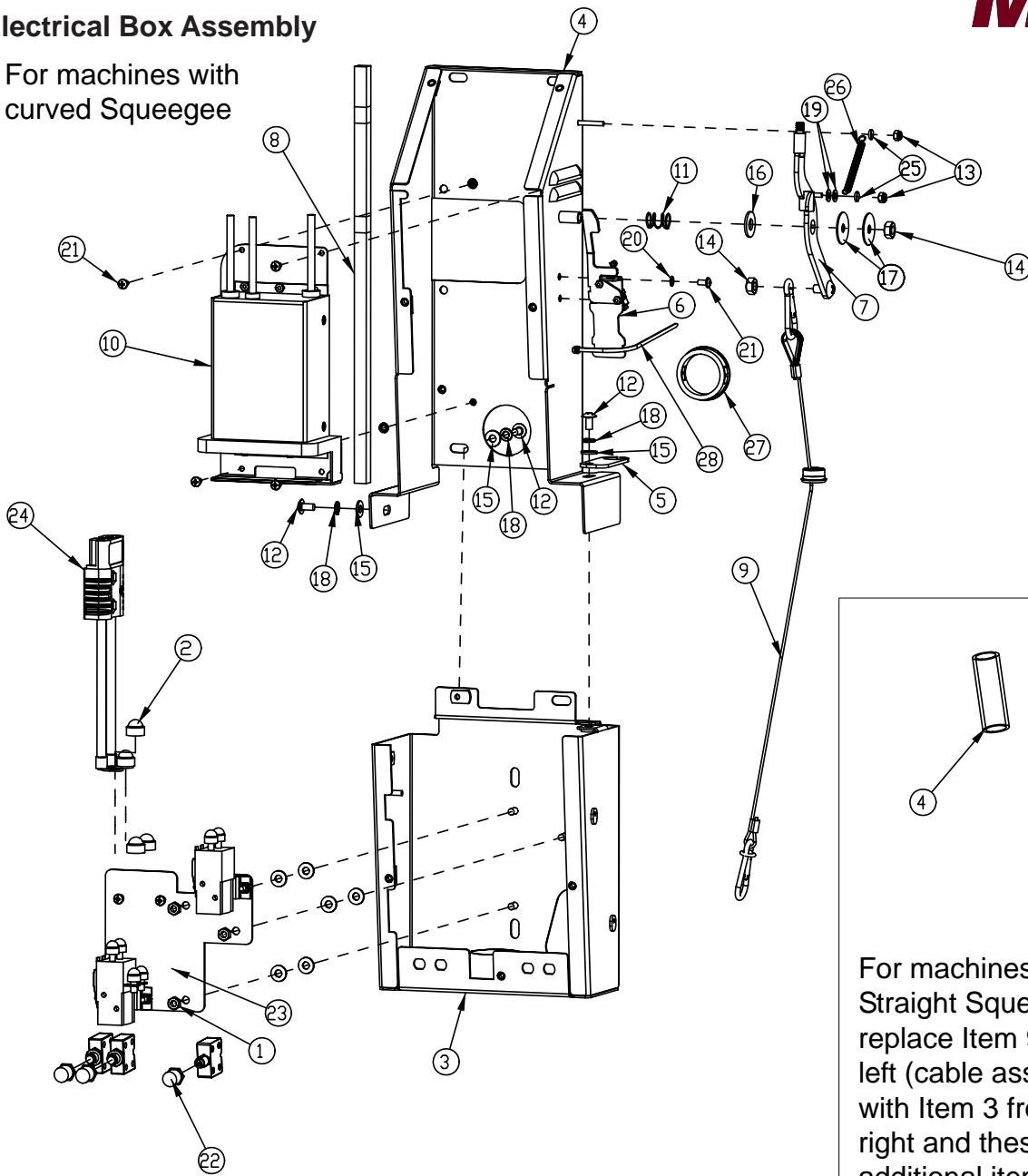
BILL OF MATERIAL - 172016			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172006	1	ES1720 HANDLE
2	172053	1	BAIL PLATE WMT RH
3	172054	1	BAIL PLATE WMT LH
4	172057	2	ES1720 LEAF SPRING
5	172059	1	ES1720 BAIL, HANDLE
6	172074	2	SPACER, 5/16OD X 17GA, ALUM
7	270143	2	HANDLE PIVOT JAW
8	710353	4	SCR-MC RD HD 10-32 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	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**

For machines with curved Squeegee

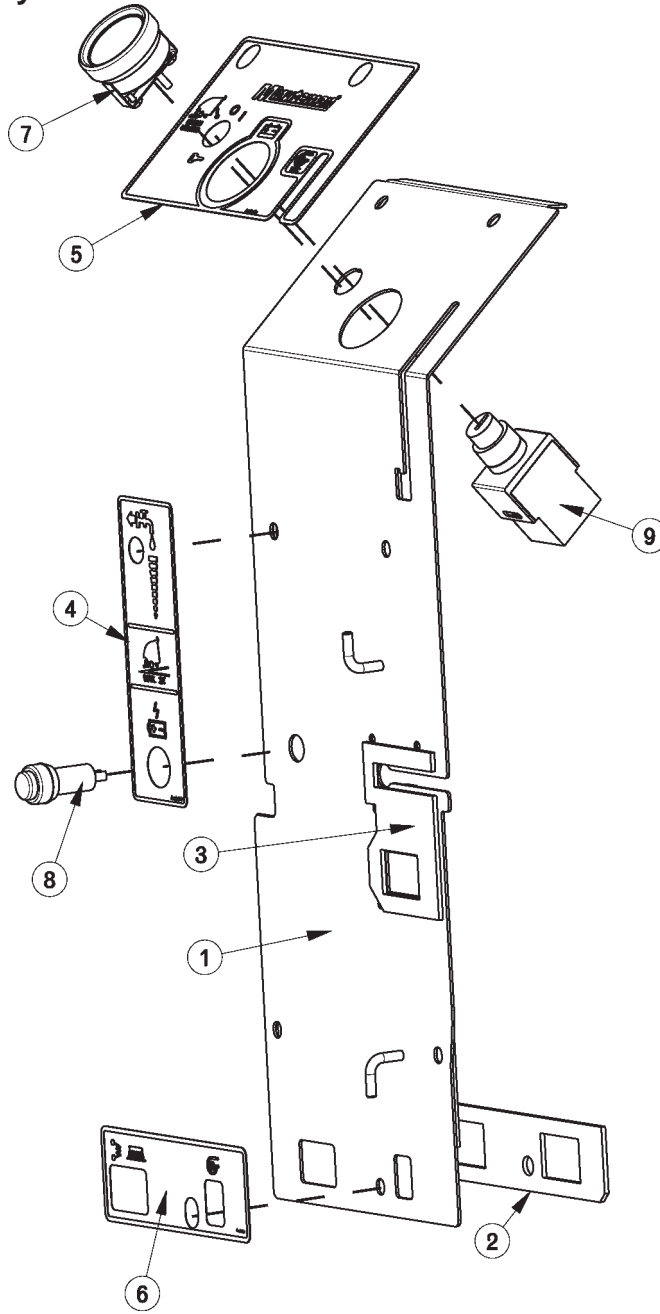


For machines with Straight Squeegee replace Item 9 from left (cable assy) with Item 3 from right and these additional items.

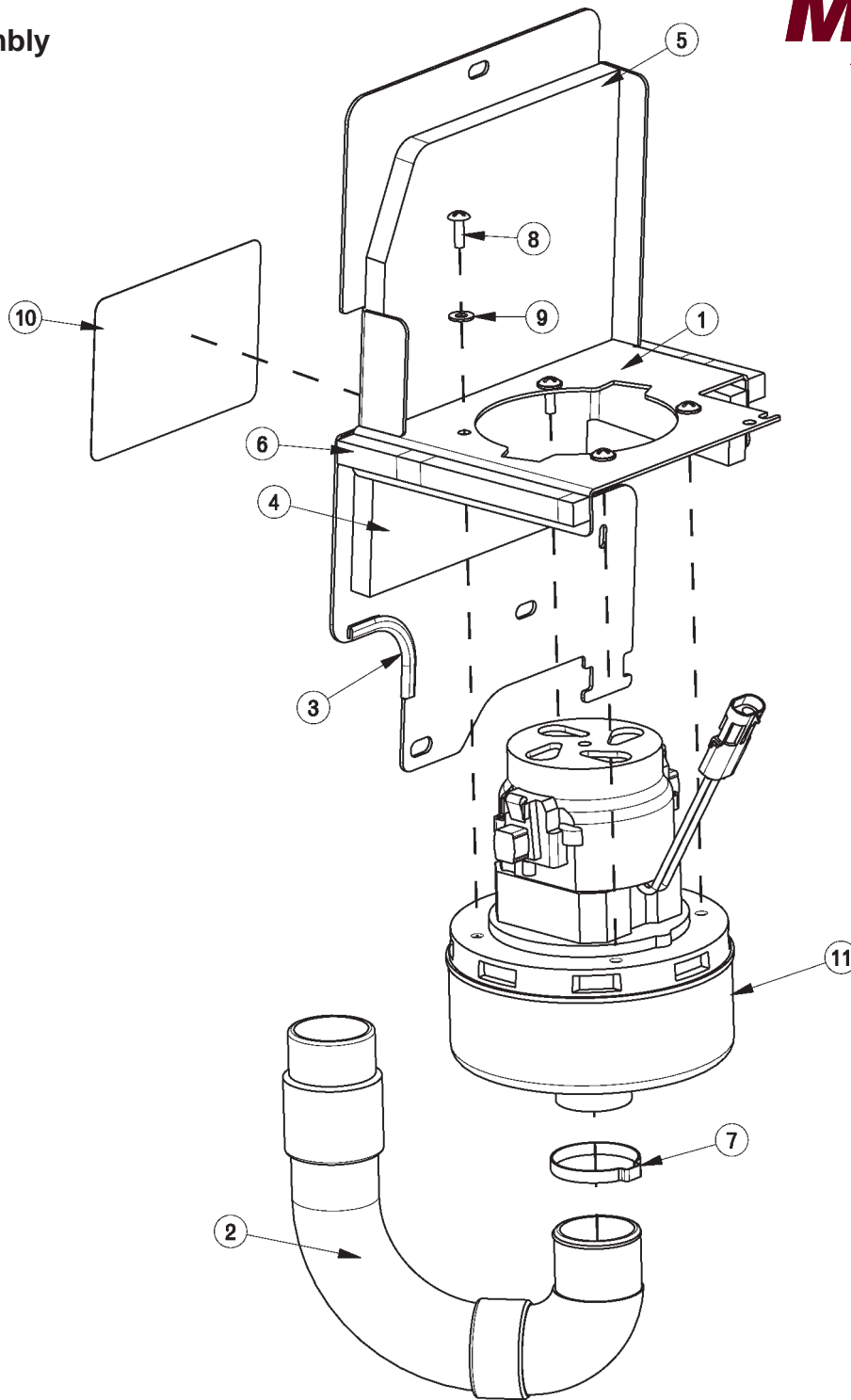
BILL OF MATERIAL - 172070-120/230-C				
ITEM	PART NO.	REQ'D	DESCRIPTION	NOTES
1	369-416	3	NUT-HEX 1/4-20 NYLOC SERATED	
2	15592033_CAP	2	CAP, SAFETY NUT COVER M8	
3	172077	1	ELEC BOX-BOT HALF WMT	
4	172088	1	ELEC BOX-TOP HALF WMT	
5	172107	1	BKT , UPPER BUSHING MOUNT	
6	172141	1	VAC SWITCH ASSY	
7	172152	1	VAC LEVER WMT	
8	172188_	1	FOAM TAPE, 1/2" SQ X 16.5"	
9	172381	1	CABLE ASSY, SQUEEGEE LIFT	
10	172385	1	E1720 120V CHARGER ASSEMBLY	
10CE	957753	1	E1720 230V CHARGER ASSEMBLY	USED UNTIL 04/2010
10CE	172360	1	E1720 230V CHARGER ASSEMBLY	USED AFTER 04/2010
11	670093	1	SPRING, COMPRESSION	
12	710178	3	SCR-MC 1/4-20 X .50 TRUSS ST PL	
13	711372	2	NUT-NYLOC 8-32 STL ZINC	
14	711383	2	NUT-HEX CLR LOC 5/16-18	
15	711505	9	1/4 FLAT WASHER, STEEL	
16	711508	1	WSR-FLAT .44X 1.0X.08	
17	711516	2	WSR- FLAT .31 X 1.25 X .05	
18	711544	3	WSR-HELICAL 1/4	
19	712320	2	WSR-NYLON .22 X .45 X .04	
20	712770	6	WSR INT LOCK #10A SS	
21	712810	6	SCR-MC 10-24 X .37 ST PL	
22	742748	3	CIRCUIT BREAKER BOOT	
23	747630	1	ELEC PANEL ASSY, E1720BD	
24	747637	1	WIRE ASY, MACHINE-BATTERY E1720	
25	760134	2	MOUNT RING	
26	762084	1	SPRING-EXT .250D X 2" F.L. MUSIC	
27	762400	1	HEYCO BUSHING 2.00"	
28	828062	1	CABLE TIE LARGE	

For machines with **Straight Squeegie**  
 Replace Cable Assembly and reference these additional parts

BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	000719	1	PACER-ISL 90
2	172128	1	BKT , LOWER BUSHING MOUNT
3	172149	1	CABLE ASSY, SQUEEGEE LIFT
4	172331	1	PIPE, 3/4 X 3.0 SCHD 40 PVC
5	710178	2	SCR-MC 1/4-20 X .50 TRUSS ST PL
6	711505	2	1/4 FLAT WASHER, STEEL
7	711544	2	WSR-HELICAL 1/4
8	717018	2	NUT-NYLOC M6 X 1.0
9	717022	2	BOLT-HH M6X1.0 X 20
10	90508391	1	BUSHING , CABLE GUIDE, HAKO



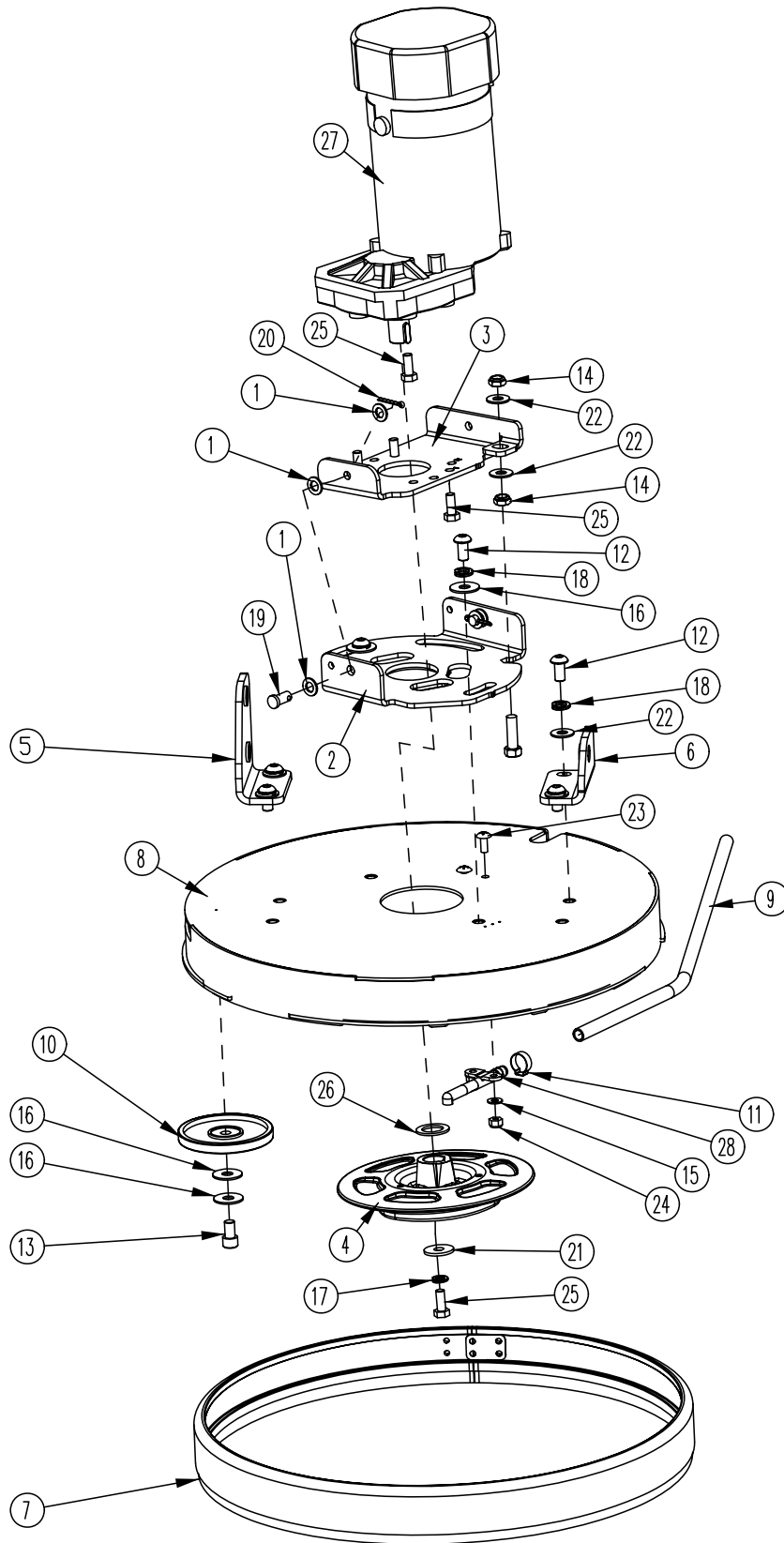
BILL OF MATERIAL - 172073			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172181	1	ELEC BOX, COVER, WMT
2	172193	1	GASKET, CB OUTLINE
3	172194	1	GASKET, CHARGER CORD PLATE
4	715672	1	DECAL, 1720 BD ELEC BOX
5	715673	1	DECAL, 1720 BD DASHBOARD
6	715675	1	DECAL, BD CIRC BKRS
7	740216	1	VOLT METER
8	747614	1	CHARGE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



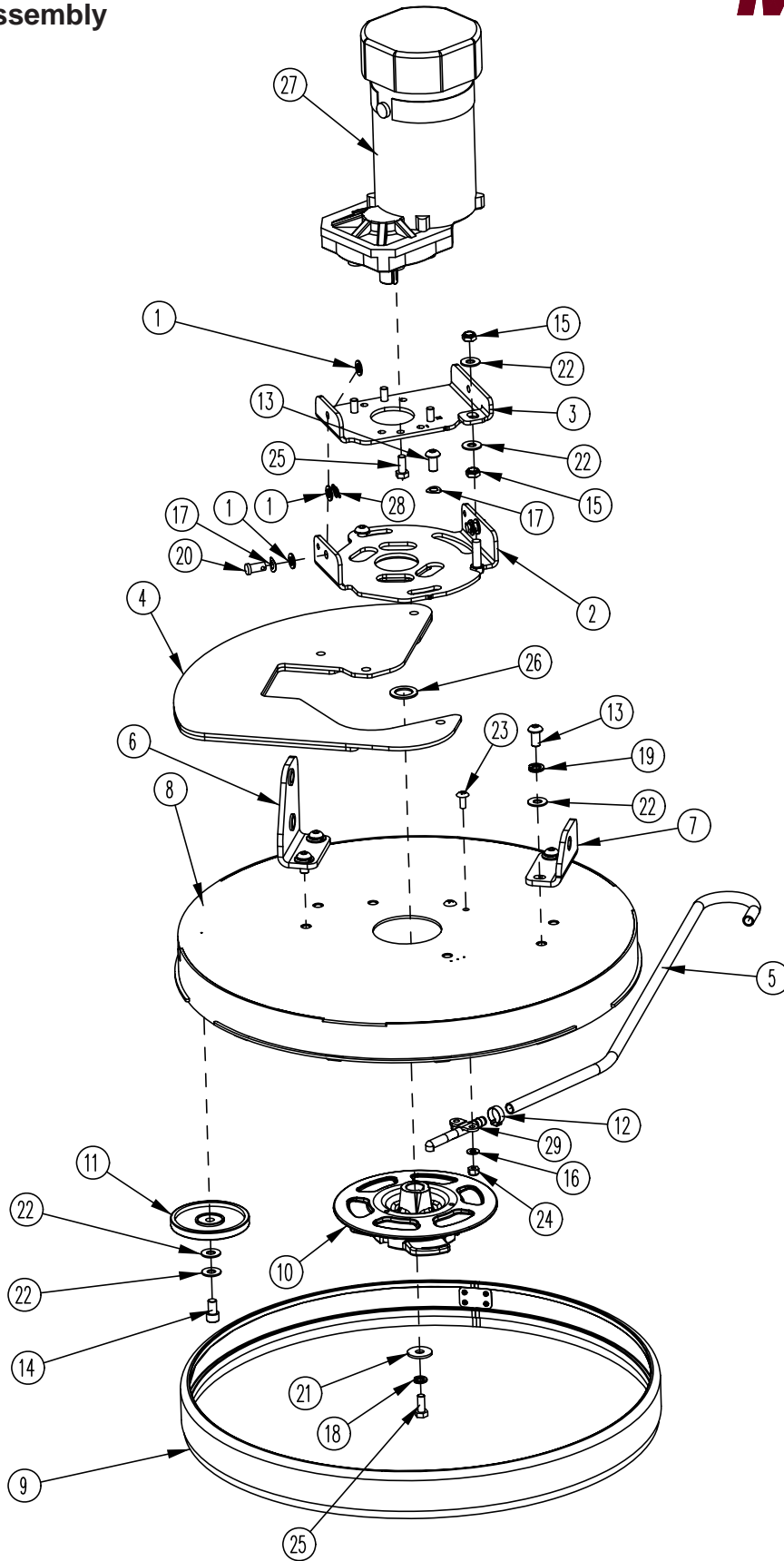
**BILL OF MATERIAL - 172050**

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"				

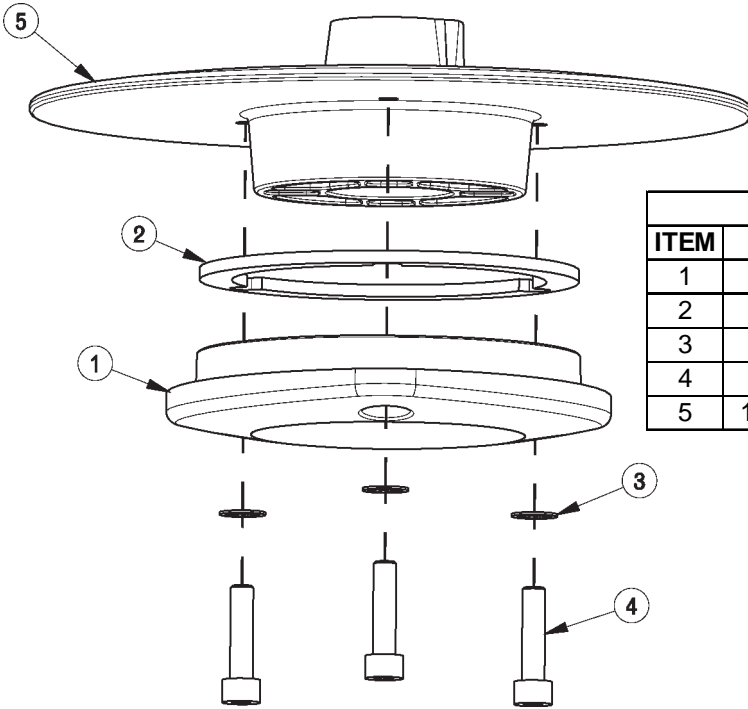




BILL OF MATERIAL -172090			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	81-166-A	6	SPECIAL WASHER
2	172040	1	DECK ANGLE ADJUST WMT
3	172044	1	PLATE, MOTOR MOUNT
4	172095	1	BRUSH HUB ASSY
5	172296	1	BKT, DECK MOUNT RH
6	172297	1	BKT, DECK MOUNT LH
7	172363-1	1	17" SPLASH GUARD
8	172365	1	DECK COVER WMT 17"
9	172198	1	HOSE-WIRE REINF 3/8 X 23"
10	210153	1	ROLLER WHEEL
11	450076	1	CLAMP-CRIMP 185R SS
12	710990	6	SCR-SC 3/8-24 X .75 BHEAD ST PL
13	710991	1	SCR-SC 3/8-24 X 5/8 ST PL
14	711375	2	NUT -NYLOC 3/8-16 X 1/2 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	711546	6	WSR-HELICAL 3/8
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	6	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	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
29	172268	1	E17 DECK WEIGHT (OPTIONAL - NOT SHOWN)

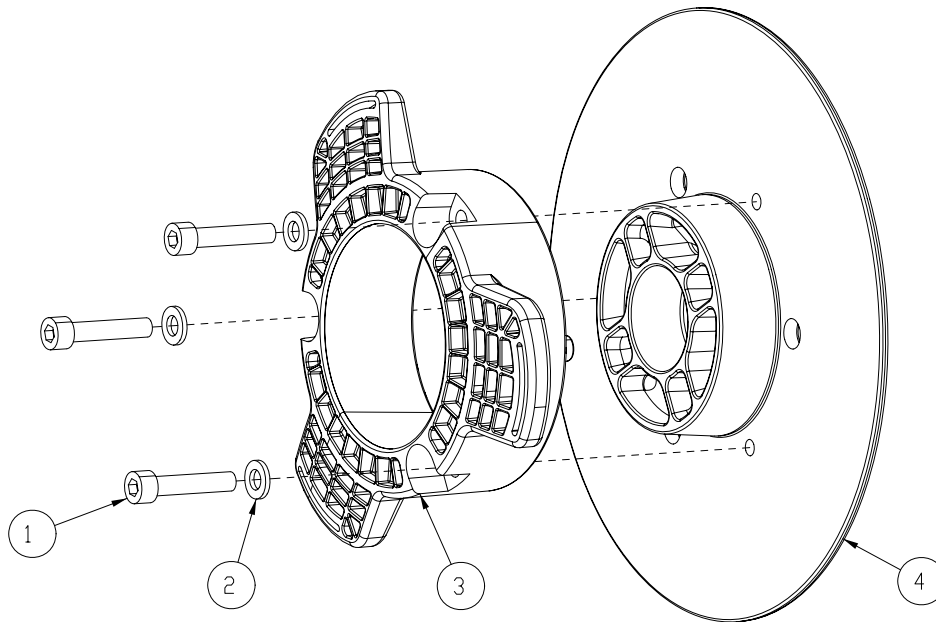


BILL OF MATERIAL - 172100				
ITEM	PART NO.	REQ'D	DESCRIPTION	NOTES
1	81-166-A	6	SPECIAL WASHER	USED AFTER 06/09
2	172040	1	DECK ANGLE ADJUST WMT	
3	172044	1	PLATE, MOTOR MOUNT	
4	172208	1	E20 BRUSH DECK PLATE	USED AFTER 04/08
5	172216	1	HOSE-WIRE REINF 3/8 X 29"	USED BETWEEN 12/07-12/09
	200581	1	HOSE-WIRE REINF 3/8 X 23"	USED BETWEEN 12/09 - 04/10
	172198	1	HOSE-NYLO REINF 3/8 X 22.5"	USED AFTER 04/10
6	172296	1	BKT, DECK MOUNT RH	USED AFTER 11/09
7	172297	1	BKT, DECK MOUNT LH	USED AFTER 11/09
8	172375	1	DECK COVER WMT 20"	USED AFTER 11/09
	172101	1	DECK COVER WMT 20"	USED UNTIL 11/09
9	172384	1	E20 FLOATING BRUSH DECK SKIRT	USED AFTER 12/09
10	172510	1	HUB ASSEMBLY, DISC DECK	USED AFTER 07/09
	172095	1	BRUSH HUB ASSY	USED UNTIL 07/09
11	210153	1	ROLLER WHEEL	
12	450076	1	CLAMP-CRIMP 185R SS	
13	710990	6	SCR-SC 3/8-24 X .75 BHEAD ST PL	
14	710991	1	SCR-SC 3/8-24 X 5/8 ST PL	
15	711375	2	NUT-NYLOC 3/8-16 X 1/2 NUT	
16	711504	2	WSR-FLAT 1/4 ID SS	
17	711523	4	WSR-WAVE .37X .68 X .08	
18	711545	1	WSR-HELICAL 5/16	
19	711546	4	WSR-HELICAL 3/8	
20	711679	2	CLEVIS PIN 3/8 X 3/4	
21	711855	1	WSR-FLT .37X1.12X.10 STL Z HARD	
22	712301	8	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	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	3400125	2	PIN-COTTER 3/8 RUE RING	
29	90311663	1	HAKO SOL FEED NOZZLE	



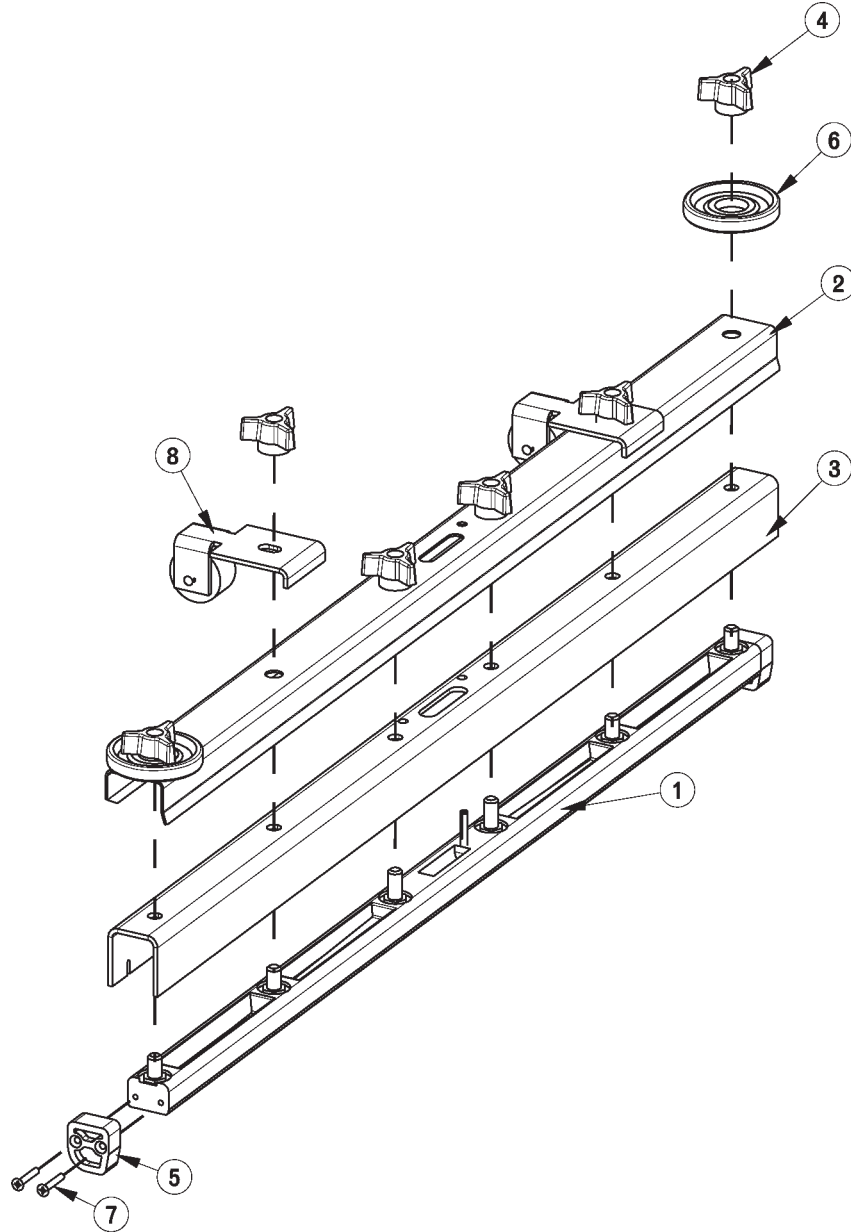
**E17 Brush Hub Assembly**

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



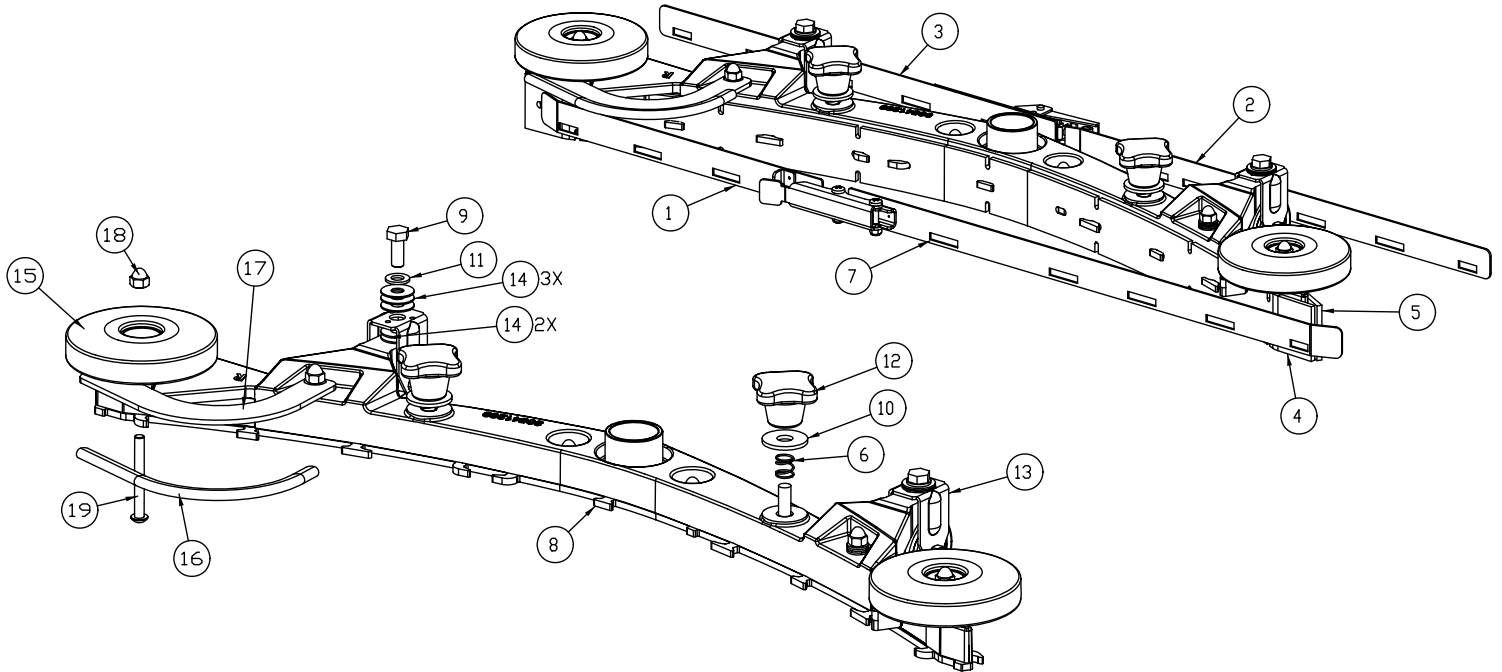
**E20 Brush Hub Assembly**

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

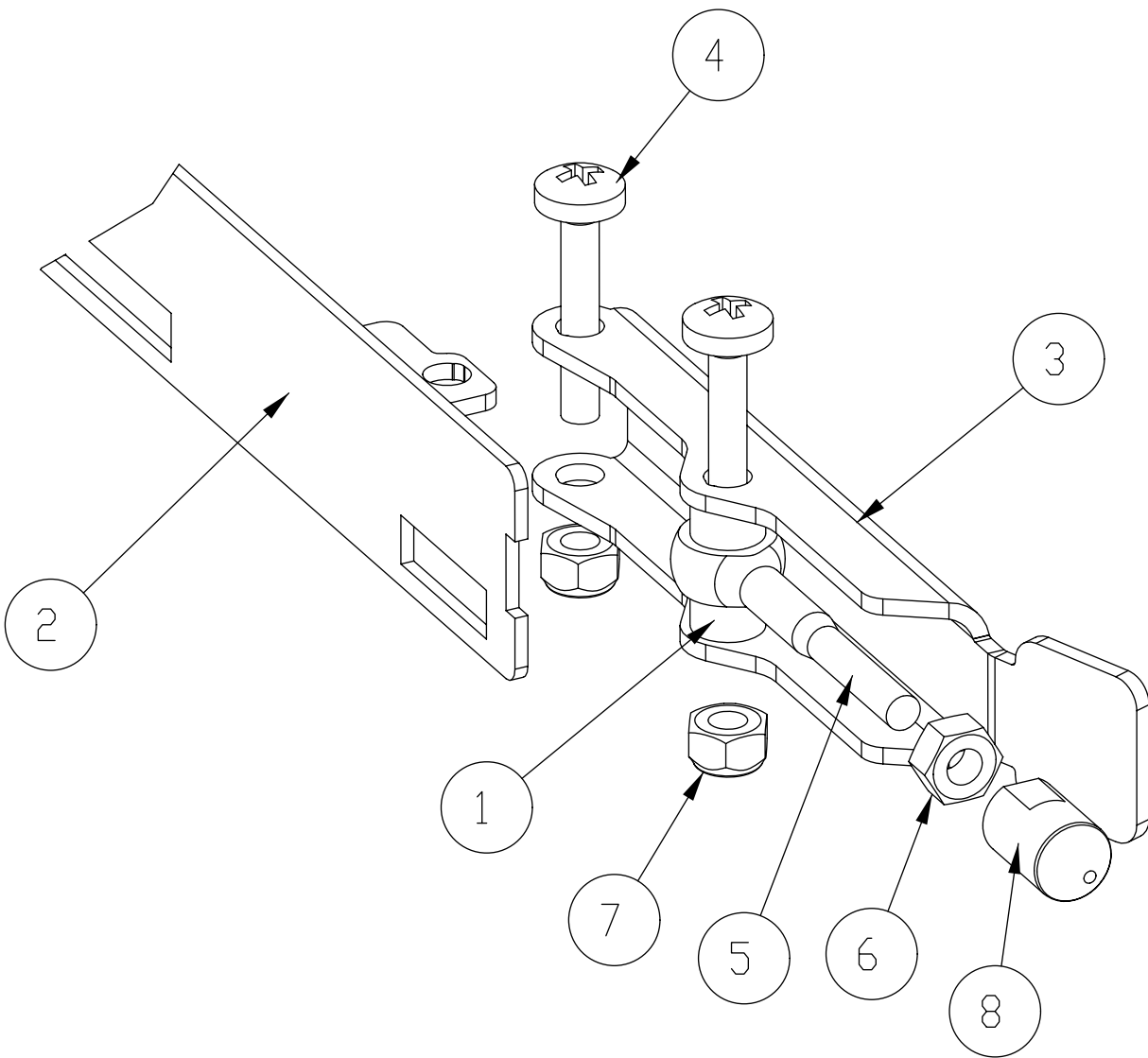


BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	210023	1	SQUEEGEE CASTING ASY
2	210024	1	SQUEEGEE MOUNT BKT
3	210065	1	SQUEEGEE BLADE 200 GUM
4	430074	6	ADJUSTING NUT 17B/E
5	430076	2	NYLON SQUEEGEE INSERT
6	430085	2	SQUEEGEE BUMPER WHEEL
7	712517	4	SCR-MC 8-32 X 1" ST PL - PH
8	831400	2	WHEEL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

# E17 Rear Squeegee Assembly (Curved)



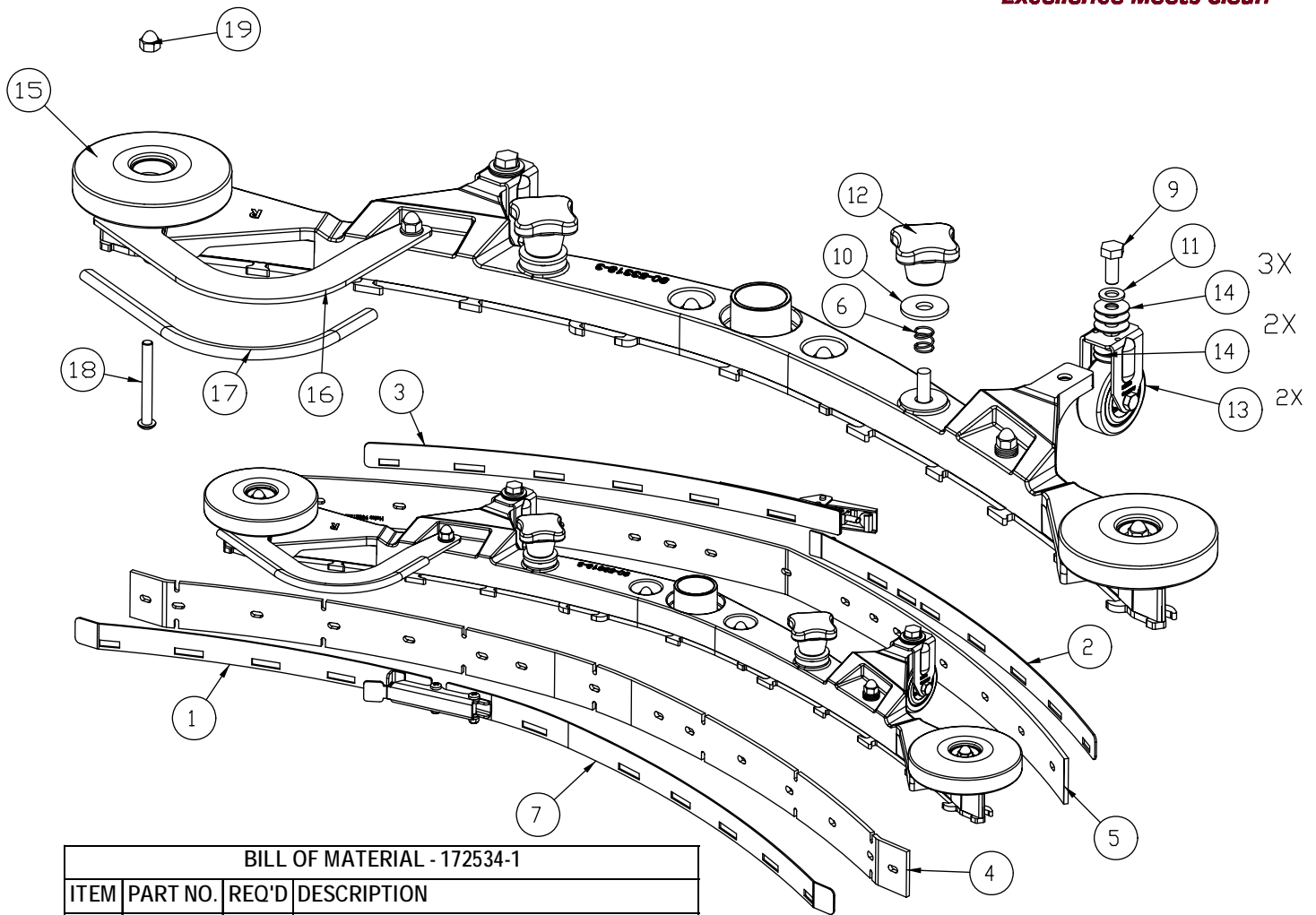
BILL OF MATERIAL - 172530-1			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172224	1	STRAP WMT , FRT RT -30" (760)
2	172226	1	STRAP WMT , REAR LEFT -30" (760)
3	172227	1	STRAP WMT , REAR RT -30" (760)
4	172258	1	FRONT SQ BLADE 30", 1/8 PU
5	172259	1	REAR SQ BLADE 30", 1/8 PU
6	172429	2	SPRING, COMPRESSION
7	172443	1	TENSION BAND ASM, FRONT LEFT 34"
8	172531	1	30" SQUEEGEE BASE ASM
9	717030	2	BOLT-HH M8X1.25 X 20 SS
10	717040	2	WSR-FLT 10.5 X 30 X 2.5 SS
11	12310264	2	WSR-FLT M8.4X16X1.6 SS
12	17133026	2	KNOB, M10 STAR HANDLE
13	90513094	2	FIXED CASTOR
14	90531112	10	WSR-FLT 8.3 X 22 X 1MM SS
15	90548397	2	ROLLER - PLASTIC, 100mm DIA. (4"), BLACK
16	172275	1	EDGE TRIM, 5/16 X 8" BLACK
17	172257	1	BUMPER, 30" SQG
18	712591	6	NUT , ACORN 1/4-20 SS
19	712592	2	SCR-MC BHCS, 1/4-20 X 2.25 SS



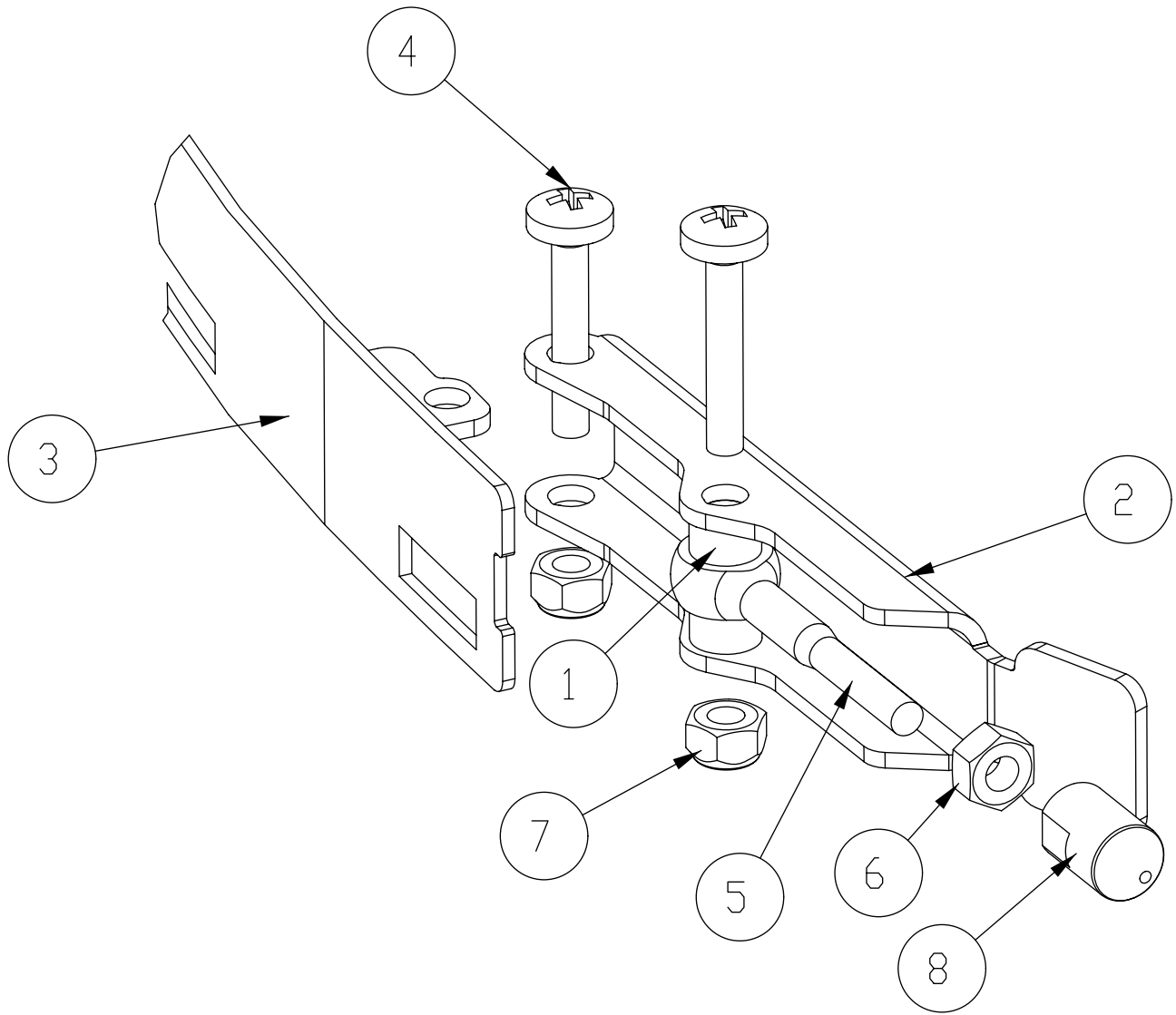
BILL OF MATERIAL - 172443			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172074	2	SPACER, 5/16OD X 17GA, ALUM
2	172223	1	STRAP WMT, FRT LEFT -30" (760)
3	172234	1	LEVER, 90535758
4	11175494	2	SCR-MC M5 X 25 SS DIN7985
5	11518313	1	BLT-EYE M5 X 40 SS
6	12022430	1	NUT - HEX, M5, SS DIN934
7	12040283	2	NUT - HEX, M5 NYLON LOCK, SS DIN985
8	90513631	1	PIN, THD 90513631



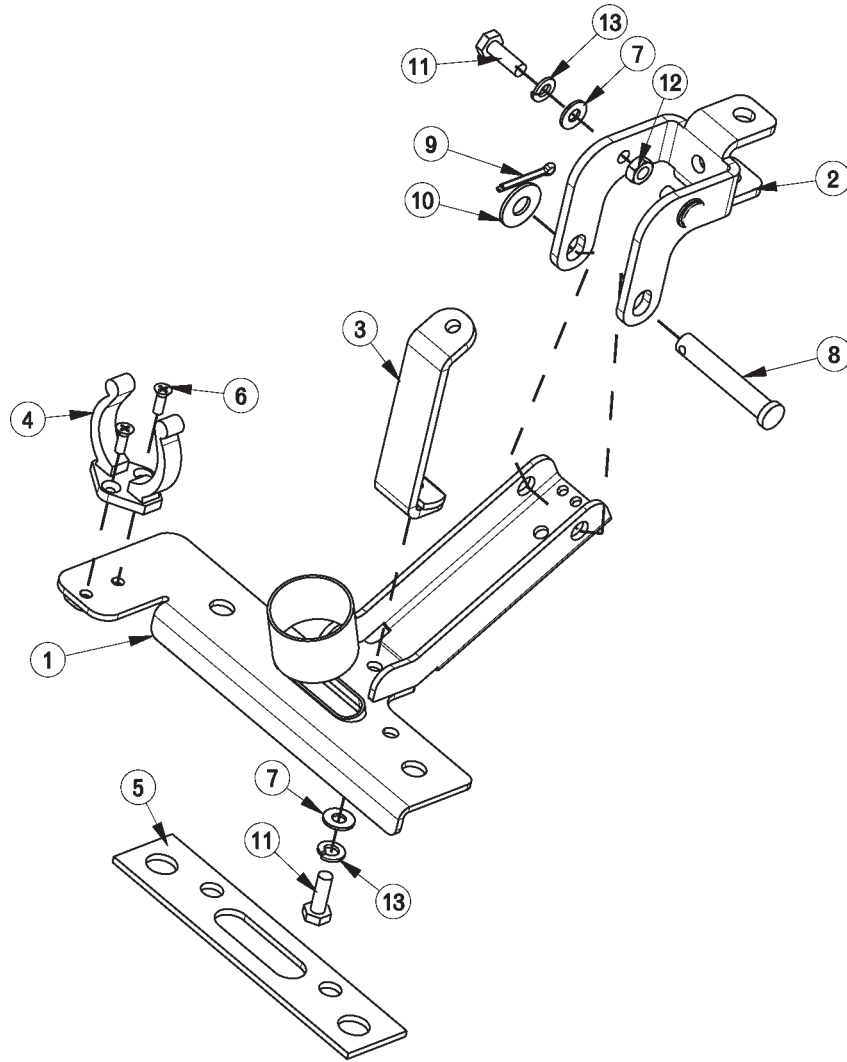
## E20 Rear Squeegee Assembly (Curved)



BILL OF MATERIAL - 172534-1			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172241	1	STRAP WMT, FRONT
2	172245	1	STRAP WMT, REAR
3	172246	1	STRAP WMT, REAR
4	172272	1	FRNT SQG BLADE 34", 1/8 PU
5	172273	1	REAR SQG BLADE 34", 1/8 PU
6	172429	2	SPRING, COMPRESSION
7	172440	1	TENSION BAND ASM, FRONT LEFT 34"
8	172535	1	SQG BASE ASSEMBLY 34"
9	717030	2	BOLT-HH M8X1.25 X 20 SS
10	717040	2	WSR-FLT 10.5 X 30 X 2.5 SS
11	12310264	2	WSR-FLT M8.4X16X1.6 SS
12	17133026	2	KNOB, M10 STAR HANDLE
13	90513094	2	FIXED CASTOR
14	90531112	10	WSR-FLT 8.3 X 22 X 1MM SS
15	90548397	2	ROLLER - PLASTIC, 100mm DIA (4"), BLACK
16	172271	1	BUMPER, 34" SQG
17	172274	1	EDGE TRIM, 5/16 X 10" BLACK
18	712592	2	SCR-MC BHCS, 1/4-20 X 2.25 SS
19	712591	6	NUT, ACORN 1/4-20 SS

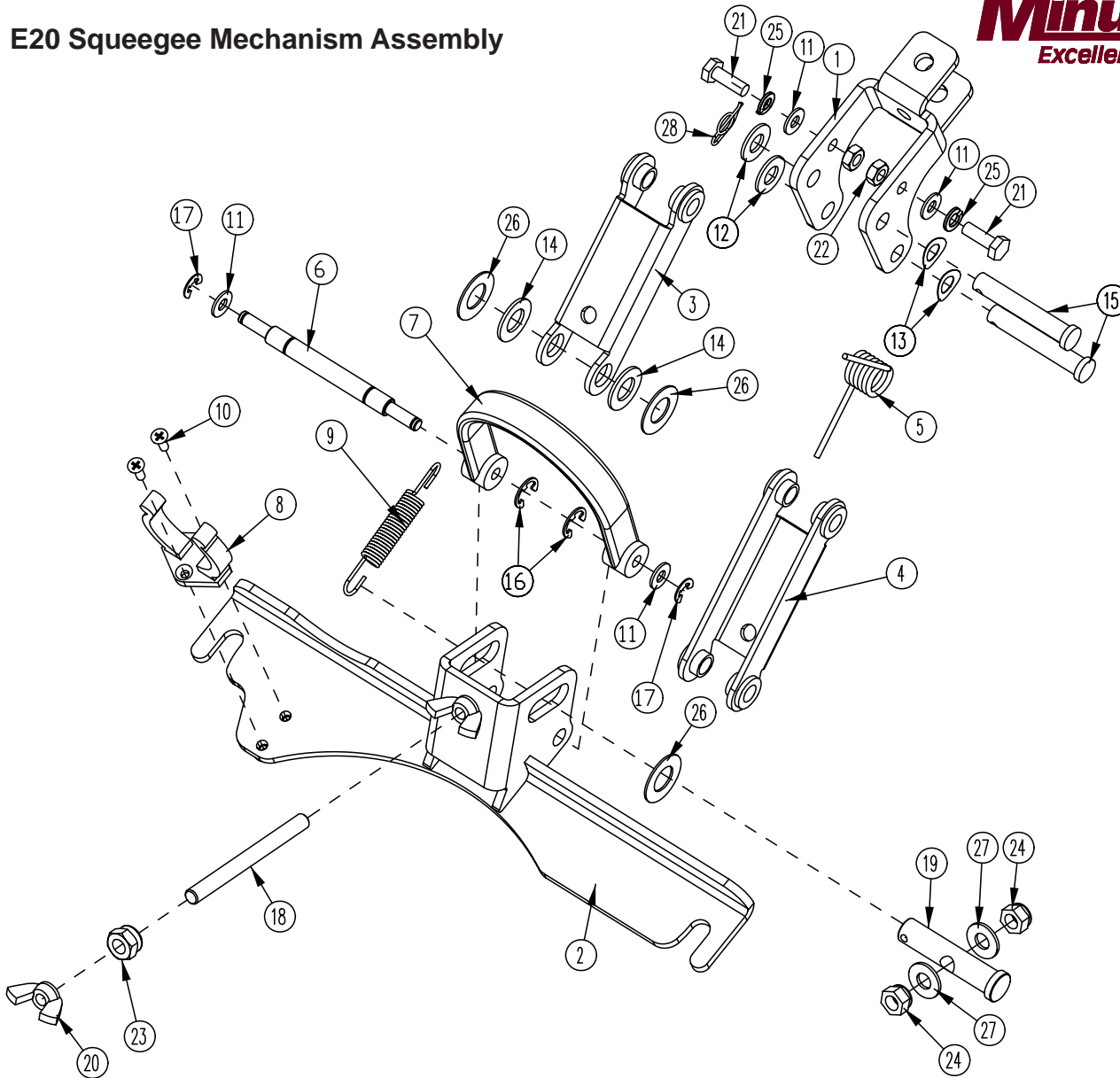


BILL OF MATERIAL - 172440			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172074	2	SPACER, 5/16OD X 17GA, ALUM
2	172234	1	LEVER, 90535758
3	172240	1	STRAP WMT, FRONT LEFT
4	11175494	2	SCR-MC M5 X 25 SS DIN7985
5	11518313	1	BLT-EYE M5 X 40 SS
6	12022430	1	NUT - HEX, M5, SS DIN934
7	12040283	2	NUT - HEX, M5 NYLON LOCK, SS DIN985
8	90513631	1	PIN, THD 90513631



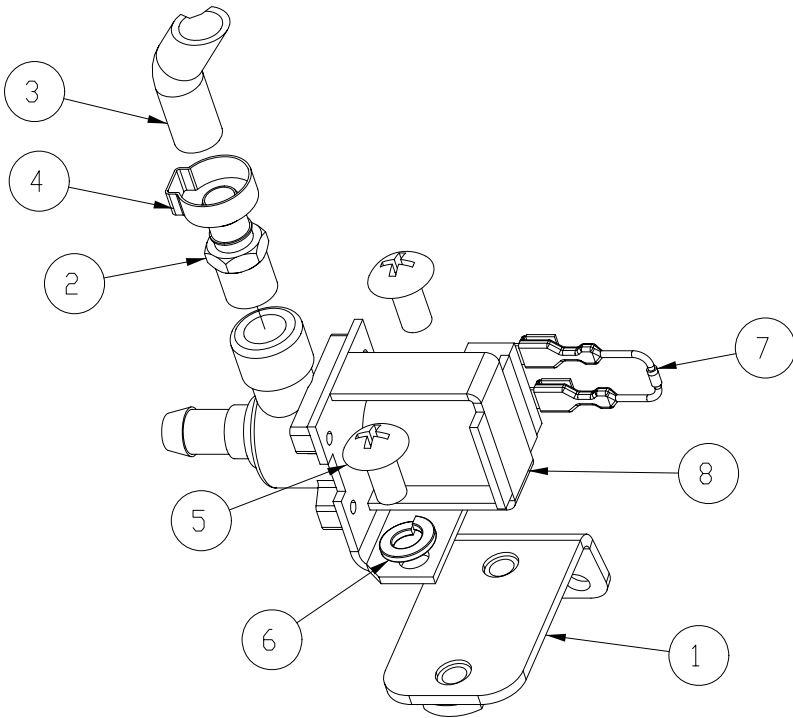
BILL OF MATERIAL - 172170			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172171	1	SQUEEGEE MECH WMT
2	172173	1	BKT, MAIN SQUEEGEE HINGE
3	172175	1	BKT, STANDOFF
4	260579	1	TOOL CLIP, 1.5" HOSE
5	430073	1	GASKET DIE CUT PS BACK
6	710530	2	SCR-MC FL HD 8-32 X .50 BRS
7	711504	3	WSR-FLAT 1/4 ID SS
8	711678	1	CLEVIS 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

# E20 Squeegee Mechanism Assembly

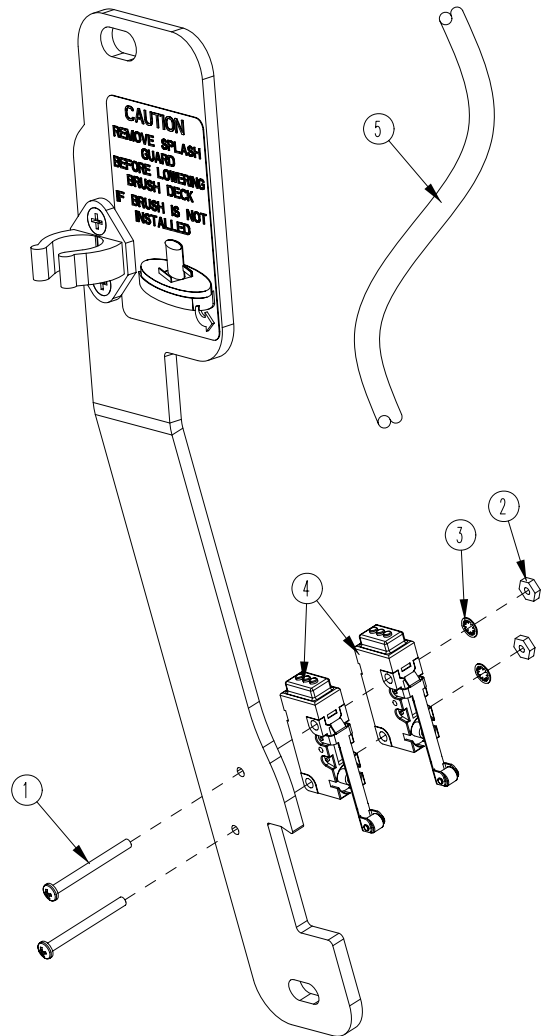


**BILL OF MATERIAL - 172150**

ITEM	PART NO.	REQ'D	DESCRIPTION	ITEM	PART NO.	REQ'D	DESCRIPTION
1	172134	1	BKT, MAIN SQUEEGEE HINGE	15	711678	2	CLEVIS PIN 3/8 X 2-1/4
2	172155	1	SQUEEGEE MOUNT WMT	16	711717	2	RETAINING RING- E TYPE .37
3	172196	1	SQ TOP LINK W/ BUSHING	17	711720	2	.250 DIA RETAINING RING- E TYPE
4	172197	1	SQ BOT LINK W/ BUSH	18	712147	1	ROD-THD 5/16-18 X 3.5 SS
5	172261	1	TORSION SPRING	19	712148	1	CLEVIS PIN, 1/2 x 2.25 W/ HOLE
6	172352	1	PIN, 3/8 X 3.0, SQG STRAP	20	712157	2	NUT- WING 5/16-18 SS
7	172357	1	STRAP, 9" PU, BLACK	21	712562	2	BOLT-HH 1/4-20X3/4 SS
8	260579	1	TOOL CLIP, 1.5" HOSE	22	712665	2	NUT-HEX 1/4-20 SS
9	430051	1	RETURN SPRING-3.00"	23	712680	1	NUT-HEX 5/16-18 SS
10	710530	2	SCR-MC FL HD 8-32 X .50 BRS	24	712683	2	NUT, HEX 5/16-18 NYLOC SS
11	711504	4	WSR-FLAT 1/4 ID SS	25	712758	2	WSR-HELICAL 1/4 SS
12	711515	2	WSR-FLAT .406 X .812 X .0625	26	712760	3	WSR-FLAT .56X1.06X.04 SS
13	711523	2	WSR-WAVE .37X .68 X .08	27	712772	2	WSR-FLAT .344 x .75 x .06 SS
14	711592	2	WSR-FLAT .506 X .9 X .064 NYL	28	3400125	1	PIN-COTTER 3/8 RUE RING



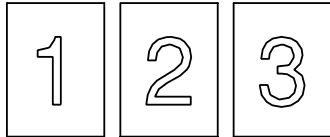
BILL OF MATERIAL - 172169			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	172168	1	BKT, BD SOLENOID MOUNT
2	320264	1	FITTING BRASS - 3/8 DBL BARB X 1/4MPT
3	450055_	1	HOSE-NYLO REINF 3/8 X 9"
4	450076	1	CLAMP-CRIMP 185R SS
5	710196	2	SCR-MC 5/16-18 X .62
6	711545	2	WSR-HELICAL 5/16
7	740482	1	DIODE ASY, 1N4007 W/PIGGY
8	740493	1	WATER VALVE 24VDC



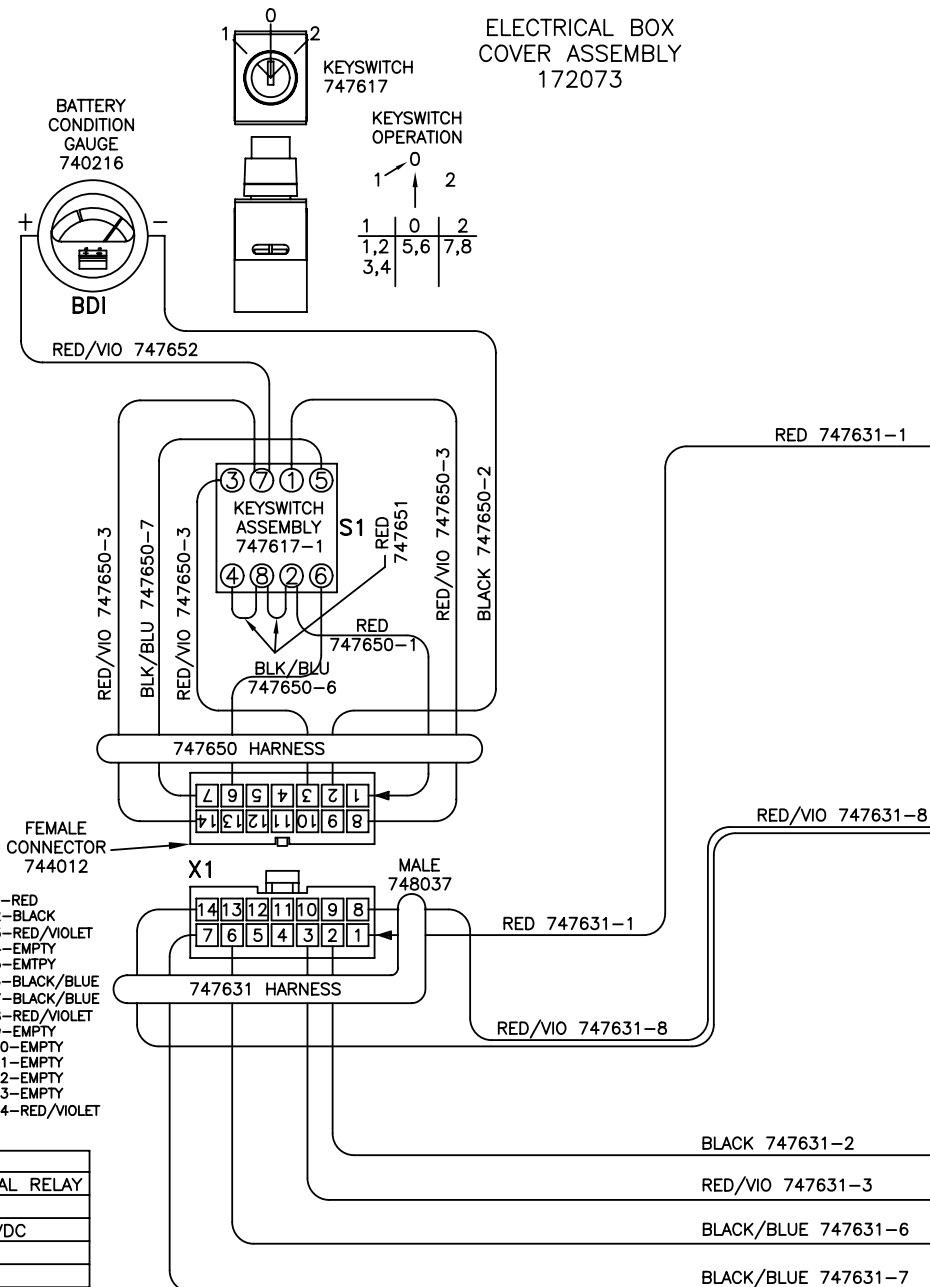
BILL OF MATERIAL			
ITEM	PART NO.	REQ'D	DESCRIPTION
1	710495	2	SCR-MC 4-40 X 1.25 STL Z
2	711428	2	NUT-HEX 4-40
3	712326	2	WSR-INT LOCK #4
4	747603-2	2	SWITCH ASY, MICRO ROLLER W/PACK/CONDUIT
5	747660	1	HARNESS, SOLENOID KIT E1720BD

# 1 Wiring Diagrams

## PAGE LAYOUT



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



- 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

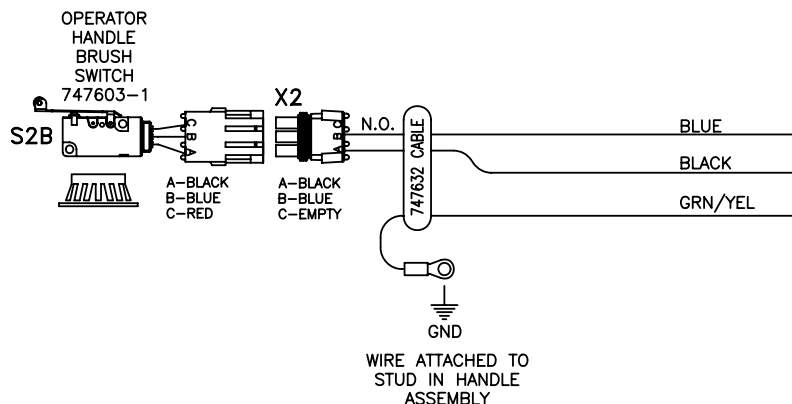
PIN #	COLOR	WHERE TO/FROM
1	RED	X13: BATTERY CHARGER INTERNAL RELAY
2	BLACK	RELAY COILS: 0V
3	RED/VIOLET	BRUSH MOTOR RELAY COIL: 24VDC
4	-	-
5	-	-
6	BLACK/BLUE	BRUSH RELAY NORMALLY CLOSED
7	BLACK/BLUE	BRUSH UNLOAD SWITCH P:B
8	RED/VIOLET	X12: MAIN RELAY COIL: 24VDC
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14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

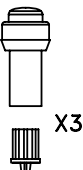


WIRE ATTACHED TO STUD IN HANDLE ASSEMBLY

2

**ELECTRICAL BOX ASSEMBLY**  
172070-120  
172070-230

CHARGER STATUS INDICATOR  
747614  
CSI

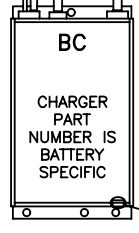


X3

120VAC 60Hz  
or  
230VAC 50Hz  
(different plug)  
CORD  
748680CE  
748680 (UK)

CABLE- PART OF CHARGER

CHARGER  
957760  
IEC60320 C14



**BATTERY CHARGER**  
100-240V~ 50/60Hz  
957761 (115VAC)  
NEMA 5/15P  
957760 (230VAC)  
IEC 60320 C14



CHARGING PROFILES  
1. 956712 12V 105Ah-FLOODED(-1)  
2. 956140 12V 140Ah-FLOODED(-2)  
3. 956135 12V 135Ah-GEL(G-3)  
4. 956100 12V 100Ah-GEL(G-4)

BLACK 747637-2

RED 747637-1

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

RED 747631-1

X13

WHITE

X14

BLACK

INTERNAL INHIBIT RELAY

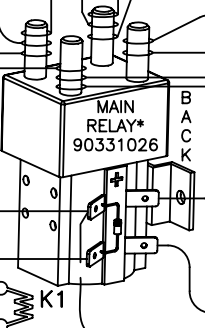
RED 747642

RED/VIO 747631-8

X12

RED

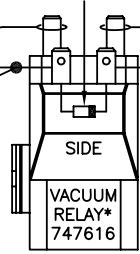
BLACK



K1

BLACK 747647

D3 DIODE  
740482



K3

SPLIT CONDUIT  
747627

RED/VIO 747634-2

RED/VIO 747634-1

BLK/VIO 747697-3  
RED/VIO 747697-1

SPLIT CONDUIT  
747625

RED 747633-1

BLACK 747633-2

RED/VIO 747635-1

RED/VIO 747635-2

RED 747638

BLACK 747639

GRN/YEL 747654

RED/BLK 747636

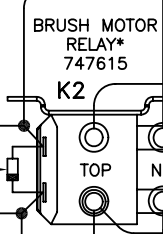
BLK/BLU 747631-7

BLACK 747631-2

RED/VIO 747631-3

BLK/BLU 747631-6

D2 DIODE  
740482



K2

TOP

NC

GRY/BLK 747655

747633

BLACK 747631-2

BLUE

X10

BLACK

X11

GRN/YEL

WIRES ATTACHED TO STUD IN ELECTRICAL BOX  
GND

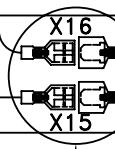
RED/VIO 747631-3

BLK/BLU 747631-7

GRY/RED 747631-3

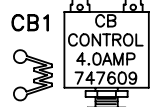
GRY/BLK 747657

GRY/RED 747656



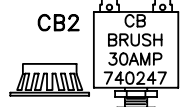
X15

ACCESSORY CONNECTION  
BLACK TAPED



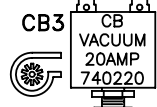
CB1

CB CONTROL  
4.0AMP  
747609



CB2

CB BRUSH  
30AMP  
740247



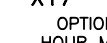
CB3

CB VACUUM  
20AMP  
740220

X18



X17

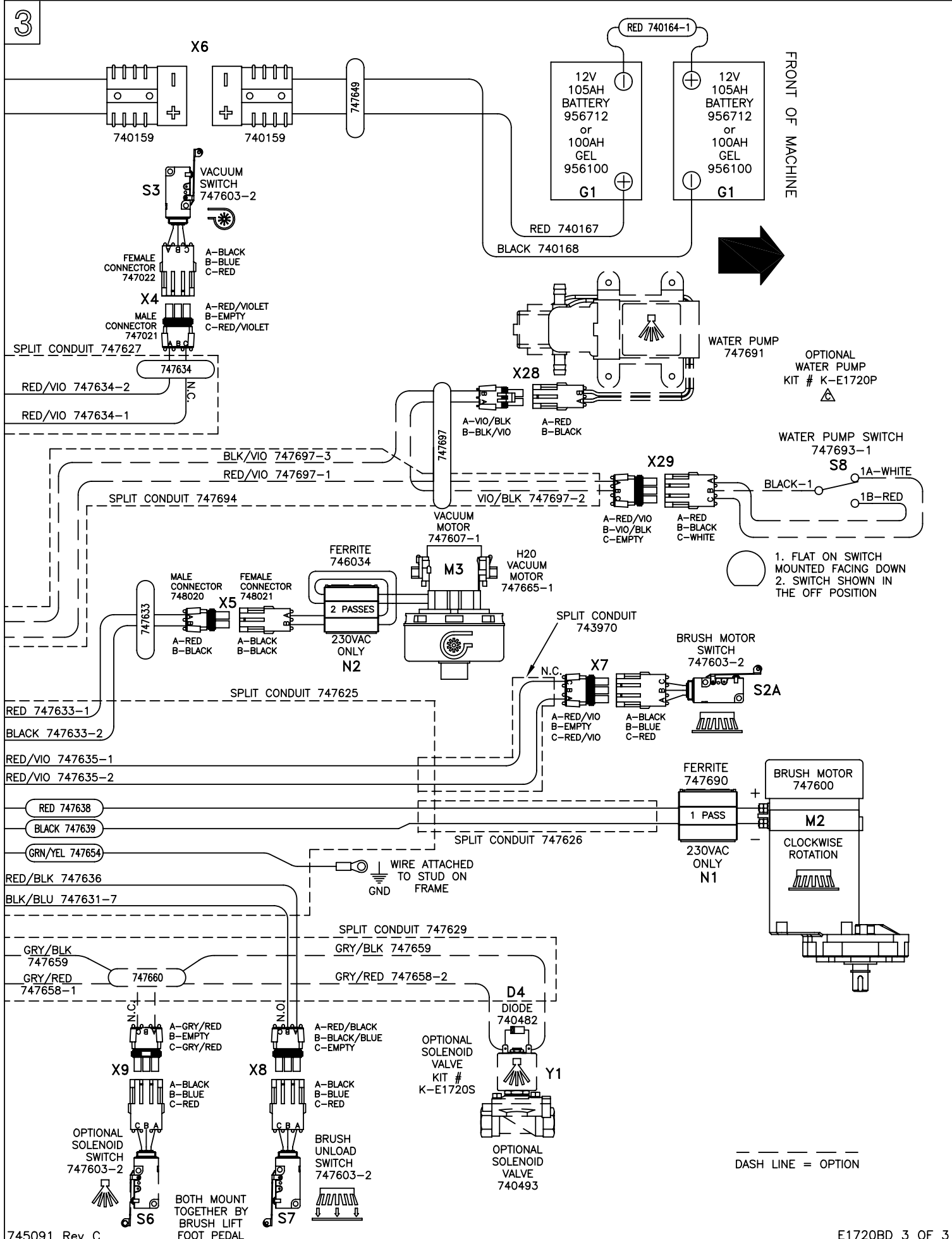


OPTIONAL HOUR METER  
747624  
K-E1720HM



HM

GRY/BLK 747656





E1720BD PART REFERENCE LIST  
Schematic 745091

REFERENCE #	COMPONENT NAME	PART NUMBER
M1 (optional)	PUMP, WATER (KIT K-E1720P)	748691
M2	MOTOR, BRUSH	748692
M3	MOTOR, VACUUM ASSEMBLY	747607-1
M3 (model specific)	MOTOR, VACUUM ASSEMBLY (H20 only)	747665-1
Y1 (optional)	SOLENOID VALVE, WATER (KIT K-E1720S)	740493
K1	RELAY, MAIN	90331026
K2	RELAY, BRUSH MOTOR	747615
K3	RELAY, VACUUM	747616
CB1	CIRCUIT BREAKER 4.0A, CONTROL	747609
CB2	CIRCUIT BREAKER 30A, BRUSH MOTOR	740247
CB3	CIRCUIT BREAKER 20A, VACUUM MOTOR	740220
S1	KEYSWITCH	747617
S2A	SWITCH, BRUSH MOTOR (at motor)	747603-2
S2B	SWITCH, BRUSH MOTOR (handle)	748603-1
S3	SWITCH, VACUUM MOTOR	748603-2
S6	SWITCH, BRUSH UNLOAD	748603-2
S7 (optional)	SWITCH, SOLENOID (KIT K-1720S)	747603-2
S8 (optional)	SWITCH, PUMP- OFF AISLE WAND (KIT K-1720P)	747693-1
CSI	CHARGER STATUS INDICATOR	747614
HM (optional)	HOUR METER (KIT K-E1720HM)	747624
BC (model specific)	BATTERY CHARGER 115VAC (battery type specific)	957761 (-1 or G-4)
BC (model specific)	BATTERY CHARGER 230VAC (battery type specific)	957760 (-1 or G-4)
G1	BATTERY, 12V 105AH (2 REQUIRED)	956712
G1 (optional)	BATTERY, GEL 12V 100AH (2 REQUIRED)	956100
N1	FERRITE, BRUSH MOTOR	747690
N2	FERRITE, VACUUM MOTOR	746034
D1	DIODE, MAIN RELAY	Part of K1
D2	DIODE ASM, BRUSH MOTOR RELAY	740482
D3	DIODE ASM, VACUUM MOTOR RELAY	740482
D4 (optional)	DIODE ASM, SOLENOID VALVE (KIT K-E1720S)	740482

REFERENCE #	CONNECTOR FUNCTION	PART # -female	PART # -male
X1	KEYSWITCH (S1)	744012	748037
X2	SWITCH, BRUSH MOTOR (S2B)	747022	747021
X3	CHARGER STATUS INDICATOR (CSI)	Part of CSI	Part of BC
X4	SWITCH, VACUUM (S3)	747022	747021
X5	MOTOR, VACUUM (M3)	748021	748020
X6	BATTERY CONNECTOR	740159	740159
X7	SWITCH, BRUSH MOTOR (S2A)	747022	747021
X8	SWITCH, BRUSH UNLOAD (S4)	747022	747021
X9	SOLENOID VALVE, WATER (Y1)	747022	747021
X10	OPERATOR HANDLE CABLE	741093	740697
X11	OPERATOR HANDLE CABLE	740366	740697
X12	KEYSWITCH (S1)- MAIN RELAY COIL (K1)	741093	741165
X13	BATTERY CHARGER (BC)- INTERNAL RELAY	740366	740697
X14	BATTERY CHARGER (BC)-INTERNAL RELAY	740366	740697
X15	SOLENOID (Y1) /HOUR METER CONNECTION (HM)	740366	741165
X16	SOLENOID (Y1) /HOUR METER CONNECTION (HM)	740366	741165
X17	OPTIONAL HOUR METER (HM) WIRE-747656	740366	741165
X18	OPTIONAL HOUR METER (HM) WIRE-747657	740366	741165
X28 (optional)	SWITCH, TOGGLE WATER PUMP (S8)	747022	747021
X29 (optional)	PUMP, OFF AISLE WAND (M1)	748021	748020

# 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