

PARTS MANUAL

EMMA Mk-2(A) Enabling Mobile Machine Automation
BE-MK2(A)-RS26



REV 08
JANUARY 2022

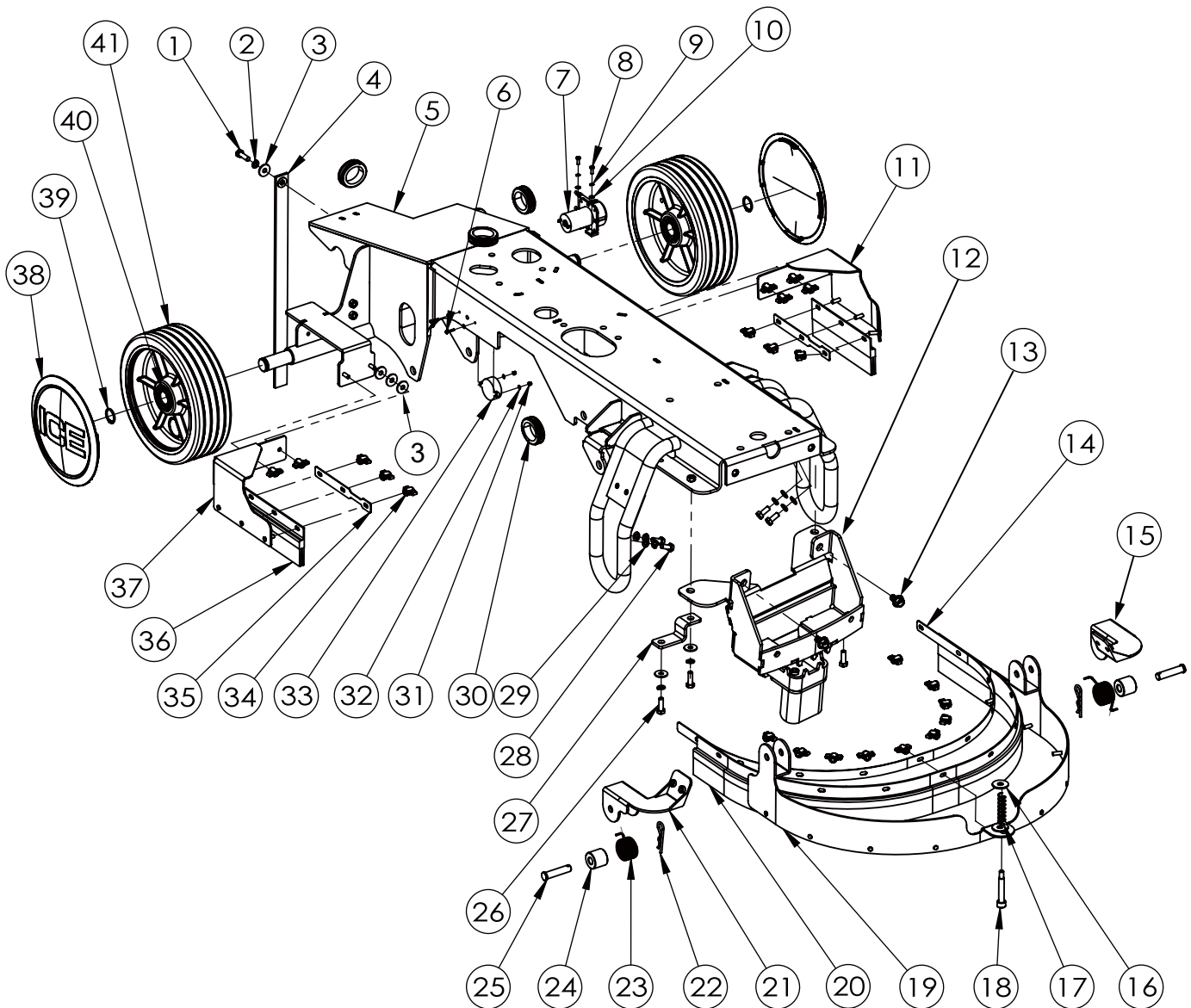
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MAIN FRAME AND PERIMETER GUARDS GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY.
1	446-00154-01	1021825	M8x25mm HH Screw	1
2	456-00102-01	1422821	Washer, M8 Lock	9
3	456-00100-01	1421824	Washer, M8 Oversize	8
4	500-00135-01	8210118	Static Strap	1
5	411-00182-01	8350150	Main Frame	1
6	446-00160-01	1211316	Screw, Pan Head, M3x16	2
7	500-00136-01	8310930A	Peristaltic Pump, Kit	1
8	446-00161-01	1221412	Screw, Pan Head, M4x12	2
9	456-00114-01	1422411	Washer, M4 Lock	2
10	456-00104-01	1421409	Washer, M4	2
11	411-00176-01	8350162	Support Bracket, Left Rear Wheel Guard	1
12	411-00252-01		LIDAR Cage, Protection	1
13	446-00102-01	1022020	Screw, M10x20mm HH	2
14	411-00180-01	8350168	Clamp	1
15	411-00178-01	8350164	Perimeter Guard Bracket, Left	1
16	456-00118-01	1421030	Flat Washer, M10x30x2.5	2
17	450-00103-01	8350171	Compress Spring	1
18	446-00153-01	8350172	Shoulder Bolt	1
19	411-00179-01	8350165	Support Bracket, Front Perimeter Guard	1
20	442-00159-01	8350167	Brush Strip	1
21	411-00177-01	8350163	Perimeter Guard Bracket, Right	1
22	442-00163-01	8310320	Pin, Cotter	2
23	450-00102-01	8350170	Torsional Spring	2
24	442-00160-01	8350169	Spacer	2
25	442-00158-01	8350166	Pin	2
26	446-00154-01	1021825	Bolt, Hex Head, M8x25	4
27	411-00181-01	8350156	Bracket, Stand, BC	2
28	446-00110-01	1021820	Screw, M8x20mm HH	4
29	456-00111-01	1421816	Washer, M8	4
30	442-00119-01	8310133	1-3/8" Grommet	4
31	444-00102-01	1123305	Nut, M3 Nylock	2
32	456-00116-01	1421307	Washer, M3	4
33	500-00137-01	8310708A	Horn, 24VDC, Kit	1
34	442-00157-01	8210531	M6 Knob	20
35	411-00174-01	8311659	Clamp	2
36	442-00102-01	8311663	Brush Strip	2
37	411-00175-01	8350161	Support Bracket, Right Rear Wheel Guard	1
38	421-00106-01	8310150	Wheel Cap	2
39	442-00175-01	1436025	Retaining Ring, 25mm	2
40	442-00176-01	1612605	Ball Bearing, 6205-2RS	2
41	442-00177-01	8310119	10" Wheel, PU Tire	2

MAIN FRAME AND PERIMETER GUARDS GROUP

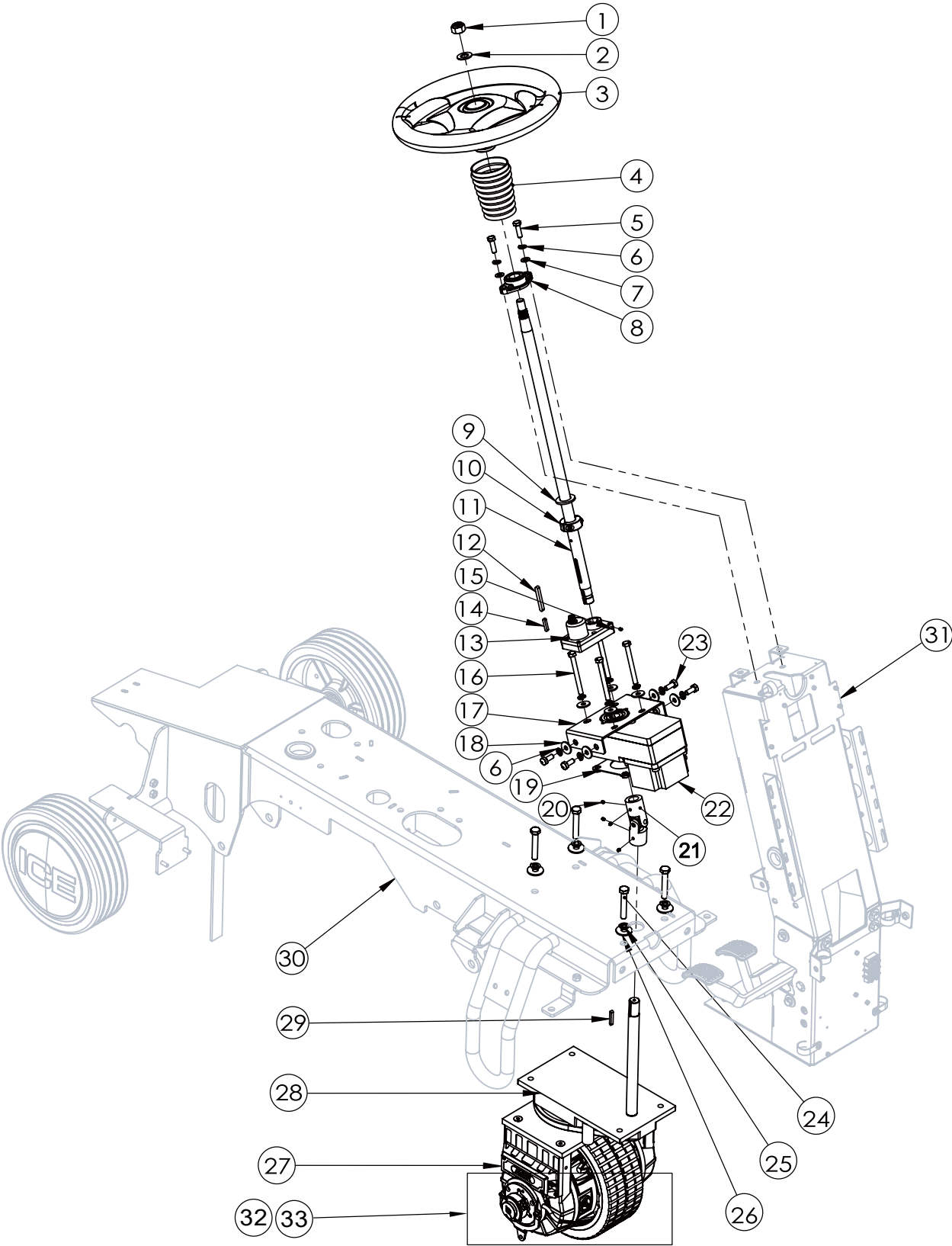
DRIVE TRAIN GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	444-00115-01	1113014	Lock Nut, M14	1
2	456-00117-01	1421428	Flat Washer, M14xOD28x2.0	1
3	442-00179-01 (a)	8310602	Steering Wheel	1
-	442-00427-01 (b)	-	Steering Wheel Hub, Adapter OT-16	1
4	442-00180-01	8310608	Bellows, Shaft, Steering	1
5	446-00154-01	1021825	Bolt, Hex Head, M8x25	3
6	456-00102-01	1422821	Washer, M8 Lock	17
7	456-00111-01	1421816	Flat Washer, M18xOD16x1.6	2
8	442-00162-01	8310609	Bearing, Flange	1
9	456-00110-01	8350239	Large Delrin Washer	1
10	442-00124-01	8350238	20mm Clamping Shaft Collar	1
11	412-00112-01	8350127	Steering Shaft	1
12	442-00120-01	1654650	6x6x50mm Key	1
13	446-00139-01	1534406	M4x6 Set Screw	2
14	442-00114-01	1654025	Key, 3/16"x3/16"x1"	1
15	290-00111-01	8350410	Encoder with Gearbox, Steering	1
16	446-00111-01	1022880	M8x80mm HH Screw	4
17	411-00152-01	8350115	Bracket, Motor Mount	1
18	456-00100-01	1421824	Washer, M8 Oversize	19
19	411-00159-01	8350121	Plate, Motor Clamping	1
20	446-00162-01	1534508	Set Screw, M5x8	4
21	442-00178-02	8313614	U-Joint, Steering, RS26 8313614	1
22	830-00119-01	8350430	Steering Column Motor Assy	1
23	446-00110-01	1021820	Screw, M8x20mm HH	12
24	446-00195-01	1021060	BOLT, HEX HEAD, M10X60	4
25	456-00130-01	1422026	LOCK WASHER, M10	4
26	456-00118-01	1421030	FLAT WASHER, M10X30X2.5	4
27	500-00131-01	8350610	Drive Wheel with Encoder	1
28	500-00157-01	8310603	Steering Chain System	1
29	442-00115-01	1654532	Key, 3/16"x3/16"x1-1/4"	1
30	MAIN FRAME AND PERIMETER GUARDS GROUP			
31	MAIN TOWER GROUP			
32	500-00149-01	8350611	Electrically Released Brake	-
33	290-00118-01	8350612	Eltra Traction Encoder	-

Note: (a) steering wheel only; the hub is not included. Please add hub 442-00427-01 if required.

(b) hub for steering wheel; the steering wheel is not included. Please add 442-00179-01 if steering wheel is required.

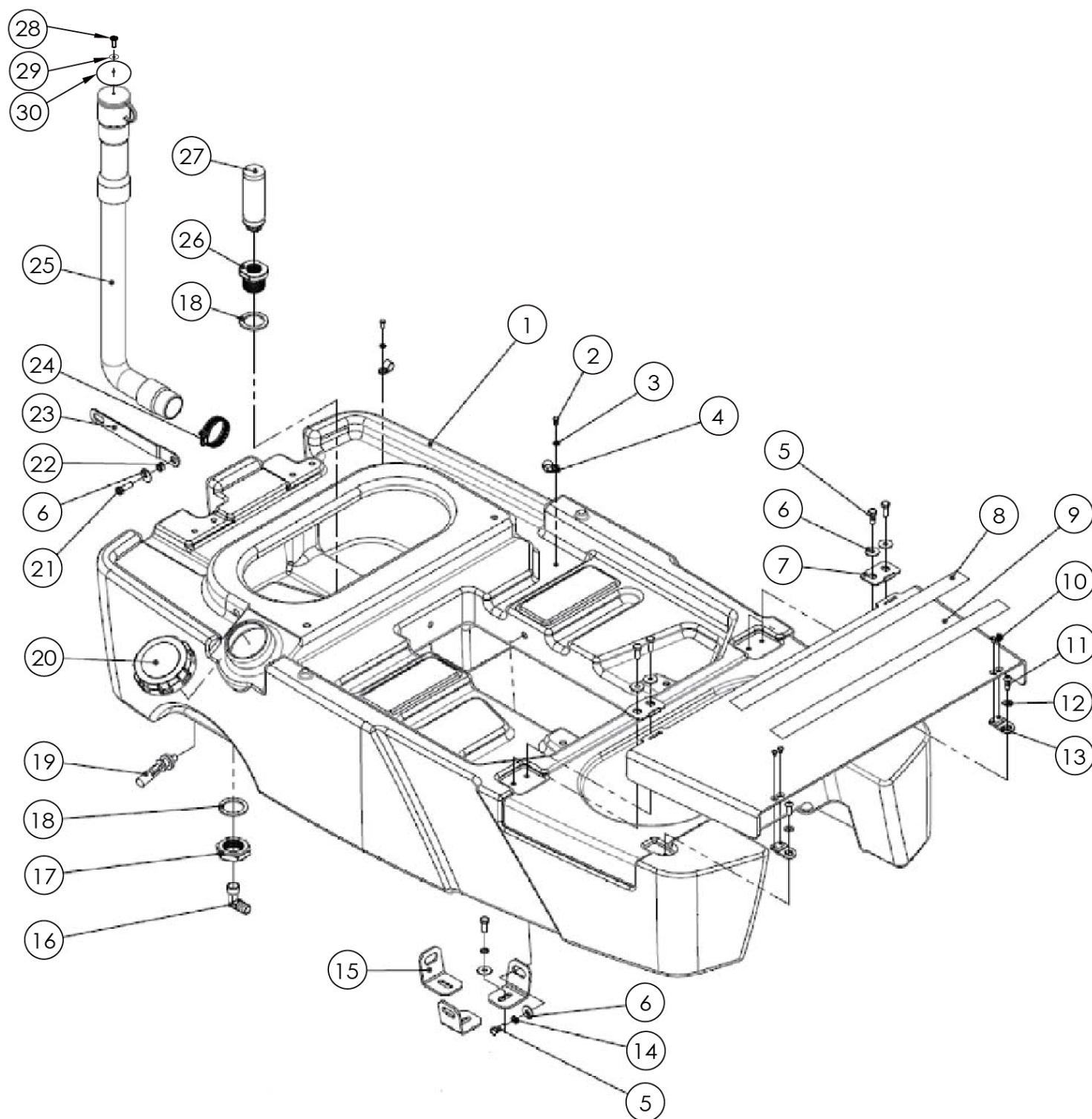
DRIVE TRAIN GROUP



SOLUTION TANK GROUP

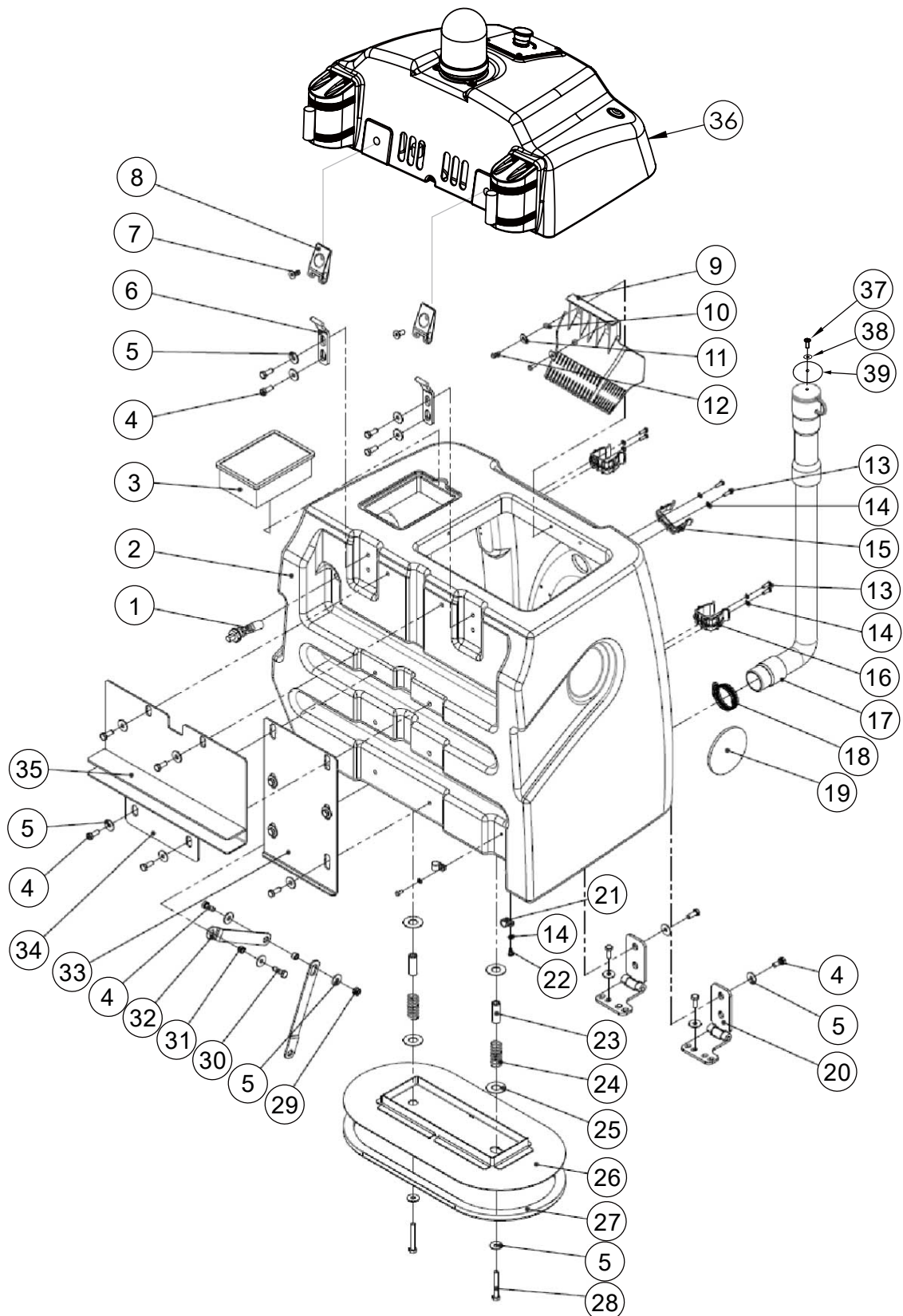
ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	422-00105-01	8310101	Solution Tank	1
2	446-00155-01	1221512	Screw, Pan Head, M5x12	2
3	456-00115-01	1421510	Flat Washer, M5x10x1.0	2
4	442-00106-01	8003009	Clamp, Nylon	2
5	446-00110-01	1021820	Bolt, Hex Head, M8x20	12
6	456-00100-01	1421824	Flat Washer, M8x24x2.0	13
7	411-00190-01	8310139	Plate, Tank to Footrest	2
8	430-00101-01	8310151	Non-Slip Mat	2
9	411-00191-01	8310132	Footrest Plate	1
10	446-00169-01	1222508	Sunk Screw, M5x8	4
11	446-00158-01	1512820	Screw, Hex Socket, M8x20	2
12	456-00111-01	1421816	Flat Washer, M8x16x1.6	2
13	411-00192-01	8310140	Junction Plate	2
14	456-00102-01	1422821	Lock Washer, M8	8
15	411-00193-01	8310130	Bracket, Solution Tank Mounting	3
16	442-00197-01	8310124	Elbow, G1/2	1
17	444-00120-01	8310142	Nut, M36	1
18	438-00131-01	8310141	Sealing	2
19	442-00201-01	8310238A	Sensor, Solution Level	1
20	421-00108-01	8310125	Cap, Solution Tank	1
21	446-00154-01	1021825	Bolt, Hex Head, M8x25	1
22	460-00109-01	8310225	Sleeve, 8.1x12.7x7.8	1
23	411-00194-01	8310224	Arm, Recovery Tank Support	1
24	442-00198-01	1962050	Clamp, 2 Inch	1
25	800-00234-01	8320106	Hose Assembly Clear	1
26	442-00199-01	8310123	Adapter, Strainer Assembly	1
27	800-00164-01	8310122	Strainer Assembly	1
28	446-00241-01	1321210	Screw, ST4.2x9.5 Self-Tapping	1
29	456-00145-01	1421515	Washer, M5 5.3x15x1 SS	1
30	420-00108-01	-	Label Cap, Clean Water Drain (Auto-C Version)	1

SOLUTION TANK GROUP



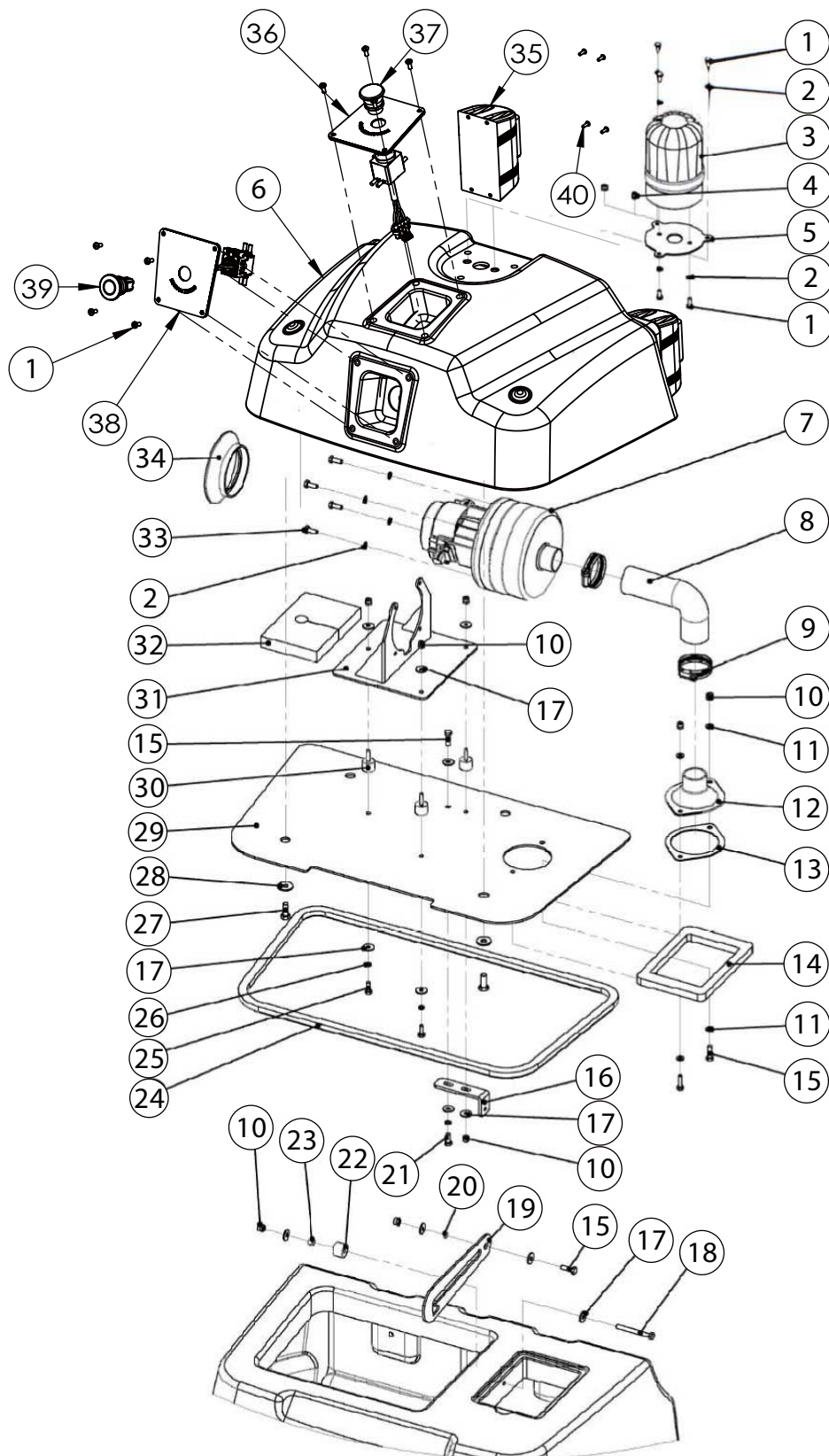
RECOVERY TANK GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	442-00201-01	8310238A	Sensor, Solution Level, Kit	1
2	442-00205-01	8310201	Recovery Tank	1
3	442-00206-01	8310237	Filter, Dust	1
4	446-00110-01	1021820	Screw, M8x20mm HH	21
5	456-00100-01	1421824	Washer, M8	25
6	442-00207-01	8310227	Hinge, Welded	2
7	446-00175-01	1513820	Screw, Hex Socket, M8x20	2
8	442-00208-01	8310226	Hinge, Leaf	2
9	442-00209-01	8310250	Debris Collector	1
10	442-00210-01	8012008	Bushing	2
11	442-00211-01	1421618	Flat Washer, M6x18x1.6	2
12	446-00176-01	1321413	Self-Tapping, ST4.8X13	2
13	446-00177-01	1221516	Screw, Pan Head M5x16	8
14	456-00123-01	1421510	Flat Washer, M5x10x1.0	12
15	442-00212-01	6210111	Clamp, Hose	2
16	442-00213-01	2310129	Clamp, Hose	2
17	800-00235-01	8320205	Hose Assembly	1
18	442-00198-01	1962050	Clamp, 2"	12
19	442-00214-01	4010316	ICE Logo	2
20	442-00215-01	8310126	Hinge Assembly	2
21	442-00200-01	8113009	Clamp, Nylon	4
22	446-00155-01	1221512	Screw, Pan Head, M5x12	4
23	442-00215-01	8310221	Hinge Assy	2
24	450-00108-01	8310220	Compression Spring	2
25	456-00124-01	8310222	Flat Washer, Large	4
26	442-00216-01	8310216	Cover, Solution Tank	1
27	442-00217-01	8310219	Sealing Strip	1
28	446-00178-01	1022860	Bolt, Hex Head, M8x60	2
29	444-00122-01	1123810	Lock Nut, M8	1
30	446-00154-01	1021825	Bolt, Hex Head, M8x25	1
31	460-00109-01	8310225	Sleeve, 8.1x12.7x7.8	2
32	442-00221-01	8310223	Arm, Recovery Tank Support	1
33	442-00220-01	8310215	Bracket, Recovery Tank Support	1
34	442-00219-01	8310211	Bracket, Support	1
35	442-00218-01	8310214	Spacer, Rubber	1
36	RECOVERY TANK COVER GROUP			
37	446-00241-01	1321210	Screw, ST4.2x9.5 Self-Tapping SS	1
38	456-00145-01	1421515	Washer, M5 5.3x15x1 SS	1
39	420-00109-01	-	Label Cap, Dirty Water Drain	1

RECOVERY TANK GROUP

RECOVERY TANK COVER GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	446-00196-01	1514512	Screw, Pan Head, M5x12, Black	13
2	456-00121-01	1421510	Flat Washer, M5x10x1.0	9
3	442-00202-01	8310165A	Caution Light, Kit	1
4	444-00118-01	1123507	Lock Nut, M5	2
5	411-00195-01	8310241	Plate, Caution Light	1
6	422-00102-01	8350201	Recovery Tank Cover	1
7	500-00140-01	8310260	Ametk Vacuum Motor, 3 Stage, Kit	1
8	460-00110-01	8310207	Vacuum Hose, Recovery Tank Cover	1
9	442-00198-01	1962050	Clamp, 2 Inch	2
10	444-00121-01	1123608	Lock Nut, M6	8
11	456-00105-01	1421612	Flat Washer, M6x12x1.6	4
12	442-00203-01	8310204	Adapter, Vacuum Hose	1
13	438-00132-01	8310205	Gasket, Adapter	1
14	438-00133-01	8310230	Gasket, Dust Filter	1
15	446-00170-01	1021620	Bolt, Hex Head, M6x20	4
16	411-00196-01	8310232	Bracket, Recovery Tank Cover	1
17	456-00113-01	1421618	Flat Washer, M6x18x1.6	12
18	446-00171-01	1022600	Bolt, Hex Head, M6x100	1
19	411-00197-01	8310228	Support, Recovery Tank Cover	1
20	460-00111-01	8310231	Sleeve, 6.4x9.5x4	1
21	446-00172-01	1021616	Bolt, Hex Head, M6x16	1
22	448-00110-01	8310236	Spacer, Nylon	1
23	460-00112-01	8310235	Sleeve, 6.4x9.5x8	1
24	438-00134-01	8310229	Sealing Strip	1
25	446-00173-01	1021610	Bolt, Hex Head, M6x10	2
26	456-00122-01	1422616	Lock Washer, M6	3
27	446-00110-01	1021820	Bolt, Hex Head, M8x20	4
28	456-00100-01	1421824	Flat Washer, M8x24x2.0	4
29	411-00198-01	8310203	Plate, Vacuum Motor Mounting	1
30	448-00111-01	8310208	Isolater, M6	3
31	411-00199-01	8310209	Bracket, Vacuum Motor	1
32	442-00204-01	8310234	Insulation, Recovery Tank Cover	1
33	446-00174-01	1311316	Screw, Self-Tapping, ST4.8x16	4
34	438-00135-01	8310206	Seal, Fan	1
35	442-00164-01	8350407	Safety Belt (US Version)	2
	442-00334-01	8350417	Safety Belt (JP Version)	2
36	800-00165-01	8350206K	Emergency Stop Plate with Decal and Gasket	1
37	500-00121-01	8310707	Button, Emergency Stop	1
38	800-00166-01	8350204K	Start-Stop Plate with Decal and Gasket	1
39	800-00190-01	8350402	Assembly, Start-Pause Button	1
40	446-00197-01	1514412	Screw, Pan Head, M4x12, Black	8

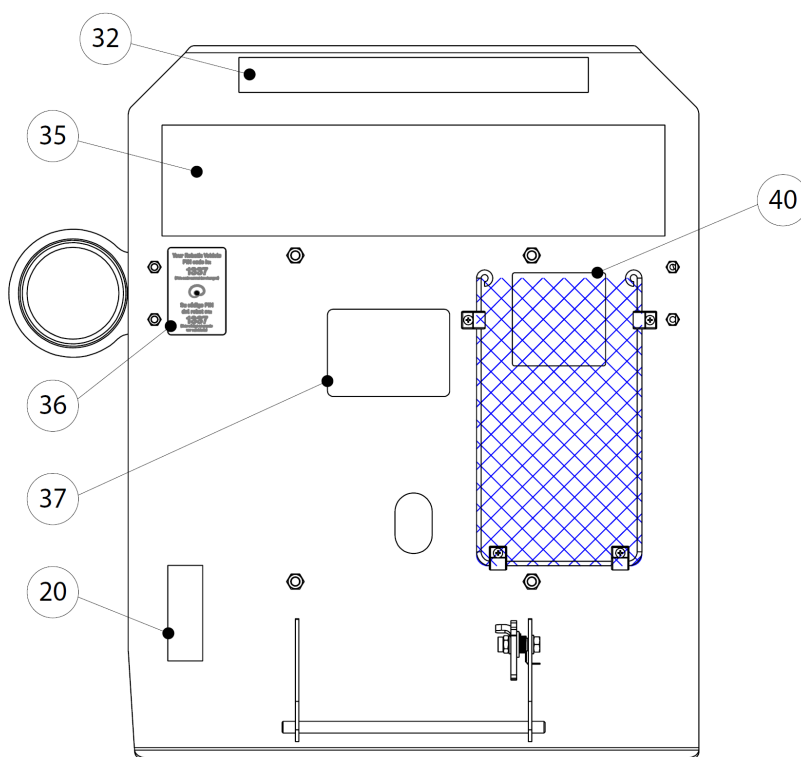
RECOVERY TANK COVER GROUP

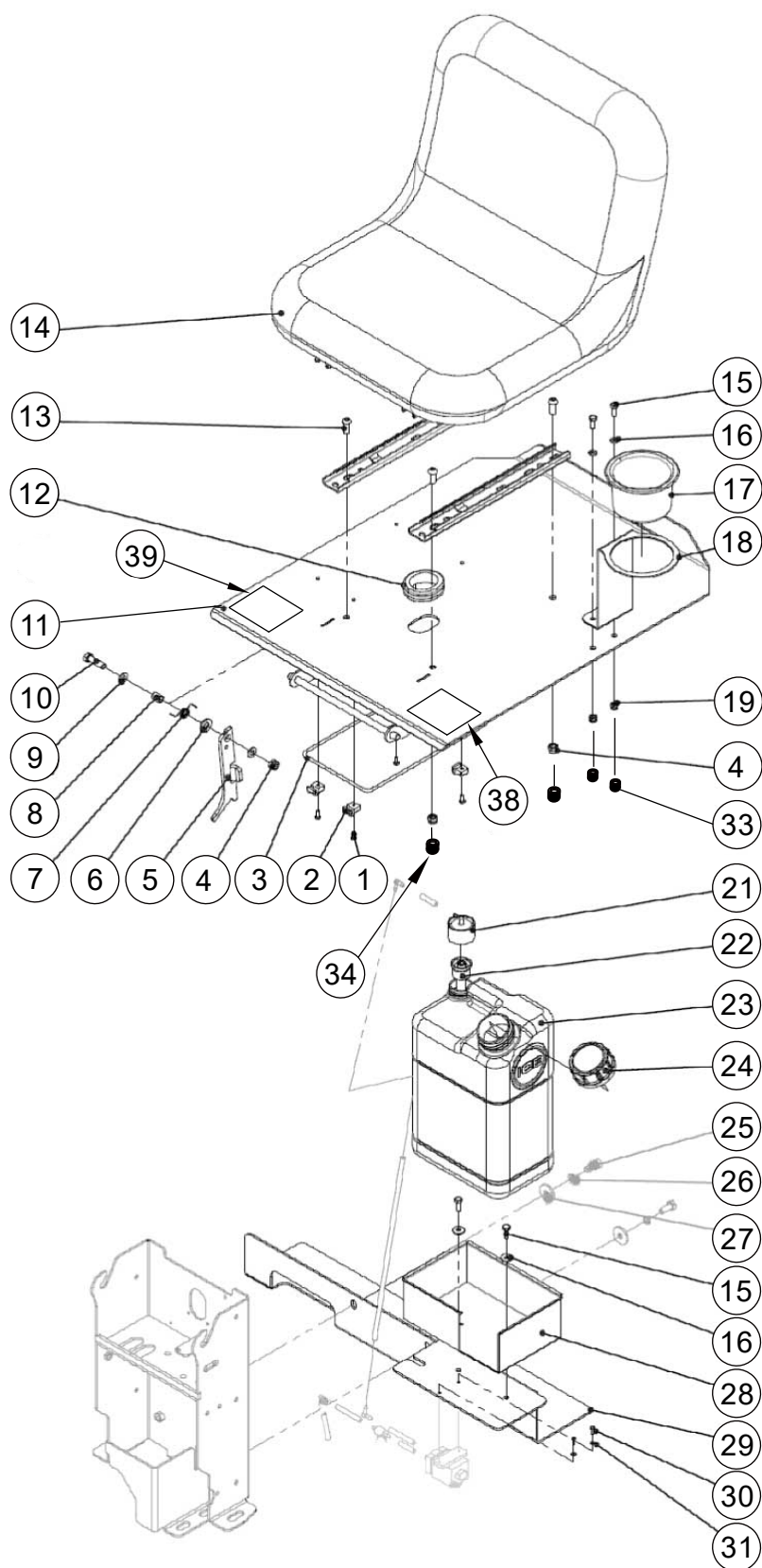
SEAT AND DETERGENT SYSTEM GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	446-00180-01	1221412	Screw, Hex Head, M4x12	4
2	442-00238-01	8133502	Clamp, Seat Assembly	4
3	442-00239-01	8133501	Cargo Net	1
4	444-00122-01	1123810	Lock Nut, M8	5
5	411-00200-01	8310413	Support, Seat	1
6	448-00112-01	8117007	Nylon Spacer	1
7	450-00109-01	8310415	Torsion Spring, Seat Assembly	1
8	460-00113-01	8310414	Sleeve, 8.2x11x15	1
9	456-00111-01	1421816	Flat Washer, M8x16x1.6	2
10	446-00103-01	1021830	Bolt, Hex Head, M8x30	1
11	411-00201-01	8310411	Plate, Seat Mounting	1
12	442-00119-01	8310133	1-3/8" Grommet	1
13	446-00158-01	1512820	Screw, Hex Socket, M8x20	4
14	442-00240-01	8310402K	Seat, Kit	1
15	446-00172-01	1021616	Screw, Hex Head, M6x16	4
16	456-00113-01	1421618	Flat Washer, M6x18x1.6	4
17	442-00241-01	8310418	Cup Holder	1
18	411-00202-01	8310419	Bracket, Cup Holder	1
19	444-00121-01	1123608	Lock Nut, M6	2
20	448-00113-01		Spacer, Seat Assembly	1
21	442-00242-01	8310463	Adapter, Key	1
22	442-00243-01	8310464	Insert, Lock	1
23	420-00105-01	8310461	Bottle, Detergent	1
24	421-00109-01	8310462	Cap, Bottle	1
25	446-00110-01	1021820	Bolt, Hex Head, M8x20	2
26	456-00102-01	1422831	Lock Washer, M8	2
27	456-00125-01	1421828	Flat Washer, M8x28x2.5	5
28	411-00203-01	8310465	Box, Detergent Bottle	1
29	411-00204-01	8310421	Bracket, Bottle	1
30	446-00181-01	1221312	Screw, Hex Head, M3x12	2
31	456-00116-01	1421307	Flat Washer, M3x7x0.5	2
32	448-00115-01	8310460	Spacer Foam, BE-MK2-RS26	1
33	444-00133-01		M6 Plastic Cap Nut	2
34	444-00134-01		M8 Plastic Cap Nut	4
35	440-00129-01	--	Sticker, Under Seat Info (US)	1
36	440-00154-01	--	Sticker, Pin Code	1
37	440-00165-01		Label, Battery Diagram, English	1
	440-00147-01	8350450	Label, Battery Diagram, Japan	1

SEAT AND DETERGENT SYSTEM GROUP – Continuation

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
38	440-00166-01		Label, Flammable Material Warning, English	1
	440-00151-01	8350454	Label, Flammable Material Warning, Japan	1
39	440-00167-01		Label, BE-Mk2-RS26 Battery Warning, English	1
	440-00150-01	8350453	Label, BE-Mk2-RS26 Battery Warning, Japan	1
40	440-00148-01	8350451	Label, BE-MK2-RS26 Emergency Brake, Japan	1
41	440-00189-01	--	Label, BE-Mk2A-RS26 Compliance	1

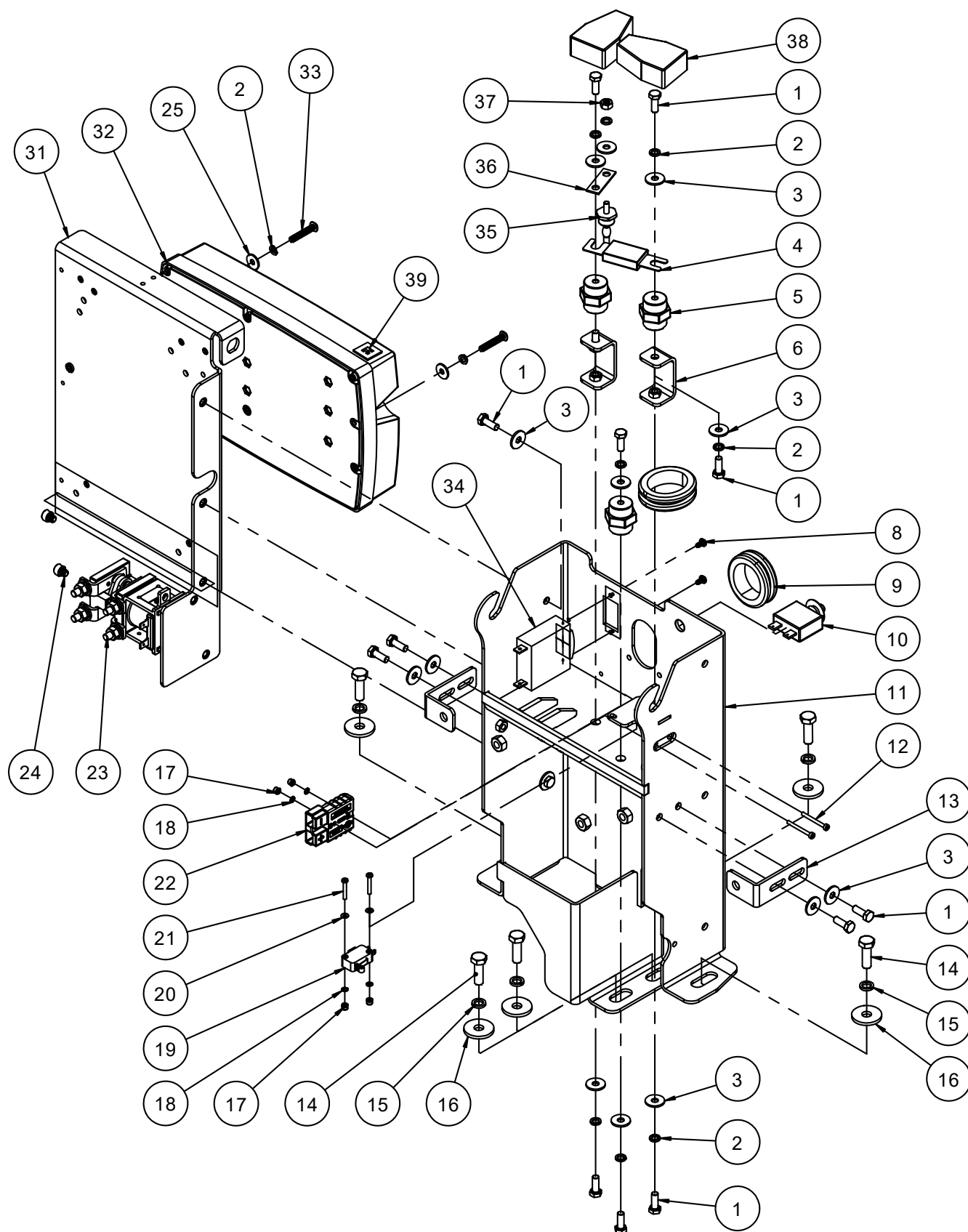
SEAT AND DETERGENT SYSTEM GROUP – Bottom Seat Labels

SEAT AND DETERGENT SYSTEM GROUP

PARTS LIST

MAIN CONTROLLER GROUP

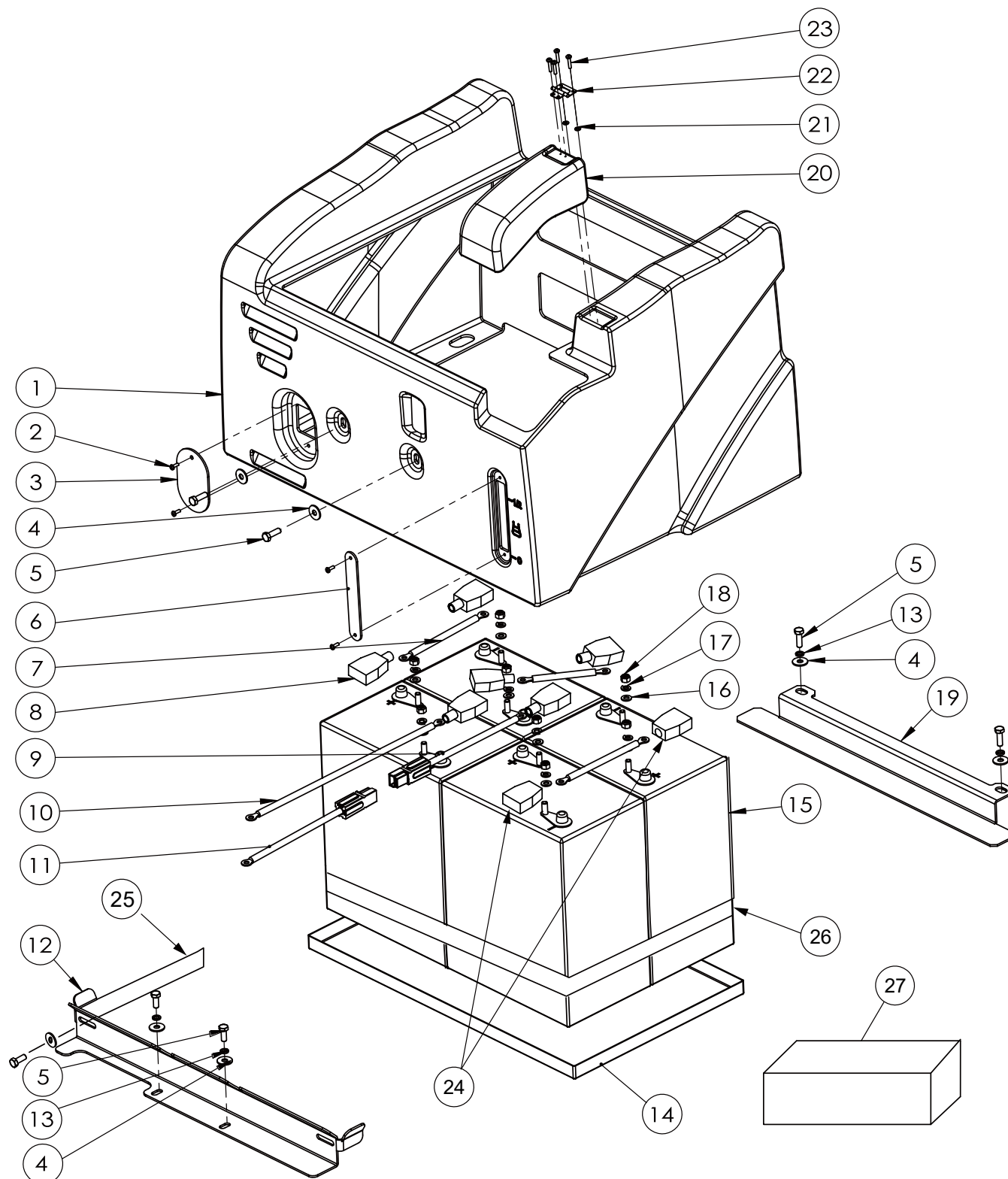
ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY.
1	446-00172-01	1021616	Bolt, Hex Head, M6x16	12
2	456-00122-01	1422616	Lock Washer, M6	18
3	442-00211-01	1421618	Flat Washer, M6x18x1.6	15
4	230-00104-01	8310480	Fuse, 150A	1
5	442-00251-01	8114705	Insulator	3
6	442-00259-01	8310422	Bracket, Insulator	2
7	Removed			
8	446-00194-01	1224304	Screw, Pan Head with Lock Washer 6.32x5.16	4
9	442-00119-01	8310133	Rubber Grommet	2
10	275-00134-01	6210504	Circuit Breaker, 2A	1
11	442-00255-01	8310450	Bracket, Scrub Head Lifting	1
12	446-00186-01	1211330	Screw, Pan Head, M3x30	2
13	442-00256-01	8310425	Bracket	2
14	446-00154-01	1021825	Bolt, Hex Head, M8x25	5
15	456-00102-01	1422821	Lock Washer, M8	5
16	456-00125-01	1421828	Flat Washer, M8x28x2.5	5
17	456-00127-01	1123305	Lock Nut, M3	4
18	456-00128-01	1434300	Washer, Tooth, M3	4
19	235-00102-01	8310423	Micro Switch	1
20	456-00116-01	1421307	Flat Washer, M3x7x0.5	2
21	446-00187-01	1211320	Screw, Pan Head, M3x20	2
22	442-00257-01	8350293	Off Board Charger Cable	1
	810-00214-01	--	Cable Assy, Charger Port 6AWG SB50 Red	
23	500-00143-01	8310492	Master Contactor, Double	1
24	446-00200-01		Screw, M6x8 SS, SHCS	2
25	456-00115-01	1421510	Flat Washer, M5x10x1.0	2
26	Removed			
27	Removed			
28	Removed			
29	Removed			
30	Removed			
31	411-00160-01	8250122	Bracket, Battery Charger	1
32	800-00231-01	--	Main Controller v2.27	1
33	446-00193-01	1512530	Screw, Button Head, M5x30	2
34	500-00145-01	8350259	Circuit Breaker, 20A Panel	1
35	810-00176-01	8310494	Diode with Cable	1
36	442-00283-01	8310495	Bus Bar	1
37	442-00142-01	1121605	M6 Nut	1
38	442-00112-01	--	Terminal covers, Black	2
39	442-00409-01		Adhesive-Back Cable Tie Mount .75x.75"	1

MAIN CONTROLLER GROUP

PARTS LIST

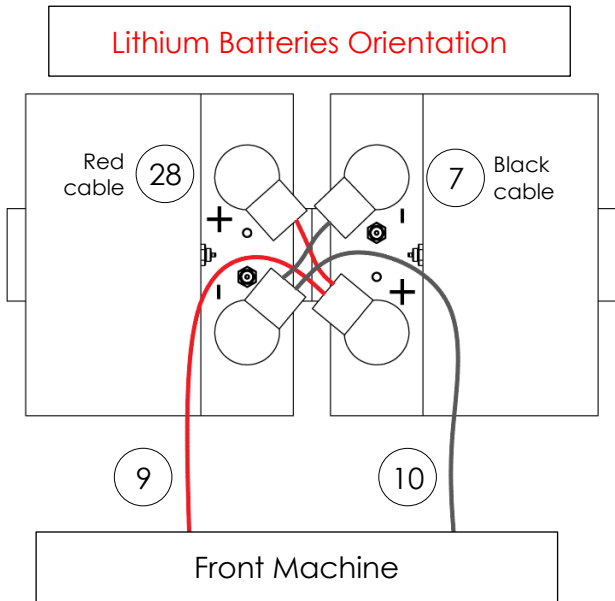
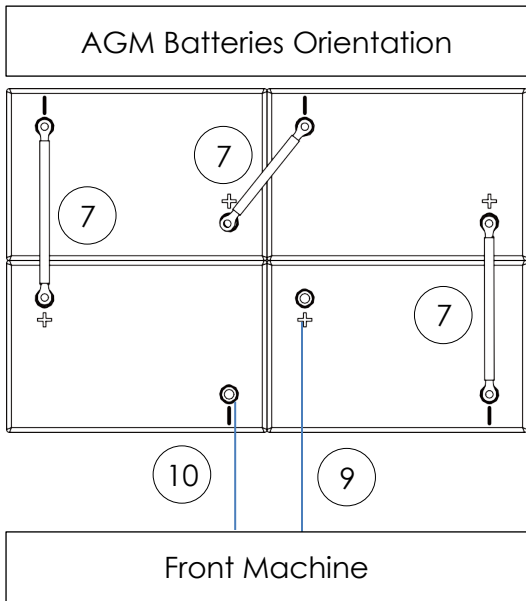
BATTERY GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	442-00222-01	8310401	Box, Battery	1
2	446-00161-01	1221412	Screw, Pan Head, M4x12	4
3	442-00232-01	8210114	Cover, Charger	1
4	456-00100-01	1421824	Washer, M8 Oversize	7
5	446-00110-01	1021820	Screw, M8x20mm HH	7
6	442-00231-01	8310406	Cover, Detergent Level	1
7	442-00343-01	8350294	Battery Connect Cable 4AWG, Black, ICE RS26	3
	442-00230-01	8210141	Battery Connect Cable, Black (6AWG)	
8	442-00112-01	--	Jacket, Battery Terminal Covers, Black	6
9	442-00346-01	8350297	Battery Connect Cable 4AWG (505mm), Red, RS26	1
	442-00228-01	8310737	Battery Connect Cable, Red (6AWG)	
10	442-00344-01	8350295	Battery Connect Cable 4AWG (584mm), Black, RS26	1
	442-00229-01	8310733	Battery Connect Cable, Black (6AWG)	
11	442-00345-01	8350296	Battery Connect Cable 4AWG (410mm), Red, RS26	1
	442-00227-01	8310736	Battery Connect Cable, Red (6AWG)	
12	442-00226-01	8310136	Support, Battery, Front	1
13	456-00102-01	1422821	M8 Lock Washer	4
14	442-00224-01	8310135	Tray, Battery	1
15	310-00104-01	--	Battery, Full River DC335. 6 Volt. 335AH	4
	310-00111-01	--	Battery, AGM, Discover EV305A-A 6V 330AH	
	800-00295-01	--	Assy, Labeled Lithium-Ion Battery Discovery 14-24-800	2
16	456-00111-01	1421816	Flat Washer, M8x16x1.6	8
17	456-00102-01	1422821	M8 Lock Washer	8
18	444-00128-01	1121807	Nut, M8, 316 Stainless Steel	8
19	442-00223-01	8310131	Support, Battery, Rear	1
20	442-00234-01	8310403	Cover, Detergent Bottle	1
21	456-00104-01	1421409	Washer, M4	4
22	442-00233-01	8310404	Hinge Assembly	1
23	446-00179-01	1662416	Rivet, 4.0x16	4
24	442-00310-01	--	Cover, Battery Terminal, Hard Plastic	2
25	442-00225-01	8310407	Plate, Battery	1
26	442-00314-01	8300016	Battery Belt	1
27	442-00315-01	8113013	Foam Spacer (shipped individually for JP units)	1
28	810-00235-01	--	Cable, Battery Red 6AWG M8 Ring 305mm	1

BATTERY GROUP

PARTS LIST

BATTERY HARDWARE TORQUE TABLE			
BATTERY TYPE	HARDWARE	VALUE (IN-LB)	VALUE (N-M)
AGM Full River	M8	65	~7.3
AGM Discover	5/16	115	13
Lithium	Supplied	80	9



CHARGER COMPONENTS

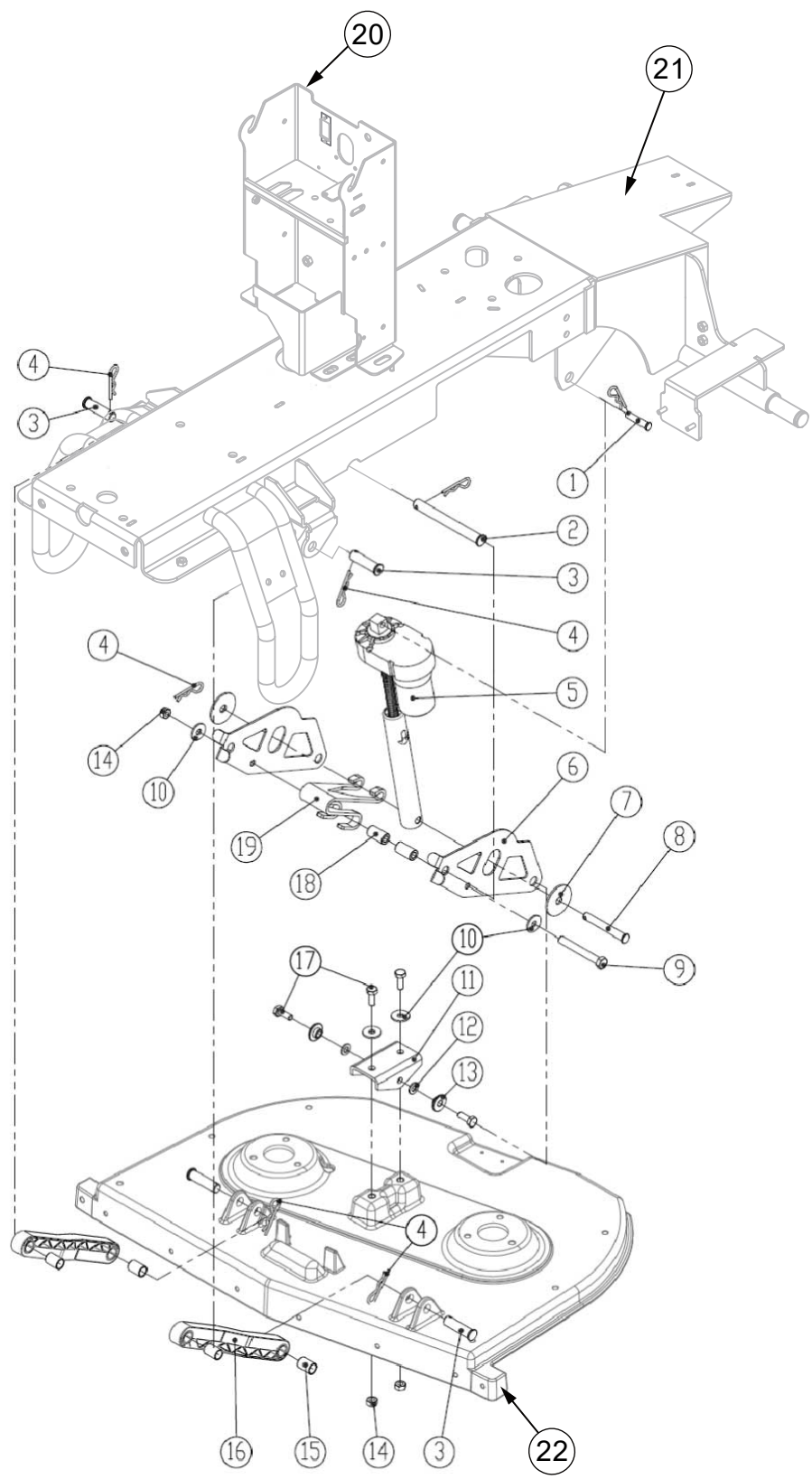
BATTERY PART NO.	BATTERY MODEL	CHARGER PROFILE	CHARGER PART NO.	KINETEK FIRMW
310-00104-01	Full River DC335	Profile #141	800-00269-01	V2.27
310-00111-01	Discover EV305A	Profile #43	800-00272-01	V2.27
800-00295-01	Discover Lithium	Profile #261	800-00269-02	V2.28 CDT1

CHARGER CABLE	DESCRIPTION
810-00224-01	Cable Assy, IC1200 DC 2.5M 6AWG SB Red
275-00106-01	Power Cord, Battery Charger Locking/Sealed 3m, US

SCRUB HEAD LIFTING GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	442-00193-01	8210301	Pin, 9.5x38	1
2	442-00191-01	8310311	Pin, 16x150	1
3	442-00194-01	8310312	Pin, 16x57	4
4	442-00182-01	8210309	Pin, Cotter	7
5	500-00139-01	8310303A	Linear Actuator, Kit	1
6	411-00188-01	8310305	Plate, Arm, Scrub Head Lifting	2
7	456-00119-01	8310314	Flat Washer, Large	2
8	442-00195-01	8310313	Pin, 12x90	1
9	446-00167-01	1032090	Bolt, Hex Head, M10x90	1
10	456-00118-01	1421030	Flat Washer, M10x30x2.5	4
11	411-00189-01	8310304	Bracket, Scrub Head Lifting	1
12	456-00120-01	1421020	Flat Washer, M10x20x2	2
13	442-00196-01	8310307	Bushing, Flange	2
14	444-00119-01	1123012	Lock Nut, M10	3
15	460-00107-01	8310144	Sleeve, 16x18.6x25.4	4
16	421-00107-01	8310118	Arm, Scrub Head Lifting	2
17	446-00168-01	1011025	Bolt, Hex Head, M10x25	4
18	460-00108-01	8310306	Sleeve, 10.5x18.5x34	2
19	450-00107-01	8310308	Spring, Scrub Head	1
20	MAIN CONTROLLER GROUP			
21	MAIN FRAME AND PERIMETER GUARDS GROUP			
22	SCRUB HEAD GROUP			

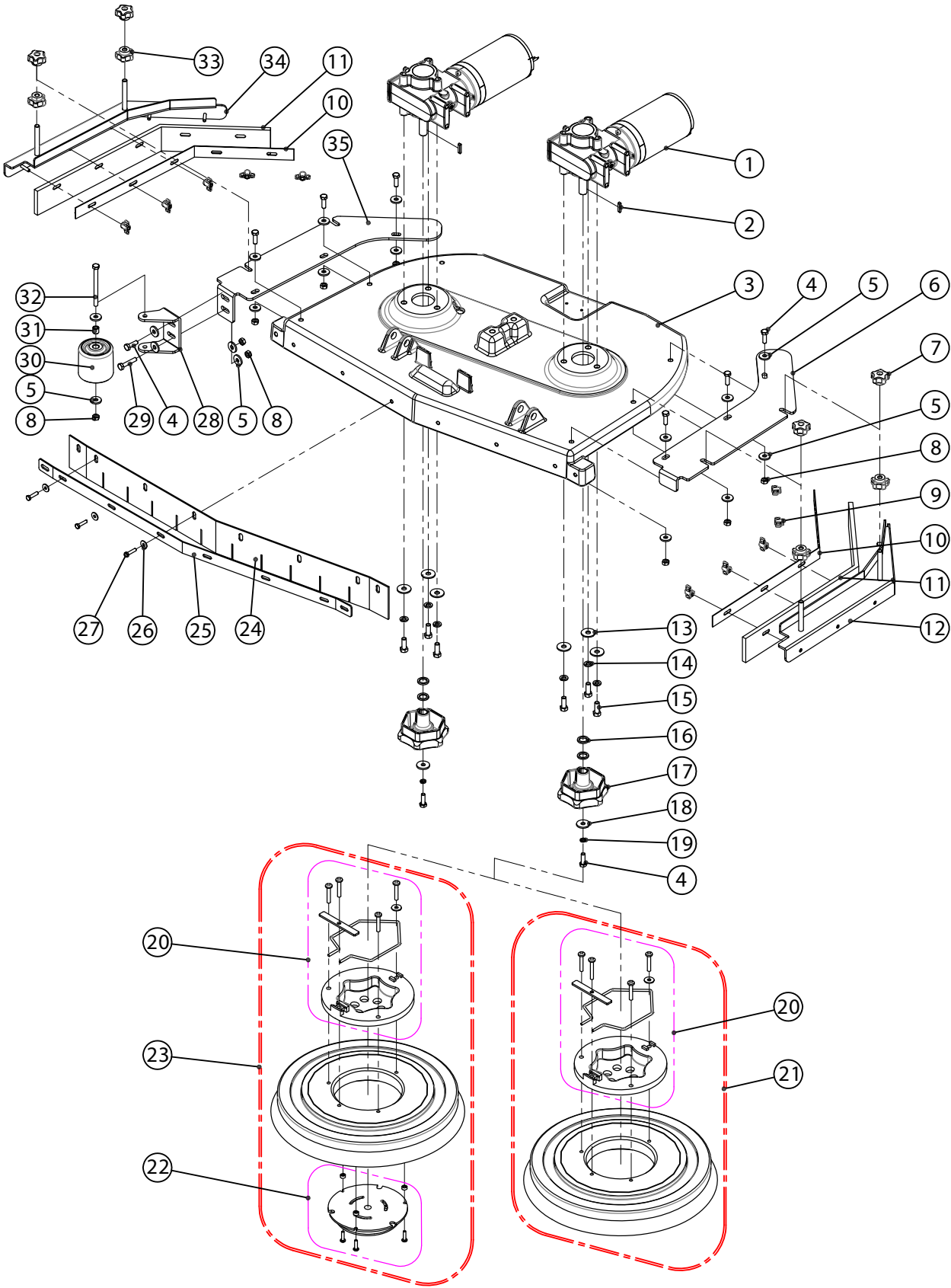
SCRUB HEAD LIFTING GROUP



SCRUB HEAD GROUP

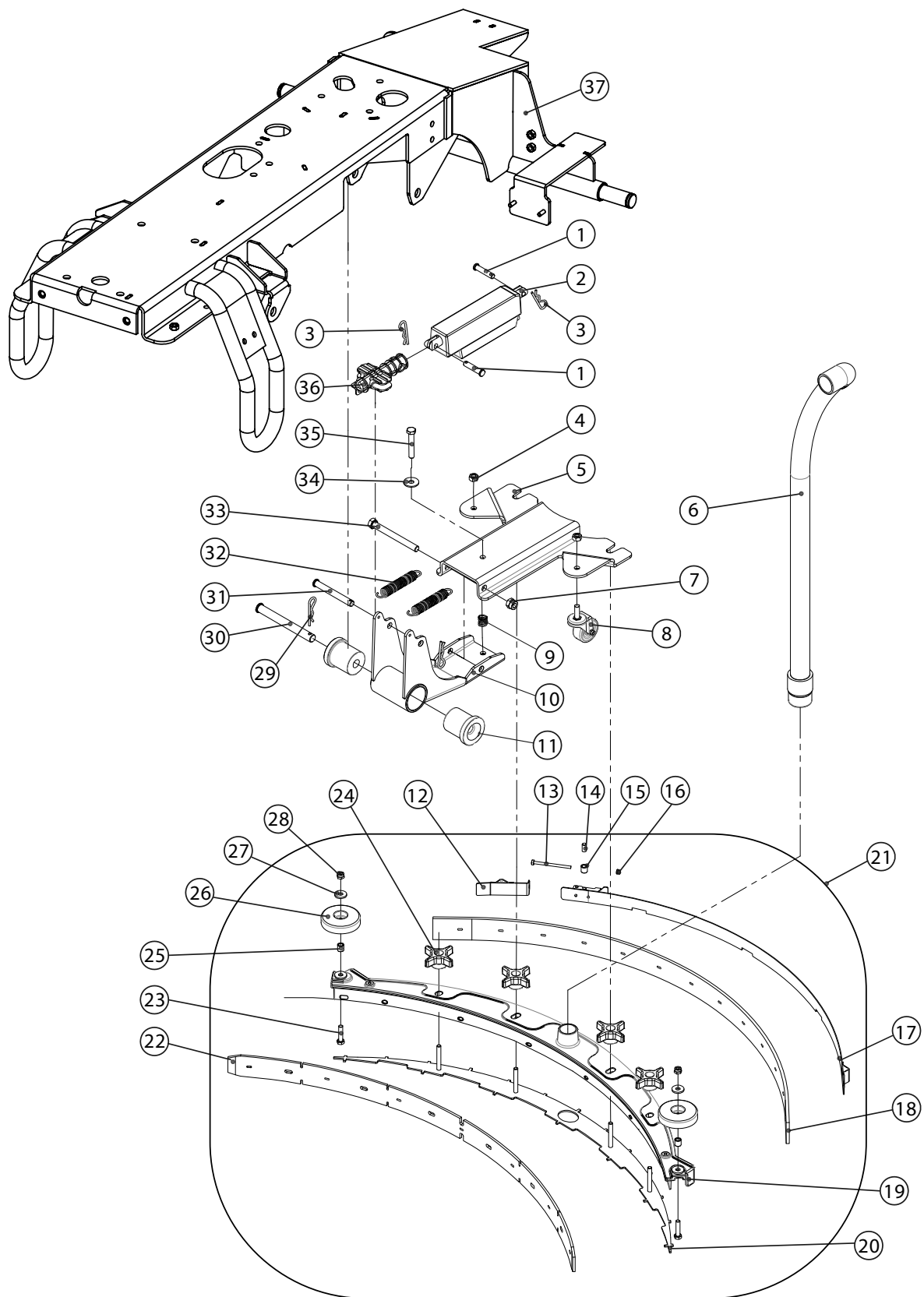
ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	500-00141-01	8310399	Brush Motor, 24VDC 450W, Kit	2
2	442-00244-01	1655025	Key, 5x5x25	2
3	412-00121-01	8311301A	Scrub Head Housing, RS26 (overlapping brushes)	1
4	446-00103-01	1021830	Bolt, Hex Head, M8x30	9
5	456-00100-01	1421824	Flat Washer, M8x24x2.0	18
6	411-00205-01	8310356	Bracket, Left	1
7	442-00245-01	8210532	Knob, M10, Upper	4
8	444-00122-01	1123810	Lock Nut, M8	9
9	442-00157-01	8210531	Knob, M6	10
10	411-00207-01	8310355	Clamp, Side Skirt	2
11	442-00246-01	8310365	Blade, Side Skirt	2
12	411-00208-01	8310357	Bracket, Side Skirt, Left	1
13	456-00120-01	1421020	Flat Washer, M10x20x2.0	6
14	444-00124-01	1422010	Lock Nut, 3/8	6
15	446-00182-01	1023010	Bolt, Hex Head, 3/8-16x1	6
16	448-00114-01	8210804	Spacer, Scrub Head	4
17	442-00247-01	8210805	Hub, Brush Drive	2
18	456-00125-01	1421828	Flat Washer, M8x28x2.5	2
19	456-00102-01	1422821	Lock Washer, M8	2
20	800-00167-01	9000004	Clutch, G-400S	2
21	442-00248-01	9050013P	13" Soft Nylon Brush	2
	900-00102-01	9050013	13" Poly Brush	2
	442-00249-01	9050013B	13" Aggressive Brush	2
22	800-00168-01	9000003	Center Lock, #3	2
23	800-00169-01	9040013	Pad Driver, 13 Inch, RS26	2
24	411-00209-01	8311358	Skirt, RS26	1
25	411-00210-01	8311359	Clamp, Skirt, RS26	1
26	456-00113-01	1421618	Flat Washer, M6x18x1.6	7
27	446-00172-01	1021616	Bolt, Hex Head, M6x16	7
28	411-00211-01	8311656	Bracket, Protective Wheel	1
29	446-00183-01	1021840	Bolt, Hex Head, M8x40	1
30	442-00250-01	8310362	Protective Wheel	1
31	460-00106-01	8115404	Sleeve, 8x12.7x12.7	6
32	446-00184-01	1022800	Bolt, Hex Head, M8x100	1
33	442-00312-01	8310354	Knob, M10, Lower	4
34	411-00212-01	8310351	Bracket, Side Skirt, Right	1
35	411-00213-01	8310353	Bracket, Right	1

SCRUB HEAD GROUP



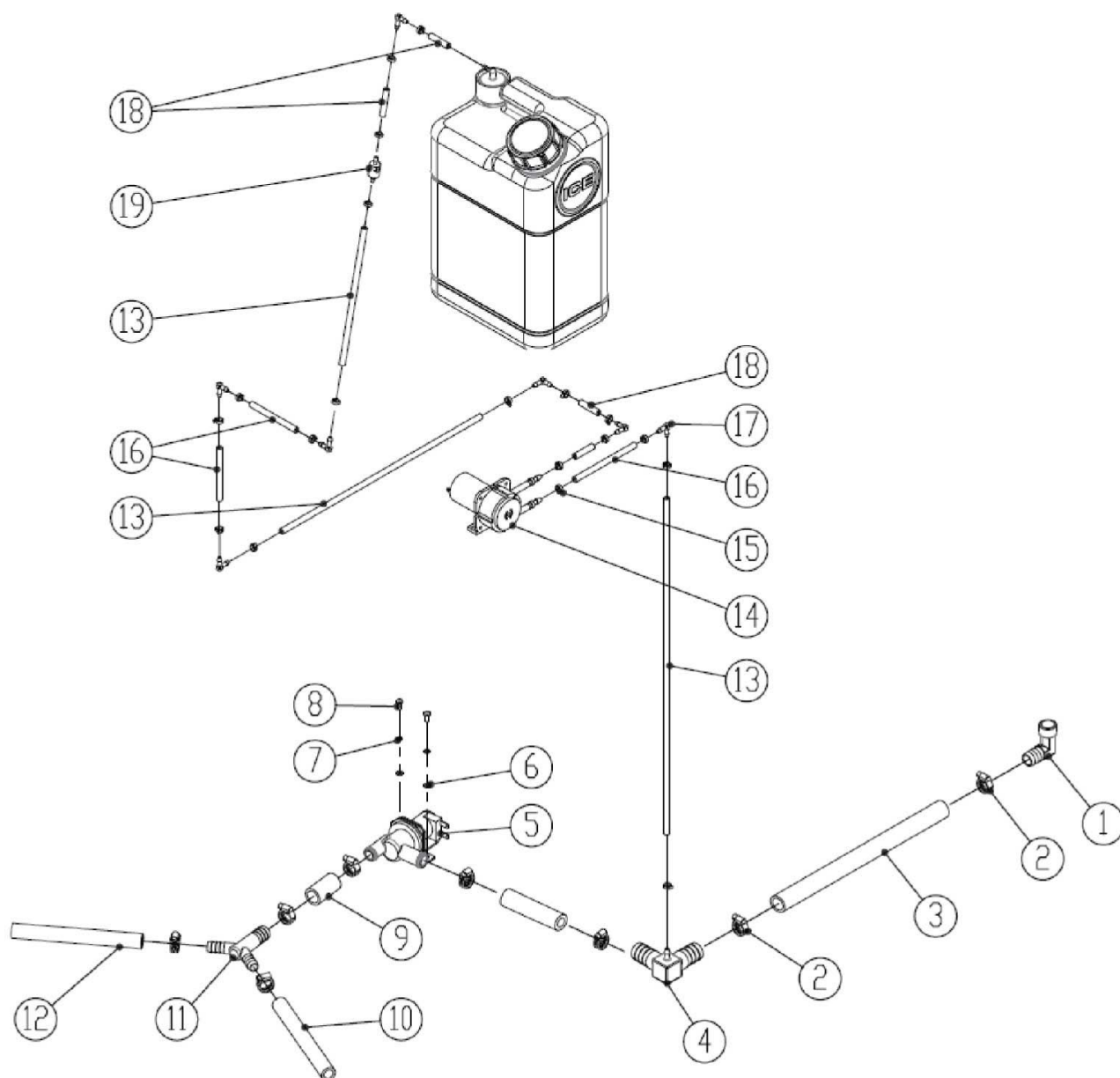
SQUEEGEE GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	442-00181-01	8310506	Pin, 10x45	2
2	500-00138-01	8310590A	Linear Actuator	1
3		8210320	Pin, Cotter	2
4	444-00116-01	1121008	Hex Nut, M10	2
5	411-00185-01	8310503	Bracket, Squeegee	1
6	442-00183-01	8310240	Vacuum Hose	1
7	444-00117-01	1123115	Lock Nut, M12	1
8	442-00184-01	8310550	Caster, 2 Inch	2
9	450-00105-01	8310501	Compression Spring	1
10	411-00186-01	8310504	Arm, Squeegee Lifting	1
11	442-00185-01	8310505	Flex Bushing, TPU	2
12	800-00161-01	8210525	Short Clamp Assembly	1
13	446-00163-01	1221575	Screw, Pan Head, M5x75	1
14		8118624	Shaft	1
15		8118623	Spacer	1
16	444-00118-01	1123507	Lock Nut, M5	1
17	800-00162-01	8311514	Clamp Assembly, RS26	1
18	442-00187-01	8311531	Rear Blade, Linatex, RS26	1
		8311541	Rear Blade, PU, RS26	1
19	460-00105-01	8311561	Squeegee Hosing, RS26	1
20	442-00188-01	8311562	Retainer, Squeegee, RS26	1
21	830-00155-01	8311560	Rear Squeegee Assembly, RS26	1
22	442-00189-01	8311534	Front Blade, Linatex, RS26	1
		8311544	Front Blade, PU, RS26	1
23	446-00164-01	1021835	Bolt, Hex Head, M8x35	2
24	442-00186-01	8210518	Knob, M8	4
25	460-00106-01	8115404	Sleeve, 8x12.7x12.7	2
26	442-00190-01	8116009	Protective Wheel	2
27	456-00100-01	1421824	Flat Washer, M8x24x2	4
28	456-00102-01	1123810	Lock Nut, M8	2
29	442-00182-01	8210309	Pin, Cotter	2
30	442-00191-01	8310311	Pin, 16x150	1
31	442-00192-01	8310508	Pin, 12x100	1
32	450-00106-01	8310509	Extension Spring	2
33	446-00165-01	1031212	Bolt, Hex Head, M12x120	1
34	456-00118-01	1421030	Flat Washer, M10x30x2.5	1
35	446-00166-01	1021060	Bolt, Hex Head, M10x60	1
36	215-00196-01	8310507	Adapter	1
37	MAIN FRAME WITH PERIMETER GUARDS GROUP			

SQUEEGEE GROUP

SOLUTION AND DETERGENT SYSTEM GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	442-00197-01	8310124	Elbow, G1/2	1
2	442-00252-01	1962025	Clamp 16-25mm	8
3	460-00114-01	8310901	Tubing, ID=16mm L=500mm	1
4	442-00270-01	8310375	Elbow, Chemical Connector	1
5	500-00153-01	8350371	Solenoid Valve, 24VDC	1
6	456-00115-01	1421510	Flat Washer, M5x10x1.0	2
7	456-00126-01	1422513	Lock Washer, M5	2
8	446-00155-01	1221512	Screw, Pan Head, M5x12	2
9	460-00115-01	8310902	Tubing, ID=16mm L=40mm	1
10	460-00116-01	8310903	Tubing, ID=12mm L=175mm	1
11	420-00106-01	8310373	Fitting, Plastic	1
12	460-00117-01	8310904	Tubing, ID=12mm L=210mm	1
13	460-00124-01	8310905	Tubing, ID=4mm L=330mm	3
14	500-00136-01	8310930A	Peristaltic Pump, Kit	1
15	442-00253-01	1914080	Tie, 3x80mm	19
16	460-00125-01	8310910	Tubing, ID=4mm L=100mm	3
17	442-00254-01	8310467	Fitting	7
18	460-00123-01	8310909	Tubing, ID=4mm L=30mm	4
19	460-00122-01	8310466	One Way Valve	1



STEERING HOUSING GROUP

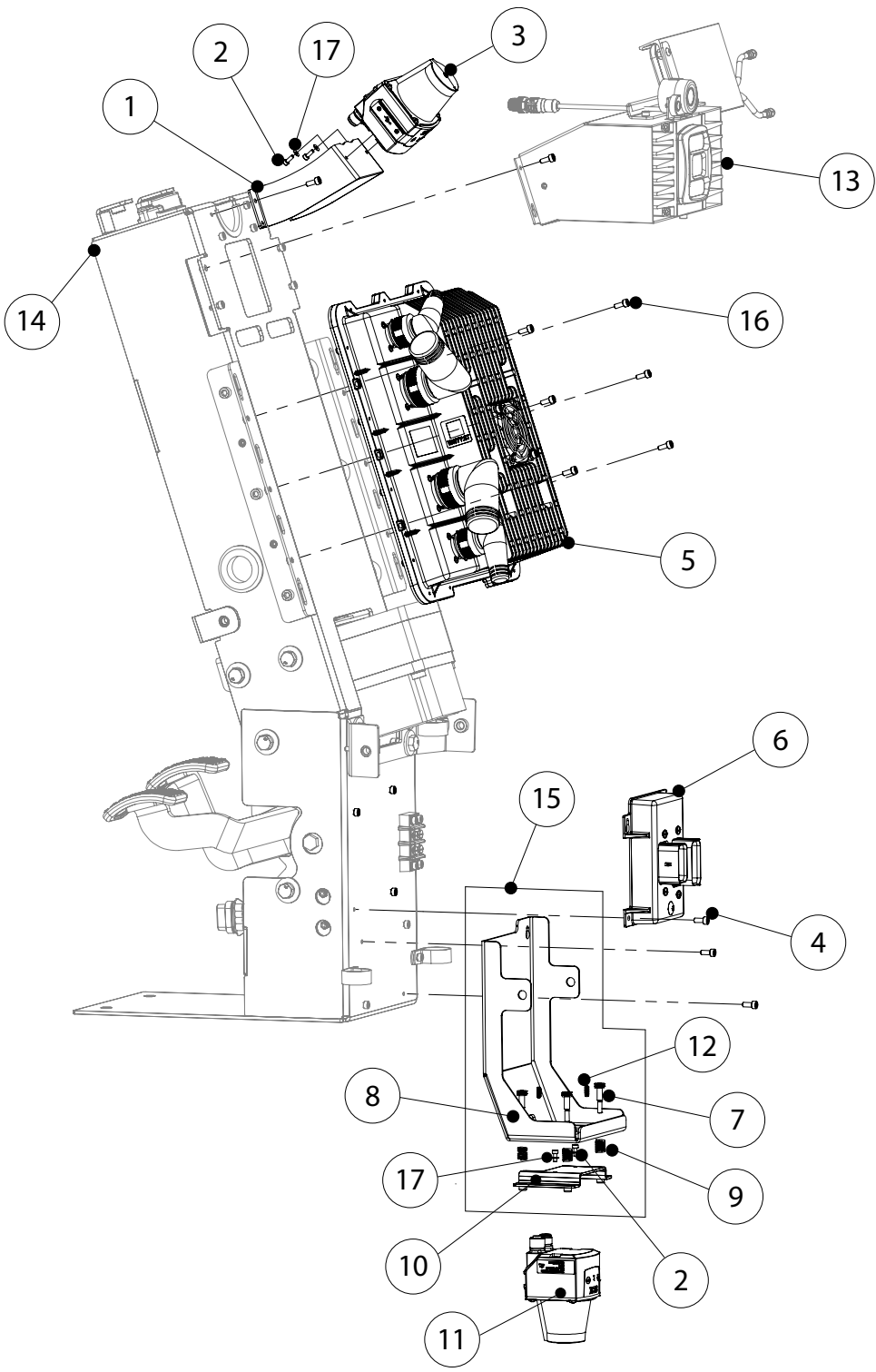
ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	411-00149-01	8350113	Bracket, Upper LIDAR	1
2	446-00128-01	1521308	Screw, M3x8mm SHC	4
3	800-00142-01	8350240	Slanted LIDAR	1
	800-00241-01 ⁽¹⁾		Slanted 7 LIDAR *	
4	446-00150-01	1521410	Screw, M4x10mm SS SHC	5
5	830-00217-02		Brain Control Module Mk2A	1
	830-00156-02		Brain Control Module Mk2A	
6	830-00174-01		Motor Amplifier Module, V2	1
7	446-00221-01	--	Shoulder Bolt, LIDAR Adjust	3
8	411-00248-01	--	Bracket, Lower LIDAR V2	1
9	450-00100-01	8350248	Lidar Spring	3
10	411-00246-01	--	Bracket, LIDAR Adjust V2	1
11	800-00294-01		Horizontal Lidar 551 HDDM+	1
	800-00238-01		Horizontal 5 LIDAR	
12	446-00232-01	--	Set Screw, M3x10mm, Allen Socket Head, 316 SS	2
13	IFM O3D HOUSING GROUP			
14	MAIN TOWER GROUP			
15	830-00175-01	--	Assy, Lower Lidar Mount Replacement Service (V2)	1
16	446-00201-01	--	Screw, M4x12mm SS SHC	6
17	456-00103-01 ⁽²⁾	--	Washer, M3 Belleville Spring Lock SS 18-8	4

NOTE:

(1) Slanted 7 LIDAR (TiM 571), 800-00241-01, installation requires authorization from Brain Engineering

(2) As needed

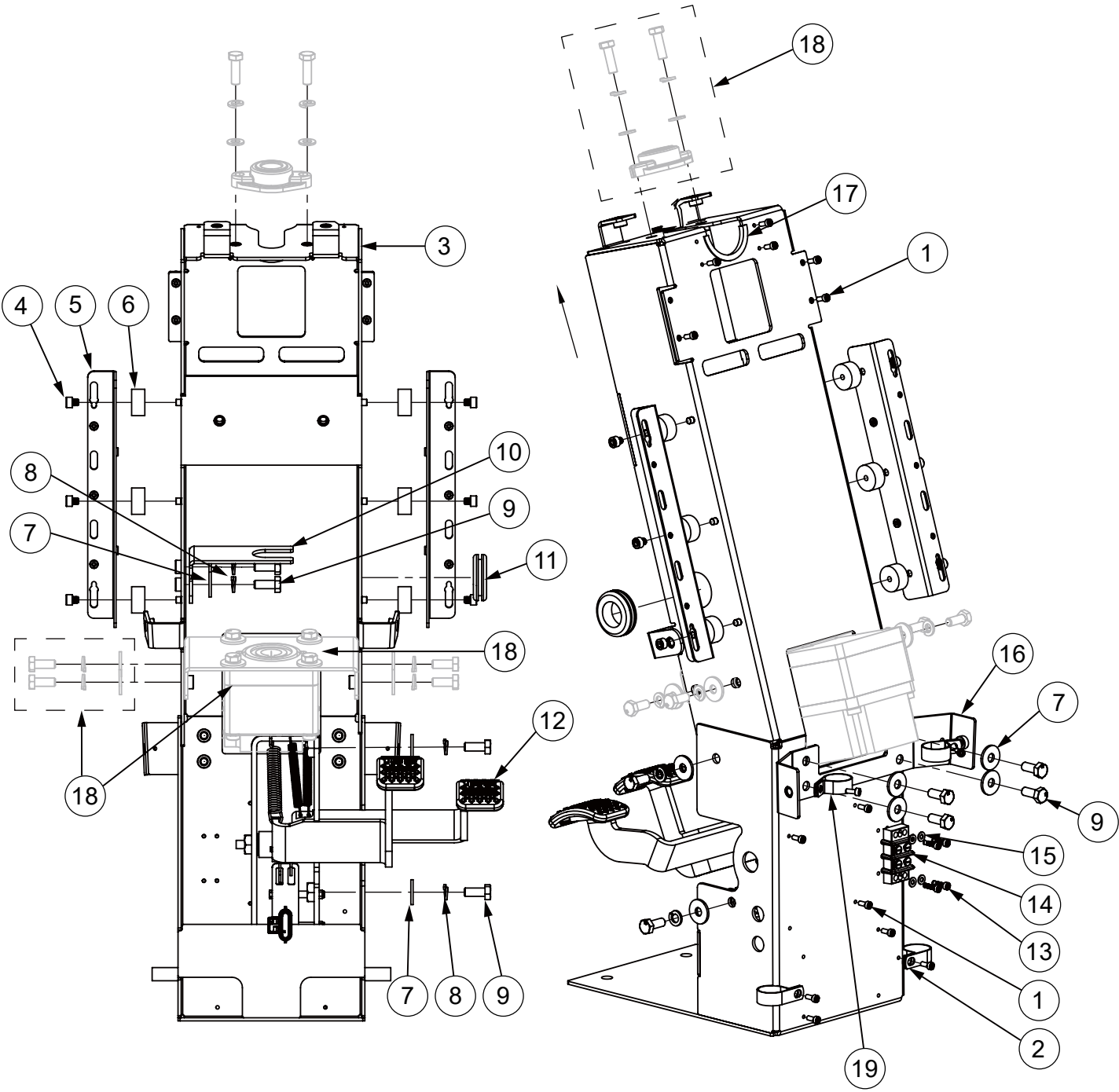
STEERING HOUSING GROUP



MAIN TOWER GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	446-00150-01	1521410	Screw, M4x10mm SS SHC	15
2	442-00171-01	6210131	1" Cable Clamp	3
3	411-00146-01	8350110	Bracket, Main Support	1
4	446-00115-01	1521606	Screw, M6x6mm SHC	6
5	411-00135-01	8350102	Bracket, Brain Control Module	2
6	442-00117-01	8350234	Rubber Damping Mount	6
7	456-00100-01	1421824	Washer, M8 Oversize	16
8	456-00102-01	1422821	Washer, M8 Lock	4
9	446-00110-01	1021820	Screw, M8x20mm HH	8
10	411-01134-01	8350186	Flange, Shaft Collar	1
11	442-00119-01	8310133	1-3/8" Grommet	1
12	500-00132-01	8310640	Foot Pedal Assy	1
13	446-00135-01	1521416	M4x16 SHC SS Screw	4
14	500-00133-01	8350235	Barrier Block	1
15	456-00104-01	1421409	Washer, M4	4
16	411-00167-01	8350184	Bracket, Belly	1
17	442-00165-01	8350233	Main Tower Edge Trim	1
18	DRIVE TRAIN GROUP			
19	--	8350016	1.5" Cable Clamp	1

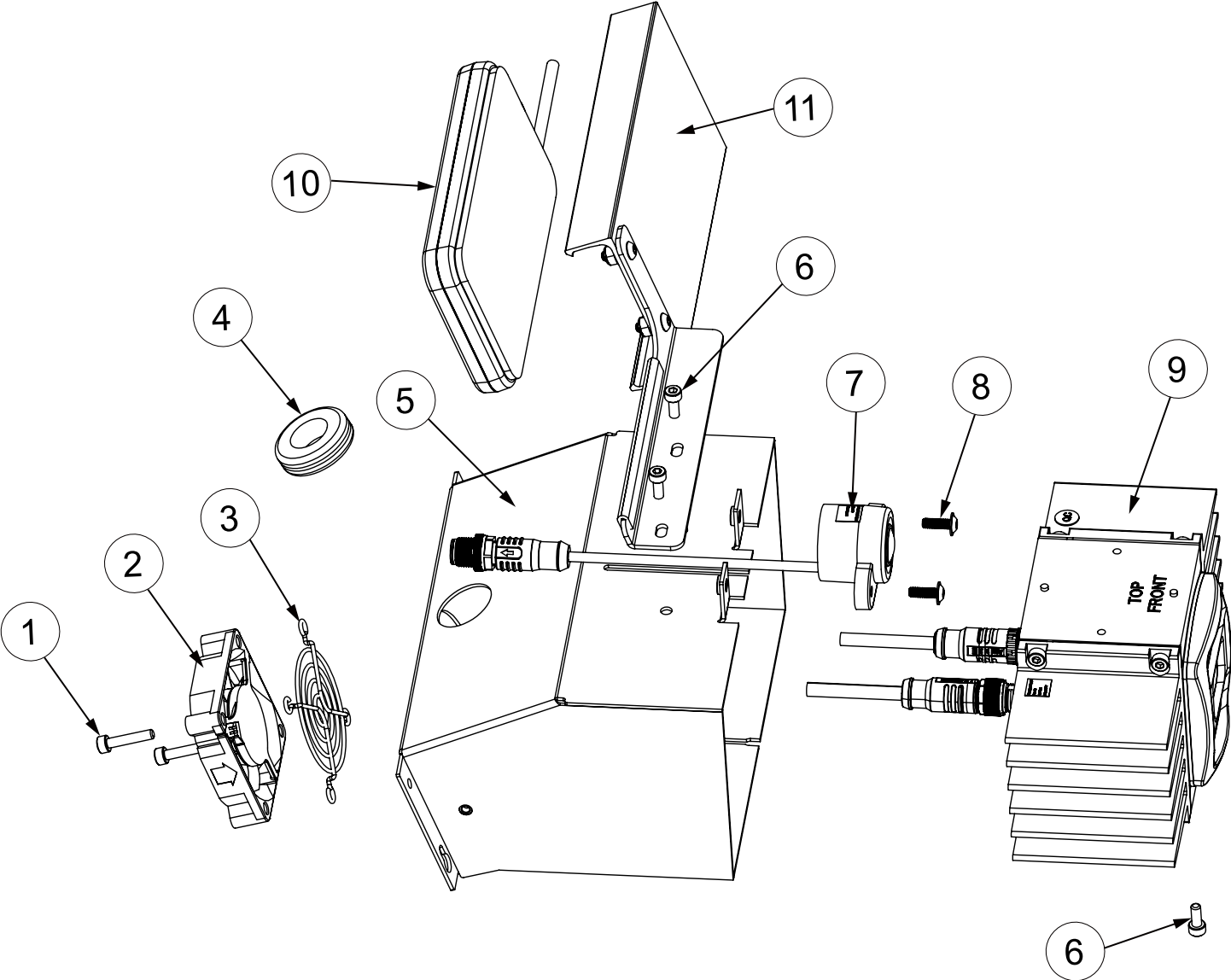
MAIN TOWER GROUP



IFM O3D HOUSING GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	446-00137-01	1521420	M4x20mm SHC Screw	2
2	800-00149-01	8350243	60mm Fan Assembly	1
3	500-00117-01	8350244	Finger Guard, 60mm	1
4	442-00118-01	8350245	1" Grommet	1
5	411-00151-01	8350114	Bracket, O3D Housing	1
6	446-00150-01	1521410	Screw, M4x10mm SS SHC	3
7	830-00114-01	8350242	110 2D Camera Module	1
8	446-00197-01	1514412	Screw, Pan Head, M4x12, Black	2
9	830-00115-01	8350241	Sensor, IFM O3D with Heatsinks	1
10	500-00147-01	--	Antenna, 4G Sentinel	1
11	800-00192-01	--	Kit, Sentinel Antenna Bracket	1

IFM O3D HOUSING GROUP

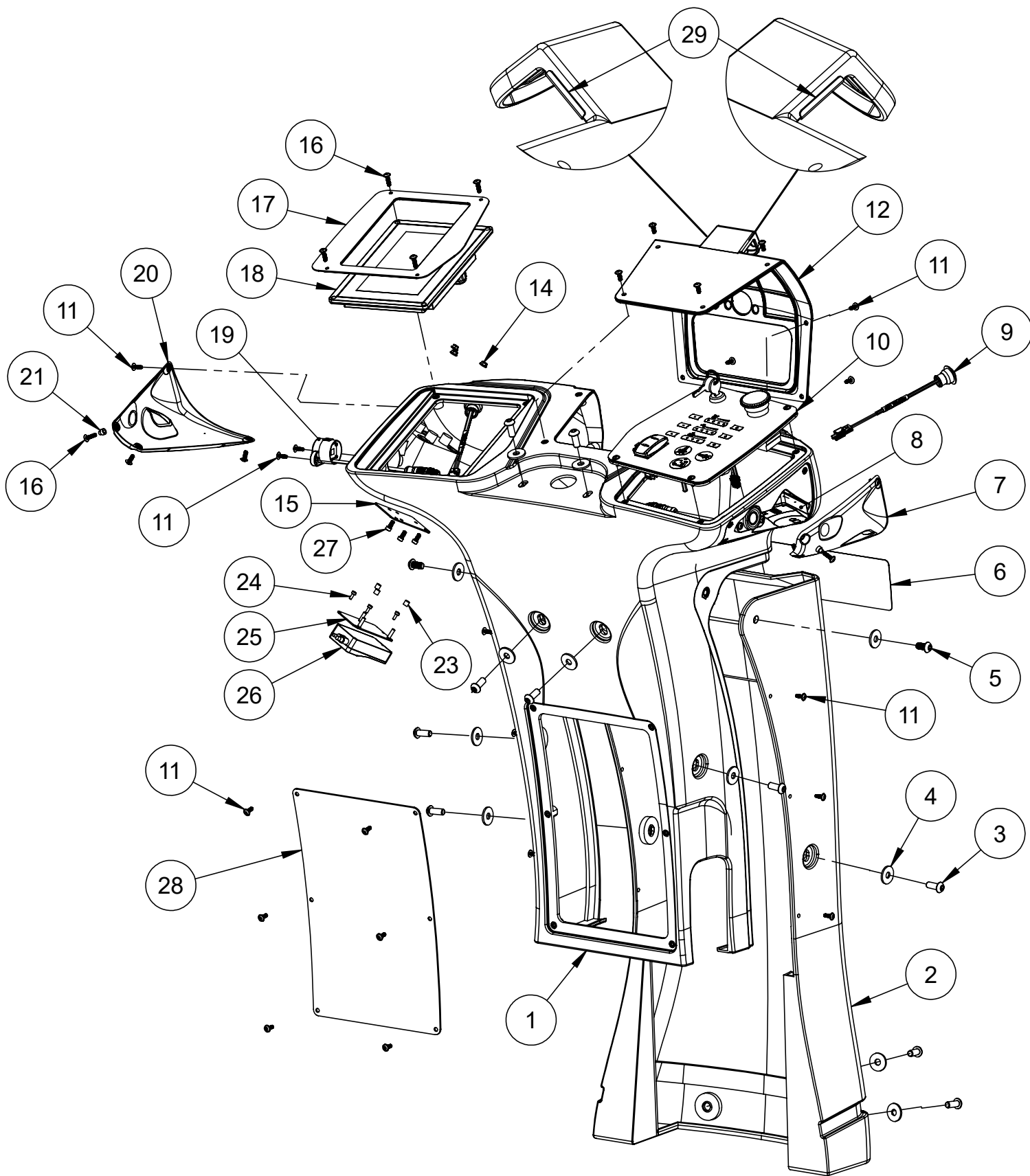


STEERING TOWER COWL GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	422-00103-01	8350701	Control Housing, Back	1
2	422-00104-01	8350702	Control Housing, Front	1
3	446-00158-01	1512820	M8x20 SS SHBC Screw	10
4	456-00154-01	-	Washer, M8 Oversize SS	12
5	446-00198-01	1512816	M8x16 SS SHBC Screw	2
6	440-00115-01	8350190	Decal, Nameplate	1
7	421-00104-01	8350197	Plastic Fascia, Right	1
8	800-00140-02	8350254	Right O3X 3D Sensor	1
9	830-00117-01	8350237	Blinker, Turn Signal	2
10	CONTROL PANEL GROUP			
11	446-00197-01	1514412	Screw, Pan Head, M4x12, Black	30
12	800-00158-01	8350703K	Front Fascia with Seal	1
13	Removed			
14	444-00113-01	1123407	Nylock, Flanged M4 Nut	6
15	411-00173-01	8350194	Mount, O3X to Housing	2
16	446-00199-01	1514416	Screw, Pan Head, M4x16, Black	7
17	830-00128-01	8350103K	Touch Screen Cover	1
18	830-00200-01		Touch Screen Module, ESD	1
19	830-00114-01	8350242	110 2D Camera Module	2
20	421-00105-01	8350198	Plastic Fascia, Left	1
21	448-00117-01	8350766	Spacer, Seat Belt	2
22	Removed			
23	448-00116-01	--	Spacer, M4 6mmOD, 6mm long	6
24	446-00128-01	1521308	M3 x 8mm SHC Screw	6
25	411-00172-01	8350193	Plate, O3X Mounting	2
26	800-00140-01	8350253	Left O3X 3D Sensor	1
27	446-00150-01	1521410	Screw, M4x10mm SS SHC	6
28	411-00165-01	8350183	RS26 Access Panel	1
29	440-00191-01		Label, Slanted Lidar Reflector RS26	1

NOTE: Left O3X Sensor should remain distinct from Right O3X Sensor. Do not interchange.

STEERING TOWER COWL GROUP

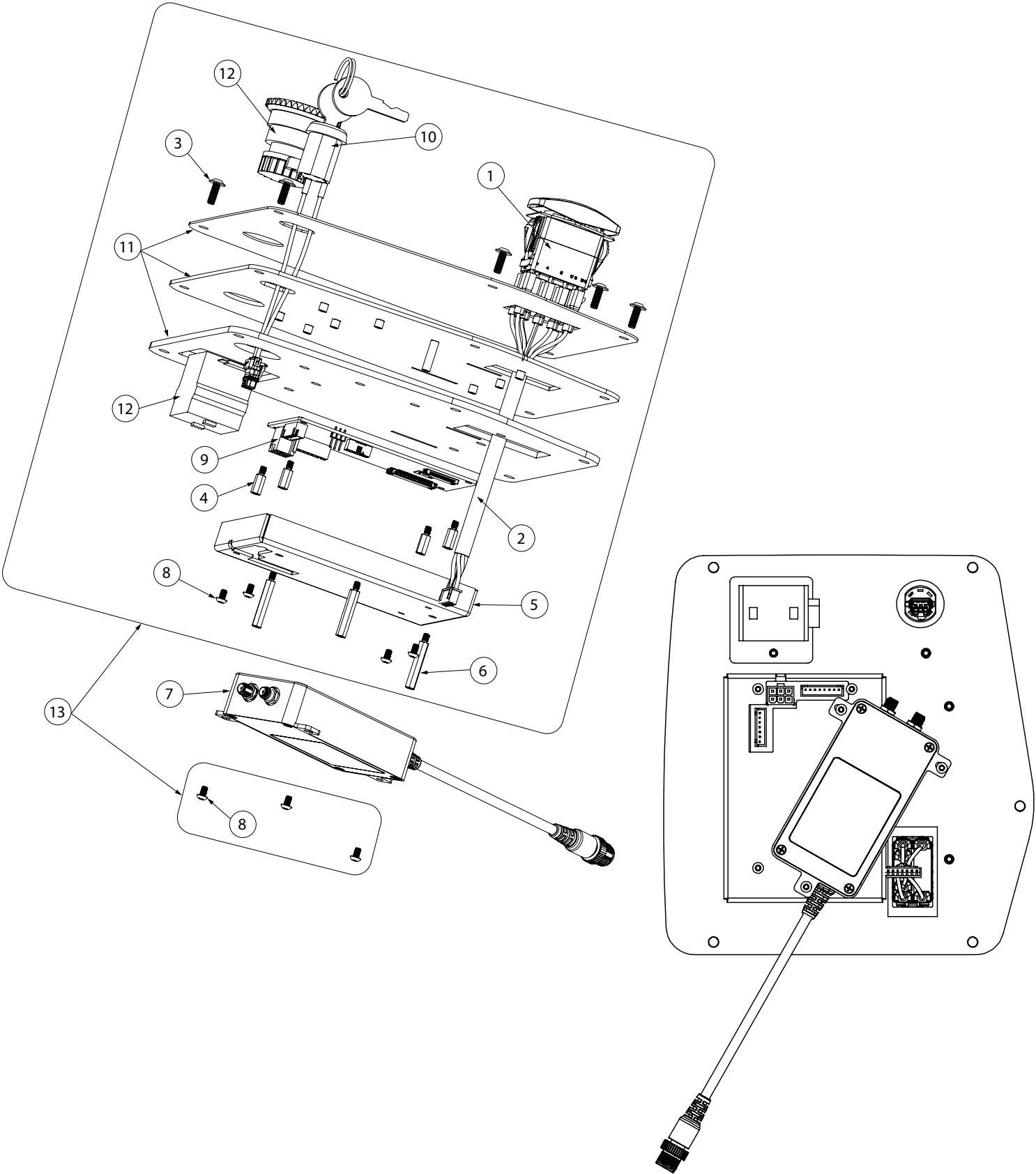


CONTROL PANEL GROUP

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	500-00120-01	8350405	Toggle Switch	1
2	810-00170-01	8350262	Cable, Toggle Switch	1
3	446-00197-01	1514412	Screw, Pan Head, M4x12, Black	5
4	448-00105-01	8350250	M3x10mm M-F Standoff	4
5	411-00214-01	8350117	Enclosure, VIB	1
6	448-00109-01	8350251	M3x25mm M-F Standoff	3
7	800-00297-01		Communications Module	1
	800-00183-02	--	Communications Module, Sierra/JT (US/JP)	
	800-00183-03	--	Communications Module, Sierra/Telus (CAN)	
8	446-00140-01	1512305	Screw, M3x5 SHBC	7
9	820-00137-01		Vehicle Interface Board (ICE RS26)	1
10	800-00153-01	8350403A	Key Switch Assembly	1
11	800-00171-01	8350260	Plate with Seal and Membrane, Control Panel	1
12	500-00121-01	8310707	Button, Emergency Stop	1
13	830-00109-01	--	Assy, Control Panel Replacement Service (w/ VIB)	1

Pinout (Toggle Switch)	Color
2	White
3	Black
7	Brown
8	Green
9	Blue
10	Orange
11	Red

CONTROL PANEL GROUP



WEAR PARTS

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	QTY
1	442-00189-01	8311534	Front, Blade, LINATEX, RS26	1
2	442-00187-01	8311531	Rear Blade, LINATEX, S26	1
3	442-00248-01	9050013P	Bush, 13 Inch Soft Nylon	2
4	900-00102-01	9050013	Bush, 13 Inch Poly	2
5	442-00249-01	9050013B	Bush, 13 Inch Aggressive	2
6	800-00169-01	9040013	Pad Driver, 13 Inch, RS26	2
7	442-00246-01	8310365	Blade, Side Skirt	2
8	411-00209-01	8311358	Skirt, RS26	1
9	442-00206-01	8310237	Dust Filter	1
10	800-00147-01	8350040K	Home Location Pack	1

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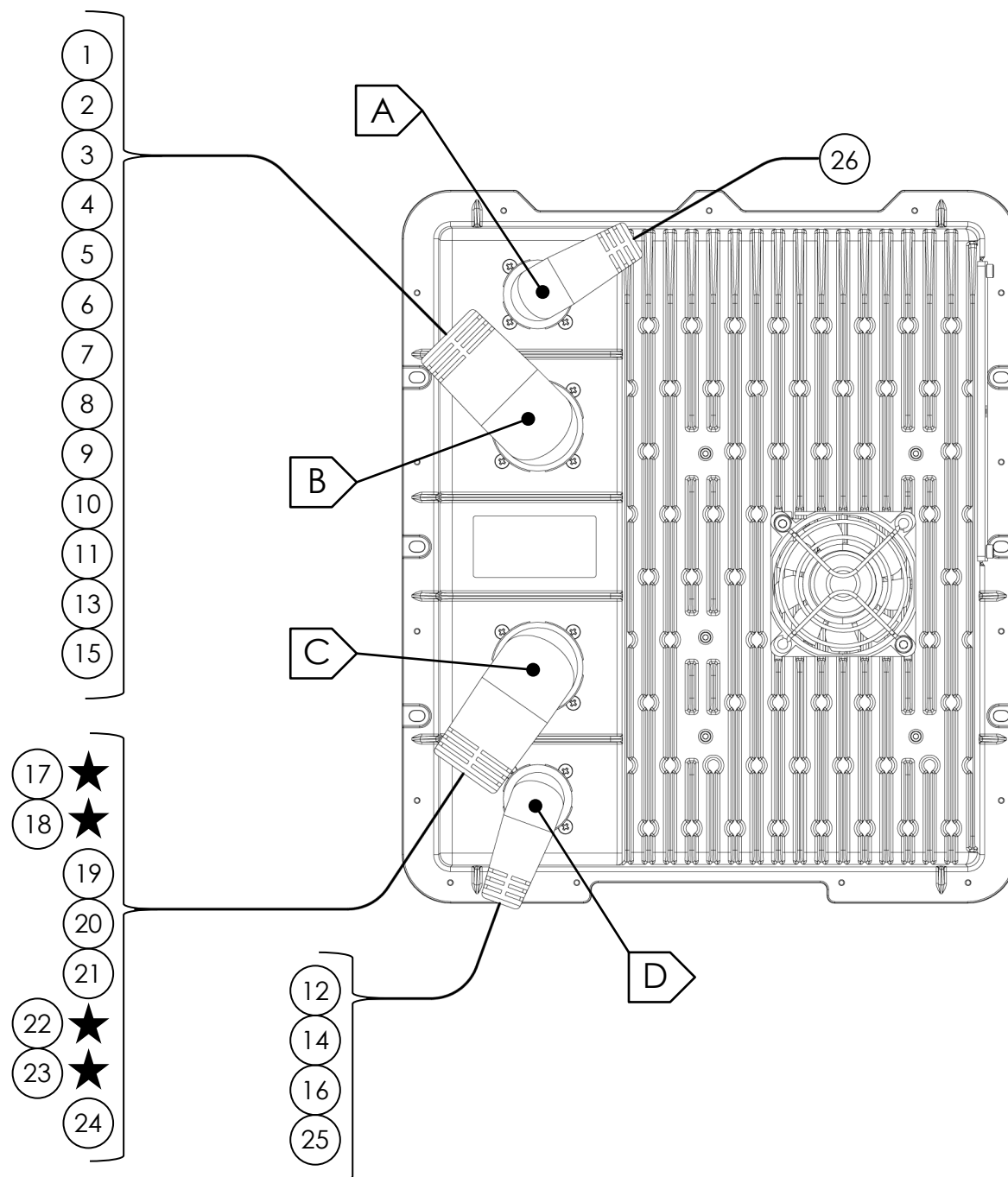
WIRING DIAGRAM**COMPONENT LIST**

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	CABLE LABEL
1	820-00137-01		Vehicle Interface Board	VIB
2	800-00297-01 800-00183-02 800-00183-03	--	Communications Module	MODEM
3	800-00142-01	8350240	Slanted LIDAR	LIDAR_SLANTED_PWR
4				LIDAR_SLANTED_ETH
5	830-00117-01	8350237	Blinker, Turn Signal	TURN_SIGNAL_LEFT
6	830-00117-01	8350237	Blinker, Turn Signal	TURN_SIGNAL_RIGHT
7	800-00149-01	8350243	60mm Fan Assembly	DEPTH_SENSOR_FAN
8	830-00114-01	8350242	110 2D Camera Module	CAM_FRONT_USB
9	830-00114-01	8350242	110 2D Camera Module	CAM_LEFT_USB
10	830-00114-01	8350242	110 2D Camera Module	CAM_RIGHT_USB
11	830-00115-01	8350241	IFM O3D with Heatsinks	DEPTH_FRONT_ETH
12				DEPTH_FRONT_PWR
13	800-00140-01	8350253	Left O3X 3D Sensor	DEPTH_LEFT_ETH
14				DEPTH_LEFT_PWR
15	800-00140-02	8350254	Right O3X 3D Sensor	DEPTH_RIGHT_ETH
16				DEPTH_RIGHT_PWR
17	810-00135-01	8350267	Service Port Ethernet	SP_ETH
18	810-00134-01	8350266	Traction Encoder	ENC_TRACT1
19	800-00294-01 800-00238-01		Horizontal LIDAR	LIDAR_HRZ_PWR
20				LIDAR_HRZ_ETH
21	290-00111-01	8350410	Encoder with Gearbox, Steering	ENC_STEER or ENC_ABS
22	500-00121-01	8310707	Button, Emergency Stop	ESTOP
23	800-00190-01		Start-Pause Button Assembly	START_PAUSE
24	830-00174-01		Motor Amplifier Module V2	STEERING
25	500-00133-01	8350235	Barrier Block	
26	830-00200-01		Touch Screen Module	

PARTS LIST

HARNESS TRUNK LIST

ITEM	Brain Corp PN	ICE PN	DESCRIPTION	CABLE LABEL
A	See item 26 from Component List Table			
B	810-00200-01		Harness, Up Trunk	810-00200-01
C	810-00129-01	8350264	Harness, Down Trunk	810-00129-01
D	810-00132-01	8350265	Harness, Power Trunk	810-00132-01

WIRING DIAGRAM

★ denotes Cable Extension

NOTE: When replacing cables, only items in the "HARNESS TRUNK LIST" may be ordered. Items in the "COMPONENT LIST" are listed for reference only.

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Specifications and parts subject to change without notice
Revision 08
January 2022