



Parts Manual

Mfg. No: 5901755
Venture XC (FS3200) Series Stand-On
Spreader Sprayer



5106065 - Salt Spreader Baffle, 220# (SPB-220-2).....
5601201 - Venture XC Spare Parts Kit (SPK-600-1).....
5105895 - Spray Wand Assembly (SPW-100-1).....

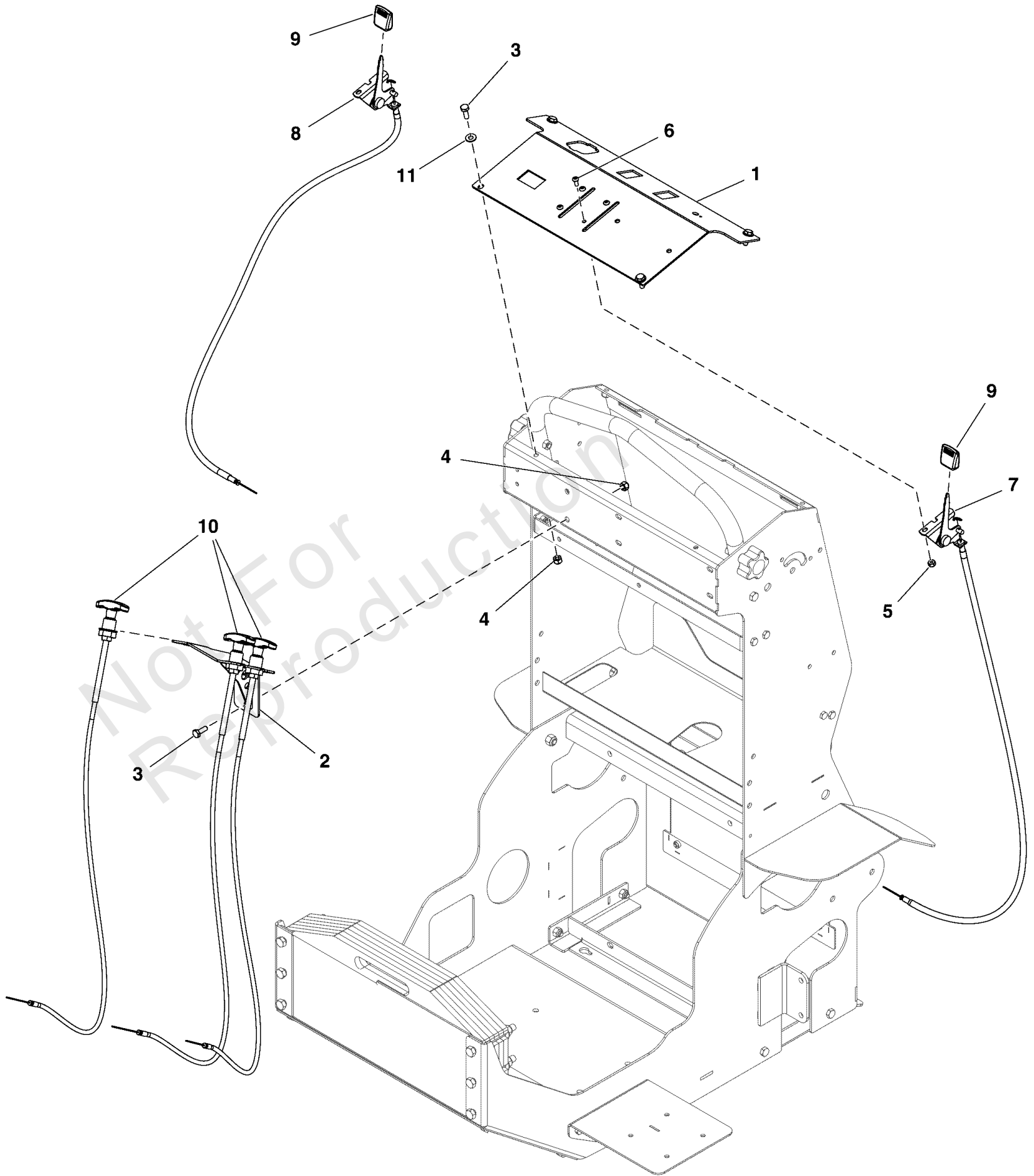
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Reproduction

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Console Pedestal Group

Note: Unless noted otherwise, use the standard torque specifications

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Console Pedestal Group

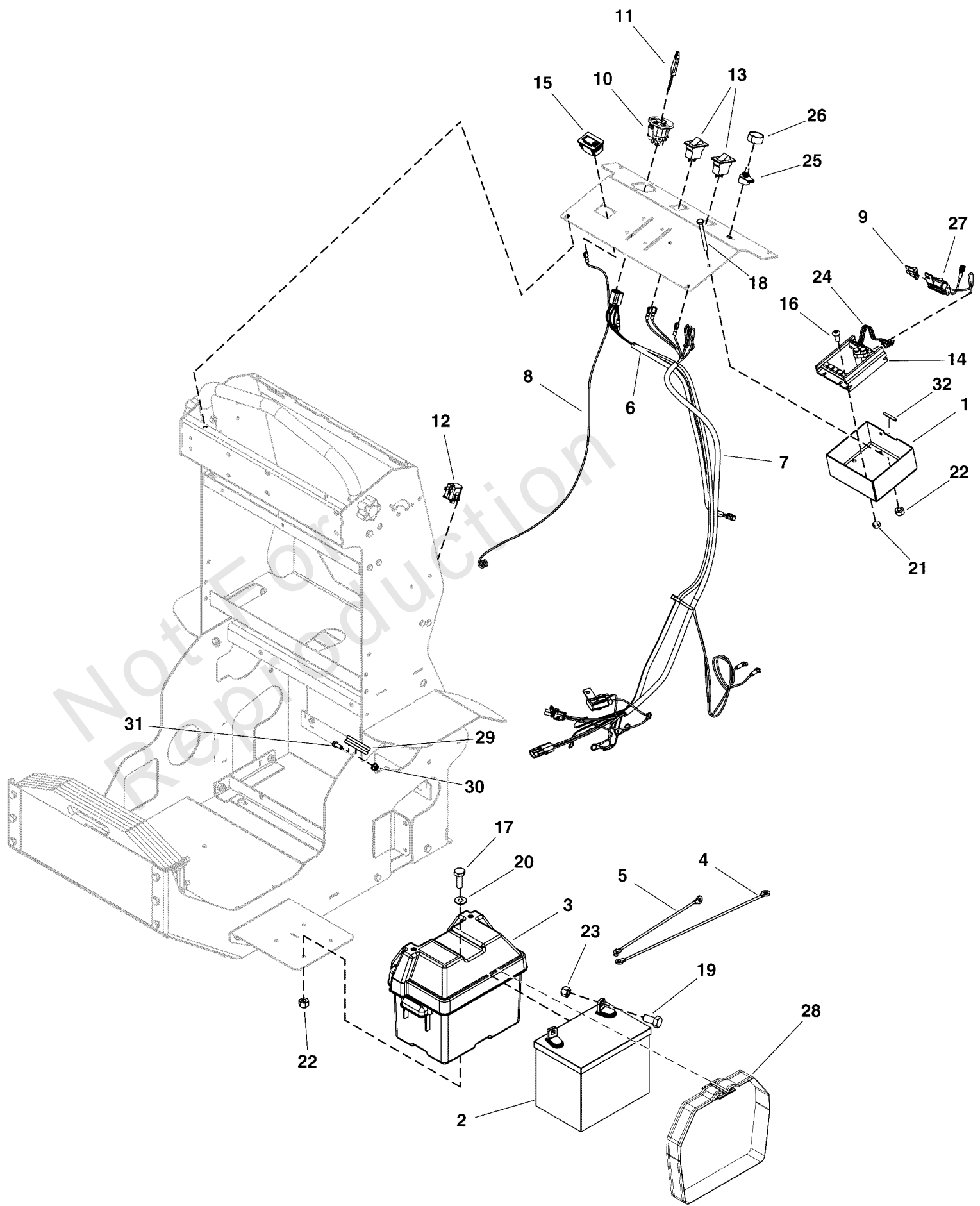
REF NO	PART NO	QTY	DESCRIPTION
1	5418490	1	PLATE, COVER CONSOLE (SANDED)
2	5418409	1	WELD, BRACKET, HAND CONTROLS
3	5106214	6	SCR-CAP, HEX .250"-20 X .750" SS188
4	5106040	6	NUT-HEX-NYLK, .250"-20 SS188
5	5105963	4	NUT-HEX-NYLK, #10-24 SS188
6	5105978	4	SCR-CAP, BSH #10-24 X .500" SS188
7	5106743	1	CABLE, POS ACTION CONT, CHOKE 36.25" LNG
8	5106744	1	CABLE, POS ACTION CONT, THRTL 35.00" LNG
9	5106000	2	KNOB, GATE LEVER
10	5109576	3	CABLE, TURN TO LOCK, 35"
11	5106067	4	WSHR-STL, FLT .281" X .625" X .050" IS SS188

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Decal Group

REF NO	PART NO	QTY	DESCRIPTION
1	100258	1	LABEL, CAUTION HOT SURFACE EN/SP
2	5103184	4	DECAL, WARNING, HAND IN BELT, ENG ONLY
3	5105761	1	DECAL, SPRAY PRESSURE CONTROL
4	5105766	1	DECAL, DANGER
5	5105767	1	DECAL, FOOT PLATFORM SPRAY SWITCH
6	5105768	1	DECAL, SPRAY TOGGLE VALVES
7	5105770	1	DECAL, PARKING BRAKE SYMBOLS HORIZONTAL
8	5106507	1	DECAL, CAUTION, MUFFLER TEMP.
9	5106542	1	DECAL, 3.00" FERRIS SHIELD LOGO
10	5106703	1	DECAL, SPINNER PUMP
11	5106704	1	DECAL, THROTTLE
12	5106705	1	DECAL, CHOKE
13	5106706	2	DECAL, MOTION CONTROL
14	5106707	1	DECAL, SPREADER/SPRAYER CONTROLS
15	5106708	1	DECAL, WARNING
16	5106709	1	DECAL, MADE IN THE USA
17	5103619YP	1	DECAL, MANUAL
18	5106710	1	DECAL, SPRAY TANK SUCTION / RETURN LABEL
19	-----	1	DECAL, CALIBRATION CHART 5 GPM, 4 NOZZLE -(Not illustrated.)



Electrical Group

REF NO	PART NO	QTY	DESCRIPTION
1	5418408	1	COVER, DART CONTROLLER
2	-----	1	BATTERY, 12 VOLT, 230 CCA
3	5100688	1	BATTERY BOX, W/ DRAIN HOLE
4	5044471	1	BATTERY CABLE, POSITIVE, 15
5	5044472	1	BATTERY CABLE, NEG, 10, 1/4-5/16
6	5106697	1	HARNESS, IGNITION
7	5106698	1	WIRING HARNESS, PUMP/GEAR MOTOR
8	5106717	1	HARNESS, HOUR METER
9	5106699	2	FUSE, ATOF/ATO, 20A 32V
10	5106193	1	SWITCH, IGNITION 3 POSITION KEY
11	5106252	1	KEY, IGNITION
12	1732004	1	SWITCH, Push Button, NO, Black
13	5106086	2	SWITCH, ROCKER 2P SPST 20A 14VDC
14	5106161	1	DRIVE, LOW VOLTAGE 20A 65E
15	5106145	1	METER, TACH/HOUR INDUCTIVE PICKUP
16	5105978	2	SCR-CAP, BSH #10-24 X .500" SS188
17	5106214	4	SCR-CAP, HEX .250"-20 X .750" SS188
18	5106275	2	SCR-CAP, HEX .250"-20 X 3.000" SS188
19	5106580	2	SCR-CAP, HEX .375"-16 X .750" SS188
20	5106067	4	WSHR-STL, FLT .281" X .625" X .050" IS SS188
21	5105963	2	NUT-HEX-NYLK, #10-24 SS188
22	5106040	6	NUT-HEX-NYLK, .250"-20 SS188
23	5106006	2	NUT-HEX-NYLK, .375"-16 SS188
24	-----	1	HARNESS, SPEED CONTROL TO PCB -(Service with item # 25)
25	5106253	1	POTENTIOMETER, SPEED CONTROL 5K OHM -(Includes potentiometer, nut, washer, and 3 wire leads)
26	5106693	1	KNOB, DART SPEED CONTROL
27	5106681	1	HARNESS, ATO FUSE HOLDER
28	5106544	1	STRAP, BATTERY BOX 45"
29	5108486	1	CLAMP, HARNESS ROUTING, SS
30	5106029	1	SCR-CAP, HEX .250"-20 X .625" SS188
31	5107655	1	NUT-HEX-NYLK, FLG .250"-20 SS188
32	5420650	1	TRIM, U-CHANNEL .031"X.156"X1.25" LONG

Electrical Schematic - Charging Circuit

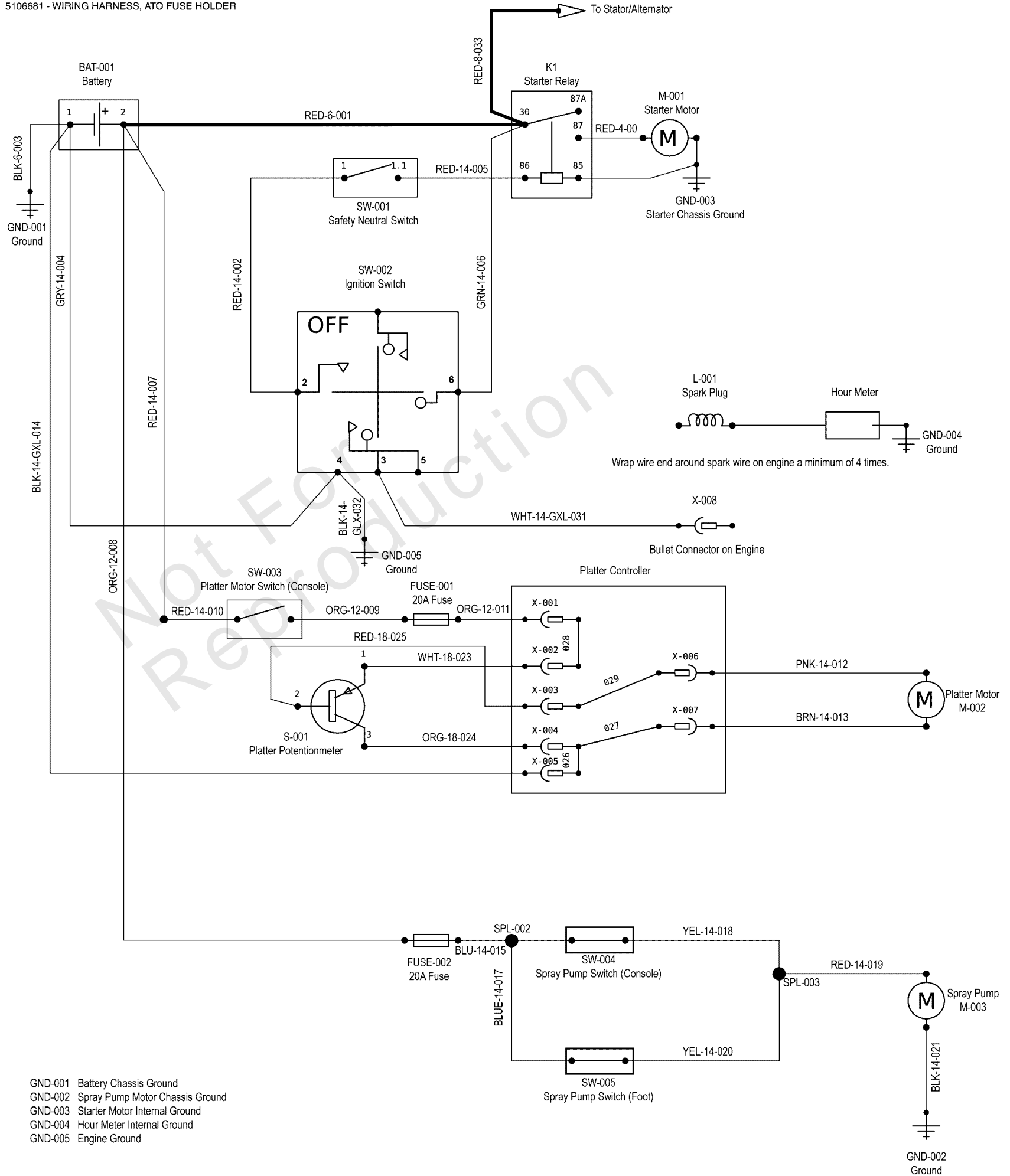
Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755

VENTURE ELECTRICAL SCHEMATICS - BRIGGS & STRATTON 356447 VANGUARD ENGINES

5106697A

- 5106697 - WIRING HARNESS, IGNITION
- 5106698 - WIRING HARNESS, PUMP/GEAR MOTOR
- 5106717 - WIRING HARNESS, HOUR METER
- 5106718 - WIRING HARNESS, SPEED CONTROL TO PCB
- 5106681 - WIRING HARNESS, ATO FUSE HOLDER



- GND-001 Battery Chassis Ground
- GND-002 Spray Pump Motor Chassis Ground
- GND-003 Starter Motor Internal Ground
- GND-004 Hour Meter Internal Ground
- GND-005 Engine Ground

Electrical Schematic - Charging Circuit

REF NO	PART NO	QTY	DESCRIPTION
5106697	5106697	1	HARNESS, IGNITION
5106698	5106698	1	WIRING HARNESS, PUMP/GEAR MOTOR
5106717	5106717	1	HARNESS, HOUR METER
5106718	-----	1	HARNESS, SPEED CONTROL TO PCB -(Refer to Note: *)
5106681	5106681	1	HARNESS, ATO FUSE HOLDER

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Footnotes:

Note: *Service with part number 5106253 which includes potentiometer, nut, washer, and three wire leads.

Electrical Schematic - Cranking Circuit

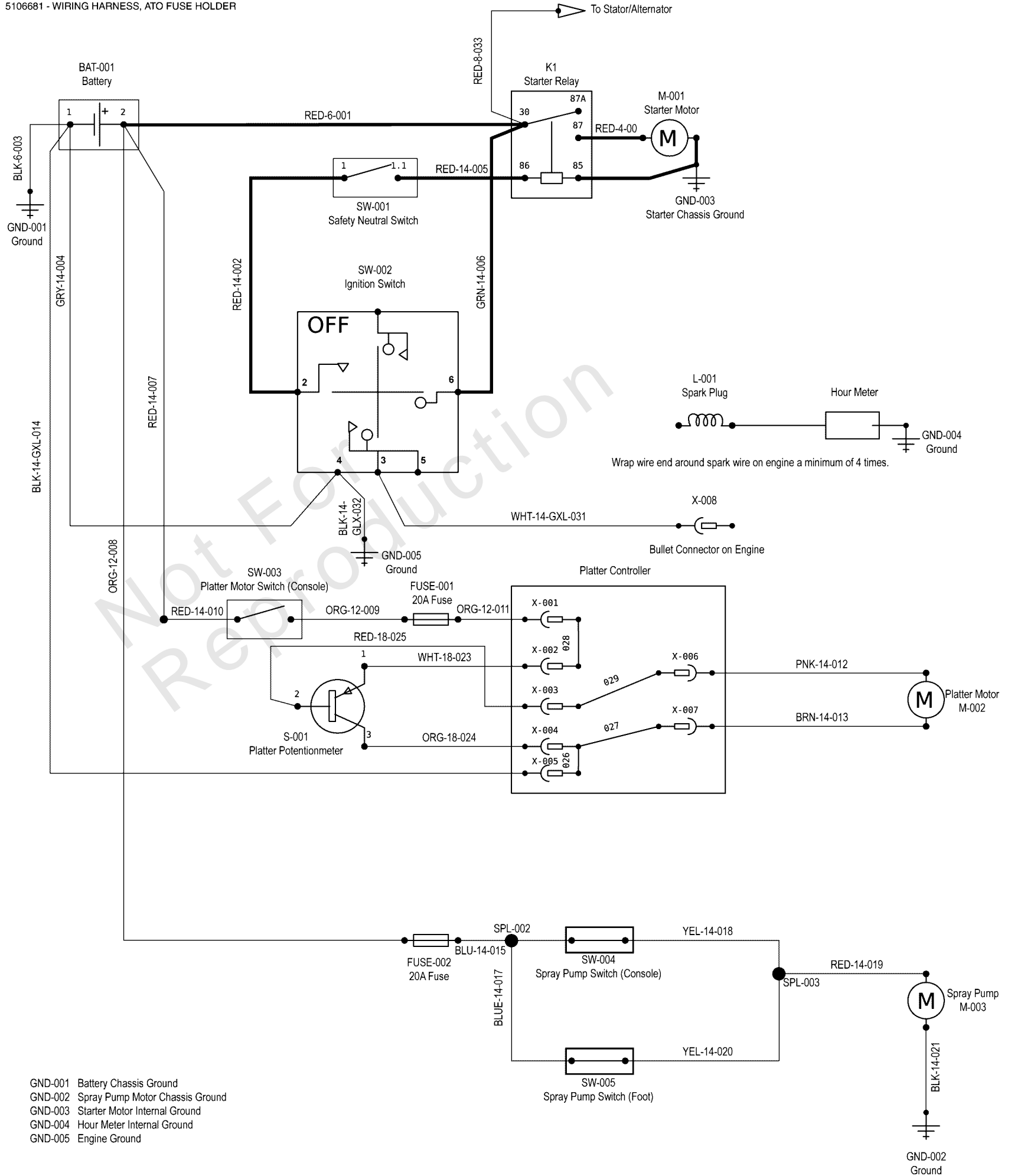
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Mfg. No: 5901755

VENTURE ELECTRICAL SCHEMATICS - BRIGGS & STRATTON 356447 VANGUARD ENGINES

5106697A

- 5106697 - WIRING HARNESS, IGNITION
- 5106698 - WIRING HARNESS, PUMP/GEAR MOTOR
- 5106717 - WIRING HARNESS, HOUR METER
- 5106718 - WIRING HARNESS, SPEED CONTROL TO PCB
- 5106681 - WIRING HARNESS, ATO FUSE HOLDER



Electrical Schematic - Cranking Circuit

REF NO	PART NO	QTY	DESCRIPTION
5106697	5106697	1	HARNES, IGNITION
5106698	5106698	1	WIRING HARNES, PUMP/GEAR MOTOR
5106717	5106717	1	HARNES, HOUR METER
5106718	-----	1	HARNES, SPEED CONTROL TO PCB -(Refer to Note: *)
5106681	5106681	1	HARNES, ATO FUSE HOLDER

Not For
Reproduction

Footnotes:

Note: *Service with part number 5106253 which includes potentiometer, nut, washer, and three wire leads.

Electrical Schematic - Spinner Platter Activation Circuit

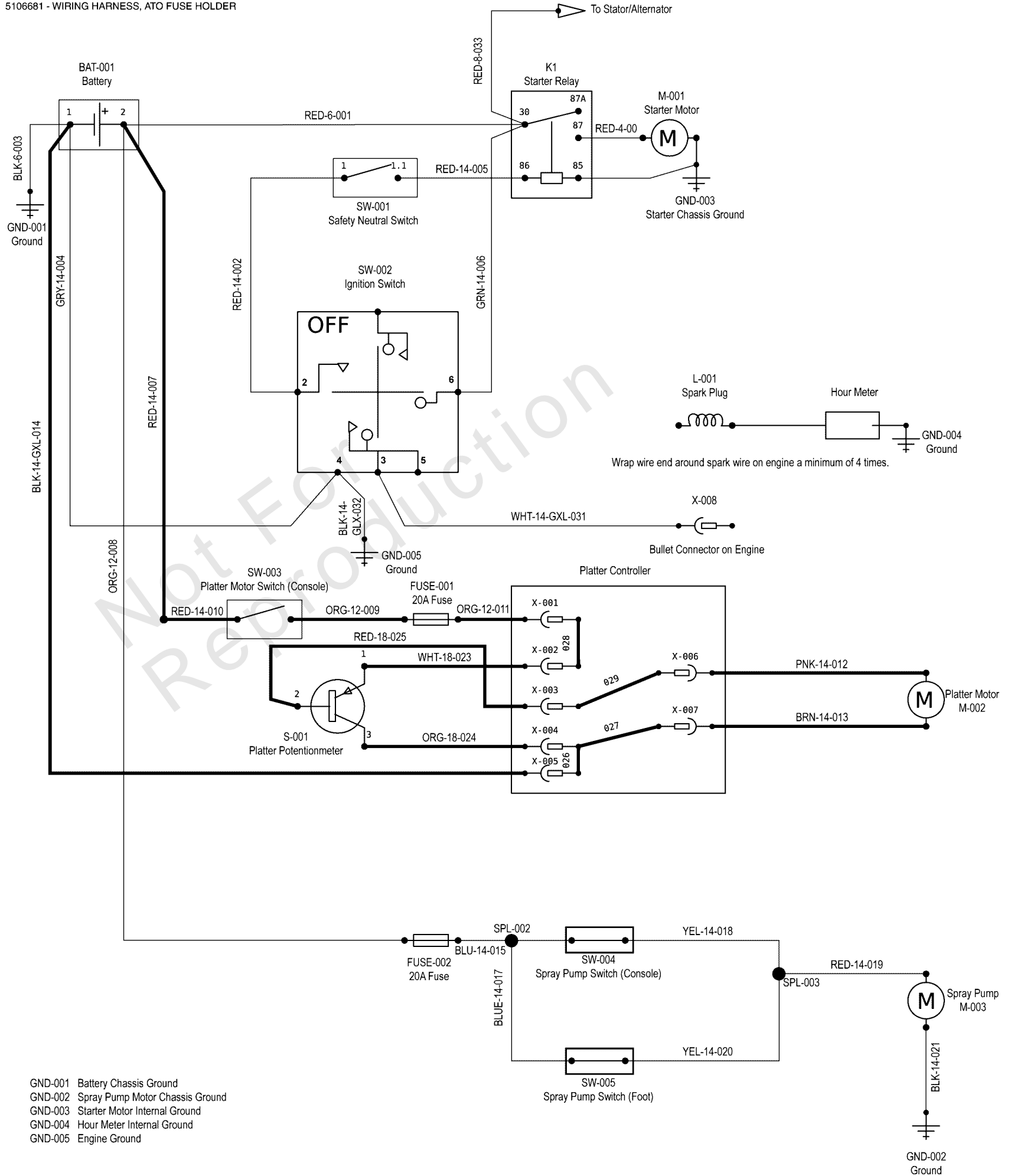
Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755

VENTURE ELECTRICAL SCHEMATICS - BRIGGS & STRATTON 356447 VANGUARD ENGINES

5106697A

- 5106697 - WIRING HARNESS, IGNITION
- 5106698 - WIRING HARNESS, PUMP/GEAR MOTOR
- 5106717 - WIRING HARNESS, HOUR METER
- 5106718 - WIRING HARNESS, SPEED CONTROL TO PCB
- 5106681 - WIRING HARNESS, ATO FUSE HOLDER



Electrical Schematic - Spinner Platter Activation Circuit

REF NO	PART NO	QTY	DESCRIPTION
5106697	5106697	1	HARNESS, IGNITION
5106698	5106698	1	WIRING HARNESS, PUMP/GEAR MOTOR
5106717	5106717	1	HARNESS, HOUR METER
5106718	-----	1	HARNESS, SPEED CONTROL TO PCB -(Refer to Note: *)
5106681	5106681	1	HARNESS, ATO FUSE HOLDER

Not For
Reproduction

Footnotes:

Note: *Service with part number 5106253 which includes potentiometer, nut, washer, and three wire leads.

Electrical Schematic - Spray Pump Activation Circuit

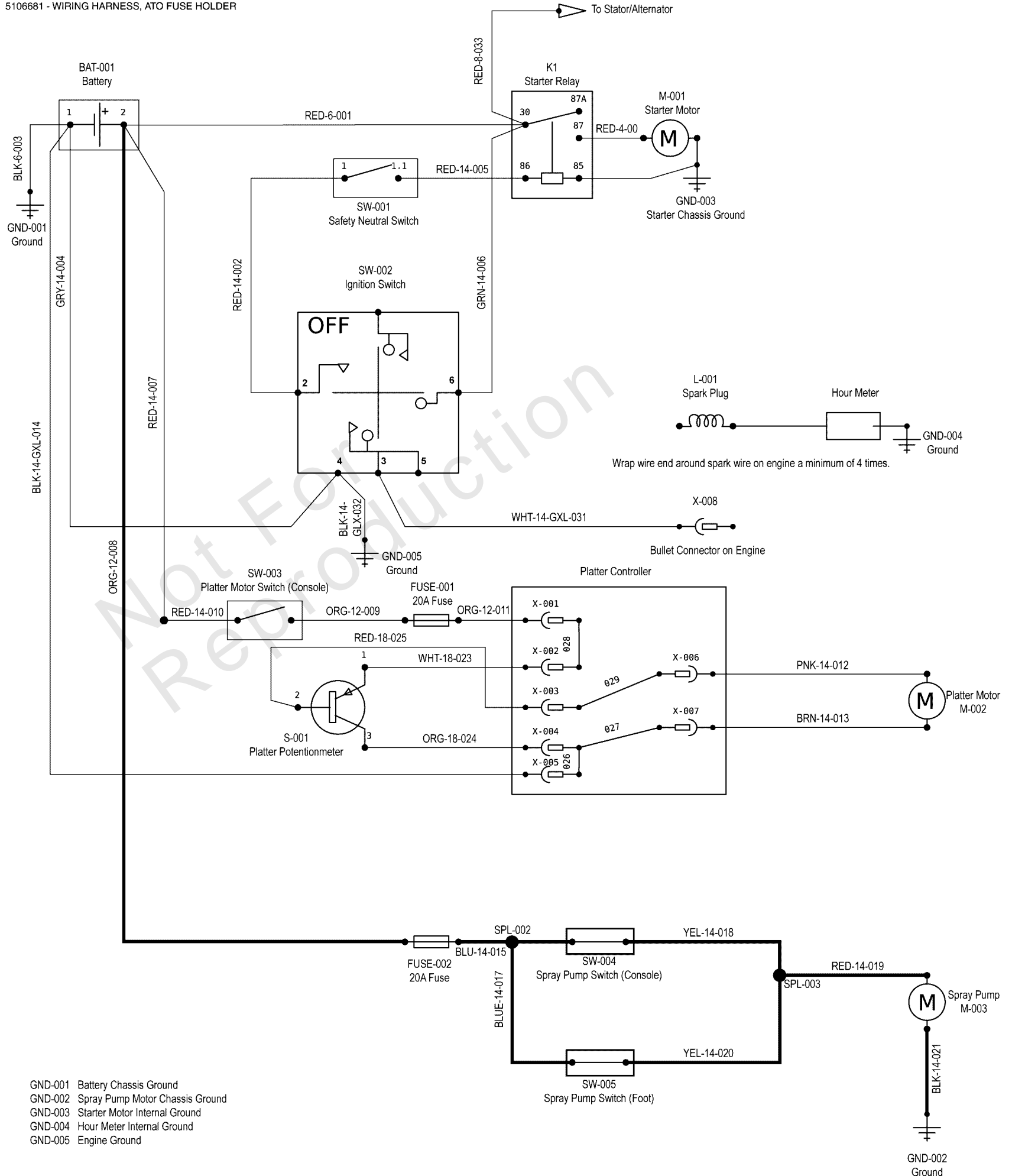
Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755

VENTURE ELECTRICAL SCHEMATICS - BRIGGS & STRATTON 356447 VANGUARD ENGINES

5106697A

- 5106697 - WIRING HARNESS, IGNITION
- 5106698 - WIRING HARNESS, PUMP/GEAR MOTOR
- 5106717 - WIRING HARNESS, HOUR METER
- 5106718 - WIRING HARNESS, SPEED CONTROL TO PCB
- 5106681 - WIRING HARNESS, ATO FUSE HOLDER



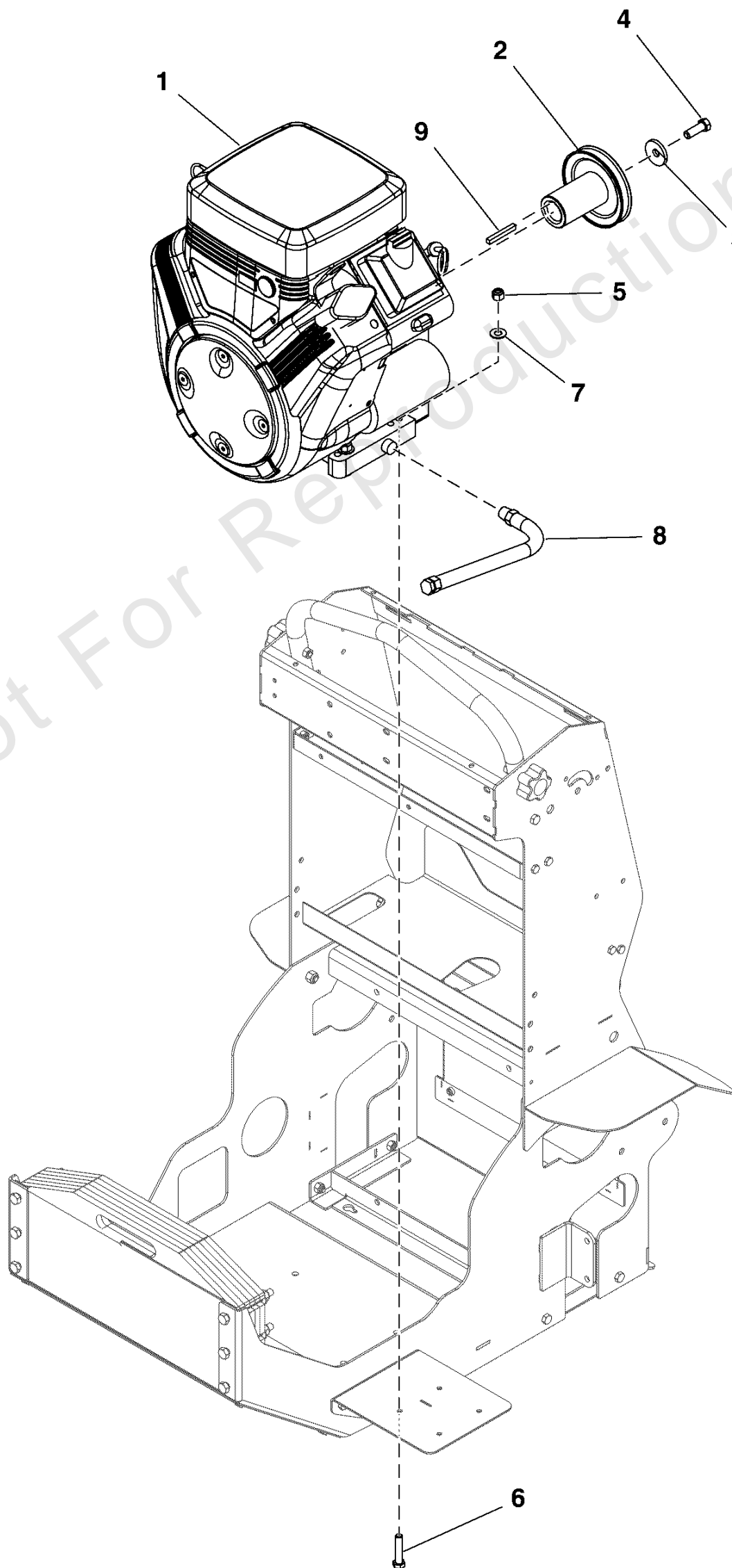
Electrical Schematic - Spray Pump Activation Circuit

REF NO	PART NO	QTY	DESCRIPTION
5106697	5106697	1	HARNESS, IGNITION
5106698	5106698	1	WIRING HARNESS, PUMP/GEAR MOTOR
5106717	5106717	1	HARNESS, HOUR METER
5106718	-----	1	HARNESS, SPEED CONTROL TO PCB -(Refer to Note: *)
5106681	5106681	1	HARNESS, ATO FUSE HOLDER

Not For
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Footnotes:

Note: *Service with part number 5106253 which includes potentiometer, nut, washer, and three wire leads.



Engine Group

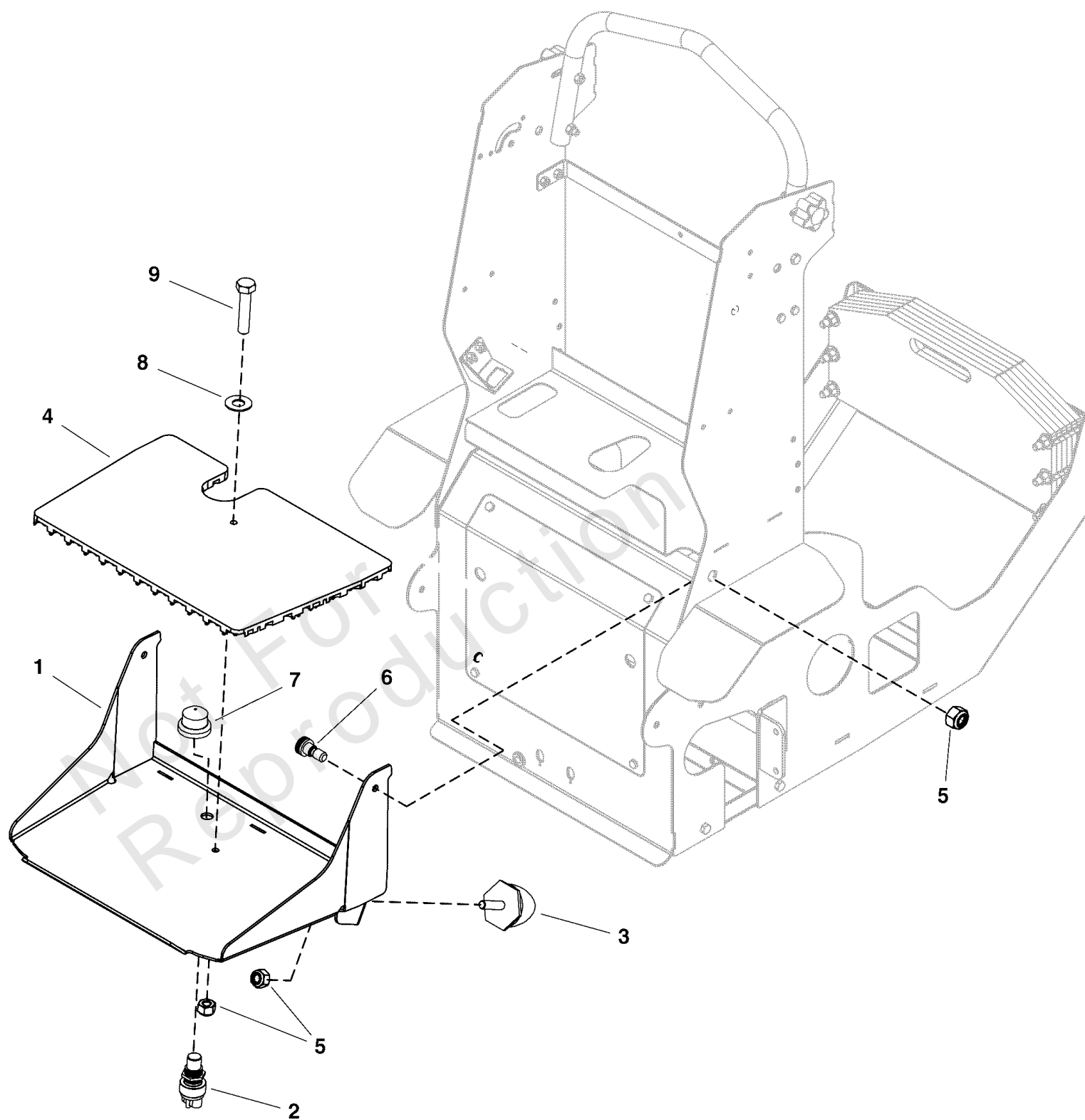
REF NO	PART NO	QTY	DESCRIPTION
1	5106334	1	ENGINE, 18 HP VANGUARD
2	5106332	1	PULLEY, 4.50 O.D. x 1.125" I.D. V, A/B
3	5106653	1	WSHR-STL, BLV, .450" X 1.500" X .172" MZ
4	5106654	1	SCR-CAP, HEX .4375"-20 X 1.250" EP42 G8 YZ
5	5106006	4	NUT-HEX-NYLK, .375"-16 SS188
6	5106518	4	SCR-CAP, HEX .375"-16 X 1.7500" SS188
7	5106168	4	WSHR-STL, FLT .406" X .875" X .050" IS SS188
8	5048681	1	HOSE, OIL DRAIN
9	5105938	1	KEY, .250" SQ. X 2" SS188

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Foot Pan Group

Note: Unless noted otherwise, use the standard torque specifications

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Foot Pan Group

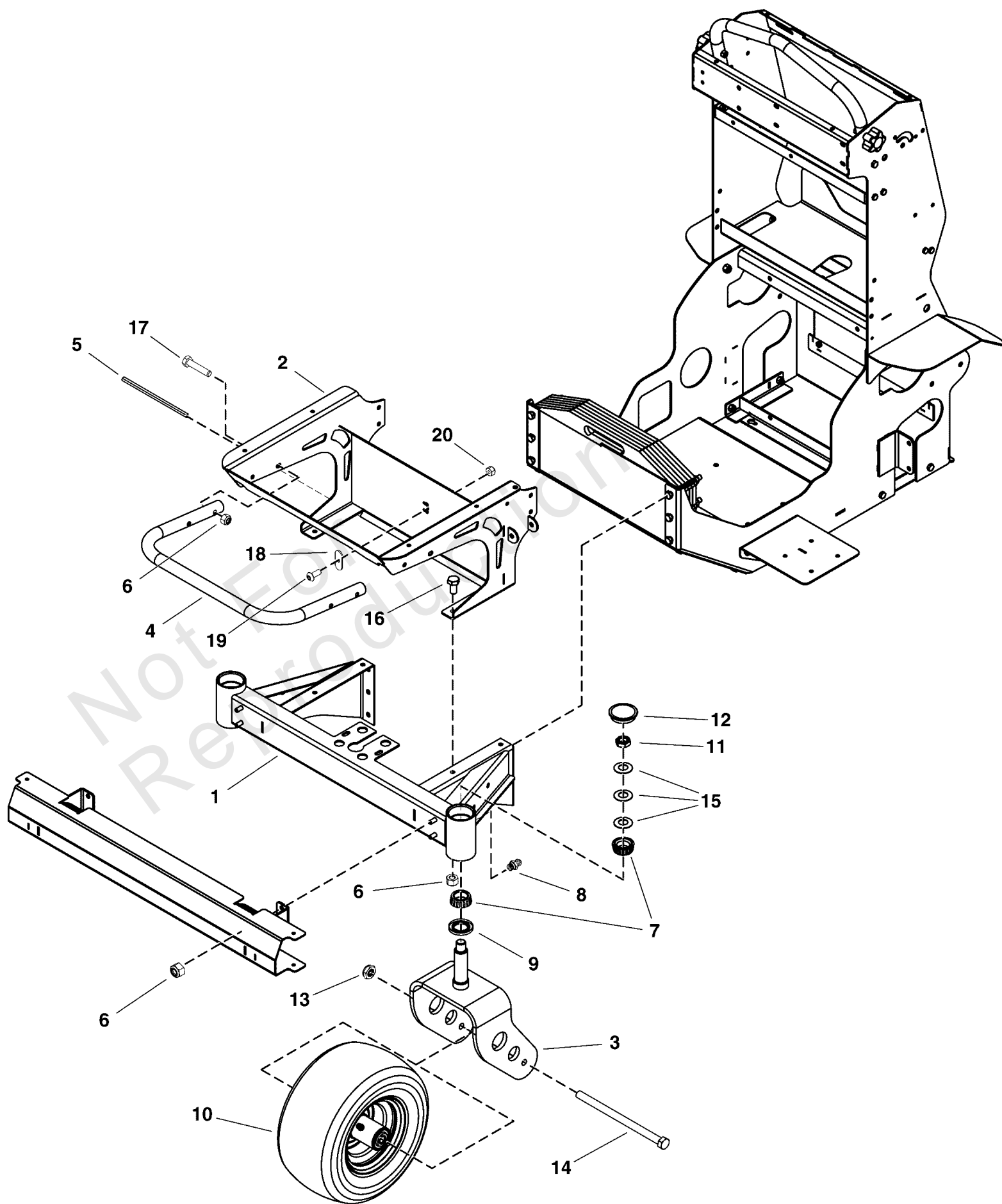
REF NO	PART NO	QTY	DESCRIPTION
1	5418390	1	WELD, FOOTPAN
2	5106144	1	SWITCH, MOMENTARY 60A 12VDC
3	5106694	3	BUMPER, MALE TAPERED 5/16-18 THD, 140 LB
4	5106262	1	PAD, FOOT RUBBER
5	5105992	6	NUT-HEX-NYLK, 0.3125"-18 SS188
6	5106171	2	BLT-SLDR, SH .375" X 0.250", .3125"-18 X.500" SS188
7	5106178	1	BOOT, SWITCH 5/8-32 THREADED
8	5106168	1	WSHR-STL, FLT .406" X .875" X .050" IS SS188
9	5106755	1	SCR-CAP, HEX .3125"-18 X 1.500" SS188

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Front Caster Group

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



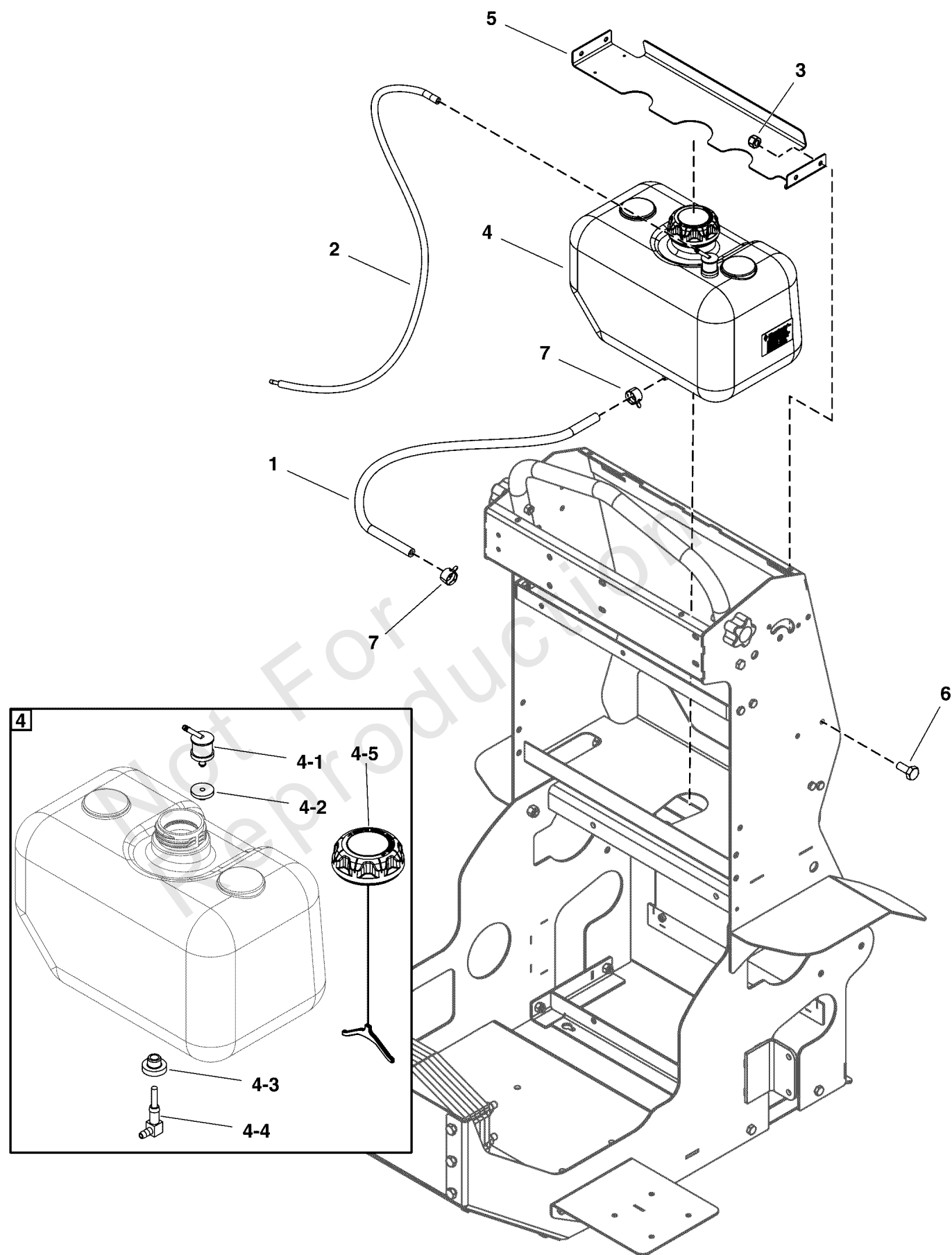
Front Caster Group

REF NO	PART NO	QTY	DESCRIPTION
1	5106272	1	WELD, CASTER ARM SUPPORT
2	5418326	1	WELD, HOPPER SUPPORT -(S/N: 30000003685 and Below)
2	84008653	1	SUPPORT -(S/N: 30000003686 and Above)
3	5418356	2	WELD, CASTER FORK ASSEMBLY
4	5418341	1	TUBE, FRONT BUMPER -(S/N: 30000003685 and Below)
4	84008652	1	BUMPER, Tube -(S/N: 30000003686 and Above)
5	5418427	1	TRIM FOR CONSOLE, 7 INCH -(S/N: 30000003685 and Below)
5	84008656	1	TRIM -(S/N: 30000003686 and Above)
6	5105992FS	12	NUT
7	5106044	4	BRG, TPR 1.063" ID X .58" THK
8	5106119	2	ZERK, GREASE .250"-28 SS
9	5106126	2	SEAL, 1.125" BORE x 1.987 OD x 0.250 THK
10	5106150	2	ASM, WHEEL & TIRE 13X6.50-6 FILLED SMOOTH
10-1	5108684	2	KIT, 5106150 REPLACEMENT BEARING -(Includes 2 each of bearing, spacer, and seal to service 5106150 tire)
11	5106184FS		NUT
12	5109845FS		CAP
13	5106582	2	NUT-HEX-NYLK, .500"-13 TH TTW SS188
14	5106583	2	SCR-CAP, HEX .500"-13 X 8.000" SS188
15	5106585	6	WSHR-STL, BLV, .770" X 1.500" X .045" MZ
16	5106649	4	SCR-CAP, HEX .3125"-18 X .625" SS188
17	5106755	4	SCR-CAP, HEX .3125"-18 X 1.500" SS188
18	5105969	1	PLATE, CABLE HOLDER
19	5105978	1	SCR-CAP, BSH #10-24 X .500" SS188
20	5105963FS	1	NUT

Fuel Tank Group

Note: Unless noted otherwise, use the standard torque specifications

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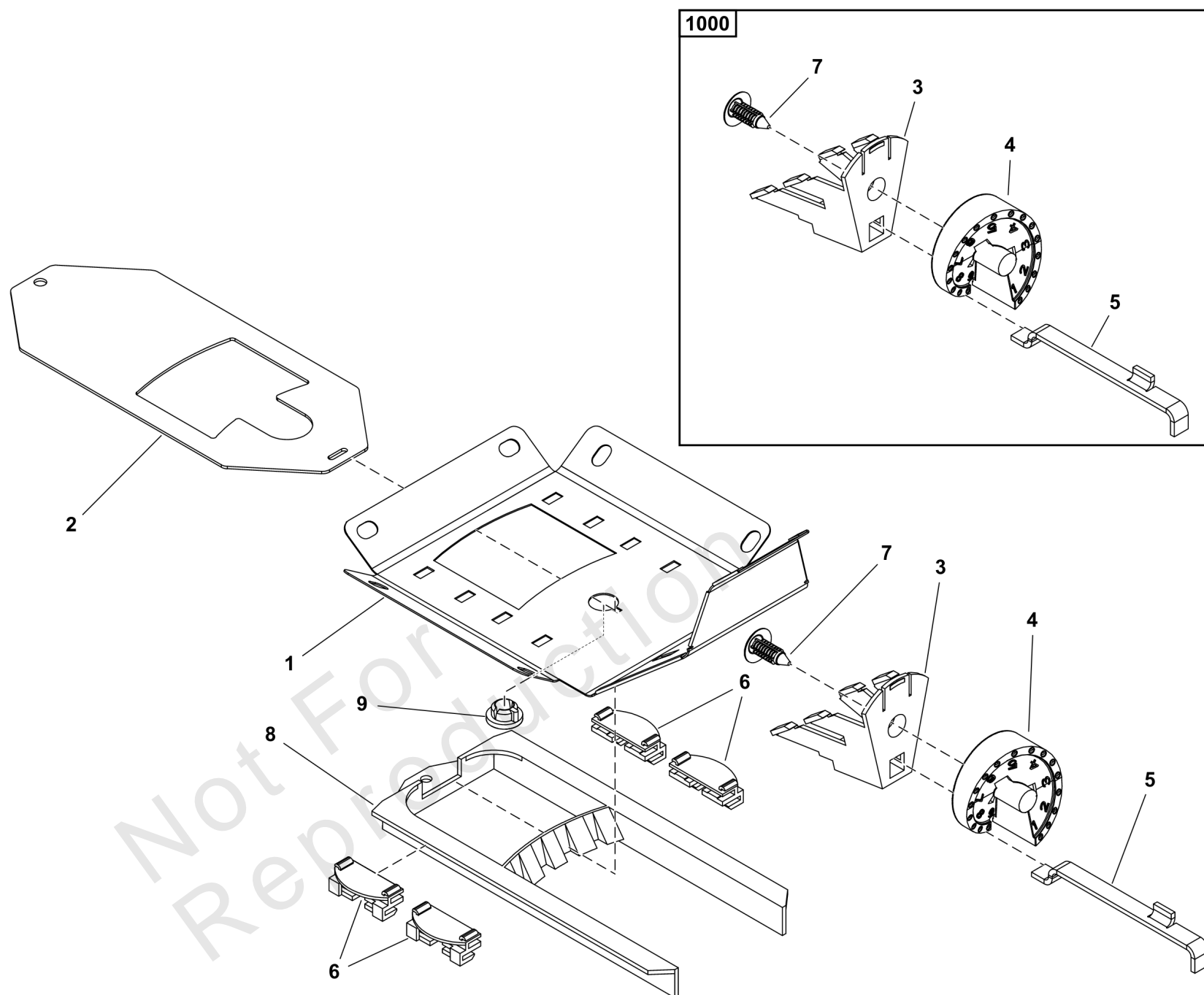
Fuel Tank Group

REF NO	PART NO	QTY	DESCRIPTION
1	5050831X14	1	1/4" Fuel Line, 14" Long -(Connects to Engine)
2	5418428	1	HOSE, FUEL VENT EPA 3/16" ID
3	5106040	4	NUT-HEX-NYLK, .250"-20 SS188
4	5105974	1	TANK, FUEL 2.5 GAL EPA/CARB -(Includes items 1-1 through 1-5)
4-1	5106225	1	VALVE, SLOSH (C0155) -(SV)
4-2	5106176	1	GROMMET, SLOSH VALVE (C0156) -(SV)
4-3	5105885	1	GROMMET, VALVE, FUEL TANK (B0142) -(SV)
4-4	5105993	1	FITTING, FUEL TANK (B0115) -(SV)
4-5	5106070	1	CAP, FUEL, EPA (C0139) -(SV)
5	5418368	1	BRACKET, FUEL TANK HOLD DOWN
6	5106029	4	SCR-CAP, HEX .250"-20 X .625" SS188
7	791164	2	CLAMP, FUEL LINE 0.50"

Hopper Gate Assembly Group (220 LBS)

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Hopper Gate Assembly Group (220 LBS)

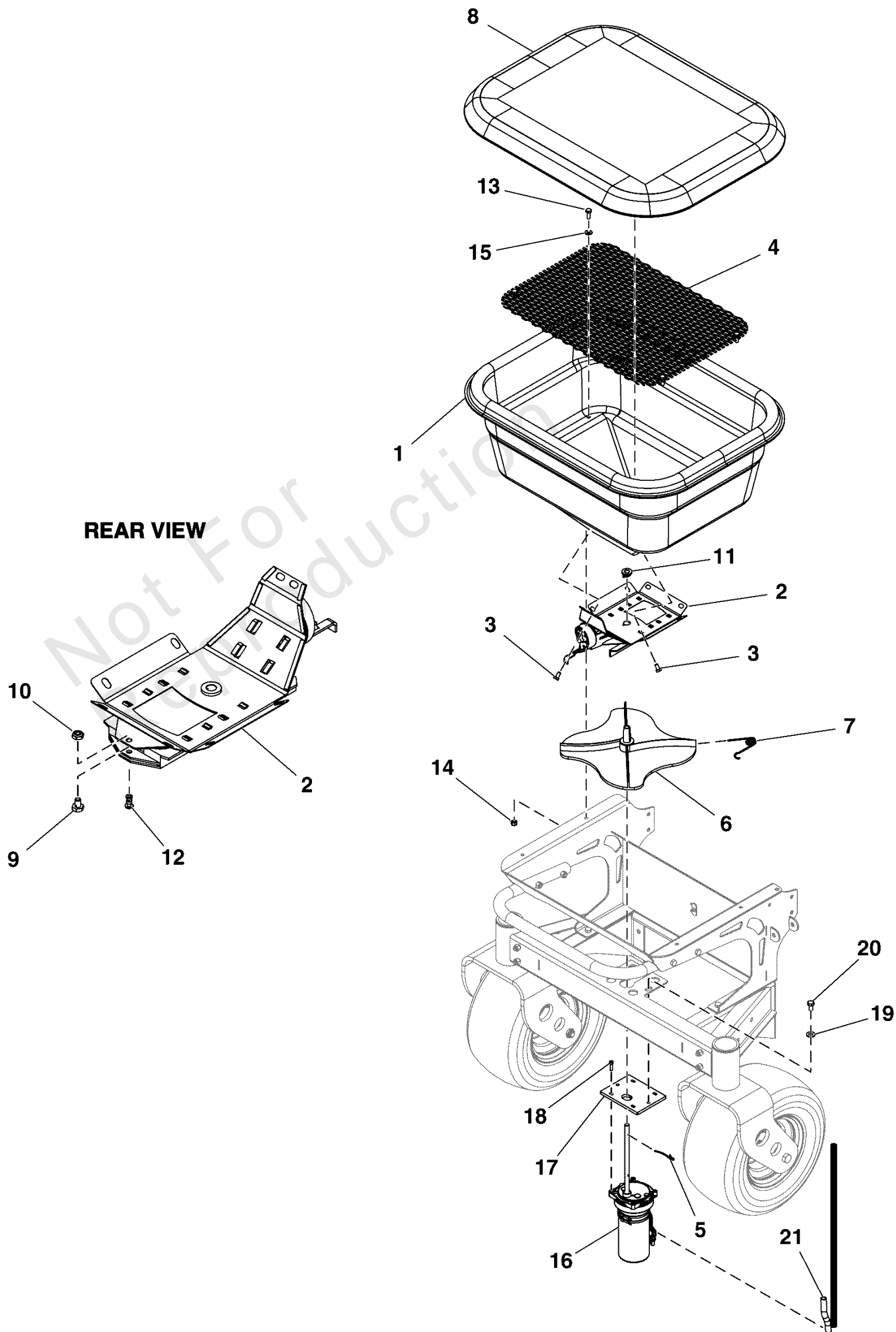
REF NO	PART NO	QTY	DESCRIPTION
1	5106197	1	PLATE, HOPPER BOTTOM 220 LBS
2	5106199	1	PLATE, RATE GATE
3	5105888	1	MOUNT, SPREADER DIAL
4	5105913	1	DIAL, CONTROLLER
5	5105942	1	PLATE, STOPPER, GATE OPENING
6	5105933	4	GUIDE, RATE GATE & DIFFUSER
7	5105953	1	PINE TREE CLIP, SPREADER FOR DIA .33"
8	5106014	1	BAFFLE, SPREADER DIFFUSER
9	5105878	1	BUSHING, HOPPER SPREADER
1000	5105923	1	AMMS, DIAL MOUNT (S0130) -(Includes items #3, #4, #5, and #7)

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Hopper Group (220 LBS)

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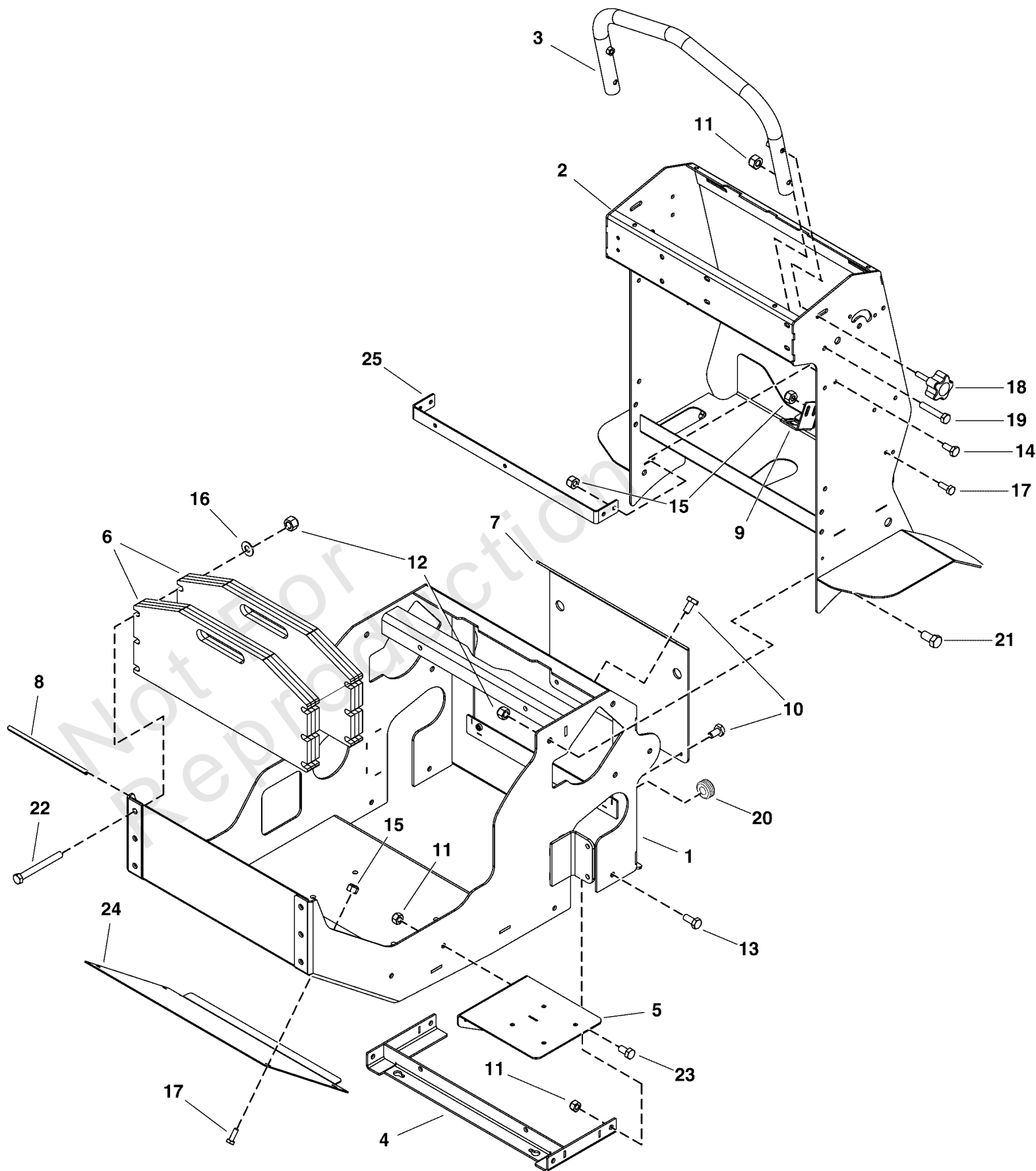
Hopper Group (220 LBS)

REF NO	PART NO	QTY	DESCRIPTION
1	5106211	1	HOPPER, 220 LBS
2	5601137	1	ASSEMBLY,GATE,COMPLET
3	5105893	8	SCR-CAP, HEX .250"-20 X .500" SS188
4	84011455	1	SCREEN, Hopper (MODEL 220 LBS PERF)
5	5105875	1	CLIP, SPINNER AGITATOR
6	84008796	1	PLATTER, Spinner
7	5105879	1	CLIP, SPREADER SPINNER
8	5105887	1	COVER, HOPPER, MODEL 220
9	5105894	1	SCR-CAP, HEX .250"-20 X .375" SS188 SPC
10	5105915	1	NUT-HEX-NYLK, .250"-20 TH SS188
11	5105878	1	BUSHING, HOPPER SPREADER
12	5105921	1	FITTING, SWIVEL ACCUWAY
13	5106214	4	SCR-CAP, HEX .250"-20 X .750" SS188
14	5106040	4	NUT-HEX-NYLK, .250"-20 SS188
15	5106067	4	WSHR-STL, FLT .281" X .625" X .050" IS SS188
16	5106120	1	SPINNER GEARMOTOR (E0118)
17	5418220	1	BRACKET, GEARMOTOR, SUPPORT
18	5106676	4	SCR-CAP SH, #10-32 X .750" SS188
19	5106009	2	WSHR-STL, FLT .343" X .750" X .050" SPC SS188
20	5106649	2	SCR-CAP, HEX .3125"-18 X .625" SS188
21	5418429	1	SPLIT LOOM, .350" ID 19.00" LONG

Main Frame Group S/N: 3000003685 and Below

Note: Unless noted otherwise, use the standard torque specifications

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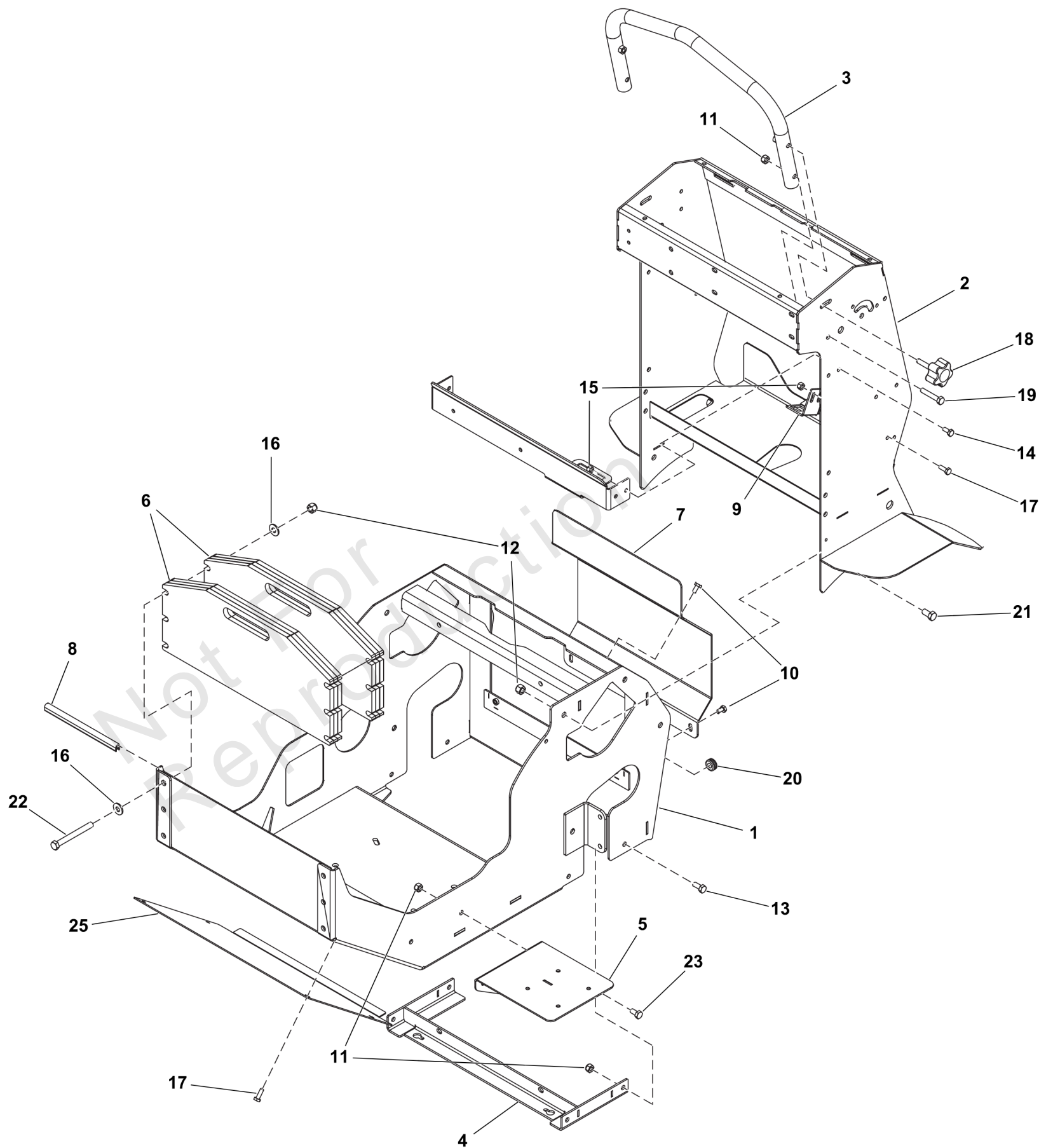
Main Frame Group S/N: 3000003685 and Below

REF NO	PART NO	QTY	DESCRIPTION
1	5418316	1	WELD, MAIN FRAME LOWER
2	5418332	1	WELD, HAND CONTROLS
3	5418344	1	WELD, STATIONARY HANDLEBAR
4	5418345	1	WELD, LOWER MOUNT TRANSAXLE
5	5418365	1	WELD, BATTERY SUPPORT PLATE
6	5418384	2	WELD, PLATE COUNTER WEIGHT
7	5418489	1	PLATE, BACK, (SANDED)
8	5418427	1	TRIM FOR CONSOLE, 7 INCH
9	5105788	1	PLATE, PARKING BRAKE SWITCH
10	5105893	4	SCR-CAP, HEX .250"-20 X .500" SS188
11	5105992	8	NUT-HEX-NYLK, 0.3125"-18 SS188
12	5106006	10	NUT-HEX-NYLK, .375"-16 SS188
13	5106024	4	SCR-CAP, HEX .3125"-18 X .750" SS188
14	5106029	4	SCR-CAP, HEX .250"-20 X .625" SS188
15	5106040	10	NUT-HEX-NYLK, .250"-20 SS188
16	5106168	6	WSHR-STL, FLT .406" X .875" X .050" IS SS188
17	5106214	6	SCR-CAP, HEX .250"-20 X .750" SS188
18	5106279	2	KNOB, STATIONARY CONTROL BAR
19	5106293	2	SCR-CAP, HEX .3125"-18 X 1.750" SS188
20	5106454	1	GROMMET, 0.375" I.D., FIT 0.500" HOLE
21	5106580	4	SCR-CAP, HEX .375"-16 X .750" SS188
22	5106648	6	SCR-CAP, HEX .375"-16 X 3.500" SS188
23	5106649	2	SCR-CAP, HEX .3125"-18 X .625" SS188
24	5418325	1	PLATE, FRONT ENGINE COVER
25	5418342	1	BRACKET, EXPANSION TANK MOUNT

Main Frame Group S/N: 3000003686 and Above

Note: Unless noted otherwise, use the standard torque specifications

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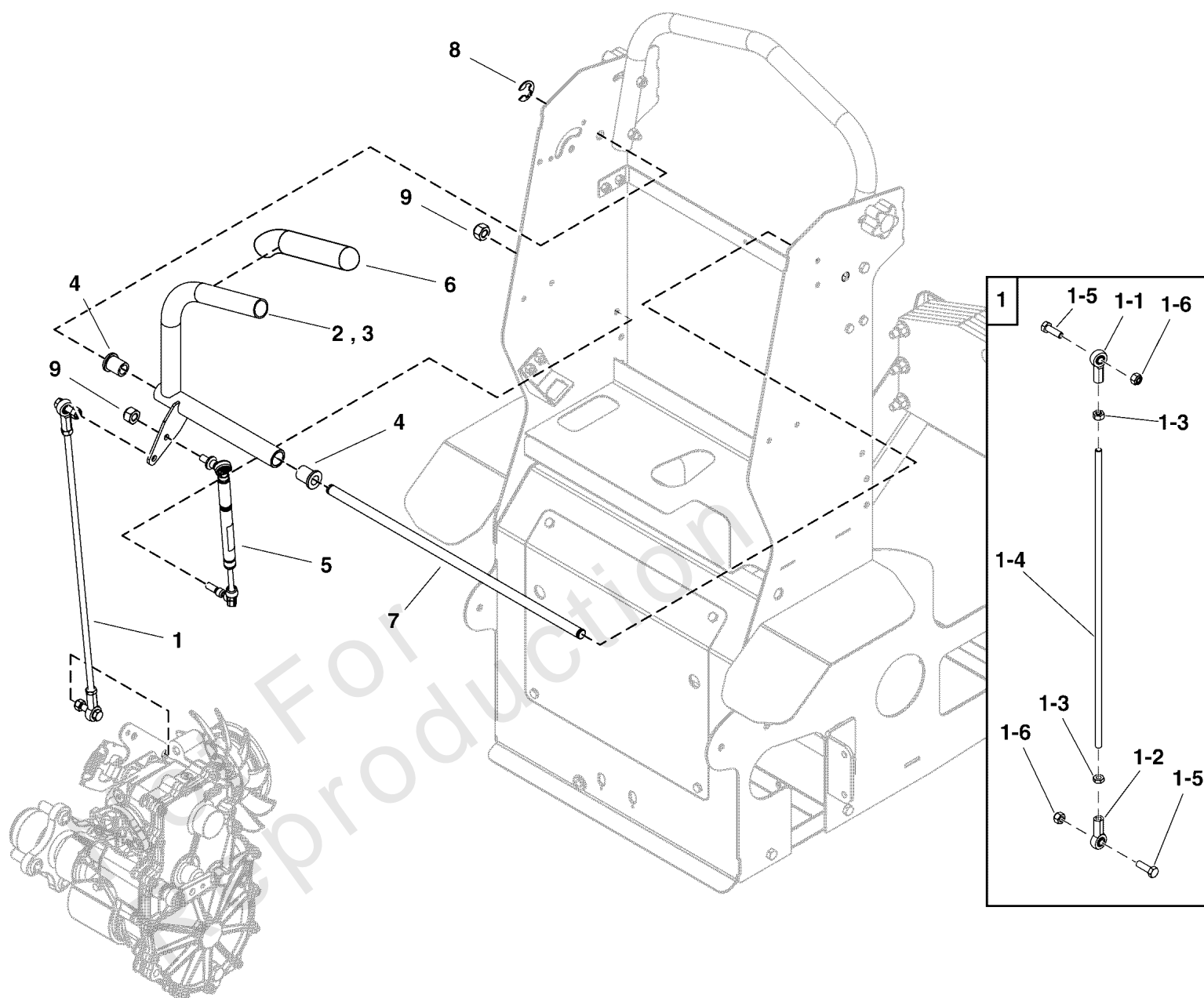
Main Frame Group S/N: 30000003686 and Above

REF NO	PART NO	QTY	DESCRIPTION
1	5423027	1	WELD, MAIN FRAME LOWER
2	5418332	1	WELD, HAND CONTROLS
3	84008740	1	HANDLEBAR
4	5418345	1	WELD, LOWER MOUNT TRANSAXLE
5	5418365	1	WELD, BATTERY SUPPORT PLATE
6	5418384	2	WELD, PLATE COUNTER WEIGHT
7	5422527	1	PLATE, BACK W/ EXTENSION (SANDED)
8	84008656	1	TRIM
9	5105788	1	PLATE, PARKING BRAKE SWITCH
10	5105893	4	SCR-CAP, HEX .250"-20 X .500" SS188
11	5105992FS	8	NUT
12	5106006FS	10	NUT
13	5106024	4	SCR-CAP, HEX .3125"-18 X .750" SS188
14	5106029	4	SCR-CAP, HEX .250"-20 X .625" SS188
15	5106040FS	6	NUT
16	5107649	12	WSHR-SS, FLT .375"X.875"X.083" USS
17	5106214	6	SCR-CAP, HEX .250"-20 X .750" SS188
18	5106279	2	KNOB, STATIONARY CONTROL BAR
19	5106293	2	SCR-CAP, HEX .3125"-18 X 1.750" SS188
20	5106454	1	GROMMET, 0.375" I.D., FIT 0.500" HOLE
21	5106580	4	SCR-CAP, HEX .375"-16 X .750" SS188
22	5106648	6	SCR-CAP, HEX .375"-16 X 3.500" SS188
23	5106649	2	SCR-CAP, HEX .3125"-18 X .625" SS188
24	5418342	1	BRACKET, EXPANSION TANK MOUNT
25	84008741	1	COVER, Engine

Motion Control Lever Group

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



Motion Control Lever Group

REF NO	PART NO	QTY	DESCRIPTION
1	-----	2	ASM, MOTION CONTROL ROD
1-1	5106245	1	ROD END, FEMALE 5/16-24 LH ZP PTFE RACE
1-2	5106244	1	ROD END, FEMALE 5/16-24 RH ZP PTFE RACE
1-3	5106688	2	NUT-HEX, JAM .3125"-24 SS188
1-4	5418378	1	ROD, CONTROL 5/16-24 THD X 18.50" MZ
1-5	5106576	2	SCR-CAP, HEX .3125"-18 X 1.000" SS188
1-6	5105992	2	NUT-HEX-NYLK, 0.3125"-18 SS188
2	5418379	1	WELD, LH CONTROL ARM -(Left Hand Control Arm)(Refer to Note: *)
3	5418383	1	WELD, RH CONTROL ARM -(Right Hand Control Arm)(Refer to Note: *)
4	5106689	4	BUSHING, FLANGE 1/2 ID X 3/4 OD X 1 LG -(Bushing with 3/4" OD)
4	5108816	4	BSHG-FL, .500" X .625" X .500", .875"x .062" IR -(Bushing with 5/8" OD)
5	5106277	2	DAMPER, CONTROL ARM -(S/N: 30000003685 and Below)
6	5106278	2	GRIP, MOTION CONTROL
7	84008797	1	ROD
8	5106691	2	E-RING, 0.500" SHAFT YZ
9	5105992	4	NUT-HEX-NYLK, 0.3125"-18 SS188 -(S/N: 30000003685 and Below)

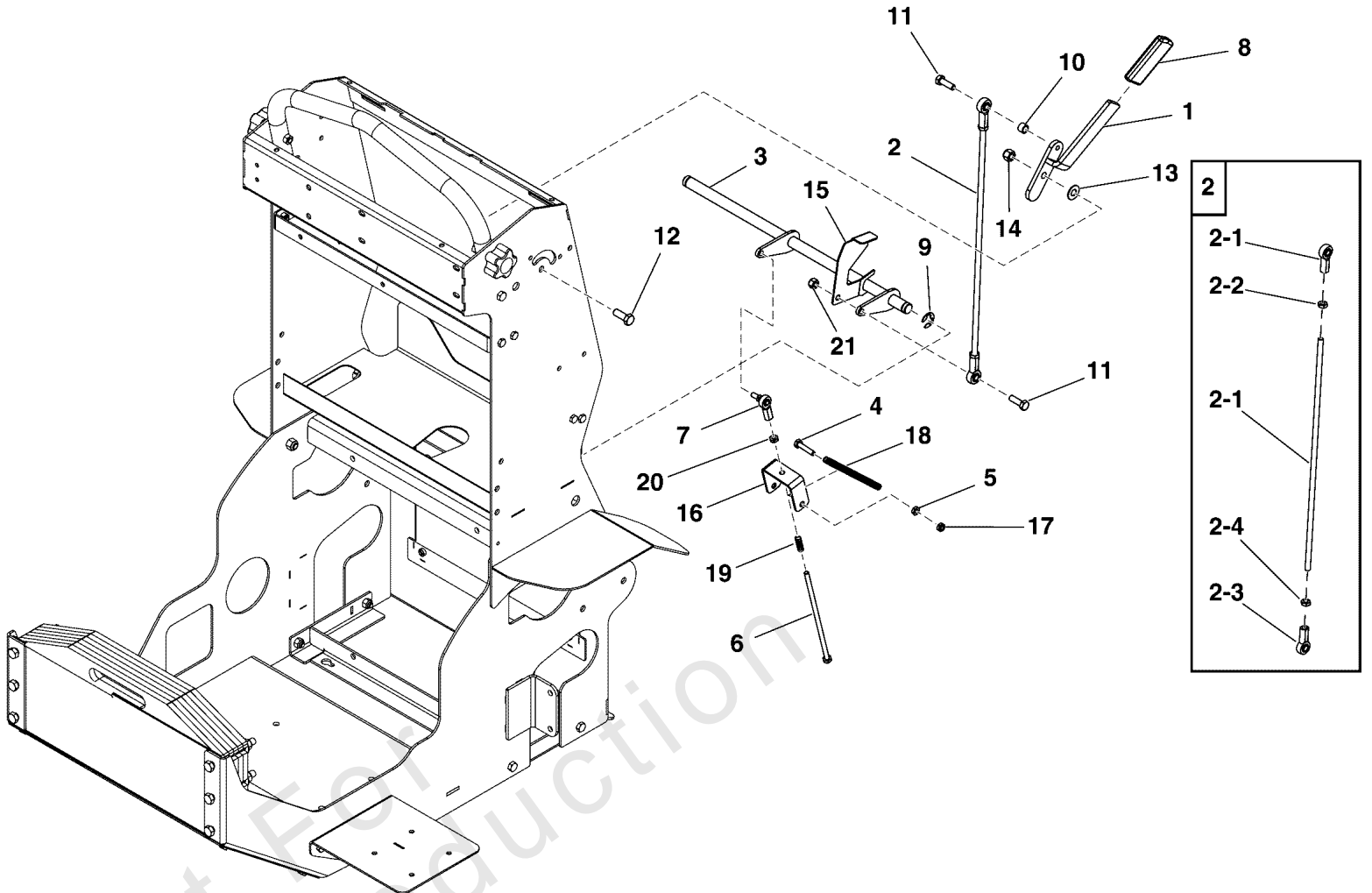
Footnotes:

Note: *If replacing you must also order 5108816 - Qty: 2.

Parking Brake Group

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



Not For Reproduction

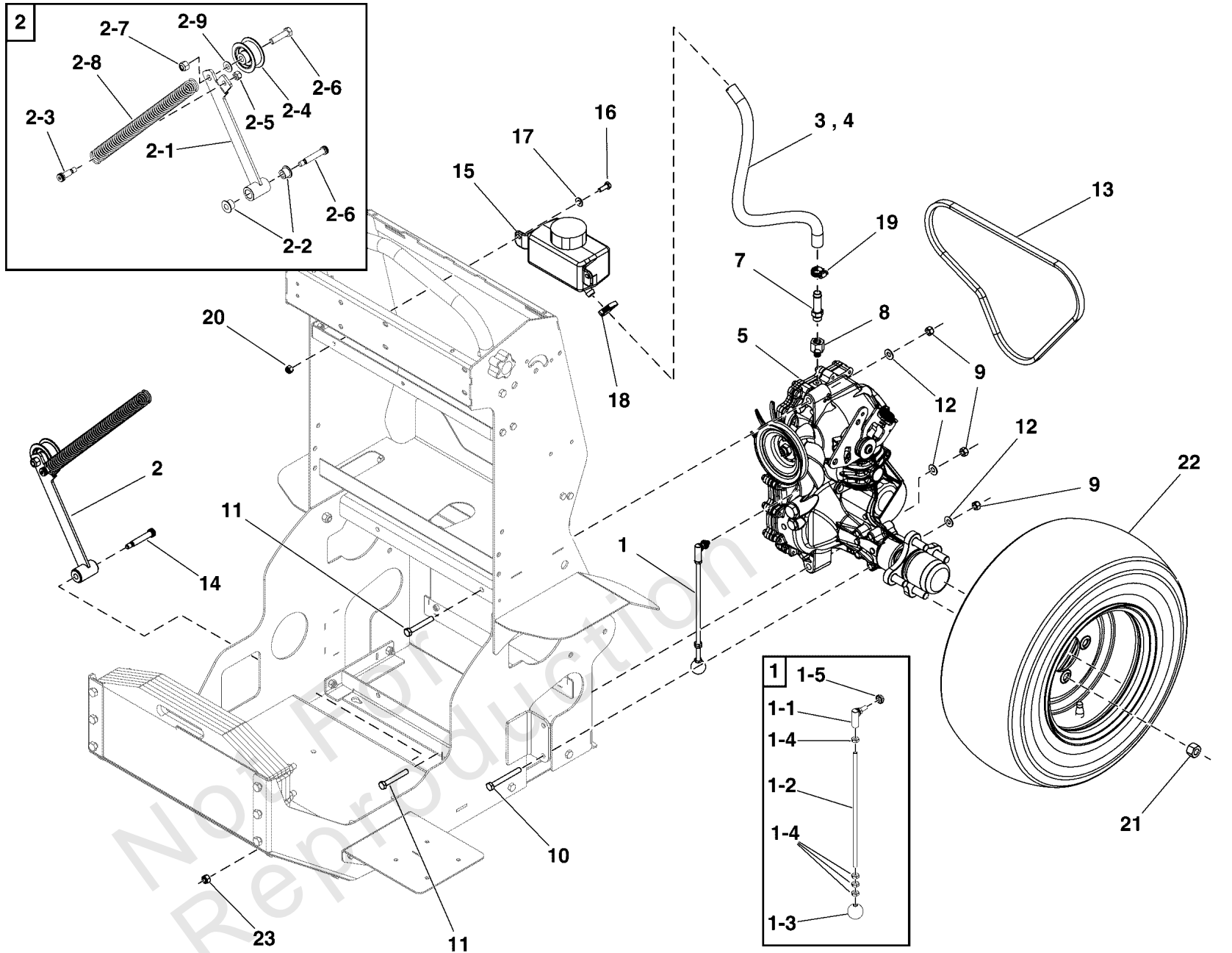
Parking Brake Group

REF NO	PART NO	QTY	DESCRIPTION
1	5418372	1	WELD, PARK BRAKE HANDLE
2	5418375	1	ASM, PARK BRAKE ROD
2-1	5106686	1	ROD, CONTROL 5/16-24 THD X 16.50" MZ
2-2	5106245	1	ROD END, FEMALE 5/16-24 LH ZP PTFE RACE
2-3	5106244	1	ROD END, FEMALE 5/16-24 RH ZP PTFE RACE
2-4	5106688	2	NUT-HEX, JAM .3125"-24 SS188
3	5418369	1	WELD, PARK BRAKE SHAFT ASSEMBLY
4	5106529	2	SCR-CAP, HEX .250"-20 X 1.250" SS188
5	5105977	2	NUT-HEX, JAM .250"-20 SS188
6	5106684	1	SCR-CAP, HEX .250"-28 X 7.000" G5 ZP
7	5106246	1	ROD END, 1/4-28 WITH STUD
8	5105900	1	GRIP, .188" X 1.00" ID X .150" THK CLSD CELL FOAM
9	5106685	2	E-RING, 0.625" SHAFT YZ
10	5106687	1	SPCR-SS, 304 0.375" X 0.500" X .357"
11	5106576	2	SCR-CAP, HEX .3125"-18 X 1.000" SS188
12	5025649	1	SCR-CAP, HEX .375"-16 X 1.000" SS188
13	5106168	1	WSHR-STL, FLT .406" X .875" X .050" IS SS188
14	5106006	1	NUT-HEX-NYLK, .375"-16 SS188
15	5105789	1	PLATE, CONTACT, PARKING BRAKE SWITCH
16	5418376	1	BRACKET, LINKAGE PARK BRAKE
17	5105915	2	NUT-HEX-NYLK, .250"-20 TH SS188
18	5105889	2	SPRING, EXTENSION .64" OD X 4.00" LG SS
19	5106223	1	SPRING, COMPRESSION .36 OD X 1.00 LG SS
20	5106016	1	NUT-HEX, JAM .250"-28 SS188
21	5105992	1	NUT-HEX-NYLK, 0.3125"-18 SS188

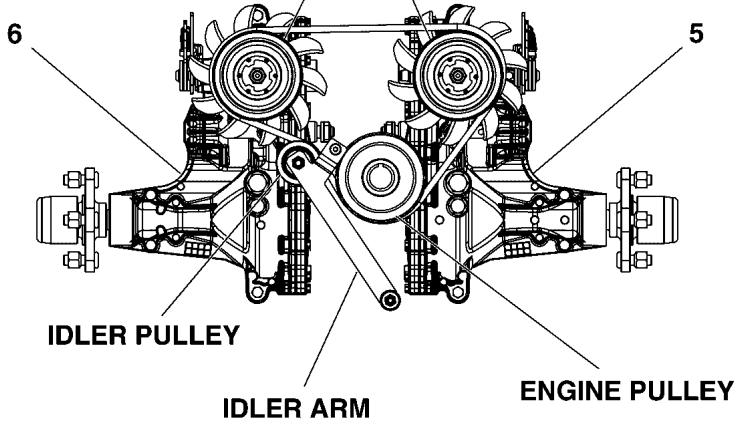
Power Transmission Group - S/N: 3000003664 and Below

Note: Unless noted otherwise, use the standard torque specifications

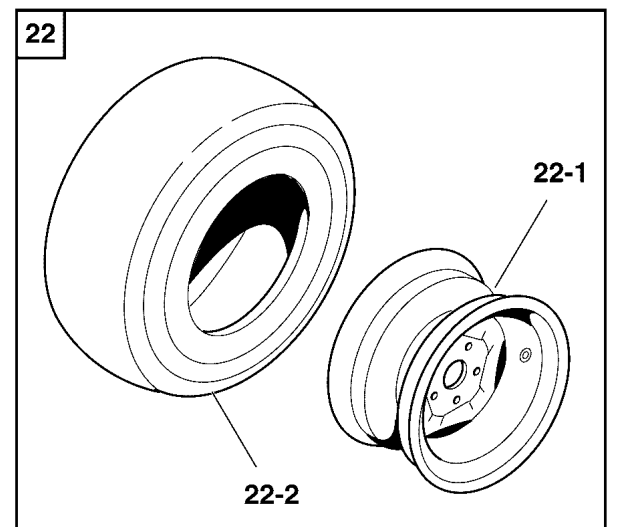
Mfg. No: 5901755



TRANSAXLE PULLEY



**FRONT OF MACHINE
BELT ROUTING**



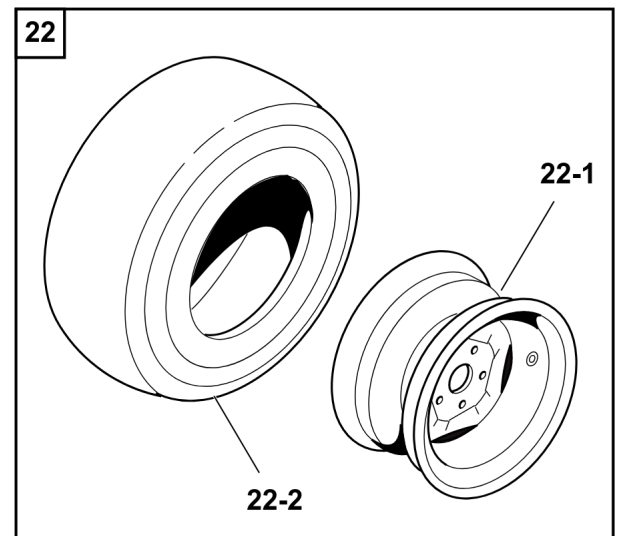
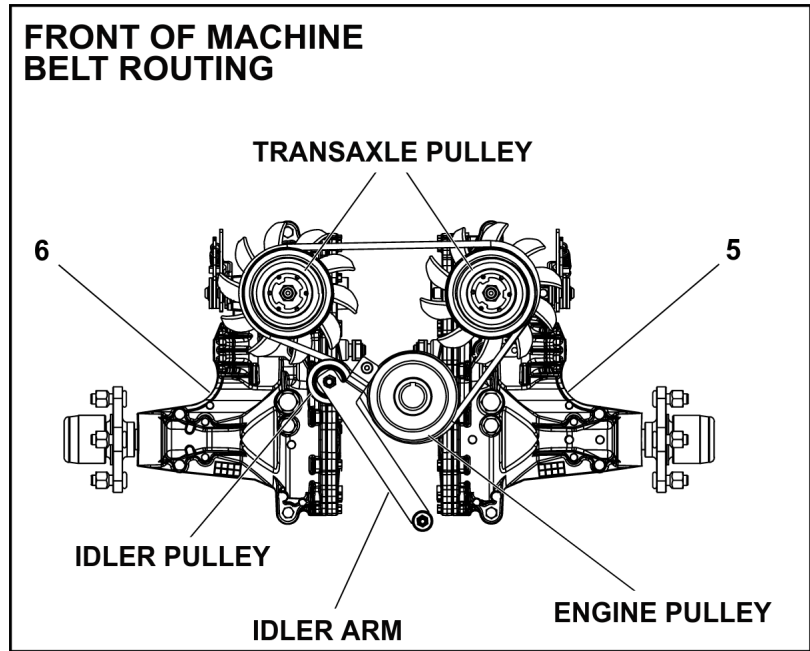
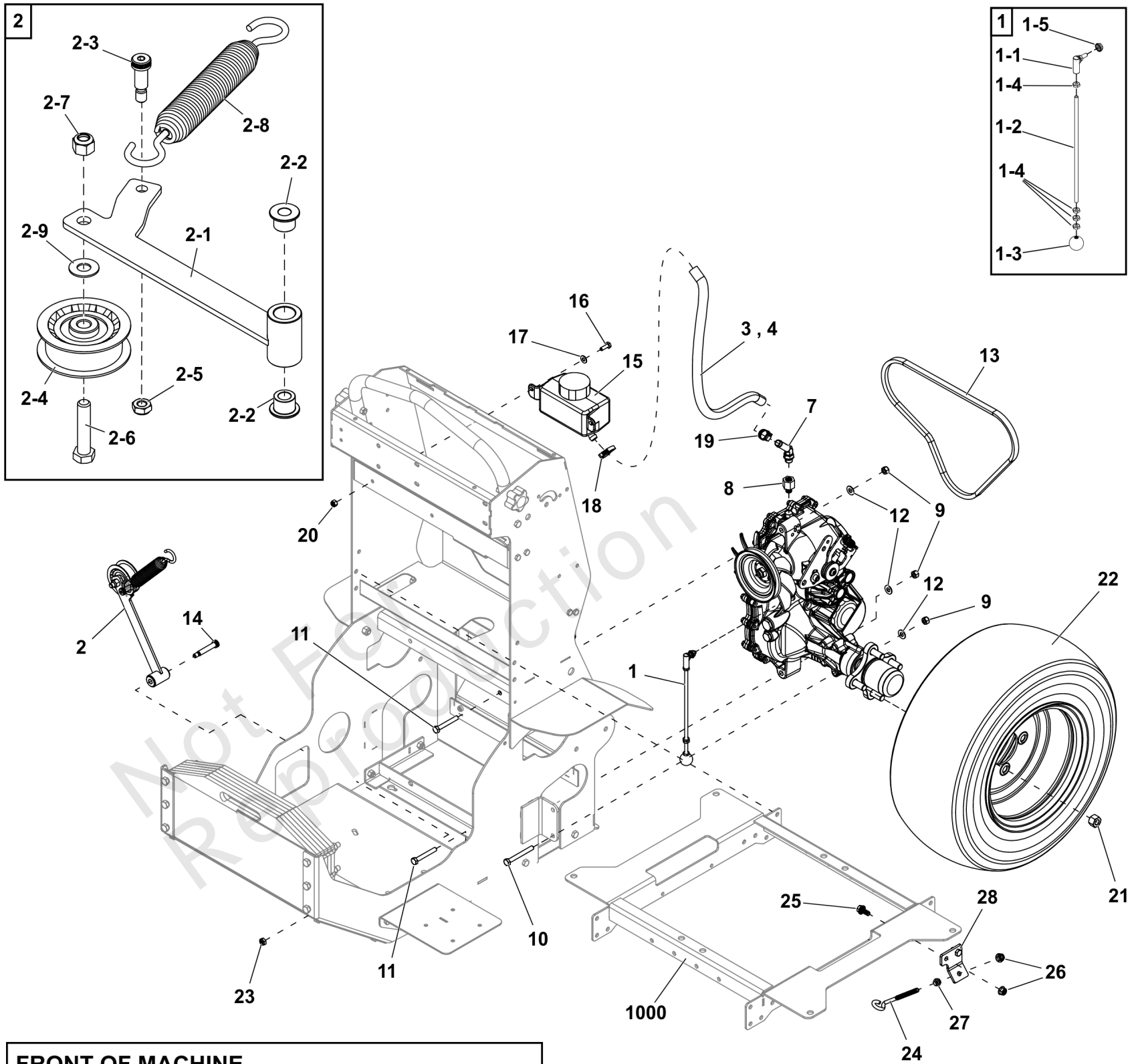
Power Transmission Group - S/N: 30000003664 and Below

REF NO	PART NO	QTY	DESCRIPTION
1	-----	2	ASM, TRANSMISSION RELEASE
1-1	5106658	1	ROD END, FEM 1/4-28 RH SS PTFE RACE STUD
1-2	5106660	1	ROD, CONTROL 1/4-28 THD X 9.00" MZ
1-3	5106659	1	KNOB, BALL 1.000 OD W/1/4-28 INSERT
1-4	5106016	4	NUT-HEX, JAM .250"-28 SS188
1-5	5106742	1	NUT-HEX-FGLK.250"-28 SS188
2	-----	1	ASM, IDLER ARM
2-1	5422194	1	IDLER ARM W/ BUSHINGS -(Includes item #2-2.)
2-2	5106031	2	BUSHING, FLANGE 3/8 ID X 5/8 OD X 1/2 LG
2-3	5106712	1	BLT-SLDR, SH .375" X 0.750", .3125"-18 X.500" G8ZY
2-4	5108777	1	PULLEY IDLER 2.75" OD X 3/8" BORE
2-5	5108891	1	NUT-HEX-NYLK, .260"-20 TH SS188
2-6	5106518	1	SCR-CAP, HEX .375"-16 X 1.7500" SS188
2-7	5106006	1	NUT-HEX-NYLK, .375"-16 SS188
2-8	80090207	1	SPRING, SWIVEL HOOK, 9" X 1"
2-9	5106168	1	WSHR-STL, FLT .406" X .875" X .050" IS SS188
3	5106250	1	HOSE, L EXP TANK, 18.5" LONG -(Connects to left expansion tank)
4	5106251	1	HOSE, R EXP TANK, 18" LONG -(Connects to right expansion tank)
5	5106336	1	TRANSAXLE, ZT3100, LH, ZL-GMPP-3B7B-1PXX -(S/N: 30000002448 and below)
5	5109248	1	TRANSAXLE, ZT3100, LH, ZL-GMPP-SB7B-1PXX -(S/N: 30000002249 and above)
6	5106248	1	TRANSAXLE, ZT3100, RH, ZL-KMPP-3B7C-1PXX -(S/N: 30000002448 and below)
6	5109244	1	TRANSAXLE, ZT3100, RH, ZL-KMPP-SB7C-1PXX -(S/N: 30000002249 and above)
7	5106656	2	FITTING, 08HB - 06MORB STRAIGHT
8	5106657	2	FITTING, 6410-04-06
9	5105992	9	NUT-HEX-NYLK, 0.3125"-18 SS188
10	5106550	4	SCR-CAP, HEX .3125"-18 X 2.750" SS188
11	5106056	4	SCR-CAP, HEX .3125"-18 X 2.250" SS188
12	5106009	8	WSHR-STL, FLT .343" X .750" X .050" SPC SS188
13	5106715	1	BELT, V, AK36 38.00 OC OHR, KVR CD
14	5106207	1	BLT-SLDR SH.375"X1.75".3125"-18 X.50" SS188
15	5106692	1	HYDRO RES. # 71328, 350 ml
16	5106214	2	SCR-CAP, HEX .250"-20 X .750" SS188
17	5106067	2	WSHR-STL, FLT .281" X .625" X .050" IS SS188
18	5106655	2	SNAP GRIP CLAMP .656 - .750 ID
19	5106683	2	CLAMP, MINIATURE WORM GEAR MAH6
20	5106040	2	NUT-HEX-NYLK, .250"-20 SS188
21	5105964	8	NUT-LUG, .500"-20 ZP
22	5106714	2	ASM, WHEEL & TIRE 20" X 10.00" - 12 LAWN BOSS
22-1	-----	1	RIM, Wheel
22-2	-----	1	TIRE, (ONLY)
23	5108891	1	NUT-HEX-NYLK, .260"-20 TH SS188

Power Transmission Group - S/N: 3000003665 and Above

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



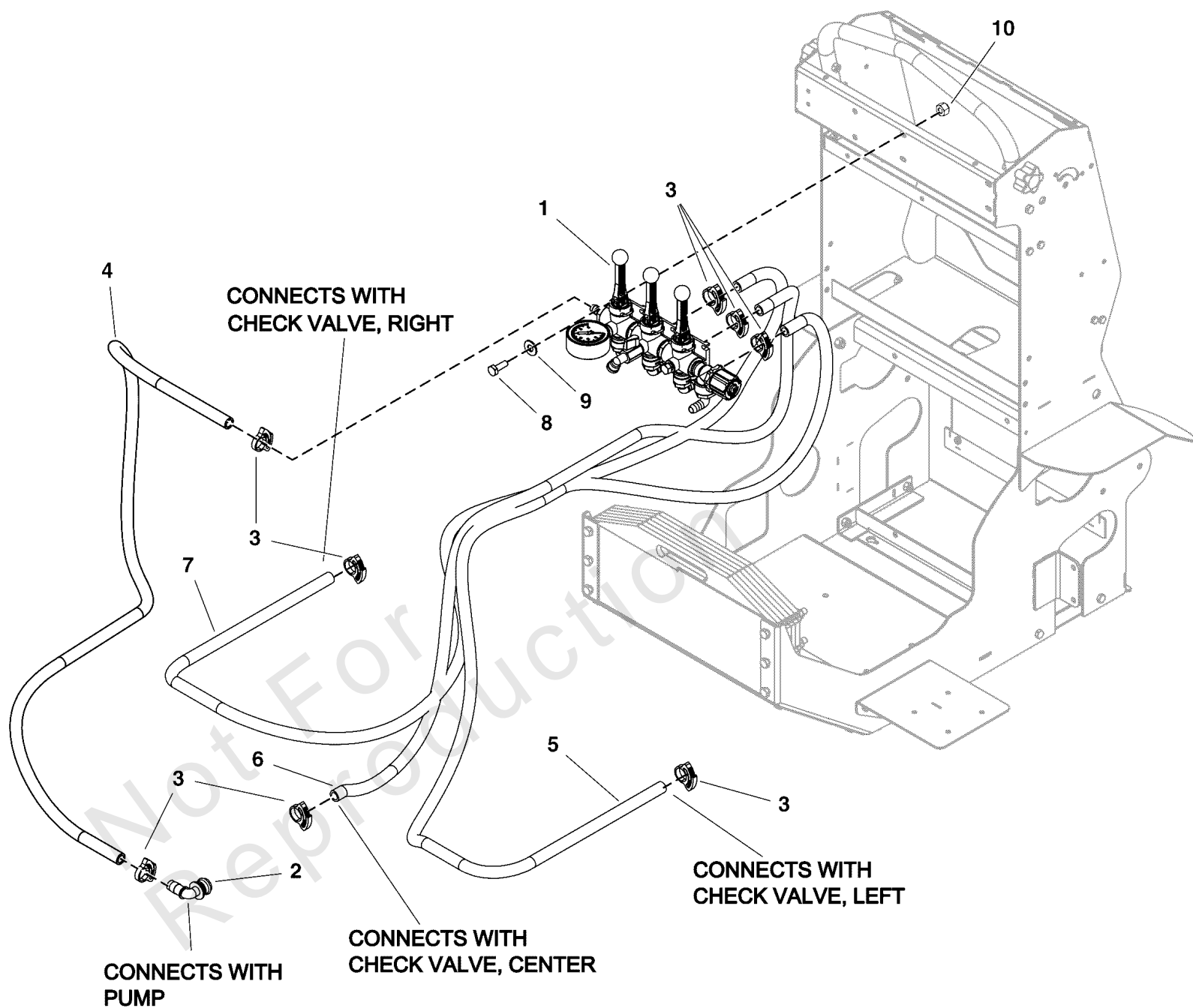
Power Transmission Group - S/N: 30000003665 and Above

REF NO	PART NO	QTY	DESCRIPTION
1	-----	2	ASM, TRANSMISSION RELEASE
1-1	5106658	1	ROD END, FEM 1/4-28 RH SS PTFE RACE STUD
1-2	5106660	1	ROD, CONTROL 1/4-28 THD X 9.00" MZ
1-3	5106659	1	KNOB, BALL 1.000 OD W/1/4-28 INSERT
1-4	5106016	4	NUT-HEX, JAM .250"-28 SS188
1-5	5106742	1	NUT-HEX-FGLK.250"-28 SS188
2	-----	1	ASM, IDLER ARM
2-1	5422194	1	IDLER ARM W/ BUSHINGS -(Includes item #2-2.)
2-2	5106031	2	BUSHING, FLANGE 3/8 ID X 5/8 OD X 1/2 LG
2-3	5106712	1	BLT-SLDR, SH .375" X 0.750", .3125"-18 X.500" G8ZY
2-4	5108777	1	PULLEY IDLER 2.75" OD X 3/8" BORE
2-5	5108891	1	NUT-HEX-NYLK, .260"-20 TH SS188
2-6	5106518	1	SCR-CAP, HEX .375"-16 X 1.7500" SS188
2-7	5106006	1	NUT-HEX-NYLK, .375"-16 SS188
2-8	84008048	1	SPRING, Extension
2-9	5106168	1	WSHR-STL, FLT .406" X .875" X .050" IS SS188
3	5106250	1	HOSE, L EXP TANK, 18.5" LONG -(Connects to left expansion tank)
4	5106251	1	HOSE, R EXP TANK, 18" LONG -(Connects to right expansion tank)
5	5109248	1	TRANSAXLE, ZT3100, LH, ZL-GMPP-SB7B-1PXX
5-1	84008674	1	KIT, Seal -(Seal kit to service transaxle.)
6	5109244	1	TRANSAXLE, ZT3100, RH, ZL-KMPP-SB7C-1PXX
6-1	84008674	1	KIT, Seal -(Seal kit to service transaxle.)
7	5106656	2	FITTING, 08HB - 06MORB STRAIGHT
8	5106657	2	FITTING, 6410-04-06
9	5105992	9	NUT-HEX-NYLK, 0.3125"-18 SS188
10	5106550	4	SCR-CAP, HEX .3125"-18 X 2.750" SS188
11	5106056	4	SCR-CAP, HEX .3125"-18 X 2.250" SS188
12	5106009	8	WSHR-STL, FLT .343" X .750" X .050" SPC SS188
13	84008474	1	BELT, Transmission
14	5106207	1	BLT-SLDR SH.375"X1.75".3125"-18 X.50" SS188
15	5106692	1	HYDRO RES. # 71328, 350 ml
16	5106214	2	SCR-CAP, HEX .250"-20 X .750" SS188
17	5106067	2	WSHR-STL, FLT .281" X .625" X .050" IS SS188
18	5106655	2	SNAP GRIP CLAMP .656 - .750 ID
19	5106683	2	CLAMP, MINIATURE WORM GEAR MAH6
20	5106040	2	NUT-HEX-NYLK, .250"-20 SS188
21	5105964	8	NUT-LUG, .500"-20 ZP
22	5106714	2	ASM, WHEEL & TIRE 20" X 10.00" - 12 LAWN BOSS
22-1	-----	1	RIM, Wheel
22-2	-----	1	TIRE, (ONLY)
23	5108891	1	NUT-HEX-NYLK, .260"-20 TH SS188
24	5110324	1	EYE BOLT, 5/16 x 6-1/4 SST, 3" THRD LGTH
25	5108284	1	SCR-CAP, HSWH .313"-18 X .750" SS188
26	5107653	2	NUT-HEX-NYLK, FLG .3125"-18 SS188
27	5106159	1	NUT-HEX, .3125"-18 SS188
28	5422742	1	WELD, SPRING ANCHOR PLATE, VENTURE
1000	REF-STG	0	Refer to Spray Tank Group

Pump / Valve System Group

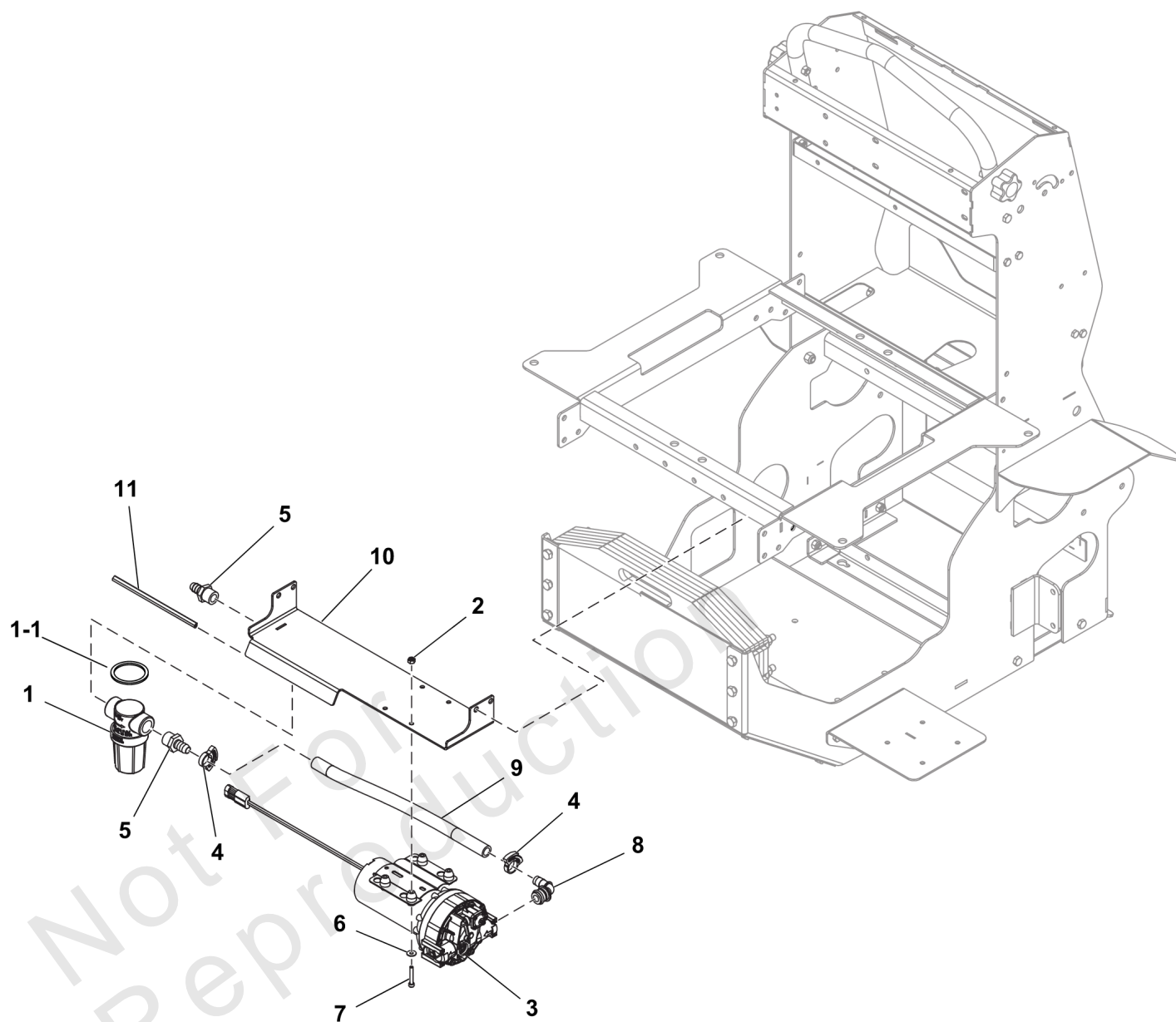
Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



Pump / Valve System Group

REF NO	PART NO	QTY	DESCRIPTION
1	-----	1	REFER TO: SPRAY TOGGLE VALVE ASSEMBLY GROUP
2	5106675	1	FITTING, ELBOW, 3/4 QA - 1/2 BARB
3	5106655	8	SNAP GRIP CLAMP .656 - .750 ID -(S/N: 30000003685 and Below)
3	84008744	8	CLAMP -(S/N: 30000003686 and Above)
4	5418416	1	HOSE, VALVE INLET, 0.5" ID, 54" LONG -(S/N: 30000003685 and Below)
4	84008664	1	HOSE, Chemical -(S/N: 30000003686 and Above)
5	5418417	1	HOSE, LEFT BOOM, 0.5" ID, 86" LONG -(S/N: 30000003685 and Below)
5	84008665	1	HOSE, Chemical -(S/N: 30000003686 and Above)
6	5418418	1	HOSE, CENTER SPRAY, 0.5" ID, 61" LONG -(S/N: 30000003685 and Below)
6	84008666	1	HOSE, Chemical -(S/N: 30000003686 and Above)
7	5418419	1	HOSE, RIGHT BOOM, 0.5" ID, 84" LONG -(S/N: 30000003685 and Below)
7	84008667	1	HOSE, Chemical -(S/N: 30000003686 and Above)
8	5106214	4	SCR-CAP, HEX .250"-20 X .750" SS188
9	5106067	4	WSHR-STL, FLT .281" X .625" X .050" IS SS188
10	5106040	4	NUT-HEX-NYLK, .250"-20 SS188



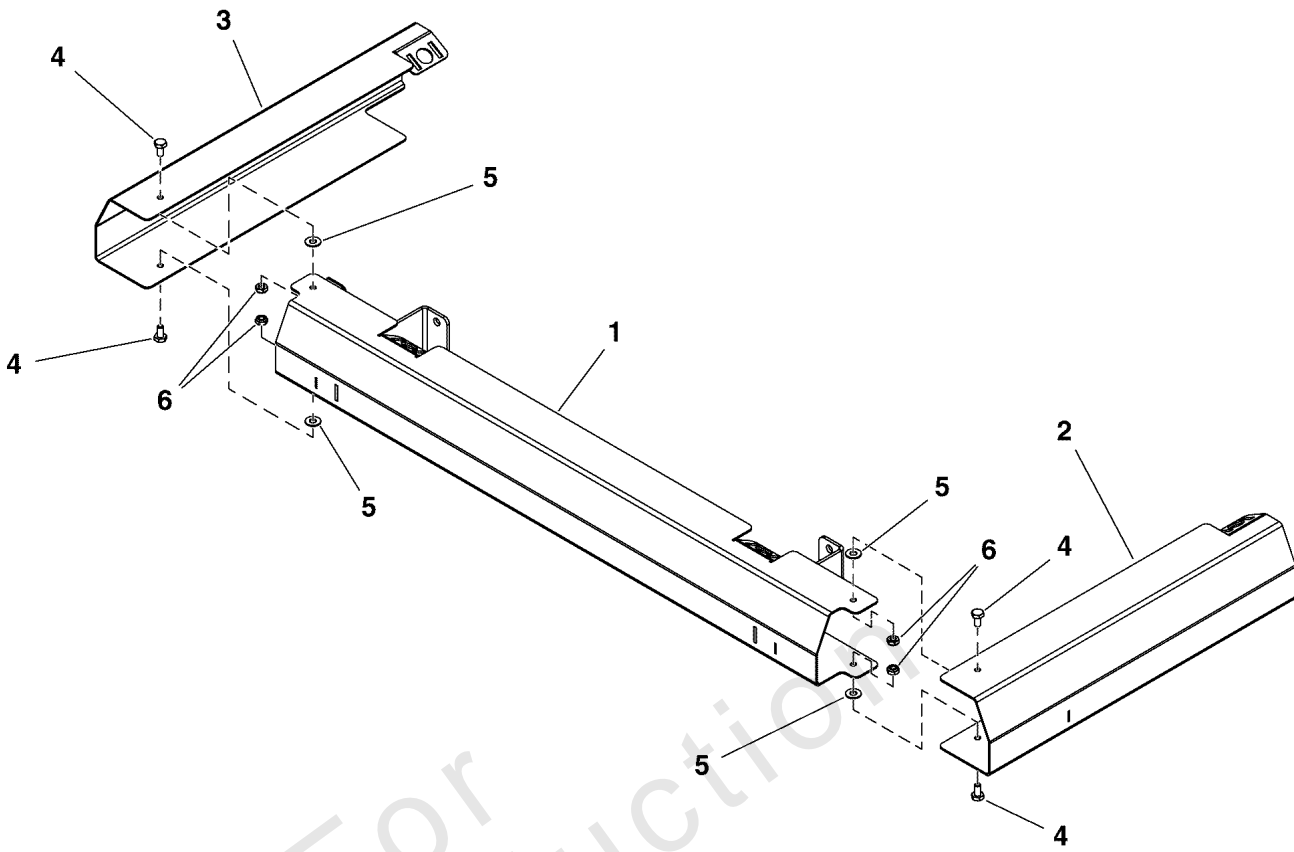
Pump Venture Group

REF NO	PART NO	QTY	DESCRIPTION
1	84008892	1	STRAINER -(Includes item #1-1.)
1-1	84009456	1	GASKET
2	5105963FS	4	NUT
3	5106237	1	PUMP, VENTURE -(S/N: 30000003685 and Below)
3	84008743	1	PUMP -(S/N: 30000003686 and Above)
4	5106655	2	SNAP GRIP CLAMP .656 - .750 ID -(S/N: 30000003685 and Below)
4	84008744	2	CLAMP -(S/N: 30000003686 and Above)
5	5106663	2	FITTING, 1/2 MPT - 1/2 BARB
6	5106673	4	WSHR-STL, FLT .203" X .562" X .040 IS SS188
7	5106674	4	SCR-CAP SH, #10-24 X 1.250" SS188
8	5106675	1	FITTING, ELBOW, 3/4 QA - 1/2 BARB
9	5418415	1	HOSE, PUMP SUCTION, 0.5" ID, 12" LONG -(S/N: 30000003685 and Below)
9	84008654	1	HOSE, Chemical -(S/N: 30000003686 and Above)
10	5418424	1	WELD, FILTER MOUNT BRACKET -(S/N: 30000003685 and Below)
10	84008655	1	BRACKET, Mounting -(S/N: 30000003686 and Above)
11	5418427	1	TRIM FOR CONSOLE, 7 INCH -(S/N: 30000003685 and Below)
11	84008656	1	TRIM -(S/N: 30000003686 and Above)

Spray Bar Folding Boom Assembly Group

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



Not For
Reproduction

Spray Bar Folding Boom Assembly Group

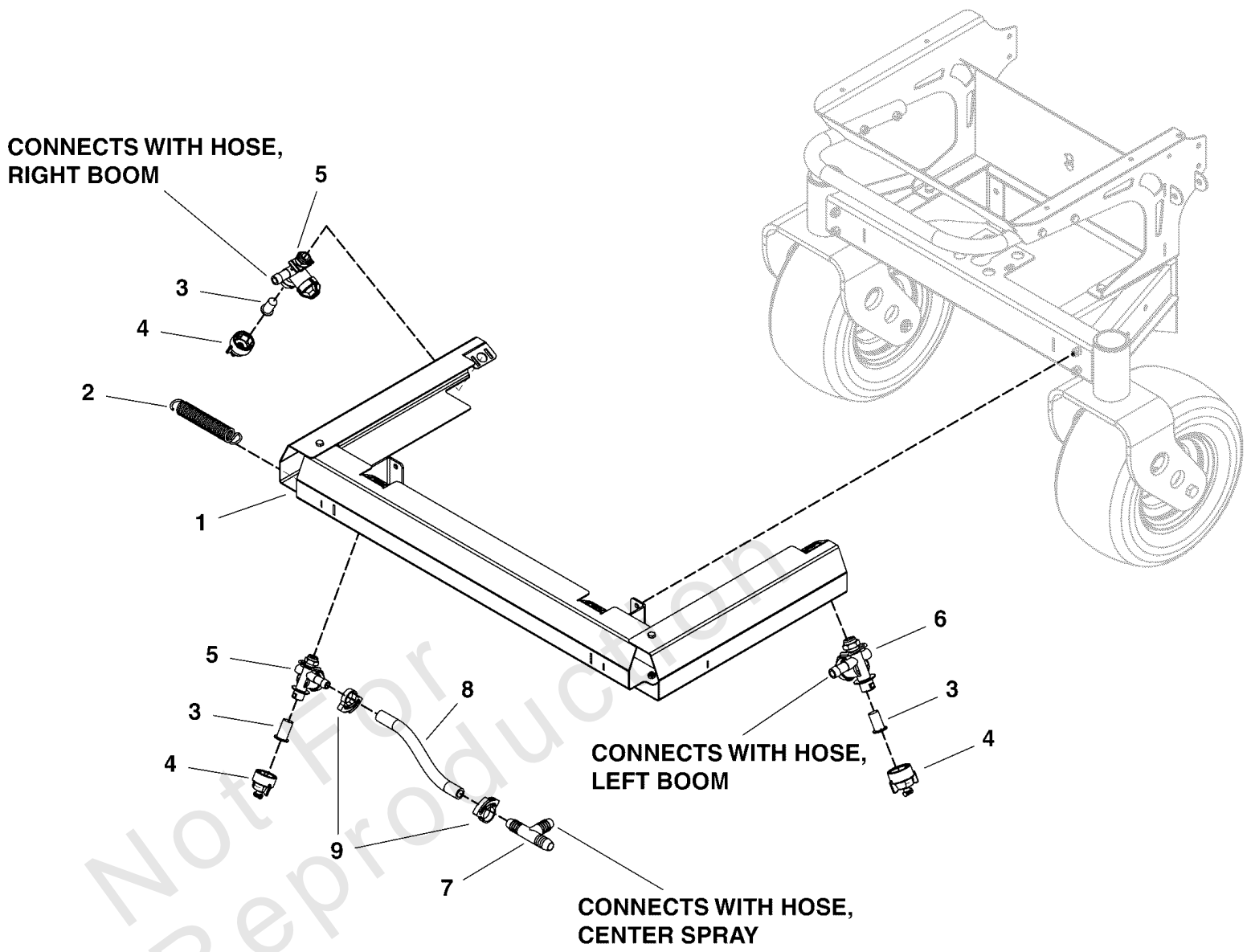
REF NO	PART NO	QTY	DESCRIPTION
1	5418394	1	WELD, CENTER, SPRAY BAR, FOLDING BOOMS
2	5418398	1	WELD, LEFT, SPRAY BAR, FOLDING BOOMS
3	5418400	1	WELD, RIGHT, SPRAY BAR, FOLDING BOOMS
4	5105893	4	SCR-CAP, HEX .250"-20 X .500" SS188
5	5106067	4	WSHR-STL, FLT .281" X .625" X .050" IS SS188
6	5105915	4	NUT-HEX-NYLK, .250"-20 TH SS188

Not For Reproduction

Spray Bar Group

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



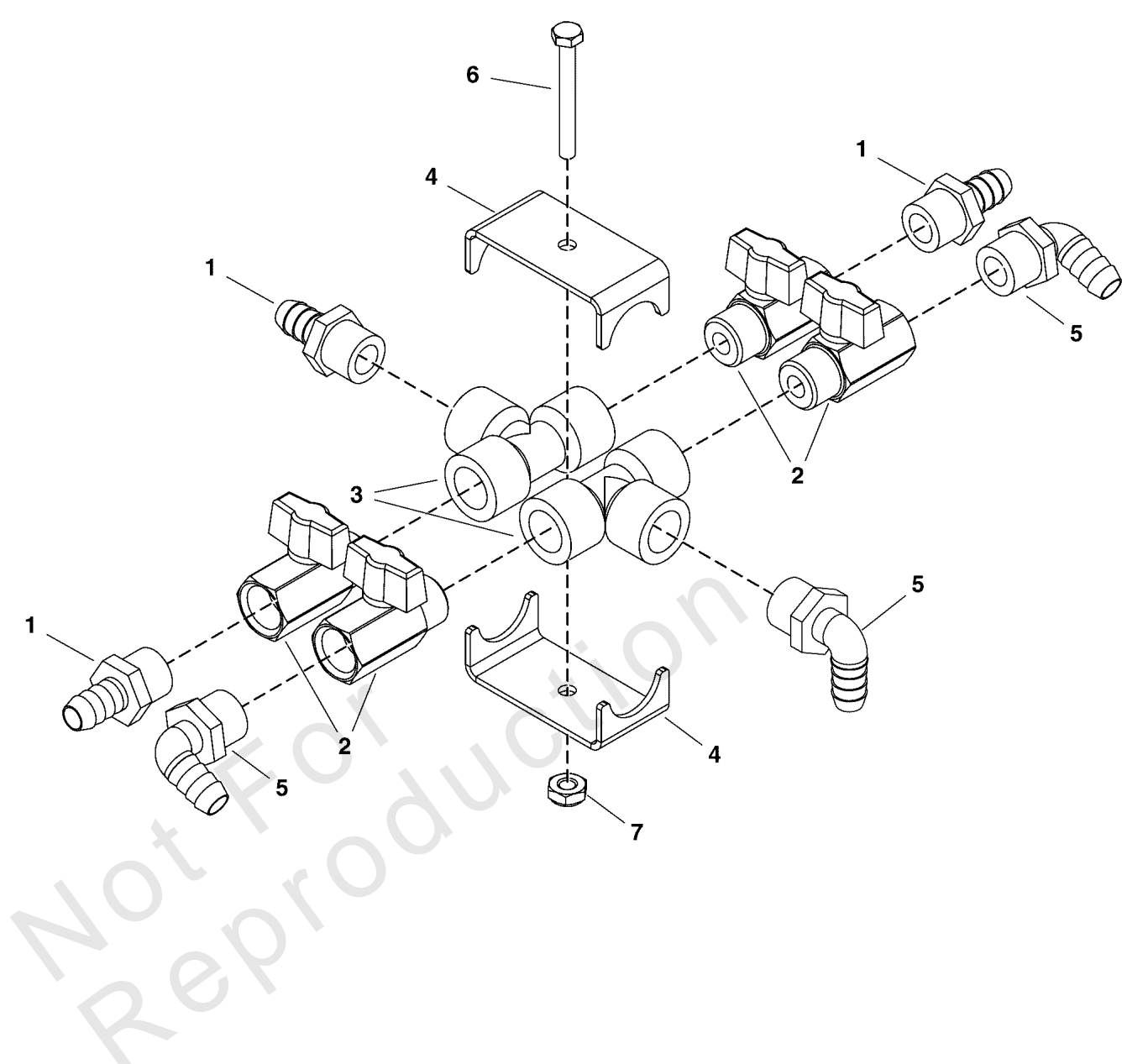
Spray Bar Group

REF NO	PART NO	QTY	DESCRIPTION
1	-----	1	ASM, SPRAY BAR , FOLDING BOOMS
2	5105972	2	SPRING, EXTENSION .64" OD X 4.00" LG SS
3	5105904	4	STRAINER, 50 MESH, POLYPROPYLENE TIP
4	5106034	4	NOZZLE, TIP, WIDE ANGLE, .03 ORIFICE -(S/N: 30000003685 and Below)
4	84008663	4	TIP, Spray -(S/N: 30000003686 and Above)
5	5106025	2	DIAPHRAGM CHECK VALVE, RIGHT
6	5106035	2	DIAPHRAGM CHECK VALVE, LEFT
7	5106713	1	FITTING, TEE, 1/2" MPT
8	5418420	2	HOSE, NOZZLE SUPPLY, 0.5" ID, 8.75" LONG -(S/N: 30000003685 and Below)
8	84008662	2	HOSE, Chemical -(S/N: 30000003686 and Above)
9	5106655	4	SNAP GRIP CLAMP .656 - .750 ID -(S/N: 30000003685 and Below)
9	84008744	4	CLAMP -(S/N: 30000003686 and Above)
10	5106024	4	SCR-CAP, HEX .3125"-18 X .750" SS188
11	5105992FS	4	NUT

Spray Tank Valve Group

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



Spray Tank Valve Group

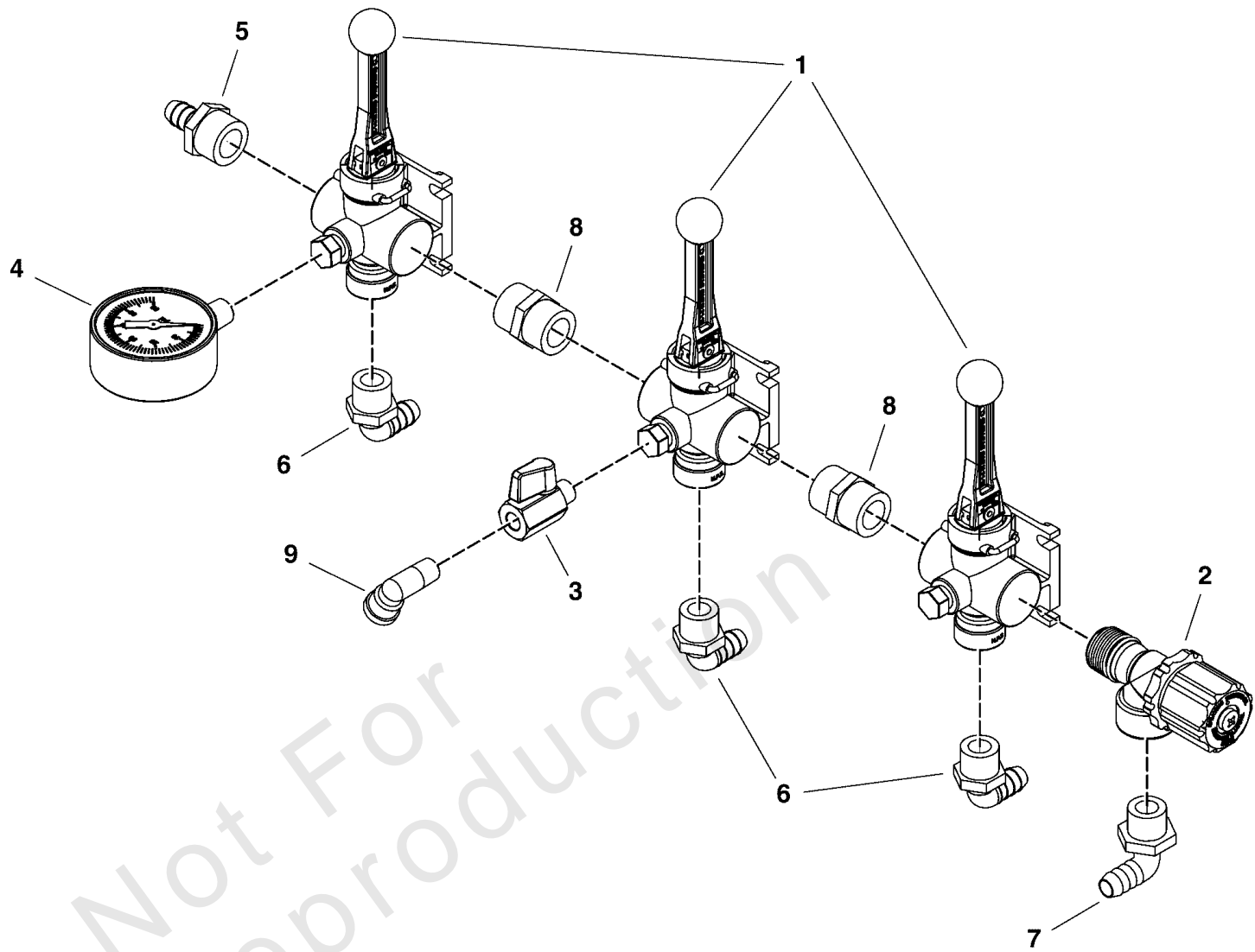
REF NO	PART NO	QTY	DESCRIPTION
1	5106663	3	FITTING, 1/2 MPT - 1/2 BARB
2	5106003	4	VALVE, BALL, 1/2 MPT - 1/2 FPT
3	5106668	2	FITTING, TEE, 1/2" FPT
4	5418362	2	PLATE, TIE SPRAY FITTING
5	5106665	3	FITTING, 1/2 MPT - 1/2 BARB, 90 ELBOW
6	5106671	1	SCR-CAP, HEX .250"-20 X 2.250" SS188
7	5105915	1	NUT-HEX-NYLK, .250"-20 TH SS188

Not For Reproduction

Spray Toggle Valve Group

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



Spray Toggle Valve Group

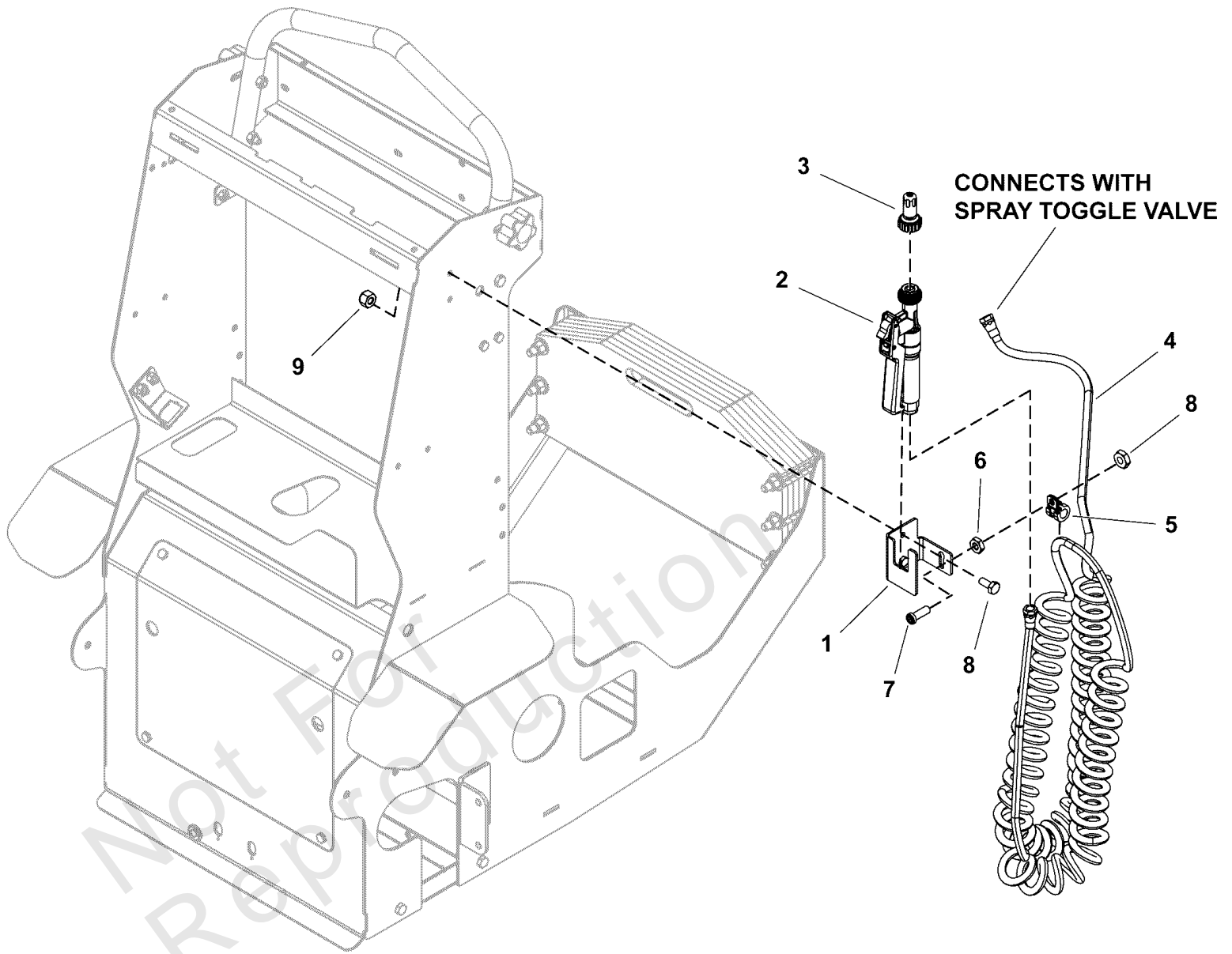
REF NO	PART NO	QTY	DESCRIPTION
1	5106284	3	VALVE, DIRECTIONAL FLOW CONTROL, 12 GPM
2	5106149	1	VALVE, PRESSURE RELIEF, SPRAYING SYSTEM
3	5106265	1	VALVE, BALL, 1/4 MPT - 1/4 FPT
4	5106266	1	GAUGE, 0-60 PSI, 1/4 NPT, SS GLYC. FILLED
5	5106127	1	FITTING, 3/4 MPT - 1/2 BARB -(S/N: 30000003685 and Below)
5	5108467	1	FTG, STR 3/4" MNPT - 1/2" HB BPP -(S/N: 30000003686 and Above)
6	5106665	3	FITTING, 1/2 MPT - 1/2 BARB, 90 ELBOW
7	5106667	1	FITTING, 3/4 MPT - 1/2 BARB, 90 ELBOW
8	5106666	2	NIPPLE, 3/4 MPT - 3/4 MPT
9	5106141	1	STREET ELBOW, 1/4 MPT-1/4 FPT, 90 DEG

Not For Reproduction

Spray Wand Group S/N: 3000003685 and Below

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



Spray Wand Group S/N: 3000003685 and Below

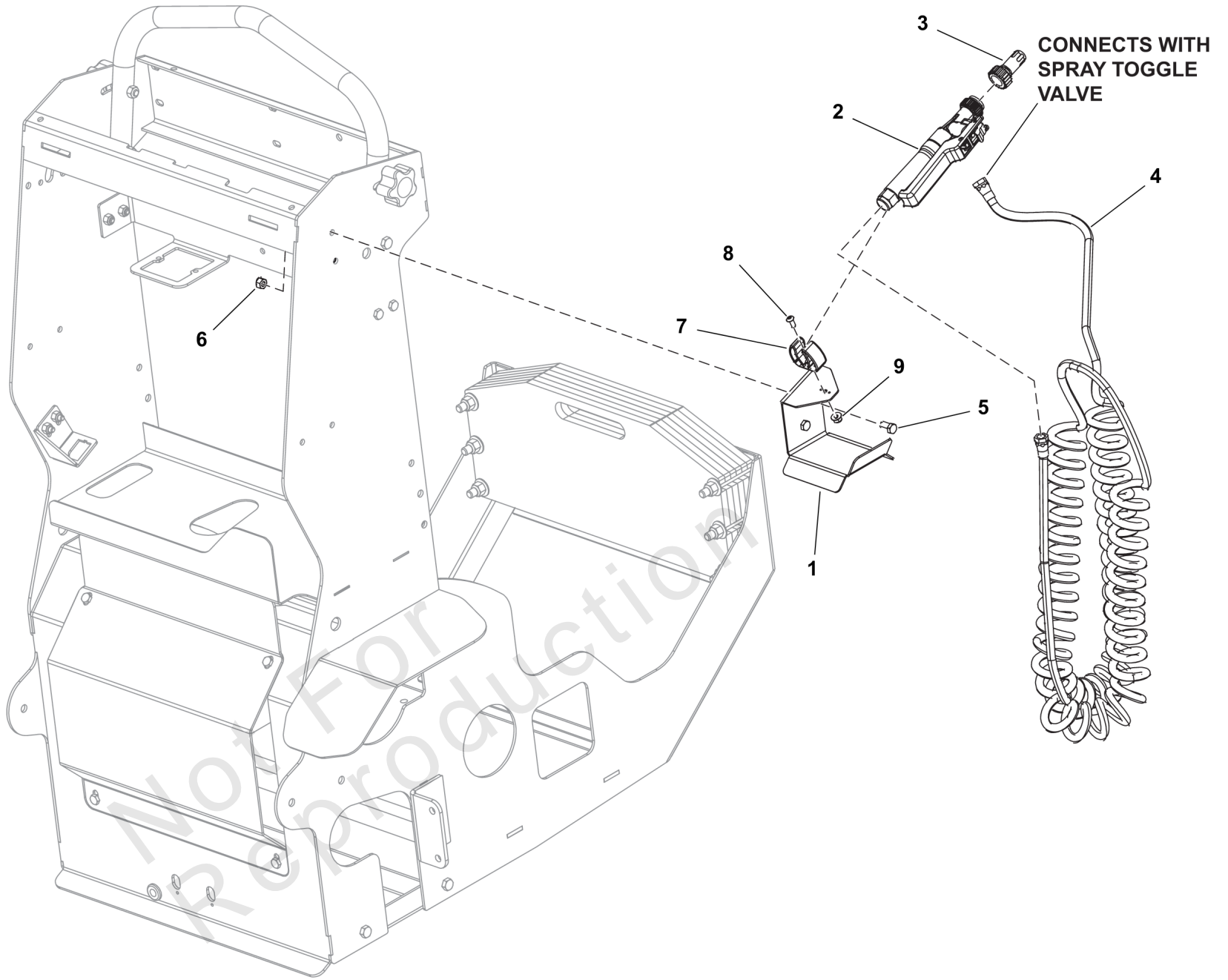
REF NO	PART NO	QTY	DESCRIPTION
1	5106085	1	BRACKET, SPRAY WAND HOLDER
2	5105944	1	SPRAY GUN, 1/4 FPT
3	5106679	1	NOZZLE TIP, ADJUSTABLE SPRAY, STANDARD
4	5106055	1	HOSE, COIL 25 FT
5	5106054	1	CLAMP, SPRAY WAND LOOP
6	5105977	8	NUT-HEX, JAM .250"-20 SS188
7	5106125	1	SCR-CAP, SHLP .250-20 X .750" G8 ZP
8	5106029	2	SCR-CAP, HEX .250"-20 X .625" SS188
9	5106040	2	NUT-HEX-NYLK, .250"-20 SS188

Not For Reproduction

Spray Wand Group S/N: 3000003686 and Above

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



Spray Wand Group S/N: 3000003686 and Above

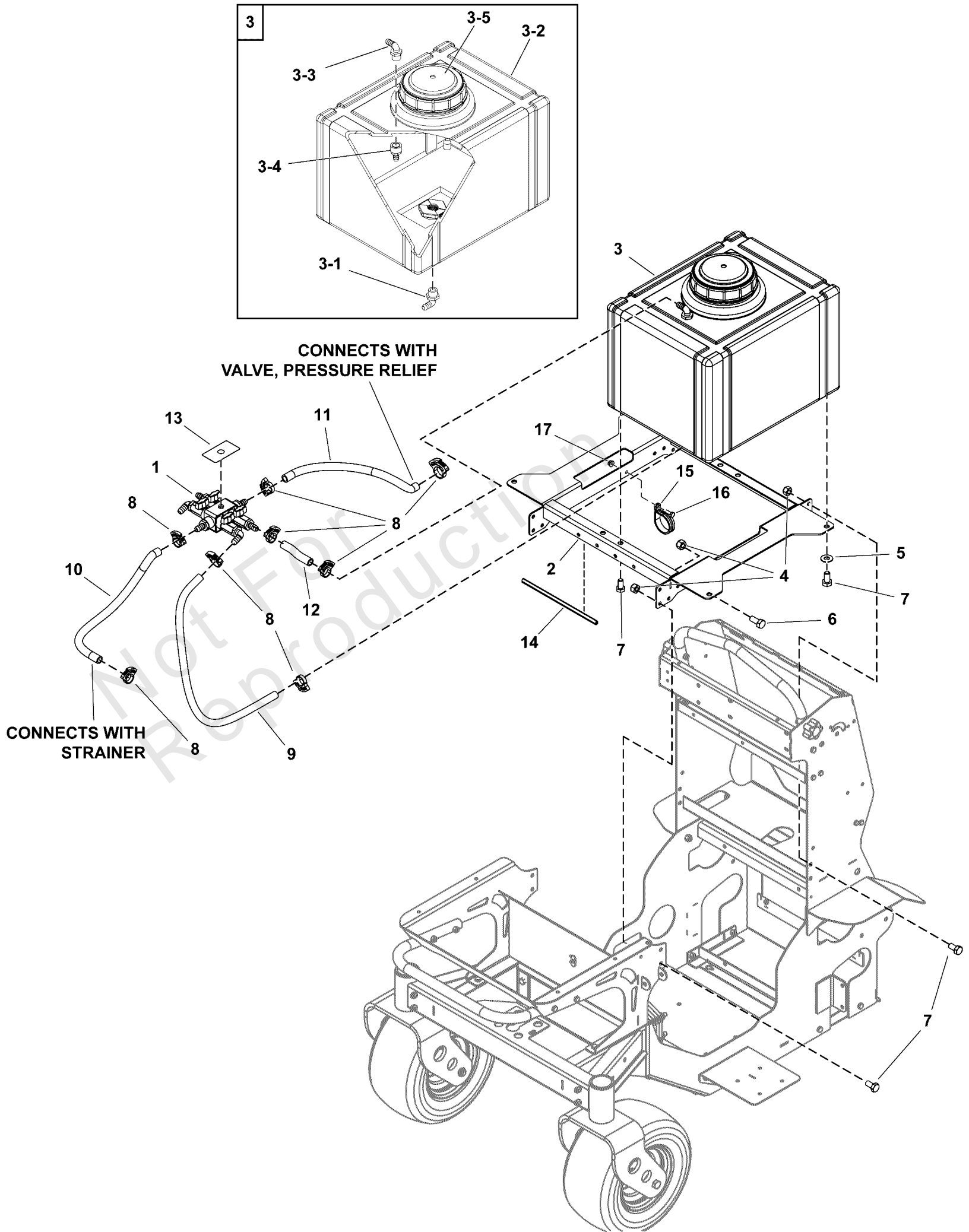
REF NO	PART NO	QTY	DESCRIPTION
1	84008745	1	BRACKET
2	5105944	1	SPRAY GUN, 1/4 FPT
3	5106679	1	NOZZLE TIP, ADJUSTABLE SPRAY, STANDARD
4	5106055	1	HOSE, COIL 25 FT
5	5106029	2	SCR-CAP, HEX .250"-20 X .625" SS188
6	5106040FS	2	NUT
7	5108265	1	CLIP, .750" O.D. OIL DRAIN HOSE
8	5105978	1	SCR-CAP, BSH #10-24 X .500" SS188
9	5108133	1	NUT-HEX-NYLK, FLG .#10-24 SS188

Not For Reproduction

Sprayer Tank Group S/N: 3000003685 and Below

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



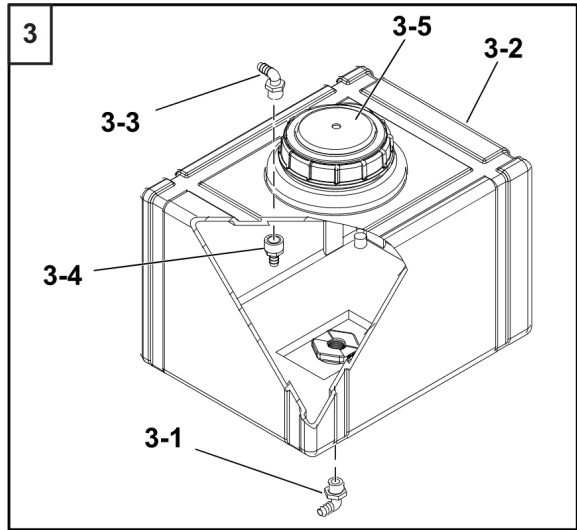
Sprayer Tank Group S/N: 3000003685 and Below

REF NO	PART NO	QTY	DESCRIPTION
1	-----	1	Refer to: Spray Tank Valve Group
2	5418359	1	WELD, SPRAY TANK MOUNT
3	5418422	2	ASM, SPRAY TANK
3-1	5106667	1	FITTING, 3/4 MPT - 1/2 BARB, 90 ELBOW
3-2	-----	1	TANK, 12 GAL RT W/SUMP HDPE NAT
3-3	5106665	1	FITTING, 1/2 MPT - 1/2 BARB, 90 ELBOW
3-4	5106672	1	FITTING, 1/2 FPT - 1/2 BARB
3-5	5105985	1	LID, TANK, SPRAY (G0134)
4	5105992	12	NUT-HEX-NYLK, 0.3125"-18 SS188
5	5106009	8	WSHR-STL, FLT .343" X .750" X .050" SPC SS188
6	5106024	4	SCR-CAP, HEX .3125"-18 X .750" SS188
7	5106649	16	SCR-CAP, HEX .3125"-18 X .625" SS188
8	5106655	12	SNAP GRIP CLAMP .656 - .750 ID
9	5418411	2	HOSE, TANK SUPPLY, 0.5" ID, 28" LONG
10	5418413	1	HOSE, FILTER SUPPLY, 0.5" ID, 25" LONG
11	5418414	1	HOSE, MANIFOLD SUPPLY, 0.5" ID, 14" LONG
12	5418423	2	HOSE, TANK RETURN, 0.5" ID, 2" LONG
13	5106710	1	DECAL, SPRAY TANK SUCTION / RETURN LABEL
14	5418427	1	TRIM FOR CONSOLE, 7 INCH
15	5108486	1	CLAMP, HARNESS ROUTING, SS
16	5106214	1	SCR-CAP, HEX .250"-20 X .750" SS188
17	5107655	1	NUT-HEX-NYLK, FLG .250"-20 SS188

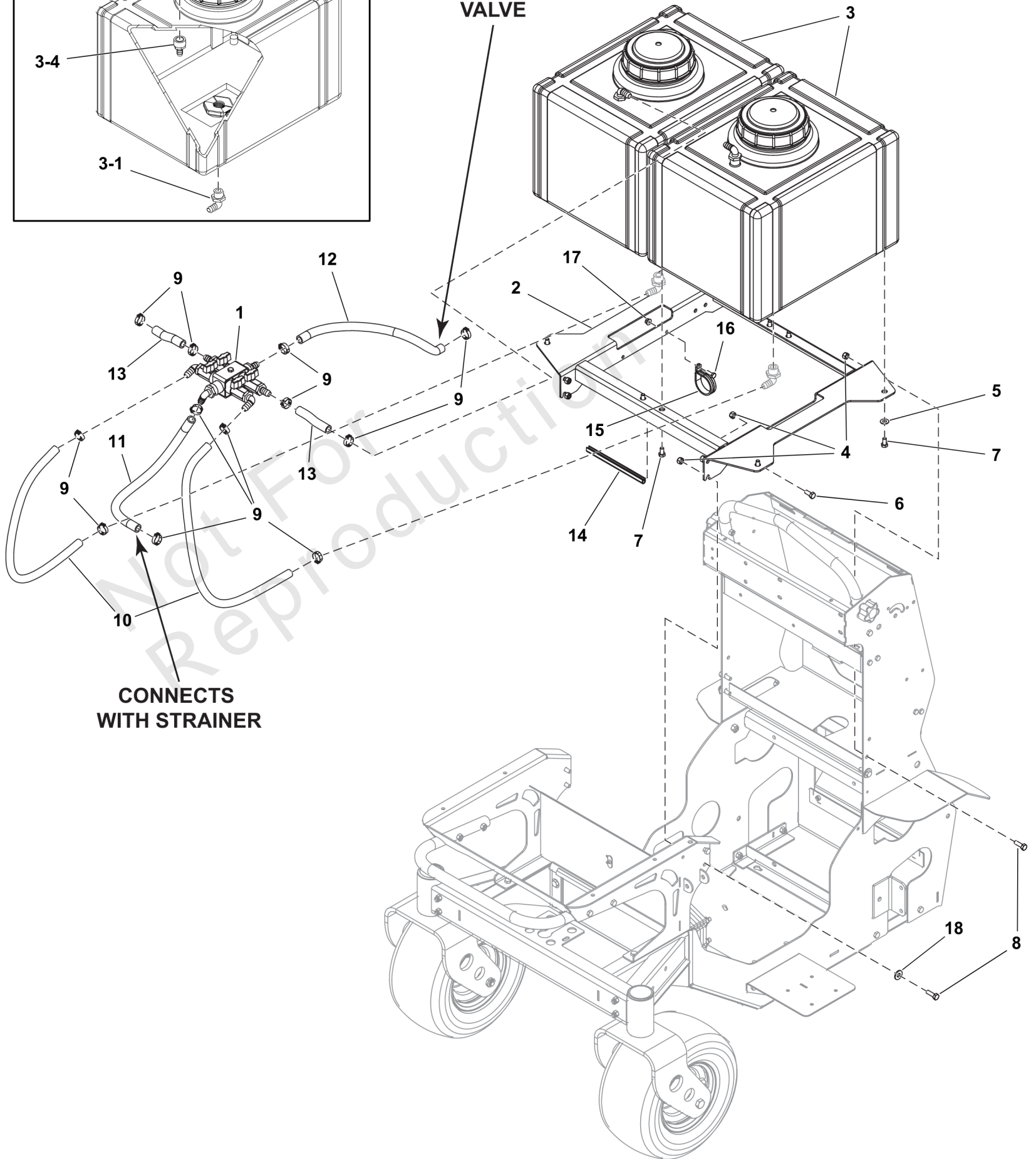
Sprayer Tank Group S/N: 3000003686 and Above

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



CONNECTS WITH
PRESSURE RELIEF
VALVE



CONNECTS
WITH STRAINER

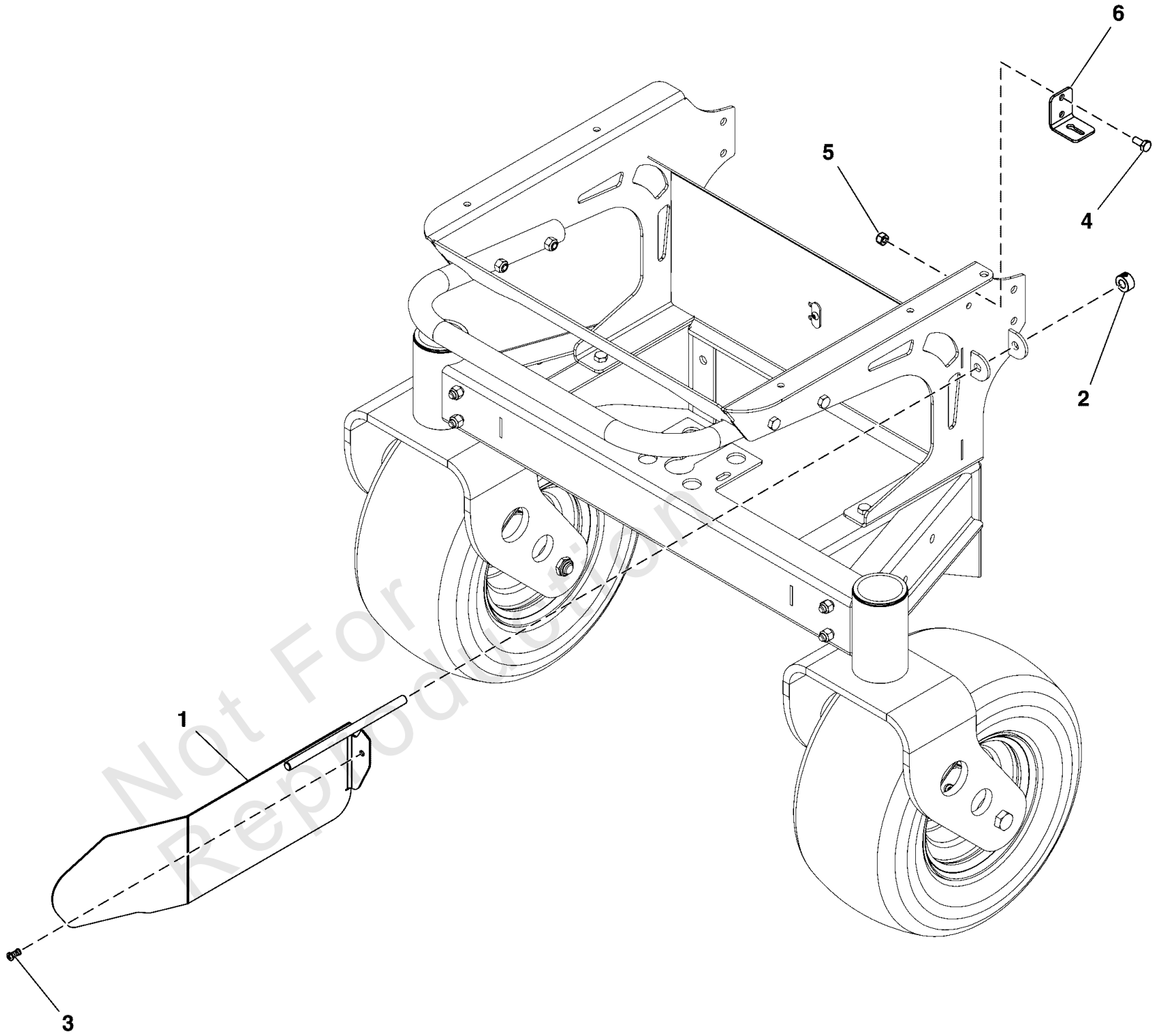
Sprayer Tank Group S/N: 3000003686 and Above

REF NO	PART NO	QTY	DESCRIPTION
1	-----	1	Refer to: Spray Tank Valve Group
2	84008742	1	MOUNT, Tank
3	5418422	2	ASM, SPRAY TANK
3-1	5106667	1	FITTING, 3/4 MPT - 1/2 BARB, 90 ELBOW
3-2	-----	1	TANK, 12 GAL RT W/SUMP HDPE NAT
3-3	5106665	1	FITTING, 1/2 MPT - 1/2 BARB, 90 ELBOW
3-4	5106672	1	FITTING, 1/2 FPT - 1/2 BARB
3-5	5105985	1	LID, TANK, SPRAY (G0134)
4	5105992	12	NUT-HEX-NYLK, 0.3125"-18 SS188
5	5106009	8	WSHR-STL, FLT .343" X .750" X .050" SPC SS188
6	5106024	4	SCR-CAP, HEX .3125"-18 X .750" SS188
7	5106649	8	SCR-CAP, HEX .3125"-18 X .625" SS188
8	5106576	8	SCR-CAP, HEX .3125"-18 X 1.000" SS188
9	84008744	12	CLAMP
10	84008658	2	HOSE, Chemical
11	84008659	1	HOSE, Chemical
12	84008660	1	HOSE, Chemical
13	84008661	2	HOSE, Chemical
14	84008656	1	TRIM
15	5108486	1	CLAMP, HARNESS ROUTING, SS
16	5106214	1	SCR-CAP, HEX .250"-20 X .750" SS188
17	5107655	1	NUT-HEX-NYLK, FLG .250"-20 SS188
18	5107649	4	WSHR-SS, FLT .375"X.875"X.083" USS

Spreader Shield Group

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



Spreader Shield Group

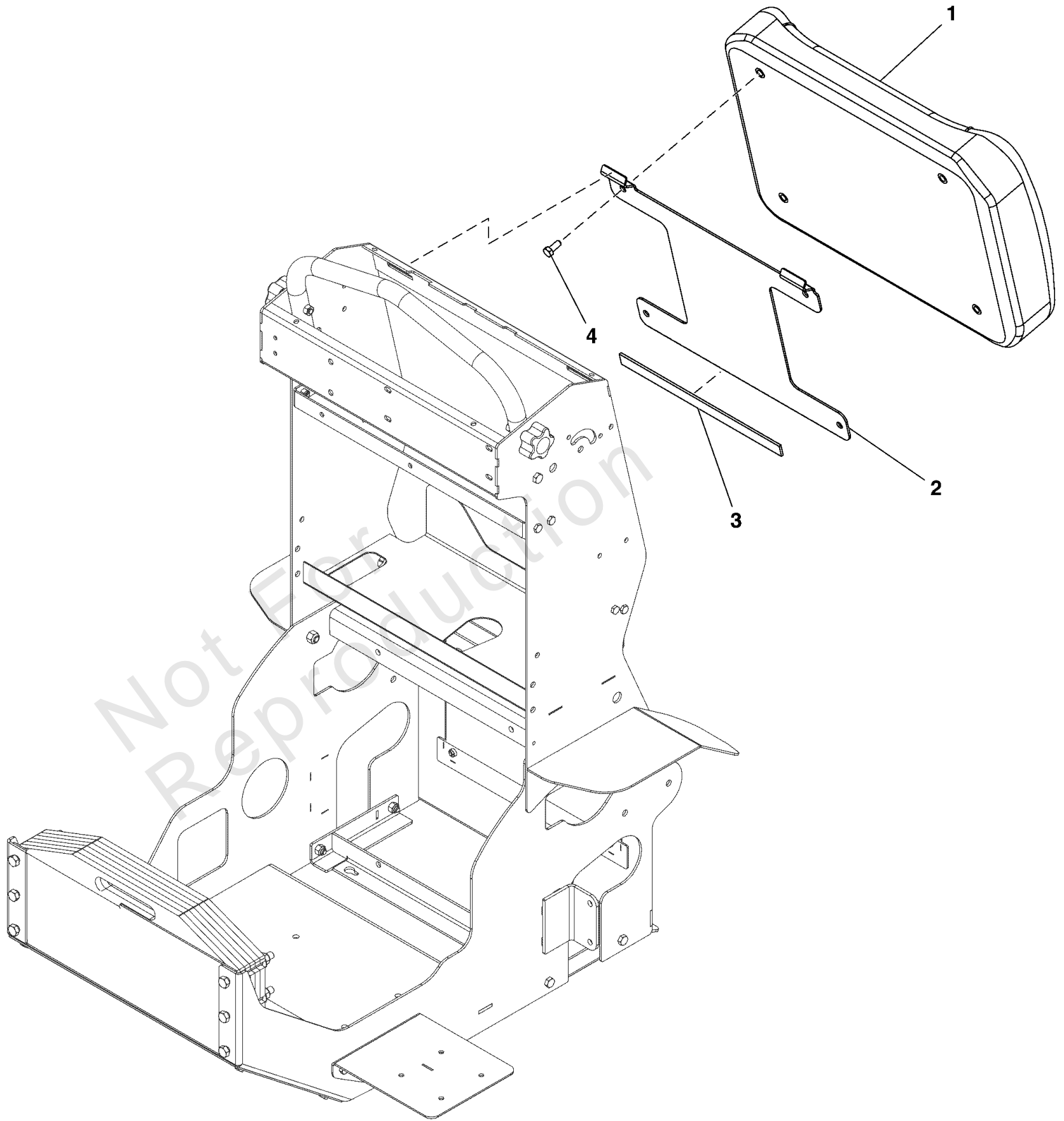
REF NO	PART NO	QTY	DESCRIPTION
1	5418403	1	WELD, DIVERTER SHIELD
2	5106023	1	COLLAR, SHAFT .375ID X .750OD X .375WD
3	5105921	1	FITTING, SWIVEL ACCUWAY
4	5106029	2	SCR-CAP, HEX .250"-20 X .625" SS188
5	5106040	2	NUT-HEX-NYLK, .250"-20 SS188
6	5418405	1	BRACKET, L-SHAPE DIVERTER CABLE

Not For Reproduction

Thigh Pad Group

Note: Unless noted otherwise, use the standard torque specifications

Mfg. No: 5901755



Thigh Pad Group

REF NO	PART NO	QTY	DESCRIPTION
1	5418406	1	PAD, THIGH VENTURE
2	5418407	1	PLATE, MOUNT THIGH PAD
3	5418421	1	HOOK AND LOOP, 0.750" X 12.00"
4	5106024	4	SCR-CAP, HEX .3125"-18 X .750" SS188

Not For Reproduction

Hardware Identification & Torque Specifications

Torque Specification Chart								
FOR STANDARD METRIC MACHINE HARDWARE (Tolerance ± 20%)								
Property Class	5.6		8.8		10.9		12.9	
	Class 5.6		Class 8.8		Class 10.9		Class 12.9	
Size Of Hardware	in/lbs	Nm.	in/lbs	Nm.	in/lbs	Nm.	in/lbs	Nm.
	ft/lbs		ft/lbs		ft/lbs		ft/lbs	
M3	5.88	.56	13.44	1.28	19.2	1.80	22.92	2.15
M4	13.44	1.28	30.72	2.90	43.44	4.10	52.56	4.95
M5	26.4	2.50	60.96	5.75	5.97	8.10	7.15	9.7
M6	44.64	4.3	7.3	9.9	10.3	14	12.1	16.5
M7	5.2	7.1	12.1	16.5	16.9	23	19.9	27
M8	7.7	10.5	17.7	24	25	34	29	40
M10	15	21	35	48	50	67	59	81
M12	26	36	61	83	86.2	117	103	140
M14	42	58	101	132	136	185	162	220
M16	64	88	147	200	210	285	250	340
M18	89	121	202	275	287	390	346	470
M20	126	171	290	390	405	550	486	660
M22	169	230	390	530	559	745	656	890
M24	217	295	497	375	708	960	840	1140
M27	320	435	733	995	1032	1400	1239	1680
M30	435	590	995	1350	1401	1900	1681	2280
M33	590	800	1349	1830	1902	2580	2278	3090
M36	759	1030	1740	2360	2441	3310	2935	3980
M39	988	1340	2249	3050	3163	4290	3798	5150

Torque Specification Chart						
FOR STANDARD MACHINE HARDWARE (Tolerance ± 20%)						
Hardware Grade	No Marks		SAE Grade 5		SAE Grade 8	
	SAE Grade 2		SAE Grade 5		SAE Grade 8	
Size Of Hardware	in/lbs	Nm.	in/lbs	Nm.	in/lbs	Nm.
	ft/lbs		ft/lbs		ft/lbs	
8-32	19	2.1	30	3.4	41	4.6
8-36	20	2.3	31	3.5	43	4.9
10-24	27	3.1	43	4.9	60	6.8
10-32	31	3.5	49	5.5	68	7.7
1/4-20	66	7.6	8	10.9	12	16.3
1/4-28	76	8.6	10	13.6	14	19.0
5/16-18	11	15.0	17	23.1	25	34.0
5/16-24	12	16.3	19	25.8	29	34.0
3/8-16	20	27.2	30	40.8	45	61.2
3/8-24	23	31.3	35	47.6	50	68.0
7/16-14	30	40.8	50	68.0	70	95.2
7/16-20	35	47.6	55	74.8	80	108.8
1/2-13	50	68.0	75	102.0	110	149.6
1/2-20	55	74.8	90	122.4	120	163.2
9/16-12	65	88.4	110	149.6	150	204.0
9/16-18	75	102.0	120	163.2	170	231.2
5/8-11	90	122.4	150	204.0	220	299.2
5/8-18	100	136	180	244.8	240	326.4
3/4-10	160	217.6	260	353.6	386	525.0
3/4-16	180	244.8	300	408.0	420	571.2
7/8-9	140	190.4	400	544.0	600	816.0
7/8-14	155	210.8	440	598.4	660	897.6
1-8	220	299.2	580	788.8	900	1,244.0
1-12	240	326.4	640	870.4	1,000	1,360.0

The guides and ruler furnished below are designed to help you select the appropriate hardware.



Nut, M8

Thread Diameter (mm)

Inside Diameter (in) Threads per inch

Nut, 1/2-16



Screw, M8- 1.25 x 25

Thread Diameter (mm) Distance between threads (mm) Body Length (mm)

Body Diameter Threads per inch Body Length (in)

Screw, 1/2- 16 x 2



Standard Hardware Sizing

When a washer or nut is identified as 1/2" (M8), this is the *Nominal size*, meaning the *inside diameter* is 1/2 inch (8mm metric thread diameter); if a second number is present it represents the *threads per inch* (distance between threads).

When bolt or capscrew is identified as 1/2 - 16 x 2" (M8 - 1.25 x 50), this means the *Nominal size*, or body diameter is 1/2 inch (8mm metric thread diameter), the second number, 16, represents the *threads per inch*, (*distance between threads*). The final number is the body length of the bolt or screw, 2 inches (50mm).

NOTES

- These torque values are to be used for all hardware excluding: locknuts, self-tapping screws, thread forming screws, sheet metal screws and socket head setscrews.
- Recommended seating torque values for locknuts:
 - for prevailing torque locknuts - use 65% of grade 5 torques.
 - for flange whizlock nuts and screws - use 135% of grade 5 torques.
- Unless otherwise noted on assembly drawings, all torque values must meet this specification.

Common Hardware Types

Hex Head Capscrew



Washer



Carriage Bolt



Hex Nut

Wrench & Fastener Size Guide

1/4" Bolt or Nut Wrench—7/16"	5/16" Bolt or Nut Wrench—1/2"	3/8" Bolt or Nut Wrench—9/16"	7/16" Bolt or Nut Wrench (Bolt)—5/8" Wrench (Nut)—11/16"	1/2" Bolt or Nut Wrench—3/4"
M6 Bolt or Nut Wrench—10mm	M8 Bolt or Nut Wrench—13mm	M10 Bolt or Nut Wrench—17mm	M12 Bolt or Nut Wrench—19mm	M14 Bolt or Nut Wrench—22mm

