



**McLAUGHLIN®**

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**Parts Manual  
Vermeer/ McLaughlin  
V500LE-HD Vacuum Machine  
V500LE-LTHD Vacuum Machine  
V800LE-HD250 Vacuum Machine  
V800LE-HD410 Vacuum Machine**

**Part #E850504**

**(Serial Number Ending V8HRB110110273 -  
V5HR121410308)**

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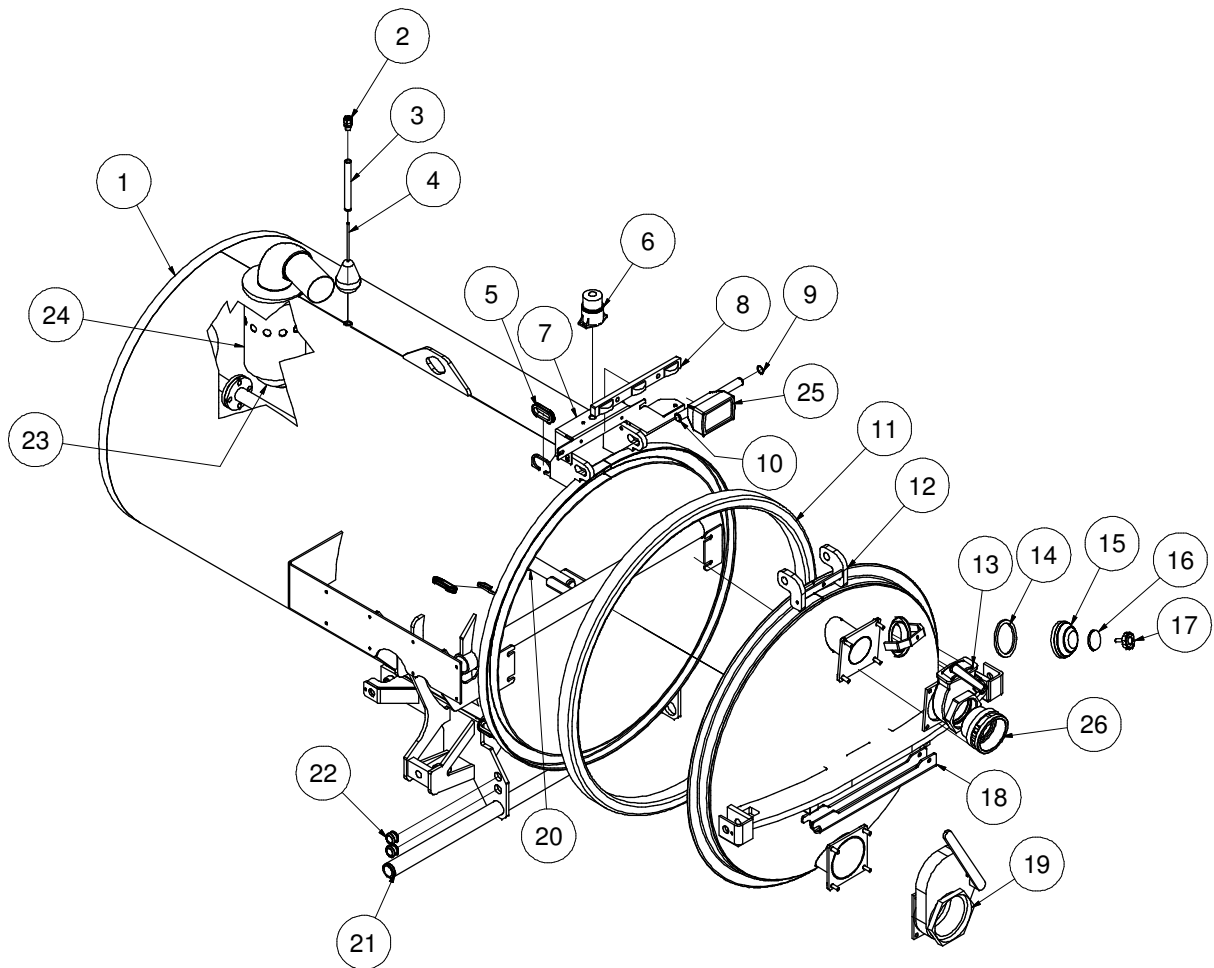
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### WARRANTY

# Tank and Door Assembly

# V500



# Tank and Door Assembly

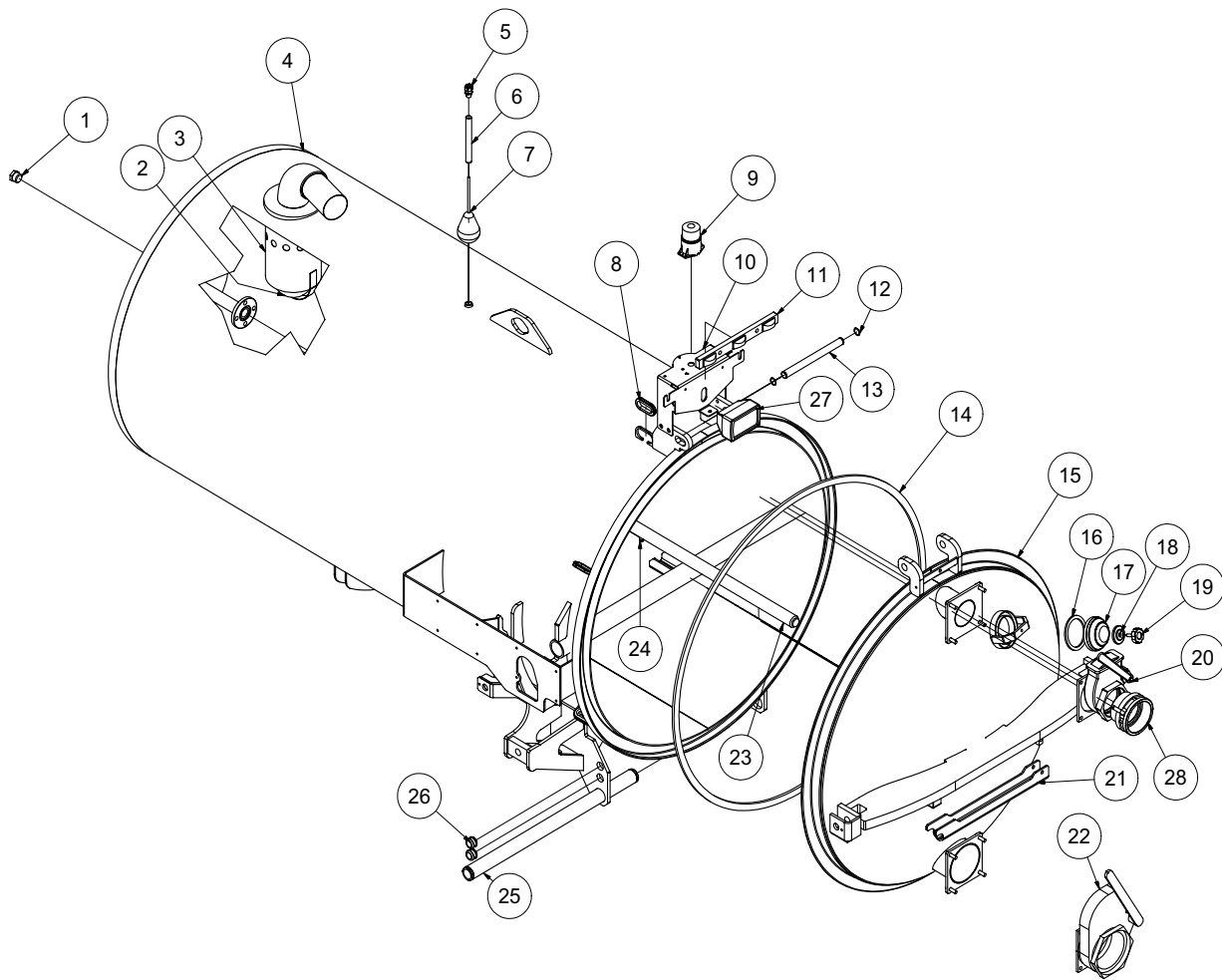
# V500

| ITEM | QTY | PART NO.   | DESCRIPTION   |
|------|-----|------------|---|
| 1    | 1   | 8045737    | TANK WELDMENT - 500LE (42"DIA)                      |
|      | 1   | T400310    | REDUCER, 1"MB - 3/8"MJ                              |
| 2    | 1   | X000113    | STRAIN RELIEF, 1/2"                                 |
| 3    | 1   | 8040769    | HIGH LEVEL FLOAT SWITCH TUBE                        |
|      | 1   | 8041291    | BUSHING, RUBBER                                     |
| 4    | 1   | 8030531    | HIGH LEVEL FLOAT SWITCH                             |
| 5    | 4   | 8042812    | GROMMET 2"ID 3"OD 1/4"WOG TRAILER SLOT MODEL        |
| 6    | 1   | 8043139    | STROBE LIGHT  |
|      | 3   | U010006    | SCREW, PHILLIPS #10 - 24 X 1"                       |
|      | 3   | U210005    | WASHER, LOCK #10                                    |
|      | 3   | U100010    | NUT, HEX #10 - 24                                   |
| 7    | 1   | 8046507    | STROBE LIGHT BRACKET                                |
|      | 4   | X000343    | DT MOUNTING CLIP                                    |
|      | 4   | U000880    | SCREW, HC 1/2" - 13 X 2.00"                         |
|      | 4   | U200100    | WASHER, FLAT 1/2"                                   |
|      | 4   | U210111    | WASHER, LOCK 1/2"                                   |
|      | 4   | U100200    | NUT, HEX 1/2" - 13                                  |
| 8    | 1   | 8041509    | LIGHT CLEARANCE 3 BAR                               |
| 9    | 2   | U500080    | RING,RET E-RING .375 SHAFT                          |
| 10   | 1   | 8040058    | DOOR HINGE ROD                                      |
| 11   | 1   | 8041765    | DOOR SEAL 42" DIA TANK                              |
| 12   | 1   | 8047770    | DOOR WELDMENT - 500 (42" DIA)                       |
| 13   | 1   | 8046215    | VALVE, 4" GATE BRASS LEVER FLANGE (500LEHD/800LEHD) |
| *    | 1   | 8046231    | O-RING, GATE VALVE FLANGE                           |
| *    | 1   | 8042408    | VALVE, 3" GATE BRASS LEVEL TYPE (500LE/800LE)       |
| *    | 1   | 8046197    | GATE VALVE TANK FLANGE 3"                           |
| *    | 1   | 8046191    | GASKET DOOR LE INLET/OUTLET                         |
| 14   | 1   | 8031049    | GASKET, 4" COUPLER                                  |
| 15   | 1   | 8031048    | SIGHT GLASS   |
| 16   | 1   | 8031047    | SIGHT GLASS PLATE                                   |
| 17   | 1   | 8031046    | SIGHT GLASS HAND WHEEL                              |
| 18   | 1   | 8041212    | TANK SAFETY BRACE                                   |
| 19   | 1   | 8046214    | VALVE, 6" GATE BRASS LEVER FLANGE                   |
| *    | 1   | 8030849-50 | HANDLE, 6" GATE VALVE (RIV MODEL)                   |
| *    | 1   | 8046191    | GASKET DOOR LE INLET/OUTLET                         |
| 20   | 1   | 8043166    | 500HLD TANK ROD WELDMENT                            |
| *    | 3   | 8030369    | NOZZLE, TANK CLEAN OUT                              |
| *    | 1   | W200120    | O-RING 1 7/8" X 2 1/8" X 1/8" (225)                 |
| 21   | 1   | 8042648    | TANK PIVOT ROD                                      |
|      | 2   | U200180    | WASHER, FLAT 2"                                     |
|      | 2   | U120120    | LOCK NUT  |
|      | 2   | U000900    | SCREW, HC 1/2"-13 X 2 1/2"LG                        |
| 22   | 4   | 8041686    | GROMMET 1"8D - 1 1/4"DOG - 1/4"WOG                  |
| 23   | 1   | 8043700    | BALLFLOAT SHUTOFF WELDMENT                          |
|      | 2   | U000420    | SCREW, HC 3/8"-16 X 1.00"                           |
|      | 2   | U210060    | WASHER, LOCK 3/8"                                   |
|      | 2   | U200600    | WASHER, FLAT 3/8"                                   |
|      | 1   | 8043571    | SEAT 4" RUBBER                                      |
|      | 1   | 8043572    | SEAT CLAMP 4"                                       |
| 24   | 1   | 8043570    | BALL STRAINLESS FLOAT 6"                            |
| 25   | 1   | 8043138    | WORK LIGHT  |
| 26   | 1   | 8046445    | CAMLOCK, 4" AL FCAM X MNPT                          |

\* NOT SHOWN

# Tank and Door Assembly

# V800LE



# Tank and Door Assembly

# V800LE

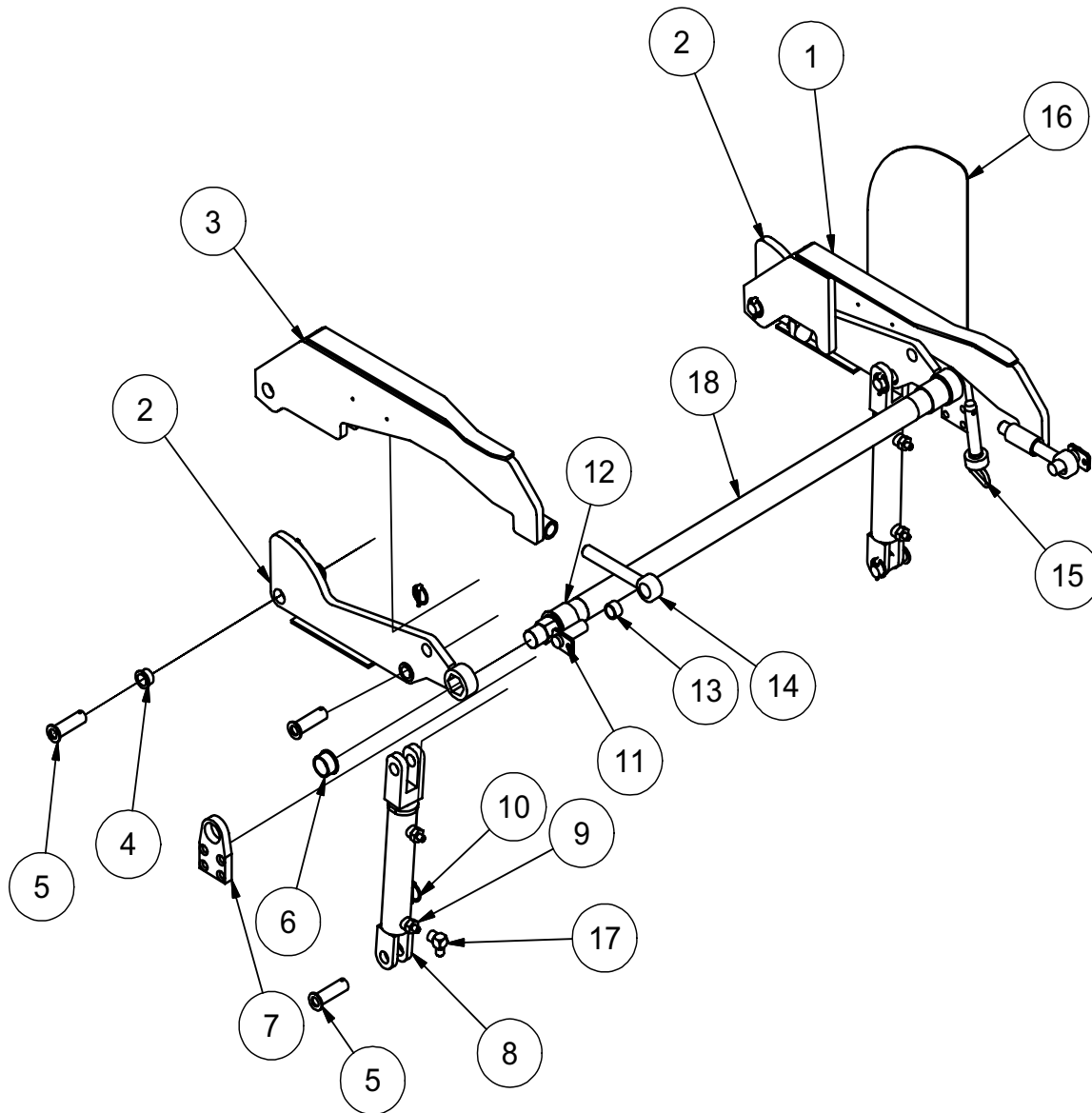
| ITEM | QTY | PART NO.   | DESCRIPTION   |
|------|-----|------------|---|
| 1    | 1   | T400310    | REDUCER, 1"MB - 3/8"MJ                              |
| 2    | 1   | 8043570    | BALL STAINLESS FLOAT 6"                             |
| 3    | 1   | 8043700    | BALL FLOAT SHUTOFF WELDMENT                         |
|      | 2   | U000420    | SCREW, HC 3/8"-16 X 1.00"                           |
|      | 2   | U210060    | WASHER, LOCK 3/8"                                   |
|      | 2   | U200600    | WASHER, FLAT 3/8"                                   |
|      | 1   | 8043571    | SEAT 4" RUBBER                                      |
|      | 1   | 8043572    | SEAT CLAMP 4"                                       |
| 4    | 1   | 8046150    | TANK WELDMENT - 800LE (48"DIA)                      |
| 5    | 1   | X000113    | STRAIN RELIEF, 1/2"                                 |
| 6    | 1   | 8040769    | HIGH LEVEL FLOAT SWITCH TUBE                        |
| 7    | 1   | 8030531    | HIGH LEVEL FLOAT SWITCH                             |
| 8    | 4   | 8042812    | GROMMET 2"ID3"OD1/4" WOG TRAILER SLOT MODEL         |
| 9    | 1   | 8043139    | STROBE LIGHT  |
|      | 3   | U010006    | SCREW, PHILLIPS #10-24 X 1"                         |
|      | 3   | U210005    | WASHER, FLAT 1/2"                                   |
|      | 3   | U100010    | NUT HEX, #10 - 24                                   |
| 10   | 1   | 8046507    | STROBE LIGHT BRACKET WELDMENT                       |
|      | 4   | X000343    | DT MOUNTING CLIP                                    |
|      | 4   | U000880    | SCREW, HC 1/2"-13 X 2.00"                           |
|      | 4   | U200100    | WASHER, FLAT 1/2"                                   |
|      | 4   | U210111    | WASHER, LOCK 1/2"                                   |
|      | 4   | U100200    | NUT, HEX 1/2" - 13                                  |
| 11   | 1   | 8041509    | LIGHT CLEARANCE 3 BAR                               |
| 12   | 2   | U500020    | SNAP RING, EXT 1" SHAFT ZP                          |
| 13   | 1   | 8040058    | DOOR HINGE ROD                                      |
| 14   | 1   | 8041766    | SEAL, DOOR SQ V750/V800LE 154"                      |
| 15   | 1   | 8047771    | DOOR 800 (48")- WELDMENT                            |
| 16   | 1   | 8031049    | GASKET, 4" COUPLER                                  |
| 17   | 1   | 8031048    | SIGHT GLASS   |
| 18   | 1   | 8031047    | SIGHT GLASS PLATE                                   |
| 19   | 1   | 8031046    | SIGHT GLASS HAND WHEEL                              |
| 20   | 1   | 8046215    | VALVE, 4" GATE BRASS LEVER FLANGE (500LEHD/800LEHD) |
| *    | 1   | 8046231    | O-RING, GATE VALVE FLANGE                           |
| *    | 1   | 8042408    | VALVE, 3" GATE BRASS LEVER TYPE (500LE/800LE)       |
| *    | 1   | 8046197    | GATE VALVE TANK FLANGE 3"                           |
| *    | 1   | 8046191    | GASKET DOOR LE INLET/OUTLET                         |
| 21   | 1   | 8041212    | TANK SAFETY BRACE                                   |
| 22   | 1   | 8046214    | VALVE 6" GATE BRASS LEVER                           |
|      | 1   | 8030849-50 | HANDLE, 6" GATE VALVE (RIV MODEL)                   |
|      | 1   | 8046191    | GASKET DOOR LE INLET/OUTLET                         |
| 23   | 1   | 8046172    | TANK ROD 800LE WELDMENT                             |
| *    | 1   | W200120    | O-RING, 1 7/8" X 2 1/8" X 1/8" (225)                |
| 24   | 3   | 8030369    | NOZZLE, TANK CLEANOUT                               |
| 25   | 1   | 8042648    | TANK PIVOT ROD                                      |
|      | 2   | U200180    | WASHER FLAT 2"                                      |
|      | 2   | U120120    | LOCK NUT  |
|      | 2   | U000900    | SCREW, HC 1/2" - 13 X 2 1/2" LG                     |
| 26   | 4   | 8041686    | GROMMET 1"ID- 1 1/4"DOG - 1/4"WO                    |
| 27   | 1   | 8043138    | WORKLIGHT   |
| 28   | 1   | 8046445    | CAMLOCK, 4" AL FCAM X MNPT                          |

\* NOT SHOWN

041315-E

VACASSY032

# Hyd. Door Cylinder Assembly



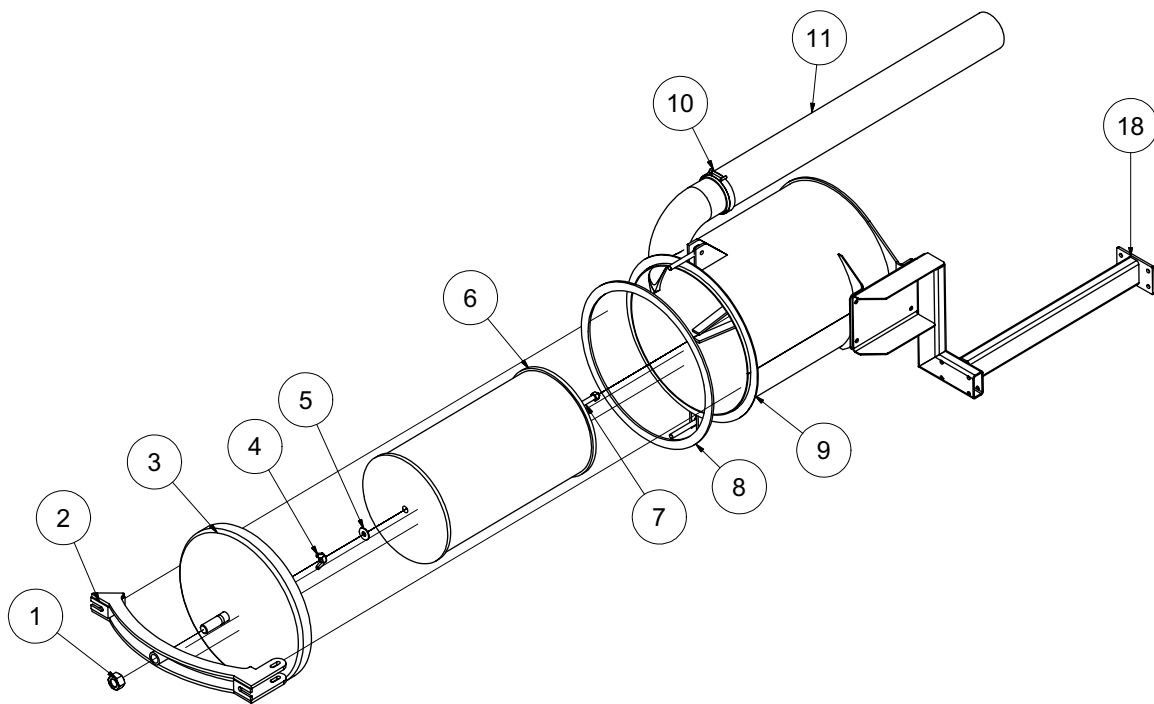
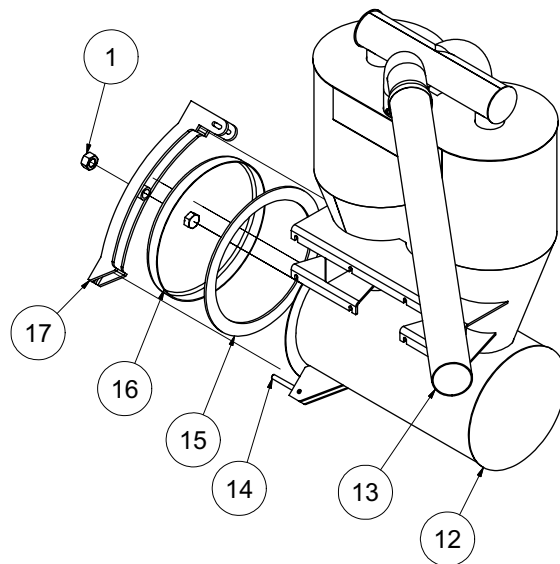


# Hyd. Door Cylinder Assembly

| ITEM | QTY | PART NO. | DESCRIPTION                           |
|------|-----|----------|---------------------------------------|
| 1    | 1   | 8041369  | DOOR HYD LONG LINKAGE WELDMENT        |
| 2    | 2   | 8041604  | SHORT LINKAGE WELDMENT                |
| 3    | 1   | 8041375  | DOOR HYD LONG LINKAGE SS WELDMENT     |
| 4    | 6   | 8041883  | BUSHING BRONZE FLANGED 1"             |
| 5    | 6   | 8042489  | HYD DOOR - PIN WELDMENT 1"DIA X 3"    |
| 6    | 2   | 8041649  | BUSHING 1 1/4" MODIFIED               |
| 7    | 1   | 8041783  | OUTER BEARING PLATE                   |
| 8    | 2   | 8041327  | HYD CYLINDER - 8" STROKE              |
| 9    | 4   | T400611  | UNION 8MB - 4MJ                       |
| 10   | 6   | U340050  | PIN LINCH 3/16 X 1 9/16               |
| 11   | 2   | 8043844  | DOOR CAPTURE PIN                      |
| 12   | 2   | 8041602  | BUSHING BRONZE FLANGED 2"             |
| 13   | 2   | 8041524  | BUSHING BRONZE 1 1/4" X 1.00 X 3/4"LG |
| 14   | 2   | 8043131  | ROD END 1" X 7 1/2"                   |
|      | 2   | U160025  | NUT, JAM 1.00"                        |
|      | 2   | U120060  | NUT, NY LOCK 1"                       |
|      | 4   | U200170  | WASHER, FLAT 1.00"                    |
| 15   | 1   | 8041626  | 1" X 4 1/2" HITCH PIN                 |
| 16   | 1   | 8041635  | HYD ARM GUARD                         |
| 17   | 1   | T401225  | ELBOW, 90 1/4MJ - 1/4FJ               |
| 18   | 1   | 8041607  | LINKAGE CROSS TUBE V500               |
|      | 1   | 8046186  | LINKAGE CROSS TUBE V750 / V800LE      |
|      | 1   | 8041663  | LINKAGE CROSS TUBE V800 / V1200       |

# Filtration

# HD



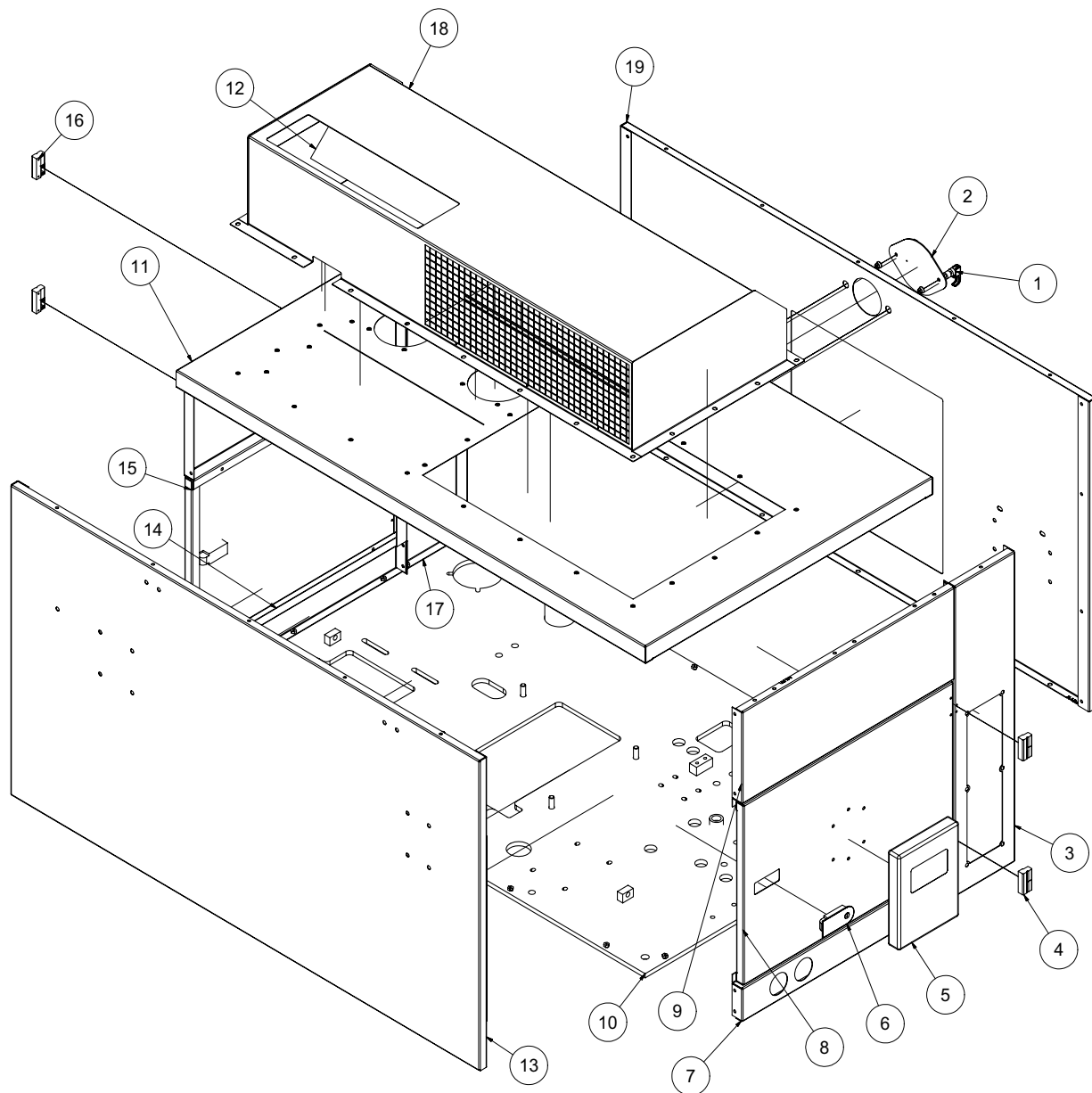
# Filtration

# HD

| ITEM | QTY | PART #  | DESCRIPTION                         |
|------|-----|---------|-------------------------------------|
| 1    | 2   | U120060 | NUT, LOCK NY 1" - 8                 |
| 2    | 1   | 8041554 | DOOR LATCH (HD AIR FILTER WELDMENT) |
| 3    | 1   | 8041387 | HD AIR FILTER DOME ASSY             |
| 4    | 1   | U130080 | NUT, WING 1/2" - 13                 |
| 5    | 1   | U200100 | WASHER, LOCK 1/2"                   |
| 6    | 1   | 8031293 | WASHABLE AIR FILTER ELEMENT         |
| 7    | 1   | 8040302 | THREADED ROD - 4" LG                |
| 8    | 1   | 8041613 | SEAL 3/8" EPDM 17.                  |
| 9    | 1   | 8046338 | HD AIR FILTER HOUSING               |
|      | 4   | U200600 | WASHER, FLAT .375                   |
|      | 4   | U210060 | WASHER, LOCK .375                   |
|      | 4   | U000440 | SCREW, HC 3/8" - 16 X 1.25"         |
| 10   | 4   | 8042606 | CLAMP T-BOLT (450)                  |
| 11   | 1   | 8046804 | HOSE VAC AG SUCTION 4-189" (V500)   |
|      | 1   | 8046805 | HOSE VAC AG SUCTION 4-206" (V800)   |
| 12   | 1   | 8046458 | HD SEPARATOR - HOUSING ONLY         |
| 13   | 1   | 8041781 | HOSE VAC AG SUCTION 4-48"           |
| 14   | 4   | 8041593 | BOLT, EYE 1/2" - 13 X 6"            |
| 15   | 1   | 8041612 | SEAL 3/8" EPDM 14" ID, 17.25" OD    |
| 16   | 1   | 8041402 | HD CYCLONE DOME DOOR ASSY           |
| 17   | 1   | 8041552 | DOOR LATCH (CYCLONE) - WELDMENT     |
| 18   | 1   | 8046243 | AIR FILTER BRACKET LE               |

# Enclosure Assembly

# 49HP LE



# Enclosure Assembly

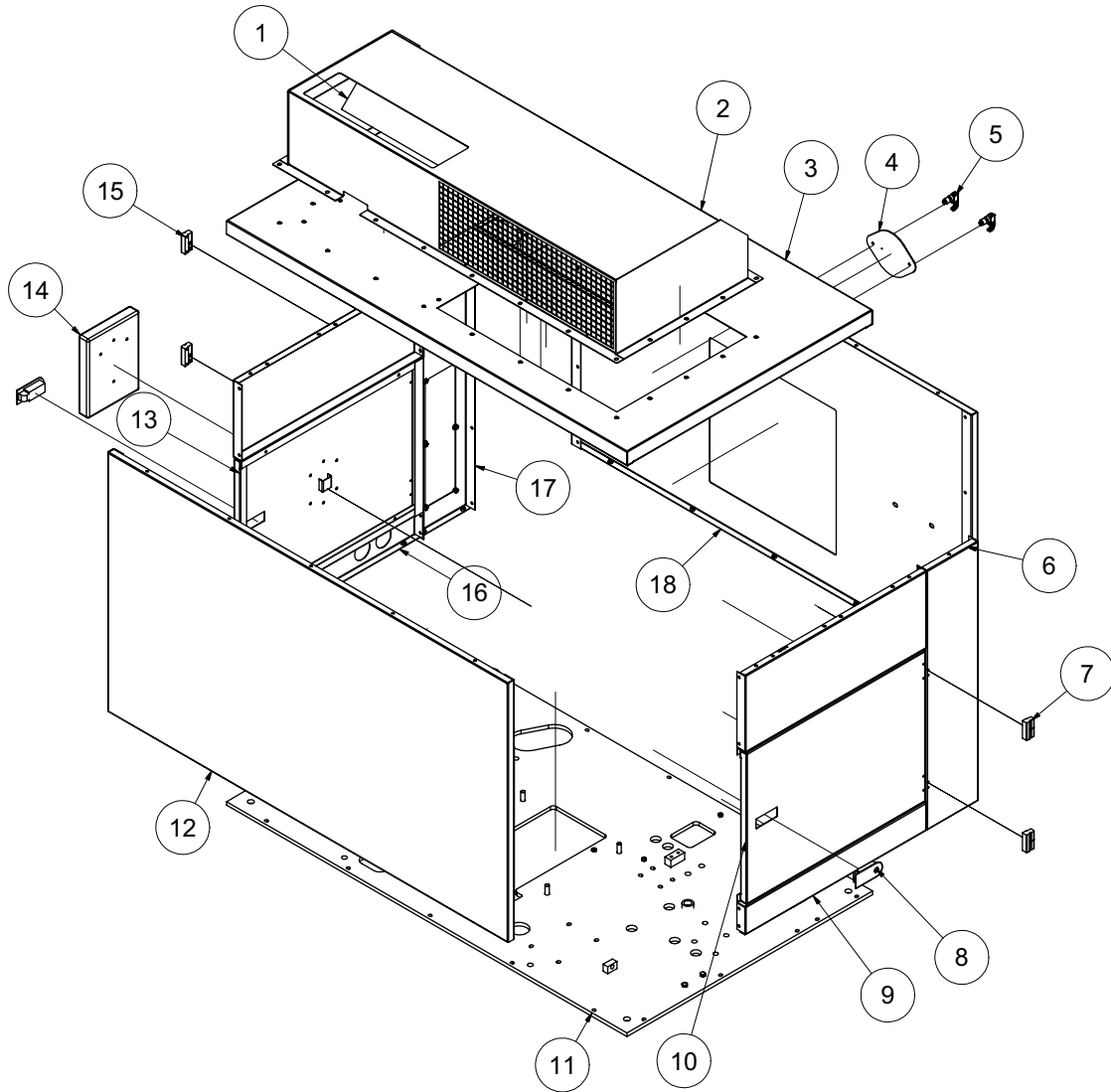
# 49HP LE

| ITEM | QTY | PART #  | DESCRIPTION                                    |
|------|-----|---------|--|
| 1    | 2   | 8040334 | SWELL LATCH                                    |
| 2    | 1   | 8040592 | ENCLOSURE RADIATOR COVER                       |
| 3    | 1   | 8043614 | 49VK - VERTICAL CONTROL WELDMENT               |
|      | 1   | 8044885 | CONTROL PANEL SOUND INSULATION                 |
| 4    | 2   | 8040588 | OFFSET HINGE TYPE "A"                          |
| 5    | 1   | E250210 | BOX, PLASTIC FOR SAFETY MANUAL                 |
| 6    | 2   | 8040586 | SEALED LEVER LATCH                             |
|      | 1   | 8041816 | KEY DOOR SOUTHCO LATCH                         |
| 7    | 1   | 8043617 | 49VK - SIDE LOWER GAUGES WELDMENT              |
|      | 1   | 8044883 | BELOW DOOR SOUND INSULATION                    |
| 8    | 1   | 8043619 | 49VK - PANEL DOOR W/TRANSMITTER MOUNT WELDMENT |
|      | 1   | 8044929 | DOOR, RH SOUND INSULATION                      |
| 9    | 2   | 8043615 | 49VK - PANEL SIDE UPPER                        |
|      | 2   | 8044882 | ABOVE DOOR SOUND INSULATION                    |
| 10   | 1   | 8046240 | 49LE - MAIN PLATE WELDMENT                     |
| 11   | 1   | 8046251 | 49LE - PANEL TOP                               |
| 12   | 1   | 8044606 | 49HS - EXHAUST SHIELD                          |
| 13   | 1   | 8046247 | 49HS - PANEL REAR WELDMENT                     |
|      | 1   | 8046369 | SOUND INSULATION 49LE BACK PANEL 1             |
|      | 1   | 8046370 | SOUND INSULATION 49LE BACK PANEL 2             |
|      | 1   | 8046371 | SOUND INSULATION 49LE BACK PANEL 3             |
|      | 1   | 8046372 | SOUND INSULATION 49LE BACK PANEL 4             |
| 14   | 1   | 8043919 | 49VK - SIDE LOWER WELDMENT                     |
|      | 1   | 8044883 | BELOW DOOR SOUND INSULATION                    |
| 15   | 1   | 8043920 | 49VK - PANEL DOOR                              |
|      | 1   | 8044887 | DOOR, LH SOUND INSULATION                      |
| 16   | 2   | 8040589 | OFFSET HINGE TYPE "B"                          |
| 17   | 1   | 8043922 | 49VK - PANEL SIDE VERTICAL BLANK WELDMENT      |
|      | 1   | 8044884 | OPP. CONTROL PANEL SOUND INSULATION            |
| 18   | 1   | 8044624 | 49HS - INTAKE BOX                              |
| 19   | 1   | 8046249 | 49HS - PANEL FRONT WELDMENT                    |
|      | 1   | 8044880 | LS FRONT PANEL SOUND INSULATION                |
|      | 1   | 8044927 | ABOVE DOOR SOUND INSULATION                    |
|      | 1   | 8044928 | BELOW RADIATOR SOUND INSULATION                |
|      | 1   | 8044881 | RS FRONT SHEET SOUND INSULATION                |
| *    | 20  | U000060 | SCREW,HC 1/4-20X1                              |
| *    | 36  | U000020 | SCREW,HC 1/4-20X1/2                            |
| *    | 112 | U200020 | WASHER,FLAT 1/4                                |
| *    | 36  | U120100 | NUT,HEX LOCK 1/4                               |
| *    | 2   | 8041504 | DOOR SEAL VERTICAL                             |

\* NOT SHOWN

# Enclosure Assembly

# 49HP LE RC



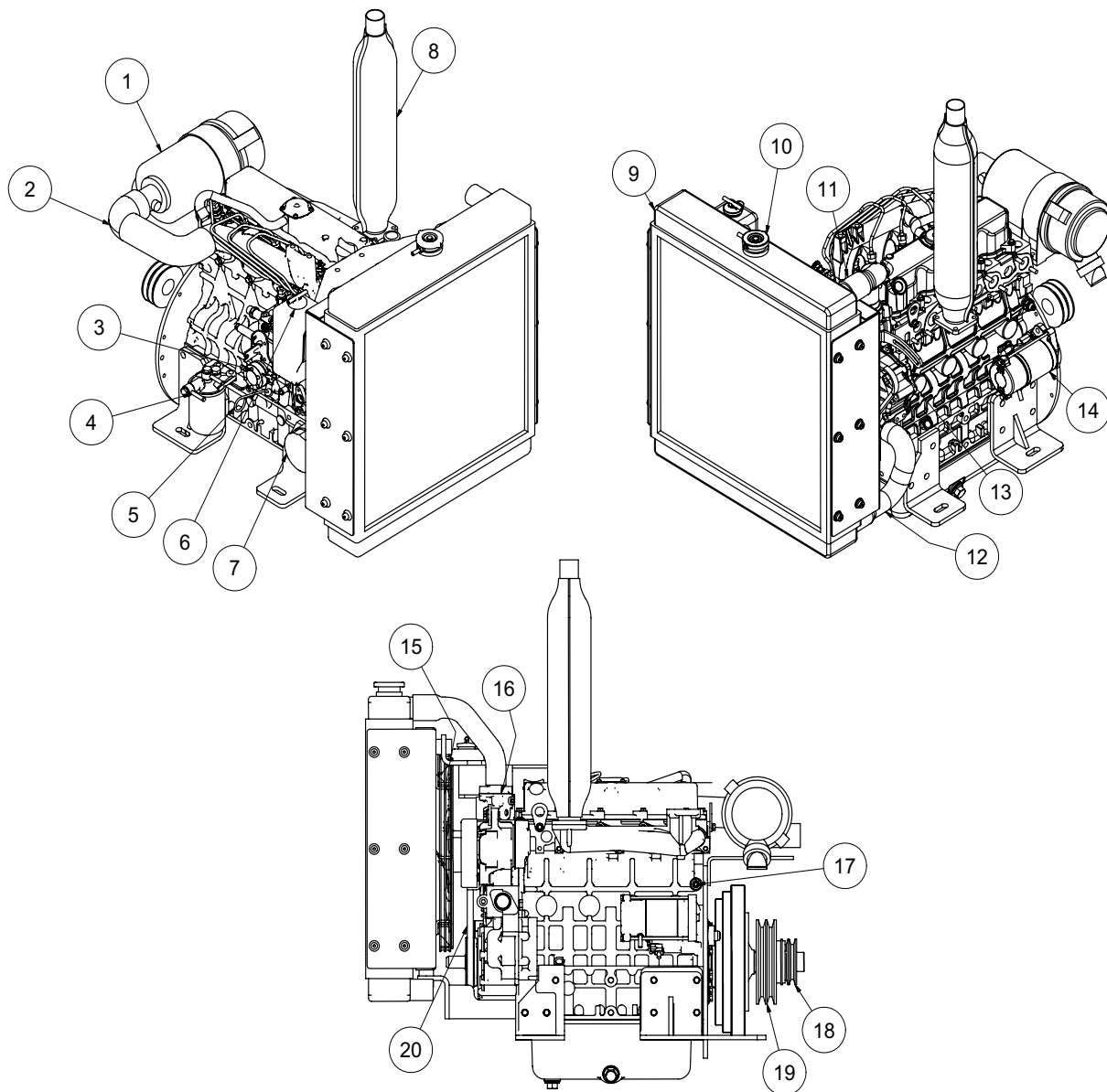
# Enclosure Assembly

# 49HP LE RC

| ITEM | QTY | PART #  | DESCRIPTION                                    |
|------|-----|---------|--|
| 1    | 1   | 8044606 | 49HS - EXHAUST SHIELD                          |
| 2    | 1   | 8044624 | 49HS - INTAKE BOX                              |
| 3    | 1   | 8046251 | 49LE - PANEL TOP                               |
| 4    | 1   | 8040592 | ENCLOSURE RADIATOR COVER                       |
| 5    | 2   | 8040334 | SWELL LATCH                                    |
| 6    | 1   | 8043922 | 49VK - PANEL SIDE VERTICAL BLANK WELDMENT      |
|      | 1   | 8044884 | OPP. CONTROL PANEL SOUND INSULATION            |
| 7    | 2   | 8040588 | OFFSET HINGE TYPE "A"                          |
| 8    | 2   | 8040586 | SEALED LEVER LATCH                             |
|      | 1   | 8041816 | KEY, DOOR SOUTHCO LATCH                        |
| 9    | 1   | 8043919 | 49VK - SIDE LOWER WELDMENT                     |
|      | 1   | 8044883 | BELOW DOOR SOUND INSULATION                    |
| 10   | 1   | 8043920 | 49VK - PANEL DOOR                              |
|      | 1   | 8044887 | DOOR, LH SOUND INSULATION                      |
| 11   | 1   | 8046240 | 49LE - MAIN PLATE WELDMENT                     |
| 12   | 1   | 8046247 | 49HS - PANEL REAR WELDMENT                     |
|      | 1   | 8046369 | SOUND INSULATION 49LE BACK PANEL 1             |
|      | 1   | 8046370 | SOUND INSULATION 49LE BACK PANEL 2             |
|      | 1   | 8046371 | SOUND INSULATION 49LE BACK PANEL 3             |
|      | 1   | 8046372 | SOUND INSULATION 48LE BACK PANEL 4             |
| 13   | 1   | 8043619 | 49VK - PANEL DOOR W/TRANSMITTER MOUNT WELDMENT |
|      | 1   | 8044929 | DOOR, RH SOUND INSULATION                      |
| 14   | 1   | 8030689 | BOX, PLASTIC FOR SAFETY MANUAL                 |
| 15   | 2   | 8040589 | OFFSET HINGE TYPE "B"                          |
| 16   | 1   | 8043617 | 49VK - SIDE LOWER GAUGE WELDMENT               |
|      | 1   | 8044883 | BELOW DOOR SOUND INSULATION                    |
| 17   | 1   | 8043614 | 49VK - VERTICAL CONTROL WELDMENT               |
|      | 1   | 8044885 | CONTROL PANEL SOUND INSULATION                 |
| 18   | 1   | 8046249 | 49HS - PANEL FRONT WELDMENT                    |
|      | 1   | 8044880 | LS FRONT PANEL SOUND INSULATION                |
|      | 1   | 8044927 | ABOVE DOOR SOUND INSULATION                    |
|      | 1   | 8044928 | BELOW RADIATOR SOUND INSULATION                |
|      | 1   | 8044881 | RS FRONT SHEET SOUND INSULATION                |
| *    | 20  | U000060 | SCREW,HC 1/4-20X1                              |
| *    | 36  | U000020 | SCREW,HC 1/4-20X1/2                            |
| *    | 112 | U200020 | WASHER,FLAT 1/4                                |
| *    | 36  | U120100 | NUT,HEX LOCK 1/4                               |
| *    | 1   | 8041171 | HANDLE   |
|      | 2   | U001017 | SCREW,HSH 1/4-20X1.25                          |
|      | 2   | U200020 | WASHER,FLAT 1/4                                |
|      | 2   | U120100 | NUT,HEX LOCK 1/4-20                            |
| *    | 2   | 8041504 | DOOR SEAL VERTICAL                             |

\* NOT SHOWN

# Engine Kubota V2203MB-1VC2





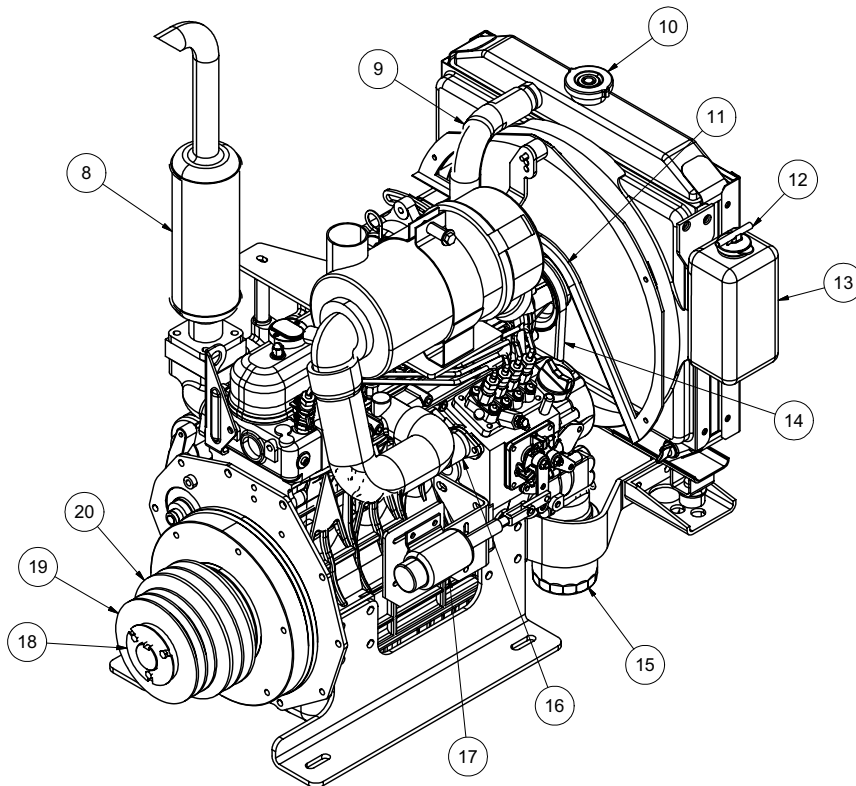
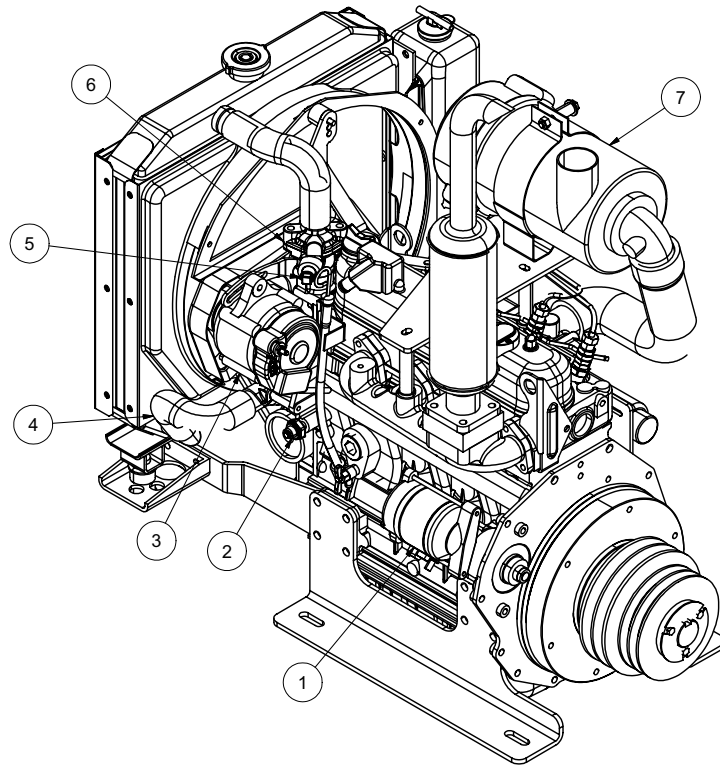
# Engine Kubota V2203MB-1VC2

| ITEM | QTY | NUMBER     | DESCRIPTION                          |
|------|-----|------------|--------------------------------------|
| 1    | 1   | 8046364-1  | AIR CLEANER                          |
| 2    | 1   | 8046364-2  | AIR CLEANER HOSE                     |
| 3    | 1   | 8046364-3  | FUEL PUMP                            |
| 4    | 1   | 8041053    | FUEL FILTER                          |
| 5    | 1   | 8046364-5  | OIL LEVEL GAUGE                      |
| 6    | 1   | 8046364-6  | OVERFLOW TANK (CAP SOLD WITH TANK)   |
| 7    | 1   | T700077    | OIL FILTER                           |
| 8    | 1   | 8046364-8  | MUFFLER                              |
| 9    | 1   | 8046364-9  | RADIATOR                             |
| 10   | 1   | 8046364-10 | RADIATOR CAP                         |
| 11   | 1   | 8046364-11 | UPPER RADIATOR HOSE                  |
| 12   | 1   | 8046364-12 | LOWER RADIATOR HOSE                  |
| 13   | 1   | 8046364-13 | ALTERNATOR                           |
| 14   | 1   | 8046364-14 | STARTER                              |
| 15   | 1   | 8046364-15 | FAN                                  |
| 16   | 1   | 8046364-16 | THERMOSTAT                           |
| 17   | 1   | 8046364-17 | OIL PRESSURE SWITCH                  |
| 18   | 1   | 8030970    | SHEAVE, WATER PUMP                   |
| *    | 1   | 8030971    | BUSHING, 1 7/16" H                   |
| 19   | 1   | 8040484    | SHEAVE, BLOWER 6.95" OD SDS 2-GROOVE |
| *    | 1   | 8040960    | BUSHING, 1 7/16" SDS                 |
| 20   | 1   | 8046364-20 | FAN BELT                             |
| *    | 1   | 8046364-21 | AIR CLEANER ELEMENT                  |
| *    | 1   | 8046364-22 | THROTTLE SOLENOID                    |
| *    | 1   | T400106    | RADIATOR DRAIN FITTING               |
| *    | 1   | 8030342-2  | SWITCH WATER TEMP                    |

\* Not Shown

# Engine Kubota V1505

# 36HD



# Engine Kubota V1505

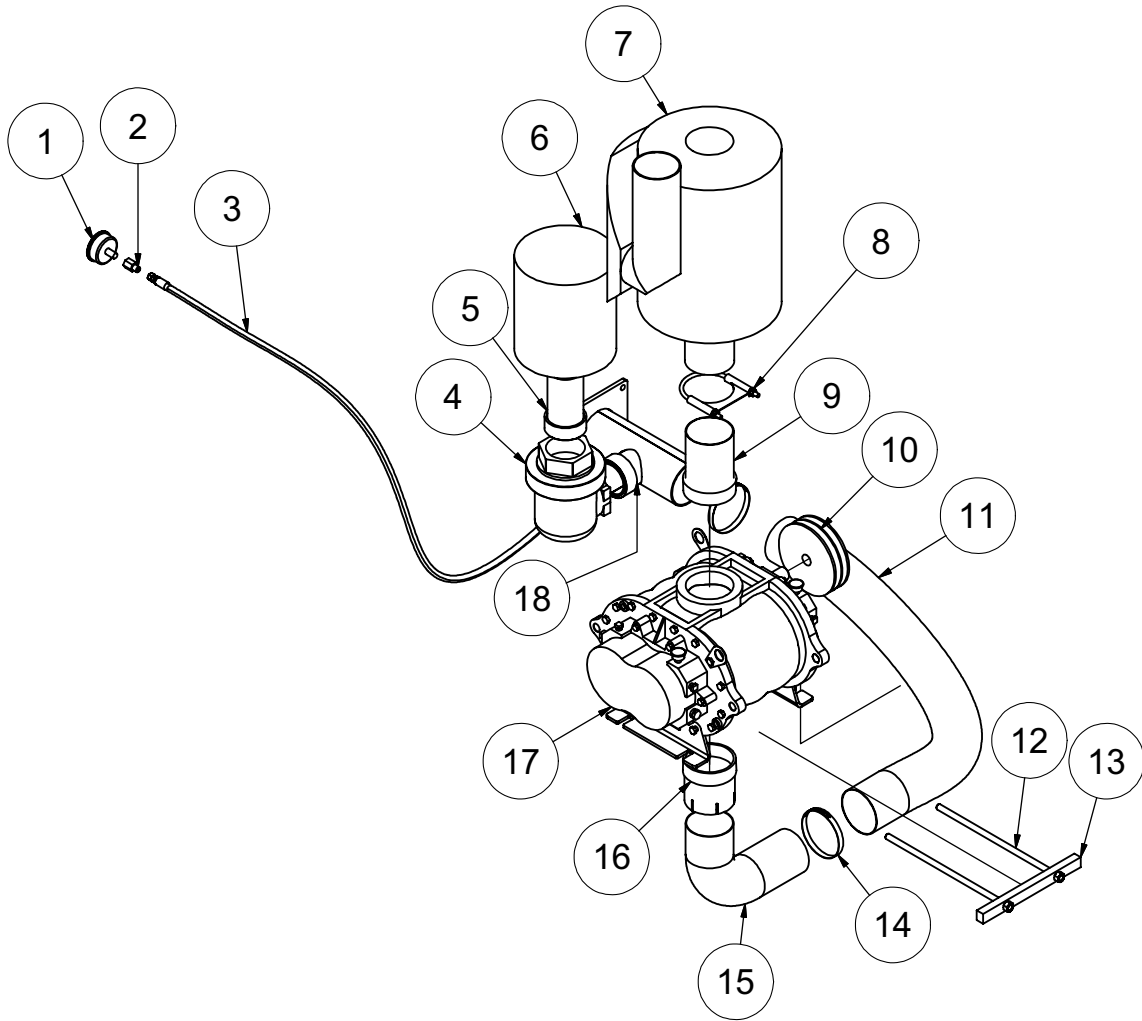
# 36HD

| ITEM | QTY | NUMBER  | DESCRIPTION                        |
|------|-----|---------|------------------------------------|
| 1    | 1   | 8043950 | STARTER                            |
| 2    | 1   | 8030960 | OIL PRESSURE SWITCH                |
| 3    | 1   | 8030937 | ALTERNATOR                         |
| 4    | 1   | 8043951 | LOWER RADIATOR HOSE                |
| 5    | 1   | 8043952 | WATER TEMPERATURE SWITCH           |
| 6    | 1   | 8043953 | THERMOSTAT                         |
| 7    | 1   | 8043954 | AIR FILTER HOUSING                 |
|      | 1   | T700150 | AIR FILTER ELEMENT                 |
| 8    | 1   | 8030691 | MUFFLER                            |
|      | 2   | 8031067 | MUFFLER GASKET                     |
|      | 1   | 8031068 | MUFFLER SPACER                     |
| 9    | 1   | 8043955 | UPPER RADIATOR HOSE                |
| 10   | 1   | 8043956 | RADIATOR CAP                       |
| 11   | 1   | 8043957 | FAN                                |
| 12   | 1   |         | OVERFLOW TANK CAP (SOLD WITH TANK) |
| 13   | 1   | 8043948 | OVERFLOW TANK                      |
| 14   | 1   | 8043958 | FAN BELT                           |
| 15   | 1   | T700075 | OIL FILTER                         |
| 16   | 1   | 8030966 | FUEL SHUTOFF SOLENOID              |
| 17   | 1   | 8030667 | THROTTLE SOLENOID                  |
| 18   | 1   | 8041799 | KEYWAY RETAINER                    |
| 20   | 1   | 8040697 | SHEAVE, BLOWER 6.55"OD 2-GROOVE    |
|      | 1   | 8040960 | BUSHING 1-7/16" SDS                |
| *    | 1   | T700045 | FUEL FILTER                        |
| *    | 1   | 8043959 | FUEL PUMP                          |
| *    | 1   | T400106 | RADIATOR DRAIN FITTING             |
| *    | 1   | 8046939 | COWL, 36HP                         |
| *    | 1   | 8046558 | EXHAUST ELBOW UPPER 31LE RF        |

\* Not Shown

# Blower Assembly

# 49HD



092410-E

VACASSY205

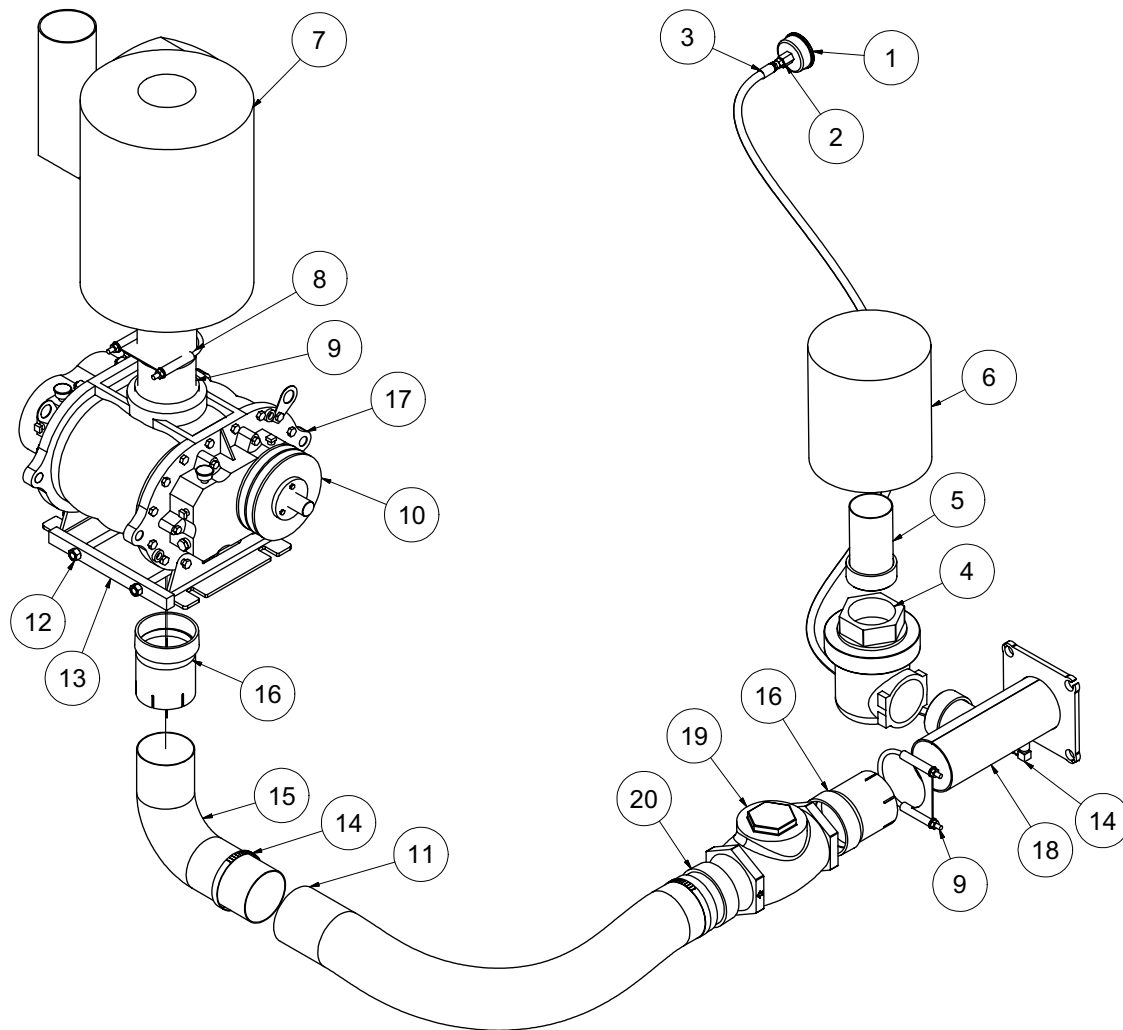
# Blower Assembly

## 49HD

| ITEM | QTY | NUMBER  | DESCRIPTION                    |
|------|-----|---------|--------------------------------|
| 1    | 1   | 8041074 | GAUGE COMPOUND PRESSURE/VACUUM |
| 2    | 1   | 8030483 | UNION, 4FP - 4MJ               |
| 3    | 1   | 8042355 | HOSE ASSY VAC 4-60" ST-ST      |
| 4    | 1   | 8030866 | BAYCO VALVE                    |
| 5    | 1   | 8045238 | HEADER AIR FILTER HDRF         |
| 6    | 1   | 8043553 | AIR FILTER 3" 245CFM           |
| 7    | 1   | 8030917 | SILENCER, 1025CFM, COWL        |
| 8    | 1   | 8031193 | CLAMP, 4in U-BOLT EXHAUST      |
| 9    | 1   | 8045239 | UNION EXHAUST 4" OD - MNPT     |
| 10   | 1   | 8040697 | SHEAVE, 6.55DIA 2 - GROOVE     |
|      | 1   | 8040485 | BUSHING, 1 1/8" SDS            |
|      | 1   | U410090 | KEY, 1/4" X 1/4" X 2 3/4"      |
|      | 2   | 8041027 | BELT, BX 54                    |
| 11   | 1   | 8046575 | HOSE VAC AG SUCTION 4-51"      |
| 12   | 2   | 8041507 | ROD TIGHTENER WELDMENT         |
| 13   | 1   | 8040904 | TENSION BLOCK 1025 CFM         |
| 14   | 2   | 8042606 | CLAMP T-BOLT 4" (450)          |
| 15   | 1   | 8041814 | ELBOW, 4" (4.5" RAD, OD-OD)    |
| 16   | 1   | 8046820 | ADAPTER 4"MNPT - 4"ID          |
| 17   | 1   | 8040001 | BLOWER (MODEL 59)              |
|      | 4   | U000817 | SCREW, HC 1/2" - 13 X 1"       |
|      | 4   | U210100 | WASHER, LOCK 1/2"              |
|      | 4   | U200100 | WASHER, FLAT 1/2"              |
| 18   | 1   | 8046415 | HEADER, AIR FILTER 1025        |
|      | 1   | 8046191 | GASKET, HEADER AIR FILTER      |

# Blower Assembly

# 36HD



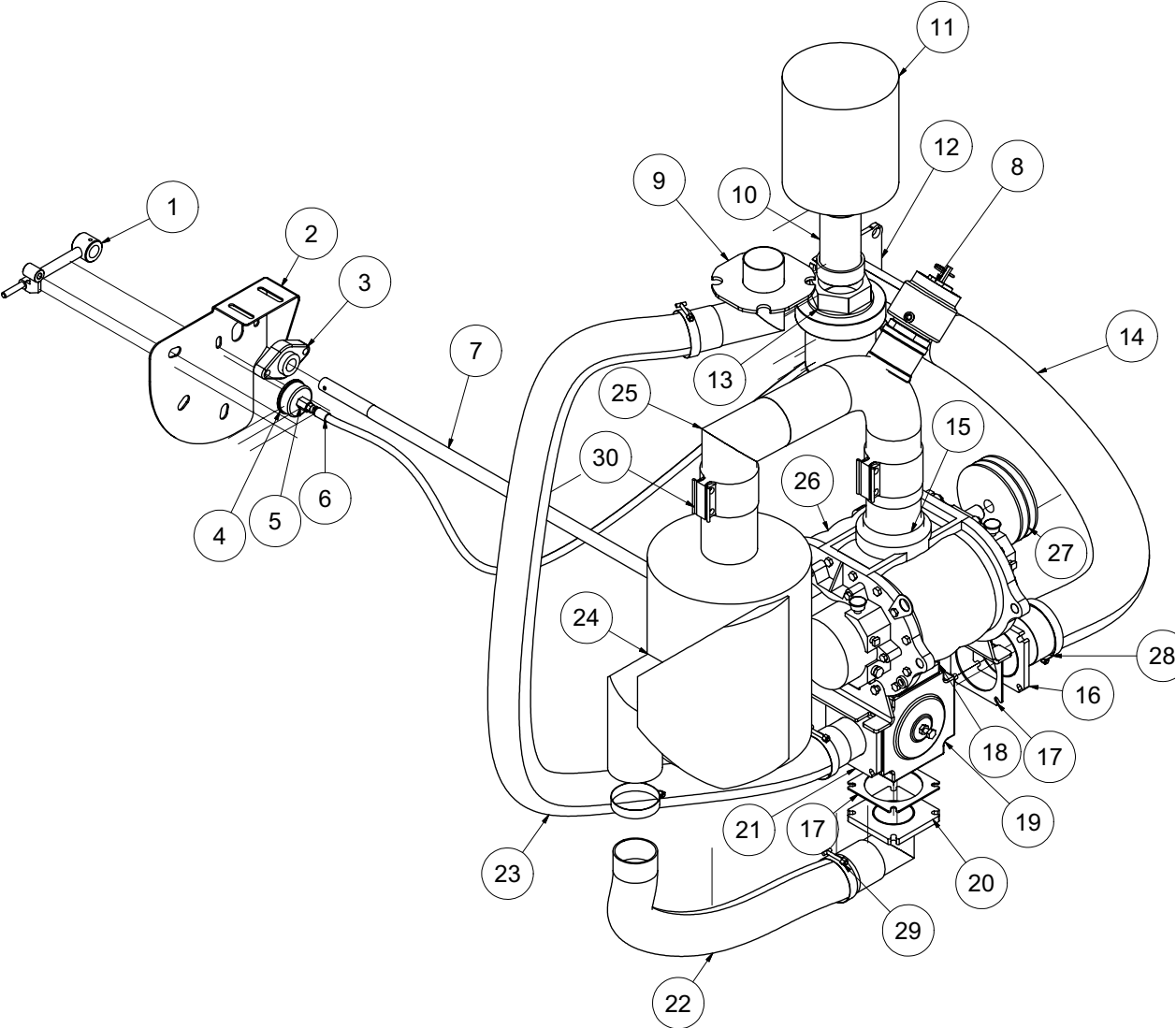
# Blower Assembly

## 36HD

| ITEM | QTY | NUMBER  | DESCRIPTION                    |
|------|-----|---------|--------------------------------|
| 1    | 1   | 8041074 | GAUGE COMPOUND PRESSURE/VACUUM |
| 2    | 1   | 8030483 | UNION, 4FP - 4MJ               |
| 3    | 1   | 8042355 | HOSE ASSY VAC 4-60" ST-ST      |
| 4    | 1   | 8030866 | BAYCO VALVE                    |
| 5    | 1   | 8045238 | HEADER AIR FILTER HDRF         |
| 6    | 1   | 8043553 | AIR FILTER 3" 245CFM           |
| 7    | 1   | 8030917 | SILENCER, 1025CFM, COWL        |
| 8    | 1   | 8031193 | CLAMP, 4in U-BOLT EXHAUST      |
| 9    | 1   | 8045239 | UNION EXHAUST 4" OD - MNPT     |
| 10   | 1   | 8040484 | SHEAVE, 6.95DIA 2 - GROOVE     |
|      | 1   | 8040485 | BUSHING, 1 1/8" SDS            |
|      | 1   | U410090 | KEY, 1/4" X 1/4" X 2 3/4"      |
|      | 2   | 8044517 | BELT, BX 57                    |
| 11   | 1   | 8046575 | HOSE VAC AG SUCTION 4-51"      |
| 12   | 2   | 8041507 | ROD TIGHTENER WELDMENT         |
| 13   | 1   | 8040904 | TENSION BLOCK 1025 CFM         |
| 14   | 2   | 8042606 | CLAMP T-BOLT 4" (450)          |
| 15   | 1   | 8041814 | ELBOW, 4" (4.5" RAD, OD-OD)    |
| 16   | 2   | 8046820 | ADAPTER 4"MNPT - 4"ID          |
| 17   | 1   | 8040001 | BLOWER (MODEL 59)              |
|      | 4   | U000817 | SCREW, HC 1/2" - 13 X 1"       |
|      | 4   | U210100 | WASHER, LOCK 1/2"              |
|      | 4   | U200100 | WASHER, FLAT 1/2"              |
| 18   | 1   | 8046415 | HEADER, AIR FILTER 1025        |
|      | 1   | 8046191 | GASKET, HEADER AIR FILTER      |
| 19   | 1   | 8041043 | CHECH VALVE 4"                 |
| 20   | 1   | 8046421 | HOSE ADAPTER 4" HOSE - 4"MP    |

# Blower Assembly

# HDRF





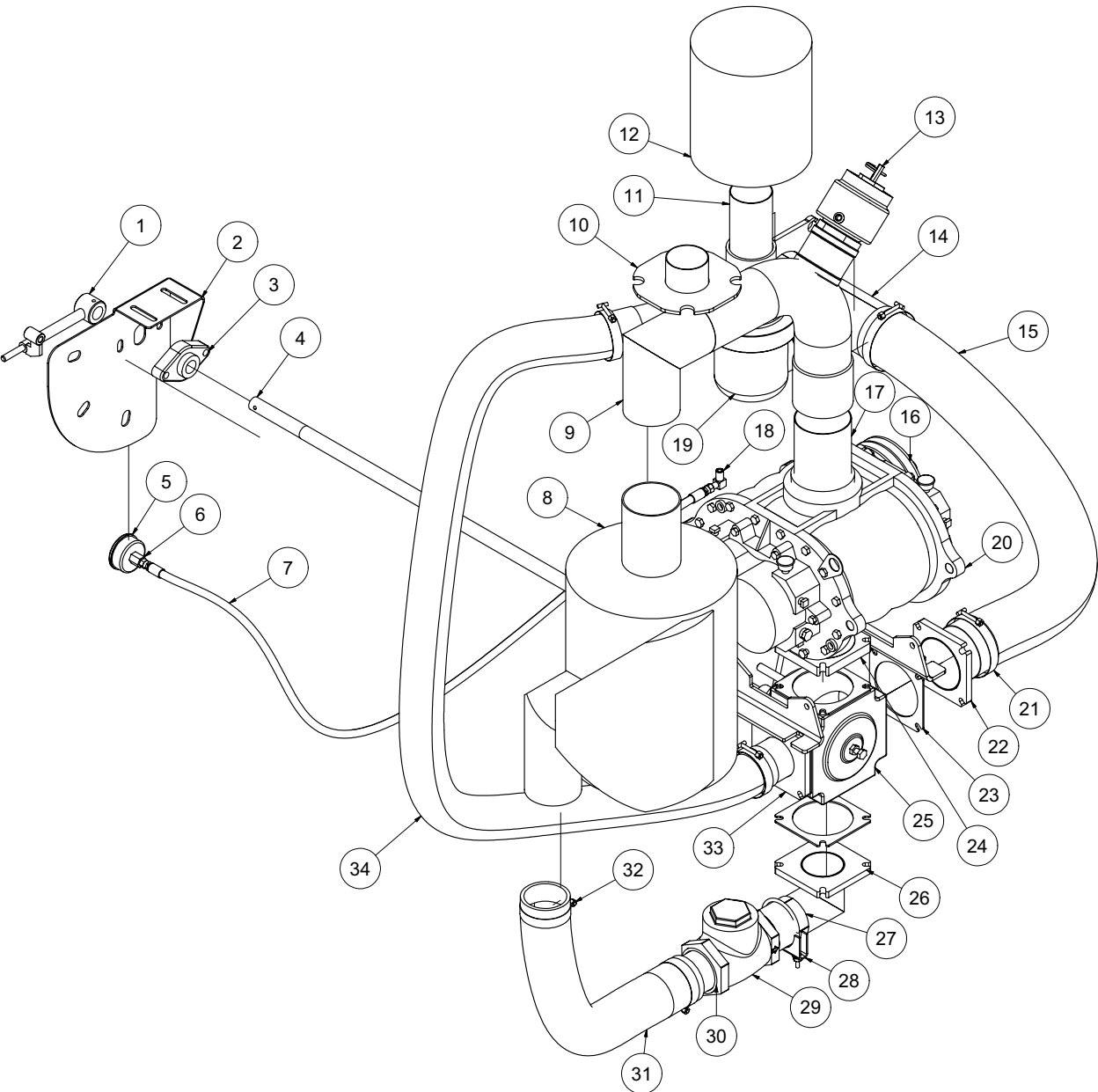
# Blower Assembly

# HDRF

| ITEM | QTY | NUMBER  | DESCRIPTION                              |
|------|-----|---------|--|
| 1    | 1   | 8041617 | REVERSE FLOW HANDLE, TRAILER UNIT        |
| 2    | 1   | 8046202 | BRACKET REV FLOW CONTROL LE              |
| 3    | 1   | W030080 | FLANGE BEARING - 2 BOLT (1" BORE)        |
| 4    | 1   | 8041074 | GAUGE COMPOUND PRESSURE/VACUUM           |
| 5    | 1   | 8030483 | UNION 4FP-4MJ                            |
| 6    | 1   | 8045869 | HOSE ASSY VAC 4-34" ST-ST                |
| 7    | 1   | 8046223 | REV FLOW SHAFT 49LE                      |
| 8    | 1   | 8041035 | PRESSURE RELIEF 1025                     |
| 9    | 1   | 8046218 | EXHAUST REV FLOW PIPE WELDMENT           |
| 10   | 1   | 8045238 | UNION EXHAUST 3" OD-MNPT                 |
| 11   | 1   | 8043553 | AIR FILTER 3" 245 CFM                    |
| 12   | 1   | 8046415 | HEADER AIR FILTER HDRF                   |
|      | 1   | 8046191 | GASKET, HEADER                           |
| 13   | 1   | 8030866 | BAYCO VALVE                              |
| 14   | 1   | 8046575 | HOSE VAC AG SUCTION 4 - 51"              |
| 15   | 1   | 8030560 | 4" HOSE COUPLING WELDMENT                |
| 16   | 1   | 8046484 | EXHAUST REV FLOW 4" X 4" FLANGE WELDMENT |
| 17   | 4   | 8043554 | ADAPTER VALVE FLANGE                     |
| 18   | 1   | 8044330 | REV FLOW 4" HEADER NIP ASSY              |
| 19   | 1   | 8041177 | 4" 4-WAY VALVE                           |
| 20   | 1   | 8046201 | ELBOW EXHAUST 3" W/ 4" FLANGE            |
| 21   | 1   | 8046222 | EXHAUST REV FLOW 3" X 4" FLANGE WELDMENT |
| 22   | 1   | 8046576 | HOSE VAC AG SUCTION 3 - 29"              |
| 23   | 1   | 8046577 | HOSE VAC AG SUCTION 3 - 65"              |
| 24   | 1   | 8030917 | SILENCER, 1025 CFM, COWL                 |
| 25   | 1   | 8046505 | EXHAUST 4" ID-OD W/COUPLING WELDMENT     |
| 26   | 1   | 8040001 | BLOWER (MODEL 59)                        |
| 27   | 1   | 8040697 | SHEAVE 6.55" OD SDS 2-GROOVE             |
|      | 1   | 8040485 | BUSHING 1 1/8" SDS                       |
|      | 2   | 8041027 | BELTS, BX 54                             |
|      | 1   | 8041798 | RETAINER                                 |
| 28   | 2   | 8042606 | CLAMP HOSE T-BOLT 450                    |
| 29   | 4   | 8042605 | CLAMP HOSE T-BOLT 350                    |
| 30   | 2   | 8030400 | 4" BAND CLAMP                            |

# Blower Assembly

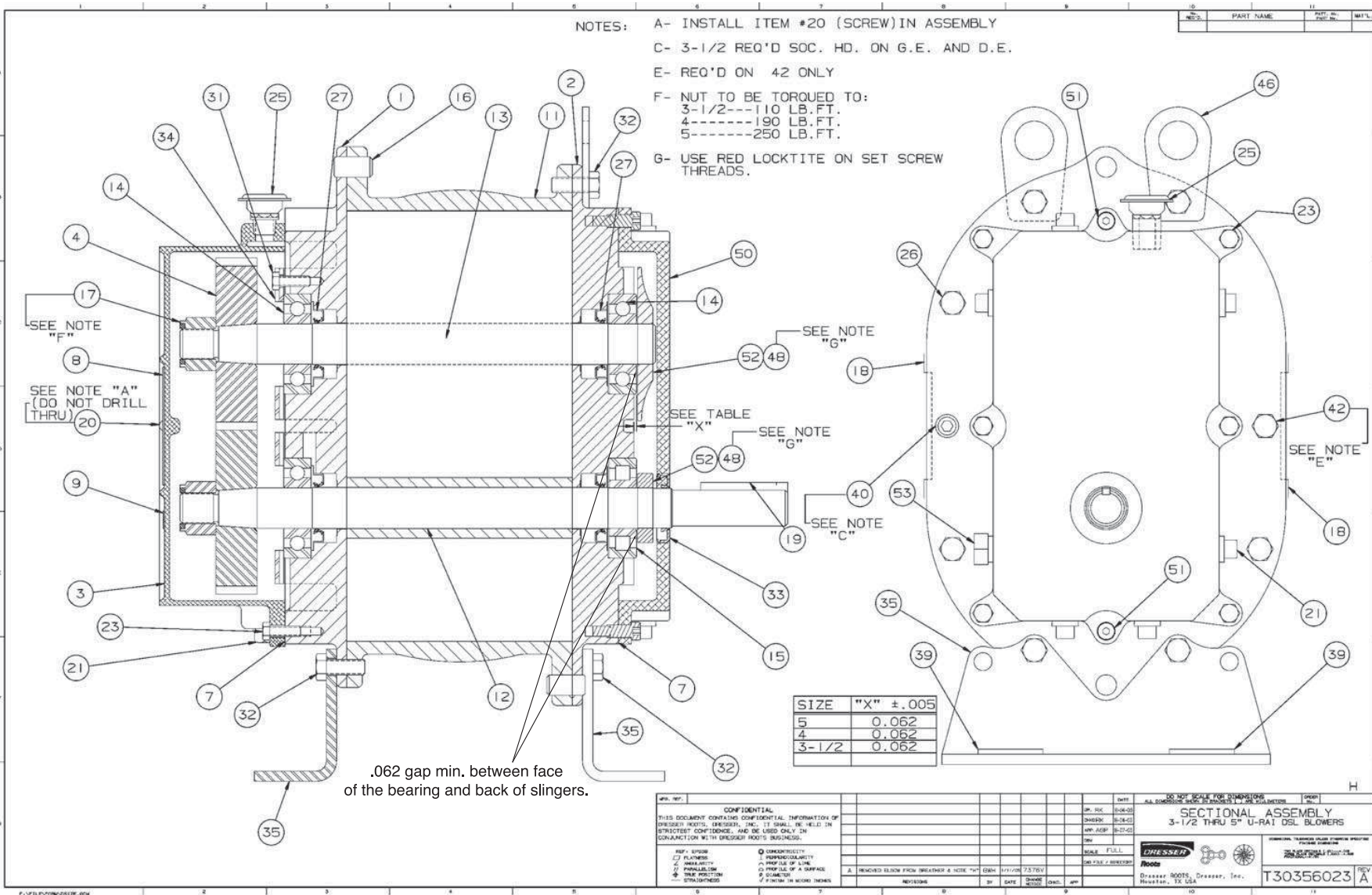
# 36HDRF



# Blower Assembly

# 36HDRF

| ITEM | QTY | NUMBER  | DESCRIPTION                              |
|------|-----|---------|--|
| 1    | 1   | 8041617 | REV FLOW HANDLE, TRAILER UNIT            |
| 2    | 1   | 8046202 | BRACKET REV FLOW CONTROL LE              |
| 3    | 1   | W030080 | FLANGE BEARING - 2 BOLT (1" BORE)        |
| 4    | 1   | 8046223 | REV FLOW SHAFT 49LE                      |
| 5    | 1   | 8041074 | GAUGE COMPOUND PRESSURE/ VACUUM          |
| 6    | 1   | 8030483 | UNION, 4FP-4MJ                           |
| 7    | 1   | 8045869 | HOSE ASSY VAC 4-34" ST-ST                |
| 8    | 1   | 8030917 | SILENCER, 1025CFM, COWL                  |
| 9    | 1   | 8046505 | EXHAUST 4"ID-OD W/COUPLING WELDMENT      |
| 10   | 1   | 8046218 | EXHAUST REV FLOW PIPE WELDMENT           |
| 11   | 1   | 8045238 | UNION EXHAUST 3" OD - MNPT               |
| 12   | 1   | 8043553 | AIR FILTER 3" 245 CFM                    |
| 13   | 1   | 8041035 | PRESSURE RELIEF 1025                     |
| 14   | 1   | 8046415 | HEADER AIR FILTER HDRF                   |
| 15   | 1   | 8046575 | HOSE VAC AG SUCTION 4-51"                |
| 16   | 1   | 8040484 | SHEAVE, 6.95" OD SDS 2-GROOVE            |
|      | 1   | U410090 | KEY, 1/4" X 1/4" X 2 3/4"                |
|      | 1   | 8040485 | BUSHING, 1 1/8" SDS                      |
|      | 2   | 8044517 | BELT, BX57                               |
| 17   | 1   | 8030560 | 4" HOSE COUPLING WELDMENT                |
| 18   | 1   | T401100 | ELBOW, 90 4MP - 4MJ                      |
| 19   | 1   | 8030866 | BAYCO VALVE                              |
| 20   | 1   | 8040001 | BLOWER (MODEL 59)                        |
| 21   | 2   | 8042606 | CLAMP T-BOLT 4" (450)                    |
| 22   | 1   | 8046484 | EXHAUST REV FLOW 4" X 4" FLANGE WELDMENT |
| 23   | 4   | 8043554 | ADAPTER VALVE FLANGE                     |
| 24   | 1   | 8044330 | REV FLOW 4" HEADER NIP ASSY              |
| 25   | 1   | 8041177 | 4" 4-WAY VALVE                           |
| 26   | 1   | 8046201 | ELBOW EXHAUST 3" W/ 4" FLANGE            |
| 27   | 1   | 8044639 | 3" MP - 3" ID EXHAUST ADAPTER            |
| 28   | 1   | 8030395 | 3" U-BOLT CLAMP                          |
| 29   | 1   | 8040799 | CHECK VALVE 3" FNPT - MODIFIED           |
| 30   | 1   | 8046420 | HOSE ADAPTER 3" HOSE - 3"MNPT            |
| 31   | 1   | 8046576 | HOSE VAC AG SUCTION 3-29"                |
| 32   | 4   | 8042605 | CLAMP T-BOLT 3" (350)                    |
| 33   | 1   | 8046222 | EXHAUST REV FLOW 3" X 4" FLANGE WELDMENT |
| 34   | 1   | 8046577 | HOSE VAC AG SUCTION 3-65"                |



Assembly of URAI DSL Blowers with Splash Lubricated Drive End 3-5" Gear Diameter

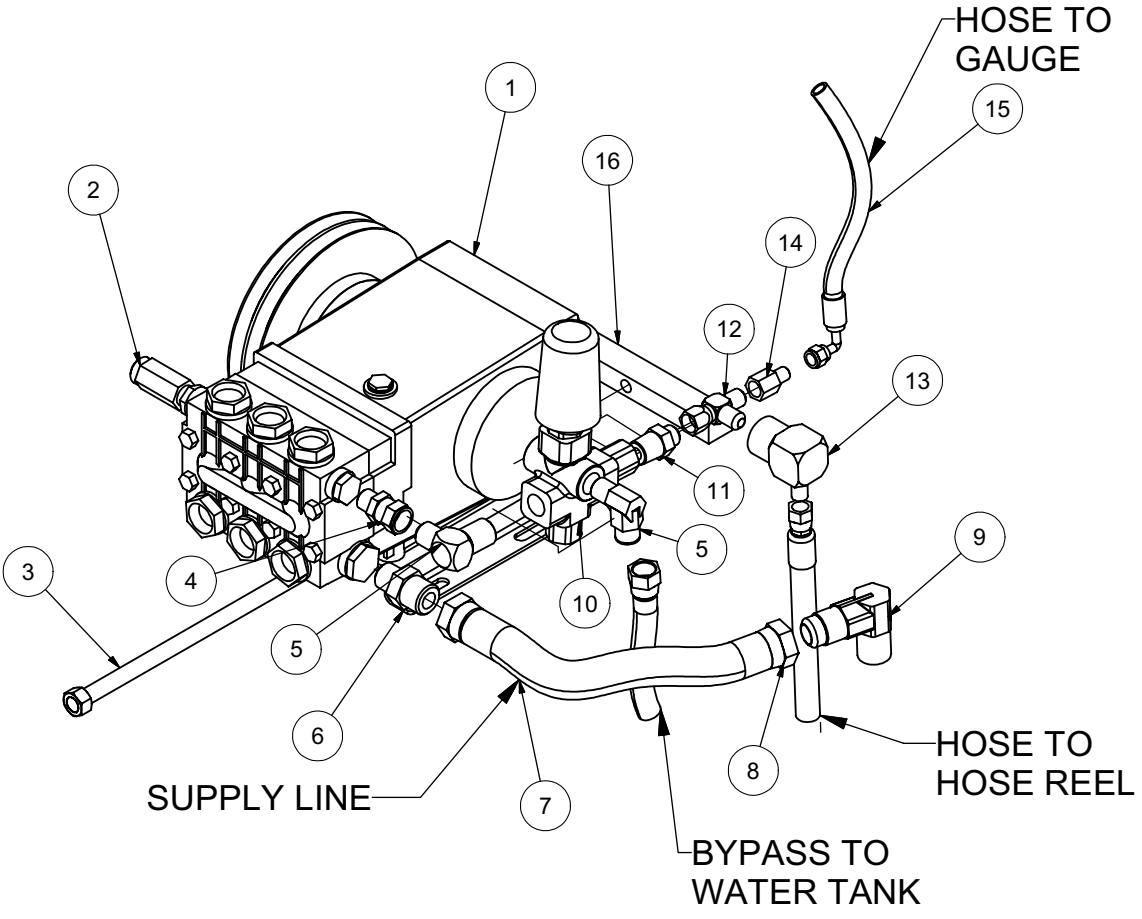
**URAI-DSL Splash Lubricated Blowers  
4" Gear Diameter**

| <b>Item #</b> | <b>Qty</b> | <b>Part #</b> | <b>Description</b>         |
|---------------|------------|---------------|----------------------------|
| 1             | 1          | 8041250-1     | Headplate Gear End         |
| 2             | 1          | 8041250-2     | Headplate Drive End        |
| 3             | 1          | 8041250-3     | Gearbox                    |
| 4             | 2          | 8041250-4     | Timing Gears               |
| 7             | 1          | 8041250-7     | Gasket, Gear Box, DE Cover |
| 11            | 1          | 8041250-11    | Cylinder                   |
| 12            | 1          | 8041250-12    | Impeller & Shaft Drive     |
| 13            | 1          | 8041250-13    | Impeller & shaft Driven    |
| 14            | 3          | 8041250-14    | Bearing, Ball              |
| 15            | 1          | 8041250-15    | Bearing, Roller            |
| 16            | 4          | 8041250-16    | Pin, Dowel                 |
| 17            | 2          | 8041250-17    | Gear Nut                   |
| 19            | 1          | 8041250-19    | Key                        |
| 21            | 3          | 8041250-21    | Plug, Pipe                 |
| 23            | 6          | 8041250-23    | Screw Hex                  |
| 25            | 1          | 8041250-25    | Breather (Plug Vent)       |
| 26            | *          | 8041250-26    | Screw, Hex                 |
| 27            | 4          | 8041250-27    | Seal, Lip Bearing          |
| 31            | 4          | 8041250-31    | Screw, Hex, Nylock         |
| 32            | 6          | 8041250-32    | Screw, Hex                 |
| 33            | 1          | 8041250-33    | Seal Lip-Drive             |
| 34            | 2          | 8041250-34    | Clamp Plate                |
| 35            | 2          | 8041250-35    | Foot                       |
| 39            | 4          | 8041250-39    | Washer Mounting            |
| 40            | 2          | 8041250-40    | Screw Socket               |
| 42            | 2          | 8041250-42    | Screw Hex                  |
| 48            | 4          | 8041250-48    | DE Oil Slinger Set Screw   |
| 50            | 1          | 8041250-50    | Drive End Cover            |
| 52            | 2          | 8041250-52    | Drive End Oil Slinger      |
| 53            | 2          | 8041250-53    | Oil Sight Glass            |

\*Quantities vary by blower.

# Water Pump Assembly

TS2021

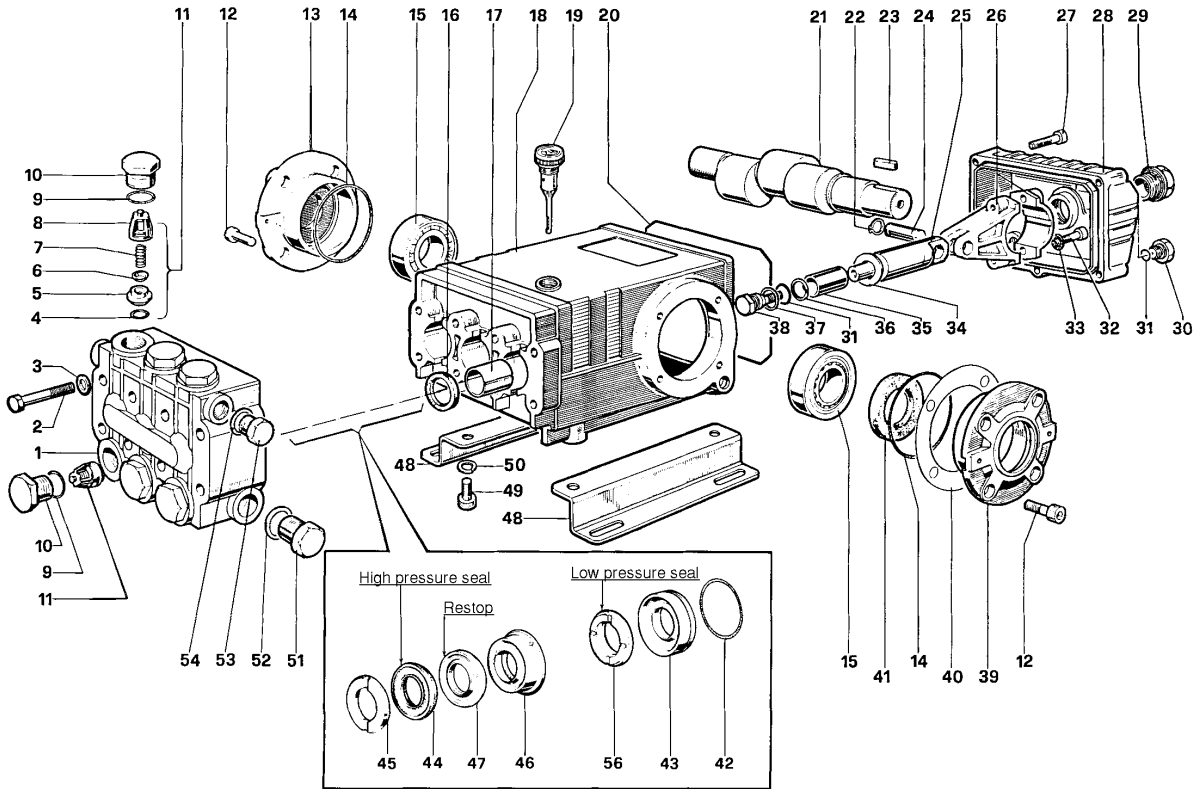


# Water Pump Assembly

# TS2021

| ITEM | QTY | PART NO. | DESCRIPTION                     |
|------|-----|----------|---------------------------------|
| 1    | 1   | 8031388  | PUMP, WATER T2021L & CLUTCH 5.6 |
|      | 2   | 8045875  | BELT, AX41                      |
| 2    | 1   | 8030340  | VALVE, RELIEF                   |
| 3    | 1   | 8040751  | ROD TIGHTENER WELDT             |
| 4    | 1   | T401125  | REDUCER, 1/2"FJ - 3/8"MP        |
| 5    | 2   | T401120  | ELBOW, 3/8"MP-1/2"MJ            |
| 6    | 1   | T400070  | REDUCER, 1/2"MP - 3/4"MJ        |
| 7    | 1   | 8040972  | HOSE VAC PUSH 12 - 8 1/2"       |
| 8    | 2   | 8030525  | FITTING, PUSHLOCK #12           |
| 9    | 1   | T401180  | ELBOW, 90 3/4"MP - 3/4"MJ       |
| 10   | 1   | 8040177  | VALVE, UNLOADER, PULSAR3        |
| 11   | 1   | T400028  | UNION, 3/8"MP - 3/8"MJ          |
| 12   | 1   | T402153  | TEE, 3/8"FJ - 3/8"MJ - 3/8"MJ   |
| 13   | 1   | T401228  | ELBOW, 3/8"MJ - 3/8"FJ          |
| 14   | 1   | T400022  | REDUCER, 3/8"FJ - 1/4"MJ        |
| 15   | 1   | 8044987  | HOSE ASSY VAC 4-40 ST-90        |
|      | 1   | T320150  | FITTING HOSE 4HO - 4FJ 90       |
|      | 1   | T320030  | FITTING HOSE 4HO - 4FJ          |
| 16   | 1   | 8040893  | TENSIONER BLOCK, ADJUSTING      |
| *    | 1   | 8030372  | WATER PRESSURE GAUGE 1/4NPT     |
| *    | 1   | T400110  | UNION, 1/4FP - 1/4MJ            |
| *    | 2   | 8045875  | BELT, AX 41 (31HP)              |
|      | 2   | 8040876  | BELT, AX 45 (49 HP)             |

# Water Pump TS2021



## TORQUE SPECS\*

\*Decrease torque by 20%  
if threads are lubricated

| Position | Ft. Lbs. | N-M  |
|----------|----------|------|
| 2        | 22.1     | 29.9 |
| 10       | 73.7     | 99.9 |
| 12       | 14.7     | 19.2 |
| 27       | 7.3      | 9.9  |
| 29       | 13.2     | 17.9 |
| 30       | 14.7     | 19.2 |
| 32       | 14.7     | 19.2 |
| 38       | 14.7     | 19.2 |
| 49       | 29.4     | 39.8 |
| 51       | 29.4     | 39.8 |
| 53       | 29.4     | 39.8 |

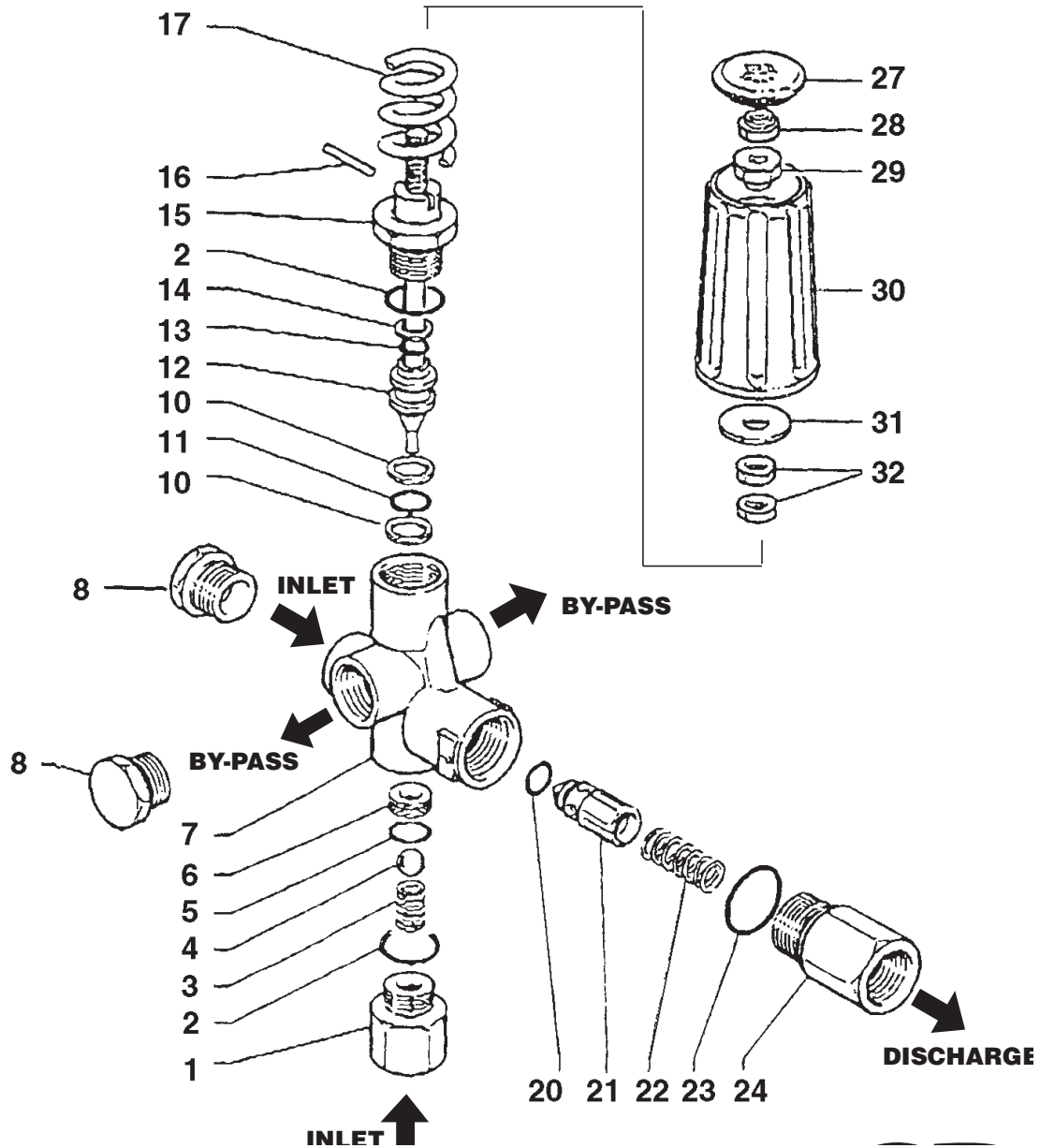


# Water Pump TS2021

| ITEM | QTY. | PART #     | DESCRIPTION          | ITEM #'S      | NO. OF ASSY        | NO. OF CYL KIT |              |
|------|------|------------|----------------------|---------------|--------------------|----------------|--------------|
|      |      |            |                      | KIT #         | INCL'D IN KIT      | IN KIT         | WILL SERVICE |
| 1    | 1    | 8031280-1  | Manifold             |               |                    |                |              |
| 2    | 8    | 8031280-2  | Screw, M8 x 70       |               |                    |                |              |
| 3    | 8    | 8031280-3  | Washer, M8 x 4       | 8031280-KIT1  | 4, 5, 6, 7, 8 (11) | 6              | 3            |
| 4    | 8    | 8031280-4  | O-ring, .674 x .103  |               |                    |                |              |
| 5    | 6    | 8031280-5  | Seat, Valve          | 8031280-KIT2  | 16                 | 3              | 3            |
| 6    | 6    | 8031280-6  | Plate, Valve         |               |                    |                |              |
| 7    | 6    | 8031280-7  | Spring               | 8031280-KIT3  | 41                 | 2              | 0            |
| 8    | 6    | 8031280-8  | Guide, Valve         |               |                    |                |              |
| 9    | 6    | 8031280-9  | O-ring,.797x.103     | 8031280-KIT4  | 9, 10              | 6              | 3            |
| 10   | 6    | 8031280-10 | Cap                  |               |                    |                |              |
| 11   | 6    | 8031280-11 | Valve Assembly       | 8031280-KIT5  | 9, 10              | 6              | 3            |
| 12   | 8    | 8031280-12 | Screw, M8 x 16       |               |                    |                |              |
| 13   | 1    | 8031280-13 | Cover, Crankcase     | 8031280-KIT6  | 31, 34             | 3              | 3            |
| 14   | 2    | 8031280-14 | O-ring, 2.675 x .103 |               |                    |                |              |
| 15   | 2    | 8031280-15 | Bearing, Roller      |               |                    |                |              |
| 16   | 3    | 8031280-16 | Seal, Oil            |               | 36, 37, 38         |                |              |
| 17   | 3    | 8031280-17 | Bushing              | 8031280-KIT7  | 45                 | 6              | 3            |
| 18   | 1    | 8031280-18 | Crankcase            |               |                    |                |              |
| 19   | 1    | 8031280-19 | Oil Dip Stick        | 8031280-KIT10 | 42, 43             | 3              | 3            |
| 20   | 1    | 8031280-20 | O-ring, Cover        |               |                    |                |              |
| 21   | 1    | 8031280-21 | Crankshaft           | 8031280-KIT28 | 42, 43, 44,        | 1              | 1            |
| 22   | 6    | 8031280-22 | Ring, Snap           |               |                    |                |              |
| 23   | 1    | 8031280-23 | Key                  |               | 45, 45, 47, 56     |                |              |
| 24   | 3    | 8031280-24 | Pin, Wrist           |               |                    |                |              |
| 25   | 3    | 8031280-25 | Guide, Plunger       | 8031280-KIT69 | 44, 47, 56         | 3              | 3            |
| 26   | 3    | 8031280-26 | Rod, Connecting      |               |                    |                |              |
| 27   | 5    | 8031280-27 | Screw, M6 x 30       | 8031280-KIT71 | 46, 47             | 3              | 3            |
| 28   | 1    | 8031280-28 | Cover, Crankcase     |               |                    |                |              |
| 29   | 6    | 8031280-29 | Oil Indicator        |               |                    |                |              |
| 30   | 1    | 8031280-30 | Cap                  |               |                    |                |              |
| 31   | 4    | 8031280-31 | O-ring,.426x.070     |               |                    |                |              |
| 32   | 6    | 8031280-32 | Screw, M8 x 35       |               |                    |                |              |
| 33   | 6    | 8031280-33 | Washer, M8.4         |               |                    |                |              |
| 34   | 3    | 8031280-34 | Washer, M14          |               |                    |                |              |
| 35   | 3    | 8031280-35 | Plunger (20 mm)      |               |                    |                |              |
| 37   | 3    | 8031280-37 | Washer               |               |                    |                |              |
| 38   | 3    | 8031280-38 | Screw, Plunger       |               |                    |                |              |
| 39   | 1    | 8031280-39 | Cover, Crankcase     |               |                    |                |              |
| 40   | 2    | 8031280-40 | Shim                 |               |                    |                |              |
| 41   | 1    | 8031280-41 | Seal, Oil            |               |                    |                |              |
| 42   | 3    | 8031280-42 | O-ring, 1.364x.070   |               |                    |                |              |
| 43   | 3    | 8031280-43 | Retainer, Packing    |               |                    |                |              |
| 44   | 3    | 8031280-44 | Packing              |               |                    |                |              |
| 45   | 3    | 8031280-45 | Ring, Head, M20      |               |                    |                |              |
| 46   | 3    | 8031280-46 | Intermed. Ring       |               |                    |                |              |
| 47   | 3    | 8031280-47 | Testop Ring          |               |                    |                |              |
| 48   | 2    | 8031280-48 | Pump Feet            |               |                    |                |              |
| 49   | 4    | 8031280-49 | Screw, M10 x 18      |               |                    |                |              |
| 50   | 4    | 8031280-50 | Washer, M10.2        |               |                    |                |              |
| 51   | 1    | 8031280-51 | Cap                  |               |                    |                |              |
| 52   | 1    | 8031280-52 | Washer, M21.5        |               |                    |                |              |
| 53   | 1    | 8031280-53 | Cap                  |               |                    |                |              |
| 54   | 1    | 8031280-54 | Washer, M17.5        |               |                    |                |              |
| 56   | 3    | 8031280-56 | Seal,Low Press,20mm  |               |                    |                |              |

VACASSY325

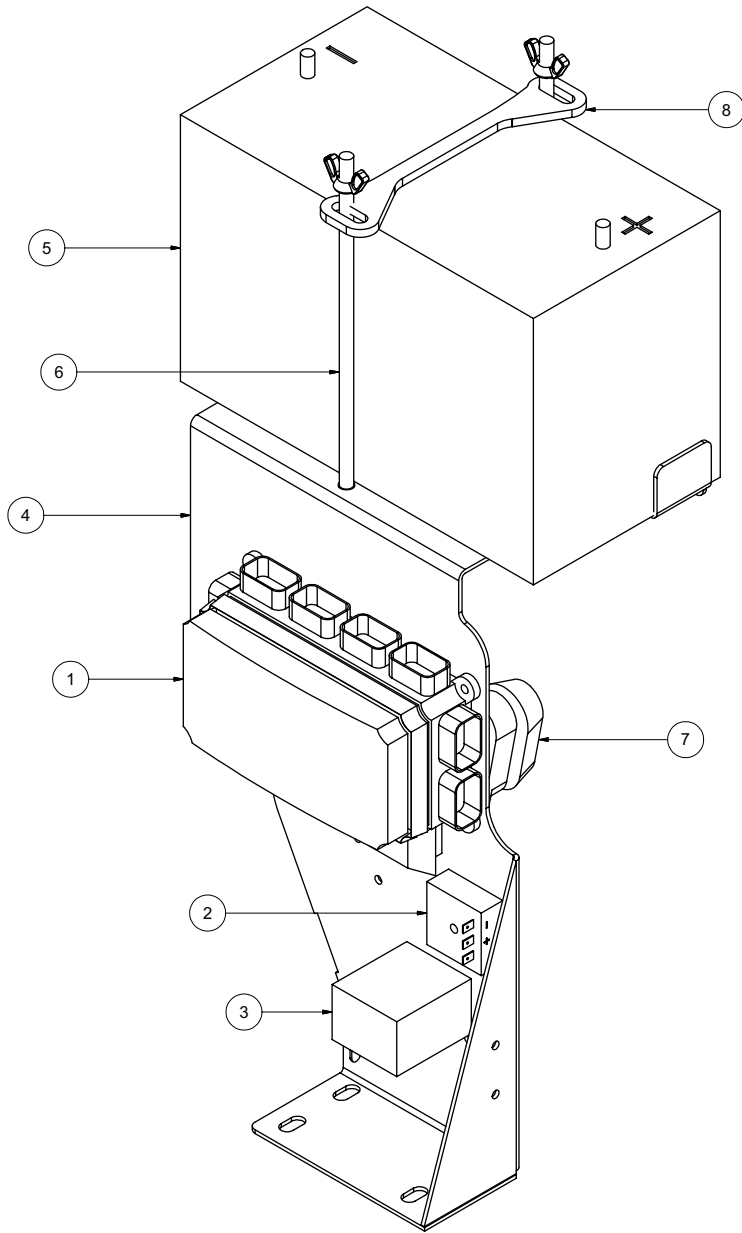
# Unloader Valve PULSAR3KHP



# Unloader Valve PULSAR3KHP

| ITEM | QTY | PART #     | DESCRIPTION              |
|------|-----|------------|--------------------------|
| 1    | 1   | 8040177-1  | INLET FITTING, 3/8 NPT-F |
| 2    | 2   | 8040177-2  | O-RING, .676ID X .070CS  |
| 3    | 1   | 8040177-3  | BALL SPRING              |
| 4    | 1   | 8040177-4  | SS BALL, 13/32           |
| 5    | 1   | 8040177-5  | O-RING, .437ID X .070CS  |
| 6    | 1   | 8040177-6  | SS SEAT, .551OD X .335ID |
| 7    | 1   | 8040177-7  | BRASS BODY, 3/8 NPT      |
| 8    | 2   | 8040177-8  | PLUG, 3/8"NPT            |
| 10   | 2   | 8040177-10 | BACKUP RING              |
| 11   | 1   | 8040177-11 | O-RING, .424ID X .103CS  |
| 12   | 1   | 8040177-12 | SS PISTON                |
| 13   | 1   | 8040177-13 | OORING, .299ID X .103CS  |
| 14   | 1   | 8040177-14 | BACKUP RING              |
| 15   | 1   | 8040177-15 | PISTON HOUSING           |
| 16   | 1   | 8040177-16 | LOCKING PIN              |
| 17   | 1   | 8040177-17 | BLUE SPRING              |
| 20   | 1   | 8040177-20 | O-RING, .236ID X .118CS  |
| 21   | 1   | 8040177-21 | CHECK VALVE              |
| 22   | 1   | 8040177-22 | SS SPRING                |
| 23   | 1   | 8040177-23 | O-RING, .739ID X .070CS  |
| 24   | 1   | 8040177-24 | OUTLET FITTING, 3/8NPT-F |
| 27   | 1   | 8040177-27 | PLASTIC PLUG for KNOB    |
| 28   | 1   | 8040177-28 | ZINC NUT, M8             |
| 29   | 1   | 8040177-29 | INSERT M8                |
| 30   | 1   | 8040177-30 | PLASTIC KNOB             |
| 31   | 1   | 8040177-31 | WASHER, 9mm X 24mm       |
| 32   | 2   | 8040177-32 | BRASS NUT, M8            |

# Electrical Control Bracket

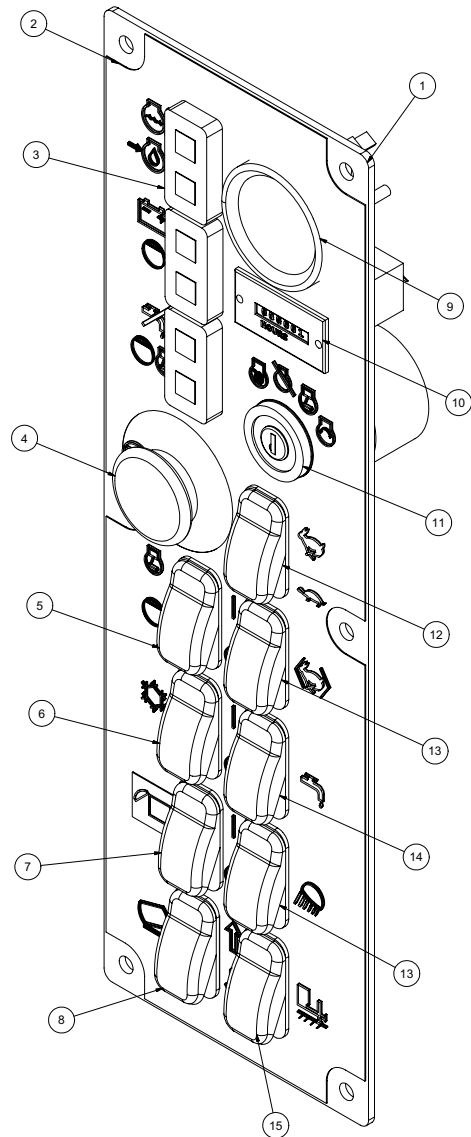
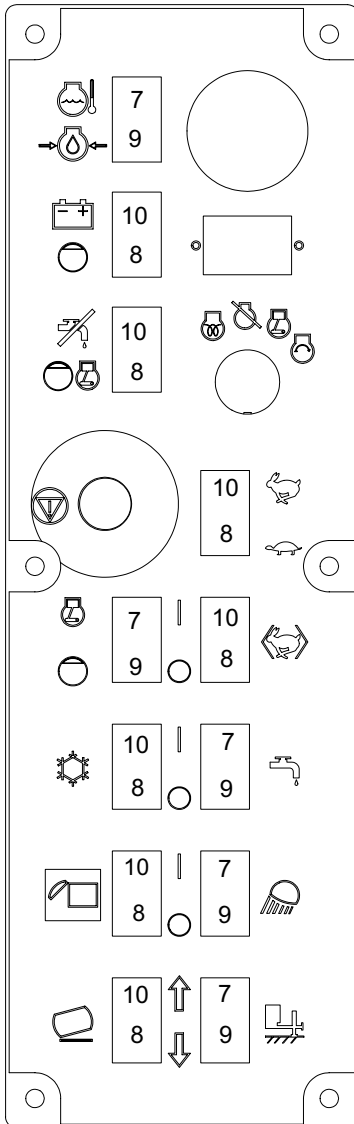


# Electrical Control Bracket

| ITEM | QTY | PART NO. | DESCRIPTION                          |
|------|-----|----------|--------------------------------------|
| 1    | 1   | X000213  | BUSSMAN VEC                          |
|      | 7   | X000205  | FUSE 5A                              |
|      | 2   | X000206  | FUSE 10A                             |
|      | 2   | X000207  | FUSE 20A                             |
|      | 3   | X000237  | FUSE 30A                             |
|      | 1   | X000236  | CIRCUIT BREAKER 20A                  |
|      | 1   | X000210  | CIRCUIT BREAKER 30A                  |
|      | 6   | X000209  | RELAY 35A/25A                        |
|      | 5   | X000208  | DIODE 6A                             |
| 2    | 1   | 8042282  | SWITCH, DELAY RELAY                  |
| 3    | 1   | X000240  | RELAY TIME 30 SECOND                 |
| 4    | 1   | 8043127  | CONTROL PANEL - HARNESS MTG PLATE    |
| 5    | 1   | X400050  | BATTERY, 31-MHD WORKAHOLIC           |
| 6    | 2   | 8043742  | BATTERY HOLD DOWN ROD ASSY           |
| 7    | 1   | 8043800  | FUSE HOLDER AMG                      |
|      | 1   | 8043801  | FUSE 250A AMG                        |
| 8    | 1   | 8050016  | BATTERY HOLD DOWN                    |
| *    | 1   | X200005  | HARNESS VAC CONTROL                  |
| *    | 1   | X300222  | BATTERY GROUND CABLE                 |
| *    | 1   | X300219  | BATTERY HOT CABLE 18"                |
| *    | 1   | X300220  | ENGINE TO FUSE HOT 1GA 60"           |
| *    | 1   | X300221  | HYD PUMP TO FUSE HOT 1GA 36"         |
| *    | 1   | X300221  | ELEC CONTROL BOX TO FUSE HOT 1GA 36" |
| *    | 1   | X300222  | ELEC CONTROL BOX GROUND 1GA 18"      |
| *    | 1   | X300224  | ENGINE GROUND 1GA 21"                |
| *    | 1   | X300225  | HYD PUMP GROUND 1GA 24"              |

\* NOT SHOWN

# Control Panel

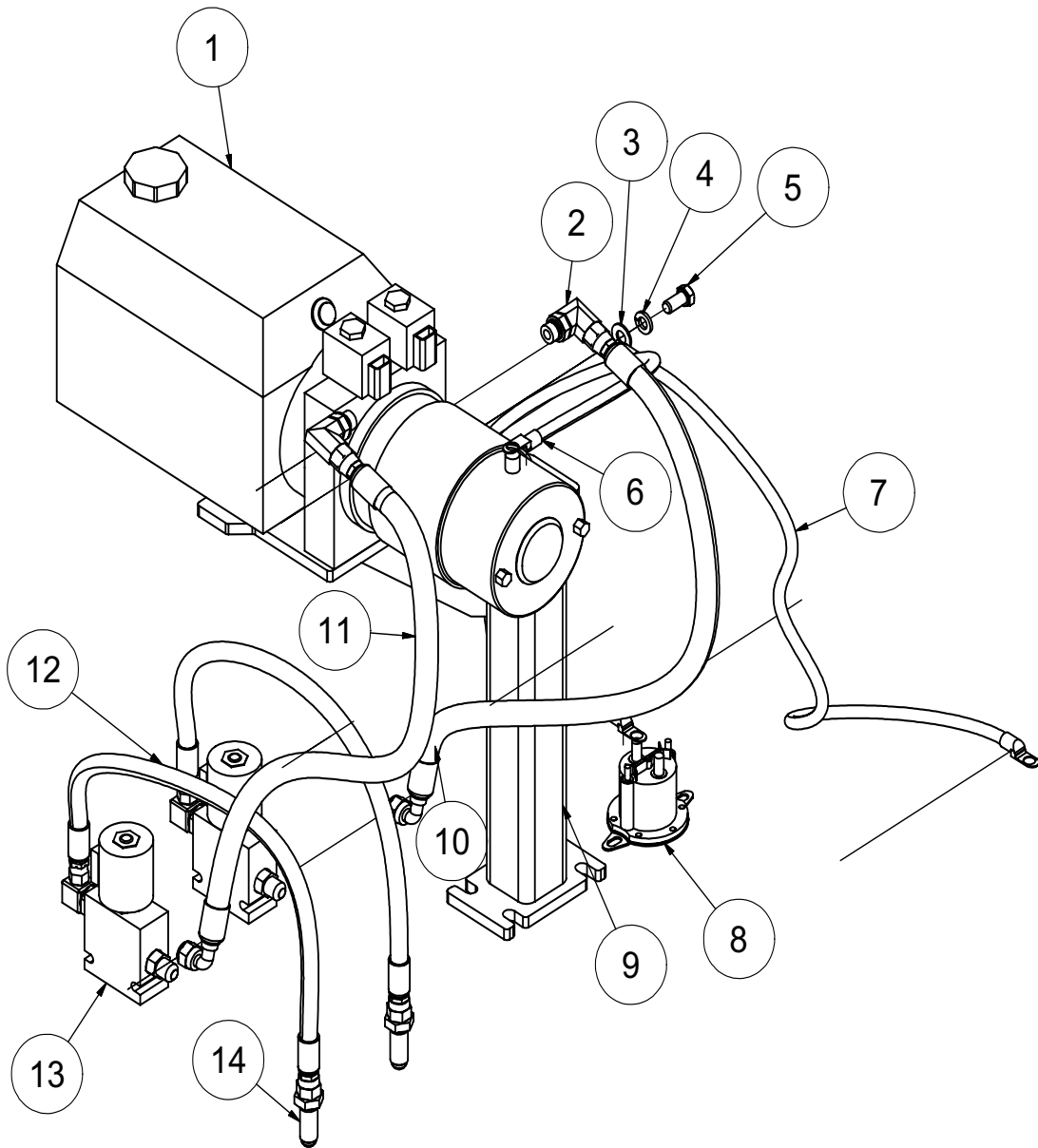


# Control Panel

| ITEM | QTY | PART NO. | DESCRIPTION                           |
|------|-----|----------|---------------------------------------|
| 1    | 1   | 8043128  | CONTROL PANEL - MAIN PLATE            |
| 2    | 1   | J200031  | DECAL - CONTROL PANEL                 |
| 3    | 3   | X000260  | LIGHT LED DUAL PANEL                  |
| 4    | 1   | X000280  | E-STOP                                |
| 5    | 1   | X000273  | ROCKER SWITCH SPST (ON) NONE -OFF     |
| 6    | 1   | X000272  | ROCKER SWITCH DPST (ON) NONE -ON      |
| 7    | 1   | X000272  | ROCKER SWITCH DPST (ON) NONE - ON     |
| 8    | 1   | X000274  | ROCKER SWITCH DPDT (ON) OFF (ON)      |
| 9    | 1   | X100001  | FUEL GAUGE                            |
| 10   | 1   | X000300  | HOUR METER                            |
| 11   | 1   | 8030458  | IGNITION SWITCH                       |
| 12   | 1   | X000271  | ROCKER SWITCH DPST ON - ON            |
| 13   | 2   | X000270  | ROCKER SWITCH SPST ON -OFF            |
| 14   | 1   | X000270  | ROCKER SWITCH SPST ON -OFF            |
|      | 1   | X000271  | ROCKER SWITCH DPST ON -ON             |
| 15   | 1   | X000290  | ROCKER SWITCH PLUG                    |
|      | 1   | X000274  | ROCKER SWITCH DPDT (HYD. JACK OPTION) |
| *    | 1   | 8030829  | KEY, IGNITION - KUBOTA                |

\* NOT SHOWN

# Hydraulic Pump Assembly



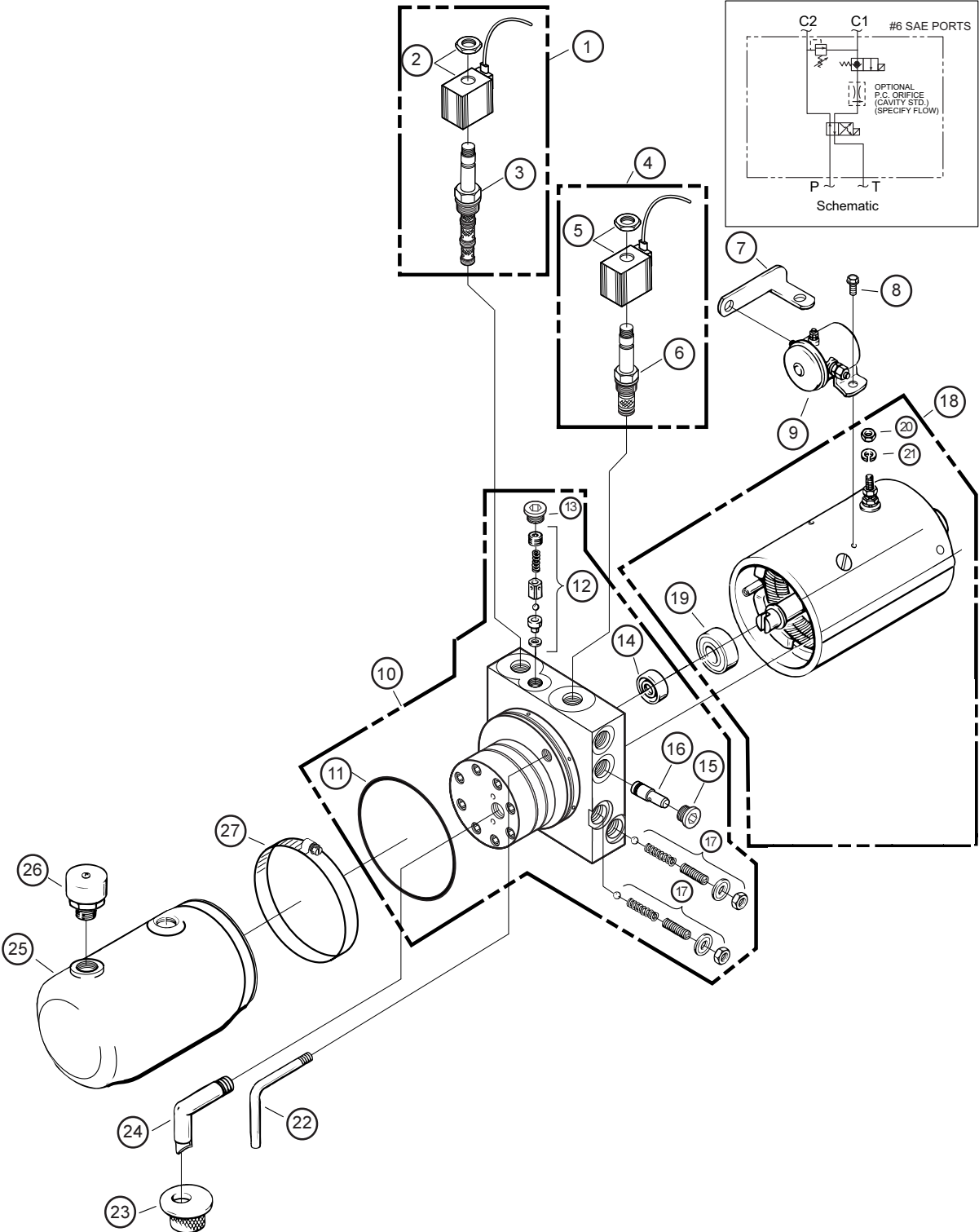


# Hydraulic Pump Assembly

| ITEM | QTY | PART    | DESCRIPTION                            |
|------|-----|---------|--|
| 1    | 1   | 8046300 | PUMP, HYD 12V 6QT                      |
| 2    | 2   | T401250 | ELBOW, 90 3/8" MB-MJ                   |
| 3    | 1   | U200600 | WASHER, FLAT 3/8"                      |
| 4    | 1   | U210060 | WASHER, LOCK 3/8"                      |
| 5    | 1   | U200400 | SCREW, HC 3/8"-16 X .750               |
| 6    | 1   | X300233 | CABLE, BATTERY HOT 1GA 26"             |
|      | 2   | X300251 | LUG, CABLE 1GA 3/8" HOLE               |
| 7    | 1   | X300224 | CABLE, BATTERY GROUND 1GA 21"          |
|      | 2   | X300251 | LUG, CABLE 1GA 3/8" HOLE               |
| 8    | 1   | 8046258 | SWITCH HYD PUMP 12V RELOCATE           |
| 9    | 1   | 8043499 | BRACKET 36/49 12V HYD PUMP             |
| 10   | 1   | 8046685 | HOSE ASSY VAC 6-25" ST-90 (500LE/LEHD) |
|      | 1   | 8046686 | HOSE ASSY VAC 6-22" ST-90 (800LE/LEHD) |
|      | 1   | 8040973 | HOSE ASSY VAC 6-20" ST-90 (73/99)      |
| 11   | 1   | 8046687 | HOSE ASSY VAC 6-23" ST-90 (500LE/LEHD) |
|      | 1   | 8040973 | HOSE ASSY VAC 6-20" ST-90 (800LE/LEHD) |
|      | 1   | 8040973 | HOSE ASSY VAC 6-20" ST-90 (73/99)      |
| 12   | 2   | 8040971 | HOSE ASSY VAC 4-19" ST-ST6FJ (LE/LEHD) |
| 13   | 2   | 8041788 | VALVE, SOLENOID 3-WAY W/ INT C4K       |
| 14   | 2   | T400391 | BULKHEAD 3/8" MJ - 3/8" MJ             |

\* NOT SHOWN

# Hydraulic Pump w/ Bracket



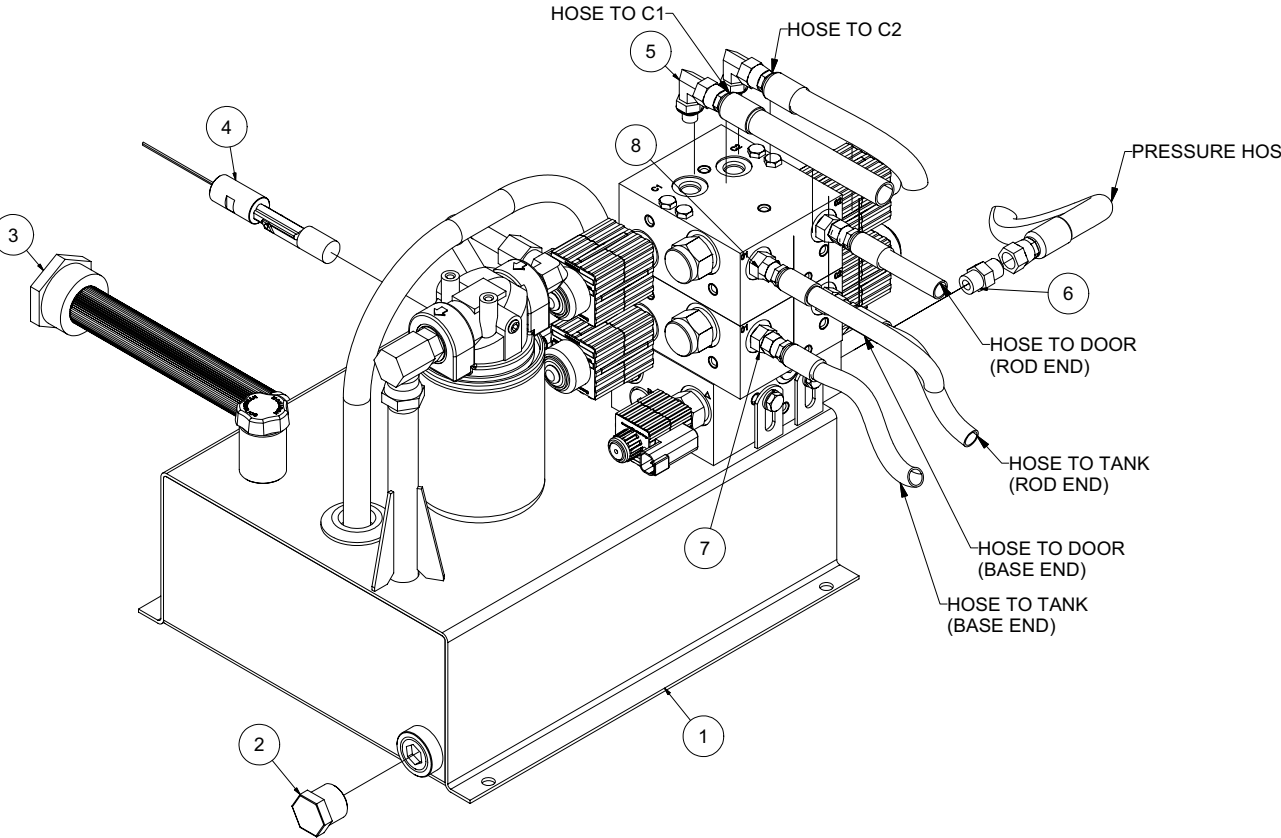
# Hydraulic Pump w/ Bracket

| ITEM | QTY | NUMBER     | DESCRIPTION                                 |
|------|-----|------------|---|
|      | 1   | 8046300    | PUMP, HYD 12V VAC 4.5QT                     |
|      | 2   | U000420    | SCREW, HC 3/8"-16 X 1"                      |
|      | 2   | U210060    | WASHER, LOCK 3/8"                           |
|      | 2   | U200600    | WASHER, FLAT 3/8"                           |
|      | 2   | T400037    | UNION 6MB - 6MJR                            |
|      | 2   | 8040973    | HOSE ASSY VAC 6-20 ST-90                    |
|      | 2   | T400391    | BULKHEAD 6MP - 6MP                          |
| 1    | 1   | 8046300-14 | VALVE, 4-WAY - 2 POSITION                   |
| 2    | 1   | 8046300-15 | COIL, 10 VDC GROUNDED W/ DEUTSCH CONN       |
| 3    | 1   | 8046300-16 | CARTRIDGE, 4-WAY 2 POSITION                 |
| 4    | 1   | 8046300-17 | VALVE, 2-WAY 2 POSITION (12V) GROUNDED      |
| 5    | 1   | 8046300-18 | COIL, 10VDC 2-WAY 2 POS GRND W/DEUTSCH CONN |
| 6    | 1   | 8046300-19 | VALVE, 12V HYD 2-WAY 2 POSITION             |
| 7    | 1   | 8046300-23 | PUMP ASSEMBLY                               |
| 8    | 1   | 8046300-24 | O-RING INDUST 3 5/8" X 3 7/8" X 1/8"        |
| 9    | 1   | 8046300-25 | PARTS KIT - VALVE ASSY, POPPET/BALL CHECK   |
| 10   | 1   | 8046300-26 | PLUG  |
| 11   | 1   | 8046300-27 | SEAL  |
| 12   | 1   | 8046300-28 | PLUG, #8 SAE                                |
| 13   | 2   | 8046300-30 | PARTS KIT, RELIEF VALVE                     |
| 14   | 1   | 8046300-31 | MOTOR, ELECTRIC 12VDC                       |
| 15   | 1   | 8046300-32 | BEARING, BASE MOTOR                         |
| 16   | 1   | 8046300-33 | NUT, HEX 5/16 -24                           |
| 17   | 1   | 8046300-34 | WASHER, LOCK 5/16"                          |
|      | 2   | 8046300-38 | SCREW, HEX HEAD 1/4"-20 X 1 3/8"            |
|      | 1   | 8046300-41 | PLUG, 3/8"NPTF                              |
| 18   | 1   | 8046300-42 | TUBE, RETURN (1/8")                         |
| 19   | 1   | 8046300-43 | SCREEN, FILTER (SUCTION)                    |
| 20   | 1   | 8046300-44 | TUBE, FILTER SUCTION 3/8"NPT 90 DEG         |
| 21   | 1   | 8046300-45 | 6QT RESEVOIR POLY                           |
|      | *   | 8040486-45 | 3QT RESEVOIR POLY                           |
|      | *   | 8046300-48 | 4.5QT RESEVOIR POLY                         |
| 22   | 1   | 8046300-46 | PLUG, VENT 3/8"NPT                          |
| 23   | 1   | 8046300-47 | CLAMP, HOSE WORM GEAR (IN SERIES)           |
| 24   | 1   | 8046258    | SWITCH HYD PUMP 12V                         |
|      |     |            |   |
| *    | 1   | X200002    | HYDRAULIC PUMP WIRE HARNESS                 |
| *    | 1   | 8043499    | HYDRAULIC PUMP MOUNT                        |
|      |     | 8044297    | HYDRAULIC PUMP MOUNT (REVERSE FLOW)         |
|      |     | 8045336    | HYDRAULIC PUMP MOUNT (412 BLOWER)           |

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# Hydraulic PowerPack Assembly

4GPM



# Hydraulic PowerPack Assembly

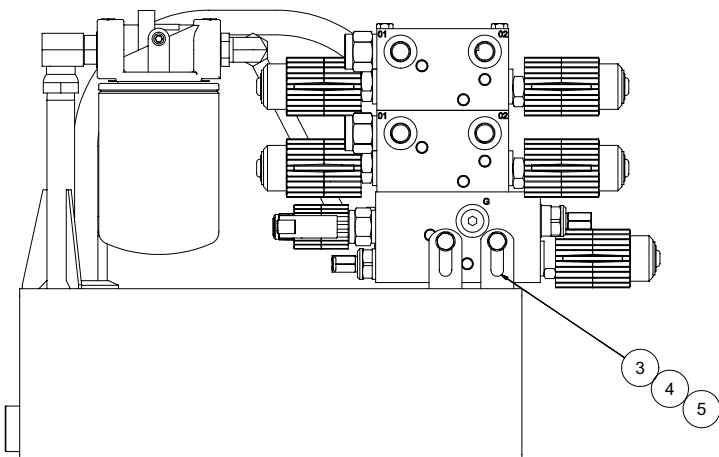
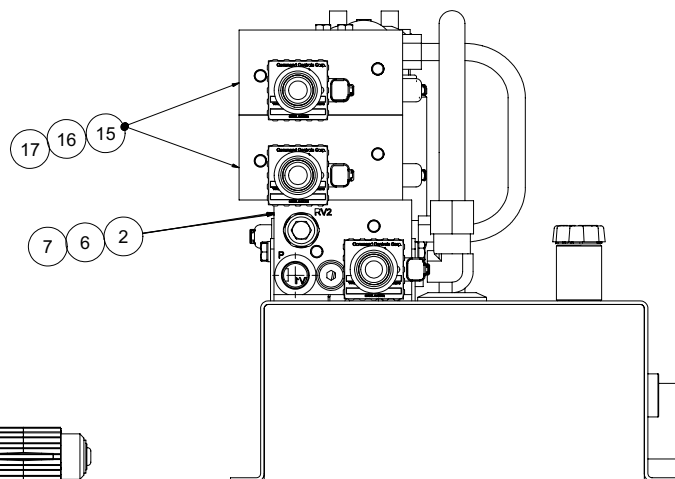
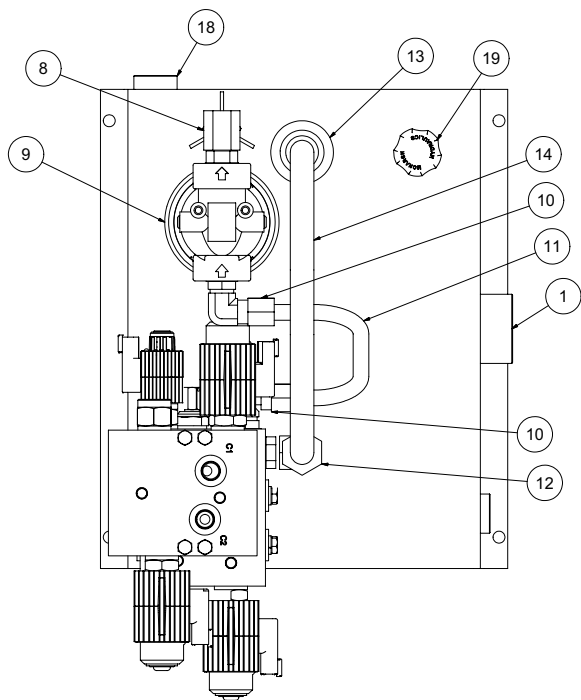
4GPM

| ITEM | QTY | PART    | DESCRIPTION                     |
|------|-----|---------|---------------------------------|
| 1    | 1   | 8046775 | PUMP, HYDRAULIC 4GPM            |
| 2    | 1   | T405065 | PLUG, #12MP                     |
| 3    | 1   | 8011058 | STRAINER SUCTION 1-1/2"ODX1"ID  |
| 4    | 1   | 8046042 | SWITCH, HYD FLUID LEVEL 100PSI  |
| 5    | 2   | T401250 | ELBOW, 90 3/8"MJ - 3/8"MB       |
| 6    | 1   | T400135 | REDUCER, 1/2"MB-3/8"MJ          |
| 7    | 2   | T400037 | UNION, 6MB - 6MJ                |
| 8    | 2   | T400550 | REDUCER, 3/8"MB - 1/4"MJ        |
| *    | 1   | X200011 | HARNESS VAC HYDRAULIC PUMP PACK |
| *    | 1   | X200012 | HARNESS VAC BOOM TANK SWITCH    |

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# Hydraulic PowerPack Components

## 4GPM

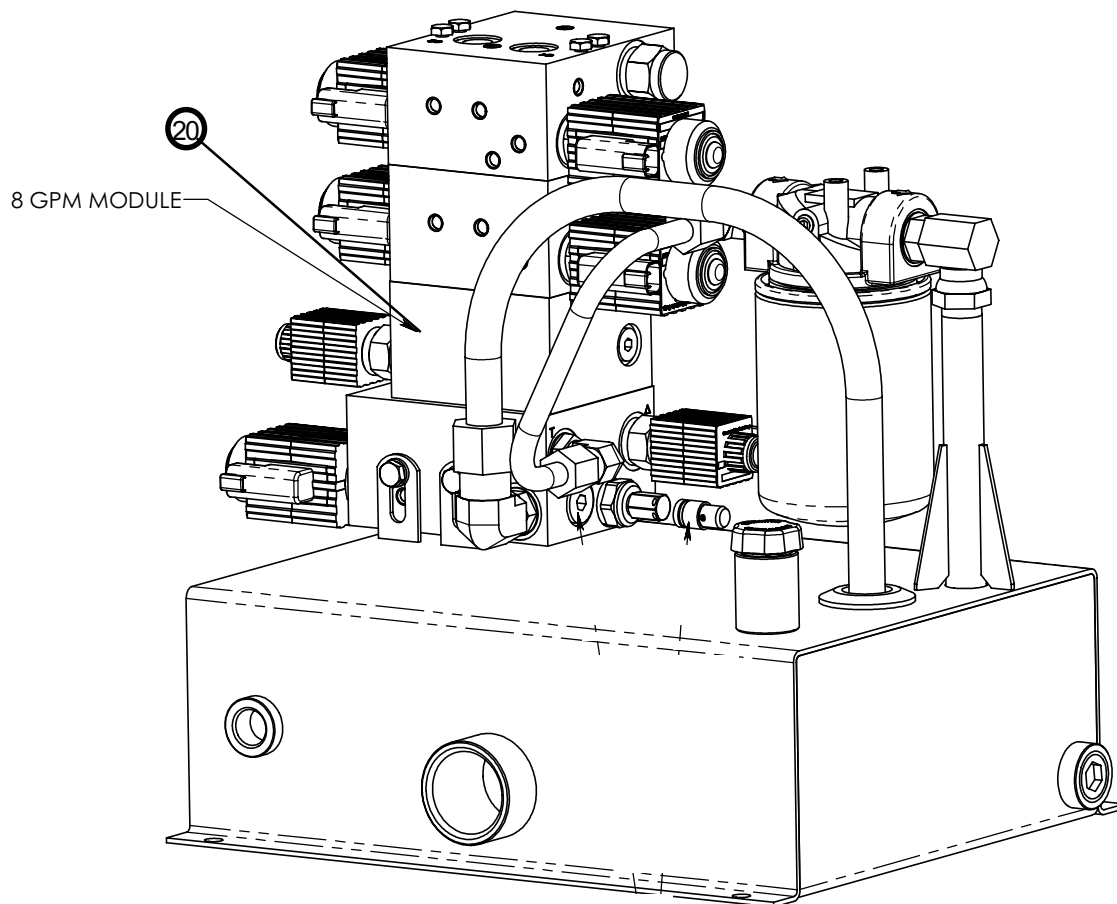


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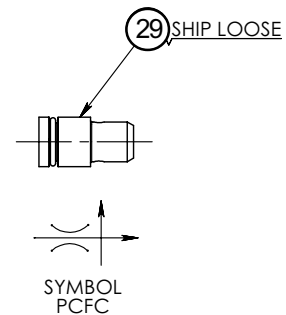
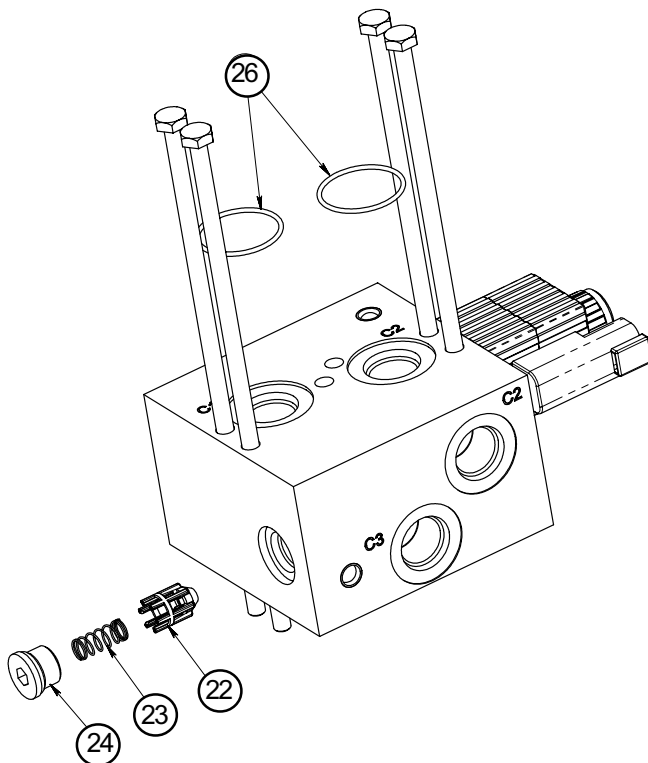
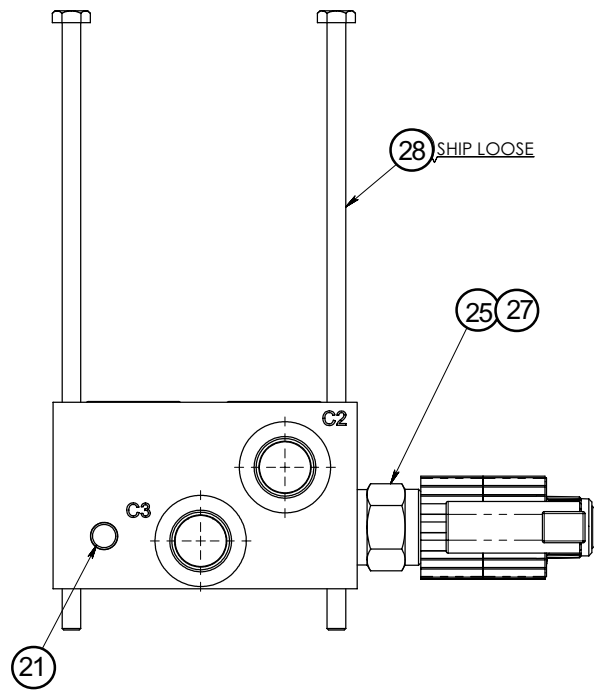
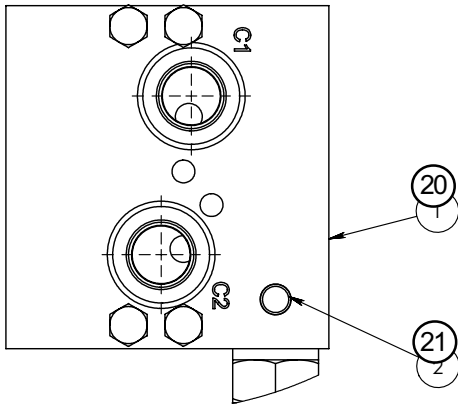
# Hydraulic PowerPack Components (OPTION)

# Aux. Hyd Module



# Hydraulic PowerPack Components (OPTION)

# Aux. Hyd Module



101410-E

VACASSY939



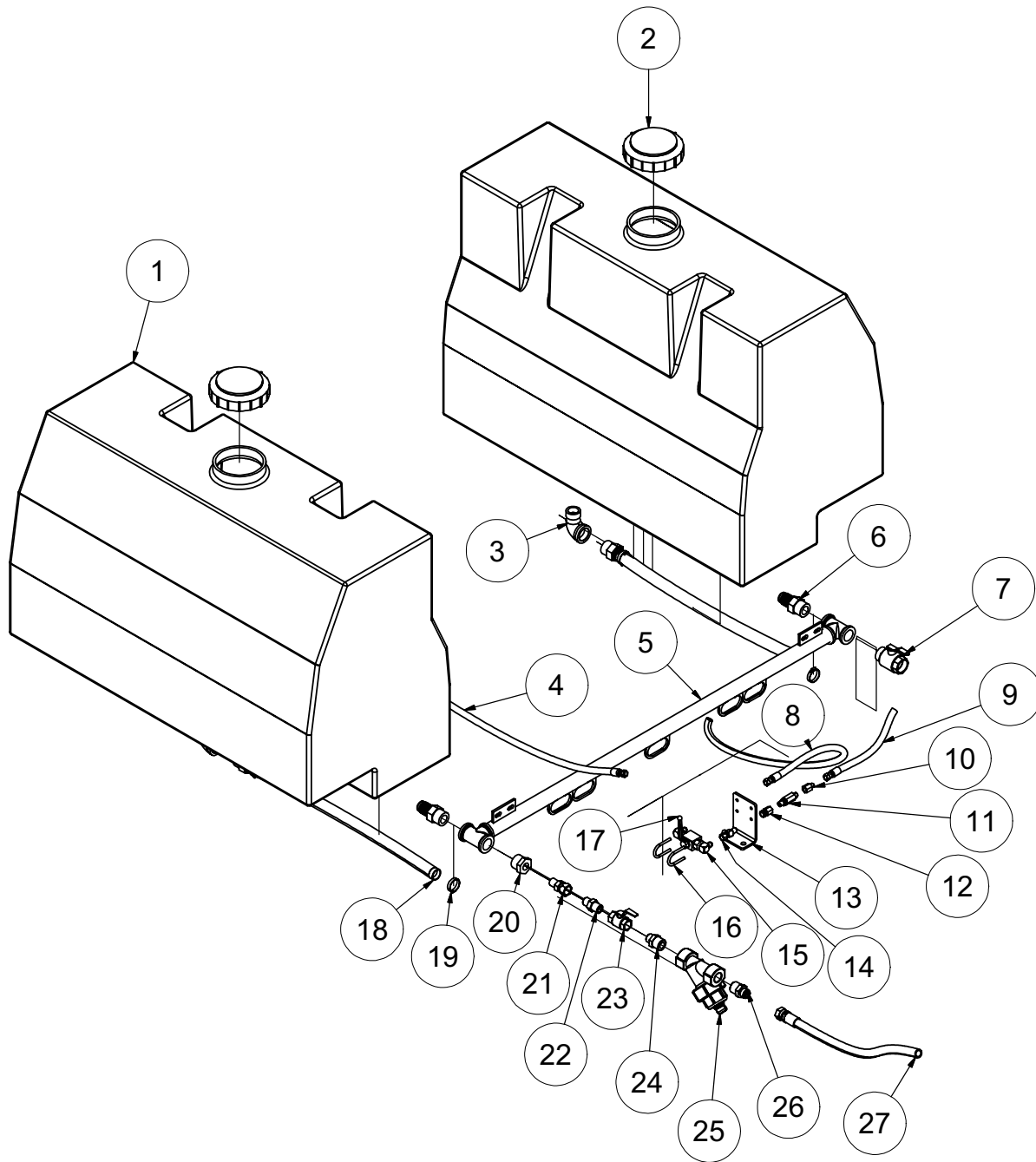
# Hydraulic PowerPack Components

# 4GPM / Aux. Hyd Module

| ITEM | QTY | PART       | DESCRIPTION                          |
|------|-----|------------|--------------------------------------|
|      | 1   | 8046775    | PUMP, HYDRAULIC 4GPM                 |
| 1    | 1   | 8046775-1  | RESV, 5.25 X 11.25 X 15.25           |
| 2    | 1   | 8046775-2  | VALVE ASSY, BOTTOM BLOCK TO PTO      |
| 3    | 4   | 8046775-3  | BRACKET, RESERVOIR MOUNTING TAB      |
| 4    | 4   | 8046775-4  | WASHER, LOCK 5/16                    |
| 5    | 4   | 8046775-5  | SCREW, H.H. CAP, 5/16-18 X 3/4"      |
| 6    | 2   | 8046775-6  | O-RING, 1.13 X 1.25 X 0.06-024       |
| 7    | 1   | 8046775-7  | O-RING, 0.50 X 0.63 X 0.06-014       |
| 8    | 1   | 8046775-8  | FITTING, ELBOW 90DEG SWIVEL ST       |
| 9    | 1   | 8046775-9  | FILTER ASSY, RETURN SPIN-ON 25M      |
| 10   | 2   | 8046775-10 | ELBOW ASSY, 90 MALE, CMPR STEEL      |
| 11   | 1   | 8046775-11 | TUBE, RETURN 180 DEG, 3/4"           |
| 12   | 1   | 8046775-12 | ELBOW ASSY, 90 MALE, CMPR, STEEL     |
| 13   | 1   | 8046775-13 | GROMMET, UNISEAL 1/2" PIPE           |
| 14   | 1   | 8046775-14 | TUBE, RETURN 180 DEG 3/4"            |
| 15   | 2   | 8046775-15 | VALVE ASSY, 12VDC, 4W, SANDWICH      |
| 16   | 2   | 8046775-16 | O-RING, 0.88 X 1.00 X 0.06-020       |
| 17   | 4   | 8046775-17 | SCREW, HEX HD CAP, 1/4"-20 X 5 1/2"  |
| 18   | 1   | 8046775-18 | PLUG, 3/4"-14, PTFM, FLUSH, STEEL    |
| 19   | 1   | 8046775-19 | PLUG, RESEV, BREATHER-FILLER         |
| 20   | 1   | 8046777    | MANIFOLD HYD AUXILIARY CIRCUIT       |
| 21   | 2   | 8046777-21 | PLUG, EXPANDER, BALL TYPE, 9MM       |
| 22   | 1   | 8046777-22 | POPPET, CHECK                        |
| 23   | 1   | 8046777-23 | SPRING, LIGHT CHECK VALVE M-SR       |
| 24   | 1   | 8046777-24 | PLUG, SAE O-RING, 9/16-18 HEX SO     |
| 25   | 1   | 8046777-25 | CARTRIDGE, 2W / 2P, NO, SIZE 8, POPP |
| 26   | 2   | 8046777-26 | O-RING, 1.13 X 1.25 X 0.06-024       |
| 27   | 1   | 8046777-27 | COIL, 12VDC, 36W, SQ, DEUTSCH        |
| 28   | 4   | 8046777-28 | SCREW, HEX HD CAP, 1/4"-20 X 8.00    |
| 29   | 1   | 8046777-29 | POPPET ASSY, P CMP FL, GPM 3.00      |

# Water Tank Assembly

# 125 Gallon Saddle Tanks



# Water Tank Assembly

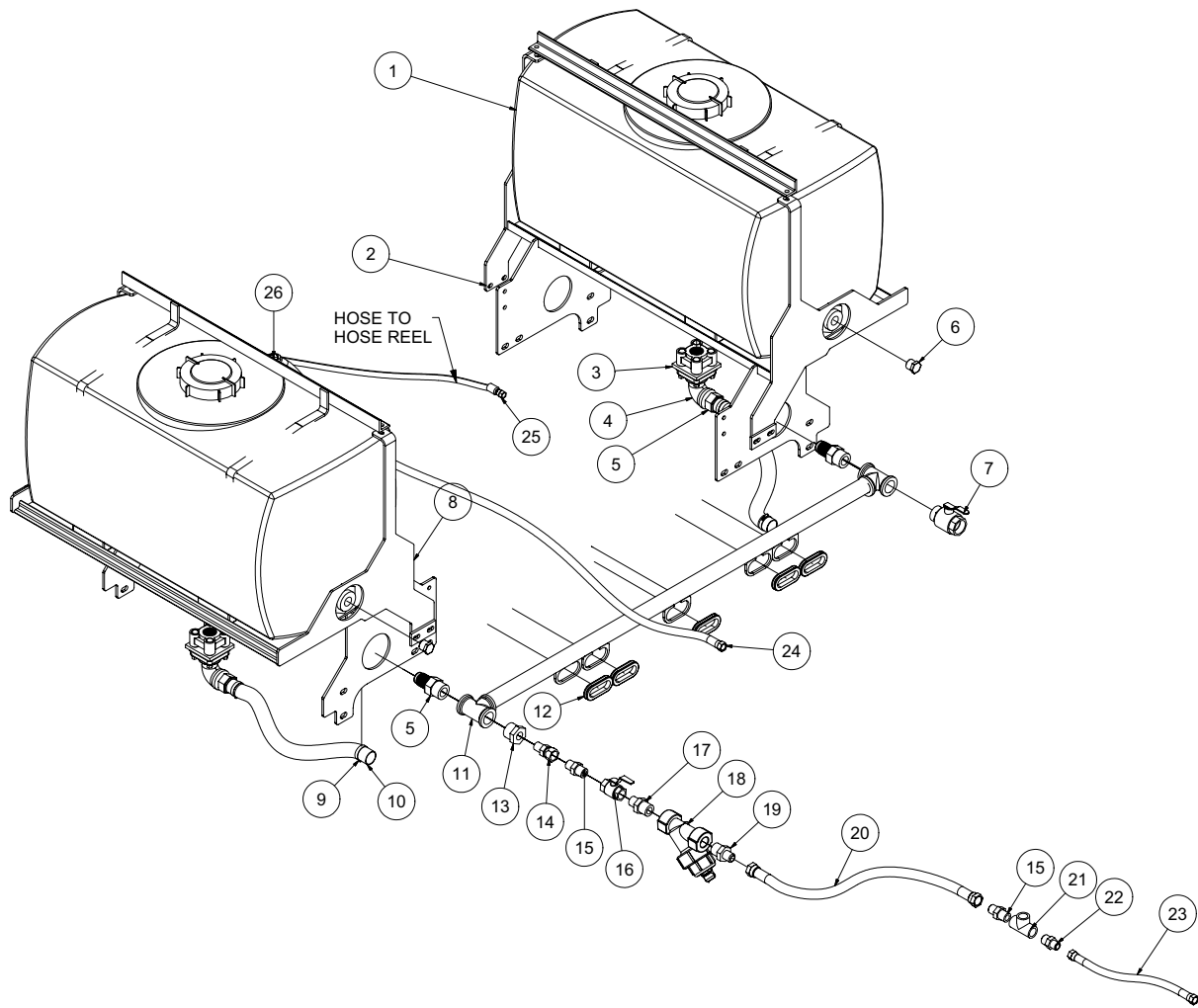
# 125 Gallon Saddle Tanks

| ITEM | QTY | PART NO.  | DESCRIPTION                                |
|------|-----|-----------|--|
| 1    | 1   | 8046162   | TANK, WATER 125 GAL (CURB SIDE)            |
|      | 1   | 8045093   | BULKHEAD 1 1/4" BOTTOM FEED                |
|      | 1   | 8046162   | TANK, WATER 125 GAL (STREET SIDE)          |
|      | 1   | 8045093   | BULKHEAD 1 1/4" BOTTOM FEED                |
| 2    | 2   | 8041119   | WATER TANK LED                             |
| 3    | 2   | 8041311   | ELBOW, STREET 1 1/4"                       |
| 4    | 1   | 8041477   | HOSE REEL TO BALL VALVE HOSE 6-140" ST-ST  |
| 5    | 1   | 8045810   | BRACKET WATER TANK LE HEADER               |
| 6    | 4   | 8041312   | FITTING, HOSE BARB 1 1/4"                  |
| 7    | 1   | 8045813   | VALVE, BALL 1 1/4" M X F BRASS             |
| 8    | 1   | 8043949   | BALL VALVE TO TANK CLEANOUT 6 - 215" ST-ST |
| 9    | 1   | 8043664   | BALL VALVE TO WATER PUMP 6 - 36" ST-90     |
| 10   | 1   | 8031126   | UNION, 4FP - 6MJ                           |
| 11   | 1   | 8030923   | FILTER, WATER HIGH PRESSURE                |
| 12   | 1   | 8031125   | REDUCER, 1/4FP - 3/8FJ                     |
| 13   | 1   | 8040670   | BALL VALVE BRACKET                         |
| 14   | 1   | T402153   | TEE, 6MJ - 6MJ - 6FJ                       |
| 15   | 2   | T401102   | ELBOW, 6MJ - 6MP                           |
| 16   | 2   | U010017   | U-BOLT .250 - 20                           |
|      | 4   | U200020   | WASHER, FLAT 1/4"                          |
|      | 4   | U120100   | NUT, LOCK 1/4"-20                          |
| 17   | 1   | 8030351   | BALL VALVE 3/8"                            |
| 18   | 2   | 8041523   | HOSE, VAC CLEAR VINYL 1 1/4" - 24          |
| 19   | 4   | 8040677   | CLAMP, HOSE 1 1/4" - 2 1/8" HD             |
| 20   | 1   | T403100   | REDUCER, 20MP - 12FP                       |
| 21   | 1   | T400101   | UNION, 12FJ - 12MP                         |
| 22   | 1   | T400100   | UNION, 12MJ - 12MP                         |
| 23   | 1   | T000185   | BALL VALVE, BRASS 3/4"FP                   |
| 24   | 1   | T404060   | REDUCER, 16MP - 12MP                       |
| 25   | 1   | 8040186   | STRAINER                                   |
|      | 1   | 8040186-1 | END CAP                                    |
|      | 1   | 8040186-2 | GASKET                                     |
|      | 1   | 8040186-3 | STRAINER PLUG                              |
|      | 1   | 8040186-4 | FKM O-RING                                 |
|      | 1   | 8040186-5 | STRAINER MESH SCREEN 80                    |
|      | 1   | 8040186-6 | Y-BODY                                     |
|      | 1   | 8040186-7 | EPDM O-RING                                |
| 26   | 1   | T400450   | REDUCER, 12MJ - 16MP                       |
| 27   | 1   | 8041058   | HOSE VAC PUSH 12-36"                       |
|      | 2   | 8030525   | FITTING HOSE 12FJ PUSHLOCK                 |
| *    | 1   | 8045799   | WATER TANK FRAMES 125 STREETSIDE           |
| *    | 1   | 8045809   | WATER TANK FRAMES 125 CURB SIDE            |
| *    | 1   | 8043806   | SWITCH, WATER TANK BOTTOM SHORT            |
| *    | 1   | 8046803   | HOSE VAC PUSH 8-79                         |
| *    | 2   | 8030524   | FITTING, PUSH LOCK #8                      |
| *    | 1   | 8030518   | ELBOW, 45 1/2" MJ BULKHEAD                 |

\* NOT SHOWN

# Water Tank Assembly

# 50Gallon Saddle Tanks LE



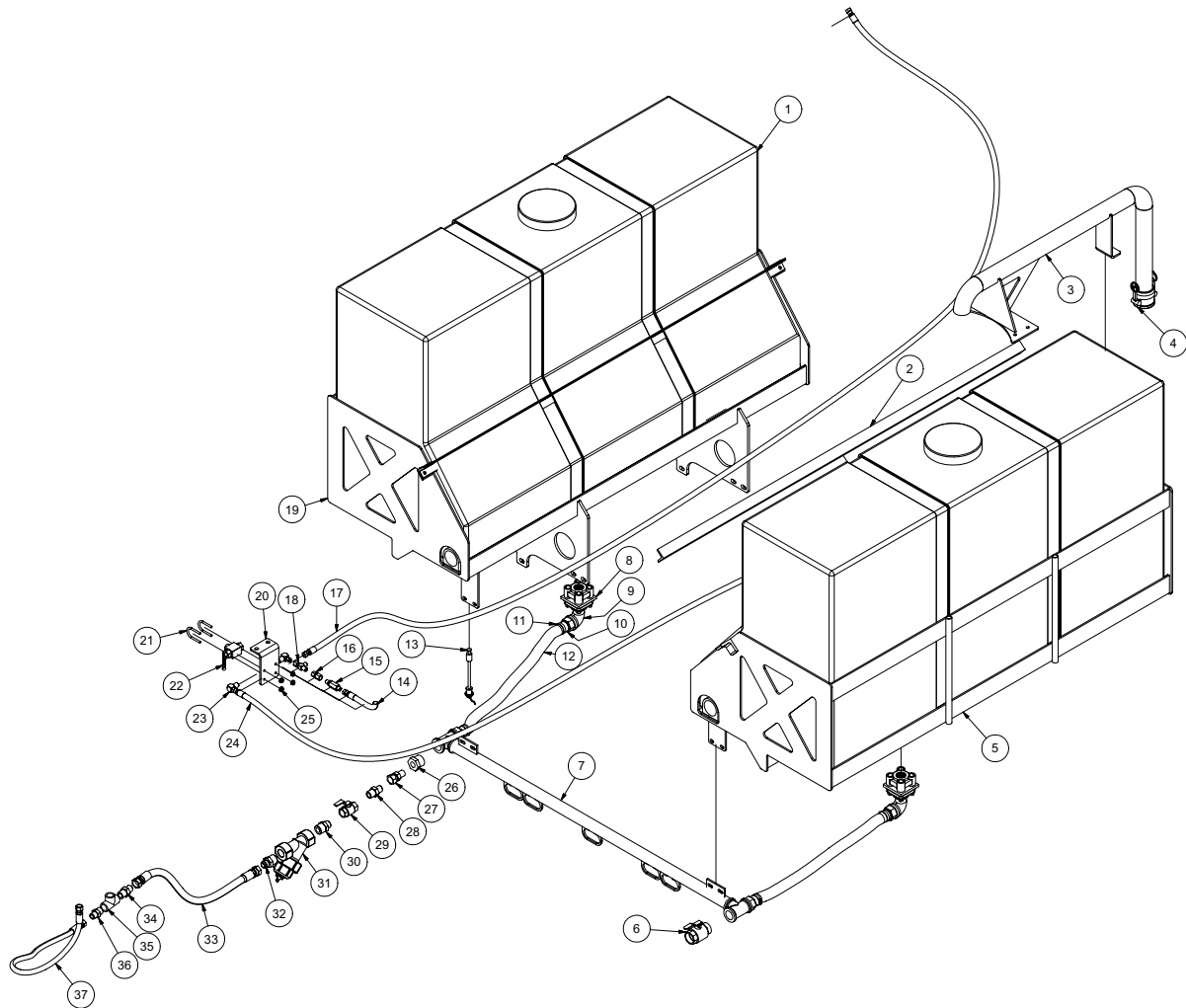
# Water Tank Assembly

# 50Gallon Saddle Tanks 31LE

| ITEM | QTY | PART NO.  | DESCRIPTION                         |
|------|-----|-----------|-------------------------------------|
| 1    | 2   | 8034151   | 50 GALLON WATER TANK                |
| 2    | 1   | 8045815   | WATER TANK FRAME (STREET)           |
|      | 1   | 8046631   | WATER TANK HOLD DOWN                |
| 3    | 2   | 8045093   | BULKHEAD, 1 1/4" BOTTOM DRAIN BANJO |
| 4    | 2   | 8041311   | ELBOW, 90 1 1/4" STREET GALVAN      |
| 5    | 4   | 8041312   | FITTING, 1 1/4"MP - 1 1/4"HB        |
| 6    | 2   | T405065   | PLUG #12MP                          |
| 7    | 1   | 8045813   | VALVE, BALL 1 1/4" M x F BRASS      |
| 8    | 1   | 8045816   | WATER TANK FRAME (CURB)             |
|      | 1   | 8046631   | WATER TANK HOLD DOWN                |
| 9    | 4   | 8040677   | CLAMP, HOSE 1 1/4" - 2 1/8" HD      |
| 10   | 2   | 8041523   | HOSE VAC CLEAR VINYL 1 1/4" - 24"   |
| 11   | 1   | 8045810   | WATER HEADER LE                     |
| 12   | 5   | 8042812   | GROMMET 2" ID X 3" OD X 1 1/4"WOG   |
| 13   | 1   | T403100   | REDUCER, 1 1/4"MP - 3/4"FP          |
| 14   | 1   | T400101   | UNION, 3/4"FJ - 3/4"MP              |
| 15   | 2   | T400100   | UNION, 3/4"MP - 3/4"MJ              |
| 16   | 1   | T000185   | VALVE, BALL 3/4" FNPT BRASS         |
| 17   | 1   | T404060   | REDUCER, 1"MP - 3/4"MP              |
| 18   | 1   | 8040186   | STRAINER, Y 1" BANJO                |
|      | 1   | 8040186-1 | END CAP                             |
|      | 1   | 8040186-2 | GASKET                              |
|      | 1   | 8040186-3 | STRAINER PLUG                       |
|      | 1   | 8040186-4 | FKM-O-RING                          |
|      | 1   | 8040186-5 | STRAINER MESH SCREEN 80             |
|      | 1   | 8040186-6 | Y-BODY                              |
|      | 1   | 8040186-7 | EPMD O-RING                         |
| 19   | 1   | T400450   | REDUCER 1"MP - 3/4"MJ               |
| 20   | 1   | 8044638   | HOSE VAC PUSH 12 - 40"              |
| 21   | 1   | T402160   | TEE, 3/4"FP - 3/4"FP - 3/4"FP       |
| 22   | 1   | T400080   | REDUCER, 12MP - 8MJ                 |
| 23   | 1   | 8041322   | HOSE VAC PUSH 8 - 20"               |
| 24   | 1   | 8041059   | HOSE VAC PUSH 8 - 66"               |
| 25   | 1   | 8041476   | HOSE ASSY VAC 6 - 150" ST-90        |
| 26   | 1   | 8030518   | ELBOW, 45 1/2" MJ BULKHEAD          |

# Water Tank Assembly

# 205 Gallon Saddle Tanks



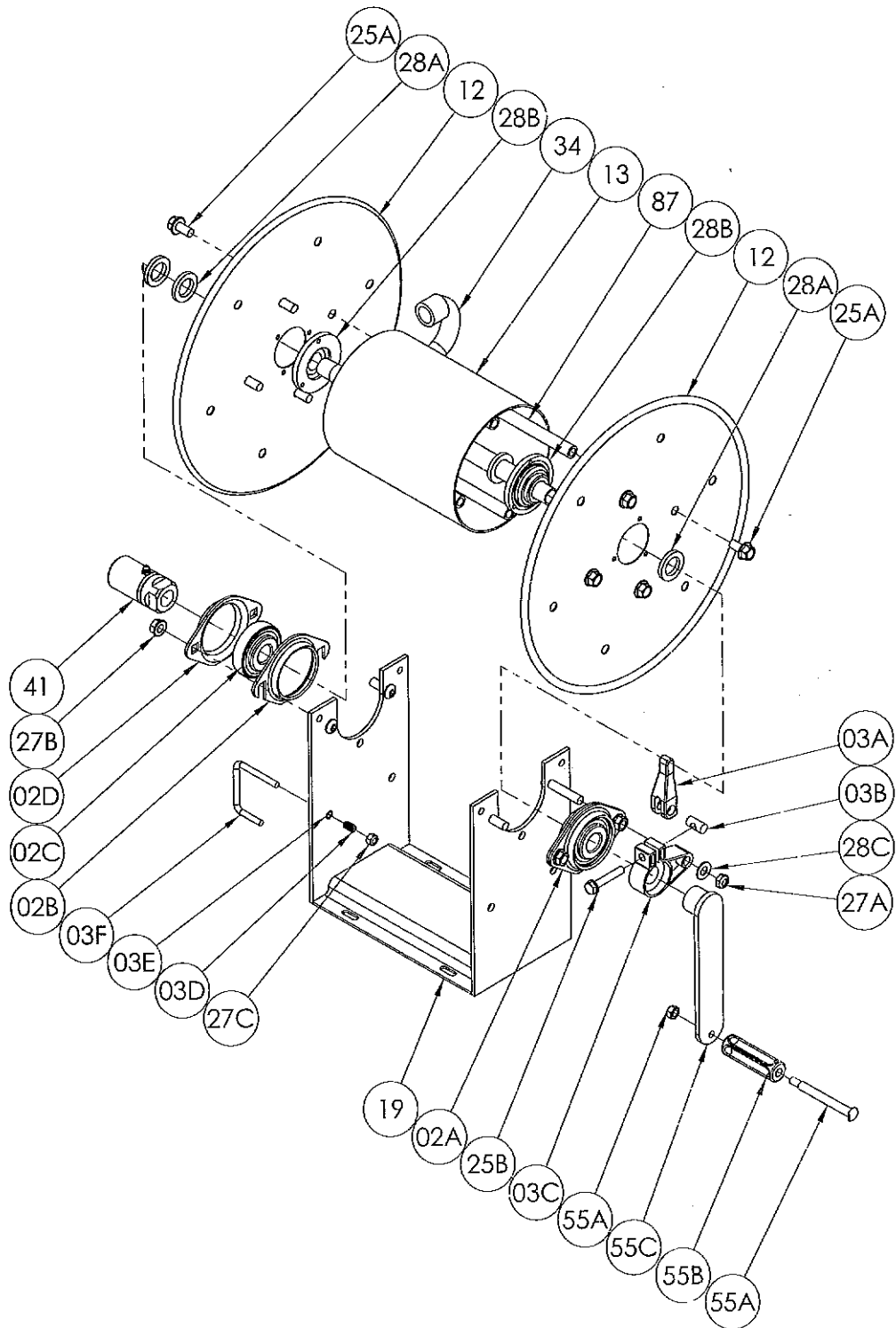
# Water Tank Assembly

# 205 Gallon Saddle Tanks

| ITEM | QTY | NUMBER    | DESCRIPTION                                    |
|------|-----|-----------|--|
| 1    | 2   | 8043805   | TANK, WATER 205 GAL. POLY.                     |
|      | 1   | 8030518   | 1/2" BULKHEAD 45DEG                            |
| 2    | 2   | 8044390   | WATER TANK ANGLE HOLDER                        |
| 3    | 1   | 8046528   | QUICKFILL 205GAL SADDLE                        |
| 4    | 1   | 8031219   | COUPLING, 2" ALUM MP X FCAMLOCK                |
| 5    | 1   | 8046177   | WATER TANK BRACKET 205 (STREETSIDE)            |
| 6    | 1   | 8045813   | VALVE, BALL 1 1/4" Mx F BRASS                  |
| 7    | 1   | 8045810   | WATER HEADER LE                                |
| 8    | 2   | 8045093   | BULKHEAD 1 1/4" BOTTOM DRAIN BANJO             |
| 9    | 2   | T420120   | STREET ELBOW 90, 1 1/4"                        |
| 10   | 4   | 8044266   | FITTING, HOSE BARB 20HB - 20MP                 |
| 11   | 4   | 8040677   | CLAMP, HOSE 1 1/4" - 2 1/8" HD                 |
| 12   | 2   | 8041523   | HOSE VAC CLEAR VINYL 1 1/4" - 24"              |
| 13   | 1   | 8043806   | SWITCH, WATER TANK BOTTOM MNT                  |
| 14   | 1   | 8043664   | BALL VALVE TO WATER PUMP #6 - 36" ST-90        |
| 15   | 1   | 8030923   | FILTER, WATER HIGH PRESSURE                    |
| 16   | 1   | 8031125   | UNION, 4FP - 6FJ                               |
| 17   | 1   | 8041477   | HOSE REEL TO BALL VALVE #6 - 140" ST-ST        |
| 18   | 1   | T402153   | TEE, 6MJ - 6MJ - 6FJ                           |
| 19   | 1   | 8046178   | WATER TANK BRACKET 205 (CURB SIDE)             |
| 20   | 1   | 8040670   | BALL VALVE BRACKET                             |
| 21   | 2   | U010017   | 1 1/2" CLAMP HOOK 1/4-20 THD                   |
| 22   | 1   | 8030351   | STEEL BALL VALVE, 3/8NPT                       |
| 23   | 2   | T401102   | ELBOW, 6MJ - 6MP                               |
| 24   | 1   | 8043949   | BALL VALVE TO TANK CLEANOUT HOSE #6-215" ST-90 |
| 25   | 4   | U120142   | NUT, LOCK FLANGED .250 - 20 G2                 |
|      | 4   | U200020   | WASHER, FLAT 1/4"                              |
| 26   | 1   | T403100   | REDUCER, 20MP - 12FP                           |
| 27   | 1   | T400101   | UNION, 12FJ - 12MP                             |
| 28   | 1   | T400100   | UNION, 12MJ - 12MP                             |
| 29   | 1   | T000185   | BALL VALVE, BRASS 3/4" FP                      |
| 30   | 1   | T404060   | REDUCER, 16MP - 12MP                           |
| 31   | 1   | 8040186   | STRAINER                                       |
|      | 1   | 8040186-1 | END CAP  |
|      | 1   | 8040186-2 | GASKET   |
|      | 1   | 8040186-3 | STRAINER PLUG                                  |
|      | 1   | 8040186-4 | FKM O-RING                                     |
|      | 1   | 8040186-5 | STRAINER MESH SCREEN 80                        |
|      | 1   | 8040186-6 | Y-BODY   |
|      | 1   | 8040186-7 | EPDM O-RING                                    |
| 32   | 1   | T400450   | REDUCER, 12MJ - 16MP                           |
| 33   | 1   | 8041058   | HOSE VAC PUSH 12 - 36"                         |
| 34   | 1   | T400100   | UNION, 12MP - 12MJ                             |
| 35   | 1   | T402160   | TEE, 3/4FP - 3/4FP - 3/4FP                     |
| 36   | 1   | T400080   | UNION, 12MP - 8MJ                              |
| 37   | 1   | 8041322   | HOSE VAC PUSH 8 - 20"                          |

\* NOT SHOWN

# Hose Reel (Components)

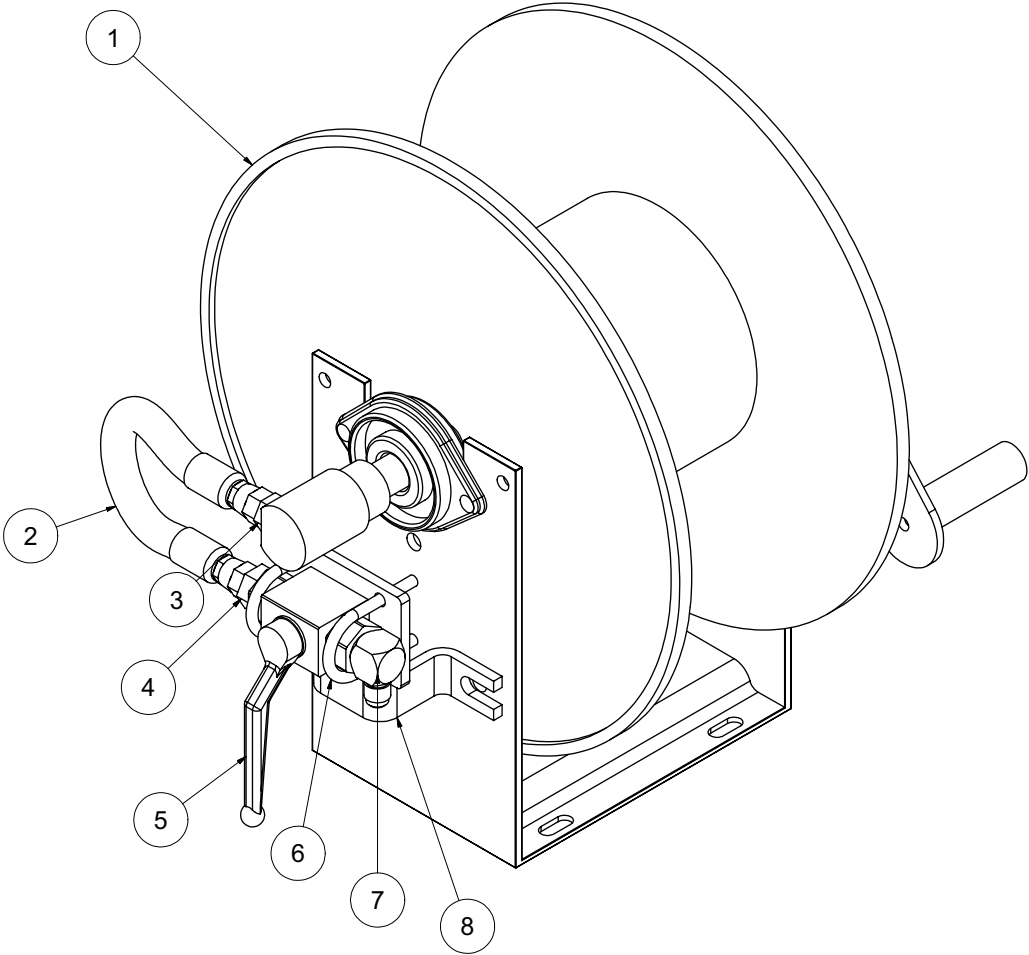




# Hose Reel Assembly

| ITEM | QTY | NUMBER      | DESCRIPTION  |
|------|-----|-------------|--|
|      | 1   | 8030879     | HOSE REEL, WATER 3/8" X 100  |
| 1    | 2   | 8030879-02A | 1/2" SELF ALIGNING BEARING for 1000 SERIES (INCLUDES 02B, 02C and 02D) |
| 2    | 2   | 8030879-02B | SELF ALIGNING BEARING HOLDER SLOTTED                                   |
| 3    | 2   | 8030879-02C | 1/2" SELF ALIGNING BEARING INSERT                                      |
| 4    | 2   | 8030879-02D | SELF ALIGNING BEARING HOLDER   |
| 5    | 1   | 8030879-03A | CAM LOCK LEVER   |
| 6    | 1   | 8030879-03B | BRASS BARREL NUT for CAM LOCK BRAKE                                    |
| 7    | 1   | 8030879-03C | CAM LOCK DRAG BRAKE BODY for 1/2" HUBS                                 |
| 8    | 1   | 8030879-03D | SPRING for PL-3 PINLOCK (1" LONG X 0.32"OD X 0.26"ID)                  |
| 9    | 1   | 8030879-03E | PINLOCK MOUNTING SLEEVE (NOT FIELD INSTALLABLE)                        |
| 10   | 1   | 8030879-03F | PL-3 PINLOCK   |
| 11   | 1   | 8030879-03G | CAM LOCK KIT (INCLUDES 03A, 03B, 03C and 25B)                          |
| 12   | 1   | 8030879-03H | PL-3 PINLOCK KIT (INCLUDES 03D, 03E, 03F and 27C)                      |
| 13   | 2   | 8030879-12  | (14-16) 14.25" DIAMETER DISC 18GA STEEL - SPECIFY MODEL                |
| 14   | 1   | 8030879-13  | DRUM, 6" DIAMETER ALUMINUM - SPECIFY MODEL                             |
| 15   | 1   | 8030879-19  | STEEL FRAME ASSY. FOR 1000 SERIES REEL - SPECIFY MODEL                 |
| 16   | 8   | 8030879-25A | 3/8" -16 X 3/4" SPINLOCK BOLT  |
| 17   | 1   | 8030879-25B | 5/16" -18 X 1 3/4" HEX HEAD BOLT w/ NYLOCK PATCH                       |
| 18   | 1   | 8030879-27A | 3/8" - 16 HEX HEAD NUT (ESNA)  |
| 19   | 4   | 8030879-27B | 3/8"- 16 SPINLOCK NUT  |
| 20   | 1   | 8030879-27C | 1/4"-20 HEX HEAD HUT (ESNA)  |
| 21   | 3   | 8030879-28A | 1 3/8"OD X 7/8"ID X 3/16" HUB SPACER WASHER                            |
| 22   | 2   | 8030879-28B | 1/2" HUB DISC WASHER, per P28A-00050                                   |
| 23   | 1   | 8030879-28C | 3/8" SAE FLAT WASHER (13/16"OD)  |
| 24   | 1   | 8030879-34  | 1/2" WELDED STEEL HUB - SPECIFY MODEL and OUTLET FITTING               |
| 25   | 1   | 8030879-41  | 1/2" 90 DEGREE F x F SUPER SWIVEL (AFLAS PACKING)                      |
| 26   | 1   | 8030879-55A | 3/8" SHOULDER BOLT and NUT for plastic crank handle                    |
| 27   | 1   | 8030879-55B | BLACK PLASTIC CRANK HANDLE   |
| 28   | 1   | 8030879-55C | HAND CRANK (INCLUDES 55A and 55B)                                      |
| 29   | 4   | 8030879-87  | ANODIZED ALUMINUM THREADED SPACER TUBE                                 |

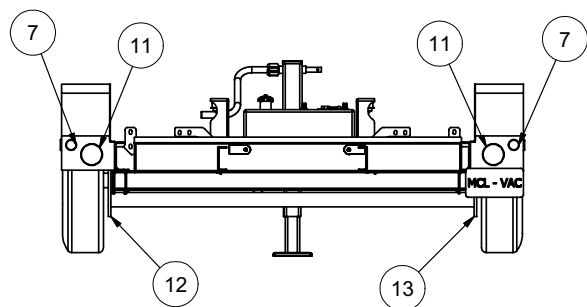
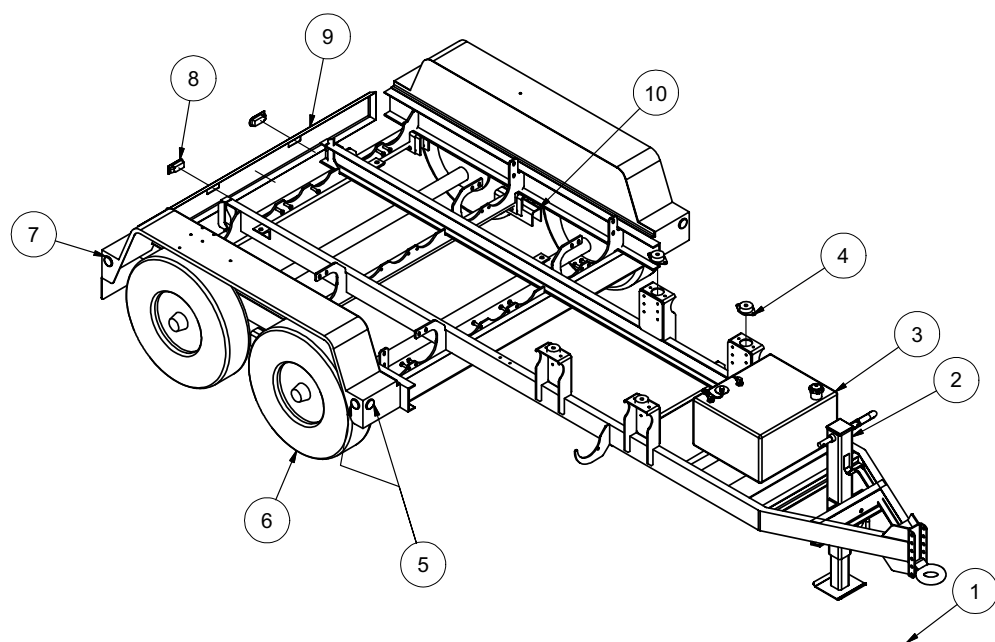
# Hose Reel Assembly



# Hose Reel Assembly

| ITEM | QTY | NUMBER  | DESCRIPTION                          |
|------|-----|---------|--------------------------------------|
| 1    | 1   | 8030879 | HOSE REEL, WATER 3/8" X 100          |
| 2    | 1   | 8044147 | HOSE ASSY VAC 6-10 ST-ST             |
|      | 2   | T320040 | FITTING, HOSE 6HO-6FJ                |
| 3    | 1   | 8031291 | UNION, 1/2"MP - 3/8"MJ               |
| 4    | 1   | T400028 | UNION, 3/8"MP - 3/8"MJ               |
| 5    | 1   | 8030351 | STEEL BALL VALVE - 3/8"NPT           |
| 6    | 2   | U010017 | 1 1/2" CLAMP HOOK 1/4 - 20 THD       |
| 7    | 1   | T401102 | ELBOW 6MJ - 6MP                      |
| 8    | 1   | 8046740 | BALL VALVE BRACKET                   |
| *    | 1   | 8041830 | HOSE ASSY 3/8" X 30' 4000PSI         |
| *    | 1   | 8030504 | REDUCER, 3/8" FP - 1/4"MP            |
| *    | 1   | 8030526 | FITTING, QD WATER 1/4"FJ - 1/4"FP SS |

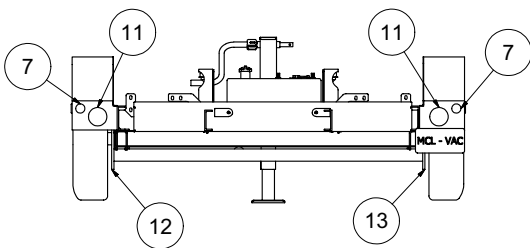
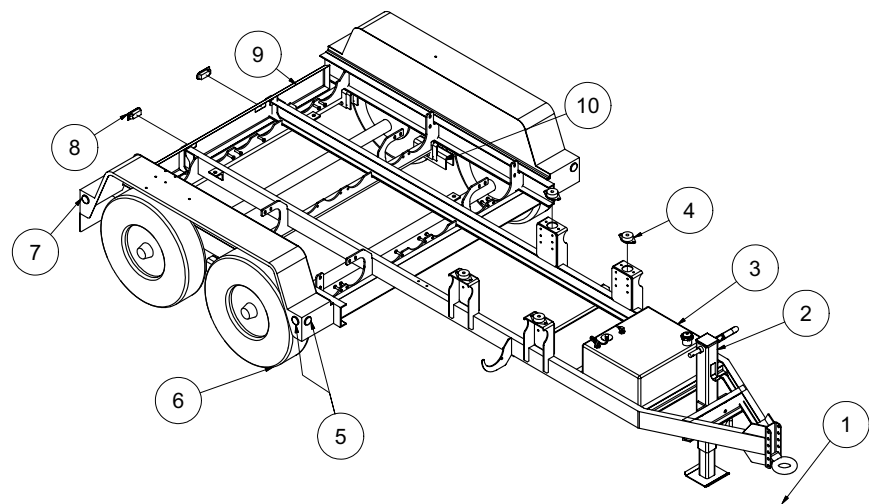
# Trailer Assy 599LE



# Trailer Assy 599LE

| ITEM | QTY | PART #    | DESCRIPTION                           |   |           |  |
|------|-----|-----------|---------------------------------------|---|-----------|--|
| 1    | 1   | 8043980   | PINTLE EYE                            | * | NOT SHOWN |  |
| 2    | 1   | 8043548   | JACK - MANUAL                         | * | 1         | 8043981 SAFETY CHAIN                     |
|      | 1   | 8043984   | JACK - HANDLE                         | * | 1         | 8043982 BREAKAWAY SWITCH                 |
|      | 1   | 8043786   | JACK - TWO SPEED                      | * | 1         | 8044007 6-WAY PLUG                       |
| 3    | 1   | 8042380   | FUEL TANK 22 GAL                      | * | 1         | 8045929 TIRE, SPARE W / WHEEL 599TRAILER |
|      | 1   | 8043359   | STRAP W/ EYEBOLT                      |   |           |  |
|      | 1   | 8042380-1 | FUEL TANK CAP                         |   |           |  |
|      | 1   | 8041725   | FUEL SENDING UNIT                     |   |           |  |
|      | 1   | 8041725-1 | SENDING UNIT GASKET                   |   |           |  |
|      | 1   | 8045686   | FUEL LINE SUPPLY 30"                  |   |           |  |
|      | 1   | 8040965   | FUEL LINE RETURN - FILTER TO TANK 58" |   |           |  |
| 4    | 4   | 8030904   | ISOLATOR 840LB                        |   |           |  |
|      | 4   | U000560   | SCREW, HC 3/8" - 16 X 3"              |   |           |  |
|      | 4   | 8030851   | WASHER, SNUBBLING                     |   |           |  |
|      | 4   | U120110   | NUT, LOCK 3/8" - 16                   |   |           |  |
|      | 8   | U000420   | SCREW, HC 3/8" - 16 X 1"              |   |           |  |
|      | 24  | U200060   | WASHER, FLAT 3/8"                     |   |           |  |
|      | 8   | U210060   | WASHER, LOCK 3/8"                     |   |           |  |
|      | 8   | U100060   | NUT, HEX 3/8" - 16                    |   |           |  |
| 5    | 4   | 8044000   | 2" YELLOW MARKER LIGHT                |   |           |  |
|      | 4   | 8044002   | 2" RUBBER GROMMET                     |   |           |  |
| 6    | 4   | 8046530   | TIRE, ST225 75 R15                    |   |           |  |
|      | 4   | 8046531   | WHEEL, R15 X 6                        |   |           |  |
|      | 2   | 8045897   | AXLE, LE                              |   |           |  |
|      | 4   | 8045898   | HUB                                   |   |           |  |
|      | 24  | 8043987   | LUG NUTS                              |   |           |  |
|      | 4   | 8047428   | GREASE CAP, W/ O-RING, & PLUG         |   |           |  |
| 7    | 4   | 8043999   | 2" RED MARKER LIGHT                   |   |           |  |
|      | 4   | 8044002   | 2" RUBBER GROMMET                     |   |           |  |
| 8    | 2   | 8040586   | SEALED LEVER LATCH                    |   |           |  |
|      | 1   | 8041816   | KEY DOOR SOUTHCO LATCH                |   |           |  |
| 9    | 1   | 8045756   | TAILGATE 599LE                        |   |           |  |
| 10   | 4   | 8045899   | SPRING                                |   |           |  |
|      | 8   | 8045900   | U-BOLT                                |   |           |  |
|      | 8   | 8045901   | U-BOLT NUT                            |   |           |  |
|      | 4   | 8045902   | TIE PLATE                             |   |           |  |
| 11   | 2   | 8044001   | 4" STOP/TURN LIGHT                    |   |           |  |
|      | 2   | 8044003   | 4" RUBBER GROMMET                     |   |           |  |
| 12   | 1   | 8046307   | LH BRAKE ASSEMBLY                     |   |           |  |
|      | 2   | 8046304   | MAGNET KIT                            |   |           |  |
|      | 2   | 8046305   | SHOE KIT                              |   |           |  |
|      | 1   | 8046306   | ADJUSTER KIT                          |   |           |  |
| 13   | 1   | 8046308   | RH BRAKE ASSEMBLY                     |   |           |  |
|      | 2   | 8046304   | MAGNET KIT                            |   |           |  |
|      | 2   | 8046305   | SHOE KIT                              |   |           |  |
|      | 1   | 8046306   | ADJUSTER KIT                          |   |           |  |

# Trailer Assy 816LE

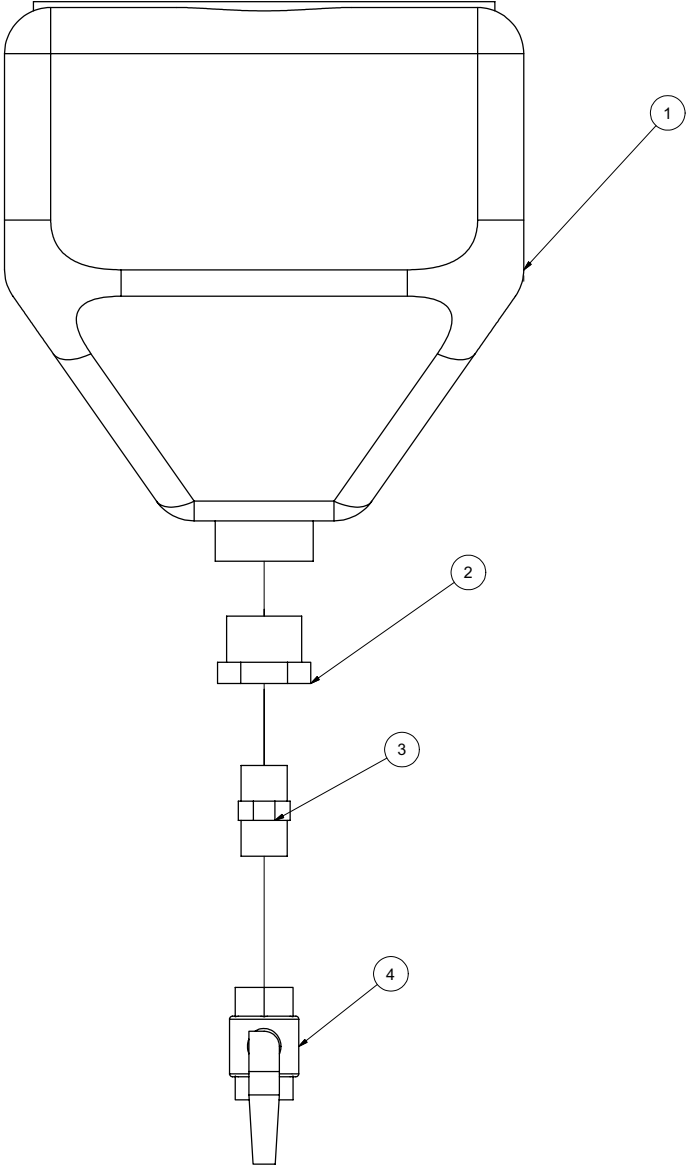


# Trailer Assy 816LE

| ITEM | QTY | PART #    | DESCRIPTION                           |
|------|-----|-----------|---------------------------------------|
| 1    | 1   | 8043980   | PINTLE EYE                            |
| 2    | 1   | 8043648   | JACK - MANUAL                         |
|      | 1   | 8043984   | JACK - HANDLE                         |
|      | 1   | 8043786   | JACK - TWO SPEED                      |
| 3    | 1   | 8042380   | FUEL TANK 22 GAL                      |
|      | 1   | 8043359   | STRAP W/ EYEBOLT                      |
|      | 1   | 8042380-1 | FUEL TANK CAP                         |
|      | 1   | 8041725   | FUEL SENDING UNIT                     |
|      | 1   | 8041725-1 | SENDING UNIT GASKET                   |
|      | 1   | 8045686   | FUEL LINE SUPPLY 30"                  |
|      | 1   | 8040965   | FUEL LINE RETURN - FILTER TO TANK 58" |
| 4    | 4   | 8030904   | ISOLATOR 840LB                        |
|      | 4   | U000560   | SCREW, HC 3/8" - 16 X 3"              |
|      | 4   | 8030851   | WASHER, SNUBBLING                     |
|      | 4   | U120110   | NUT, LOCK 3/8" - 16                   |
|      | 8   | U000420   | SCREW, HC 3/8" - 16 X 1"              |
|      | 24  | U200060   | WASHER, FLAT 3/8"                     |
|      | 8   | U210060   | WASHER, LOCK 3/8"                     |
|      | 8   | U100060   | NUT, HEX 3/8" - 16                    |
| 5    | 4   | 8044000   | 2" YELLOW MARKER LIGHT                |
|      | 4   | 8044002   | 2" RUBBER GROMMET                     |
| 6    | 4   | 8046294   | TIRE, ST215 / 75 R17.5                |
|      | 4   | 8046295   | WHEEL, R17.5 X 6.75                   |
|      | 2   | 8046296   | AXLE                                  |
|      | 4   | 8046297   | HUB                                   |
|      | 24  | 8046298   | LUG NUTS                              |
|      | 4   | 8047429   | GREASE CAP W/ O-RING, & PLUG          |
| 7    | 4   | 8043999   | 2" RED MARKER LIGHT                   |
|      | 4   | 8044002   | 2" RUBBER GROMMET                     |
| 8    | 2   | 8040586   | SEALED LEVER LATCH                    |
|      | 1   | 8041816   | KEY DOOR SOUTHCO LATCH                |
| 9    | 1   | 8045756   | TAILGATE 599LE                        |
| 10   | 4   | 8046299   | SPRING                                |
|      | 8   | 8046301   | U-BOLT                                |
|      | 8   | 8046302   | U-BOLT NUT                            |
|      | 4   | 8046303   | TIE PLATE                             |
| 11   | 2   | 8044001   | 4" STOP/TURN LIGHT                    |
|      | 2   | 8044003   | 4" RUBBER GROMMET                     |
| 12   | 1   | 8046307   | LH BRAKE ASSEMBLY                     |
|      | 2   | 8046304   | MAGNET KIT                            |
|      | 2   | 8046305   | SHOE KIT                              |
|      | 1   | 8046306   | ADJUSTER KIT                          |
| 13   | 1   | 8046308   | RH BRAKE ASSEMBLY                     |
|      | 2   | 8046304   | MAGNET KIT                            |
|      | 2   | 8046305   | SHOE KIT                              |
|      | 1   | 8046306   | ADJUSTER KIT                          |

| * NOT SHOWN |   |         |                  |
|-------------|---|---------|------------------|
| *           | 1 | 8043981 | SAFETY CHAIN     |
| *           | 1 | 8043982 | BREAKAWAY SWITCH |
| *           | 1 | 8044007 | 6-WAY PLUG       |
| *           | 1 | 8046994 | TIRE,SPARE       |

# Antifreeze Assembly



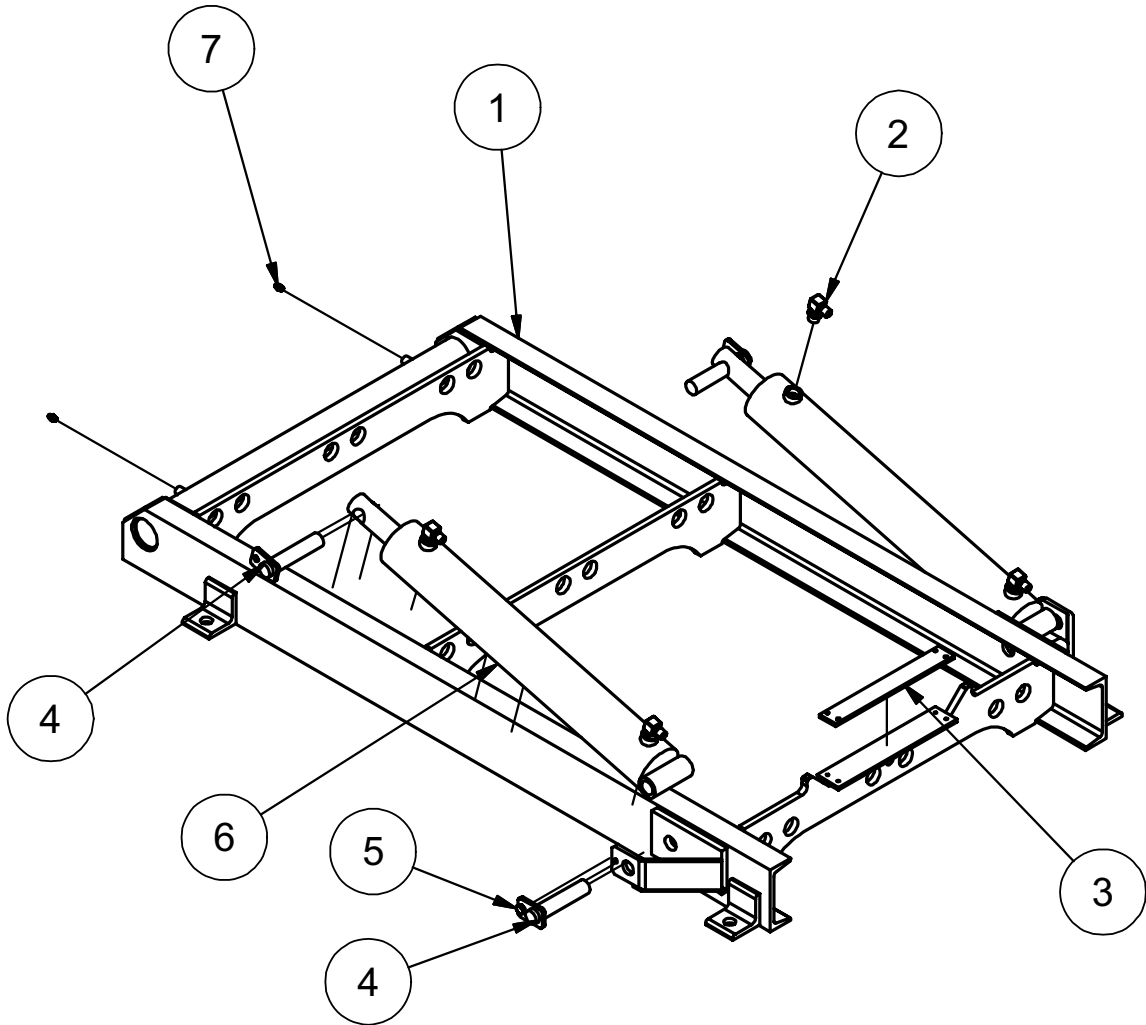


# Antifreeze Assembly

| ITEM | QTY | PART NO. | DESCRIPTION               |
|------|-----|----------|---------------------------|
| 1    | 1   | 8030394  | ANTI-FREEZE TANK 4 GAL.   |
|      | 4   | U000180  | SCREW, HC .312 -18 X .750 |
|      | 4   | U200040  | WASHER, FLAT 5/16"        |
|      | 4   | U210040  | WASHER, LOCK 5/16"        |
| 2    | 1   | T400585  | REDUCER, 20MP-12FP        |
| 3    | 1   | T400800  | UNION, 12MP-12MP          |
| 4    | 1   | T000185  | BALL VALVE, BRASS 3/4" FP |

# Skid Assembly

V500LE



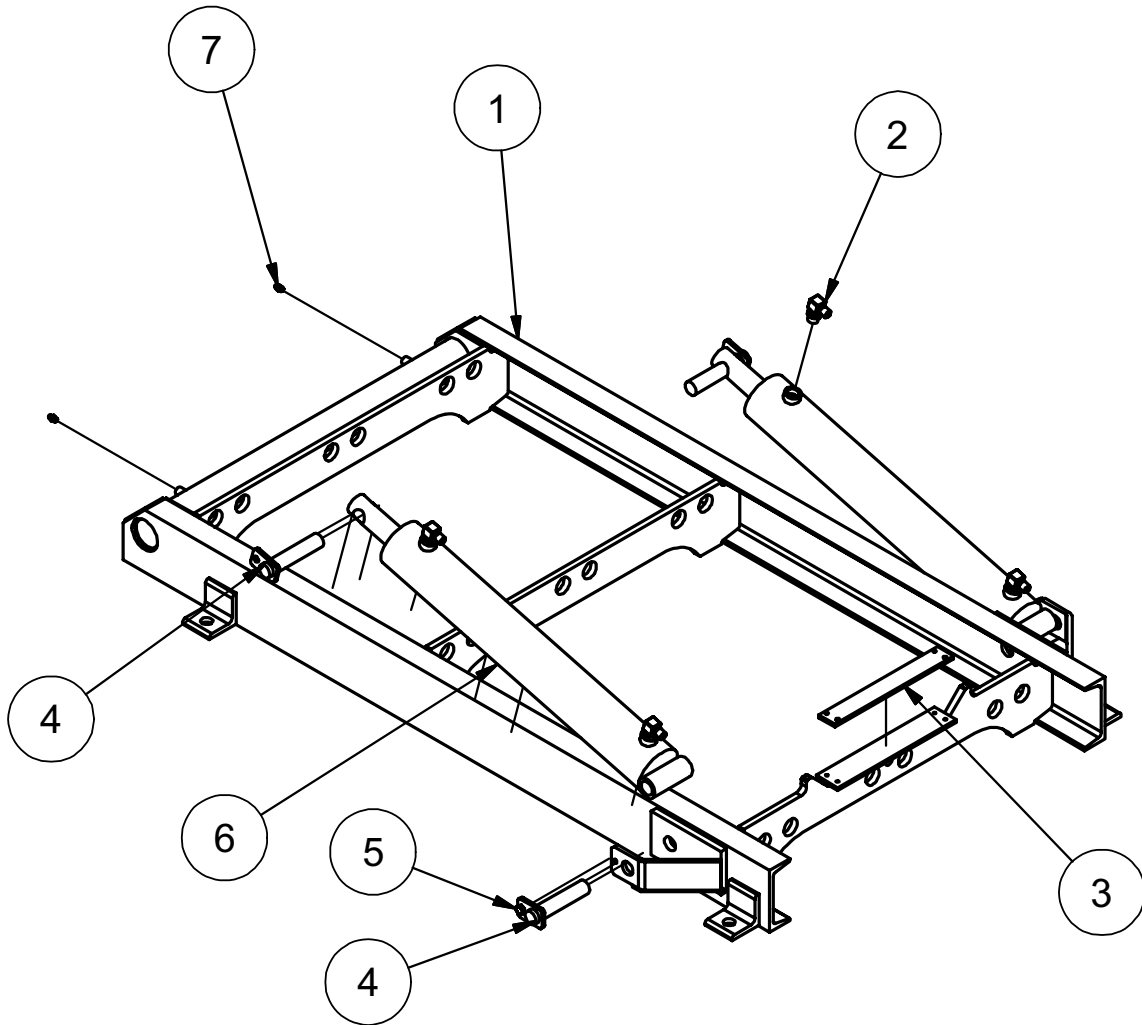
# Skid Assembly

# V500LE

| ITEM              | QTY | PART #  | DESCRIPTION                               |
|-------------------|-----|---------|---|
| 1                 | 1   | 8045732 | TANK SKID LE                              |
| 2                 | 4   | T401270 | ELBOW, 90 1/2"MB - 3/8"MJ                 |
| 3                 | 1   | 8045787 | STRIP, PLASTIC 1/4" X 1 1/2" X 11"        |
| 4                 | 4   | 8043844 | CYLINDER PIN WELDMENT                     |
| 5                 | 2   | U000400 | SCREW, HC 3/8" - 16 X .750                |
| 6                 | 2   | 8030359 | SPOIL TANK CYLINDER                       |
| 7                 | 2   | T500030 | GREASE FITTING 1/8"NPT STRAIGHT           |
| <b>DOOR HOSES</b> |     |         |   |
| *                 | 2   | 8043303 | HYD HOSE TO DOOR CYL BASE END 4-36" ST-ST |
| *                 | 2   | 8046806 | HYD HOSE TO DOOR CYL ROD END 4-45" ST-ST  |
| *                 | 1   | 8046493 | HYD HOSE, DOOR CYL SUPPLY 4-122" ST-90    |
| *                 | 1   | 8046492 | HYD HOSE, DOOR CYL RETURN 4-125" ST-90    |
| *                 | 2   | T402035 | TEE, 1/4MJ-1/4MJ-1/4MJ                    |
| <b>TANK HOSES</b> |     |         |   |
| *                 | 2   | 8046490 | HYD HOSE TO TANK CYL BASE END 6-24" ST-ST |
| *                 | 2   | 8046491 | HYD HOSE TO TANK CYL ROD END 6-51" ST-ST  |
| *                 | 1   | 8046494 | HYD HOSE, TANK CYL SUPPLY 6-60" ST-90     |
| *                 | 1   | 8041442 | HYD HOSE, TANK CYL RETURN 6-63" ST-90     |
| *                 | 2   | T402154 | TEE, 3/8"MJ-3/8"MJ-3/8"MJ                 |

# Skid Assembly

V800LE

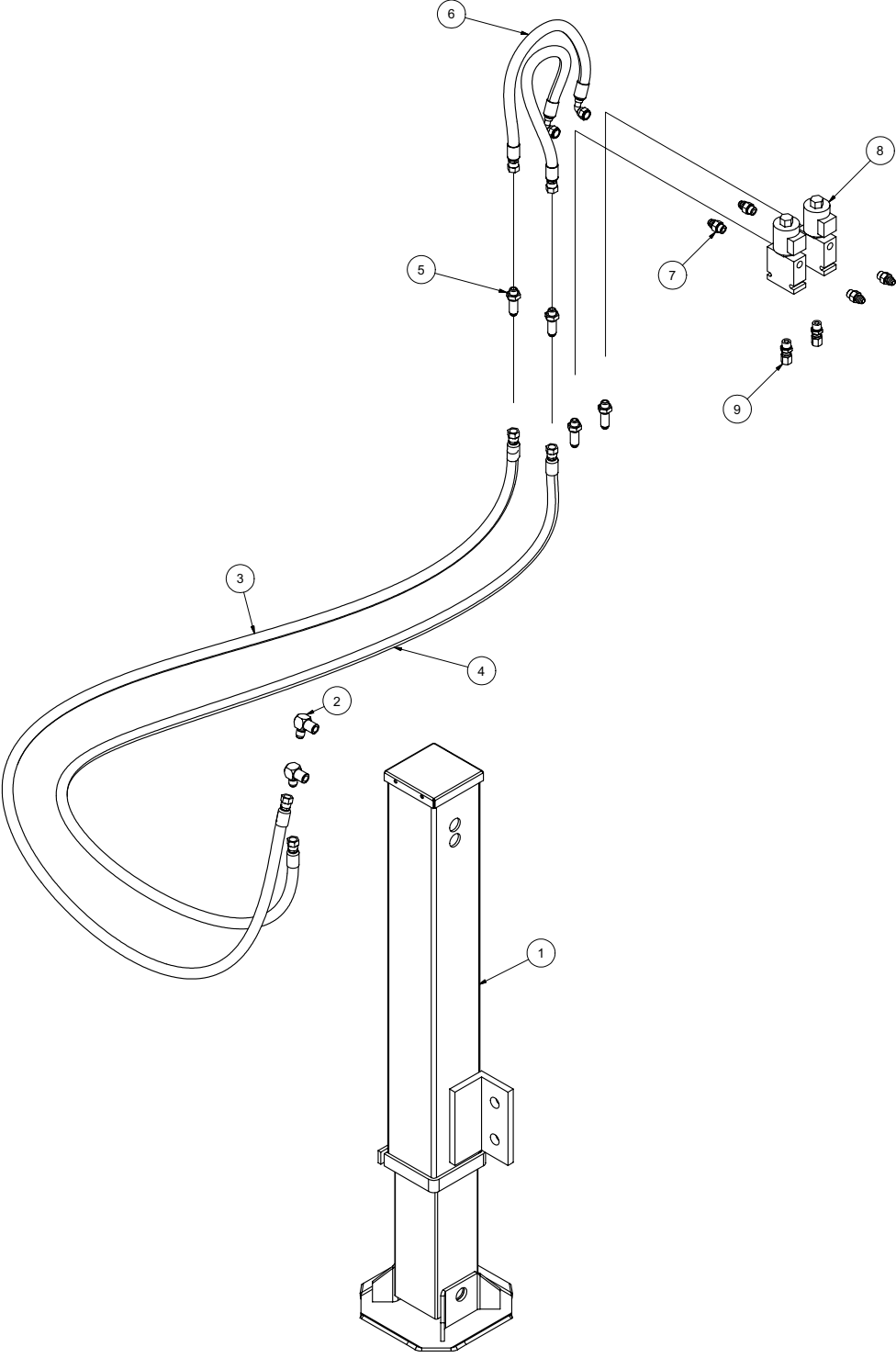


# Skid Assembly

# V800LE

| ITEM              | QTY | PART #  | DESCRIPTION                               |
|-------------------|-----|---------|---|
| 1                 | 1   | 8045732 | TANK SKID LE                              |
| 2                 | 4   | T401270 | ELBOW, 90 1/2"MB - 3/8"MJ                 |
| 3                 | 1   | 8045787 | STRIP, PLASTIC 1/4" X 1 1/2" X 11"        |
| 4                 | 4   | 8043844 | CYLINDER PIN WELDMENT                     |
| 5                 | 2   | U000400 | SCREW, HC 3/8" - 16 X .750                |
| 6                 | 2   | 8030359 | SPOIL TANK CYLINDER                       |
| 7                 | 2   | T500030 | GREASE FITTING 1/8"NPT STRAIGHT           |
| <b>DOOR HOSES</b> |     |         |   |
| *                 | 2   | 8046814 | HYD HOSE TO DOOR CYL BASE END 4-43" ST-ST |
| *                 | 2   | 8046815 | HYD HOSE TO DOOR CYL ROD END 4-52" ST-ST  |
| *                 | 1   | 8046816 | HYD HOSE, DOOR CYL SUPPLY 4-148" ST-90    |
| *                 | 1   | 8042950 | HYD HOSE, DOOR CYL RETURN 4-150" ST-90    |
| *                 | 2   | T402035 | TEE, 1/4MJ-1/4MJ-1/4MJ                    |
| <b>TANK HOSES</b> |     |         |   |
| *                 | 2   | 8046817 | HYD HOSE TO TANK CYL BASE END 6-32" ST-ST |
| *                 | 2   | 8046818 | HYD HOSE TO TANK CYL ROD END 6-54" ST-ST  |
| *                 | 1   | 8043782 | HYD HOSE, TANK CYL SUPPLY 6-77" ST-90     |
| *                 | 1   | 8046819 | HYD HOSE, TANK CYL RETURN 6-79" ST-90     |
| *                 | 2   | T402154 | TEE, 3/8"MJ-3/8"MJ-3/8"MJ                 |

# Hydraulic Jack Option



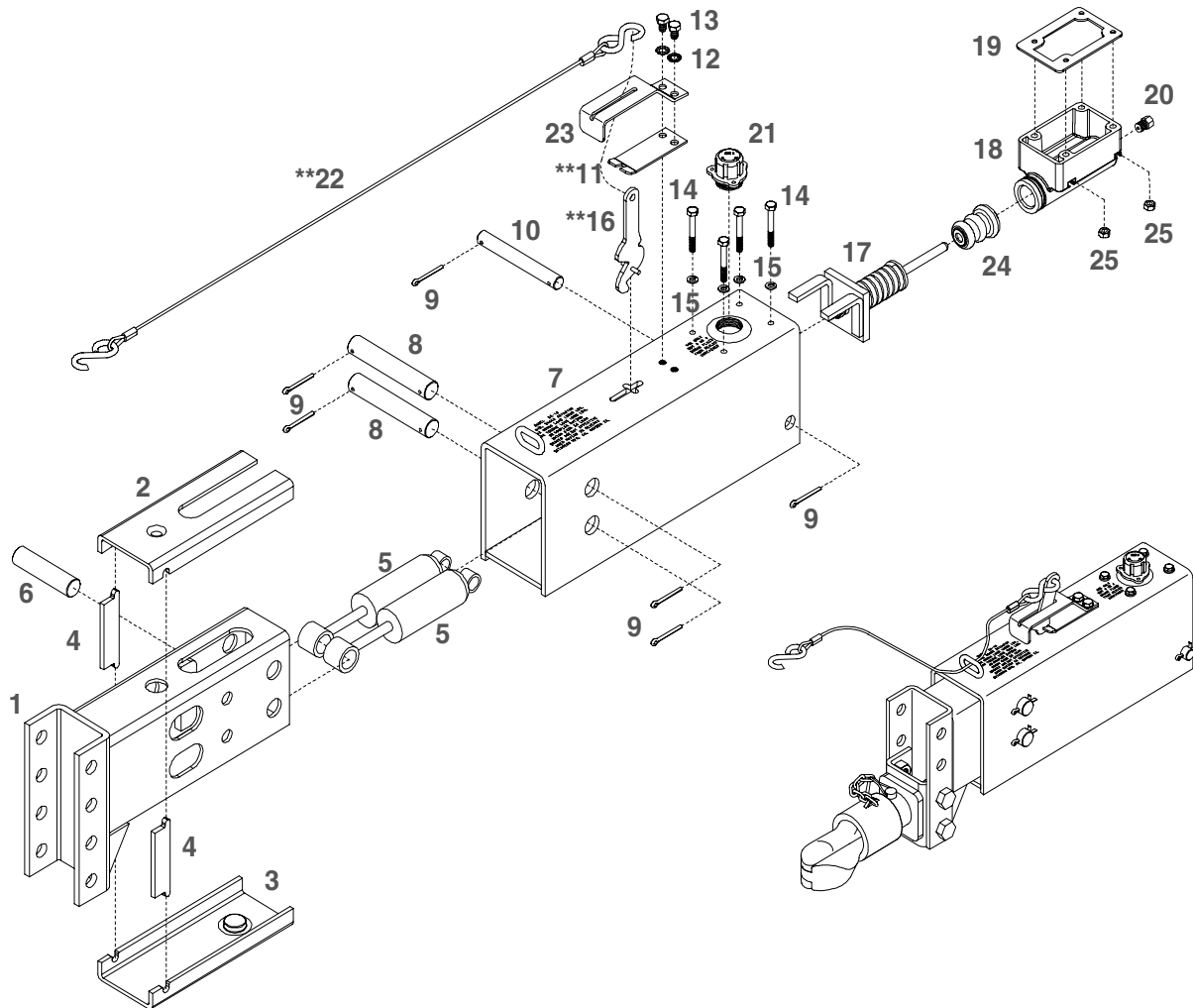
# Hydraulic Jack Option

| ITEM | QTY | PART #  | DESCRIPTION                  |
|------|-----|---------|------------------------------|
| 1    | 1   | 8043653 | HYDRAULIC JACK CYLINDER      |
| 2    | 2   | T401103 | ELBOW 90 DEG 3/8"MJ - 1/4"FJ |
| 3    | 1   | 8042661 | HOSE ASSY VAC 6-66 ST-90     |
| 4    | 1   | 8041442 | HOSE ASSY VAC 6-60 ST-90     |
| 5    | 2   | T400391 | BULKHEAD, 3/8"MJ - 3/8"MJ    |
| 6    | 2   | 8040973 | HOSE ASSY VAC 6-20 ST-90     |
| 7    | 4   | T400037 | UNION, 3/8"MB - 3/8"MJ       |
| 8    | 2   | 8041788 | SOLENOID VALVE               |
| 9    | 2   | 8030512 | UNION, 3/8"MB - 3/8"FJ       |
| *    | 1   | X000274 | SWITCH ROCKER DPDT           |

\* NOT SHOWN

# Surge Brake Option

# V500



051408

VACASSY948



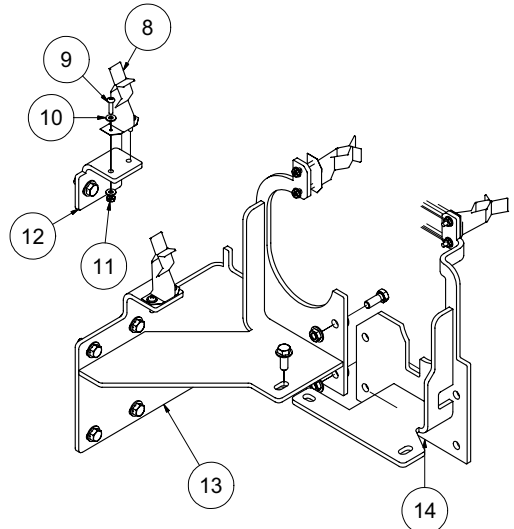
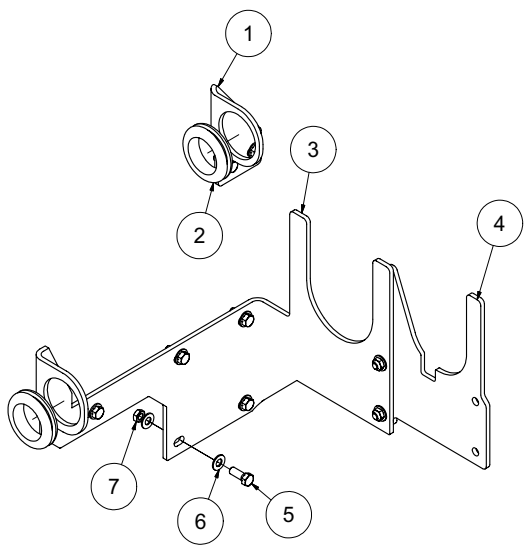
# Surge Brake Option

# V500

| ITEM | QTY | NUMBER     | DESCRIPTION                                |
|------|-----|------------|--|
| 1    | 1   | 8040790-1  | INNER SLIDER TUBE CHAN. DOWN               |
| 2    | 1   | 8040790-2  | TOP WEAR PAD                               |
| 3    | 1   | 8040790-3  | BOTTOM WEAR PAD                            |
| 4    | 2   | 8040790-4  | SPACER BLOCK                               |
| 5    | 2   | 8040790-5  | DAMPER SHOCK                               |
| 6    | 1   | 8040790-6  | FRONT SHOCK PIN (ZINC PLATED)              |
| 7    | 1   | 8040790-7  | OUTER CASE                                 |
| 8    | 2   | 8040790-8  | CONNECTING PIN (ZINC PLATED)               |
| 9    | 6   | 8040790-9  | 5/32" X 1-1/4" COTTER PIN                  |
| 10   | 1   | 8040790-10 | REAR SHOCK PIN (ZINC PLATED)               |
| 11   | 1   | 8040790-11 | EMERGENCY LEVER SPRING (ZINC PLATED)       |
| 12   | 2   | 8040790-12 | 5/16" EXTERNAL TOOTH LOCK WASHER           |
| 13   | 2   | 8040790-13 | 5/16"-18 UNC X 5/8" HEX HEAD BOLT GR.5     |
| 14   | 4   | 8040790-14 | 1/4"-20 UNC X 2" HEX HEAD BOLT GR.5        |
| 15   | 4   | 8040790-15 | 1/4" LOCK WASHER                           |
| 16   | 1   | 8040790-16 | EMERGENCY LEVER (ZINC PLATED)              |
| 17   | 1   | 8040790-17 | PUSH ROD ASSEMBLY                          |
| 18   | 1   | 8040790-18 | COMPOSITE MASTER CYLINDER (DRUM BRAKES)    |
| 19   | 1   | 8040790-19 | REPLACEMENT MASTER CYL. GASKET ONLY        |
| 20   | 1   | 8040790-20 | 1/8" PIPE-3/16" FITTING W/ORIFICE (DRUM)   |
| 21   | 1   | 8040790-21 | MASTER CYLINDER CAP W/DIAPHRAGM AND O-RING |
| 22   | 1   | 8040790-22 | 3/32" CABLE WITH HOOKS (BOTH ENDS)         |
| 23   | 1   | 8040790-23 | LEVER GUIDE (ZINC PLATED)                  |
| 24   | 1   | 8040790-24 | MASTER CYL. PROTECTIVE BOOT                |
| 25   | 4   | 8040790-25 | 1/4"-20 UNC HEX NUTS                       |

# Tool Rack Assembly

LEHD



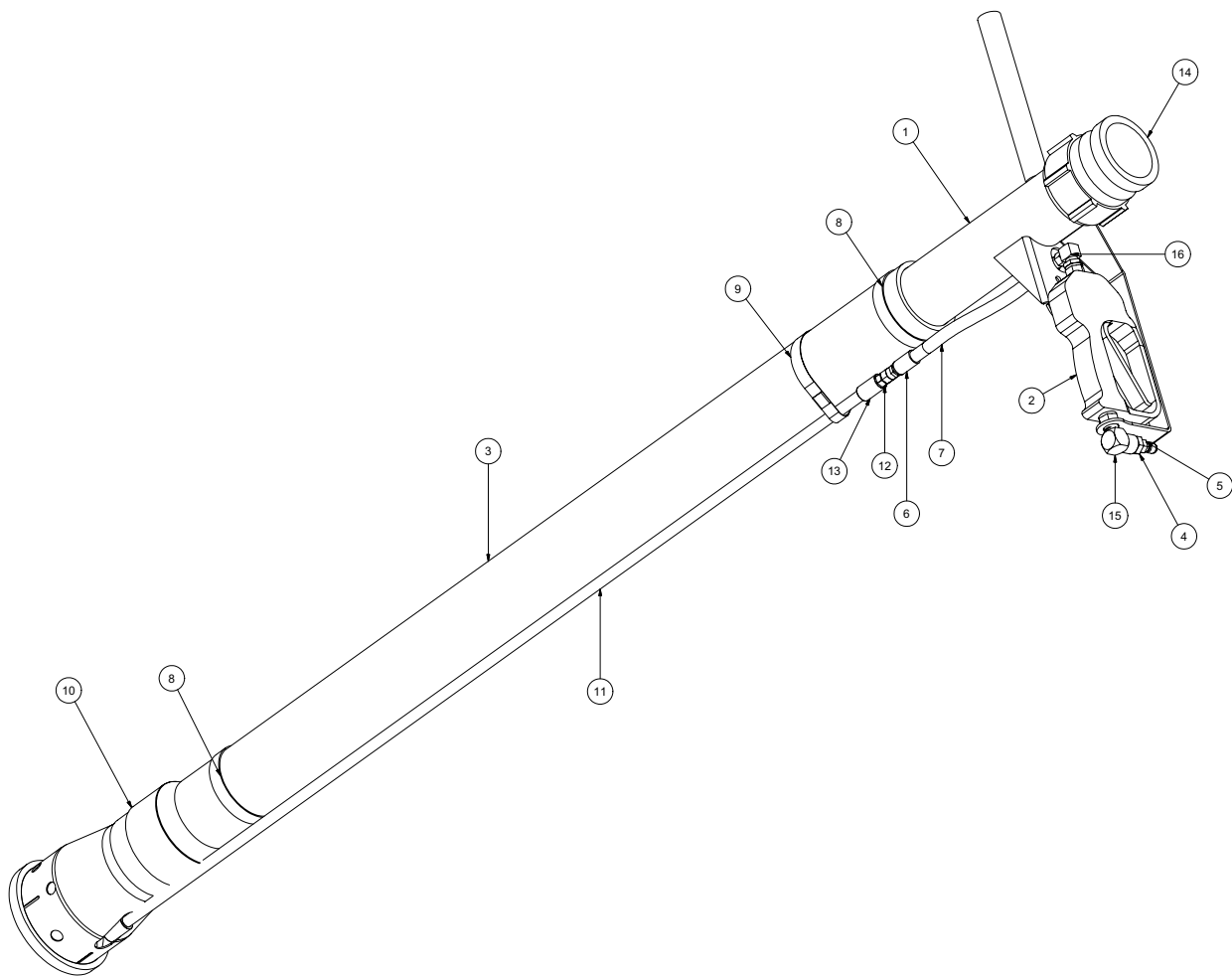
# Tool Rack Assembly

LEHD

| ITEM | QTY | PART NO. | DESCRIPTION                    |
|------|-----|----------|--------------------------------|
| 1    | 1   | 8046209  | TOOL RACK BRACKET #3           |
| 2    | 2   | 8042812  | GROMMET 2" ID 1/4" WOG         |
| 3    | 1   | 8046208  | TOOL RACK BRACKET #2           |
| 4    | 1   | 8046217  | TOOL RACK EXTRA TOOL BRACKET   |
| 5    | 18  | U000420  | SCREW, HC 3/8"-16 X 1.00       |
| 6    | 36  | U200600  | WASHER, FLAT 3/8"              |
| 7    | 18  | U120110  | NUT, HEX LOCK 3/8"             |
| 8    | 4   | 8040899  | CLIP, TOOL HOLDER              |
| 9    | 8   | C400119  | SCREW, PHILLIPS 10 - 24 X 3/4" |
| 10   | 16  | U200001  | WASHER, FLAT #10               |
| 11   | 8   | U100010  | NUT, HEX 10 - 24               |
| 12   | 1   | 8046207  | TOOL RACK BRACKET #1           |
| 13   | 1   | 8046206  | TOOL RACK WELDMENT LE #1       |
| 14   | 1   | 8046210  | TOOL RACK EXTRA TOOL WELDMENT  |

# Tools (Option)

# HD Reduction Tool



## Tools (Option)

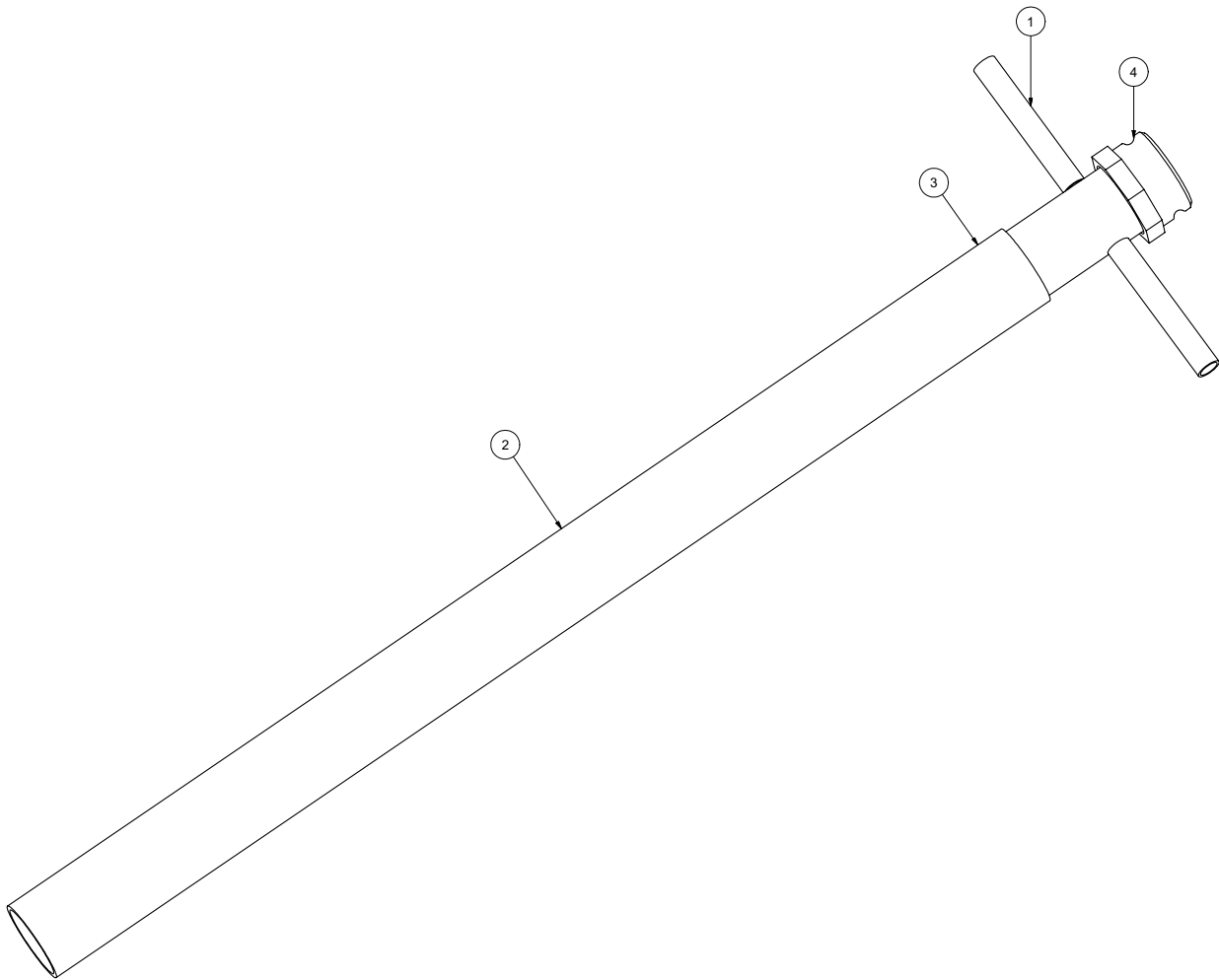
## HD Reduction Tool

| ITEM | QTY | PART NO. | DESCRIPTION                      |
|------|-----|----------|----------------------------------|
| -    | -   | 8043118  | TOOL VAC REDUCTION HD COMPLETE   |
| 1    | 1   | 8042862  | TOOL VAC HEAD ASSY 3"            |
| 2    | 1   | 8042026  | STRAIGHT SPRAY GUN               |
| 3    | 1   | 8042811  | TOOL VAC REDUCTION PVC 3" X 48"  |
| 4    | 1   | T400023  | UNION 6MP 4FP                    |
| 5    | 1   | 8030486  | WATER QD 1/4 MNPT SS             |
| 6    | 2   | T320030  | FITTING, HOSE 4HO 4FJ            |
| 7    | 1   | 8031278  | HOSE ASSEMBLY REDUCTION TOOL     |
| 8    | 2   | 8030244  | VAC CLAMP BAND 3 1/2" PUNCHLOCK  |
| 9    | 1   | 8030244  | VAC CLAMP BAND 3 1/2" PUNCHLOCK  |
| 10   | 1   | 8041099  | TOOL VAC REDUCTION HD LOWER ASSY |
| 11   | 1   | 8030247  | VAC WATER SUPPLY TUBE            |
| 12   | 1   | T400020  | UNION 1/4" MP-1/4" MJ STRAIGHT   |
| 13   | 2   | T422010  | COUPLING,PIPE 1/4"FP             |
| 14   | 1   | 8030391  | BANJO 3" MALE 3" FNPT            |
| 15   | 1   | T401065  | ELBOW, 3/8 MP - 3/8 FP           |
| 16   | 1   | T401100  | ELBOW 4MP 4MJ 90                 |
| *    | 2   | 8030370  | REDUCTION TOOL NOZZLE            |
| *    | 2   | 8031268  | REDUCTION TOOL NOZZLE 45 DEG     |

\* NOT SHOWN

# Tools

# 4" Suction Tool



072308

VACASSY710

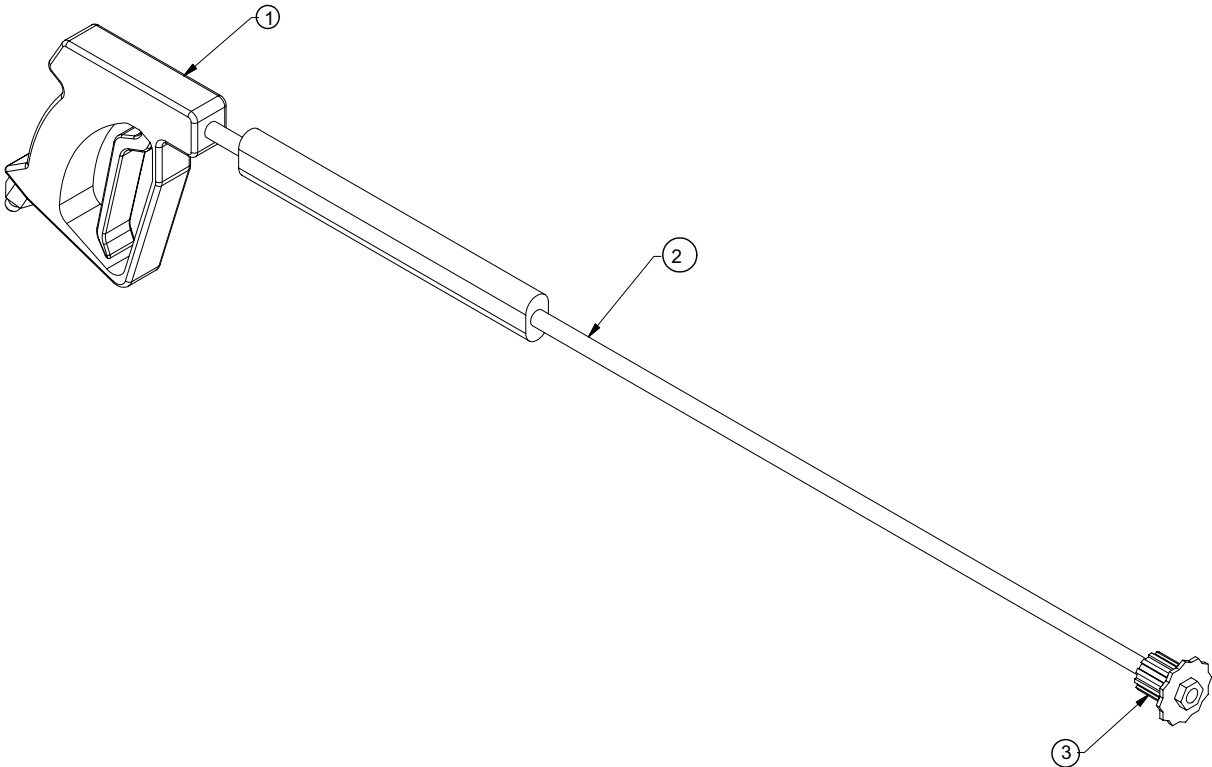
# Tools

# 4" Suction Tool

| ITEM | QTY | NUMBER  | DESCRIPTION                  |
|------|-----|---------|------------------------------|
|      | 1   | 8040983 | TOOL VAC SUCTION 4" COMPLETE |
| 1    | 1   | 8040981 | TOOL VAC HANDLE ASSEMBLY 4"  |
| 2    | 1   | 8040982 | PVC VACUUM TUBE 4"           |
| 3    | 1   | 8030912 | CLAMP, 4.5" PUNCHLOK         |
| 4    | 1   | 8030844 | COUPLING, 4" BANJO           |

# Tools

# Wash Wand



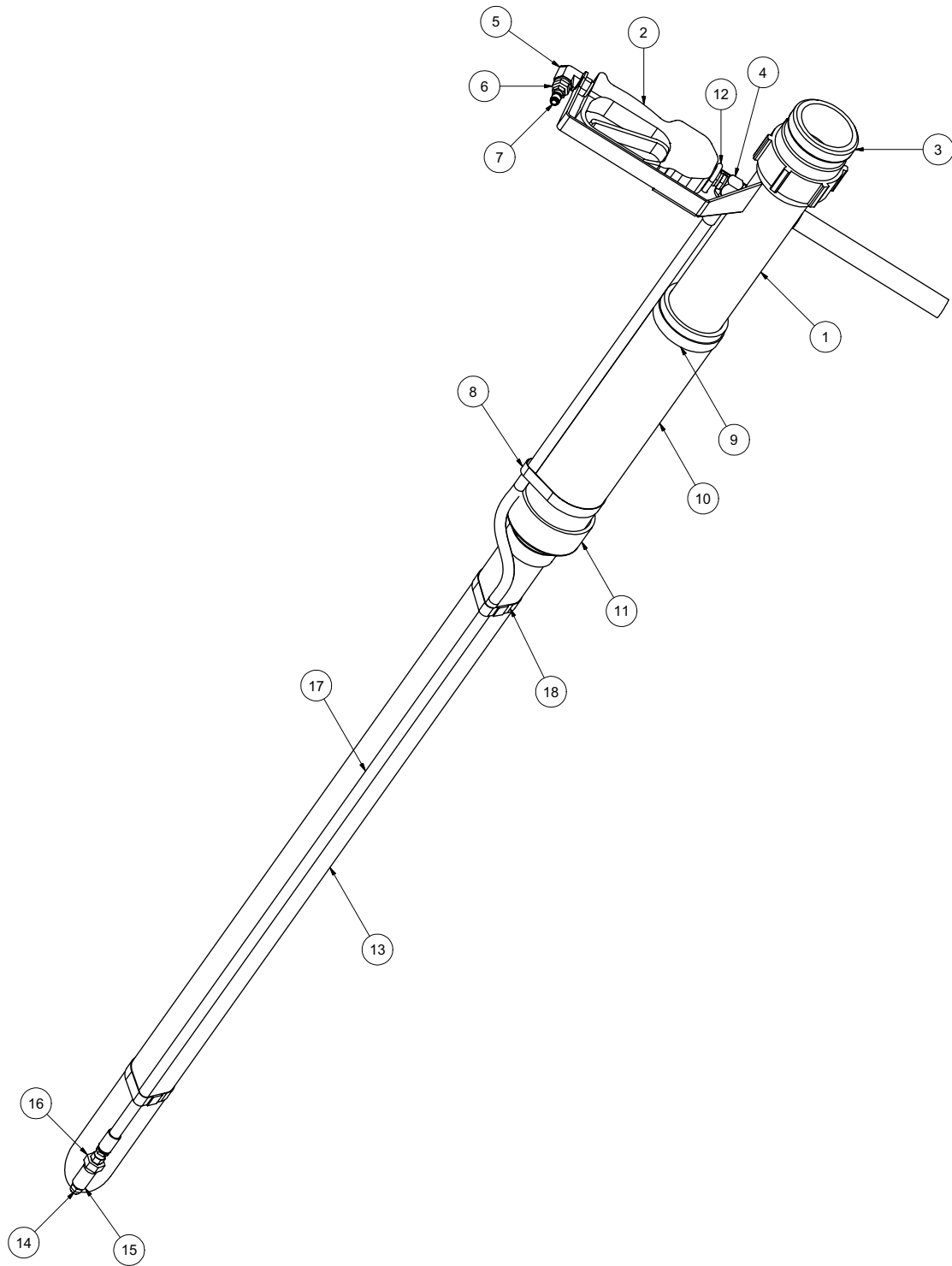


# Tools

# Wash Wand

| <b>Item</b> | <b>Qty</b> | <b>Number</b> | <b>Description</b>           |
|-------------|------------|---------------|------------------------------|
| 1           | 1          | 8030348       | TOOL VAC SPRAY WAND COMPLETE |
| 2           | 1          | 8030928       | TRIGGERASSEMBLY              |
| 3           | 1          | 8030847       | WAND                         |
|             |            | 8031308       | NOZZLE,#6 40 DEGREE FOR WAND |

# Valve Box Cleanout Tool



050709

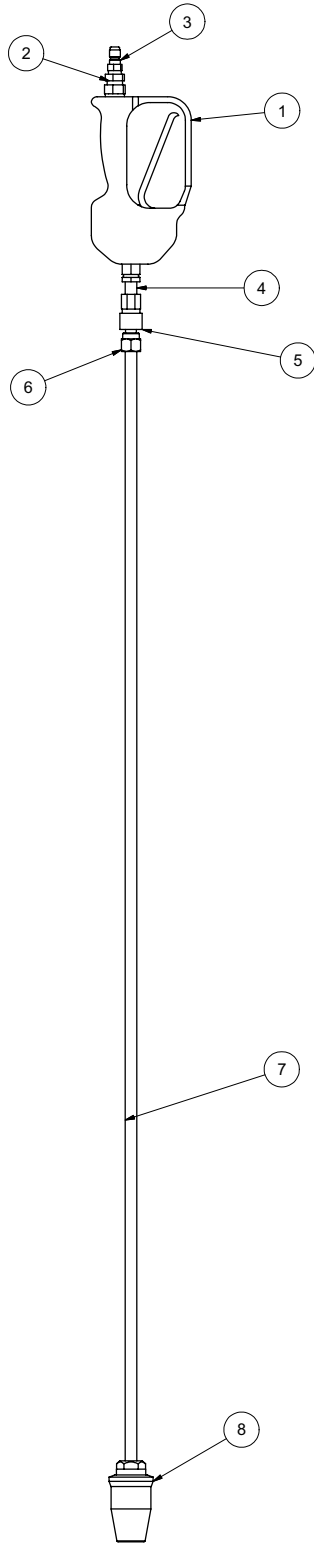
VACASSY714

# Valve Box Cleanout Tool

| ITEM | QTY | PART NO. | DESCRIPTION                           |
|------|-----|----------|---------------------------------------|
| 1    | 1   | 8042862  | REDUCTION TOOL HEAD WELD'T            |
| 2    | 1   | 8042026  | STRAIGHT SPRAY GUN                    |
| 3    | 1   | 8030391  | BANJO 3" MALE FNPT                    |
| 4    | 1   | T401100  | ELBOW 4MP 4MJ 90                      |
| 5    | 1   | T401065  | ELBOW, 3/8 MP - 3/8 FP                |
| 6    | 1   | T400023  | REDUCER 6MP 4FP                       |
| 7    | 1   | 8030486  | WATER QD 1/4 MNPT SS                  |
| 8    | 1   | 8042855  | CLAMP HOSE T-BOLT 375                 |
| 9    | 1   | 8042605  | CLAMP HOSE T-BOLT 350                 |
| 10   | 1   | 8044096  | PVC 3" DIA X 9" LONG                  |
| 11   | 1   | 8030669  | REDUCER PVC 3" TO 2" SLIP ON          |
| 12   | 1   | U010019  | U-BOLT 1_4-20 X 3_4 WIDE X 2 1_4 LONG |
| 13   | 1   | 8044097  | PVC 2" DIA X 42.5" LG                 |
| 14   | 1   | 8031246  | NOZZLE, .100 X 0 DEG                  |
| 15   | 1   | T422010  | COUPLING 1/4"FP                       |
| 16   | 1   | U400020  | UNION, 1/4" MP - 1/4" MJ              |
| 17   | 1   | 8044098  | HOSE ASSY VALVE BOX CLEANOUT TOOL     |
| 18   | 2   | 8045316  | CLAMP, HOSE T-BOLT 275                |

# Tools

# Rotary Lance



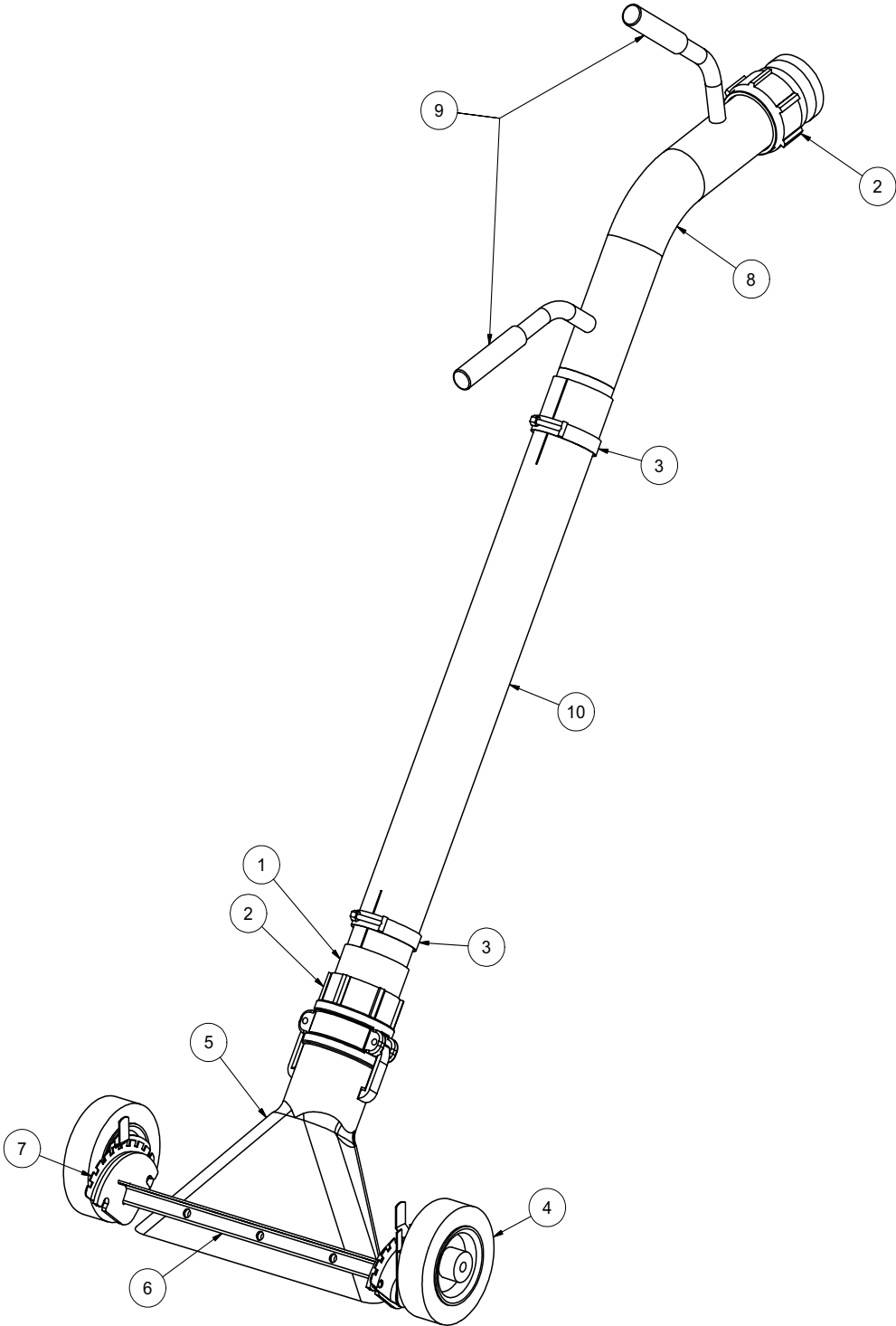
# Tools

# Rotary Lance

| ITEM | QTY | PART NO. | DESCRIPTION                        |
|------|-----|----------|------------------------------------|
| 1    | 1   | 8042026  | STRAIGHT SPRAY GUN                 |
| 2    | 1   | T400023  | UNION 6MP-4FP                      |
| 3    | 1   | 8030486  | WATER QD 1/4MNPT SS                |
| 4    | 1   | T421010  | NIPPLE, CLOSE 1/4"                 |
| 5    | 1   | 8030526  | FITTING, QD WATER 1/4F - 1/4"FP    |
| 6    | 1   | 8030487  | WATER QD 1/4 FNPT SS               |
| 7    | 1   | 8043764  | 47 INCH LANCE EXT. 1/4NPT X 1/4NPT |
| 8    | 1   | 8042691  | ROTARY WOBBLE NOZZLE 90            |

# Tools

# Lawn Sweeper 3''

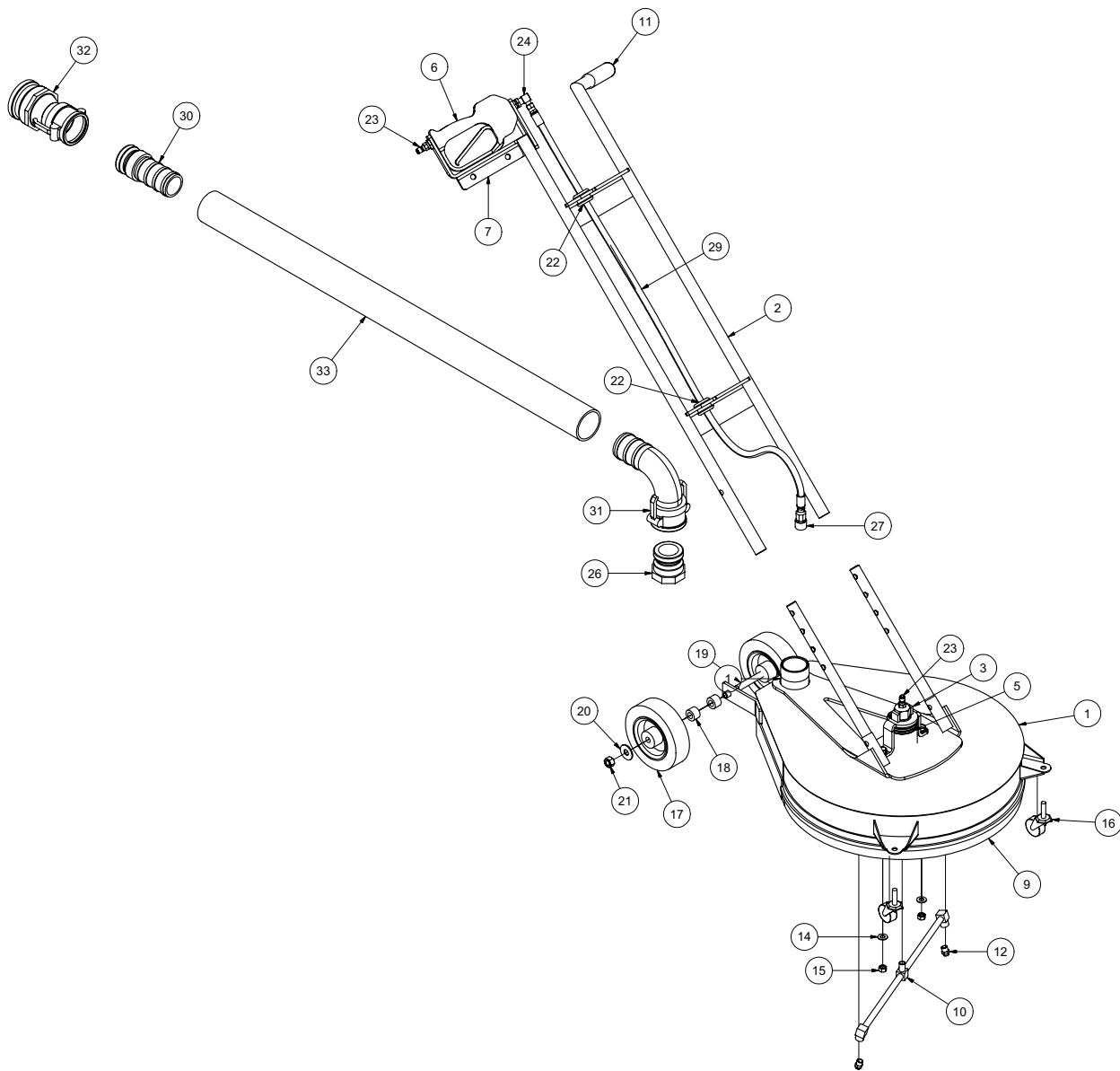


# Tools

# Lawn Sweeper 3"

| ITEM | QTY | PART #  | DESCRIPTION                      |
|------|-----|---------|----------------------------------|
| 1    | 1   | 8030287 | 3" HOSE X 3" MNPT ADAPTER        |
| 2    | 2   | 8030391 | BANJO 3" MALE 3" FNPT            |
| 3    | 2   | 8042605 | CLAMP T-BOLT 3" (350)            |
| 4    | 2   | 8043887 | WHEEL 6" PNEUMATIC               |
| 5    | 1   | 8043925 | DUCKBILL 3" ALUMINUM             |
| 6    | 1   | 8043928 | LS WHEEL WELDMENT                |
| 7    | 1   | 8043931 | WHEEL ADJUSTERS (1 LEFT/1 RIGHT) |
| 8    | 1   | 8043933 | LS HANDLE WELDMENT               |
| 9    | 2   | J300080 | HANDLE GRIP                      |
| 10   | 1   | 8043932 | PVC 3" X 30"                     |

# Surface Cleaner

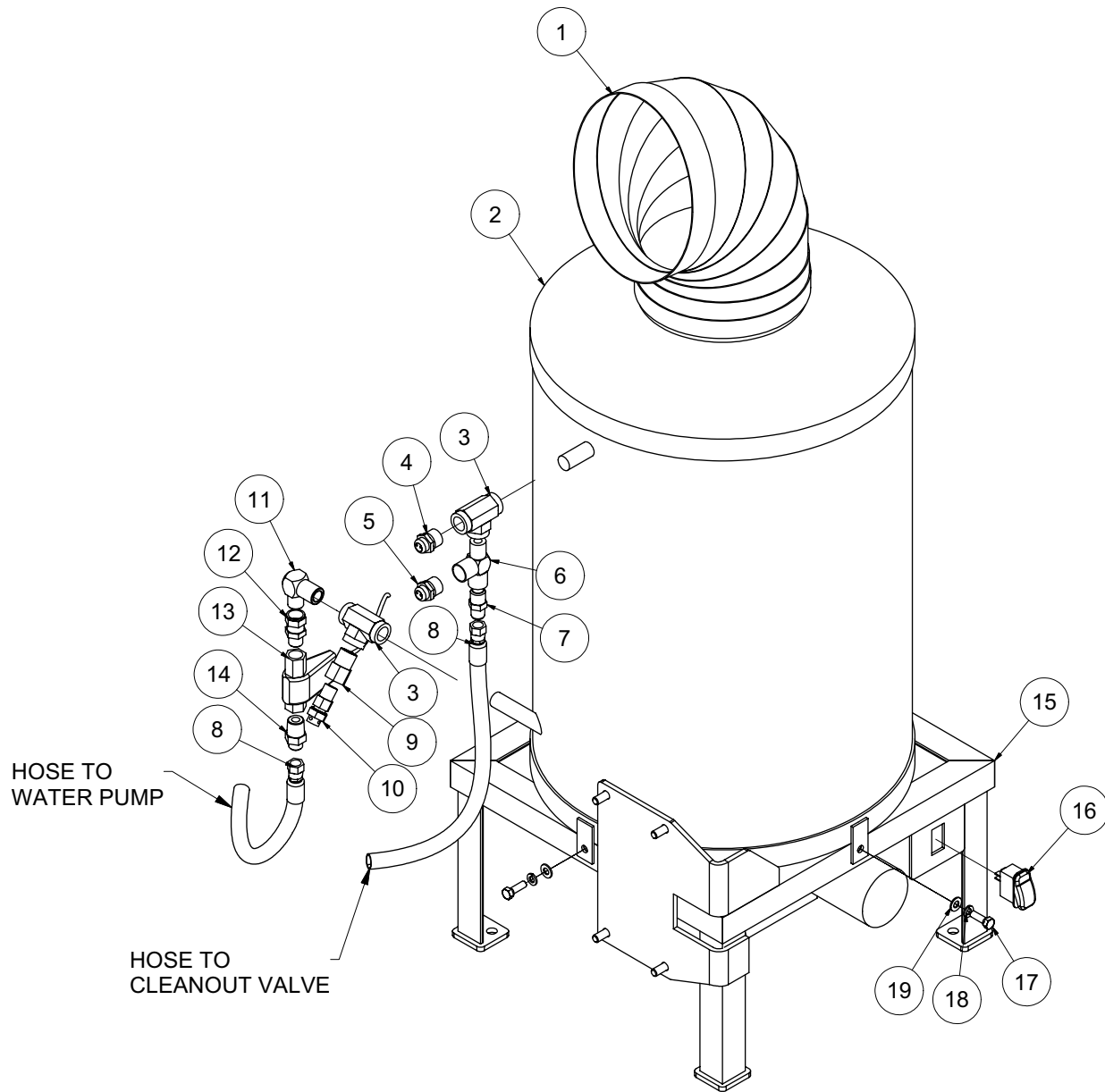




# Surface Cleaner

| ITEM | QTY | PART NO. | DESCRIPTION                        |
|------|-----|----------|------------------------------------|
| 1    | 1   | 8041887  | SURFACE CLEANER - HEAD ASSY        |
| 2    | 1   | 8042019  | HANDLE ASSY                        |
| 3    | 1   | 8041890  | ROTARY RETAINER                    |
| 4    | 2   | 8042022  | HANDLE ADJ. TUBE                   |
| 5    | 1   | 8042027  | ROTARY HEAD                        |
| 6    | 1   | 8042026  | STRAIGHT SPRAY GUN                 |
| 7    | 1   | 8042020  | GUN CAPTURE BRACKET                |
| 8    | 1   | 8043467  | SQUEEGEE                           |
| 9    | 1   | 8042030  | FLEXIBLE BRUSH                     |
| 10   | 1   | 8042028  | ROTARY ARM                         |
| 11   | 1   | J300080  | GRIPHANDLE                         |
| 12   | 2   | 8031419  | NOZZLE, #4.0 25 DEG                |
| 13   | 2   | U000420  | SCREW, HC 3/8-16 X 1.00            |
| 14   | 4   | U200600  | WASHER, FLAT 3/8"                  |
| 15   | 2   | U100060  | NUT, HEX 3/8-16                    |
| 16   | 2   | 8043387  | SWIVEL CASTER 1 5/8"               |
| 17   | 2   | 8043887  | WHEEL 6" PNEUMATIC                 |
| 18   | 2   | 8043591  | SURFACE CLEANER REAR WHEEL SPACER  |
| 19   | 1   | U001060  | SCREW, HC 1/2-13 X 6.0             |
| 20   | 2   | U200100  | WASHER, FLAT 1/2"                  |
| 21   | 1   | U120120  | NUT, LOCK 1/2-13                   |
| 22   | 2   | 8041686  | GROMMET 1"ID- 1 1/4"DOG-1/4"WO     |
| 23   | 2   | 8030486  | WATER QD 1/4 MNPT SS               |
| 24   | 1   | T401100  | ELBOW 4MP 4MJ 90                   |
| 25   | 1   | T320030  | FITTING, HOSE 4HO 4FJ              |
| 26   | 1   | 8043389  | ADAPTER M2" F THREAD               |
| 27   | 1   | 8030526  | FITTING, QD WATER 1/4"F-1/4"FP     |
| 28   | 1   | T320300  | FITTING, HOSE 4HO 4MP              |
| 29   | 1   | 8044108  | HOSE VAC SURFACE CLEANER           |
| 30   | 1   | 8043392  | ADAPTER M2" F THREAD               |
| 31   | 1   | 8043391  | REDUCER COUPLER 2" F 90 DEG - 3" M |
| 32   | 1   | 8043395  | REDUCER COUPLER 2" X 3" ADAPTER    |
| 33   | 1   | 8043398  | HOSE VAC CLEAR 2"                  |
| *    | 2   | 8043397  | CLAMP VAC CLEAR HOSE 2"            |
| *    | 4   | U360020  | PIN, U-LOCK 3/8 X 1.5              |

# Hot Box Assembly



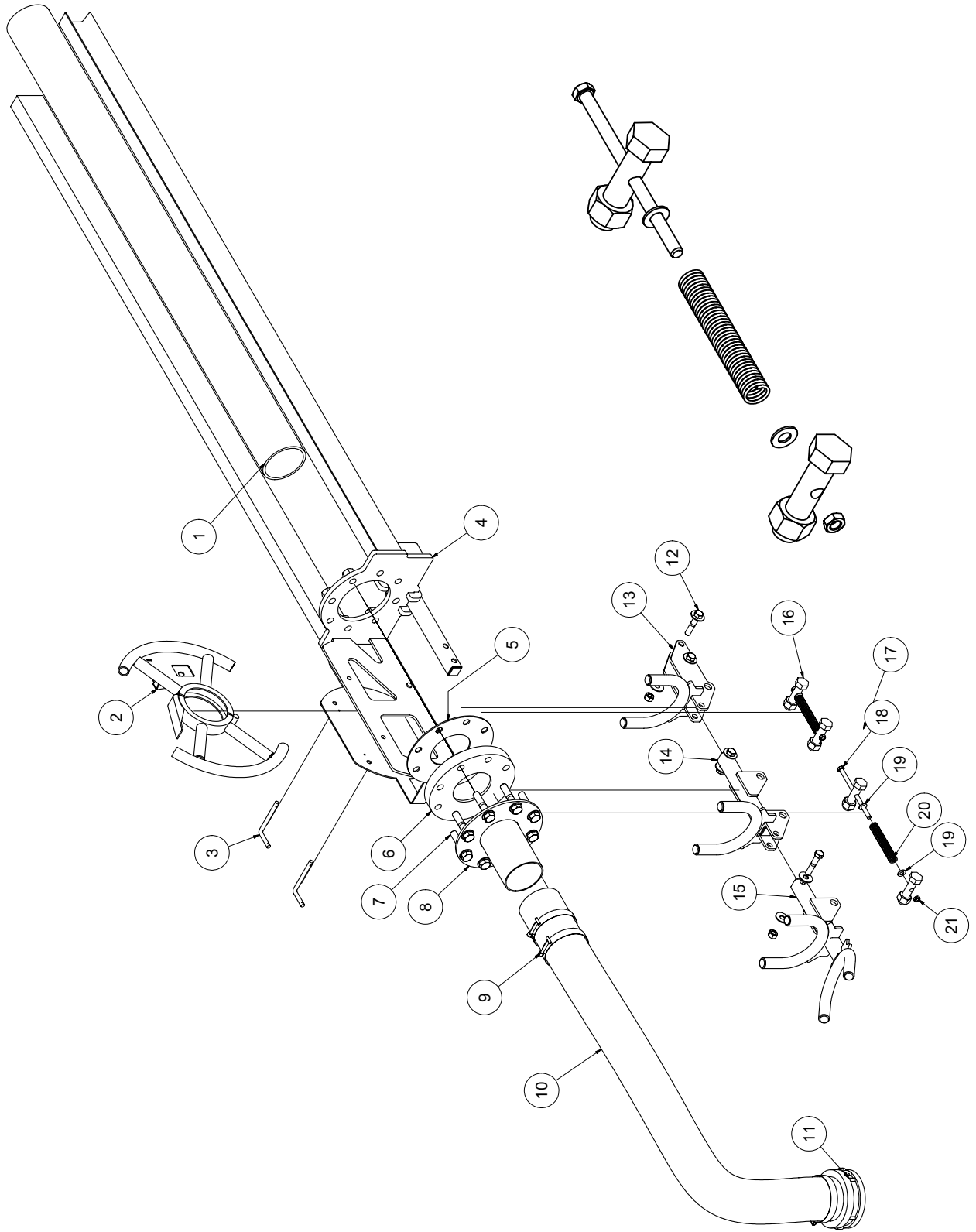
# Hot Box Assembly

| ITEM | QTY | NUMBER    | DESCRIPTION                   |
|------|-----|-----------|-------------------------------|
| 1    | 1   | 8046535   | 8" ELBOW EXHAUST (AQUA-BLAST) |
| 2    | 1   | 8046448   | HOT BOX, VERTICAL             |
| 3    | 2   | T402130   | TEE, 1/2"FP - 1/2FP - 1/2FP   |
| 4    | 1   | 8046536   | 120 TEMP. SWITCH NORM CLOS RD |
| 5    | 1   | 8046537   | 165 TEMP. SWITCH NORM CLOSED  |
| 6    | 1   | T402156   | TEE, 1/2MP - 1/2FP - 1/2FP    |
| 7    | 1   | T400029   | REDUCER, 1/2"MP - 3/8" MJ     |
| 8    | 2   | T320040   | FITTING, HOSE 6HO - 6FJ       |
| 9    | 1   | T400024   | REDUCER, 1/2MP - 3/8FP        |
| 10   | 1   | 8046448-1 | TEMPERTURE RELIEF             |
| 11   | 1   | T401140   | ELBOW 8MP - 8MJ               |
| 12   | 1   | T401125   | REDUCER 3/8MP - 1/2FJ         |
| 13   | 1   | 8031267   | FLOW SWITCH                   |
| 14   | 1   | T400028   | UNION 3/8MP - 3/8MJ           |
| 15   | 1   | 8046515   | HOT BOX WELDMENT              |
| 16   | 1   | X000271   | SWITCH HIGH / LOW             |
| 17   | 3   | U200020   | SCREW, HC 5/16-18 X 1.00      |
| 18   | 3   | U210040   | WASHER, LOCK 5/16             |
| 19   | 3   | U200040   | WASHER, FLAT 5/16             |

\* ITEM NOT SHOWN

# EXTENSION ARM

# BOOM



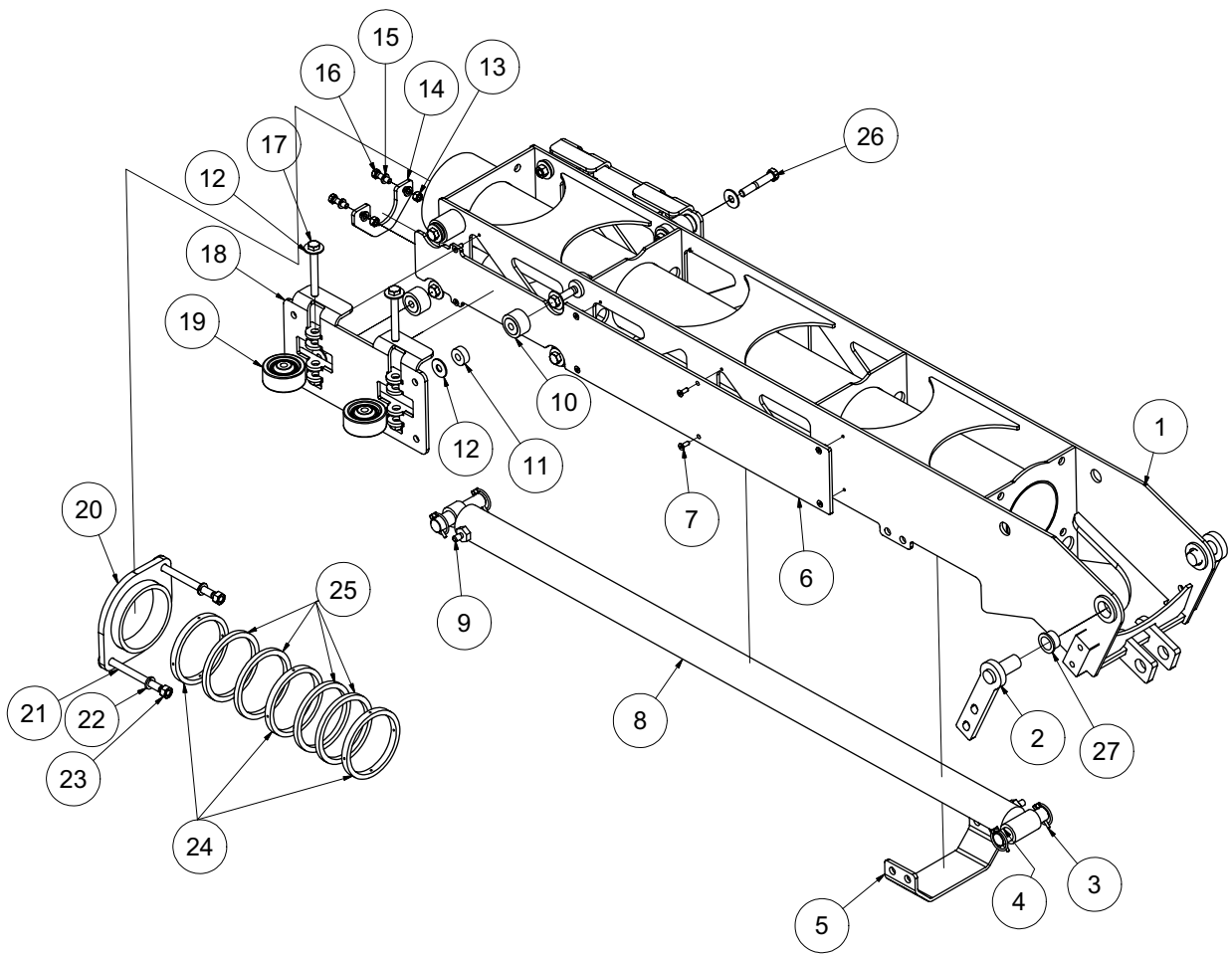
# EXTENSION ARM

# BOOM

| ITEM | QTY | NUMBER  | DESCRIPTION                         |
|------|-----|---------|-------------------------------------|
| 1    | 1   | 8042160 | BOOM - PVC TUBE 4 X 60"             |
| 2    | 1   | 8043647 | BOOM HANDLE WELDMENT                |
|      | 2   | 8042971 | RUBBER STRIP                        |
| 3    | 2   | 8043947 | CAPTURE PIN                         |
|      | 2   | R700160 | R-CLIP                              |
|      | 2   | 8041485 | LANYARD CABLE                       |
| 4    | 1   | 8046591 | BOOM - EXTENSION ARM WELDMENT       |
| 5    | 1   | 8041938 | GASKET, FLANGE 4"                   |
| 6    | 1   | 8041937 | 4" PVC FLANGE                       |
| 7    | 8   | U001250 | SCREW, HC 5/8" - 11 X 3.00"         |
|      | 16  | U200140 | WASHER, FLAT 5/8"                   |
|      | 8   | U120020 | NUT, NYLOCK 5/8" - 11               |
| 8    | 1   | 8046638 | BOOM - HOSE MOUNT PLATE WELDMENT    |
| 9    | 3   | 8042606 | CLAMP, T-BOLT 4" (450)              |
| 10   | 1   | 8046769 | HOSE VAC AG SUCTION 4-42"           |
| 11   | 1   | 8046444 | CAMLOCK, 4" MCAM X MBARB            |
| 12   | 4   | U000900 | SCREW, 1/2" - 13 X 2 1/2" HHCS      |
|      | 8   | U200100 | WASHER, FLAT 1/2"                   |
|      | 4   | U120120 | NUT, LOCK 1/2" - 13                 |
| 13   | 1   | 8046612 | BOOM - END PIVOT WELDMENT # 3       |
| 14   | 1   | 8046603 | BOOM - END PIVOT WELDMENT # 1       |
| 15   | 1   | 8046606 | BOOM - END PIVOT WELDMENT # 2       |
| 16   | 4   | 8046636 | BOOM - SPRING BOLT                  |
|      | 4   | U100200 | NUT, HEX 3/4" - 10                  |
| 17   | 1   | 8046771 | SPRING, 3/8" - 5.00", 480lb per in  |
| 18   | 2   | U000635 | SCREW, HC .375 - 16 X 6.50" ZP CR5  |
| 19   | 4   | U200600 | WASHER, FLAT 3/8"                   |
| 20   | 1   | 8046770 | SPRING, 3/8" X 5.00", 395 lb per in |
| 21   | 2   | U120110 | NUT, HEX LOCK                       |

# PIVOT ARM

# BOOM



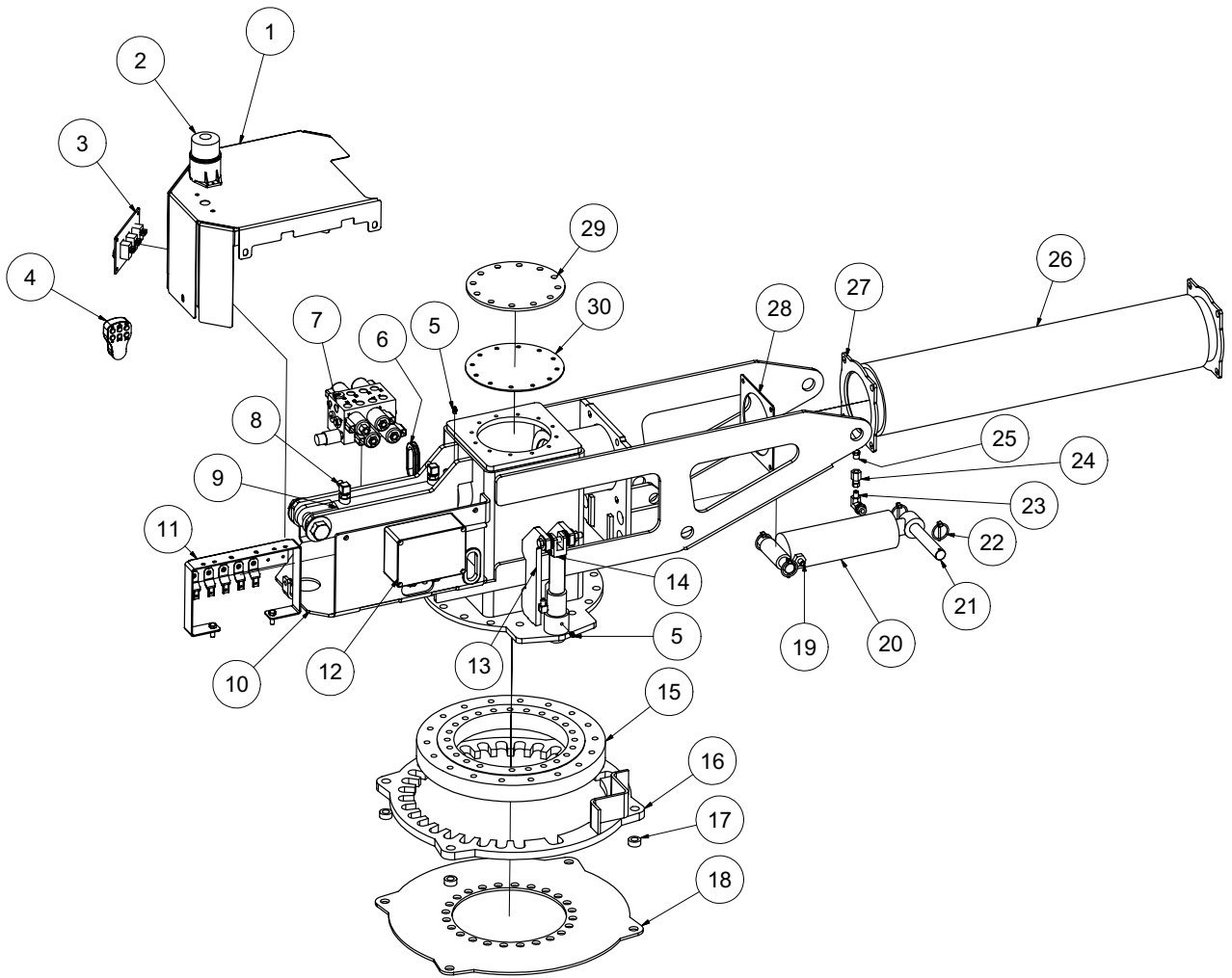
# PIVOT ARM

# BOOM

| ITEM | QTY | NUMBER  | DESCRIPTION                         |
|------|-----|---------|-------------------------------------|
| 1    | 1   | 8046582 | BOOM - PIVOT ARM WELDMENT           |
| 2    | 2   | 8046634 | BOOM - PIVOT PIN WELDMENT           |
| 3    | 4   | U340050 | PIN LINCH 3/16" X 1 9/16"           |
| 4    | 2   | 8041990 | BOM - PIVOT CYLINDER ROD PIN        |
| 5    | 1   | 8046635 | BOOM - CRADEL FOOT PLATE            |
| 6    | 2   | 8041986 | BOOM - PIVOT ARM GUIDE SHEET        |
| 7    | 16  | U030015 | SCREW, SFH 1/4-20 X .750            |
| 8    | 1   | 8041926 | BOOM - CYLINDER WX                  |
| 9    | 2   | T400611 | REDUCER, 1/2"MB - 1/4"MJ            |
| 10   | 4   | W000055 | CAM YOKE ROLLER 1 3/4"DIA X 1.00"   |
| 11   | 4   | 8046624 | BOOM - CAM SPACER                   |
| 12   | 14  | U200100 | WASHER, FLAT 1/2"                   |
| 13   | 2   | U100060 | NUT, HEX 3/8"-16                    |
| 14   | 1   | 8041956 | BOOM - PIVOT ARM CYC RETAINER PLATE |
| 15   | 4   | U210060 | WASHER, LOCK 3/8"                   |
| 16   | 2   | U000440 | SCREW, HC 3/8"-16 X 1.25"           |
| 17   | 4   | 8046773 | SCREW, BOOM EXT. CAPTURE PLATE      |
| 18   | 2   | 8046627 | BOOM - EXT. CAPTURE PLATE WELDMENT  |
| 19   | 4   | 8030226 | WHEEL 3.00"OD X 1.25" WIDE W / BRG  |
| 20   | 1   | 8041963 | PACKING GLAND WELDMENT              |
| 21   | 2   | U001020 | SCREW, HC .50"-13 X 5.50"ZP GR5     |
| 22   | 2   | U210111 | WASHER, LOCK 1/2"                   |
| 23   | 2   | U100120 | NUT, HEX 1/2-13                     |
| 24   | 3   | 8041945 | SLEEVE PLASTIC                      |
| 25   | 4   | 8041947 | PACKING RING                        |
| 26   | 8   | U000940 | SCREW,HC .500-13X3.50               |
|      | 16  | U200110 | WASHER, FLAT .500                   |
|      | 8   | U120120 | NUT, LOCK .500 - 13                 |
| 27   | 2   | 8041883 | BUSHING, BRONZE FLANGED 1"          |

# TURRET

# BOOM MANUAL ROTATION REV. FLOW





# TURRET

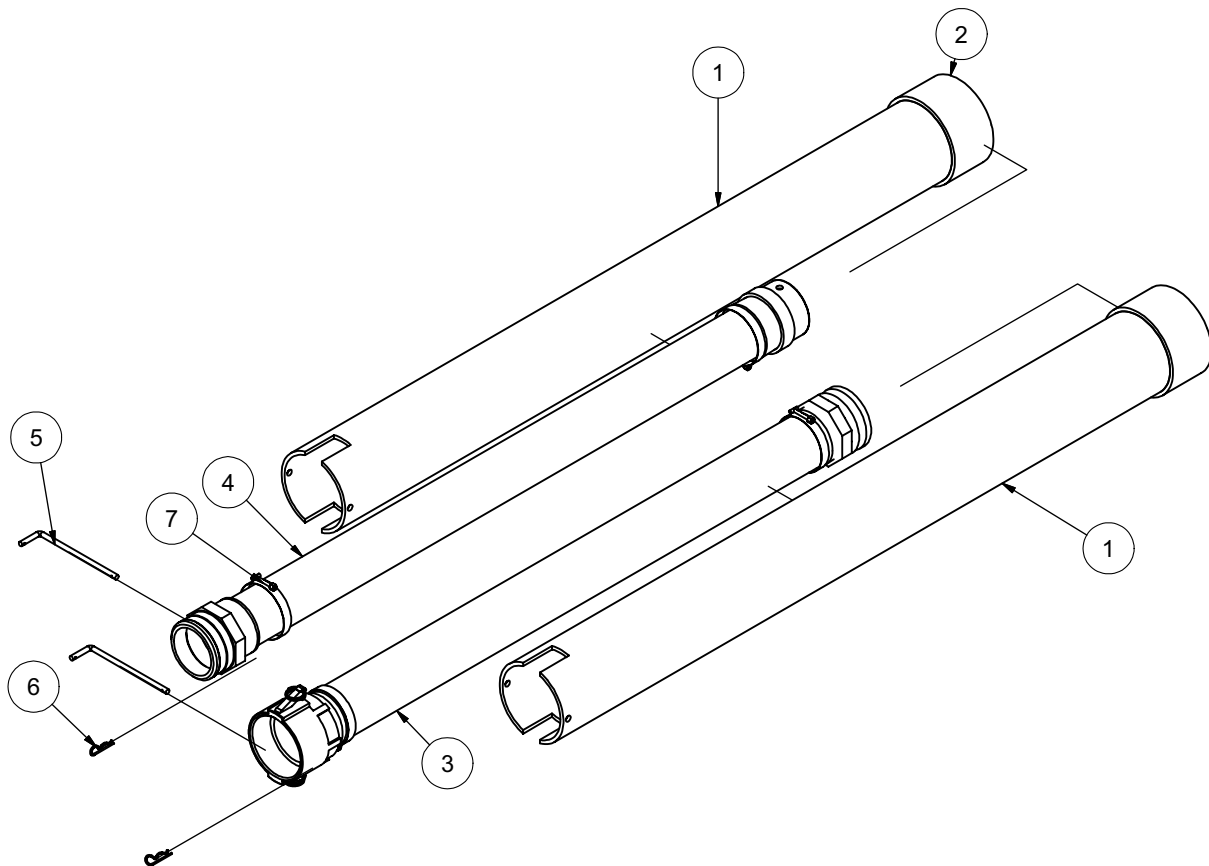
# BOOM

## MANUAL ROTATION REV. FLOW

| ITEM | QTY | PART #    | DESCRIPTION   | PORT | PART#      | DESCRIPTION    | COIL    |
|------|-----|-----------|---|------|------------|----------------|---------|
| 1    | 1   | 8046644   | BOOM - COVER WELDMENT   |      |            |                |         |
| *    | 5   | U000400   | SCREW, HC 3/8"-16 X .75   |      |            |                |         |
| *    | 5   | U000440   | WASHER, FLAT 3/8"   |      |            |                |         |
| 2    | 1   | 8043139   | LIGHT STROBE LED DEUTSCH  |      |            |                |         |
| 3    | 1   | 8046696   | PANEL CONTROL BOOM OVERRIDE   |      |            |                |         |
|      | 1   | X000274   | SWITCH, ROCKER (UP / DOWN)  |      |            |                |         |
|      | 1   | X000274   | SWITCH, ROCKER (EXTEND / RETRACT)                                   |      |            |                |         |
|      | 1   | X000273   | SWITCH, ROCKER (BRAKE)  |      |            |                |         |
| 4    | 1   | 8042426   | RC TRANSMITTER ( w/ GRAPHIC OVERLAYS)                               |      |            |                |         |
| *    | 1   | 8045653   | BOOM REMOTE METAL CLIP  |      |            |                |         |
| *    | 1   | X200010   | BOOM WIRING HARNESS   |      |            |                |         |
| *    | 1   | 8041911-1 | RUBBER 6-BUTTON PAD   |      |            |                |         |
| *    | 1   | 8043075   | DECAL OVERLAY   |      |            |                |         |
| *    | 1   | 8042428   | RC TRANSMITTER 8 BUTTON   |      |            |                |         |
| 5    | 2   | T500030   | GREASE FITTING 1/8"NPT STRAIGHT                                     |      |            |                |         |
| 6    | 4   | 8042812   | GROMMET 2"ID 3"OD 1/4"WOG TRAILER SLOT MODEL                        |      |            |                |         |
| 7    | 1   | 8043580   | MANIFOLD ASSY BOOM  |      |            |                |         |
| 8    | 2   | T401265   | ELBOW, 90 1/2"MB - 1/4"MJ   |      |            |                |         |
| 9    | 1   | 8041327   | CYLINDER, HYD. DOOR & REV FLOW                                      |      |            |                |         |
|      | 2   | W201020   | WIPER, CYLINDER ROD, 1 1/8" ROD                                     |      |            |                |         |
|      | 1   | 8044480   | SEAL PLATE WELDMENT   |      |            |                |         |
|      | 1   | 8044482   | BOOM SHUTOFF SEAL   | 1.1  | 8043584    | 3-WAY VALVE    | 8043588 |
|      | 1   | 8044483   | BOOM SHUTOFF SEAL PLATE SHIELD                                      | 1.2  | T405077    | #10 SAE PLUG   | -       |
|      | 1   | U001570   | SCREW, HC 1"-8 X 5.00   | 1.3  | 8043584    | 3-WAY VALVE    | 8043588 |
|      | 1   | U120060   | NUT, LOCK NY 1 - 8  | 1.4  | 8043584    | 3-WAY VALVE    | 8043588 |
| 10   | 1   | 8046571   | BOOM TURRET WELDMENT  | 1.5  | 8043584    | 3-WAY VALVE    | 8043588 |
|      | 6   | U001281   | SCREW, HC .625 - 11 X 3.50"   | 1.6  | 8043584    | 3-WAY VALVE    | 8043588 |
|      | 6   | U120020   | NYLON LOCK NUT .625 - 11  | 2.0  | 8043122-01 | 2-WAY VALVE NC | -       |
|      | 12  | U200140   | WASHER, FLAT .625   | 3.1  | T405095    | #8 SAE PLUG    | -       |
| 11   | 1   | 8046764   | BOOM ELECTRICAL BRACKET LP  | 3.2  | 8046772    | CAVITY PLUG    | -       |
|      | 5   | X000320   | DEUTSH DIODE RECEPTACLE   | 4.1  | T405088    | #4 SAE PLUG    | -       |
|      | 1   | 8040185   | RELAY   | 4.2  | T405088    | #4 SAE PLUG    | -       |
|      | 2   | 8044912   | TIME RELAY  | 5    | 8043584    | 3-WAY VALVE    | -       |
| 12   | 1   | 8041915   | BOOM - RC RECEIVER 8-RELAY  | 7    | T405077    | #10 SAE PLUG   | -       |
|      | 1   | 8044994   | ANTENNA, BOOM 7" 90DEG  | GR   | 8043122    | 2-WAY VALVE NC | -       |
| 13   | 1   | 8045157   | BOOM MANUAL BRAKE WELDMENT  | L    | T405092    | #6 SAE PLUG    | -       |
| 14   | 1   | 8043052   | BRAKE, CYLINDER   | T    | T405088    | #4 SAE PLUG    | -       |
|      | 1   | T401100   | ELBOW, 4MP-4MJ, 90  |      |            |                |         |
| 15   | 1   | 8042234   | SWIVEL BEARING  |      |            |                |         |
|      | 3   | T500020   | FITTING, GREASE .125 STRAIGHT (2 IN INNER RING,<br>1 IN OUTER RING) |      |            |                |         |
|      | 18  | U001195   | SCREW, HC 5/8"-11 X 1 3/4"  |      |            |                |         |
|      | 23  | U001210   | SCREW, HC 5/8"-11 X 2 1/4"  |      |            |                |         |
|      | 41  | U200140   | WASHER, FLAT 5/8"   |      |            |                |         |
|      | 41  | U210140   | WASHER, LOCK 5/8"   |      |            |                |         |
| 16   | 1   | 8046688   | BOOM MOUNT BRAKE RING   |      |            |                |         |
|      | 4   | U001900   | SCREW, HC 5/8"-11 X 2 1/2"  |      |            |                |         |
|      | 8   | U200140   | WASHER, FLAT 5/8"   |      |            |                |         |
|      | 4   | U120140   | NUT, LOCK 5/8"-11   |      |            |                |         |
| 17   | 4   | 8030315   | SKID - WATER TANK CLEVIS TUBE                                       |      |            |                |         |
| 18   | 1   | 8046690   | BOOM - LOWER STOP RING  |      |            |                |         |
| 19   | 1   | T400611   | UNION, 8MB - 4MJ  |      |            |                |         |
| 20   | 1   | 8046597   | CYLINDER, HYD BOOM 3 X 6  |      |            |                |         |
| 21   | 2   | 8041977   | BOOM - PIVOT CYLINDER BASE PIN                                      |      |            |                |         |
| 22   | 4   | U340050   | PIN LINCH 3/16 X 1 9/16"  |      |            |                |         |
| 23   | 1   | T401265   | ELBOW, 90 1/2"MB - 1/4"MJ   |      |            |                |         |
| 24   | 1   | T400082   | UNION, 1/4"FP - 1/4"FJ  |      |            |                |         |
| 25   | 1   | T400801   | FITTING, VENTED CAP 1/4" - 18NPTF                                   |      |            |                |         |
| 26   | 1   | 8042103   | HOSE AG SUCTION 6 - 32 1/2"   |      |            |                |         |
|      | 2   | 8042104   | CLAMP, HOSE T-BOLT 6.75   |      |            |                |         |
| 27   | 2   | 8041958   | BOOM - FLEX HOSE ADAPTER WELDMENT                                   |      |            |                |         |
| 28   | 2   | 8041988   | BOOM - FLANGE GASKET  |      |            |                |         |
| 29   | 1   | 8044471   | BOOM TURRET SHUTOFF - CLEAN COVER                                   |      |            |                |         |
| 30   | 1   | 8044475   | BOOM TURRET SHUTOFF - CLEAN COVER GASKET                            |      |            |                |         |

# HOSE STORAGE

# BOOM



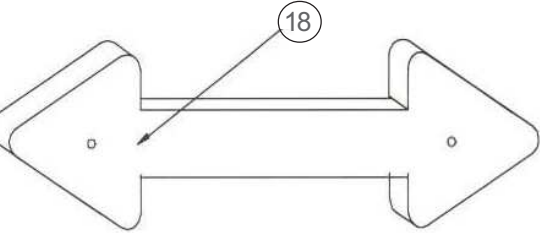
# HOSE STORAGE

# BOOM

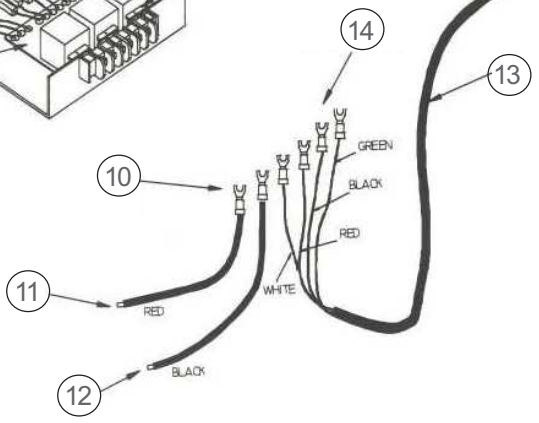
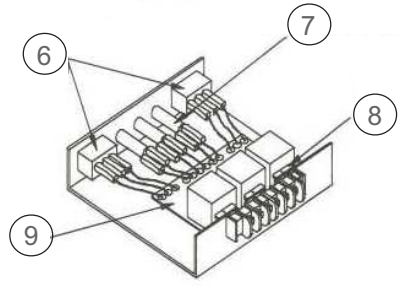
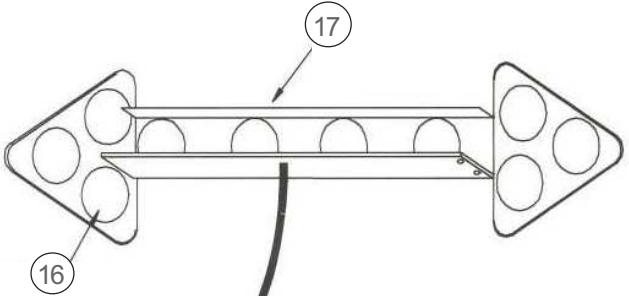
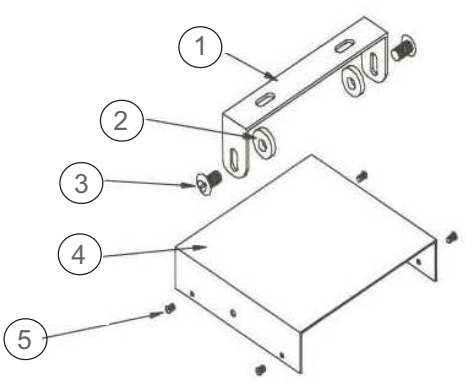
| ITEM | QTY | NUMBER  | DESCRIPTION                           |
|------|-----|---------|---------------------------------------|
| 1    | 2   | 8042222 | BOOM EXTENSION HOSE STORAGE           |
|      | 2   | 8043198 | CLAMP T-BOLT 700                      |
| 2    | 2   | 8030925 | PIPE CAP 6" PVC                       |
| 3    | 1   | 8042137 | BOOM HOSE EXTENSION                   |
|      | 1   | 8041781 | BOOM EXTENSION HOSE                   |
|      | 2   | 8045239 | UNION EXHAUST 4"OD - MNPT             |
|      | 1   | 8030846 | 4" FEMALE COUPLER                     |
| 4    | 1   | 8030844 | 4" MAL COUPLER                        |
|      | 1   | 8032138 | BOOM HOSE EXTENSION WITH 4" UNION PVC |
|      | 1   | 8045723 | 4" ALUMINUM TUBE 52 1/2"LG            |
|      | 2   | 8045728 | 4" HALF NIPPLE                        |
|      | 1   | 8030844 | COUPLING, 4" ALUM CAMLOCK MXF         |
|      | 1   | 8045725 | UNION PVC 4"FNPT 4"MSLIP w/HOLE       |
| 5    | 2   | 8041101 | HOSE STORAGE RETAINING ROD            |
|      | 2   | 8041485 | LANYARD CABLE                         |
| 6    | 2   | R700160 | R-CLIP                                |
| 7    | 4   | 8042606 | CLAMP T-BOLT 450                      |

# Arrow Board Option

ARROW BOARD & DUST COVER  
NOT DRAWN TO SCALE



NOTE: MOUNTING BRACKETS MUST BE ATTACHED TO ARROW BOARD BEFORE DUST COVER IS REPLACED

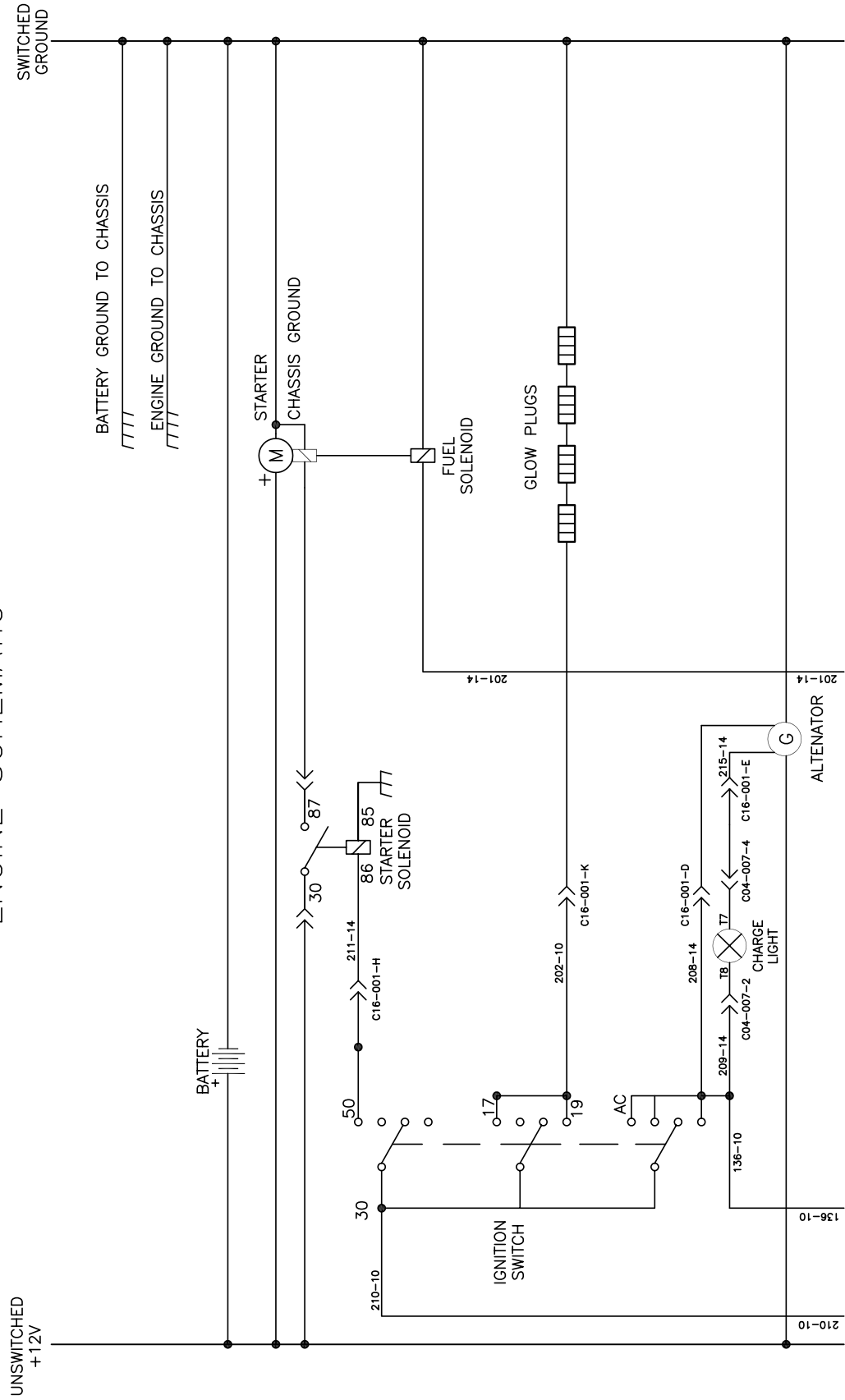


# Arrow Board Option

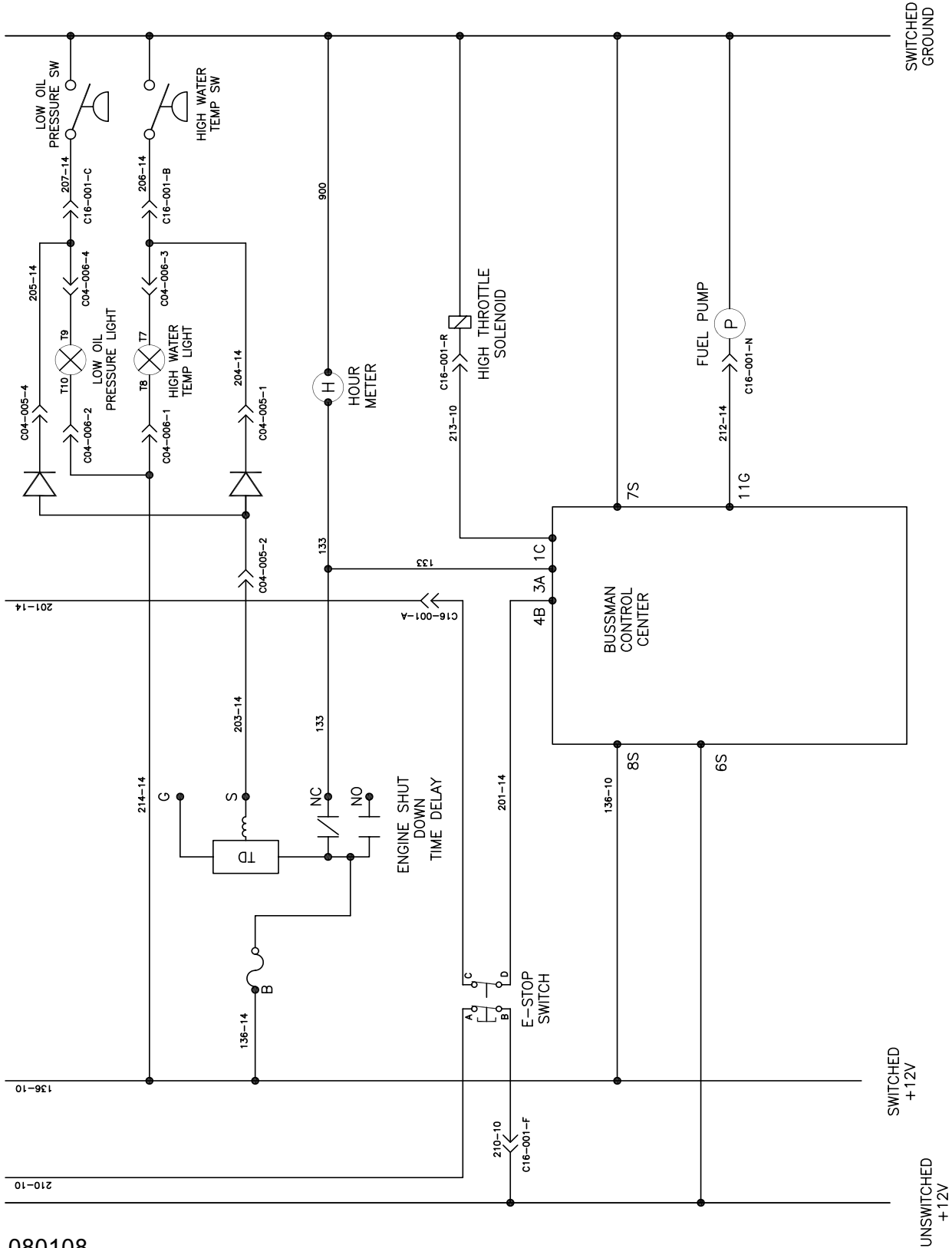
| ITEM | QTY | PART #     | DESCRIPTION             |
|------|-----|------------|-------------------------|
| 1    | 1   | 8042197-1  | MOUNTING BAIL           |
| 2    | 2   | 8042197-2  | WASHER                  |
| 3    | 2   | 8042197-3  | BOLT                    |
| 4    | 1   | 8042197-4  | COVER                   |
| 5    | 4   | 8042197-5  | MACHINE SCREW           |
| 6    | 2   | 8042197-6  | SPDT SWITCH             |
| 7    | 3   | 8042197-7  | RED PILOT LAMP          |
| 8    | 1   | 8042197-8  | 15 AMP FUSE             |
| 9    | 1   | 8042197-9  | CIRCUIT BOARD ASSY      |
| 10   | 2   | 8042197-10 | #6 BLUE SPADE CONNECTOR |
| 11   | 4'  | 8042197-11 | RED                     |
| 12   | 4'  | 8042197-12 | BLACK                   |
| 13   | 20' | 8042197-13 | CABLE HARNESS           |
| 14   | 4   | 8042197-14 | #6 BLUE SPADE CONNECTOR |
| 15   | 1   | 8042197-15 | 4-WAY CONNECTOR         |
| 16   | 1   | 8042197-16 | STANDARD LAMP ASSY      |
| 17   | 1   | 8042197-17 | ARROWBOARD FRAME        |
| 18   | 1   | 8042197-18 | DUST COVER              |
| *    | 1   | 8045830    | ARROWBOARD BRACKET      |
| *    | 1   | 8046526    | ARROWBOARD MOUNT PLATE  |

# Vacuum Diesel Engine Schematic

## VACUUM DIESEL ENGINE SCHEMATIC

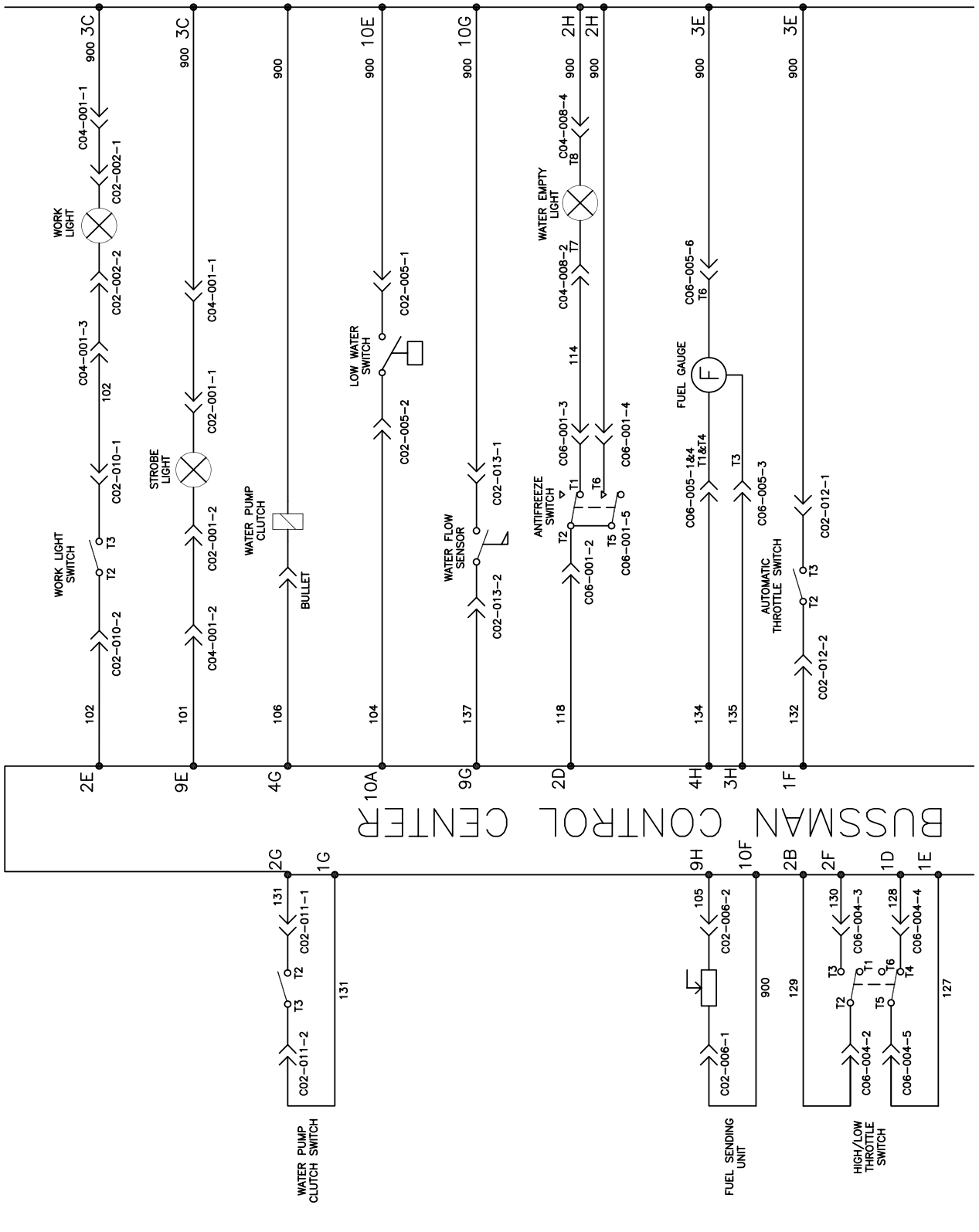


# Vacuum Diesel Engine Schematic



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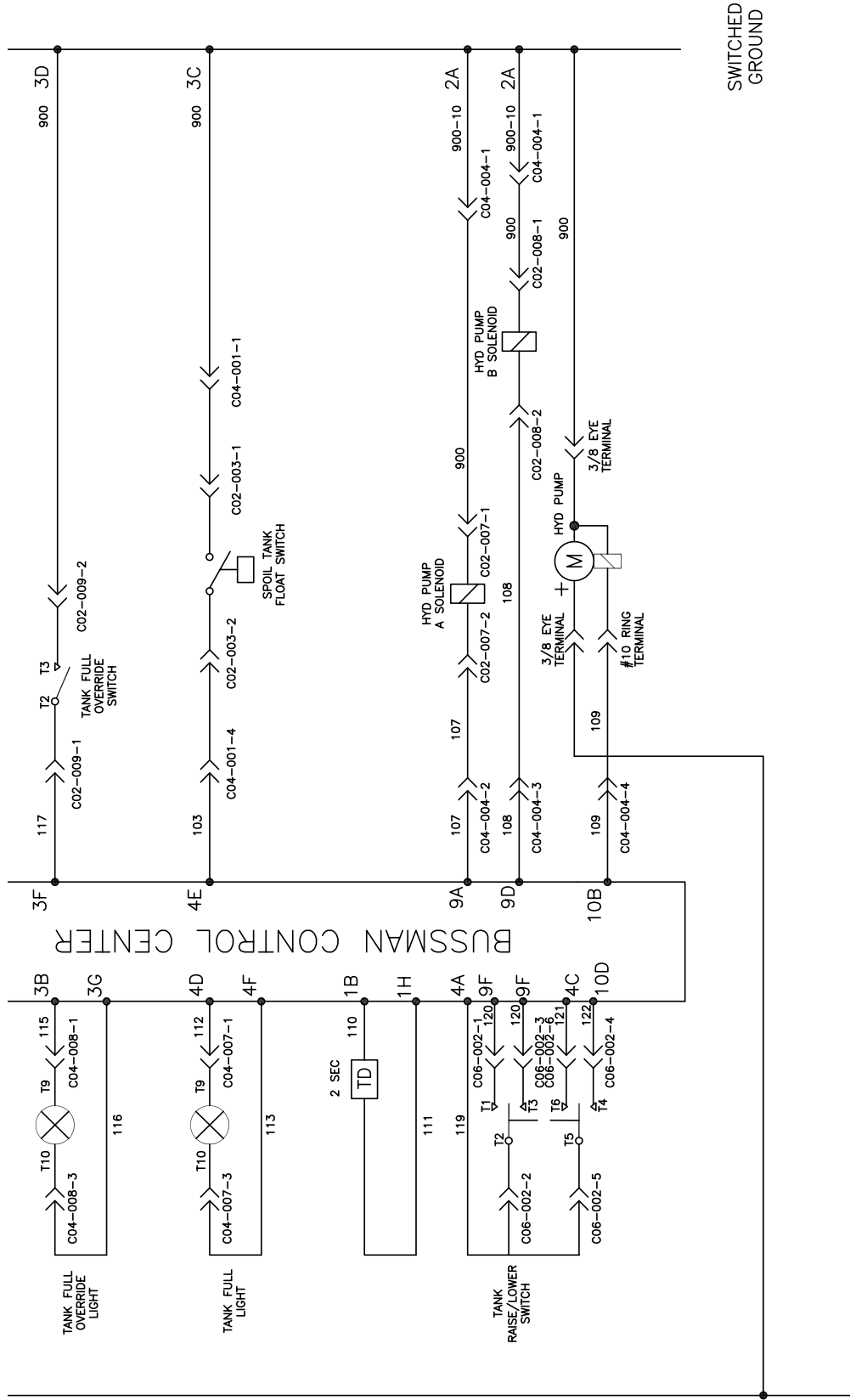
# Vacuum Diesel Engine Schematic



BUSSMAN CONTROL CENTER

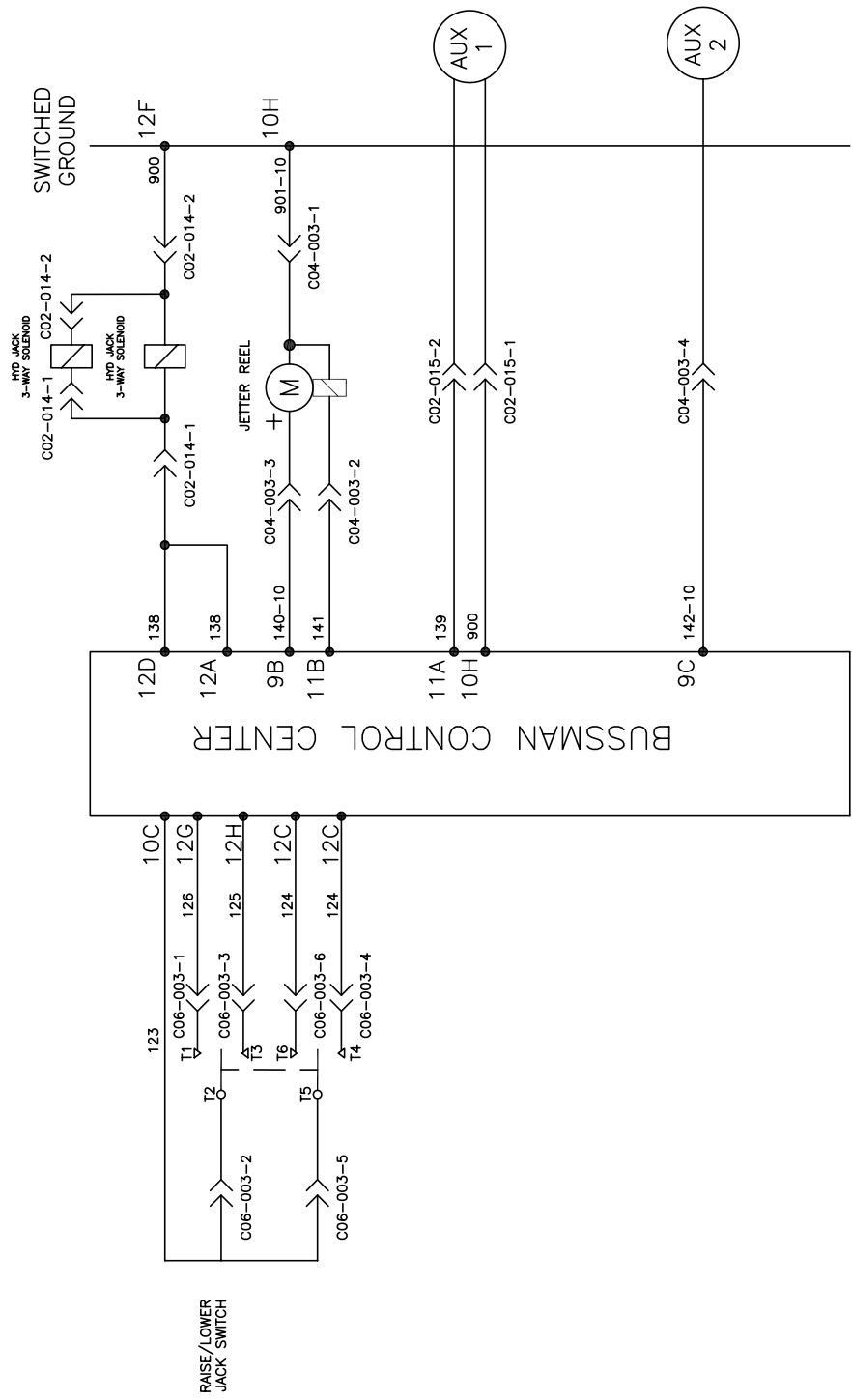


# Vacuum Diesel Engine Schematic



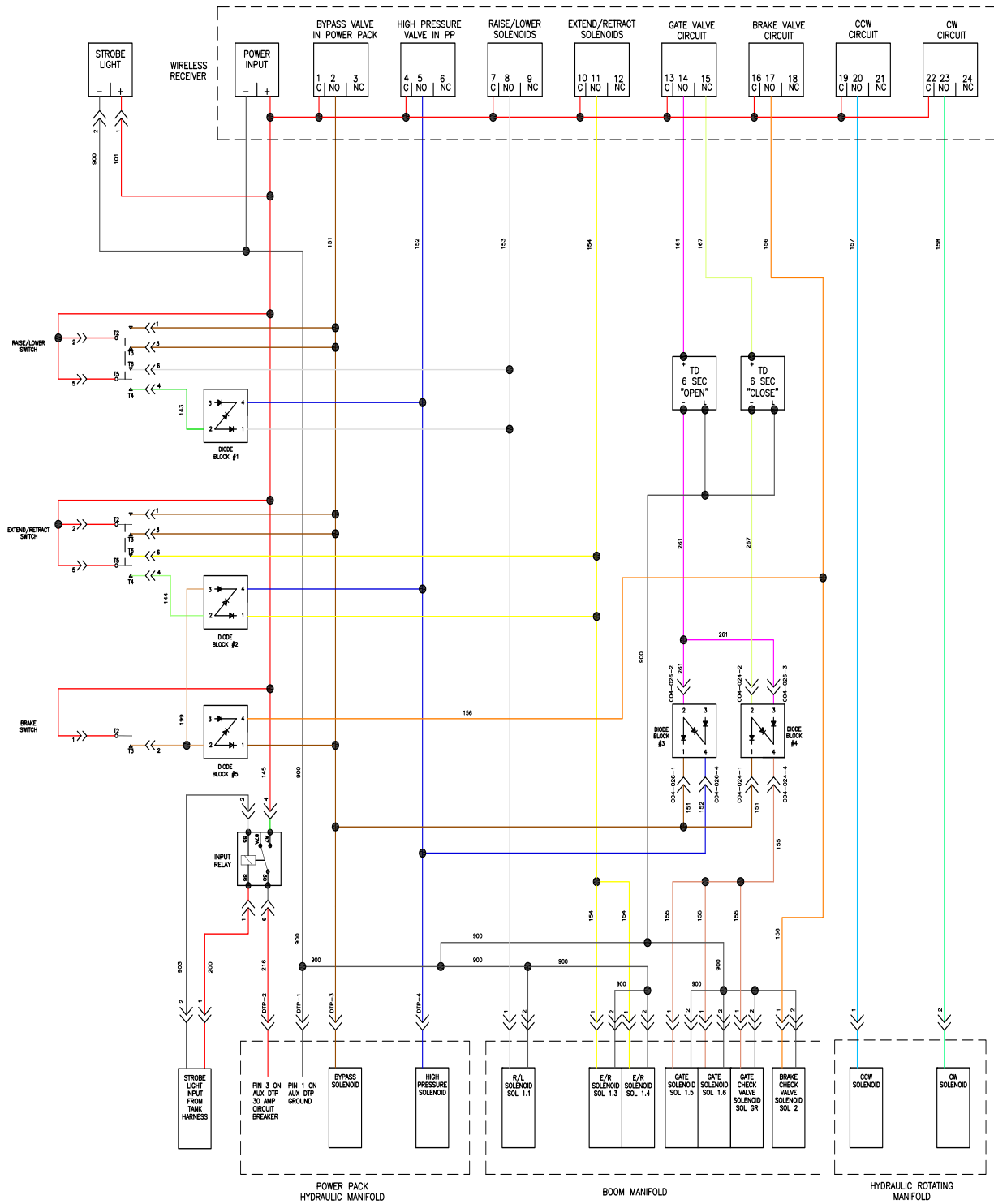
# Vacuum Diesel Engine Schematic

## BUSSMAN CONTROL CENTER OPTIONS



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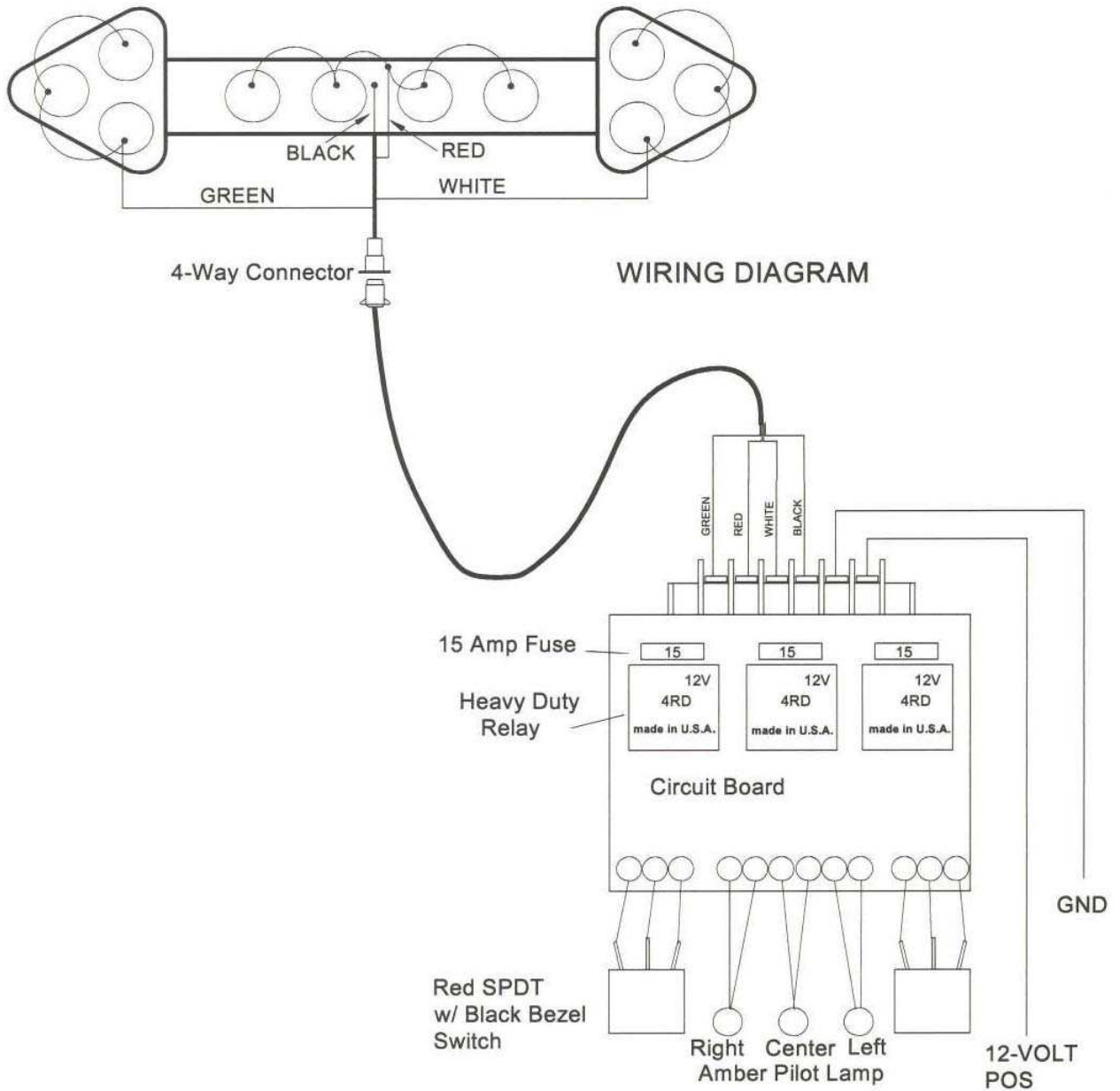
# BOOM HYDRAULIC WIRING SHCEMATIC



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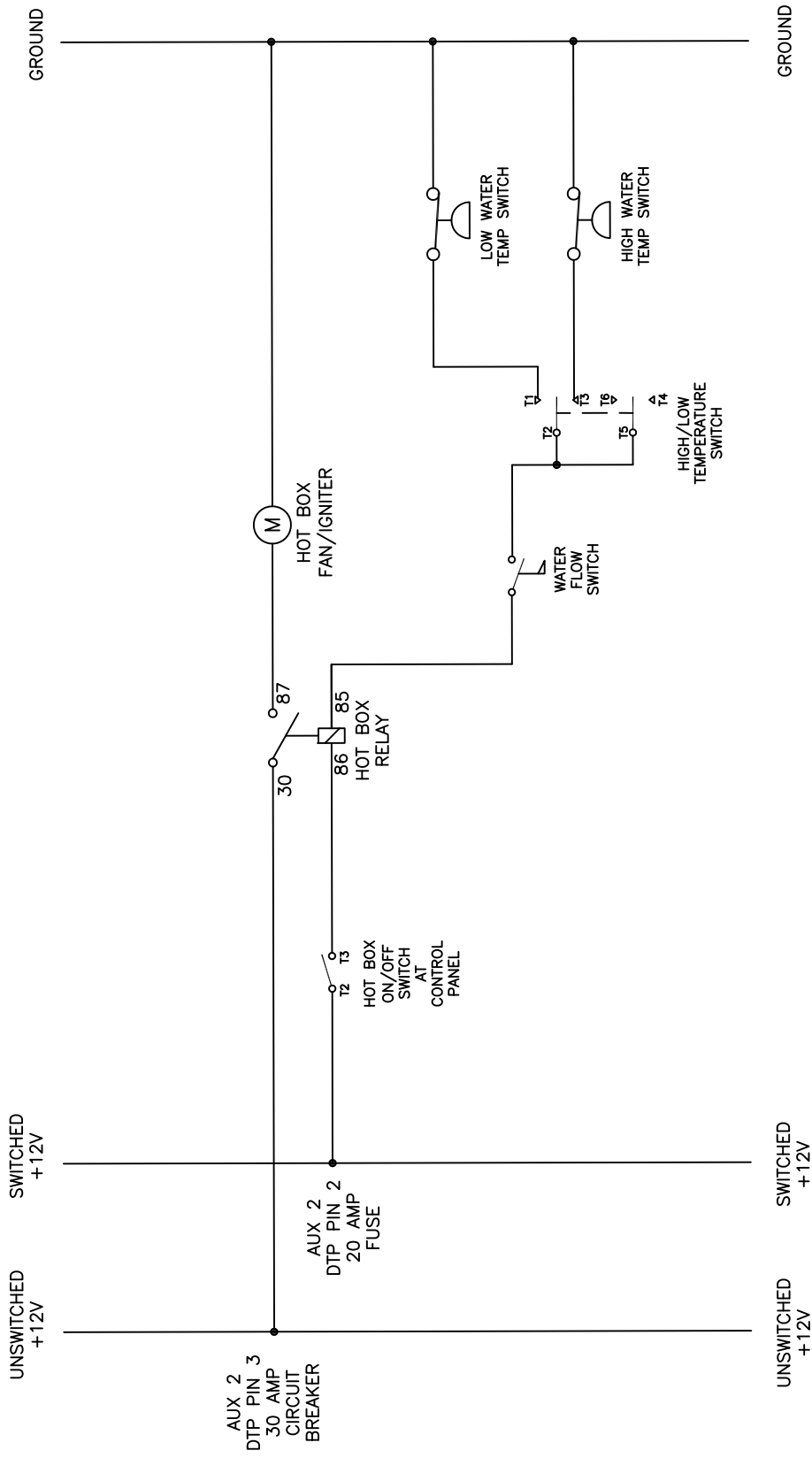
# Arrow Board Option



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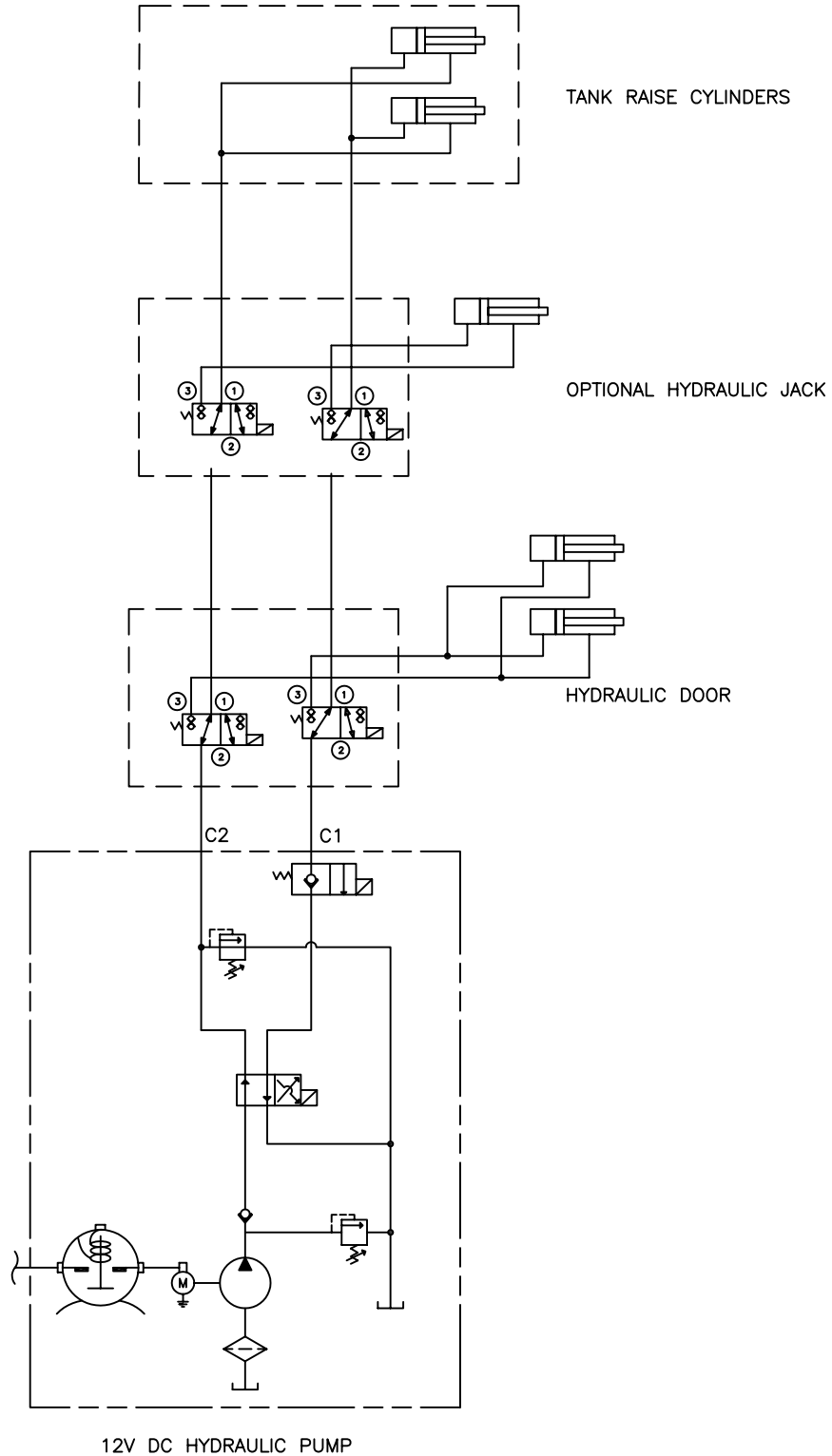


# MCLAUGHLIN – HOT BOX WIRING SCHEMATIC



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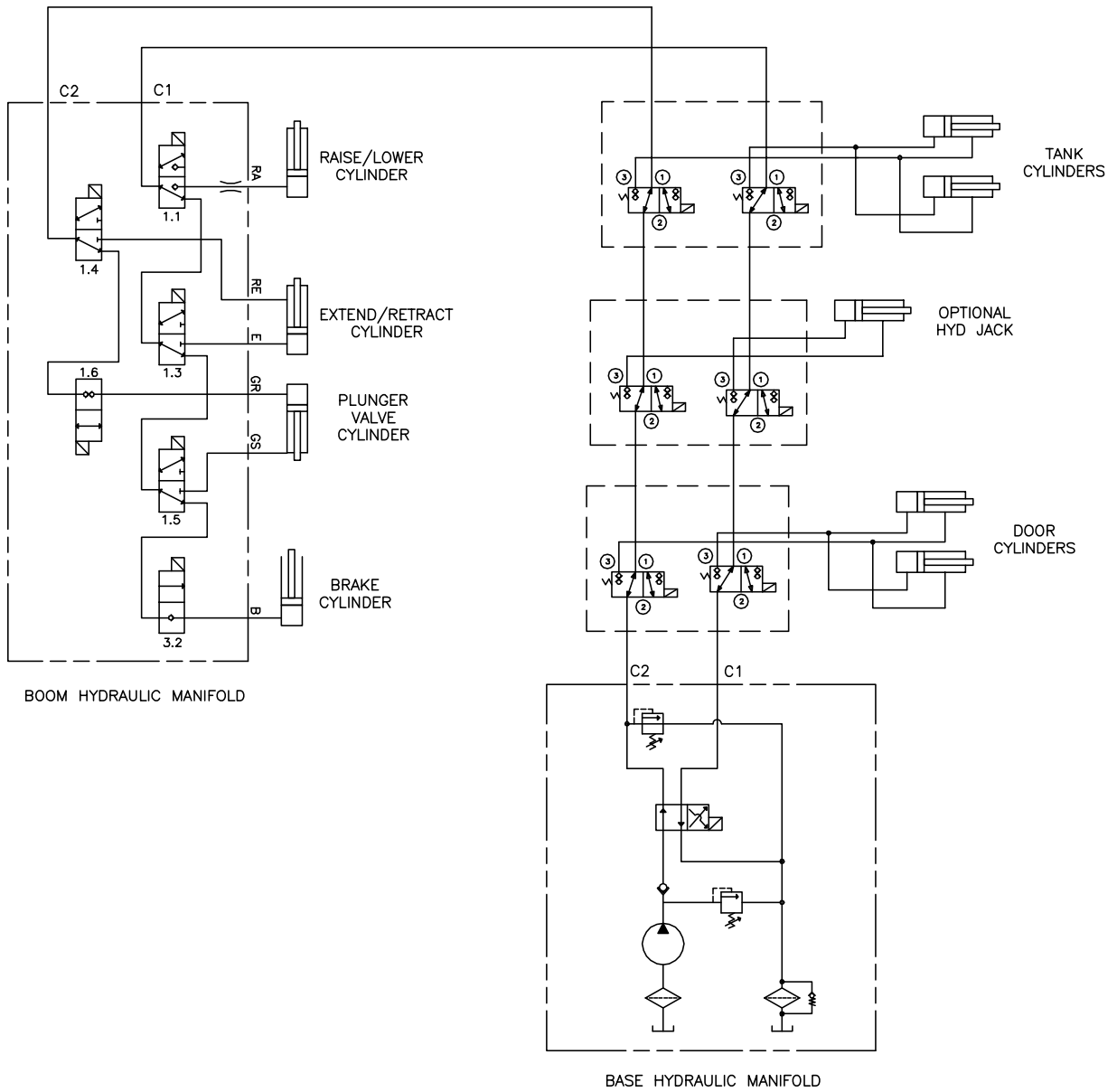
# TANK AND OPTIONAL JACK HYDRAULIC SCHEMATIC (2-Stage)



051410-E

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# BOOM HYDRAULIC SCHEMATIC



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# ROOTS

Blowers Compressors Exhausters

## Universal URAI-DSL

### Contents

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Information Summary  
Safety Precautions  
Operating Limitations  
Lubrication  
Operation

Troubleshooting  
Inspection & Maintenance  
Data  
Assembly Drawings  
Parts List

### Do These Things To Get The Most From Your ROOTS™ blower

---

- **Make sure both driving and driven equipment is correctly lubricated before start-up. See LUBRICATION.**
- In event of trouble during installation or operation, do not attempt repairs of ROOTS furnished equipment. Notify ROOTS, giving all nameplate information plus an outline of operating conditions and a description of the trouble. Unauthorized attempts at equipment repair may void ROOTS warranty.
- Units out of warranty may be repaired or adjusted by the owner. Good inspection and maintenance practices should reduce the needs for repairs.

**NOTE:** Information in this manual is correct as of the date of publication. ROOTS reserves the right to make design or material changes without notice, and without obligation to make similar changes without notice, and without obligation to make similar changes on equipment of prior manufacture.

## Safety Precautions

It is important that all personnel observe safety precautions to minimize the chances of injury. Among many considerations, the following should be particularly noted:

- Blower casing and associated piping or accessories may become hot enough to cause major skin burns on contact.
- Internal and external rotating parts of the blower and driving equipment can produce serious physical injuries. Do not reach into any opening in the blower while it is operating, or while subject to accidental starting. Protect external moving parts with adequate guards.
- Disconnect power before doing any work, and avoid bypassing or rendering inoperative any safety or protective devices.
- If blower is operated with piping disconnected, place a strong coarse screen over the inlet and avoid standing in the discharge air stream. **CAUTION: Never cover the blower inlet with your hand or other part of body.**
- Stay clear of the blast from pressure relief valves and the suction area of vacuum relief valves.
- Use proper care and good procedures in handling, lifting, installing, operating and maintaining the equipment.
- Casing pressure must not exceed 25 PSI (1725 mbar) gauge. Do not pressurize vented cavities from an external source, nor restrict the vents without first consulting Roots.
- Do not use air blowers on explosive or hazardous gases.
- Other potential hazards to safety may also be associated with operation of this equipment. All personnel working in or passing through the area should be trained to exercise adequate general safety precautions.

## Operating Limitations

A ROOTS blower or exhauster must be operated within certain approved limiting conditions to enable continued satisfactory performance. Warranty is contingent on such operation.

Maximum limits for pressure, temperature and speed are specified in TABLE 1 for various models & sizes of blowers & exhausters. These limits apply to all units of normal construction, when operated under standard atmospheric conditions. Be sure to arrange connections or taps for instruments, thermometers and pressure or vacuum gauges at or near the inlet and discharge connections of the unit. These, along with a tachometer, will enable periodic checks of operating conditions.

**PRESSURE** – The pressure rise, between inlet and discharge, must not exceed the figure listed for the specific unit frame size concerned. Also, in any system where the unit inlet is at a positive pressure above atmosphere a maximum case rating of 25 PSI gauge (1725 mbar) should not be exceeded without first consulting Roots. Never should the maximum allowable differential pressure be exceeded.

On vacuum service, with the discharge to atmospheric pressure, the inlet suction or vacuum must not be greater than values listed for the specific frame size.

**TEMPERATURE** – Blower & exhauster frame sizes are approved only for installations where the following temperature limitations can be maintained in service:

- Measured temperature rise must not exceed listed values when the inlet is at ambient temperature. Ambient is considered as the general temperature of the space around the unit. This is not outdoor temperature unless the unit is installed outdoors.
- If inlet temperature is higher than ambient, the listed allowable temperature rise values must be reduced by 2/3 of the difference between the actual measured inlet temperature and the ambient temperature.
- The average of the inlet and discharge temperature must not exceed 250°F. (121°C).
- The ambient temperature of the space the blower/motor is installed in should not be higher than 120°F (48.8°C).

**SPEED** – These blowers & exhausters may be operated at speeds up to the maximum listed for the various frame sizes. They may be direct coupled to suitable constant speed drivers if pressure/temperature conditions are also within limits. At low speeds, excessive temperature rise may be a limiting factor.

**Special Note:** The listed maximum allowable temperature rise for any particular blower & exhauster may occur well before its maximum pressure or vacuum rating is reached. This may occur at high altitude, low vacuum or at very low speed. The units' operating limit is always determined by the maximum rating reached first. It can be any one of the three: Pressure, Temperature or Speed.



## Lubrication

### For Units with Splash Lubrication on Both Ends

Bearings and oil seals are lubricated by the action of the timing gears or oil slingers which dip into the main oil sumps

causing oil to splash directly on gears and into bearings and seals. A drain port is provided below each bearing to prevent an excessive amount of oil in the bearings. Seals located inboard of the bearings in each headplate effectively retain oil within the sumps. Any small leakage that may occur should the seals wear passes into a cavity in each vented headplate and is drained downward.

Oil sumps on each end of the blower are filled by removing top vent plugs, Item (25), and filling until oil reaches the middle of the oil level sight gauge when the unit is not operating, Item (45 or 53), DO NOT FILL PAST THE MIDDLE OF THE SIGHT GLASS.

Initial filling of the sumps should be accomplished with the blower not operating, in order to obtain the correct oil level. Approximate oil quantities required for blowers of the various models and configurations are listed in Table 3. Use a good grade of industrial type non-detergent, rust inhibiting, anti-foaming oil and of correct viscosity per Table 2. **\*ROOTS synthetic oil (Roots P/N 813-106-) is specified and recommended.** Roots does not recommend automotive type lubricants, as they are not formulated with the properties mentioned above.

The oil level may rise or fall on the gauge during operation, to an extent depending somewhat on oil temperature and blower speed.

Proper lubrication is usually the most important single consideration in obtaining maximum service life and satisfactory operation from the unit. Unless operating conditions are quite severe, a weekly check of oil level and necessary addition of lubricant should be sufficient. During the first week of operation, check the oil levels in the oil sumps about once a day, and watch for leaks. Replenish as necessary. Thereafter, an occasional check should be sufficient. It is recommended that the oil be changed after initial 100 hours of operation. Frequent oil changing is not necessary unless the blower is operated in a very dusty location.

Normal life expectancy of petroleum based oils is about 2000 hours with an oil temperature of about 180°F (82°C). As the oil temperature increases by increments of 15-18°F (8°C - 10°C), the life is reduced by half. Example: Oil temperatures of 210-216°F (99°C - 102°C) will produce life expectancy of 1/4 or 500 hours. Therefore, it is considered normal to have oil change periods of 500 hours with petroleum based oils.

Normal life expectancy of ROOTS™ Synthetic Oil is about 4000 to 8000 hours with an oil temperature of about 180°F (82°C). As the oil temperature increases by increments of 15-18°F (8°C - 10°C), the life is reduced by half. Example: Oil temperatures of 210-216°F (99°C - 102°C) will produce life expectancy of 1/4 or 1000 to 2000 hours.

NOTE: To estimate oil temperature, multiply the discharge temperature of the blower by 0.80. Example: if the discharge air temperature of the blower is 200° F, it is estimated that the oil temperature is 160° F.

\*ROOTS™ Synthetic Oil & Grease is superior in performance to petroleum based products. It has high oxidation stability, excellent corrosion protection, extremely high film strength and low coefficient of friction. Typical oil change intervals are increased 2-3 times over petroleum based lubricants. Also, ROOTS™ Synthetic Oil is 100% compatible with petroleum based oils. Simply drain the oil in the blower and refill the reservoirs with ROOTS™ Synthetic Oil to maintain optimum performance of your ROOTS™ blower.

## Operation

Before operating a blower under power for the first time, recheck the unit and the installation thoroughly to reduce the likelihood of avoidable troubles. Use the following procedure check list as a guide, but consider any other special conditions in the installation.

- Be certain that no bolts, tools, rags, or debris have been left in the blower air chamber or piping.
- If an outdoor intake without filter is used, be sure the opening is located so it cannot pick up dirt and is protected by a strong screen or grille. Use of the temporary protective screen as described under INSTALLATION is strongly recommended.
- Recheck blower leveling, drive alignment and tightness of all mounting bolts if installation is not recent. If belt drive is used, adjust belt tension correctly.
- Turn drive shaft by hand to make sure impellers still rotate without bumping or rubbing at any point.
- Ensure oil levels in the main oil sumps are correct.
- Check lubrication of driver. If it is an electric motor, be sure that power is available and that electrical overload devices are installed and workable.
- Open the manual unloading valve in the discharge air line. If a valve is in the inlet piping, be sure it is open.
- Bump blower a few revolutions with driver to check that direction of rotation agrees with arrow near blower shaft, and that both coast freely to a stop.

After the preceding points are cleared, blower is ready for trial operation under "no-load" conditions. The following procedure is suggested to cover this initial operation test period.

- a. Start blower, let it accelerate to full speed, then shut off. Listen for knocking sounds, both with power on and as speed slows down.
- b. After blower comes to a complete stop, repeat above, but let blower run 2 or 3 minutes. Check for noises, such as knocking sounds.
- c. After blower comes to a complete stop, operate blower for about 10 minutes unloaded. Check oil levels. Observe cylinder and headplate surfaces for development of hot spots such as burned paint, indicating impeller rubs. Be aware of any noticeable increase in vibration.

Assuming that all trials have been satisfactory, or that necessary corrections have been made, the blower should now have a final check run of at least one hour under normal operating conditions. After blower is restarted, gradually

close the discharge unloading valve to apply working pressure. At this point it is recommended that a pressure gauge or manometer be connected into the discharge line if not already provided, and that thermometers be in both inlet and discharge lines. Readings from these instruments will show whether pressure or temperature ratings of the blower are being exceeded.

During the final run, check operating conditions frequently and observe the oil levels at reasonable intervals. If excessive noise or local heating develops, shut down immediately and determine the cause. If either pressure rise or temperature rise across the blower exceeds the limit specified in this manual, shut down and investigate conditions in the piping system. Refer to the TROUBLESHOOTING CHECKLIST for suggestions on various problems that may appear.

The blower should now be ready for continuous duty operation at full load. During the first few days make periodic checks to determine whether all conditions remain steady, or at least acceptable. This may be particularly important if the blower is supplying air to a process system where conditions can vary. At the first opportunity, stop the blower and clean the temporary inlet protective screen. If no appreciable amount of debris has collected, the screen may be removed. See comments under INSTALLATION. At this same time, verify leveling, coupling alignment or belt tension, and mounting bolt tightness.

Should operating experience prove that blower capacity is a little too high for the actual air requirements, a small excess may be blown off continuously through the manual unloading or vent valve. Never rely on the pressure relief valve as an automatic vent. Such use may cause the discharge pressure to become excessive, and can also result in failure of the valve itself. If blower capacity appears to be too low, refer to the TROUBLESHOOTING CHECKLIST.

### Vibration Assessment Criteria

With measurements taken at the bearing locations on the housings, see chart below for an appropriate assessment guide for rotary lobe blowers rigidly mounted on stiff foundations.

In general, blower vibration levels should be monitored on a regular basis and the vibration trend observed for progressive or sudden change in level. If such a change occurs, the cause should be determined through spectral analysis.

As shown on the chart below, the level of all pass vibration will determine the need to measure discrete frequency vibration levels and the action required.

| All Pass Vibration (in/sec)       | Discrete Frequency Vibration (in/sec) | Action      |
|-----------------------------------|---------------------------------------|-------------|
| 0.45 or less                      | N/R                                   | Acceptable  |
| Greater than 0.45 but 1.0 or less | 0.45 or less @ any frequency          | Acceptable  |
|                                   | Greater than 0.45 @ any frequency     | Investigate |
| Greater than 1.0                  | Less than 1.0                         | Investigate |
|                                   | Greater than 1.0                      | Investigate |

## Troubleshooting Checklist

| Trouble                                       | Item | Possible Cause                          | Remedy   |
|---|------|---|--|
| No flow                                       | 1    | Speed too low                           | Check by tachometer and compare with published performance   |
|   | 2    | Wrong rotation                          | Compare actual rotation with Figure 1<br>Change driver if wrong  |
|   | 3    | Obstruction in piping                   | Check piping, valves, silencer to assure open flow path  |
| Low capacity                                  | 4    | Speed too low                           | See item 1, If belt drive, check for slippage and readjust tension   |
|   | 5    | Excessive pressure rise                 | Check inlet vacuum and discharge pressure and compare with Published performance   |
|   | 6    | Obstruction in piping                   | See item 3   |
|   | 7    | Excessive slip                          | Check inside of casing for worn or eroded surfaces causing excessive clearances  |
| Excessive power                               | 8    | Speed too high                          | Check speed and compare with published performance   |
|   | 9    | Excessive pressure rise                 | See Item 5   |
|   | 10   | Impeller rubbing                        | Inspect outside of cylinder for high temperature areas, then check for impeller contact at these points. Correct blower mounting, drive alignment        |
|   | 11   | Scale, sludge, rust or product build up | Clean blower appropriately   |
| Damage to bearings or gears                   | 12   | Inadequate lubrication                  | Check oil sump levels in gear and drive end headplates   |
|   | 13   | Excessive lubrication                   | Check oil levels. If correct, drain and refill with clean oil of recommended grade   |
|   | 14   | Excessive pressure rise                 | See Item 5   |
|   | 15   | Coupling misalignment                   | Check carefully. Realign if questionable   |
|   | 16   | Excessive belt tension                  | Readjust for correct tension   |
| Vibration                                     | 17   | Misalignment                            | See Item 15  |
|   | 18   | Impellers rubbing                       | See Item 10  |
|   | 19   | Worn bearings/gears                     | Check gear backlash and condition of bearings, and replace as indicated  |
|   | 20   | Unbalanced or rubbing impeller          | Scale or process material may build up on casing and impellers, or inside impellers. Remove build-up to restore original clearances and impeller balance |
|   | 21   | Driver or blower loose                  | Tighten mounting bolts securely  |
|   | 22   | Piping resonances                       | Determine whether standing wave pressure pulsations are present in the piping  |
|   | 23   | Scale/sludge build-ups                  | Clean out interior of impeller lobes to restore dynamic balance  |
| Driver stops, or will not start               | 24   | Casing strain                           | Re-work piping alignment to remove excess strain   |
|   | 25   | Impeller stuck                          | Check for excessive hot spot on headplate or cylinder. See item 10. Look for defective shaft bearing and/or gear teeth                                   |
|   | 26   | Scale, sludge, rust or product build-up | Clean blower appropriately   |
| Excessive breather                            | 27   | Broken seal                             | Replace seals  |
| Blow-by or excessive oil leakage to vent area | 28   | Defective O-ring                        | Replace seals and O-ring   |
| Excessive oil leakage in vent area            | 29   | Defective/plugged breather              | Replace breather and monitor oil leakage   |
|   | 30   | Oil level too high                      | Check sump levels in gear and drive headplates.  |
|   | 31   | Oil type or viscosity incorrect         | Check oil to insure it meets recommendations. Drain then fill with clean oil of recommended grade.   |
|   | 32   | Blower running hot                      | Check blower operating conditions to ensure they are within the operating limitations defined in this manual.  |

## Inspection & Maintenance: Universal RAI® series blowers

A good program of consistent inspection and maintenance is the most reliable method of minimizing repairs to a blower. A simple record of services and dates will help keep this work on a regular schedule. Basic service needs are:

- Lubrication
- Checking for hot spots
- Checking for increases or changes in vibration and noise
- Recording of operating pressures and temperatures

Above all, a blower must be operated within its specified rating limits, to obtain satisfactory service life.

A newly installed blower should be checked often during the first month of full-time operation. Attention there after may be less frequent assuming satisfactory performance. Lubrication is normally the most important consideration and weekly checks of lubricant levels in the gearbox and bearing reservoirs should be customary. Complete oil change schedules are discussed under **LUBRICATION**.

Driver lubrication practices should be in accordance with the manufacturer's instructions. If direct connected to the blower through a lubricated type coupling, the coupling should be checked and greased each time blower oil is changed. This will help reduce wear and prevent unnecessary vibration. In a belted drive system, check belt tension periodically and inspect for frayed or cracked belts.

In a new, and properly installed, unit there is no contact between the two impellers, or between the impellers and cylinder or headplates. Wear is confined to the bearings (which support and locate the shafts) the oil seals, and the timing gears. All are lubricated and wear should be minimal if clean oil of the correct grade is always used. Seals are subject to deterioration as well as wear, and may require replacement at varying periods.

Shaft bearings are designed for optimum life under average conditions with proper lubrication and are critical to the service life of the blower. Gradual bearing wear may allow a shaft position to change slightly, until rubbing develops between impeller and casing. This will cause spot heating, which can be detected by observing these surfaces. Sudden bearing failure is usually more serious. Since the shaft and impeller are no longer supported and properly located, extensive general damage to the blower casing and gears is likely to occur.

Oil seals should be considered expendable items, to be replaced whenever drainage from the headplate vent cavity becomes excessive or when the blower is disassembled for

any reason. Some oil seal leakage may occur since an oil film under the lip is required for proper operation. Periodically leaked oil should be wiped off from surfaces. Minor seal leakage should not be considered as indicating seal replacement.

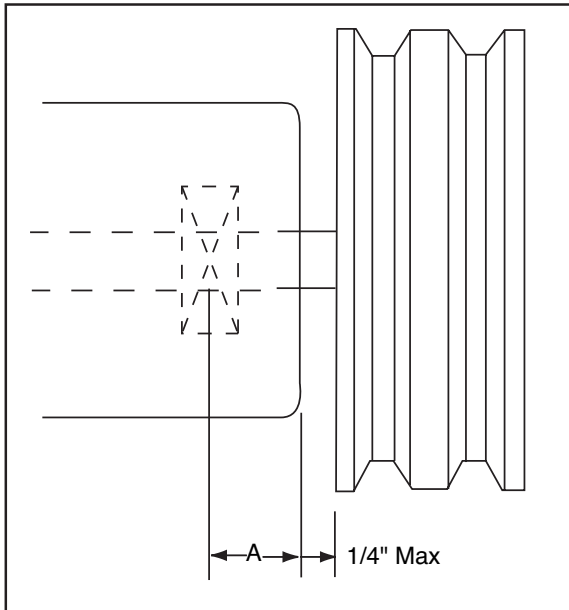
Timing gear wear, when correct lubrication is maintained, should be negligible. Gear teeth are cut to provide the correct amount of backlash, and gears correctly mounted on the shafts will accommodate a normal amount of tooth wear without permitting contact between lobes of the two impellers. However, too high an oil level will cause churning and excessive heating. This is indicated by unusually high temperature at the bottom of the gear housing. Consequent heating of the gears will result in loss of tooth-clearance, backlash and rapid wear of the gear teeth usually will develop. Continuation of this tooth wear will eventually produce impeller contacts (knocking), and from this point serious damage will be unavoidable if blower operation is continued. A similar situation can be produced suddenly by gear tooth fracture, which is usually brought on by sustained overload or momentary shock loads.

Problems may also develop from causes other than internal parts failure. Operating clearances within a blower are only a few thousandths of an inch. This makes it possible for impeller interference or casing rubs to result from shifts in the blower mounting, or from changes in piping support. If this type of trouble is experienced, and the blower is found to be clean, try removing mounting strains. Loosen blower mounting bolts and reset the leveling and drive alignment. Then tighten mounting again, and make sure that all piping meets blower connections accurately and squarely. Foreign materials in the blower will also cause trouble, which can only be cured by disconnecting the piping and thoroughly cleaning the blower interior.

A wide range of causes & solutions for operating troubles are covered in the **TROUBLE SHOOTING CHECKLIST**. The remedies suggested should be performed by qualified mechanics with a good background. Major repairs generally are to be considered beyond the scope of maintenance, and should be referred to an authorized Roots distributor.

Warranty failures should not be repaired at all, unless specific approval has been obtained through Roots before starting work. Unauthorized disassembly within the warranty period may void the warranty.

**Figure 2 - Allowable Overhung Loads for V-Belt Drives Universal RAI®/URAI®-DSL Units**



$$\text{Belt Pull lbs} = \frac{252100 \cdot \text{Motor HP}}{\text{Blower RPM} \cdot \text{Sheave Diameter}}$$

$$\text{Shaft Load (lb.in)} = \text{Belt Pull} \cdot \left( A + \frac{1}{4} + \frac{\text{Sheave Width}}{2} \right)$$

| Frame Size | Dimension "A" | Max Allowable Shaft Load (lb-in) | Min Sheave Diameter |
|------------|---------------|----------------------------------|---------------------|
| 59         | 1.13          | 1,325                            | 6.00                |

**NOTE:**

Arc of sheave belt contact on the smaller sheave not to be less than 170°

Driver to be installed on the inlet side for vertical units, and on the drive shaft side for horizontal units.

Roots recommends the use of two or more 3V, 5V or 8V matched set or banded belts and sheaves.

**Specified Lubricants**

**ROOTS Synthetic Oil: ISO-VG-320 Grade**

|               | Part Number |
|---------------|-------------|
| Quart         | 13106004    |
| Gallon        | 13106005    |
| Case (12 qts) | 13106007    |

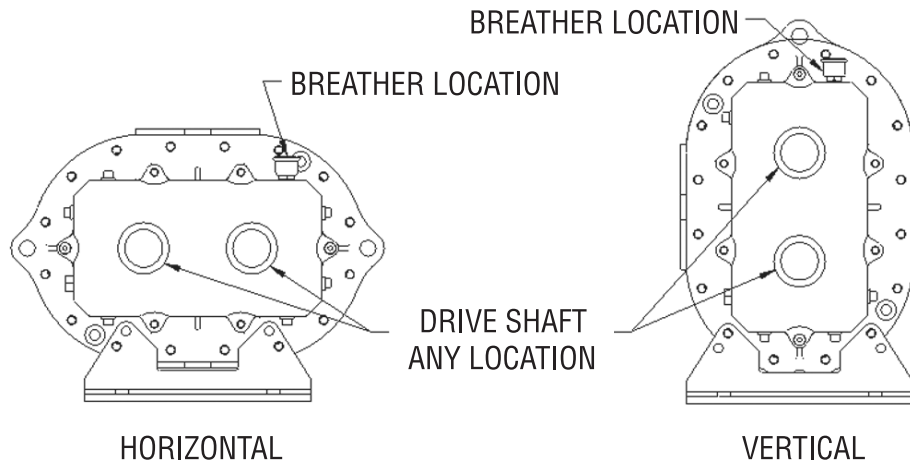
**ROOTS Synthetic Oil: ISO-VG-220 Grade**

|               | Part Number |
|---------------|-------------|
| Quart         | 13106001    |
| Gallon        | 13106002    |
| Case (12 qts) | 13106008    |

**ROOTS Synthetic Oil: ISO-VG-150 Grade**

|                | Part Number |
|----------------|-------------|
| Quart          | 13106020    |
| Gallon         | 13106021    |
| Case (12 qts)  | 13106023    |
| 5 Gallon Pail  | 13106022    |
| 55 Gallon Drum | 13106025    |

**Drive End Breather Orientation for URA-DSL blowers with Oil Lube**



**URAI DSL BREATHER ORIENTATION**

**Table 1 - URAI, URAI-DSL Blowers,  
Maximum Allowable Operating Conditions**

| <b>Frame Size</b> | <b>Gear Diameter (Inch)</b> | <b>Speed RPM</b> | <b>Temp. Rise Deg F (Deg C)</b> | <b>Delta Pressure PSI (mbar)</b> | <b>Inlet Vacuum INHG (mbar)</b> |
|-------------------|-----------------------------|------------------|---------------------------------|----------------------------------|---------------------------------|
| 59                | 5                           | 2,850            | 225 (125)                       | 7 (483)                          | 15 (500)                        |

**Table 2 - Recommended Oil Grades**

| Ambient Temperature °F (°C) | ISO Viscosity No. |
|-----------------------------|-------------------|
| Above 90° (32°)             | 320               |
| 32° to 90° (0° to 32°)      | 220               |
| 0° to 32° (-18° to 0°)      | 150               |
| Below 0° (-18°)             | 100               |

Ambient temperature is defined as the temperature of the space in which the blower and drive are located.

**Table 3 - Approximate Oil Sump Capacities**

These capacities are provided to assist in stocking the correct amount of oil. Exact sump capacities may differ slightly. See "Lubrication" section for proper filling instructions.

**URAI-DSL Splash Lubricated Blowers**

| Frame Size | Gear End Capacity Fl. Oz (Liters) | Drive End Capacity Fl. Oz. (Liters) |
|------------|-----------------------------------|-------------------------------------|
| 59         | 27.6 (.82)                        | 14.8 (.44)                          |

Basic Connection & Drive Shaft Information

**URAI DSL AIR BLOWERS (with Dual Splash Lubrication DSL)**

| BOM#      | FRAME SIZE | INLET/DISCHARGE CONN. | SHAFT DIAMETER | BARE WEIGHT |
|-----------|------------|-----------------------|----------------|-------------|
| T30361020 | 59         | 4" NPT                | 1.125          | 209         |

Universal RAI air blowers include detachable mounting feet which permit vertical or horizontal installation. The units are center timed for rotation in either direction. The bearings on the URAI are grease lubricated on the drive end and splash lubricated on the gear end. The URAI-DSL is splash lubricated on BOTH ends.

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# MODEL MSR-DC OIL BURNER



## MODEL MSR-DC SPECIFICATIONS

### FIRING CAPACITIES - MODEL MSR-DC

0.50 To 2.75 GALLONS PER HOUR

70,000 TO 385,000 BTU/HR INPUT

### FUELS - MODEL MSR-DC

Use No. 1 or No. 2 Heating Oil (ASTM D-396), Kerosene, Diesel or Jp8 Jet Fuel.

NEVER attempt to use gasoline as a fuel for your burner, as it is more combustible and could result in a serious explosion.

NEVER burn garbage or refuse in the heating unit.

NEVER try to ignite by tossing burning paper or other materials into the heating unit.

NEVER burn waste or crankcase oil in the heating unit.

### ELECTRICAL - MODEL MSR-DC

Power supply 13.0VDC Minimum (at Battery)

Motor 4500 RPM (Std) or 3950 RPM (low RPM), Ball Bearing, Permanent Magnet

Ignition 20,000V/28MA/50VA Secondary, Intermittent Duty Electronic Ignitor

### DIMENSIONS - MSR-DC (Standard)

Height.....12½"

Width .....13"

Depth .....6⅞"

### FUEL UNIT

Suntec and DanFoss brands

### MOUNTING

Rigid Flange, Adjustable Flange or Base mount.

### DC OIL BURNER ELECTRICAL CONSIDERATIONS

- \* Not all generators are equally capable. A minimum of 13.0 volts must be provided at the battery.
- \* Generators should be operated at the maximum rated RPM during burner operation.
- \* Good quality batteries are strongly suggested. Batteries with higher Cold Cranking Amp (CCA) rating and deep draw/marine type batteries are recommended.
- \* Use automotive rated battery cabling. All other wiring should be OEM suggested wire type and gauge.
- \* Protect all wiring connection points with dielectric grease.
- \* Ambient temperature impacts electrical requirements. Higher temperatures will result in higher amp draws.
- \* Increased pump operating pressure settings will increase amp draw.
- \* Higher gallon rate nozzles and accompanying wider air band openings will increase amp draw.

### INSTALLATION OF BURNER

INSTALLATION OF THE BURNER MUST BE DONE BY A QUALIFIED INSTALLER IN ACCORDANCE WITH REGULATIONS OF THE NATIONAL FIRE PROTECTION STANDARD FOR OIL-BURNING EQUIPMENT, NFPA NO. 31, AND IN COMPLETE ACCORDANCE WITH ALL LOCAL CODES AND AUTHORITIES HAVING JURISDICTION.

A QUALIFIED INSTALLER IS THE PERSON WHO IS RESPONSIBLE FOR THE INSTALLATION AND ADJUSTMENT OF THE EQUIPMENT AND WHO IS LICENSED TO INSTALL OIL-BURNING EQUIPMENT IN ACCORDANCE WITH ALL CODES AND ORDINANCES. WARRANTY IS VOIDED IF NOT INSTALLED BY SERVICE PERSON.

**THESE INSTRUCTIONS SHOULD BE AFFIXED TO THE BURNER  
OR ADJACENT TO THE HEATING APPLIANCE.**

## TO THE CLEANING EQUIPMENT OWNER

Since 1970, Wayne has supplied the hot water pressure washer cleaning equipment industry with oil burners. You are obtaining a quality burner unsurpassed in engineering design and product development. It will provide you with many years of efficient trouble-free operation, if properly installed and serviced. Please read this manual carefully.



Wayne warrants its burners specifically to those who have purchased it for resale, including your dealer. If, in any case, you have a problem with your burner, or its installation, you should contact your dealer or the cleaning equipment manufacturer for assistance.

## FUEL UNITS AND OIL LINES

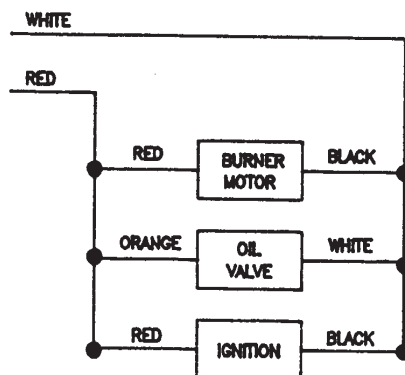
The model MSR-DC oil burner is provided with a single stage 3450 RPM fuel unit with by-pass plug removed for a single pipe installation; the by-pass plug for two pipe (inlet and return) is provided in the plastic bag attached to the fuel unit.

The installation of fuel filters are recommended. Check supply tank for sludge accumulation and leakage. Use only flare fittings on all piping and connections since compression fittings will eventually leak. With the system running, the vacuum should not exceed 12" mercury for single stage units. For ease of servicing, install a shut off valve near burner.

## WIRING

The MSR-DC oil burner must be electrically wired and GROUNDED in accordance with local codes or in their absence, with National Electric Code ANS/NFPA No. 70-latest edition.

This oil burner requires a 12-volt DC power source. Use copper wire only not lighter than #12 awg. If a fused disconnect is used, it should be fused for a minimum of 20 amps. Refer to the wiring diagram in this manual or cleaning equipment manufacturers manual making sure the burner and controls are wired correctly.



## AIR SUPPLY FOR COMBUSTION

The oil burner fired hot water pressure washer shall not be installed in an area where facilities for normal air circulation or infiltration are so limited as to interfere with ready attainment of all necessary for proper combustion and venting. When the heating appliance is installed in a confined space, two permanent openings shall be provided. One near the top of the enclosure and one near the bottom. Each opening shall have a free area of not less than one square inch per 1000 BTU per hour (140 square inch per gph) of the total input rating of all the appliances in the enclosure. When the building is of unusually tight construction, has an air ventilating system, exhaust fans, process dryer or vented fireplaces, it is recommended that combustion air be supplied through two permanent openings. The openings shall communicate directly, or by means of ducts, with outdoors or such spaces (attic or crawl) that freely communicate with outdoors. Avoid lint environments. For additional venting information, refer to the regulations of the National Fire Protection Standard for oil burning equipment, ANSI/NFPA NO. 31-latest edition, or the cleaning equipment manufacturers recommendations.

## NOZZLE AND AIR HANDLING PARTS SELECTION

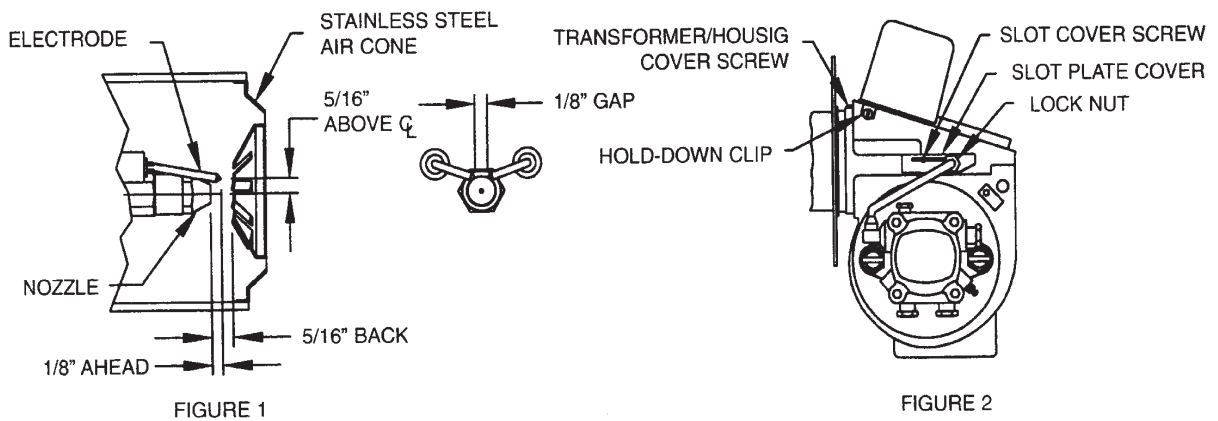
**IMPORTANT:** Thorough combustion and performance testing was done to establish the correct nozzle type and air handling parts on this MSR-DC oil burner. Under circumstance attempt to replace or alter the oil burner nozzle type or air handling parts (stainless steel flamelock, air cone, electrode support style static disc, blower wheel or slotted air circumstances attempt to fire the MSR-DC oil burner under its 1.00 gph minimum or over its 2.75 gph maximum input rating.



To remove the gun assembly once the burner has been installed on the appliance remove the ignitor/housing cover screw and loosen the screw in the hold-down clip and swing open the transformer. Next, disconnect the copper oil line where it attaches with a 7/16" hex flare nut on the gun assembly oil line adapter fitting and remove the 9/16" hex gun assembly locknut. Now, grasp the rear of the gun assembly where the oil line fitting adapter exits through the housing and pull oil line fitting adapter to the right out of the housing slot and slot plate cover. Gently lift, do not force, the rear of the gun assembly, rotating the oil line fitting adapter up a 45 degrees pulling the entire gun assembly out of the air tube and housing opening.

The recommended can be installed into the nozzle body adapter using the following steps. With the gun assembly removed from the burner, loosen the electrode clamp screw and rotate the electrodes up, out of the way of a nozzle wrench. Now, thread the nozzle into the adapter finger tight then tighten securely with a nozzle wrench. **CAUTION:** Do not over tighten. Next, reposition the electrodes as shown in figure 1. At this time reinstall the gun assembly into the burner using the preceding steps in reverse order. Position the nozzle face forward to a 5/16" setting behind the stainless steel air cone as shown in figure 1. Once in the required position, replace the 9/16" hex lock nut and the 7/16" hex flare nut on the gun assembly and tighten the slot cover screw (see figure 2).

**CAUTION:** Close the ignitor and observe for spring contact with the brass buss bars, taking care not to pinch the ignition transformer lead wires between the housing and cover plate. Reinstall the ignitor/housing cover screw and tighten the screw in the hold down clip (see figure 2).



## STARTING PROCEDURE

### PREPARATION STEPS

1. Calibrate and check operation of combustion analysis equipment, CO<sub>2</sub> (carbon dioxide) or O<sub>2</sub> (oxygen) analyzer, smoke pump tester, fuel gas thermometer and oil pressure/vacuum gages. Follow the manufacture recommendation for proper calibration and check out.
2. Install oil pressure gage and vacuum gage in the outlet pressure and inlet ports of the fuel unit.
3. Set oil burner slotted air band shutter 25% open.

### STARTING BURNER

1. Turn off the main power switch to the burner and appliance.
2. Be sure main fuel tank is filled and all manual valves are open between the fuel tank and the burner.
3. Turn on the main power switch to the burner and appliance.
4. Prime the fuel pump per its manufacturers recommendations, check fuel unit for 100 psi delivery pressure and check system vacuum (see paragraphs under Fuel Units and Oil Lines).

**CAUTION:** Do not run fuel unit dry for more than five minutes or damage to the fuel unit could result.



5. Once the fuel unit is primed (no signs of air in oil bleeder port discharge), close the bleed port. Burner will ignite.
6. When flame is established, make a temporary air adjustment to the slotted air band for a visually clean combustion smoke observed from the appliance vent. Allow the appliance to warm up approximately five minutes or until the water temperature reaches that recommended by the cleaning equipment manufacture.
7. Adjust the slotted air band shutter until a #1 to #2 smoke (Shell Bacharach scale) is obtained at the appliance vent.
8. Check CO<sub>2</sub> (carbon dioxide) and/or O<sub>2</sub> (oxygen) percentages and smoke in the flue gas at the appliance vent. In general, CO<sub>2</sub> readings should be in the 10% to 12% range and O<sub>2</sub> readings in the 7.4% to 4.7% range.
9. Once the desired combustion results are attained, securely tighten slotted air band screw and check that controls on the appliance are adjusted per the cleaning equipment manufactures instruction sheets. Remove oil pressure and vacuum gages from the fuel unit and reinstall pipe plug fittings.
10. Check burner lighting with hot chamber, then allow burner and appliance to sufficiently cool. Then check burner lighting with a cold chamber.

SUGGESTION: all new installations should be reinspected after one or two weeks of normal operation.

## MAINTENANCE

**OILING MOTOR** – The MSR\_DC oil burner is provided with a ball bearing shaft motor. Ball-bearing motors do not require oiling under normal service conditions.

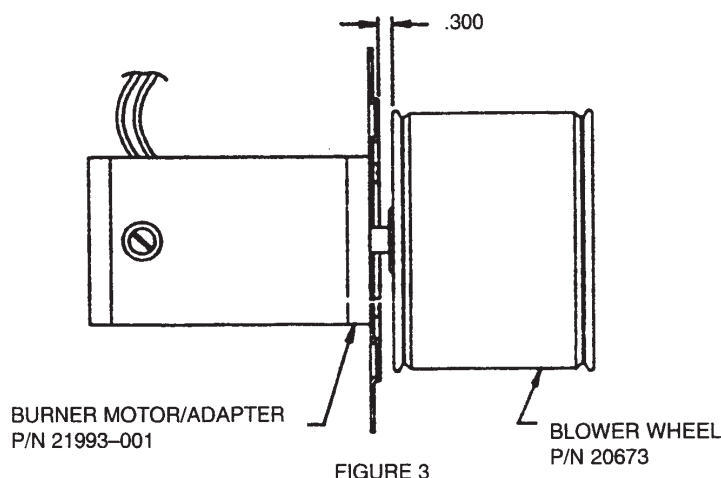
**FILTER** – The oil filter cartridge should be replaced, or sediment cleaned, periodically so the fuel oil will not become contaminated and plug up the fuel pump and nozzle of oil burner.

**NOZZLE** – The nozzle should be changed at least once each year or twice a year if the cleaning equipment is used daily through the year and should poor combustion occur. Replace with the proper nozzle.

**COMPONENTS** – If for any reason any of the burner parts have to be replaced, always use parts recommended by the manufacturer. Specify part numbers and description when ordering. (IN ALL COMMUNICATIONS STATE BURNER MODEL AND SIX DIGIT SPECIFICATION NUMBER).

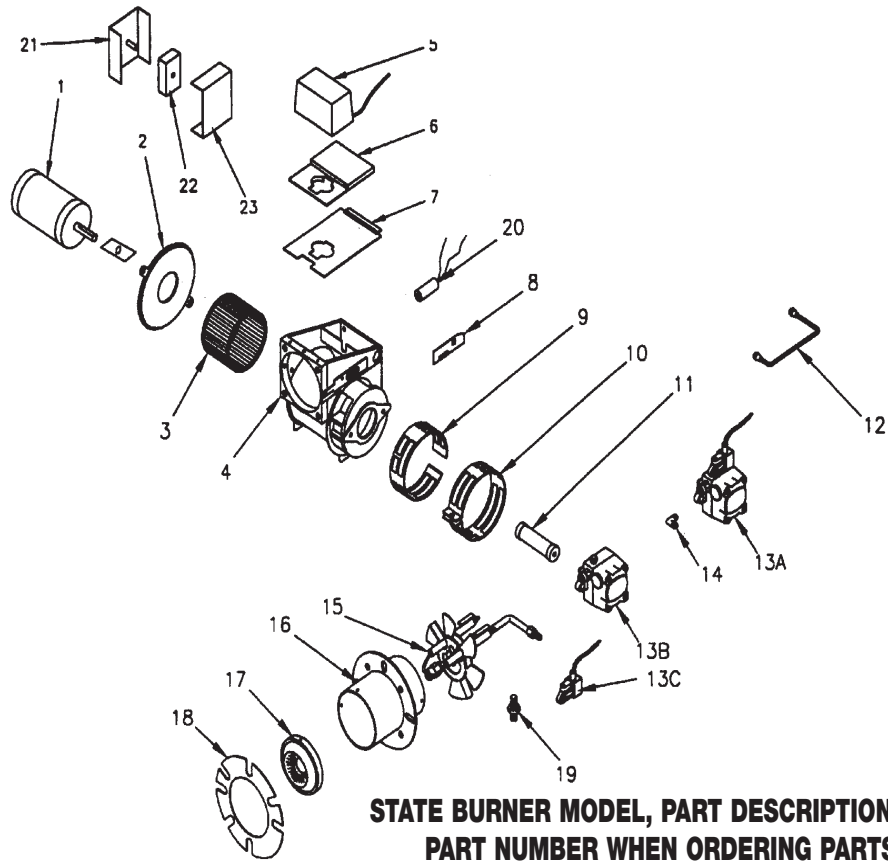
**ELECTRODE SETTINGS** – This is very important for reliable ignition of the oil; check these once a year in accordance with the instructions provided in this manual. Replace electrodes if worn excessively or if porcelain insulator is oil soaked or cracked (See Figure 1).

**FAN & BLOWER HOUSING** – This must be kept clean, free of dirt and lint; open transformer to check fan blades from above. Be sure the electric power is off on burner when the transformer is opened up for this inspection. Should the blower wheel be removed for replacement or cleaning, reinstall as shown in figure 3.

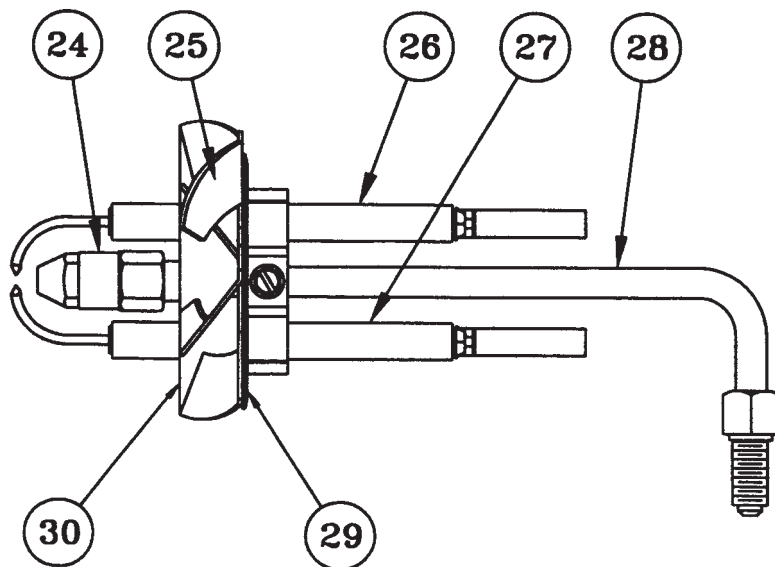




## BURNER COMPONENTS - MODEL MSR-DC

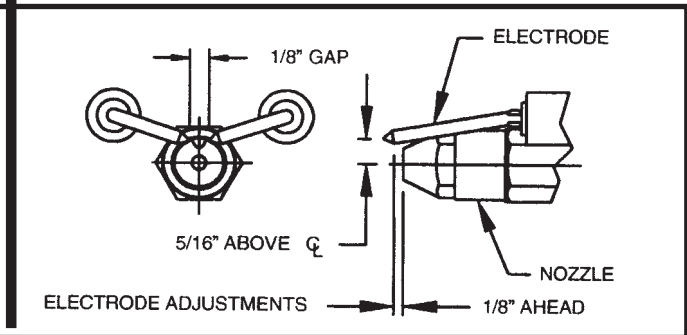
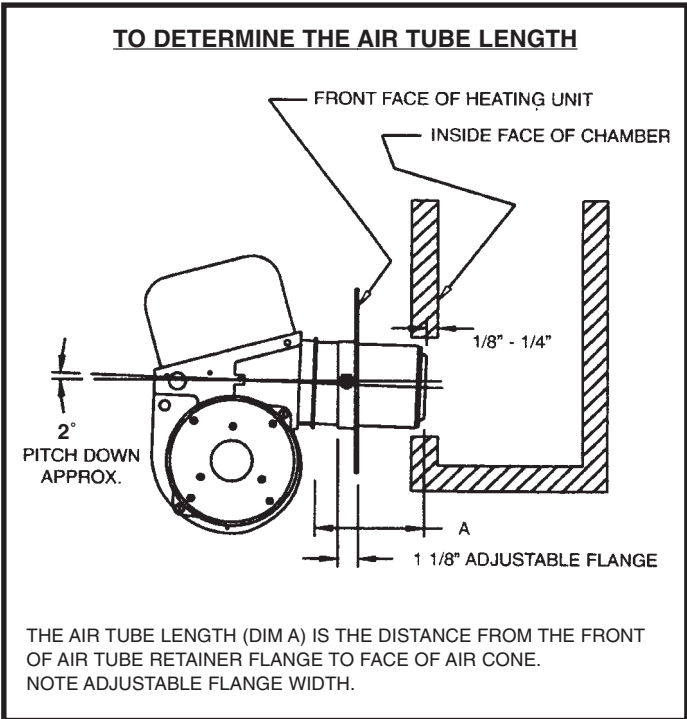


## AIR TUBE & GUN ASSEMBLY DETAILS MODEL MSR-DC



| ITEM | QTY | PART #      | DESCRIPTION                   |
|------|-----|-------------|-------------------------------|
| 1    | 1   | 8046448-1   | MOTOR 1/8 STANDARD            |
|      | 1   |             | MOTOR 1/8 LOW AMP             |
| 2    | 1   | 8046448-2   | MOTOR ADAPTER                 |
| 3    | 1   | 8046448-3   | BLOWER WHEEL 3 1/2 X 4 1/4    |
| 4    | 1   | 8046448-4   | BURNER HOUSING                |
| 5    | 1   | 8046448-5   | IGNITOR - 12VDC               |
| 6    | 1   | 8046448-6   | MOUNTING BASE                 |
| 7    | 1   | 8046448-7   | HOUSING COVER                 |
| 8    | 1   | 8046448-8   | SLOT COVER PLATE              |
| 9    | 1   | 8046448-9   | INNER AIR BAND                |
| 10   | 1   | 8046448-10  | OUTER AIR BAND                |
| 11   | 1   | 8046448-11  | COUPLING                      |
| 12   | 1   | 8046448-12  | OIL LINE ASSEMBLY 6"          |
|      | 1   |             | OIL LINE ASSEMBLY 8"          |
| 13   | 1   | 8046448-13A | FUEL UNIT: SUNTEC COMBO       |
|      | 1   | 8046448-13B | FUEL UNIT: SUNTEC             |
|      | 1   | 8046448-13C | FUEL SOLENOID                 |
| 14   | 1   | 8046448-14  | ELBOW (USE WITH 13A)          |
| 15   | 1   | 8046448-15  | GUN ASSEMBLY                  |
| 16   | 1   | 8046448-16  | AIR TUBE/FLANGE ASM           |
| 17   | 1   | 8046448-17  | AIR CONE - #3A                |
|      | 1   |             | AIR CONE - #4A                |
| 18   | 1   | 8046448-18  | GASKET                        |
| 19   | 1   | 8046448-19  | CONNECTOR (USE WITH 13B, 13C) |
| 20   | 1   | 8046448-20  | CAD CELL                      |
| 21   | 1   | 8046448-21  | CONTROL BOX                   |
| 22   | 1   | 8046448-22  | TIMER, DROP OUT               |
| 23   | 1   | 8046448-23  | COVER, CONTROL BOX            |
| 24   | 1   | 8046448-24  | ADAPTOR, NOZZLE SUPPORT       |
| 25   | 1   | 8046448-25  | ELECTRODE SUPPORT ASM         |
| 26   | 1   | 8046448-26  | ELECTRODE (RH)                |
| 27   | 1   | 8046448-27  | ELECTRODE (LH)                |
| 28   | 1   | 8046448-28  | OIL PIPE/FITTING              |
| 29   | 1   | 8046448-29  | DISC/BAFFLE PLATE             |
| 30   | 1   | 8046448-30  | CAST STABILIZER               |
|      | 1   |             | STAMPED STABILIZER            |

| Suggested Combustion Chamber Dimensions<br>Conversion or Upgrading<br>Chamber Dimensions (In Inches) |                  |                  |                  |                  |                 |
|--|------------------|------------------|------------------|------------------|-----------------|
| Firing Rate<br>(G.H.P)   | Square           |                  | Round            | Height           | Floor to Nozzle |
|  | Width            | Length           |                  |                  |                 |
| 0.85   | 8.5              | 8.5              | 8.5              | 8.5              | 8.5             |
| 1.00   | 9                | 9                | 10 $\frac{1}{2}$ | 12 $\frac{1}{2}$ | 5-6             |
| 1.25   | 10               | 10               | 11 $\frac{1}{4}$ | 12 $\frac{1}{2}$ | 5-6             |
| 1.35   | 10 $\frac{1}{2}$ | 10 $\frac{1}{2}$ | 11 $\frac{1}{4}$ | 12 $\frac{3}{4}$ | 5-6             |
| 1.50   | 11               | 11               | 12 $\frac{3}{4}$ | 13               | 5-6             |
| 1.65   | 11 $\frac{1}{2}$ | 11 $\frac{1}{2}$ | 13               | 13 $\frac{1}{4}$ | 5-6             |
| 2.00   | 12 $\frac{3}{4}$ | 12 $\frac{3}{4}$ | 14 $\frac{1}{4}$ | 13 $\frac{1}{2}$ | 6-7             |
| 2.50   | 14 $\frac{1}{4}$ | 14 $\frac{1}{4}$ | 16               | 14               | 7-8             |
| 3.00   | 15 $\frac{1}{2}$ | 15 $\frac{1}{2}$ | 17 $\frac{1}{2}$ | 15               | 7-8             |







# Notes



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## WAYNE COMBUSTION SYSTEMS

801 GLASGOW AVE.  
FORT WAYNE, IN 48803

### **LIMITED WARRANTIES FOR OIL AND GAS BURNERS, MADE BY WAYNE AND USED IN RESIDENTIAL INSTALLATIONS**

**WAYNE COMBUSTION SYSTEMS** (“WAYNE”) warrants to those who purchase its **Oil Burner Models** for resale or for incorporation into a product of resale, that its burner is free from defects in material and workmanship under normal use and service for thirty-six (36) months from the date of manufacture. **ALL GAS BURNERS** manufactured by “WAYNE” will be similarly warranted for eighteen(18) months from date of manufacture except where original manufacture offers a greater warranty. (Reference #6 below) **THESE LIMITED WARRANTIES DO NOT APPLY UNLESS THE BURNER COVERED BY IT IS PROPERLY INSTALLED BY A QUALIFIED, COMPETENT TECHNICIAN, WHO IS LICENSED WHERE STATE AND/OR LOCAL CODES PREVAIL, AND WHO IS EXPERIENCED IN MAKING SUCH INSTALLATIONS, IN ACCORDANCE WITH NFPA #31 OF THE NATIONAL FIRE PROTECTION ASSOCIATION AND IN ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES.**

Any **IN-WARRANTY** burner component which is defective in material or workmanship will be either repaired or replaced as follows:

1. Fuel units, motors, transformers, gas valves, and controls should be returned to an authorized service station or distributor of WAYNE for determination of applicability of this LIMITED WARRANTY as to either repair or replacement, where said service station or distributor is reasonably available in the customer's locality. The manufacturers of burner components regularly publish and distribute listings showing the locations of their network of service stations. Where such local service is NOT available for the burner components described above or other burner parts are involved, these items should be returned, freight prepaid, to WAYNE Service Department, 801 Glasgow Ave, Fort Wayne, Indiana 46803.
2. Burners and/or component(s) determined to be covered under this LIMITED WARRANTY by WAYNE shall be repaired or replaced at WAYNE's sole option.
3. WAYNE is not responsible for any labor cost for the removal and replacement of said burner or burner components and equipment associated therewith.
4. A burner so repaired will then carry the LIMITED WARRANTY equal to the unexpired portion of the original burner LIMITED WARRANTY.
5. If inspection by WAYNE does **NOT** disclose any defect covered by this LIMITED WARRANTY, the burner or burner component(s) will be either repaired or replaced at the expense of the customer and WAYNE's regular charges will apply.
6. If the original manufacturer of a burner component offers a warranty greater than either of our LIMITED WARRANTIES described above, then this portion will be added to our LIMITED WARRANTY.

This LIMITED WARRANTY does **NOT** cover products which have been damaged as the result of accident, abuse, misuse, neglect, improper installations, improper maintenance or failure to operate in accordance with WAYNE's written instructions.

These LIMITED WARRANTIES do not extend to anyone except the first purchaser at retail and only when the burner is in the original installation site.

**IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED TO THE DURATION OF THE LIMITED EXPRESS WARRANTIES CONTAINED HEREIN. WAYNE EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY NATURE FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY.**

Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you. Also, some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. WAYNE neither assumes or authorizes any person to assume for WAYNE any other liability or obligation in connection with the sale of these products. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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# WARRANTY RETURN GOODS POLICY

## LIMITED WARRANTY

The Manufacturer warrants its products to be free from defects in material and workmanship for a period of twelve months from the date of shipment from the factory. The Manufacturer shall not be responsible for any damage resulting to or caused by its products by reason of installation, improper storage, unauthorized service, alteration of the products, neglect or abuse, or use of the product in a manner inconsistent with its design. The warranty does not extend to any component parts not manufactured by Manufacturer; however, Manufacturer's warranty herein shall not limit any warranties made by manufacturers of component parts which extend to Buyer.

Claims for defects in material and workmanship shall be made in writing to Manufacturer within ten days of discovery of defect. Manufacturer may either send a service representative or have the product returned to its factory at Buyer's expense for inspection. Upon notification of defect, Manufacturer will issue a return goods authorization number to Buyer. The return goods authorization number must accompany the product returned. If judged by the Manufacturer to be defective in material or workmanship, the product will be replaced or repaired at the option of the Manufacturer, free from all charges except authorized transportation. Buyer shall be responsible for all maintenance services consisting of lubrication and cleaning of equipment, replacing expandable parts, making minor adjustments, and performing operating checks, all in accordance with procedures outlined in Manufacturer's maintenance literature.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES AND NO REPRESENTATIONS, GUARANTEES, OR WARRANTIES, EXPRESS OR IMPLIED, (INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), ARE MADE BY THE MANUFACTURER IN CONNECTION WITH THE MANUFACTURE OR SALE OF ITS PRODUCTS. NO EMPLOYEE, DISTRIBUTOR, OR REPRESENTATIVE IS AUTHORIZED TO CHANGE THIS WARRANTY ON BEHALF OF MANUFACTURER.

THE REMEDIES OF BUYER SET FORTH HEREIN ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER REMEDIES. THE LIABILITY OF MANUFACTURER WHETHER IN CONTRACT, TORT, UNDER ANY WARRANTY, OR

OTHERWISE SHALL NOT EXTEND BEYOND ITS OBLIGATION TO REPAIR OR REPLACE, AT ITS OPTION ANY PRODUCT OR PART FOUND BY MANUFACTURER TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP. MANUFACTURER SHALL NOT BE LIABLE FOR COST OF INSTALLATION AND/OR REMOVAL OR BE RESPONSIBLE FOR DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE.

## GENERAL RETURNS OF MERCHANDISE

1. All returns must be pre-authorized
  - A. Please call our parts department for an RGA number
  - B. Please include RGA number on the outside of box
  - C. Include any required paper work or special instructions
  - D. Items returned without an RGA number will not be accepted
2. All returns are subject to a 20% restock charge.
3. Special items are non-returnable
  - A. Non-stock parts
  - B. Custom parts
  - C. If you are unsure about a parts status when ordering, ask your McLaughlin representative if the item fits on of the above conditions.
4. Items must be returned within thirty days of original order date.
5. Items not returned within 30 days from the date of RGA is issued will not be accepted.
6. The item(s) must be in new condition. Used item(s) are not returnable.



