



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 022510104 - 051810146)

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040509

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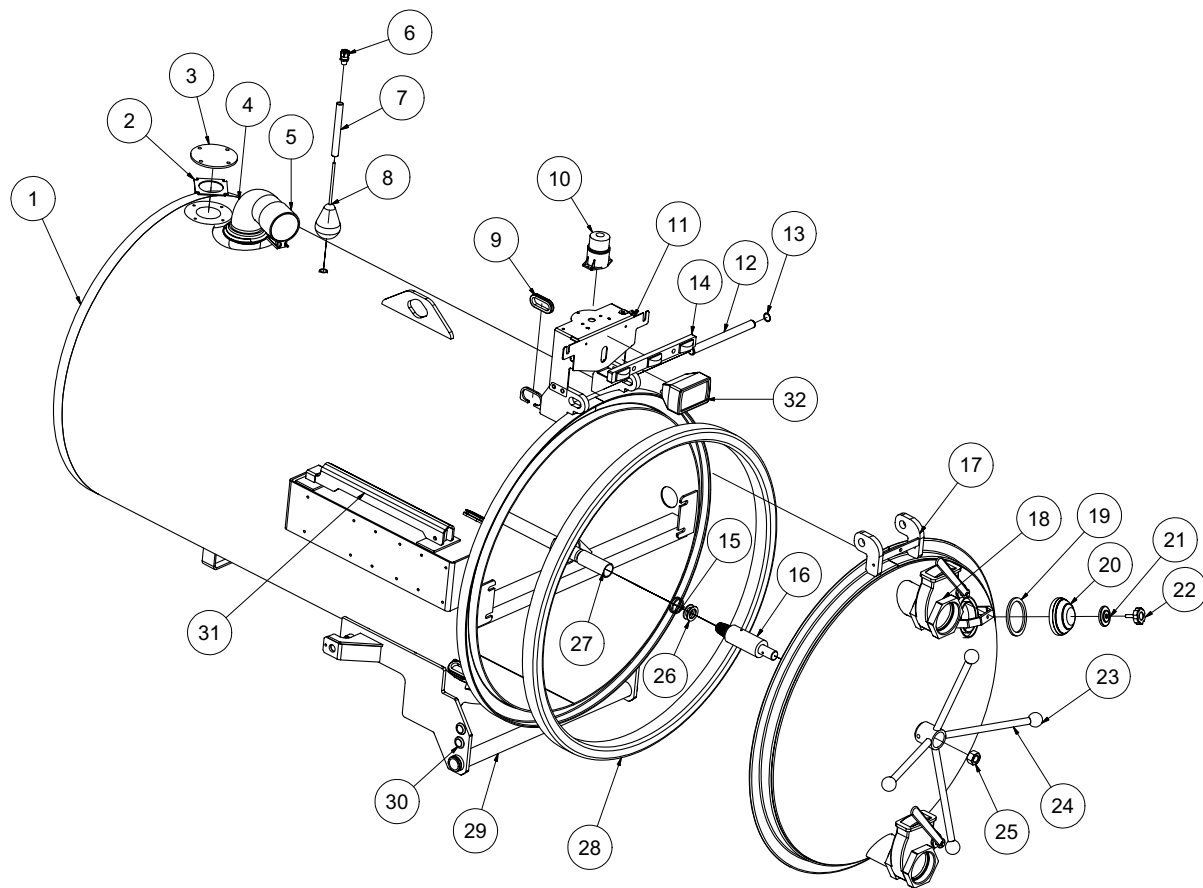
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WARRANTY

Tank and Door Assembly

500LE



021010-E

VACASSY028

Tank and Door Assembly

500LE

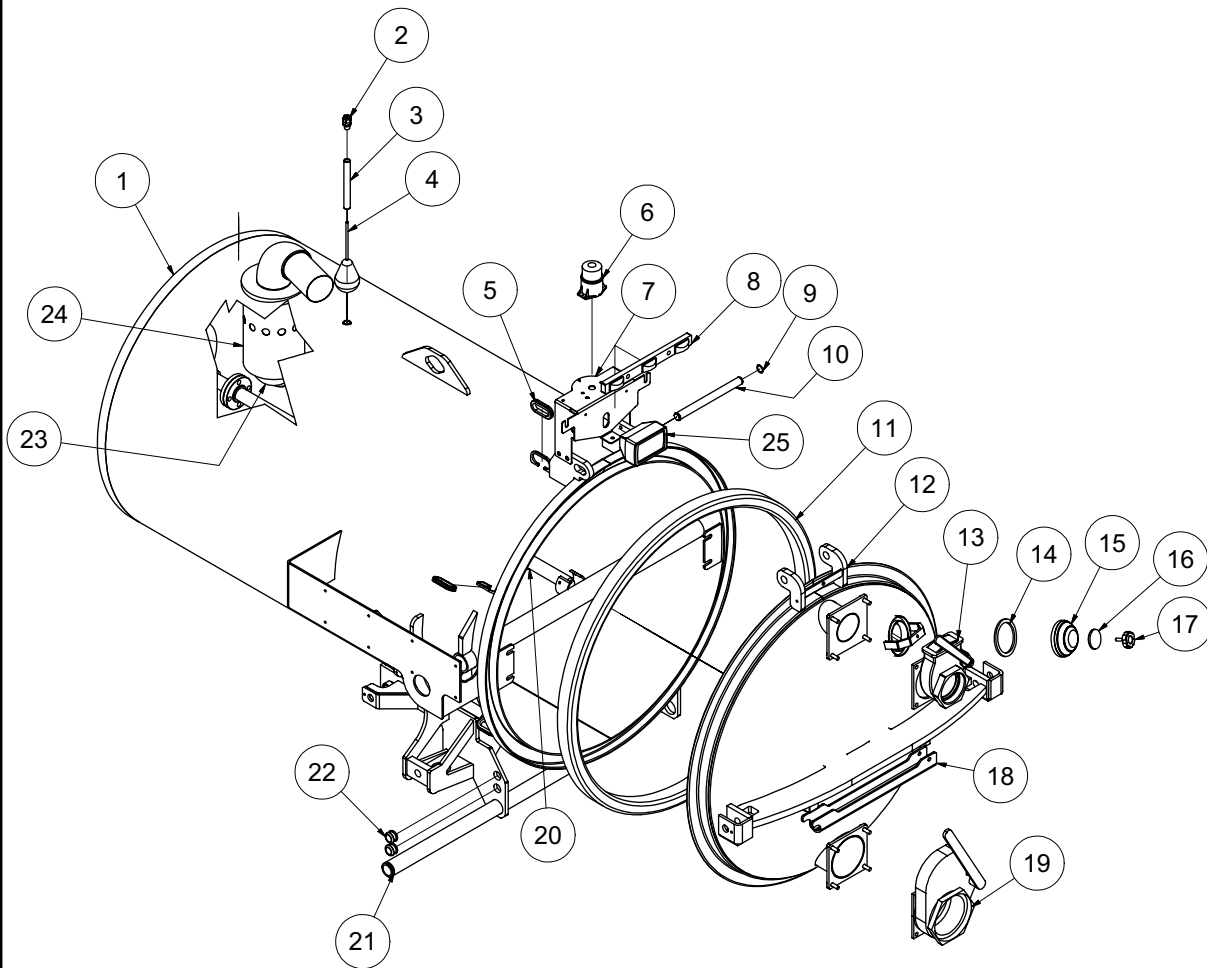
| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|----------|--|
| 1 | 1 | 8045865 | TANK WELDMENT - 500LE (42"DIA) |
| 2 | 1 | 8044792 | GASKET, 4-WAY VALVE 3" |
| 3 | 1 | 8045866 | TANK CLEANOUT COVER |
| | 4 | U000440 | SCREW, HC 3/8" - 16 X 1.25" |
| | 4 | U200600 | WASHER, FLAT 3/8" |
| | 4 | U210060 | WASHER, LOCK 3/8" |
| 4 | 1 | 8040786 | EXHAUST ELBOW 4" - WELDMENT |
| 5 | 1 | 8030400 | 4" BAND CLAMP |
| 6 | 1 | X000113 | STRAIN RELIEF, 1/2" |
| 7 | 1 | 8040769 | HIGH LEVEL FLOAT SWITCH TUBE |
| | 1 | 8041291 | BUSHING, RUBBER |
| 8 | 1 | 8030531 | HIGH LEVEL FLOAT SWITCH |
| 9 | 4 | 8042812 | GROMMET 2"ID 3"OD 1/4"WOG TRAILER SLOT MODEL |
| 10 | 1 | 8043139 | STROBE LIGHT |
| | 3 | U010006 | SCREW, PHILLIPS #10 - 24 X 1" |
| | 3 | U210005 | WASHER, LOCK #10 |
| | 3 | U100010 | NUT, HEX #10 - 24 |
| 11 | 1 | 8046279 | 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 | U100120 | NUT, HEX 1/2" - 13 |
| 12 | 1 | 8040058 | DOOR HINGE ROD |
| 13 | 2 | 8030362 | 1" SNAP RING |
| 14 | 1 | 8041509 | LIGHT CLEARANCE 3 BAR |
| 15 | 2 | W200120 | ORING 1 7/8" X 2 1/8" X 1/8" (225) |
| 16 | 1 | 8040306 | Q.L. DOOR STRIKER |
| 17 | 1 | 8045868 | DOOR WELDMENT - 500LE |
| 18 | 2 | 8030916 | 4' GATE VALVE |
| 19 | 1 | 8032007 | GASKET, 4" COUPLER |
| 20 | 1 | 8031048 | SIGHT GLASS |
| 21 | 1 | 8031047 | SIGHT GLASS PLATE |
| 22 | 1 | 8031046 | SIGHT GLASS HAND WHEEL |
| 23 | 4 | J400060 | 1 7/8" KNOB |
| 24 | 1 | 8040235 | DOOR HANDLE, 250 - 1200 |
| 25 | 1 | U120060 | NUT, LOCK NY 1" - 8 |
| 26 | 2 | 8030174 | WASHER, DOOR HOLDER Q.L. |
| 27 | 1 | 8040868 | TANK ROD - WELDMENT (500) |
| 28 | 1 | 8041765 | DOOR SEAL - 42" DIA TANK |
| 29 | 1 | 8030038 | TANK PIVOT ROD |
| 30 | 4 | 8041686 | GROMMET 1"ID - 1 1/4"DOG - 1/4"WOG |
| 31 | 1 | 8041212 | TANK SAFETY BRACE |
| 32 | 1 | 8043138 | WORK LIGHT |

021010-E

VACASSY028

Tank and Door Assembly

V500LE



021010-E

VACASSY031

Tank and Door Assembly

V500LE

| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|----------|--|
| 1 | 1 | 8045737 | TANK WELDMENT - 500LE (42"DIA) |
| 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 | 8046279 | 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 | 8030362 | 1" SNAP RING |
| 10 | 1 | 8040058 | DOOR HINGE ROD |
| 11 | 1 | 8041765 | DOOR SEAL 42" DIA TANK |
| 12 | 1 | 8045738 | DOOR WELDMENT - 500 (42" DIA) |
| 13 | 1 | 8046215 | VALVE, 4" GATE BRASS LEVER FLANGE |
| * | 1 | 8046231 | O-RING, GATE VALVE FLANGE |
| 14 | 1 | 8032007 | 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 | 8046231 | O-RING, GATE VALVE FLANGE |
| 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 | 8030038 | TANK PIVOT ROD |
| | 4 | U200100 | WASHER, FLAT 1/2" |
| | 2 | U100120 | NUT, HEX 1/2" - 13 |
| 22 | 4 | 8041686 | GROMMET 1"ID - 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" |
| 24 | 1 | 8043570 | BALL STRAINLESS FLOAT 6" |
| 25 | 1 | 8043138 | WORK LIGHT |

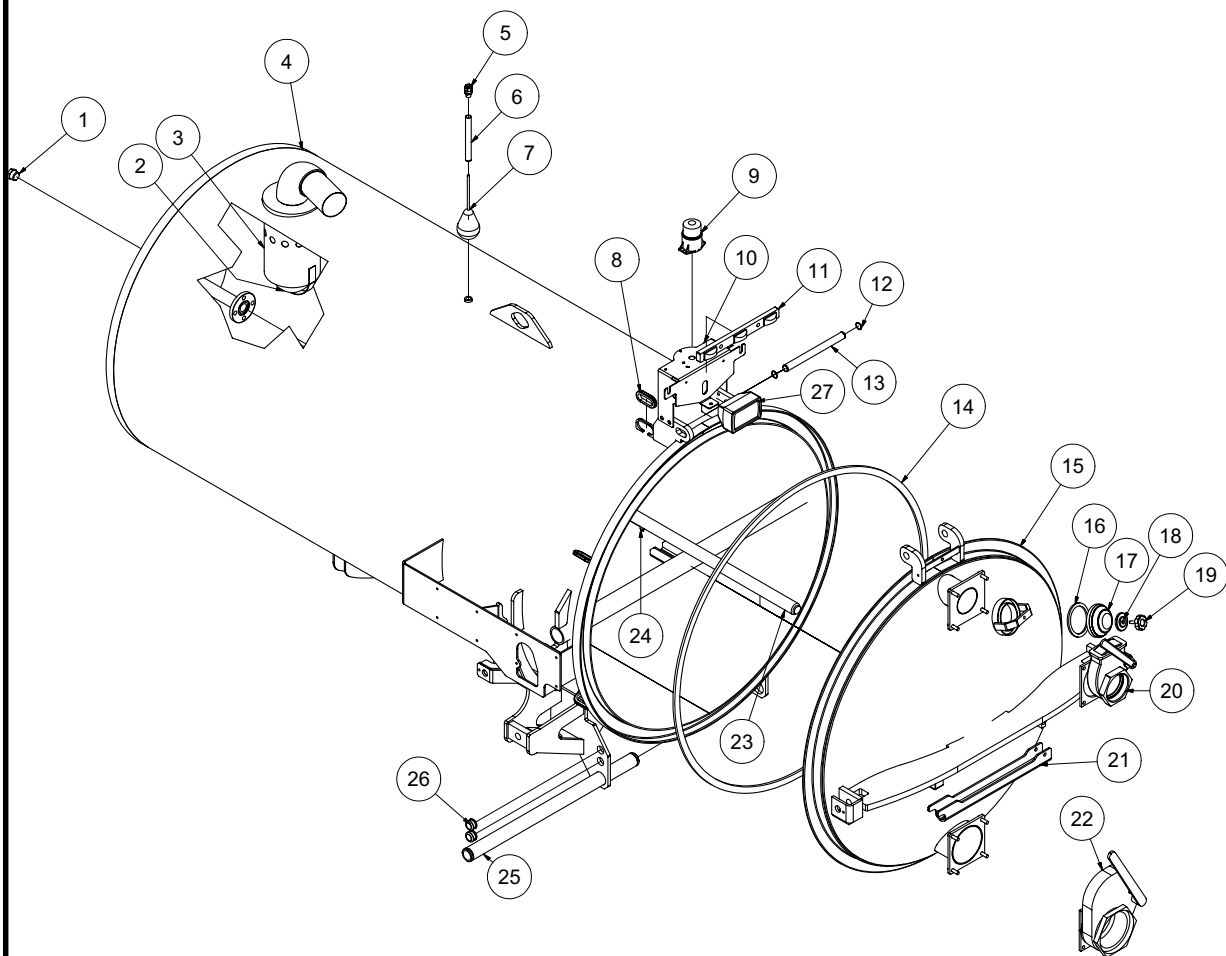
* NOT SHOWN

021010-E

VACASSY031

Tank and Door Assembly

V800LE



021010-E

VACASSY032

Tank and Door Assembly

V800LE

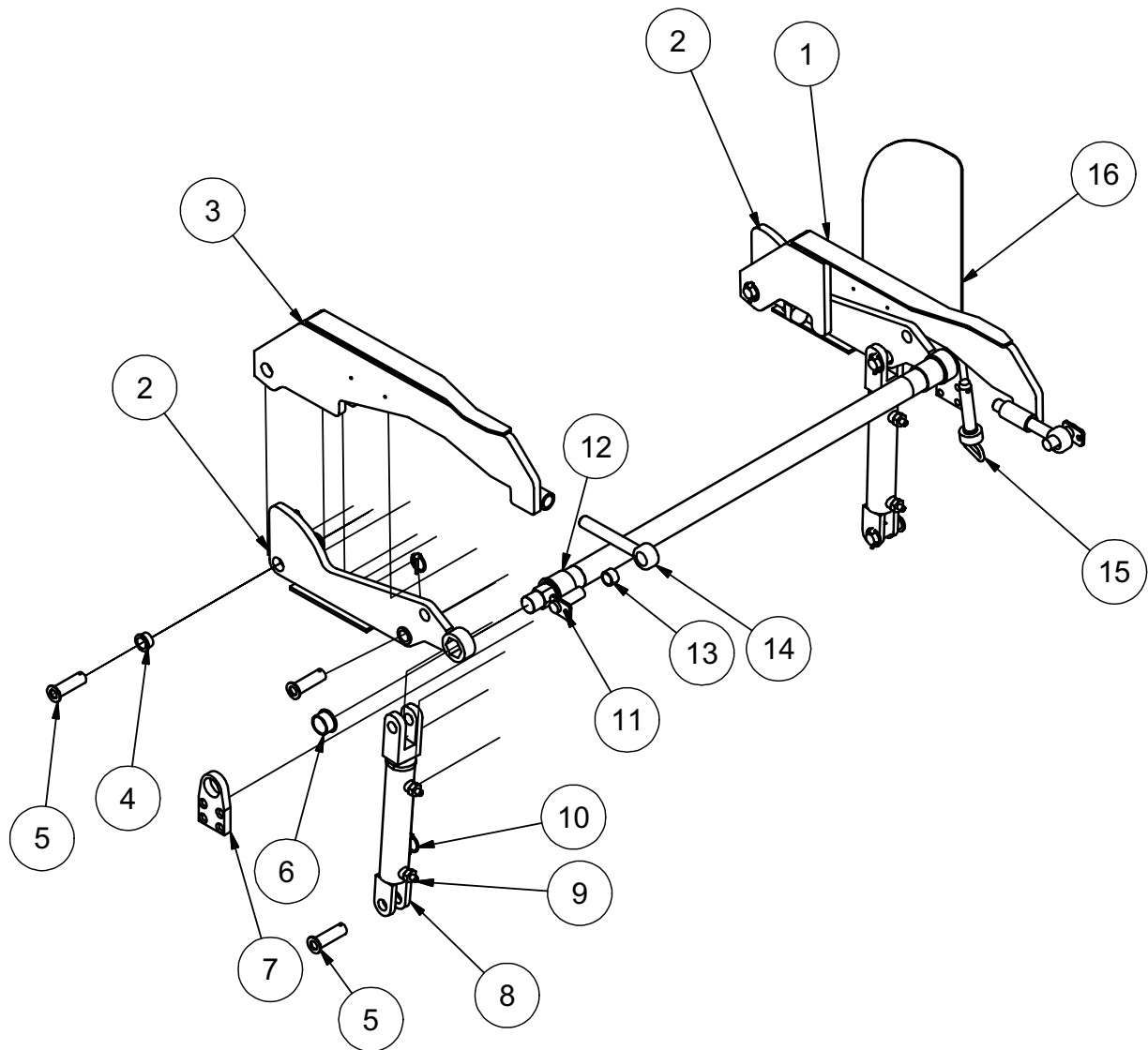
| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|----------|---|
| 1 | 1 | T405120 | 1" PLUG MB |
| 2 | 1 | 8043570 | BALL STAINLESS FLOAT 6" |
| 3 | 1 | 8043700 | BALL FLOAT SHUTOFF WELDMENT |
| | 2 | U000420 | SCREW, HC 3/8"-16 X 1.00" |
| | 2 | U210060 | WASHER, LOCK 3/8" |
| | 2 | U200600 | WASHER, FLAT 3/8" |
| 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 | 8046279 | 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 | 8030362 | 1" SNAP RING |
| 13 | 1 | 8040058 | DOOR HINGE ROD |
| 14 | 1 | 8030276 | DOOR SEAL, 48"DIA |
| 15 | 1 | 8046192 | DOOR 750/800 (48")- WELDMENT |
| 16 | 1 | 8032007 | GASKET, 4" COUPLER |
| 17 | 1 | 8031048 | SIGHT GLASS |
| 18 | 1 | 8031047 | SIGHT GLASS PLATE |
| 19 | 1 | 8031046 | SIGHT GLASS HAND WHEEL |
| 20 | 1 | 8046215 | 4" GATE VALVE |
| 21 | 1 | 8041212 | TANK SAFETY BRACE |
| 22 | 1 | 8046214 | VALVE 6" GATE BRASS LEVER |
| 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 | 8030038 | TANK PIVOT ROD |
| 26 | 4 | 8041686 | GROMMET 1"ID- 1 1/4"DOG - 1/4"WO |
| 27 | 1 | 8043138 | WORK LIGHT |

* NOT SHOWN

021010-E

VACASSY032

Hyd. Door Cylinder Assembly



100209-E

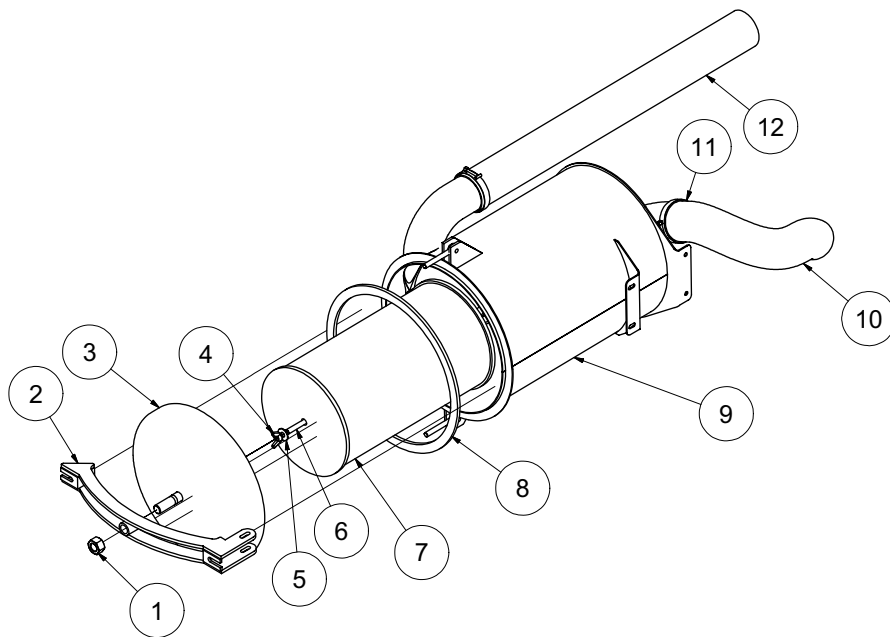
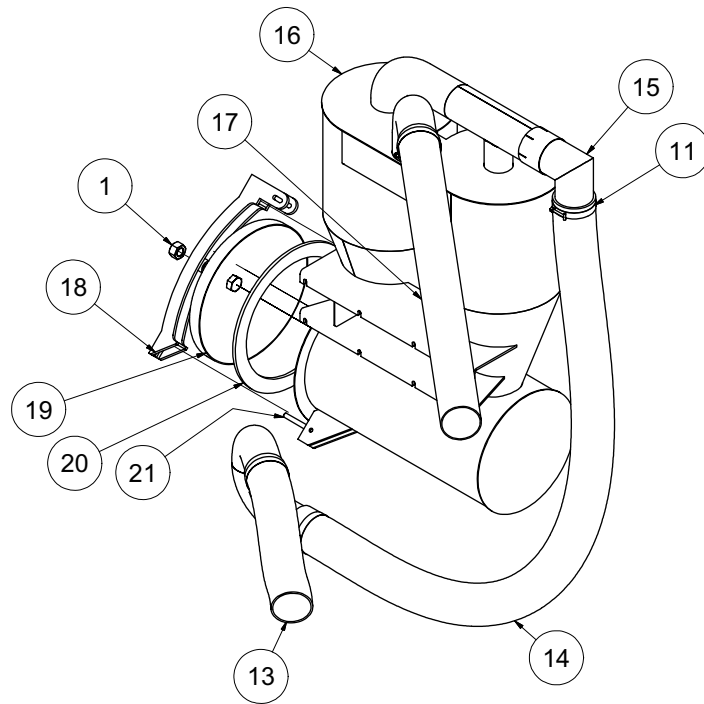
VACASSY942

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 | 8042171 | 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" |
| 15 | 1 | 8041626 | 1" X 4 1/2" HITCH PIN |
| 16 | 1 | 8041635 | HYD ARM GUARD |

Filtration

LE-HD



021110-E

VACASSY347

Filtration

LEHD

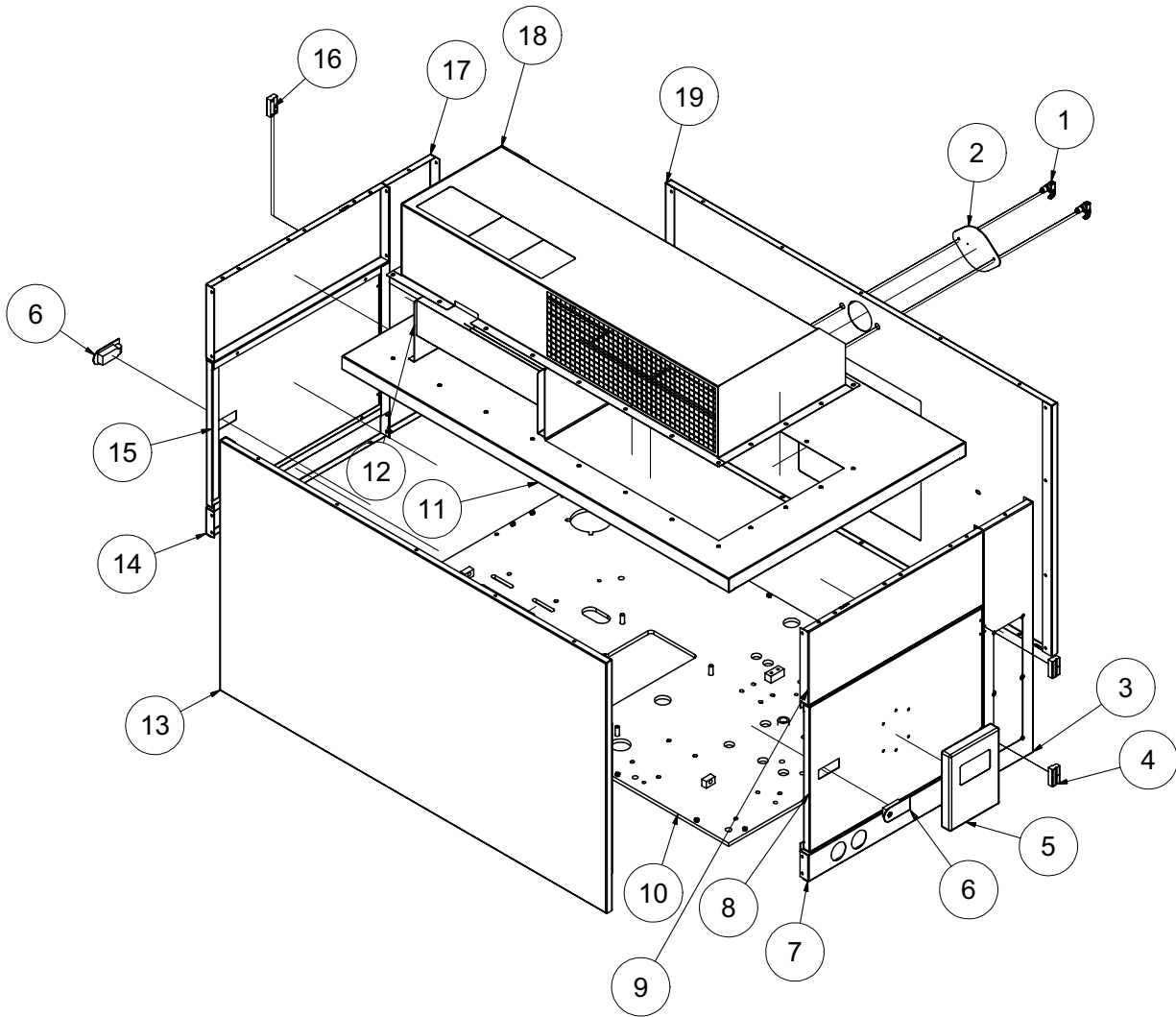
| ITEM | QTY | PART # | DESCRIPTION |
|------|-----|-------------|-------------------------------------|
| 1 | 2 | U120060 | NUT, LOCK NY 1" - 8 |
| 2 | 1 | 8041554 | DOOR LATCH (HD AIR FILTER WELDMENT) |
| 3 | 1 | 8041387 | HD AIR FILTER DOME ASSY |
| 4 | 1 | U130080 | NUT, WING 1/2" - 13 |
| 5 | 1 | U200100 | WASHER, LOCK 1/2" |
| 6 | 1 | 8040302 | THREADED ROD - 4"LG |
| 7 | 1 | 8031293 | WASHABLE AIR FILTER ELEMENT |
| 8 | 1 | 8041613 | SEAL 3/8" EPDM 17.25" ID, 19.25" OD |
| 9 | 1 | 8044138-MOD | 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 | 1 | 8046285 | HOSE VAC KANAFLEX 4-31 1/2" (V500) |
| | 1 | 8046289 | HOSE VAC KANAFLEX 4-21" (V800) |
| 11 | 5 | 8042606 | CLAMP T-BOLT (450) |
| 12 | 1 | 8046284 | HOSE VAC KANAFLEX 4-57" (V500) |
| | 1 | 8046288 | HOSE VAC KANAFLEX 4-67" (V800) |
| 13 | 1 | 8046286 | HOSE VAC KANAFLEX 4-35 1/2" (V500) |
| | 1 | 8046292 | HOSE VAC KANAFLEX 4-40" (V800) |
| 14 | 1 | 8046287 | HOSE VAC KANAFLEX 4-76 3/4" (V500) |
| | 1 | 8046290 | HOSE VAC KANAFLEX 4-74" (V800) |
| 15 | 1 | 8044114 | 4" ELBOW 90 DEG WELDMENT ID-OD |
| 16 | 1 | 8044137 | HD SEPARATOR - HOUSING ONLY |
| 17 | 1 | 8041740 | HOSE VAC KANAFLEX 4-48" (V500) |
| | 1 | 8046291 | HOSE VAC KANAFLEX 4-71 1/2" (V800) |
| 18 | 1 | 8041552 | DOOR LATCH (CYCLONE) - WELDMENT |
| 19 | 1 | 8041402 | HD CYCLONE DOME DOOR ASSY |
| 20 | 1 | 8041612 | SEAL 3/8" EPDM 14"ID, 17.25"OD |
| 21 | 4 | 8041593 | BOLT, EYE 1/2" -13 X 6" |

021110-E

VACASSY347

Enclosure Assembly

49 HP



111609-E

VACASSY404

Enclosure Assembly

49 HP

| 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 | 8030689 | BOX, PLASTIC FOR SAFETY MANUAL |
| 6 | 2 | 8040586 | SEALED LEVER 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 | 8044222 | 49HS - MAIN PLATE WELDMENT |
| 11 | 1 | 8044600 | 49HS - PANEL TOP |
| 12 | 1 | 8044606 | 49HS - EXHAUST SHIELD |
| 13 | 1 | 8044197 | 49HS - PANEL REAR WELDMENT |
| | 1 | 8044886 | BACK SHEET RS SOUND INSULATION |
| | 1 | 8044944 | BACK SHEET LS SOUND INSULATION |
| 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 | 8044602 | 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 |

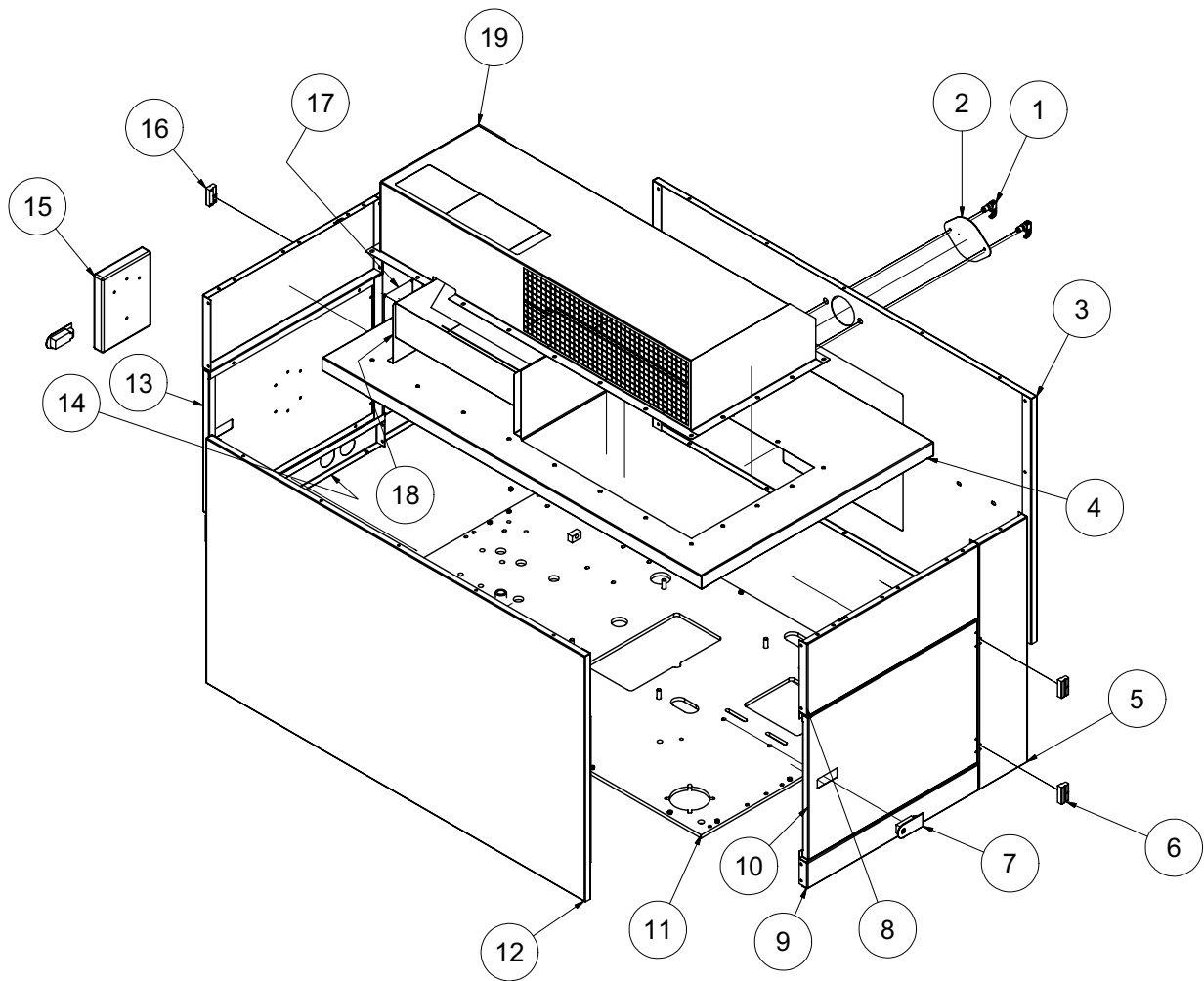
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111609-E

VACASSY404

Enclosure Assembly

49 HP RC



111709-E

VACASSY416

Enclosure Assembly

49 HP RC

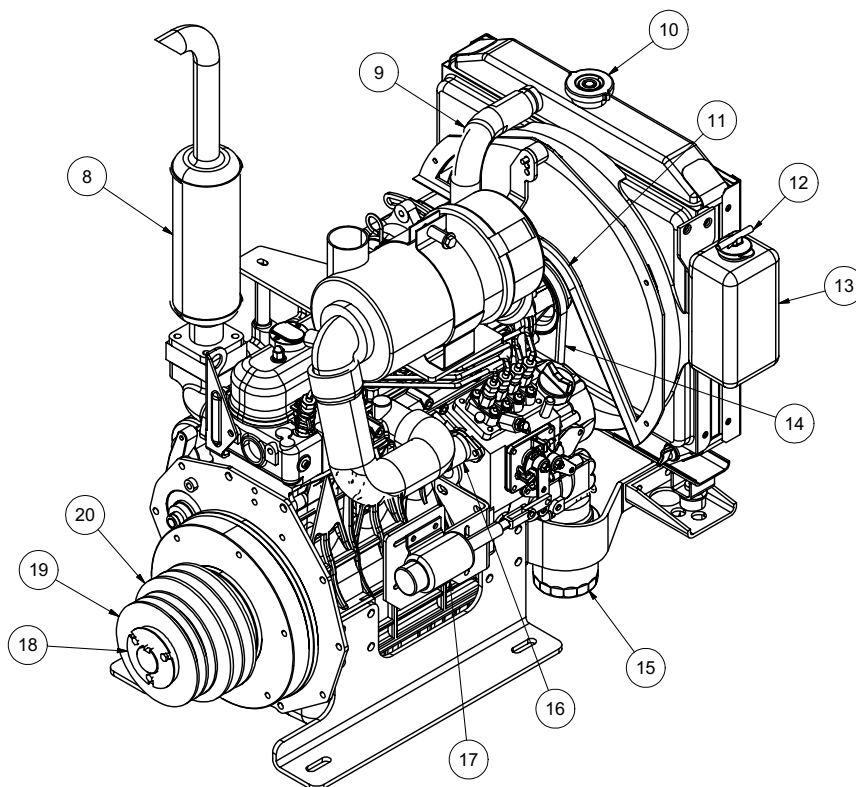
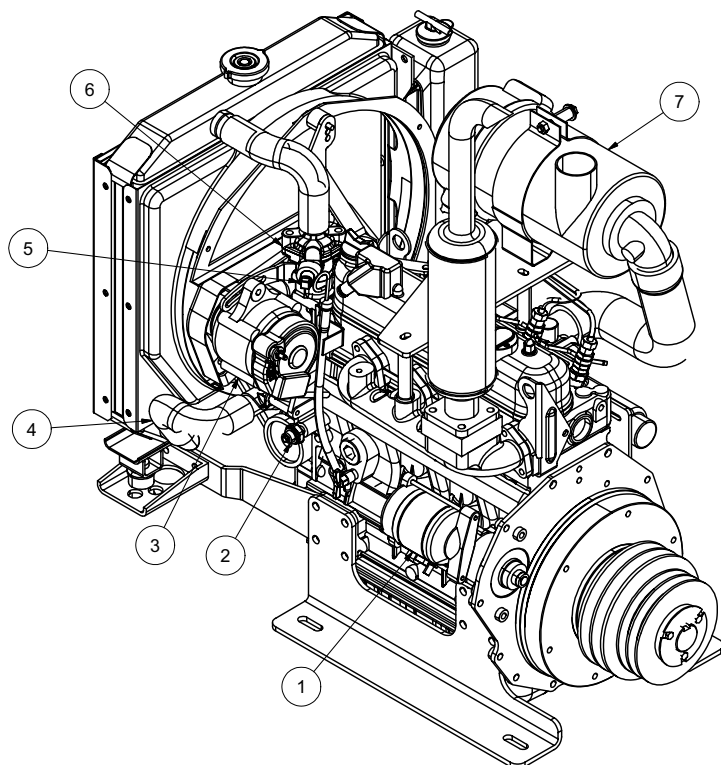
| ITEM | QTY | PART # | DESCRIPTION |
|------|-----|---------|--|
| 1 | 2 | 8040334 | SWELL LATCH |
| 2 | 1 | 8040592 | ENCLOSURE RADIATOR COVER |
| 3 | 1 | 8044602 | 49HS - PANEL FRONT WELDMENT |
| | 1 | 8044880 | LS FRONT PANEL SOUND INSULATION |
| | 1 | 8044927 | ABOVE DOOR SOUND INSULATION |
| | 1 | 8044928 | BELOW RADIATOR SOUND INSULATION |
| | 1 | 8044881 | RS FRONT SHEET SOUND INSULATION |
| 4 | 1 | 8044600 | 49HS - PANEL TOP |
| 5 | 1 | 8043922 | 49VK - PANEL SIDE VERTICAL BLANK WELDMENT |
| | 1 | 8044884 | OPP. CONTROL PANEL SOUND INSULATION |
| 6 | 2 | 8040588 | OFFSET HINGE TYPE "A" |
| 7 | 2 | 8040586 | SEALED LEVER LATCH |
| 8 | 2 | 8043615 | 49VK - PANEL SIDE UPPER |
| | 2 | 8044882 | ABOVE DOOR SOUND INSULATION |
| 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 | 8044222 | 49HS - MAIN PLATE WELDMENT |
| 12 | 1 | 8044197 | 49HS - PANEL REAR WELDMENT |
| | 1 | 8044886 | BACK SHEET RS SOUND INSULATION |
| | 1 | 8044944 | BACK SHEET LS SOUND INSULATION |
| 13 | 1 | 8043619 | 49VK - PANEL DOOR W/TRANSMITTER MOUNT WELDMENT |
| | 1 | 8044929 | DOOR, RH SOUND INSULATION |
| 14 | 1 | 8043617 | 49VK - SIDE LOWER GAUGES WELDMENT |
| | 1 | 8044883 | BELOW DOOR SOUND INSULATION |
| 15 | 1 | 8030689 | BOX, PLASTIC FOR SAFETY MANUAL |
| 16 | 2 | 8040589 | OFFSET HINGE TYPE "B" |
| 17 | 1 | 8043614 | 49VK - VERTICAL CONTROL WELDMENT |
| | 1 | 8044885 | CONTROL PANEL SOUND INSULATION |
| 18 | 1 | 8044606 | 49HS - EXHAUST SHIELD |
| 19 | 1 | 8044624 | 49HS - INTAKE BOX |
| * | 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

111709-E

VACASSY416

Engine Kubota V2203



091808

VACASSY851

Engine Kubota V2203

| ITEM | QTY | NUMBER | DESCRIPTION |
|------|-----|---------|-------------------------------------|
| 1 | 1 | 8045596 | STARTER |
| 2 | 1 | 8030960 | OIL PRESSURE SWITCH |
| 3 | 1 | 8045597 | ALTERNATOR |
| 4 | 1 | 8045598 | LOWER RADIATOR HOSE |
| 5 | 1 | 8043952 | WATER TEMPERATURE SWITCH |
| 6 | 1 | 8045600 | THERMOSTAT |
| 7 | 1 | 8045601 | AIR FILTER HOUSING |
| | 1 | T700150 | AIR FILTER ELEMENT |
| 8 | 1 | 8045602 | MUFFLER |
| 9 | 1 | 8045599 | UPPER RADIATOR HOSE |
| 10 | 1 | 8045603 | RADIATOR CAP |
| 11 | 1 | 8045604 | FAN |
| 12 | 1 | | OVERFLOW TANK CAP (SOLD WITH TANK) |
| 13 | 1 | 8043948 | OVERFLOW TANK |
| 14 | 1 | 8043958 | FAN BELT |
| 15 | 1 | 8045605 | OIL FILTER |
| 16 | 1 | 8045606 | FUEL SHUTOFF SOLENOID |
| 17 | 1 | 8030667 | THROTTLE SOLENOID |
| 18 | 1 | 8041799 | KEYWAY RETAINER |
| 19 | 1 | 8030961 | SHEAVE, WATER PUMP |
| | 1 | 8030961 | BUSHING 1-7/16" H |
| 20 | 1 | 8040697 | SHEAVE, BLOWER 6.55"OD SDS 2-GROOVE |
| | 1 | 8040485 | BUSHING 1-1/8" SDS |
| * | 1 | 8045607 | FUEL FILTER |
| * | 1 | 8045608 | FUEL PUMP |
| * | 1 | T400106 | RADIATOR DRAIN FITTING |

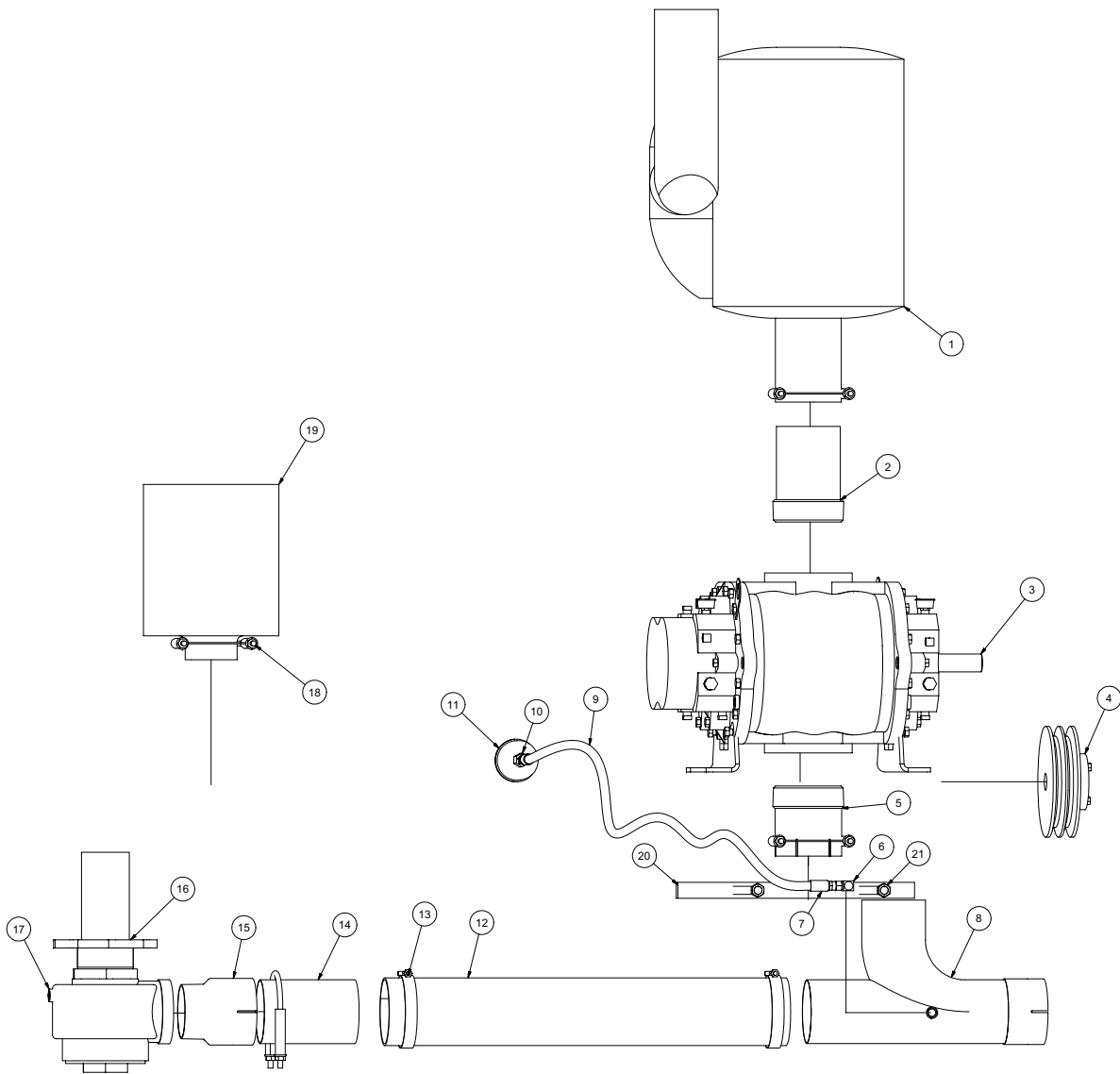
* Not Shown

091808

VACASSY851

Blower Assembly

49HP LTHD



030509

VACASSY205

Blower Assembly

49HP LTHD

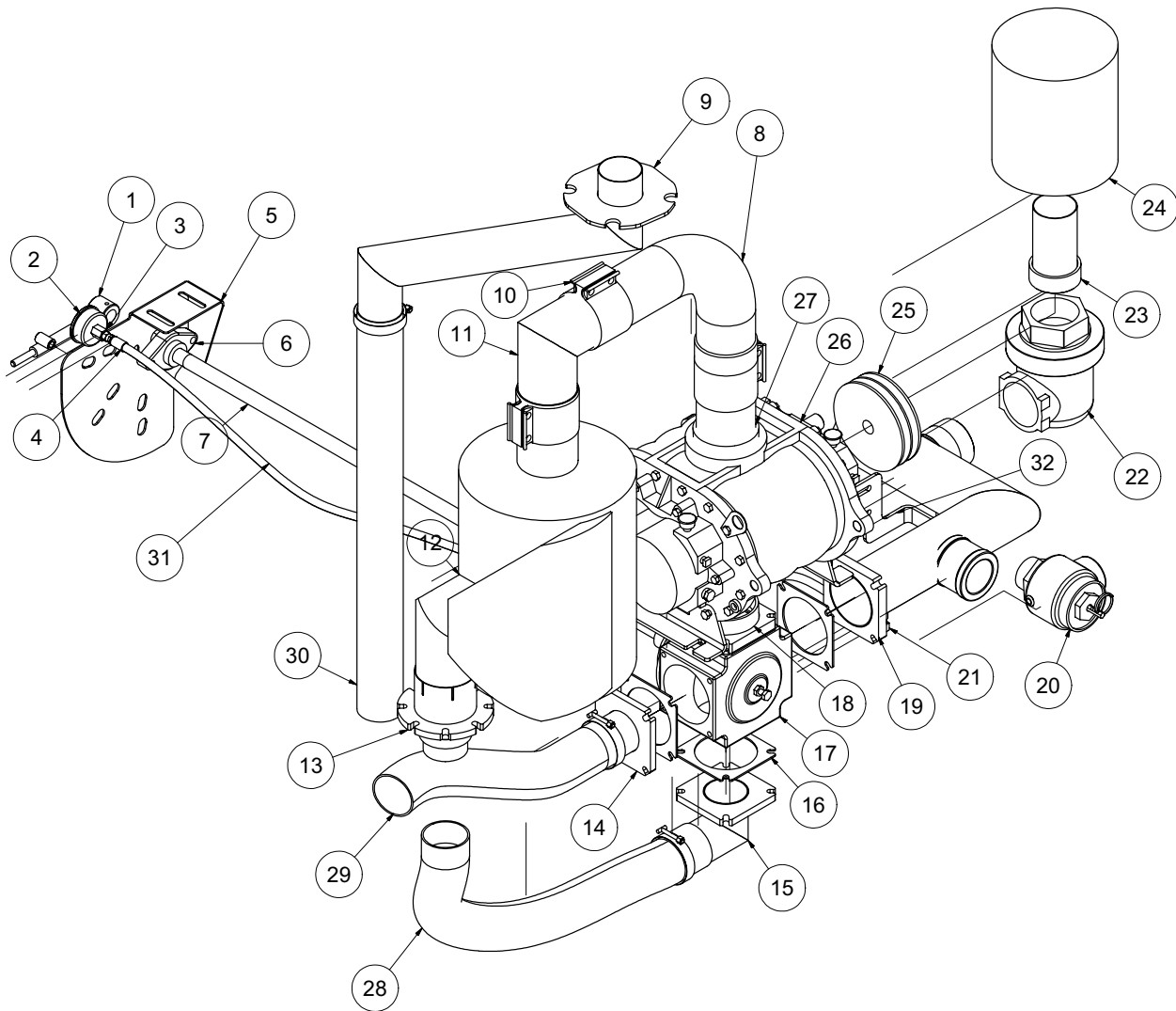
| ITEM | QTY | NUMBER | DESCRIPTION |
|------|-----|---------|-----------------------------|
| 1 | 1 | 8030917 | SILENCER, 1025CFM, COWL |
| 2 | 1 | 8045239 | UNION EXHAUST 4" OD-MNPT |
| 3 | 1 | 8040001 | BLOWER (MODEL 59) |
| | 4 | U000817 | SCREW, HC 1/2" - 13 X 1" |
| | 4 | U210100 | WASHER, LOCK 1/2" |
| | 4 | U200100 | WASHER, FLAT 1/2" |
| 4 | 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 | BX 54 BELT |
| 5 | 1 | 8040991 | ADAPTER 4"MNPT - 4"ID |
| 6 | 1 | T401100 | ELBOW 4MP - 4MJ 90 |
| 7 | 2 | T320030 | FITTING, HOSE 4HO - 4FJ |
| 8 | 1 | 8045036 | WYE 4" IDOD /W 1/4" PORT |
| 9 | 1 | 8042355 | HOSE ASSY VAC 4-60 ST-ST |
| 10 | 1 | 8030483 | UNION 4FP - 4MJ |
| 11 | 1 | 8030372 | WATER PRESSURE GAUGE 1/4NPT |
| 12 | 1 | 8042931 | HOSE VAC AG SUCTION 4-26 |
| 13 | 2 | 8042606 | CLAMP T-BOLT 4" (450) |
| 14 | 1 | 8030324 | TUBE, ADAPTER HOSE 4 X 6 |
| 15 | 1 | 8031044 | ADAPTER 3"MNPT X 4"ID |
| 16 | 1 | 8044612 | BRACKET VACUUM RELIEF 3" |
| 17 | 1 | 8030866 | KUNKLE VALVE, 1025CFM |
| 18 | 4 | 8031193 | 4IN U-BOLT EXHAUST |
| 19 | 1 | 8043553 | FILTER, AIR 3" 245CFM |
| 20 | 1 | 8040904 | TENSION BLOCK 1025CFM |
| 21 | 2 | 8040751 | ROD TIGHTENER WELD'T |

030509

VACASSY205

Blower Assembly

49LE-HD REV FLOW



020310-E

VACASSY232

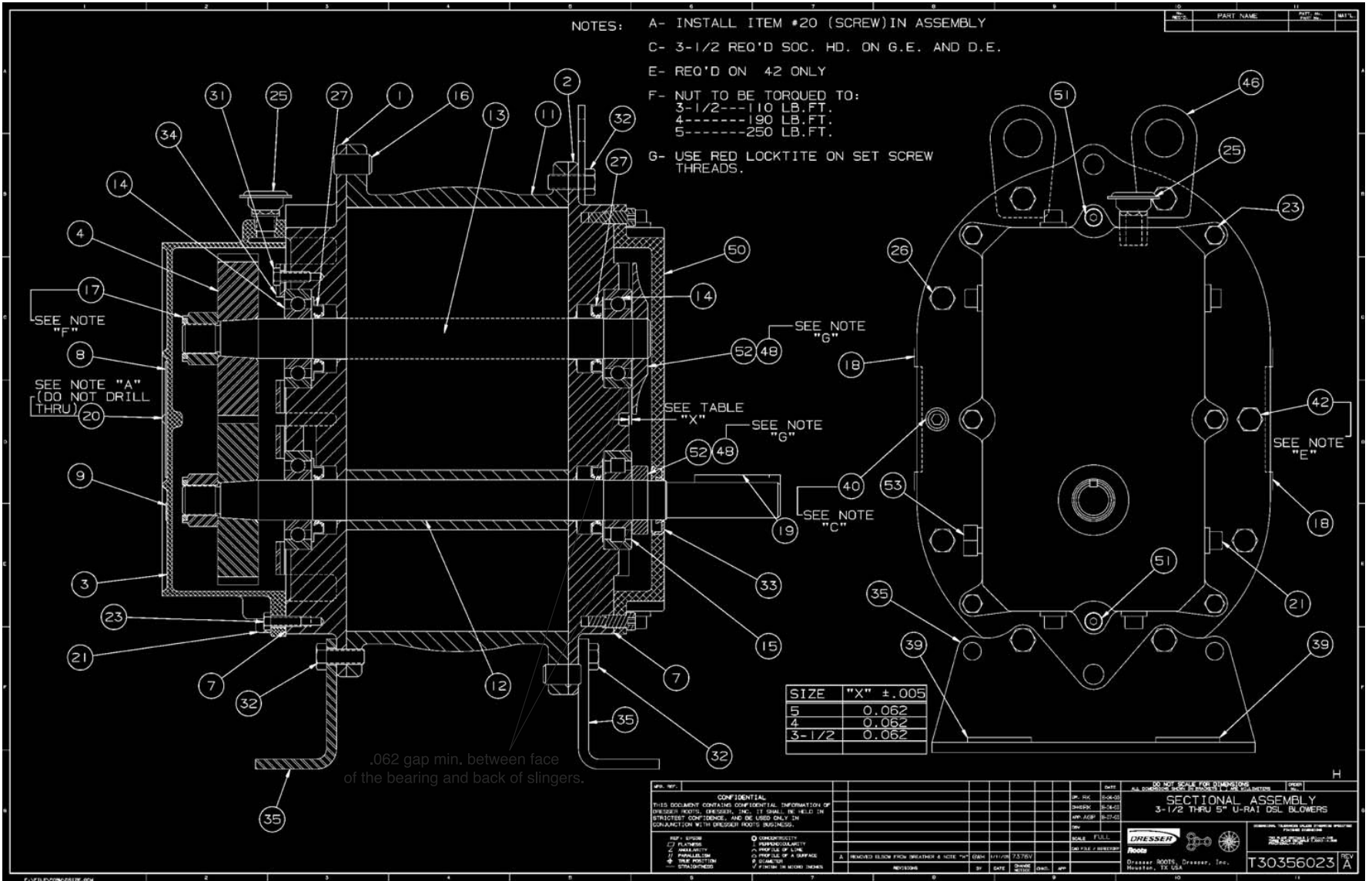
Blower Assembly

49LE-HD REV FLOW

| ITEM | QTY | NUMBER | DESCRIPTION |
|------|-----|---------|---|
| 1 | 1 | 8041617 | REVERSE FLOW HANDLE, TRAILER UNIT |
| 2 | 1 | 8030372 | WATER PRESSURE GAUGE 1/4"NPT |
| 3 | 1 | 8030483 | UNION, 4FP-4MJ |
| 4 | 2 | T320030 | FITTING, HOSE 4HO-4FJ |
| 5 | 1 | 8046202 | BRACKET REV FLOW CONTROL LE |
| 6 | 1 | W030080 | FLANGE BEARING - 2 BOLT (1" BORE) |
| 7 | 1 | 8046223 | REV FLOW SHAFT 49LE |
| 8 | 1 | 8030398 | ELBOW, 4" (6" RAD. ID-OD) |
| 9 | 1 | 8046218 | EXHAUST REV FLOW Z-PIPE WELDMENT |
| 10 | 3 | 8030400 | 4" BAND CLAMP |
| 11 | 1 | 8044789 | AIR RELEASE ELBOW CONNECTOR |
| 12 | 1 | 8030917 | SILENCER, 1025CFM, COWL |
| 13 | 1 | 8046228 | EXHAUST REV FLOW 49LE WELDMENT |
| 14 | 1 | 8046222 | EXHAUST REV FLOW 3" X 4" FLANGE |
| 15 | 1 | 8046201 | ELBOW EXHAUST 3" 3.0"LG X 5.5"LG W/ 4" FLANGE |
| 16 | 4 | 8043554 | ADAPTER VALVE FLANGE |
| 17 | 1 | 8041177 | 4" 4-WAY VALVE |
| 18 | 1 | 8044330 | REV FLOW 4" HEADER NIP ASSY |
| 19 | 1 | 8046225 | HEADER PIPE 49LE - WELDMENT |
| 20 | 1 | 8041034 | PRESSURE RELIEF 1025 |
| 21 | 1 | T401100 | ELBOW ELBOW, 4MP-4MJ 90 |
| 22 | 1 | 8030866 | BAYCO VALVE |
| 23 | 1 | 8045238 | UNION, EXHAUST 3" OD-MNPT |
| 24 | 1 | 8043553 | FILTER AIR 3" 245CFM |
| 25 | 1 | 8040697 | SHEAVE 6.55"OD SDS 2-GROOVE |
| | 1 | 8040485 | BUSHING 1 1/8" SDS |
| | 2 | 8041027 | BELTS, BX54 |
| | 1 | 8041798 | RETAINER |
| 26 | 1 | 8040001 | BLOWER (MODEL 59) |
| 27 | 1 | 8030560 | 4" HOSE COUPLING WELDMENT |
| 28 | 1 | 8045967 | HOSE VAC AG SUCTION 3-40 |
| 29 | 1 | 8046121 | HOSE VAC AG SUCTION 3-22 |
| 30 | 1 | 8045545 | HOSE VAC AG SUCTION 2-34 |
| 31 | 1 | 8040970 | HOSE ASSY VAC 4-70 ST-ST |
| 32 | 1 | 8046242 | HEADER SUPPORT PLATE |

020310-E

VACASSY232



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

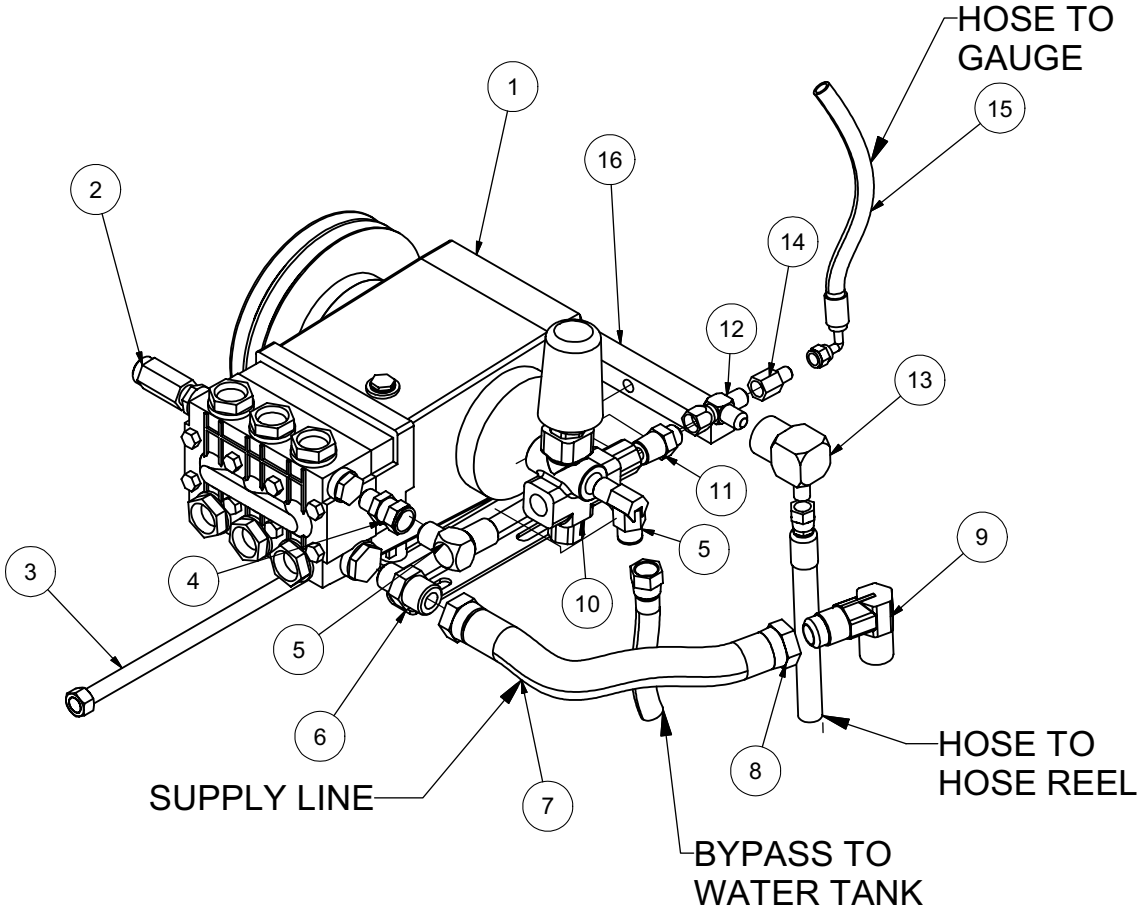
**URAI-DSL Splash Lubricated Blowers
5" Gear Diameter**

| Item # | Qty | Part # | Description |
|---------------|------------|---------------|----------------------------|
| 1 | 1 | 8040001-1 | Headplate Gear End |
| 2 | 1 | 8040001-2 | Headplate Drive End |
| 3 | 1 | 8040001-3 | Gearbox |
| 4 | 2 | 8040001-4 | Timing Gears |
| 7 | 1 | 8040001-7 | Gasket, Gear Box, DE Cover |
| 11 | 1 | 8040001-11 | Cylinder |
| 12 | 1 | 8040001-12 | Impeller & Shaft Drive |
| 13 | 1 | 8040001-13 | Impeller & shaft Driven |
| 14 | 3 | 8040001-14 | Bearing, Ball |
| 15 | 1 | 8040001-15 | Bearing, Roller |
| 16 | 4 | 8040001-16 | Pin, Dowel |
| 17 | 2 | 8040001-17 | Gear Nut |
| 19 | 1 | 8040001-19 | Key |
| 21 | 3 | 8040001-21 | Plug, Pipe |
| 23 | 6 | 8040001-23 | Screw Hex |
| 25 | 1 | 8040001-25 | Breather (Plug Vent) |
| 26 | * | 8040001-26 | Screw, Hex |
| 27 | 4 | 8040001-27 | Seal, Lip Bearing |
| 31 | 4 | 8040001-31 | Screw, Hex, Nylock |
| 32 | 6 | 8040001-32 | Screw, Hex |
| 33 | 1 | 8040001-33 | Seal Lip-Drive |
| 34 | 2 | 8040001-34 | Clamp Plate |
| 35 | 2 | 8040001-35 | Foot |
| 39 | 4 | 8040001-39 | Washer Mounting |
| 40 | 2 | 8040001-40 | Screw Socket |
| 42 | 2 | 8040001-42 | Screw Hex |
| 48 | 4 | 8040001-48 | DE Oil Slinger Set Screw |
| 50 | 1 | 8040001-50 | Drive End Cover |
| 52 | 2 | 8040001-52 | Drive End Oil Slinger |
| 53 | 2 | 8040001-53 | Oil Sight Glass |

*Quantities vary by blower.

Water Pump Assembly

TS2021



Water Pump Assembly

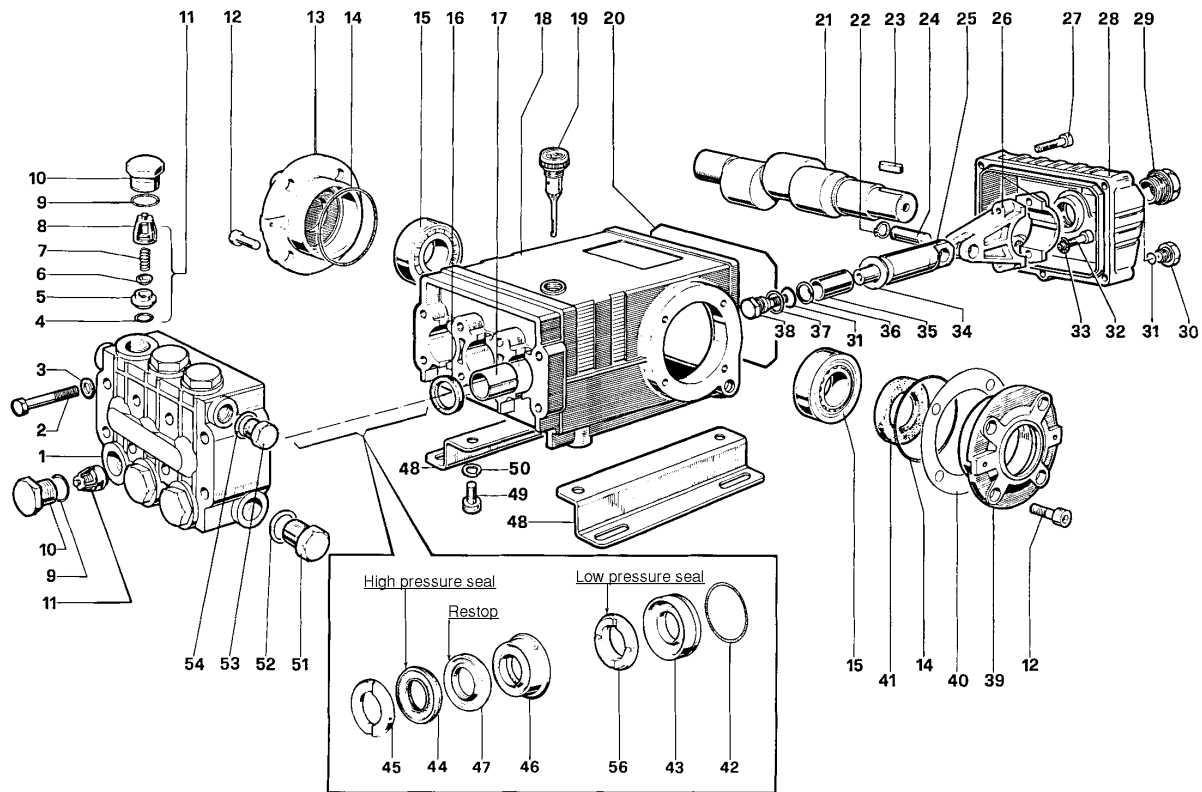
TS2021

| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|----------|---------------------------------|
| 1 | 1 | 8031388 | PUMP, WATER T2021L & CLUTCH 5.6 |
| 2 | 1 | 8030340 | VALVE, RELIEF |
| 3 | 1 | 8040751 | ROD TIGHTENER WELD'T |
| 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) |

102810-E

VACASSY310

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 |

072908

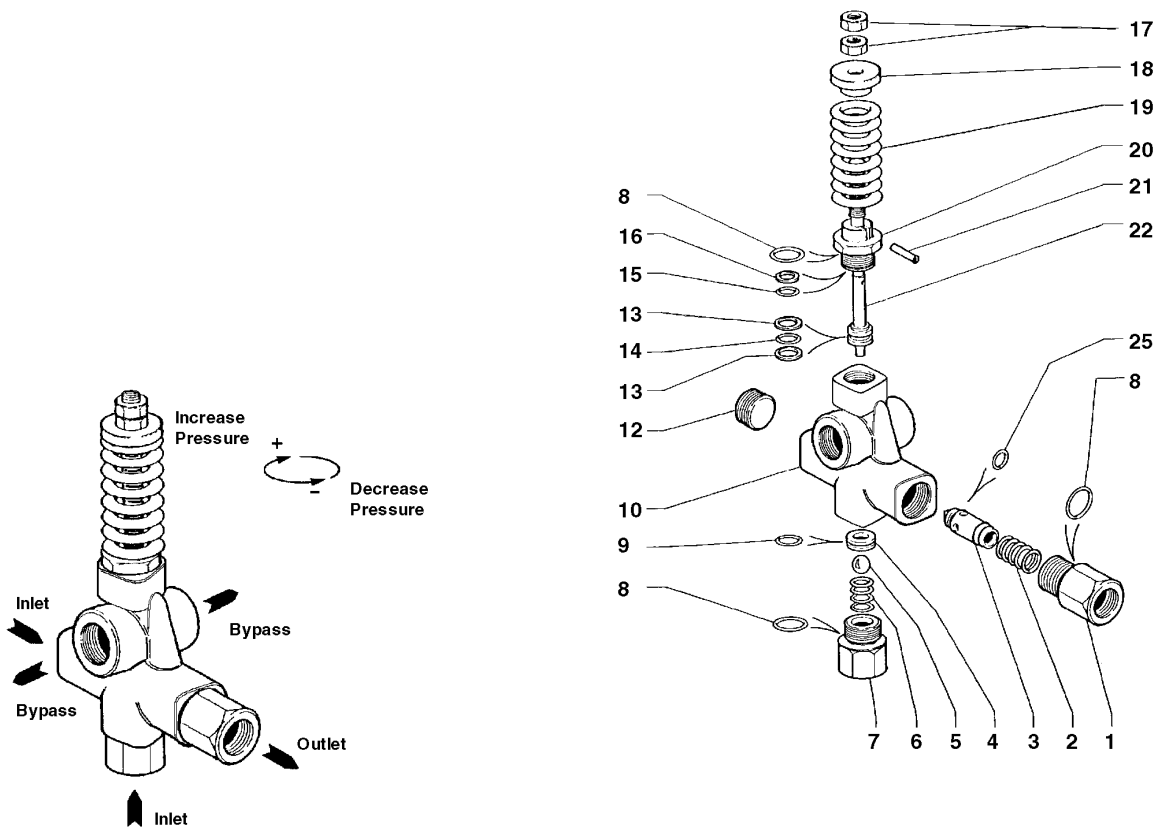
VACASSY325

Water Pump TS2021

| ITEM | QTY. | PART # | DESCRIPTION | KIT # | ITEM #'S INCL'D IN KIT | NO. OF ASSY IN KIT | NO. OF CYL KIT WILL SERVICE |
|------|------|------------|----------------------|---------------|---------------------------|-----------------------|--------------------------------|
| 1 | 1 | 8031280-1 | Manifold | 8031280-KIT1 | 4, 5, 6, 7, 8 (11) | 6 | 3 |
| 2 | 8 | 8031280-2 | Screw, M8 x 70 | 8031280-KIT2 | 16 | 3 | 3 |
| 3 | 8 | 8031280-3 | Washer, M8 x 4 | 8031280-KIT3 | 41 | 2 | 0 |
| 4 | 8 | 8031280-4 | O-ring, .674 x .103 | 8031280-KIT4 | 9, 10 | 6 | 3 |
| 5 | 6 | 8031280-5 | Seat, Valve | 8031280-KIT5 | 9, 10 | 6 | 3 |
| 6 | 6 | 8031280-6 | Plate, Valve | 8031280-KIT6 | 31, 34 | 3 | 3 |
| 7 | 6 | 8031280-7 | Spring | | 36, 37, 38 | | |
| 8 | 6 | 8031280-8 | Guide, Valve | 8031280-KIT7 | 45 | 6 | 3 |
| 9 | 6 | 8031280-9 | O-ring,.797x.103 | 8031280-KIT10 | 42, 43 | 3 | 3 |
| 10 | 6 | 8031280-10 | Cap | 8031280-KIT28 | 42, 43, 44, | 1 | 1 |
| 11 | 6 | 8031280-11 | Valve Assembly | | 45, 45, 47, 56 | | |
| 12 | 8 | 8031280-12 | Screw, M8 x 16 | 8031280-KIT69 | 44, 47, 56 | 3 | 3 |
| 13 | 1 | 8031280-13 | Cover, Crankcase | 8031280-KIT71 | 46, 47 | 3 | 3 |
| 14 | 2 | 8031280-14 | O-ring, 2.675 x .103 | | | | |
| 15 | 2 | 8031280-15 | Bearing, Roller | | | | |
| 16 | 3 | 8031280-16 | Seal, Oil | | | | |
| 17 | 3 | 8031280-17 | Bushing | | | | |
| 18 | 1 | 8031280-18 | Crankcase | | | | |
| 19 | 1 | 8031280-19 | Oil Dip Stick | | | | |
| 20 | 1 | 8031280-20 | O-ring, Cover | | | | |
| 21 | 1 | 8031280-21 | Crankshaft | | | | |
| 22 | 6 | 8031280-22 | Ring, Snap | | | | |
| 23 | 1 | 8031280-23 | Key | | | | |
| 24 | 3 | 8031280-24 | Pin, Wrist | | | | |
| 25 | 3 | 8031280-25 | Guide, Plunger | | | | |
| 26 | 3 | 8031280-26 | Rod, Connecting | | | | |
| 27 | 5 | 8031280-27 | Screw, M6 x 30 | | | | |
| 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 YU2140



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VACASSY326

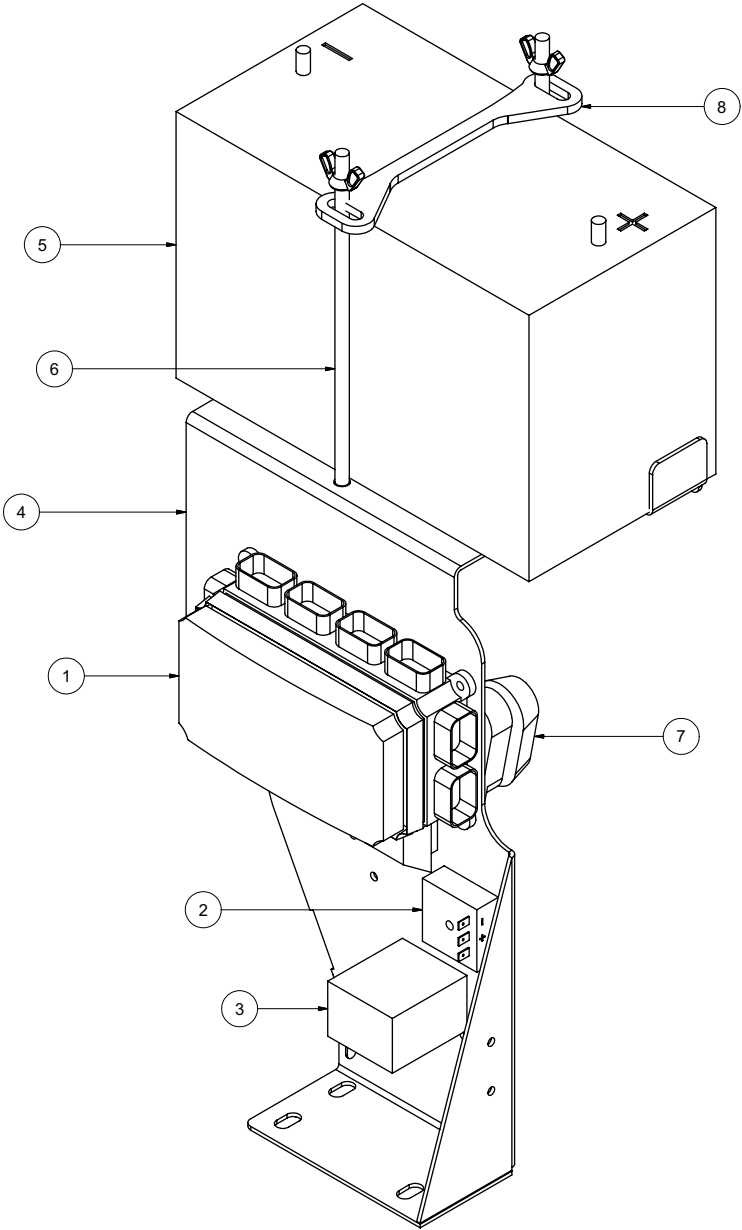
Unloader Valve YU2140

| ITEM | QTY | PART # | DESCRIPTION |
|------|-----|------------|-----------------------|
| 1 | 1 | 8030341-1 | OUTLET CONNECTION |
| 2 | 1 | 8030341-2 | SPRING |
| 3 | 1 | 8030341-3 | CHECK VALVE |
| 4 | 1 | 8030341-4 | SEAT |
| 5 | 1 | 8030341-5 | SS BALL |
| 6 | 1 | 8030341-6 | SPRING |
| 7 | 1 | 8030341-7 | INLET CONNECTION |
| 8 | 2 | 8030341-8 | O-RING |
| 9 | 1 | 8030341-9 | O-RING |
| 10 | 1 | 8030341-10 | VALVE HOUSING |
| 12 | 1 | 8030341-12 | PLUG |
| 13 | 2 | 8030341-13 | BACK RING |
| 14 | 1 | 8030341-14 | O-RING |
| 15 | 1 | 8030341-15 | O-RING |
| 16 | 1 | 8030341-16 | BACK RING |
| 17 | 1 | 8030341-17 | NUT |
| 18 | 1 | 8030341-18 | SPRING GUIDE |
| 19 | 1 | 8030341-19 | SPRING-GREEN (YU2140) |
| 20 | 1 | 8030341-20 | PISTON HOUSING |
| 21 | 1 | 8030341-21 | PN |
| 22 | 1 | 8030341-22 | PISTON |
| 25 | 1 | 8030341-25 | O-RING |

072908

VACASSY326

Electrical Control Bracket



Electrical Control Bracket

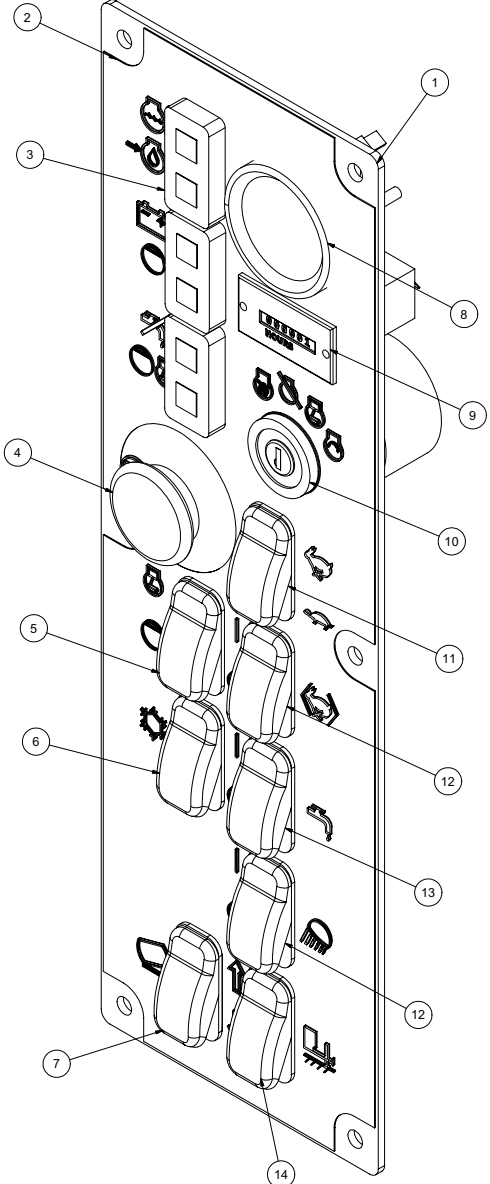
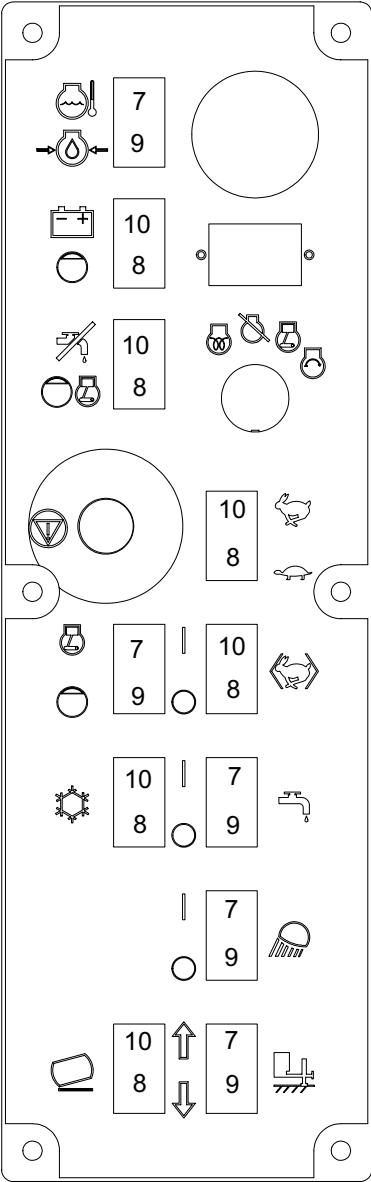
| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|----------|--------------------------------------|
| 1 | 1 | X000213 | BUSSMAN VEC |
| | 7 | X000205 | FUSE 5A |
| | 2 | X000206 | FUSE 10A |
| | 2 | X000207 | FUSE 20A |
| | 3 | X000237 | FUSE 30A |
| | 1 | X000236 | CIRCUIT BREAKER 20A |
| | 1 | 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

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VACASSY550

Control Panel

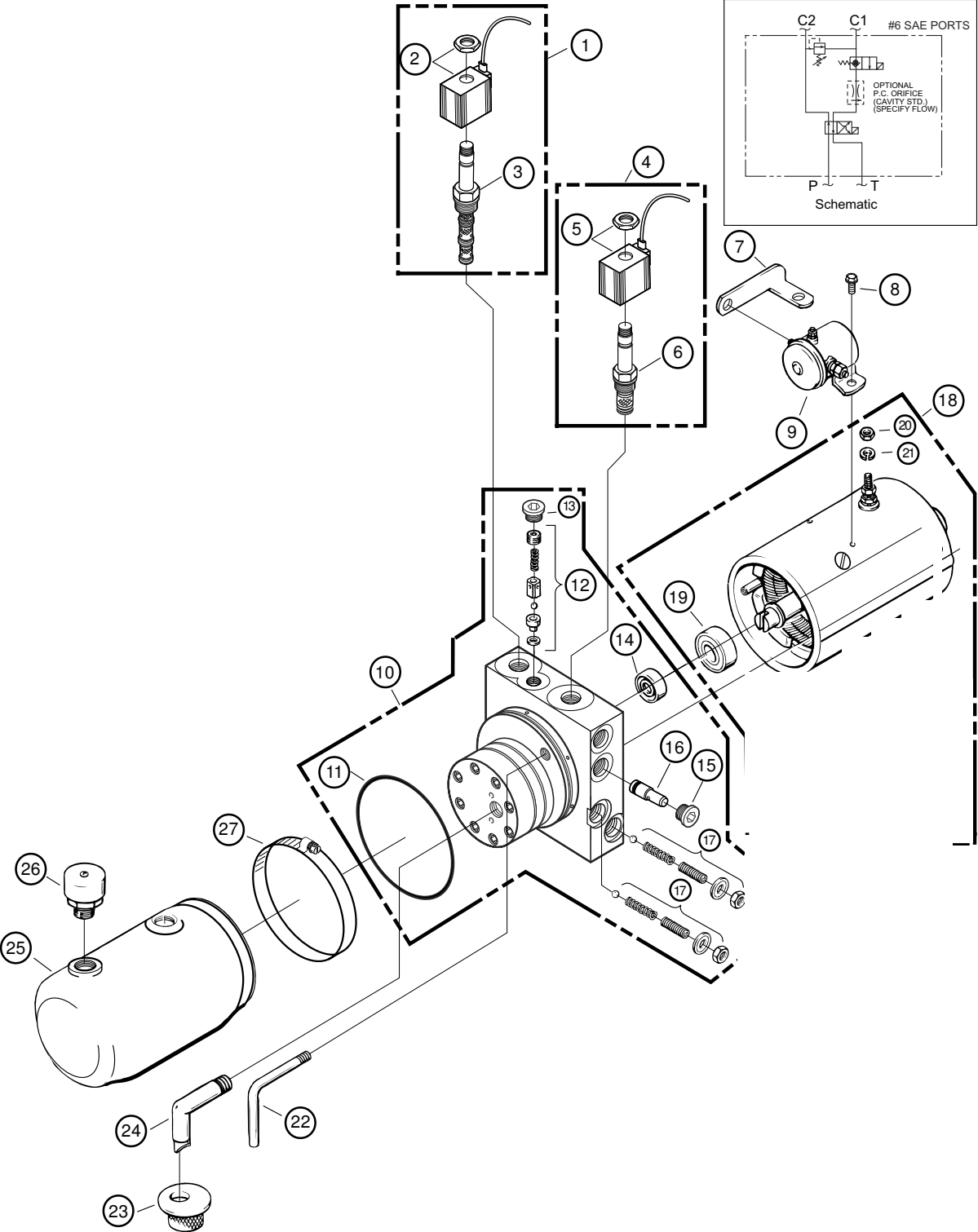


Control Panel

| 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 | X000274 | ROCKER SWITCH DPDT (ON) OFF (ON) |
| 8 | 1 | X100001 | FUEL GAUGE |
| 9 | 1 | X000300 | HOURMETER |
| 10 | 1 | 8030458 | IGNITION SWITCH |
| 11 | 1 | X000271 | ROCKER SWITCH DPST ON - ON |
| 12 | 2 | X000270 | ROCKER SWITCH SPST ON -OFF |
| 13 | 1 | X000270 | ROCKER SWITCH SPST ON -OFF |
| | 1 | X000271 | ROCKER SWITCH DPST ON -ON |
| 14 | 1 | X000290 | ROCKER SWITCH PLUG |
| | 1 | X000274 | ROCKER SWITCH DPDT (HYD. JACK OPTION) |
| * | 1 | 8030829 | KEY, IGNITION - KUBOTA |

* NOT SHOWN

Hydraulic Pump w/ Bracket



091709-E

VACASSY250

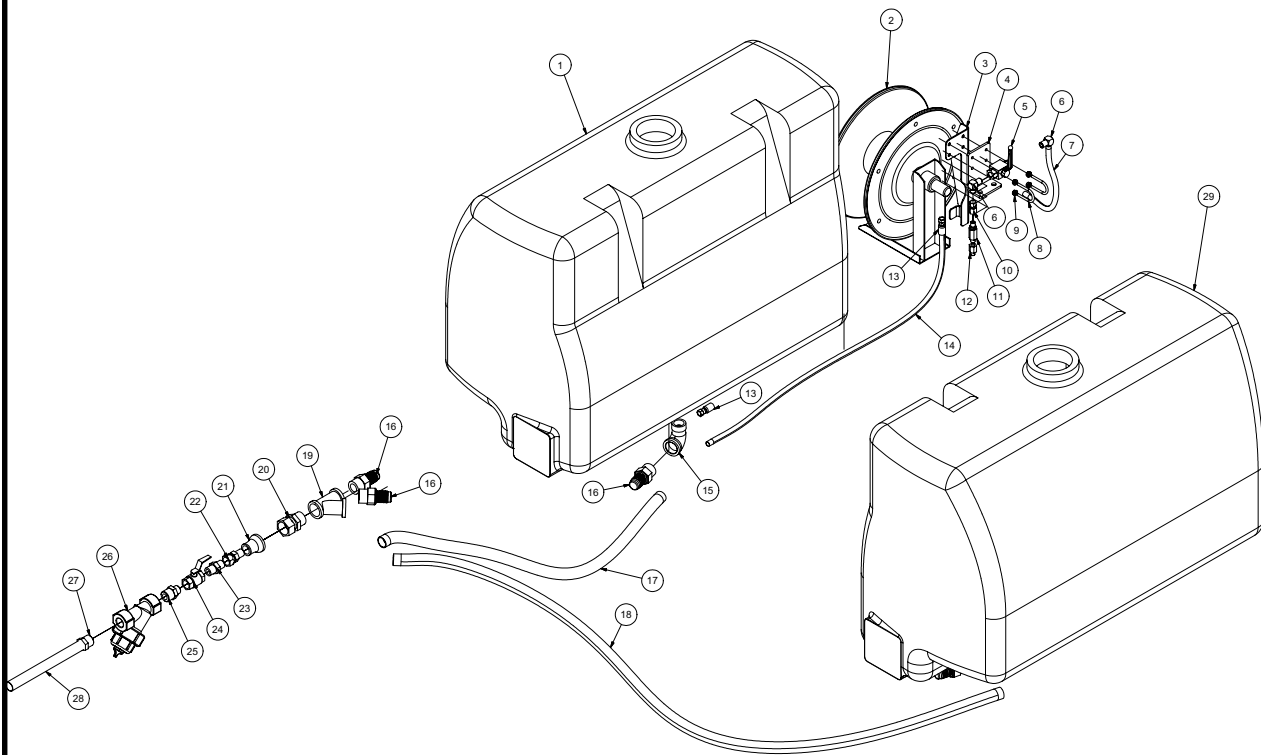
Hydraulic Pump w/ Bracket

| ITEM | QTY | NUMBER | DESCRIPTION |
|------|-----|------------|--|
| | 1 | 8040486 | HYDRAULIC PUMP 12V 3QT |
| | | 8045355 | HYDRAULIC PUMP 12V 6QT (HYDRAULIC DOOR OPTION) |
| | 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 | 8041601-14 | VALVE, 4 WAY - 2 POSITION (12V) |
| 2 | 1 | 8041601-15 | COIL, 10 VDC GROUNDED W/DEUTSCH CONN |
| 3 | 1 | 8041601-16 | CARTRIDGE, 4 WAY - 2 POSITION |
| 4 | 1 | 8041601-17 | VALVE, 2 WAY - 2 POSITION (12V) GROUNDED |
| 5 | 1 | 8041601-18 | COIL, 10 VDC, 2 WAY-2 POS GRND W/DEUTSCH CONN |
| 6 | 1 | 8041601-19 | VALVE 12V HYD 2 WAY-2 POS |
| 7 | 1 | 8041601-20 | STRAP, MOTOR SOLENOID CONNECTING |
| 8 | 2 | 8041601-21 | SCREW, RND HD MACH 10-32 X 1/4" |
| 9 | 1 | 8041601-22 | SWITCH, SOLENOID 12VDC, 3 POST GRND |
| 10 | 1 | 8041601-23 | PUMP ASSY |
| 11 | 1 | 8041601-24 | O-RING INDUST 3-5/8 X 3-7/8 X 1/8 |
| 12 | 1 | 8041601-25 | PARTS KIT-VALVE ASSY, POPPET/BALL CHECK |
| 13 | 1 | 8041601-26 | PLUG |
| 14 | 1 | 8041601-27 | SEAL |
| 15 | 1 | 8041601-28 | PLUG, #8 SAE |
| 16 | 1 | 8041601-29 | VALVE, PRESS, COMP ORIFICE |
| 17 | 2 | 8041601-30 | PARTS KIT, RELIEF VALVE |
| 18 | 1 | 8041601-31 | MOTOR, ELECTRIC 12VDC |
| 19 | 1 | 8041601-32 | BEARING, BASE, MOTOR |
| 20 | 1 | 8041601-33 | NUT, HEX 5/16-24 |
| 21 | 1 | 8041601-34 | WASHER, LOCK 5/16" |
| | 2 | 8041601-38 | SCREW, HEX HEAD, 1/4-20 X 1-3/8" |
| | 1 | 8041601-41 | PLUG, 3/8" NPTF |
| 22 | 1 | 8041601-42 | TUBE, RETURN (1/8") |
| 23 | 1 | 8041601-43 | SCREEN, FILTER (SUCTION) |
| 24 | 1 | 8041601-44 | TUBE, FILTER SUCTION 3/8 NPT 90 DEG |
| 25 | 1 | 8041601-45 | 6QT RESEVOIR POLY |
| | * | 8040486-45 | 3QT RESEVOIR POLY |
| | * | 8041601-48 | 4.5QT RESEVOIR POLY |
| 26 | 1 | 8041601-46 | PLUG, VENT, 3/8" NPT |
| 27 | 1 | 8041601-47 | CLAMP, HOSE WORM GEAR (IN SERIES) |
| * | 1 | X200002 | HYDRAULIC PUMP WIRE HARNESS |
| * | 1 | 8043499 | HYDRAULIC PUMP MOUNT |
| | | 8044297 | HYDRAULIC PUMP MOUNT (REVERSE FLOW) |
| | | 8045336 | HYDRAULIC PUMP MOUNT (412 BLOWER) |

* NOT SHOWN

Water Tank Assembly

125 Gallon Saddle Tanks 31LEG/LE



042909

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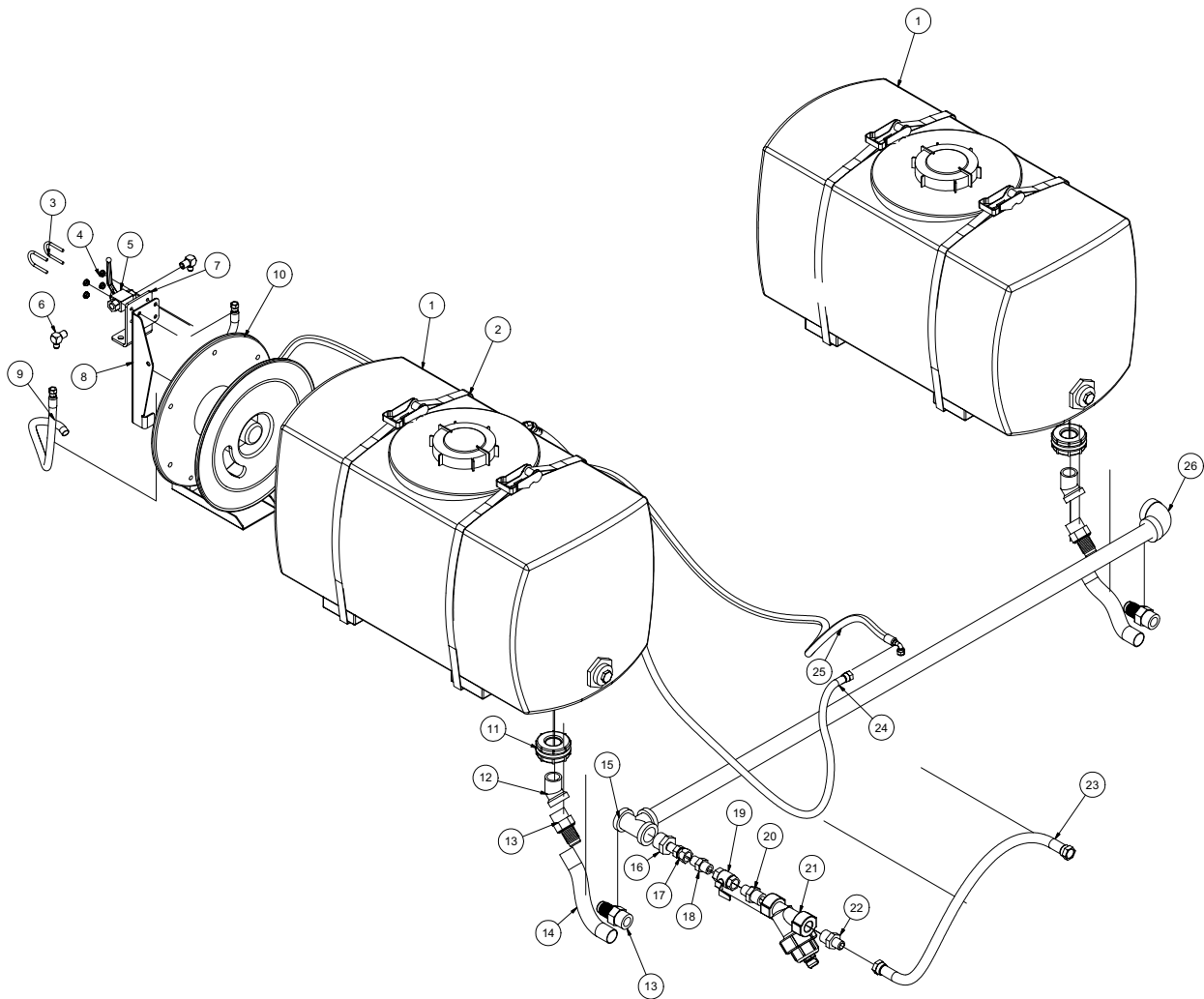
Water Tank Assembly

125 Gallon Saddle Tanks 31LEG/LE

| ITEM | QTY | NUMBER | DESCRIPTION |
|------|-----|-----------|--|
| 1 | 1 | 8040782-1 | TANK, WATER SADDLE (125 GAL) CURB SIDE |
| 2 | 1 | 8043927 | HOSE REEL SP 3/8" |
| | 4 | U000420 | SCREW, HC 3/8"-16 X 1.0 |
| | 8 | U200060 | WASHER, FLAT 3/8" |
| | 4 | U210060 | WASHER, LOCK 3/8" |
| | 4 | U100060 | NUT, HEX 3/8"-16 |
| | 1 | 8041830 | HOSE ASSY VAC 3/8" X 50' 4000PSI |
| 3 | 1 | 8043094 | WATER HOSE VALVE BRACKET |
| 4 | 1 | 8040670 | BALL VALVE BRACKET |
| 5 | 1 | 8030351 | STEEL BALL VALVE - 3/8"NPT |
| 6 | 2 | T401102 | ELBOW, 6MJ-6MP |
| 7 | 1 | 8044147 | HOSE REEL SUPPLY HOSE 6-10 ST-ST |
| 8 | 2 | U010017 | 1 1/2" CLAMP HOOK 1/4-20 THD |
| 9 | 4 | U120100 | NUT, LOCK 1/4-20 |
| | 4 | U200020 | WASHER, FLAT 1/4" |
| 10 | 1 | 8031125 | UNION, 4FP-6FJ |
| 11 | 1 | 8030923 | FILTER, WATER HIGH PRESSURE |
| 12 | 1 | 8031126 | UNION, 4FP-6MJ |
| 13 | 2 | T320040 | FITTING, HOSE 6HO-6FJ |
| 14 | 1 | 8045262 | HOSE ASSY VAC 6-125 ST-ST |
| 15 | 2 | T420120 | STREET ELBOW 90 - 1 1/4 |
| 16 | 4 | 8044266 | FITTING, HOSE BARB 20HB-20MP |
| 17 | 1 | 8044637 | HOSE VAC VINLY 1 1/4-30 |
| 18 | 1 | 8045263 | HOSE VAC VINLY 1 1/4-54 |
| 19 | 1 | 8045201 | WYE, 1 1/4"FP 45DEG BLACK PIPE |
| 20 | 1 | 8045203 | UNION, 1 1/4"MP - 1 1/4"FP SWIVL |
| 21 | 1 | 8045202 | COUPLING, PIPE 1 1/4 X 3/4 |
| 22 | 1 | T400101 | UNION, 3/4"FJ - 3/4"MP |
| 23 | 1 | T400100 | UNION, 12MP-12MJ |
| 24 | 1 | T000185 | VALVE, BALL 3/4"FNPT BRASS |
| 25 | 1 | T404060 | UNION, 16MP-12MP |
| 26 | 1 | 8040186 | STRAINER "Y" BANJO |
| 27 | 1 | T400450 | UNION, 12MJ-16MP |
| 28 | 1 | 8043688 | HOSE VAC PUSH 12-20 |
| | 2 | 8030525 | FITTING, PUSHLOCK #12 |
| 28 | 1 | 8040782 | TANK, WATER SADDLE (125 GAL) STREET SIDE |

Water Tank Assembly

50Gallon Saddle Tanks 31LE



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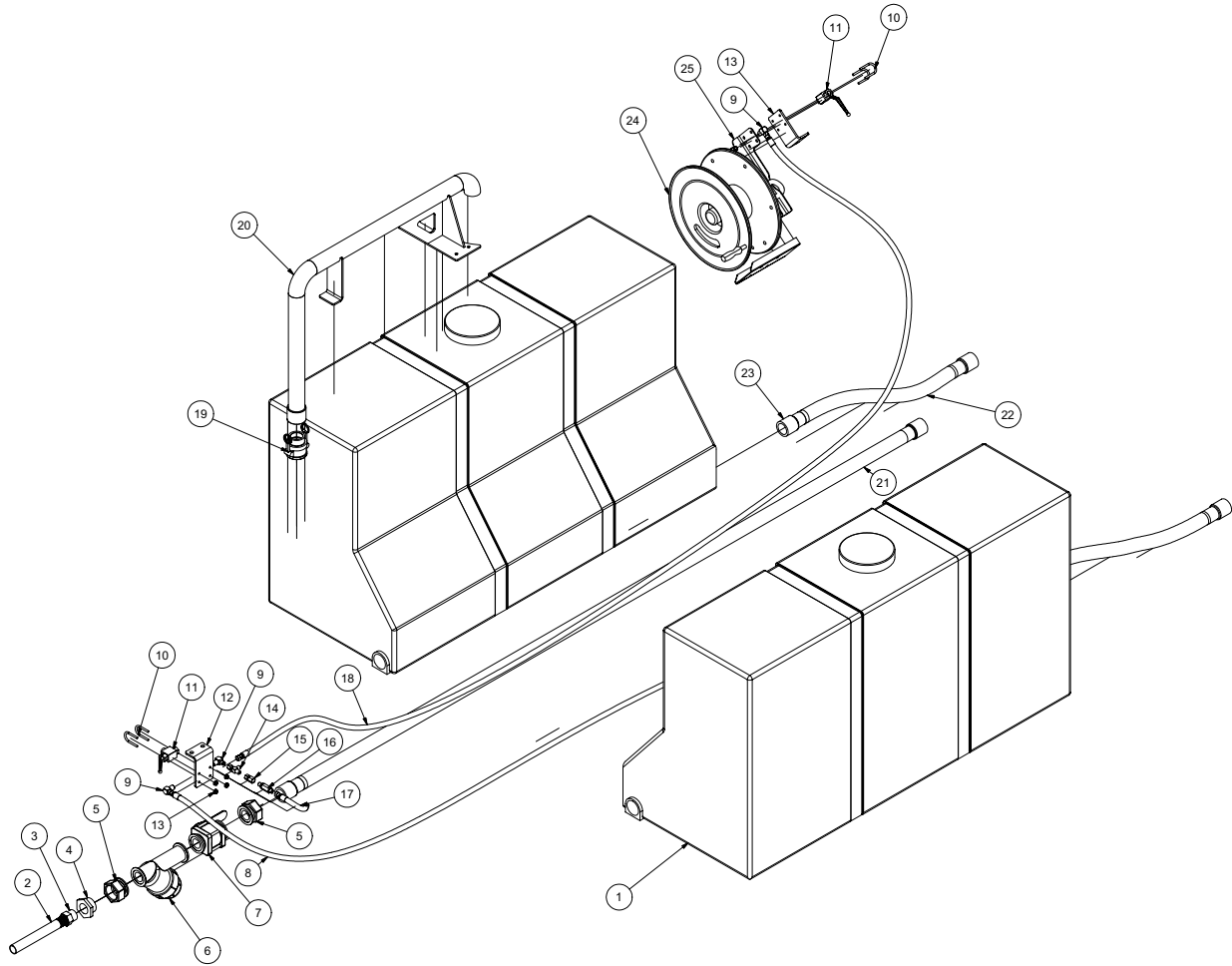
Water Tank Assembly

50Gallon Saddle Tanks 31LE

| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|------------|----------------------------------|
| 1 | 2 | 8034151 | 50 GALLON WATER TANK |
| 2 | 4 | 8043758 | STRAP, EYEBOLT 1" X 55" OAL |
| 3 | 2 | U010017 | 1 1/2" CLAMP HOOK 1/4-20 |
| 4 | 4 | U120100 | NUT, LOCK 1/4-20 |
| | 4 | U200020 | WASHER, FLAT 1/4" |
| 5 | 1 | 8030351 | STEEL BALL VALVE - 3/8"NPT |
| 6 | 2 | T401102 | ELBOW, 6MJ-6MP |
| 7 | 1 | 8040670 | BALL VALVE BRACKET |
| 8 | 1 | 8043094 | WATER HOSE VALVE BRACKET |
| 9 | 1 | 8044147 | HOSE REEL SUPPLY HOSE 6-10 ST-ST |
| 10 | 1 | 8043927 | HOSE REEL SP 3/8" |
| | 4 | U000420 | SCREW, HC 3/8"-16 X 1.0 |
| | 8 | U200060 | WASHER, FLAT 3/8" |
| | 4 | U210060 | WASHER, LOCK 3/8" |
| | 4 | U100060 | NUT, HEX 3/8"-16 |
| | 1 | 8030842-50 | HOSE ASSY VAC 3/8" X 50' 4000PSI |
| 11 | 2 | 8041044 | BULKHEAD, 1 1/4"FNPT - PLASTIC |
| 12 | 2 | 8041526 | ELBOW, 45 STREET 1 1/4" |
| 13 | 4 | 8041312 | FITTING, HOSE BARB 1 1/4" |
| 14 | 2 | 8044637 | HOSE VAC VINLY 1 1/4-30 |
| 15 | 1 | 8041310 | TEE, 1 1/4FP-1 1/4FP-1 1/4FP |
| 16 | 1 | T403100 | REDUCER, 20MP-12FP |
| 17 | 1 | T400101 | UNION, 12FJ-12MP |
| 18 | 1 | T400100 | UNION, 12MJ-12MP |
| 19 | 1 | T000185 | BALL VALVE, BRASS 3/4"FP |
| 20 | 1 | T404060 | UNION, 16MP-12MP |
| 21 | 1 | 8040186 | STRAINER |
| 22 | 1 | T400450 | UNION, 12MJ-16MP |
| 23 | 1 | 8044638 | HOSE VAC PUSH 12-40 |
| | 2 | 8030525 | FITTING, PUSHLOCK #12 |
| 24 | 1 | 8043977 | HOSE VAC PUSH 8-102 |
| | 2 | 8030524 | FITTING, PUSHLOCK #8 |
| 25 | 1 | 8041476 | HOSE ASSY VAC 6-150 ST-90 |
| 26 | 1 | 8041309 | ELBOW, 1 1/4FP - 1 1/4FP |

Water Tank Assembly

205 Gallon Saddle Tanks



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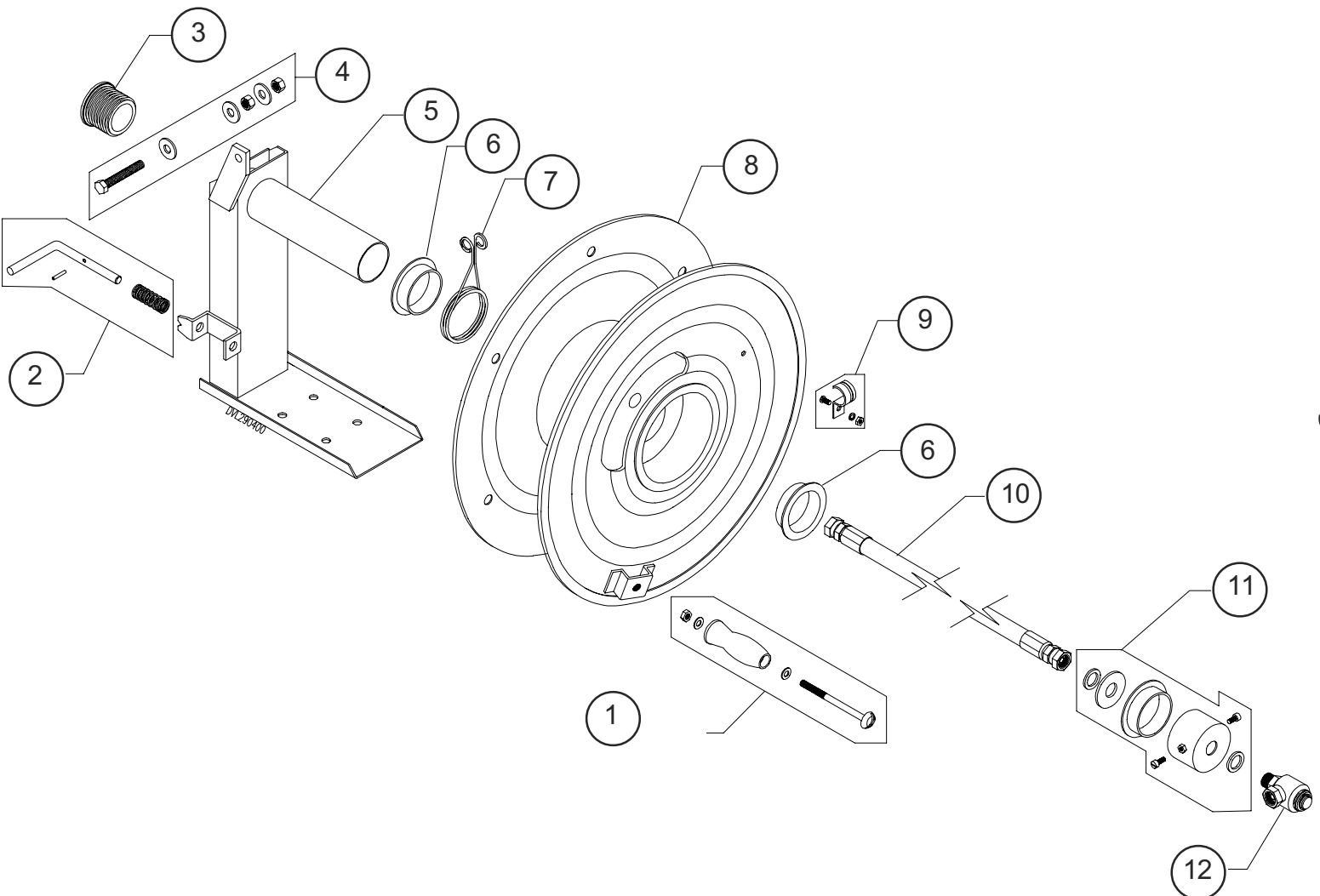
Water Tank Assembly

205 Gallon Saddle Tanks

| ITEM | QTY | NUMBER | DESCRIPTION |
|------|-----|---------|--|
| 1 | 2 | 8043805 | TANK, WATER 205 GAL. POLY. |
| * | 1 | 8030518 | 1/2" BULKHEAD 45 DEG |
| 2 | 1 | 8043076 | HOSE VAC CLEAR VINLY 1 1/4-37" |
| 3 | 1 | 8044266 | FITTING HOSE BARB 20HB-20MP |
| 4 | 1 | 8043843 | REDUCER, 1 1/4"MP - 1/2"FP GALV |
| 5 | 2 | 8030996 | ADAPTER, FEMALE 2" |
| 6 | 1 | 8031001 | Y-STRAINER, 2" |
| 7 | 1 | 8030998 | BALL VALVE, BANJO 1 1/2"ID |
| 8 | 1 | 8043949 | BALL VALVE TO TANK CLEAN OUT HOSE #6-215 ST-90 |
| | 2 | T320040 | FITTING, HOSE 6HO-6FJ |
| 9 | 4 | T401102 | ELBOW, 6MJ-6MP |
| 10 | 4 | U010017 | 1 1/2" CLAMP HOOK 1/4-20 THD |
| 11 | 2 | 8030351 | STEEL BALL VALVE, 3/8" NPT |
| 12 | 2 | 8040670 | BALL VALVE BRACKET |
| 13 | 8 | U120142 | NUT, LOCK FLANGED .250-20 G2 |
| | 8 | U200020 | WASHER, FLAT 1/4" |
| 14 | 1 | T402153 | TEE, 6MJ-6MJ-6FJ |
| 15 | 1 | 8031125 | UNION, 4FP-6FJ |
| 16 | 1 | 8030923 | FILTER, WATER HIGH PRESSURE |
| 17 | 1 | 8043664 | BALL VALVE TO WATER PUMP HOSE #6-36 ST-90 |
| 18 | 1 | 8041477 | HOSE REEL TO BALL VALVE HOSE #6-140 ST-ST |
| | 2 | T320040 | FITTING, HOSE 6HO-6FJ |
| 19 | 1 | 8031219 | COUPLING, 2" ALUM MP X FCAMLOCK |
| 20 | 1 | 8044398 | QUICK FILL 205 GAL |
| 21 | 1 | 8045635 | HOSE VAC CLEAR VINLY 2"-122 |
| | 2 | 8043397 | CLAMP VAC CLEAR HOSE 2" |
| 22 | 2 | 8045636 | HOSE VAC CLEAR VINLY 2"-36 |
| | 2 | 8043397 | CLAMP VAC CLEAR HOSE 2" |
| 23 | 6 | T410115 | HOSE BARB 2" |
| 24 | 1 | 8043927 | HOSE REEL |
| 25 | 1 | 8043094 | WATER HOSE VALVE BRACKET |
| 26 | 1 | 8045386 | SWITCH, WATER TANK BOTTOM LONG |

* NOT SHOWN

Hose Reel Assembly



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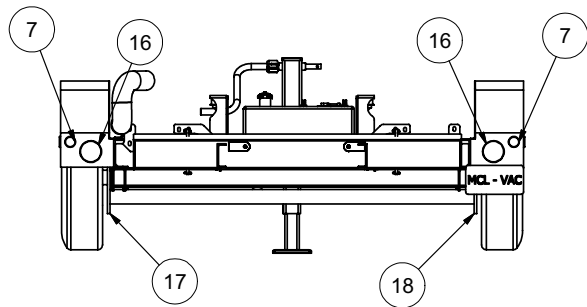
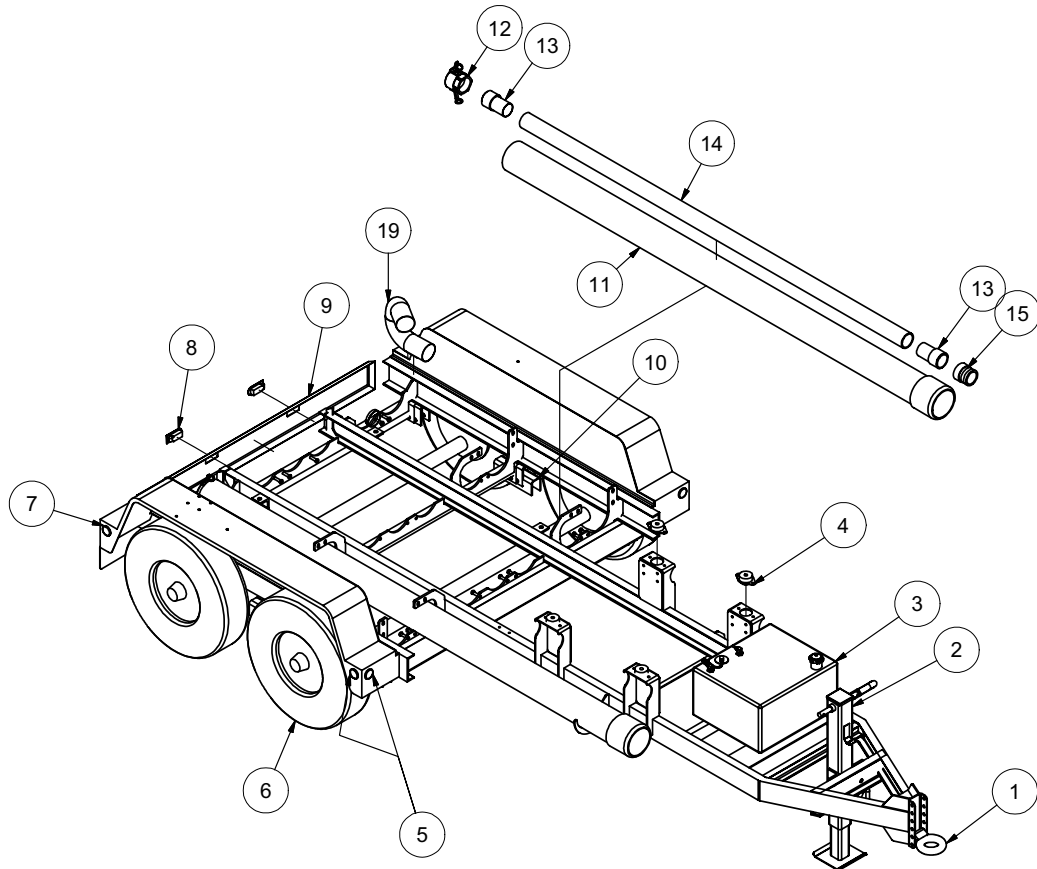
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VACASSY751

Hose Reel Assembly

| ITEM | QTY | NUMBER | DESCRIPTION |
|------|-----|------------|--|
| | 1 | 8043927 | HOSE REEL, SP 3/8" X 150' |
| 1 | 1 | 8043927-1 | KIT-HOSE REEL HANDLE W/HARDWARE |
| 2 | 1 | 8043927-2 | KIT-LOCKING LATCH AND SPRING |
| 3 | 1 | 8043927-3 | KIT-HOSE GUIDE |
| 4 | 1 | 8043927-4 | KIT-SCREW, WASHER, BOLT SET |
| 5 | 1 | 8043927-5 | KIT-BASE |
| 6 | 1 | 8043927-6 | KIT-BUSHINGS (2) |
| 7 | 1 | 8043927-7 | KIT-BREAKING SPRING |
| 8 | 1 | 8043927-8 | KIT-REEL |
| 9 | 1 | 8043927-9 | KIT-HOSE CLAMP AND SCREW SET |
| 10 | 1 | 8042412 | HOSE VAC ASSY 6-33 ST-ST FNPT |
| 11 | 1 | 8043927-11 | KIT-SWIVEL MOUNTING COLLAR |
| 12 | 1 | 8043927-12 | KIT-3/8" HIGH PRESSURE SWIVEL 5000 PSI |

Trailer Assy 599LE



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VACASSY899

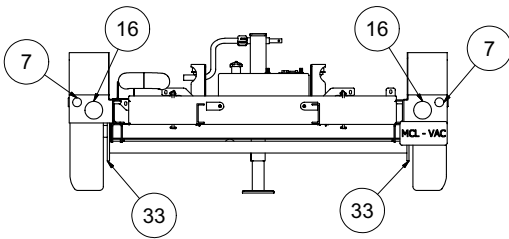
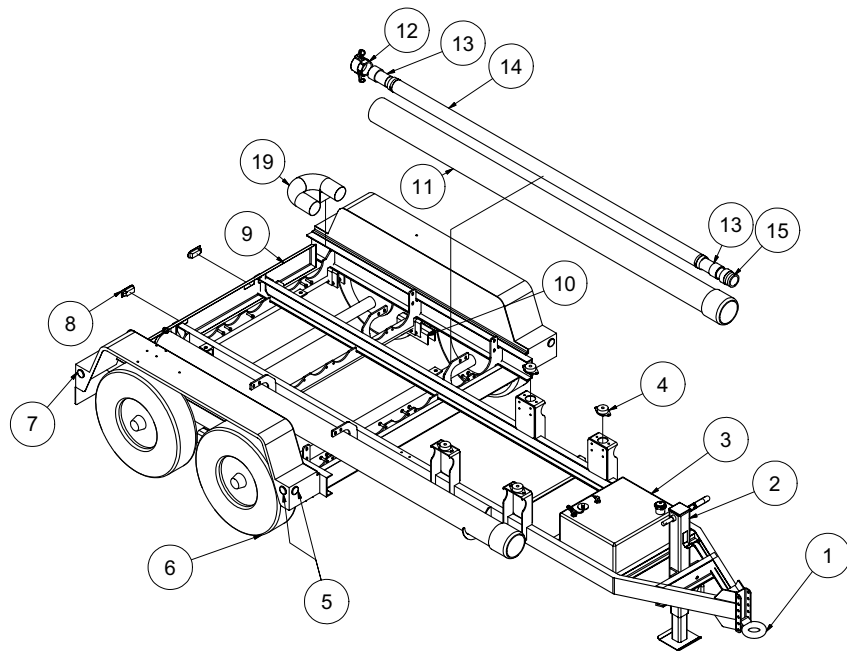
Trailer Assy 599LE

| ITEM | QTY | PART # | DESCRIPTION |
|------|-----------|-----------|---------------------------------------|
| 1 | 1 | 8043980 | PINTLE EYE |
| 2 | 1 | 8043637 | JACK - MANUAL |
| | 1 | 8043984 | JACK - HANDLE |
| 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 | 8030389 | 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 | 8045151 | TIRE, ST235 / 80 R16 |
| | 4 | 8045152 | WHEEL, R16 X 6 |
| | 2 | 8045897 | AXLE, LE |
| | 4 | 8045898 | HUB |
| | 24 | 8043987 | LUG NUTS |
| | 4 | 8047428 | GREASE CAP |
| 7 | 4 | 8043999 | 2" RED MARKER LIGHT |
| | 4 | 8044002 | 2" RUBBER GROMMET |
| 8 | 2 | 8040586 | SEALED LEVER 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 | 8041102 | HOSE STORAGE 6" X 10' |
| | 2 | 8030925 | END CAP 6" |
| | 2 | 8041485 | LANYARD CABLE |
| | 4 | 8043198 | HOSE STORAGE CLAMP |
| | 8 | U200060 | WASHER, FLAT 3/8" |
| | 8 | U100060 | NUT, HEX 3/8" |
| 12 | 2 | 8030392 | 3" FEMALE COUPLER |
| 13 | 4 | 8030287 | 3" HOSE X 3" MNPT ADAPTER |
| 14 | 2 | 8040338 | HOSE VAC KANAFLEX 3 - 110" |
| 15 | 2 | 8030391 | BANJO 3" MALE 3" FNPT |
| 16 | 2 | 8044001 | 4" STOP/TURN LIGHT |
| | 2 | 8044003 | 4" RUBBER GROMMET |
| 17 | 1 | 8043990 | LH BRAKE ASSEMBLY |
| | 2 | 8043992 | MAGNET KIT |
| | 2 | 8043993 | SHOE KIT |
| | 1 | 8043994 | ADJUSTER KIT |
| 18 | 1 | 8043991 | RH BRAKE ASSEMBLY |
| | 2 | 8043992 | MAGNET KIT |
| | 2 | 8043993 | SHOE KIT |
| | 1 | 8043994 | ADJUSTER KIT |
| 19 | 1 | 8046262 | EXHAUST ELBOW TANK PIVOT 4" |
| * | NOT SHOWN | | |
| * | 1 | 8043981 | SAFETY CHAIN |
| * | 1 | 8043982 | BREAKAWAY SWITCH |
| * | 1 | 8044007 | 6-WAY PLUG |

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VACASSY899

Trailer Assy 816LE



022814-E

VACASSY898

Trailer Assy 816LE

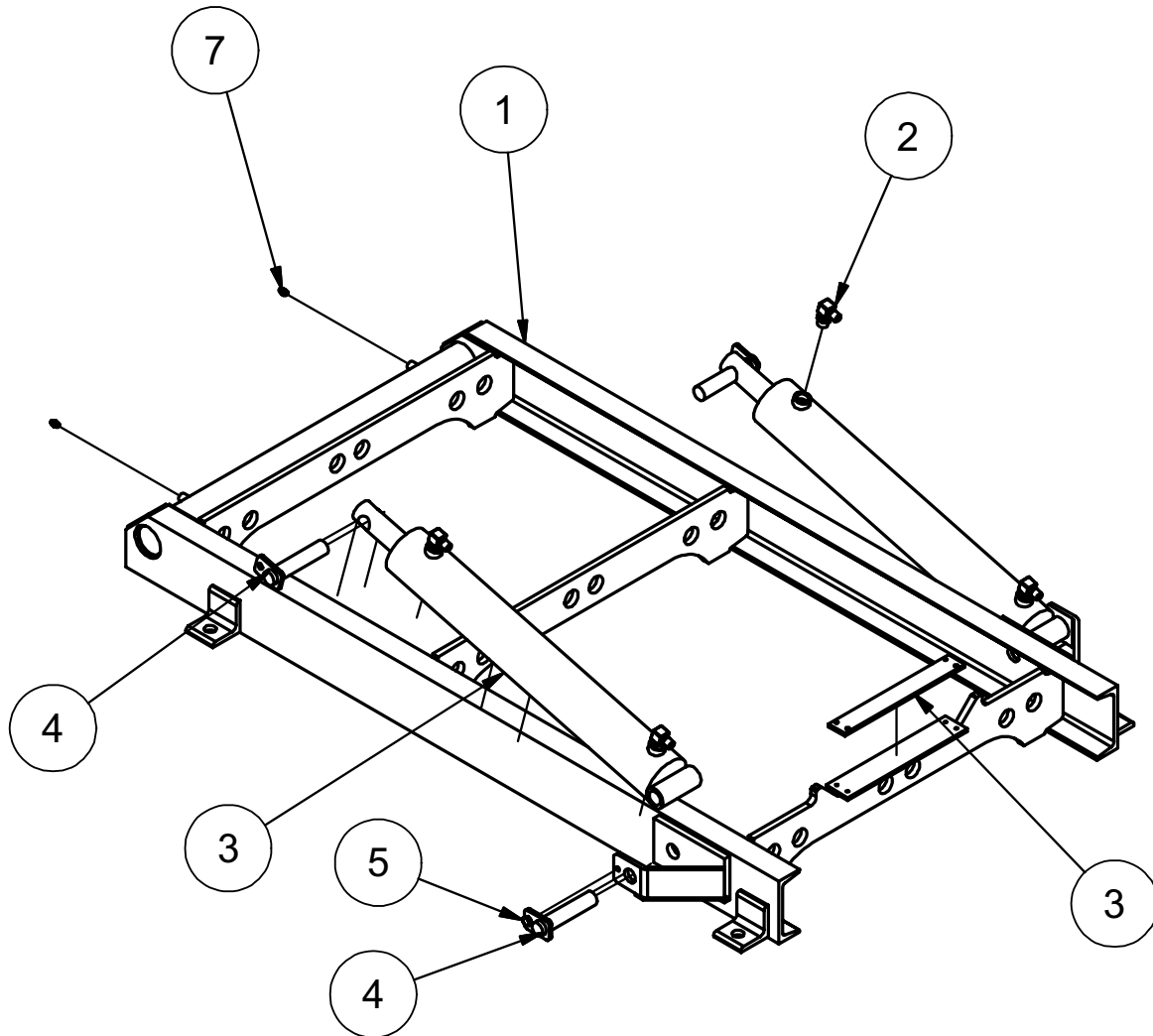
| ITEM | QTY | PART # | DESCRIPTION |
|------|-----------|-----------|---------------------------------------|
| 1 | 1 | 8043980 | PINTLE EYE |
| 2 | 1 | 8043637 | JACK - MANUAL |
| | 1 | 8043984 | JACK - HANDLE |
| 3 | 1 | 8042380 | FUEL TANK 22 GAL |
| | 1 | 8043359 | STRAP W/ EYEBOLT |
| | 1 | 8042380-1 | 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 | 8030389 | 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 |
| 7 | 4 | 8043999 | 2" RED MARKER LIGHT |
| | 4 | 8044002 | 2" RUBBER GROMMET |
| 8 | 2 | 8040586 | SEALED LEVER 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 | 8041102 | HOSE STORAGE 6" X 10' |
| | 2 | 8030925 | END CAP 6" |
| | 2 | 8041485 | LANYARD CABLE |
| | 4 | 8043198 | HOSE STORAGE CLAMP |
| | 8 | U200060 | WASHER, FLAT 3/8" |
| | 8 | U100060 | NUT, HEX 3/8" |
| 12 | 2 | 8030392 | 3" FEMALE COUPLER |
| 13 | 4 | 8030287 | 3" HOSE X 3" MNPT ADAPTER |
| 14 | 2 | 8040338 | HOSE VAC KANAFLEX 3 - 110" |
| 15 | 2 | 8030391 | BANJO 3" MALE 3" FNPT |
| 16 | 2 | 8044001 | 4" STOP/TURN LIGHT |
| | 2 | 8044003 | 4" RUBBER GROMMET |
| 17 | 1 | 8046307 | LH BRAKE ASSEMBLY |
| | 2 | 8046304 | MAGNET KIT |
| | 2 | 8046305 | SHOE KIT |
| | 1 | 8046306 | ADJUSTER KIT |
| 18 | 1 | 8046308 | RH BRAKE ASSEMBLY |
| | 2 | 8046304 | MAGNET KIT |
| | 2 | 8046305 | SHOE KIT |
| | 1 | 8046306 | ADJUSTER KIT |
| 19 | 1 | 8046277 | EXHAUST ELBOW TANK PIVOT 4" |
| * | NOT SHOWN | | |
| * | 1 | 8043981 | SAFETY CHAIN |
| * | 1 | 8043982 | BREAKAWAY SWITCH |
| * | 1 | 8044007 | 6-WAY PLUG |

022814-E

VACASSY898

Skid Assembly

V500LE



101209-E

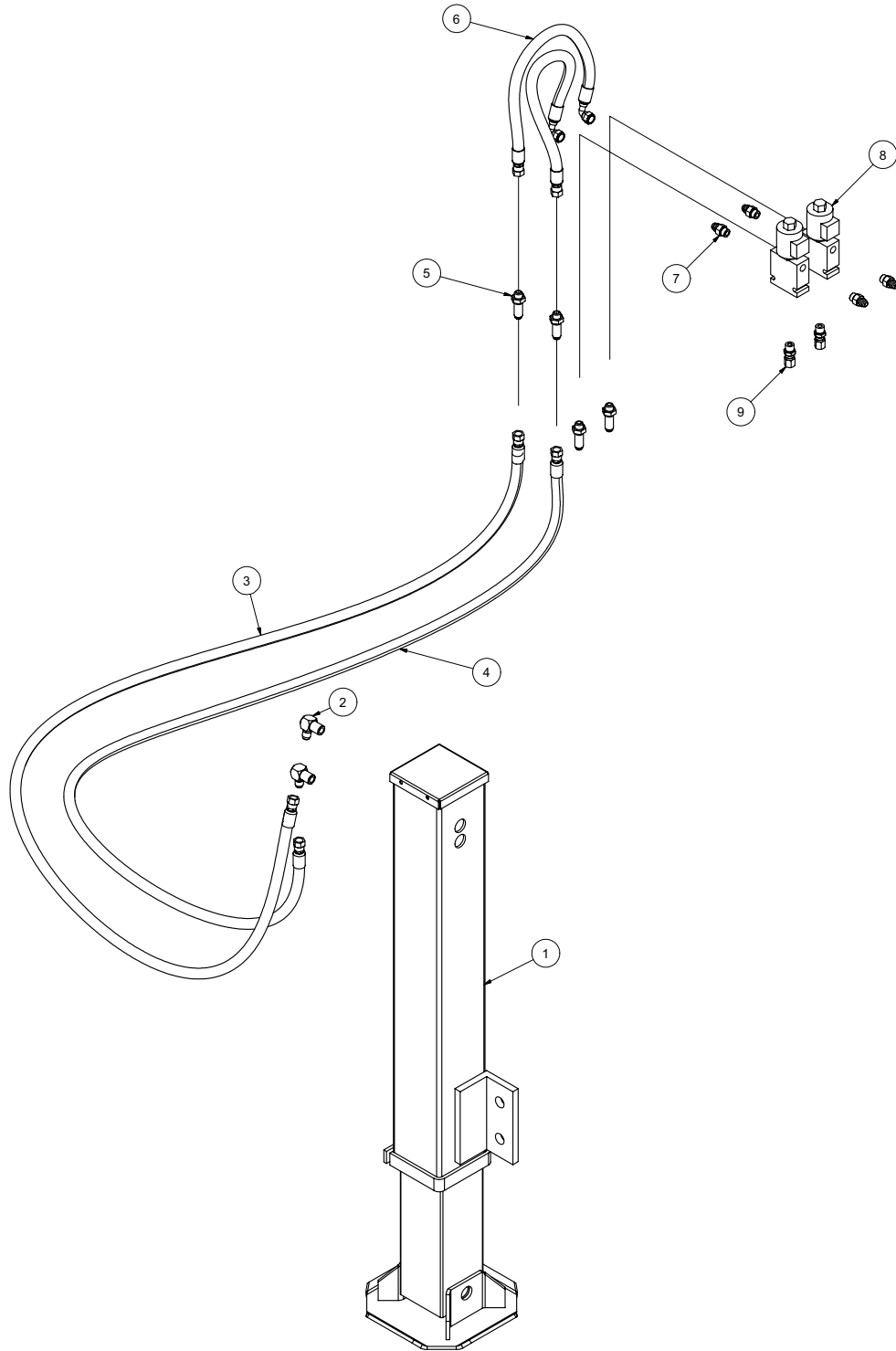
VACASSY875

Skid Assembly

V500LE

| ITEM | QTY | PART # | DESCRIPTION |
|------|-----|---------|------------------------------------|
| 1 | 1 | 8045732 | TANK SKID V500 |
| 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 | 8030128 | 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 |

Hydraulic Jack Option



072808

VACASSY956

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 |

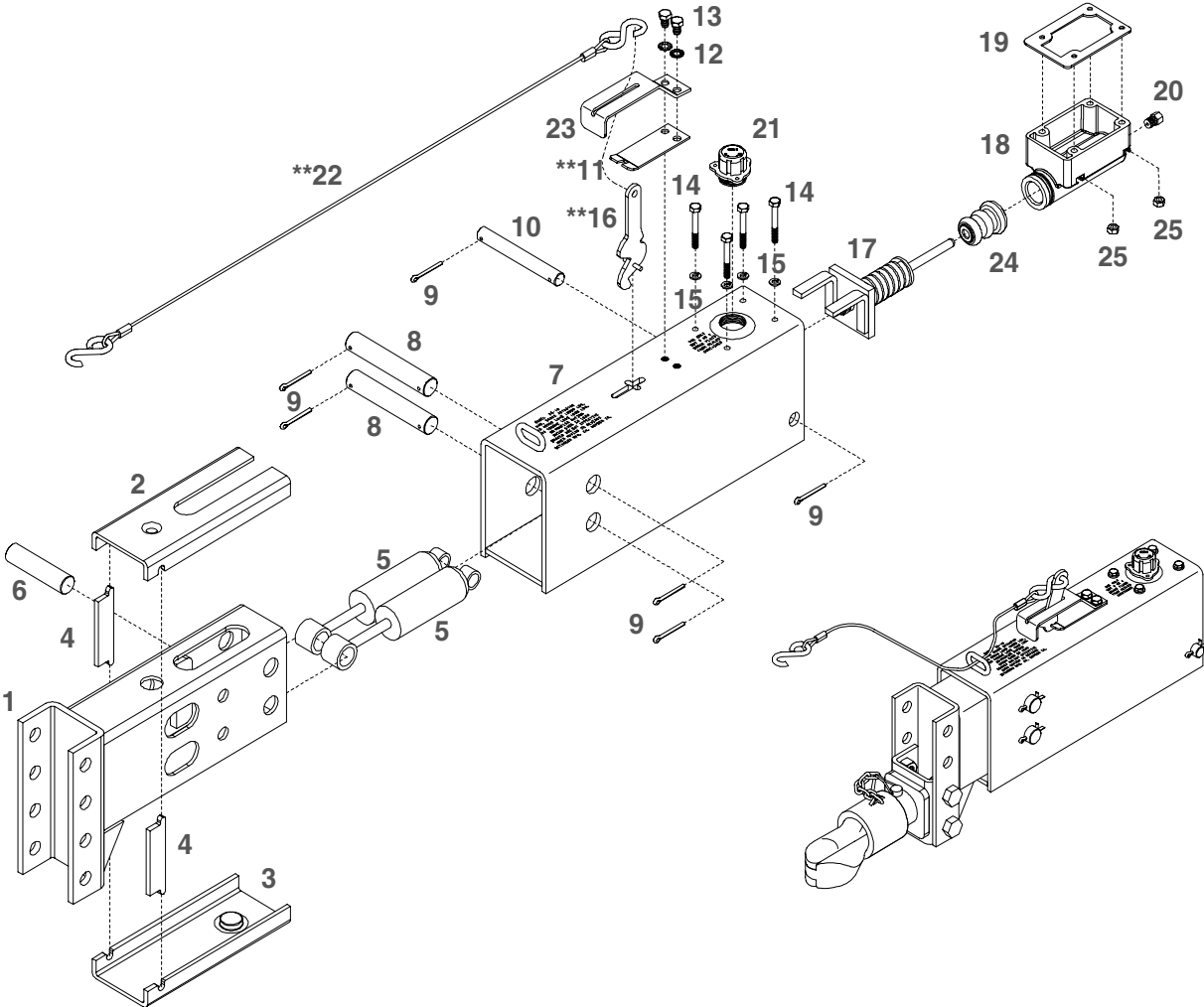
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VACASSY956

Surge Brake Option

V500



051408

VACASSY948

Surge Brake Option

V500

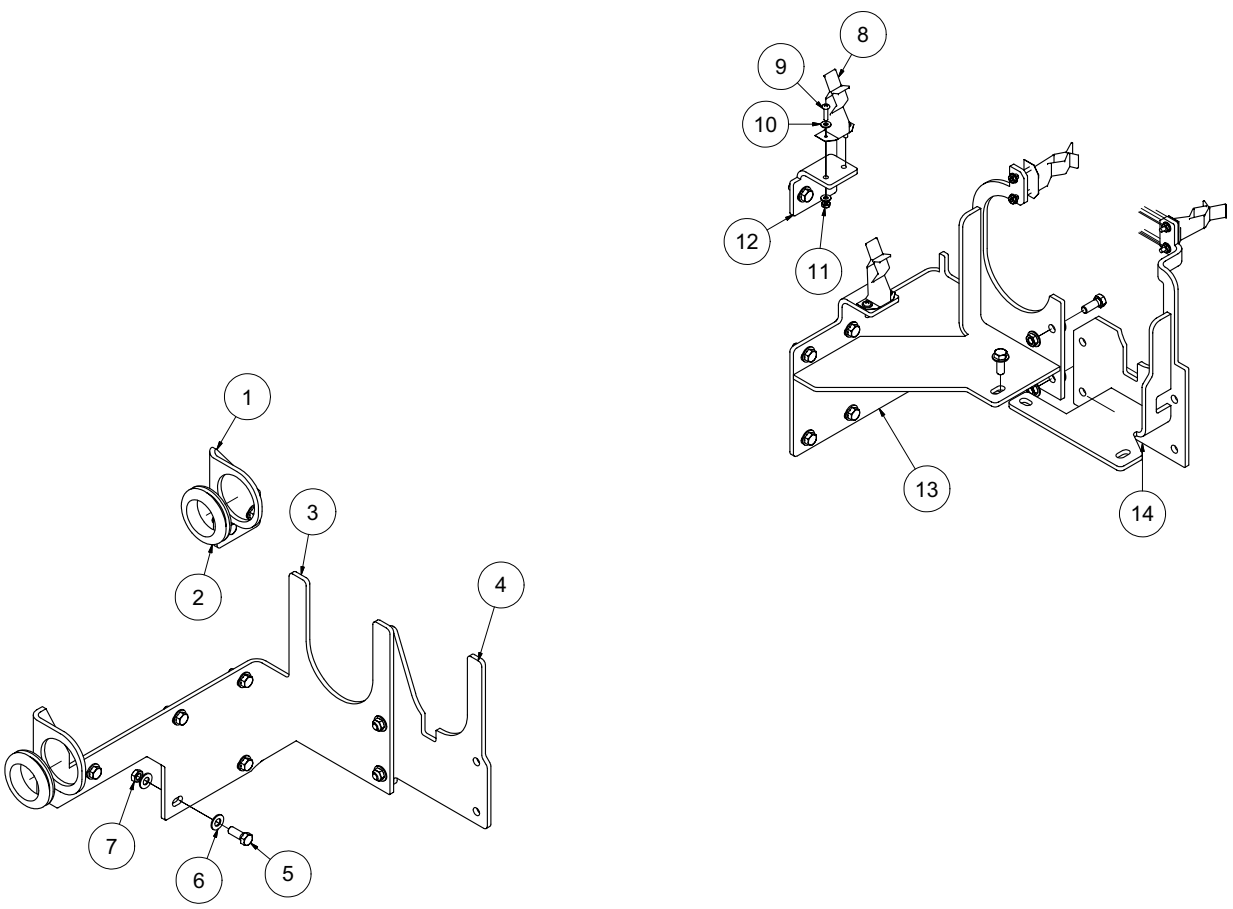
| ITEM | QTY | NUMBER | DESCRIPTION |
|------|-----|------------|--|
| 1 | 1 | 8040790-1 | INNER SLIDER TUBE CHAN. DOWN |
| 2 | 1 | 8040790-2 | TOP WEAR PAD |
| 3 | 1 | 8040790-3 | BOTTOM WEAR PAD |
| 4 | 2 | 8040790-4 | SPACER BLOCK |
| 5 | 2 | 8040790-5 | DAMPER SHOCK |
| 6 | 1 | 8040790-6 | FRONT 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 |

051408

VACASSY948

Tool Rack Assembly

LE-HD



021010-E

VACASSY760

Tool Rack Assembly

LE-HD

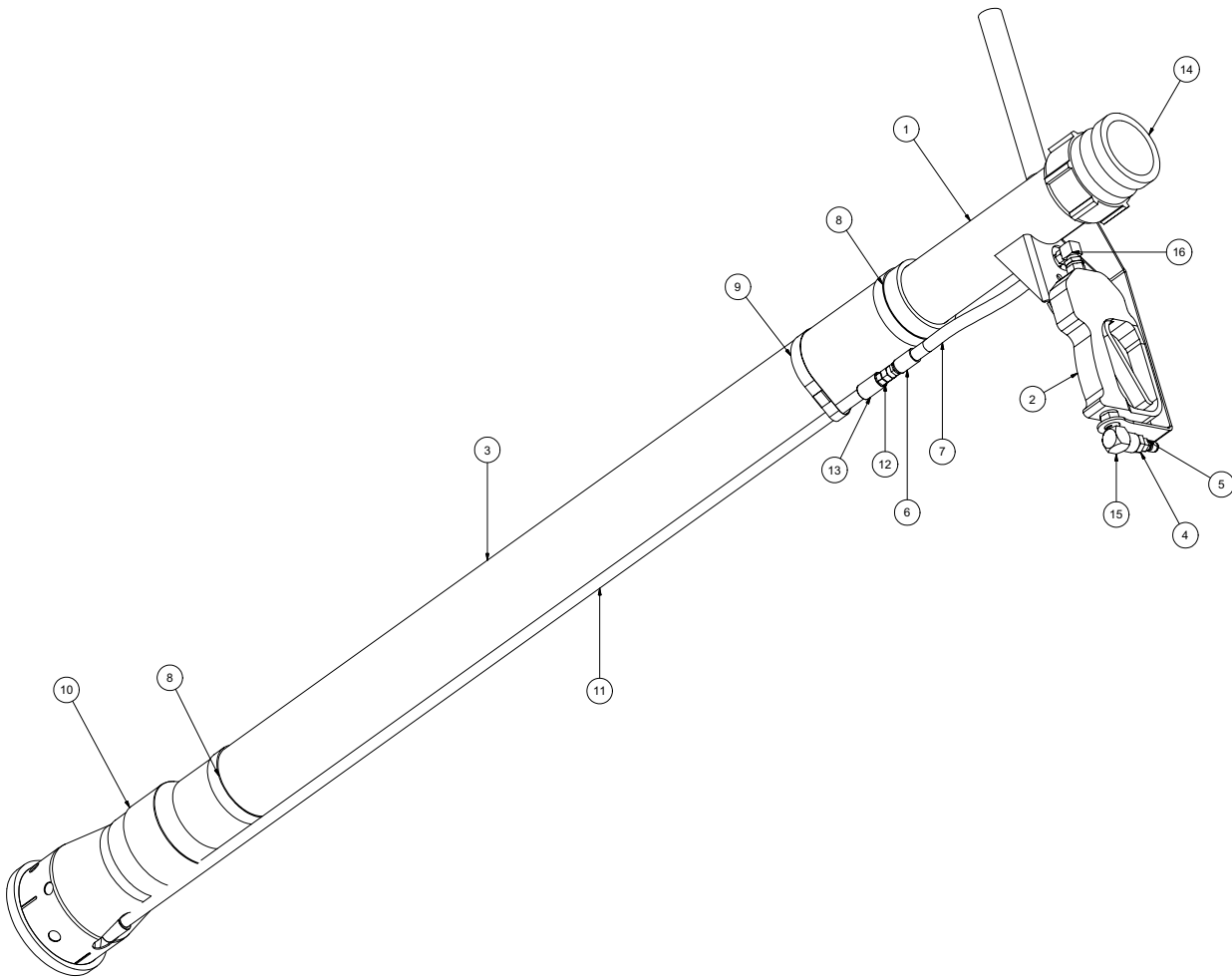
| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|----------|--------------------------------|
| 1 | 1 | 8046209 | TOOL RACK BRACKET #3 |
| 2 | 2 | 8042812 | GROMMET 2" ID 1/4" WOG |
| 3 | 1 | 8046208 | TOOL RACK BRACKET #2 |
| 4 | 1 | 8046217 | TOOL RACK EXTRA TOOL BRACKET |
| 5 | 18 | U000420 | 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 |

021010-E

VACASSY760

Tools

HD Reduction Tool



122607

VACASSY707

Tools

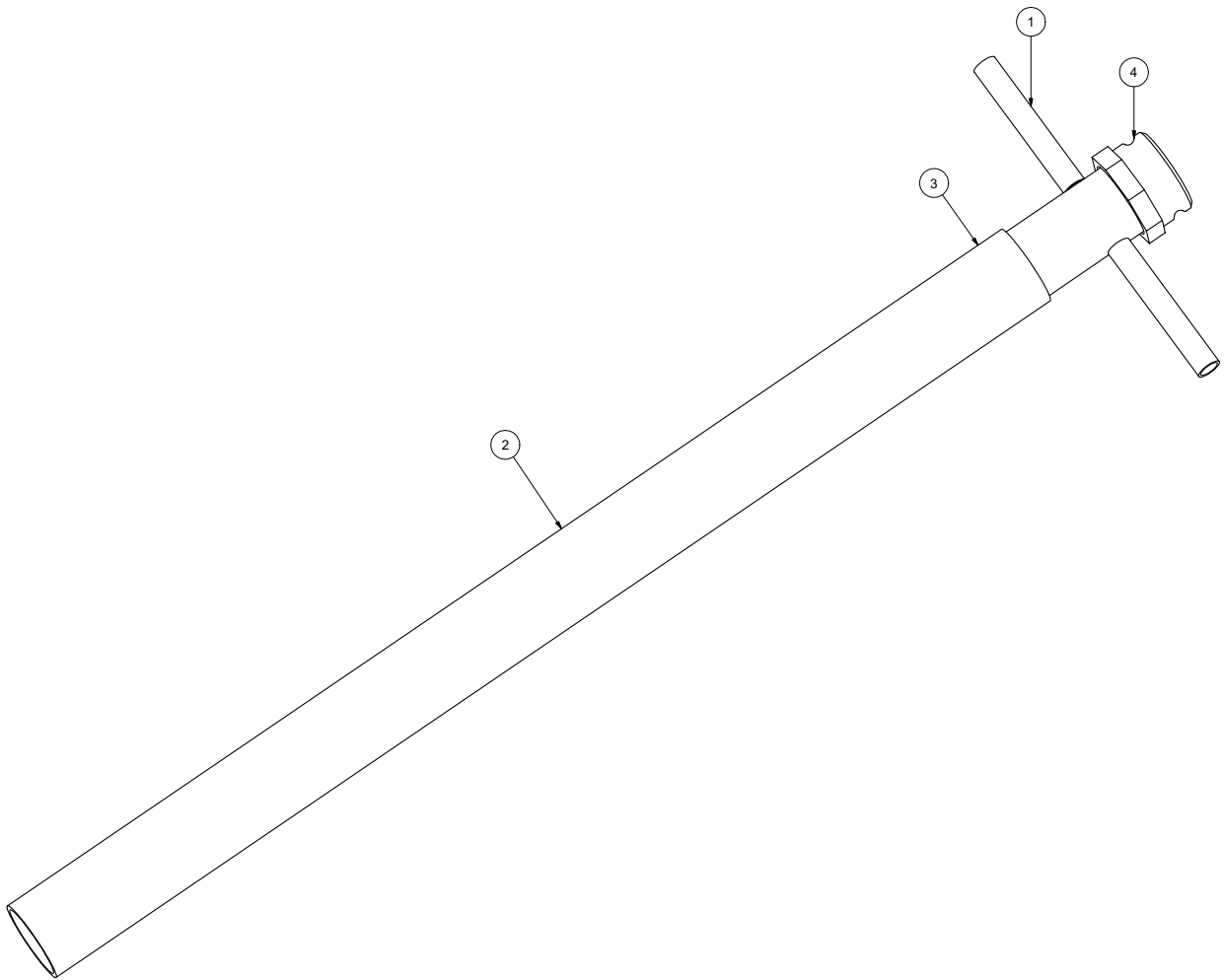
HD Reduction Tool

| 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 | 1 | 8030367 | VAC FITT 1/4" FF-S |
| 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

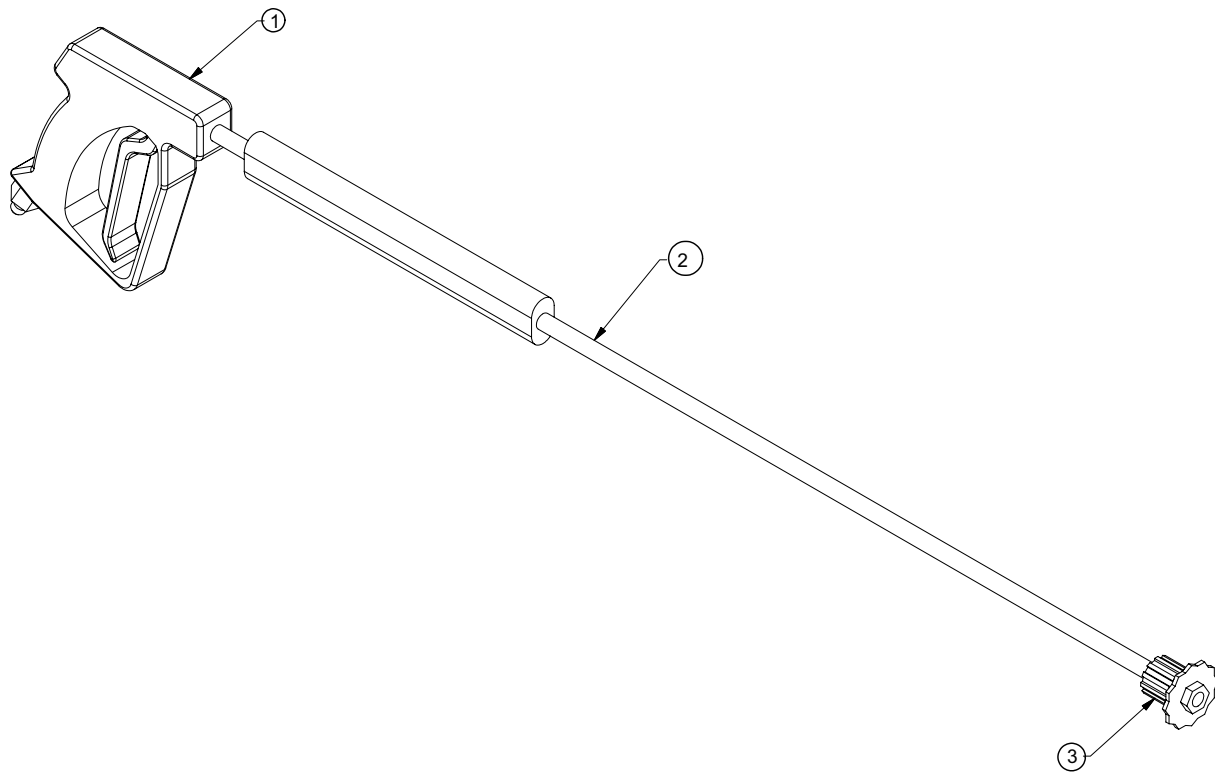
| ITEM | QTY | NUMBER | DESCRIPTION |
|-------------|------------|---------------|------------------------------|
| | 1 | 8040983 | TOOL VAC SUCTION 4" COMPLETE |
| 1 | 1 | 8040981 | TOOL VAC HANDLE ASSEMBLY 4" |
| 2 | 1 | 8040982 | PVC VACUUM TUBE 4" |
| 3 | 1 | 8030912 | CLAMP, 4.5" PUNCHLOK |
| 4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

072308

VACASSY710

Tools

Wash Wand



052208

VACASSY711

Tools

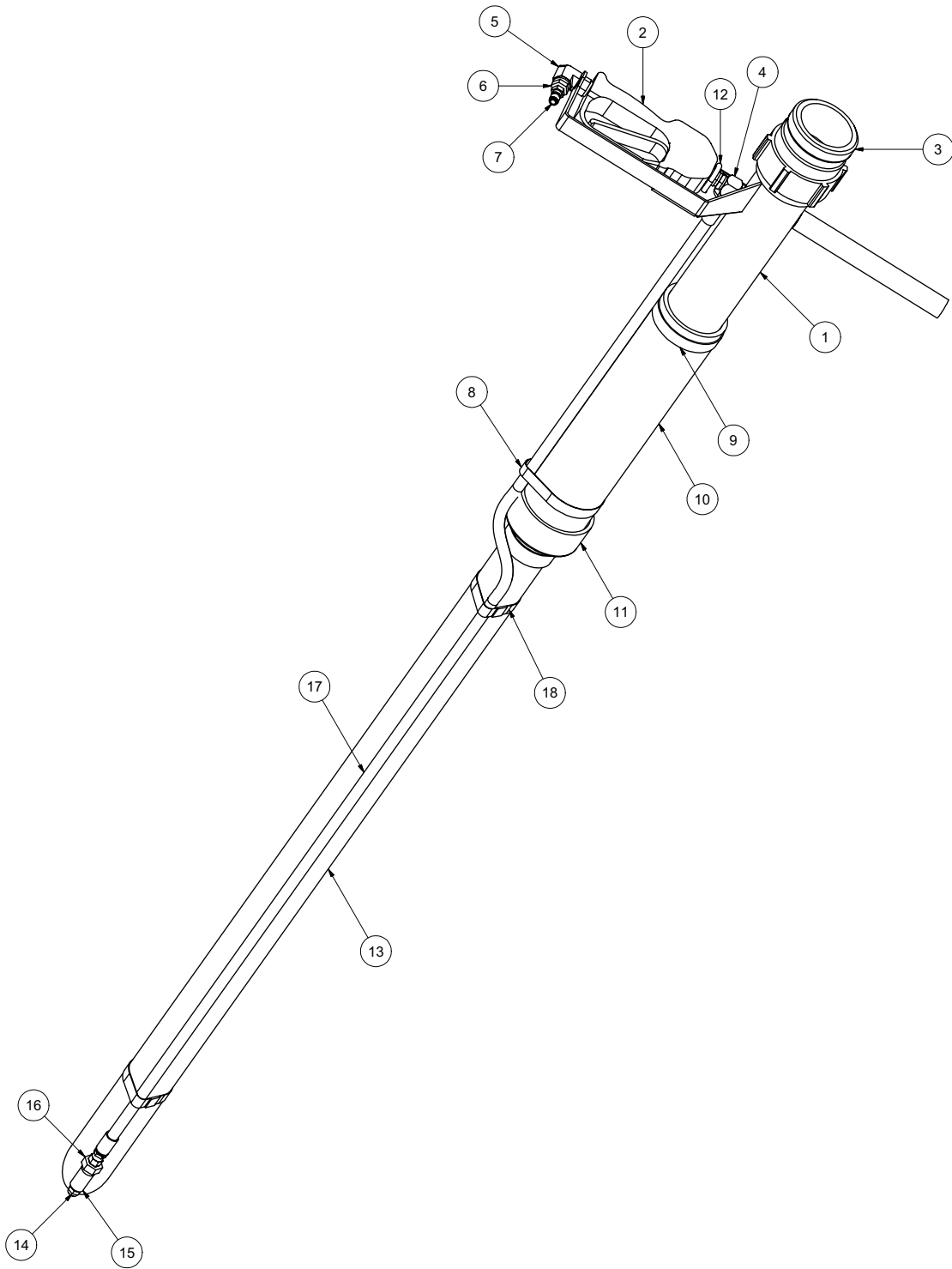
Wash Wand

| Item | Qty | Number | Description |
|-------------|------------|---------------|------------------------------|
| | 1 | 8030348 | TOOL VAC SPRAY WAND COMPLETE |
| 1 | 1 | 8030928 | TRIGGERASSEMBLY |
| 2 | 1 | 8030847 | WAND |
| 3 | 1 | 8031308 | NOZZLE |

052208

VACASSY711

Valve Box Cleanout Tool



073108

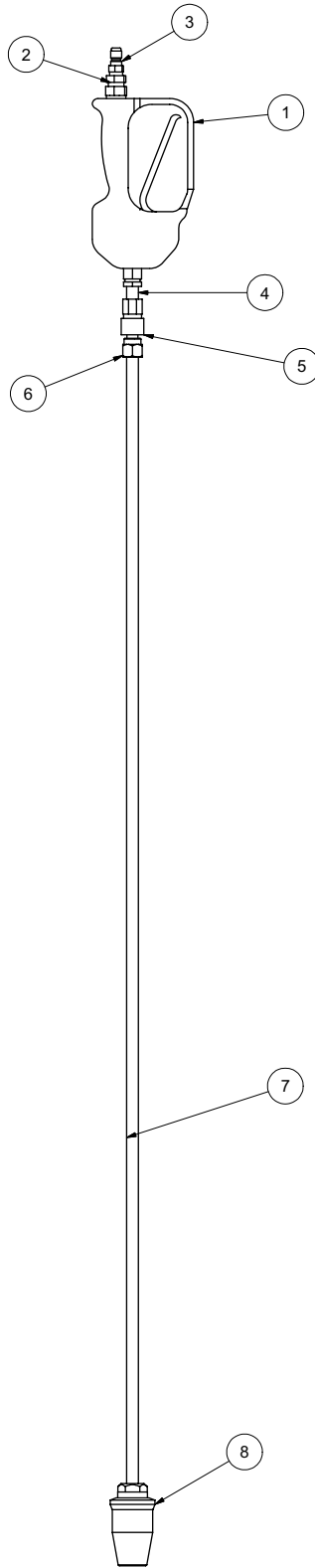
VACASSY714

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 | U800070 | CLAMP, BAND 3.00" X .500 |

Tools

Rotary Lance



042409

VACASSY716

Tools

Rotary Lance

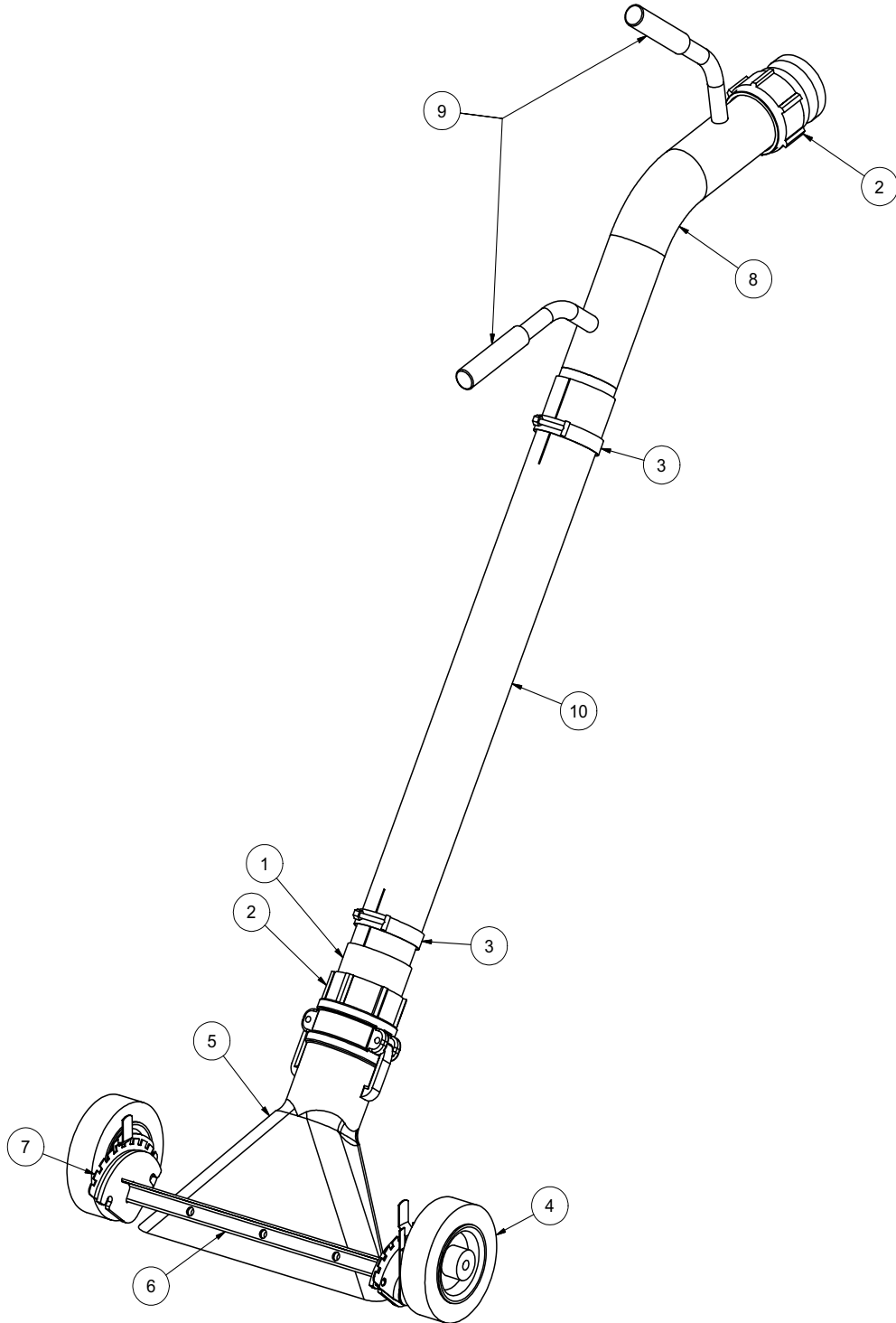
| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|----------|------------------------------------|
| 1 | 1 | 8042026 | STRAIGHT SPRAY GUN |
| 2 | 1 | T400023 | UNION 6MP-4FP |
| 3 | 1 | 8030486 | WATER QD 1/4MNPT SS |
| 4 | 1 | T421010 | NIPPLE, CLOSE 1/4" |
| 5 | 1 | 8030526 | FITTING, QD WATER 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 |

042409

VACASSY716

Tools

Lawn Sweeper 3''



071708

VACASSY713

Tools

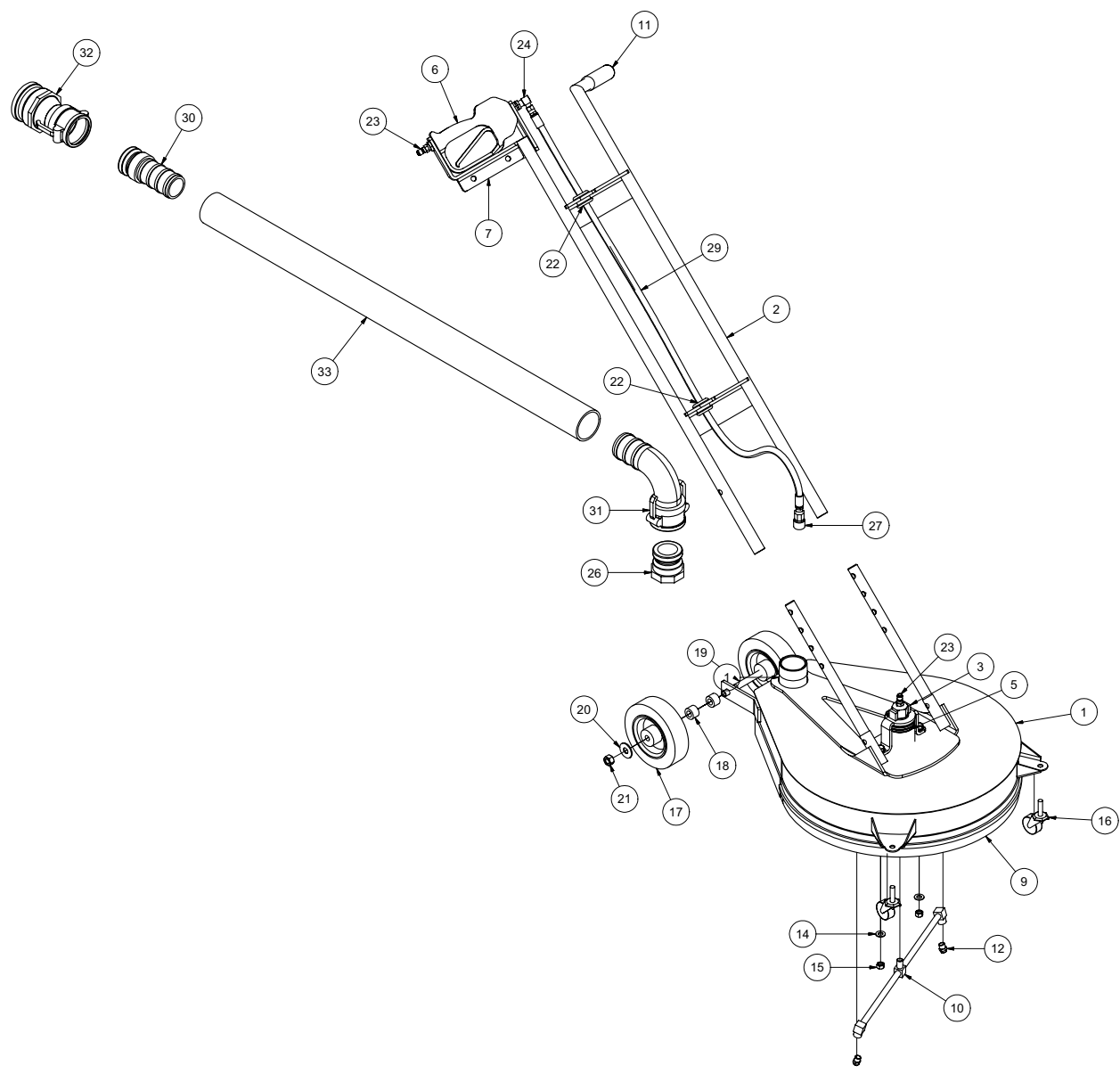
Lawn Sweeper 3"

| 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" |

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VACASSY713

Surface Cleaner



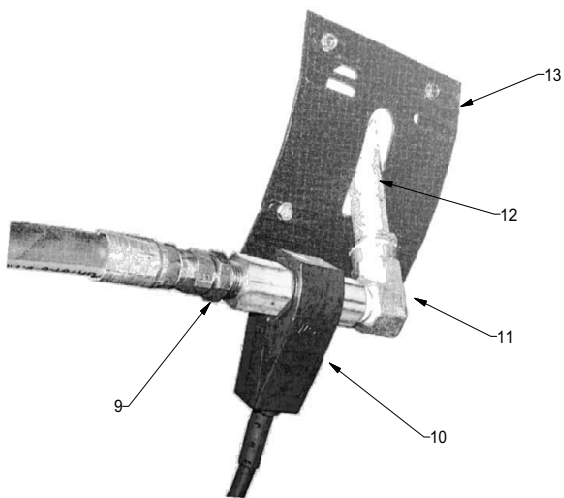
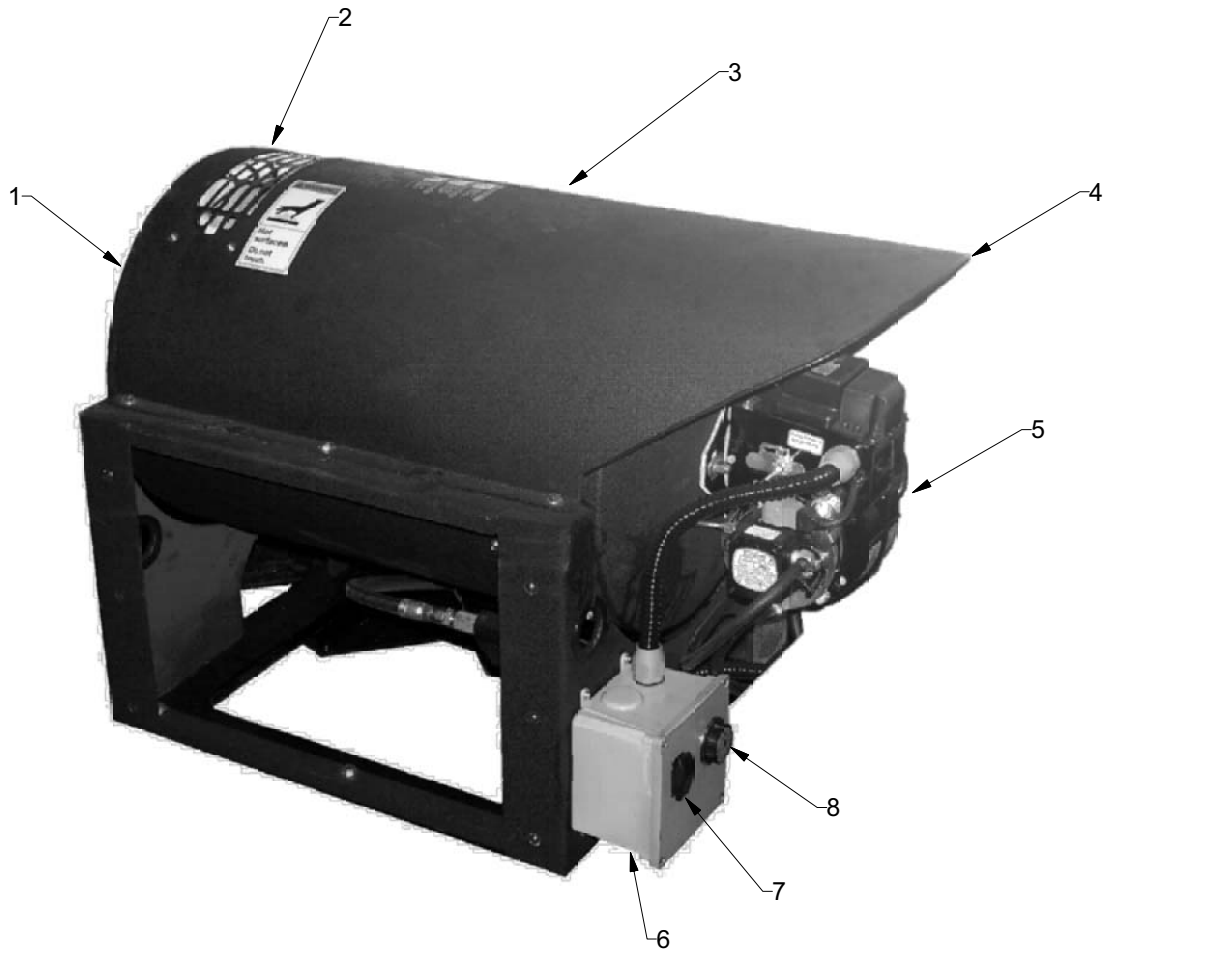
080108

VACASSY715

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 | 8044102 | ROTARY HEAD |
| 6 | 1 | 8042026 | STRAIGHT SPRAY GUN |
| 7 | 1 | 8042020 | GUN CAPTURE BRACKET |
| 8 | 1 | 8044103 | SQUEEGEE |
| 9 | 1 | 8044104 | FLEXIBLE BRUSH |
| 10 | 1 | 8044105 | ROTARY ARM |
| 11 | 1 | 8044106 | 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 | 8044107 | 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



071808

VACASSY949

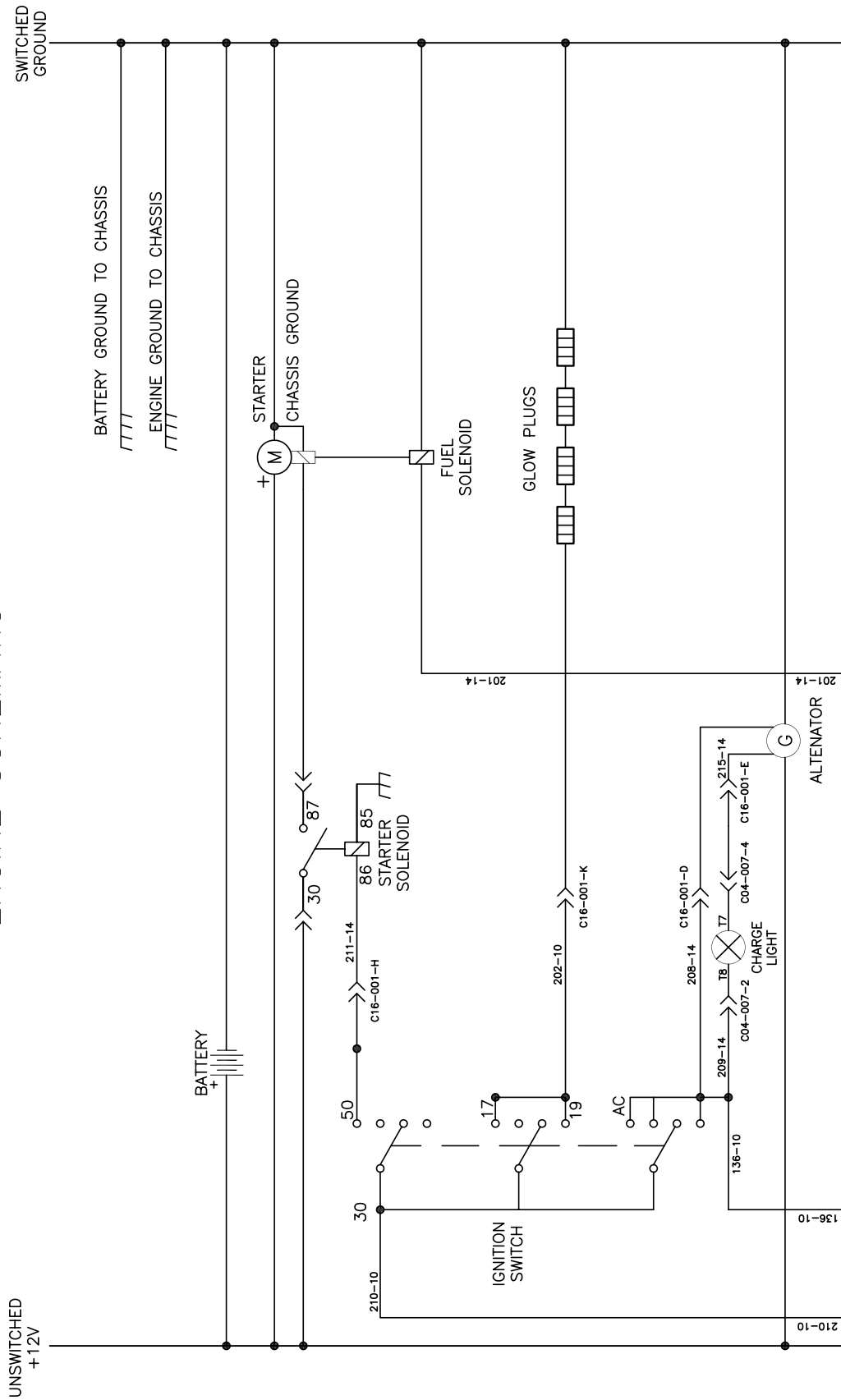
Hot Box Assembly

| ITEM | QTY | NUMBER | DESCRIPTION |
|------|-----|------------|----------------------------------|
| 1 | 1 | 8040088-23 | INSULATION DISC |
| | 1 | 8040088-21 | COIL ASSEMBLY |
| | 1 | 8040088-22 | INSULATION BLANKET |
| | 1 | 8040088-01 | INSULATION DRUM HEAD |
| | 1 | 8040088-20 | BOTTOM WRAP ASSEMBLY |
| 2 | 1 | 8040088-26 | SLOTTED EXHAUST PLATE |
| | 4 | 8040088-27 | CLIP NUT 1/4-2 DUNC |
| | 4 | 8040088-28 | WASHER ZI SAE TYPE A 3/16 |
| | 4 | 8040088-29 | SCREW #10-032 X 3/4 LONG |
| 3 | 1 | 8040088-25 | TOP WRAP |
| 4 | 1 | 8040088-24 | EDGING 3 FT REQUIRED |
| 5 | 1 | 8040088-03 | BURNER-12 VOLT |
| | 1 | 8040088-02 | NOZZLE-OIL |
| | 1 | 8040088-04 | LOCKNUT 1/2-ELECTRICAL |
| | 1 | 8040088-05 | CONDIUT STRAIGHT CONNECTOR |
| | 1 | 8040088-09 | ELBOW 1/4 M 1/4 BARB 90 BRASS |
| 6 | 1 | 8040089-39 | CONTROL BOX COMPLETE |
| | 1 | 8040088-33 | CONTROL BOX ONLY |
| | 4 | 8040088-30 | STRAIN RELIEF |
| | 1 | 8040088-34 | RELAY CONTROL |
| | 1 | X000143 | PLUG, ENCLOSURE 3/4" KNOCKOUT |
| 7 | 1 | 8040088-36 | ROCKER SWITCH 15AMP 24 VOLT |
| 8 | 1 | 8040088-17 | ADJUSTABLE THERMOSTAT 86-194F |
| 9 | 2 | T400029 | REDUCER 1/2 MP - 3/8 MJIC |
| 10 | 1 | 8040088-14 | FLOW SWITCH |
| 11 | 1 | 8040088-13 | ELBOW 1/2 F X 3/8 M STEEL |
| 12 | 2 | 8040088-12 | PIPE NIPPLE 1/2 NPT X 5 1/2 LONG |
| 13 | 2 | 8040088-11 | PATCH PLATE |
| | 8 | 8040088-10 | SCREW SELF DRILL #10 X 1/2 |
| 14 | 1 | 8040088-38 | FUEL FILTER WITH ELEMENT |
| | 1 | 8040088-37 | FUEL FILTER ELEMENT |
| * | 1 | 8040088-18 | CROSS 1/2 NPT STL |
| * | 1 | 8040088-19 | PRESSURE RELIEF VALVE 4500 PSI |

* ITEM NOT SHOWN

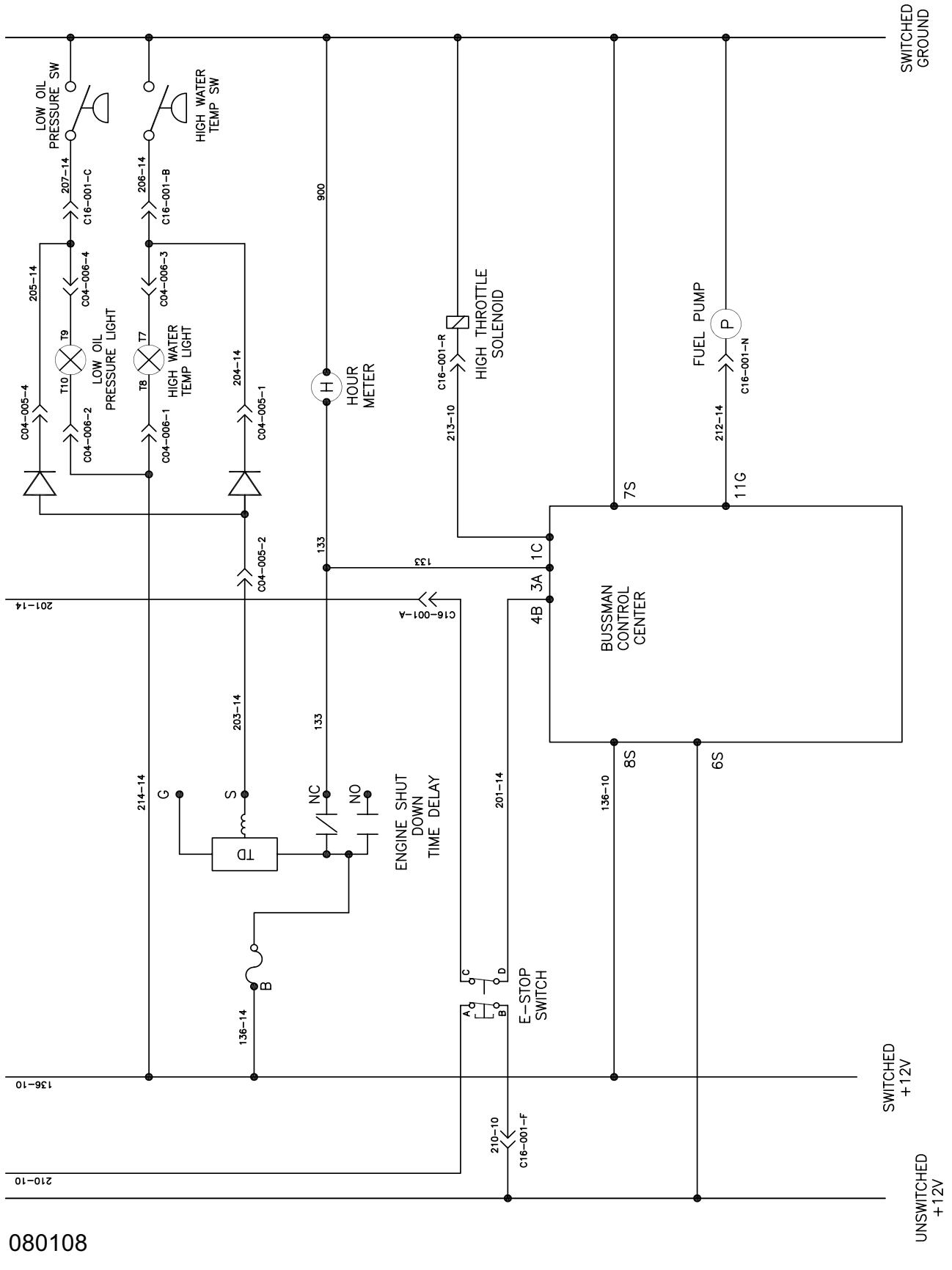
Vacuum Diesel Engine Schematic

VACUUM DIESEL ENGINE SCHEMATIC



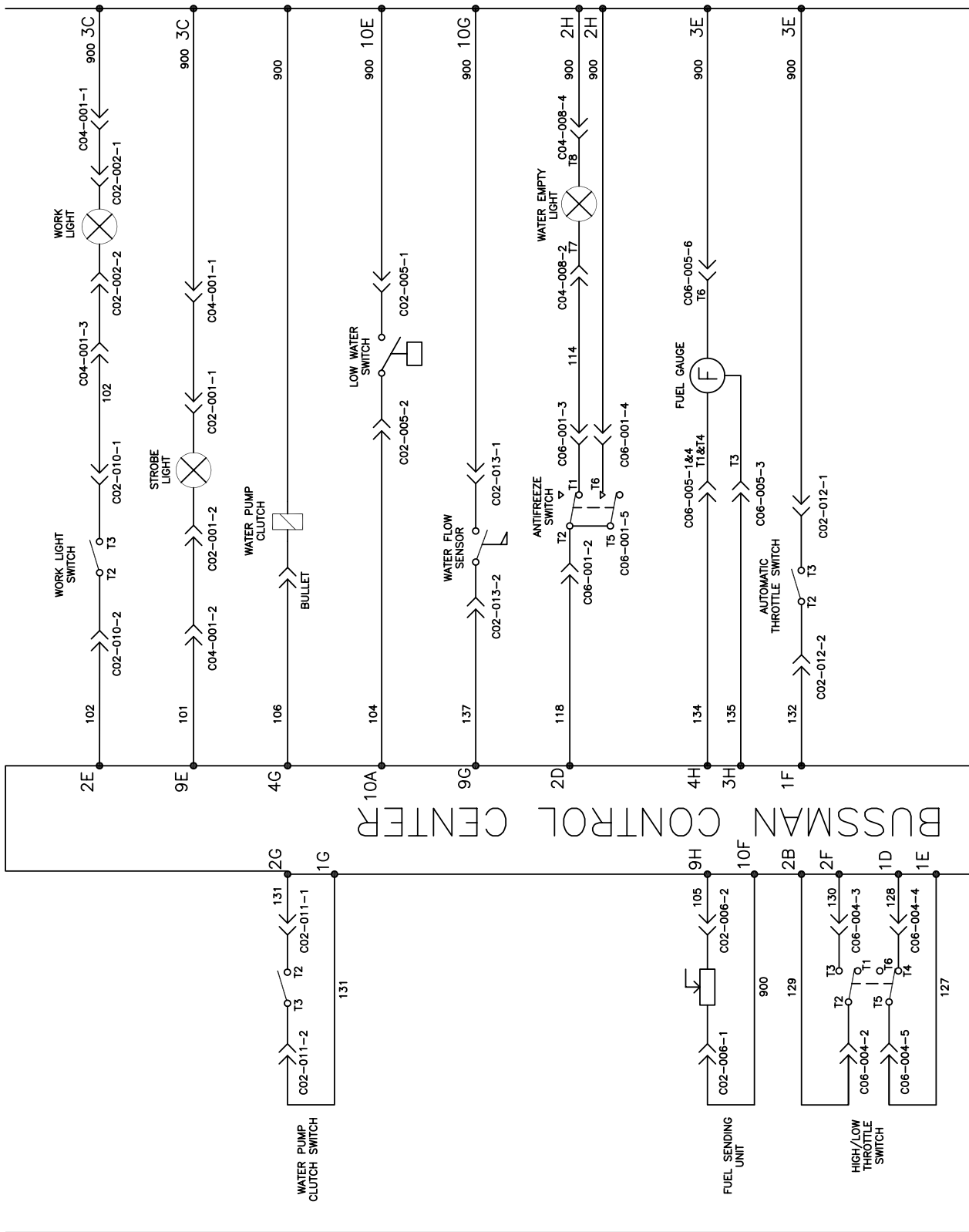
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Vacuum Diesel Engine Schematic



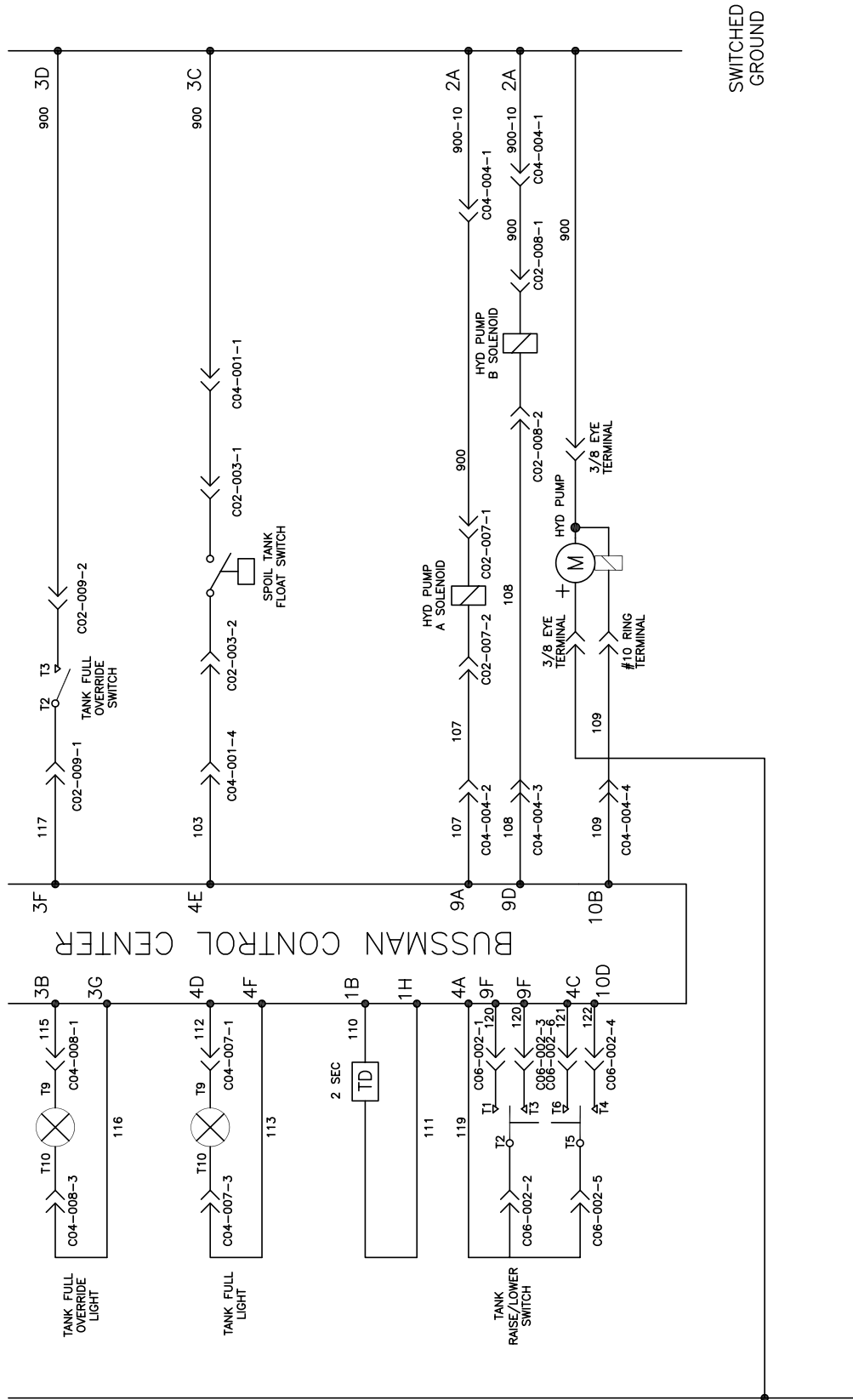
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Vacuum Diesel Engine Schematic



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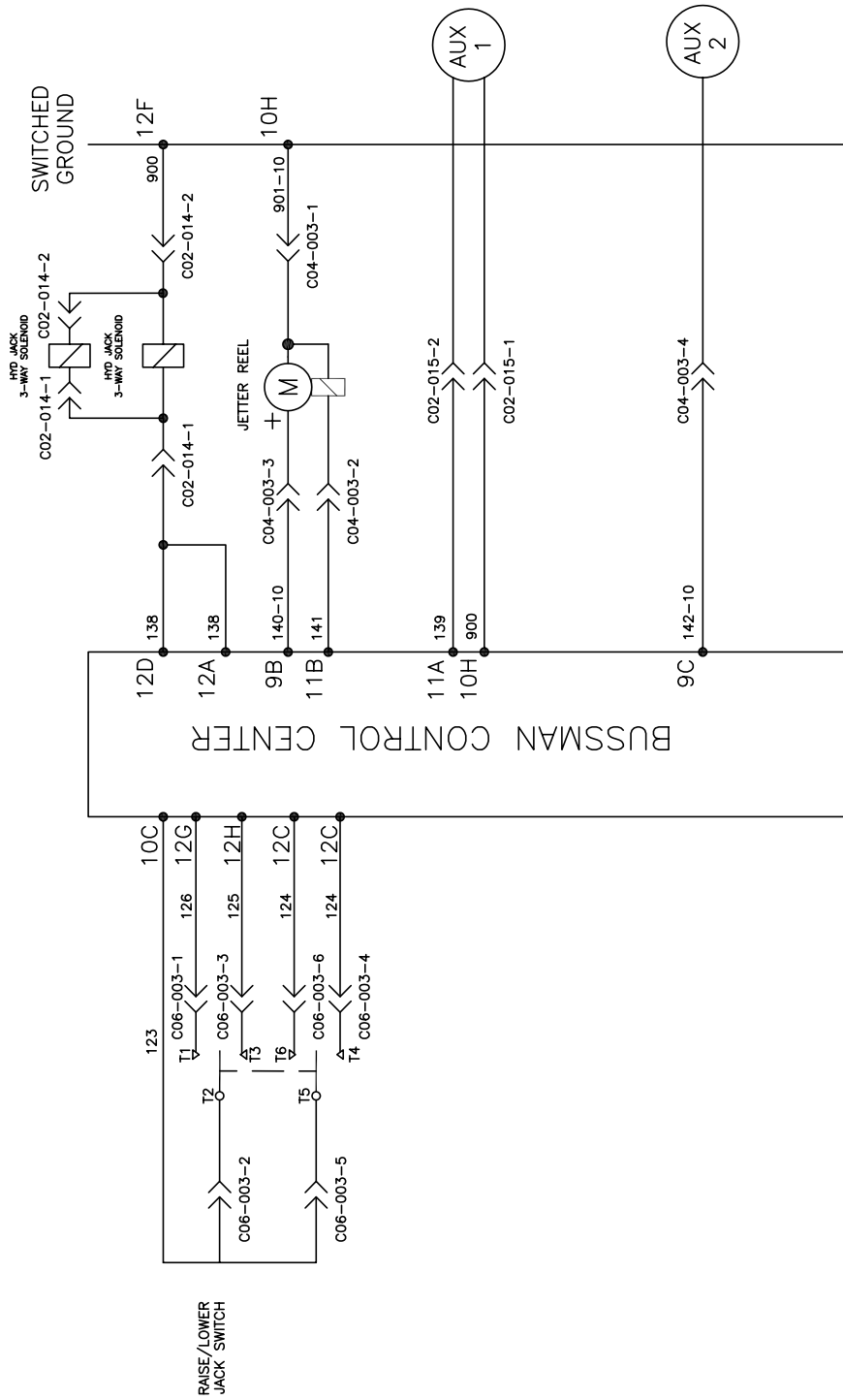
Vacuum Diesel Engine Schematic



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Vacuum Diesel Engine Schematic

BUSSMAN CONTROL CENTER OPTIONS

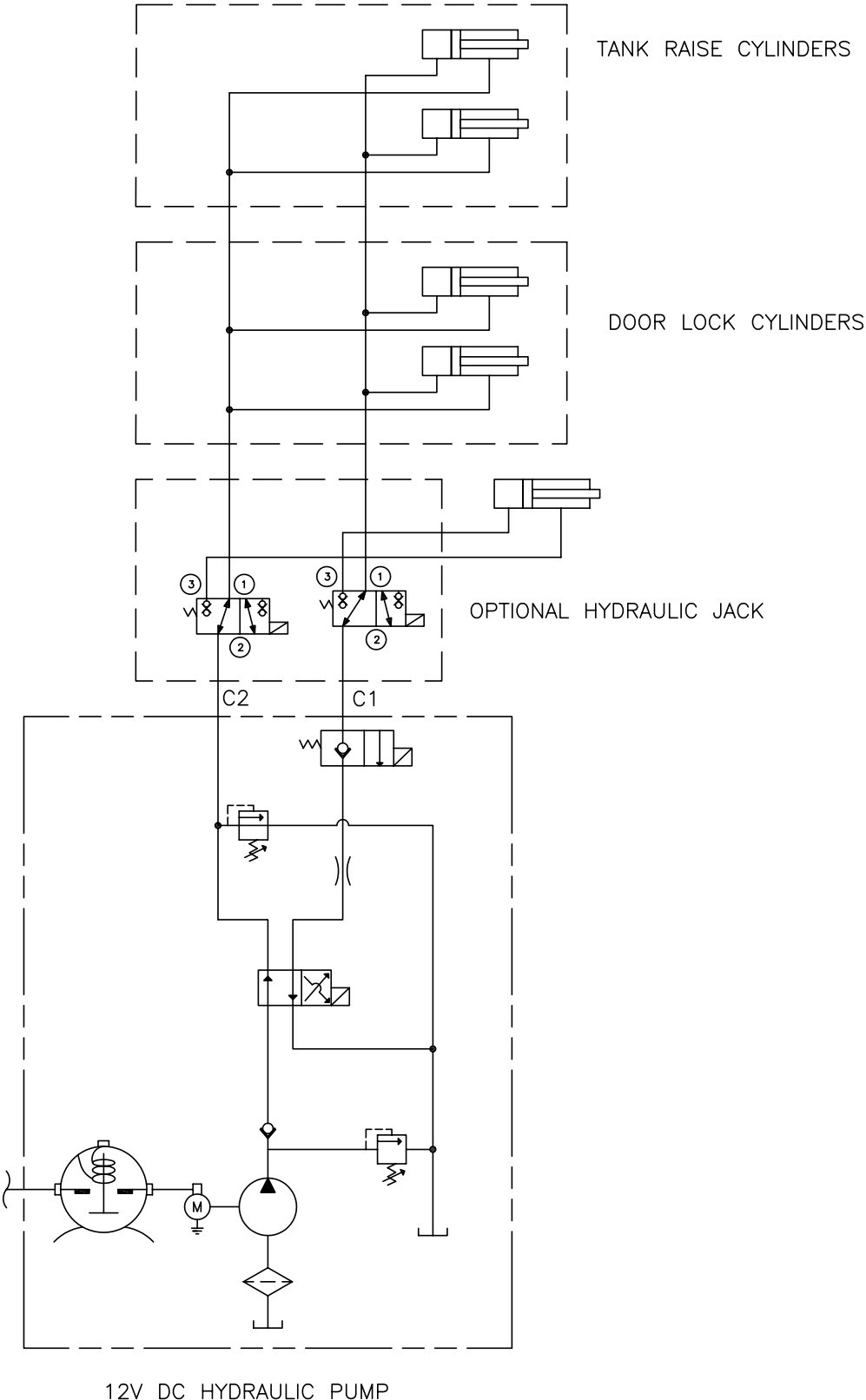


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Tank and Optional Jack Hydraulic Schematic



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12V DC HYDRAULIC PUMP

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ROOTS

Blowers Compressors Exhausters

Universal URAI-DSL

Contents

Information Summary
Safety Precautions
Operating Limitations
Lubrication
Operation

Troubleshooting
Inspection & Maintenance
Data
Assembly Drawings
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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 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 |
| 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 Blow-by or excessive oil leakage to vent area Excessive oil leakage in vent area | 27 | Broken seal | Replace seals |
| | 28 | Defective O-ring | Replace seals and O-ring |
| | 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.

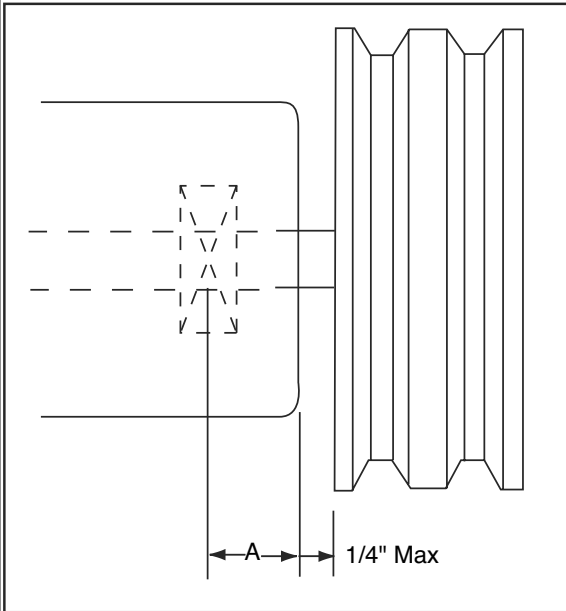
Timing gear wear, when correct lubrication is maintained, should be negligible. Gear teeth are cut to provide the correct amount of backlash, and gears correctly mounted on the shafts will accommodate a normal amount of tooth wear without permitting contact between lobes of the two impellers. However, 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 overloading 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

BREATHER LOCATION

BREATHER LOCATION

DRIVE SHAFT
ANY LOCATION

HORIZONTAL

VERTICAL

URAI DSL BREATHER ORIENTATION

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

| Frame Size | Gear Diameter (Inch) | Speed RPM | Temp. Rise Deg F (Deg C) | Delta Pressure PSI (mbar) | Inlet Vacuum INHG (mbar) |
|-------------------|-----------------------------|------------------|---------------------------------|----------------------------------|---------------------------------|
| 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

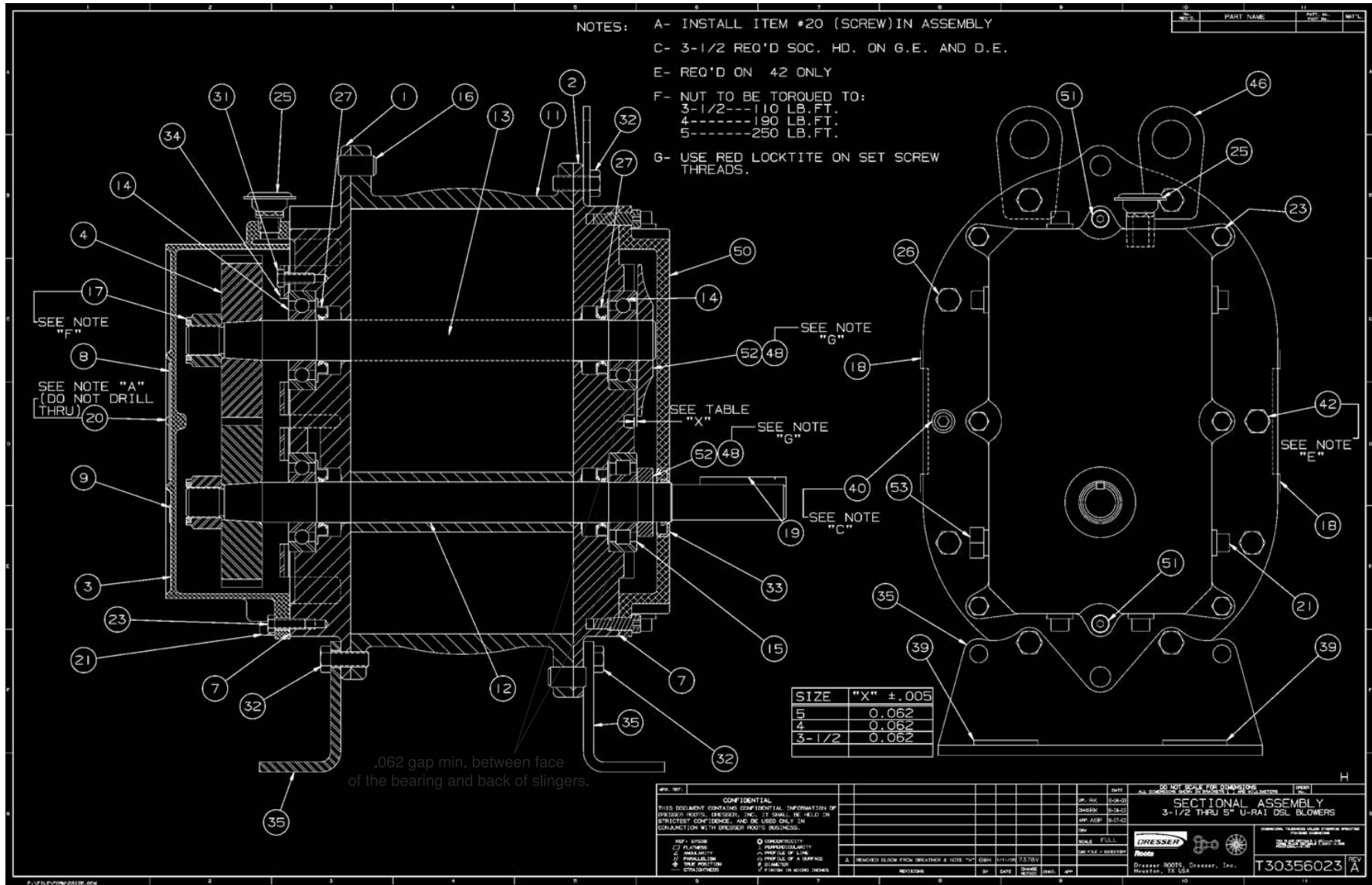
| Frame Size | Gear End Capacity Fl. Oz (Liters) | Drive End Capacity Fl. Oz. (Liters) |
|------------|-----------------------------------|-------------------------------------|
| 59 | 27.6 (.82) | 14.8 (.44) |

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.



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

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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.

Maintenance Record

| DATE | SERVICE PERFORMED | BY |
|------|-------------------|----|
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Notes

A large rectangular box containing 30 horizontal lines for writing notes.