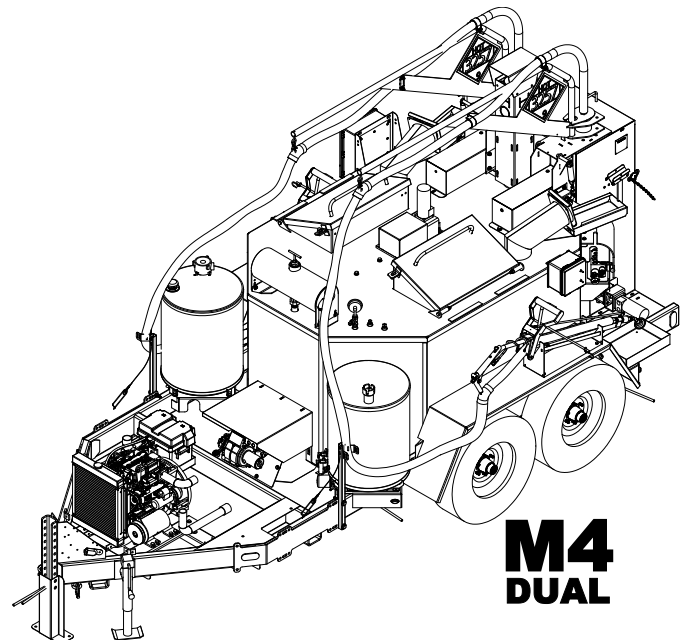
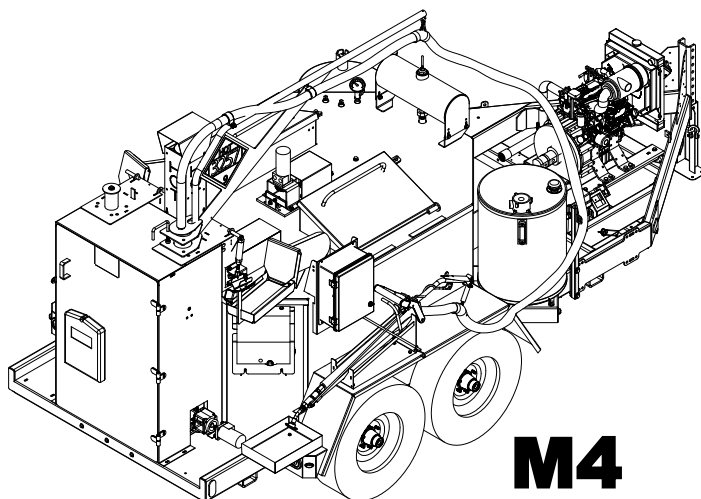
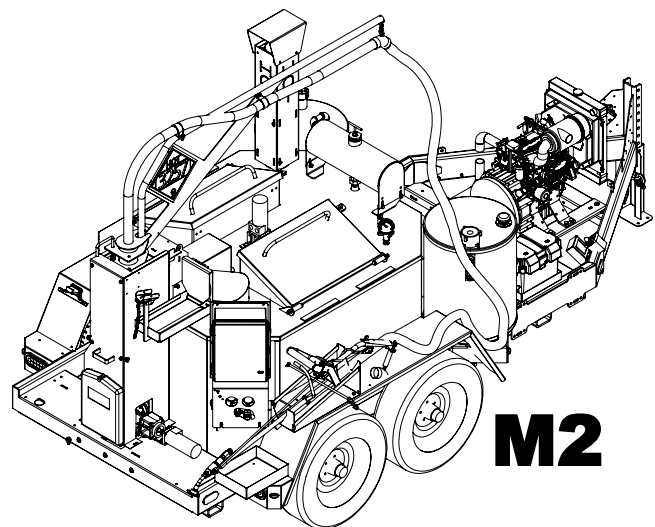
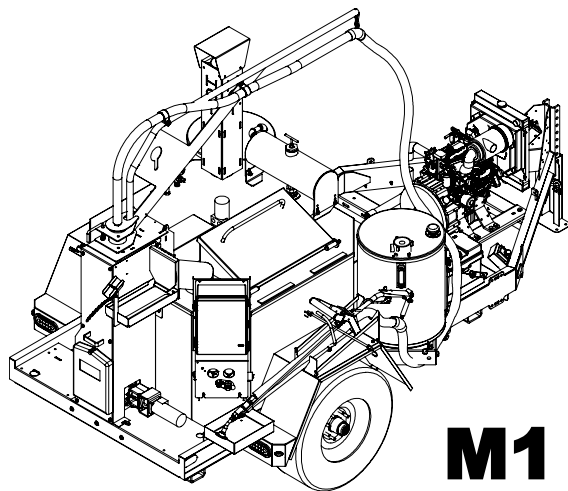




Sealant Melter Applicator Machine

Owner/Operator Manual



CIMLINE.COM

2601 Niagara Lane · Plymouth, MN 55447 · (763) 557-1982 · (877) 841-0848 · Fax (763) 557-1971

Part # 161698

Rev G 6/07/21

Shipping Papers and Information

In addition to this operators manual, a packet containing IMPORTANT INFORMATION has been enclosed with your CIMLINE M-Series Melter.

The following *Manufacturer's Documents* are included for the following parts:

- a) Engine
- b) Material Pump
- c) Burner

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IMPORTANT: This manual contains the basic information required to operate, maintain and repair the CIMLINE Melter you have purchased. The use of this manual insures accurate adjustments, operation, basic maintenance and proper lubrication of your equipment. Please keep a copy with the machine at all times.

Melter Serial Number:

Engine Manufacturer:

Model Number:

Engine Model (H.P.):

Pump Number:

CONTACTING CIMLINE

At Cimline, impressing the customer is one of our core values. We want to make sure you are covered for any general or technical questions you may have on your new CIMLINE equipment. Please use the following information to get the support you need if this manual does not provide the answers you are looking for.

Cimline Dealer Network:

Your local dealer is always your first point of contact when looking for parts, maintenance, technical support, warranty information or answers to your questions. No one should know you and your business better than your local dealer, and they should always be the first call you make when looking for answers to your questions.

CIMLINE Local Dealer Name:

CIMLINE Local Dealer Phone Number:

CIMLINE Sales:

Toll Free: (877) 841-0848 • Telephone: 763-694-2665 • Fax: 866-557-1971
Corporate Headquarters: 2601 Niagara Lane N, Plymouth, Minnesota 55447
www.cimline.com

Any parts orders or service problems relating to CIMLINE equipment should be directed to your local dealer FIRST.

CIMLINE Customer Care and Technical Service:

CIMLINE Technical Service is available Monday - Friday during normal business hours.
Toll Free: (877) 841-0848 • Telephone: 763-694-2665 • Fax: 866-553-7765
www.cimline.com • Email: customercareorders@plymouthind.com

CIMLINE Parts and Warranty Items:

Toll Free: (800) 328-3874 • Telephone: 763-694-2638 • Fax: 866-553-7765
www.cimline.com • Email: customercareorders@plymouthind.com

Personal Safety

OPERATOR MUST READ AND UNDERSTAND ENTIRE OPERATORS MANUAL BEFORE PROCEEDING.
THIS PAGE ONLY PROVIDES AN OVERVIEW OF SAFETY INFORMATION

WARNING

The melter operates at elevated temperature which can cause burns. Operator and anyone working in close proximity to hot materials must always wear protective clothing.

Required clothing includes:



Gloves with wristlets • Heavy leather boots or shoes • Face shield
 • Long sleeve shirt with sleeves rolled down and cuffs buttoned
 • Long pants with no cuffs

GENERAL OPERATION SAFETY:

- Perform a DOT pre-trip inspection before towing.
- Never go under trailer with out first stabilizing trailer.
- Never touch material expelled by melter while still hot.
- Do not operate without safety cover on hose.
- Never leave machine unattended while it is running.
- Keep material door closed at all times except when adding material.
- Always use pin with swivel jack.
- Never use a damaged swivel jack.
- Never stand on any part of the machine.
- Load melter from ground level.
- Do not touch exhaust stacks or mufflers.

Signal Words in Manual:

The signal words **DANGER**, **WARNING** and **CAUTION**, are used to identify levels of hazard seriousness.

DANGER

DANGER! Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING! Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION! Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE: Is used to address practices not related to personal injury.

Trailer Safety

GENERAL SAFETY CONSIDERATIONS:

Operating this machine requires workers to perform work behind the trailer, it is critical to perform the work safely. Communication between the tow vehicle driver and worker is critical. Worker and tow vehicle driver must stay in communication, use an audible device or visual signals to communicate. A worker must never ride on the trailer or position him or herself between the tow vehicle and trailer when the tow vehicle is running. Tow vehicle driver must always be aware of workers position.

Only use a tow vehicle that is equipped with an electronic brake control system and has the appropriate towing capacity. The best means for determining the vehicle's towing capacity is to read the vehicle owner's manual. The owner's manual will provide detailed instructions and limitations, usually accompanied by tips for safe towing. If the owner's manual has been misplaced, most manufacturers provide free downloadable copies on their website. Towing with an undersized tow vehicle can cause the trailer to tow improperly, potentially causing loss of control. Overloading can also cause unintended failures to tow vehicle.

The weight of your trailer listed in this manual is for the base model without any additional accessories or the weight of the sealant material. The weight of your trailer will vary, weigh your machine to determining your Gross Vehicle Weight (GVW). Scales are sometimes available to use at state highway weigh stations, refuse transfer stations and commercial truck stops.

TRAILER STABILIZATION PROCEDURE:



WARNING

Going under the trailer puts a person at risk of severe injury or death. Follow the procedure below to stabilize trailer before going under the trailer.

METHOD #1 HITCH TO VEHICLE:

Park both the tow vehicle and trailer on a flat level surface. Place tow vehicle in park and remove keys.

METHOD #2 UNHITCHED:

Park trailer on a level surface. Place wheel blocks in front of and behind wheels on both sides of the trailer. Inspect your swivel jack thoroughly for damage or abnormal wear, especially if it was subjected to abnormal load or shock. *[If damaged do not use, replace swivel jack.]* Turn the swivel jack to the vertical position and pin in place. Use the swivel jack to decouple trailer from tow vehicle. After raising the hitch coupler, crib, block, or otherwise secure the trailer at once.

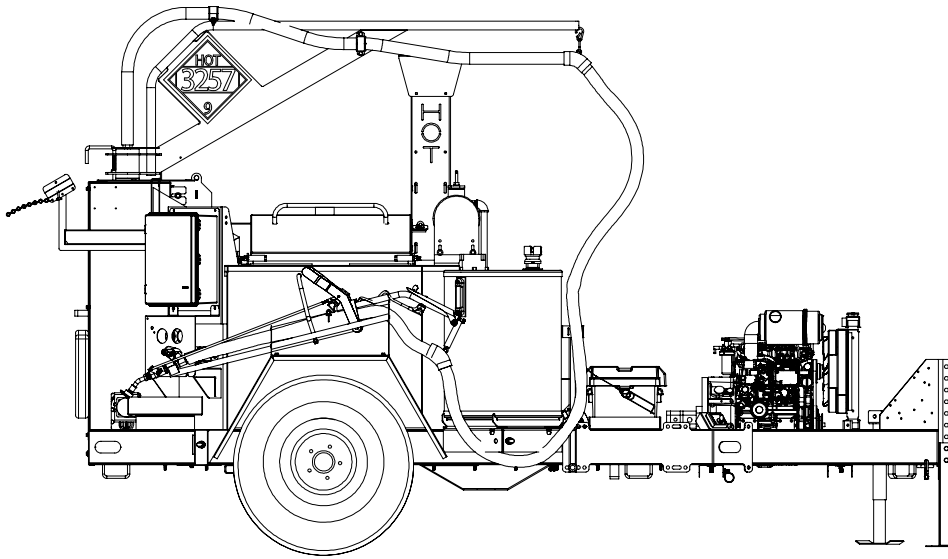


WARNING

BREATHING DIESEL ENGINE EXHAUST EXPOSES YOU TO CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM. ALWAYS START AND OPERATE THE ENGINE IN A WELL-VENTILATED AREA. IF IN AN ENCLOSED AREA, VENT THE EXHAUST TO THE OUTSIDE. DO NOT MODIFY OR TAMPER WITH THE EXHAUST SYSTEM. DO NOT IDLE THE ENGINE EXCEPT AS NECESSARY. FOR MORE INFORMATION GO TO; **WWW.P65WARNINGS.CA.GOV/DIESEL**.

M-Series Weight and Dimensions

WEIGHT AND DIMENSIONS ARE FOR BASE UNIT WITHOUT OPTIONS.
WEIGHT LISTED DOES NOT INCLUDE MATERIAL WEIGHT.



HEIGHT
82 INCHES
(234 cm)

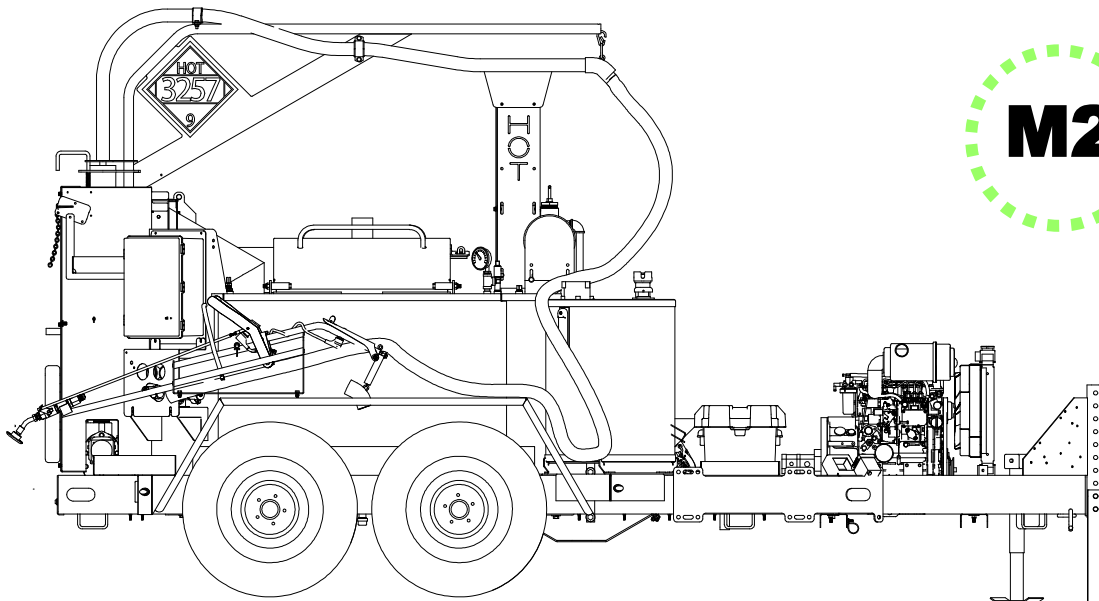
WIDTH
82 INCHES
(208 cm)

LENGTH
148 INCHES
(376 cm)

Sealant Material Tank Size is 150 Gallons

Maximum Safe Operational Sealant Material Tank Capacity is 112 Gallons

BASE
WEIGHT
4200 Lbs.
(1814 kg)



HEIGHT
90 INCHES
(229 cm)

WIDTH
81 INCHES
(206 cm)

LENGTH
164 INCHES
(417 cm)

Sealant Material Tank Size is 230 Gallons

Maximum Safe Operational Sealant Material Tank Capacity is 172 Gallons

BASE
WEIGHT
4700 Lbs.
(2132 kg)



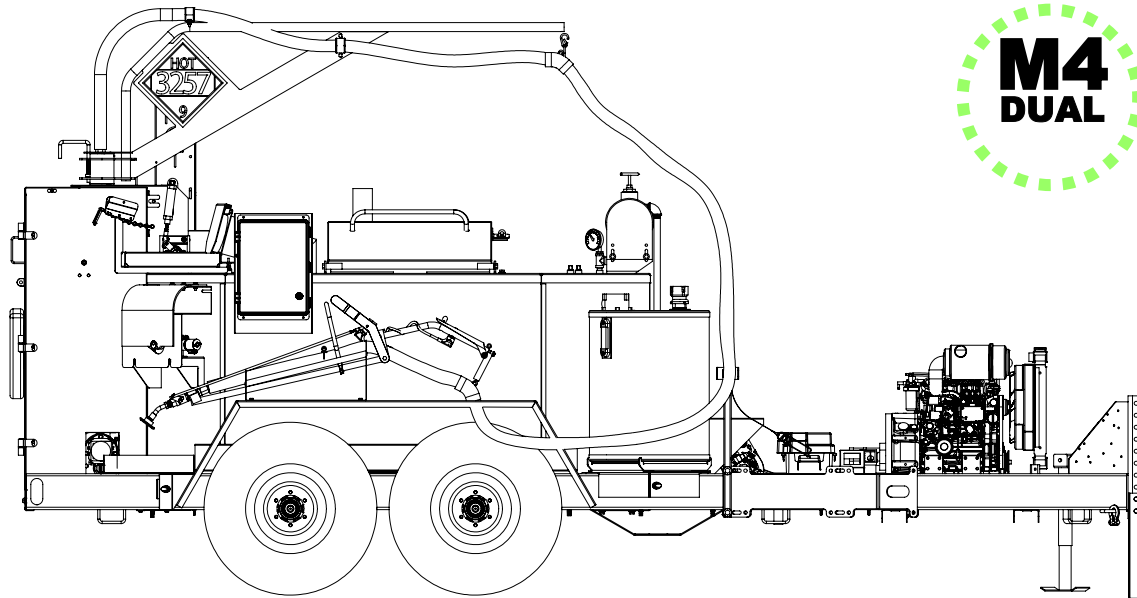
WARNING

***To maintain safe operation of trailer while in transport,
do not fill tank more than 75% of total tank capacity.***

Product specification may change without notice.
Images contained in this manual may differ from the actual product.

M-Series Weight and Dimensions

WEIGHT AND DIMENSIONS ARE FOR BASE UNIT WITHOUT OPTIONS.
WEIGHT LISTED DOES NOT INCLUDE MATERIAL WEIGHT.



M4

HEIGHT
84 INCHES
(213 cm)

**M4
DUAL**

WIDTH
87 INCHES
(221 cm)

LENGTH
189 INCHES
(480 cm)

M4 BASE
WEIGHT
6000 Lbs.
(2801 kg)

Sealant Material Tank Size is 410 Gallons

Maximum Safe Operational Sealant Material Tank Capacity is 307 Gallons

M4 DUAL BASE
WEIGHT
6500 Lbs.
(2994 kg)



WARNING

*To maintain safe operation of trailer while in transport,
do not fill tank more than 75% of total tank capacity.*

M-Series Replacement Labels

Inspect your labels and replace any that are damaged.
Contact your dealer to order replacement labels.

! WARNING: TO PREVENT BODILY INJURY

HOT MATERIAL

READ OWNER'S MANUAL BEFORE OPERATING

*WEAR GLOVES WITH WRISTLETS
DO NOT WEAR OPEN WRIST GLOVES.
*WEAR LONG PANTS
*WEAR LONG SLEEVE SHIRT WITH SLEEVES ROLLED DOWN AND BUTTONED.
*WEAR HIGH TOP SAFETY SHOES.
*WEAR FACE MASK WHEN LOADING MATERIAL
*NEVER LEAVE MACHINE UNATTENDED WHILE RUNNING.
*KEEP MATERIAL DOOR CLOSED EXCEPT WHEN LOADING.
*STAND CLEAR OF OUTLET SPIGOT WHEN OPENING.
*NEVER STAND ON THE MACHINE.
*STAY CLEAR OF EXHAUST AREA.

FAILURE TO OBSERVE THE SAFETY RULES COULD RESULT IN SERIOUS BODILY INJURY OR DEATH.

WARNING TO PREVENT SERIOUS INJURY
HEARING PROTECTION
EYE OR FACE PROTECTION
HEAD PROTECTION
RESPIRATOR

ALERTA PARA PREVENIR UN ACCIDENTE GRAVE
PROTECCIÓN PARA LOS OÍDOS
PROTECCIÓN PARA LOS OJOS Y LA CARA
PROTECCIÓN PARA LA CABEZA
MASCARILLA RESPIRATORIA

MAINTENANCE OPERATION	DAILY	25 HRS.	100 HRS.	200 HRS.	500 HRS./YEARLY
CHECK ENGINE FUEL LEVEL	X				
CHECK ENGINE AND HEAT TRANSFER OIL	X				
CHECK HYDRAULIC OIL (ADD IF LOW)	X				
CHECK ENGINE AIR CLEANER	X				
INSPECT PRE-CLEANER		X			
CLEANOUT MATERIAL SYSTEM		X			
INSPECT SEALING HOSE CONNECTION			X		
INSPECT AND CLEAN COOLING SYSTEM/RADIATOR			X		
INSPECT MATERIAL PUMP PACKING (ADJUST IF LEAKING IS EXCESSIVE)			X		
SERVICE AIR CLEANER ELEMENT/GASKETS				X	
INSPECT MATERIAL FLOW PLUMBING				X	
INSPECT BURNER NOZZLE, ELECTRODE AND HEAD POS. (ADJUST IF NECESSARY)				X	
CHANGE ENGINE OIL AND OIL FILTER				X	
GREASE AGITATOR BEARING BLOCK (LOAD ADAPTER)				X	
REPLACE FUEL FILTER				X	
INSPECT DIESEL BURNER ELECTRIC EYE (CLEAN IF DIRTY)					X
GREASE WHEEL BEARINGS					X
INSPECT CHAMBER LINING (REPLACE IF EXCESSIVE CRACKING)					X
INSPECT STARTER MOTOR					X
REPLACE HYDRAULIC OIL					X
REPLACE HYDRAULIC RETURN FILTER					X
REPLACE HYDRAULIC SUCTION STRAINER					X
REPLACE BURNER NOZZLE					X
CHANGE HEAT TRANSFER OIL					X
CHANGE DIESEL FUEL FILTER					X
FLUSH RADIATOR AND REPLACE FLUID					X

ENGINE RPM

MAXIMUM RPM IS SET AT THE FACTORY TO APPROXIMATELY 2800 RPM
DO NOT ALTER THIS RPM (REFER TO MANUAL ON HEATED HOSE MODELS)

HYDRAULIC OIL

CHECK HYDRAULIC OIL LEVEL BEFORE STARTING:

- CHECK SIGHT GAUGE TO VERIFY FLUID LEVEL
- CHANGE HYDRAULIC OIL, FILTER AND INSPECT STRAINER ANNUALLY
- REPLACE OIL WITH HY 32 HYDRAULIC OIL OR EQUIVALENT
- CAPACITY: SEE OWNER'S MANUAL FOR TANK SIZE

DIESEL FUEL ONLY

MANUFACTURER RECOMMENDS
ASTM D975 NO. 2-D S15
(THE GENERAL AUTOMOTIVE DIESEL ENGINE ALL-PURPOSE FUEL OIL) OR EQUIVALENT WHICH FULLY MEETS THE ABOVE REQUIREMENTS.

Operators Manual

Please Read and Understand
Entire Manual Before Operating Equipment

AGITATOR PRESSURE GAUGE

MATERIAL PRESSURE GAUGE

! WARNING: TO PREVENT BODILY INJURY

STAY CLEAR OF ACTUATOR WHILE ENGINE IS RUNNING

! WARNING!

OIL MAY BE VERY HOT! ALLOW TO COOL BEFORE REPLACING OR CHECKING LEVEL.

Oil Thermometer

Vent Plug

Vent plug must be removed when filling tank with heat transfer oil.

Replace with an ISO 68 heat transfer oil or equivalent

Capacity: 150 - 21 Gal.
230 - 28 Gal.
410 - 36 Gal.

* Use dipstick to verify level when filling

PN: 161441

! WARNING

Crush Hazard
Always use pin with swivel jack.
Never use damaged jack.
Never place blocking under jack

161808(2)

! WARNING

Crush Hazard
Perform Trailer Stabilizing Procedure found in operator's manual before going under trailer.

161808(1)

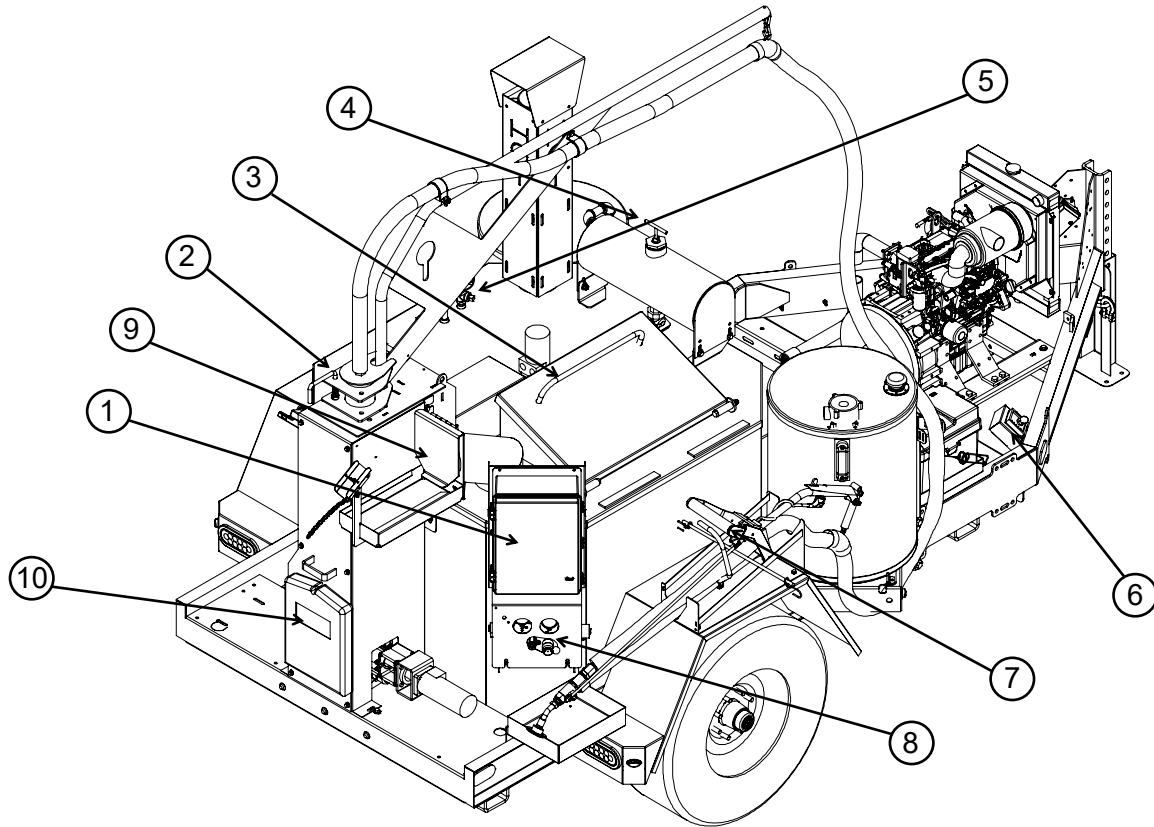
! WARNING

BREATHING DIESEL ENGINE EXHAUST EXPOSES YOU TO CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM. ALWAYS START AND OPERATE THE ENGINE IN A WELL-VENTILATED AREA. IF IN AN ENCLOSED AREA, VENT THE EXHAUST TO THE OUTSIDE. DO NOT MODIFY OR TAMPER WITH THE EXHAUST SYSTEM. DO NOT IDLE THE ENGINE EXCEPT AS NECESSARY.
FOR MORE INFORMATION GO TO
WWW.P65WARNINGS.CA.GOV/DIESEL

161808(3)

PN: 161808

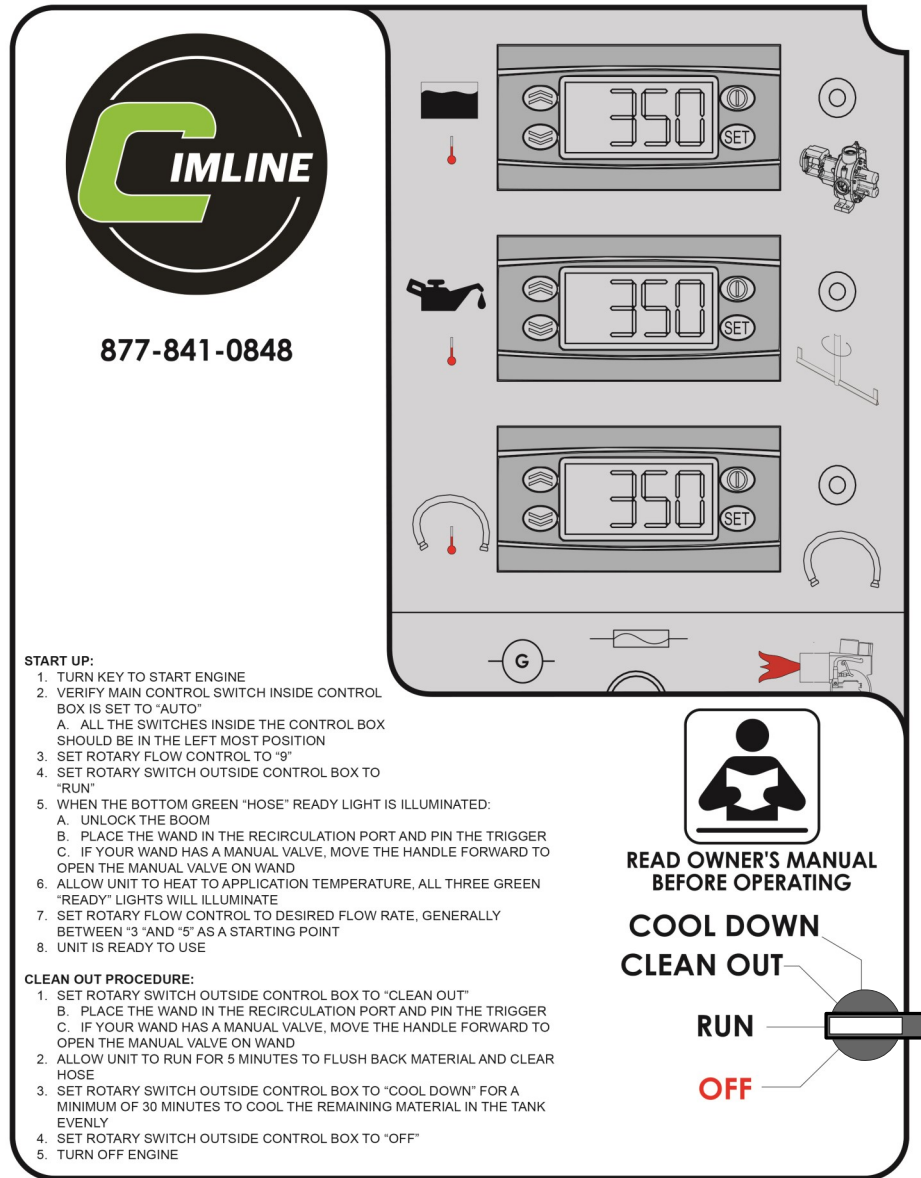
M-Series Feature Overview



NOTE: This general outline will familiarize you with this machine, dependent on model, location and style and may vary with options installed. Read through the entire manual before putting this machine into operation.

- 1) **Main Control Panel:** The main control panel is used to control the primary functions of the melter, including simple automated user controls for Off / Run / Clean Out / Cool Down as well as manual control of the sealant material pump direction and tank agitator. You can also monitor or adjust the temperature of the sealant material and heat transfer oil on the control sub panel. See page 10-11 for more information on the main control panel.
- 2) **Boom Rotation Lock:** This handle locks the boom from rotating during transport.
- 3) **Loading Door:** Place the sealant material block or biscuit on the open door to load the sealant melting tank. See page 14 for more information on safely loading sealant material into the melter.
- 4) **Heat Transfer Oil Level Dipstick:** Allows you to monitor the amount of heat transfer oil in the melter oil tank. See page 24 for more information on using the heat transfer oil dipstick.
- 5) **Heat Transfer Oil Temperature Gauge:** Displays the heat transfer oil temperature.
- 6) **Ignition Switch:** Engine key "Start" / "On" / "Off" and also displays engine running hours, glow plug status, alternator charge, engine oil pressure and engine coolant warnings.
- 7) **Sealing Wand:** Dispenses sealant material to the ground.
- 8) **Material Sealant Flow Control:** Controls the flow rate of sealant by varying the pump speed.
- 9) **Recirculation Port:** The sealing wand is placed here when not in use. This allows operator to continue circulating sealant material through the hose and wand to prevent the sealant material from cooling and freezing up.
- 10) **Instruction Manual Case:** Keeps the manual and important documentation protected.

M-Series Control Panels and Their Functions



MAIN CONTROL PANEL:

The Main Control Panel is used to operate the melter control system. Controls located on the outer cover are for operating in AUTO mode only.

OFF: Shuts down power to the control panel and the pump, agitator and burner.

RUN: Allows the preprogrammed controllers to turn on the pump, agitator, and burner.

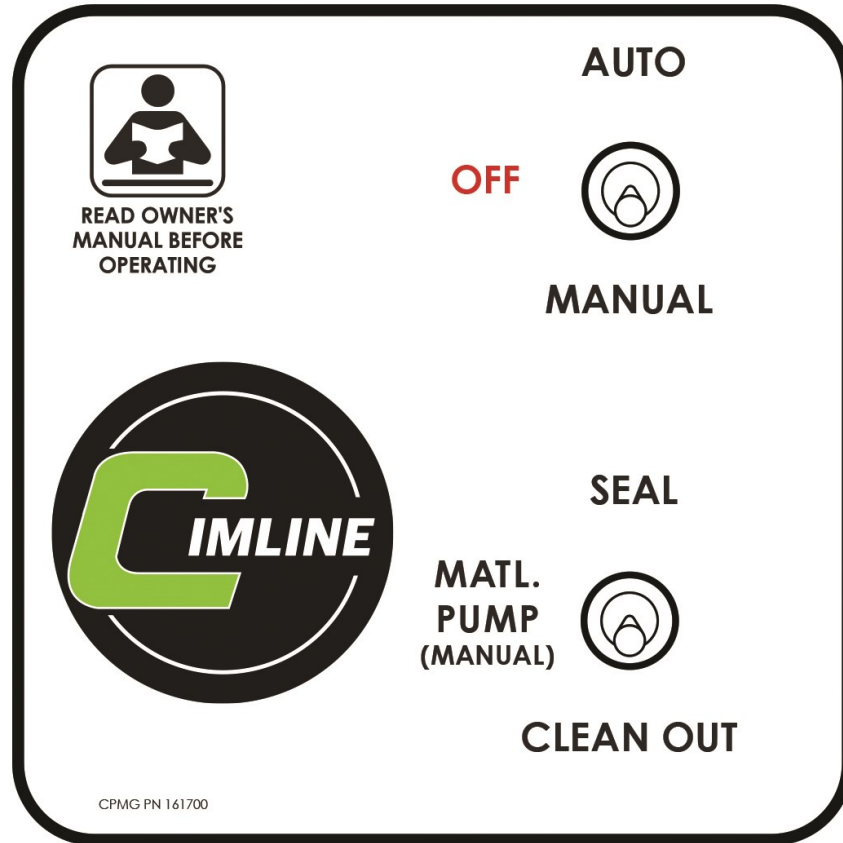
CLEAN OUT: Shuts down the burner and reverses pump flow direction to clean out material from the hose and internal plumbing returning the sealant material to the material tank

COOL DOWN: - Shuts down the burner and pump and turns the agitator only. This allows the material to cool down more consistently, extending the life of the material remaining in the tank.

Inside the Main Control Panel box is a Sub Control Panel.

See pages 12-13 for detailed explanation of its use.

M-Series Control Panels and Their Functions



DUAL PUMP AUXILIARY CONTROL PANEL (M4 DUAL ONLY):

The dual pump auxiliary control panel is used to operate the secondary pump and hose controls.

OFF: Shuts down power to the auxiliary control panel. Keep the auxiliary control panel in the "OFF" position when not in use (center position on the switch).

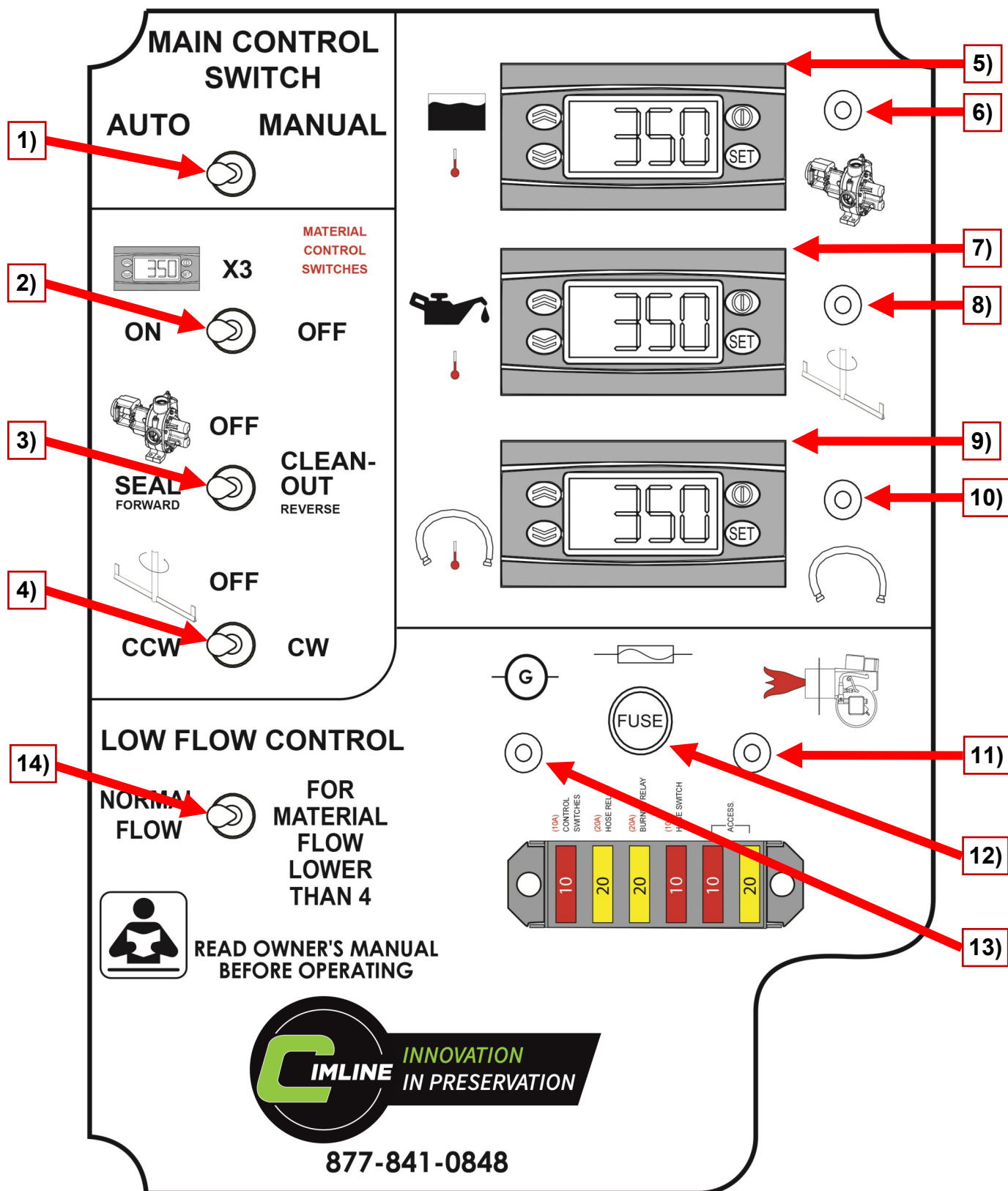
AUTO: All controls will be operated from the main control panel.

MANUAL: Overrides material pump controls from the main control panel and allows the secondary material pump to work independent of the main material pump.

SEAL: When operating in MANUAL mode this option will allow the material pump to flow material forward to wand.

CLEAN OUT: When operating in MANUAL mode this option reverses pump flow direction to clean out material from the secondary hose, wand and internal plumbing returning the sealant material to the material tank.

M-Series Manual Sub Control Panel and Its Functions



M-Series Manual Sub Control Panel and Its Functions

NOTICE

CIMLINE recommends using the Main Control Panel in “AUTO” control mode. “MANUAL” mode is provided for trouble shooting and trained advanced/experienced users.

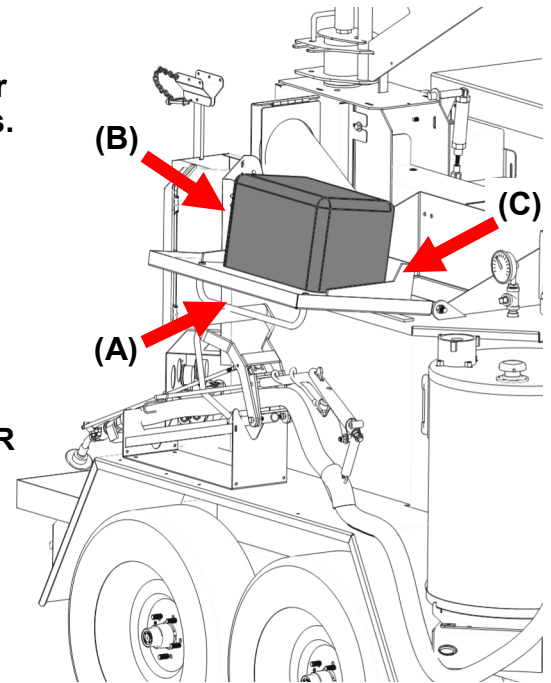
- 1) **MAIN CONTROL SWITCH:**
Auto: (left position) Machine will operate from the systems preconfigured program using the rotary switch control located on the outside front cover.
Off: (center position) Power to all systems will be off and burner, pump and agitator will stop.
Manual: (right position) Main rotary switch on front cover is no longer active. The three switches below for temperature control, pump and agitator must be used to control the melter's operations.
- 2) **TEMPERATURE CONTROLLER ON / OFF SWITCH:** When this switch is on, the three digital controllers to the right will be energized and they will be controlling the diesel burner and activate the hydraulics for agitator motor, sealant material pump and the heated hose.
- 3) **MATERIAL PUMP SWITCH:**
Seal (Forward): When the switch is on “SEAL (Forward)” the pump will be rotating counter clockwise with sealant material recirculating back to sealant material tank or to the application wand.
Off: When the switch is “OFF”, the pump will not be rotating.
Clean-out (Reverse): When the switch is on “CLEAN-OUT”, the pump will be rotating clockwise in reverse direction and will be drawing back any sealant material in the application wand and plumbing system back to the sealant material tank.
- 4) **AGITATOR CCW / OFF / CW SWITCH:** This switch controls the rotation of the agitator from counter-clockwise (CCW) or clockwise (CW). If the switch is in the center position, the agitator will not rotate.
- 5) **SEALANT TEMPERATURE CONTROLLER:** The control system on your CIMLINE melter has been factory set to run the most common types of sealant materials. See page 19 to override or change settings.
- 6) **PUMP LIGHT (Green):** This LED light indicates that the sealant material has reached the preset temperature and if the unit is running in the auto mode, the hydraulic circuit for the sealant material pump will be activated. If enough sealant material has melted the pump should be turning and sealant material should be circulating through the system and back into the top of the sealant material tank.
- 7) **HEAT TRANSFER OIL CONTROLLER:** The control system on you CIMLINE melter has been factory set to not exceed the OEM heat transfer oil limits for maximum temperature. It is advised to only use heat transfer oil from CIMLINE. See Page 21 for heat transfer oil information and specifications.
- 8) **AGITATOR READY LIGHT (Green):** This LED light indicates that the heat transfer oil has reached the preset temperature and if the unit is running in the auto mode, the hydraulic circuit for the agitator will be activated. If enough sealant material has melted the agitator should be turning.
- 9) **HOSE TEMPERATURE CONTROLLER:** The control system on your CIMLINE melter has been factory set to run a heated hose to the proper temperature for successful application of sealant material.
- 10) **HOSE READY LIGHT (Green):** This LED light indicates that the heated hose has reached the preset temperature and is ready to use.
- 11) **DIESEL BURNER LIGHT (Yellow):** This LED light indicates that the material and heat transfer oil temperature control are demanding that the diesel burner circuit is turned on.
- 12) **HEATED HOSE FUSE:** This is a 240V/18A slow-blow fuse for protecting the heated hose.
- 13) **HEATED HOSE GENERATOR LIGHT (Yellow):** This LED light indicates that the heated hose temperature control is demanding that the generator circuit is turned on.
- 14) **LOW FLOW SWITCH:** Some sealants dispense best at low flow rates (<4 on the flow controller). If the sealant material dispenses unevenly, switch the AUTO/MANUAL switch to MANUAL and place the low flow switch on “FOR MATERIAL FLOW LOWER THAN 4”. This will make the sealant material pump only rotate when the wand trigger is pressed, resulting in a smoother, more consistent flow.

M-Series Start Up Procedure

LOAD FRESH SEALANT MATERIAL INTO TANK:

All sealant material must be clean. Keep all foreign matter out of melting tank to avoid damage to pump and systems.

- 1) Open the material door (A) and place the block of sealant material (B) on the open door against the holder (C).
- 2) Push door to the closed position.



WARNING

TO PREVENT CONTACT WITH HOT SEALANT DO NOT DROP MATERIAL INTO THE MELTER WITH EITHER OR BOTH DOORS OPEN.

LOADING OPERATOR MUST WEAR ALL PROTECTIVE CLOTHING COVERED ON PAGE 4.

LOAD MATERIAL FROM GROUND ONLY. NEVER CLIMB ON THE TRAILER TO LOAD.

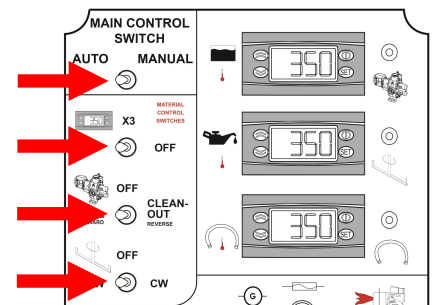
1. START ENGINE:

- A) Turn key on engine control to “1”.
- B) Allow 3-5 seconds to heat glow plugs. (Flashing green light will turn to solid green)
- C) Turn key to “2” and release when engine starts.



2. VERIFY SWITCHES ON CONTROL PANEL:

- A) Verify main control switch inside control box is set to “AUTO”.
- B) Verify ALL the switches inside the control box are in their left most position.



3. SET ROTARY FLOW CONTROL TO 9:

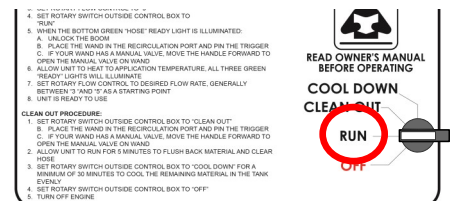
- A) Set rotary switch (A) on the hydraulic block to “9” for maximum sealant material flow during the start up process.

NOTE: Remember to return the flow control back to your starting point setting before beginning sealant material application.



4. POWER UP CONTROL PANEL:

- A) Set control panel rotary switch on front (outside) of control box to the “RUN” position.

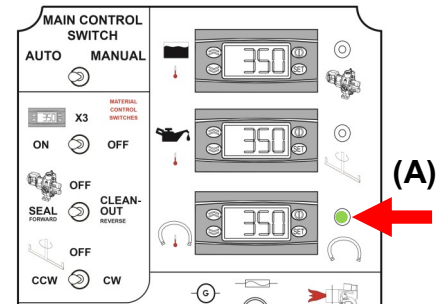
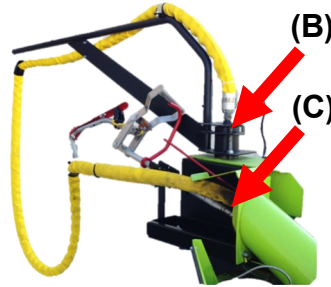


M-Series Start Up Procedure

5. PREPARE HOSE AND WAND:

When the (green) hose ready light (A) is illuminated.

- Unlock the boom (B) by raising and displacing the locking pin. The boom is free to swing now.
- Place the wand in the recirculation port (C) and pin the trigger.
- If your wand has a manual valve, move the handle forward to open the valve on the wand.

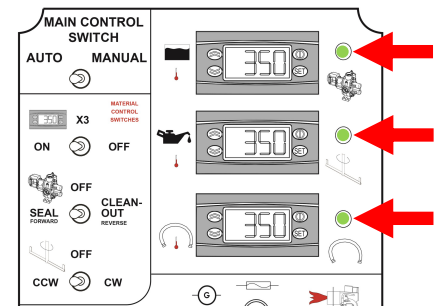


CAUTION

Do not pull or kink the hose. Moving the hose prior to it being up to operating temperature could permanently damage the hose.

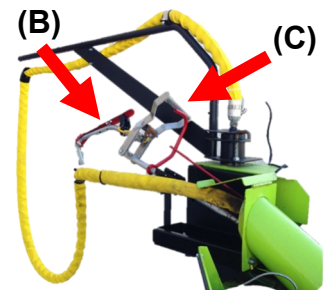
6. ALLOW UNIT TO HEAT SEALANT MATERIAL TO CORRECT APPLICATION TEMPERATURE:

The unit should be ready for operation when all three (green) ready lights are illuminated. The correct sealant material temperature is now reached in the sealant material tank. The agitator and pump should be running and the heated hose should be up to the proper temperature.



7. SET WAND FLOW CONTROL SPEED:

- Set flow control (A) to "0" with the wand securely in the recirculation port, the trigger pinned (B) and the manual valve open (C).
- Slowly adjust the flow control knob to begin the flow of material through the wand. The flow of material can be observed through the recirculation port.
- Generally most sealant materials dispense at a setting between "3" and "5" on the flow control.
- Once the material is flowing at the desired rate pull the manual valve handle back to close the valve on the wand.



CAUTION

Use caution when in proximity of flowing hot material. This includes proper face and skin protection.

8. RUNNING SEALING WAND:

With the start up procedure complete you are ready to begin sealing.

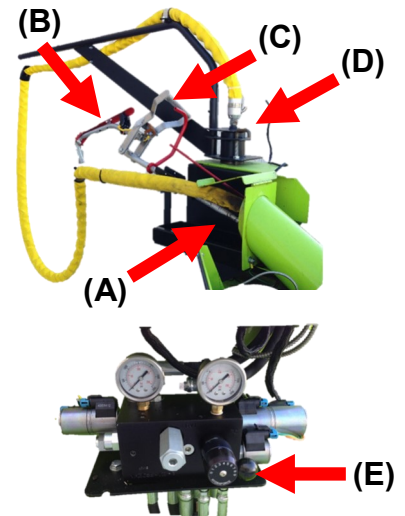
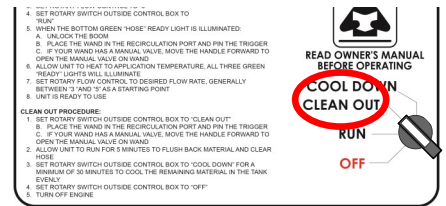
- Remove the pin from the wand trigger.
- Remove the wand from the recirculation port.
- Push the manual valve handle forward and squeeze the wand trigger to begin the flow and start sealing.
- Adjust the flow control as needed to best fit your movements and the size of the areas you are sealing.

M-Series Clean Out / Shut Down Procedure

1. SET ROTARY SWITCH OUTSIDE CONTROL BOX TO “CLEAN OUT”:

The clean out function on the control box will reverse the sealant material pump and begin to evacuate the wand, heated hose and internal plumbing of a majority of the sealant material and return it back to the sealant material tank. The entire procedure (steps A - G) should be followed and all steps properly executed. Following this process fully will increase start up efficiency on the next job. If using duck-bill tip, remove from wand.

- Place the wand in the recirculation port (A) and pin the trigger (B).
- If your wand has a manual valve, move the handle forward to open the manual valve on the wand (C).
- Set rotary switch (E) on the hydraulic block to “9” for maximum sealant material flow during the clean out process.
- Allow the unit to run for 5 minutes to suck back as much of the sealant material to the tank as possible.
- After 5 minutes, unpin the wand trigger, pull the handle back on the manual valve to close the valve and remove the wand from the recirculation port.
- Properly secure the wand in the storage tray (F).
- Swing the boom all the way forward and lock the boom using the locking pin (D).



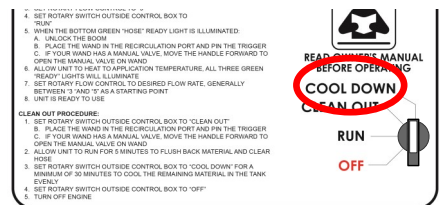
CAUTION
Moving the hose when cold could permanently damage the hose.

Caution should be taken to not pull or kink the hose excessively while moving the boom back to its storage position.



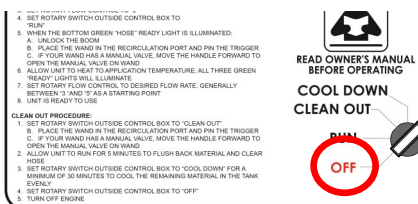
2. SET ROTARY SWITCH OUTSIDE CONTROL BOX TO “COOL DOWN”:

The “Cool Down” function on the control box will shut down all functions on the M-Series except the sealant material agitator. The cool down step should be run for a minimum of 30 minutes. Following this process will allow the sealant material to more evenly cool down and increase longevity of the material remaining in the tank.



3. SET ROTARY SWITCH OUTSIDE CONTROL BOX TO “OFF”

4. TURN OFF ENGINE



M4 Dual Hose Clean Out / Shut Down Procedure

METHOD #1

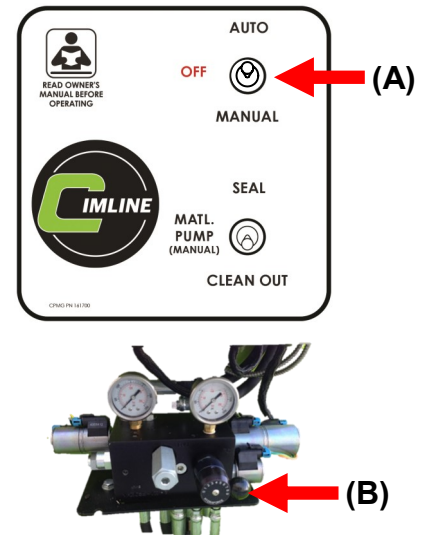
1. SET AUXILIARY HOSE CONTROL PANEL SWITCH (A) TO “AUTO”:

The clean out function on the auxiliary hose will run concurrently with the primary hose cleanout procedure on the main control box.

Follow all instruction for the auxiliary hose as you would on the primary hose (as described on the previous page).

Make certain to set rotary switch (B) on the hydraulic block to “9” for maximum sealant material flow during the clean out process.

The entire procedure (steps A - G) on the previous page should be followed and all steps properly executed for the auxiliary hose. Following this process fully will increase start up efficiency on the next job.



METHOD #2

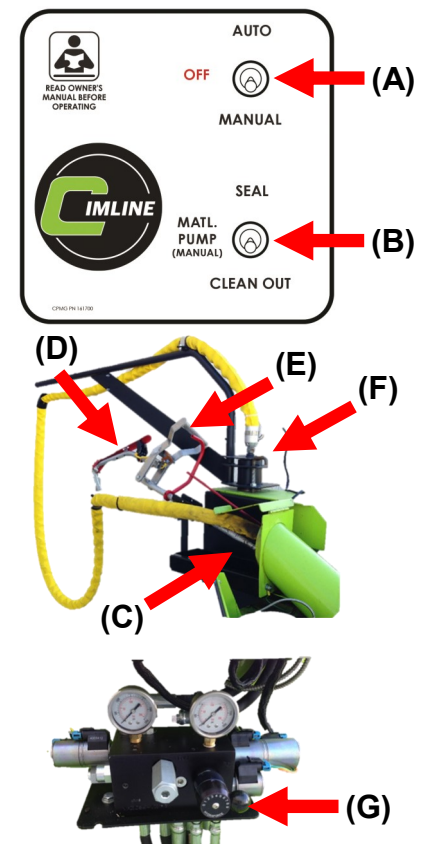
1. SET AUXILIARY HOSE CONTROL PANEL SWITCH (A) TO “MANUAL”

2. SET THE MATERIAL PUMP SWITCH (B) TO “CLEAN OUT”:

The clean out function on the auxiliary hose will run independently of the primary hose cleanout procedure on the main control box.

The entire procedure (steps A - G) should be followed and all steps properly executed for the auxiliary hose. Following this process fully will increase start up efficiency on the next job.

- Place the auxiliary wand in the secondary recirculation port (C) and pin the trigger (D).
- If your wand has a manual valve, move the handle forward to open the manual valve on the wand (E).
- Set rotary switch (G) on the hydraulic block to “9” for maximum sealant material flow during the clean out process.
- Allow the unit to run for 5 minutes to evacuate as much of the sealant material back to the tank as possible.
- After 5 minutes, unpin the wand trigger, pull the handle back on the manual valve to close the valve and remove the wand from the recirculation port.
- Properly secure the wand in the auxiliary storage tray.
- Swing the boom all the way forward and lock the boom using the locking pin (F).



M-Series Sealant Material Tank Capacity

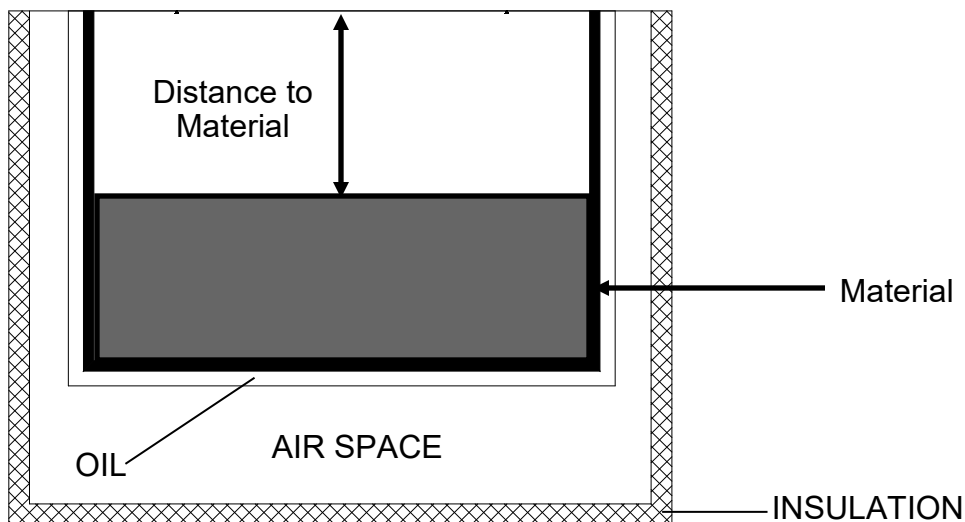
The amount of sealant material can be estimated by measuring the distance from the top of the tank to the sealant material. (When Material is cold)



WARNING

To maintain safe operation of trailer while in transport, do not fill tank more than 75% of total tank capacity.

MATERIAL CAPACITY (Tank cutaway)



Distance To Material	M1 GALLONS (6.8 Gallons/Inch)	M2 GALLONS (9.7 Gallons/Inch)	M4 (M4 Dual) GALLONS (13.9 Gallons/Inch)
5.5"	112 (Max)		
6"	108.8	170 (Max)	
7.5	98.6	156.1	305.9 (Max)
9	85	141.5	285
11	71.4	122.1	257.2
13	57.8	102.7	229.4
15	44.2	83.3	201.6
17	30.6	63.9	173.8
19	17	44.5	146
21		25.1	118.2
23			90.4
25			62.6
27			34.8

M-Series Automatic Temperature Control Settings

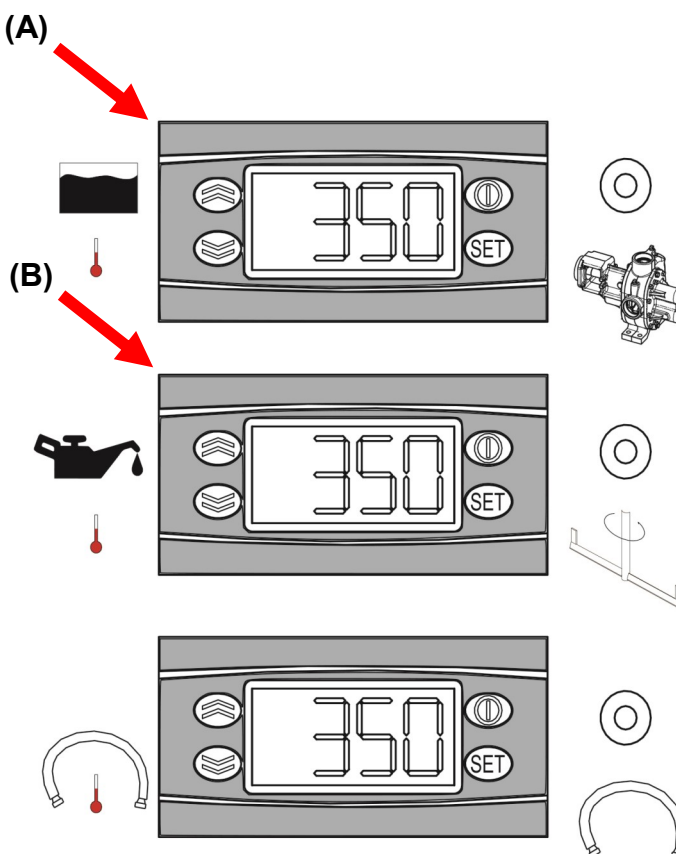
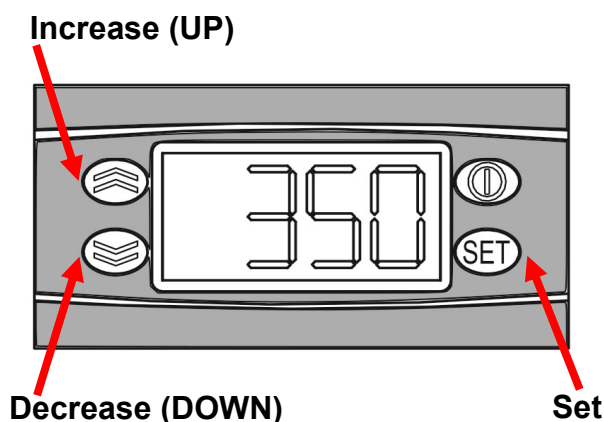
MODIFYING SEALANT TEMPERATURE CONTROL SETTINGS:

NOTICE

Modifying any of the M Series Applicator Temperature Controls is only intended to be done by trained, experienced operators.

The Sealant Temperature Control (A) on your CIMLINE melter applicator has been factory set to run the most common types of sealants. These sealants have an application temperature of 380° F (193°C). With some sealants, it may require a change to the controller to achieve the appropriate application temperature. To achieve this, open the control box and alter the Sealant Temperature Controller (top controller) by following the directions below.

- 1) Press the "SET" button twice.
- 2) "SP1" (Set Point 1) is displayed.
- 3) Press the "SET" button.
- 4) Current material temperature setting is Displayed (factory default is 380°F (193°C).
- 5) Use the "Up / Down" arrow buttons to change to the desired temperature.
- 6) Press the "SET" button.
- 7) Let the controller time out. The controller will now be changed and the updates will be saved.



OTHER MELTER NOTES:

On a new CIMLINE Melter Applicator or a unit that has been idle for some time, it is recommended that you slowly raise the oil temperature to 250°F (121°C) and hold there for approximately 20 to 30 minutes. This will help evaporate any water condensation that may be in the oil chamber.

To do this it will be necessary to temporarily change the heat transfer oil temperature setting.

The heat transfer oil control (B) on your CIMLINE melter has been factory set to 550° F (288°C). To temporarily change the max temperature for evaporating condensation follow the same process as above and apply to the heat transfer oil temperature controller (B). Run the melter applicator machine maintaining the 250°F (121°C) heat transfer oil temperature for 20 to 30 minutes. Follow the instructions again to return the heat transfer oil temperature controller back to the factory setting of 550°F (288°C).



WARNING

Operating the heat transfer oil controller at temperatures higher than the factory recommended 550°F (288°C) can risk death or serious injury, equipment damage and will shortening the life of the oil.

M-Series Fluid and Components Specifications

ENGINE:

The operation and life of the engine depends on you and your operators. Do not start engine until the engine pre-check is complete. The engine pre-check consists of checking the oil, the fuel level, the hydraulic oil level and the air filter. For more details about your engine please refer to the engine operator maintenance manual and warranty provided with your sealant melter applicator.

NOTICE

When breaking in a new sealant melter applicator, CIMLINE recommends running the engine for one hour with no load prior to actual use on the job.

AIR CLEANER:

Due to the dusty conditions that can be created by road work, it is essential to check the engine air cleaner element daily. Remove element and shake out the accumulated dust and dirt. Wipe out dirt from inside cover and from housing. Reference engine manual for washing instructions. CIMLINE recommends stocking replacement filters.

ENGINE OIL:

Use high quality detergent oil of API (American Petroleum Institute) service class CF or higher grade. Select the viscosity based on the air temperature at the time of operation. Reference your engine manual for other recommendations.

Hydraulic Reserve Capacity	33 Gallons (125L)
Hydraulic Oil Type	Conoco MV32 or equivalent
Diesel Fuel Capacity	33 Gallons (125L)
Diesel Fuel Type	ASTM D975 No.2
Heat Transfer Oil Type	See specification on next page

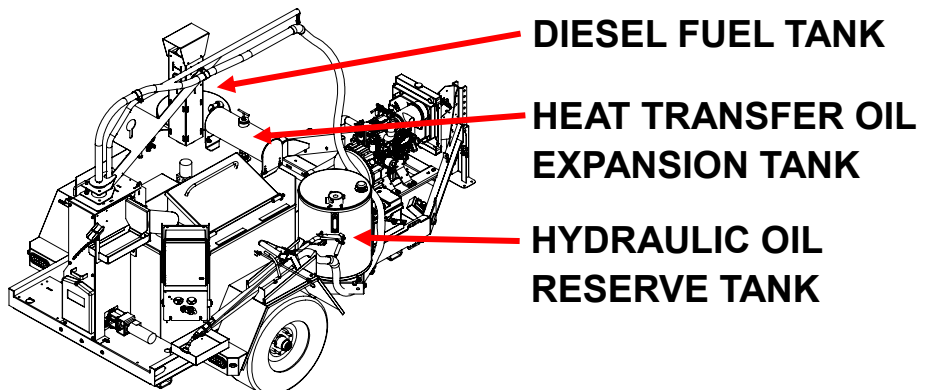
MELTER UNIT	HEAT TRANSFER OIL CAPACITY	PUMP Hydraulic Relief Setting	AGITATOR Hydraulic Relief Setting
M1	25 Gal (95 L)	800 psi (55 Bar)	1100 psi (76 Bar)
M2	30 Gal (114 L)	800 psi (55 Bar)	800 psi (55 Bar)
M4 & M4 Dual	42 Gal (159 L)	800 psi (55 Bar)	800 psi (55 Bar)

NOTICE

**Only the oils specified, or equal, may be used in this system.
(Always check your local and state regulations before disposal)**

These are petroleum based products. CIMLINE recommends that you do not mix oil brands.

Mixing any oils (Engine oil, hydraulic oil, transmission fluid, etc.) adversely affects each Manufacturers formula.



M-Series Heat Transfer Oil Specification

ISO GRADE 68 HEAT TRANSFER OIL SPECIFICATION:

To insure maximum safety and performance, CIMLINE recommends you purchase your oil through CIMLINE directly. CIMLINE heat transfer oil can be ordered in 5 or 30 gallon (19L and 114L) bulk quantities and is also included when ordering a CIMLINE maintenance kit. PN 409185 (M1 & M2), PN 409186 (M4, M4 Dual and MA4).

There are many different types of heat transfer oils on the international marketplace. It is critical that you use the proper oil to prevent poor performance, oil flashing, or auto-ignition. To conform to most government bids and to supply a readily available product, ISO Grade 68 heat transfer oil specifications listed should be the same as the table to the right.

ISO Viscosity Grade	68
API Gravity	30.7
Viscosity cSt @ 40° C°	68
Flash Point, COC, F°	420° F
Pour Point, F°	10° F

NOTICE

Using oil that does not meet CIMLINE heat transfer oil specification is cause for a voided warranty.

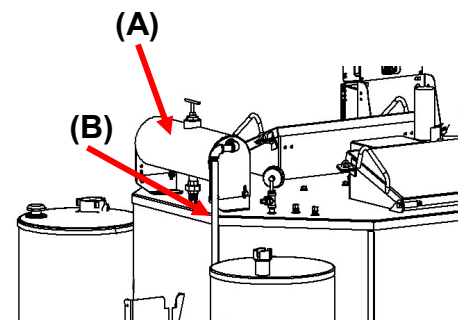
REFERENCE INFORMATION:

GENERAL DESCRIPTION - Due to the extremely high temperatures experienced in these applications, the oil must provide excellent thermal stability to resist oxidation, while also providing good resistance to carbon deposits (coking). CIMLINE heat transfer oil is fully formulated to provide long service in closed low pressure heat transfer systems such as asphalt processing plants and sealant material melter's working at temperatures up to 550°F. Low volatility control enables operation in closed high temperature, low pressure systems. Excellent conductivity provides rapid heating and cooling properties in various operations while maintain longer life.

ISO GRADE - Is a viscosity index (ability to flow/thickness). An ISO Grade 68 oil can be an engine oil, hydraulic oil, etc. The manufacturer uses different additives to make the oil conform to different applications. **YOU MUST CLARIFY WITH THE SUPPLIER** that the oil is to be used in a heat transfer system to avoid any potential problems. The correct and recommended oil is available from CIMLINE in 5 and 30 gallon (19L and 114L) containers for ship-out.

FLASH POINT - Test in which a container of oil is heated until an open flame will flash when passed over the fumes.

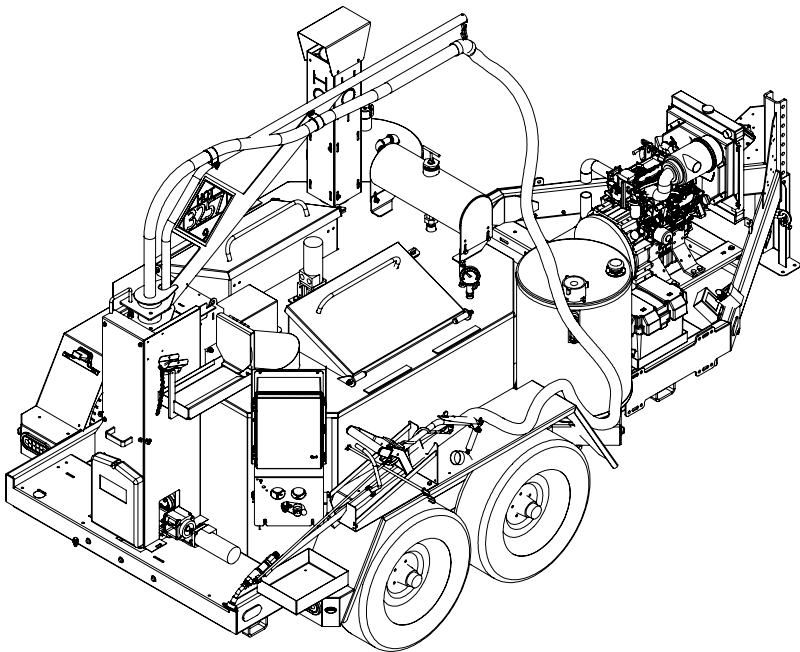
NOTE: CIMLINE melter applicators use an expansion tank (A), when the oil heats up and expands, it flows into the expansion tank. The expansion tank is cooler since it is not part of the oil jacketed heating system and is surrounded by outside airflow. The only exposure the hot oil has to the atmosphere is through a 3/4" vent/overflow pipe (B). This is done so the oil in the oil jacketed tank can run at higher than the flash point temperatures. Only the lower temperature oil fumes are exposed to the atmosphere.



M-Series Maintenance And Troubleshooting

MAINTENANCE AND TROUBLESHOOTING:

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M-Series Maintenance Schedule

Maintenance Schedule / Operation	Every Day	Every 25 Hrs.	Every 100 Hrs.	Every 200 Hrs.	Every 500 Hrs. or Yearly	Manual Page Number
Check engine fuel level (add if low)	X					20
Check engine oil and heat transfer oil (add if low)	X					20/24
Check hydraulic oil (add if low)	X					20/28
Check engine air cleaner	X					54-57
Inspect and clean engine air pre-cleaner		X				-
Clean out sealant material system		X				16-17
Inspect sealing hose connections			X			-
Inspect and clean engine cooling system/radiator			X			-
Inspect sealant material pump packing (adjust if leaking is excessive)			X			25
Service engine air cleaner element/gaskets				X		54-57
Inspect sealant material flow plumbing				X		26
Inspect tank burner nozzle, electrode & head position (adjust if necessary)				X		32/48
Change engine oil and oil filter				X		20/55
Grease agitator bearing block (load adapter)				X		66-67
Replace engine fuel filter				X		54-57
Inspect diesel tank burner electric eye (clean if dirty)					X	47-48
Grease trailer wheel bearings					X	-
Inspect tank burner chamber lining insulation (replace if excessive cracking)					X	34/46
Inspect engine starting motor					X	-
Replace hydraulic oil					X	28-29
Replace hydraulic return filter					X	28-29
Replace hydraulic suction strainer					X	28-29
Replace tank burner nozzle					X	32/48
Change heat transfer oil					X	24
Change diesel tank fuel filter					X	49
Flush engine radiator and replace fluid					X	-

M-Series Maintenance - Changing Heat Transfer Oil

HEAT TRANSFER OIL LONGEVITY:

The regular interval for changing heat transfer oil is once annually or every 500 hours. If the time frame between heat transfer oil changes is not known a significant difference in temperature from the digital oil controller readout and the analog gauge may mean the oil has reached it's service life and is due to be changed. Oil that is not changed regularly can cause numerous problems including; slow start-up times, incorrect controller temperature readings, oil crystalizing inside the vessel and damage to the heat sensing probes.



DANGER

Going under the trailer puts a person at risk of serious injury or death. Follow procedure in the manual to stabilize trailer before going under the trailer.



WARNING

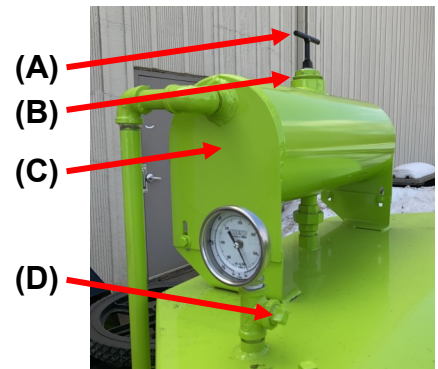
The melter operates at elevated temperatures which can cause burns. Be sure the heat transfer oil is cool before performing maintenance.

NOTICE

Using oil that does not meet CIMLINE Heat Transfer Oil specification is cause for a voided warranty.

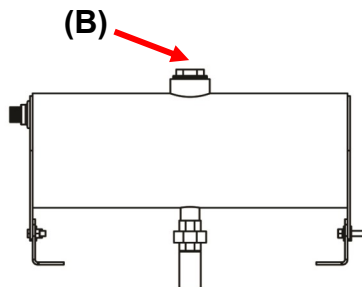
CHANGING/REPLACEMENT OF HEAT TRANSFER OIL:

- 1) Remove the dipstick (A) and the larger hex head cap (B) on the top of the expansion tank (C).
- 2) Remove the fill and drain breather plug (D) at the base of the analog temperature gauge when draining and filling heat transfer oil.
- 3) Drain from the bottom of the vessel (under the trailer) through the 3/4" pipe cap (E), or by suction through the hex head cap on the top of the expansion tank (B). Use two wrenches to remove the drain cap, you do not want the pipe to come unscrewed, just the cap on the end of the pipe.
- 4) Replace the 3/4" drain plug (E) and refill with the correct amount of heat transfer oil as stated on page 21 by pouring through the hex head cap (B).
- 5) Replace the hex head cap, the fill and drain breather plug, and check for the proper heat transfer oil level using the dipstick.

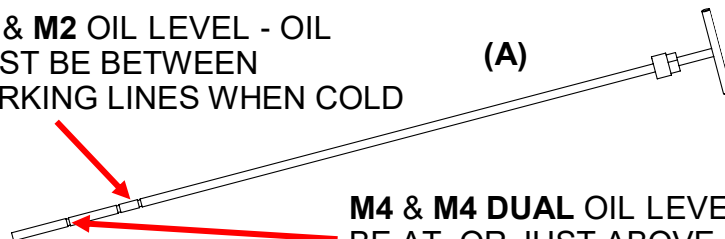


CHECKING HEAT TRANSFER OIL LEVEL:

NOTE: Use dipstick (A) as provided for checking heat transfer oil level when cold.



M1 & M2 OIL LEVEL - OIL MUST BE BETWEEN MARKING LINES WHEN COLD



M4 & M4 DUAL OIL LEVEL - OIL MUST BE AT, OR JUST ABOVE, MARKING LINE WHEN COLD

NOTICE

Do not operate machine when heat transfer oil is below the marking line or significant damage to machine can occur.

M-Series Maintenance - Sealant Material Pump

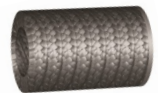
SEALANT MATERIAL PUMP:

Examine the packing around the drive shaft for leakage. (A) Slight leakage (about 1 drip per minute) is necessary and is a normal condition for packing and allows for expansion and proper seating of the pump shaft. If leakage is excessive follow tightening instructions below.

TIGHTENING SEALANT MATERIAL PUMP PACKING:

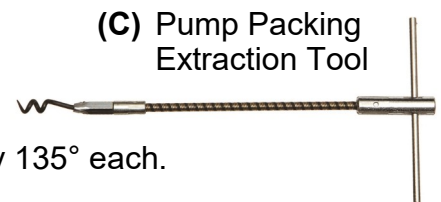
With machine warmed up and material pump running, tighten the 2 lock nuts (B) evenly by only a half turn each. Allow pump to flow for a minute and examine for leakage. If leaking continues repeat in half turn increments until excessive leaking stops. The pump will leak about 1 drip per minute when adjusted properly - this is normal.

The material pump is sealed by a series of compressible fibrous braded graphite packing rings. If tightening does not reduce the leaking, replace these packing rings. Contact your CIMLINE dealer for packing ring kit and follow the instructions below to replace.

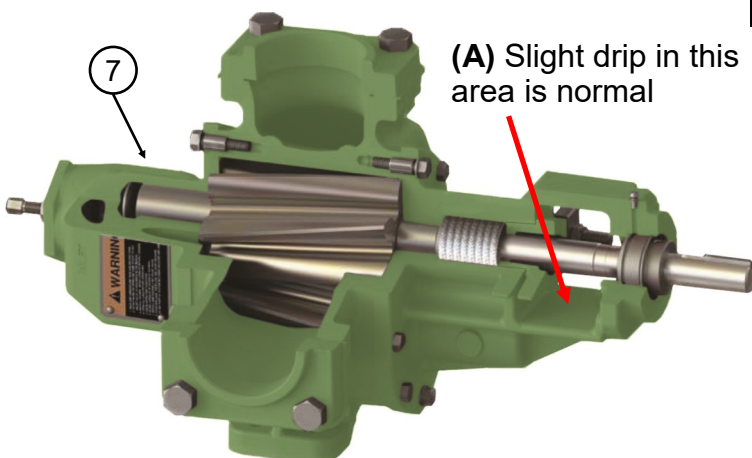


MATERIAL PUMP PACKING REPLACEMENT:

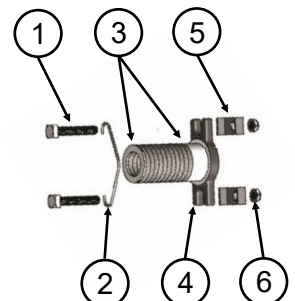
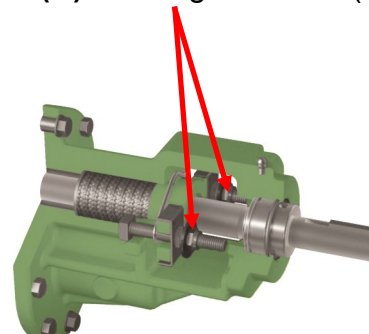
- 1) Remove the locknuts, packing gland clips, spring clip and square head bolts.
- 2) Slide the packing gland back as far as possible on the shaft.
- 3) Using a packing extractor tool (C) remove as much of the old packing as possible.
- 4) Clean the shaft and adjacent parts.
- 5) Examine the shaft, if excessively worn or scored the pump may need to be replaced.
- 6) Install new the 8 new packing rings, offsetting the open ends by 135° each.
- 7) Reassemble the components
- 8) Draw up evenly on the packing gland to assure proper seating of the packing and then loosen locknuts about 1/2 turn
- 9) NOTE: DO NOT COCK THE PACKING GLAND. THIS MAY CAUSE BINDING OR EXCESSIVE HEATING OF THE SHAFT
- 10) Run in the pump for several minutes and observe the leakage as explained above.



#	Part #	Description
1	120554	Square Head Bolt (2 Qty)
2	155148	Spring Clip
3	120541	Packing Rings (8 Qty)
4	120525	Packing Gland
5	120526	Packing Gland Clips (2 Qty)
6	100495	Locknuts (2 Qty)
7	120803	20GPM Material Pump



(B) Packing lock nuts (2)



M-Series Maintenance - Sealant Material Plumbing

Material Plumbing

It's important to check the torque of the nuts on the plumbing flanges, check the torque of the nuts after the initial 8 hours of run time, then every 200 hours after that.

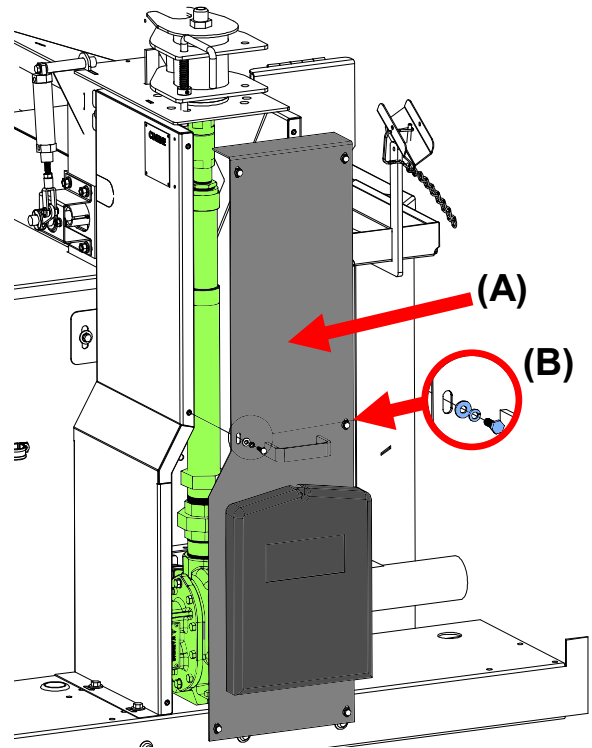
Accessing Plumbing

M1 and M2

A) Remove rear plumbing cover (A) by removing the 6 bolts (B) on the outside of the rear cover.

M4 and M4 Dual

A) Open rear panel door. No hardware to remove.



Plumbing Maintenance

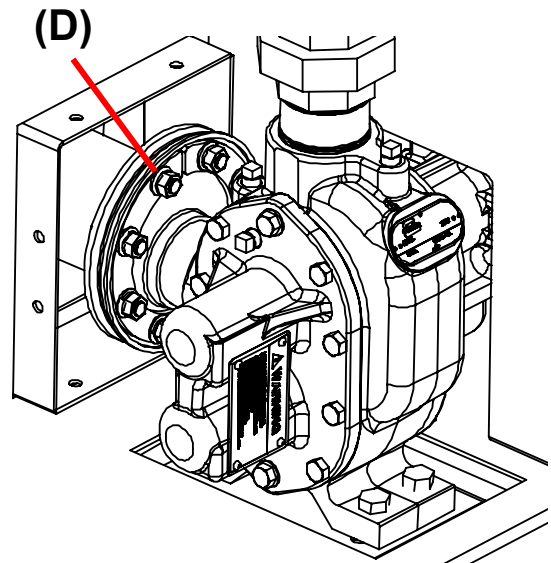
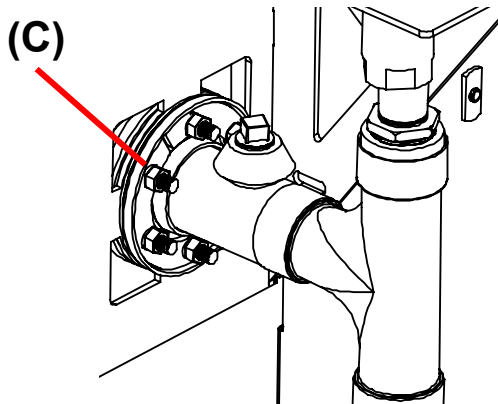
Use a torque wrench with an extension and check the 6 nuts from the upper flange (C).

Set torque to 30 ft./pounds.

Use a torque wrench with an extension and check the 8 nuts on the lower pump flange (D).

These need to be set to 22 Ft/pounds.

Reinstall plumbing cover when completed.



M-Series Maintenance - Recirculation Valve Timing

SEALANT MATERIAL RECIRCULATION VALVE:

The material sealant pumping system relies on a mechanical valve to direct the flow of material either to the application hose and wand or in recirculation mode back to the tank. This valve is operated by a hydraulic actuator and is connected to the recirculation valve shaft by a clamp and two set screws.

This system is intentionally designed to slip when under extreme force to prevent damage to the valve or the hydraulic actuator. If the system is activated when cold material is inside the valve the actuator may try to operate the valve and not be able to move due to the cold material impeding proper operation of the valve interior. Thus the clamp will slip on the shaft and be out of time with the proper operation to apply sealant or recirculate material back to the tank.



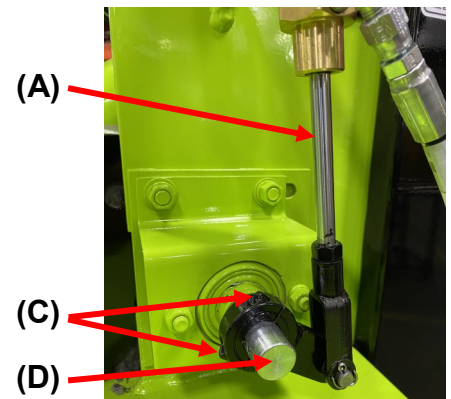
WARNING

The melter operates at elevated temperatures which can cause burns. Be sure the sealant material is cool before performing maintenance.

Correct Position for

Material Flow Between Application and Recirculation:

- The first photo shows the hydraulic actuator (A) fully extended and in the recirculation position. This is the correct position for the valve and hydraulic actuator when the system is not calling for sealant to the applicator hose and wand.
- The second photo again shows the recirculation valve in the correct position for recirculation as indicated by the roll pin (B) being in the horizontal (9 o'clock - 3 o'clock) position. When the hydraulic actuator retracts it turns the valve shaft in a counter clockwise direction and the roll pin (B) will be in a vertical (12 o'clock - 6 o'clock) position.



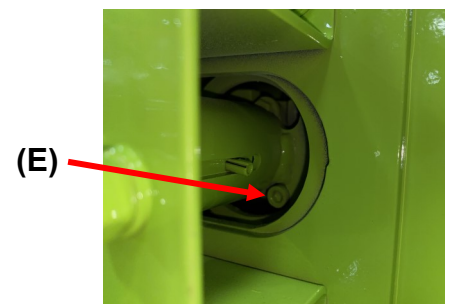
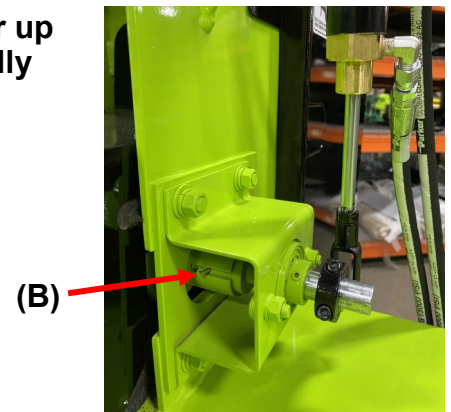
INSTRUCTIONS FOR RESETTNG THE TIMING OF THE RECIRCULATION VALVE:



CAUTION

It may be necessary to run the melter up to temperature in order to successfully operate the valve when making this timing adjustment. Extreme caution must be taken when working around hot material and hot melter machine parts.

- Loosen the two hex head screws (C) on the clamp from the hydraulic actuator to the recirculation valve shaft.
- Using a locking plyers or pipe wrench rotate the recirculation valve shaft (D) until the roll pin is in the correct orientation - horizontal (9 o'clock - 3 o'clock) position.
- With the hydraulic actuator extended in the recirculation position and the roll pin on the valve shaft in the horizontal (9 o'clock - 3 o'clock) position, tighten the two hex head screws (C) on the clamp, torque to 22 ft. lbs.
- In some rare occasions the recirculation valve limit set screw will need to be adjusted . The limit screw is shown in the photo as (E).



M-Series Maintenance - Hydraulic Oil Servicing

HYDRAULIC OIL LONGEVITY:

The regular interval for changing hydraulic oil, replacing the return filter and recirculation strainer is once annually or every 500 hours. Hydraulic oil that is not changed regularly can cause numerous problems including; poor or sluggish control operation, incorrect pressure readings and damage to the hydraulic actuators and pumps.

The operation and life of the hydraulic system depends on you and your operators. Do not start engine until the engine pre-check is complete which should include the inspection of hydraulic oil level and the overall hydraulic system.

HYDRAULIC OIL:

Use high quality Conoco MV32 or equivalent hydraulic oil. CIMLINE recommends that you do not mix oil brands. Mixing any oils (Engine oil, hydraulic oil, etc.) adversely affects each manufacturers formula. The maximum capacity of the hydraulic reserve tank is 33 gallons (125L).

HYDRAULIC OIL CAPACITY:

The maximum capacity of the hydraulic tank is 33 gallons, but the actual fill level of hydraulic oil is between 27 and 28 gallons. Do not fill the tank higher than the top level of the site gauge (G) on the tank. Normal operating capacity of the hydraulic oil should be around the top 3/4 on the site gauge.


DANGER

Going under the trailer puts a person at risk of serious injury or death. Follow procedure in the manual to stabilize trailer before going under the trailer.

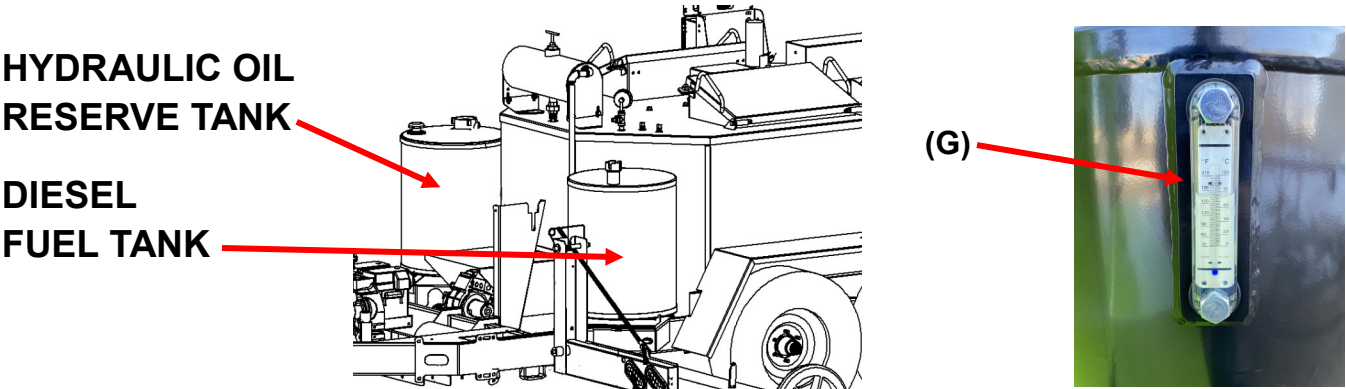

WARNING

The melter operates at elevated temperatures which can cause burns. Be sure the hydraulic oil is cool before performing maintenance.

NOTICE

Using oil that does not meet CIMLINE Hydraulic Oil specification is cause for a voided warranty.

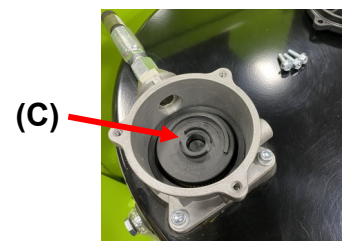
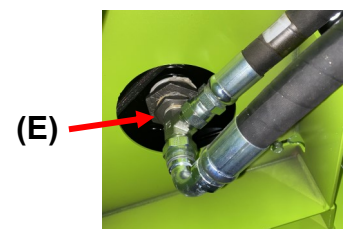
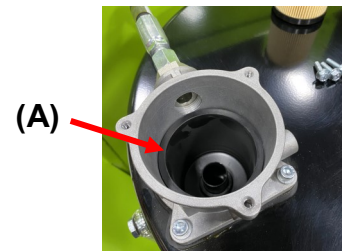
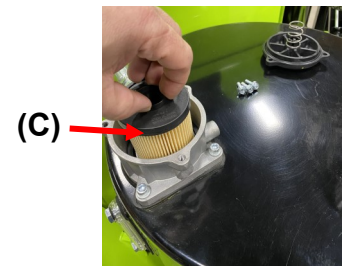
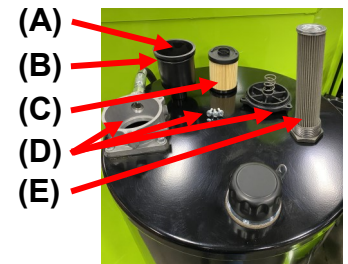
#	PART #	DESCRIPTION
A-D	172127	Return Filter Assembly (Non-Compressor)
C	170407	Element - Return Filter (Non-Compressor)
E	172186	Suction Strainer
G	171631	Hydraulic Tank Sight Gauge



M-Series Maintenance - Hydraulic Oil Servicing

SERVICING THE HYDRAULIC OIL:

- 1) At the top of the hydraulic tank, loosen the three bolts holding the hydraulic return filter assembly cap (D) on the filter assembly base . NOTE - the cap is spring loaded so be ready for the cap to “pop up” as the bolts are removed! Be careful to not lose the large o-ring that seals the cap to the filter assembly itself.
- 2) Pull out the return filter cartridge and inspect for metal shavings and/or unusual debris.
- 3) Remove the return filter cup (A) while being careful not to lose the o-ring (B) that seals the cup to the inside of the return filter assembly, it can easily fall back into the tank if you do not capture it as you lift out the filter cup.
- 4) Disconnect the hydraulic lines at the base of the tank and capture the hydraulic oil in an appropriate container. Be prepared to capture nearly 30 gallons of fluid while the reservoir tank drains.



WARNING

The melter operates at elevated temperatures which can cause burns. Be sure the hydraulic oil is cool before performing maintenance.

- 5) Unscrew and remove the suction strainer (E) from the bottom of the tank and replace with Cimline part number 172186.
- 6) Apply pipe thread tape and an appropriate amount of thread sealant to the threads of the suction strainer (E) and any other pipe threads in this assembly. The hydraulic JIC compression type connections do not require thread tape or sealant.
- 7) Tighten all the components of the suction strainer (E) and related hydraulic connections and leak test them before filling the tank completely with hydraulic oil.
- 8) Reassemble the return filter assembly in reverse of the disassembly instructions being careful to not drop the filter cup o-ring (B) into the tank while replacing the filter cup (A) into the return filter base.
- 9) Place a new filter cartridge (C), Cimline part number 170407, into the filter cup (A) and seat properly all the way into the cup.
- 10) Replace the filter cap (D) back onto the return filter assembly base. Be careful to seat the large o-ring in the cap properly (F) in order to seal the cap on the base. Alternate tightening the three lid screws to evenly seat the lid and not pinch or distort the o-ring.
- 11) Fill the tank using high quality Conoco MV32 or equivalent hydraulic oil. The maximum capacity of the hydraulic tank is 33 gallons, but the actual fill level of hydraulic oil is between 27 and 28 gallons. Do not fill the tank higher than the top level of the site gauge (G) on the tank. Normal operating capacity of the hydraulic oil should be around the top 3/4 on the site gauge window.

NOTICE

Using oil that does not meet CIMLINE hydraulic oil specification is cause for a voided warranty.

M-Series Maintenance - Tank Burner

TANK BURNER:

Have your equipment inspected at regular intervals by a qualified service agency to assure continued proper operation. The burner should be adjusted using dedicated combustion test equipment. Failure to properly set the burner could result in inefficient operation, equipment damage and/or conditions that could potentially cause severe personal injury, death or substantial property damage.



Professional Service Required: Incorrect installation, adjustment, and use of this burner could result in severe personal injury, death, or substantial property damage.

OWNER SERVICE AND MAINTENANCE

Daily:

Check the area around your burner/equipment to make sure:

- A. Nothing is blocking the burner inlet air openings.
- B. Air ventilation openings are clean and unobstructed and the exhaust is not crusted.
- C. No combustible materials are stored near the equipment.

Beckett Corp. ADC 12V Tank Burner

Capacity: Firing rate 0.75 - 2.50 GPH, Input 105,000 - 350,000 Btu/h

Fuel: (USA) No.1 or No.2 diesel fuel

Electrical: Power Supply 13.5Vdc, Operating load w/igniter on 15amps, w/igniter off 8-10amps

Pump: Outlet pressure 140psi

Regular Service/Maintenance:

- A. The following components/assemblies should be checked/adjusted/replaced on a regular basis. See page 48 for more information and the tank burner parts exploded view.
- B. Replace the diesel fuel supply line filter. The line filter cartridge must be replaced to avoid contamination of the pump and nozzle.
- C. Inspect the diesel supply system. All fittings should be leak-tight.
- D. Verify the nozzle is the one originally specified by CIMLINE and always replace the nozzle with one having the exact specifications from CIMLINE.
- E. Clean and inspect the electrodes for damage, replacing any that are cracked or chipped.
- F. Check electrode tip settings. Replace electrodes if tips are rounded.
- G. Inspect the igniter spring contacts. Clean or replace if corroded.
- H. Clean the cad cell (electric eye), if applicable.
- I. Inspect all gaskets including the igniter base plate gasket. Replace any that are damaged or missing.
- J. Clean the blower wheel, air inlet, air guide, retention head and static plate of any dirt, asphalt or other material.
- K. Check motor current. The amp draw should not exceed the nameplate rating. Check all wiring for loose connections or damaged insulation.
- L. Check the pump pressure and cutoff function.
- M. Check ignition system for proper operation.
- N. Inspect the exhaust system for soot accumulation or other restriction.

Extended Down Time:

If the equipment will be stored for an extended period of time, insure that the fuel tank is full and add a fuel stabilizer to the tank.

M-Series Maintenance - Tank Burner

TANK BURNER TROUBLESHOOTING:

Oil burners that are designed for use on road maintenance equipment are built to take temperature extremes, vibration, and rough handling. When performing the following troubleshooting steps, we assume that the oil burner motor and ignition transformer operate continuously and the oil solenoid valve, which controls oil flow, is cycled by the equipment controls. We also assume that there is power to the burner and fuel in the tank.

Symptom	Possible Cause
Fuel Not Igniting	<p>If the burner is not igniting, the burner motor, drive coupling, and fuel pump are operating and fuel is flowing to the nozzle through the solenoid valve, check the following possibilities.</p> <p>Check the air shutter adjustment. If it is opened too far, the flow of air may prevent the arc from reaching the fuel spray. This may appear as a white vapor exhaust from the heater. The ignition system may have failed to supply an adequate arc to ignite the fuel. Check the battery and charging system to insure a continuous supply of 12 to 16 volts DC (15 amps). Check the electrodes for wear and damage. Insure that the electrodes are adjusted properly.</p>
No Flame	<p>If there is no flame, the burner motor and igniter operate continuously and the oil solenoid valve is functional, check the following possibilities.</p> <p>Check for a plugged fuel nozzle. If the coil on the solenoid valve is actuating, insure the valve is opening and closing properly. Check for sufficient fuel pressure. Pressure is 140 psig with valve energized. Check the pump pressure. Check for air in fuel lines. Check burner for broken motor coupling. If the coupling is broken check pump rotation prior to replacing the coupling. Check for contaminated fuel and/or partially plugged fuel filter.</p>
Motor Not Operating	<p>If the blower motor is not operating, check the following possibilities.</p> <p>Check voltage at the motor to insure that switches and relays, in line with the motor, are operating properly. Check pump and motor shaft operation. They should work freely without binding.</p>
No Fuel Spray	<p>If the blower motor is operating, there is fuel in the tank, but oil does not spray out the end of the nozzle, check the following possibilities.</p> <p>Check for a broken or stripped coupling between the pump and the motor. Check the pump output for fuel. Check operation of the fuel valve. Check for a plugged fuel nozzle. Check for air in the fuel line. Check for fuel contamination or plugged filter.</p>
Fluctuation Or No Pump Pressure	<p>If the pump pressure, as determined by a pressure gauge, is erratic or does not exist, check the following possibilities.</p> <p>Check motor rotational speed. Low rpm can cause erratic or no pump pressure. Check for a broken or worn motor coupling. Check that the pump turns freely. Check for air leaks in the lines. Check for fuel froth at the bleed point. Check voltage at the motor. Check for fuel contamination or partially plugged filter.</p>
Slow Motor Rotation	<p>If the blower motor is not operating at the rpm's listed on the nameplate, check the following.</p> <p>Check the supply voltage to the motor. Check for free operation of the motor shaft and pump assembly.</p>

M-Series Maintenance - Tank Burner

Igniter Maintenance:

The igniter assembly does not require any adjustments beyond making sure the springs and the burner electrode rods make solid contact when the igniter is in the closed position. The sealing surfaces of the gaskets should be checked and replaced at the first signs of any damage or deterioration. Clean any dirt or residue from the porcelain bushings, springs, and baseplate.

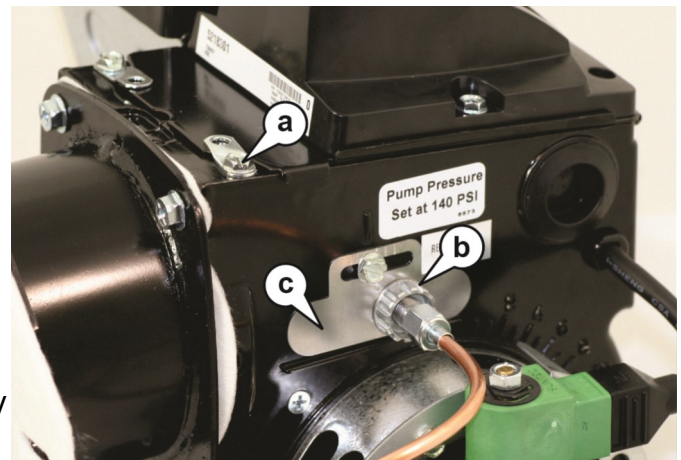
The simplest way to check igniter operation is by supplying voltage to the input and checking to see whether an arc is produced. Check by either looking or listening to see if there is an arc across the electrodes while the burner is running and the igniter is energized.

The igniter must be grounded to the burner before checking the following. To check the igniter, ensure all power to the burner is off and use an ohmmeter to check the resistance between the two springs. The meter should read between .480 - .580 ohm.

The igniter should be replaced if the meter indicates an open circuit, or the spring-to-spring resistance exceeds the .480 - .580 ohm range by more than 10%.

Servicing Nozzle Assembly:

- A. Before proceeding, turn off power to the burner.
- B. Disconnect the diesel fuel connector tube from the nozzle line.
- C. Loosen the two screws securing the igniter retaining clips (a) and rotate both clips to release the igniter baseplate. Then tilt the igniter back on its hinge.
- D. Remove the splined nut (b).
- E. Remove the nozzle line assembly from the burner, being careful not to damage the electrodes or insulators while handling. To ease removal of short assemblies, it may be necessary to loosen the escutcheon plate (c). Reset to the edge of the label.
- F. To replace the nozzle assembly, reverse the above steps.

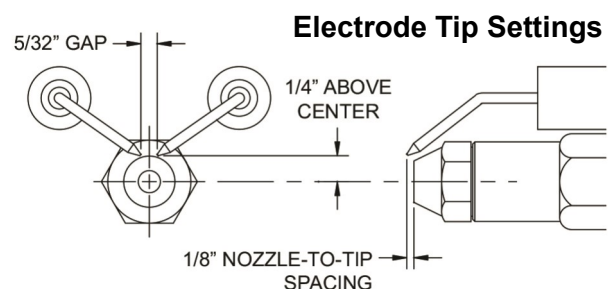


Replacing The Burner Nozzle:

- A. Use rubber gloves and avoid touching the new nozzle with your bare fingers. The oils in your skin can adversely affect the operation of the new nozzle.
- B. Remove the plastic cover protecting the nozzle adapter threads.
- C. Place a 3/4" open-end wrench on the nozzle adapter. Insert the nozzle into the adapter and finger tighten with your gloved hand. Finish tightening with a 5/8" open-end wrench.
- D. Verify that the electrode tip settings comply with the diagram below.

Check/Adjust Electrodes:

- A. Check the electrode tip settings.
- B. Adjust if necessary to comply with the dimensions shown.
- C. To adjust, loosen the electrode clamp screw and slide/rotate electrodes as necessary.
- D. Securely tighten the clamp screw when finished.



M-Series Maintenance - Tank Burner

Primary Controller:

The Beckett ADC tank burner motor is used to drive the blower and pump. The rotational speed of the motor is determined by the voltage supplied and the load placed on the motor. Pump pressure and air settings are the main factors affecting the motor load. The ignition transformer converts battery DC voltage into a high voltage spark to ignite the fuel. The pump and solenoid valve are used to control the flow of fuel from the reservoir to the nozzle.

The tank burner has a control circuit to reduce current draw on the charging system by turning the igniter off after a flame has been established. This circuit controls ignition transformer operation based on a signal from a light sensing cad cell (electric eye). When light hits the cell the control will sense a decrease in resistance across the sensor. As long as sufficient light is reaching the cell eye, the igniter will remain off. If light is removed from the sensor, the igniter will turn on until light is again sensed by the cad cell.

Air Supply Set-up:

The tank burner is set up properly from the factory.

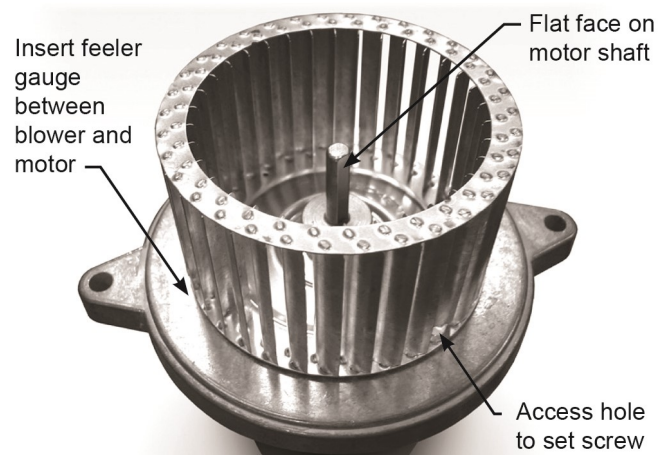
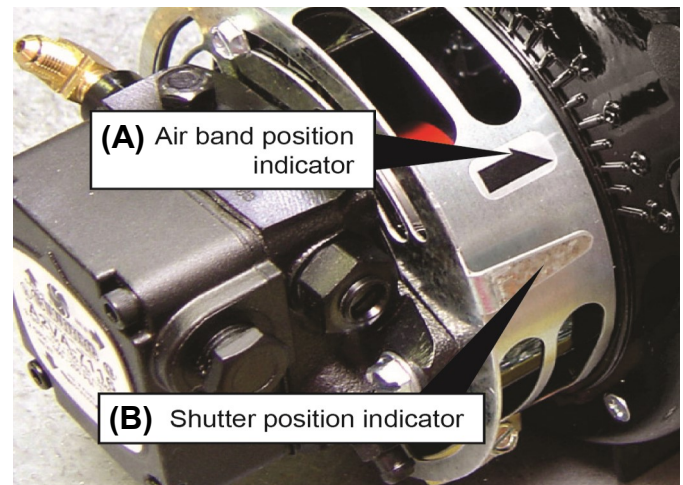
Air Band Position (A) should be set to 8.5

Shutter Position (B) should be set to 10

Motor, Blower Wheel and Coupling Replacement:

See page 48 for the tank burner parts exploded view

- A. Before servicing, turn off and/or disconnect all power to the burner.
- B. Disconnect the burner motor wires.
- C. Remove the bolts securing the motor to the burner housing.
- D. Remove the motor, coupling, and blower wheel.
- E. Loosen the set screw on the blower wheel to slide the existing wheel off the shaft.
- F. Slide the new blower wheel onto the old shaft and/or slide the old blower wheel onto the new motor shaft.
- G. Place a .030" ($1/32" \pm 1/64"$) feeler gauge between the blower wheel and the motor housing.
- H. Slide the blower wheel toward the motor until it contacts the feeler gauge.
- I. Rotate the blower wheel until the setscrew is centered on the flat of the motor shaft. Tighten the setscrew to secure the wheel.
- J. Slide the motor coupling on the motor shaft, then install the motor on the burner housing. Ensure that the motor coupling fits between the motor shaft and the pump shaft inside the housing. Tighten the motor retaining screws. Reconnect the wires.

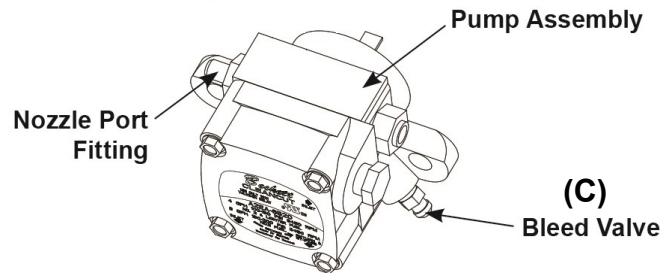


M-Series Maintenance - Tank Burner

Bleeding The Fuel Supply Line (Older Melter Units):

More recent CIMLINE Melters use a Clean-Cut Fuel Pump on the Beckett Burner units. These more modern fuel pumps are self priming and this process should not be needed.

In the case of older Beckett Burner units there may be a need to bleed air from the fuel line if the burner has run completely out of fuel. To bleed the pump, attach a clear plastic hose over the vent fitting (C). Loosen the fitting and catch the fuel in an empty container. Tighten the fitting when all air has been purged from the supply system. Note: If the burner stops after a flame is established, the unit probably requires additional bleeding. Continue to bleed the system until the pump is primed and a flame is established when the bleed valve is closed.



Tank Burner

After initial 200 hours of operation, the chamber lining must be inspected. Cracks in lining may occur and should be regularly inspected and monitored. If cracks expand excessively a new lining kit should be ordered to replace worn lining.

Chamber Lining:

NOTICE

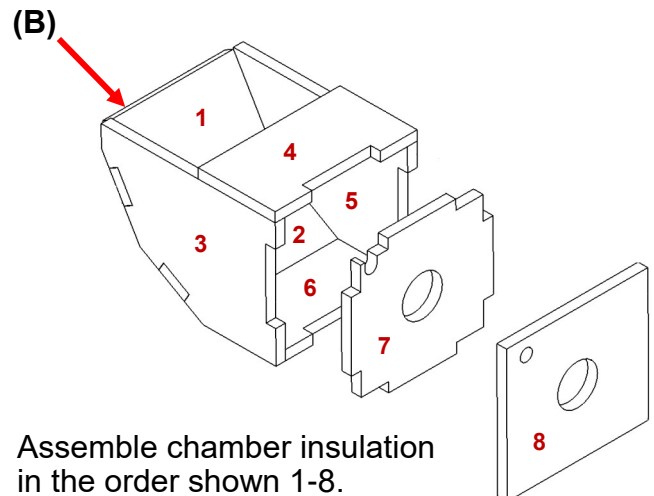
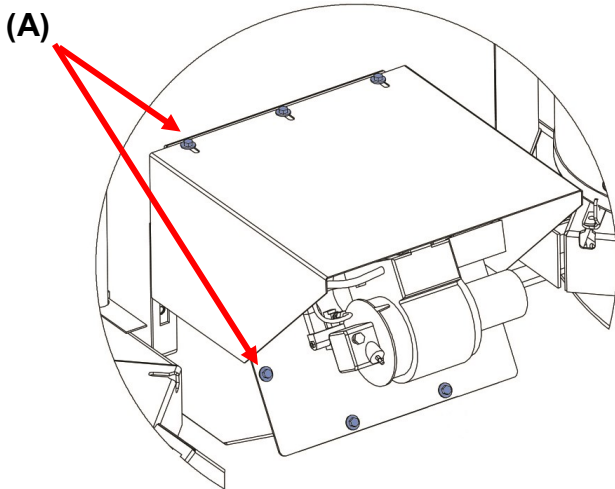
Do not run machine if cracks are wide enough to allow flame to contact the metal combustion chamber walls or if any piece has broken loose. Do not attempt to repair cracks.



CAUTION

Contact with lining may cause skin or eye irritation, wear long sleeve shirt, gloves, and goggles when inspecting lining.

Remove tank burner mount bolts (A) and pull out burner and mount. Inspect lining (B) for excessive cracking. If cracks exceed guidelines, contact your CIMLINE dealer to purchase a replacement PN# 403400 Burner Chamber Lining Kit.

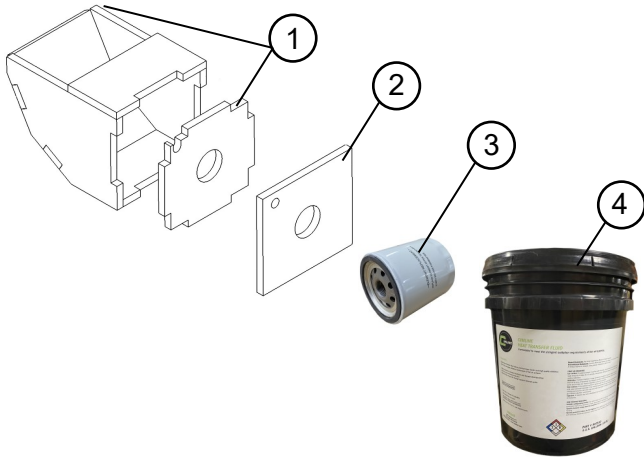


M-Series Trouble Shooting Guide

Problem	Cause	Solution
Burner will not ignite	Fuse burned out	Check 20A fuse at sub control panel
	Burner relay inoperative	Check for 12VDC at relay
	Primary control fuse	Check control switch fuse
	Thermocouple(s) inoperative	Replace thermocouple(s)
Agitator will not rotate	Fuse burned out	Check 10A control switch fuse
	Sealant material not hot enough	Allow material to heat longer
	Too many biscuits added at one time	Continue heat up and reverse agitation to break biscuits free
	Low hydraulic oil level	Check hydraulic oil Level
	Worn agitator motor	Replace agitator Motor
Material pump will not rotate	Fuse burned out	Check 10A control switch fuse
	Sealant material not hot enough	Allow material to heat longer
	Too much cold material left in lines from previous use	Heat plumbing and valve to melt material
	Low hydraulic level	Check hydraulic oil level
	Foreign object lodged in line	Locate/remove foreign object
	Pump worn or damaged	Confirm pump switch on control panel is in "SEAL" forward position
Material pump rotates but does not pump material	Pump rotating in wrong direction	Reverse pump switch
	Pump inlet line plugged	Check sealant tank grid and lines for obstruction
	Too much cold material left in lines from previous use	Heat plumbing and valve to melt material
	Pump worn or damaged	Replace pump
Sealant heat up time slow	Burner orifice clogged	Remove orifice and clean/replace
	Heat transfer oil is worn out	Check oil level. Replace if necessary
	Too much old material on tank walls	Clean material tank
Material recirculates but will not flow through sealing nozzles.	Sealing nozzle valve not completely closing or worn out	Realign valve or replace
	Actuator not turning valve	Realign valve or replace

M-Series Service Parts Kits (Optional)

**M-Series Maintenance Kit Part #409185 for M1 and M2
and Maintenance Kit Part #409186 for M4, M4 Dual and MA4**



Maintenance Kit Part #409185

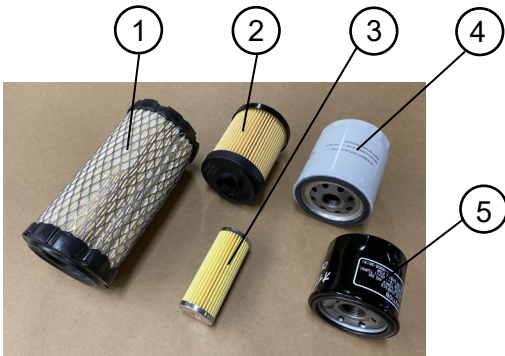
#	Part #	Description
1	403400	Burner Chamber Lining Kit
2	152487	Heat Chamber Insulation
3	170169	3" Fuel Filter
4	403910	5gal Heat Transfer Oil (6 Qty)

Maintenance Kit Part #409186

The only difference between #409185 and #409186 is the quantity of Heat Transfer Oil for the M4, M4 Dual and MA4.

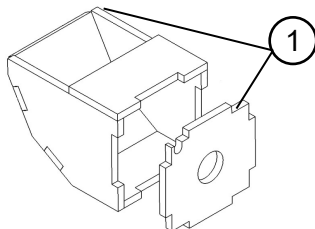
4	403910	5gal Heat Transfer Oil (8 Qty)
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M-Series Engine/Hydraulic Fluids Service Kit Part #406597



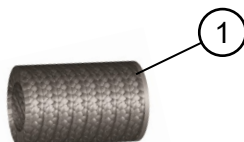
#	Part #	Description
1	111111	Engine Air Filter Element
2	170407	Hydraulic Return Filter Element
3	111457	Engine Fuel Filter Element
4	170169	3" Fuel Tank Filter
1	111337	Engine Oil Filter

M-Series Burner Chamber Lining Kit Part #403400



#	Part #	Description
1	403400	Burner Chamber Lining Kit

M-Series Pump Packing Set Kit Part #120541



#	Part #	Description
1	120541	Pump Packing Set

M-Series Spare Parts Kit (Optional)

M-Series Melter Spare Parts Kit Part #404695

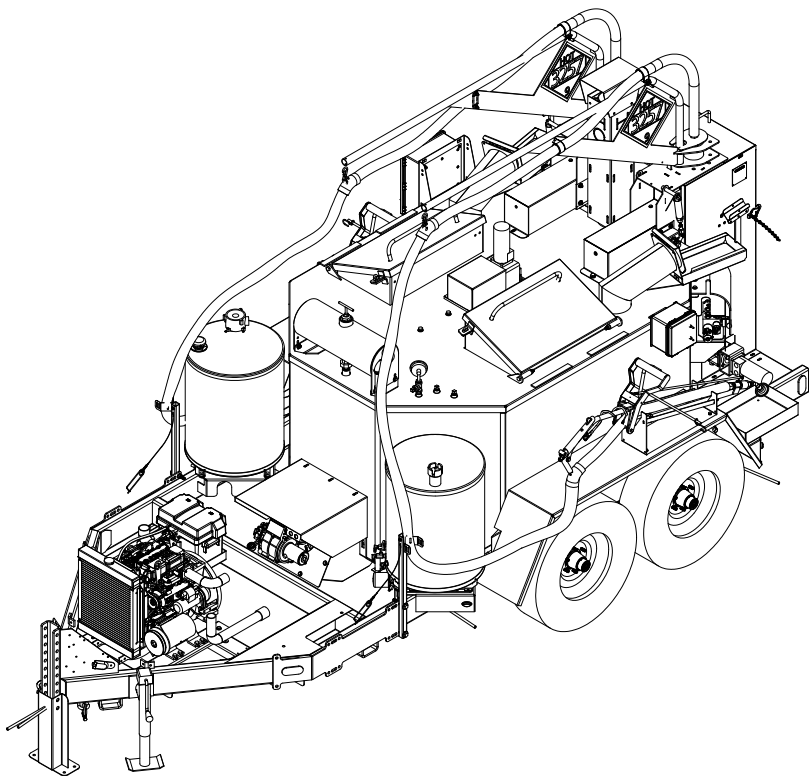
#	PART #	DESCRIPTION	QTY.	#	PART #	DESCRIPTION	QTY.
1	152105	Electric Eye	1	5	130384	Material Controller	1
2	200352	Burner Primary Control	1	6	130097	Thermocouple	2
3	130113	12V/30A Relay (Hose & Burner)	1	7	130505	240V/18A Ceramic Fuse	1
4	152399	Burner Coupling	1	8	152883	12V/10A Blade Fuse (Qty 5)	5



M-Series Parts and Assembly Diagrams

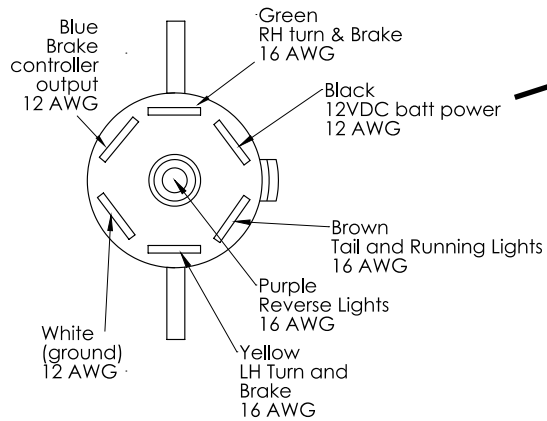
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M-Series Trailer Wiring Diagram and Parts

60" Trailer Harness Cable PN 156025



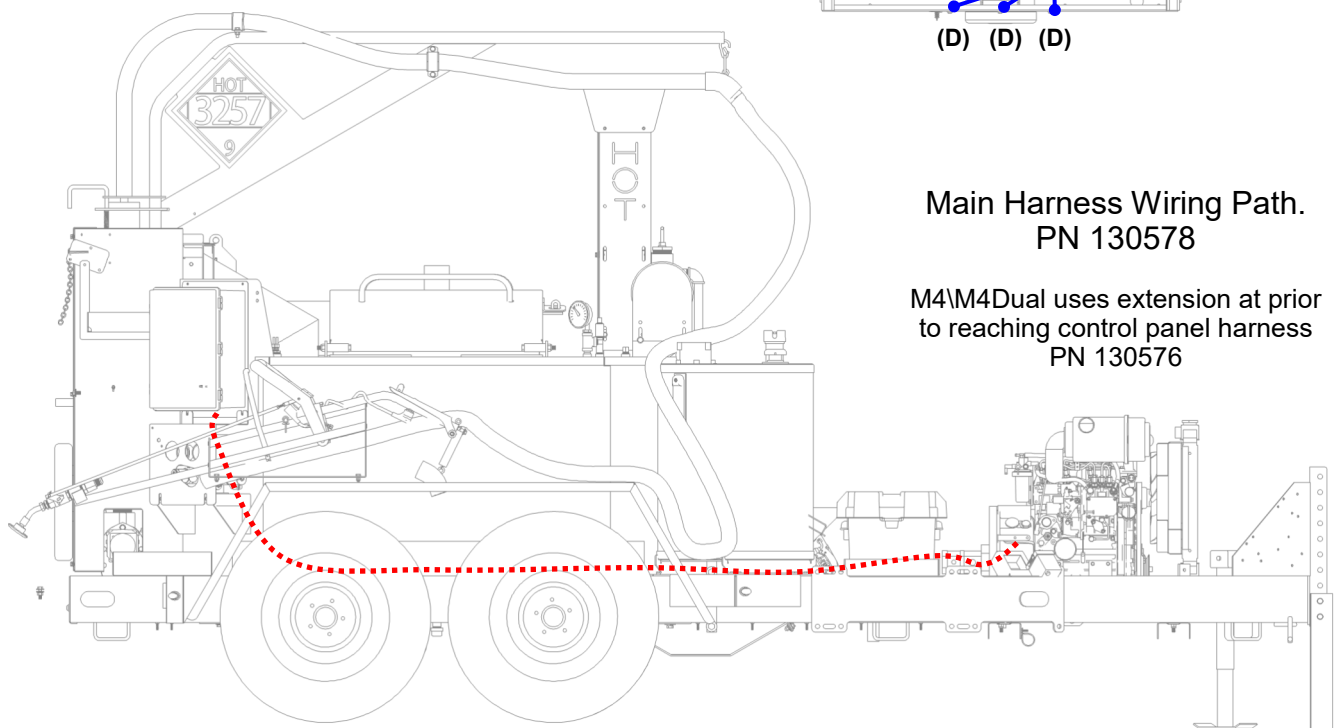
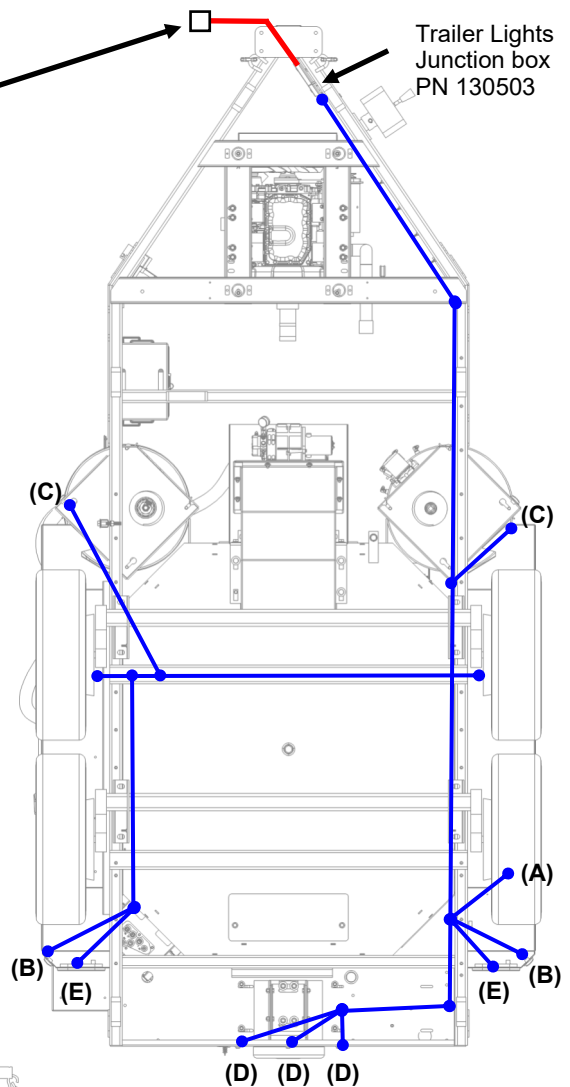
Front view of plug

BRAKING NOTE:

Brake controller is required on vehicle to activate the brakes on the trailer.

TRAILER LIGHT COMPONENTS:

PN	Material Description	Location
130360	LICENSE PLATE BRKT	(A)
130374	CLEARANCE LIGHT RED	(B)
130375	CLEARANCE LIGHT AMBER	(C)
130402	CLEARANCE LIGHT RED	(D)
130403	TAIL LIGHT LED OVAL	(E)
130405	GROMMET FOR TAILLIGHT	(E)

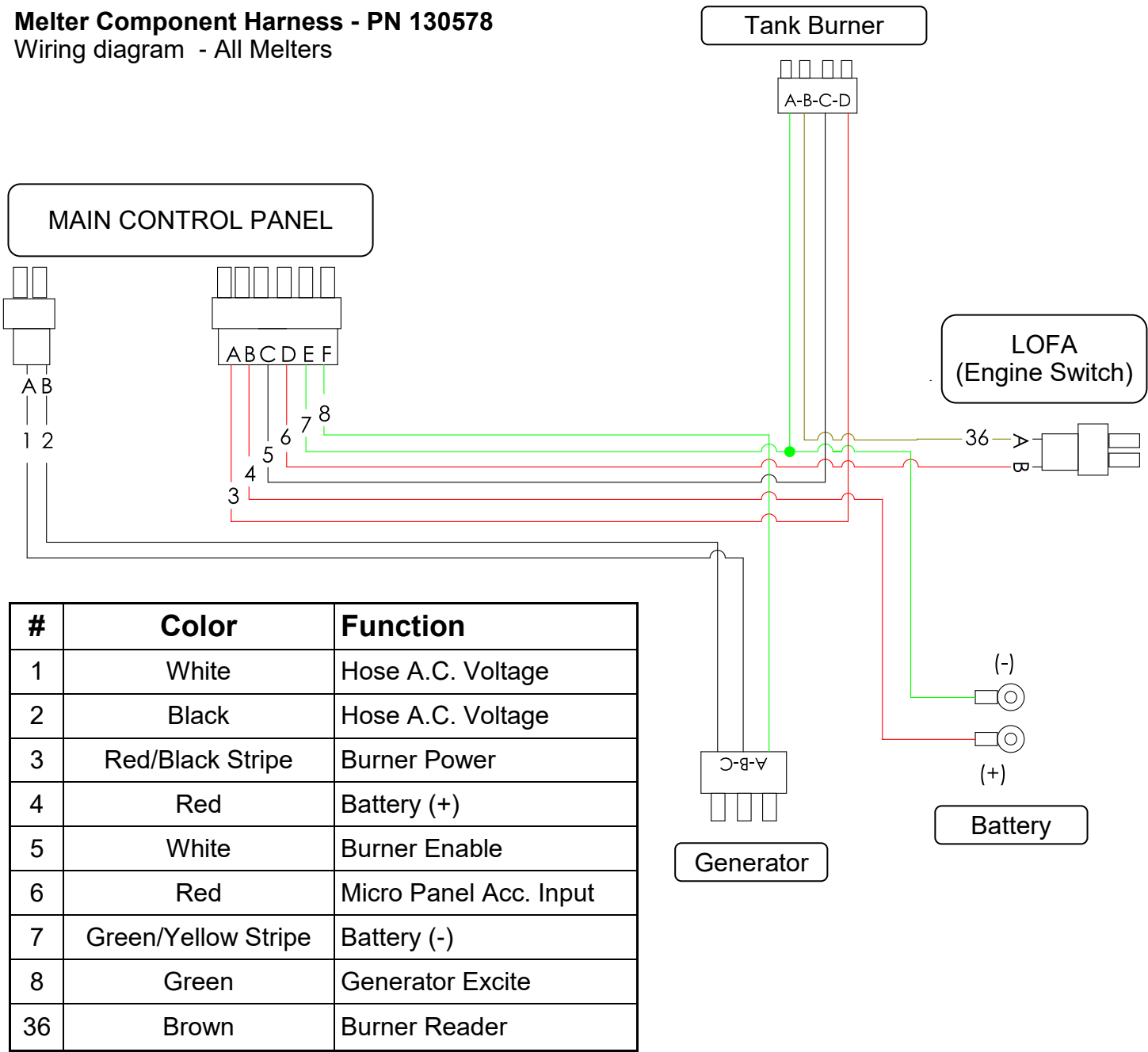


Main Harness Wiring Path.
PN 130578

M4\M4Dual uses extension at prior
to reaching control panel harness
PN 130576

M-Series Main Wiring Harness Diagram

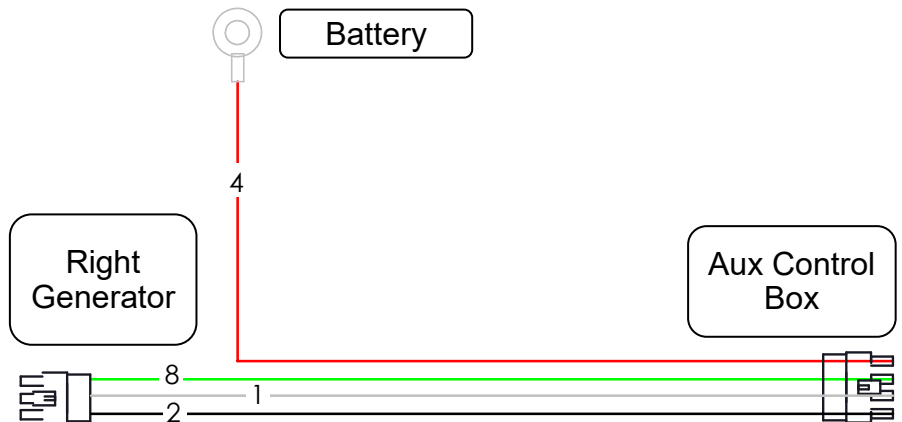
Melter Component Harness - PN 130578
Wiring diagram - All Melters



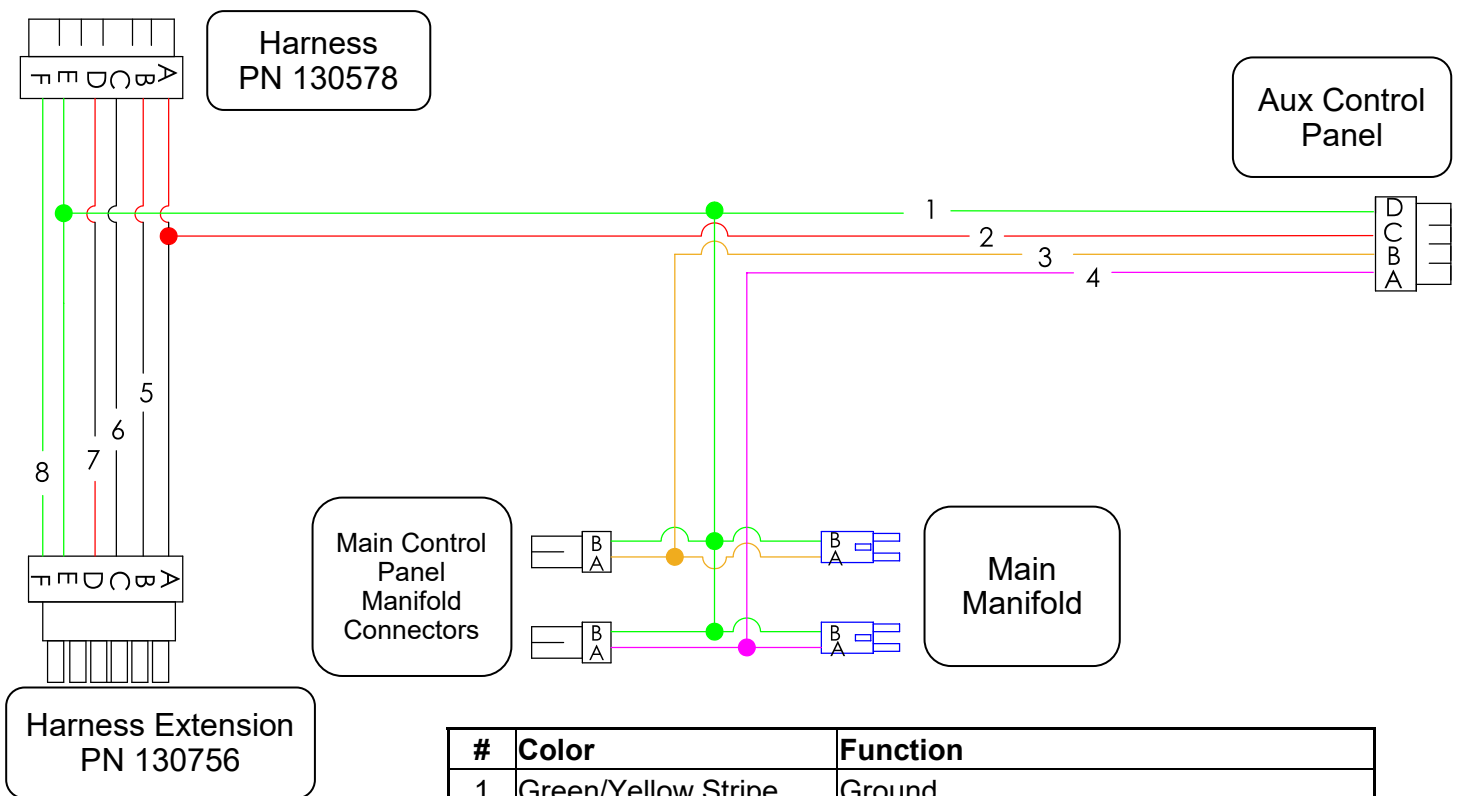
M4 Dual Main Wiring Harness Diagram

M4 Dual Wand Generator Harness PN 130578 Wiring diagram

#	Color	Function
1	White	Hose A.C. Voltage
2	Black	Hose A.C. Voltage
4	Red	Battery (+)
8	Green	Generator Excite

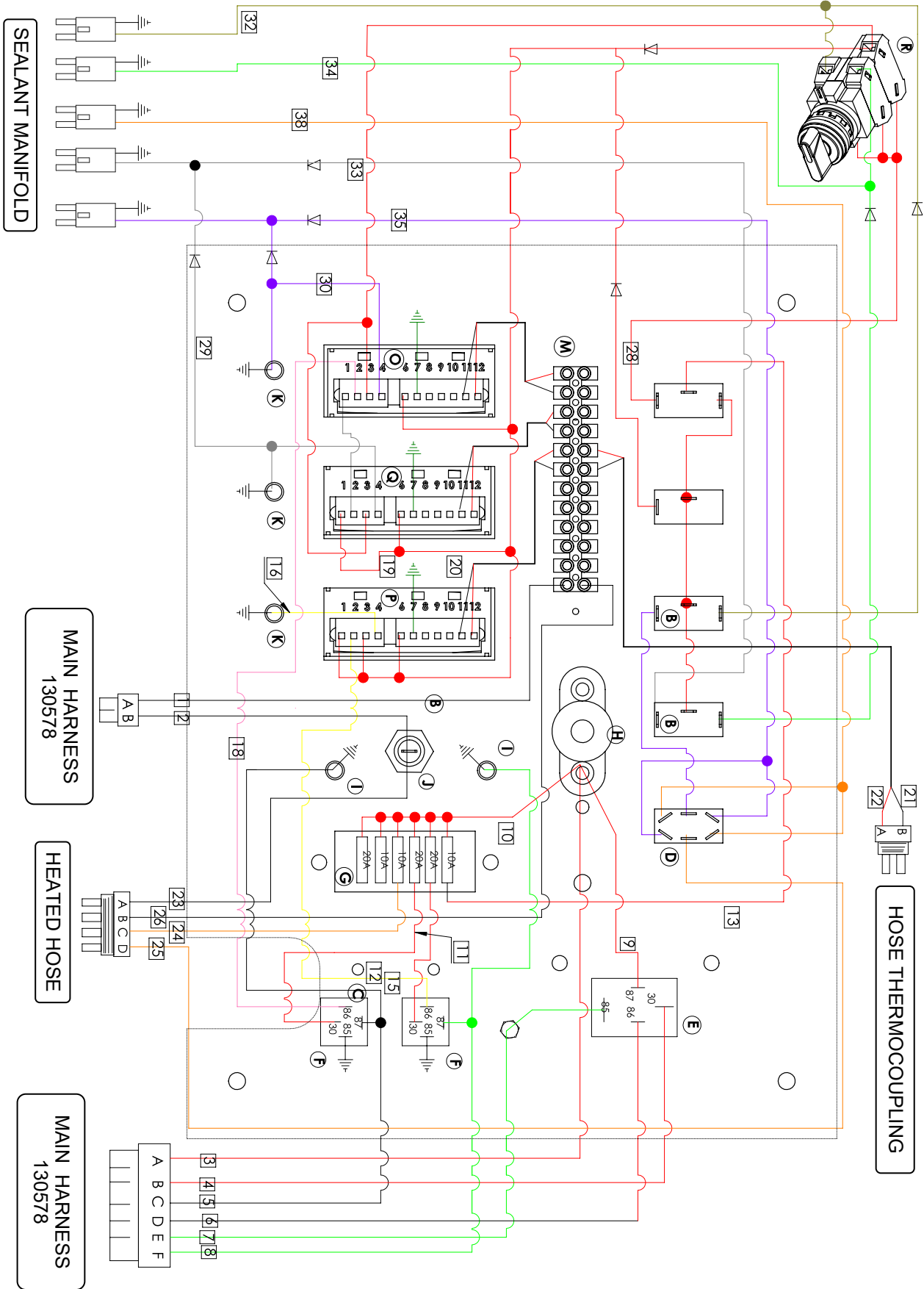


M4 Dual Wand Splitter Harness PN 130947 Wiring diagram



#	Color	Function
1	Green/Yellow Stripe	Ground
2	Red	Control Box Power
3	Tan	Pump Reverse Auto
4	Purple	Pump Forward Auto
5	Red	Battery Pass Through
6	White	Burner Pass Through
7	Red	Micro Panel Pass Through
8	Green	Generator Excite Pass Through

M-Series Control Panel Wiring Diagram

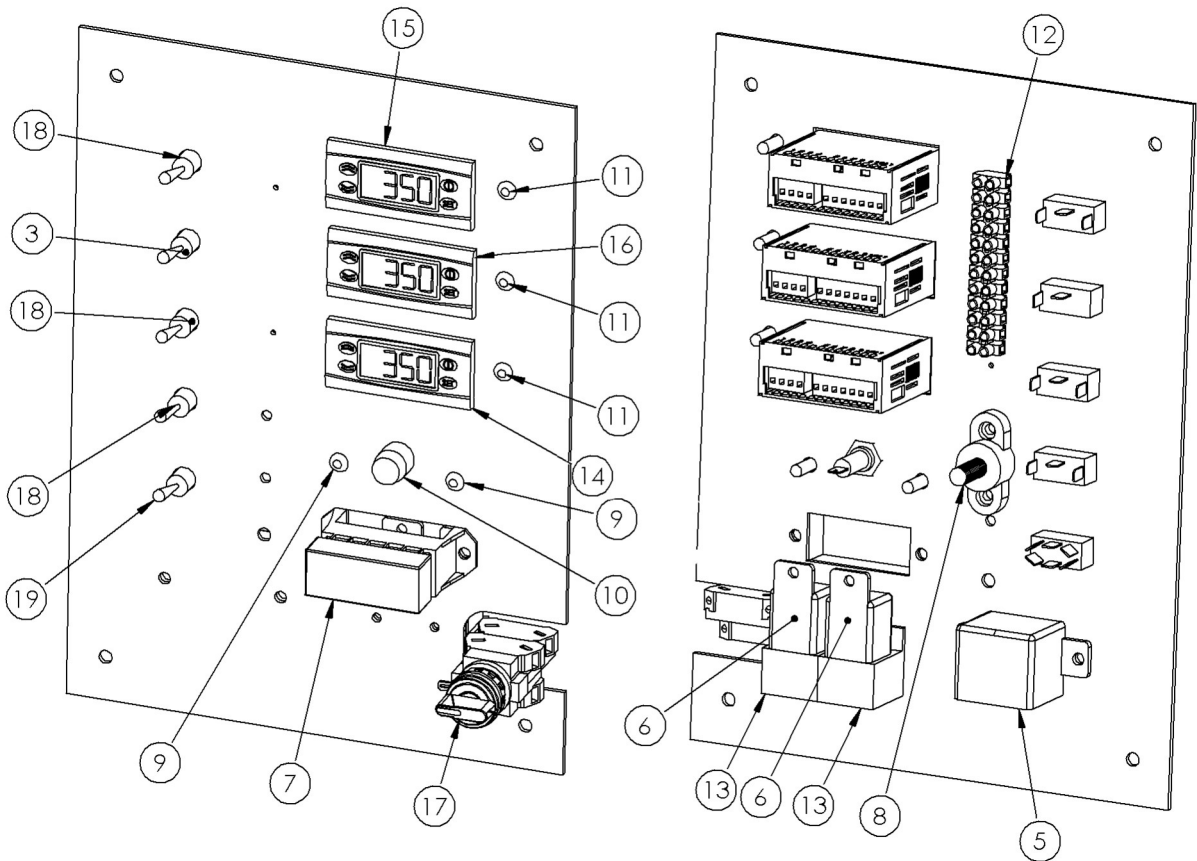


M-Series Control Panel Wiring Diagram

Number	Color	Function	AWG Wire Gauge
1	White	Hose AC Voltage	16
2	Black	Hose AC Voltage	16
3	Red/Black Stripe	Burner Power	14
4	Red	Battery (+)	12
5	White	Burner Enable	16
6	Red	Micro Panel Accessory Input	16
7	Green/Yellow Stripe	Battery (-)	12
8	Green	Generator Excite	16
9	Red	Accessory Relay Output	16
10	Red	Relay Panel Lug to Fuse	16
11	Red	Fuse to Relay	16
12	Red	Fuse to Burner Relay	16
13	Red	Fuse to Terminal Strip	16
14	Red	Terminal Strip to Hose Controller and Controller Strip	16
15	Yellow	Hose Controller to Relay	16
16	Yellow/Black Stripe	Hose Controller to Hose Light	16
17	Green/Yellow Stripe	Ground (ALL GROUND SYMBOLS ON DRAWING)	16
18	Pink	Material Controller to Burner Relay	16
19	White Sensor Wire	Controller to Terminal Strip	Sensor wire
20	Red Sensor Wire	Controller to Terminal Strip	Sensor wire
21	White Sensor Wire	Terminal Strip to Hose	Sensor wire
22	Red Sensor Wire	Terminal Strip to Hose	Sensor wire
23	Black	Hose AC	16
24	Orange	Fuse to Hose Accessory	16
25	Orange	Hose Switch to Low Flow Switch	16
26	White	Hose AC	16
28	Red	Manifold Switch to Rotary	16
29	Gray	Oil Controller to Agitator Manifold	16
30	Purple	Material Controller to Pump Manifold	16
31	Gray	Oil Controller to Material Controller	16
32	Tan	Manifold to Switch	16
33	Gray	Manifold to Agitator Switch	16
34	Green	Manifold to Rotary Switch #3	16
35	Purple	Manifold to Pump Switch	16
38	Orange	Manifold to Low Flow Switch	16

M-Series Control Panel Parts (130831)

#	Part #	Description	Qty.
3	130122	Toggle Switch SPST	1
5	130222	12V 75A Relay	1
6	130113	12V 30A Relay	2
7	429735	Fuse Block	1
8		Lug	1
9	130624	Yellow LED Light	2
10	152119	18 Amp Slow Blow Fuse	1
11	130625	Green LED Light	3
12		Terminal Strip	1
13	153870	Relay Base	2
14	200598	Heated Hose Controller	1
15	200597	Material Controller	1
16	200596	Oil Controller	1
17	130883	Selector Switch	1
18	130227	Toggle Switch SPDT	3
19	111204	Toggle Switch DPDT	1

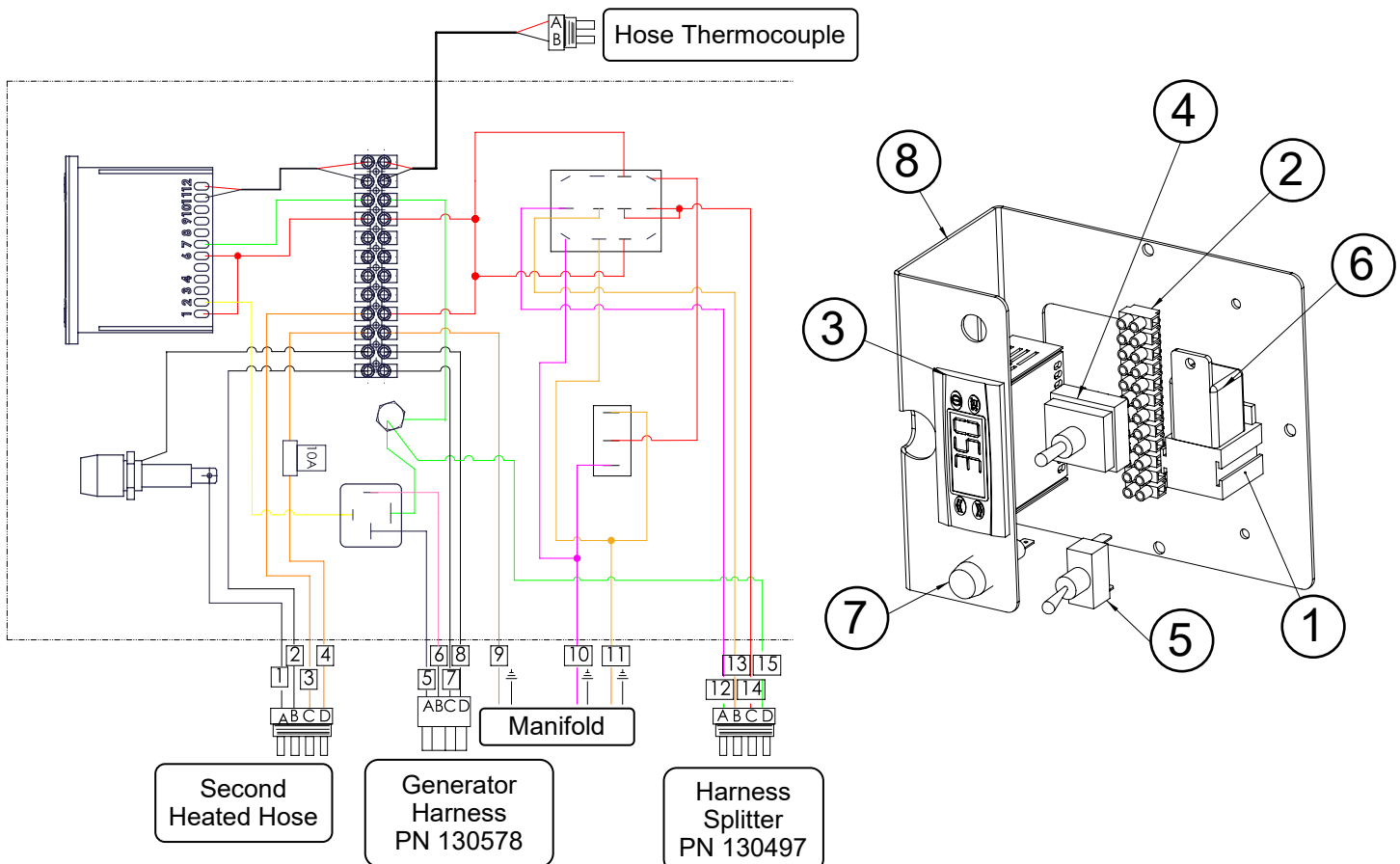


M4 Dual Auxiliary Control Panel Parts

#	Color	Function	AWG Wire Gauge
1	White	Hose AC Voltage	16
2	Black	Hose AC Voltage	16
3	Orange	TFC Inlet	16
4	Orange	TFC Outlet	16
5	Red	Power	16
6	Pink	Generator Excite	16
7	White	Generator AC	16
8	Black	Generator AC	16
9	Orange	TFC Output	16
10	Purple	Pump Forward	16
11	Tan	Pump Reverse	16
12	Purple	Pump Forward Auto	16
13	Tan	Pump Reverse Auto	16
14	Red	Power	16
15	Green/Yellow Stripe	Battery (-)	12

#	PART #	DESCRIPTION	QTY.
1	153870	Relay Base	1
2	-	Terminal Strip DIN	1
3	200598	Heated Hose Controller	1
4	-	4PDT Toggle Switch On/Off/On	1
5	130227	SPDT Toggle Switch	1
6	130113	12V 30A Relay	1
7	152119	Fuse Holder	1
8	430376	Plate - Control Panel	1
*	-	Control Panel Enclosure	1

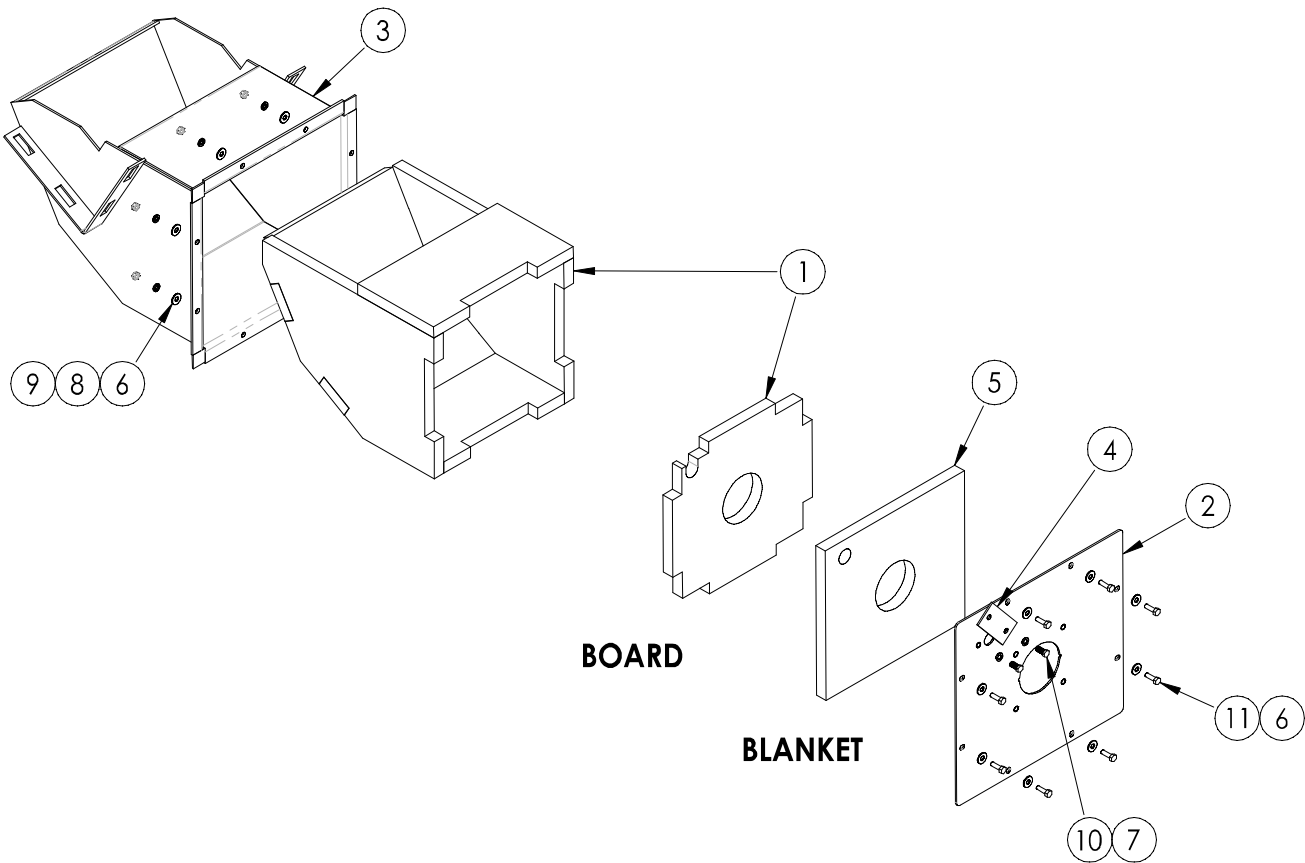
* NOT SHOWN



Combustion Chamber Parts

COMPLETE ASSEMBLY (ITEMS 1-11) - Part #404518

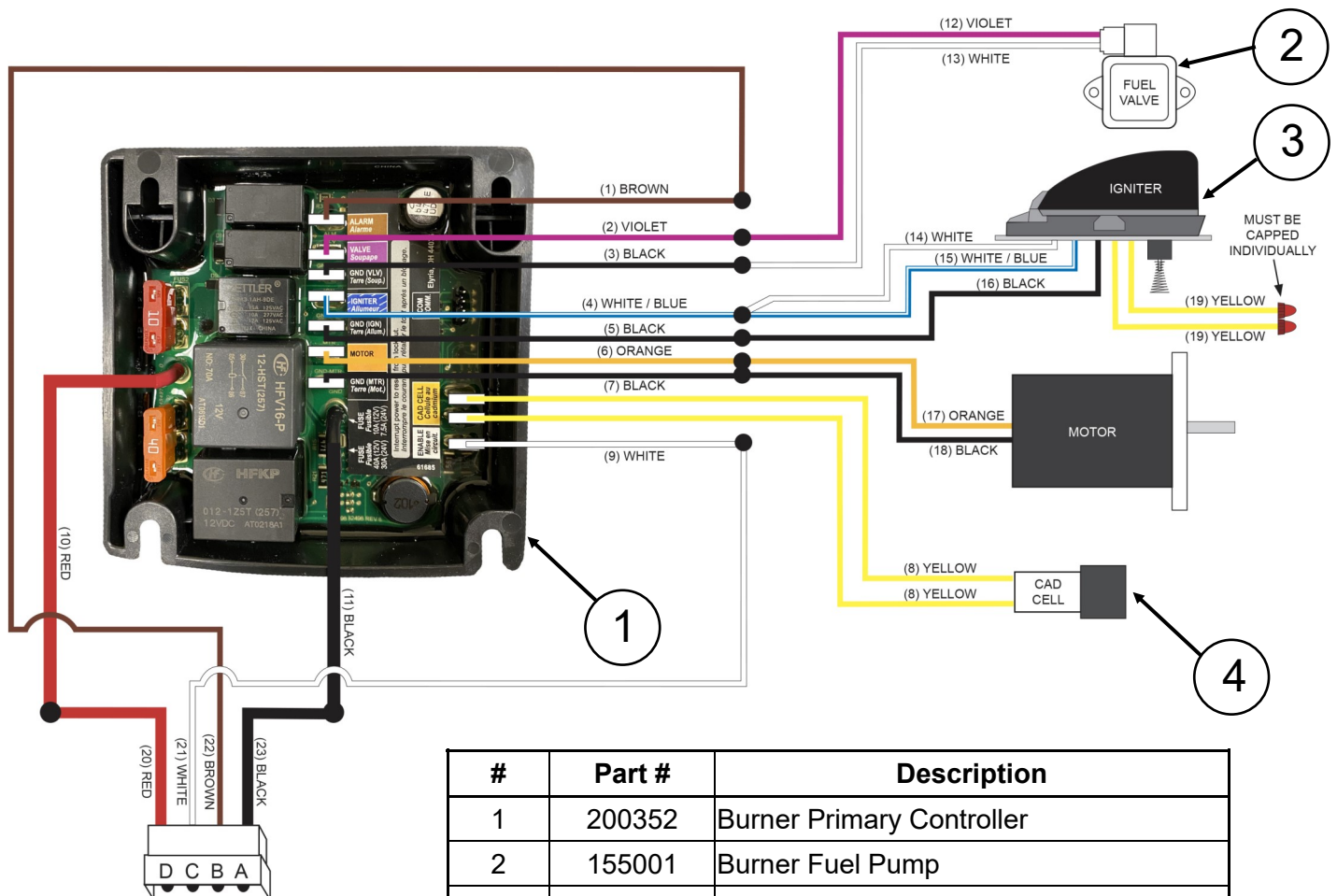
#	PART #	DESCRIPTION	QTY.
1	403400X	Chamber Lining Kit	1
2	402898	Burner Mount	1
3	402893	Heat Chamber Skin	1
4	417041	Inspection Cover	1
5	152487	Insulation Heat Chamber	1
6	100125	Washer-Flat .31	16
7	100093	Washer - Split Lock .38	2
8	100092	Washer - Split Lock .31	8
9	100068	Nut - Hex .31	8
10	100015	Bolt - Hex 3/8 - 16 X 3/4	2
11	100006	HHCS .31 X 1.0	8



Tank Burner Internal Wiring Diagram

#	COLOR	DESCRIPTION
1	Brown	Alarm To Controller
2	Violet	Fuel Valve To Controller
3	Black	Fuel Valve Ground To Controller
4	Wht/Blu	Igniter To Controller
5	Black	Igniter Ground To Controller
6	Orange	Motor To Controller
7	Black	Motor Ground To Controller
8	Yellow	Cad Cell To Controller (x2)
9	White	Control Circuit Enable To Controller
10	Red	12V (+) Input To Controller
11	Black	Ground (-) To Controller

#	COLOR	DESCRIPTION
12	Violet	Fuel Valve Input Lead
13	White	Fuel Valve Ground Lead
14	White	Secondary Igniter Input Lead
15	Wht/Blu	Primary Igniter Input Lead
16	Black	Igniter Ground Lead
17	Orange	Motor Input Lead
18	Black	Motor Ground Lead
19	Yellow	Not Used (Capped Individually) X2
20	Red	12V (+) Power (Wiring Harness)
21	White	Burner Enable (Wiring Harness)
22	Brown	LOFA Alarm (Wiring Harness)
23	Black	Ground From Relay (Wiring Harness)

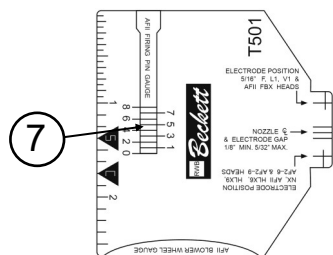


#	Part #	Description
1	200352	Burner Primary Controller
2	155001	Burner Fuel Pump
3	152173	Burner Ignition Transformer Assembly
4	152105	Burner Cad Cell (Electric Eye)

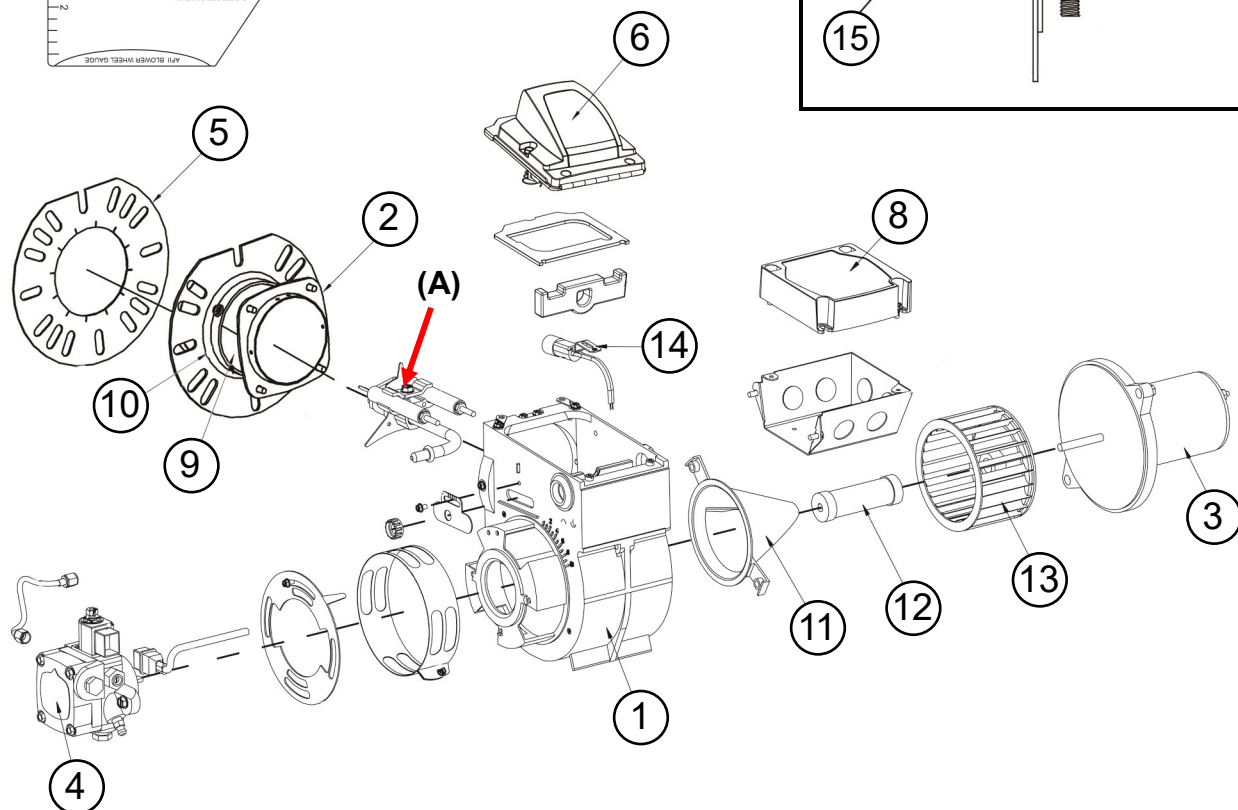
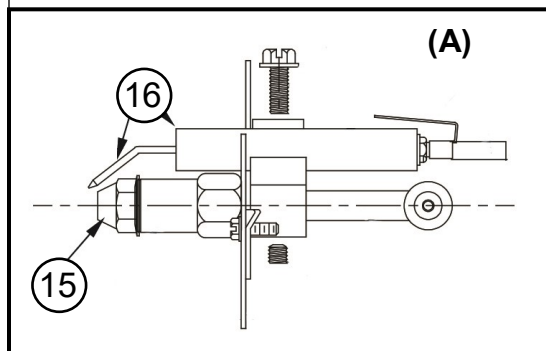
Tank Burner Parts

#	PART #	DESCRIPTION
1	152197	Tank Burner, Complete M1 & C1
1	404428	Tank Burner, Complete M2
1	404388	Tank Burner, Complete M4 & MA4
2	153505	Square Plate, Gasket
3	152191	Tank Burner Motor (Items #12 & #13)
4	155001	Fuel Pump
5	152128	Gasket, Burner Flange
6	152173	Ignition Transformer Assembly
7	152668	Nozzle / Electrode Set Gauge
8	200352	Primary Control Assembly
9	120443	Air Tube

#	PART #	DESCRIPTION
10	153446	Burner Head Tube
11	152398	Air Inlet Guide
12	152399	Coupling
13	152466	Blower Wheel
14	152105	Cad Cell (Electric Eye) Assembly
15	152305	Nozzle Tip M1 & C1 1.75gph x 90B
15	152204	Nozzle Tip M2 2.00gph x 90B
15	153445	Nozzle Tip M4 & MA4 2.25gph x 90B
16	152106	Electrode Rod Assembly
*	130166	Fuel Pressure Gauge
		* - Not Shown

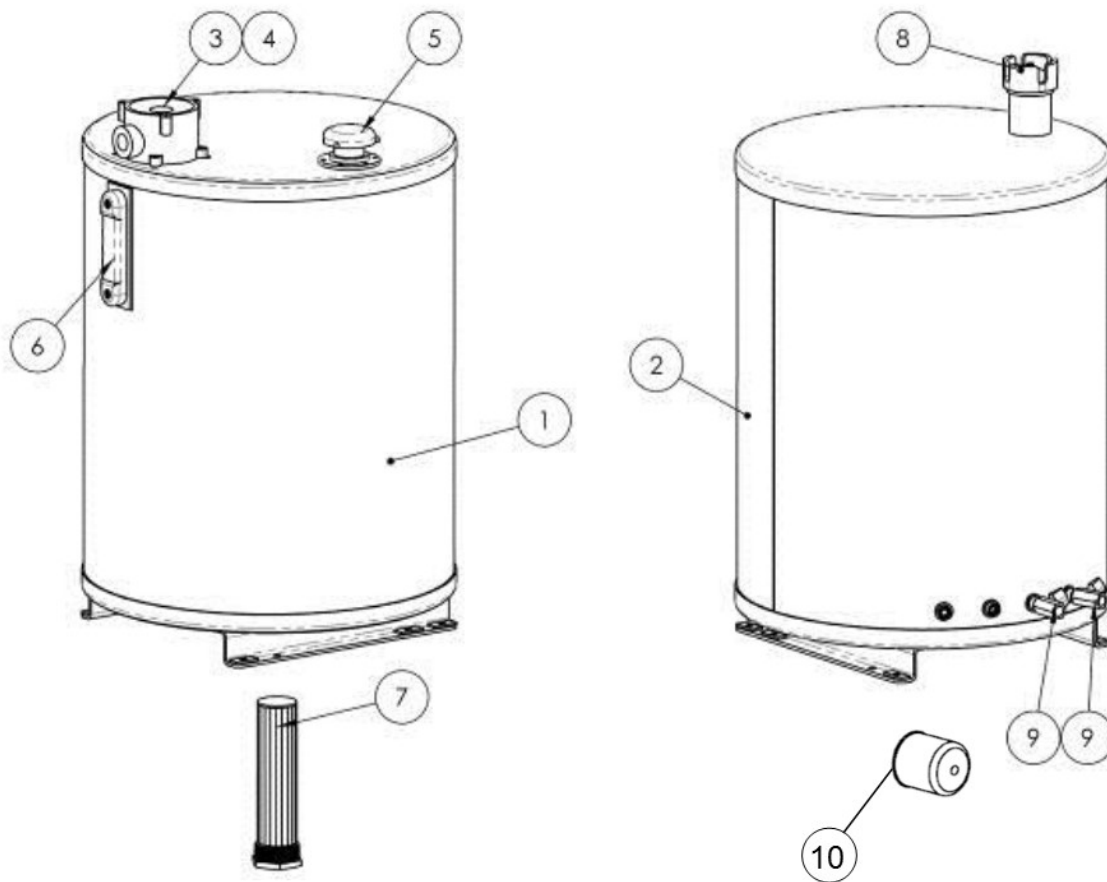


Complete Burner Nozzle Line Assembly - Part #155328



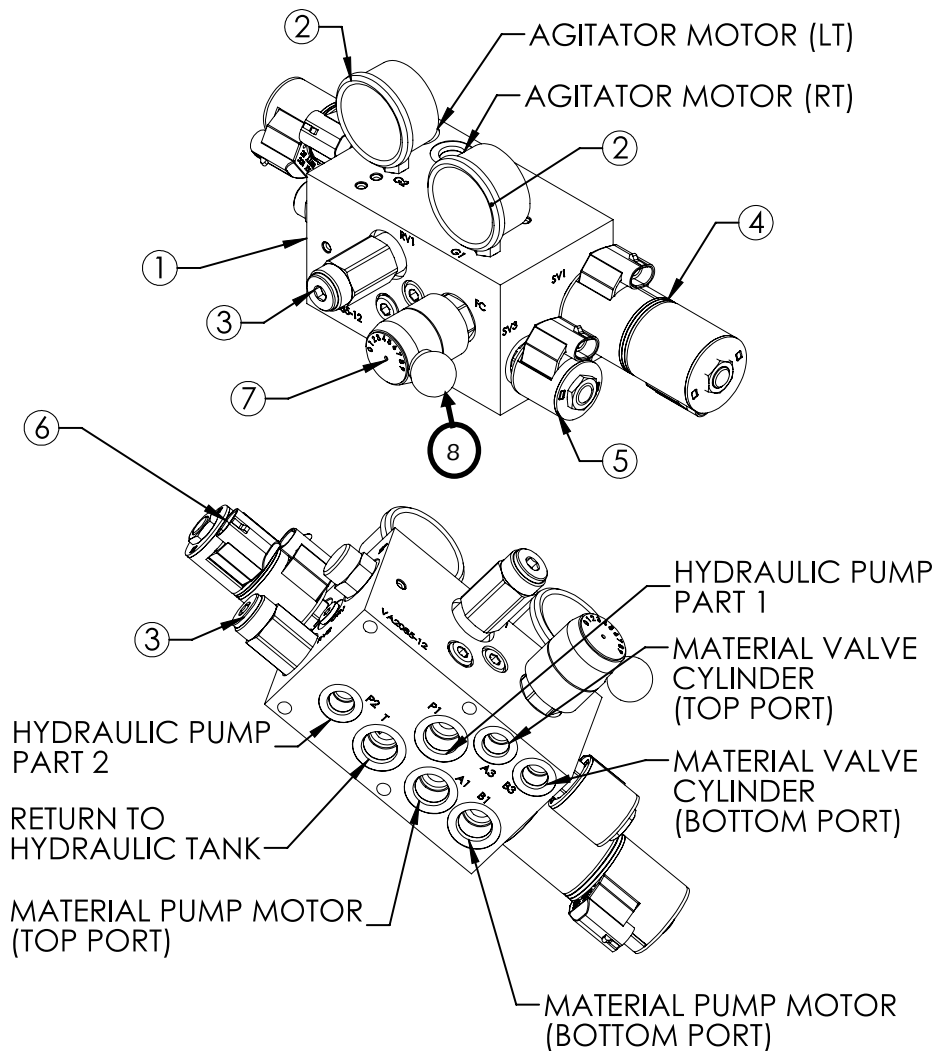
M-Series Hydraulic Reservoir and Diesel Tank Parts

#	PART #	DESCRIPTION
1	172618	Hydraulic Tank
2	309-074-004	Diesel Tank
3	172127	Return Filter Assembly (Non-Compressor)
4	170407	Element - Return Filter (Non-Compressor)
5	152044	Filler Cap Assembly
6	171631	Sight Gauge
7	172186	Suction Strainer
8	156463	Fuel Gauge / Cap
9	120743	Fuel Shut-off Valve
10	170169	Fuel filter

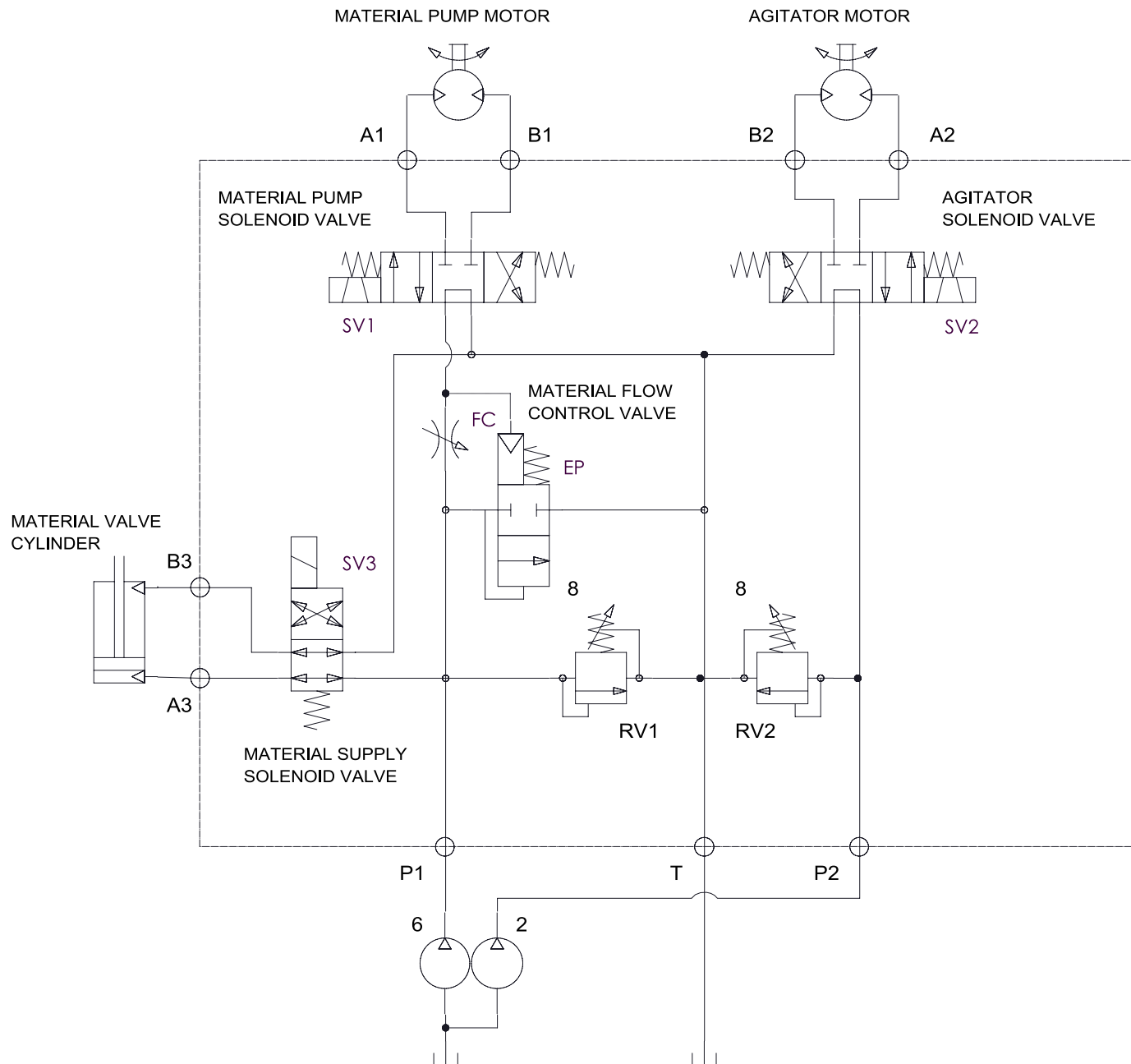


M-Series Single Hose Hydraulic Manifold Parts

#	Part #	Description
1	172371	Hydraulic Manifold
2	171597	Gauge
3	172587	Relief Valve (Set at 800 PSI)
4	172226	Spool and Coil Kit for Material Pump
	172224	Spool for Material Pump
	172225	Coil for Material Pump (2 Required)
5	172589	Spool and Coil Kit for FC (Flow Control)
	172557	Spool for FC (Flow Control)
	172585	Coil for FC (Flow Control)
6	172583	Spool and Coil Kit for Agitator
	172584	Spool for Agitator
	172585	Coil for Agitator (2 Required)
7	172563	Rotary Flow Control
8	172566	Handle Kit (Knob/Housing)

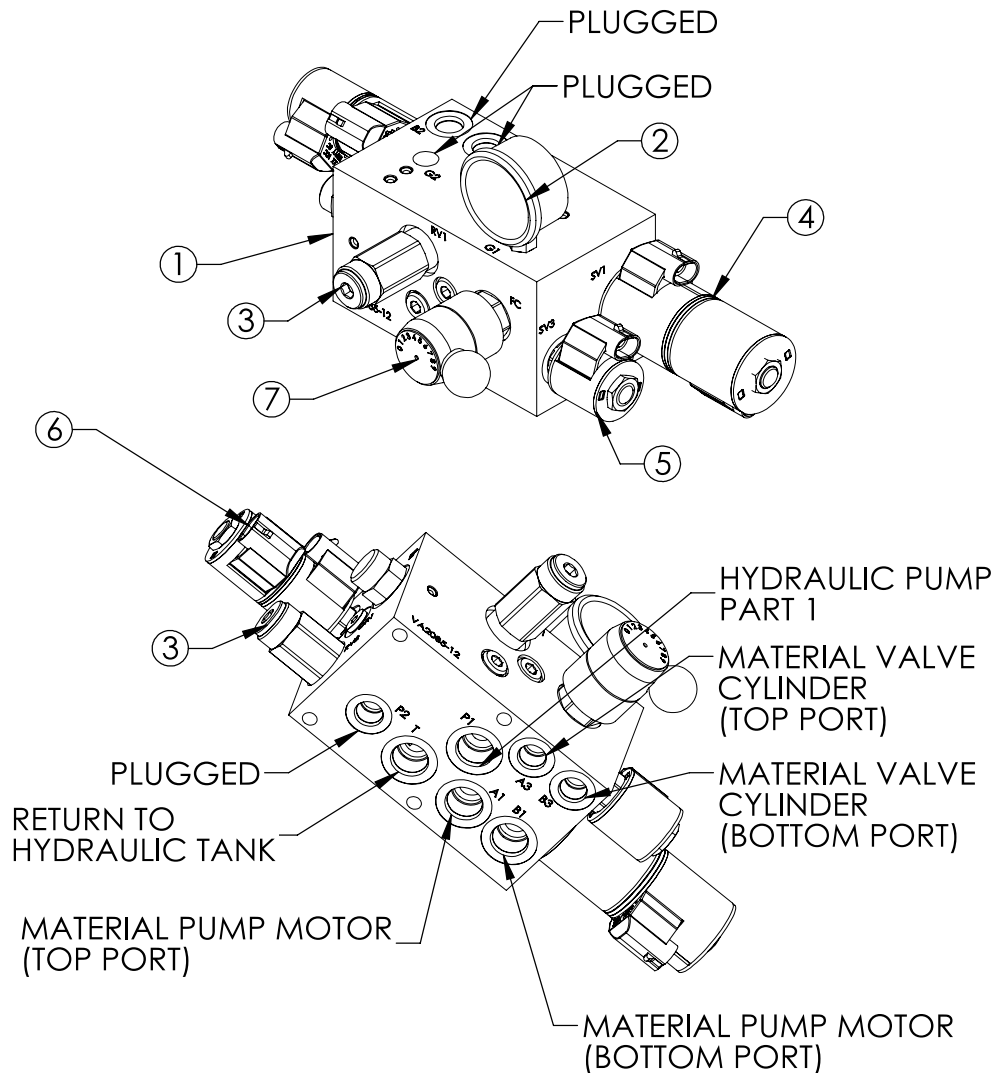


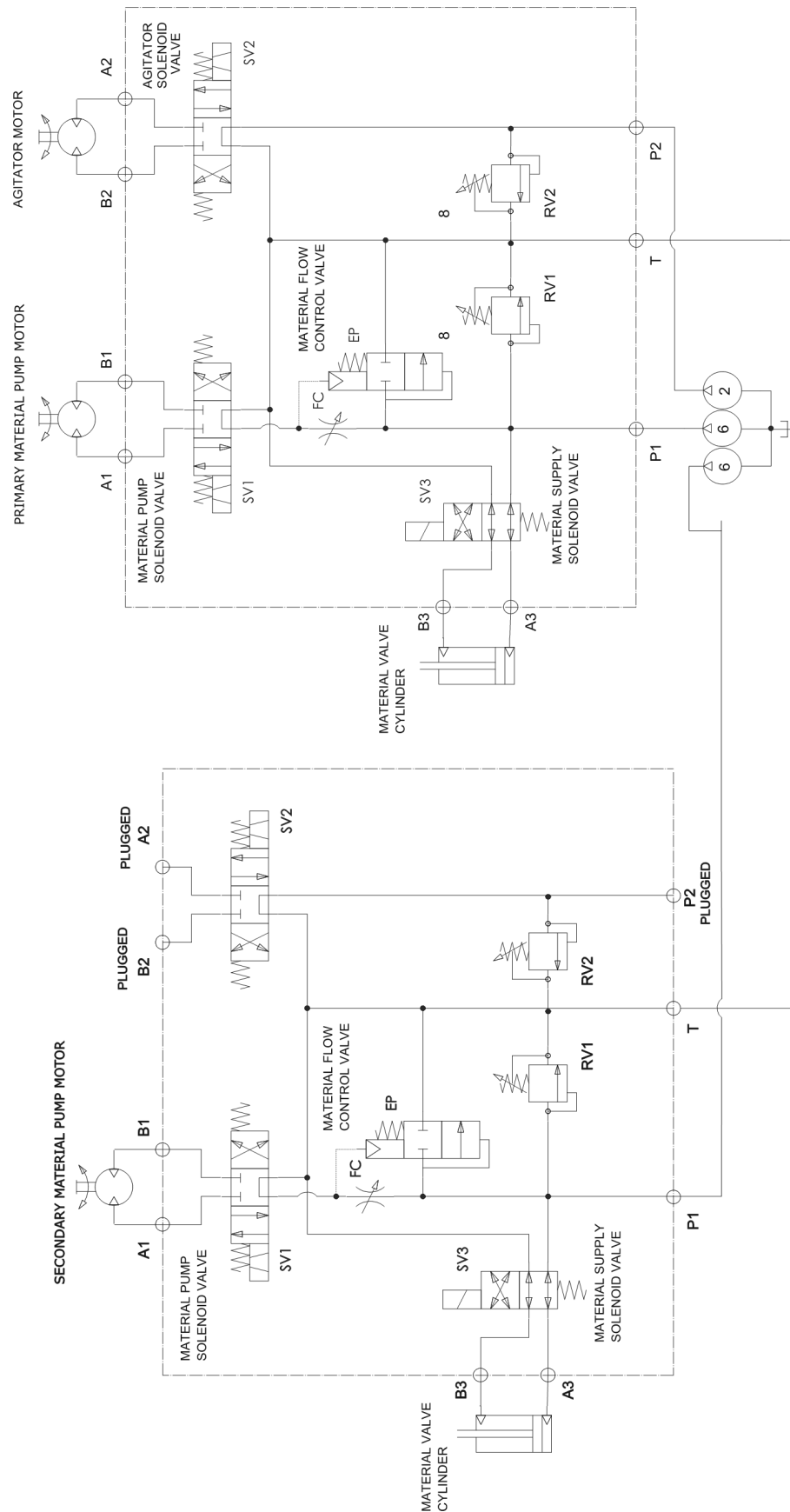
M-Series Single Hose Hydraulic Schematic



M4 Dual Hose Hydraulic Manifold Parts

#	Part #	Description
1	172371	Hydraulic Manifold
2	171597	Gauge
3	172587	Relief Valve (Set at 800 PSI)
4	172226	Spool and Coil Kit for Material Pump
	172224	Spool for Material Pump
	172225	Coil for Material Pump (2 Required)
5	172589	Spool and Coil Kit for FC (Flow Control)
	172557	Spool for FC (Flow Control)
	172585	Coil for FC (Flow Control)
6	172583	Spool and Coil Kit for Agitator
	172584	Spool for Agitator
	172585	Coil for Agitator (2 Required)
7	172563	Rotary Flow Control

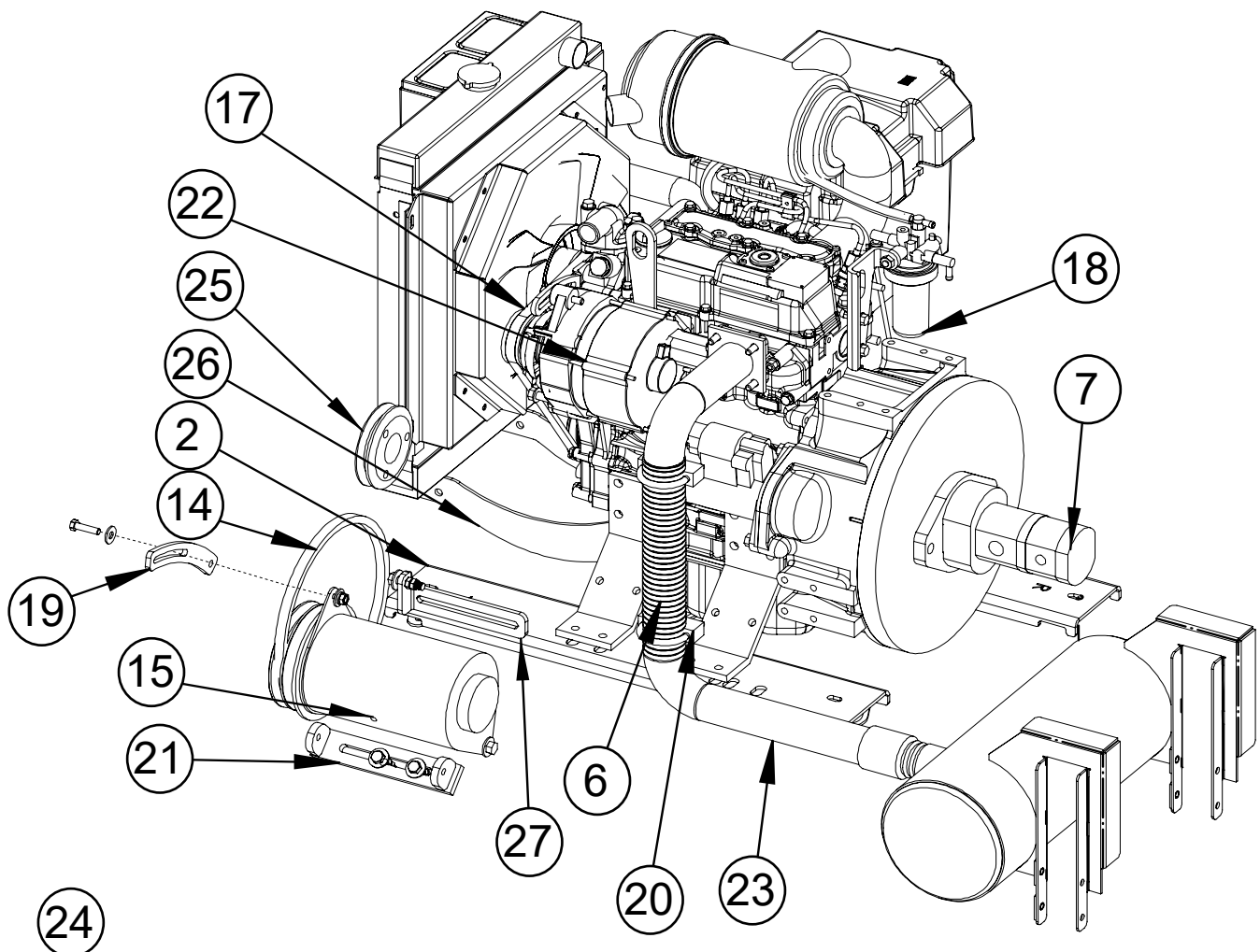




M-Series Diesel Engine Components

See the included engine manual for additional engine component diagrams and information.

#	PART #	DESCRIPTION	#	PART #	DESCRIPTION
2	425244	Plate, Engine Mount LH	21	406016	Generator Mounting Bracket
6	155143	Flexible Exhaust	22	156283	30A Alternator
7	156057	Hydraulic Pump(s)	23	155976	Exhaust Tube Weld
14	110947	Generator Belt A-29	24*	407981	Generator Guard Weld*
15	130431	Generator	25	152808	Pulley Single Belt
17	111372	Fan Belt	26	430104	Plate Radiator Bracket
19	422256	Short Gen. Adjust Bracket	27	423399	Plate Generator Stiffener
20	100512	Muffler Clamp			

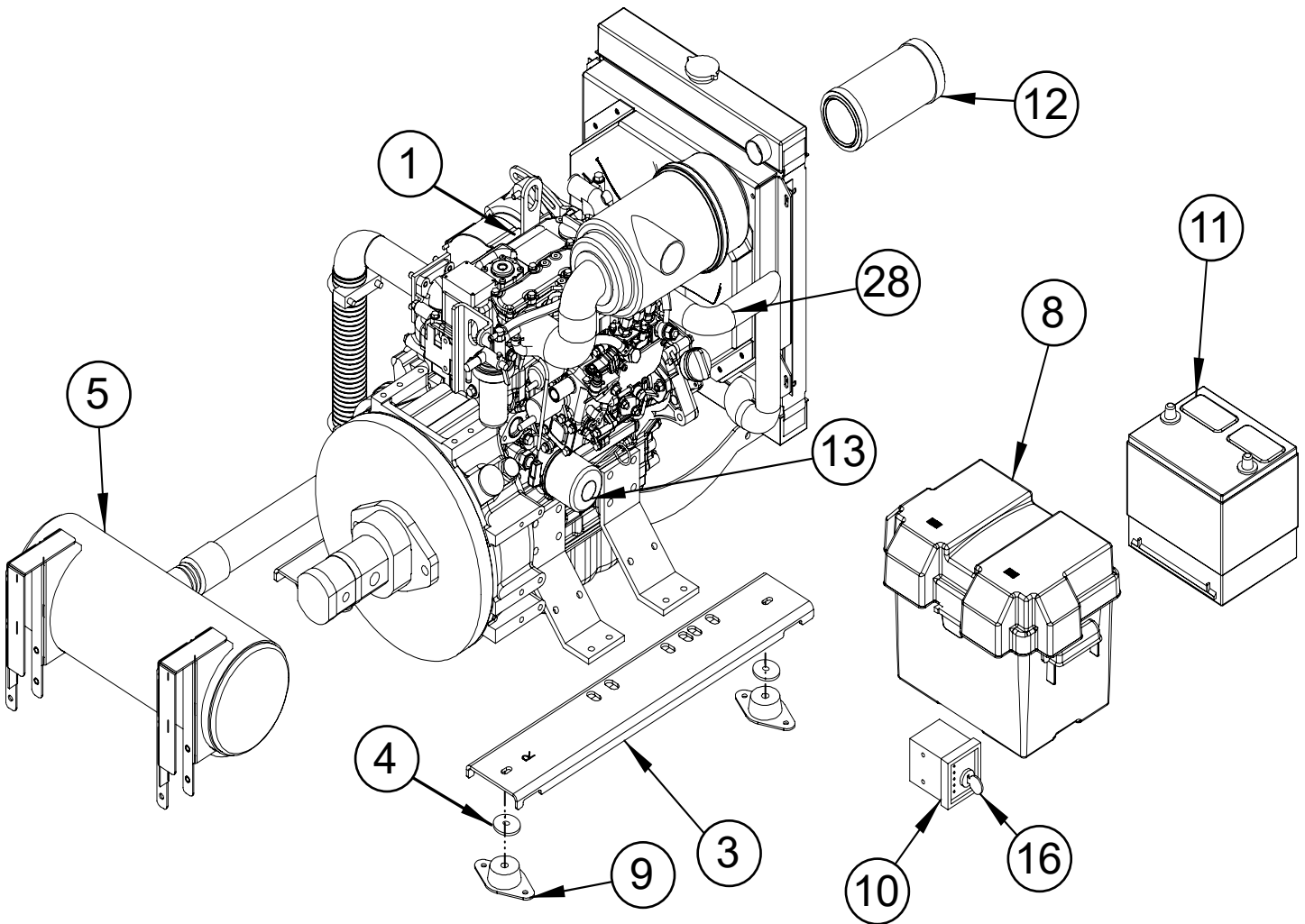


* NOT SHOW, NO ENGINE ENCLOSURE MODEL

M-Series Diesel Engine Components

See the included engine manual for additional engine component diagrams and information.

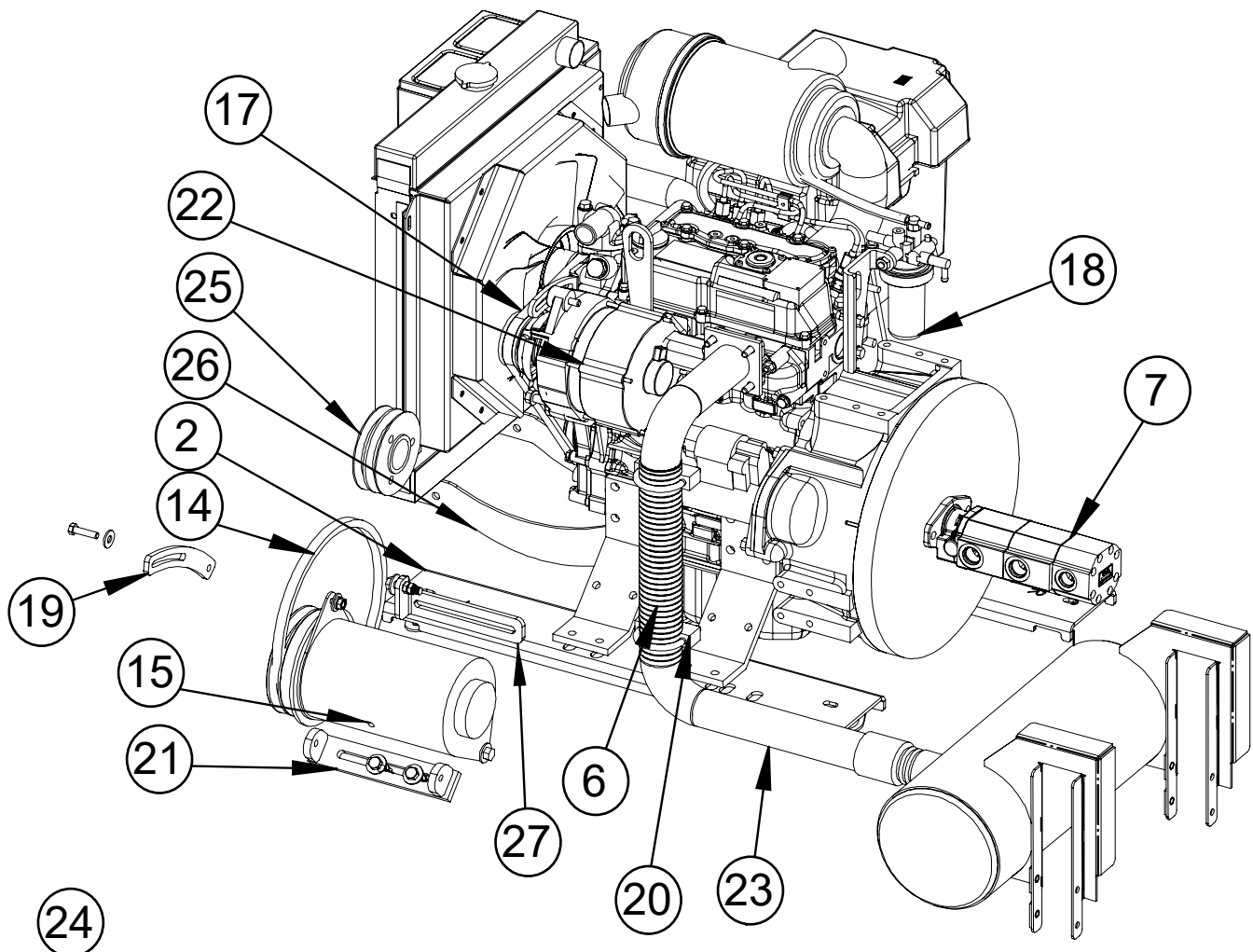
#	PART #	DESCRIPTION	#	PART #	DESCRIPTION
1	111838	Engine	11	150212	Battery 26/26R-50-Wet
3	422167	Plate, Engine Mount RH	12	111111	Air Filter
4	100126	Washer - Flat .38	13	111337	Oil Filter
5	409037	Exhaust Weld	16	155266	Ignition Key
8	200543	Battery Box	28	111872	Radiator Hose
9	152047	Rubber Isolator	*	111457	Fuel Filter
10	111108	LOFA Control Switch			* Not Shown



M4 Dual Hose Diesel Engine Components

See the included engine manual for additional engine component diagrams and information.

#	PART #	DESCRIPTION	#	PART #	DESCRIPTION
2	425244	Plate, Engine Mount LH	21	406016	Generator Mounting Bracket
6	155143	Flexible Exhaust	22	156164	60A Alternator
7	155927	Hydraulic Pump(s)	23	155976	Exhaust Tube Weld
14	110947	Generator Belt A-29	24*	407981	Generator Guard Weld*
15	130431	Generator	25	111868	Pulley Dual Belt
17	111372	Fan Belt	26	430104	Plate Radiator Bracket
19	422256	Short Gen. Adjust Bracket	27	423399	Plate Generator Stiffener
20	100512	Muffler Clamp			

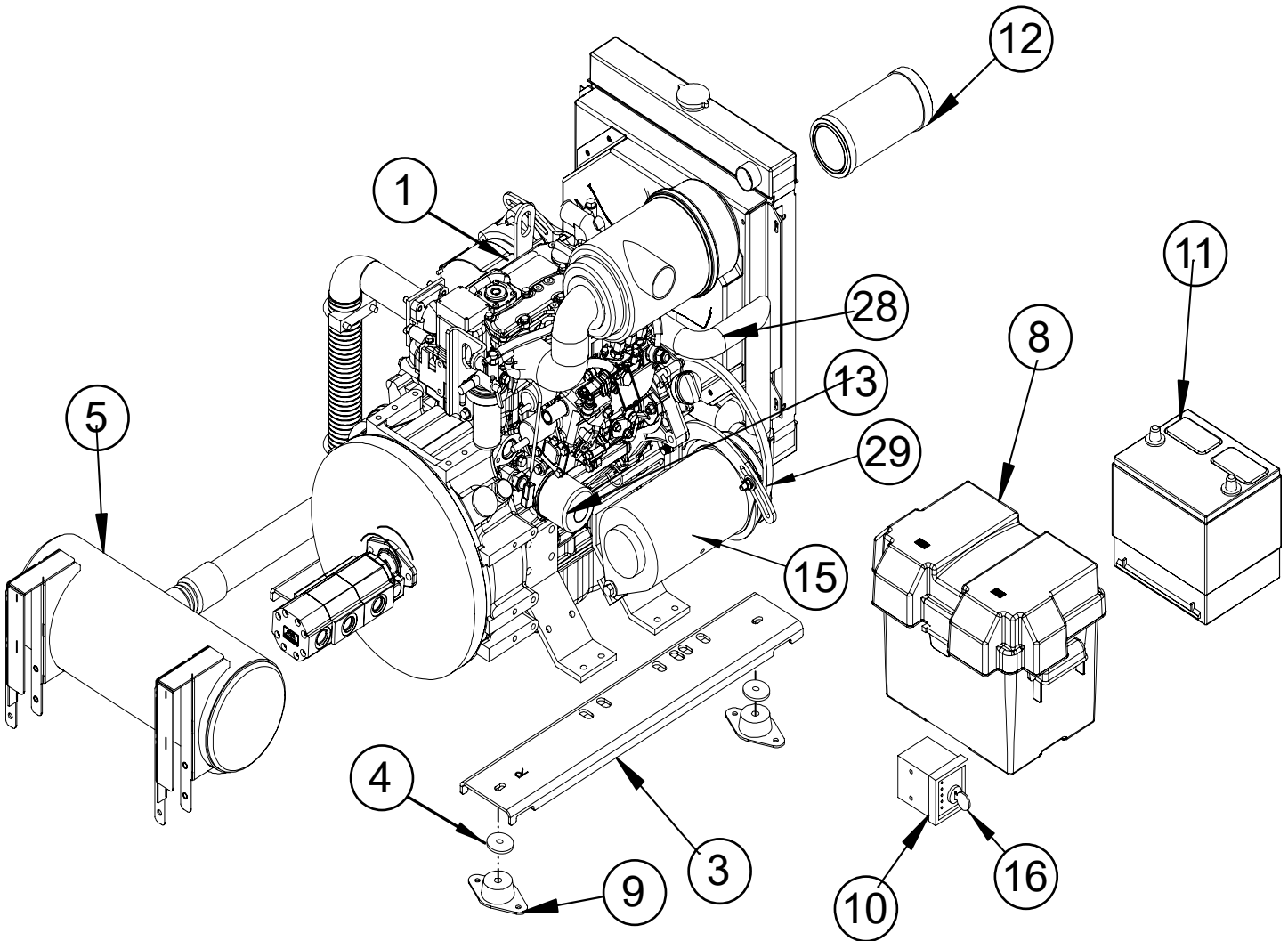


* NOT SHOW, NO ENGINE ENCLOSURE MODEL

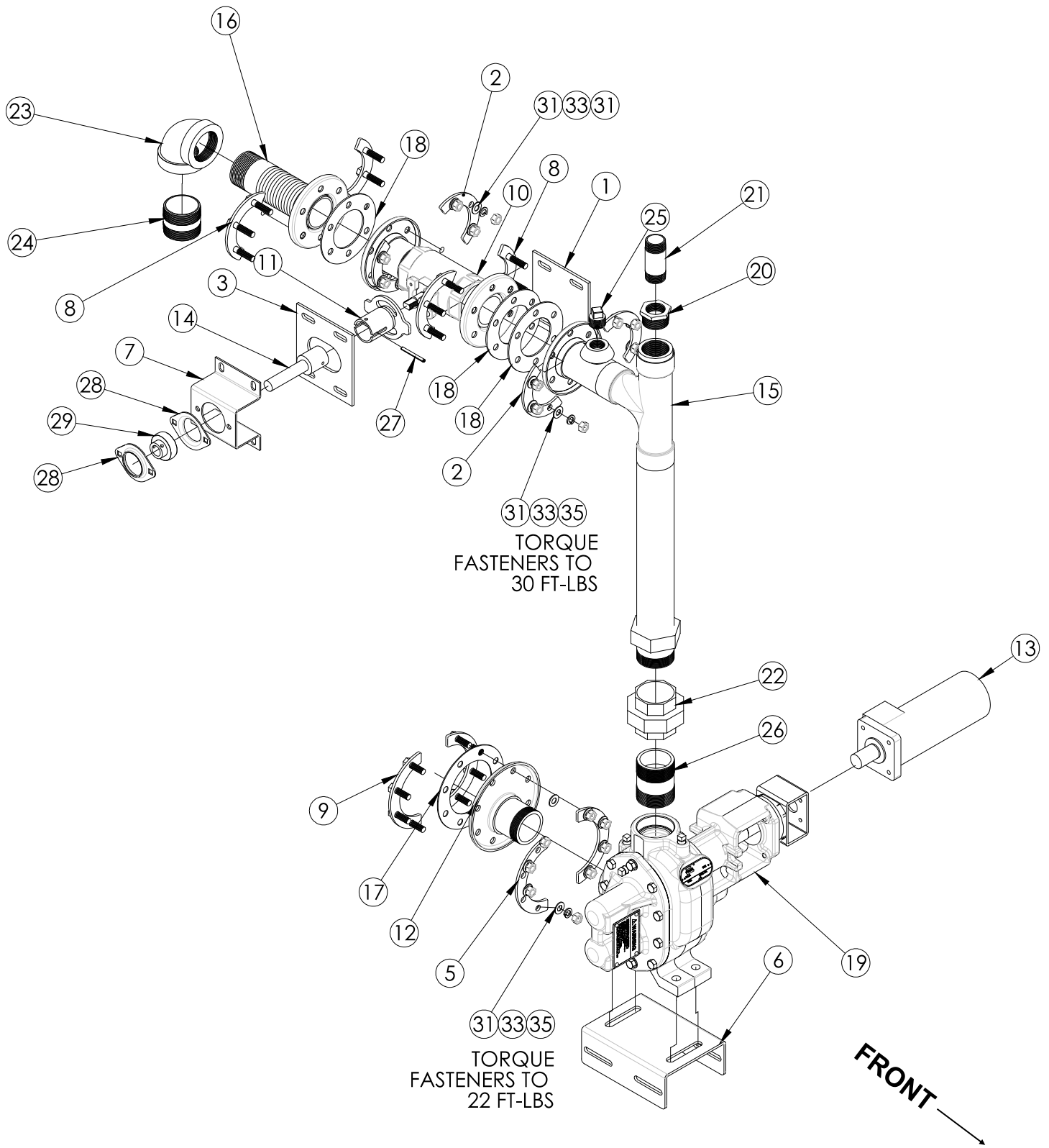
M4 Dual Hose Diesel Engine Components

See the included engine manual for additional engine component diagrams and information.

#	PART #	DESCRIPTION	#	PART #	DESCRIPTION
1	111838	Engine	12	111111	Air Filter
3	422167	Plate, Engine Mount RH	13	111337	Oil Filter
4	100126	Washer - Flat .38	15	130431	Generator
5	409037	Exhaust Weld	16	155266	Ignition Key
8	200543	Battery Box	28	111872	Radiator Hose
9	152047	Rubber Isolator	29	430111	Long Gen. Adjust Bracket
10	111108	LOFA Control Switch	*	111457	Fuel Filter
11	150212	Battery 26/26R-50-Wet			* Not Shown



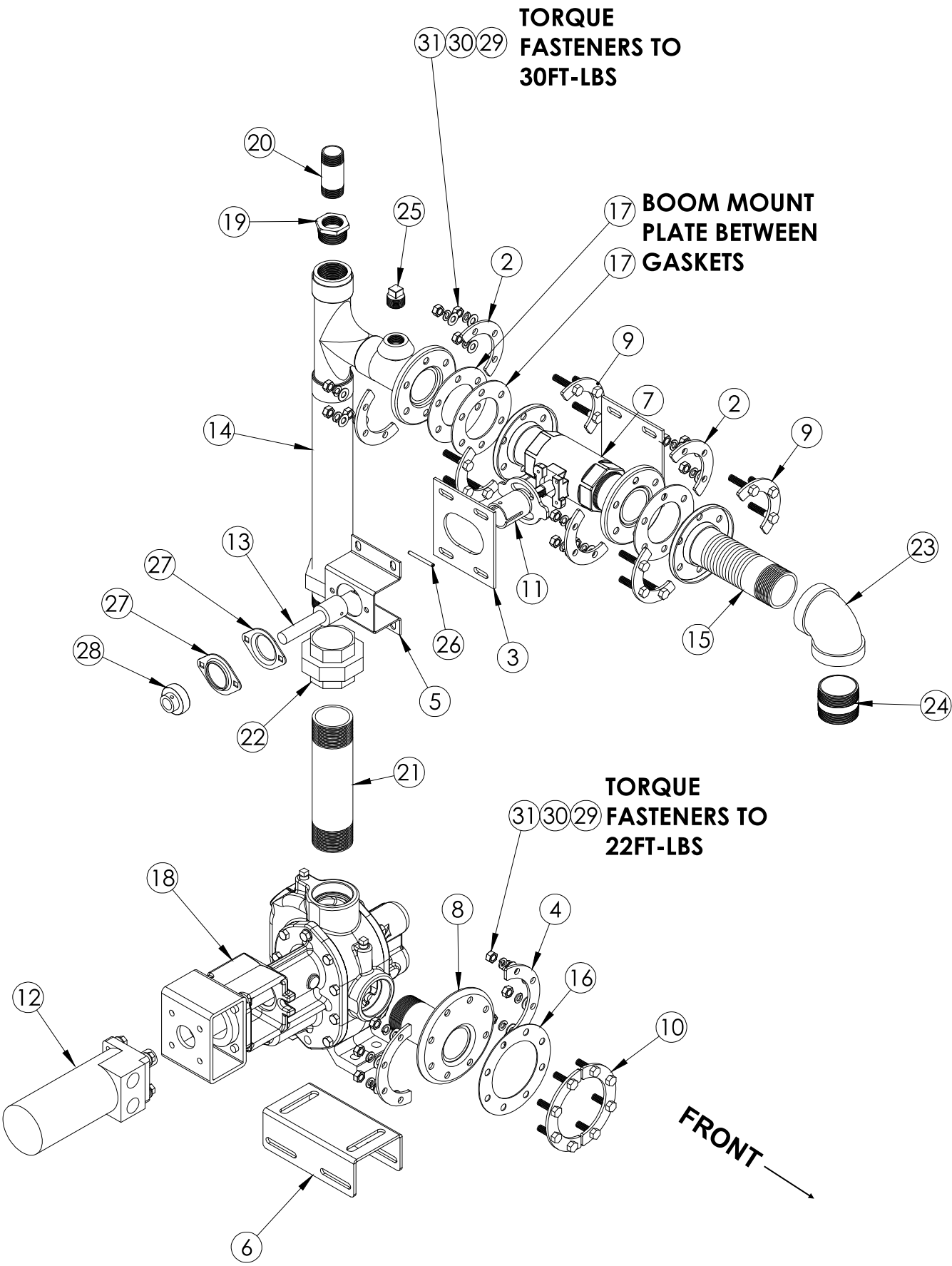
M1 and M2 Sealant Material Plumbing Parts



M1 and M2 Sealant Material Plumbing Parts

#	PART #	DESCRIPTION	QTY.
1	430519	Plate, Valve Brace	1
2	430421	Plate - Backer	4
3	430167	Plate, Valve Brace	1
5	429818	Plate - Backer	2
6	429599	Plate - Pump	1
7	429584	Plate, Bearing Mount	1
8	409576	Flange Support Weld	4
9	409484	Flange Support Weld	2
10	409032	Valve Sub - Assembly	1
11	407838	Coupling Weldment	1
12	406162	Offset Flange Weld	1
13	170469	Motor-6" High Speed Motor	1
14	155997	Rod Adapter	1
15	155920	Tee Weld	1
16	155375	Flex Tube Weld 7" Long	1
17	152127	Gasket 3"	1
18	152126	Flange Gasket 2"	3
19	120803	Pump	1
20	120774	Bushing - Hex 1.5 X 1	1
21	120682	Pipe-Nipple - 1.0 X 3.0	1
22	120611	Pipe Union	1
23	120598	2" Pipe Elbow	1
24	120396	2" Close Nipple	1
25	120291	Square Head Pipe	1
26	120029	Pipe-Nipple - 2 X 3	1
27	111737	Spring Pin .18 X 2	1
28	110501	Sphere Bearing Flange	2
29	110500	Bearing Only - .75 SB204 - 12	1
33	100093	Washer - Split Lock .38	30
35	100069	Nut - Hex .38	27
37	100016	HHCS .38 X 1.00	10
*	409942x	Thermocouple Relocation Kit	1

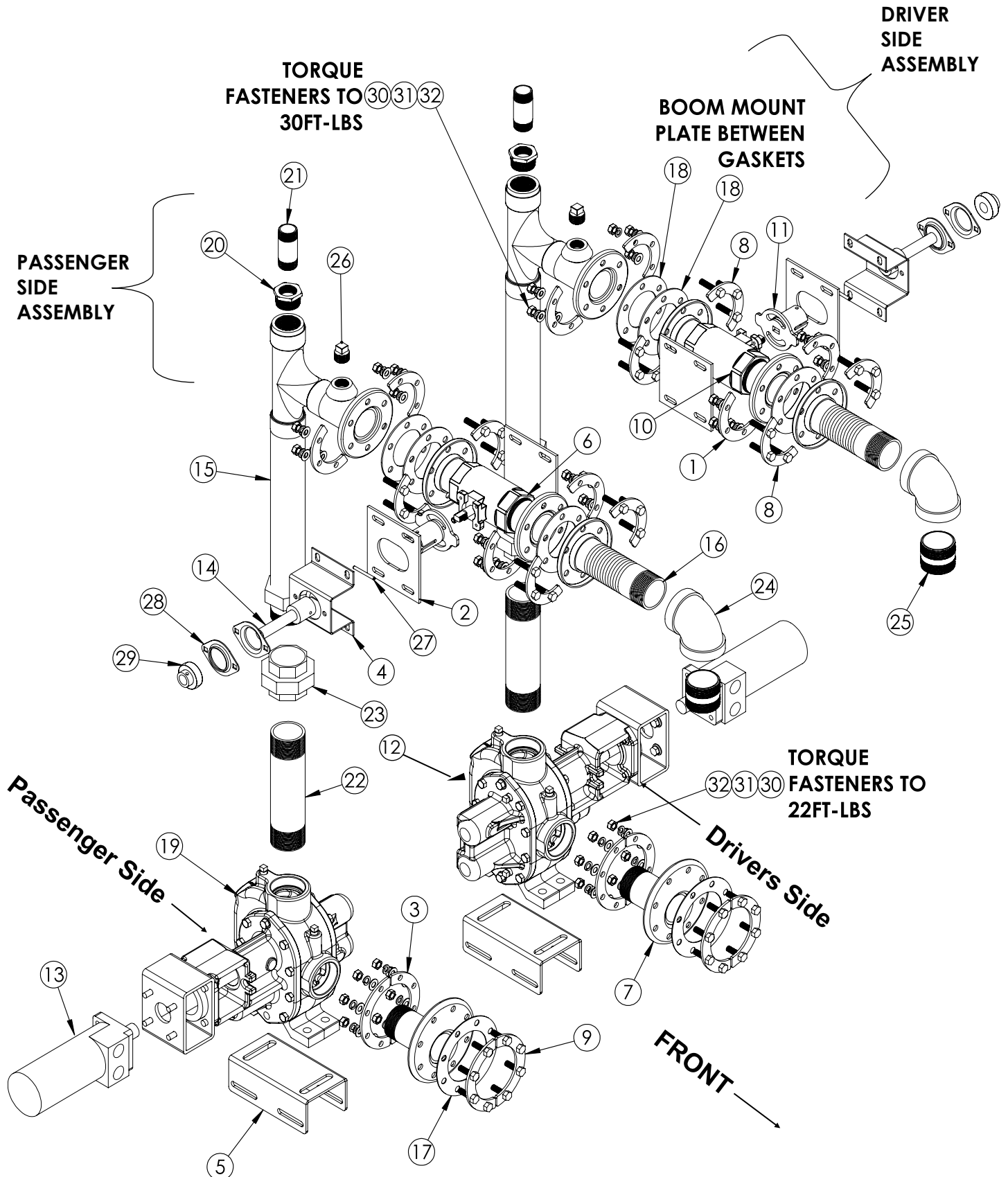
M4 Sealant Material Plumbing Parts



M4 Sealant Material Plumbing Parts

#	PART #	DESCRIPTION	QTY.
1	430519	Plate, Valve Brace	1
2	430421	Plate - Backer	4
3	430167	Plate, Valve Brace	1
4	429818	Plate - Backer	2
5	429584	Plate, Bearing Mount	1
6	422053	Plate - Pump	1
7	409712	Valve Sub - Assembly, RH	1
8	409617	Outlet Adapter	1
9	409576	Flange Support Weld	4
10	409484	Flange Support Weld	2
11	407838	Coupling Weldment	1
12	170602	Motor - 45 Cu. In.	1
13	155997	Rod Adapter	1
14	155920	Tee Weld	1
15	155375	Flex Tube Weld 7" Long	1
16	152127	Gasket 3"	1
17	152126	Flange Gasket 2"	3
18	120803	Pump	1
19	120774	Bushing - Hex 1.5 X 1	1
20	120682	Pipe Nipple - 1.0 X 3.0	1
21	120613	2.00 x 9.00 Nipple	1
22	120611	Pipe Union	1
23	120598	2" Pipe Elbow	1
24	120396	2" Close Nipple	1
25	120291	Square Head Pipe	1
26	111737	Spring Pin .18 X 2	1
27	110501	Sphere Bearing Flange	2
28	110500	Bearing Only - .75 SB204-12	1
29	100211	Washer - Flat - SAE .38	24
30	100093	Washer - Split Lock .38	24
31	100069	Nut - Hex .38	20
32	100016	HHCS .38 X 1.00	4

M4 Dual Hose Sealant Material Plumbing Parts



M4 Dual Hose Sealant Material Plumbing Parts

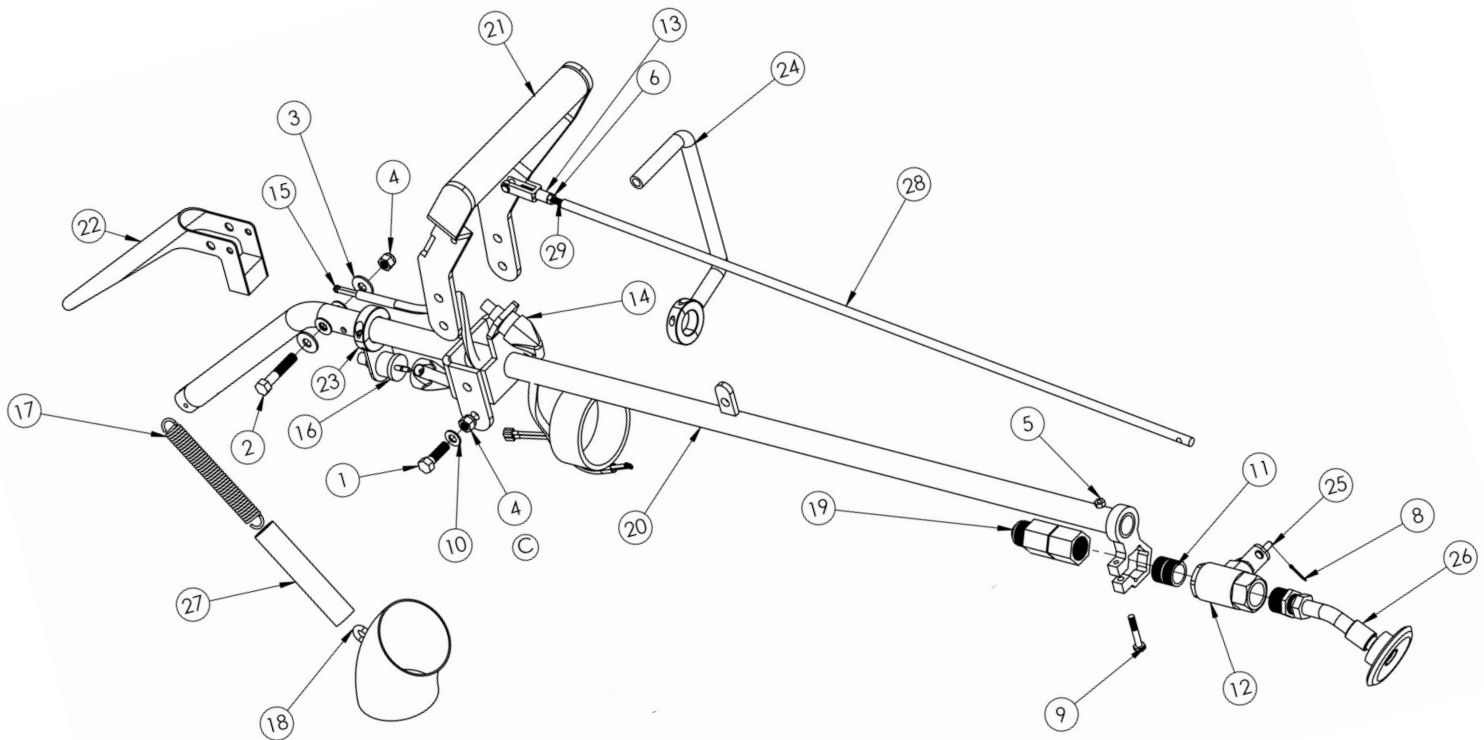
#	PART #	DESCRIPTION	QTY.
1	430421	Plate - Backer	8
2	430167	Plate - Valve Brace	2
3	429818	Plate - Backer	4
4	429584	Plate - Bearing Mount	2
5	422053	Plate - Pump	2
6	409712	Valve Sub - Assembly RH	1
7	409617	Outlet Adapter	2
8	409576	Flange Support Weld	8
9	409484	Flange Support Weld	4
10	409032	Valve Sub - Assembly	1
11	407838	Coupling Weldment	2
12	200619	Pump (Drivers Side)	1
13	170602	Motor - 45 Cu. In.	2
14	155997	Rod Adapter	2
15	155920	Tee Weld	2
16	155375	Flex Tube Weld 7" Long	2
17	152127	Gasket 3"	2
18	152126	Flange Gasket 2"	6
19	120803	Pump (Passenger Side)	1
20	120774	Bushing - Hex 1.5 X 1	2
21	120682	Pipe Nipple - 1.0 X 3.0	2
22	120613	2.00 X 9.00 Nipple	2
23	120611	Pipe Union	2
24	120598	2" Pipe Elbow	2
25	120396	2" Close Nipple	2
26	120291	Square Head Pipe	2
27	111737	Spring Pin .18 X 2	2
28	110501	Sphere Bearing Flange	4
29	110500	Bearing Only - .75 SB204-12	2
30	100211	Washer - Flat SAE .38	48
31	100093	Washer - Split Lock .38	48
32	100069	Nut - Hex .38	40
33	100016	HHCS .38 X 1.00	8
34	430519	Plate, Valve Brace	2

M-Series No Drip Sealant Wand

#	PART #	DESCRIPTION	QTY.	#	PART #	DESCRIPTION	QTY.
1	100017	HHCS .38 x 1.25	2	16	152058	Switch	2
2	100020	HHCS .38 X 2.00	1	17	155297	Spring	1
3	100126	Washer-Flat .38	2	18	155975	Sleeve w/Link	1
4	100169	Nut-Plastic Lock .38	3	19	171065	Swivel	1
5	100206	Nut-Hex .25	1	20	303-005-000	Handle Assembly	1
6*	100207	.25 Nut	1	21	303-006-000	Handle	1
7	100211	Washer - Flat SAE .38	2	22	303-008-004	Switch Activation Assy.	1
8*	100275	Cotter Pin .09 X .75	1	23	303-011-004	Switch, Wand	1
9	100562	HHCS 1/4 X 1-1/2	1	24*	303-013-601	Wand, Frt Hndl	1
10	111725	Thrust Washer	2	25*	403905	Valve Lever	1
11*	120412	Pipe-Nipple-Close-.75	1	26	407232	Swivel Tip	1
12*	120560	Wand Valve .75 IN	1	27	427116	Spring Guard	1
13*	130155	Clevis Kit	1	28*	427358	Rod	1
14	130224	Boot, Switch	2	29*	429945	Stud	1
15	130580	Harness, Wand	1		303-004-000	Complete Wand Assy.	

* Not used on Light Weight Wand 303-003-000

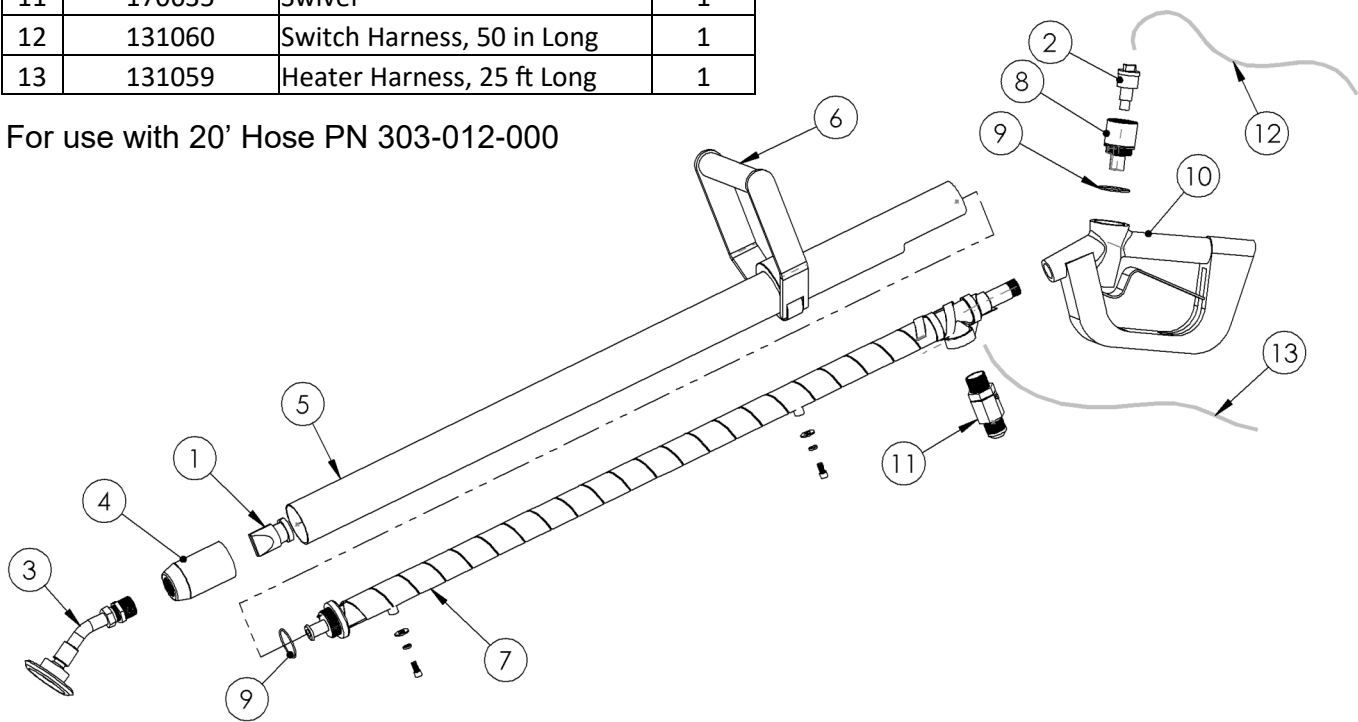
For use with 20' Hose PN 303-012-000



M-Series Heated Wand PN 309-010-902

#	Part #	DESCRIPTION	QTY
1	156431	Duckbill Valve	1
2	152058	Switch	1
3	407232	Swivel Tip	1
4	309-021-000	Valve Cover	1
5	309-015-000	Wand Cover	1
6	156430	Handle	1
7	309-022-000	Wand Assy	1
8	309-015-000	Switch Adapter	1
9	172697	O-Ring	2
10	156430	Handle	1
11	170635	Swivel	1
12	131060	Switch Harness, 50 in Long	1
13	131059	Heater Harness, 25 ft Long	1

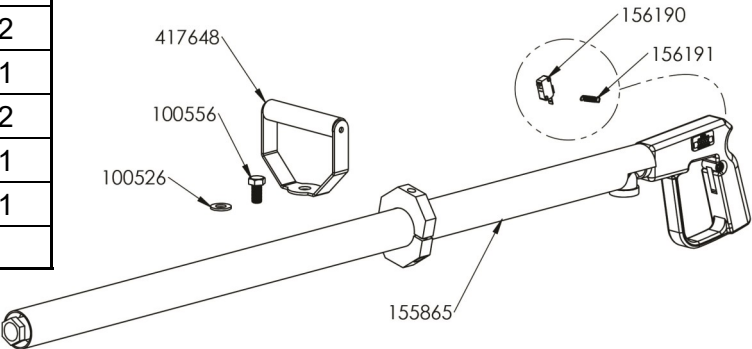
For use with 20' Hose PN 303-012-000



Legacy Heated Sealant Wand

#	PART #	DESCRIPTION	QTY.
1	155865	Heated Wand Assy.	1
3	100556	HHCS .50 x 1.0 GR 5 ZP	2
4	409228	Heated Wand Handle	1
5	100526	Washer-Flat-SAE .50	2
6	161689	Decal - Heated Wand SN	1
13	156249	Clamp	1
	409134	Complete Heated Wand Assy.	

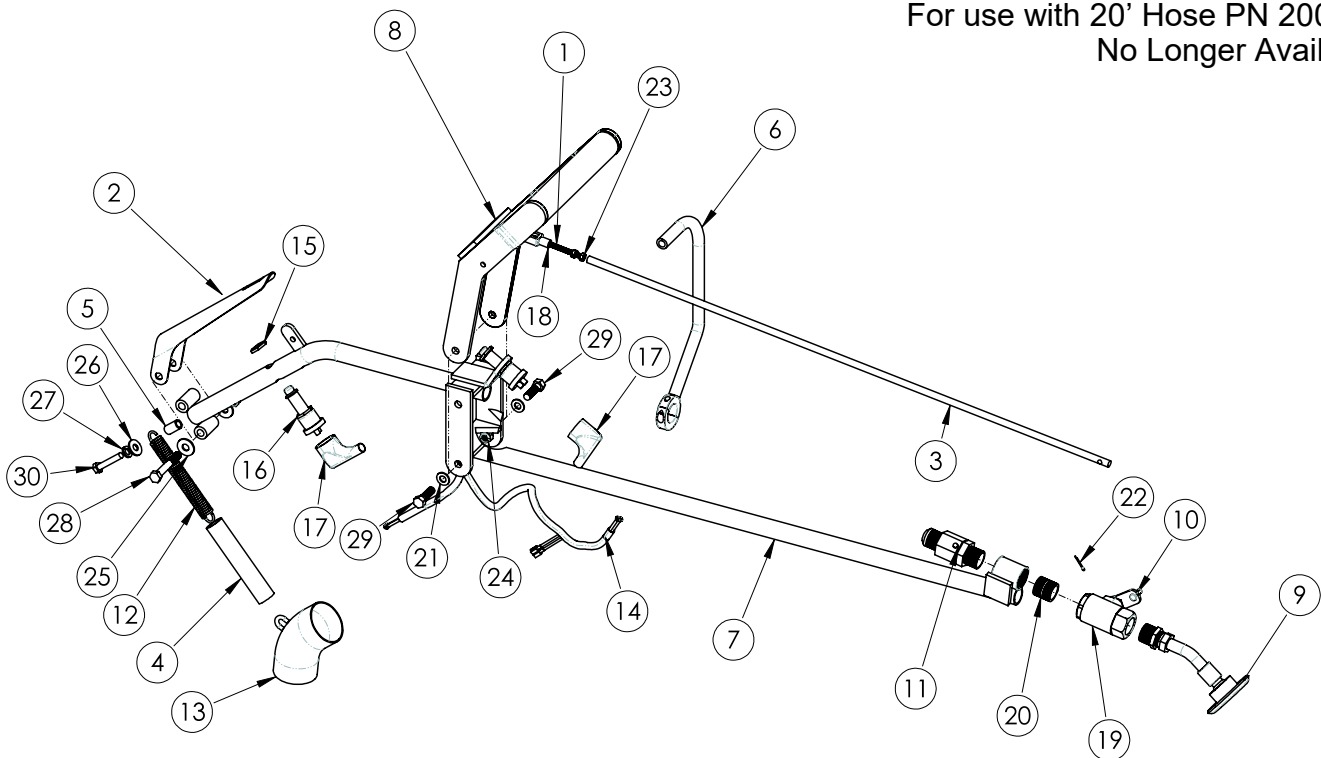
For use with 18' Hose Part #200622
No longer available



M-Series Legacy Sealant Wand Parts

#	PART #	DESCRIPTION	QTY.	#	PART #	DESCRIPTION	QTY.
1	429945	STUD	1	16	130323	SWITCH - MOMENTARY	2
2	427557	CLUTCH LEVER	1	17	130224	BOOT, SWITCH	2
3	427358	ROD	1	18	130155	CLEVIS KIT-.25-28 X .25	1
4	427116	SPRING GUARD	1	19	120560	WAND VALVE .75 IN	1
5	426987	SPACER	1	20	120412	PIPE-NIPPLE-CLOSE-.75	1
6	407872	SUB HANDLE	1	21	111725	THRUST WASHER	2
7	407863	WAND SUB -WELD	1	22	100275	COTTER PIN .09 X .75	1
8	407862	HANDLE	1	23	100207	.25 NUT	2
9	407232	SWIVEL TIP	1	24	100169	NUT-PLASTIC LOCK .38	3
10	403905	VALVE LEVER	1	25	100126	WASHER-FLAT .38	2
11	170635	SWIVEL	1	26	100125	WASHER-FLAT .31	1
12	155297	SPRING	1	27	100092	WASHER-SPLITLOCK .31	1
13	155272	SLEEVE W/ LINK	1	28	100022	HHCS .38X2.5	1
14	130580	HARNESS, WAND	1	29	100017	HHCS .38 X 1.25	2
15	130324	LOCKNUT - 5/8-32 BRASS	2	30	100009	HHCS .31 X 1.75	1

For use with 20' Hose PN 200526
No Longer Available



Optional Wand Attachments Available See Page 71

M1 and M2 Agitation System Parts

M1

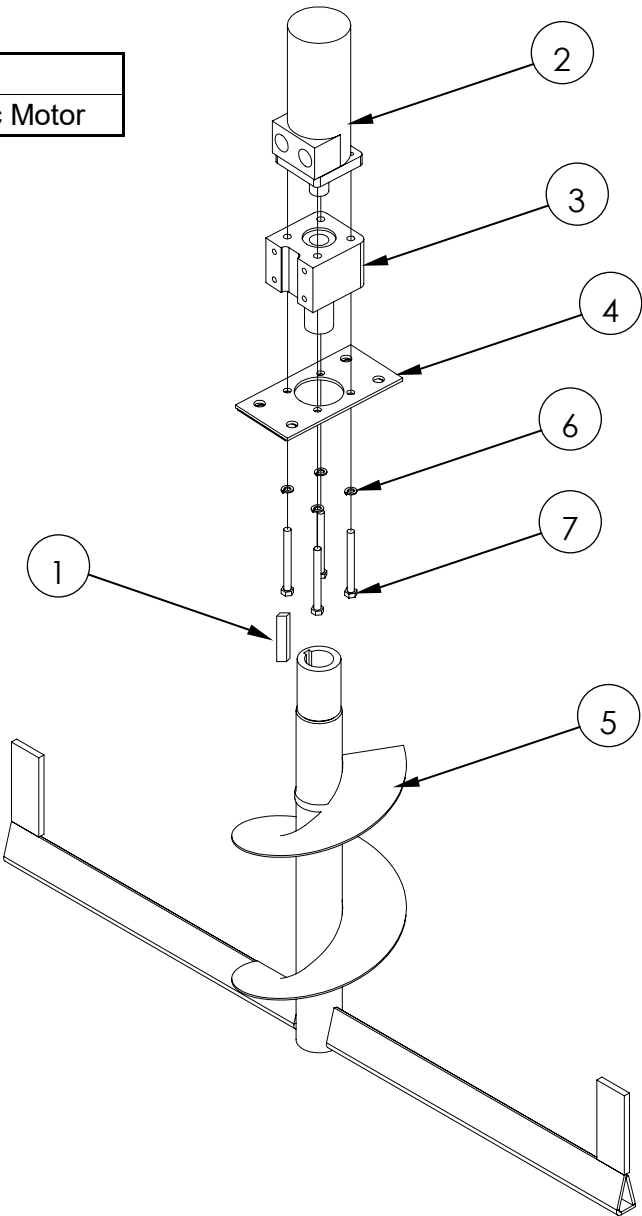
M2

#	PART #	DESCRIPTION	QTY.
1	110294	Key .38 X 2.00 LG	1
2	170467	Motor - Agitation	1
3	170449	Load Adapter M	1
4	416670	Agitator Motor Mount	1
5	405107	Agitator	1
6	100093	Washer - Split-lock .38	4
7	100877	HHCS .38 x 3.75	4
*	130226	Agitator Stop Limit Switch	1

#	PART #	DESCRIPTION	QTY.
1	110294	Key .38 X 2.00 LG	1
2	170602	Motor - Agitation	1
3	170449	Load Adapter M	1
4	416670	Agitator Motor Mount	1
5	403557	Agitator	1
6	100093	Washer - Split-lock .38	4
7	100877	HHCS .38 x 3.75	4
*	130226	Agitator Stop Limit Switch	1

MAINTENANCE KIT:

PART #	DESCRIPTION
153772	Seal Kit for Hydraulic Motor



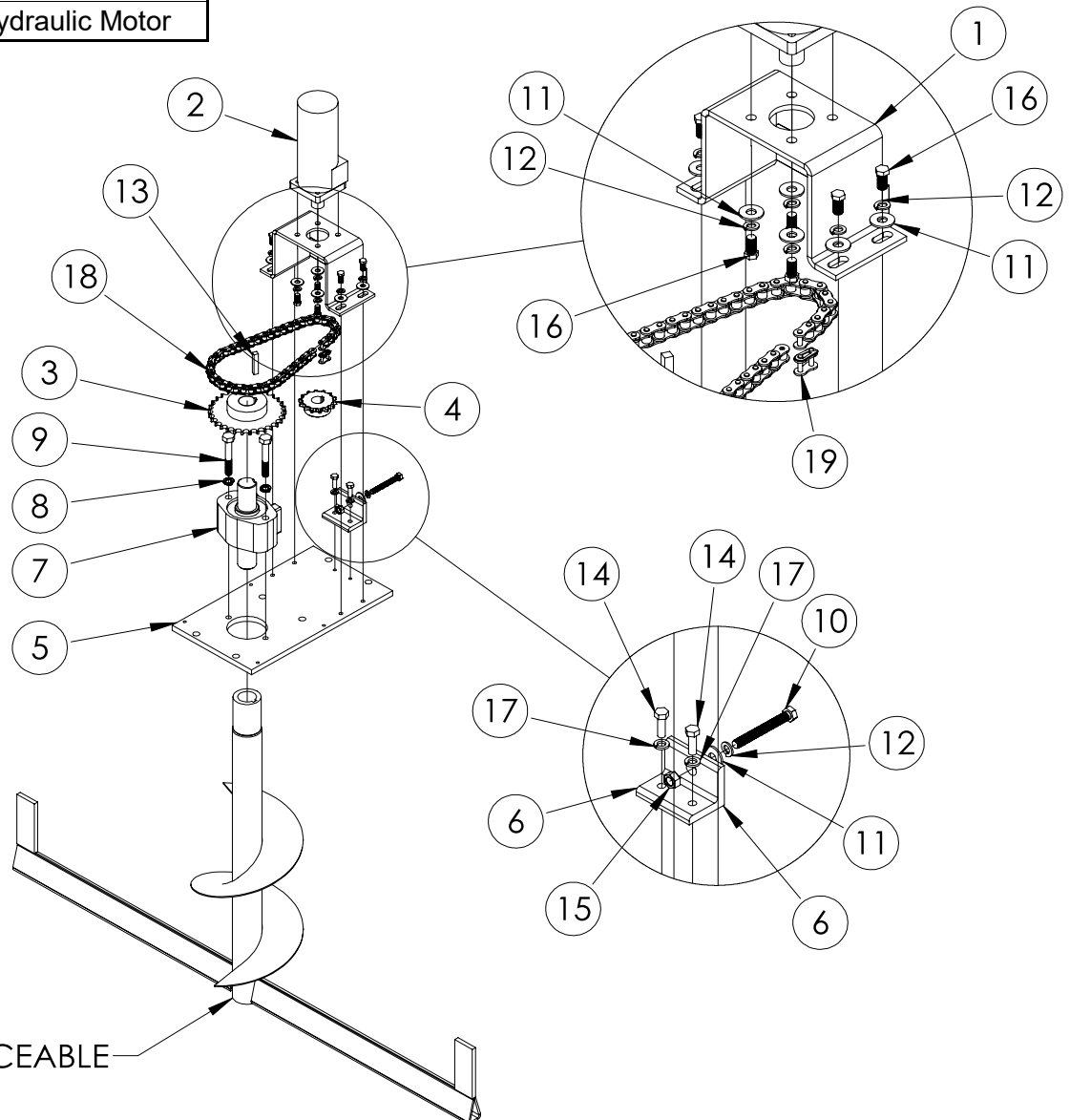
M4 Agitation System Parts

#	PART #	DESCRIPTION	QTY.
1	404327	Motor Mount	1
2	170602	Motor - 45 CU IN	1
3	111087	Sprocket	1
4	111088	Sprocket	1
5	420169	Plate - Agitator	1
6	420171	Adjustment Angle	1
7	171173	Load Adapter	1
8	100095	Washer - Split-lock 1/2"	2
9	100039	HHCS 1/2 X 3-1/2	2
10	100295	HHCS 3/8 X 3 FL THD	1

#	PART #	DESCRIPTION	QTY.
11	100126	Washer - Flat .38	9
12	100093	Washer - Split-lock .38	9
13	110294	Key .38 X 2.00 LG	1
14	100006	HHCS .31 X 1.0	2
15	100069	Nut - Hex .38	1
16	100015	Bolt, Hex 3/8-16 X 3/4	8
17	100092	Washer - Split-lock .31	2
18	110488	Chain No. 50 X 68 Links	1
19	110190	Link - Master No. 50	1
*	130226	Agitator Stop Limit Switch	1

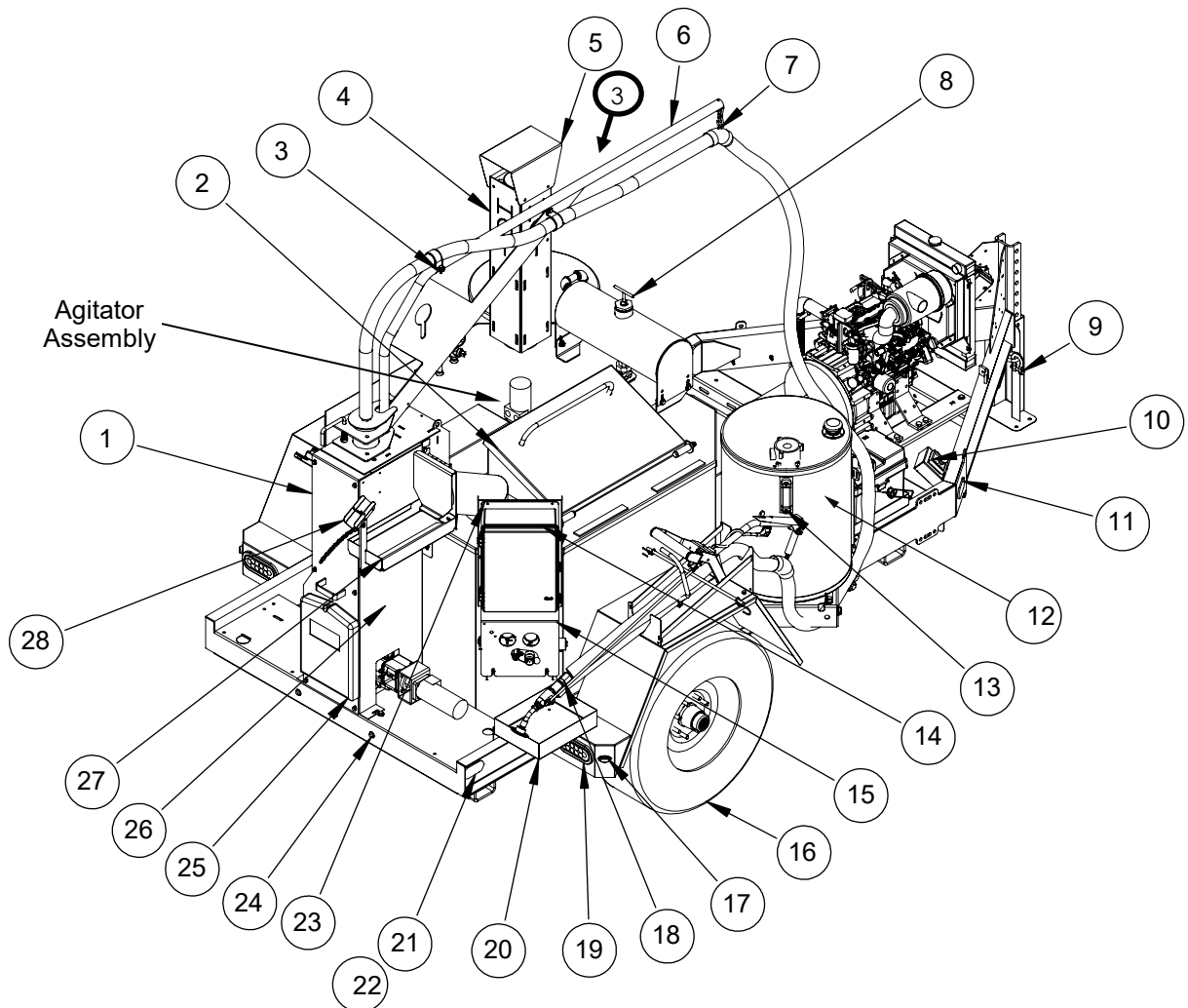
MAINTENANCE KIT:

PART #	DESCRIPTION
153772	Seal Kit for Hydraulic Motor



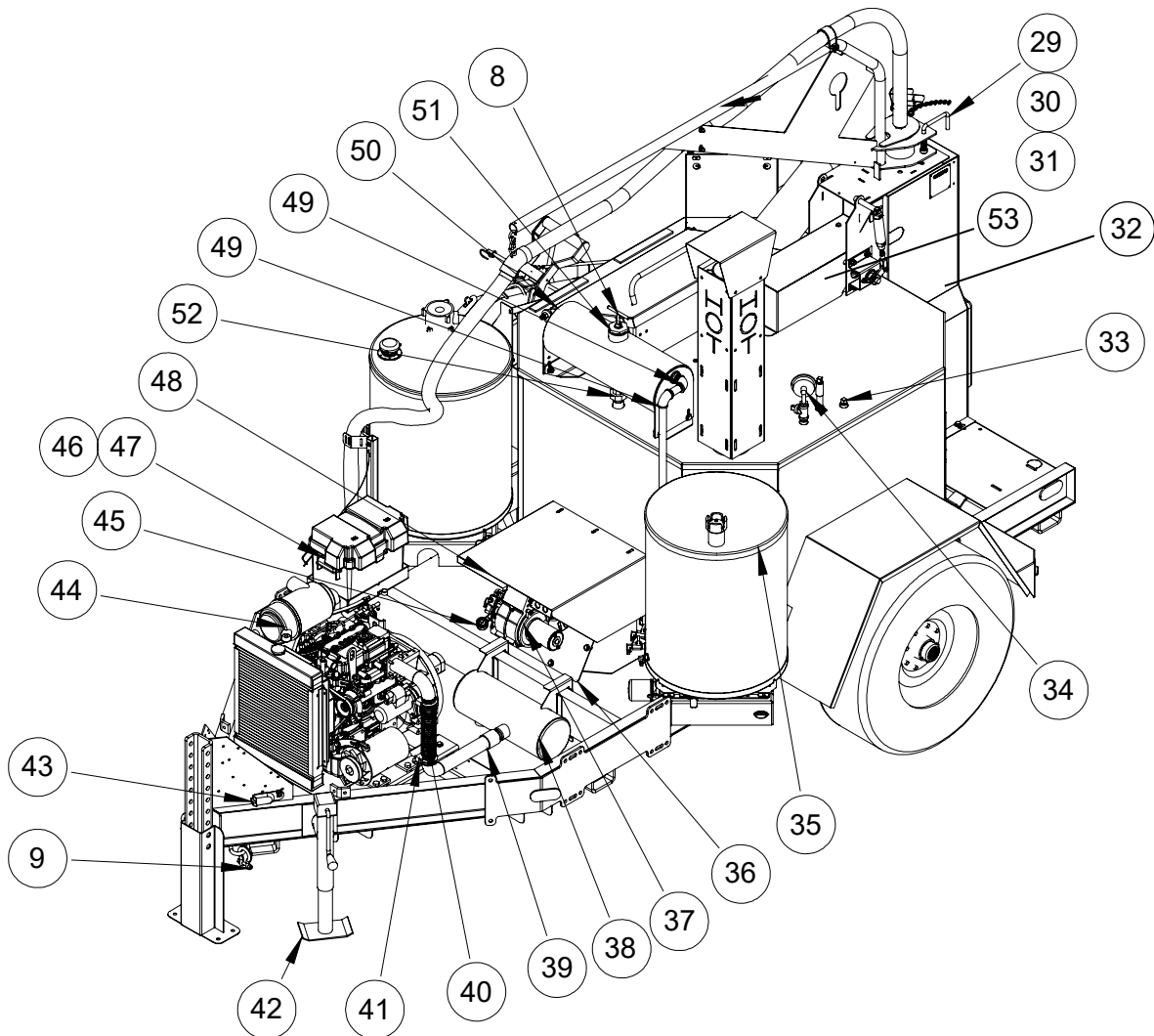
M-Series Miscellaneous Components and Parts

#	PART #	DESCRIPTION	#	PART #	DESCRIPTION
1	409758	Cabinet Panel Back	16	140709	Wheel - 235/80R16
2	404215	Loading Door	17	130374	Clearance Light - Red
3	155699	Hose Clamp - 2 In.	18	407861	Wand - Material 2012
4	429336	Plate - Side	19	130405	Grommet for Taillight
5	429335	Plate - Cap	20	130403	Taillight - Led Oval
6	409035	Boom Weld	21	427355	Plate - Catch Box
7	155272	Sleeve - Metal	22	150214	Reflector - Red 3 In.
8	404341	Dipstick - Melter	23	429594	Plate - Control Box
9	152664	Anchor Shackle W/Pin	24	130402	Clearance Light - Red
10	111108	LOFA Control Switch	25	154234	Pack - Manual Holder
11	150215	Reflector - Amber	26	409757	Cabinet Panel - RH
12	172618	Hydraulic Tank - Black	27	409116	Wand Cradle - Drip Tray
13	171631	Sight Gauge - 5 In.	28	427423	Plate - Cradle (2 Required)
14	130831S	M Series Control Box	*	309-058-902	New Boom Update Kit
15	429900	Cover - Manifold			



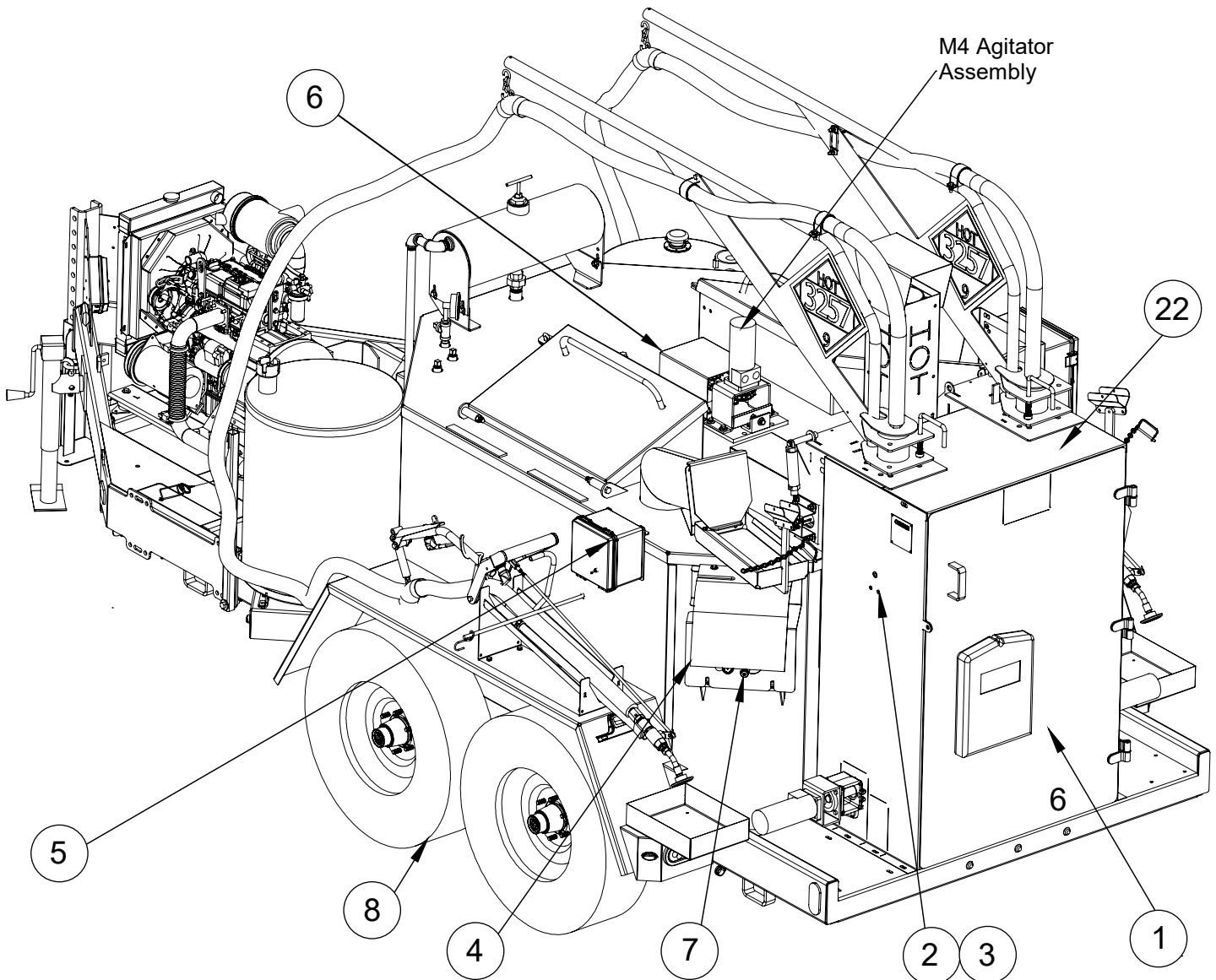
M-Series Miscellaneous Components and Parts

#	PART #	DESCRIPTION	#	PART #	DESCRIPTION
8	404341	Dipstick - Melter	41	100512	Muffler Clamp - 2 In.
9	152664	Anchor Shackle W/Pin	42	140330	Jack 5000 Lb.
29	429581	Pin - Engagement	43	130050	Switch - Breakaway
30	154308	Spring	44	111838	Engine Assembly
31	111861	Set Collar - .56	45	130166	Gauge - 0-160 PSI
32	409756	Cabinet Panel - LH	46	200543	Battery Box
33	120073	Pipe Plug - .50 Galv	47	150212	Battery - 26/26R-50 Wet
34	130130	Thermometer - 24 In.	48	424534	Plate - Burner Shield
35	172619	Diesel Tank - Black	49	120053	Pipe Elbow - 90° .75 Galv
36	404518	Heat Chamber Sub-Assembly	50	406164	Expansion Tank
37	152197	Burner - Diesel 105-110	51	120559	Pipe Bushing - 2.0 x .75 Galv.
38	409037	Exhaust Weld	52	120433	Pipe Union - 1.0
39	155976	Exhaust Tube Weld	53	409088	Return Box Weld
40	155143	1.88 ID Interlock Flex Tube	54	200526	Heated Hose Kit - Standard

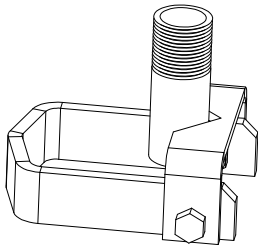


M4 / M4 Dual Miscellaneous Components and Parts

#	PART #	DESCRIPTION
1	409621	Cabinet Door - M4
2	409619	Cabinet Panel - RH - M4
3	409618	Cabinet Panel - LH - M4
4	153529	Rubber Pad
5	130944S	Dual Heated Hose Control Box
6	420170	Cover - Agitator Bearing
7	429833	Plate - Manifold Mount
8	140715	Tire ST225/75R15

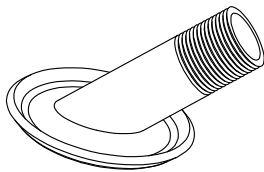


Optional Sealant Wand Attachments



PIVOTING SHOE 2-1/2" / 403137

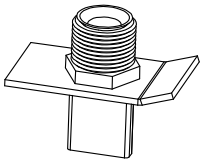
- 2-1/2" Wide Band
- 3/4" NPT Inlet
- Open Shoe Design For Clear Visibility Of Material
- Pivoting Inlet Tube Maintains Contact With The Road



SEALING DISC 3.5" / 403162

SEALING DISC 2.5" / 404528

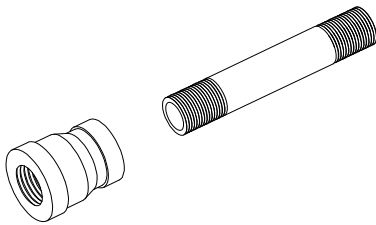
- 2" or 3" Wide Band
- 3/4" NPT Inlet
- 3/8" OD Orifice
- 4-1/2" OD Plate
- Uniform Band Provided By Disc Shape



SEALING TIP 1/8" / 403164Z

SEALING TIP 1/4" / 403163Z

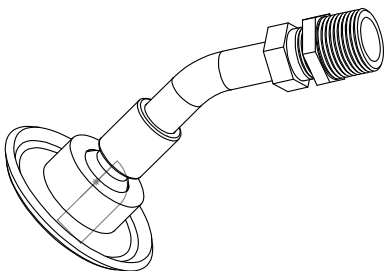
- Available In 1/8" And 1/4"
- 3/4" NPT Inlet
- Skid Plate To Reduce Operator Fatigue
- Tip May Be Shortened Or Angled On Field For Specific Applications



SEALING TUBE 3/8" / 416968

REDUCER 3/4" X 3/8" / 120567

- 3/8 NPT X 3-1/2" Long Tube
- Angled Tip
- May Be Flattened In Field For Different Applications
- 3/4" NPT Inlet
- **120567 REDUCER REQUIRED**



SWIVEL TIP 4" / 407233

SWIVEL TIP 2-1/2" / 407232

- 2" or 3-1/2" Wide Band
- 3/4" NPT Inlet
- 3/8" OD Orifice
- 3-1/8" OD Plate
- Uniform Band Provided By Disc Shape
- Pivoting Shoe

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EQUIPMENT WARRANTY

Cimline Pavement Maintenance Group warrants its equipment, to the original purchaser only, against defects in material or workmanship based on normal use of service.

Cimline Equipment is warranted for one year / 1000 hours of use and includes/excludes the following:

Includes basic frame and tanks, steel fabricated parts, hydraulic and burner control system.

Excludes the engine, air compressor, battery, and tires as these items are covered by their respective manufacturer; and all warranty for these items should be directed to their local authorized distributor/dealer.

Warranty period begins at the date unit is first placed in service, or shipped from factory. Upon sale or rental of the equipment by the distributor or Cimline the provided warranty card should be mailed within 14 days starting date the unit is placed in service.

In the absence of this card on file, the warranty period begins from date of shipment from factory.

Warranty for material pumps and electric heated hoses/heated hose with heated wands, are pro-rated using the following scale:

<u>Days</u>	<u>Hours</u>	<u>Warranty Coverage</u>
365 (1 year)	500	100%

Any warranty claims on parts may require a return for evaluation. Specifically heated wands with heated hose, standard heated hoses, and material pumps will be required to return for evaluation on any warranty claim.

Replacement parts are warranted for a period of 60 days from factory invoice, with the exception of the replacement material pumps, heated hoses and heated hoses with heated wands, which use the above scale for pro-rated coverage. For replacement parts that are purchased, the 60-day period will commence from the date of distributor to end user invoice. A copy of the invoice will be required as proof of in service date. If invoice is not provided, policy will revert back to the original factory invoice date.

Warranty does not apply to defects caused by improper or unreasonable use, damage (including freight damage), accidents, failure to provide reasonable maintenance or faulty repair made by others; furthermore, warranty is void if the product or any of its components are modified or altered in any way or if aftermarket (NON-OEM) parts have been used during the warranty period.

Our responsibility under this warranty is limited to replacement or repair (at Cimline's discretion) of such part or parts, as inspection shall disclose to have been defective, to be performed at Cimline Inc. factory at Plymouth, MN or at a facility designated by Cimline.

In no event shall Cimline Pavement Maintenance Group be liable for incidental or consequential damages of any kind whatsoever. Downtime, overhead and performance penalties are not recognized at any time as part of warranty coverage. Reasonable labor, travel, and diagnostic time will be reviewed for reimbursement. The use of aftermarket (NON-OEM) parts will result in denial of the claim.

All warranty claims must be processed through the factory authorized Cimline dealer that was the original distributor of your Cimline Equipment or OEM Parts.

No exceptions will be made to this warranty unless agreed to in writing by the Cimline Customer Service Manager.

