



Titan H₂O Kubota Owner's Manual

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MAN-44359 Rev. 0, April 13, 2012
(182-860-D)

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TITAN_{H₂O}

1- General Information

HydraMaster's Titan H₂O Water Recovery System has been designed to better accommodate the needs of water extraction, recovery and restoration professionals.

The Titan H₂O features a WG 972 Kubota engine that powers a Tuthill 4007 Tri-Lobe vacuum blower. This combination produces over 400 cfm of air flow, more than enough to extract water with one or two wands (or other extraction tools).

HydraMaster's reliable Dura-Flow Automatic Pump Out (APO), offered as an option, allows you to extract water without the need to shut down and dispose of the recovered water.

Other features of the Titan H₂O include:

- Dual oil bath and sight glasses for enhanced blower reliability
- Dual tool/wand capable

In addition to the obvious performance aspects of the Titan H₂O, it delivers maximum reliability and can be easily serviced. All service points are conveniently located so routine maintenance takes only a few minutes to perform.

HydraMaster suggests that the operator of the machine be well acquainted with the IICRC guidelines for Flood Extraction and with the various methods of carpet and surface drying that are currently being used. It is also recommended that the machine operator be familiar with the local municipality's requirements for the proper disposal of waste water.

As with any machine, it is important to use the Titan H₂O correctly. Operating the machine is simple as described in Section 3 of this Owner's Manual. This manual also contains installation as well as information required for proper maintenance, adjustment and repair of the Titan H₂O. Component troubleshooting guides have been included for your convenience.



TITAN_{H₂O}

It is the purpose of this manual to help you properly understand, maintain and service your Titan H₂O. Follow the directions carefully and you will be rewarded with years of profitable, trouble-free operation.

No section of this manual should be overlooked when preparing for operation of the Titan H₂O. Please read the manual to familiarize yourself with the operation of your machine, paying special attention to all ***Warnings and Cautions***.

This section of the manual contains the following information:

- Contact Information
- Warnings, Cautions and Notices
- Responsibilities
- Machine Specifications
- High Altitude Operation
- Waste Water Disposal Advisory

NOTICE

Photographs and illustrations, such as those included in this document, can represent optional equipment as well as standard equipment.

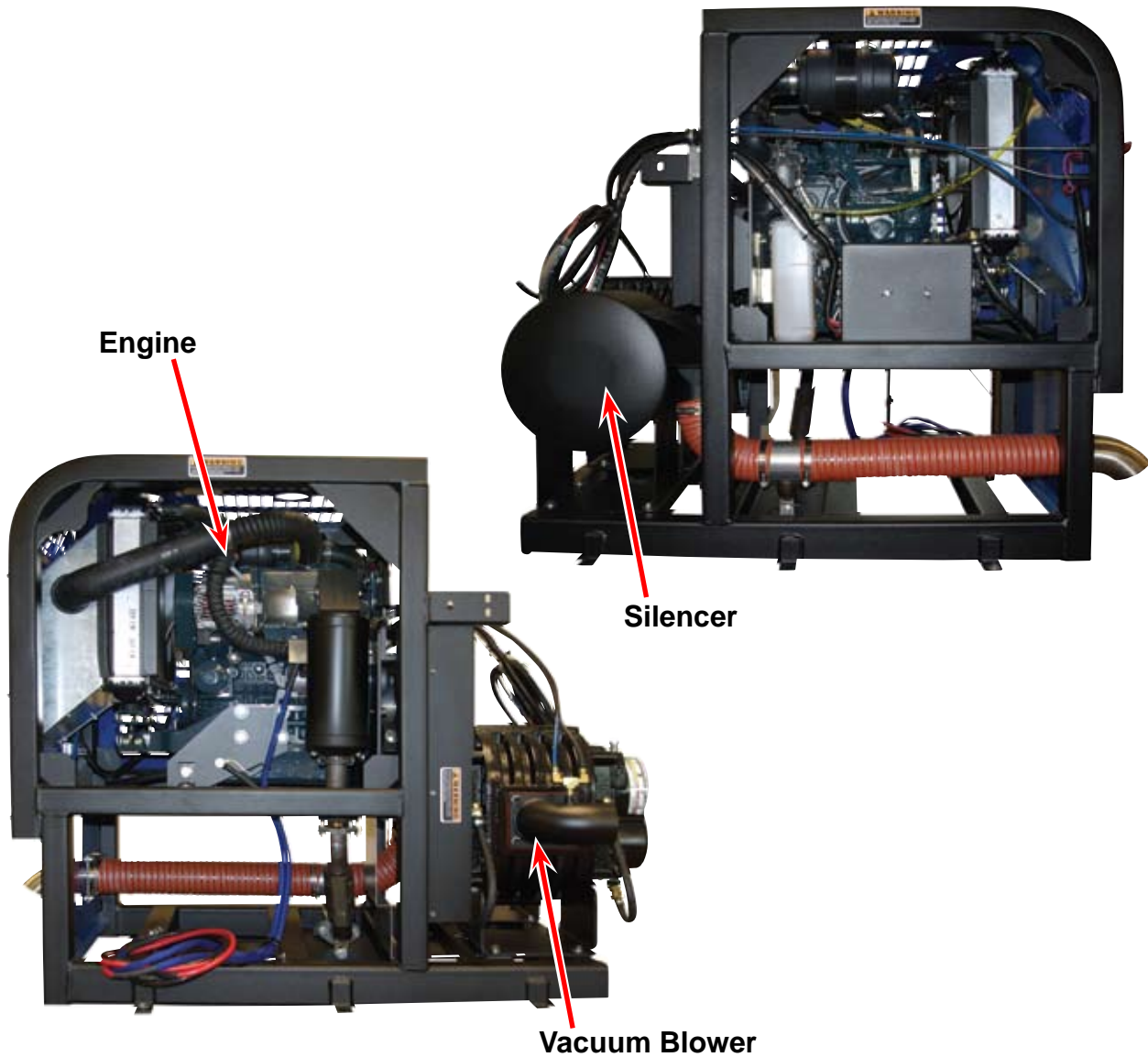


Figure 1-1. Illustration Showing Left and Right Views of Titan H₂O without Side and Belt Covers

CONTACT INFORMATION

If you have any questions regarding the operation, maintenance or repair of this machine, please contact your local distributor.

To find a local distributor, please visit our website at:

<http://hydramaster.com/HowToBuy/DealerLocator.aspx>

If your question cannot be resolved by your distributor or by the information within this manual, you may contact HydraMaster direct using the following phone numbers.

HOURS	TELEPHONE NUMBERS	E-MAIL ADDRESSES
Monday-Friday 7:00 a.m. to 5:00 p.m. Pacific Standard Time	Technical Support (425) 775-7275 FAX : (800) 426-4225	Technical Support techsupport@hydramaster.com
	Customer Service/Parts (425) 775-7276 FAX: (425) 771-7156	Customer Service/Parts parts@hydramaster.com

When calling your distributor, be sure to reference the serial number and date of purchase.

FOR YOUR REFERENCE:

Serial No. _____

Date of Purchase: _____

Purchased From (Distributor): _____

WARNINGS, CAUTIONS AND NOTICES

⚠ WARNING

HydraMaster uses this WARNING symbol throughout the manual to warn of possible injury or death.

CAUTION

This CAUTION symbol is used to warn of possible equipment damage.

NOTICE

This NOTICE symbol indicates that federal or state regulatory laws may apply, and also emphasizes supplemental information.

Warnings and Cautions specific to the Titan H₂O include the following:

⚠ WARNING

During the operation of the truckmount many components are in motion. Never touch any part of the truckmount that is in motion. Serious injury may result.

⚠ WARNING

During the operation of the truckmount many surfaces will become extremely hot. Never touch hot surfaces. Serious injury may result.

⚠ WARNING

The operation of this truckmount can produce noise levels exceeding 85 decibels to a distance of 10 ft (3.05 m). The Occupational Safety and Health Administration (OSHA) recommends the use of hearing protective equipment if a person is exposed to an average of 85 decibels over an 8-hour period. Check with local and state agencies concerning hearing conservation rules.

⚠ WARNING

During the operation of the truckmount carbon monoxide and other toxic fumes are produced. Position the vehicle so that any fumes produced will be directed away from inhabited areas and any points of building entry (doors, windows, air conditioning units, fans, etc.). Do not occupy the vehicle while the truckmount is in operation. Serious injury may result.

⚠ WARNING

During the operation of the truckmount, chemicals known to the State of California to cause cancer, birth defects and other reproductive harm are produced by the engine exhaust.

⚠ WARNING

Never operate the truckmount with a portable gas container inside the vehicle. Doing so will increase the risk of fire and explosion. Serious injury or death may result.

Transporting a vented fuel container that presently contains, or has ever contained in the past, a flammable liquid is strictly forbidden by HydraMaster and by federal and state regulations. Doing so will increase the risk of fire and explosion. Serious injury or death may result.

⚠ WARNING

Never smoke in or around the truckmount. Doing so will increase the risk of fire and explosion. Serious injury or death may result.

⚠ WARNING

During the operation of the truckmount the exhaust system will become extremely hot. Keep all flammable materials away from the truckmount exhaust system. Failure to do so will increase the risk of fire and explosion. Serious property damage may result.

CAUTION

Never operate the truckmount when the vehicle is tilted more than 10 degrees in any direction. Doing so will result in improper lubrication of the internal components, and will increase the risk of serious component or engine damage.

CAUTION

Never operate the truckmount with the vehicle doors closed. Doing so results in extremely high temperatures inside the vehicle and will lead to serious component or engine damage.

CAUTION

Many vehicles have critical components mounted directly below the floor that can easily be damaged. Before drilling holes in the floor of the vehicle inspect the underside of the vehicle for critical components. Failure to do so may result in damage to the vehicle.

RESPONSIBILITIES

Purchaser's Responsibilities

- Prior to purchasing a van, ensure that the payload is suitable for all of the equipment that will be installed and transported. This includes and is not limited to: the truckmount, recovery tanks, hose reels, hoses, tools and drying equipment. Payload capacity information is available through the auto dealer, the manufacturer's web site, and is also located on the door pillar of the driver's side door.
- Purchase a heavy duty Group 24 (500+ CC Amps) battery for this truckmount. This is normally available from the installation dealer.
- Prior to dropping your van off at the distributor for the truckmount to be installed, have a spray-on bed liner applied to the floor such as Rhino Lining® or Line-X®.

NOTICE

Plywood and carpet are not recommended.

- Prior to operating the truckmount, read this manual in its entirety and familiarize yourself with the information contained here. Special attention should be paid to all ***Warnings and Cautions***.
- The distributor is responsible for the correct installation of the truckmount. The distributor is also responsible to train you in the correct and proper operation and maintenance of the truckmount.

NOTICE

Any modification of the truckmount may void the warranty.

Distributor's Responsibility

Acceptance of Shipment

Before accepting the truckmount, check the following:

1. The truckmount should be free from any damage during shipping. Do not sign the delivery receipt until you have closely inspected the truckmount and noted any damage on the delivery receipt. Hidden damage may be present even if the box looks okay. It is recommended that the box be opened before you sign for the shipment.
2. Check the packing list and verify that all items are present.

Installation Responsibilities

- Ensure proper payload capacity. It is the distributor's responsibility to verify that the equipment package does not exceed the vehicle capacity.
- Ensure installation of a safe fuel tap system and through-floor fittings as provided by HydraMaster.
- Ensure proper placement of the truckmount, recovery tank and accessories in the vehicle, and check that they are secured with bolts and back up plates. The distributor should verify that the owner is in agreement with the layout.
- Ensure proper connection of the fuel lines.
- Ensure proper connection and installation of the battery. Verify that the battery is in accordance with HydraMaster's recommendation.
- Check the vacuum blower and engine oil levels prior to starting the truckmount.
- Start and run the truckmount and check that all systems function properly.
- Test all hoses, wands and other accessories for correct operation.
- Ensure timely return of the document package.

Training

The distributor should provide a thorough review of the operation manual with the purchaser along with instruction and familiarization in:

1. How all the truckmount's systems function.
2. All safety precautions and their importance.
3. How to correctly start and shut down the truckmount.
4. How to correctly operate the truckmount.
5. Where and how often to check and change component oil levels.
6. How to do basic troubleshooting of the truckmount.
7. The truckmount's warranty and warranty procedures.

MACHINE SPECIFICATIONS

Frame Dimensions	26.0" W x 45" D x 39" H (66 cm x 114 cm x 99 cm)	
Weight	775 lbs (352 kg)	
Engine - Kubota	Oil Type	5W-30 Synthetic
	Capacity	3.2 quarts (3.02 litres) when changing oil and filter
	Engine rpm	High - 3,000 rpm
		Idle - 1,500 rpm
	Fuel Consumption	1.78 gph (6.74 litres/hr)
Ignition	Keyless	
Vacuum Blower - Tuthill 4007 Competitor (Dual Splash Lubrication)	Oil Type Max. Vac. 14" Hg	PneuLube or other ISO 100 rating
	Gear End Capacity	Approx. 5.8 oz. (171.5 ml)
	Drive End Capacity	Approx. 4.7 oz. (139 ml)
	Blower rpm	3,000 rpm
Standard Equipment		
	Vacuum Hose	2" Vacuum Hose - 100 ft. (5.08 cm Vacuum Hose - 30.5 m)
	Recovery Hose	10 ft (3.05 m)
	Recovery Tank	100 gallon Universal Tank (379 litre Universal Tank)
	Battery Box	
	Van Decal	
	Van Installation Kit	
	Owner's Manual (on CD) Owner's Guide (printed)	

OPTIONAL EQUIPMENT

To better meet your business needs, HydraMaster offers several options that you can add to your basic Titan H₂O system. The following shows the available options and the additional kits necessary to install the options. Refer to the following table before placing your order for optional equipment.

If you want this option:	Order this P/N:
2.5" Vacuum Hose Adapter (100 Gallon Recovery Tank)	000-078-875 Kit, 2.5" 3 Port Hose and 000-041-466, Cover Assembly
Automatic Pump Out (APO)	000-079-091 Pump, Dura-Flow APO
Exhaust Thru Floor	000-078-414 Exhaust Thru Floor Kit

If you have questions or need assistance configuring your system, please contact your distributor.

SPARE PARTS

The following table is a list of available Titan H₂O spares that distributors may purchase to have on hand for repairs and maintenance.

Part No	Description	Qty
000-010-131	Belt, 3vx450 Eng. Drive	3
000-025-003	Cable, Choke, With Detent	1
000-049-002	Filter, Fuel	1
000-049-063	Filter, Air - Kubota	1
000-049-256	Filter, Oil - Kubota	1
000-049-152	Filter, Basket, Recovery Tank	1
000-049-153	Filter, Stainless Steel Vacuum Pump	1
000-056-011	Fuse, 30 Amp Circuit	2
000-057-177	Gasket, Exhaust Doughnut	1
000-073-011	Impeller, Replacement, APO	1
000-074-025	Gauge, Vacuum 0-30" Hg	1
000-087-006	HydraMaster-recommended Lubricant Blower Spray - part number is for 1 can	1 ea
000-157-022	Switch, Relay	1
000-157-040	Switch, 12V DC, On/Off	1
000-157-131	Switch, 12V DC, Throttle	2
000-157-152	Switch, Ignition, 3-Way	1
000-169-022	Valve, 1 1/2" Full Port	1

HIGH ALTITUDE OPERATION

Elevation plays a key role in how the truckmount will operate. Operation at high altitude (above 5,000 ft [1,524 m]) may require a high-altitude carburetor jet. Use of this jet at high altitude will improve power, reduce fuel consumption and help reduce excessive carbon build-up in the exhaust system.

Contact the local Kubota dealer or HydraMaster to obtain the proper jet size. Find your local Kubota dealer at http://www.kubotaengine.com/distributor/engine_usa.html.

WASTE WATER DISPOSAL ADVISORY

There are laws in most communities prohibiting the dumping of recovered “gray” water from carpet cleaning in any place but a sanitary treatment system.

The cleaning rinse water, recovered into your unit’s vacuum tank, contains materials such as detergents, and must be safely processed before entering streams, rivers and reservoirs.

In most cases, an acceptable method of waste water disposal is to discharge into a municipal sewage treatment system after first filtering out solid material such as carpet fiber. Access to the sanitary system can be obtained through a toilet, laundry drain, RV dump, etc. Permission should first be obtained from any concerned party or agency.

One disposal method which usually complies with the law is to accumulate the waste water and haul it to an appropriate dump site. Another solution to the disposal problem is to equip your Titan H₂O with an Automatic Pump-Out System (APO). These systems are designed to remove waste water from the extractor’s recovery system and actively pump the water through hoses to a suitable disposal drain.

HydraMaster makes an APO System which can be ordered with new equipment or installed later.

When properly configured, the systems will continuously monitor the level of waste water and pump it out simultaneously with the cleaning operation. The hidden benefit of this process is that the technician does not have to stop his/her cleaning to empty the recovery tank.

NOTICE

IN ACCORDANCE WITH EPA, STATE AND LOCAL LAWS, DO NOT DISPOSE OF WASTE WATER INTO GUTTERS, STORM DRAINS, STREAMS, RESERVOIRS, ETC.

The penalties for non-compliance can be serious. Always check local laws and regulations to be sure you are in compliance.

2 - Installation Information

Although there are many different heavy duty vehicles used for water restoration equipment, the preferable vehicle for a Titan H₂O installation is a cargo van with a heavy-duty suspension package and a minimum of 3/4 HD ton capacity.

Prior to installation of the Titan H₂O, HydraMaster recommends installing a spray-on bed liner in the vehicle. This provides 'metal to cushion' mounting rather than 'metal to metal' and makes for an attractive van interior.

HydraMaster also recommends installing roof vents in vehicles operated in hot weather locations. Roof vent positions are shown in Figure 2-1. Consult your local RV distributor about selection and/or installation of powered roof vents.

For best results, the fan should draw air into the vehicle which will supply cooler air to the air cleaner intake.

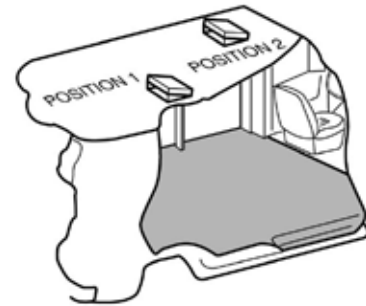


Figure 2-1. Location of Roof Vents in Vehicle

OPERATING THE TITAN H₂O IN HOT WEATHER

HydraMaster recommends the following steps when operating the Titan H₂O during periods of hot weather (95° F [35° C] or higher). This will help ensure that your Titan H₂O continues to run at 100% capacity during even the hottest days.

1. A minimum of 9" (22.9 cm) of clearance is required on both sides of the Titan H₂O, when installed. Ensure that additional equipment or other materials are not stored at the sides or on top of the Titan. Unobstructed airflow around the unit is critical for cooling the engine and other components.
2. For side-door vans with "barn doors", open the doors as wide as their construction will allow. Be sure to open the doors beyond their standard "straight-out" position, if possible, by releasing the stops and putting the doors in their fully extended position.
3. Provide cross-ventilation. When possible, keeping the rear doors open while the Titan is running will substantially reduce the temperature inside the van and will provide a path for cooling air flow. For rear-mount installations, open up the other doors in the van.
4. Consider adding powered roof vents to the vehicle (if not already installed). These vents can significantly reduce interior temperatures and will result in much cooler operation.

CAUTION

Use caution when drilling any holes through the van floor. Many vans have critical components mounted directly below the vehicle floor that could be damaged by a misplaced drill bit.

LOCATING THE TITAN H₂O IN VEHICLE

There are two recommended entry points on the vehicle for the Titan H₂O installation: the side door or the rear doors.

Most installations are through the side door. This provides rear access for accessories and hoses as well as unobstructed access to the component/working side of the machine, thus making it a bit easier to perform maintenance and/or repair without removing the unit from the truck.

Rear mounting requires the unit to be slid to the right side as far as possible. Although installing the Titan H₂O through the rear door partly limits working access, it does direct the noise away from the cleaning site.

In addition, rear mounting not only provides adequate working space on the component side of the unit but also improves weight distribution inside the van (engine and component weight line up over drive shaft). Some water restoration companies in colder geographical areas prefer this placement for better traction in ice and snow. Also, it is physically easier to load the unit into the rear door due to the height of the vehicle bed.

Secure Installation

No matter how the unit is installed, check to see if the Titan H₂O is properly secured to the floor of the van with the hardware provided. This safety measure will ensure that the machine will not slide inside the van. See Figure 2-2 for the correct installation.

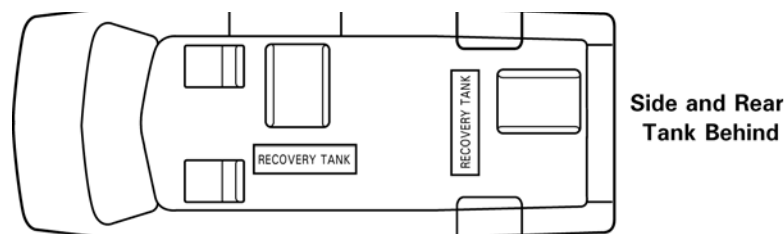


Figure 2-2. Recommended Location of Titan H₂O in Van

WARNING

A sudden or crash stop will cause the machine to rocket forward if not properly secured. To prevent serious personal injury, ensure that the Titan H₂O is well secured to the floor of the vehicle with the hardware supplied. Protect yourself and the machine.

⚠ WARNING

HydraMaster strongly recommends that the exhaust from the front of the machine be vented down under the truck to prevent carbon monoxide from entering the job site. **Always park the truck so the exhaust is blowing away from the job site.**

⚠ WARNING

Never operate this machine with a portable gas can inside the truck. Doing so increases the risk of a fire or explosion.

⚠ WARNING

Mount a fire extinguisher just inside the rear or side door for emergencies.

⚠ WARNING

Do not use a portable propane tank inside of the truck or van. It is dangerous and illegal in most states.

⚠ WARNING

Transporting any vented fuel container that presently holds or has ever held a flammable liquid in a vehicle containing the Titan H₂O is strictly forbidden by HydraMaster North America, Inc., and by federal and state regulation.

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

SETTING UP THE TITAN H₂O

Prior to operating the Titan H₂O, adjust the vacuum relief located on the recovery tank by capping all the vacuum inlets. The machine should be set to 14" Hg maximum.

CAUTION

Setting the vacuum level higher than the recommended value can result in an increased risk of serious component damage.

ORIENTATION OF FUEL PUMP

For proper fuel pump operation and fuel flow, the vehicle's fuel pump must be installed in a lower position with respect to the fuel tank and in as vertical a position as possible (outlet side up - see Figure 2-3 and Figure 2-4).

Mount the fuel pump away from sources of heat

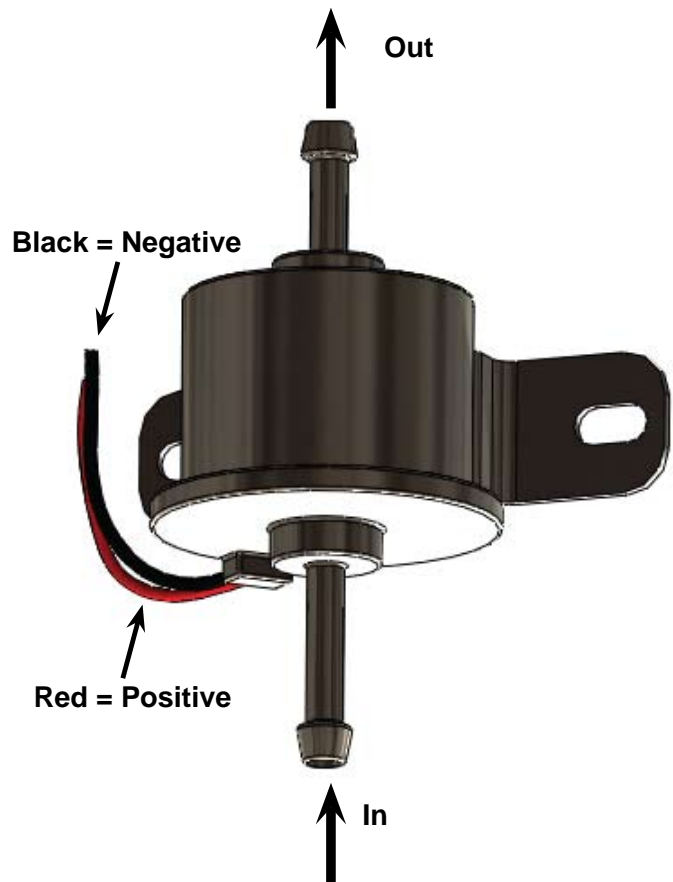


Figure 2-3. Install Fuel Pump, Outlet Side Up

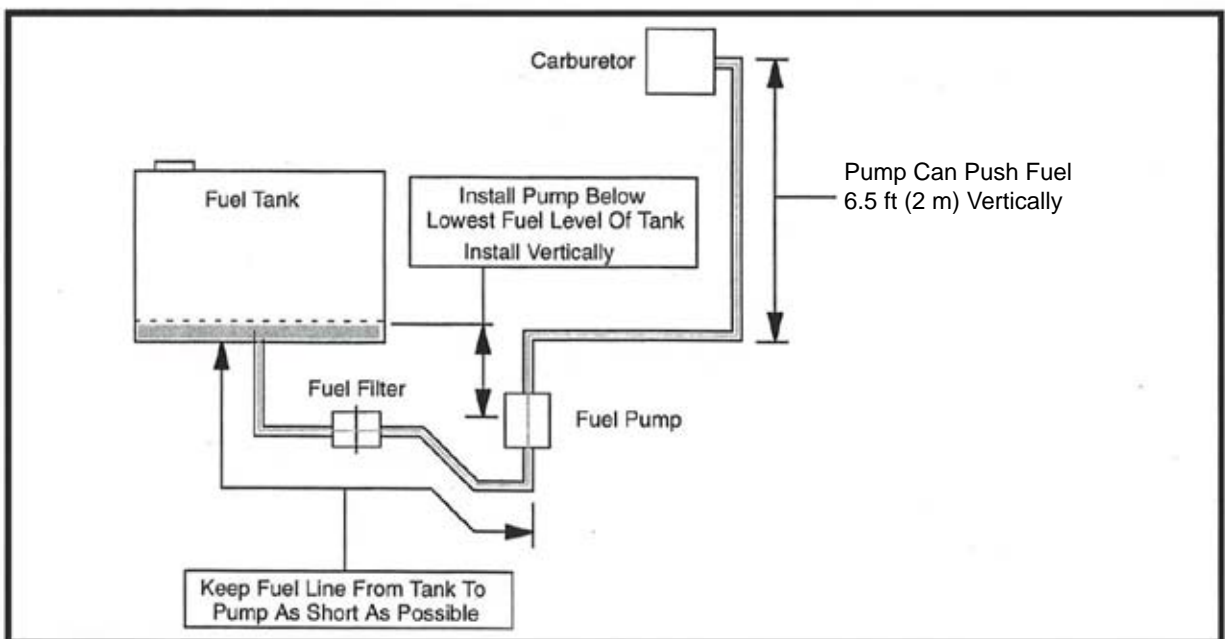


Figure 2-4. Fuel Pump Must Be in Vertical Position

3 - Operating Instructions

This section describes how to operate the Titan H₂O, starting with a physical layout of the front panel (see Figure 3-1).



Figure 3-1. Titan H₂O Front Panel Assembly

CAUTION

The machine cannot be run in the "IDLE" position for water extraction. This will void the warranty.

START UP PROCEDURE

1. Turn the throttle cable to the "IDLE" position.
2. Pull the choke cable out if the engine is cold.
3. Start the engine by pushing the ignition switch to "START". Allow the Titan H₂O to run in idle for 2 – 3 minutes to warm up.
4. Connect the required length of hoses.
5. Connect the wand or tool.
6. If the Automatic Pump-Out option is included in your configuration, turn the Automatic Pump-Out (APO) switch to "ON"
7. Pull the throttle cable to the "HIGH" speed position.
8. Commence water extraction.

SHUT DOWN PROCEDURE

1. Remove the vacuum hose.
2. Lubricate the blower to prevent it from rusting internally.
 - a. Allow the unit to run at high speed for a few minutes with the vacuum hose disconnected in order to remove moisture from the blower.
 - b. Cap off the inlet(s) to the vacuum tank.
 - c. Spray a HydraMaster-recommended spray lubricant into the "BLOWER LUBE PORT" for about 5 to 10 seconds while the unit is running.
 - d. Allow machine to run additional 2 to 5 minutes under load to flush off lubricant.
 - e. Uncap the inlet(s) and run the unit for another minute to allow the blower to cool down.
3. Push the throttle cable to the "IDLE" position.
4. Turn the ignition switch to "OFF."
5. Drain the vacuum tank in an appropriate location.

NOTICE

In accordance with EPA, state and local laws, do not dispose of water into gutters, storm drains, streams, or reservoirs.

6. Clean the vacuum filter prior to mobilizing the van.
7. Perform daily and periodic maintenance as specified in Section 4 of this Owner's Manual.

4 - Machine Maintenance

To avoid costly repairs and downtime, it is imperative to develop and practice good maintenance procedures. These procedures fall into daily, weekly, monthly and quarterly increments and are outlined below. All maintenance must be performed by qualified service personnel.

A maintenance log, provided in the Owner's Guide, must be correctly and completely filled out. HydraMaster may request to inspect the logs before a warranty claim is honored. It is recommended that the log be affixed to the vehicle door near the truckmount for convenience and to serve as a maintenance reminder.

This section describes how to properly maintain the truckmount in the following areas:

- Operational Maintenance
- Overall Machine Maintenance
- Vacuum System Maintenance

OPERATIONAL MAINTENANCE

Daily Maintenance

- Check the engine oil level. Add oil if needed.
- Check the oil level in the blower. Add oil if needed.
- Check coolant overflow bottle level. Add coolant if needed.
- Inspect and clean the recovery tank filters.
- Inspect the truckmount for water and oil leaks, loose electrical connections, etc. and repair as needed.
- Lubricate the blower with a HydraMaster-recommended lubricant.

Weekly Maintenance

- Inspect the recovery tank filters for tears, holes, etc. Repair or replace as needed.
- Inspect the vacuum relief valve. Clean and lubricate as necessary.
- Clean the recovery tank thoroughly with pressure washer.
- Check the blower belt drive and fan belt for wear and proper tension. Adjust as needed.
- Check all the hoses and wiring for wear and chafing. Secure as needed.
- Check all the nuts and bolts. Tighten as needed.
- One time change of the engine oil after 25 hours of operation.
- Change the engine oil every 100 hours. (Every 50 hours if operating in high ambient temperatures.) Change oil filter every oil change.

Monthly Maintenance

- Check the engine air filter. Clean or replace as necessary.
- Check the water level in battery. Fill as needed.
- Clean the battery terminals as needed.

Quarterly Maintenance

- Check the fuel lines. Repair or replace as needed.
- Clean and gap the spark plugs to 0.031 - 0.035" (0.8 - 0.9 mm). Replace if excessive carbon buildup is visible.
- Change the blower oil after first 100 hours of use.

500 Hours

- Change the blower oil.
- Check the engine valve clearance (intake and exhaust 0.012" [0.30 mm])
- Replace spark plugs
- Change primary fuel filter
- Change coolant

1,000 Hours

- Replace spark plugs
- Change primary air filter
- Flush coolant system

OVERALL MACHINE MAINTENANCE

Maintenance, troubleshooting and repair are much easier tasks to accomplish on a clean truckmount. Regular cleaning of the truckmount offers the user an opportunity to visually inspect all facets of the truckmount and spot potential problems before they occur. In addition to the operational maintenance the following "housekeeping" duties should be performed.

After each job

- Check the recovery tank and the recovery tank filters. Empty and clean as necessary.

Daily

- Wipe the Titan H₂O down thoroughly with a damp cloth.
- Wipe down the vacuum hoses as needed.
- Inspect and clean the vacuum slot on the wand or tool.
- Clean your wands and tools to maintain original appearance.
- Visually inspect the hoses for abrasions, cuts, etc. Repair or replace as needed.

Weekly

- Thoroughly clean all wands and tools, and inspect for debris in vacuum slot.
- Thoroughly clean the vacuum hoses.

ENGINE MAINTENANCE

Engine Oil Level Check

The engine oil level should be checked daily. It is recommended that the oil be checked just before the engine is started for the first time for that day. The oil level should be between the 'Add' and the 'Full' marks on the dipstick.

CAUTION

Do not operate the engine with the oil level below the bottom of the 'Add' mark on the dipstick, or above the top of the 'Full' mark.

Adding Engine Oil

It is normal to add some oil in the period of time between oil changes. The amount will vary with the severity of operation. When adding or replacing engine oil, be sure the oil meets or exceeds the recommended specification.

Changing Engine Oil and Filter

The engine oil and filter must be changed every 100 hours or every 3 months whichever occurs first. The oil and filter should be changed more often if the engine is operating in dusty or extremely dirty areas, or during cold weather.

Engine Oil Quality

To achieve proper engine performance and durability, it is important that you use only engine lubricating oils of the correct quality in your engine. Proper quality oils also provide maximum efficiency for crankcase ventilation systems, which reduces pollution.

CAUTION

Use only engine oils displaying the American Petroleum Institute (API) "starburst" certification mark 'FOR GASOLINE ENGINES' on the container.

Engine Oil Recommendation

While multi-viscosity oils are generally recommended, SAE 5W-30 synthetic is specifically recommended year round for your Titan H₂O engine.

Oil Filter

Kubota engines use a Kubota oil filter. An equivalent or better oil filter must be used when servicing the engine.

To replace the filter, use a proper filter wrench to remove the filter.

Clean the filter mounting base and lightly coat the gasket surface of the new filter with engine oil. Hand tighten the filter until the gasket contacts the base, then tighten another ½ turn. Fill the engine with the correct amount of oil, run the engine and check for oil leaks at the drain plug and oil filter gasket.

Spark Plugs

Always use the recommended spark plugs for your engine. Hotter or colder plugs, or similar plugs that are not exact equivalents to the recommended plugs, can cause permanent engine damage, reduce the engines useful life, and cause many other problems such as hard starting, spark knock and run-on. Installing new spark plugs regularly is one of the best ways to keep your engine at peak performance.

Cooling System

Coolant Level

Check the coolant level in the coolant overflow reservoir daily. Generally a good time to do this is just prior to starting the engine for the first time each day.

Maintain the coolant level in the radiator at ¾ " (19 mm) below the filler neck seat of the radiator when the coolant is cold. When the coolant level is checked, inspect the condition of the radiator caps rubber seal. Make sure it is clean and free of any dirt particles which would keep it from seating on the filler neck seat. Rinse off with clean water if necessary. Also make sure that the filler neck seat is free of any dirt particles.

▲ WARNING

Never remove the radiator cap under any condition while the engine is operating. Failure to follow these instructions could result in damage to the cooling system, engine, or cause personal injury. DO NOT add coolant to any engine that has overheated until the engine cools.

The engine manufacture recommends the cooling system to be filled with a 50/50 mixture of antifreeze and water.

CAUTION

Always maintain a 50% solution of phosphate-free antifreeze at all times for adequate heat dissipation, lubrication and protection from freezing. Major brands are typically low phosphate or phosphate free, and will be labeled accordingly on the container. It is recommended that you consult the technical data sheet for the brand of coolant you are using to determine if it meets the low phosphate requirement. Failure to use a 50% solution of phosphate-free antifreeze may result in corrosion of the cooling system.

Bleeding Air from Cooling System

It is necessary to remove all of the air from the engine to prevent overheating. If the coolant has been drained for any reason, it will be necessary to follow the bleed procedure.

When the engine is cold, remove the radiator cap. Fill the radiator until it is to the top of the filler neck. Start the engine and run in the idle rpm position and no vacuum load. Allow the engine coolant to heat up and open the thermostat several times. As all the air is removed from the system, the level of the radiator should lower below the internal tubes. This process should take approximately 5 - 10 minutes. Top off the coolant and install the cap. In the event you experience a coolant shutdown due to overheat, allow the machine to cool down and repeat this procedure.

Radiator

Inspect the exterior of the radiator for obstructions. Remove all debris with a soft brush or cloth. Use care to avoid damaging the core fins.

Fuel Filter

The fuel filter is located between the fuel pump and the fuel tank underneath the vehicle.

VACUUM SYSTEM MAINTENANCE

The vacuum pump in this machine is commonly referred to as a “rotary positive displacement blower” or “blower” for short. The performance and life of the truckmount is greatly dependent on the care and proper maintenance it receives. The manual for the blower has been included. Review the manual for a better understanding of this piece of machinery.

CAUTION

To protect the blower from overloading and damaging itself, there is a vacuum relief system installed on the vacuum tank. When the vacuum tank inlet is completely sealed off a maximum of 14” Hg will be attained.

CAUTION

Solid objects entering the blower will cause serious damage to the internal components of the blower. Extreme caution should be used when the truckmount is being run for test purposes with the inlet to the blower open to the atmosphere.

CAUTION

Foam passing through the blower can lead to serious problems with the truckmount. It is important to keep the vacuum tank free of foam. The tank is protected from overflowing by a float kill switch; however, this switch is not activated by foam.

Daily

At the end of each day the internal components of the blower need to be lubricated. This helps to prevent rust deposits and prolongs the life of the truckmount.

To lubricate the blower:

1. Allow the unit to run for a few minutes at high speed with the vacuum hose disconnected in order to remove moisture from the blower.
2. Cap off the inlet(s) to the vacuum tank.
3. Spray a HydraMaster-recommended spray lubricant into the “BLOWER LUBE PORT” for about 5 to 10 seconds while the unit is running.
4. Allow machine to run additional 2 to 5 minutes under load to flush off lubricant.
5. Uncap the inlet(s) and run the unit for another minute to allow the blower to cool down.

Periodically

Change the oil in both ends of the blower after the initial 100 hours of use. The oil is to be changed each 500 hours of use thereafter.

TITAN_{H₂O}

5 - Electrical System

This section describes how the electrical system functions in the following manner:

- Electrical System Information
- Electrical Schematic
- Wiring Diagram

ELECTRICAL SYSTEM INFORMATION

The Titan H₂O electrical system operates on 12 - 14 V DC which is provided by the battery. Battery levels are maintained by a 40-Amp alternator mounted on the engine.

NOTICE

When a new battery is installed, check that it is properly charged before installation or damage to the charging system may occur.

Figure 5-1. Electrical Schematic
000-179-853

COLOR KEY	
BLACK	- DENOTES WIRES
RED	- DENOTES OPTIONAL EQUIPMENT
GREEN	- DENOTES COMPONENTS

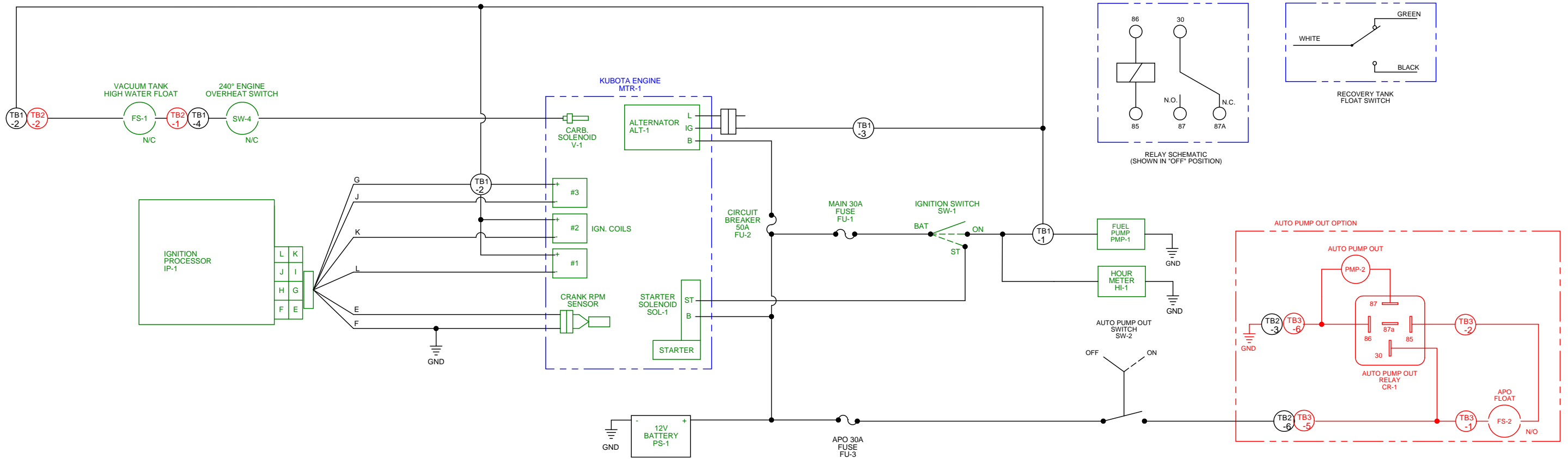


Figure 5-2. Wiring Diagram - View 1 of 3
000-179-852

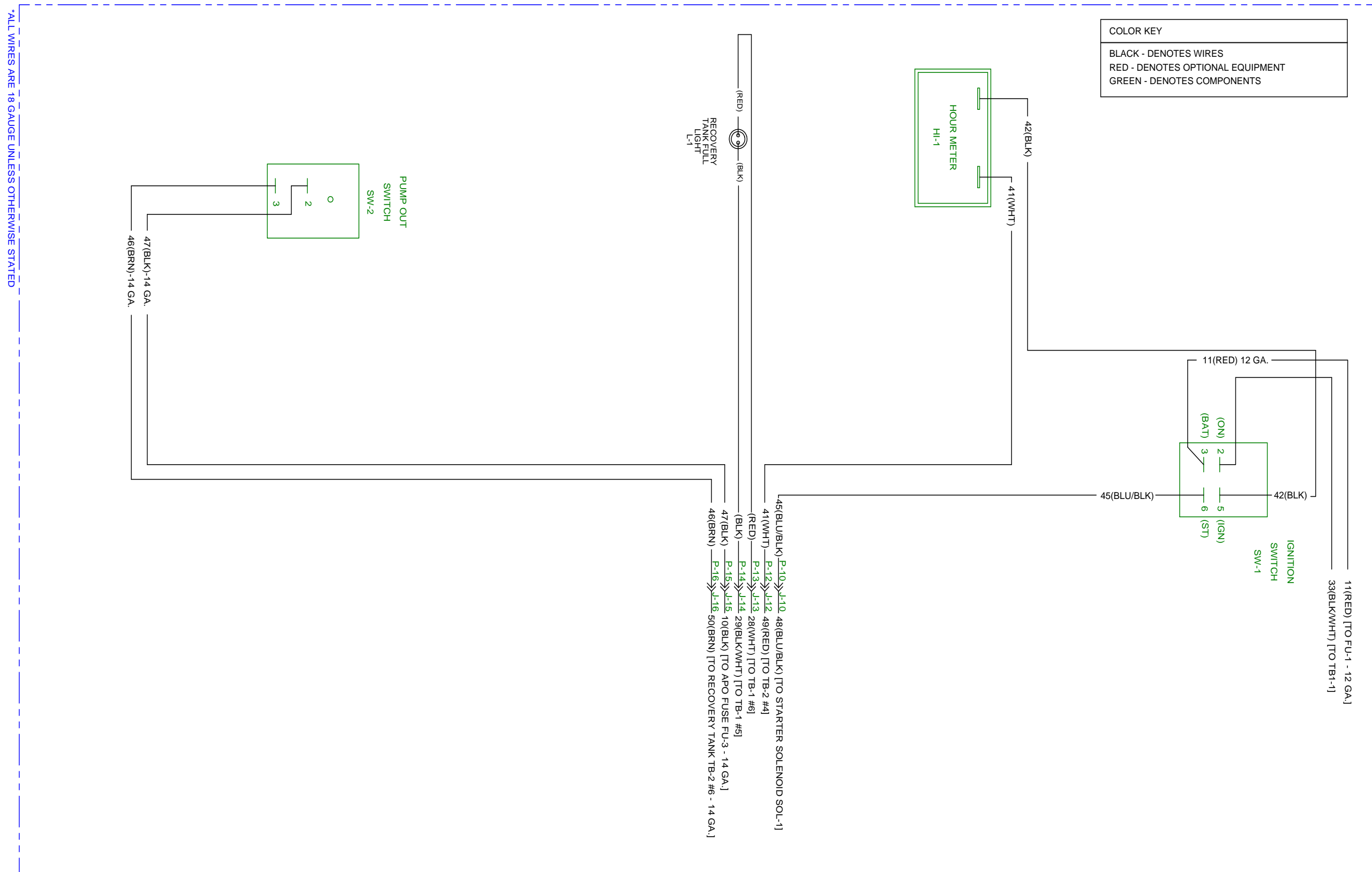


Figure 5-3. Wiring Diagram - View 2 of 3
000-179-852

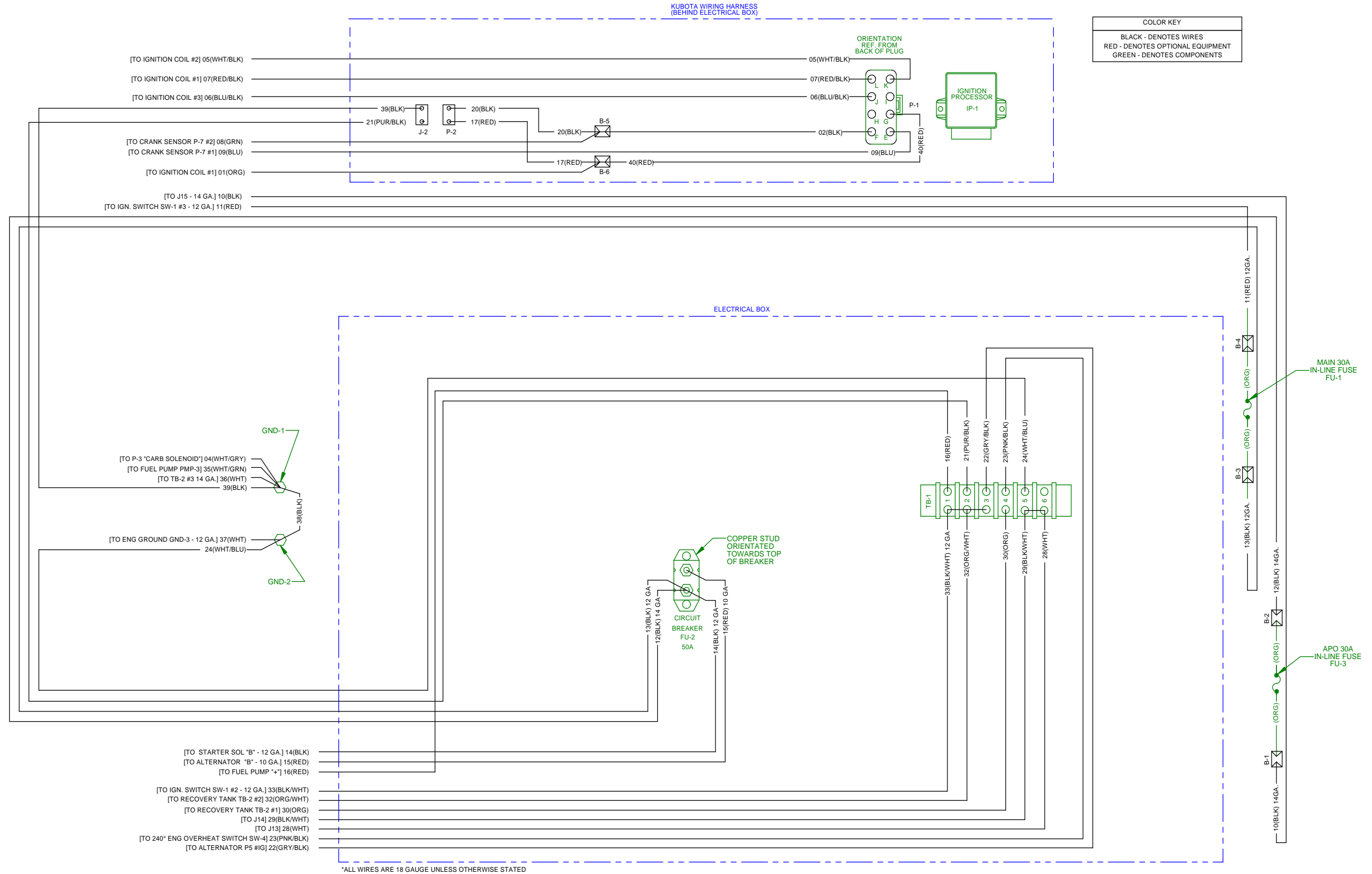
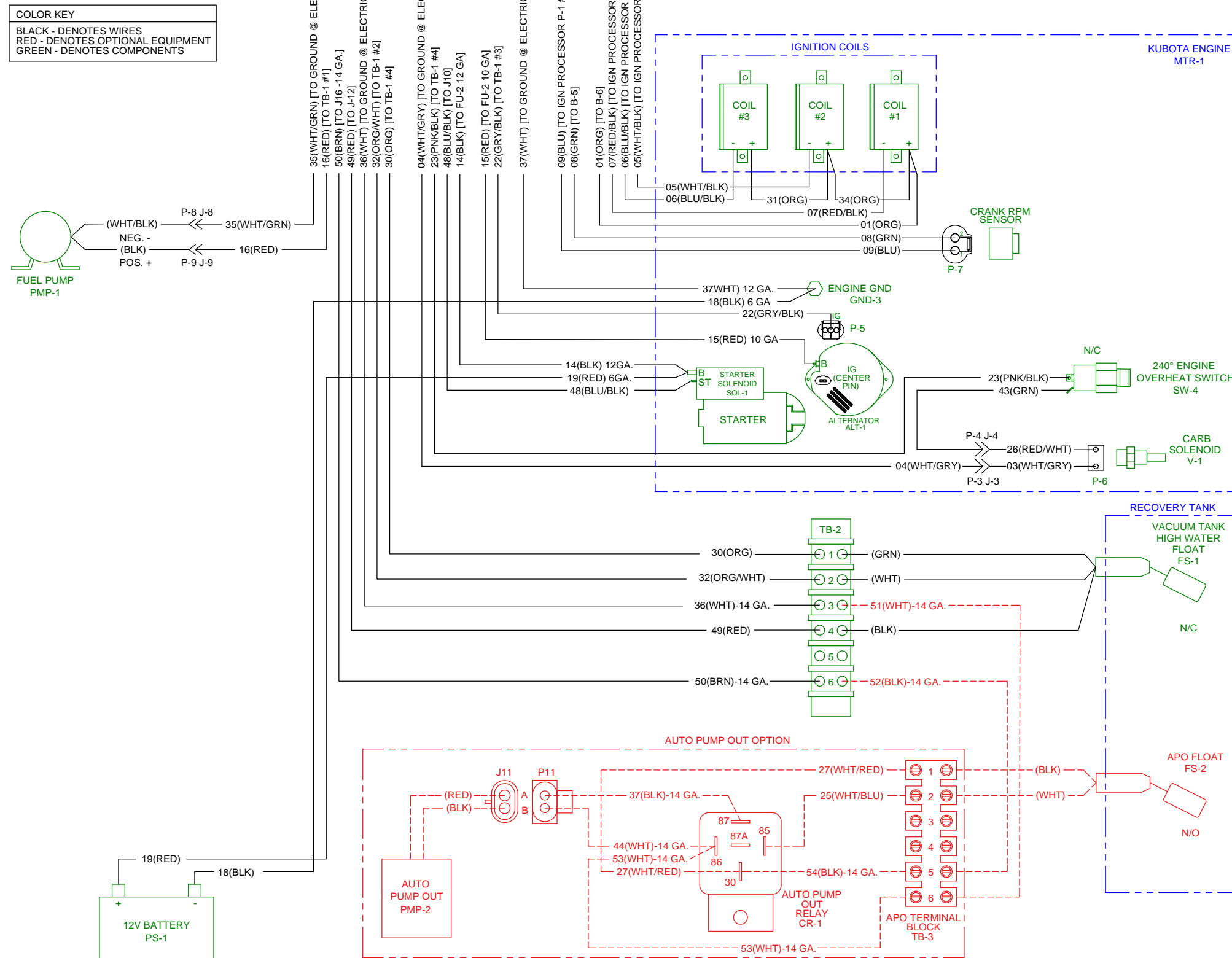


Figure 5-4. Wiring Diagram - View 3 of 3
000-179-852



TITAN_{H₂O}

6 - Systems Troubleshooting

This section describes the standard troubleshooting procedures in the following areas:

- Engine
- Vacuum System

ENGINE

1. The engine will not turn over

	Possible Cause	Solution
1.1.	A loose or corroded battery terminal.	Clean and tighten the battery terminal connections.
1.2.	The battery is dead.	Recharge or replace the battery. Test the charging system. Repair if necessary.
		<p>CAUTION</p> <p>Do not attempt to jump start the truckmount from a running vehicle. The amperage output from an automobile will damage the charging system of the truckmount.</p>
1.3.	The main fuse is blown.	Check the main fuse.
		If the fuse is blown, inspect the electrical system for worn or shorted wires. Repair or replace as necessary.
1.4.	The vacuum blower has seized.	Attempt to turn the coupler by hand. If it will not turn refer to the Vacuum System Troubleshooting Subsection.
1.5.	The ignition switch is faulty.	Test to see if there is power both to and from the switch.
1.6.	The starter solenoid is faulty.	Test to see if there is power to solenoid with ignition in "START" position.
1.7.	The starter motor is faulty.	Test to see if there is power to the motor with the ignition in "START" position. .
1.8.	None of the above.	Refer to a qualified service technician for further troubleshooting.

2. The engine turns over but will not start.

	Possible Cause	Solution
2.1.	The recovery tank is full	Drain the tank.
2.2.	The recovery tank float is faulty.	Inspect the float. Repair or replace as necessary.
2.3.	The engine ignition system is faulty.	Refer to a qualified service technician for further troubleshooting.
2.4.	Fuel is not reaching the carburetor.	Test for power to the fuel pump. Refer to Electrical Section.
		If power is present, inspect the fuel pump. Replace if necessary.
		Inspect the fuel lines between the source and the carburetor. Repair or replace as necessary.
2.5.	The engine is flooded.	Remove spark plug and dry.
2.6.	The spark plugs are worn or dirty.	Inspect and replace as necessary.
2.7.	None of the above.	Refer to a qualified service technician for further troubleshooting.

NOTICE

Engine should be adjusted to run at 3,000 rpm under a vacuum load of 14" Hg.

3. The engine will not come up to normal operating rpm

	Possible Cause	Solution
3.1.	Excessive load on the engine.	Inspect and clean the recovery tank filters.
		Inspect the recovery tank to the blower hose. Repair or replace as necessary.
3.2.	Excessive back pressure on the engine exhaust.	Inspect for blockage in the exhaust system. Clean or replace as necessary.

4. Runs rough at high speed

	Possible Cause	Solution
4.1.	The spark plug(s) are faulty.	Remove and inspect the plugs. Clean or replace as necessary.
4.2.	The spark plug wire(s) are faulty.	Inspect the wires and connectors for damage or loose connections. Repair or replace as necessary.
4.3.	Inadequate fuel supply to the carburetor.	Check for blockage in the filter. Repair or replace as necessary.
4.4.	Poor connection to coils.	Verify there is a good contact with each of the wires to the coils.

5. Runs rich (black smoke)

	Possible Cause	Solution
5.1.	A dirty air filter	Inspect and replace as necessary.
5.2.	Excessive back pressure	Inspect for blockage in the blower exhaust, dirty air filter or a partially opened choke.

6. Engine overheats

	Possible Cause	Solution
6.1.	Poor ventilation in the van	Open all the van doors.
		Install a roof vent in the van.
		Remove any dividers or other objects impeding airflow around the truckmount.
6.2.	Low oil level	Check the level and fill as necessary.
6.3.	Excessive back pressure on the engine exhaust	Inspect for blockage in the blower exhaust. Clean or replace as necessary.
6.4.		Check radiator level
		Check overflow bottle level
6.5.	Poor coolant mixture	Check the coolant with a test to determine mixture; adjust as necessary.

VACUUM SYSTEM

1. Weak vacuum at wand. The gauge reads normal.

	Possible Cause	Solution
1.1	Blockage in the hoses or wand tube	Disconnect the hoses and check for an obstruction.
1.2	Excessive length of hose connected to the truckmount	Do not attach excessive lengths of hose.

2. Weak vacuum

	Possible Cause	Solution
2.1.	Air leak somewhere in the vacuum system	Check the vacuum relief valve for proper adjustment.
		Carefully check all the vacuum hoses for a cut or break.
		Check the recovery tank lid gasket.
		Make sure the recovery tank drain valve is fully closed.
2.2.	The vacuum blower is turning too slowly.	Check the rpm of the engine. Adjust as necessary to 3,000 rpm under a 14" Hg vacuum load.
2.3.	The vacuum gauge is defective.	Test the gauge and replace if necessary.

3. The vacuum gauge reads too high with no hoses attached

	Possible Cause	Solution
3.1.	The filter in recovery tank is clogged.	Remove and clean or replace as necessary.
3.2.	The hose from recovery tank to the vacuum blower is collapsed internally.	Inspect and replace as necessary.

4. Excessive noise produced by the blower

	Possible Cause	Solution
4.1.	The blower is low on oil.	Inspect the oil levels and replenish as necessary. Note: Running the blower with low oil levels can cause severe damage. If this situation occurs the blower should be inspected by a qualified service technician.
4.2	The vacuum blower has internal damage.	Refer to a qualified service technician.

5. The vacuum blower is locked and will not turn

	Possible Cause	Solution
5.1.	Truckmount has been inactive for a period of time and the blower was not properly lubricated prior to final shutdown. Rust has possibly built up on the internal surfaces.	Spray penetrating oil into the blower and let sit for at least one hour. Then very carefully use pipe wrench on the outer diameter of the pulley on the coupler to attempt to free lobes of the blower. Do not use a wrench directly on the blower shaft. If unable to free up the blower in this manner, refer to a qualified service technician.
5.2.	There is internal damage to the blower	Refer to a qualified service technician.

6. Water in exhaust

	Possible Cause	Solution
6.1.	The recovery tank has been filled with foam or overfilled with water.	Inspect the recovery tank. If full, drain the tank.
		Inspect the high level shutoff switch for proper operation. Clean or replace the switch as necessary.
6.2.	Condensation in system	This will be more common in cool weather and humid climates. If this is the cause it should dissipate after a few minutes of running.

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7 - Assemblies and Parts List

This section contains assemblies and parts lists associated with the Titan H₂O:

- Machine Assembly Parts List
- Frame Assembly Parts List
- Top Cover Assembly Parts List
- Side Cover Assembly Parts List
- Engine Assembly Parts List
- Blower and Silencer Assembly Parts List
- Exhaust Assembly Parts List
- Flywheel Plate Assembly Parts List
- Upper Dash Assembly Parts List
- Lower Dash Assembly Parts List
- Grill Assembly Parts List
- Electrical Panel Assembly Parts List
- 100 Gallon Universal Recovery Tank (URT) Assembly Parts List
- 100 Gallon Universal Recovery Tank (URT) Cover Assembly Parts List
- Vacuum Relief Valve Assembly Parts List

Figure 7-1. Machine Assembly - View 1 of 4
610-050-743

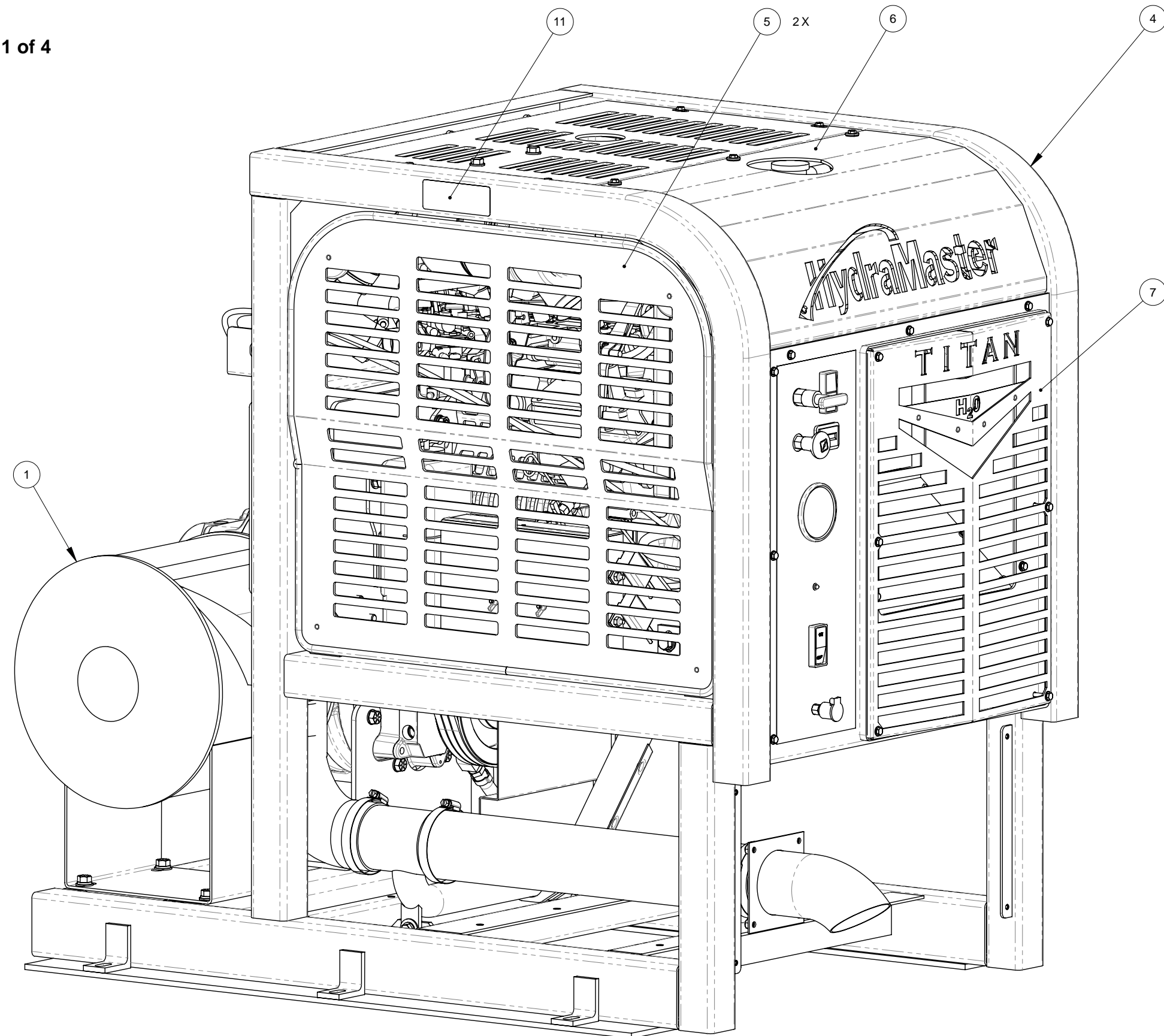


Figure 7-2. Machine Assembly - View 2 of 4
610-050-743

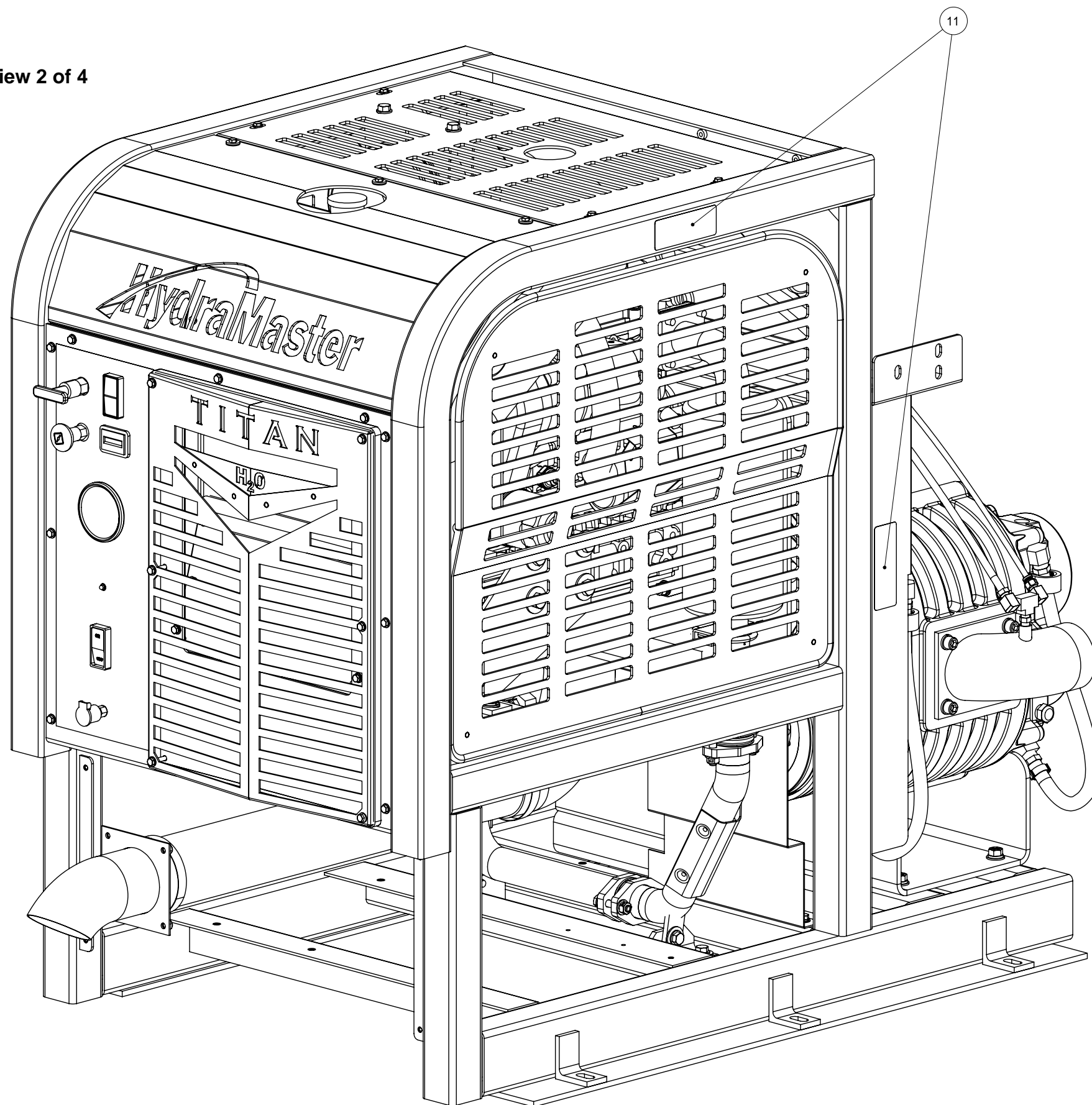
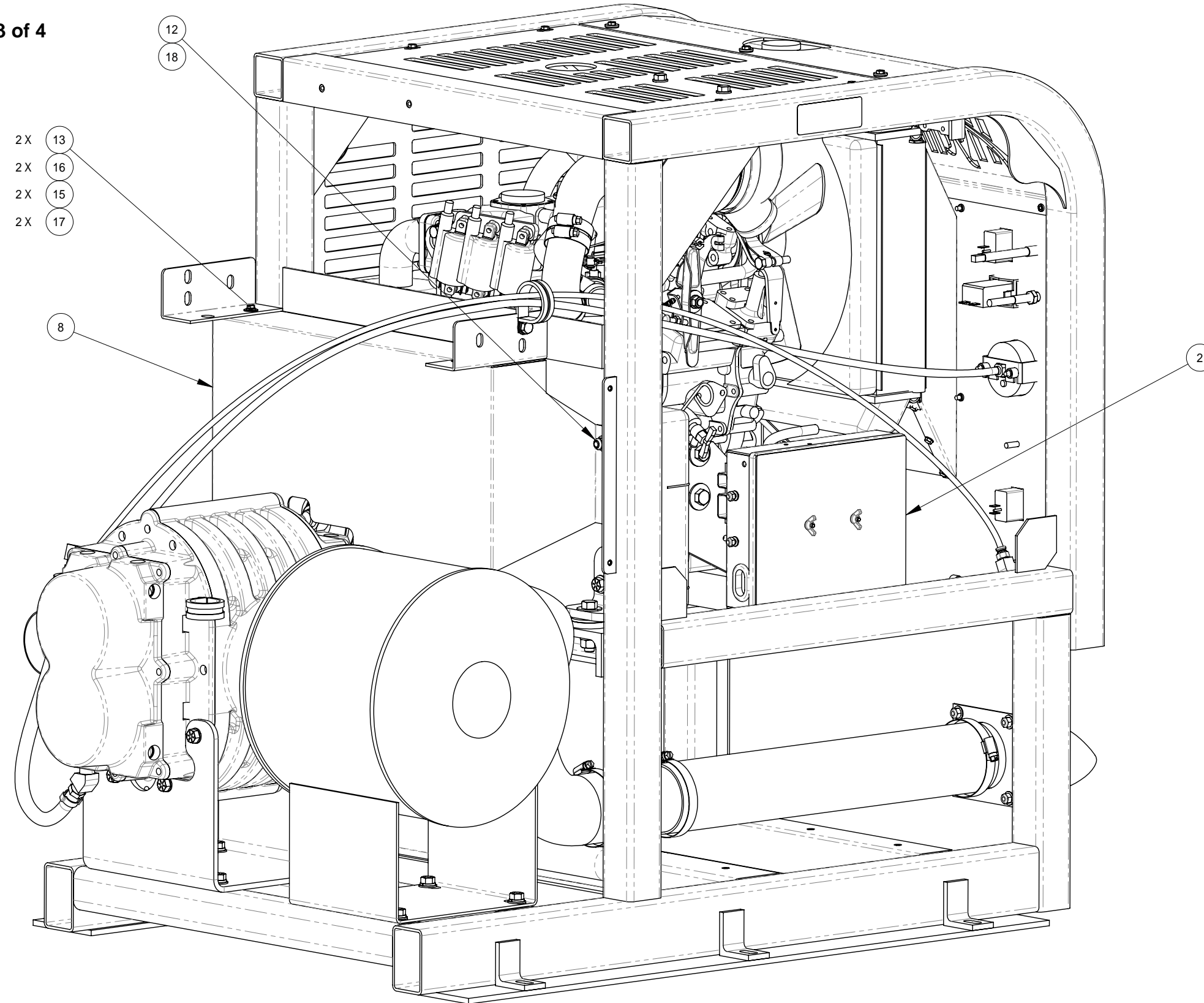
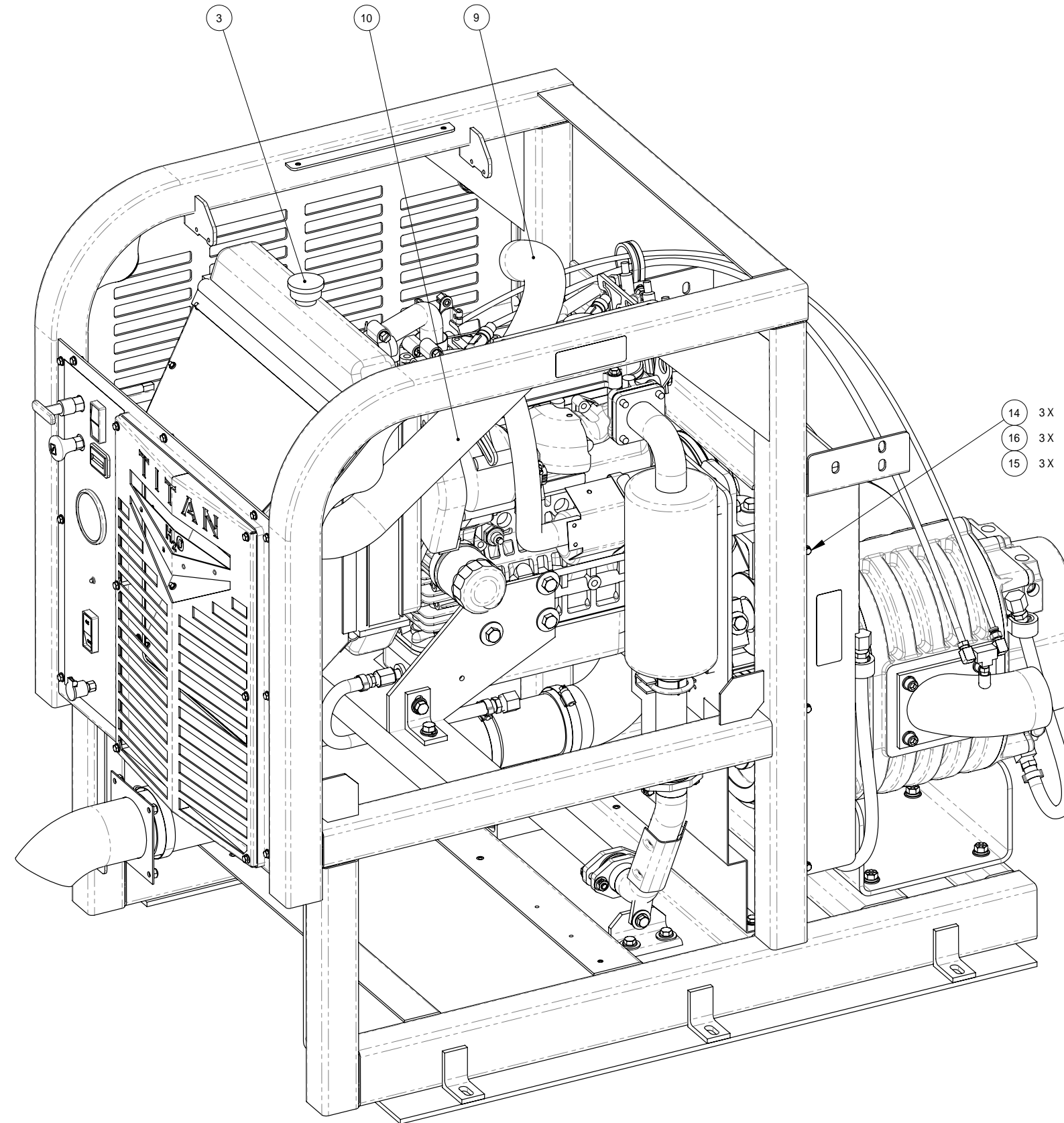


Figure 7-3. Machine Assembly - View 3 of 4
610-050-743



SOME HOSES AND EXTERNAL PARTS HIDDEN FOR CLARITY

Figure 7-4. Machine Assembly - View 4 of 4
610-050-743



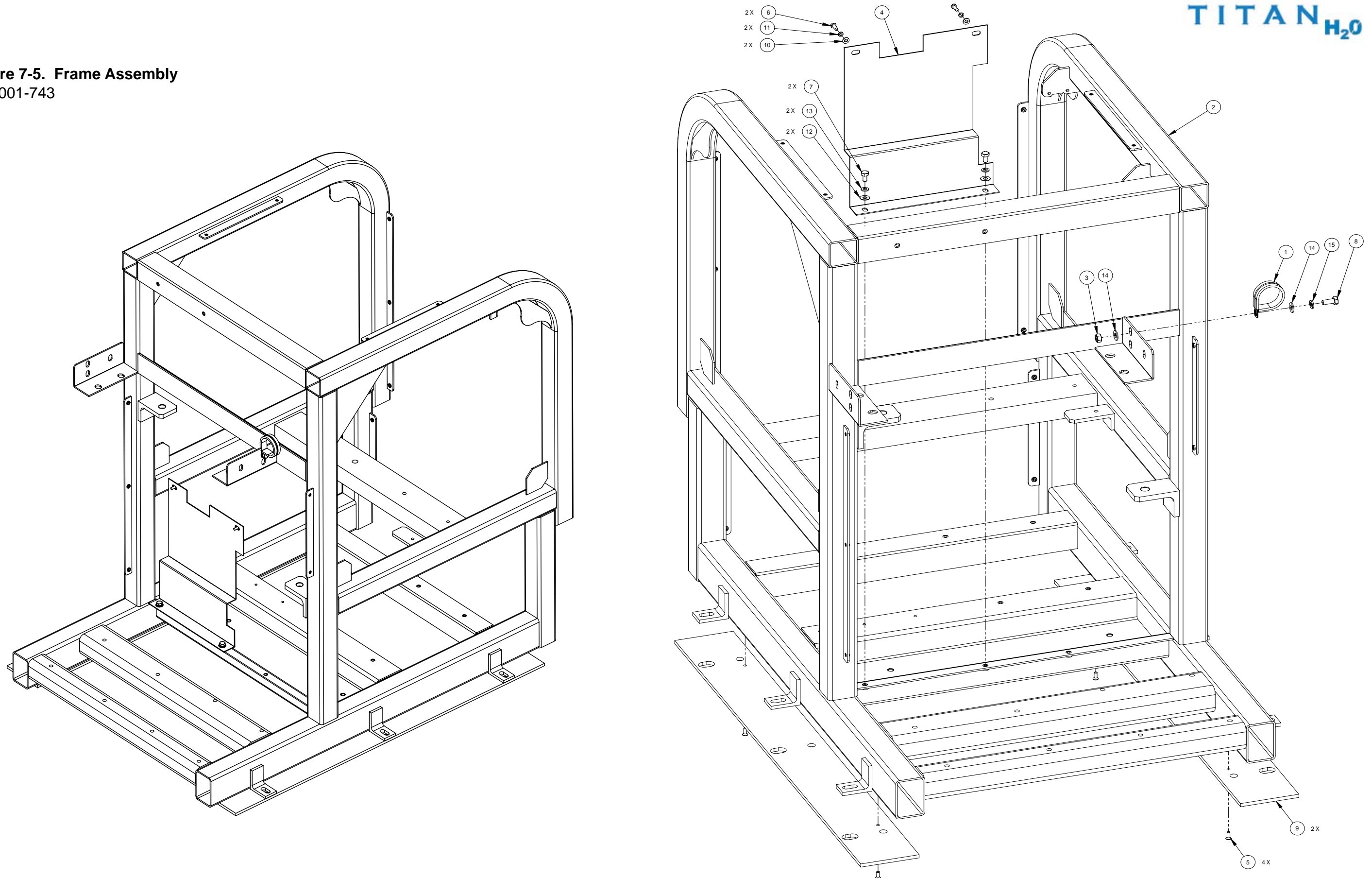
SOME HOSES AND EXTERNAL PARTS HIDDEN FOR CLARITY

Machine Assembly Parts List

Item	Part Number	Description	Qty
1	610-002-743	Assembly, Blower and Silencer	1
2	610-011-743	Assembly, Electrical Panel	1
3	610-004-743	Assembly, Engine	1
4	610-001-743	Assembly, Frame	1
5	610-023-741	Assembly, Side Cover	2
6	610-022-741	Assembly, Top Cover	1
7	610-020-743	Assembly, Upper Dash	1
8	000-041-872	Cover, Belt, - Coated	1
9	000-068-919	Hose, 1.75" I.D. X 18.75" Lg. Flexible	1

Item	Part Number	Description	Qty
10	000-068-920	Hose, Intake Elbow - Modified	1
11	000-081-327	Label, ANSI Warning	3
12	000-094-038	Nut, 5/16"-18UNC Nylock	1
13	000-143-126	Screw, #10-24UNC X 0.50" Lg. Hex Head	2
14	000-143-166	Screw, #10-24UNC X 3/8" Lg. Hex Head	3
15	000-174-001	Washer, #10 Flat	5
16	000-174-014	Washer, #10 Lock	5
17	000-174-003	Washer, 1/4" Flat	2
18	000-174-004	Washer, 5/16" Flat	1

Figure 7-5. Frame Assembly
610-001-743

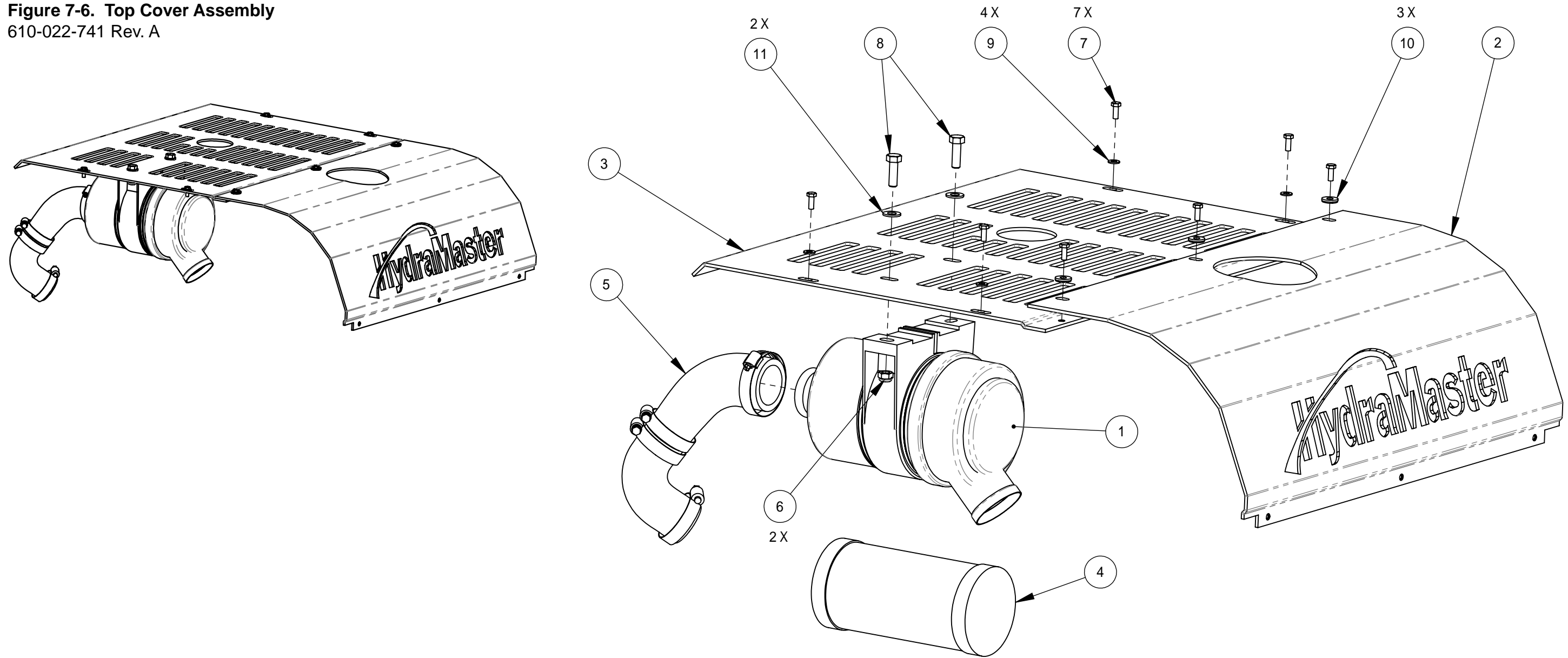


Frame Assembly Parts List

Item	Part Number	Description	Qty
1	000-033-135	Clamp, 1-3/4" Cushion Loop w/ 7/16" Hole	1
2	000-055-190	Frame - Coated	1
3	000-094-012	Nut, 5/16-18"UNC Hex	1
4	000-108-164	Protector, Belt Heat Shield	1
5	000-143-114	Screw, #10-24UNC X 0.50" Lg. Flat Head Phillips	4
6	000-143-126	Screw, #10-24UNC X 0.50" Lg. Hex Head	2
7	000-143-333	Screw, 1/4"-20UNC X 0.50" Lg. Hex Head	2
8	000-143-012	Screw, 5/16"-18UNC X 3/4" Lg.	1

Item	Part Number	Description	Qty
9	000-154-156	Spacer, Machine Rising 4" X 35"	2
10	000-174-001	Washer, #10 Flat	2
11	000-174-014	Washer, #10 Lock	2
12	000-174-003	Washer, 1/4" Flat	2
13	000-174-019	Washer, 1/4" Lock	2
14	000-174-004	Washer, 5/16" Flat	2
15	000-174-018	Washer, 5/16" Lock	1

Figure 7-6. Top Cover Assembly
610-022-741 Rev. A

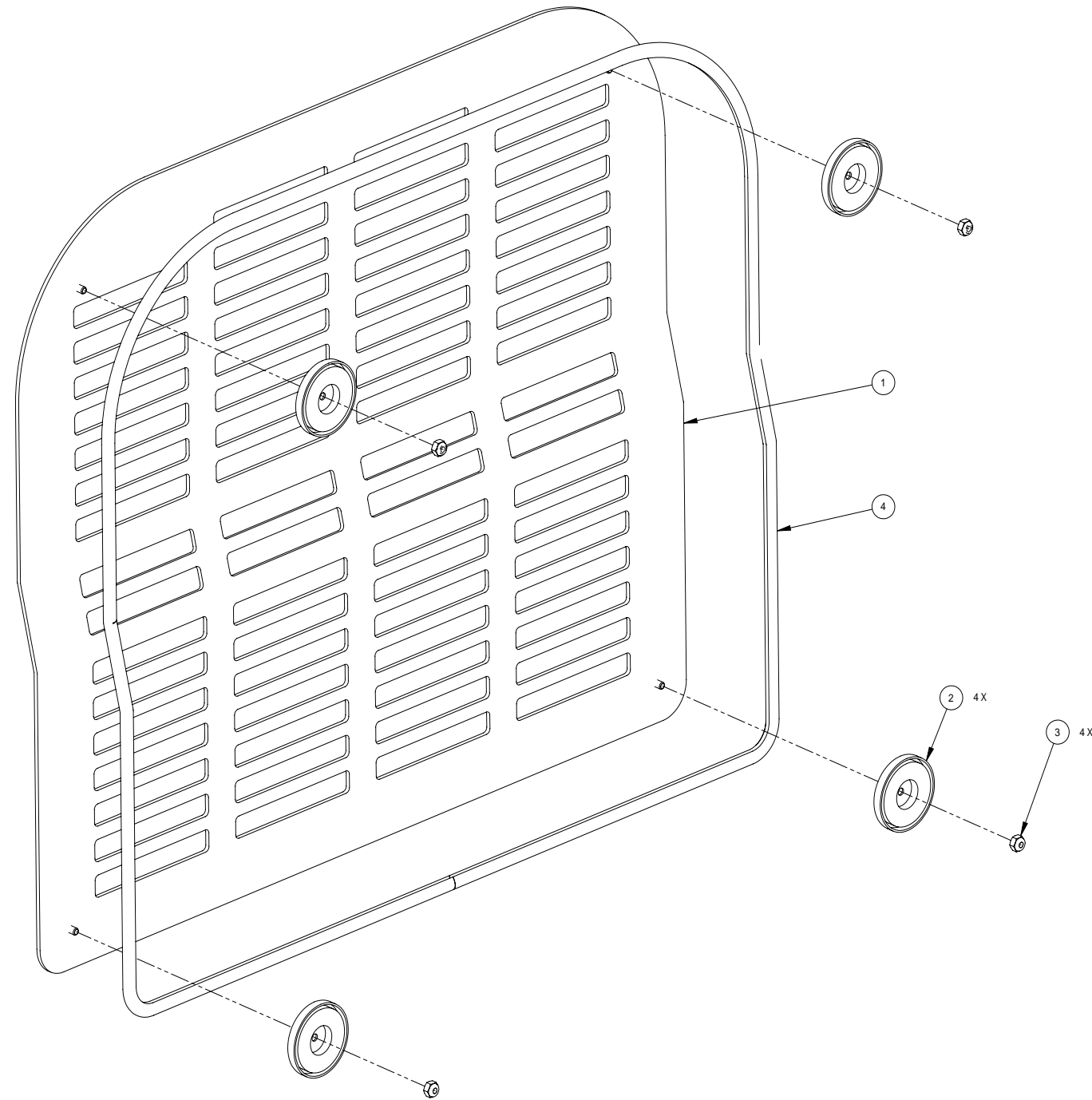


Top Cover Assembly Parts List

Item	Part Number	Description	Qty
1	- - -	Air Cleaner - Kubota Engine (Comes w/ Engine)	1
2	000-041-552	Cover, Brow - Machine - Coated	1
3	000-041-554	Cover, Top - Machine - Coated	1
4	000-049-063	Filter, Replacement - Engine Air (Comes w/ Engine)	1
5	000-068-916	Hose, Kubota Air Intake - Modified	1
6	000-094-038	Nut, 5/16"-18UNC Nylock	2

Item	Part Number	Description	Qty
7	000-143-126	Screw, #10-24UNC X 0.50" Lg. Hex Head	7
8	000-143-143	Screw, 5/16"-18UNC X 1.00" Lg. Hex Head	2
9	000-174-001	Washer, #10 Flat	4
10	000-174-060	Washer, 1/4" Rubber Backed	3
11	000-174-049	Washer, 5/16" Flat	2

Figure 7-7. Side Cover Assembly
610-023-741 Rev. B



Side Cover Assembly Parts List

Item	Part Number	Description	Qty
1	000-041-469	Cover, Side - Machine - Coated	1
2	000-089-003	Magnet	4
3	000-094-034	Nut, #10-24UNC Nylock	4
4	000-131-131	Trimlok, 3/8 X 1/8 Rubber Edge Trim	1 ft

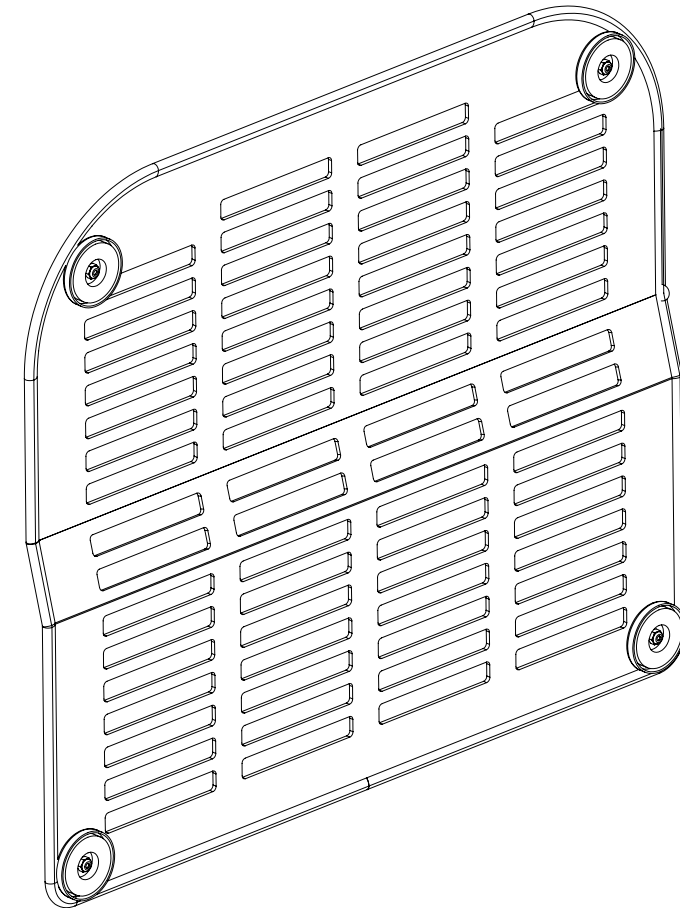


Figure 7-8. Engine Assembly - View 1 of 3
610-004-743

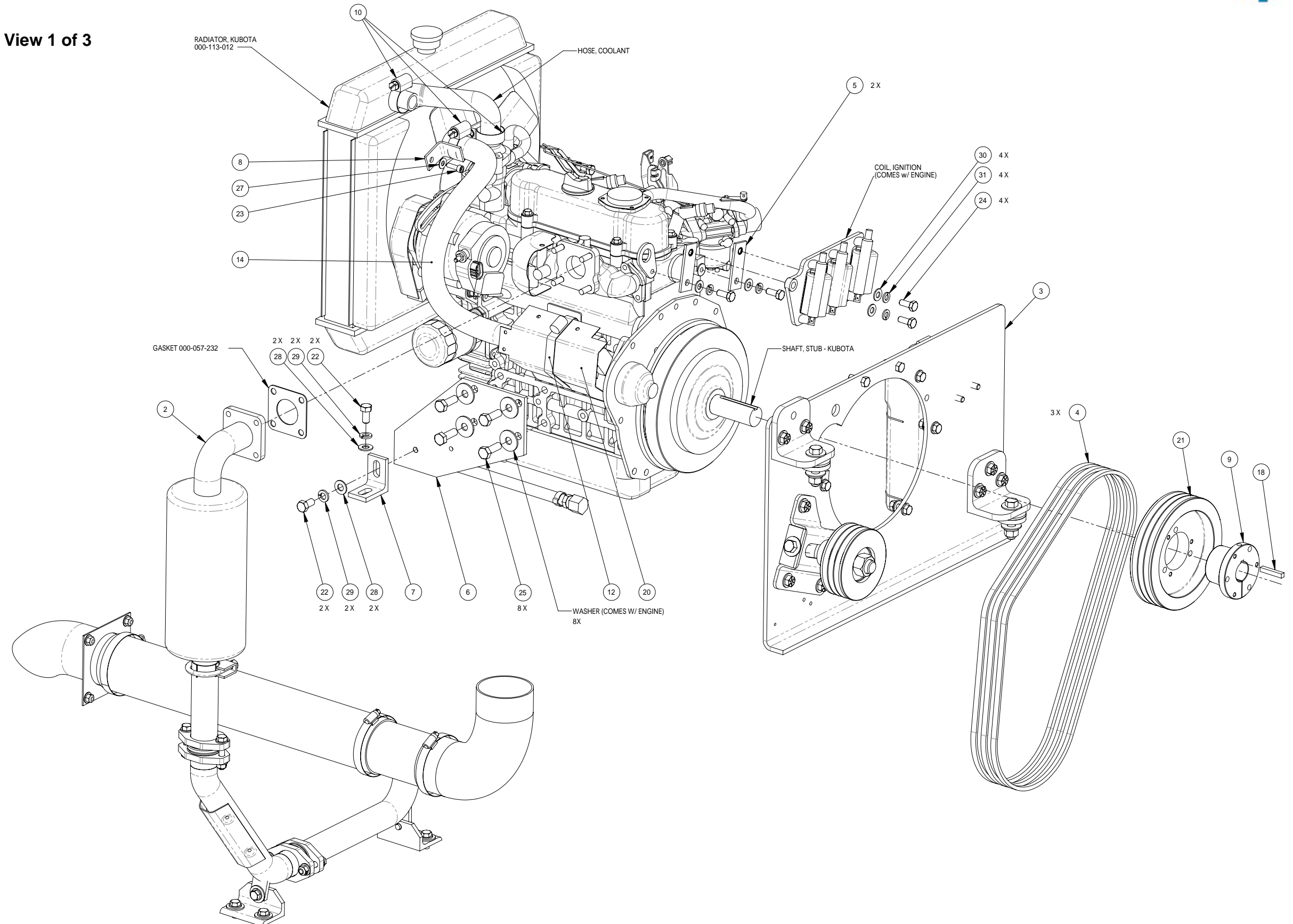


Figure 7-9. Engine Assembly - View 2 of 3
610-004-743

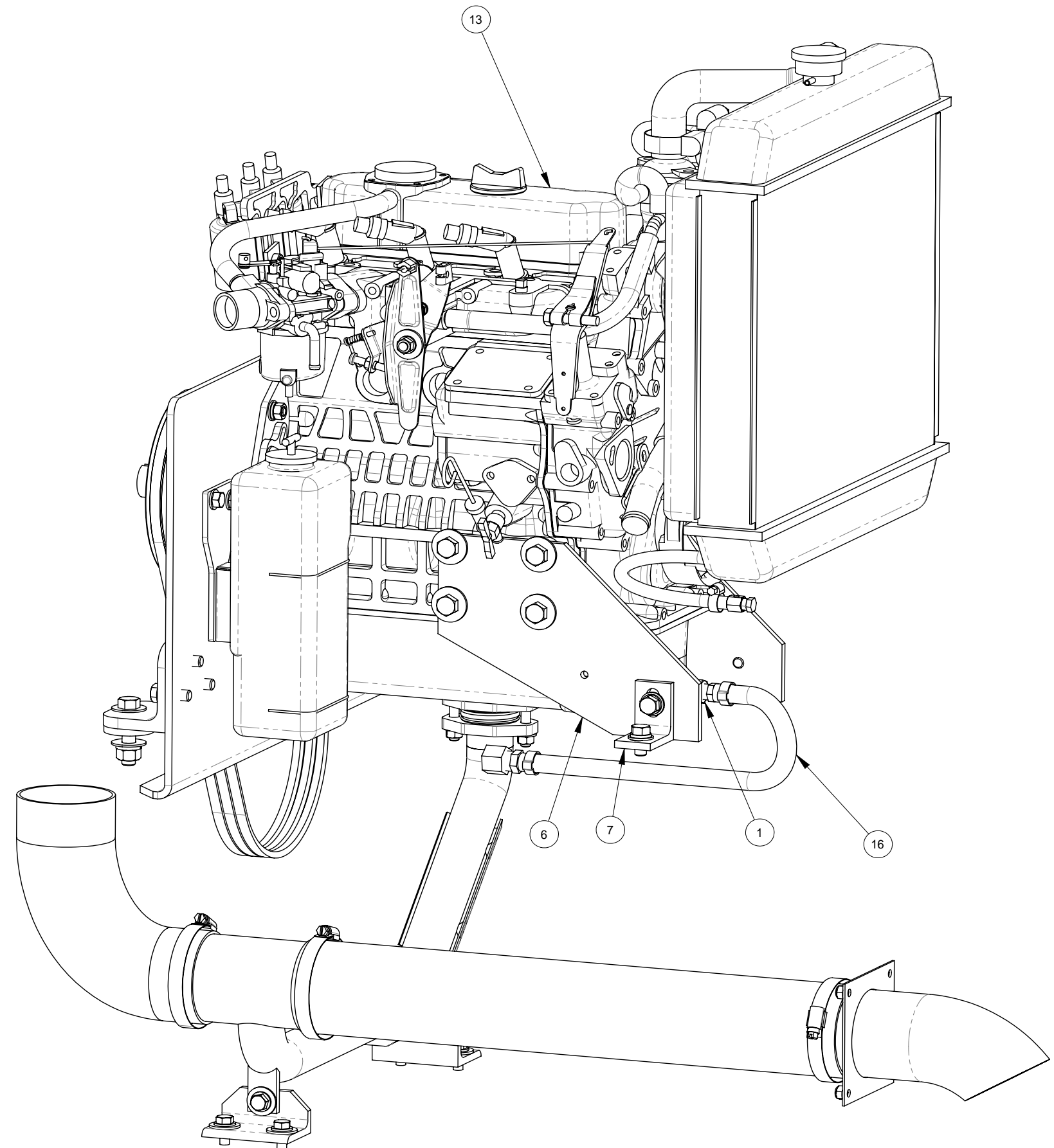
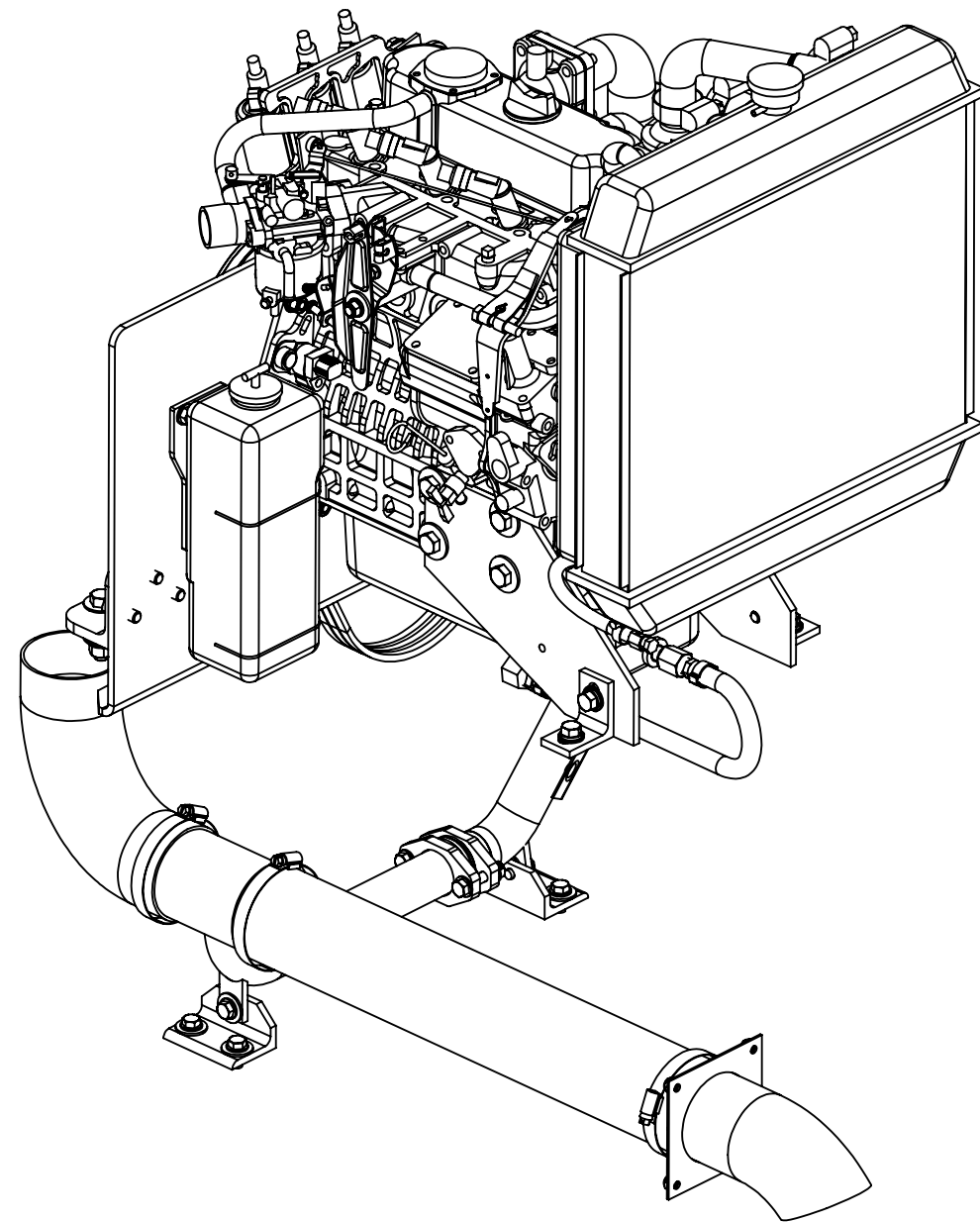
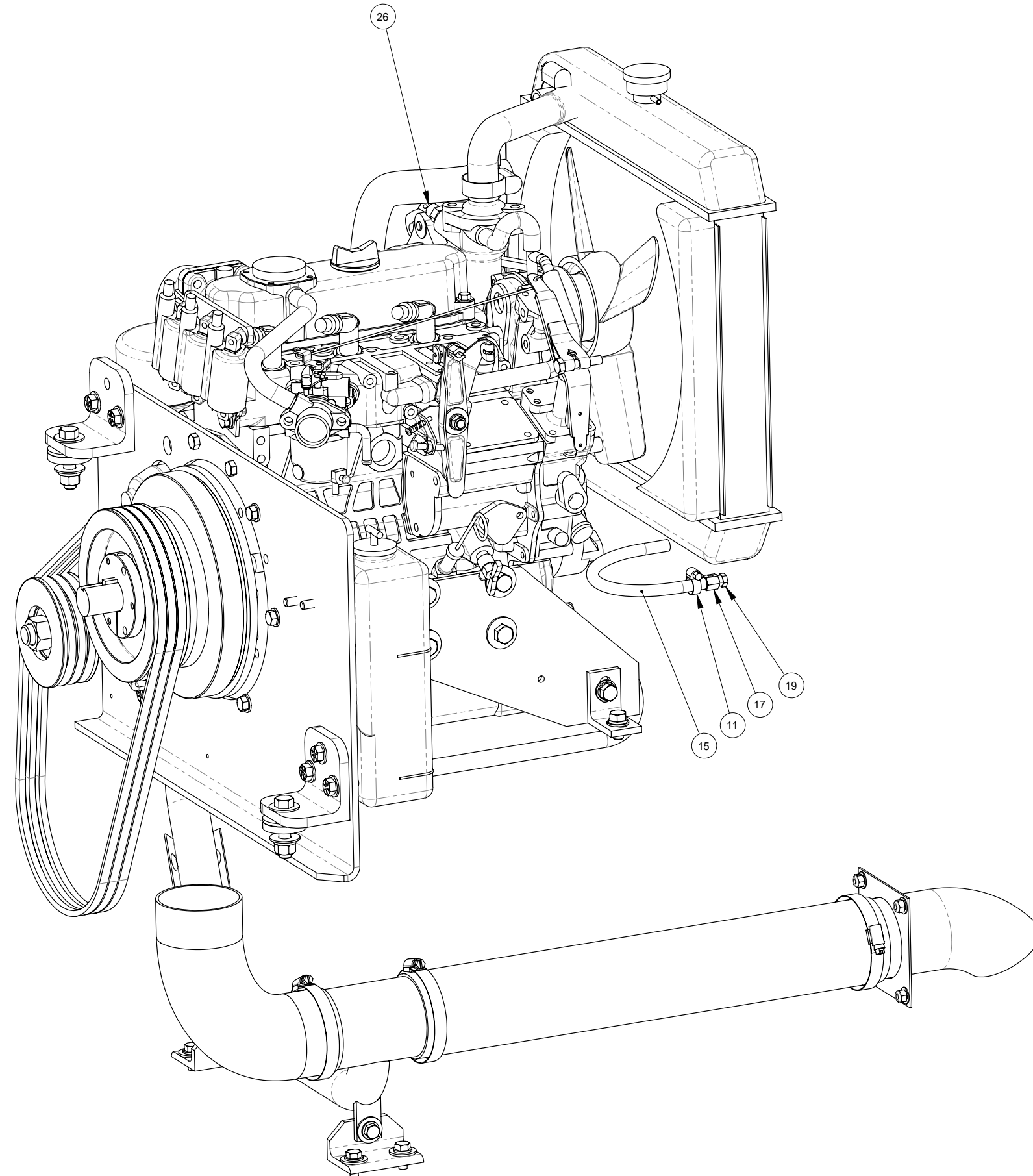


Figure 7-10. Engine Assembly - View 3 of 3
610-004-743

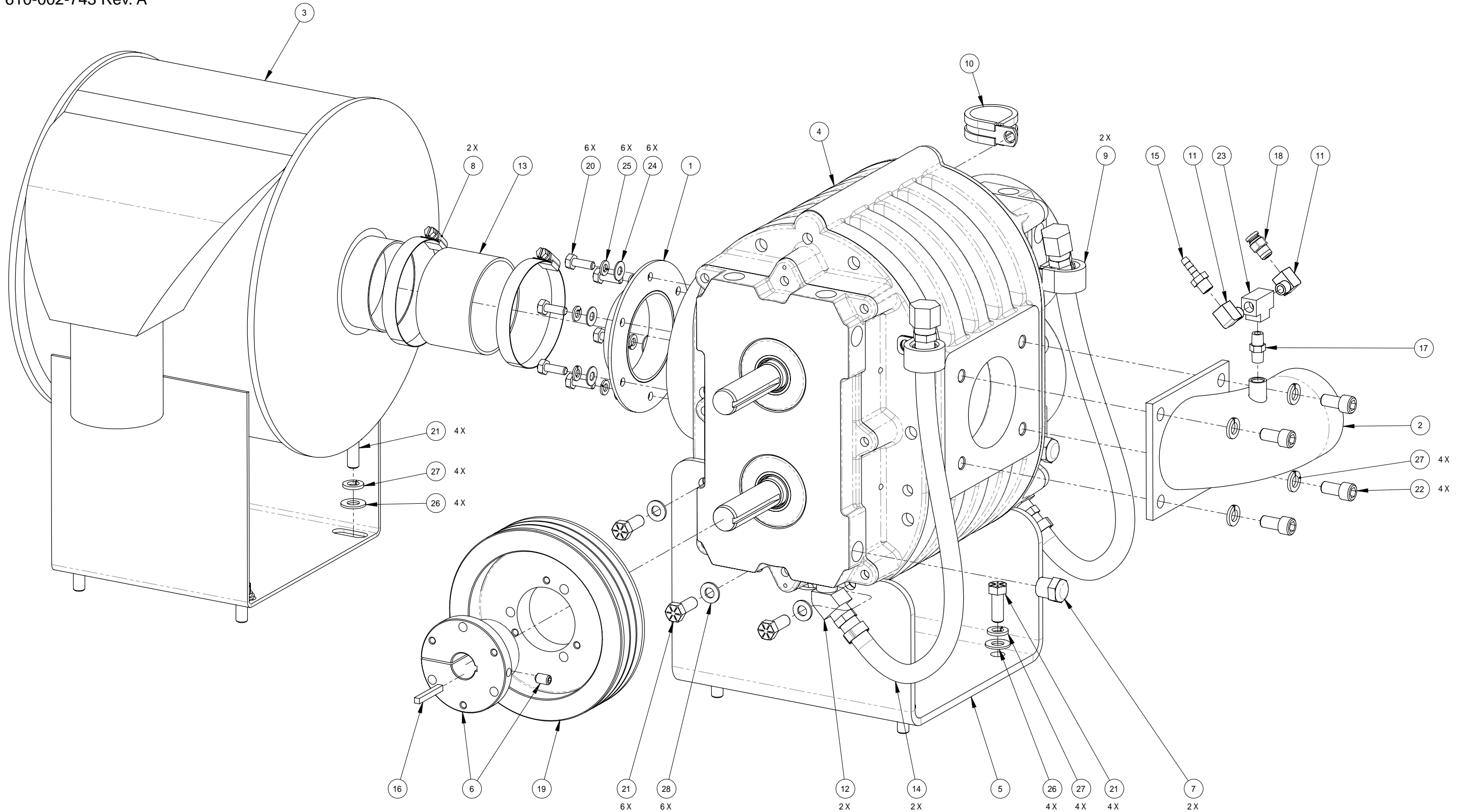


Engine Assembly Parts List

Item	Part Number	Description	Qty
1	000-052-906	Adapter, 1/4" F X 12mm Male	1
2	610-013-743	Assembly, Exhaust	1
3	610-021-007	Assembly, Flywheel Plate	1
4	000-010-131	Belt, 3VX450 Super HC	3
5	000-015-1032	Bracket, Engine, Coil Relocation	2
6	000-015-1052	Bracket, Engine, Front - Coated	2
7	000-015-265	Bracket, Machine Tie Down - Coated	2
8	000-015-1167	Bracket, Starter Cooling Hose	1
9	000-020-070	Bushing, QD SDS Style	1
10	000-033-020	Clamp, Size #16 Hose	3
11	000-033-003	Clamp, Size #4 Mini Hose	1
12	000-033-060	Clamp, Size #80 Hose	1
13	000-047-042	Engine, Kubota 32.5HP	1
14	000-068-924	Hose, 1" I.D. Silicone Flexible	1
15	000-068-016	Hose, 5/16" I.D. Rubber - Bulk	1
16	000-068-221	Hose, Oil Drain	1

Item	Part Number	Description	Qty
17	000-052-109	Insert, #F24	1
18	000-077-010	Key, 1/4" X 1-1/2" Lg. Class 2 Fit	1
19	000-106-001	Plug, 1/8" NPT	1
20	000-108-165	Protector, Starter	1
21	000-109-124	Pulley, Ø6.5" O.D. Tri-3VX Section	1
22	000-143-017	Screw, 3/8"-16UNC X 0.75" Lg. Hex Head Grd. 8	4
23	000-143-077	Screw, 6mm X 20mm Lg. Socket Head	1
24	000-143-185	Screw, 8mm X 20mm Gr. 8.8 Hex Head	4
25	000-143-710	Screw, M10 X 1.5 X 30mm Lg.	8
26	000-149-545	Sensor, 240°F N/C	1
27	000-174-003	Washer, 1/4" Flat	1
28	000-174-005	Washer, 3/8" Flat	4
29	000-174-021	Washer, 3/8" Lock	4
30	000-174-004	Washer, 5/16" Flat	4
31	000-174-018	Washer, 5/16" Lock	4

Figure 7-11. Blower and Silencer Assembly
610-002-743 Rev. A



Blower and Silencer Assembly Parts List

Item	Part Number	Description	Qty
1	000-001-115	Adapter, Blower Flange to 3" M Slip - Coated	1
2	000-001-041	Adapter, Blower Inlet - Coated	1
3	000-093-851	Assembly, Silencer - Coated	1
4	000-111-147	Blower, 4007 Dominator	1
5	000-015-976	Bracket, Blower Mounting - Coated	1
6	000-020-071	Bushing, QD SDS Style, 7/8" Bore	1
7	000-027-112	Cap, Oil Sight Glass Tuthill Blower (Comes w/ Blower)	2
8	000-033-013	Clamp, #48 Hose (3")	2
9	000-033-117	Clamp, 1" Cushion Loop w/ 7/16" Mount Hole	2
10	000-033-116	Clamp, 1-1/2" Cushion Loop w/ 7/16" Mounting Hole	1
11	000-052-084	Elbow, 1/8" NPT Street	2
12	000-052-083	Elbow, 3/8" NPT Street X 45°	2
13	000-068-910	Hose, 3.0" I.D. X 3 Ply Silicone X 2" Lg.	1
14	000-068-219	Hose, Drain	2

Item	Part Number	Description	Qty
15	000-052-293	Insert, #23 (1/8" NPT X 3/16" Barb)	1
16	000-077-011	Key, 3/16" X 1 1/2" Long	1
17	000-052-069	Nipple, 1/8" NPT Hex	1
18	000-052-814	Nipple, 1/8" NPT X 1/4" Presto Lock	1
19	000-109-124	Pulley, Ø6.5" O.D. Tri-3VX Section	1
20	000-143-001	Screw, 1/4"-20UNC X 0.75" Lg. Hex Head	6
21	000-143-018	Screw, 3/8"-16UNC X 1" Lg. Hex Head - Grade 8	14
22	000-143-094-1	Screw, 3/8"-16UNC X 3/4" Lg. Socket Head	4
23	000-052-092	Tee, 1/8" FPT	1
24	000-174-003	Washer, 1/4" Flat	6
25	000-174-019	Washer, 1/4" Lock	6
26	000-174-005	Washer, 3/8" Flat	8
27	000-174-021	Washer, 3/8" Lock	12
28	000-174-049	Washer, 5/16" Flat	6

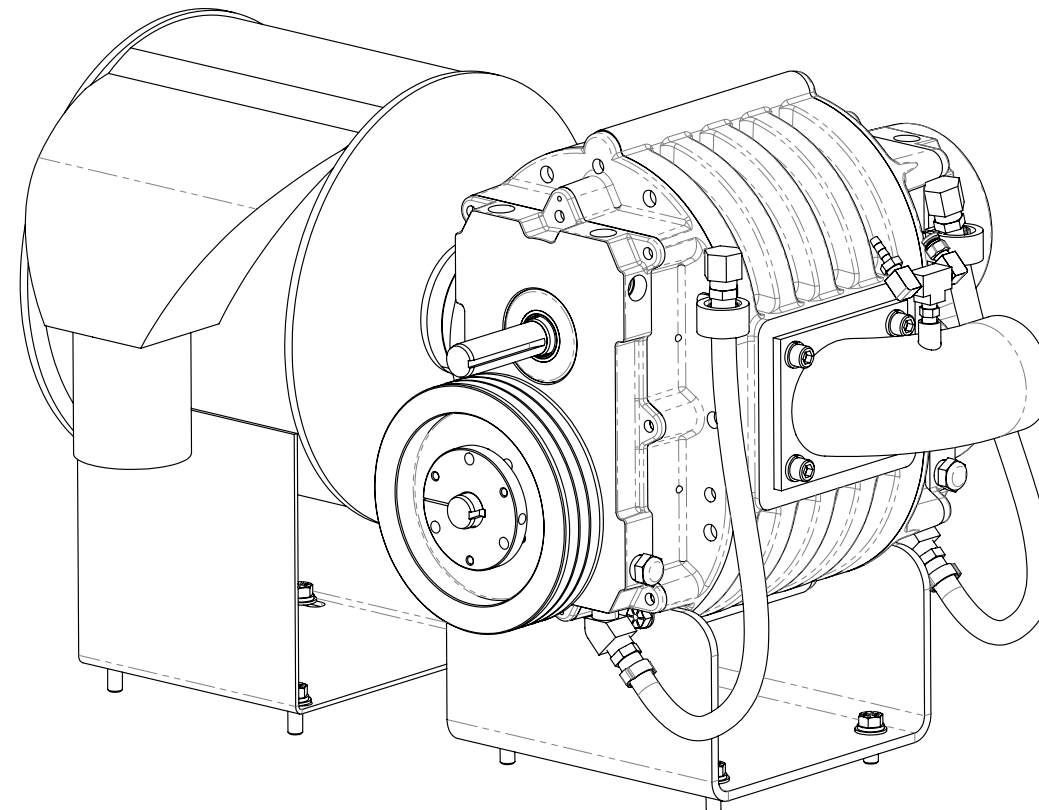
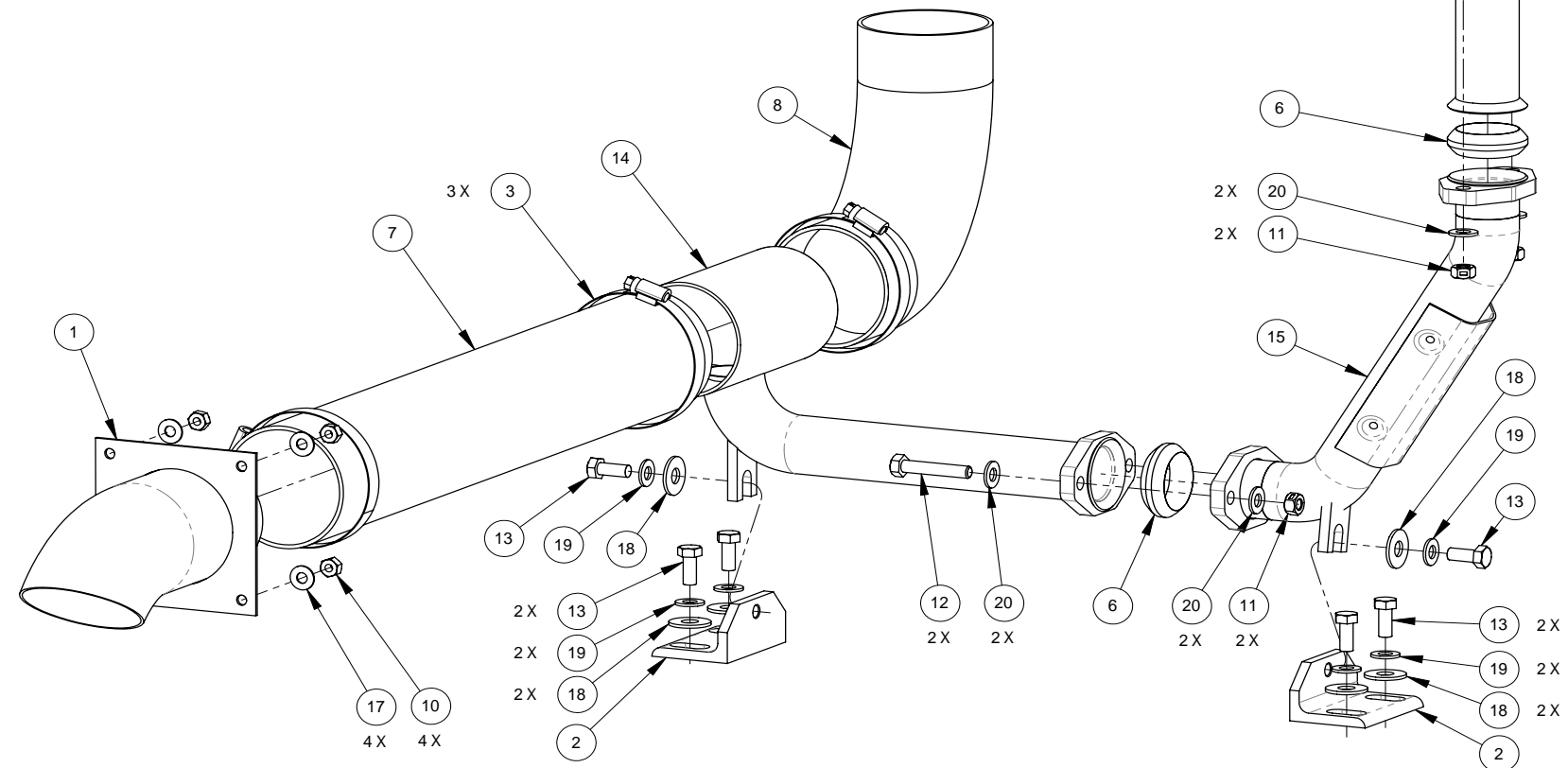
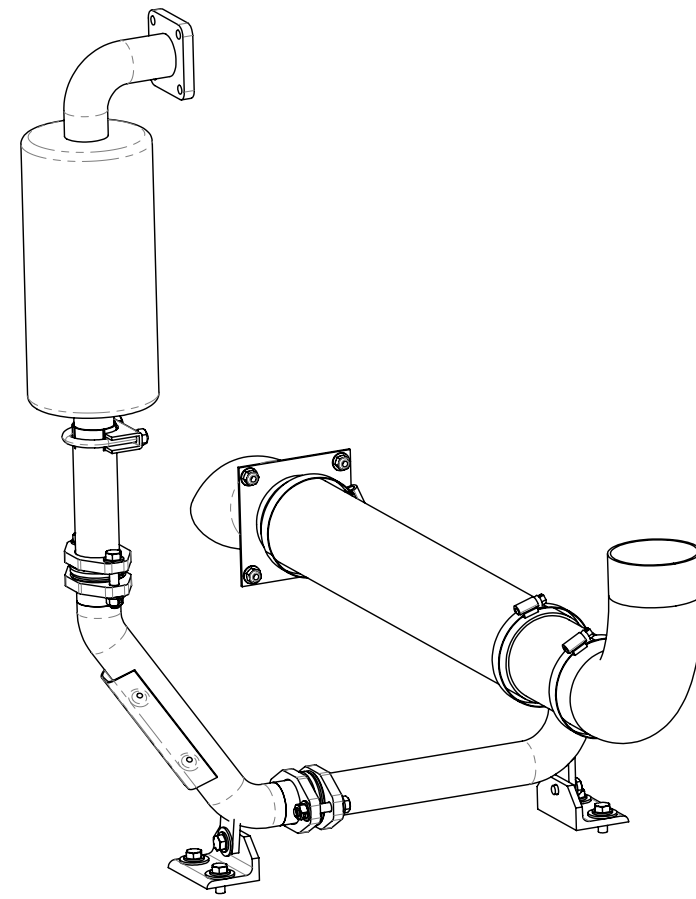


Figure 7-12. Exhaust Assembly
610-013-743

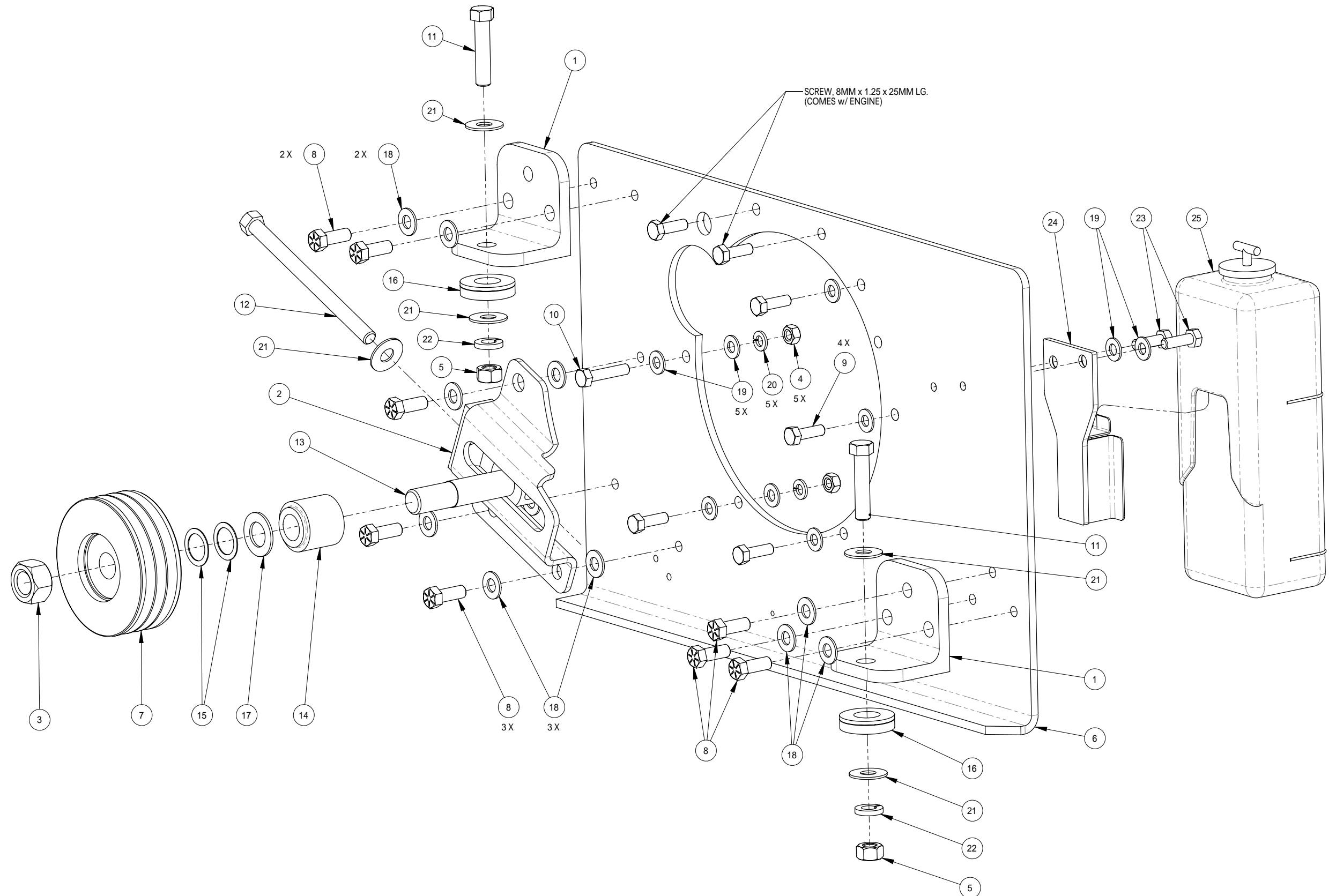


Exhaust Assembly Parts List

Item	Part Number	Description	Qty
1	000-001-098	Adapter, Exhaust Turndown - Welded	1
2	000-015-393	Bracket, Muffler Support Foot - Coated	2
3	000-033-013	Clamp, #48 Hose (3")	3
4	000-033-068	Clamp, 1-1/2" Exhaust	1
5	000-105-181	Flange, Ø1.50" Exhaust Donut - Coated	1
6	000-057-199	Gasket, Exhaust Donut	2
7	000-068-851	Hose, 3" I.D. X 19" Lg.	1
8	000-068-850	Hose, 3" I.D. X 9.5" Lg.	1
9	000-093-158	Muffler/Catalytic	1
10	000-094-009	Nut, 1/4"-20UNC Nylock	4

Item	Part Number	Description	Qty
11	000-094-081	Nut, 5/16"-18UNC Hex 2 Way Locking	4
12	000-143-124	Screw, 5/16"-18UNC X 1.75" Lg. Hex Head	4
13	000-143-012	Screw, 5/16"-18UNC X 3/4" Lg.	6
14	000-125-850	Tube, Exhaust Diverter - Welded	1
15	000-125-856	Tube, Lower Engine Exhaust - Weldment	1
16	000-125-855	Tube, Ø1.50" O.D. X 0.049" Wall X 5" Lg. Flare	1
17	000-174-003	Washer, 1/4" Flat	4
18	000-174-005	Washer, 3/8" Flat	6
19	000-174-004	Washer, 5/16" Flat	6
20	000-174-049	Washer, 5/16" Flat	8

**Figure 7-13. Flywheel
Plate Assembly**
610-021-007 Rev. B



Flywheel Plate Assembly Parts List

Item	Part Number	Description	Qty
1	000-015-1164	Bracket, Angle - Rear Engine Mount - Coated	2
2	000-015-941	Bracket, Idler Pulley Tensioner - Coated	1
3	000-094-105	Nut, 3/4"-16UNF Hex Zinc Plated	1
4	000-094-120	Nut, 5/16"-18UNC Hex Z/P	5
5	000-094-018	Nut, 7/16"-14UNC Hex Z/P	2
6	000-105-586	Plate, Flywheel, Kubota - Coated	1
7	000-109-125	Pulley, Tri Groove 3VX	1
8	000-143-018	Screw, 3/8"-16UNC X 1" Lg. Hex Head - Grade 8	8
9	000-143-013	Screw, 5/16"-18UNC X 1.00" Lg. Hex Head Grade 8	4
10	000-143-015	Screw, 5/16-18 X 1 1/2" HHC	1
11	000-143-587	Screw, 7/16"-14UNC X 2" Lg. Hex Head	2
12	000-143-554	Screw, 7/16-14UNC X 6.5" Lg. Ft Gr. 5	1
13	000-150-055	Shaft, Idler - Dual V Belt	1

Item	Part Number	Description	Qty
14	000-154-195	Spacer, Idler Pulley - 1.403" Lg.	1
15	000-174-177	Washer, 0.813 I.D. X 1.125 O.D. X 0.030 Thk.	2
16	000-174-105	Washer, 1-1/16" I.D. Self Aligning Spherical 2 Pc Set	2
17	000-174-027	Washer, 3/4" Flat - Brass	1
18	000-174-005	Washer, 3/8" Flat	11
19	000-174-004	Washer, 5/16" Flat	12
20	000-174-018	Washer, 5/16" Lock	5
21	000-174-006	Washer, 7/16" Flat	5
22	000-174-022	Washer, 7/16" Lock	2
23	000-143-143	Screw, 5/16"-18UNC X 1.00" Lg. Hex Head	2
24	---	Bracket, Overflow Jug Mounting (Comes w/ Engine)	1
25	---	Jug, Overflow (Comes w/ Engine)	1

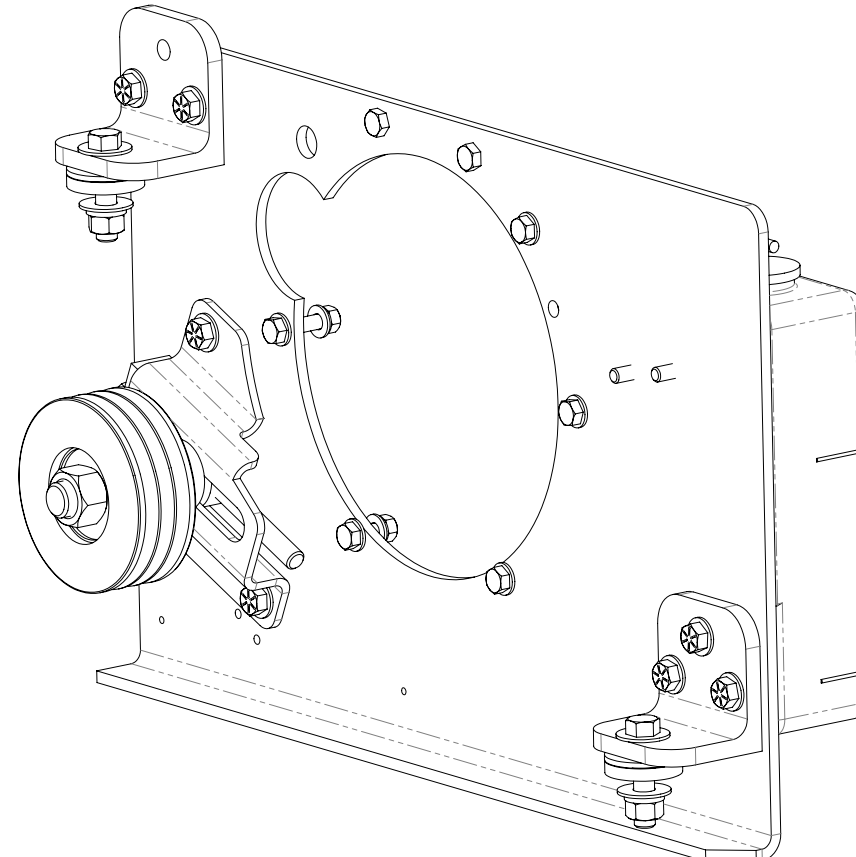


Figure 7-14. Upper Dash Assembly- View 1 of 2
610-020-743

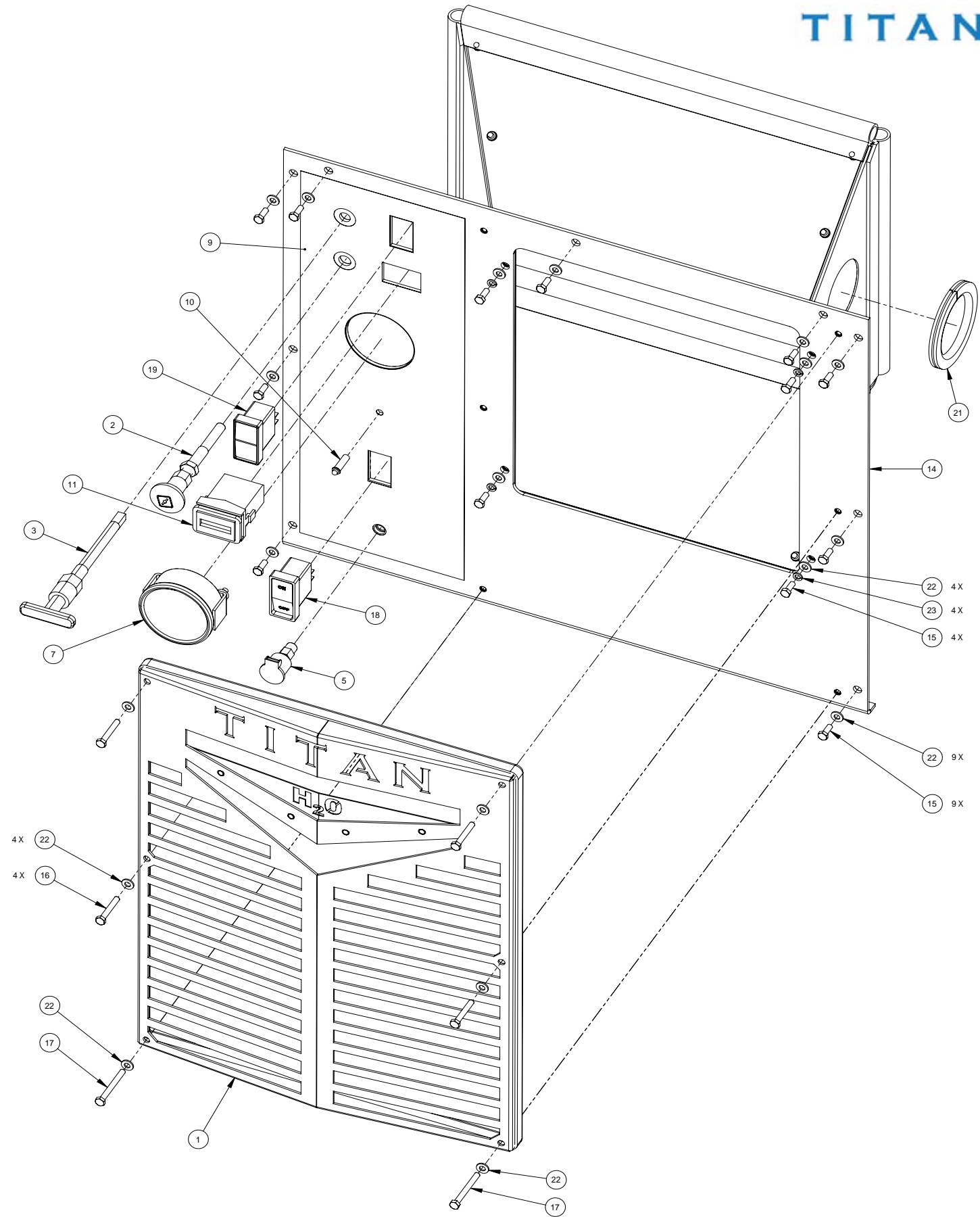
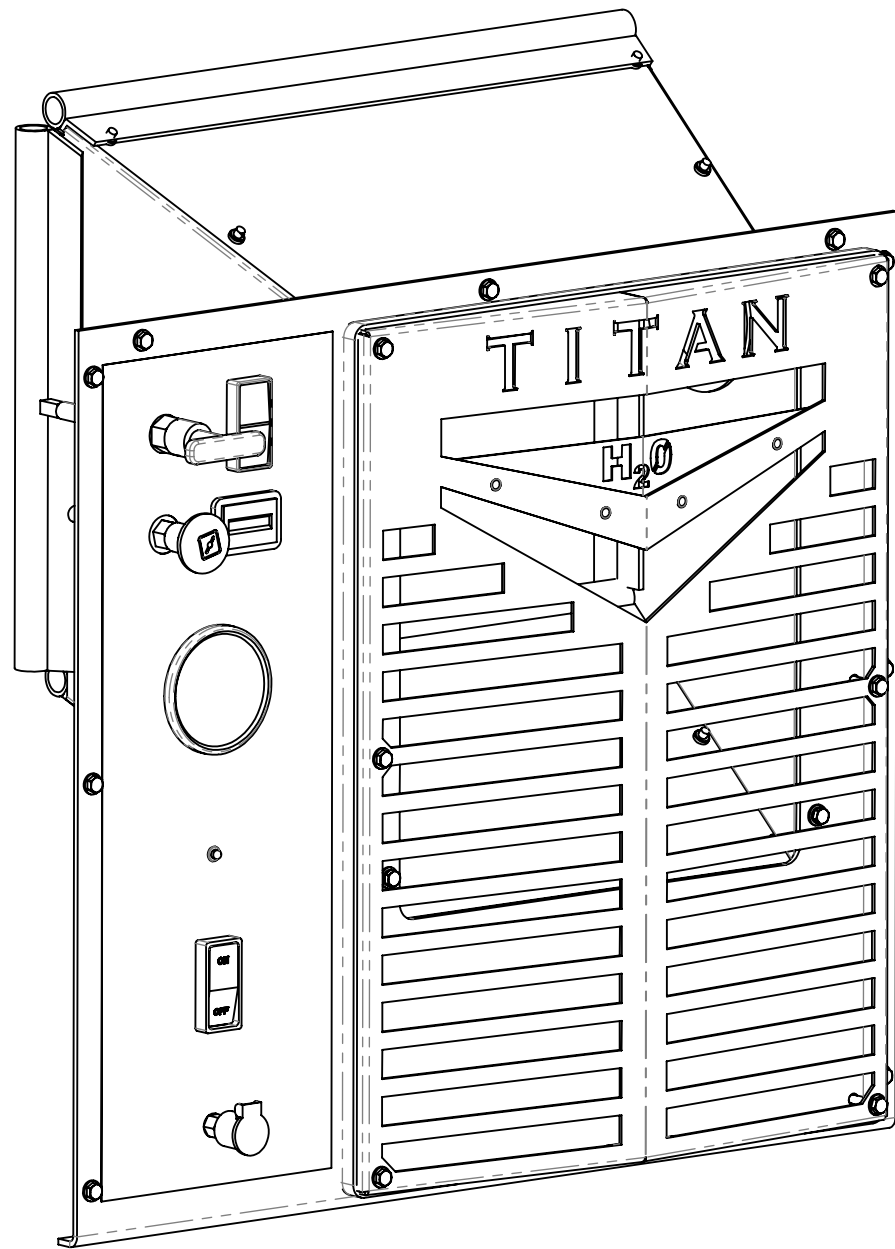


Figure 7-15. Upper Dash Assembly - View 2 of 2
610-020-743

Upper Dash Assembly Parts List

Item	Part Number	Description	Qty
1	610-028-743	Assembly, Grill	1
2	000-025-003	Cable, Choke w/ Detent	1
3	000-025-020	Cable, Throttle Locking	1
4	000-033-128	Clamp, 3/8" Nylon Hose	2
5	000-052-272	Cup, Gravity Feed Oil Blower Lube Port	1
6	000-052-089	Elbow, 1/8" NPT Female	1
7	000-074-017	Gauge, 0-30" Hg Vac. 2 1/2" HydraMaster Face	1
8	000-042-076	Housing, Radiator Shroud	1
9	000-081-861	Label, Upper Dash	1
10	000-084-011	Light, Red LED Indicator Mini	1
11	000-074-170	Meter, Rectangular Hour w/o Bezel	1
12	000-052-814	Nipple, 1/8" NPT X 1/4" Presto Lock	1
13	000-094-034	Nut, #10-24UNC Nylock	2
14	000-100-249	Panel, Upper Dash - Coated	1
15	000-143-126	Screw, #10-24UNC X 0.50" Lg. Hex Head	13
16	000-143-171	Screw, #10-24UNC X 1.25" Lg. Hex Head	4
17	000-143-065	Screw, #10-24UNC X 1.75" Lg. Hex Head	2
18	000-157-040	Switch, 20 Amp Rocker	1
19	000-157-152	Switch, Ignition	1
20	000-131-060	Trimlok, 3/4" Bulb X 3/16" Opening	1 ft
21	000-131-131	Trimlok, 3/8 X 1/8 Rubber	1 ft
22	000-174-001	Washer, #10 Flat	21
23	000-174-014	Washer, #10 Lock	4
24	000-174-032	Washer, 3/8" Flat	1

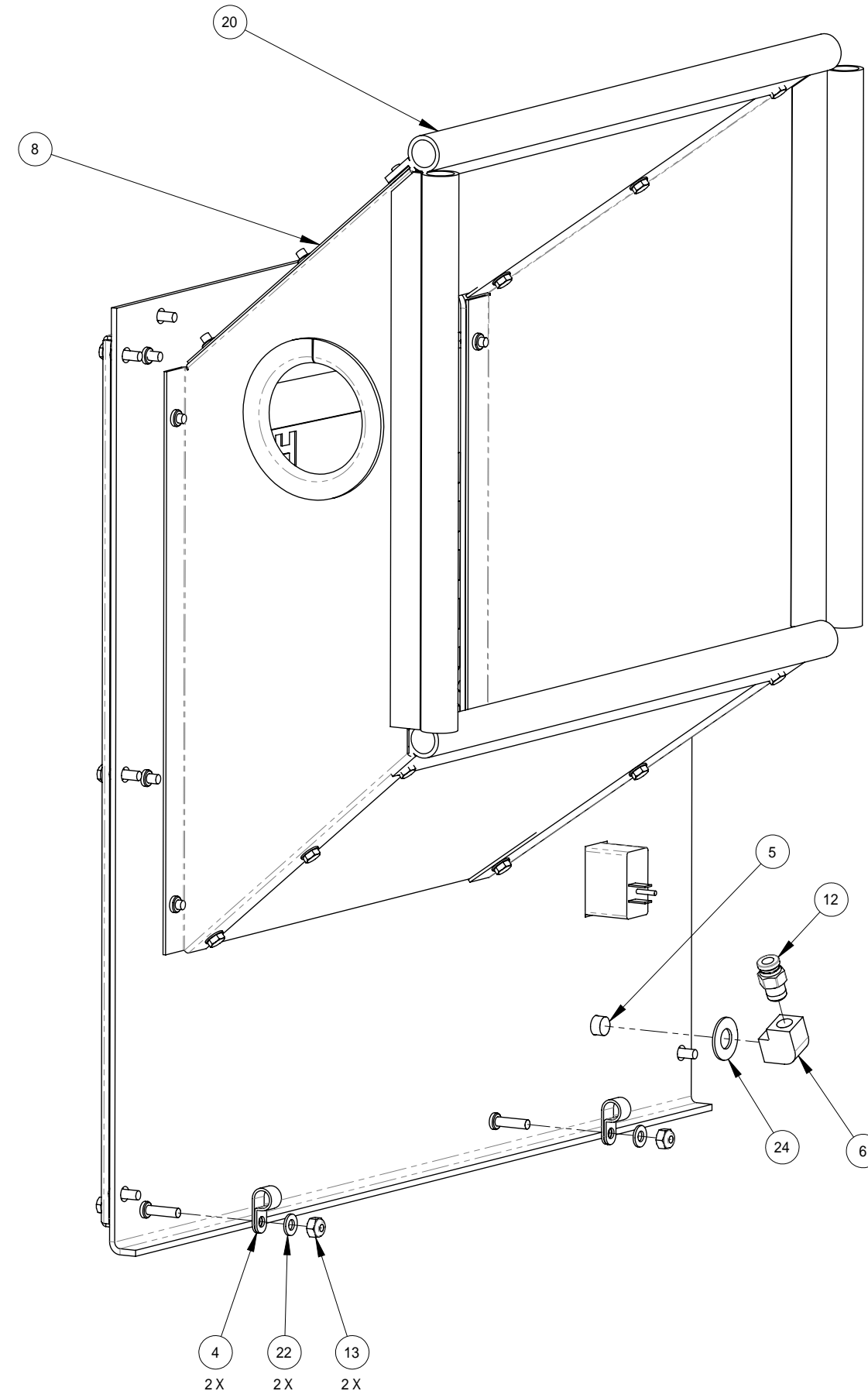
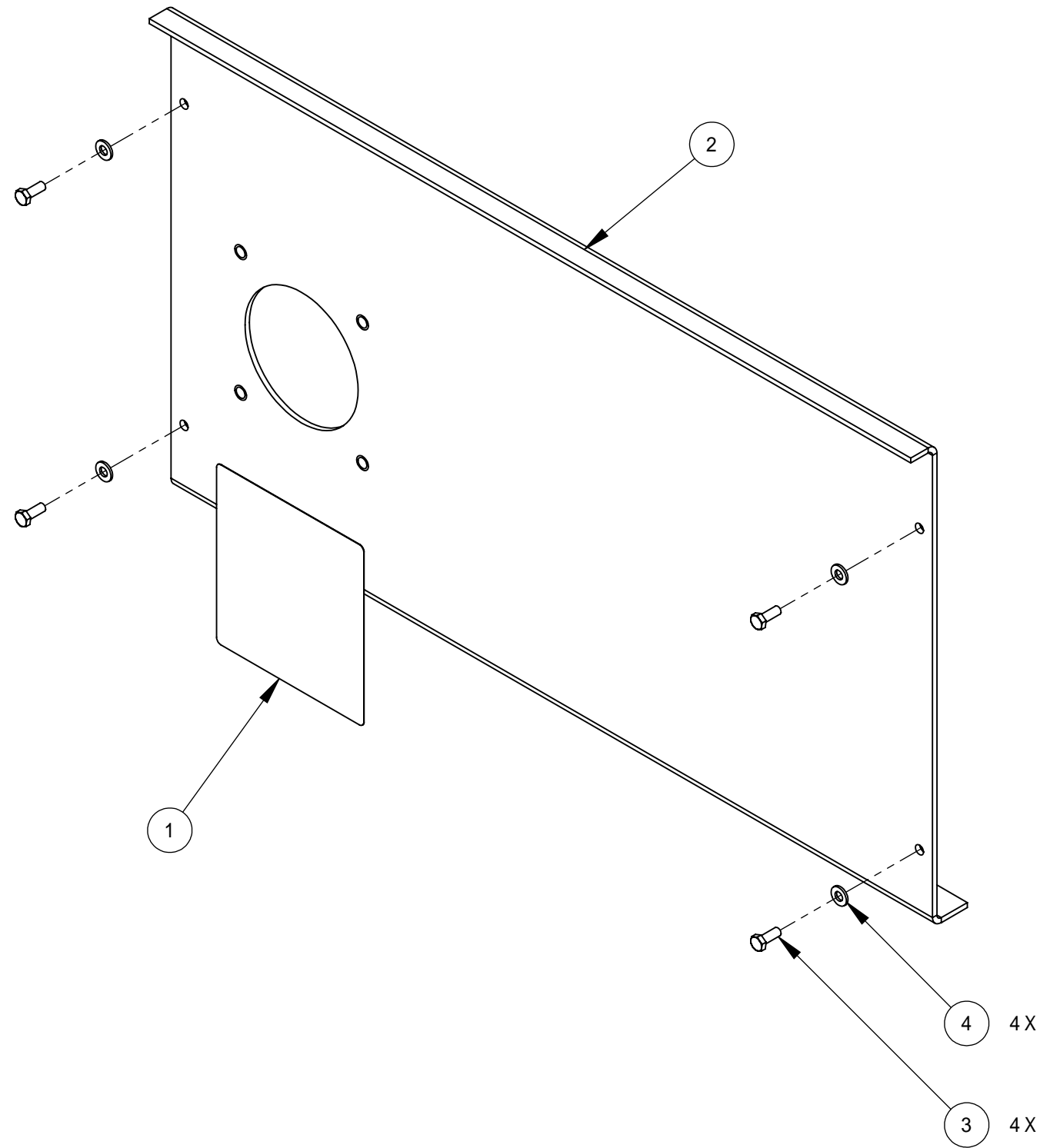


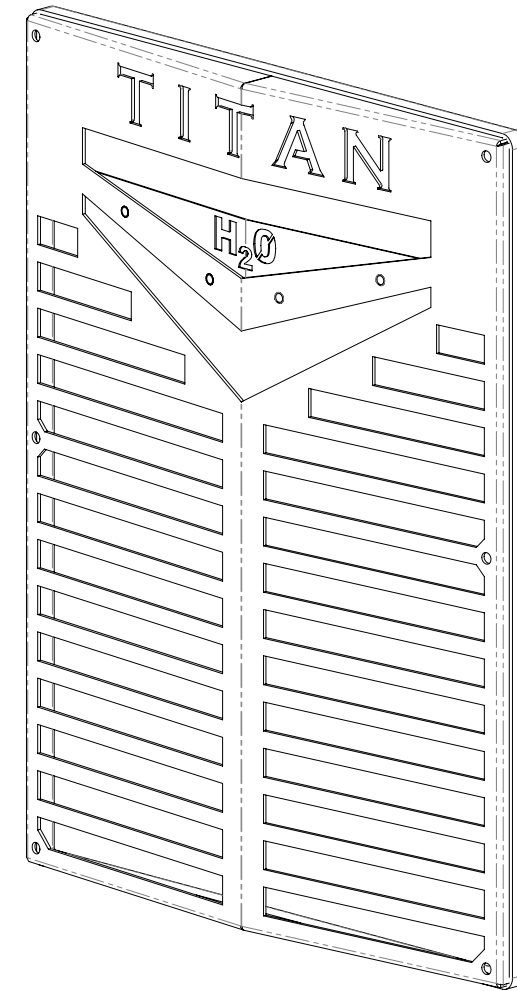
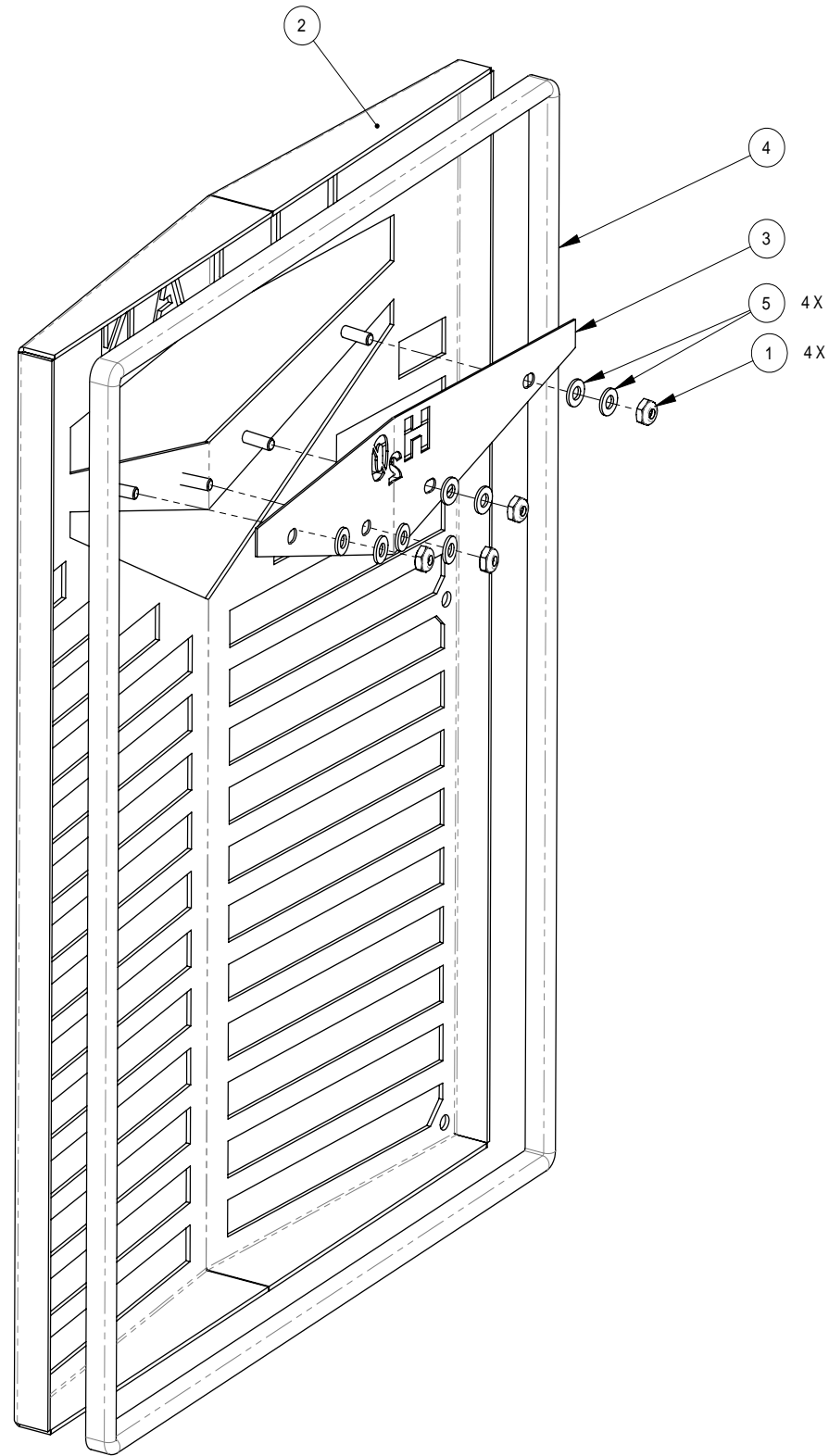
Figure 7-16. Lower Dash Assembly
610-019-743



Lower Dash Assembly Parts List

Item	Part Number	Description	Qty
1	000-081-328	Label, ANSI Warning - Large	1
2	000-100-240	Panel, Lower Dash - Coated	1
3	000-143-126	Screw, #10-24UNC X 0.50" Lg. Hex Head	4
4	000-174-001	Washer, #10 Flat	4

Figure 7-17. Grill Assembly
610-028-743 Rev. A



Grill Assembly Parts List

Item	Part Number	Description	Qty
1	000-094-058	Nut, #10-32UNF Nylock	4
2	000-100-172	Panel, Grill	1
3	000-100-242	Panel, Logo Grill - Coated	1
4	000-131-131	Trimlok, 3/8" X 1/8" Groove	1 ft
5	000-174-001	Washer, #10 Flat	8

Figure 7-18. Electrical Panel Assembly -
View 1 of 2
610-011-743 Rev. A

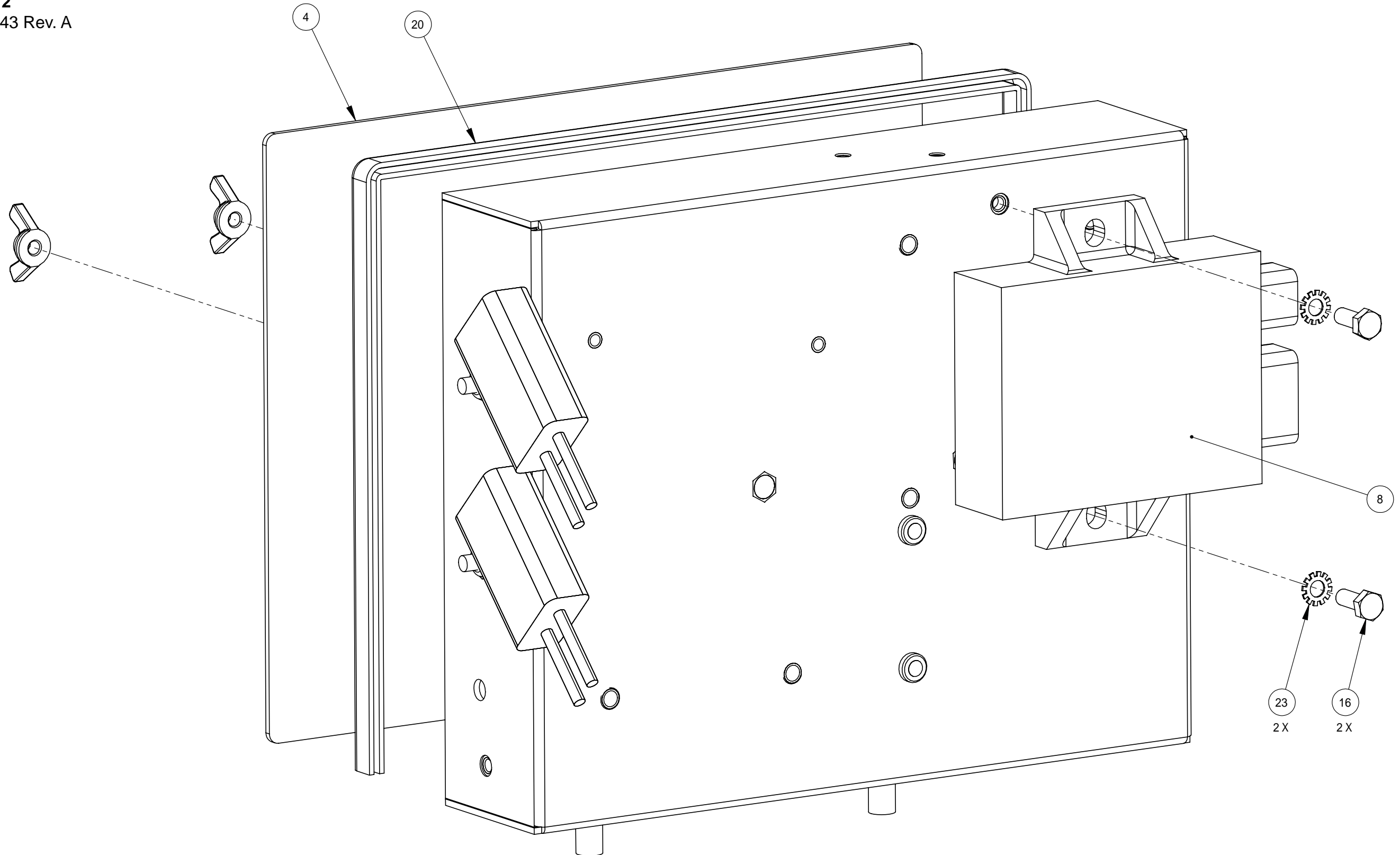
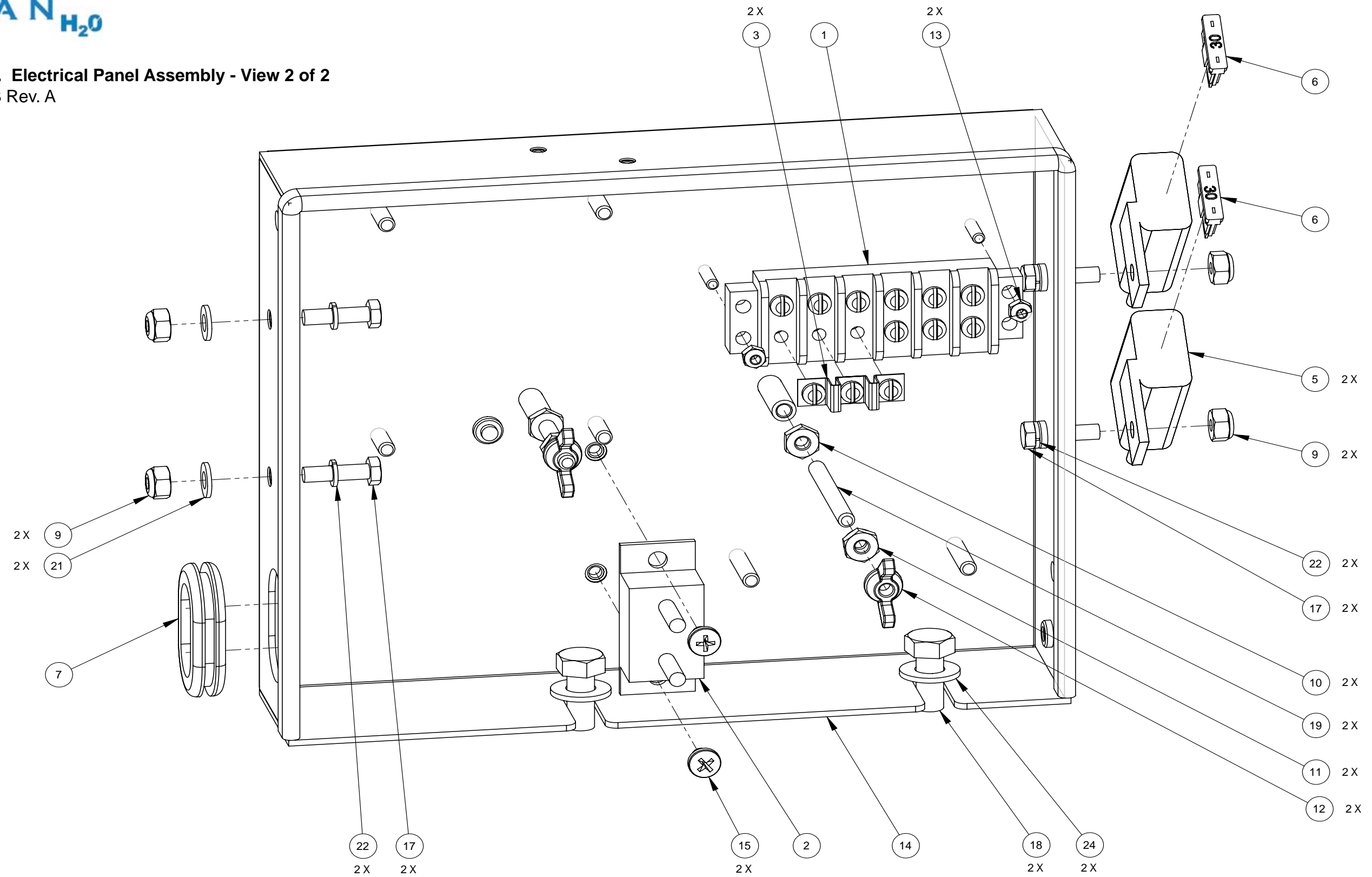


Figure 7-19. Electrical Panel Assembly - View 2 of 2
610-011-743 Rev. A



NOTE:
COVER, ITEM # 12, NOT SHOWN IN THIS VIEW.

Electrical Panel Assembly Parts List

Item	Part Number	Description	Qty
1	000-012-002	Block, 6 Post Terminal	1
2	000-018-040	Circuit Breaker, 50 Amp	1
3	000-037-011	Connector, "Jumper" Terminal Block	2
4	000-041-478	Cover, Electrical Panel - Coated	1
5	000-056-006	Fuse Holder, In-Line - Weatherproof	2
6	000-056-011	Fuse, 30 Amp	2
7	000-060-014	Grommet, 1.00" I.D. X 1.50" O.D.	1
8	000-072-018	Ignition Processor, Kubota WG972	1
9	000-094-034	Nut, #10-24UNC Nylock	4
10	000-094-003	Nut, #10-32UNF Hex	2
11	000-094-058	Nut, #10-32UNF Nylock	2
12	000-094-108	Nut, #10-32UNF Wing	2

Item	Part Number	Description	Qty
13	000-094-063	Nut, #6-32UNC Nylock	2
14	000-100-182	Panel, Electrical - Universal - Coated	1
15	000-143-533	Screw, #10-24UNC X 0.25" Lg. Pan Head Phillips	2
16	000-143-126	Screw, #10-24UNC X 0.50" Lg. Hex Head	2
17	000-143-132	Screw, #10-24UNC X 0.75" Lg. Hex Head	4
18	000-143-012	Screw, 5/16"-18UNC X 3/4" Lg.	2
19	000-156-030	Stud, #10-32UNF X 2" Lg. S/S	2
20	000-131-131	Trimlok, 3/8" X 1/8" X 24" Lg. Rubber Edge Trim	1 ft
21	000-174-001	Washer, #10 Flat	2
22	000-174-014	Washer, #10 Lock	4
23	000-174-015	Washer, #10 Outside Star	2
24	000-174-049	Washer, 5/16" Flat	2

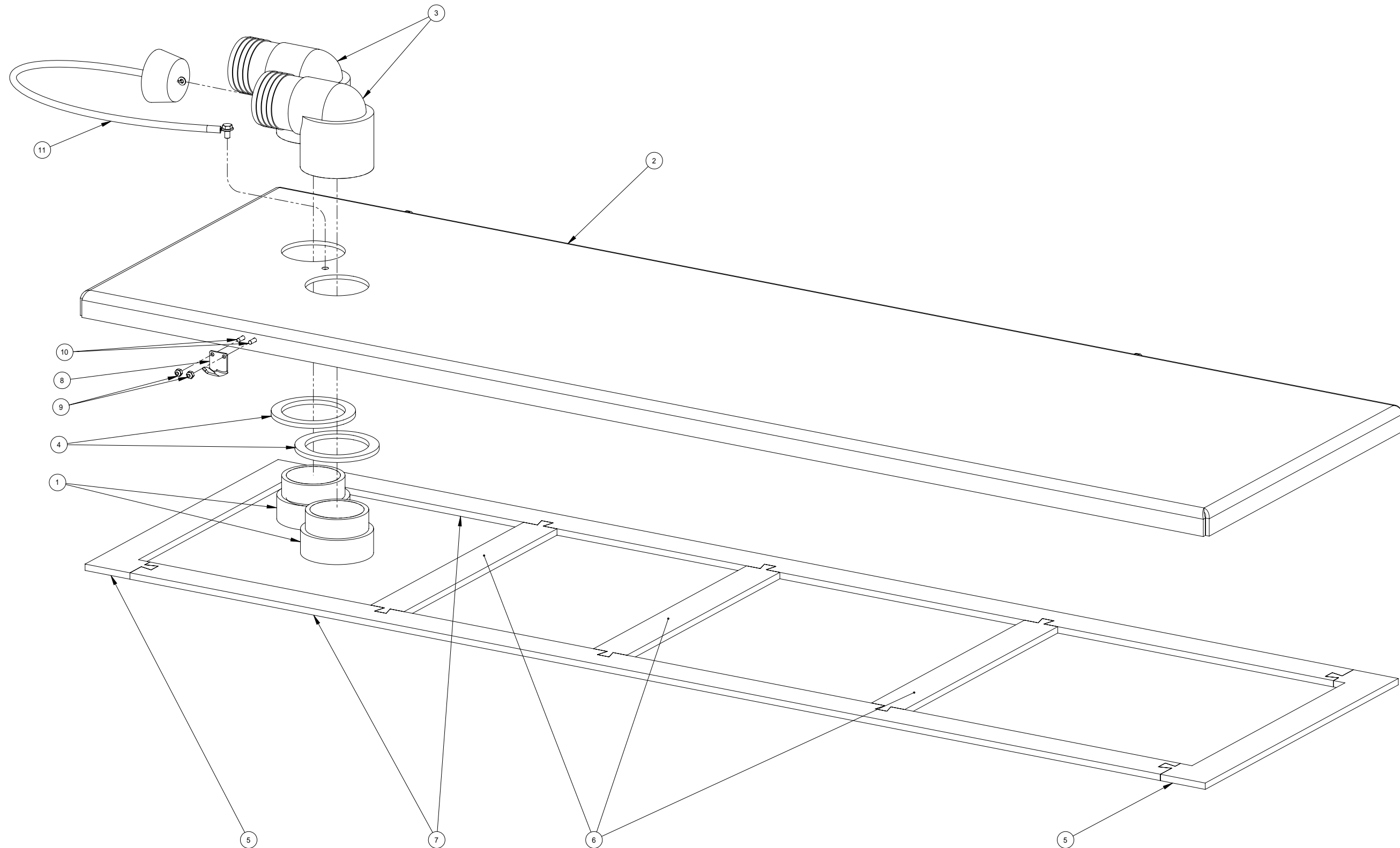
100 Gallon Universal Recovery Tank (URT) Assembly Parts List

Item	Part Number	Description	Qty
1	000-001-135	Adapter, Ø3.0 Tank To X 90° Blower Hose - Coated	1
2	000-079-091	Assembly, Dura-Flow APO - Production	1
3	601-029-701	Assembly, Recovery Tank Cover	1
4	610-026-724	Assembly, Vacuum Relief Valve - URT	1
5	000-012-002	Block, 6 Post Terminal	1
6	000-015-932	Bracket, Flat Filter Securing - Uncoated	1
7	000-033-046	Clamp, 1/2 Wide X 1/2 Tube	1
8	000-049-154	Filter, Air Deflector, URT - Fabricated	1
9	000-049-153	Filter, Flat - URT	1
10	000-049-152	Filter, Recovery Tank Basket	1
11	000-157-091	Float, Lever Switch	2
12	000-057-206	Gasket, Adapter - URT	2
13	000-052-226	Insert, 1-1/2" NPT X 1-1/2" Barb (Grey)	1
14	000-081-554	Label, Maintenance and Lube Schedule	1
15	000-086-008	Latch, Bungie	1
16	000-052-763	Nipple, 1-1/2" IPS Close S/S	1
17	000-094-063	Nut, #6-32UNC Nylock	2
18	000-094-059	Nut, #8-32UNC Nylock	2
19	000-094-113	Nut, 1/4"-20UNC Neoprene Wellnut	14

Item	Part Number	Description	Qty
20	000-094-009	Nut, 1/4"-20UNC Nylock	8
21	000-106-019	Plug, 1-1/2" NPT	1
22	000-106-046	Plug, 1-1/4" NPT	1
23	000-106-007	Plug, 1/4" NPT Allen Head	1
24	000-106-049	Plug, 1" NPT Black Nylon	1
25	000-140-023	Rivet, AB8-6A Aluminum Pop	4
26	000-143-126	Screw, #10-24UNC X 0.50" Lg. Hex Head	3
27	000-143-539	Screw, #6-32UNC X 0.50" Lg. Button Head	2
28	000-143-051	Screw, #8-32UNC X 3/4" Lg. Binder Head	2
29	000-143-333	Screw, 1/4"-20UNC X 0.50" Lg. Hex Head	2
30	000-143-002	Screw, 1/4"-20UNC X 1.00" Lg. Hex Head	22
31	000-159-129	Tank, 100 Gal. Universal Recovery - Coated	1
32	000-169-022	Valve, 1-1/2" Full Port Ball	1
33	000-174-036	Washer, #10 Flat Rubber Backed	3
34	000-174-003	Washer, 1/4" Flat	19
35	000-174-019	Washer, 1/4" Lock	2
36	000-174-060	Washer, 1/4" Rubber Backed	14
37	000-174-029	Washer, 3/8" Rubber Backed	2

Figure 7-21. 100 Gallon Universal Recovery Tank (URT) Cover Assembly

601-029-701 Rev. A



100 Gallon Universal Recovery Tank (URT) Cover Assembly Parts List

Item	Part Number	Description	Qty
1	000-052-219	Adapter, 2" NPT X 2" F Slip	2
2	000-041-447	Cover, 100 Gal. Universal Recovery Tank - Coated	1
3	000-052-222	Elbow, 2" Barb X 2" FPT	2
4	000-057-015	Gasket, 1-1/2" Bulkhead Fitting	2
5	000-057-202	Gasket, End - Rec. Tank Cover	2
6	000-057-203	Gasket, Middle - Rec. Tank Cover	3

Item	Part Number	Description	Qty
7	000-057-205	Gasket, Side - Rec. Tank Cover	2
8	000-078-039	Vacuum Inlet Stopper	1
9	000-086-008	Latch, Bungee - Strike	1
10	000-094-063	Nut, #6-32UNC Nylock	2
11	000-143-539	Screw, #6-32UNC X 0.50" Lg. Button Head	2

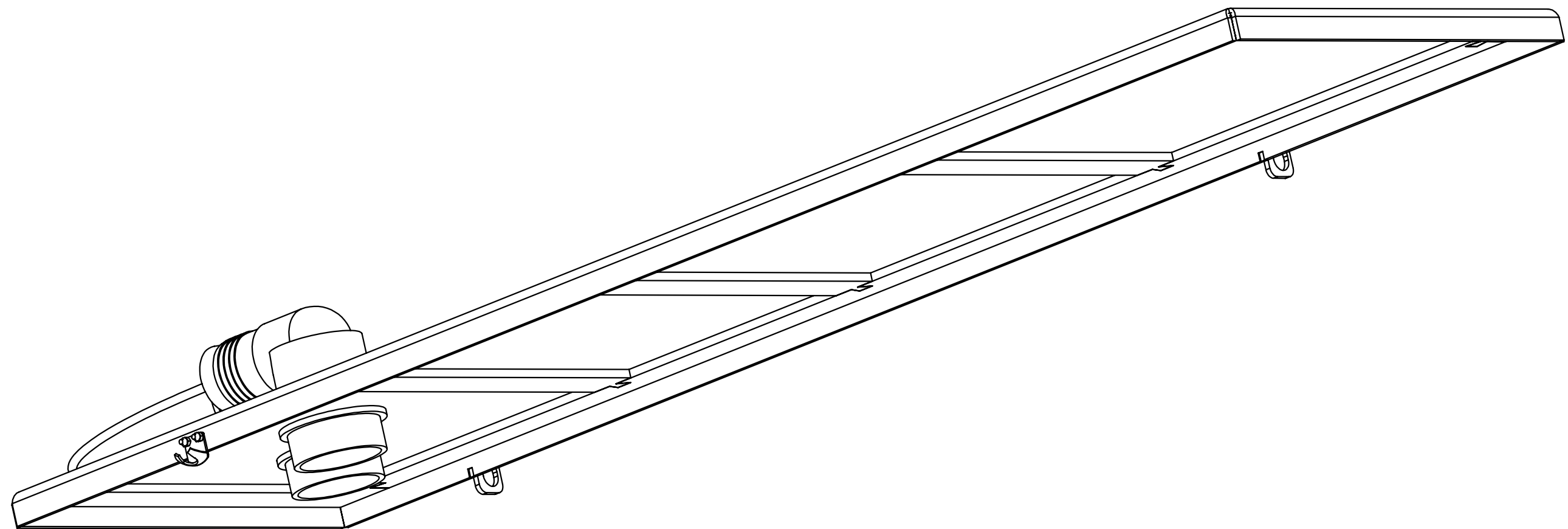
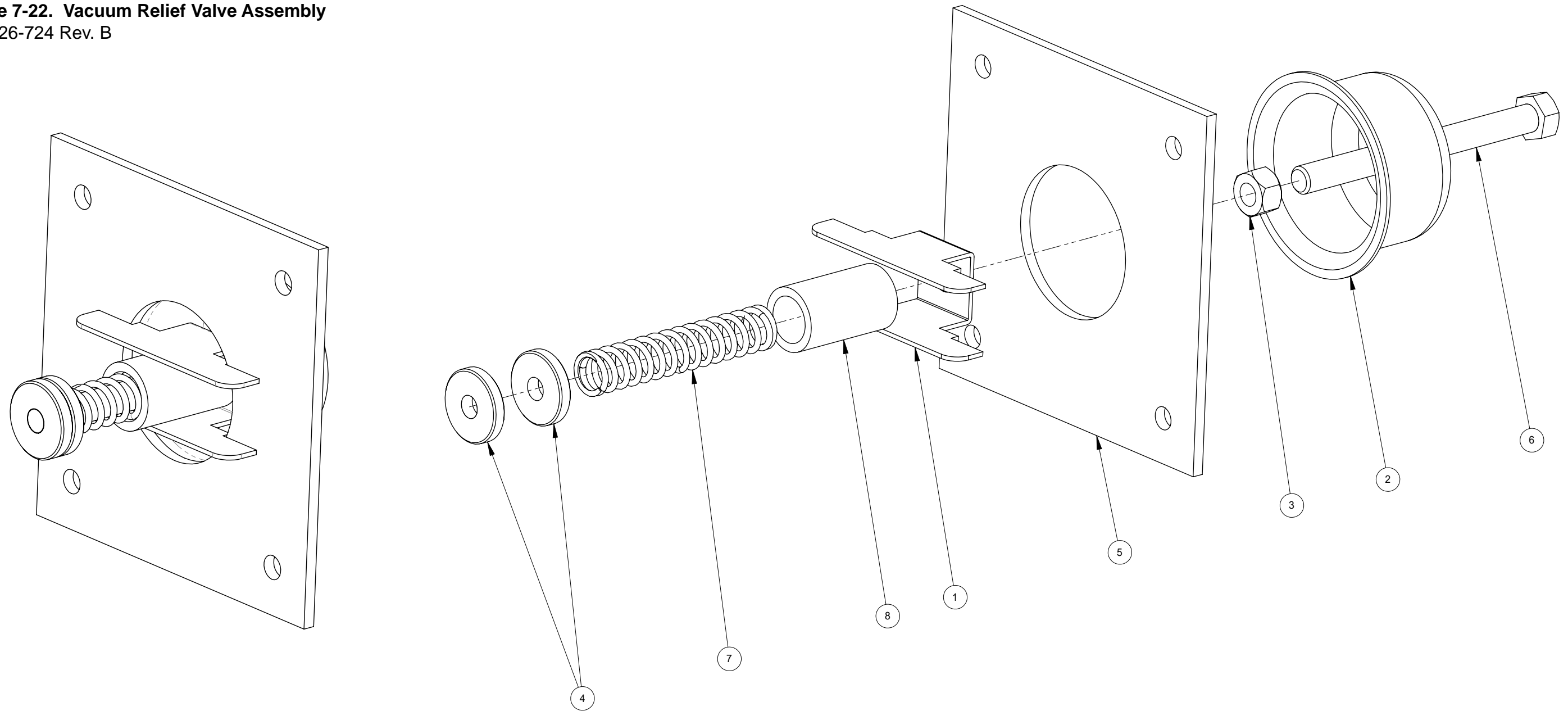


Figure 7-22. Vacuum Relief Valve Assembly
610-026-724 Rev. B



Vacuum Relief Valve Assembly Parts List

Item	Part Number	Description	Qty
1	000-015-182	Bracket, Vacuum Relief Valve - Fabricated	1
2	000-027-032	Cap, Spun Vacuum Relief Valve	1
3	000-094-101	Nut, 3/8"-16UNC Hex Jam	1
4	000-094-077	Nut, 3/8"-16UNC X 1.00" O.D. Knurled	2

Item	Part Number	Description	Qty
5	000-105-332	Plate, Vacuum Relief Valve Mounting - Coated	1
6	000-143-198	Screw, 3/8"-16UNC X 4" Lg. Hex Head - Full Thread	1
7	000-155-026	Spring, Vacuum Relief Valve	1
8	000-125-111	Tube, Vacuum Relief Spring Guide	1

8 - How to Order Parts

To obtain a proper diagnosis of your malfunction, and to order warranty replacement parts or repairs, it is important that you proceed in the following manner:

WARRANTY PARTS ORDERS

1. Call the local distributor where you purchased your equipment and ask for the Service Department.
2. Have the following information ready:
 - a. Equipment Model
 - b. Date of Purchase
 - c. Hours on the Unit
 - d. Unit Serial Number
 - e. Description of Malfunction
3. Once it has been determined which parts are needed to correct the problem with your machine, make arrangements with your distributor to either perform the repairs or ship the parts to you.

PARTS ORDERS

Call your local distributor. In most instances, the distributor either stocks or has access to parts through a regional service center.

EMERGENCIES

If, for any reason, your distributor is unable to supply you with the necessary parts, s/he may call us and arrange for expedited shipping.

HydraMaster sells parts only through authorized distributors and service centers.

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9 - Warranty Information

To avoid misunderstandings which might occur between machine owners and manufacturer, we are listing causes of component failure that specifically voids warranty coverage. Such causes as listed below shall constitute **abuse** or **neglect**.

BLOWER

- Failure to lubricate impellers daily with an oil based lubricant.
- Failure to lubricate bearings as recommended in blower manual.
- Failure to maintain proper oil levels in the blower.
- Failure to use the correct oil grade and viscosity as recommended in blower manual.
- Failure to properly maintain blower safeguard systems such as waste tank filter screen, vacuum safety relief valve and waste tank automatic shut-off system.
- Allowing foam to pass through blower.

VACUUM TANK

- Failure to properly maintain filtering devices in tank.
- Failure to clean tank as recommended by manufacturer.
- Failure to maintain vacuum safety release in tank.

VACUUM HOSES

- Failure to protect hoses against burns from engine and blower exhaust.
- Damage to hoses from being run over by vehicles.
- Kinking or cracking from failure to store or unroll hoses correctly.
- Normal wear and tear from everyday use.

RECOVERY WAND

- Obvious physical abuse of wand.

GOLDEN GUARANTEE

Please refer to the following web page for more information concerning HydraMaster's warranty policy: <http://hydramaster.com/KnowledgeCenter/Warranty.aspx> .

A paper copy of the Golden Guarantee is also available in the HydraMaster Titan H₂O documentation package.

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