OPERATING, MAINTENANCE, PARTS MANUAL

COMPRESSOR MODELS

HP1300WCU HP1600WCU

Code: C **Code:**

This manual contains important safety information.
Do not destroy this manual.
This manual must be available to the personnel who operate and maintain this machine.

Portable Power
P.O. Box 868 - 501 Sanford Ave
Mocksville, N.C. 27028

Book 54757919 (5/02)
Revised (09-12)

QUALITY POLICY

We will supply products and services that consistently meet the requirements of our customers and each other.

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Foreword

Machine models represented in this manual may be used in various locations worldwide. Machines sold and shipped into European common market countries requires that the machine display the EC Mark and conform to various directives. In such cases, the design specification of this machine has been certified as complying with EC directives. Any modification to any part is absolutely prohibited and would result in the CE certification and marking being rendered invalid. A declaration of that conformity follows:

Machine models represented in this manual may be used in various locations worldwide. Machines sold and shipped into European common market countries requires that the machine display the EC Mark and conform to various directives. In such cases, the design specification of this machine has been certified as complying with EC directives. Any modification to any part is absolutely prohibited and would result in the CE certification and marking being rendered invalid. A declaration of that conformity follows:

Declaration of Conformity with EC Directives

98/37/EC, 93/68/EEC, 89/336EEC

CE

Ingersoll-Rand Company
P.O. Box 868
501 Sanford Avenue
Mocksville, North Carolina 27028

We

Represented In EC By:

Ingersoll-Rand Company Limited
Swan Lane, Hindley Green
Wigan WN2 4EZ
United Kingdom

Declare that, under our sole responsibility for manufacture and supply, the product(s)

10/370 25/300
10/455 25/330

To which this declaration relates, is (are) in conformity with the provisions of the above directives using the following principal standards

EN1012-1, EN29001, EN292, EN60204-1
PN8NTC2, EN 50081, EN50082

Issued at Mocksville on 1-1-02

Ric Lunsford
Manager of Quality Control

Issued at Hindley Green on 1-1-02

H. Seddon, Q.A. Manager

EC Pressure Equipment Directive and Related Regulations

We declare that this product has been assessed according to the Pressure Equipment Directive (97/23/EC) and, in accordance with the terms of this Directive, has been excluded from the scope of this Directive.

It may carry “CE” marking in compliance with other applicable EC Directives.

Nothing contained in this document is intended to extend any promise, warranty or representation, expressed or implied, regarding the Ingersoll-Rand products described herein. Any such warranties or other terms and conditions of sale of products shall be in accordance with the standard terms and conditions of sale for such products, which are available upon request.

This manual contains instructions and technical data to cover all routine operation and scheduled maintenance tasks by operation and maintenance staff. Major overhauls are outside the scope of this manual and should be referred to an authorized Ingersoll-Rand service department.

All components, accessories, pipes and connectors added to the compressed air system should be:

- of good quality, procured from a reputable manufacturer and, wherever possible, be of a type approved by Ingersoll-Rand.
- clearly rated for a pressure at least equal to the machine maximum allowable working pressure.
- compatible with the compressor lubricant/coolant.
- accompanied with instructions for safe installation, operation and maintenance.

Details of approved equipment are available from Ingersoll-Rand Service departments.
The use of repair parts other than those included within the Ingersoll-Rand approved parts list may create hazardous conditions over which Ingersoll-Rand has no control. Therefore, Ingersoll-Rand cannot be held responsible for equipment in which non-approved repair parts are installed.

Ingersoll-Rand reserves the right to make changes and improvements to products without notice and without incurring any obligation to make such changes or add such improvements to products sold previously.

The intended uses of this machine are outlined below and examples of unapproved usage are also given. However, Ingersoll-Rand cannot anticipate every application or work situation that may arise. **If in doubt, consult supervision.**

This machine has been designed and supplied for above ground operation to be used for compression of normal ambient air containing no additional gases, vapors or particles within the ambient temperature range specified in the general data section of this manual.

This machine should not be used:

A. For direct or indirect human consumption of the compressed air.

B. Outside the ambient temperature range specified in the general data section of this manual.

C. When an actual or foreseeable risk of hazardous levels of flammable gases or vapors exists.

D. With other than Ingersoll-Rand approved components.

E. With guards, or controls or switches missing or disabled.

F. For storage or transportation of materials inside or on the enclosure.

This company accepts no responsibility for errors in translation of this manual from the original English version.

You as the customer are expected to provide certain service and maintenance items. Your Ingersoll-Rand dealer will provide all other more detailed service and maintenance items on a special preventive maintenance schedule for each machine. It is very important that the minimum service and maintenance requirements explained in this manual be performed at the required intervals. Exceeding these intervals may reduce the reliability of the machine.

The purpose of this manual is to train the operator with functions, operation, and basic service and maintenance requirements of the compressor. During the preparation of this manual, every effort was made to ensure the adequacy and accuracy of the contents.

Your Ingersoll-Rand dealer will assist with setup and initial startup of the compressor. He will also provide brief operating and service instructions and will insure that a copy of this manual is included with the machine. Before starting the compressor, this manual and instructions should be carefully read to obtain a thorough knowledge of the duties to be performed. Please take pride in the compressor, keep it clean, and in good mechanical condition.

To enable proper maintenance records, Ingersoll-Rand provides a Noise Emission Control Maintenance Log Book (PCD Form 685) with each compressor shipped from the factory. This Log Book contains a recommended schedule and space so that the serviceman can note what service and maintenance was done, by whom, where, and when.

TABLE OF CONTENTS

SECTION 1- SAFETY

SAFETY PRECAUTIONS

General Information

Ensure that the operator reads and understands the decals and consults the manuals before maintenance or operation.

Ensure that the Operation and Maintenance manual, and the manual holder if equipped, are not removed permanently from the machine.

Ensure that maintenance personnel are adequately trained, competent and have read the manuals.

Make sure that all protective covers are in place and that the canopy/doors are closed during operation.

The specification of this machine is such that the machine is not suitable for use in flammable gas risk areas. If such an application is required then all local regulations, codes of practice and site rules must be observed. To ensure that the machine can operate in a safe and reliable manner, additional equipment such as gas detection, exhaust spark arrestors, and intake (shut-off) valves may be required, dependent on local regulations or the degree of risk involved.

Air discharged from this machine may contain carbon monoxide or other contaminants which will cause serious injury or death. Do not breathe this air.

Compressed air can be dangerous if incorrectly handled. Before doing any work on the unit, ensure that all pressure is vented from the system and that the machine cannot be started accidentally.

Ensure that the machine is operating at the rated pressure and that the rated pressure is known to all relevant personnel.

All air pressure equipment installed in or connected to the machine must have safe working pressure ratings of at least the machine safety valve rating.

If more than one compressor is connected to one common downstream plant, effective check valves and isolation valves must be fitted and controlled by work procedures, so that one machine cannot accidentally be pressurized or over pressurized by another.

Compressed air must not be used for a feed to any form of breathing apparatus or mask.

The discharged air contains a very small percentage of compressor lubricating oil and care should be taken to ensure that downstream equipment is compatible.

If the discharged air is to be ultimately released into a confined space, adequate ventilation must be provided.

When using compressed air, always use appropriate personal protective equipment.

All pressure containing parts, especially flexible hoses and their couplings, must be regularly inspected, be free from defects and be replaced according to the Manual instructions.

Avoid bodily contact with compressed air.

Never operate unit without first observing all safety warnings and carefully reading the operation and maintenance manual shipped from the factory with this machine.

Never operate the engine of this machine inside a building without adequate ventilation. Avoid breathing exhaust fumes when working on or near the machine. Do not alter or modify this machine.

A battery contains sulfuric acid and can give off gases which are corrosive and potentially explosive. Avoid contact with skin, eyes and clothing. In case of contact, flush area immediately with water.

Exercise extreme caution when using booster battery. To jump battery, connect ends of one booster cable to the positive (+) terminal of each battery. Connect one end of other cable to the negative (-) terminal of the booster battery and other end to a ground connection away from dead battery (to avoid a spark occurring near any explosive gases that may be present). After starting unit, always disconnect cables in reverse order.

Never operate unit without first observing all safety warnings and carefully reading the operation and maintenance manual shipped from the factory with this machine.

This machine may include such materials as oil, diesel fuel, antifreeze, brake fluid, oil/air filters and batteries which may require proper disposal when performing maintenance and service tasks. Contact local authorities for proper disposal of these materials.

High Pressure Air can cause serious injury or death. Relieve pressure before removing filler plugs/caps, fittings or covers.

Air pressure can remain trapped in air supply line which can result in serious injury or death. Always carefully vent air supply line at tool or vent valve before performing any service.

This machine produces loud noise with the doors open or service valve vented. Extended exposure to loud noise can cause hearing loss. Always wear hearing protection when doors are open or service valve is vented.

Never inspect or service unit without first disconnecting battery cable(s) to prevent accidental starting.

Do not remove the pressure cap from a HOT radiator. Allow radiator to cool down before removing pressure cap.

Do not use petroleum products (solvents or fuels) under high pressure as this can penetrate the skin and result in serious illness. wear eye protection while cleaning unit with compressed air to prevent debris from injuring eye(s).

Disconnected air hoses whip and can cause serious injury or death. Always attach a safety flow restrictor to each hose at the source of supply or branch line in accordance with OSHA Regulation 29CFR Section 1926.302(b).

Hot pressurized fluid can cause serious burns. Do not open radiator while hot.

Rotating fan blade can cause serious injury. Do not operate without guard in place.

Use care to avoid contacting hot surfaces (engine exhaust manifold and piping, air receiver and air discharge piping, etc.).

Ether is an extremely volatile, highly flammable gas. USE SPARINGLY! Do NOT use ETHER if unit has GLOW Plug starting aid. Engine damage will result.

Never allow the unit to sit stopped with pressure in the receiver-separator system. As a precaution, open the manual blowdown valve.

Never operate unit with guards, covers or screens removed. Keep hands, hair, clothing, tools, blow gun tips, etc. well away from moving parts.

Make sure wheels, tires and tow bar connectors are in safe operating condition and tow bar is properly connected before towing.

Whenever the machine is stopped, air will flow back into the compressor system from devices or systems downstream of the machine unless the service valve is closed. Install a check valve at the machine service valve to prevent reverse flow in the event of an unexpected shutdown when the service valve is open.

Hazardous Substance Precaution

The following substances are used in the manufacture of this machine and may be hazardous to health if used incorrectly.

Precaution: Avoid ingestion, skin contact and breathing fumes for the following substances: Antifreeze, Compressor Oil, Engine Lubricating Oil, Preservative Grease, Rust Preventative, Diesel Fuel and Battery Electrolyte.

The following substances may be produced during the operation of this machine and may be hazardous to health:

Avoid build-up of Engine Exhaust Fumes in confined spaces.

Avoid breathing Exhaust Fumes.

Avoid breathing Brake Lining Dust during maintenance.

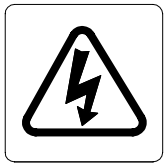
SAFETY LABELS

Look for these signs on machines shipped to international markets outside North America, which point out potential hazards to the safety of you and others. Read and understand thoroughly. Heed warnings and follow instructions. If you do not understand, inform you supervisor.

Corrosion risk

Hot Surface

Lifting point

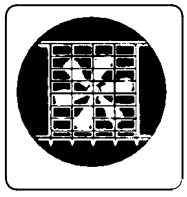


WARNING: Electrical shock risk.

Parking Brake

No open flame

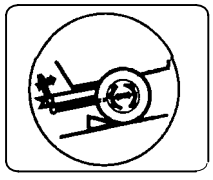
Diesel Fuel.
No open flame.



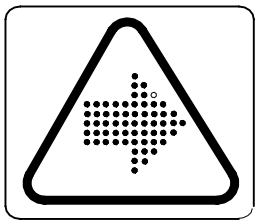
Do not operate the machine without guard being fitted.

Lifting point

WARNING - Flammable liquid.



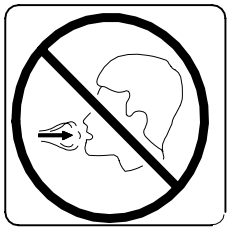
When parking use prop stand, handbrake and wheel chocks.



Air/gas flow or Air discharge.

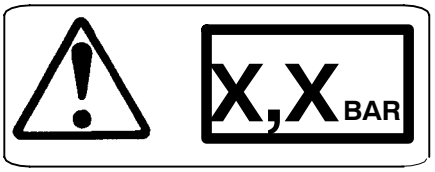
WARNING - Hot and harmful exhaust gas.

Tie down point

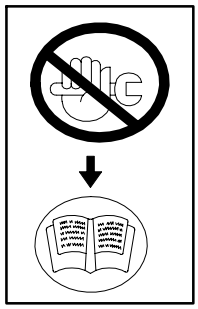


Do not breathe the compressed air from this machine.

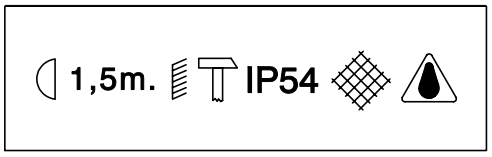
Read the Operation and Maintenance manual before operation or maintenance of this machine is undertaken.



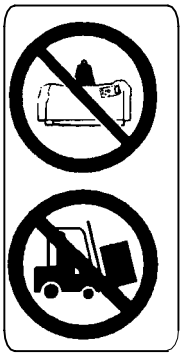
WARNING - Maintain correct tire pressure. (Refer to the *GENERAL INFORMATION* section of this manual).



WARNING: Consult the operation and maintenance manual before performing any maintenance.

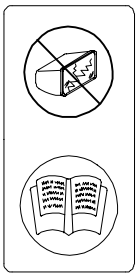


Rough Service Designation
Wet Location Operation

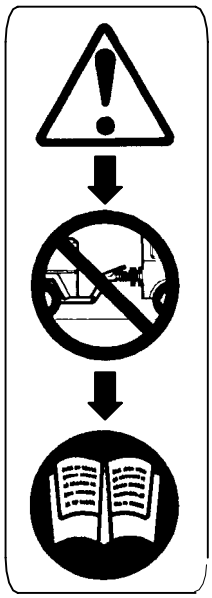


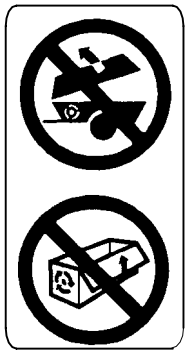
Do not stack

Do not use fork lift truck from this side

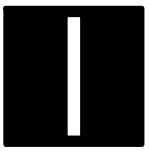


Replace any cracked protective shield.



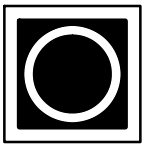


Do not operate with the doors or enclosure open.



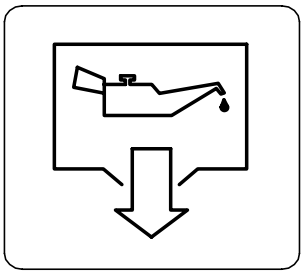
On (power).

Off (power).

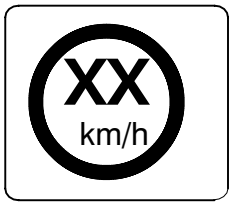


Emergency stop.

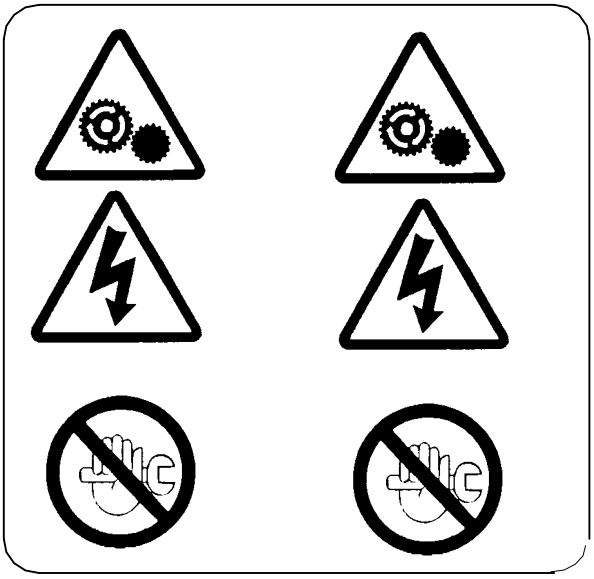
WARNING - Before connecting the tow bar or when preparing to tow, consult the operation and maintenance manual.



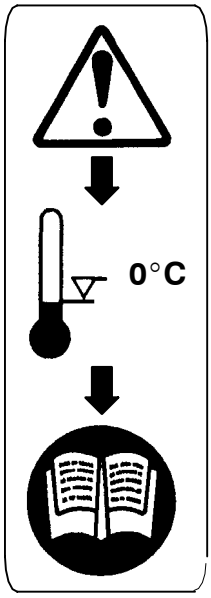
Oil Drain



Do not exceed the speed limit.



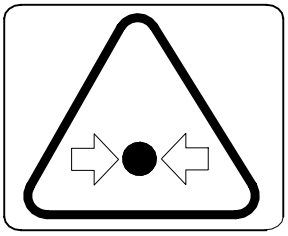
WARNING - Do not undertake any maintenance on this machine until the electrical supply is disconnected and the air pressure is totally relieved.



WARNING - For operating temperature below 0°C, consult the operation and maintenance manual.

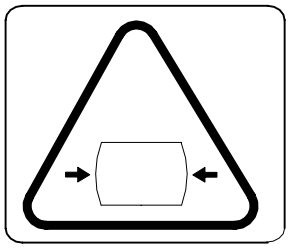
Read the Operation and Maintenance manual before operation or maintenance of this machine is undertaken

Do not remove the Operating and Maintenance manual and manual holder from this machine.



Pressurized vessel.

Use fork lift truck from this side only.



Pressurized component or system.

Look for these signs on machines shipped to markets in North America, which point out potential hazards to the safety of you and others. Read and understand thoroughly. Heed warnings and follow instructions. If you do not understand, inform you supervisor.

DANGER

(Red Background)

Indicates the presence of a hazard which WILL cause serious injury, death or property damage, if ignored.

WARNING

(Orange Background)

Indicates the presence of a hazard which CAN cause serious injury, death or property damage, if ignored.

CAUTION

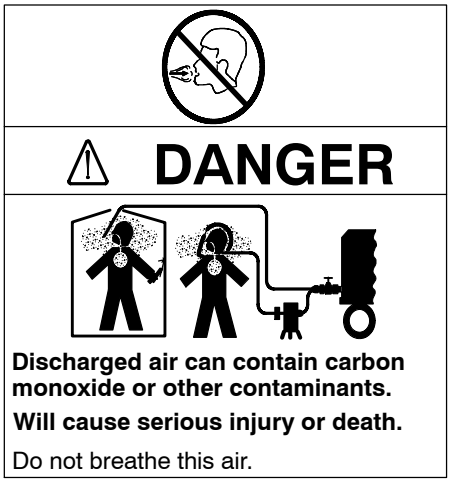
(Yellow Background)

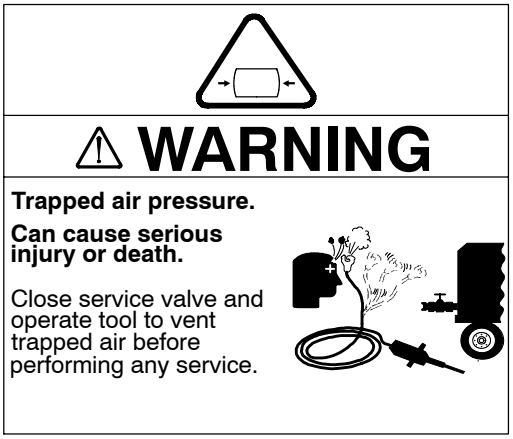
Indicates the presence of a hazard which WILL or can cause injury or property damage, if ignored.

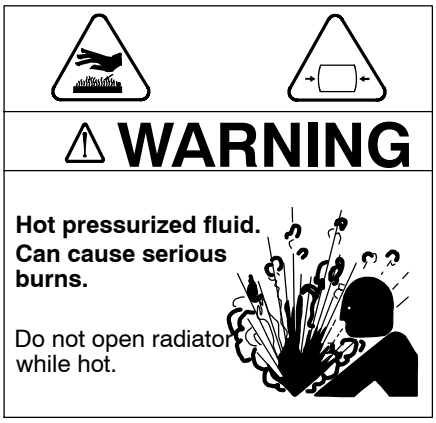
NOTICE

(Blue Background)

Indicates important set-up, operating or maintenance information.







⚠ WARNING

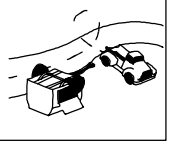
Improper operation of this equipment.
Can cause serious injury or death.
Read Operator's Manual supplied with this machine before operation or servicing.

Modification or alteration of this machine.
Can cause serious injury or death.
Do not alter or modify this machine without the express written consent of the manufacturer.

⚠ WARNING

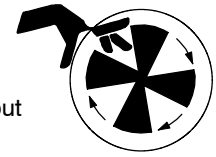
Collapsing jackstand.
Can cause serious injury.
Insert locking pin completely.

Excessive towing speed.
Can cause serious injury or death.
Do NOT exceed 65 mph (105 km/hr.)



⚠ WARNING

Rotating fan blade.
Can cause serious injury.
Do not operate without guard in place.



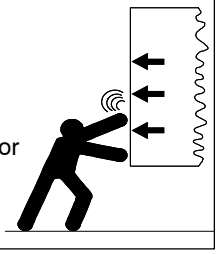
⚠ WARNING

Falling off machine.
Can cause serious injury or death.

Access lifting bail from inside machine.

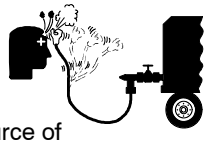
⚠ WARNING

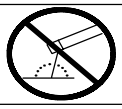
Door under pressure.
Can cause serious injury.
Use both hands to open door when machine is running.



⚠ WARNING

Disconnected air hoses whip.
Can cause serious injury or death.
When using air tools attach safety device (OSHA Valve) at source of air supply for each tool.





CAUTION

DO NOT WELD.
ELECTRONIC DAMAGE WILL OCCUR.
This engine is equipped with an electronic engine controller and other electronic components.

⚠ WARNING

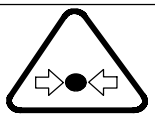
Combustible gas.
Can cause serious burns, blindness or death.
Keep sparks and open flames away from batteries.

CAUTION

DO NOT USE ETHER.

ENGINE DAMAGE WILL OCCUR.

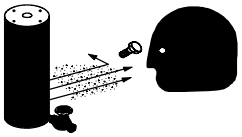
This engine is equipped with an electric heater starting aid.

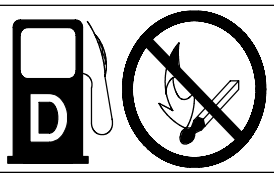


⚠ WARNING

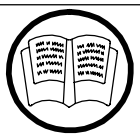
High pressure air. Can cause serious injury or death.

Relieve pressure before removing filler plugs/caps, fittings or covers.





USE DIESEL FUEL ONLY



NOTICE

COOLANT FILL INSTRUCTIONS

Adding:

Do NOT remove radiator cap. Top off at overflow reservoir. Use same anti–freeze mixture as in radiator.

Replacing:

With system cool, remove radiator cap. Drain coolant and close drain. At radiator, refill system. Replace radiator cap. At reservoir, fill to “Hot” level. Run for 30 minutes. Stop and allow to cool. At reservoir, add coolant as necessary to reach “Cold” level.

FREE SAFETY DECALS!

To promote communication of Safety Warnings on products manufactured by the Portable Compressor Division in Mocksville, N.C., Safety Decals are available **free** of charge. Safety decals are identified by the decal heading: **DANGER, WARNING or CAUTION.**

Decal part numbers are on the bottom of each decal and are also listed in the compressor’s parts manual. Submit orders for Safety Decals to the Mocksville Parts Service Department. The no charge order should contain only Safety Decals. Help promote product safety! Assure that decals are present on the machines. Replace decals that are not readable.

SECTION 2 - Warranty

Ingersoll-Rand, through its distributor, warrants that each item of equipment manufactured by it and delivered hereunder to the initial user will be free of defects in material and workmanship for a period of three (3) months from initial operation or six (6) months from the date of shipment to the initial user, whichever occurs first.

With respect to the following types of equipment, the warranty period enumerated below will apply in lieu of the foregoing warranty period.

A. **Aftercoolers** - The earlier of nine (9) months from date of shipment to or six (6) months from start up by initial user.

B. **Portable Compressors, Portable Generator Sets (GENSET) 8KW, 11KW, 20KVA thru 575KVA, Portable Light Towers and Air Dryers** - The earlier of twelve (12) months from shipment to or the accumulation of 2,000 hours of service by the initial user.
3.5KW thru 7.0KW and 10KW– The earlier of twelve (12) months from shipment to or the accumulation of 2,000 hours of service by the initial user, whichever occurs first. Ingersoll-Rand will provide a new part or repaired part, at it's election, in place of any part which is found to be defective in material or workmanship during the period described above. Labor cost to replace the part is the responsibility of the user.

C. **Portable Compressor Air Ends -** The earlier of twenty-four (24) months from shipment to or the accumulation of 4,000 hours of service by the initial user. For Air Ends, the warranty against defects will include replacement of the complete Air End, provided the original Air End is returned assembled and unopened.

C.1 **Portable Compressor Airend Limited Optional Warranty** - The earlier of sixty (60) months from shipment to or the accumulation of 10,000 hours of service. The optional warranty is limited to defects in rotors, housings, bearings and gears and provided all the following conditions are met:
1. The original air end is returned assembled and unopened.
2. Continued use of genuine Ingersoll-Rand parts, fluids, oil and filters.
3. Maintenance is performed at prescribed intervals.

Oil-Free airends are fee-based and may require a maintenance agreement. Formal enrollment is required.

D. **Genset Generators 8KW, 11KW, 20KVA thru 575KVA -** The earlier of twenty-four (24) months from shipment to or the accumulation of 4,000 hours of service by the initial user.
3.5KW thru 7.0KW and 10KW - The earlier of twelve (12) months from shipment to or the accumulation of 2,000 hours of service.

E. **Portable Light Tower Generators-** The earlier of twelve (12) months from shipment to or the accumulation of 2,000 hours of service by the initial user. Light Source model only, the earlier of twenty-four (24) months from shipment to or the accumulation of 4,000 hours of service.

F. **Ingersoll-Rand Engines -** The earlier of twenty-four (24) months from shipment to or the accumulation of 4,000 hours of service.

G. **Ingersoll-Rand Platinum Drive Train Warranty (Optional)** – Platinum drive train pertains to the Ingersoll-Rand Engine and Airend combination. The earlier of sixty (60) months from shipment to, or the accumulation of 10,000 hours of service. The starter, alternator, fuel injection system and all electrical components are excluded from the extended warranty. The airend seal and drive coupling are included in the warranty (airend drive belts are not included). The optional warranty is automatically available when meeting the following conditions:

1. The original airend is returned assembled and unopened.
2. Continued use of genuine Ingersoll-Rand parts, fluids, oil and filters.
3. Maintenance is performed at prescribed intervals.

It is the obligation of the user to provide verification that these conditions have been satisfied when submitting warranty claims.

F. **Spare Parts**– Six (6) months from date of shipment.

Ingersoll-Rand will provide a new part or repaired part, at its election, in place of any part which is found upon its inspection to be defective in material and workmanship during the period prescribed above. Such part will be repaired or replaced without charge to the initial user during normal working hours at the place of business of an Ingersoll-Rand distributor authorized to sell the type of equipment involved or other establishment authorized by Ingersoll-Rand. User must present proof of purchase at the time of exercising warranty.

The above warrantees do not apply to failures occurring as a result of abuse; misuse, negligent repairs, corrosion, erosion and normal wear and tear, alterations or modifications made to the product without express written consent of Ingersoll-Rand; or failure to follow the recommended operating practices and maintenance procedures as provided in the product's operating and maintenance publications.

Accessories or equipment furnished by Ingersoll-Rand, but manufactured by others, including, but not limited to, engines, tires, batteries, engine electrical equipment, hydraulic transmissions, carriers, shall carry whatever warranty the manufacturers have conveyed to Ingersoll-Rand and which can be passed on to the initial user.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, (EXCEPT THAT OF TITLE),AND THERE ARE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

GENERAL WARRANTY INFORMATION

GENERAL WARRANTY			Extended Coverage
Portable Compressor	Package	1 year/2000 hrs	
	Airend	2 yrs/4000 hrs	5 yrs/10,000 hrs Limited warranty, major components (refer to operator's manual).

Portable Genset 8kW, 11KW, 20KVA thru 575KVA	Package	1 yr/2000 hrs	None
	Generator	2 yrs/4000 hrs	None

Portable Genset 3.5KW thru 7.0KW and 10KW	Package	1 yr/2000 hrs (parts only)	None
	Generator	1 yrs/2000 hrs (parts only)	None

Light Tower	Package	1 yr/2000 hrs	
	Generator	1 yr/2000 hrs	2 years/4000 hours, for Lightsource introduced 8/16/99.

ENGINES			
CATERPILLAR	**Months**	**Hours**	**Extended Coverage**
	12	unlimited	Available at dealer
CUMMINS	24	2000	Major components 3 yrs/10,000 hrs Available at dealer
JOHN DEERE (in compressors)	24	2000	5 yrs/5000 hrs using OEM fluids and filters with $250 deductible
(in generators as of 1/1/01)	24	2000	2 yrs/4000 hrs using IR fluids and filters
DEUTZ	24	2000	Available at dealer
INGERSOLL-RAND	24	4000	5 yrs/10,000 hrs when using genuine Ingersoll-Rand fluids and parts. Refer to operator's manual.
KUBOTA (North America only)	24	2000	Major components 36 mo/3000 hrs (parts only)
(Western Europe & Oceania)	24	2000	None
(Central & South America, Asia, Middle East & Africa)	12	1000	None
MITSUBISHI	24	2000	2 yrs/4000 hrs using IR fluids & filters
VOLVO	24	2000	2 yrs/4000 hrs using ir fluids & filters
HONDA	12	unlimited	None
VANGUARD	24	unlimited	None

PARTS			
	Months	**Hours**	**Coverage**
Ingersoll-Rand	6	No Limit	Parts Only

AIREND EXCHANGE			
	Months	**Hours**	**Extended Coverage**
Airend	12	2000 hours	2 yrs/4000 hrs - available from IR.

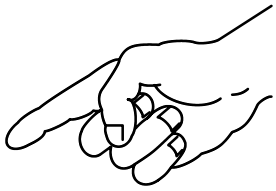
Note: Actual warranty times may change. Consult the manufacturer's warranty policy as shipped with each new product.

WARRANTY REGISTRATION

Complete Machine Registration

Machines shipped to locations within the United States do not require a warranty registration unless the machine status changes (i.e. change of ownership).

Machines shipped outside the United States require notification be made to initiate the machine warranty.



Fill out the Warranty Registration Form in this section, keep a copy for your records and mail form to:

Ingersoll–Rand Company
Portable Compressor Division
P.O. Box 868
Mocksville, North Carolina 27028

Attn: Warranty Department

Note: Completion of this form validates the warranty.

Selling Distributor	**Servicing Distributor**	**WARRANTY REGISTRATION**
Name _____	Name _____	Owner/User Name _____
Address _____	Address _____	Address _____
City _____	City _____	City _____
County _____	County _____	County _____
State _____	State _____	State _____
Zip Code _____	Zip Code _____	Zip Code _____
Telephone _____	Telephone _____	Telephone _____

Complete the Applicable Blocks

Owner/User Type of Business (check one only)

☐ Construction–Heavy (highway, excavation, etc.)	☐ Asphalt Contractor	☐ Coal Mining	☐ Other Mining
☐ Construction–Light (carpentry, plumbing, pools, mason, etc.)	☐ Government (municipal, state, county, etc.)	☐ Quarry	☐ Shallow Oil & Gas
☐ Rental (rental center, rental fleet, etc.)	☐ Building Contractor	☐ Waterwell	☐ Utility Company (gas, electric, water, etc.)
☐ Industrial (plant use)	☐ Other specify _____	☐ Exploration	☐ Utility Contractor

Model	**Unit S/N**	**Engine S/N**	**Date Delivered**
Unit–Hours	**Airend S/N**	**Truck S/N**	**Truck Engine S/N**

SERVICING DISTRIBUTOR/USER ACKNOWLEDGEMENT

1. The Purchaser has been instructed and/or has read the manual and understands proper preventative maintenance, general operation and safety precautions.
2. The warranty and limitation of liability has been reviewed and understood by the owner/user.
3. In the event that this unit is to be used within a nuclear facility, the owner/user shall notify Ingersoll–Rand of such use so that Ingersoll–Rand may arrange for appropriate nuclear liability protection from the owner–licensee of the facility.
4. Ingersoll–Rand reserves the right to make design changes or modifications of Ingersoll–Rand products at anytime without incurring any obligation to make similar changes or modifications on previously sold units.

Attention: Warranty Department

Ingersoll-Rand Company
Portable Compressor Division
P.O. Box 868
Mocksville, North Carolina 27028

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SECTION 3 – GENERAL DATA

UNIT MODELS	HP1600WCU	HP1300WCU
Air Delivery – cfm (litres/sec)	1600 (756)	1300 (614)

COMPRESSOR

Rated Operating Pressure – psi (kPa)	80–150 (552–1034)

ENGINE (Diesel)

Manufacturer	Cummins
Model	QSX–15
Rated Horsepower at 1800 rpm	560
Electrical System	24 VDC
Full Load Speed – rpm	1800
No Load Speed – rpm	1200

FLUID CAPACITIES – U.S. Gallons (litres)

Compressor Lubricant	55 (208)
Engine Lube (including filter)	10.5 (40)
Engine Coolant (Radiator)	15.2 (57.5)
Fuel Tank (Clean DIESEL fuel)	230 (870)

UNITS MEASUREMENTS/WEIGHTS Feet (Meters)	HSRG	Wagon RG	LRG
Overall Length	24.2 (7.4)	19.0 (5.79)	19.0 (5.79)
Overall Height	8.33 (2.54)	8.33 (2.54)	7.25 (2.21)
Overall Width	7.5 (2.29)	7.5 (2.29)	7.5 (2.29)
Gross Weight – pounds (kg)	17,200 (7810)	17,200 (7810)	16,700 (7590)
(including fluids–no fuel)	est		est

RUNNING GEAR

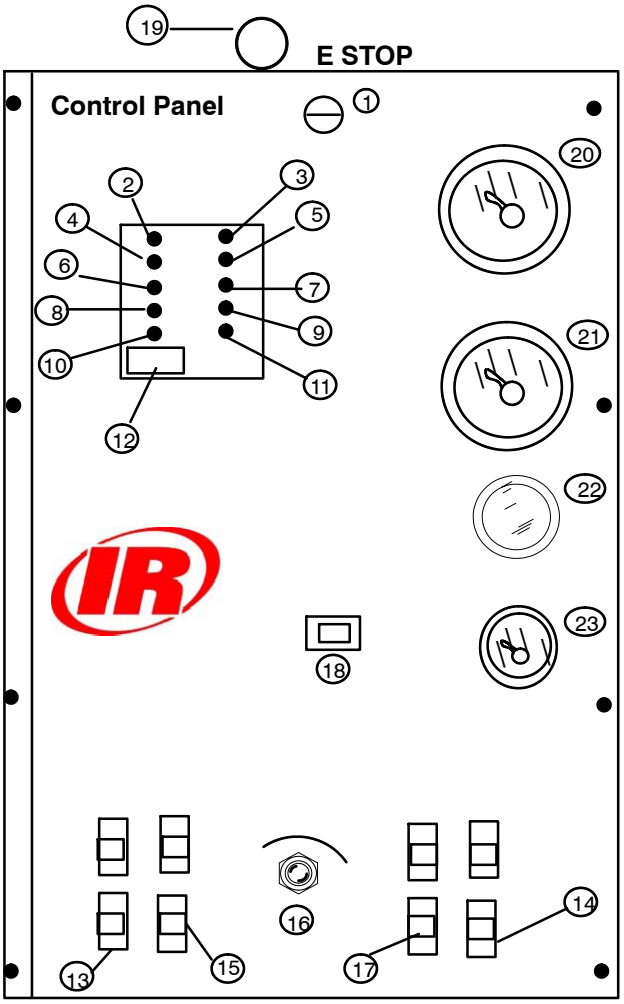
Tire Size	215/75R17.5H	215/75R17.5H	NA
Towing Speed (Maximum) mph	65	20	NA
Inflation Pressure	125 psig	125 psig	NA

EXPENDABLE SERVICE PARTS

Part Number	Description	Where Used	Quantity
36860336	Filter, Oil	Airend	2
36754406	Separator, Oil HP	Airend	1
36864361	Filter, Inlet Primary	Engine & AE inlet	2
36864379	Filter, Inlet Secondary	Engine & AE inlet	2
54662028	Filter Oil, Engine	QSX15	1
54662051	Filter Coolant, Engine	QSX15	1
54662036	Filter Fuel, Engine	QSX15	1

CAUTION: Any departure from the specifications may make this equipment unsafe.

SECTION 4 - OPERATING INSTRUCTIONS



OPERATING CONTROLS AND INSTRUMENTS

The operating controls and instruments are arranged on the control panel as shown on previous page. A description of each panel device is as follows:

1. **Panel Light:** Illuminates PHE instrument and control panel controlled by Switch 14.
2. **High Compressor Temp**: Fault indicator lamp. Indicates shutdown due to high compressor temperature.
3. **Low Radiator Coolant Level:** Alarm indicator lamp. Indicates engine coolant needs service.
4. **Low Engine Oil Pressure**: Fault indicator lamp. Indicates shutdown due to low engine oil pressure.
5. **Restricted Air Filter**: Alarm indicator lamp. Indicates engine/compressor air inlet filters need service.
6. **High Engine Coolant Temp:** Fault indicator lamp. Indicates shutdown due to high engine water temperature.
7. **Restricted IQ Air Filters:** Fault indicator lamp. Indicates shutdown due to high Pon IQ air filters (if equipped).
8. **Low Fuel Level:** Fault indicator lamp. Indicates shutdown due to low fuel level. Lamp blinks at low fuel warning.
9. **Compressor Malfunction:** Fault indicator lamp. Indicates shutdown due to compressor system fault. Refer to Fault Code List.
10. **Low Battery Voltage**: Alarm indicator lamp. Indicates battery or charging system requires service.
11. **Engine Malfunction:** Engine Fault code. Refer to service card or engine manual for codes and service requirements.
12. **Malfunction Code (4 Digit)**: Compressor or engine fault. Refer to manual for list of codes and service requirements.
13. **Ether Inject**: Injects a measured shot of ether for aid in cold weather starting of engine. Caution: Use Sparingly.
14. **Panel Light Switch**: Controls panel lamp # 1.
15. **Service Air Switch:** Momentary contact switch. Allows engine to warm up at low compressor pressure.
16. **Main Power Control Switch:** ON/OFF Start Switch.
17. **Heaters:** ON/OFF Power Switch for regulation and IQ heaters. Prevents freeze up in cold weather.
18. **Hourmeter:** Indicates machine operating hours.
19. **E-STOP**: Emergency Stop Push Button (ESA units only). Push to stop, turn to release.
20. **Discharge Air Pressure Gage:** Indicates pressure in receiver tank, normally from 0 psi(kPa) to the rated pressure of the machine.
21. **Engine Tachometer:** Indicates engine speed in RPM from 0 when stopped to full speed.
22. **Systems Gage:** Engine Water Temp
    Compressor Oil Temp
    Engine Oil Pressure
    Battery Voltage
23. **Fuel Level Gage:** Indicate fuel level in tank.

WARNING

Do not climb on top of unit.

LIFTING UNIT

Central Lifting Bail

- Hoist/crane per machines gross weight (see general data)

BEFORE TOWING

Ensure that the tires, wheels and running gear are in good condition and secure.

Wagon Style Running Gear

• Do not tow this unit in exess of 20 mph (32km/hr).

• Use a tow vehicle whose towing capacity is greater than the gross weight of this unit. (see general data).

• Machine is not designed to be Highway Towable.

• Set parking brake or chock wheels before disconnecting from towing vehicle.

• Optional Parking Brake – located beside towbar on front of unit, if equipped.

High Speed Running Gear

• Use jack to raise or lower lunette eye.

• Use tow vehicle whose towing capacity is greater than the gross weight of this unit (see general data).

• Do not tow this unit in excess of 65 mph.

• Place wheel chocks under tires before disconnecting from towing vehicle.

• When raising or lowering lunette eye, always stand to one side.

Wheel Chock – HSRG

- Located inside of front towbar
- Secure unit with chocks before disconnecting drawbar from tow vehicle.

SETTING UP (ALL UNITS)

Place the unit in an open, well–ventilated area. Position as level as possible. The design of these units permits a maximum 15 degree limit on out–of–level operation.

When the unit is to be operated out–of–level it is important: (1) to keep the engine crankcase oil level near the high level mark (with the unit level), and (2) to have the compressor oil level gauge show no more than mid–scale (with the unit running at full load). Do not overfill either the engine crankcase or the compressor lubricating oil system.

Chock wheels or set parking brake.

This unit is equipped with on–board fuel tanks with a total capacity of 230 gallons which provides 10 hours of full load operation.

Compressor Mounting

Portable compressors, which are modified to remove the running gear and mount the machine direct to trailers, truck beds or frames, etc. may experience failure of the enclosure, frame, and/or other components. It is necessary to isolate the compressor package from the carrier base with a flexible mounting system. Such a system must also prevent detachment of the package from the carrier base in the event the isolators fail. Contact Ingersoll–Rand representative for flexible mounting kits.

Warranty does not cover failures attributable to mounting of the compressor package to the carrier base unless it is an Ingersoll–Rand provided system.

WARNING

Do not connect the air discharge on this unit onto a common header with any other unit of any description, or any other source of compressed air, without first making sure a check-valve is used between the header and the unit. If this unit is connected in parallel with another unit of higher discharge pressure and capacity, a safety hazard could occur in a back-flow condition.

WARNING

Unrestricted air flow from a hose will result in a whipping motion of the hose which can cause serious injury or death. A safety device must be attached to the hose at the source of supply to reduce pressure in case of hose failure or other sudden pressure release. Reference: OSHA regulation 29 CFR Section 1926.302 (b).

Air hose restraining cable installation:

Secure hose restraining cable at each end to prevent accidental hose whipping. At the machine-side of the air hose, install and secure one end of the hose restraining cable on the 3" nipple on the inlet side of the 3" service valve. Install the other end of the hose restraining cable over the main hose connector.

Install suitable 3" air hose between service valve on unit and point of air use. The air hose must be rated for outdoor use and for pressurized air service. Minimum rating is 250°F (121°C) and 200 psig (HP) or 425 psig (XHP).

BEFORE STARTING

Open service valves.

Inspect the complete installation including remote fuel lines (if any) and air hose routing and connections.

Check battery for proper connections and condition.

WARNING

Combustible gas can cause severe burns, blindness or death. Keep sparks and open flame away from battery.

- Check the compressor lubricating oil level. The proper oil level is labeled on the compressor sump sight glass.
- Check engine oil level. The proper level is labeled on the engine dipstick. Add oil when required. Do not overfill.
- To jump-start, connect the positive booster/charger cable to the 24VDC positive (+) terminal of the battery. Then connect the negative booster/charger cable to the engine block...Not to the negative (-) terminal of the weak battery. After starting, disconnect the negative (-) cable from engine block; then from the booster battery/charger. Disconnect positive (+) cable from both batteries.

WARNING

Do not remove the cap from a HOT engine radiator. The sudden release of pressure from a heated cooling system can result in a loss of coolant and possible severe personal injury.

WARNING

Hot pressurized fluid can cause serious burns. Do not open radiator while hot.

Check coolant to assure coolant level is at minimum level when the unit is cold.

Check engine coolant level by removing the radiator top cap and looking for coolant in the filler neck of the radiator. Add coolant as required. Insure that radiator cap is installed properly and tightened.

Note: This machine will not allow engine starting if engine coolant is low.

NOTICE: If the appropriate mixture of antifreeze is not used during freezing temperatures, failure to drain the engine may cause costly engine damage. Never use water only as corrosion inhibitors are required in engine coolant fluid.

CAUTION

No smoking, sparks, or open flame near fuel.

Check the fuel level. Add only CLEAN DIESEL fuel for maximum service from the engine. Refer to the Engine Operator's Section for fuel specifications.

NOTICE

To minimize condensation (water) in the fuel tank, it is recommended to fill the tank at the end of each day.

WARNING

This machine produces loud noise with doors open. Extended exposure to loud noise can cause hearing loss. Wear hearing protection when doors or valve(s) are open.

- Close the side doors to maintain a cooling air path and to avoid recirculation of hot air. This will maximize the life of the engine and compressor and protect the hearing of surrounding personnel.

- Make sure no one is IN or ON the compressor unit.

STARTING -

NOTICE

This unit is equipped with a battery disconnect switch which removes power from the machine controller for long term storage. The switch is located on the side of the engine near the battery.

This switch must be turned ON to provide power to the control panel for starting this unit.

1. Turn the keyswitch to the "ON" position (first position). All diagnostic lamps and the LED display will light for two (2) seconds. Then all lamps should go off except for ALTERNATOR NOT CHARGING and LOW ENGINE OIL PRESSURE.
2. In freezing weather (below 32°F/0°C), flip HEATERS switch "ON" and wait sixty (60 seconds). This applies heat to the control system components for easier starting. Leave this switch "ON" while operating at these temperatures.
3. When the keyswitch is turned to "START" the engine starter will be engaged. **Do not operate the engine starter motor for more than ten (10) seconds without allowing at least one minute cooling time between start attempts.**

CAUTION

Ether is an extremely volatile, high flammable gas. Use Sparingly! If too much is injected, the uncontrolled explosion may result in costly damage to the engine.

4. In cold weather, as required, press the ETHER INJECT button once or twice only while the engine is cranking. This injects a measured amount of ETHER to the engine.
5. Following a successful start, the engine will accelerate to idle speed of 1200 RPM for warm-up. Compressor discharge pressure will be maintained at 60 psi during warm-up.
6. Press the LOAD button. The engine will increase speed up to 1800 rpm until the pressure reaches the desired set point.

NORMAL OPERATION

The Operator may observe and monitor operating parameters using the gages on the panel. In the event the machine controller detects a parameter outside normal operating limits, the unit will shutdown.

In the event the machine controller detects a parameter at a dangerously high or low level, the machine will be automatically be stopped with the cause of the SHUTDOWN shown on the diagnostic lights.

Delivered air volume at set point pressure is accomplished by two methods:

1). The compressor is loaded (inlet valve fully open or modulated partially open), or unloaded (inlet valve fully closed).

2) Engine speed varies between 1200 RPM and 1800 RPM while compressor is loaded to match the required volume flow.

Operation - Loaded

Assume engine has been started and is running in the unload state at 1200 RPM. If there is air demand (pressure falls below the load point pressure), compressor will load at 1200 RPM by opening the inlet valve. As air demand rises and falls, engine speed is controlled between 1200 RPM and 1800 RPM to match the required flow while maintaining rated pressure.

Operation - Unloaded

If there is no air demand at 1200 RPM (Pressure rises above the unload point prssure), the compressor will unload by closing the inlet valve. The unit then runs at 1200 RPM unloaded with no air delivery. If air demand increases (pressure falls to below the load point pressure), the compressor reloads to meet the required air demand.

STOPPING

- Close air service valve(s).
- Allow the unit to run at "no load" for 3 to 5 minutes to reduce the engine temperatures.
- Turn the keyswitch to the "OFF" position.

NOTICE

Once the engine stops, the automatic blowdown valve will continue to relieve all pressure from the check valve to discharge valve piping.

NOTICE

Failure to allow turbo cool down prior to stopping can cause turbocharger damage.

WARNING

Even after pressure is relieved from the piping system, any air supply line from the compressor to a tool or machine could remain under pressure and cause serious personal injury or death. After the compressor stops, carefully open a valve at any tool or machine to exhaust the pressure in any line prior to removal or servicing.

CAUTION

Never allow the unit to sit stopped with pressure in the receiver-separator system. As a precaution, open the service valve.

IQ System

The IQ System is a complete, self–contained system which provides cooler, cleaner air than from a standard portable compressor. The system utilizes an integral aftercooler, high–efficiency filtration, and a patented condensate disposal system to provide the cool, clean air. The condensate disposal system injects all liquid condensed from the moisture separator and filters into the engine exhaust system where it is vaporized by heat. This eliminates the need for collecting the condensate, and the added cost of disposing of the condensate, which is often regulated by local, state, and/or federal regulations.

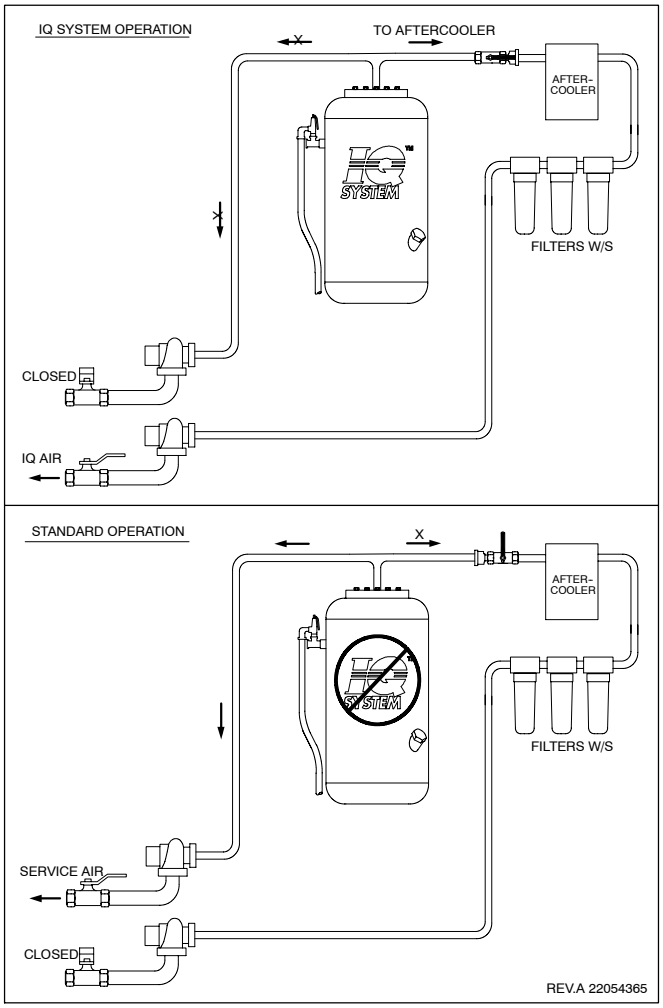
When equipped with the low ambient feature, the IQ System automatically adjusts movable louvers to control airflow through the aftercooler, ensuring that the compressed air temperature always remains above freezing temperatures (typically 45ºF) at any ambient temperature down to –20ºF. This prevents the need for 120V AC heat tracing systems, or any manual adjustment to prevent freezing of the compressed air system. All drain points for the condensate handling system are heated with 24VDC heat tracing, which is integral to the compressor heater system.

Theory of Operation

The compressed air exits the separator tank through the top cover piping, and can then travel along one of two paths, selectable via manual valving.

One path allows Standard Operation, which bypasses the IQ System, and delivers air quality equivalent to a standard oil–flooded portable compressor. If the IQ System is enabled by proper setting of the selector valve, the compressed air first enters the aftercooler.

The aftercooler is cooled by the incoming compressor package air, which is controlled by movable louvers mounted on the aftercooler (if equipped with low ambient option). At most conditions, the louvers are fully open, and maximum aftercooling is available. The compressed air and condensate (water with a small amount of compressor lubricant) exits the aftercooler and enters the moisture separator, where most of the condensate is removed. The compressed air then flows through two stages of filtration, where the aerosol water and oil is removed down to approximately 0.01 ppm, and all particulates are removed down to 0.01 micron.



At the bottom of the moisture separator and both filters are strainers and constant–bleed orifices, which are sized to allow the maximum flow of condensate while minimizing compressed air loss.

The condensate lines are then piped together, and the condensate is injected at a single point into the engine exhaust piping. The compressed air then travels through the minimum pressure valve, and out through the service air valve. The air pressure gauge on the instrument panel indicates the pressure inside the separator tank. A service air pressure gauge is located inside the front door of the compressor on the filter support.

If the IQ System is bypassed (Standard Operation selected), the delivered air pressure will be approximately equal to the separator tank pressure. If the IQ System operation is selected, the delivered air pressure will be slightly less, depending on the restriction of the filters.

CAUTION

The compressor regulation system is adjusted to maintain regulated pressure at the separator tank. DO NOT adjust regulation to provide full regulation pressure at the service valve when the IQ System is enabled. This will result in operation at excessive horsepower levels, causing overheating, reduced engine life, and reduced airend life.

Low Ambient Option Operation

When the ambient temperature falls to the point that the aftercooler outlet temperature is approaching 45ºF, the Temperature Control Unit (TCU), mounted on the rear of the control panel, will automatically adjust the louvers to control the cooling airflow through the aftercooler.

In the event that the unit is operating under abnormal conditions (i.e., an enclosure door open) which would cause excessive cooling of the aftercooler, a temperature sensor in the aftercooler outlet header will signal the TCU to further close the louvers if the compressed air temperature falls to approximately 36ºF or lower.

There are no user selectable or serviceable components in the TCU. Contact Ingersoll-Rand Service if any abnormal operation of the freeze protection control system occurs.

MAINTENANCE

Daily Maintenance:

Verify, during full-load (maximum compressed air delivery) that the IQ System filter restriction indicators do not show excessive restriction. Restriction indicators for the filters are mounted inside the control panel, and will shut down the compressor if restriction exceeds recommended values.

CAUTION

Excessively restricted filter elements may cause an increase in the amount of aerosol water and oil carryover, which could result in damage to downstream equipment. Normal service intervals should not be exceeded.

Weekly Maintenance:

• Remove Y-strainer screens at the bottom of the moisture separator and both filters and clean out any residue.

• Verify that the orifices below the Y-strainers are not clogged.

• Verify that the piping from the orifice purge points to the exhaust system is not clogged.

CAUTION

Blockage of the Y-strainers, orifices, or piping can result in flooding of the vessels with condensate. If flooding occurs, excessive condensate may enter the air stream and could result in damage to downstream equipment.

Yearly Maintenance:

The normal maintenance interval on the primary and secondary IQ System filters is one year, or earlier if pressure drop becomes excessive. Restriction indicators for the filters are mounted on the filter support inside the front door, and will shut down the compressor if restriction exceeds recommended values.

CAUTION

Excessively restricted filter elements may cause an increase in the amount of aerosol water and oil carryover, which could result in damage to downstream equipment. Normal service intervals should not be exceeded.

Filter Replacement

• With engine stopped, ensure pressure is relieved from air system.

• Remove all wires and hoses connected to drains on bottom of each filter housing. Inspect fittings and hoses for any blockage. Clean if necessary.

• Using a chain wrench or similar tool, loosen the housing. The housing should be removed by hand after loosening, taking care to prevent the housing from falling to the floor panel.

• Lower the housing to floor panel and lean it against the airend. Remove and replace the filter element, being careful not to damage outer wrap.

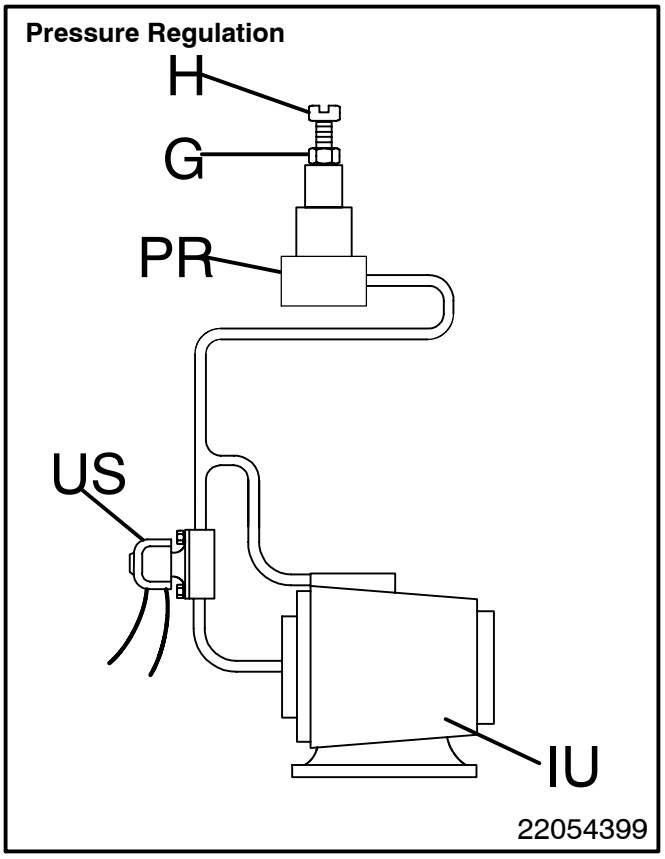
Verify the part number of new element vs. old element, as the two IQ filters are of different media.

• Put a small amount of petroleum jelly or other non-synthetic grease on the element o-ring to aid installation into the filter head.

• Replace housing making sure to not overtighten.

• Repeat the above procedure on the remaining filter element.

• Reconnect all wires and hoses to drains on bottom of each filter housing.



Normally, regulation requires no adjusting, but if proper adjustment is lost, proceed as follows:

Before Starting Unit -

1. Atop separator cover at pressure regulator (PR) loosen locknut (G) counterclockwise. Turn adjustment screw counterclockwise on full turn.

After Starting Unit -

2. Allow unit to warm up, then push “Service Air Switch” on control panel.

3. Open and adjust service valve on outside of the unit to obtain the rated operating pressure on the discharge pressure gauge.

Note: If the rated operating pressure cannot be maintained with engine at full load speed, turn regulator adjustment screw (H) clockwise and adjust service valve until engine maintains rated full load speed.

4. Insure that pressure is maintained at rated pressure, then turn regulator adjustment screw (H) counterclockwise until engine speed just begins to be reduced.

Note: Turning regulator adjustment screw (H) clockwise will raise pressure at full speed.

5. Close service valve (engine will slow to no load or idle speed).

6. If necessary, repeat steps 3 and 4.

7. At pressure regulator (PR) tighten lock nut (G).

8. To adjust the unloaded pressure to any pressure between 80 PSI (550 kPa) and the rated operating pressure, turn adjustment screw (H) of pressure regulator (PR) to obtain desired discharge pressure at full load engine speed. Always lock and protect pressure setting of adjusting screw (H) with locknut (G).

9. Ensure unloader solenoid (US) acts to hold pressure in inlet unloader (IU) after shutdown. After start-up, the compressor controller will open unloader solenoid (US).

SECTION 5 - MAINTENANCE

GENERAL

In addition to periodic inspections, many of the components in these units require periodic servicing to provide maximum output and performance. Servicing may consist of pre-operation and post-operation procedures to be performed by the operating or maintenance personnel. The primary function of preventive maintenance is to prevent failure, and consequently, the need for repair. Preventive maintenance is the easiest and the least expensive type of maintenance. Maintaining your unit and keeping it clean at all times will facilitate servicing.

CONTAINMENT BASE

This unit uses a containment base large enough to hold the fluid contents of the engine oil, coolant, fuel or compressor oil systems.

Drain plugs are located at strategic positions in this base to drain accumulated fluids and also to allow access to system drain plugs in the fuel tanks and compressor oil resevoir for flushing.

A central drain system is provided for normal service of engine, fuel, or compressor system.

The containment base should be drained and flushed monthly or following any fluid discharge into the base.

SCHEDULED MAINTENANCE

The maintenance schedule is based on normal operation of the unit. This page can be reproduced and used as a checklist by the service personnel. In the event unusual environmental operating conditions exist, the schedule should be adjusted accordingly.

COMPRESSOR OIL LEVEL

The oil level is most consistent when the unit is running unloaded and should be checked at this time.The oil level should be between the high/low indicators on the sight glass located on the side of the receiver tank.

COMPRESSOR OIL

This machine was factory filled with Ingersoll-Rand Fluid.

By continued use of Ingersoll-Rand compressor fluids and filters, optional warranty will be extended for the base airend (rotors, housings, gears and bearings) when substantiated with proof of conformance to recommended maintenance intervals and purchase of OEM Ingersoll-Rand filters and fluids.

Optional Warranty - The earlier of 60 months from shipment to, or the accumulation of 10,000 hours of service by the initial user. The optional warranty is limited to defects in major components (rotors, housings and bearings), and is automatically available to the original user when he meets the following two conditions:

1. Submissions of proof that Ingersoll-Rand fluid, filters and separators have been used. Refer to the Operation and Parts manual for the correct fluids, filters and separator elements required.

2. Submission of proof that maintenance intervals have been followed.

WARRANTY	TIME	*BARE AIREND	**AIREND COMPONENTS
STANDARD	2 yrs/4000 hrs	100% parts and labor	100% parts and labor

Bare Airend – Pertains to major airend parts (rotors, housings, and bearings).

Airend Components – Pertains to auxiliary attachments to the bare airend (drive coupling, seals, pumps, valves, tubes, hoses, fittings and filter housing).

The compressor oil must be replaced every 1000 hours of operation or six (6) months, whichever comes first.

Refer to the fluids and lubricants chart for ambient temperature ranges and specifications, in the lubrication section of this manual.

Refer to the fluids and lubricants chart for ambient temperature ranges and specifications in the lubrication section of this manual.

AIR CLEANER

This unit is equipped with an AIR FILTERS RESTRICTED lamp on the instrument panel.

When this message is viewed, both the engine and airend filters should be replaced.

Also, each week, squeeze the rubber valve (precleaner dirt dump) on each air cleaner housing to ensure that they are not clogged.

NOTICE: Holes or cracks downstream of the air cleaner housing will cause the restriction indicators to be ineffective.

To service the air cleaners on all units proceed as follows:

1. Loosen outer wing nut and remove with outer element. Inspect red window on special inner wing nut to find small dot. If dot is not visible, remove cotter pin and special wing nut and inner (safety) element.
2. Inspect air cleaner housing for any condition that might cause a leak and correct as necessary.
3. Wipe inside of air cleaner housing with a clean, damp cloth to remove any dirt accumulation, especially in the area where the element seals against the housing.
4. If a new air filter element is to be used check it closely for shipping damage. To reset the signal indicator in the special wing nut, apply suction to the red window.
5. Install cleaned or new elements in the reverse order to the above. Tighten wing nuts firmly and replace cotter pin.
6. Inspect to ensure that the end cap seals tightly 360 degrees around the air cleaner body.

The air cleaner system (housing and piping) should be inspected every month for any leakage paths or inlet obstructions. Make sure the air cleaner mounting bolts and clamps are tight. Check the air cleaner housing for dents or damage which could lead to a leak. Inspect the air transfer tubing from the air cleaner to the compressor and the engine for holes. Make sure that all clamps and flange joints are tight.

GAUGES

The instruments or gauges are essential for safety, maximum productivity and long service life of the machine. Inspect the gauges and test any diagnostic lamps prior to start–up. During operation observe the gauges and any lamps for proper functioning. Refer to Operating Controls for the normal readings.

FUEL TANK

This unit is equipped with dual tanks that can be filled from either side. Using clean fuel in the fuel tanks is important and every precaution should be taken to ensure that only clean fuel is either poured or pumped into the tank. When filling the fuel tank on this unit, by methods other than a pump and hose, use a CLEAN non–metallic funnel.

Every six months the drain plugs should be removed from the tanks so that any sediment or accumulated condensate may be drained. When replacing the drain plugs, make sure they are tightened securely.

BATTERY

Heavy-duty, diesel cranking type batteries were installed at the factory and these should be inspected weekly. Keep the battery posts-to-cable connections clean, tight and lightly coated with a grease. Also the electrolyte level in each cell should cover the top of the plates. If necessary, top-up with clean distilled water.

COMPRESSOR OIL and FUEL COOLERS

The coolers are cooled by means of the fin and tube-type oil cooler. The compressor oil and fuel flow internally through the core sections. Fluid is cooled by the air stream from the cooling fan flowing past the core section. When grease, oil and dirt accumulate on the exterior surfaces of the coolers, their efficiency is impaired.

Each month it is recommended that the coolers be cleaned by directing compressed air which contains a nonflammable safety solvent through the core of the coolers. This should remove the accumulation of grease, oil and dirt from the exterior surfaces of the cooler core so that the entire cooling area can transmit the heat of the fluid to the air stream.

If foreign deposits, such as sludge and lacquer, accumulate in the coolers, high temperature is likely to occur, causing shut down of the unit.

RADIATOR

WARNING

Do not remove the cap from a HOT engine radiator. The sudden release of pressure from a heated cooling system can result in serious personal injury.

The engine cooling system is filled at the factory with a 50/50 mixture of water and ethylene glycol. This permanent type antifreeze contains rust inhibitors and provides protection to -35° F (-37°C).

The use of such a mixture is recommended for both summer and winter operation. When using water alone, be sure to add a reputable brand of rust inhibitor to prevent internal corrosion.

It is recommended to test the freezing protection of the coolant every six months or prior to freezing temperatures. Replenish with a fresh mixture every twelve months. A drain for the system is located in the bottom radiator tank.

Each month, inspect the radiator exterior for obstructions (dirt, bugs, etc.). If present, blow water or compressed air containing a nonflammable solvent between the fins in a direction opposite the normal air flow. Should the radiator be clogged internally, standard automotive practices should be followed.

ENGINE CHARGE AIR COOLER

This cooler is a fin and tube-type oil cooler. The engine intake air flows internally through the core section. It is cooled by the air stream from the cooling fan flowing past the core section. When grease, oil and dirt accumulate on the exterior surfaces of the cooler, efficiency is impaired.

Each month it is recommended that the cooler be cleaned by directing compressed air which contains a nonflammable safety solvent through the core of the cooler. This should remove the accumulation of grease, oil and dirt from the exterior surfaces of the cooler core so that the entire cooling area can transmit the heat of the fluid to the air stream.

Ensure that the air connections do not leak. Leaks or loss of cooling will result in low engine power.

ENGINE CRANKCASE VAPOR CONDENSATE

The engine is equipped with a system to collect engine crankcase vapor condensate (oil and water) for disposal. Check the collection bottle near the engine oil pan before starting the unit. If the bottle is more than half full, remove it and empty the contents in a proper waste container. Replace the empty bottle on the unit.

WARNING

Do not allow the bottle to overflow. Engine damage may result.

HOSES

Each month it is recommended that all of the intake lines to and from the air cleaners, the charge air coolers, the engine cooling system hoses and all of the flexible hoses used for air, oil, and fuel be inspected.

To prevent leaks, regular inspection of these connections for wear or deterioration is a definite "must" if regulator servicing of the air cleaners is not to prove futile.

Premature wear of both the engine and compressor is ASSURED if dust-laden air is permitted to enter the engine or the compressor.

The flexible hoses used in the fuel, oil and air lines on these units are primarily used for their ability to accommodate relative movement between components. It is extremely important they be periodically inspected for wear and deterioration. Clamps are used to prevent hose cover abrasion through vibration. This abrasion may occur when two hose lines cross, or when a hose line rubs against a fixed point; therefore, it is necessary that all clamps be replaced if missing. It is also important the operator does not use the hoses as convenient hand hold or steps. Such use can cause early cover wear and hose failure.

NOTICE

Piping systems operating at less than 150 psi (1050 kPa) may use a special nylon tubing. The associated fittings are also of a special "push-in" design.

Pulling on the tubing will cause the inner sleeve to withdraw and compress, thus tightening the connection. The tubing can be withdrawn only while holding the sleeve against the fitting. The tubing can be removed and replaced numerous times without losing its sealing ability.

To install the nylon tubing, make a mark (with tape or grease pencil) approximately 7/8 inch from the end of the tubing. Insert the tubing into the sleeve and "push-in" past the first resistance to the bottom. The mark should be approximately 1/16 inch from the sleeve, for the 3/8 inch O.D. tubing; 1/8 inch for the 0.25 inch O.D. tubing. This will ensure that the tubing is fully engaged in the sealing mechanism.

COMPRESSOR OIL FILTERS

The compressor lubrication oil systems include spin-on, throw away type oil filters, each with an internal bypass valve. With a clean, new filter element, all of the oil flows through the full element area, from the outside/inside. As each element becomes contaminated with dirt, a pressure differential is created in the filter housing between the oil inlet and outlet ports. As this differential approaches 25 psi (175 kPa), the bypass valve starts to open, thus permitting a small quantity of oil to bypass the filter. As the contaminants continue to build up, more and more of the oil bypasses the filter media itself.

This bypass does not provide any filtration but does allow a maximum flow of compressor lubricating oil to preclude any possible damage from loss of oil. Also the design of the filter prevents any washing–off of any dirt during oil bypassing.

NOTICE

The oil filter must be replaced every 1000 hours of operation.

To service the oil filters it will first be necessary to shut the unit down. Wipe off any external dirt and oil from the exterior of the filter to minimize any contamination from entering the lubrication system. Proceed as follows:

WARNING

High pressure air can cause severe injury or death from hot oil and flying parts. Always relieve pressure before removing caps, plugs, covers or other parts from pressurized air system.

1. Open the service air valve(s) to ensure that system is relieved of all pressure. Close the valve(s).

2. Turn the spin–on filter element counterclockwise to remove it from the filter housing. Inspect the filter element and then discard.

Note: If there is any indication of formation of varnishes, shellacs or lacquers on the oil filter element, it is a warning the compressor lubricating oil has improper characteristics and should be immediately changed.

3. Inspect the oil filter head to be sure the gasket was removed with the oil filter element. Clean the gasket seal area on the oil filter head.

Installing a new oil filter element when the old gasket remains on the oil filter head will cause an oil leak and can cause property damage.

4. Lubricate the new filter gasket with the same oil being used in the machine.

5. Install new filter by turning element clockwise until gasket makes initial contact. Tighten an additional 1/2 to 3/4 turn.

6. Start unit and allow to build up to rated pressure. Check for leaks before placing unit back into service.

FASTENERS

Visually check entire unit in regard to bolts, nuts and screws being properly secured. Spot check several capscrews and nuts for proper torque. If any are found loose, a more thorough inspection must be made. Take corrective action.

COMPRESSOR OIL

The lubricating and cooling oil must be replaced every 1000 hours of operation or six (6) months, whichever comes first.

ENGINE COOLING FAN DRIVE

The heat exchanger or cooling fan is driven by a single belt arrangement from the engine. Inspect the cooling fan belt weekly. These belts should be maintained at the proper tension by the auto tension system on the engine.

EXTERIOR FINISH CARE

This unit was painted and heat cured at the factory with a high quality, thermoset polyester powder coating. The following care will ensure the longest possible life from this finish.

1. **If necessary to remove dust, pollen, etc. from housing, wash with water and soap or dish washing liquid detergent. Do not scrub with a rough cloth, pad, etc.**
2. **If grease removal is needed, a fast evaporating alcohol or chlorinated solvent can be used. Note: This may cause some dulling of the paint finish.**

3. **If the paint has faded or chalked, the use of a commercial grade, non-abrasive car wax may partially restore the color and gloss.**

Field Repair of Texture Paint

1. **The sheet metal should be washed and clean of foreign material and then thoroughly dried.**
2. **Clean and remove all grease and wax from the area to be painted using Duponts 3900S Cleaner prior to sanding.**
3. **Use 320 grit sanding paper to repair any scratches or defects necessary.**
4. **Scuff sand the entire area to be painted with a red scotch brite pad.**
5. **Wipe the area clean using Duponts 3900S.**
6. **Blow and tack the area to be painted.**
7. **Apply a smooth coat of Duponts 1854S Tuffcoat Primer to all bare metal areas and allow to dry.**
8. **Apply 2 medium - wet coats of Duponts 222S Adhesion Promoter over the entire area to be painted, with a 5 minute flash in between coats.**
9. **To apply the texture coat, use Duponts 1854S Tuffcoat Primer. The proper technique to do this is to spray the Tuffcoat Primer using a pressure pot and use about 2-5 pounds of air pressure. This will allow the primer to splatter causing the textured look. Note: you must be careful not to put too much primer on at one time, this will effect the amount of texture that you are trying to achieve. Allow the texture coat to flash for 20 minutes or until dry to touch.**
10. **Apply any of Duponts Topcoat Finishes such as Imron™ or Centari™ according to the label instructions.**

Note: To re-topcoat the textured surfaces when sheet metal repairs are not necessary, follow steps 1, 2, 4, 5, 6, 8 and 10.

CAUTION

- Any unauthorized modification or failure to maintain this equipment may make it unsafe and out of factory warranty.
- If performing more than visual inspections, disconnect battery cables and open manual blowdown valve.
- Use extreme care to avoid contacting hot surfaces (engine exhaust manifold and piping, air receiver and air discharge piping, etc.).
- Never operate this machine with any guards removed.
- Inch and metric hardware was used in the design and assembly of this unit. Consult the parts manual for clarification of usage.

Notice: Disregard any maintenance pertaining to components not provided on your machine.

NOTICE

Drain the frame after power-washing/cleaning or heavy rains.

MAINTENANCE SCHEDULE

These time periods should be reduced if operating in extreme conditions (very hot, cold, dusty or wet).

	Daily	Weekly	Monthly	3 MOS .	6 MOS.	12 MOS.
SMALL UNITS (P100-P600)				250 hours	500 hours	1000 hours
LARGE UNITS (HP600-P1600)				500 hours	1000 hours	2000 hours
**Hydraulic Oil Level		C			R	
Compressor Oil Level	C					
Engine Oil Level	C					
**Radiator Coolant Level	C					
Gauges/Lamps	C					
Air Cleaner Service Indicators	C					
Fuel Tank (fill at end of day)	C				DRAIN	
**Fuel/Water Separator DRAIN	C					
Air Cleaner Precleaner Dumps		C				
Fan/Alternator Belts		C				
Battery Connections/Electrolyte		C				
**Tire Pressure and Surface		C				
**Wheel Lug Nuts			C			
Hoses (oil, air, intake, etc.)			C			
Automatic Shutdown System Test			C			
Air Cleaner System Visual			C			
Compressor Oil Cooler Exterior			C	CLEAN		
**Engine Radiator Exterior			C	CLEAN		
Fasteners, Guards				C		
Air Cleaner Elements				WI		
** Fuel/Water Separator Element					R	
*Compressor Oil Filter Element				B	A	
*Compressor Oil					R	
**Wheels (bearings, seals, etc)					C	C
Engine Coolant Test					C	R
Shutdown Switch Settings Test						C
Scavenge Orifice & related parts						CLEAN
Oil Separator Element						R
**Lights (running, brake, & turn)	CBT					
**Pintle Eye Bolts	CBT					
Engine (oil changes, oil & fuel filters, etc)				R		

**Disregard if not appropriate for this particular machine.

*NXP Units - consult manual

R=replace, **C**=check (adjust if necessary), **WI**=OR when indicated, **CBT** = check before towing.

A = Small Units

B = Large Units

Refer to specific sections of the operator's manual for more information.

SECTION 6 - LUBRICATION

GENERAL INFORMATION

Lubrication is an essential part of preventive maintenance, affecting to a great extent the useful life of the unit. Different lubricants are needed and some components in the unit require more frequent lubrication than others. Therefore, it is important that the instructions regarding types of lubricants and the frequency of their application be explicitly followed. Periodic lubrication of the moving parts reduces to a minimum the possibility of mechanical failures.

The Preventive Maintenance Schedule shows those items requiring regular service and the interval in which they should be performed. A regular service program should be developed to include all items and fluids. These intervals are based on average operating conditions. In the event of extremely severe (hot, cold, dusty or wet) operating conditions, more frequent lubrication than specified may be necessary. Details concerning lubrication of the running gear are in Maintenance Section.

All filters and filter elements for air and compressor lubricant must be obtained through Ingersoll-Rand to assure the proper size and filtration for the compressor.

COMPRESSOR OIL CHANGE

These units are normally furnished with an initial supply of oil sufficient to allow operation of the unit for approximately 6 months or 1000 hours, whichever comes first. If a unit has been completely drained of all oil, it must be refilled with new oil before it is placed in operation. Refer to specifications in Lubrication Table.

NOTICE

Some oil types are incompatible when mixed and result in the formation of varnishes, shellacs, or lacquers which may be insoluble. Such deposits can cause serious troubles including clogging of the filters. Where possible, do NOT mix oils of different types and avoid mixing different brands. A type or brand change is best made at the time of a complete oil drain and refill.

If the unit has been operated for the time/ hours mentioned above, it should be completely drained of oil. If the unit has been operated under adverse conditions, or after long periods in storage, an earlier change period may be necessary as oil deteriorates with time as well as by operating conditions.

WARNING

High pressure air can cause severe injury or death from hot oil and flying parts. Always relieve pressure before removing caps, plugs, covers or other parts from pressurized air system. Ensure the following conditions are met:

- Discharge air pressure gauge reads zero (0).
- No air discharging from an "open" manual blowdown valve.

An oil change is good insurance against the accumulation of dirt, sludge, or oxidized oil products.

Completely drain the reservoir, piping, and cooler. If the oil is drained immediately after the unit has been run for some time, most of the sediment will be in suspension and, therefore, will drain more readily. However, the fluid will be hot and care must be taken to avoid contact with the skin or eyes.

After the unit has been completely drained of all old fluid, close the drain valve, install new oil filter elements. Add oil in the specified quantity at the filler plug. Tighten the filler plug and run the machine to circulate the oil. Check the oil level. DO NOT OVERFILL.

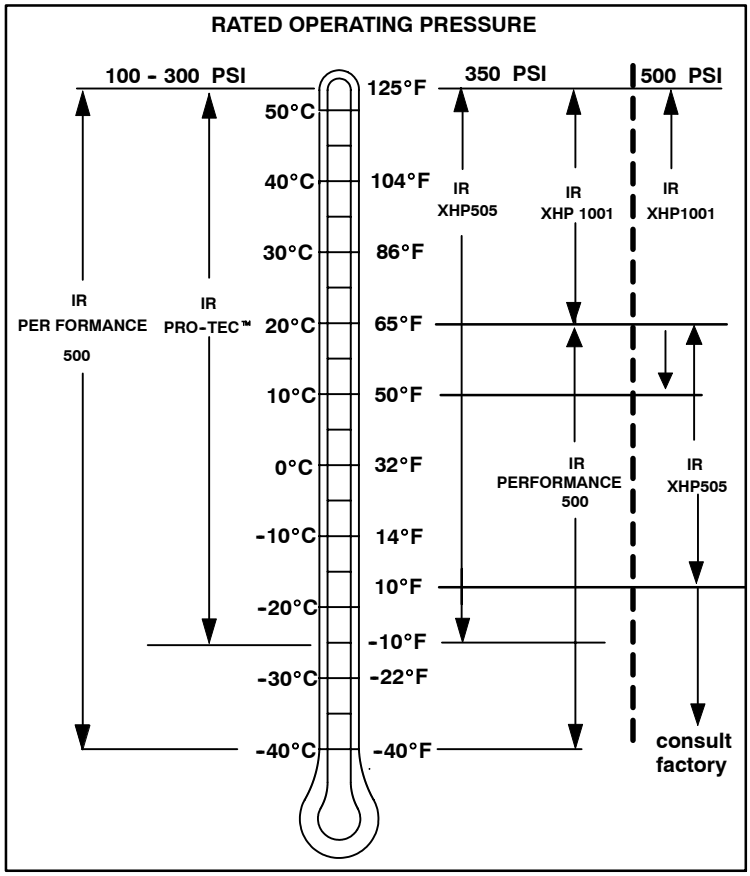
NOTICE

Ingersoll-Rand provides compressor oil specifically formulated for Portable Compressors and requires the use of these fluids in order to obtain extended limited airend warranty.

COMPRESSOR LUBRICATION

Portable Compressor Fluid Chart

Refer to these charts for correct compressor fluid required. Note that the selection of fluid is dependent on the design operating pressure of the machine and the ambient temperature expected to be encountered before the next oil change.



Design Operating Pressure	Ambient Temperature	Specification
100 psi to 300 psi	-10°F to 125°F (-23°C to 52°C)	IR Pro-Tec™ Mil –PRF 2104G SAE 10W
100 psi to 300 psi	-40°F to 125°F (-40°C to 52°C)	IR Performance 500 Mil-L-46167
350 psi	-10°F to 125°F (-23°C to 52°C)	IR XHP 505
	65°F to 125°F (18°C to 52°C)	IR XHP1001
	-40°F to 65°F (-40°C to 18°C)	IR Performance 500 Mil-L-46167
500 psi	50°F to 125°F (10°C to 52°C)	IR XHP1001
	10°F to 65°F (-12°C to 18°C)	IR XHP 505
	below 10°F (-12°C)	Consult Factory

Recommended Ingersoll-Rand Fluids - Use of these fluids with original I-R filters can extend airend warranty. Refer to operator's manual warranty section for details or contact your I-R representative.

Recommended Fluid	1 Gal. (3.8 Litre)	5 Gal. (19.0 Litre)	55 Gal. (208.2 Litre)
IR Pro-Tec™	36899698	36899706	36899714
IR XHP 505		35365188	35365170
IR Performance 500	35382928	35382936	35382944
IR XHP1001		35612738	35300516

Premium grade oils API, CG -4 or CH-4 are recommended for the QSX15 engine.

SECTION 7 – Trouble Shooting

INTRODUCTION

Trouble shooting for a portable air compressor is an organized study of a particular problem or series of problems and a planned method of procedure for investigation and correction. The trouble shooting chart that follows includes some of the problems that an operator may encounter during the operation of a portable compressor.

The chart does not attempt to list all of the troubles that may occur, nor does it attempt to give all of the answers for correction of the problems. The chart does give those problems that are most apt to occur. To use the trouble shooting chart:

A. Find the "complaint" depicted as a bold heading.

B. Follow down that column to find the potential cause or causes. The causes are listed in order (1,2,3 etc.) to suggest an order to follow in trouble shooting.

ACTION PLAN

A. Think Before Acting

Study the problem thoroughly and ask yourself these questions:

(1) What were the warning signals that preceded the trouble?
(2) Has a similar trouble occurred before?
(3) What previous maintenance work has been done?
(4) If the compressor will still operate, is it safe to continue operating it to make further checks?

B. Do The Simplest Things First

Most troubles are simple and easily corrected. For example, most complaints are "low capacity" which may be caused by too low an engine speed or "compressor over– heats" which may be caused by low oil level.

Always check the easiest and most obvious things first; following this simple rule will save time and trouble.

Note: For trouble shooting electrical problems, refer to the Wiring Diagram Schematic found in Parts List Section.

C. Double Check Before Disassembly

The source of most compressor troubles can be traced not to one component alone, but to the relationship of one component with another. Too often, a compressor can be partially disassembled in search of the cause of a certain trouble and all evidence is destroyed during disassembly. Check again to be sure an easy solution to the problem has not been overlooked.

D. Find And Correct Basic Cause

After a mechanical failure has been corrected, be sure to locate and correct the cause of the trouble so the same failure will not be repeated. A complaint of "premature breakdown" may be corrected by repairing any improper wiring connections, but something caused the defective wiring. The cause may be excessive vibration.

General Information

The WEDGE controller records and displays diagnostic fault codes for the compressor system and the electronic engine. These codes are displayed on the 4–digit LED display on the machine control panel. Two of the ten LED diagnostic lamps on the control panel are used with fault codes display. One lamp is designated “Engine Fault” and the other “Compressor Fault”. When the engine fault lamp is on, all codes displayed are engine faults. When the compressor fault lamp is on, all codes displayed are compressor or package related faults.

A list of compressor and engine faults is attached with the placards inside the machine control panel and provided in this section. The table of Alert/Sutdown conditions in this section also lists the compressor fault codes and a list of the engine fault codes is provided.

The engine diagnostic fault codes can also be read with the manufacturer’s service tool. A service tool connector is mounted on the engine. This connector provides a connection to the J1939 CAN network. For advanced engine troubleshooting, it is recommended that the manufacturer’s service tools be used with accompanying service literature.

FAULT CODE	DESCRIPTION (QSX15 ENGINE FAULT CODES)
111	Engine Control Module – Critical Internal Failure
115	Engine Speed/Position Sensor Circuit – Lost both signals from Magnetic Pickup Sensor
121	Engine Speed/Position Sensor Circuit – Lost one or two signals from Magnetic PU Sensor
122	Intake Manifold Pressure Sensor #1 Circuit – Shorted High
123	Intake Manifold Pressure Sensor #1 – Circuit – Shorted Low
135	Engine Oil Pressure Sensor Circuit – Shorted High
141	Engine Oil Pressur Sensor Circuit – Shorted Low
143	Engine Oil Pressure Low – Warning
144	Engine Coolant Temperature Sensor Circuit – Shorted High
145	Engine Coolant temperature Sensor Circuit – Shorted Low
151	Engine Coolant temperature High – Critical
153	Intake Manifold Temperature Sensor #1 Circuit Shorted Low
154	Intake Manifold Temperature Sensor #1 Circuit Shorted High
155	Intake Manifold Temperature #1 High – Critical
186	Sensor Supply Voltage #2 Circuit – Shorted Low
212	Engine Oil Temperature Sensor Circuit – Shorted High
213	Engine Oil Temperature Sensor Circuit – Shorted Low
214	Engine Oil Temperature High – Critical
221	Ambient Air Pressure Sensor Circuit – Shorted High
222	Ambient Air Pressure Sensor Circuit – Shorted Low
223	Engine Oil Burn Valve Solenoid Circuit – Shorted Low
227	Sensor Supply Voltage #2 Circuit – Shorted High
234	Engine Speed High – Critical
235	Engine Coolant Level Low – Critical
241	Vehicle Speed Sensor Circuit – Data Incorrect
245	Fan Clutch Circuit – Shorted Low
254	Fuel Shutoff Valve Circuit – Shorted Low
255	Fuel Shutoff Valve Circuit – Shorted High
259	Fuel Shutoff Valve – Stuck Open
284	Engine Speed/Position Sensor #1 (Crankshaft) Supply Voltage Circuit – Shorted Low

FAULT CODE	DESCRIPTION
285	SAE J1939 Multiplexing PGN Timeout Error
286	SAE J1939 Multiplexing Configuration Error
287	SAE J1939 Multiplexing Remote Throttle Error
295	Ambient Air Pressure Sensor Circuit – Data Incorrect
299	Engine Shutdown Commanded By J1939
311	Injector Solenoid Valve Cylinder #1 Circuit Grounded Circuit
312	Injector Solenoid Valve Cylinder #5 Circuit Grounded Circuit
313	Injector Solenoid Valve Cylinder #3 Circuit Grounded Circuit
314	Injector Solenoid Valve Cylinder #6 Circuit Grounded Circuit
314	Injector Solenoid Valve Cylinder #2 Circuit Grounded Circuit
319	Real Time Clock – Power Interrupt
341	Engine Control Module – Data Lost
343	Engine Control Module – Warning Internal Hardware Failure
346	Engine Control Module – Warning Software Error
352	Sensor Supply Voltage #1 – Circuit – Shorted Low
378	Fueling Actuator #1 Circuit – Open Circuit
379	Fueling Actuator #1 Circuit – Grounded Circuit
386	Sensor Supply Voltage #1 Circuit – Shorted High
394	Timing Actuator #1 Circuit – Open Circuit
395	Timing Actuator #1 Circuit – Grounded Circuit
396	Fueling Actuator #2 Circuit – Open Circuit
397	Fueling Actuator #2 Circuit – Grounded Circuit
398	Timing Actuator #2 Circuit – Open Circuit
399	Timing Actuator #2 Circuit – Grounded Circuit
415	Engine Oil Pressure Low – Critical
418	Water In Fuel Indicator High – Maintenance
422	Engine Coolant Level Sensor Circuit – Data Incorrect
426	SAE J1939 Datalink – Cannot Transmit
428	Water in Fuel Sensor Circuit – Shorted High
429	Water in Fuel Sensor Circuit – Shorted Low
433	Intake Manifold Pressure Sensor Circuit – Data Incorrect
434	Power Lost Without Ignition OFF
435	Engine Oil Pressure Sensor Circuit – Data Incorrect
441	Battery #1 Voltage Low – Warning
442	Battery #1 Voltage High – Warning
449	Fuel Pressure High – Warning
451	Injector Metering Rail #1 Pressure Sensor Circuit – Shorted High
452	Injector Metering Rail 31 Pressure Sensor Circuit – Shorted Low
466	Turbocharger #1 Wastegate Control Circuit – Data Incorrect
482	Fuel Pressure Low – Warning
483	Injector Metering Rail #2 Pressure Sensor Circuit – Shorted High
484	Injector Metering Rail #2 Pressure Sensor Circuit – Shorted Low
485	Injector Metering Rail #2 Pressure High – Warning

FAULT CODE	DESCRIPTION
486	Injector Metering Rail #2 Pressure Low – Warning
496	Engine Speed/Position Sensor #2 (Camshaft) Supply Voltage
546	Fuel Delivery Pressure Sensor Circuit – Shorted High
547	Fuel Delivery Pressure Sensor Circuit – Shorted Low
553	Injector Metering Rail #1 Pressure High – Warning
581	Fuel Supply Pump Inlet Pressure Sensor Circuit – Shorted High
582	Fuel Supply Pump Inlet Pressure Sensor Circuit – Shorted Low
583	Fuel Supply Pump Inlet Pressure Low – Warning Level
595	Turbocharger #1 Speed High – Warning Level
596	Electrical Charging System Voltage High – Warning Level
597	Electrical Charging System Voltage Low – Warning Level
598	Electrical Charging System Voltage Low – Critical Level
611	Engine Hot Shutdown
753	Engine Speed/Position #2 Cam Sync Error
754	Injector Metering Rail #1 Pressure Malfunction
758	Injector Metering Rail #2 Pressure Malfunction
951	Cylinder Power Imbalance Between Cylinders

	ALERT		SHUTDOWN		
	CODE	**LIGHT (BLINKS)**	**CODE**	**LIGHT (STEADY)**	**DELAY (sec)**
Low Engine Speed (RPM<800)			1	CPRSR Malf.	30
High Engine Speed (RPM >1900)			2	CPRSR Malf.	30
Engine Crank Time Exceeded			3	CPRSR Malf.	0
Low Fuel Level		Fuel Level		Fuel Level	3
Engine Oil Temperature > 252 deg. F	5	CPRSR Malf.			
Intake Manifold Temperature > 180 deg. F	6	CPRSR Malf.			
High Discharge Temp. (RT2>247 deg. F)				High Comp Temp.	3
Low AE Oil Pressure (HP1600 only)			31	CPRSR Malf.	3
Disch. Temp (RT2) Sensor Fault			32	CPRSR Malf.	10
High Separator Tank Temp (RT1>247 deg.F)			50	CPRSR Malf.	3
Machine ID Not Valid			51	CPRSR Malf.	0
IQ Filter Restriction				IQ Filt. Rest	3
Sep. Tank Temp (RT1) Sensor Fault			53	CPRSR Malf.	10
Sep. Tank Pressure (PT1) Sensor Fault	33	CPRSR Malf.			
Reg. System Pressure PT2) Sensor Fault	54	CPRSR Malf.			
Air Filter Restriction		Soiled Filter			
Low Battery Voltage		Battery Charging Condition			
Serial Comm. Problem	70	CPRSR Malf.			
CAN Bus Problem	71	CPRSR Malf.			
Engine Coolant Temp > 215 deg. F		High Engine Temp			
Engine Oil Pressure < 10 psi		Low Engine Oil Pressure			
Separator Tank Pressure > 20 psi during start attempt (engine will not crank)			34	CPRSR Malf.	0
Engine Temp > 220 deg. F				High Engine Temp	10

TROUBLE SHOOTING CHART

Bold Headings depict the COMPLAINT - Subheadings suggest the CAUSE

Note: Subheadings suggest sequence to follow troubleshooting.

1. Unit Shutdown:

	Corrective Action
Out of Fuel	Add CLEAN diesel Fuel
Compressor Oil Temp. Too High	See Complaint 10
Engine Water Temp. Too High	Check coolant level. If necessary, Add.
Engine Oil Pressure Too Low	See Complaint 3 and Complaint 4.
Broken Engine Fan Belt	Replace fan belt.
Loose Wire Connection	Wiggle wires at switches & connector blocks. Make repairs.
Low Fuel Level Shutdown	Replace fuel sender.
Defective Sensor	Replace sensor.
Malfunctioning Relay	Replace relay.
Blown Fuse	Replace fuse.
Engine Malfunctioning	See Trouble Shooting in Engine Manual.
* Airend Malfunctioning	See Complaint 10.

2. Won't Start/Run:

Low Battery Voltage	Check electrolyte level. Check connections.
Blown Fuse	Replace fuse.
Malfunctioning Start Switch	Replace switch.
Clogged Fuel Filters	Service filters. See Engine Operator's Manual.
Out of Fuel	Add CLEAN fuel.
Compressor Oil Temp. Too High	See Complaint 10.
Engine Water Temp. Too High	Check fluid level. If necessary, Add.
Engine Oil Pressure Too Low	See Complaint 3 and Complaint 4.
Loose Wire Connection	Repair or replace connection.
Defective Sensor	Replace sensor.
Malfunctioning Relay	Replace relay.
Engine Malfunctioning	See Trouble Shooting in Engine Manual.
Airend Malfunctioning	See Complaint 10.

3. High Engine Temperature

Broken Engine Fan Belt	Replace fan belt set.
* Ambient Temp. >115°F	Above spec limit.
Dirty Operating Conditions	Move unit to cleaner environment.
Dirty Cooler	Clean exterior of cooler.
* Out of Level >15 degrees	Relocate or reposition unit.
Operating Pressure Too High	Reduce pressure to spec.
Recirculation of Cooling Air	Close side doors.
Loose Wire Connection	Repair or replace.

* : > = greater than, < = less than

4.	**Low Engine Oil Pressure**	**Corrective Action**
	Low Oil Level	Add oil.
	Out of Level >15 degrees	Relocate or reposition.
	Wrong Lube Oil	See Engine Oil Spec. Change oil.
	Clogged Oil Filter Element(s)	Replace element(s).
	Engine Malfunctioning	See Trouble Shooting in Engine Manual.
	Loose Wire Connection.	Repair or replace.
5.	**Alternator Low Voltage**	
	Loose or Broken Belts	Tighten or replace belt set.
	Loose Wire Connection	Repair or replace connection.
	Low Battery Voltage	Check electrolyte level. Add if necessary.
		Check connectors. Clean & tighten.
		Recharge battery.
	Malfunctioning Alternator	Repair or replace alternator.
6.	**High Compressor Discharge Temperature:**	**Corrective Action**
	Ambient Temp. > 115°F	Above spec limit.
	Out of Level > 15 degrees	Relocate or reposition unit.
	Low Oil Level	Add oil. Look for any leaks.
	Wrong Lube Oil	Check spec in this manual.
	Dirty Cooler	Clean exterior surfaces.
	Dirty Operating Conditions	Move unit to cleaner environment.
	Clogged Oil Filter Elements	Replace elements. Change oil.
	Loose or Broken Belts	Tighten or replace belt set.
	Operating Pressure Too High	Reduce pressure to spec.
	Recirculation Of Cooling Air	Close side doors. Replace belly pan.
	Malfunctioning Thermostat	Replace thermostat in bypass valve.
	Malfunctioning Fan	Check fan belt tension. Tighten or replace belt set.
	Defective Oil Cooler Relief Valve	Replace valve.
	Defective Minimum Pressure Valve	Repair or replace valve.
	Blocked or Restricted Oil Lines	Clean by flushing or replace.
	Airend Malfunctioning	See Complaint 11, 12, 13, 15, 16 or 18.
7.	**Engine RPM Down:**	
	Clogged Fuel Filter (primary)	Replace primary filter. Replace final filter. Drain tanks. Add CLEAN fuel.
	Operating Pressure Too High	Reduce pressure to spec limit.
	Dirty Air Filter	Clean or replace elements.
	Wrong Air Filter Element	Install correct element.
	Engine Malfunctioning	See Trouble Shooting in Engine Manual.
	Airend Malfunctioning	Refer to Factory.

	Corrective Action
8. Excessive Vibration:	
Rubber Mounts, Loose or Damaged	Tighten or replace.
Defective Fan	Replace fan.
Drive Coupling Defective	Replace coupling.
Engine Malfunctioning	See Trouble Shooting in Engine Manual.
Airend Malfunctioning	See Complaint 15 and 17.
Engine idle speed too low.	See Engine Manual.
9. Low CFM:	
Dirty Air Filter	Clean or replace elements.
Incorrect Linkage Adjustment	Make adjustment per Section 6.
Malfunctioning Inlet Unloader/Butterfly Valve	Inspect valve. Make adjustment per Section 6.
Wrong Air Filter Element	Install correct element.
10. Short Air Cleaner Life:	
Dirty Operating Conditions	Move unit to cleaner environment.
Inadequate Element Cleaning	Install new element.
Incorrect Stopping Procedure	Read procedure in this manual.
Wrong Air Filter Element	Install proper element.
11. Will Not Unload:	
Malfunctioning Inlet Butterfly Valve	Inspect valve fit. Re-adjust per Section 6.
Ice in Regulation Lines/Orifice	Apply heat to line(s) and or orifice.
Load Solenoid Leak	Replace load solenoid.
Plugged Vent Leak	Clean and/or replace.
12. Safety Valve Relieves:	
Operating Pressure Too High	Reduce pressure to spec limit.
Malfunctioning Inlet Unloader/Butterfly Valve	Inspect valve fit. Readjust per Section 6.
Defective Safety Valve	Replace safety valve.
Unit Will Not Unload Fast Enough	Apply heat to lines and/or orifice.

SECTION 8 - ELECTRICAL

GENERAL INFORMATION AND OPERATIONAL THEORY

General

The HP1600/1300 machine has an electronic monitor and control system to provide discharge air pressure control and engine and package monitor functions. The system uses the WEDGE controller to perform these functions. The electrical system connects all the necessary switches, sensors and transducers to the WEDGE controller in order for it to perform the monitor and control functions.

WEDGE Controller

The WEDGE controller is the heart of the machine monitor and control system. It provides data collection, alarming and control functions for compressor operations. It is a microcontroller based unit with analog and digital inputs and outputs.

The WEDGE controller is attached to the back of the control panel. The LED annunciators are part of the front panel of the WEDGE. They can be seen through the laminate on the front of the control panel. The WEDGE is attached to the control panel with four #10 size nuts.

The first function of the WEDGE is to scan all analog and digital inputs at a fixed interval. These inputs are scanned every 50 milliseconds. The analog values are then compared against minimum and maximum values and an ALERT or SHUTDOWN is issued, if a value is out of range. The various ALERTS and SHUTDOWNS are listed in this section.

The second function of the WEDGE controller is machine discharge pressure control. The WEDGE monitors the regulation system air pressure and varies the engine throttle to maintain the setpoint discharge airpressure. The setpoint pressure is set using the regulator on the separator tank.

The third function of the WEDGE controller is to communicate with the diesel engine via the J1939 CAN network. The WEDGE controller provides the engine throttle setting (software versions 2.0 and greater) to the engine controller via the J1939 CAN Network and retrieves diagnostic information from the engine.

Software versions under 2.0 use the frequency throttle to communicate with the engine. A square wave frequency signal from 150 Hz to 375 Hz is sent from the WEDGE controller to the engine controller.

The signal is linear from 150 Hz at engine idle (1200 RPM) to 375 Hz at maximum run speed (1800 RPM).

Figure 8–2 shows the signals between the engine controller and the WEDGE controller.

Sensors and Transducers

The electronics system contains sensors and transducers that are used to collect process data from the compressor. The temperature is measured by a thermister. This device exhibits a change in resistance as the temeprature changes. The resistance causes an input voltage change to the WEDGE controller input and is interpreted as a temperature change.

The electronics system also uses pressure transducers to measure process pressure changes. These devices have an output signal of .45 VDC to 4.5 VDC, corresponding to 0 psi and the maximum measured psi for a particular device. The maximum pressure transducer ranges are 100 or 225 psi. The 100 and 225 psi devices are gauge rpessure devices. These transducers are provided with 5VDC excitation to power the device. These are three wire devices: excitation, signal and ground (return) connections.

Digital Inputs and Outputs

The WEDGE controller scans digital inputs such as switch contacts. These are either “ON” (24VDC) or “OFF” (0 VDC). These digital inputs are connected to switches within the package such as the key start switch, air filter switches and IQ filter switches.

The WEDGE controller provides 24 VDC digital outputs to control solenoids, start compressor and DC heaters. These are 24 VDC “ON” and O VDC “OFF”. They are current limited and short circuit protected.

Controller Outputs:
The WEDGE controller has three different types of outputs: frequency, pulse width modulated (PWM) and 24 VDC digital (ON / OFF). The frequency output is used as a throttle signal for the engine (software versions less than 2.0).

The WEDGE controller varies the frequency from 150 Hz to 375 Hz, corresponding to 1200 to 1800 rpm. The frequency signal is a 50% duty cycle, 24VDC, square wave. This throttle signal is used with the Cummins engine.

The PWM signal is used as a throttle signal for the Caterpillar engine. It has a base frequency of 500 Hz and the duty cycle varies from 10% to 90%.

Pressure Control
The discharge pressure is controlled by manipulating the engine speed and compressor inlet valve position. The inlet valve position is controlled pneumatically and the engine speed is determined by the WEDGE controller. The WEDGE measures the pneumatic system regulation pressure and computes an engine throttle setting. This throttle setting is sent to the engine via the frequency throttle, PWM or J1939 throttle, depending on which technique is used. The engine controller will control engine speed to this throttle setting.

Electronic Engine
The HP1600/1300 machine contains an emissions certified diesel engine. In order to meet the emissions requirements, the engine has an electronic control system.

The control system handles all monitor, alarm and control functions for the engine. The WEDGE controller communicates with the engine controller over the J1939 CAN network.

The WEDGE controller sends throttle settings to the engine (software versions 2.0 and greater) and receives diagnostic and run time data from the engine over the J1939 CAN network. A frequency throttle interface with the engine is used for software versions earlier than 2.0.

Figure 8-2 shows the connections between the WEDGE controller and the engine controller.

J1939 Data Link - The CAN network is a single pair shielded cable within the W1 main harness. Figure 8-3 shows a layout of the CAN harness or "backbone" as it is referred to. The termination resistors (Terminator) are important to prevent reflections on the transmission line and must be in place for the network to function properly. The shield from the cable is connected to the machine metal at the WEDGE controller end.

The connection must be properly made with good metal to metal contact between the wire terminal and the machine metal.

The engine diagnostics connector is located on the left side of the engine. This is used to connect the engine manufacturer's service tools to the CAN network. This connector also provides 24 VDC power to these service tools.

Electrical System
The electrical system consists of the wiring harnesses and associated electrical devices such as relays, switches, lights, solenoids and alarm horn.
The electrical system consists of the wiring harnesses and associated electrical devices such as relays, switches, lights, solenoids and alarm horn. There are two wiring harnesses in the HP1600 machine. They are as follows:

54654918 W1 Chassis Main Wiring Harness

22060594 Control Panel Wiring Harness

The schematic diagrams show the connections for these harnesses. Figure 8-1 is a system diagram showing harness connection with devices and controllers.

The electrical circuits are protected using ATC style fuses. A fuse should only be replaced with one of the same rating. Replacing a fuse with one of a large rating could lead to harness damage. If a fault occurs and the circuit does not have the appropriate size fuse, wires could be burned in the harness and damage other circuits.

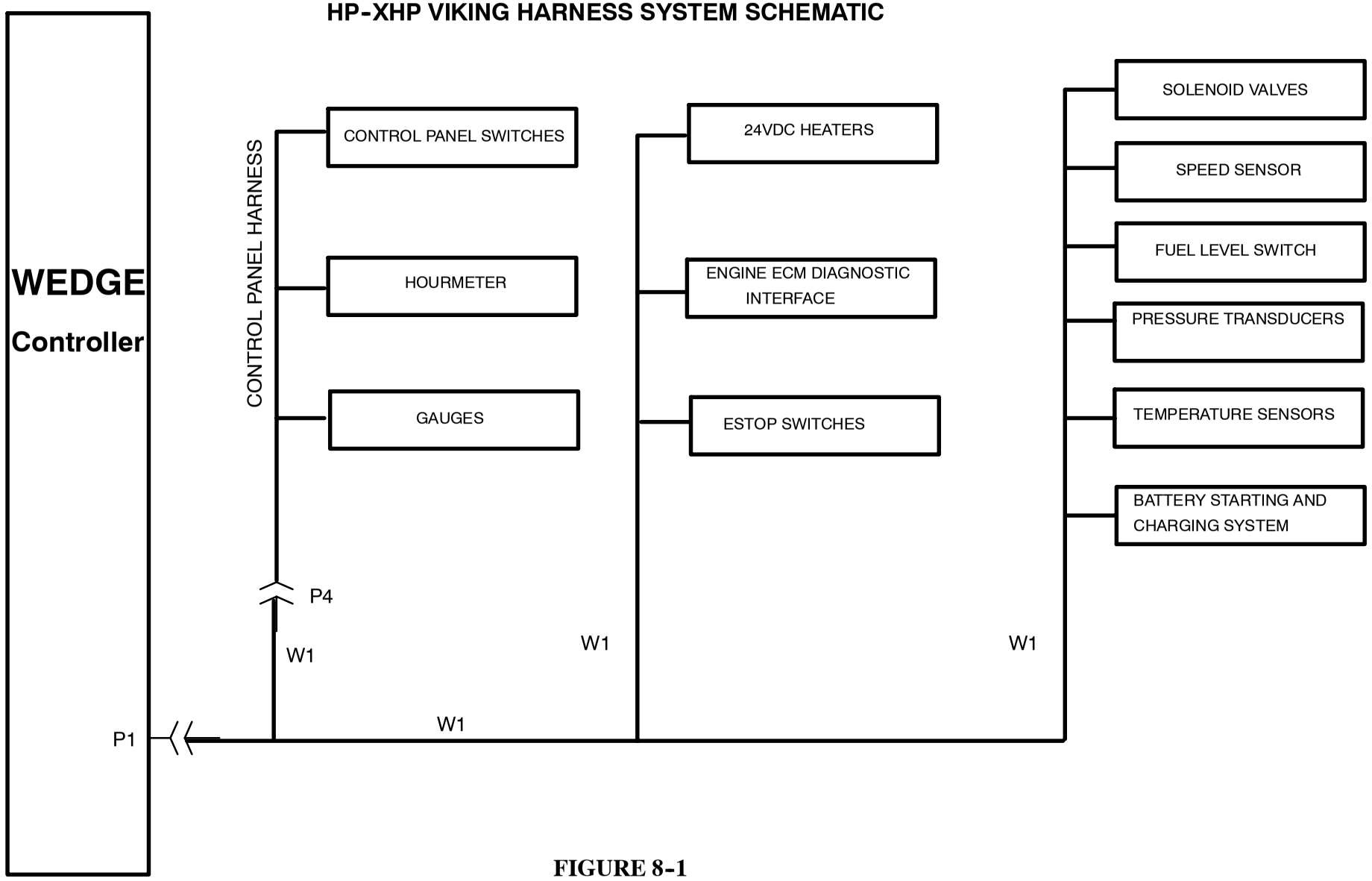

HP-XHP VIKING HARNESS SYSTEM SCHEMATIC
WEDGE
Controller
CONTROL PANEL HARNESS
CONTROL PANEL SWITCHES
HOURMETER
GAUGES
24VDC HEATERS
ENGINE ECM DIAGNOSTIC INTERFACE
ESTOP SWITCHES
SOLENOID VALVES
SPEED SENSOR
FUEL LEVEL SWITCH
PRESSURE TRANSDUCERS
TEMPERATURE SENSORS
BATTERY STARTING AND CHARGING SYSTEM
P1
P4
W1
W1
W1
W1

FIGURE 8-1

WEDGE TO ENGINE INTERFACE
CUMMINS ENGINE

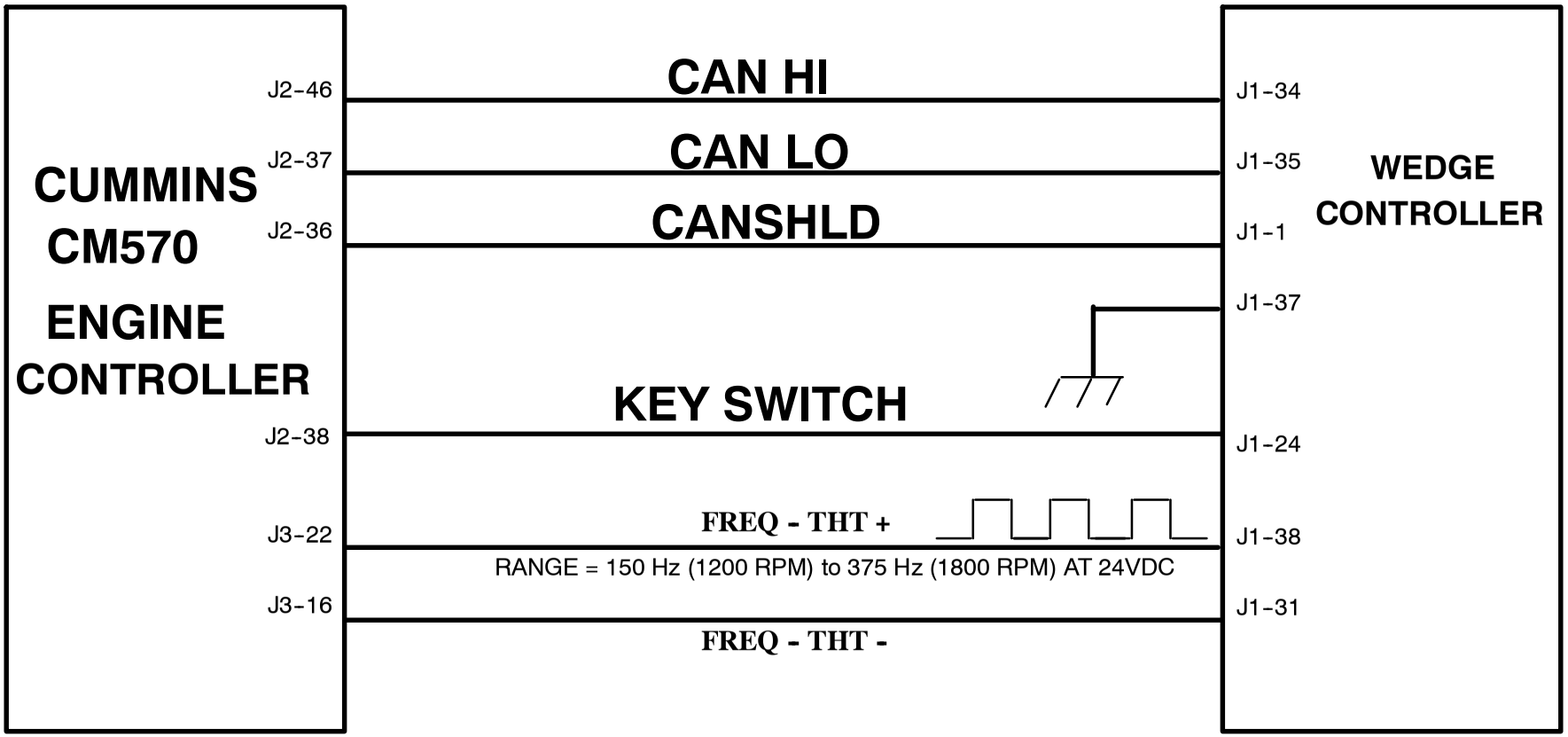


FIGURE 8-2

HP-XHP VIKING J1939 CAN COMMUNICATIONS SCHEMATIC

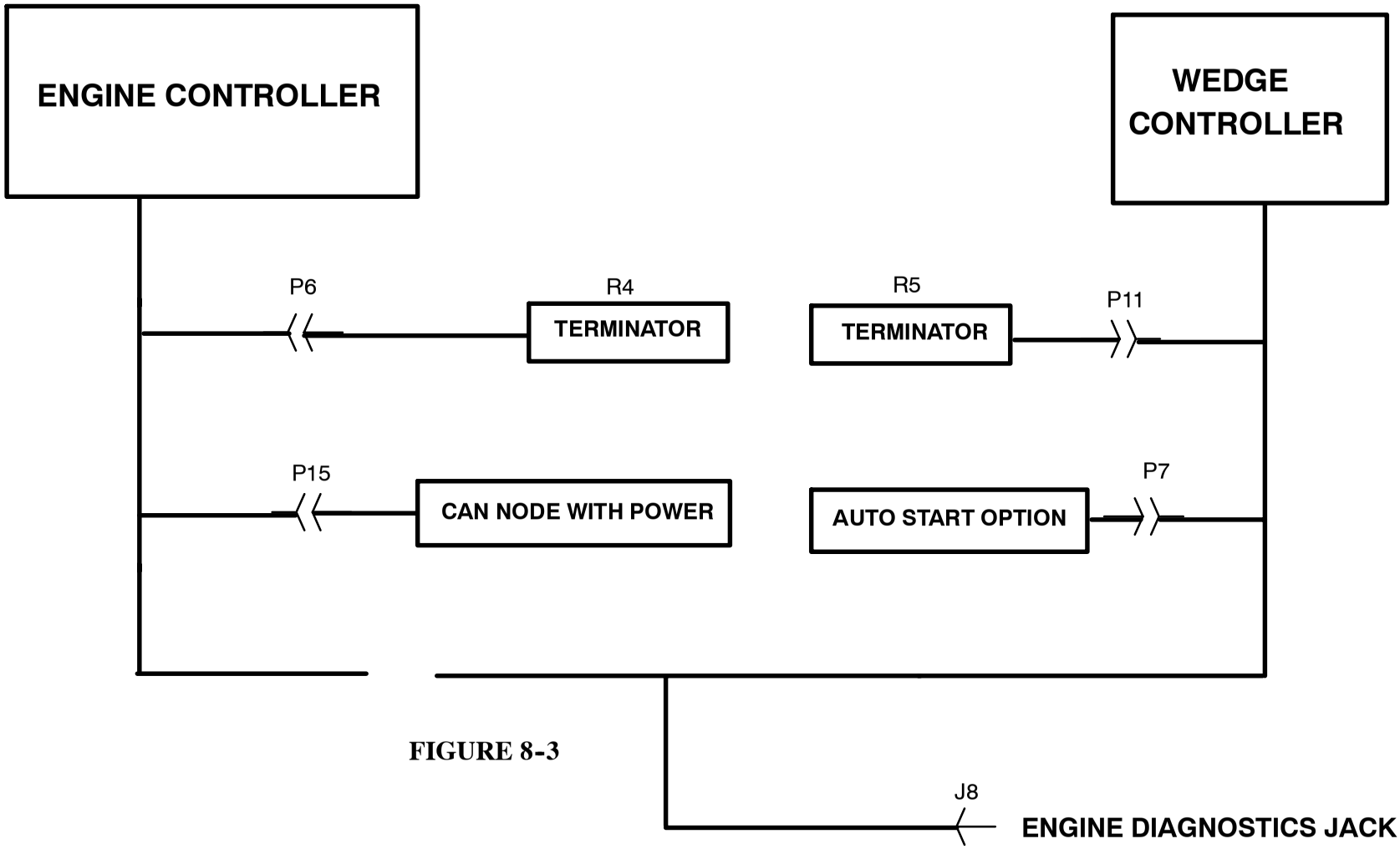


FIGURE 8-3

KEY ELECTRICAL COMPONENTS FUNCTION

PT1:

PT1 is a 0–225 psi gauge pressure transducer that measures discharge air pressure.

PT2:

PT2 is a 0–100 psi gauge pressure transducer that measures regulation system pressure.

U1:

U1 is resistive level detector that measures the fuel level in the fuel tank.
It provides a continuous reading of fuel level. It also has a switch for low fuel level and low fuel shutdown.
These switches connect to WEDGE.

RT1:

RT1 is a 10K ohm Thermistor temperature sensor that measures separator tank temperature.
Its range is –30 to 255° F.

RT2:

RT2 is a 10K ohm Thermistor temperature sensor that measures airend discharge temperature.
Its range is –30 to 255°F.

K1:

K1 is SPST, 24VDC relay used to activate the engine starter.

K2:

K2 is a SPDT, 24VDC relay used to activate the start compressor.

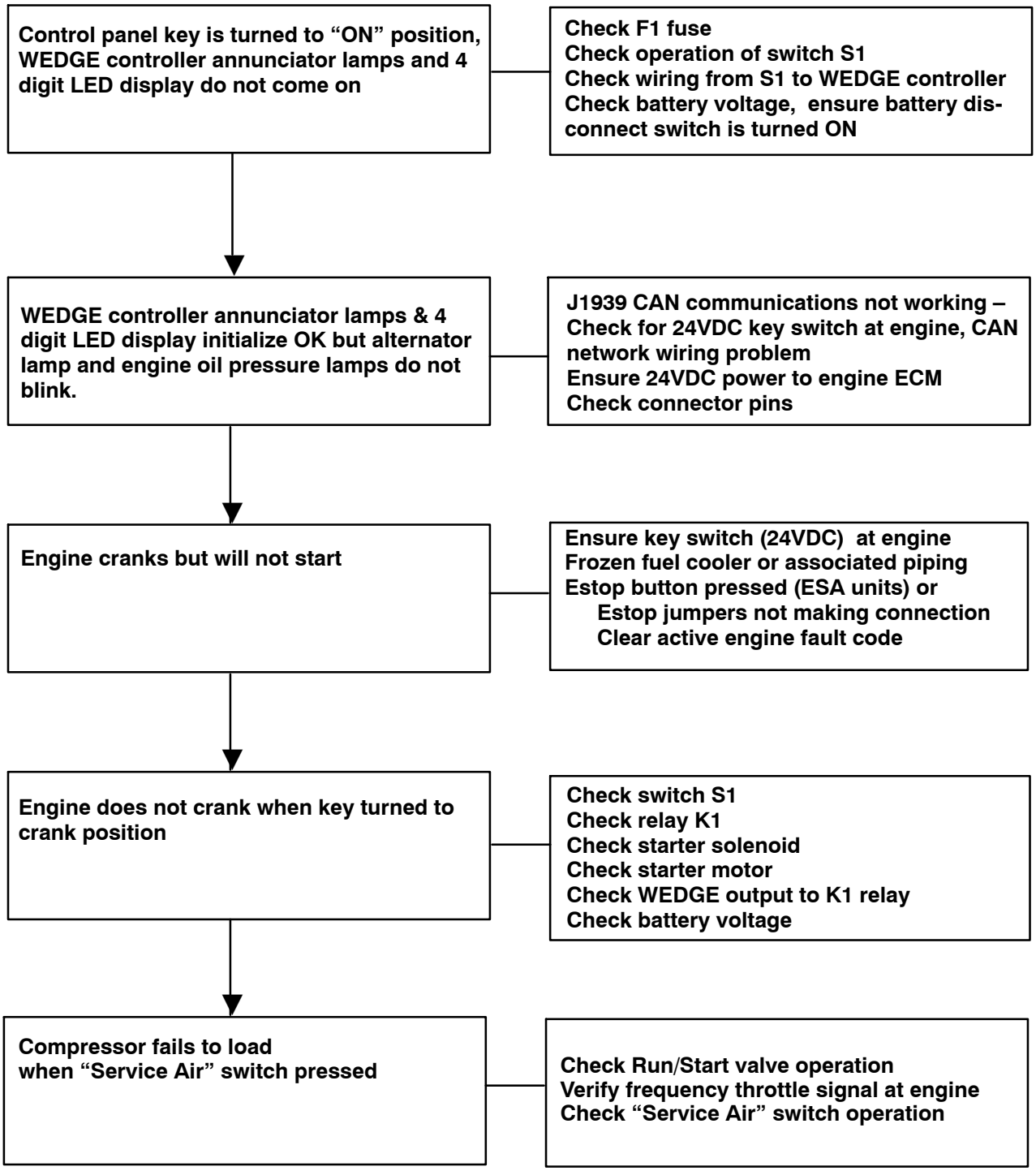
K3:

K3 is a SPDT, 24VDC relay used to power the IQ system.

ELECTRICAL PARTS LIST

Ref Designator	Description		Part Number
	IQ Wiring Harness		54757224
U2	Coolant Level Switch		54474572
	Battery Disconnect Switch		36896975
PT1	0–225 psi pressure transducer		54496973
PT2	0–100 psi Pressure Transducer		36920825
K2	Relay, 24VDC SPDT		36892362
G2	Mag Speed Sensor		36785319
RT1	Thermistor Temperature Sensor		36898922
L1	Start / Run Solenoid Valve		36842300
L2	Unloader Solenoid Valve		36842318
S10, S11	Air Filter Switch		36847838
RP1	Engine Oil Press Sender		36870608
RT3, RT4	Temperature Sender		36841138
S9	Airend Oil Press Switch		36757581
S14	Safety Valve Press Switch		36757581
B2	Startup Compressor		36850691
K1	Auxiliary Start Relay		35577873
R3	Control Orifice Heater		36841526
R1	Regulator Heater		36864677
R2	Machine ID Plug		54765953
U1	Fuel Level Sender	(Wagon)	54672803
		(High Speed)	54672811
D1–D4	Diode		35376169
	WEDGE Controller		54688411
W1	Chassis Harness		54654918
	W1 Control Panel Harness		22060594
	Negative Battery Cable		54765367
	Positive Battery Cable		54765375
	Positive Jumper Cable		54765383
	Battery Jumper		35128982
F2, F3	10 Amp ATC Fuse		22071591
F4	15 Amp Fuse		22071575
F1	20 Amp Fuse		36792083
	IQ Heater Harness		54775887
	IQ Orifice Heaters		36841526
	Actuator		36898310
RT5	Thermistor Temperature Sensor		36898922
K3	Relay, 24VDC SPDT		36892362
TCU	Controller		36920643
S12	Filter Switch		36899615
S13	Filter Switch		36899599

TROUBLE SHOOTING FLOW CHART



Replace this sheet with 11 x 17 System Schematic

Sheet 1 of 5

Replace this sheet with 11 x 17 System Schematic

Sheet 2 of 5

Replace this sheet with 11 x 17 System Schematic

Sheet 3 of 5

Replace this sheet with 11 x 17 System Schematic

Sheet 4 of 5

Replace this sheet with 11 x 17 System Schematic

Sheet 5 of 5

ALERT/SHUTDOWN CONDITIONS

Software V1.01

	ALERT		SHUTDOWN		
	CODE	LIGHT (BLINKS)	CODE	LIGHT (STEADY)	DELAY (sec)
Low Engine Speed (RPM<800)			1	CPRSR Malf.	30
High Engine Speed (RPM >1900)			2	CPRSR Malf.	30
Engine Crank Time Exceeded			3	CPRSR Malf.	0
Low Fuel Level		Fuel Level		Fuel Level	3
Engine Oil Temperature > 252 deg. F	5	CPRSR Malf.			
Intake Manifold Temperature > 180 deg. F	6	CPRSR Malf.			
High Discharge Temp. (RT2>247 deg. F)				High Comp Temp.	3
Low AE Oil Pressure (HP1600 only)			31	CPRSR Malf.	3
Disch. Temp (RT2) Sensor Fault			32	CPRSR Malf.	10
High Separator Tank Temp (RT1>247 deg.F)			50	CPRSR Malf.	3
Machine ID Not Valid			51	CPRSR Malf.	0
IQ Filter Restriction				IQ Filt. Rest	3
Sep. Tank Temp (RT1) Sensor Fault			53	CPRSR Malf.	10
Sep. Tank Pressure (PT1) Sensor Fault	33	CPRSR Malf.			
Reg. System Pressure PT2) Sensor Fault	54	CPRSR Malf.			
Air Filter Restriction		Soiled Filter			
Low Battery Voltage		Battery Charging Condition			
Serial Comm. Problem	70	CPRSR Malf.			
CAN Bus Problem	71	CPRSR Malf.			
Engine Coolant Temp > 215 deg. F		High Engine Temp			
Engine Oil Pressure < 10 psi		Low Engine Oil Pressure			
Separator Tank Pressure > 20 psi during start attempt (engine will not crank)			34	CPRSR Malf.	0
Engine Temp > 220 deg. F				High Engine Temp	10

ALERT/SHUTDOWN CONDITIONS

Software V1.22

	ALERT		SHUTDOWN		
	CODE	LIGHT (BLINKS)	CODE	LIGHT (STEADY)	DELAY (sec)
Low Engine Speed < 1000 RPM			1	CPRSR Malf.	10
High Engine Speed >1900 RPM			2	CPRSR Malf.	30
Engine Crank Time Exceeded			3	CPRSR Malf.	0
Engine Oil Temperature > 252 deg. F	5	CPRSR Malf.			
Intake Manifold Temperature > 180 deg. F	6	CPRSR Malf.			
Low AE Oil Pressure (HP1600 only)			31	CPRSR Malf.	3
Disch. Temp (RT2) Sensor Fault			32	CPRSR Malf.	10
Separator Tank (PT1) Sensor Fault	33	CPRSR Malf.			
Separator Tank Pressure >20 PSI during start attempt (Engine will not crank)			34	CPRSR Malf.	0
Machine Over Pressure			35	CPRSR Malf.	1
Safety Valve Open			36	CPRSR Malf.	0
Sep. Tank Temp > 247 degrees F			50	CPRSR Malf.	3
Machine ID Not Valid			51	CPRSR Malf.	0
Sep. Tank Temp. (Rt1) Sensor Fault			53	CPRSR Malf.	10
Reg. System Pressure (PT2) Sensor Fault	54	CPRSR Malf.			
Serial Comm. Problem	70	CPRSR Malf.			
CAN Bus Problem	71	CPRSR Malf.			
Dedicated Lights:					
Low Fuel Level		Fuel Level		Fuel Level	3
Air Filter Restriction		Soiled Filter			
Low Battery Voltage		Battery Charging Condition			
Engine Oil Pressure < 18 PSI		Low Engine Oil Pressure			
Engine Coolant Temperature > = 215 deg F.		High Engine Temp			
Engine Coolant Temperature > = 220 deg F.				High Engine Temp	10
IQ Filter Restriction				IQ Filter Restriction	3
High Discharge Temp. (RT2 > 247 deg. F)				High Comp. Temp.	3

CAN Derived Data =

FAULT CODES FOR QSX15 CUMMINS ENGINE

Fault Code	Description
111	Engine Control Module – Critical Internal Failure
115	Engine Speed/Position Sensor Circuit – Lost both signals from Magnetic Pickup Sensor
121	Engine Speed/Position Sensor Circuit – Lost One of Two Signals From the Magnetic Pickup Sensor
122	Intake Manifold Pressure Sensor #1 Circuit – Shorted High
123	Intake Manifold Pressure Sensor #1 Circuit – Shorted Low
135	Engine Oil Pressure Sensor Circuit – Shorted High
141	Engine Oil Pressure Sensor Circuit – Shorted Low
143	Engine Oil Pressure Low – Warning
144	Engine Coolant Temperature Sensor Circuit – Shorted High
145	Engine Coolant Temperature Sensor Circuit – Shorted Low
147	Frequency throttle signal low (see note 1)
151	Engine Coolant Temperature High – Critical
153	Intake Manifold Temperature Sensor #1 Circuit – shorted High
154	Intake Manifold Temperature Sensor #1 Circuit – Shorted Low
155	Intake Manifold Temperature #1 High – Critical
186	Sensor Supply Voltage #2 Circuit – Shorted Low
212	Engine Oil Temperature Sensor Circuit – Shorted High
213	Engine Oil Temperature Sensor Circuit – Shorted Low
214	Engine Oil Temperature High – Critical
221	Ambient Air Pressure Sensor Circuit – Shorted High
222	Ambient Air Pressure Sensor Circuit – Shorted Low
223	Engine Oil Burn Valve Solenoid Circuit – Shorted Low
227	Sensor Supply Voltage #2 Circuit – Shorted High

234	Engine Speed High – Critical
235	Engine Coolant Level Low – Critical
241	Vehicle Speed Sensor Circuit – Data Incorrect
245	Fan Clutch Circuit – Shorted Low
254	Fuel Shutoff Valve Circuit – Shorted Low
255	Fuel Shutoff Valve Circuit – Shorted High
259	Fuel Shutoff Valve – Stuck Open
284	Engine Speed/Position Sensor #1 (Crankshaft) Supply Voltage Circuit – Shorted Low
285	SAE J1939 Multiplexing PGN Timeout Error
286	SAE J1939 Multiplexing Configuration Error
287	SAE J1939 Multiplexing Remote Throttle Error
295	Ambient Air Pressure Sensor Circuit – Data Incorrect
299	Engine Shutdown Commanded By J1939
311	Injector Solenoid Valve Cylinder #1 Circuit – Grounded Circuit
312	Injector Solenoid Valve Cylinder #5 Circuit – Grounded Circuit
313	Injector Solenoid Valve Cylinder #3 Circuit – Grounded Circuit
314	Injector Solenoid Valve Cylinder #6 Circuit – Grounded Circuit
315	Injector Solenoid Valve Cylinder #2 Circuit – Grounded Circuit
319	Real Time Clock – Power Interrupt
341	Engine Control Module – Data Lost
343	Engine Control Module – Warning Internal Hardware Failure
346	Engine Control Module – Warning Software Error
352	Sensor Supply Voltage #1 Circuit – Shorted Low
378	Fueling Actuator #1 Circuit – Open Circuit
379	Fueling Actuator #1 Circuit – Grounded Circuit
386	Sensor Supply Voltage #1 Circuit – Shorted High
394	Timing Actuator #1 Circuit – Open Circuit
395	Timing Actuator #1 Circuit – Grounded Circuit
396	Fueling Actuator #2 Circuit – Open Circuit
397	Fueling Actuator #2 Circuit – Grounded Circuit

398	Timing Actuator #2 Circuit – Open Circuit
399	Timing Actuator #2 Circuit – Grounded Circuit
415	Engine Oil Pressure Low – Critical
418	Water In Fuel Indicator High – Maintenance
422	Engine Coolant Level Sensor Circuit – Data Incorrect
426	SAE J1939 Datalink – Cannot Transmit
428	Water In Fuel Sensor Circuit – Shorted High
429	Water In Fuel Sensor Circuit – Shorted Low
433	Intake Manifold Pressure Sensor Circuit – Data Incorrect
434	Power Lost Without Ignition Off
435	Engine Oil Pressure Sensor Circuit – Data Incorrect
441	Battery #1 Voltage Low – Warning
442	Battery #1 Voltage High – Warning
449	Fuel Pressure High – Warning
451	Injector Metering Rail #1 Pressure Sensor Circuit – Shorted High
452	Injector Metering rail#1 Pressure Sensor Circuit – Shorted low
466	Turbocharger #1 Wastegate Control Circuit – Data Incorrect
482	Fuel Pressure Low – Warning
483	Injector Metering Rail #2 Pressure Sensor Circuit – Shorted High
484	Injector Metering Rail #2 Pressure Sensor Circuit – Shorted Low
485	Injector Metering Rail #2 Pressure High – Warning
486	Injector Metering Rail #2 Pressure Low – Warning
496	Engine Speed/Position Sensor #2 (Camshaft) Supply Voltage
546	Fuel Delivery Pressure Sensor Circuit – Shorted High
547	Fuel Delivery Pressure Sensor Circuit – Shorted Low
553	Injector Metering Rail #1 Pressure High – Warning
581	Fuel Supply Pump Inlet Pressure Sensor Circuit – Shorted High
582	Fuel Supply Pump Inlet Pressure Sensor Circuit – Shorted Low
583	Fuel Supply Pump Inlet Pressure Low – Warning Level

595	Turbocharger #1 Speed High – Warning Level
596	Electrical Charging System Voltage High – Warning Level
597	Electrical Charging System Voltage Low – Warning Level
598	Electrical Charging System Voltage Low – Critical Level
611	Engine Hot Shutdown
753	Engine Speed/Position #2 Cam Sync Error
755	Injector Metering Rail #1 Pressure Malfunction
758	Injector Metering Rail #2 Pressure Malfunction
951	Cylinder Power Imbalance Between Cylinders

Notes:
1. Code 147 will be logged each time the compressor controller stops the engine. This is an operational fault and does not indicate any engine fault.

SECTION 10 – PARTS ORDERING

GENERAL

This publication, which contains an illustrated parts breakdown, has been prepared as an aid in locating those parts which may be required in the maintenance of the unit. All of the compressor parts, listed in the parts breakdown, are manufactured with the same precision as the original equipment. For the greatest protection always insist on genuine Ingersoll–Rand Company parts for your compressor.

NOTICE

Ingersoll–Rand Company can bear no responsibility for injury or damages resulting directly from the use of non–approved repair parts.

Ingersoll–Rand Company service facilities and parts are available worldwide. There are Ingersoll– Rand Company Construction Equipment Group Sales Offices and authorized distributors located in the principal cities of the United States. In Canada our customers are serviced by the Canadian Ingersoll–Rand Company, Limited. There are also Ingersoll–Rand International autonomous companies and authorized distributors located in the principal cities throughout the free world.

Special order parts may not be included in this manual. Contact the Mocksville Parts Department with the unit serial number for assistance with these special parts.

DESCRIPTION

The illustrated parts breakdown illustrates and lists the various assemblies, subassemblies and detailed parts which make up this particular machine. This covers the standard models and the more popular options that are available.

A series of illustrations show each part distinctly and in location relative to the other parts in the assembly. The part number, the description of the part and the quantity of parts required are shown on each illustration or on adjacent page. The quantities specified are the number of parts used per one assembly and are not necessarily the total number of parts used in the machine. Where no quantity is specified the quantity is assumed to be one.

Each description of a part is based upon the “noun first” method, i.e., the identifying noun or item name is always the first part of the description. The noun name is generally followed by a single descriptive modifier. The descriptive modifier may be followed by words or abbreviations such as upper, lower, inner, outer, front, rear, RH, LH, etc. when they are essential.

In referring to the rear, the front or to either side of the unit, always consider the **drawbar end** of the unit as the **front.** Standing at the rear of the unit facing the drawbar (front) will determine the right and left sides.

FASTENERS

Both SAE/inch, ISO/metric hardware have been used in the design and assembly of these units. In the disassembly and reassembly of parts, extreme care must be taken to avoid damaging threads by the use of wrong fasteners. In order to clarify the proper usage and for exact replacement parts, all standard fasteners have been identified by part number, size and description. This will enable a customer to obtain fasteners locally rather than ordering from the factory. These parts are identified in tables that will be found at the rear of the parts illustrations. Any fastener that has not been identified by both part number and size is a specially engineered part that must be ordered by part number to obtain the exact replacement part.

MARKINGS AND DECALS

NOTICE

Do not paint over safety warnings or instructional decals. If safety warning decals become illegible, immediately order replacements from the factory.

Part numbers for original individual decals and their mounting locations are shown within Parts List Section. These are available as long as a particular model is in production.

Afterwards, service sets of exterior decals and current production safety warning decals are available. Contact the Product Support Group at Mocksville for your particular needs and availability.

HOW TO USE PARTS LIST

a. Turn to Parts List.

b. Locate the area or system of the compressor in which the desired part is used and find illustration page number.

c. Locate the desired part on the illustration by visual identification and make note of part number and description.

HOW TO ORDER

The satisfactory ordering of parts by a purchaser is greatly dependent upon the proper use of all available information. By supplying your nearest sales office, autonomous company or authorized distributor, with complete information, you will enable them to fill your order correctly and to avoid any unnecessary delays.

In order that all avoidable errors may be eliminated, the following instructions are offered as a guide to the purchaser when ordering replacement parts:

a. Always specify the model number of the unit as shown on the general data decal attached to the unit.

b. Always specify the serial number of the unit. THIS IS IMPORTANT. The serial number of the unit will be found stamped on a plate attached to the unit. (The serial number on the unit is also permanently stamped in the metal of the frame side rail.)

c. Always specify the number of the parts list publication.

d. Always specify the quantity of parts required.

e. Always specify the part number, as well as the description of the part, or parts, exactly as it is given on the parts list illustration.

In the event parts are being returned to your nearest sales office, autonomous company or authorized distributor, for inspection or repair, it is important to include the serial number of the unit from which the parts were removed.

TERMS AND CONDITIONS ON PARTS ORDERS

Acceptance: Acceptance of an offer is expressly limited to the exact terms contained herein. If purchaser's order form is used for acceptance of an offer, it is expressly understood and agreed that the terms and conditions of such order form shall not apply unless expressly agreed to by Ingersoll–Rand Company ("Company") in writing. No additional or contrary terms will be binding upon the Company unless expressly agreed to in writing.

Taxes: Any tax or other governmental charge now or hereafter levied upon the production, sale, use or shipment of material and equipment ordered or sold is not included in the Company's price and will be charged to and paid for by the Purchaser.

Shipping dates shall be extended for delays due to acts of God, acts of Purchaser, acts of Government, fires, floods, strikes, riot, war, embargo, transportation shortages, delay or default on the part of the Company's vendors, or any other cause beyond the Company's reasonable control.

Should Purchaser request special shipping instruction, such as exclusive use of shipping facilities, including air freight when common carrier has been quoted and before change order to purchase order can be received by the Company, the additional charges will be honored by the Purchaser.

Warranty: The Company warrants that parts manufactured by it will be as specified and will be free from defects in materials and workmanship. The Company's liability under this warranty shall be limited to the repair or replacement of any part which was defective at the time of shipment provided Purchaser notifies the Company of any such defect promptly upon discovery, but in no event later than three (3) months from the date of shipment of such part by the Company. The only exception to the previous statement is the extended warranty as it applies to the special airend exchange program.

Repairs and replacements shall be made by the Company F.O.B. point of shipment. The Company shall not be responsible for costs of transportation, removal or installation.

Warranties applicable to material and equipment supplied by the Company but wholly manufactured by others shall be limited to the warranties extended to the Company by the manufacturer which are able to be conveyed to the Purchaser.

Delivery: Shipping dates are approximate. The Company will use best efforts to ship by the dates specified; however, the Company shall not be liable for any delay or failure in the estimated delivery or shipment of material and equipment or for any damages suffered by reason thereof.

The company makes no other warranty or representation of any kind whatsoever, expressed or implied, except that of title, and all implied warranties, including any warranty of merchantability and fitness for a particular purpose, are hereby disclaimed.

Limitation of Liability:
The remedies of the Purchaser set forth herein are exclusive, and the total liability of the Company with respect to this order whether based on contract, warranty, negligence, indemnity, strict liability or otherwise, shall not exceed the purchase price of the part upon which such liability is based. The Company shall in no event be liable to the Purchaser, any successors in interest or any beneficiary of this order for any consequential, incidental, indirect, special or punitive damages arising out of this order or any breach thereof, or any defect in, or failure of, or malfunction of the parts hereunder, whether based upon loss of use, lost profits or revenue, interest, lost goodwill, work stoppage, impairment of other goods, loss by reason of shutdown or non- operation, increased expenses of operation or claims of customers of Purchaser for service interruption whether or not such loss or damage is based on contract, warranty, negligence, indemnity, strict liability or otherwise.

AIREND EXCHANGE PROGRAM

Your Ingersoll-Rand Company Construction Equipment Group Sales Offices and authorized distributors as well as Ingersoll-Rand International autonomous companies and authorized distributors now
have an airend exchange program to benefit portable compressor users.

On the airend exchange program the exchange price is determined by the age and condition of the airend and may be classified by one of the following categories.

Category "A": The airend must not be over two years old and must have reusable rotor housing(s) and rotor(s).
Category "B": The airend must be between two and five years old and returned with two or more reusable major castings.
Category "C": The airend must be over five years old.
Your nearest sales office, autonomous company or authorized distributor must first contact the Parts Service Department at the factory at which your portable air compressor was manufactured for an airend exchange number. The airend must be tagged with this preassigned number and returned to the factory prepaid. The airend must be intact, with no excluded parts, otherwise the exchange agreement may be cancelled. The warranty on an exchange or factory rebuilt airend is 365 days.
Airends being returned to the factory in connection with a WARRANTY CLAIM must be processed through the Customer Service Department. If returned without a Warranty MRR (Material Return Request) Number, no warranty claim will be considered.

VIKING ELECTRICAL COMPONENTS

I-R Part Number	Quantity per Mach	Description
54757224	1	IQ Wiring Harness
54474572	1	Coolant Level Switch
36896975	1	Battery Disconnect Switch
54765946	1	0-500 psi Pressure Transducer
36920825	1	0-100 psi Pressure Transducer
36892362	1	24V Sealed Relay
36785319	1	Mag Speed Sensor
36898922	2	Thermistor Temperature Probe
36842300	1	Start/Run Solenoid Valve
36842318	1	Compressor Solenoid Valve
36847838	2	Air Filter Switch
36870608	1	Engine Oil Pressure Sender
36841138	2	Eng & Comp Temp Sender
36757581	1	Comp Oil Pressure Switch
36850691	1	Startup Compressor
35577873	1	Auxilary Start Relay
54720701	1	Eng Temp Sender Adaptor
36841526	1	Control Heater
36864677	1	Regulator Heater
54765367	1	Negative Battery Cable
54765375	1	Positive Battery Cable
54765383	1	Positive Jumper Battery Cable
35128982	1	Battery Jumper
35578194	1	Frame Ground Strap
35293075	1	Engine Ground Strap
54672803 (Wagon)	1	Fuel Level Sender
54672811 (High Speed)	1	Fuel Level Sender
22073894	1	WEDGE Controller
54654918	1	W1 Chassis Harness
54765953	1	Machine ID Plug
36898310	1	Louver Actuator
36920643	1	TCU Controller
36899599	1	IQ Filter Switch
36899615	1	IQ Filter Switch
54775887	1	IQ Heater Harness
36792083	2	20 AMP ATC Fuse
22071591	2	10 AMP ATC Fuse

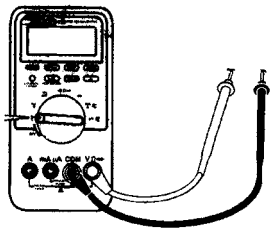
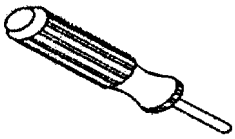
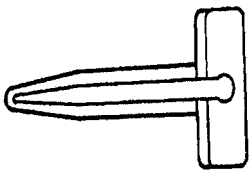
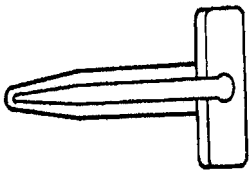
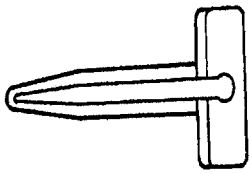
SERVICE TOOLS

Electronic Systems

The following special tools are recommended to perform service procedures in this manual. The tools can be purchased from Ingersoll Rand or equivalent substitutes can be used.

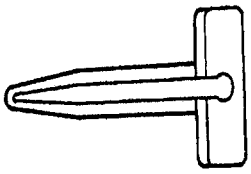
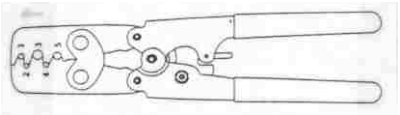
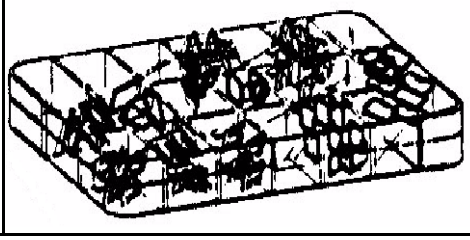
Tool	Tool Description
Fluke 87	Digital Multimeter *Used to Measure electrical circuits: volts, ohms amps*
54729660	Weather-Pack Terminal Removal Tool *Used to repair Packard Electric Weather-Pack Connectors*
54729678	Deutsch Terminal Removal Tool (Blue) *Used to repair Deutsch connectors*
54729686	Deutsch Terminal Removal Tool (Red) *Used to repair Deutsch connectors*
54729694	Deutsch Terminal Removal Tool (Yellow) *Used to repair Deutsch connectors*
HDT-48-00	Deutsch Terminal Crimp Tool *Used to crimp Deutsch connector terminals*
DD	Deutsch Terminal Crimping Tool *Used to crimp Deutsch connector terminals*
54729710	Electrical Contact Cleaner *Used to clean electrical contacts and connectors*
54729728	PDA Service Tool *Palm Pilot based service tool used to connect to Intellisys (SGP) Controller to load software and extract service information*
22073886	Packard Crimp Tool *Used to crimp Packard connector terminals*
22073878	Thermistor Simulator Plug *Used to test thermister circuits*
54699616	Deutsch Terminal Removal Tool *Used to repair Deutsch connectors*
54699657	Deutsch Terminal Removal Tool *Used to repair Deutsch connectors*
54749643	Packard Metri-Pack Terminal Removal Tool *Used to repair Metri-Pack connectors*
54749635	Connector Repair Kit *Used to make connector repairs*

SERVICE TOOLS

Tool No.	Tool Description	Tool Illustration
Fluke 87	**Digital Multimeter** Available from electrical and electronic parts distributors.	
54729660	**Weather-Pack Terminal Removal Tool**	
54699632	**Deutsch Terminal Removal Tool (Blue)**	
54699640	**Deutsch Terminal Removal Tool (Red)**	
54699624	**Deutsch Terminal Removal Tool (Yellow)**	
DT-RT1	**Crimp Tool for Deutsch Pins Crimp** Available from: Ladd Industries (800-223-1236)	

54729710	**Electrical Contact Cleaner**	

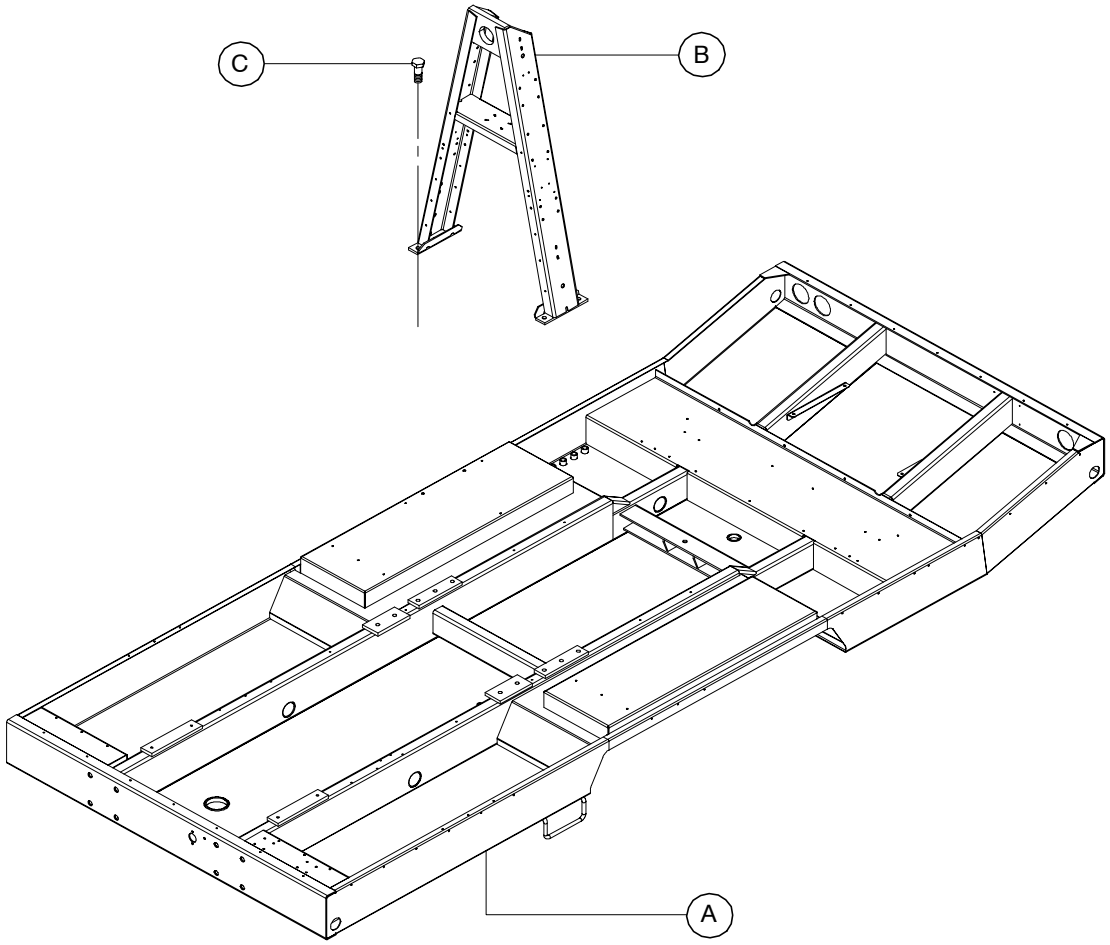
54729728	**PDA Service Tool**	

54699616	**Deutsch Terminal Removal Tool**	
22073886	**Packard Crimp Tool**	
22073878	**Thermistor Simulator**	
54749635	**Connector Repair Kit**	

54699657	**Deutsch Terminal Removal Tool**	
54749643	**Packard Metri-Pack Removal Tool**	

INDEX

FAST TRACK FRAME ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION
A	54760202	1	FRAME ASSEMBLY
B	54542543	1	BAIL , LIFTING
C	96720610	4	SCREW

CPN	QTY	DESCRIPTION
LESS RUNNING GEAR OPTION (PARTS)		
22053870	2	MIDDLE SUPPORT ASSEMBLY
22053888	4	LARGE EDGE SUPPORT ASSEMBLY
96727896	4	SCREW (THRU EDGE ASSY. TO FRAME)
36879203	4	NUT (THRU EDGE ASSY. TO FRAME)
36879492	8	SCREW (THRU SIDES OF EDGE SUPPORTS)
36879203	8	NUT (THRU SIDES OF EDGE SUPPORTS)
22054118	2	LARGE FRONT SUPPORT ASSY.
95939914	8	SCREW (THRU SLOTS OF THE SUPPORT)
95941084	8	NUT (TO SCREWS THRU SUPPORTS)
54594098	1	TANK , R.H. FUEL
35279025	24	SCREW (FUEL TANKS TO FRAME)
54594080	1	TANK , L.H. FUEL
22060156	1	HOSE ASSY. (FUEL COOLER TOP TO L.H. TANK)
35136548	1	HOSE ASSY. (R.H. TANK PICK-UP TO ENGINE)

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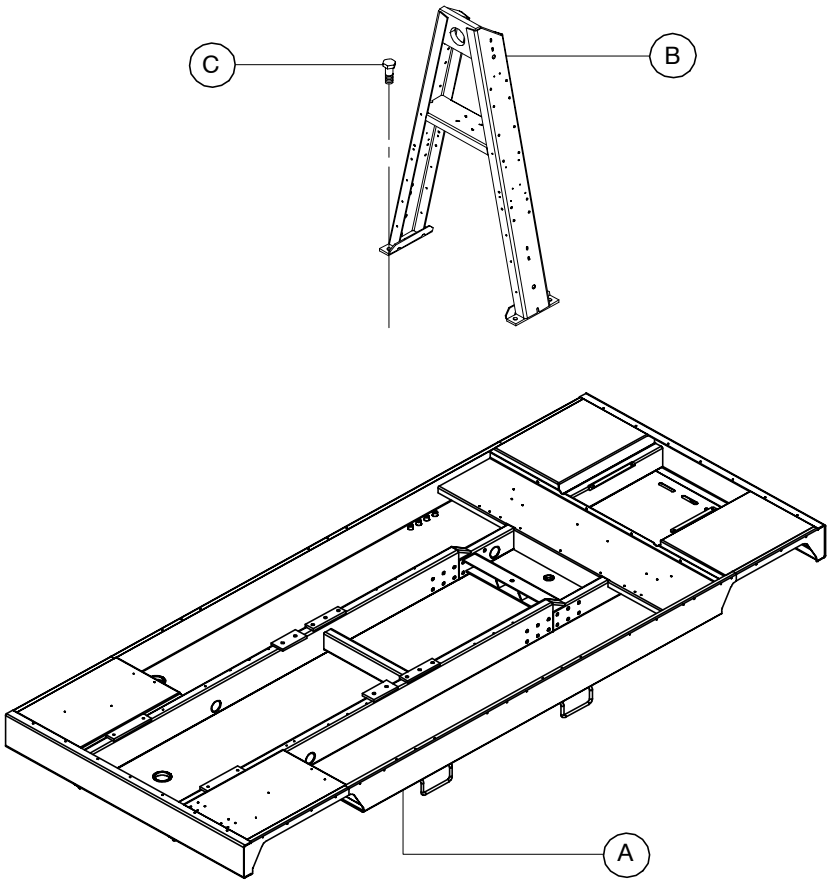
WAGON WHEEL FRAME ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION
A	54501796	1	FRAME ASSEMBLY
B	54542543	1	BAIL , LIFTING
C	96720610	4	SCREW

CPN	QTY	DESCRIPTION
LESS RUNNING GEAR OPTION (PARTS)		
22051304	4	SUPPORT (BETWEEN FRAME)
39179072	16	BOLT (SUPPORTS TO FRAME)
96701750	16	NUT (SUPPORTS TO FRAME)
22053706	2	CROSSMEMBER (BETWEEN SUPPORTS)
39179072	8	BOLT (CROSSMEMBER TO SUPPORT LEGS)
96701750	8	NUT (CROSSMEMBER TO SUPPORT LEGS)
54594114	1	TANK , R.H. FUEL TANK
35279025	12	SCREW (FUEL TANK TO FRAME)
54594106	1	TANK , L.H. FUEL TANK
22060149	1	HOSE ASSEMBLY (FUEL COOLER TOP TO L.H. TANK)
35325083	1	HOSE ASSEMBLY (RH FUEL PICK-UP TO ENGINE)

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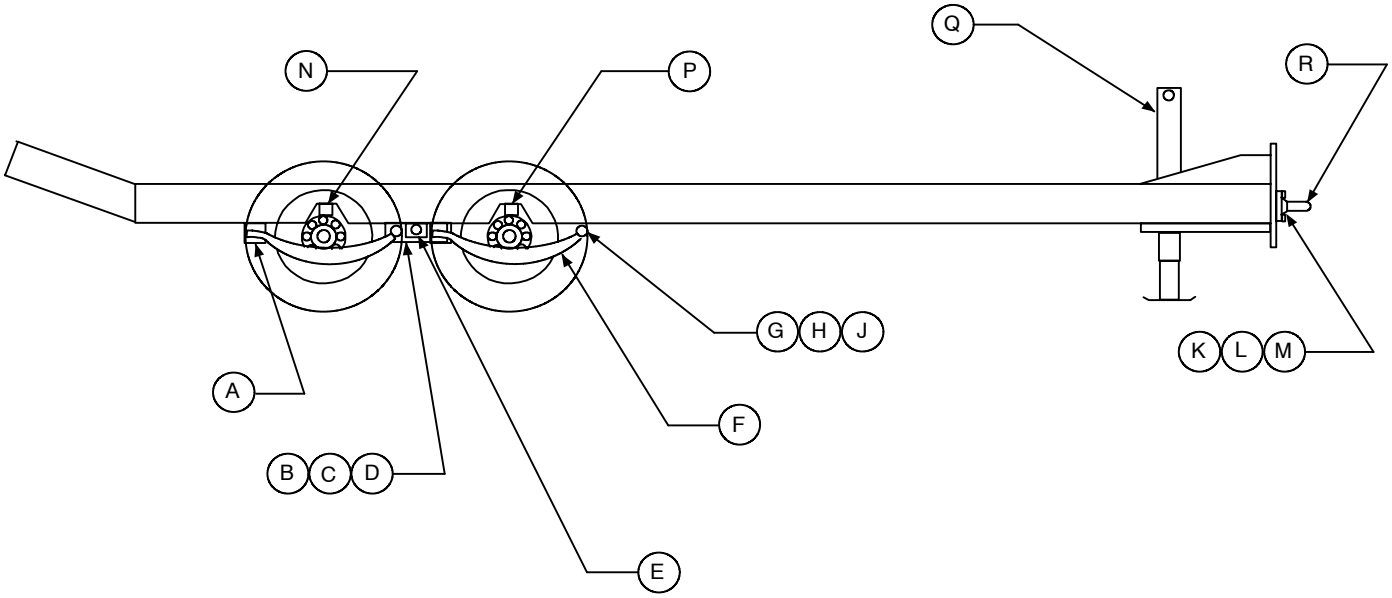

ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	36880235	2	HANGER , REAR				
B	36880219	2	BAR , EQUALIZER				
C	36880243	2	BOLT , EQUALIZER				
D	36880250	2	LOCKNUT				
E	36880193	2	HANGER , CENTER				
F	36880284	4	SPRING , LEAF				
G	36880201	2	HANGER , FRONT				
H	36880227	8	BOLT , SHACKLE				
J	35336700	8	LOCKNUT				
K	36880136	4	BOLT				
L	95935011	4	WASHER				
M	95077608	4	LOCKNUT				
N	35144336	8	SCREW				
P	36880151	4	BUMPER , RUBBER				
Q	36880144	1	JACK , DROPLEG				
R	36880128	1	EYE , PINTLE				

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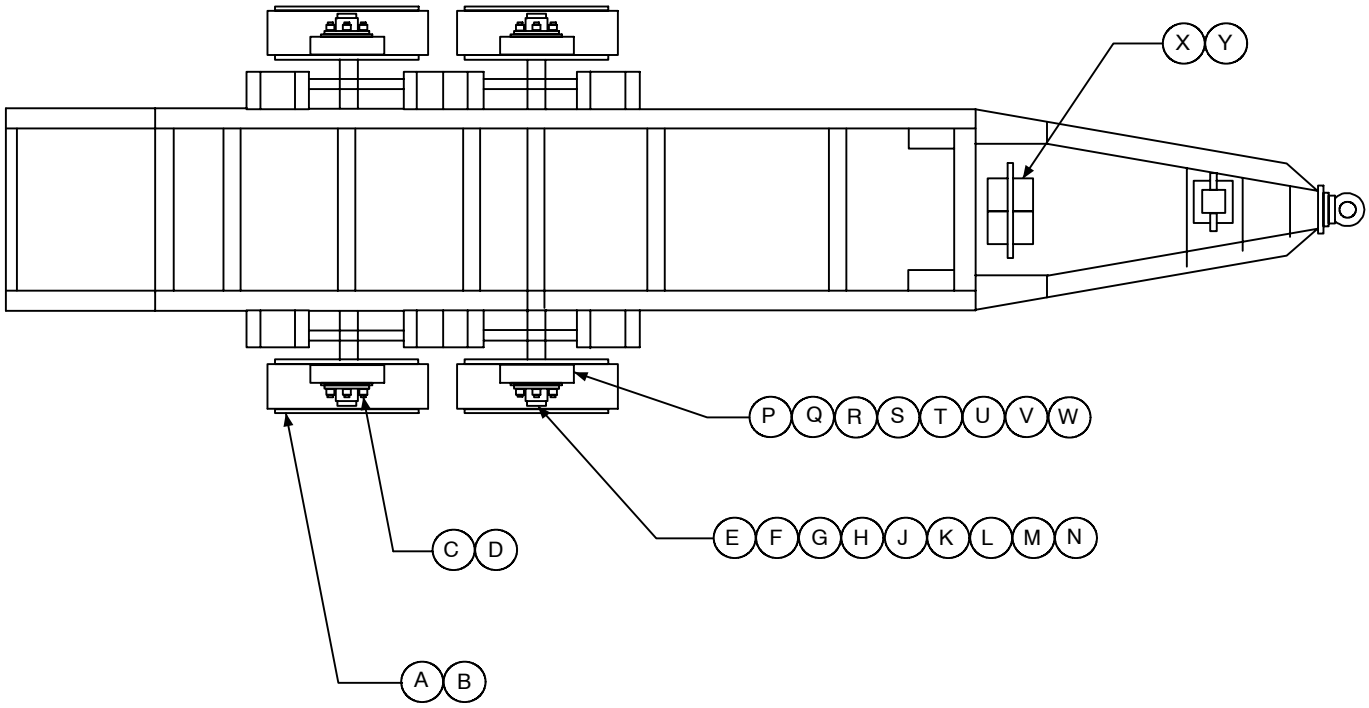

ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	36877991	4	TIRE				
B	22077515	4	WHEEL				
	36878049	4	CLAMP , PLATE				
C	35272150	8	STUD				
D	36880276	8	NUT				
E	36853091	4	NUT				
F	36853109	2	WASHER				
G	36853117	2	WASHER , LOCK				
H	36851624	1	INNER BEARING CUP				
J	36851616	1	OUTER BEARING CUP				
K	36851608	1	INNER BEARING				
L	36851590	1	OUTER BEARING				
M	36851632	1	SEAL				
N	36776813	8	CAP , DUST				
P	36880268	4	HUB ASSEMBLY				
Q	36880292	2	L.H. ELECTRIC BRAKE				
R	36880300	2	R.H. ELECTRIC BRAKE				
S	36880318	4	SHIELD , BOTTOM DUST				
T	36880326	4	SHIELD , TOP DUST				
U	36880334	7	BOLT				
V	95939955	7	WASHER , LOCK				
W	36880342	7	LOCKNUT				
X	35603190	2	CHOCK , WHEEL				
Y	35333830	2	STRAP , RUBBER				

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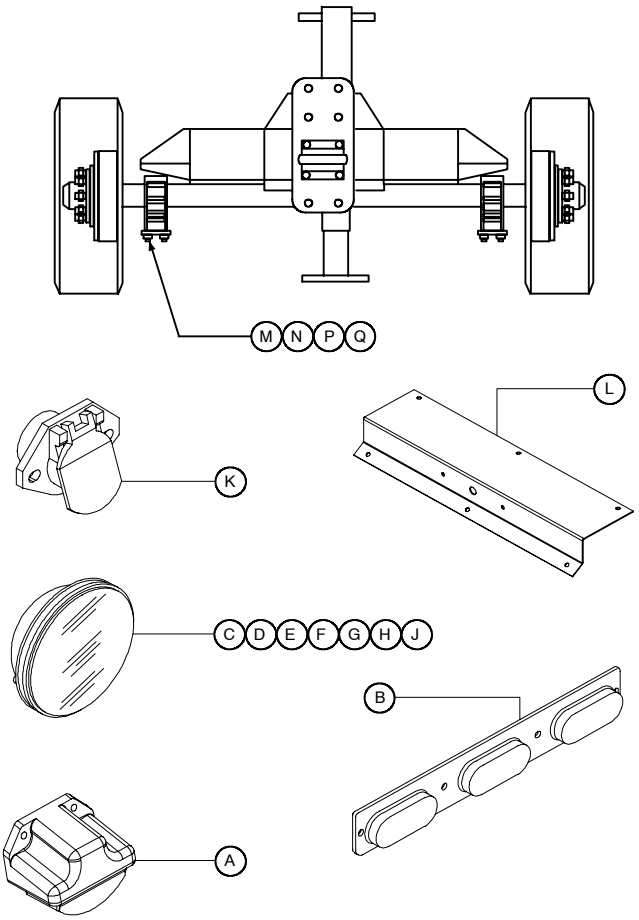

ITEM	CPN	QTY	DESCRIPTION
A	36895860	1	LIGHT , LICENSE PLATE
B	36922144	1	3 LIGHT ASSEMBLY
C	36788081	2	STOP , TURN AND TAIL LIGHT
D	36787968	6	GROMMET (USE ON ITEM C & E)
E	36859320	4	STOP , TURN AND TAIL LIGHT
F	35367051	4	YELLOW LIGHT
G	36893642	2	GROMMET (USE ON ITEM F)
H	36893634	2	GROMMET (USE ON ITEM F)
J	35367044	4	RED CLEARANCE LIGHT
K	36894129	1	7-WAY CONNECTOR
L	36896306	1	ID BRACKET
M	36880169	2	PLATE , U-BOLT
N	36880177	4	U-BOLT
P	36880185	8	NUT
Q	95934741	8	WASHER , LOCK

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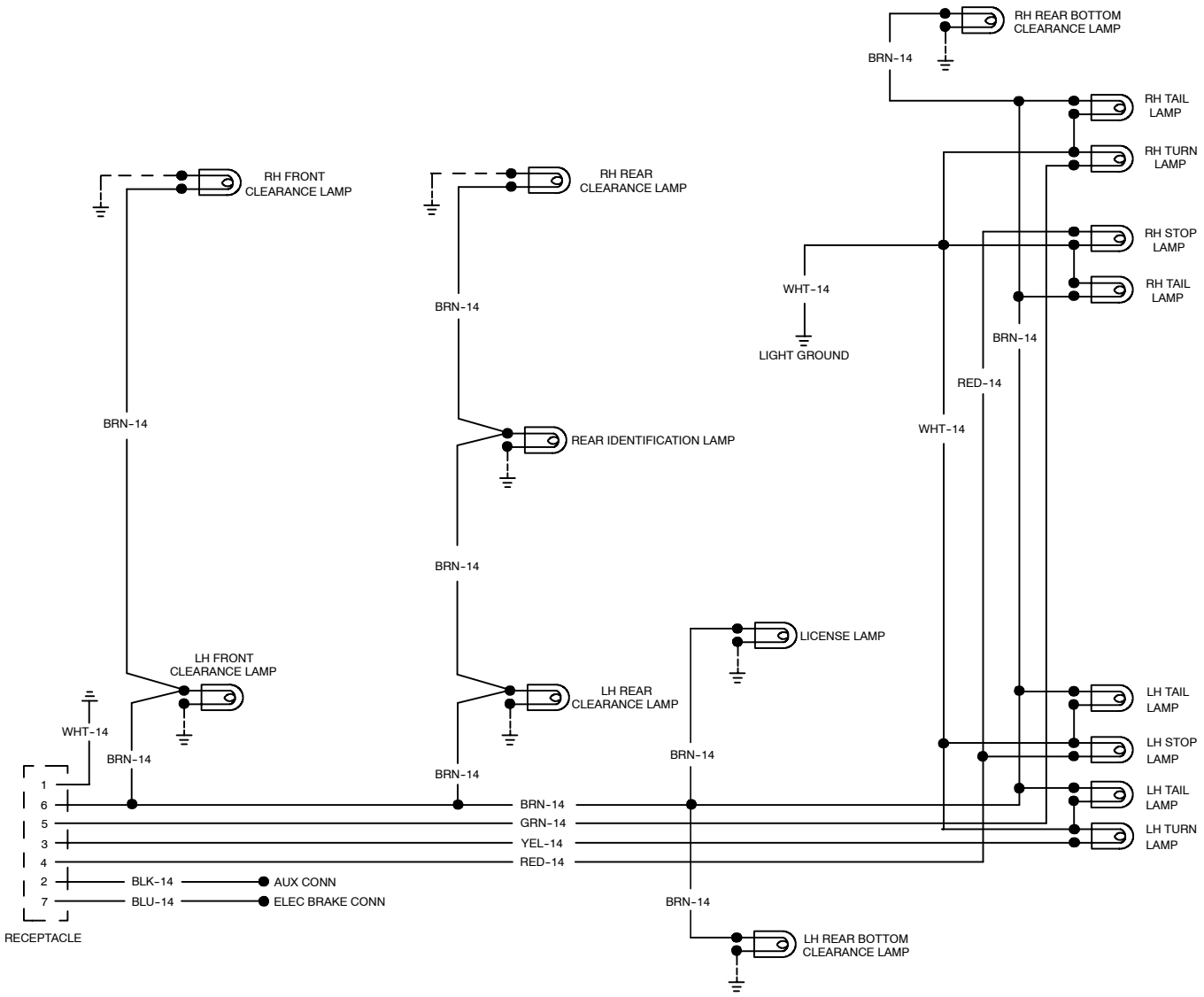

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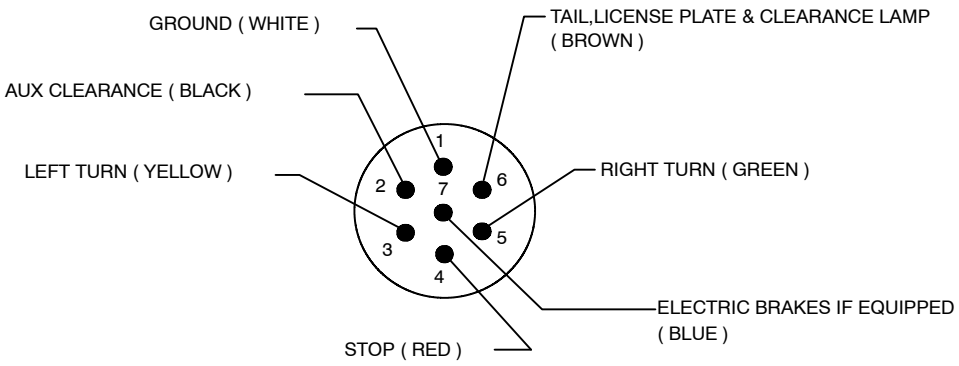
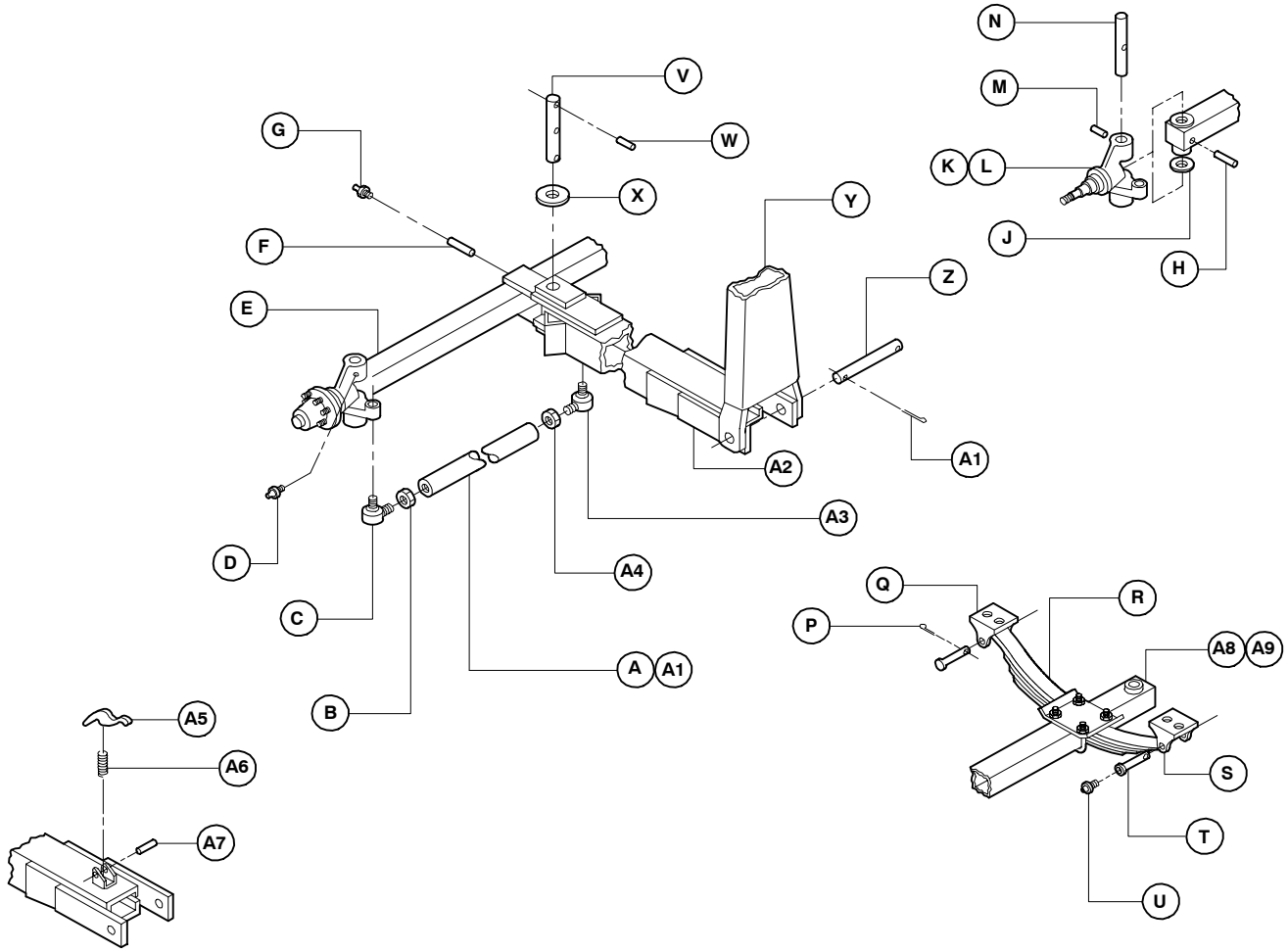


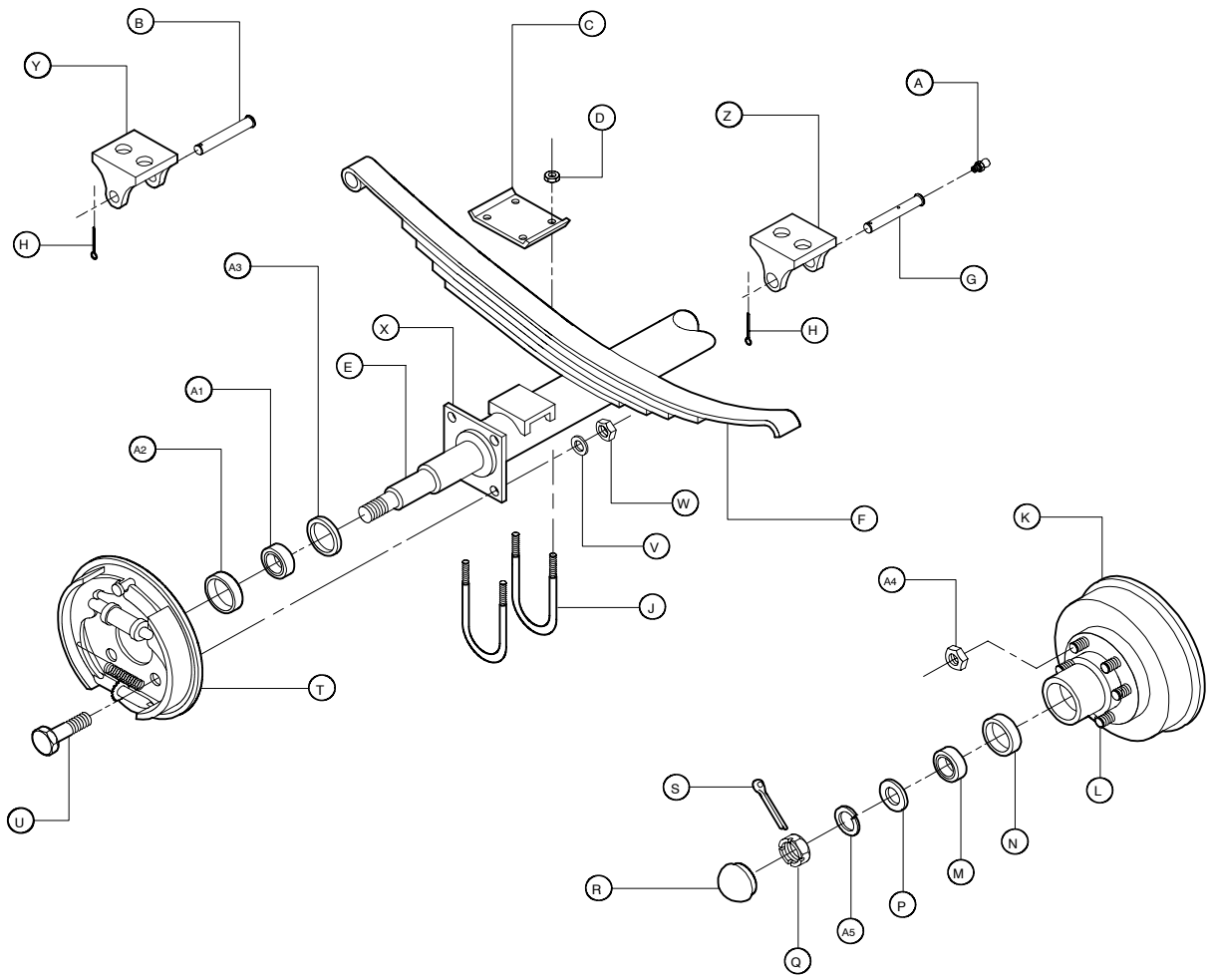
STOP,TAIL & TURN LIGHT OPTION
(AS VIEWED FROM REAR OF SOCKET)

LIST OF MATERIALS									
CKT	TERMINATION A	TYPE	SIZE	TERMINATION B	TYPE	SIZE	GAUGE	LENGTH	COLOR
1	RECEPTACLE 1	E		GROUND	A	1/4	14	46	WHT
2	RECEPTACLE 6	E		SPLICE 1	D		14	24	BRN
3	SPLICE 1			LH FRT CLEARANCE	B		14	95	BRN
4	LH FRT CLEAR W/CKT 3B			RH FRT CLEARANCE	B		14	89	BRN
5	SPLICE 1 W/CKT 3A			SPLICE 2	D		14	218	BRN
6	RECEPTACLE 3	E		RH TURN	G		14	342	YEL
7	RECEPTACLE 5	E		LH TURN	G		14	255	GRN
8									
9									
10	RH TURN/TAIL W/CKT 27B			RH REAR CLEAR BOT	B		14	22	BRN
11									
12	SPLICE 2			LH REAR CLEARANCE	B		14	19	BRN
13	LH REAR CLEAR W/CKT 12B			LH REAR TOP CLEAR	B		14	74	BRN
14	LH REAR TOP CLEAR W/CKT 13B			REAR ID W/CKT 15A	B		14	61	BRN
15	R ID W/CKT 14B			RH REAR TOP CLEAR	B		14	56	BRN
16	SPLICE 2 W/CKT 12A			LICENSE LAMP	B		14	31	BRN
17	SPLICE 2 W/CKT 12A			LH TURN/TAIL	G		14	13	BRN
18	RECEPTACLE 4	E		LH STOP LAMP	G		14	261	RED
19	LIGHT GRD W/CKT 24A			LIGHT GROUND			14	36	WHT
20	LEFT STOP LAMP W/CKT 18B			RIGHT STOP LAMP	G		14	99	RED
21	RECEPTACLE 7	E		ELECTRIC BRAKES			14	29	BLU
22	LEFT TURN GRD			LH ST/GRD W/CKT 23A	G		14	30	WHT
23	LEFT STOP GRD			RT ST/GRD W/CKT 24A	G		14	99	WHT
24	RIGHT STOP GRD			RH TURN GRD	G		14	30	WHT
25	LH TURN/TAIL W/CKT 17B			LEFT STOP/TAIL	G		14	30	BRN
26	LH STOP/TAIL W/CKT 25B			RIGHT STOP/TAIL	G		14	99	BRN
27	RH STOP/TAIL W/CKT 26B			RIGHT TURN/TAIL	G		14	30	BRN
28	RECEPTACLE 2	E		AUX	B		14	29	BLK



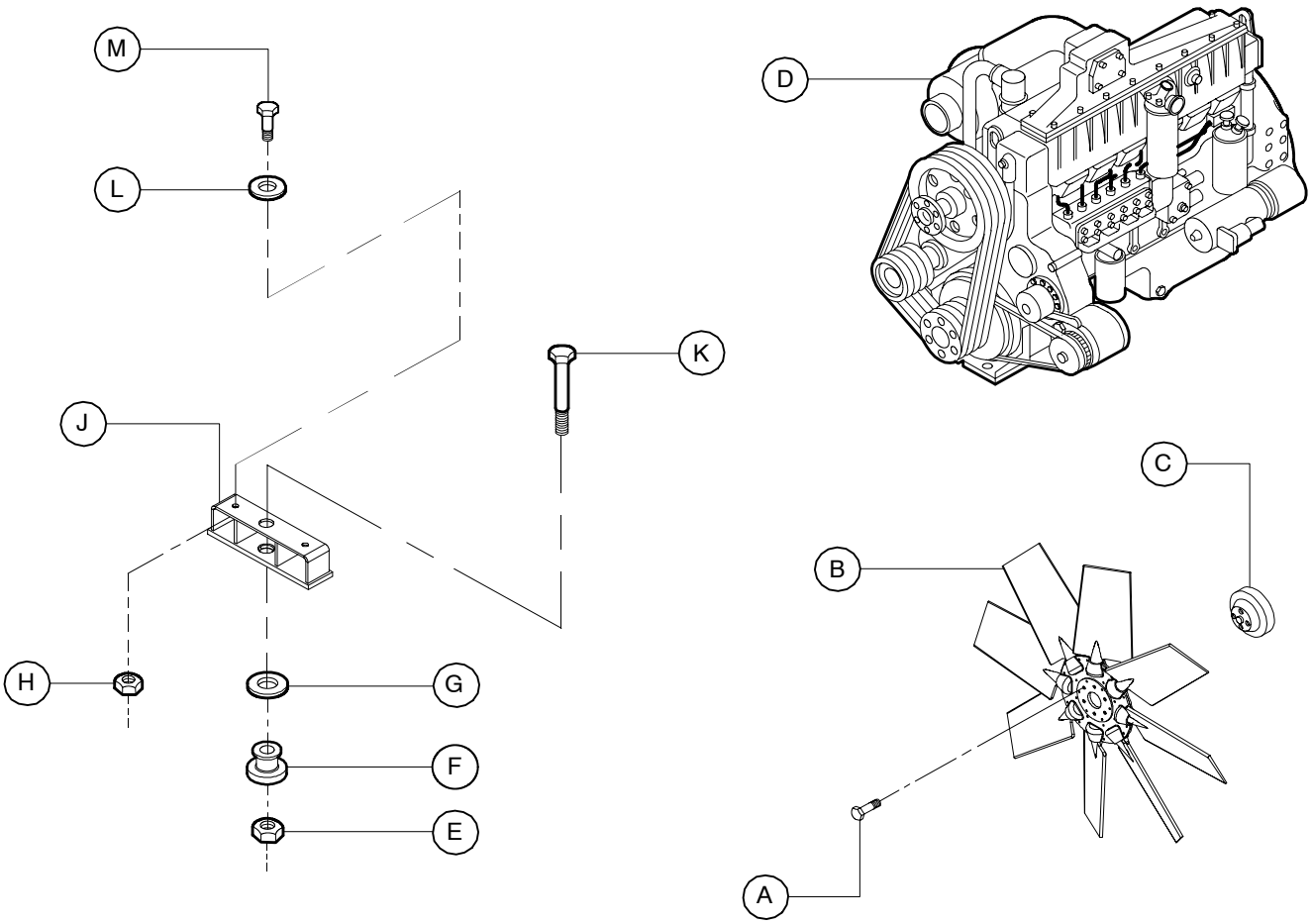
ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	36504389	2	ROD , TIE	X	95934956	2	WASHER
B	36140730	2	NUT , JAM	Y	36719557	1	DRAWBAR
C	35588961	2	BALL JOINT , OUTER	Z	35107168	1	PIN , HINGE
D	35221894	2	FITTING , LUBE	A1	95201455	2	PIN , COTTER
E	36753259	1	AXLE , FRONT	A2	36753242	1	ARM , CENTER
F	95717369	1	PIN , ROLL	A3	35588953	2	BALLJOINT , INNER
G	35221894	1	FITTING , LUBE	A4	35140722	2	NUT , JAM
H	95338554	2	PIN , ROLL	A5	36719219	1	LATCH
J	95239927	4	WASHER	A6	35141167	1	SPRING
K	36851566	1	L.H. KNUCKLE ASSEMBLY	A7	95098703	2	PIN , ROLL
L	36851574	1	R.H. KNUCKLE ASSEMBLY	A8	36851376	1	FRONT AXLE ASSEMBLY
M	95673042	2	PIN , ROLL	A9	36851384	1	REAR AXLE ASSEMBLY
N	35319045	2	PIN , KING	B1	36853042	2	TIE ROD ASSEMBLY (INCLUDES A,B,C,A3,A4)
P	95018982	2	PIN , COTTER				
Q	36719169	2	BRACKET		22077515	4	WHEEL
R	36719466	2	SPRING		36877991	4	TIRE
S	36719177	2	BRACKET		36878049	4	RING , CLAMP
T	35111590	2	BOLT , SHACKLE				
U	95318556	2	FITTING , LUBE				
V	35588755	1	PIN , CENTER				
W	95717377	2	PIN , ROLL				

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 9 01/02 B



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	95318556	2	FITTING , LUBE	X	36776839	2	FLANGE , BRAKE MTG
B	35588839	2	RIVET	Y	36719177	2	BRACKET
C	35589241	2	PLATE , CLAMP	Z	36719169	2	BRACKET
D	35111566	8	NUT	A1	36851608	2	INNER BEARING
E	36851640	1	AXLE , REAR	A2	36851624	2	INNER RACE
F	36719466	2	SPRING	A3	36851632	2	SEAL
G	35111590	2	BOLT , SHACKLE	A4	36776821	8	NUT , STUD
H	95018982	2	PIN , COTTER	A5	36853117	2	WASHER , LOCK
J	35834621	4	U-BOLT				
K	36851665	2	HUB ASSEMBLY (INCLUDES ITEMS N, L, A2)				
L	36764983	8	STUD				
M	36851590	2	OUTTER BEARING				
N	36851616	2	OUTER RACE				
P	36853109	2	WASHER , FLAT				
Q	36853091	2	NUT				
R	36776813	2	CAP , GREASE				
S	95272902	2	PIN , COTTER				
T	--------	1	PARKING BRAKE ASSEMBLY				
U	36A2D326Z1	8	BOLT				
V	95934741	8	WASHER , FLAT				
W	95916573	8	NUT				

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 10 08/01 A



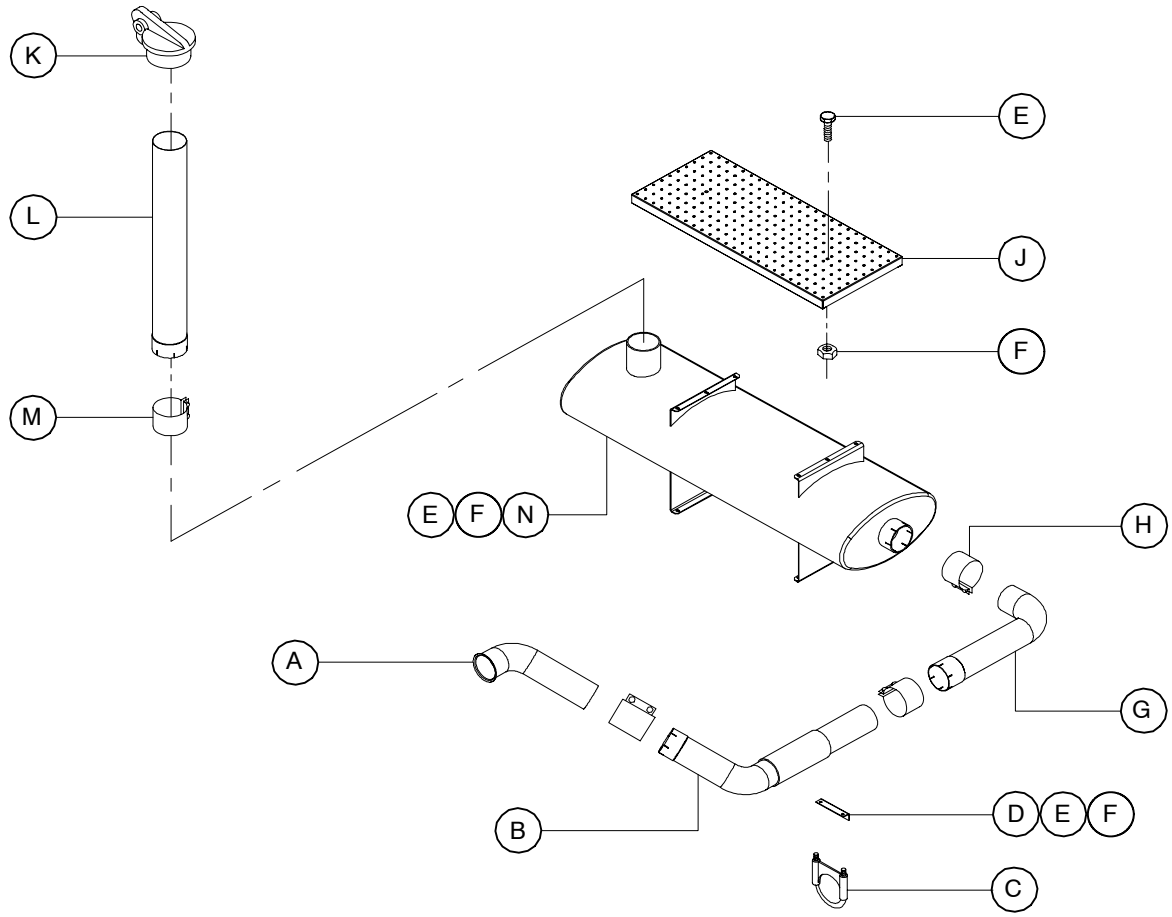
ITEM	CPN	QTY	DESCRIPTION
A	95940920	6	SCREW
B	36884047	1	FAN ASSEMBLY
C	54409339	1	SPACER , FAN
D	54661533	1	ENGINE , QSX-15 CUMMINS
E	35297340	1	NUT
F	35584556	1	MOUNT , RUBBER
G	35273937	1	WASHER
H	35297340	2	NUT
J	54570122	1	BRACKET , ENGINE
K	96700919	1	SCREW
L	95935011	2	WASHER
M	36763670	2	SCREW

ENGINE FILTERS

35362243	ENGINE FUEL FILTER
35362235	ENGINE OIL FILTER
35362268	ENGINE WATER SEPARATOR FILTER
35362250	PRIMARY FUEL FILTER

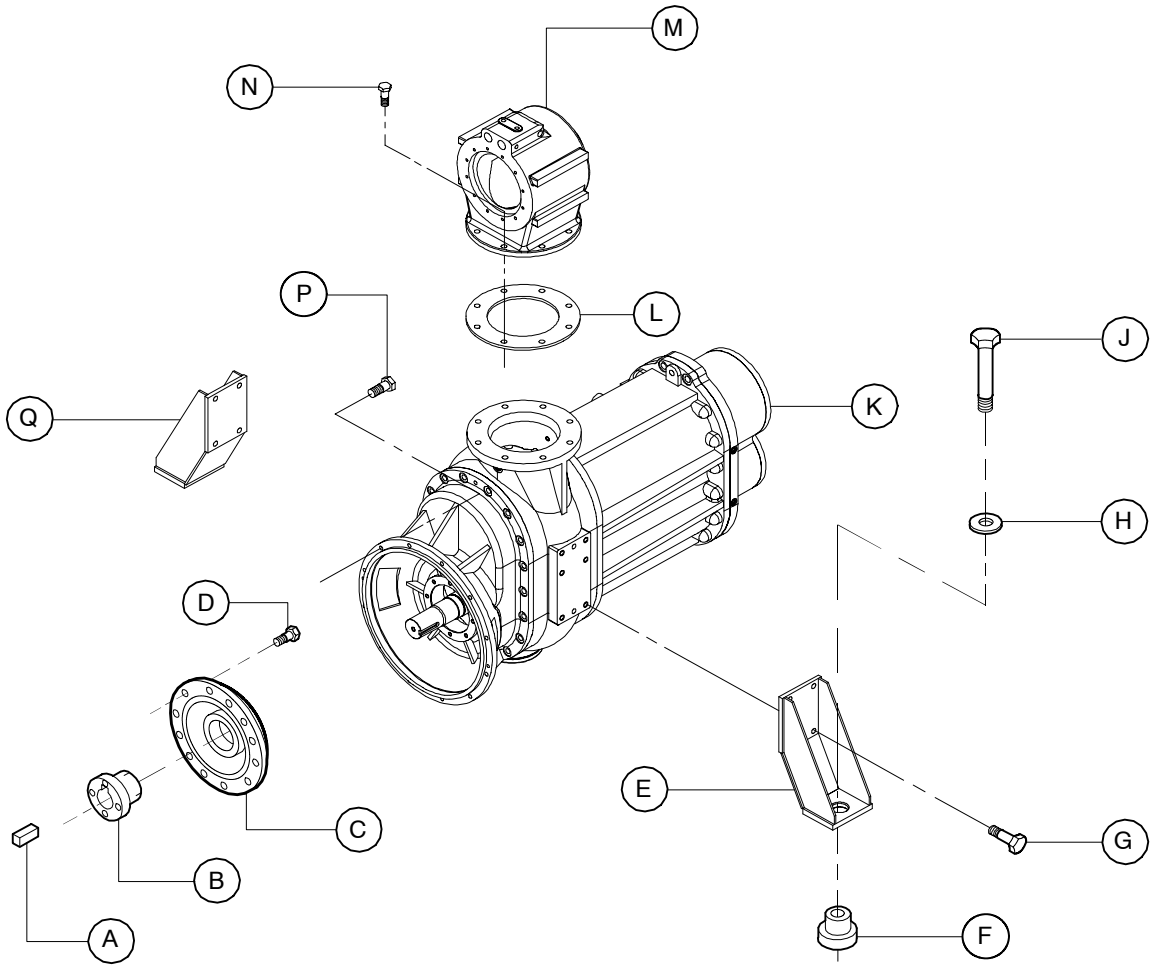
MANUAL NO. — DRAWING NO. DATE / REV:
22063556 11 09/01 A

EXHAUST ASSEMBLY



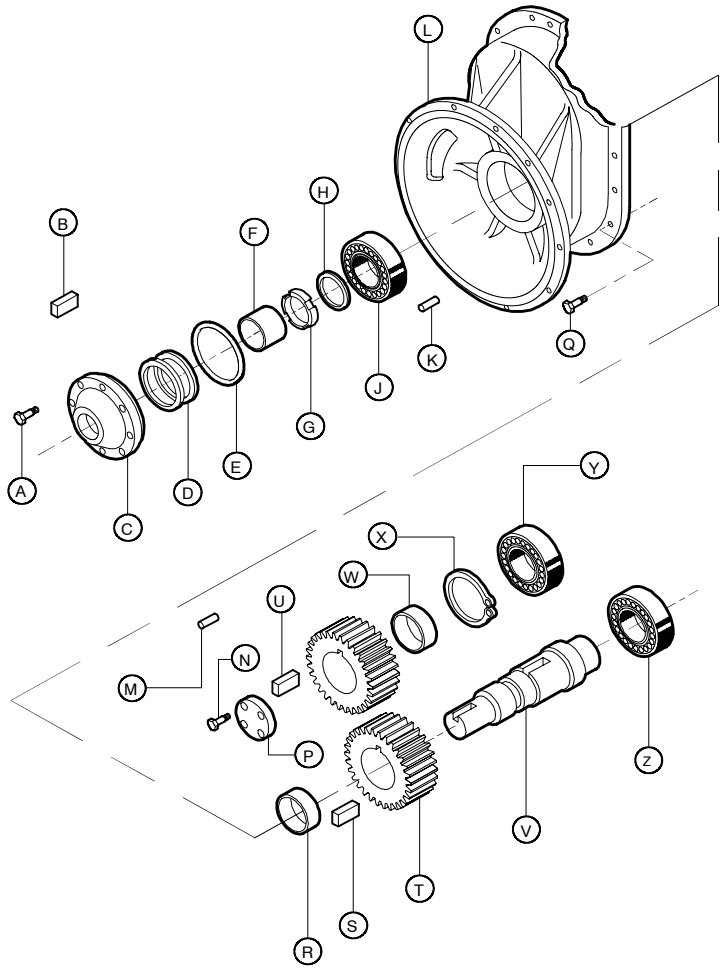
ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	54603774	1	PIPE , ENGINE TURBO				
B	54616552	1	PIPE , EXHAUST (STANDARD)				
	54738752	1	PIPE , EXHAUST (IQ)				
C	35127653	1	CLAMP				
D	35611235	1	SUPPORT , PIPE				
E	36880995	12	SCREW				
F	36879195	12	NUT				
G	54616560	1	PIPE , EXHAUST				
H	35307131	3	CLAMP , SEAL				
J	54629589	1	STEP				
K	35851351	1	CAP , RAIN				
L	54629126	1	PIPE , EXHAUST				
M	36799807	1	CLAMP , SEAL				
N	54603204	1	MUFFLER				
	54662010	1	WRAP , EXHAUST				
	54721105	1	KIT , WRAP WIRE KIT				

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 12 02/02 B



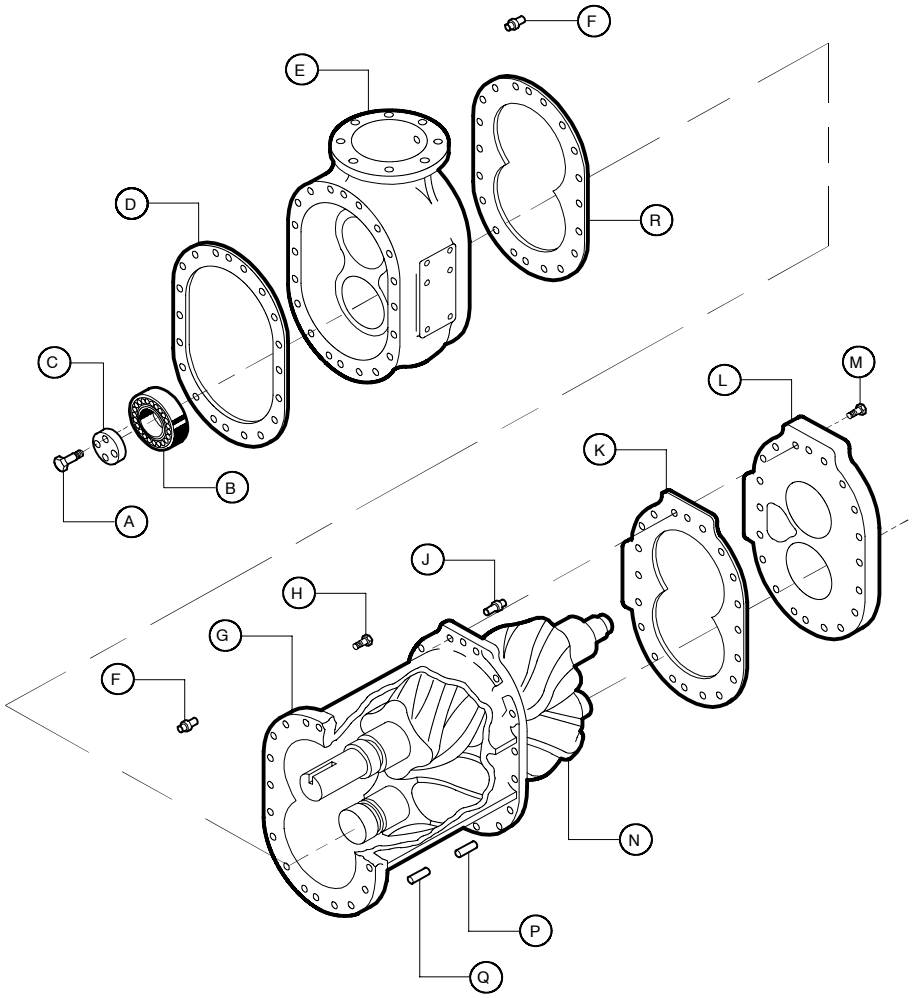
ITEM	CPN	QTY	DESCRIPTION
A	35116086	1	KEY , BUSHING
B	35307784	1	BUSHING
C	54540141	1	COUPLING
D	95941092	12	SCREW
E	54542535	2	BRACKET , AIR END
F	35584556	2	MOUNT , RUBBER
G	35375385	8	SCREW
H	35273937	2	WASHER
J	96700919	2	SCREW
K	42469809	1	AIR END ASSEMBLY
L	36754059	1	GASKET
M	36729531	1	UNLOADER ASSEMBLY
N	35375377	8	SCREW

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 13 08/01 A



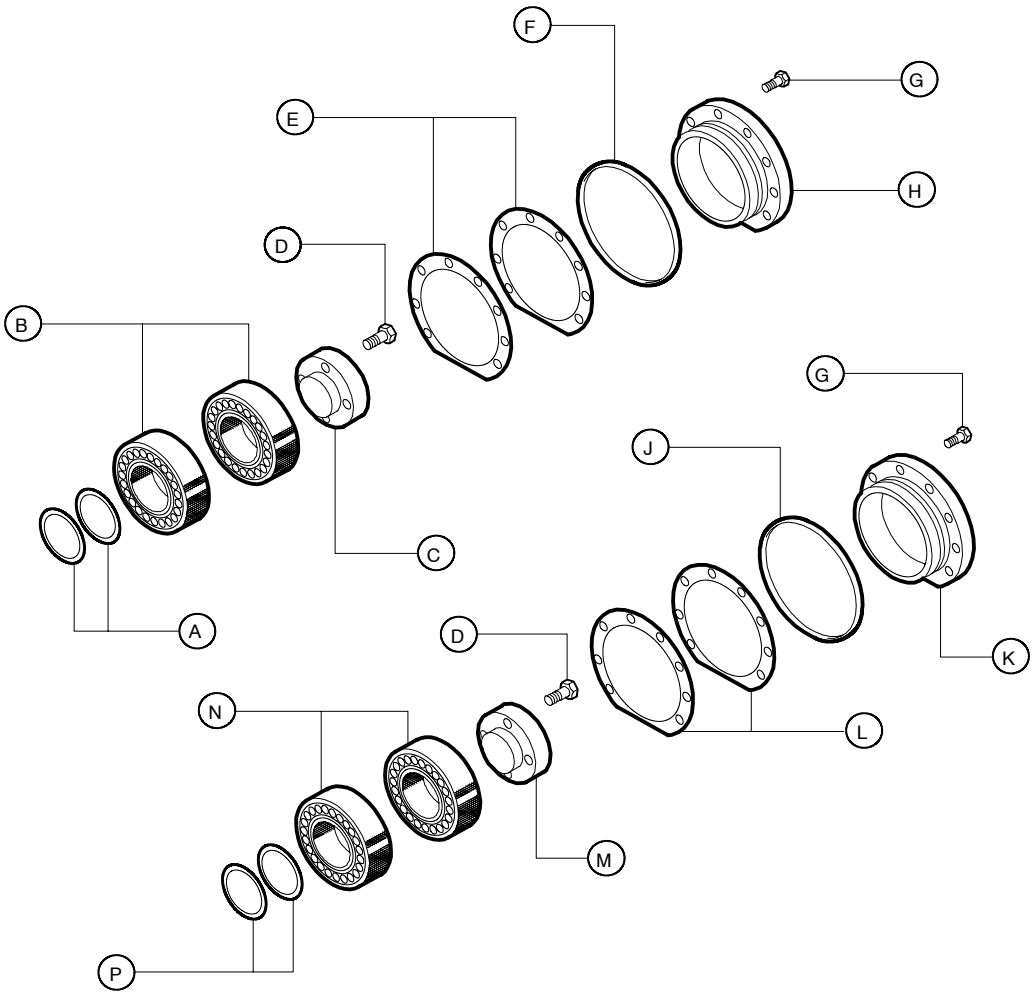
ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION	
A	35271139	8	SCREW	S	35300136	1	KEY	
B	35367069	1	KEY	T	35298470	1	GEAR SET	HP-1300
C	35849348	1	COVER		36758142	1	GEAR SET	P-1600
D	35299536	1	SHIM	U	35300144	1	KEY	
E	95358214	1	O-RING	V	35851195	1	SHAFT	
F	35596626	1	SEAL	W	35610286	1	SPACER	
G	35299775	1	LOCKNUT	X	95285599	1	RETAINING RING	
H	35300227	1	SPACER	Y	35610591	1	BEARING	
J	35299379	1	BEARING	Z	35299379	1	BEARING	
K	35365261	1	PIN					
L	36711083	1	GEAR CASE					
M	35295336	1	DOWEL					
N	35299569	4	SCREW					
P	35300177	1	PLATE , CLAMP					
Q	35295344	18	SCREW					
R	35300227	1	SPACER					

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 14 08/01 A



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	35293869	4	SCREW				
B	35610609	1	BEARING				
C	35373877	1	PLATE , CLAMP				
D	35820646	1	GASKET				
E	36754141	1	HOUSING , FRONT BEARING				
F	35365279	2	PIN				
G	36711109	1	HOUSING , ROTOR				
H	35272533	18	SCREW				
J	35365279	1	DOWEL				
K	35820661	1	GASKET				
L	36760890	1	HOUSING , REAR BEARING				
M	39101472	18	SCREW				
N	35092246	1	ROTOR SET				
P	35295336	1	DOWEL				
Q	35305325	1	DOWEL				
R	35820653	1	GASKET				

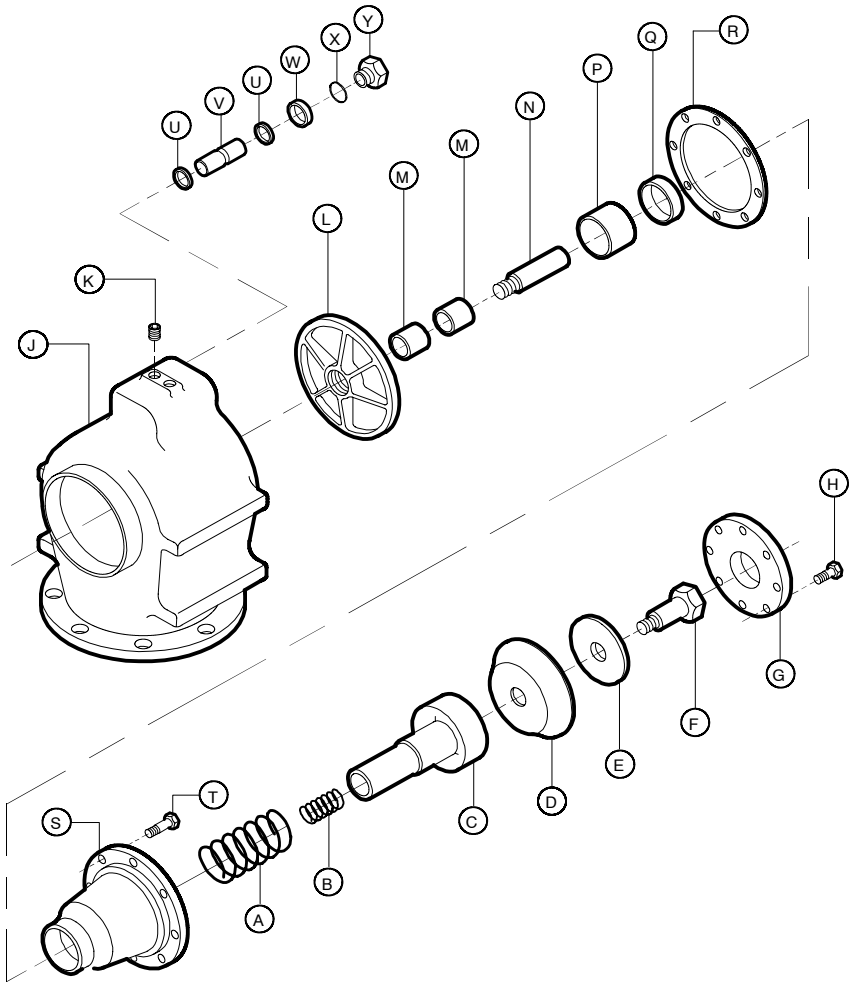
MANUAL NO. — DRAWING NO. DATE / REV:
54757919 15 08/01 A



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	35299510	SET	SHIM				
B	35299403	2	BEARING				
C	35610278	1	PLATE , CLAMP				
D	35299569	4	SCREW				
E	35373141	SET	SHIM				
F	95358446	1	O-RING				
G	35321520	8	SCREW				
H	36504330	1	CAP				
J	95870432	1	O-RING				
K	36504355	1	CAP				
L	35373133	SET	SHIM				
M	35606920	1	PLATE , CLAMP				
N	35299429	2	BEARING				
P	35299528	SET	SHIM				

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 16 08/01 A

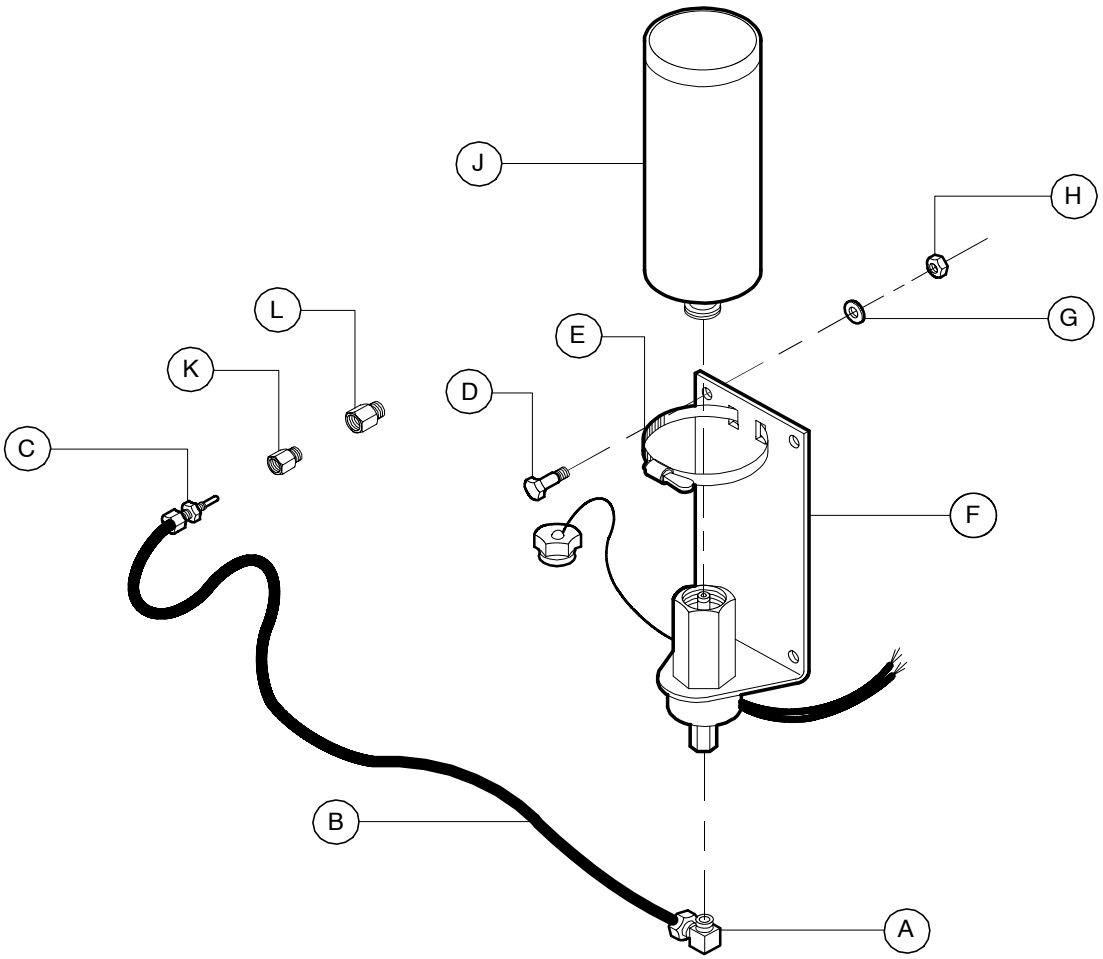
UNLOADER ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	35594878	1	SPRING , PISTON	W	35332626	1	SPACER
B	35594910	1	SPRING , VALVE	X	39102355	1	O-RING
C	35594829	1	PISTON	Y	35280528	1	PLUG
D	35594837	1	DIAPHRAGM				
E	35332618	1	WASHER , PISTON				
F	35A2D217	1	SCREW				
G	35594811	1	COVER , PISTON				
H	35374834	8	SCREW				
J	36729416	1	BODY , UNLOADER				
K	34A7SZ4	1	PLUG				
L	35594860	1	VALVE , UNLOADER				
M	35332659	1	BUSHING				
N	35332675	1	STEM , VALVE				
P	35332634	1	BUSHING , HOUSING				
Q	35332642	1	SEAL				
R	35594845	1	GASKET				
S	36729465	1	HOUSING , PISTON				
T	35374842	12	SCREW				
U	35331586	2	GROMMET				
V	35328210	1	VALVE				

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 17 08/01 A

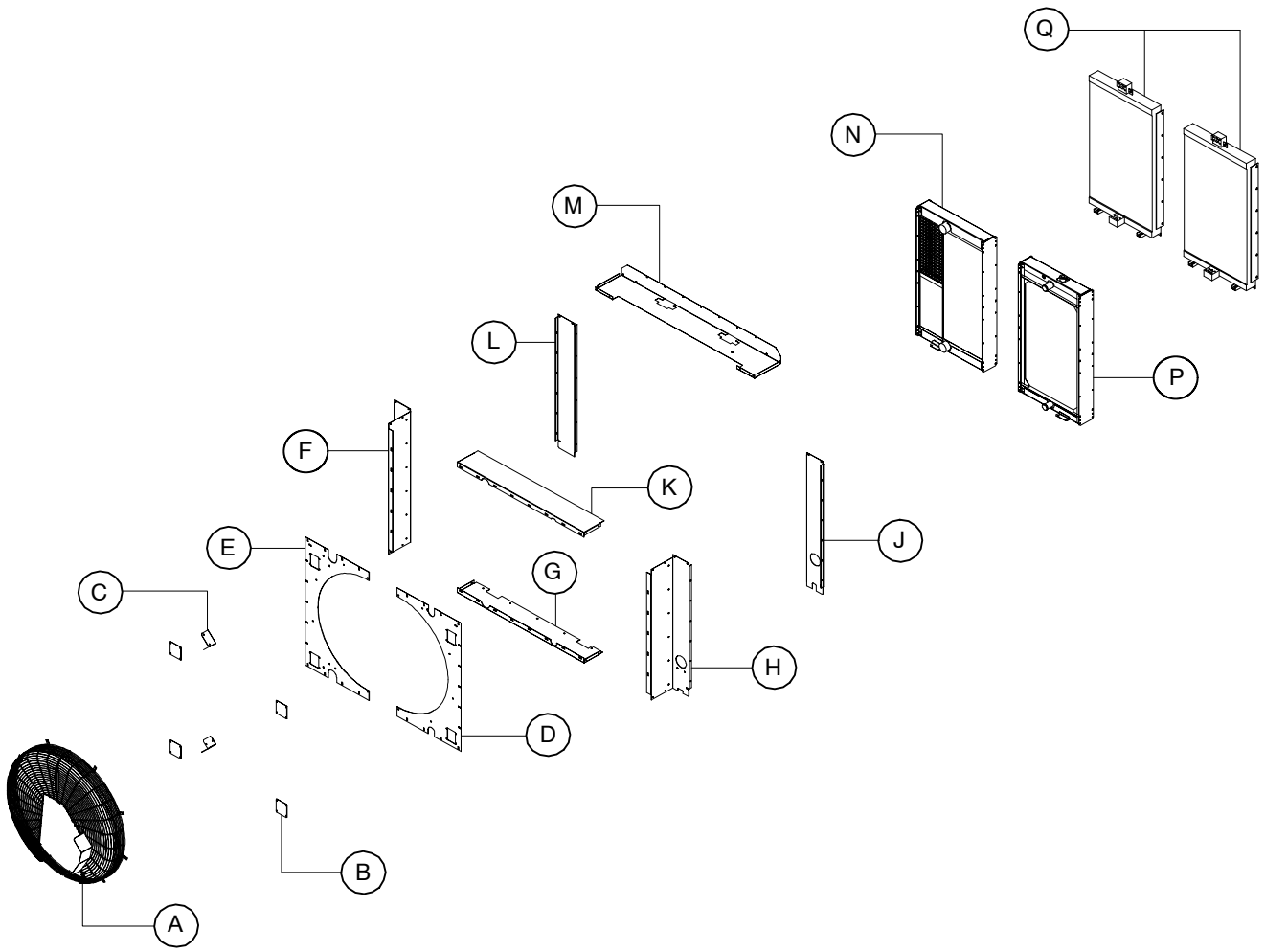
STARTING AID ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION
A	35103498	1	ELBOW
B	35132166	1	TUBING (84 INCHES)
C	35602812	1	ATOMIZER
D	35322908	4	SCREW
E	35103506	1	CLAMP
F	35357052	1	VALVE AND BRACKET ASSEMBLY
G	95043196	4	WASHER
H	92304500	4	NUT
J	35112911	1	CYLINDER , ETHER
K	95930301	1	BUSHING
L	54720719	1	ADAPTER (TO ENGINE CHARGE AIR RETURN)

MANUAL NO. — DRAWING NO. DATE / REV:
54665302 18 04/01 A

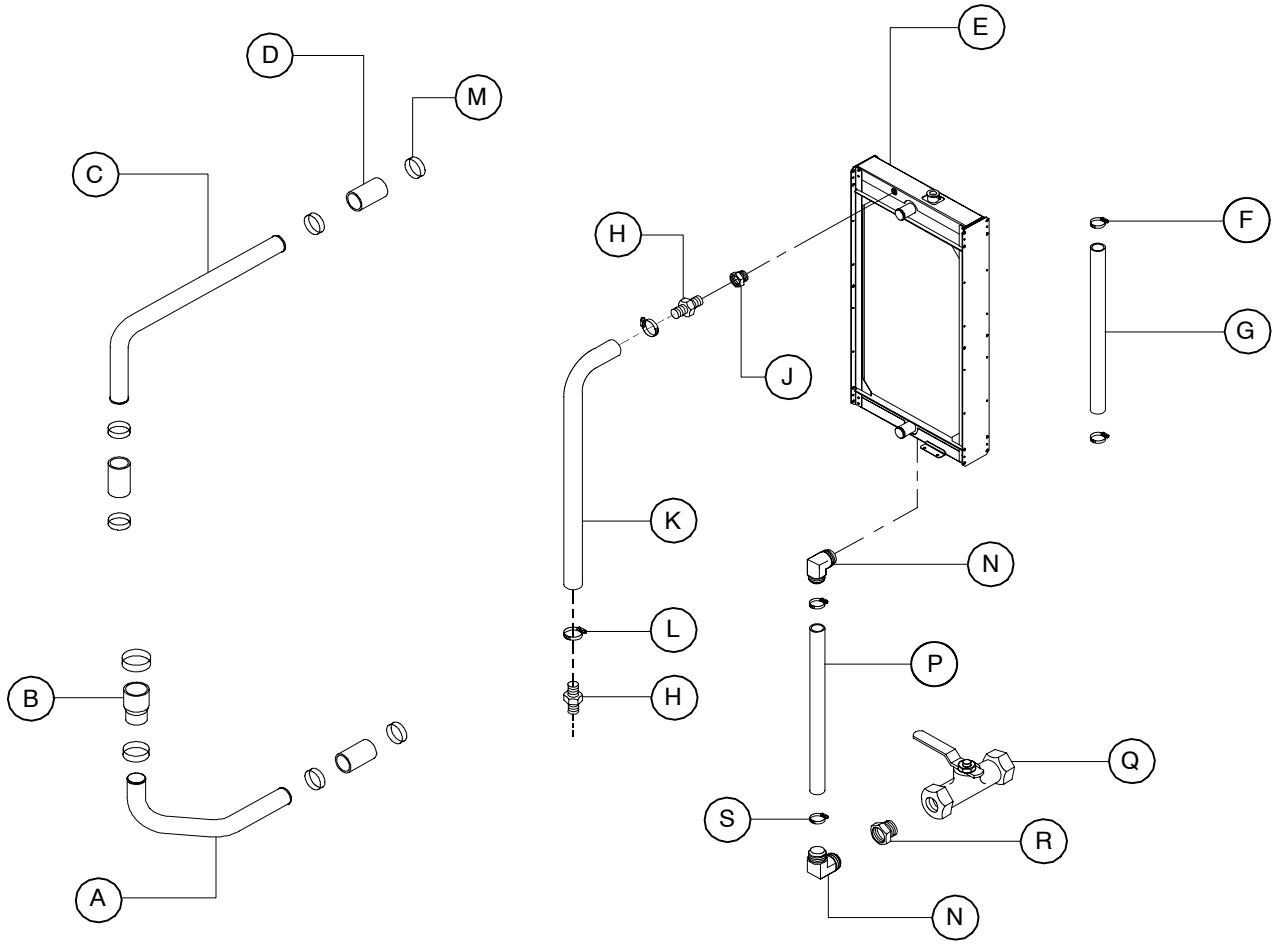
RADIATOR AND OIL COOLER



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	54501085	1	FAN GUARD ASSEMBLY				
B	54661426	4	PLATE , COVER				
C	54661459	2	BRACKET				
D	54507488	1	ORIFICE , L.H. FAN				
E	54507470	1	ORIFICE , R.H. FAN				
F	54507454	1	SUPPORT , R.H. SHROUD				
G	54507447	1	SUPPORT , BOTTOM SHROUD				
H	54507462	1	SUPPORT , L.H. SHROUD				
J	54521422	1	SUPPORT , L.H. REAR SHROUD				
K	54501439	1	SUPPORT , TOP SHROUD				
L	54521430	1	SUPPORT , R.H. REAR SHROUD				
M	54521448	1	SUPPORT , TOP REAR SHROUD				
N	54501846	1	COOLER , A/C FUEL				
P	54501838	1	RADIATOR				
Q	54501853	2	COOLER , OIL				

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 19 08/01 A

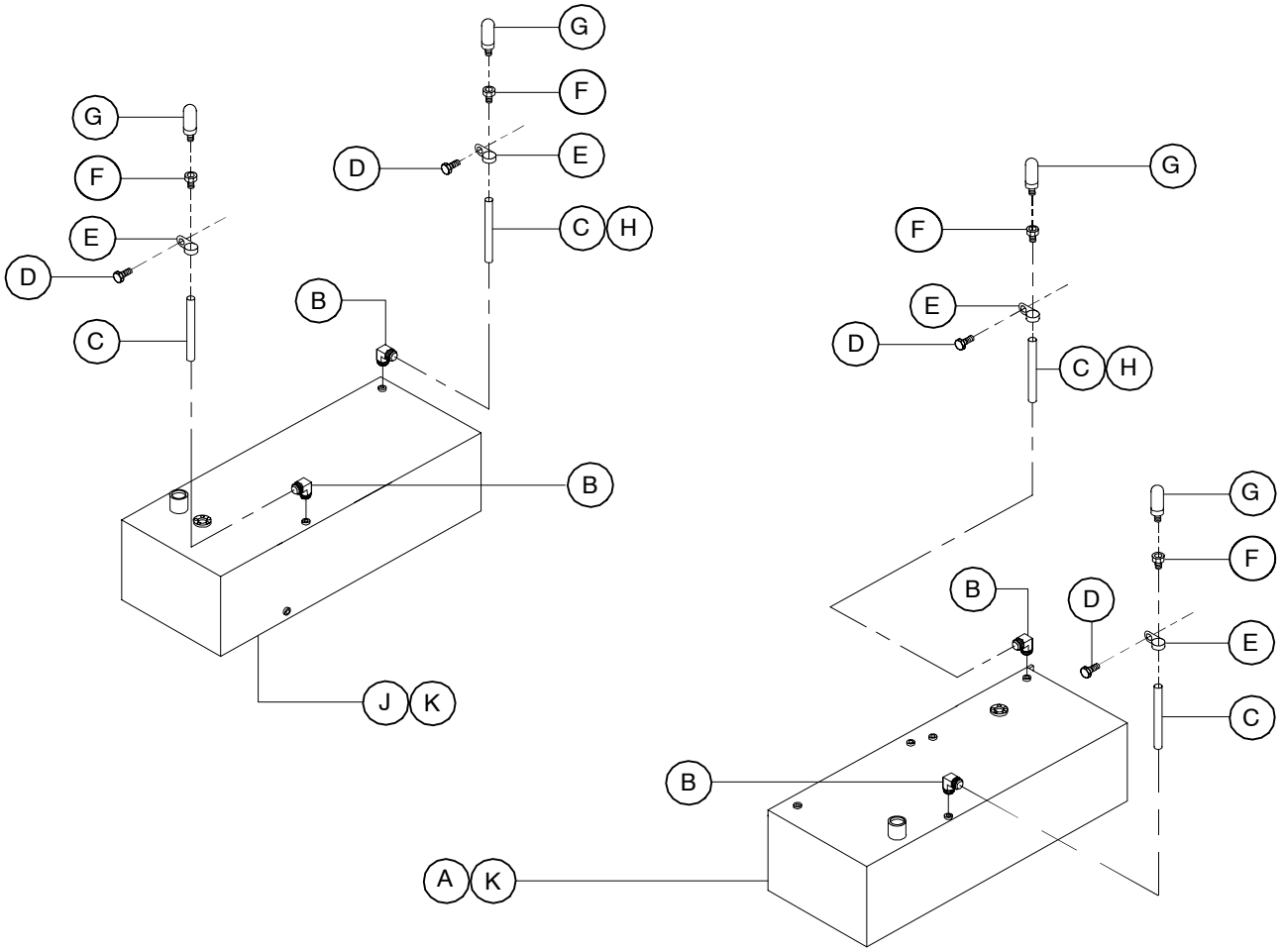
RADIATOR PIPING



ITEM	CPN	QTY	DESCRIPTION
A	54642350	1	TUBE , LOWER RADIATOR
B	36767903	1	HOSE , REDUCER
C	54642343	1	TUBE , UPPER RADIATOR
D	35330570	3	HOSE , CONNECTOR
E	54501838	1	RADIATOR
F	95235131	2	CLAMP
G	35135458	1	HOSE , BY-PASS (55 INCHES)
H	35363662	1	FITTING , BARBED
J	43212216	1	ADAPTER
K	35285600	1	HOSE , VENT (52 INCHES)
L	95264776	2	CLAMP
M	35222017	8	CLAMP
N	35366665	1	ELBOW
P	35326578	1	HOSE , DRAIN (115 INCHES)
Q	35576115	1	VALVE , BALL
R	95953949	1	ADAPTER
S	95220844	2	CLAMP
	54474572	1	SWITCH , LEVEL

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 20 08/01 A

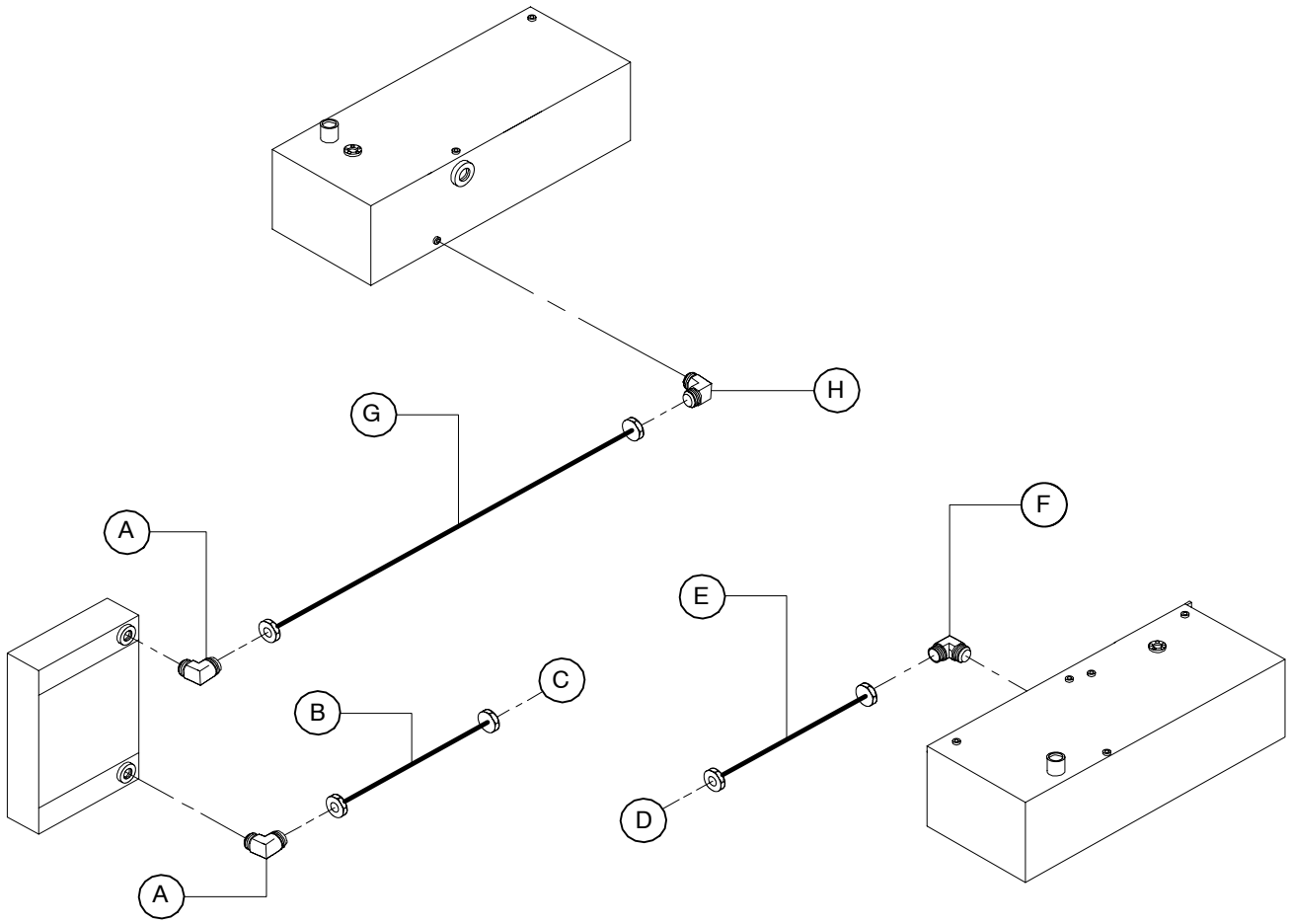
FUEL TANK VENT PIPING



ITEM	CPN	QTY	DESCRIPTION
A	54594098	1	TANK , R.H. FUEL
B	35369354	1	ELBOW
C	35356484	1	TUBING (23 INCHES)
D	92368687	1	SCREW
E	35253038	1	CLAMP
F	35369339	1	REDUCER
G	35322395	1	BREATHER
H	35356484	1	TUBING (40 INCHES HSRG)
J	54594080	1	TANK , L.H. FUEL
K	35279025	12	SCREW

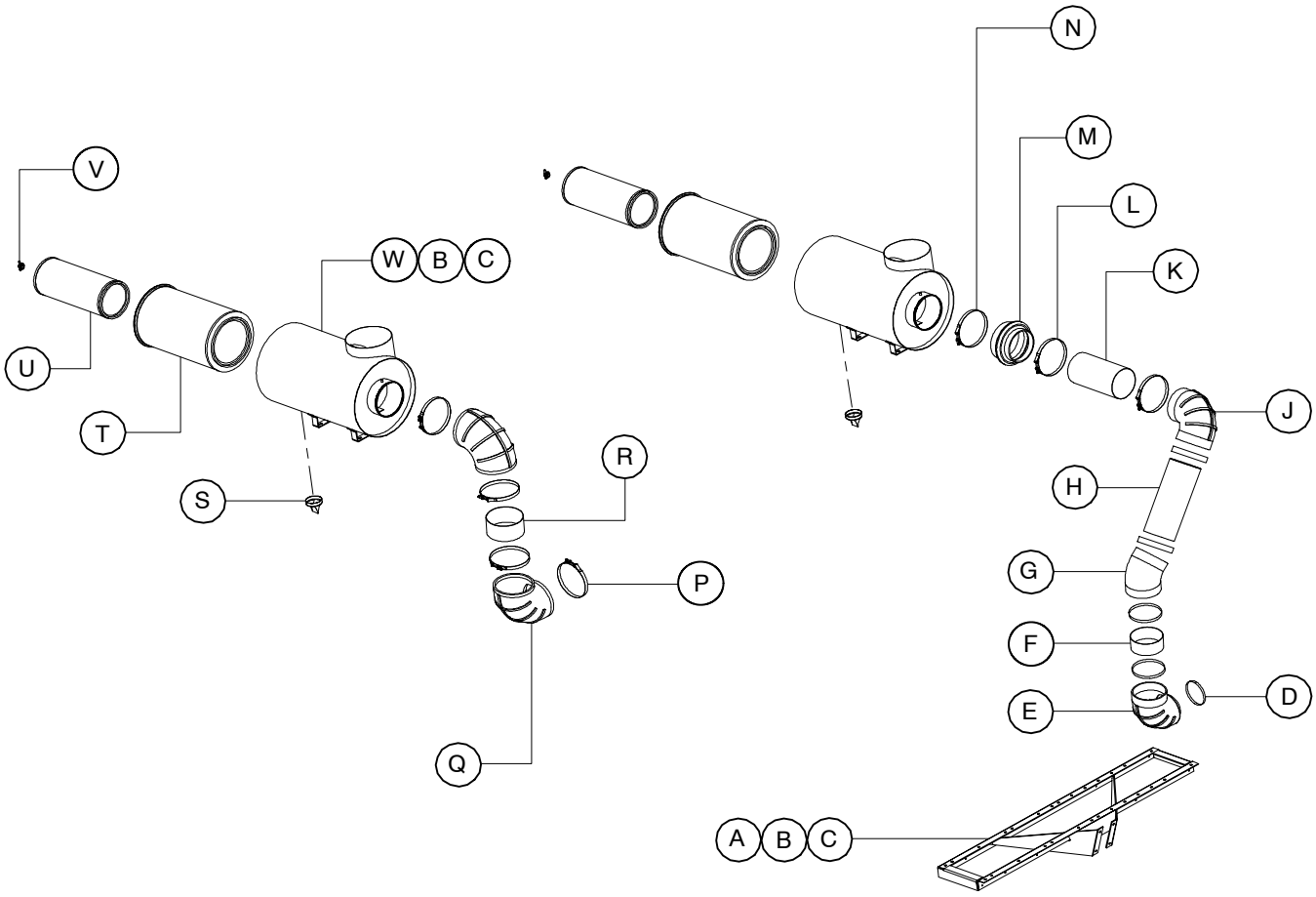
MANUAL NO. — DRAWING NO. DATE / REV:
54757919 21 08/01 A

FUEL PIPING



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	35279081	1	ELBOW				
B	35305499	1	HOSE ASSEMBLY				
C	OUT OF FUEL PUMP ON ENGINE						
D	INTO FUEL PUMP ON ENGINE						
E	35136548	1	HOSE ASSEMBLY (HSRG)				
	35325083	1	HOSE ASSEMBLY (WAGON WHEEL)				
F	35286756	1	ELBOW				
G	22060156	1	HOSE ASSEMBLY (HSRG)				
	22060149	1	HOSE ASSEMBLY (WAGON WHEEL)				
H	35309210	1	ELBOW				
	36845014	1	CAP , FUEL TANK				
	54672811	1	SENDER , FUEL LEVEL				

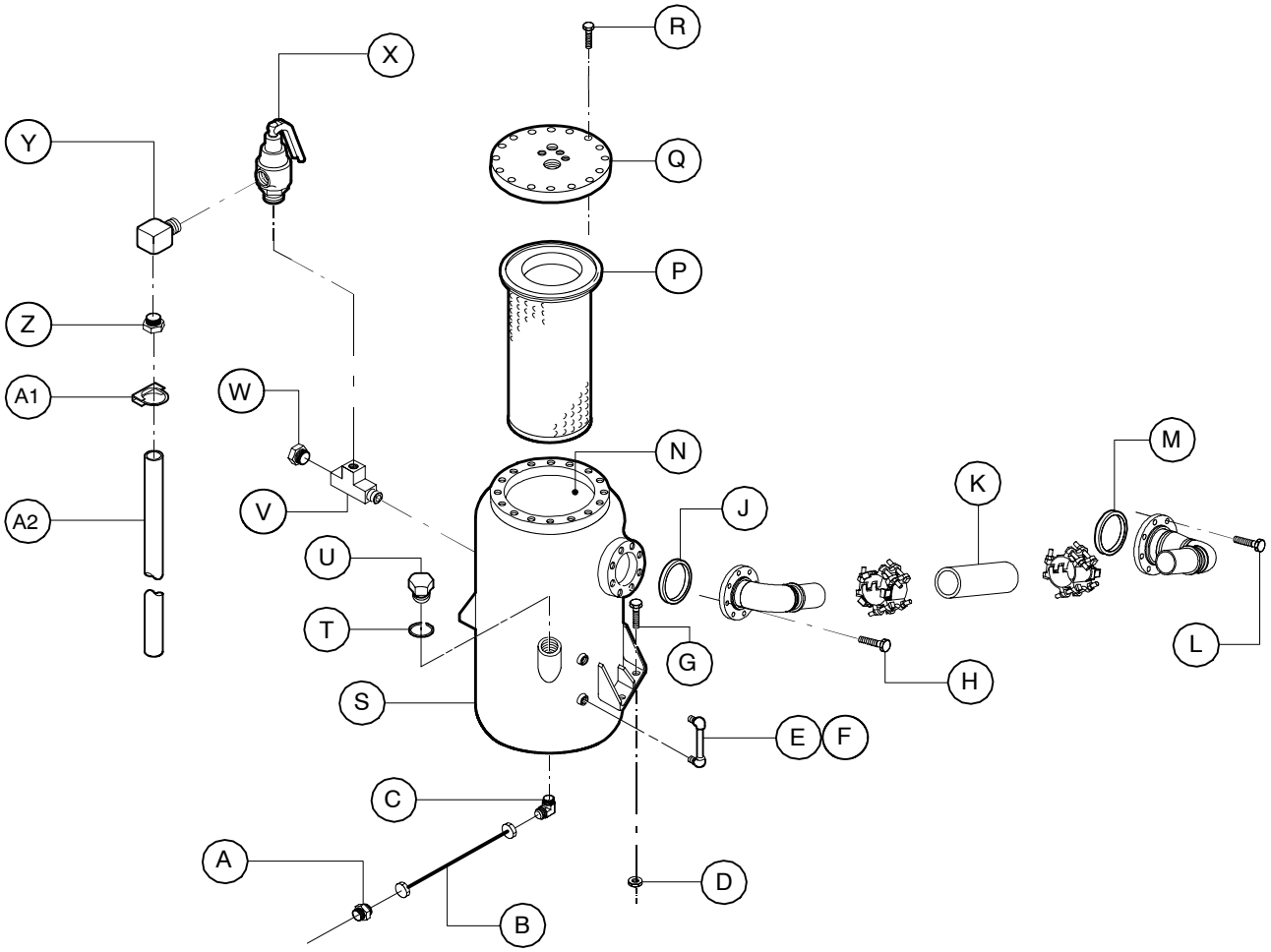
MANUAL NO. — DRAWING NO. DATE / REV:
54757919 22 08/01 A



ITEM	CPN	QTY	DESCRIPTION
A	36879815	1	BRACKET , AIR CLEANER
B	36880995	12	SCREW
C	36879195	12	NUT
D	35161025	1	CLAMP
E	54599956	1	ELBOW , RUBBER
F	35112648	1	TUBE
G	35509074	1	ELBOW , RUBBER
H	35123272	1	TUBE
J	35112630	1	ELBOW , RUBBER
K	35505866	1	TUBE
L	35119858	1	CLAMP
M	35141290	1	HOSE , HUMP
N	35129071	1	CLAMP
P	35129071	4	CLAMP
Q	36862886	2	ELBOW , RUBBER
R	35300110	1	TUBE
S	36867778	2	EVACUATOR
T	36864361	2	ELEMENT , PRIMARY
U	36864379	2	ELEMENT , SAFETY
V	35388982	2	NUT , WING
W	36864346	2	AIR CLEANER ASSEMBLY
	36847838	2	SWITCH , AIR FILTER

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 23 08/01 A

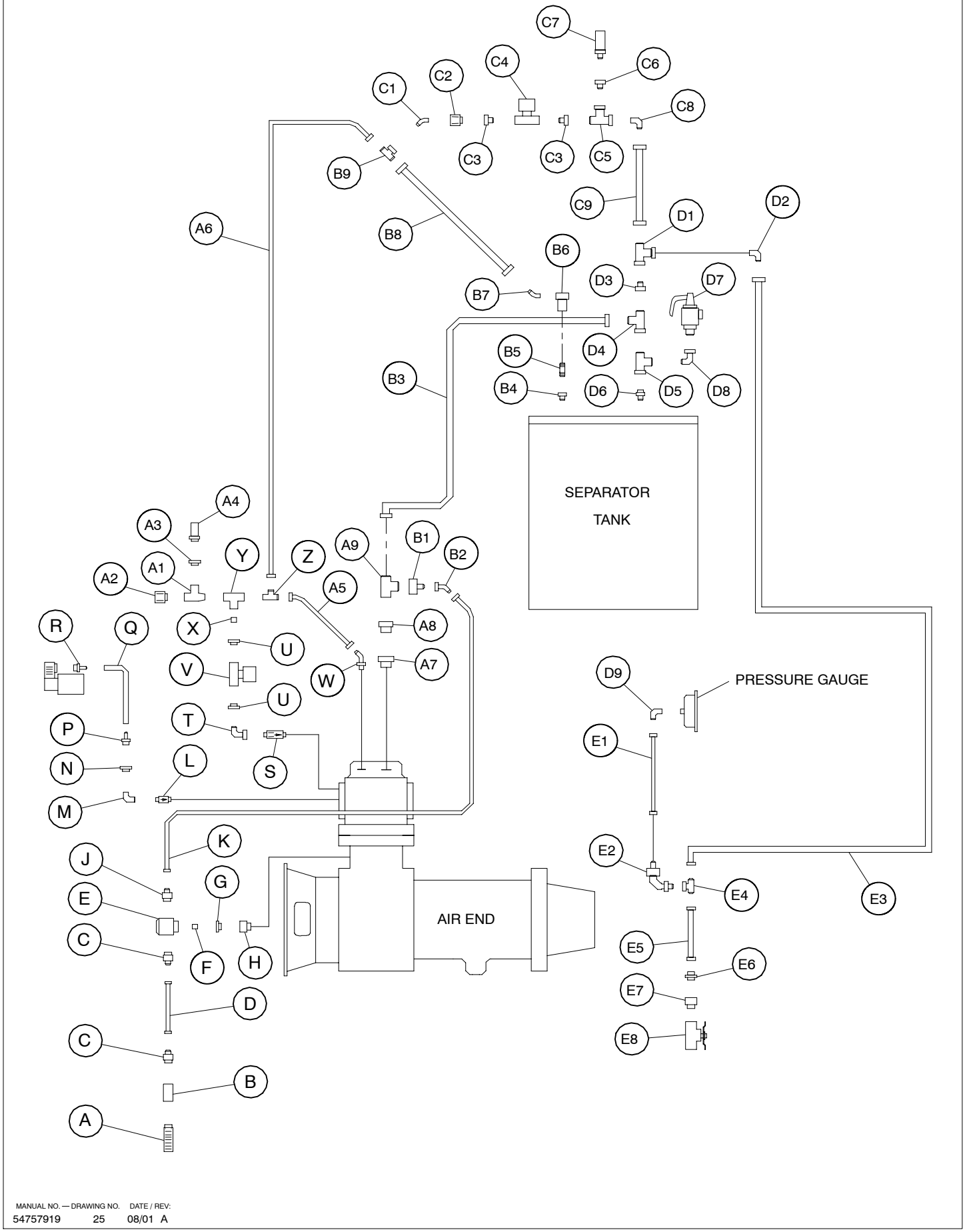
SEPARATOR TANK ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	95219747	1	CONNECTOR		36898922	1	PROBE , TEMPERATURE
B	36878254	1	HOSE ASSEMBLY				
C	35294750	1	ELBOW				
D	36879203	2	NUT				
E	54629464	1	GLASS , SIGHT				
F	54627799	2	ELBOW				
G	36877793	2	SCREW				
H	36765121	8	SCREW				
J	36786283	1	GASKET				
K	54612437	1	DISCHARGE HOSE ASSEMBLY				
L	36765121	8	SCREW				
M	36856656	1	GASKET				
N	36754414	1	LINER , SHELL				
P	36754406	1	ELEMENT , SEPARATOR				
	35610617	1	GASKET				
Q	54612429	1	COVER , TANK				
R	95934170	16	SCREW				
S	54612403	1	TANK , SEPARATOR				
T	35277797	1	O-RING				
U	35802933	1	PLUG , OIL FILL				
V	95954285	1	TEE				
W	95942108	1	ADAPTER				
X	36764371	1	VALVE , SAFETY				
Y	95953311	1	ELBOW				
Z	36764389	1	ADAPTER				
A1	35192178	1	CLAMP				
A2	54744149	1	PIPE , SAFETY VALVE				

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 24 07/02 B

AIR PIPING


C7
C6
C4
C2
C1
C8
C3
C3
C5
B9
C9
D2
D1
A6
B8
B6
B7
D3
D7
D4
B5
B3
B4
D6
D5
D8
SEPARATOR
TANK
A4
A3
A9
B1
B2
Y
Z
A1
A2
A5
R
Q
X
A8
U
V
W
A7
PRESSURE GAUGE
D9
U
T
P
E1
S
N
L
M
K
J
G
E
E2
E4
E3
C
F
H
AIR END
E5
E6
D
E7
C
E8
B
A
MANUAL NO. — DRAWING NO. DATE / REV:
54757919 25 08/01 A

A	35132299	SILENCER
B	95989554	COUPLING
C	35290147	CONNECTOR
D	35282987	HOSE ASSEMBLY
E	35335017	VALVE , BLOWDOWN
F	95944575	NIPPLE
G	95944633	BUSHING
H	35279116	ADAPTER
J	35283126	CONNECTOR
K	35298512	HOSE ASSEMBLY
L	35248145	VALVE , CHECK
M	95954095	ELBOW
N	95930301	BUSHING
P	95287629	ADAPTER
Q	35283241	HOSE ASSEMBLY
R	95287629	ADAPTER
S	36840460	VALVE , CHECK
T	35294453	ELBOW
U	95940748	BUSHING
V	36840841	VALVE , SOLENOID
W	35279835	ELBOW
X	95944575	NIPPLE
Y	95954194	TEE
Z	35283050	TEE
A1	95944690	TEE
A2	35322346	ORIFICE , .156
A3	95930301	BUSHING
A4	36920825	REDUCER
A5	36841815	TUBE ASSEMBLY
A6	35284538	HOSE ASSEMBLY
A7	35280510	ADAPTER
A8	95944617	BUSHING
A9	35330117	TEE
B1	35365774	REDUCER
B2	35287911	ELBOW
B3	35298512	HOSE ASSEMBLY
B4	95944625	BUSHING
B5	95944575	NIPPLE
B6	36854495	REGULATOR
B7	35290253	ELBOW
B8	35282953	HOSE ASSEMBLY
B9	35283092	TEE
C1	35290253	ELBOW
C2	35123124	ORIFICE
C3	95940748	BUSHING
C4	36840841	VALVE , SOLENOID
C5	95944690	TEE
C6	95930301	BUSHING
C7	54496773	REDUCER
C8	35279934	ELBOW
C9	35282961	HOSE ASSEMBLY
D1	35283084	TEE
D2	35283068	ELBOW
D3	35321165	REDUCER
D4	35287739	TEE
D5	35330117	TEE
D6	36863702	ADAPTER
D7	22061394	VALVE , SAFETY
D8	95954111	ELBOW
D9	35280098	ELBOW
E1	35282979	HOSE ASSEMBLY
E2	36852499	ELBOW
E3	35283001	HOSE ASSEMBLY
E4	35283092	TEE
E5	35282961	HOSE ASSEMBLY
E6	35336139	FITTING , BULKHEAD
E7	35367846	CONNECTOR
E8	35324839	VALVE , BALL

MANUAL NO. — DRAWING NO. DATE / REV:
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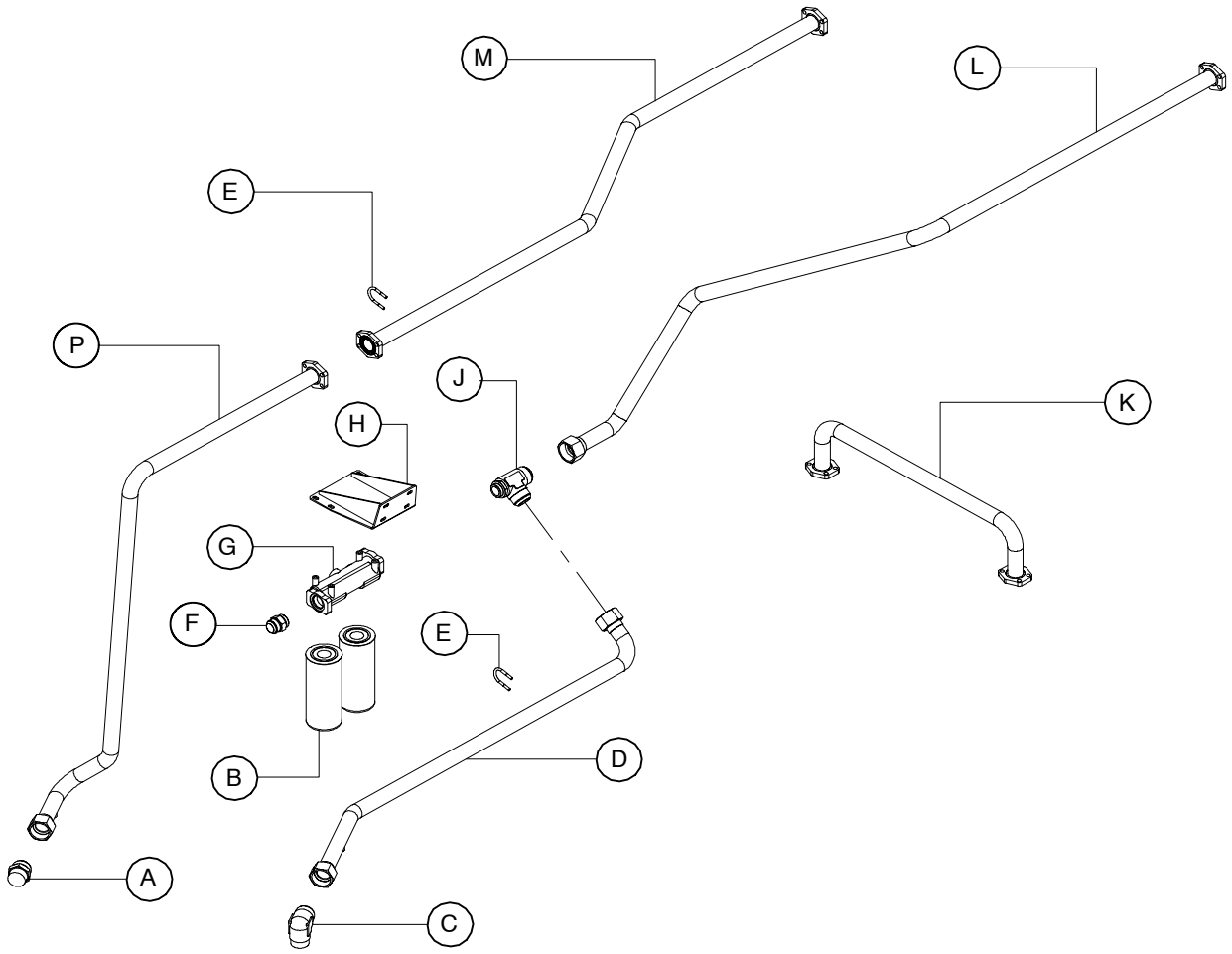
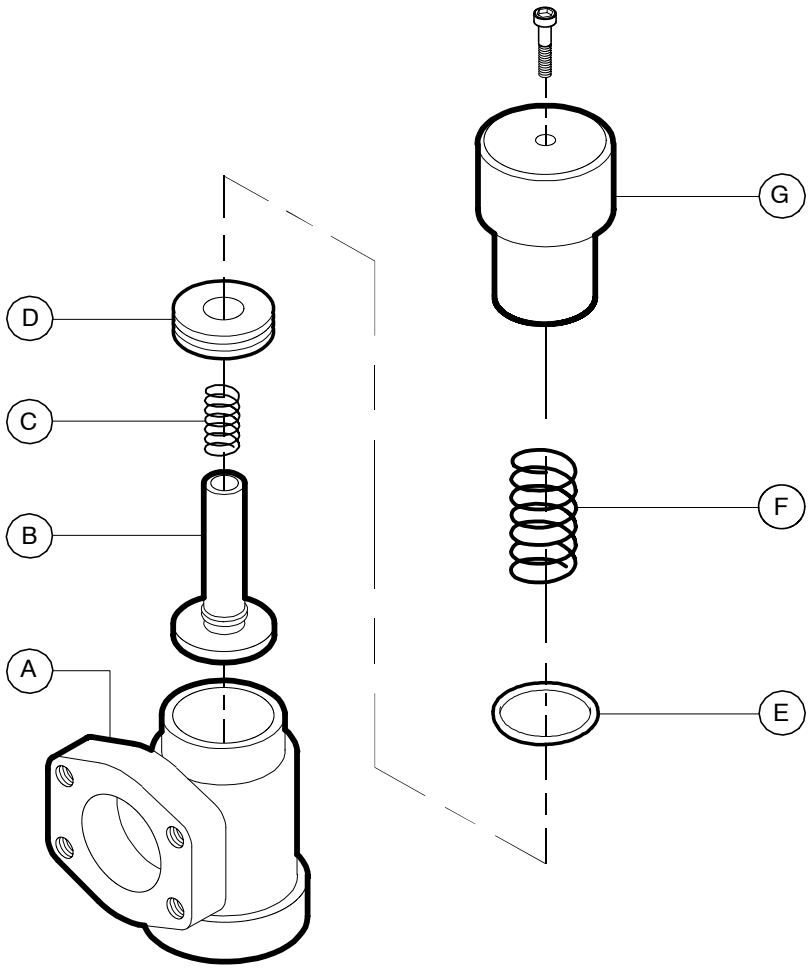


ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	35335124	1	CONNECTOR				
B	36897346	1	ELEMENT , FILTER				
C	95286910	1	ELBOW				
D	54625348	1	TUBE ASSEMBLY				
E	36506756	1	CLAMP				
F	35296409	1	CONNECTOR				
G	39871306	1	HEAD , FILTER				
H	54625173	1	BRACKET , FILTER				
J	36756906	1	TEE				
K	54628185	1	TUBE ASSEMBLY				
L	54625363	1	TUBE ASSEMBLY				
M	54628177	1	TUBE ASSEMBLY				
N	54625355	1	TUBE ASSEMBLY				

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 27 08/01 A



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	54699731	1	BODY , CHECK VALVE				
B	36792380	1	CHECK VALVE ASSEMBLY				
C	54699749	1	SPRING , CHECK VALVE				
D	36792927	1	PISTON				
E	54699756	1	O-RING				
F	36794790	1	SPRING , MAIN				
G	36794808	1	CAP				

MINIMUM PRESSURE CHECK VALVE ASSEMBLY 54642152

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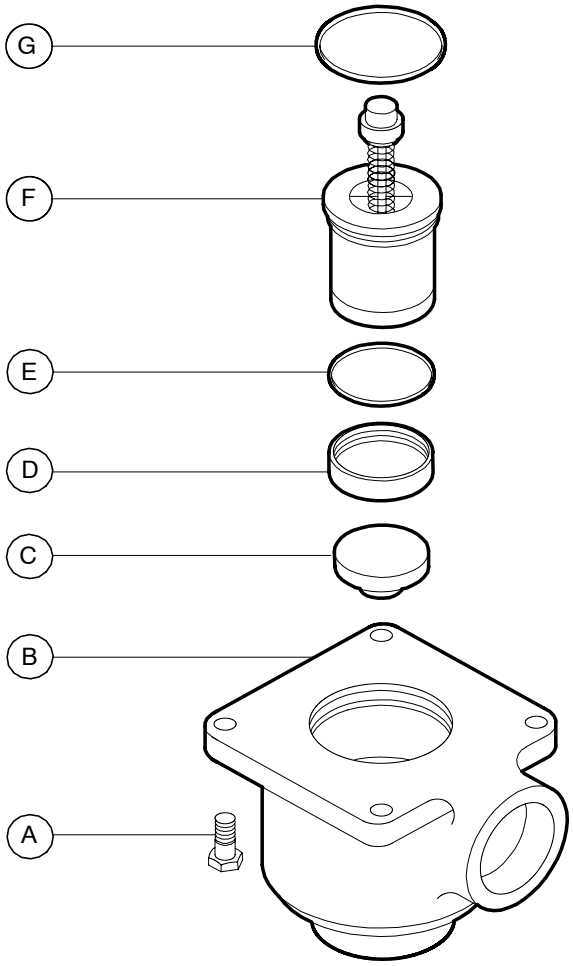
54757919 28 08/01 A



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	95920674	4	SCREW				
B	35307537	1	BODY , VALVE				
C	35307545	1	SEAT , VALVE				
D	35307552	1	SLEEVE , VALVE				
E	35307560	1	SEAL , VALVE				
F	35307578	1	ELEMENT , VALVE				
G	35307586	1	GASKET , VALVE				

35825595 - OIL TEMPERATURE BY-PASS VALVE ASSEMBLY

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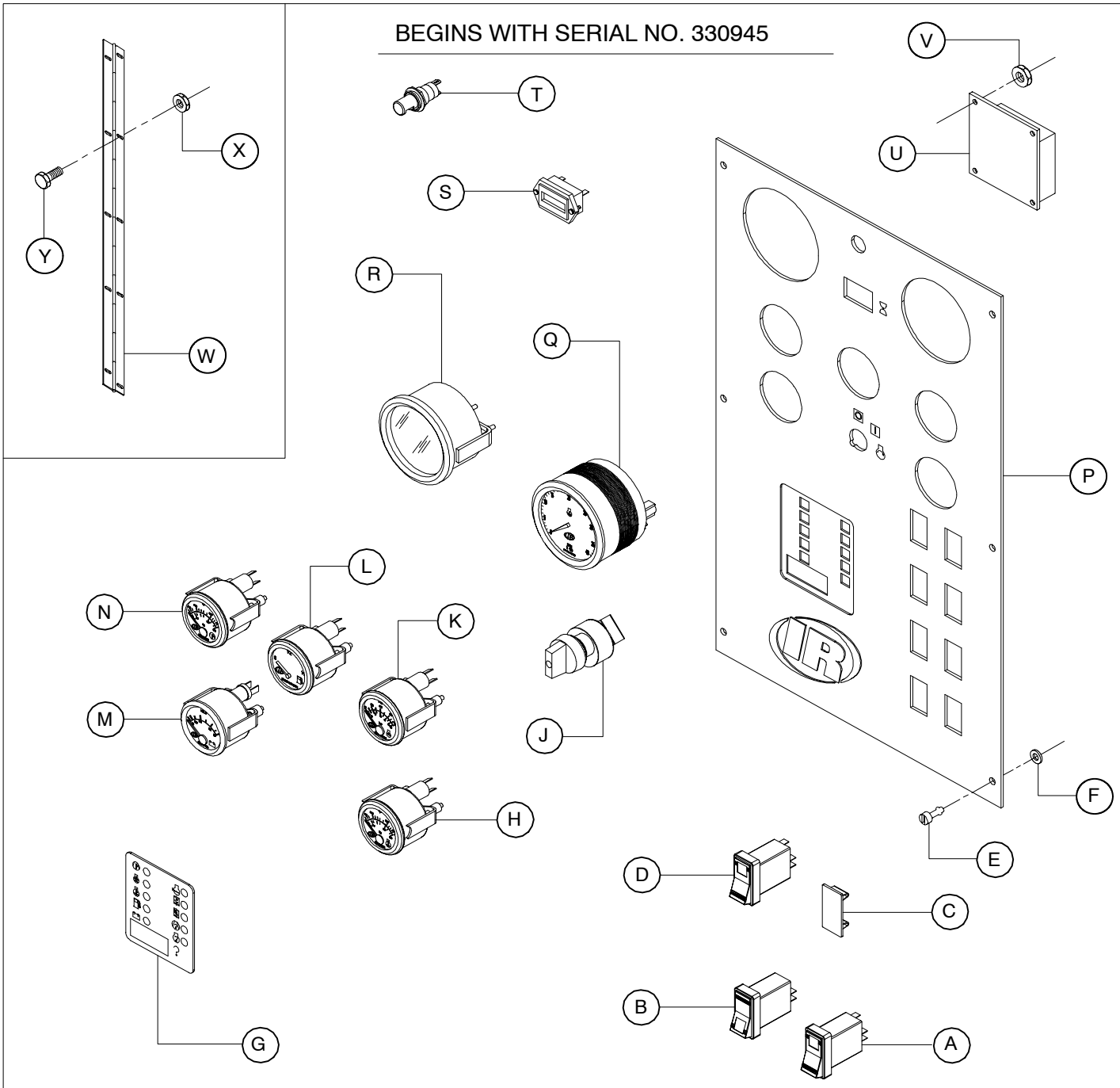
INSTRUMENT PANEL ASSEMBLY

BEGINS WITH SERIAL NO. 330945



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	22053896	1	SWITCH , LAMPS	M	36841153	1	GAGE , VOLTAGE
B	22054050	1	SWITCH , HEATER	N	22105613	1	GAGE , AIR DISCHARGE
C	22054142	5	PLUG , SWITCH	P	22105571	1	PANEL , INSTRUMENT
D	22054076	1	SWITCH , AFTER WARM-UP	Q	22055883	1	TACHOMETER
E	36844124	3	SCREW , QUARTER TURN	R	22105639	1	GAGE , 300 PSI PRESSURE
F	35369180	3	RETAINER	S	54766704	1	HOURMETER
G	22055800	1	OVERLAY , MODULE	T	36852622	1	LIGHT , PANEL
H	36870590	1	GAGE , OIL PRESSURE		22113880	1	BULB , LIGHT
J	22127385	1	SWITCH ASSEMBLY	U	54688411	1	MODULE , WEDGE
	22127377	1	SWITCH , START	V	95928800	4	NUT
	22134118	1	KNOB ASSEMBLY	W	36840908	1	HINGE
K	22105621	1	GAGE , WATER TEMPERATURE	X	35144492	3	NUT
L	22050991	1	GAGE , FUEL LEVEL	Y	35365386	3	SCREW
					22137426	7	BULB , GAGE LIGHT

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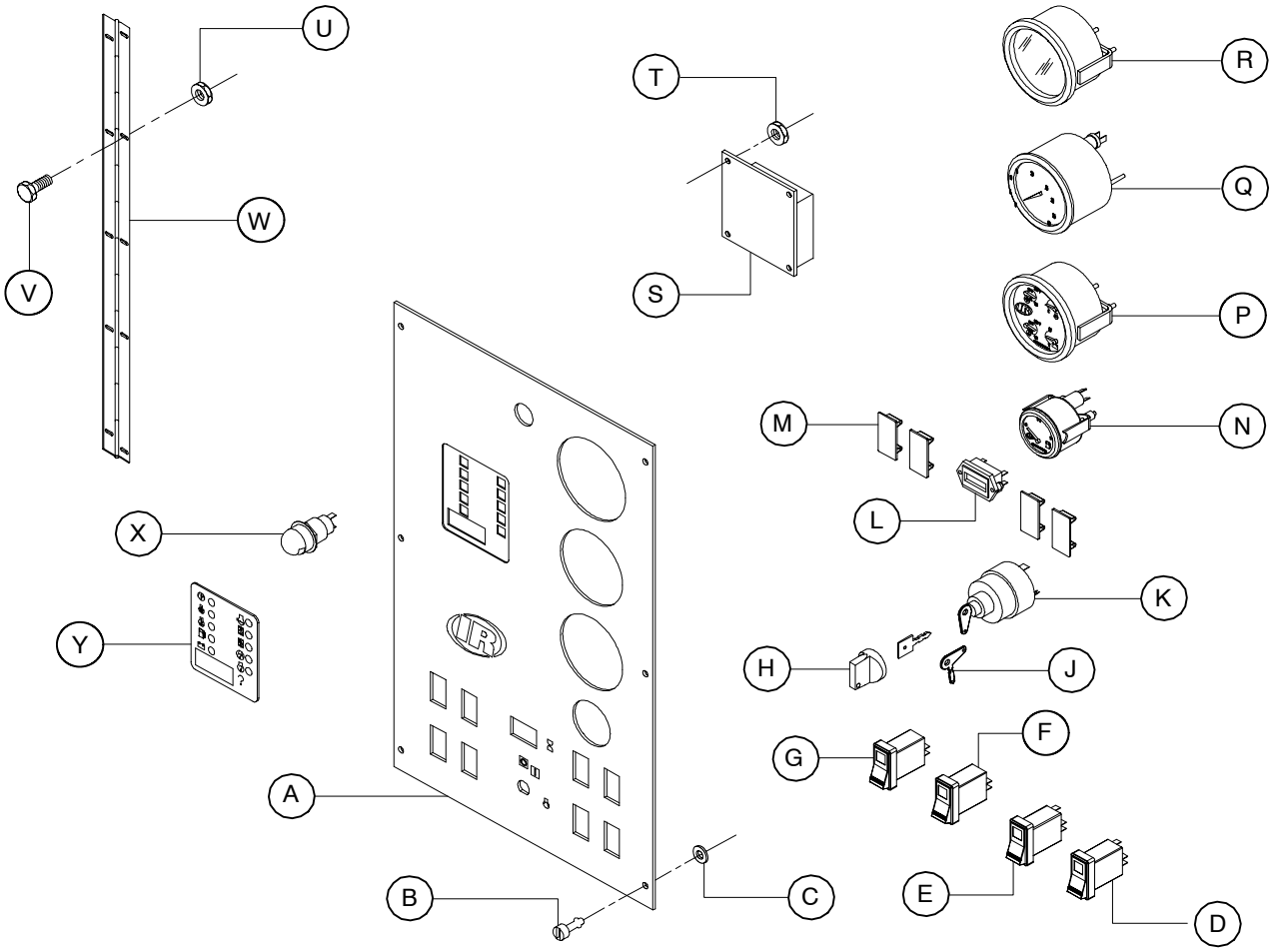
INSTRUMENT PANEL ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION
A	54755590	1	PANEL , INSTRUMENT
B	36844124	3	SCREW , QUARTER TURN
C	35369180	3	RETAINER
D	22053896	1	SWITCH , LAMPS
E	22054050	1	SWITCH , HEATER
F	22054076	1	SWITCH , AFTER WARM-UP
G	22054068	1	SWITCH , ETHER
H	54774104	1	COVER , KEY
J	22054167	1	KEY , SWITCH
K	92086719	1	SWITCH , START
L	54766704	1	METER , HOUR
M	22054142	4	PLUG , SWITCH
N	22050991	1	GAUGE , FUEL LEVEL
P	22056394	1	GAUGE , 4 IN 1
Q	36861177	1	TACHOMETER
R	36840767	1	GAUGE , PRESSURE
S	54688411	1	MODULE , WEDGE
T	95928800	4	NUT
U	35144492	3	NUT
V	35365386	3	SCREW
W	36840908	1	HINGE
X	36841252	1	LIGHT , PANEL
Y	22055800	1	OVERLAY , MODULE

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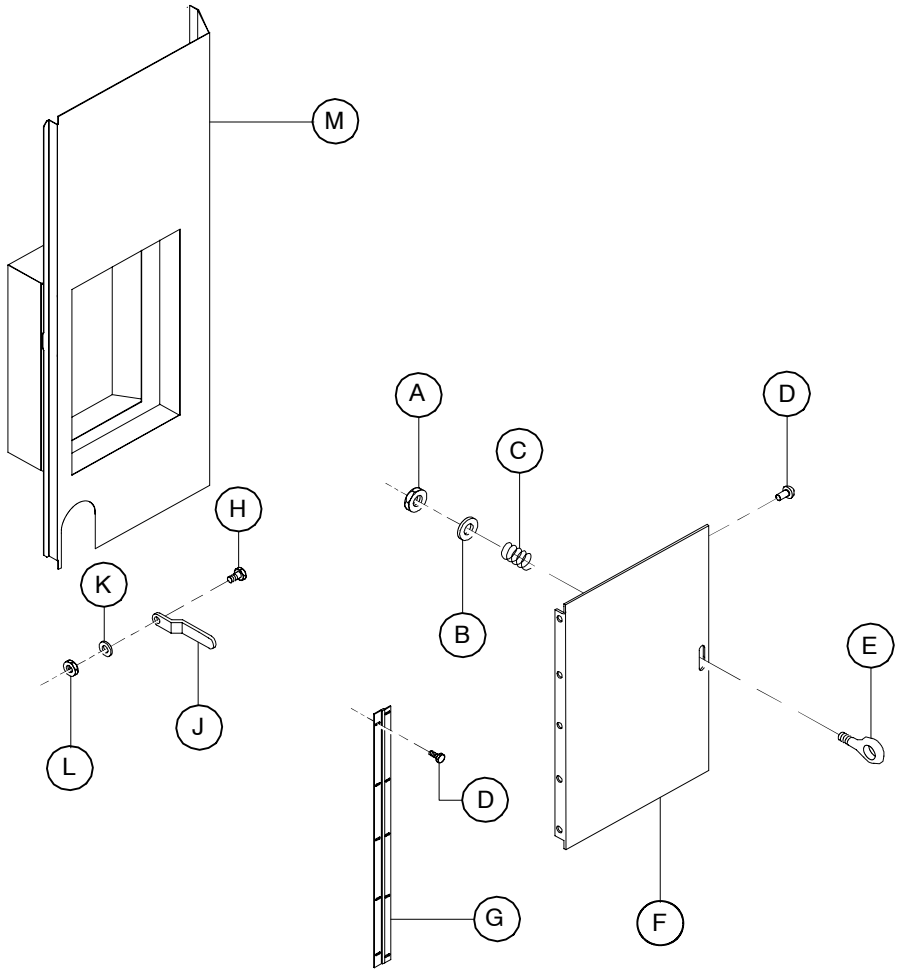
INSTRUMENT PANEL ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	95923314	1	NUT				
B	95934998	1	WASHER				
C	35327311	1	SPRING				
D	92368687	7	SCREW				
E	35327303	1	EYEBOLT				
F	36738565	1	DOOR , INSTRUMENT PANEL				
G	36740405	1	HINGE				
H	35357995	1	STUD				
J	35603349	1	HOLDER , DOOR				
K	95935037	1	WASHER				
L	35273366	1	NUT				
M	54576939	1	PANEL , VERTICAL				

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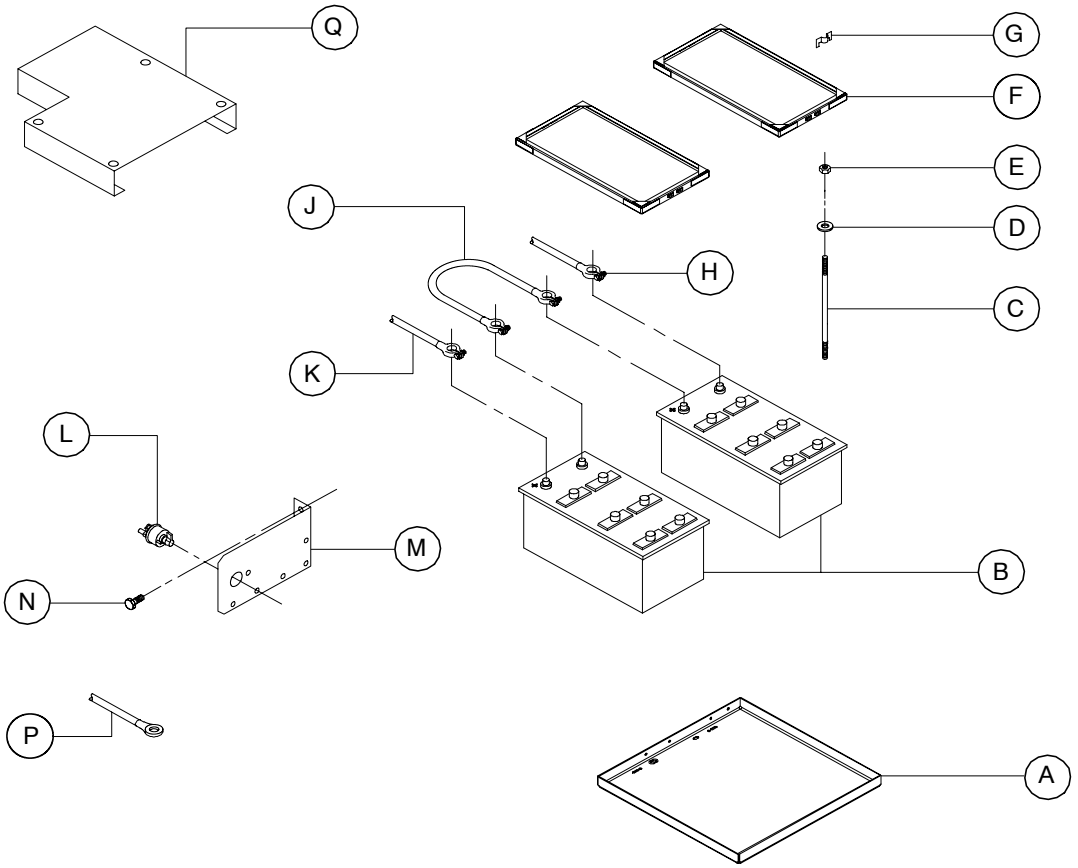
54757919 31 08/01 A



ITEM	CPN	QTY	DESCRIPTION
A	36870350	1	TRAY , BATTERY
B	35225788	2	BATTERY
C	54715479	4	STUD
D	95935037	8	WASHER
E	95923322	8	NUT
F	35562156	2	FRAME
G	35108216	4	CLIP
H	54765367	1	CABLE , NEGATIVE
J	35128982	1	CABLE , JUMPER
K	54765375	1	CABLE , POSITIVE
L	36896975	1	SWITCH , MASTER CUT-OFF
M	54737400	1	BRACKET , SWITCH
N	35279025	2	SCREW
P	54765383	1	CABLE , MASTER SWITCH
Q	54706825	1	COVER , BATTERY
	35578194	1	GROUND STRAP FROM STARTER
	35293075	1	GROUND STRAP TO RH OF ENGINE

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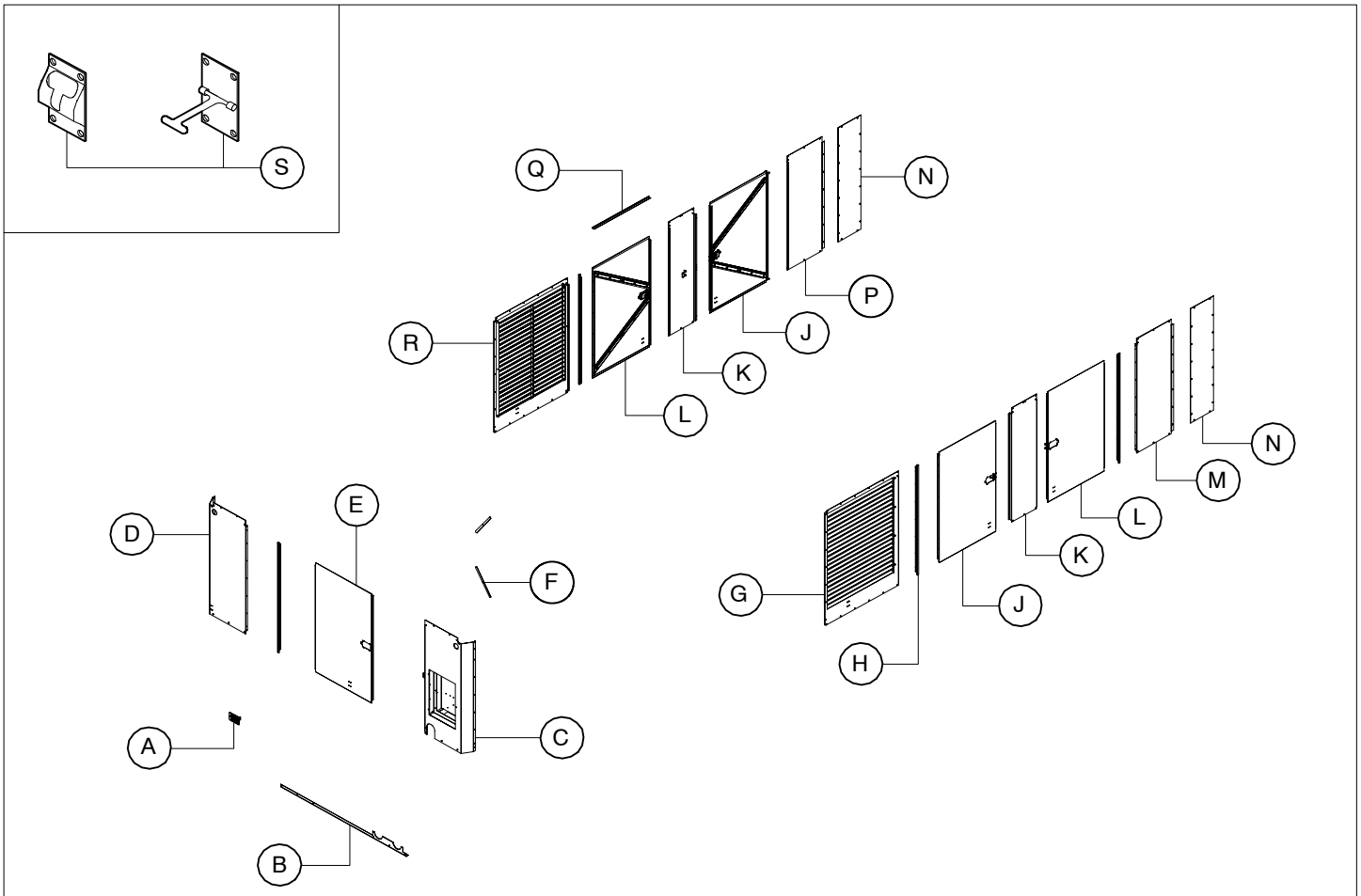
COMMON ENCLOSURE ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION
A	36793602	5	LATCH , DOOR SLAM
B	54576871	1	BRACE , FRONT PANEL
C	54576939	1	PANEL , L.H. FRONT
	54744479	1	PANEL , L.H. FRONT (IQ UNITS)
D	54576947	1	PANEL , R.H. FRONT
	22055750	1	PANEL , R.H. FRONT (IQ UNITS)
E	36863363	1	DOOR , FRONT
F	54718184	2	BRACE , FRONT
G	54587944	1	GRILLE , L.H. FRONT SIDE
H	36863413	5	HINGE
J	36863660	1	DOOR , SIDE
K	54587969	1	PANEL , CENTER
L	36863652	1	DOOR , SIDE
M	54587977	1	PANEL , L.H. REAR SIDE
N	54663240	1	PANEL , REAR SIDE
P	54587985	1	PANEL , R.H. REAR SIDE
Q	36863371	5	ANGLE , DOOR DRIP
R	54587951	1	GRILLE , R.H. FRONT SIDE
S	36849925	5	LATCH , DOOR

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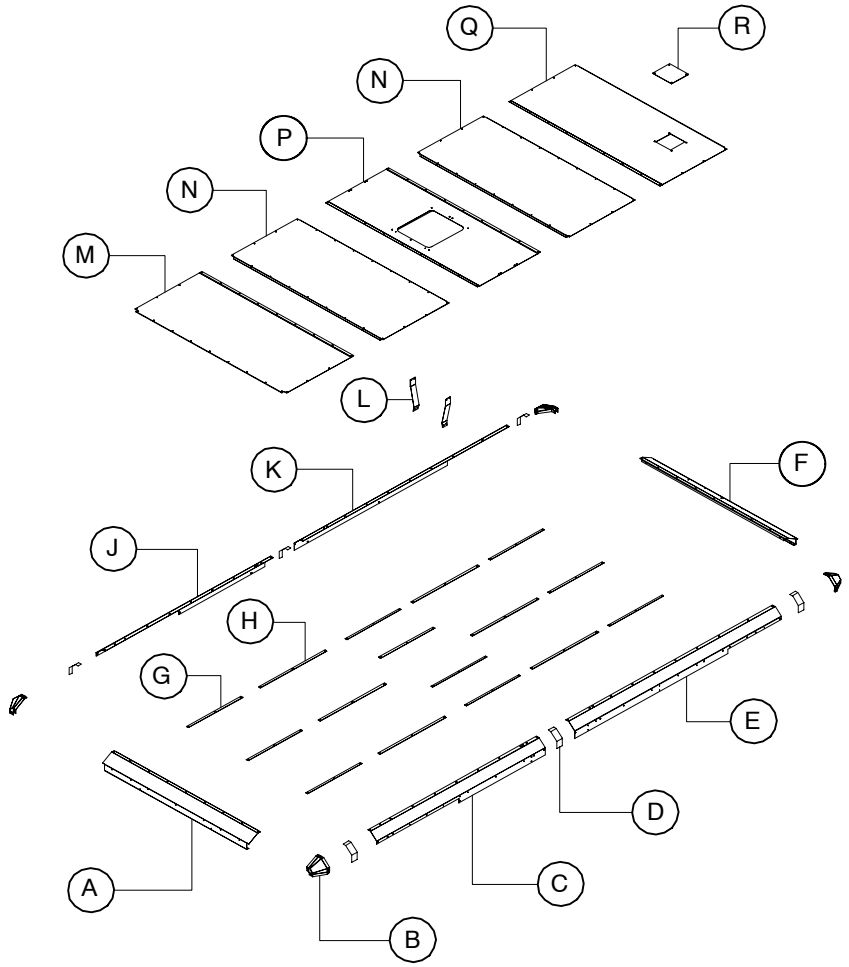
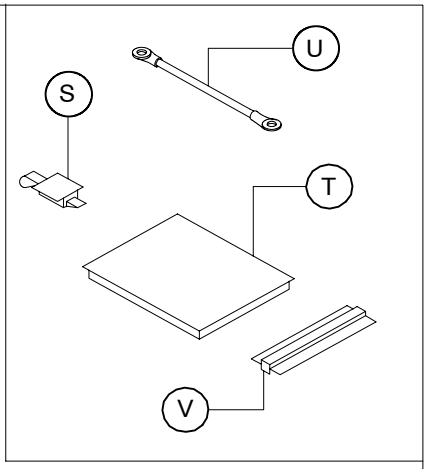
TOP ENCLOSURE ASSEMBLY





ITEM	CPN	QTY	DESCRIPTION
A	54576970	1	CAP , FRONT END
B	36755981	4	CAP , CORNER
C	54690110	1	CAP , L.H. FRONT SIDE
D	36755742	6	BRACKET , FILLER
E	54690128	1	CAP , L.H. REAR SIDE
F	54584784	1	CAP , REAR END
G	54747316	8	BRACE , TOP FOAM
H	54747324	8	BRACE , TOP FOAM
J	54663224	1	CAP , R.H. FRONT TOP
K	54663232	1	CAP , R.H. REAR TOP
L	54700091	2	BRACE , CENTER ROOF
M	54599915	1	PANEL , FRONT TOP
N	54599923	1	PANEL , 2ND AND 4TH TOP
P	54599931	1	PANEL , CENTER TOP
Q	54599949	1	PANEL , REAR TOP
R	54690136	1	PLATE , RADIATOR FILL
S	35131051	1	LATCH , DOOR
T	36864403	1	DOOR , ROOF
U	36864304	1	CABLE
V	36864288	1	HINGE , DOOR

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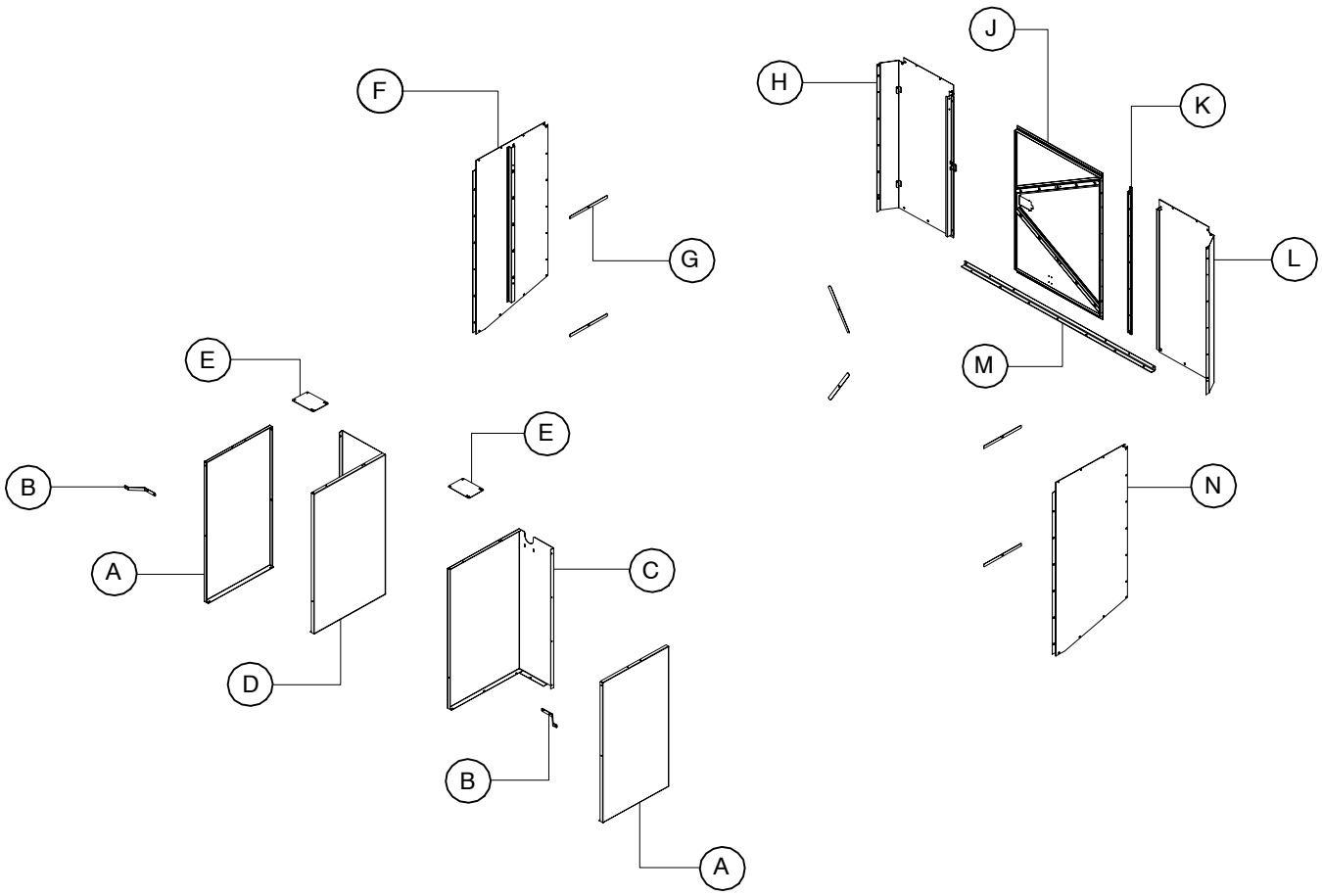

ITEM	CPN	QTY	DESCRIPTION
A	54640982	1	BAFFLE , L.H. OUTSIDE
B	54641022	1	STRIP , SUPPORT
C	54640966	1	BAFFLE , L.H. INSIDE
D	54640974	1	BAFFLE , R.H. INSIDE
E	54641006	1	PLATE , TIE
F	54672761	1	PANEL , R.H. REAR
G	54718184	6	STRIP , FOAM RETENTION
H	54663299	1	PANEL , R.H. REAR CORNER
J	54672779	1	DOOR , REAR
	36793602	1	LATCH , DOOR SLAM
K	54692744	1	HINGE
L	54663281	1	PANEL , L.H. REAR CORNER
M	54576921	1	STRIP , PANEL SUPPORT
N	54672753	1	PANEL , L.H. REAR SIDE

NOTE: ALL OTHER ENCLOSURE PARTS ARE SHOWN ON COMMON ENCLOSURE DRAWING.

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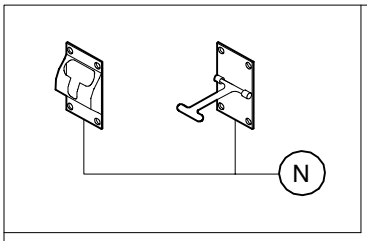
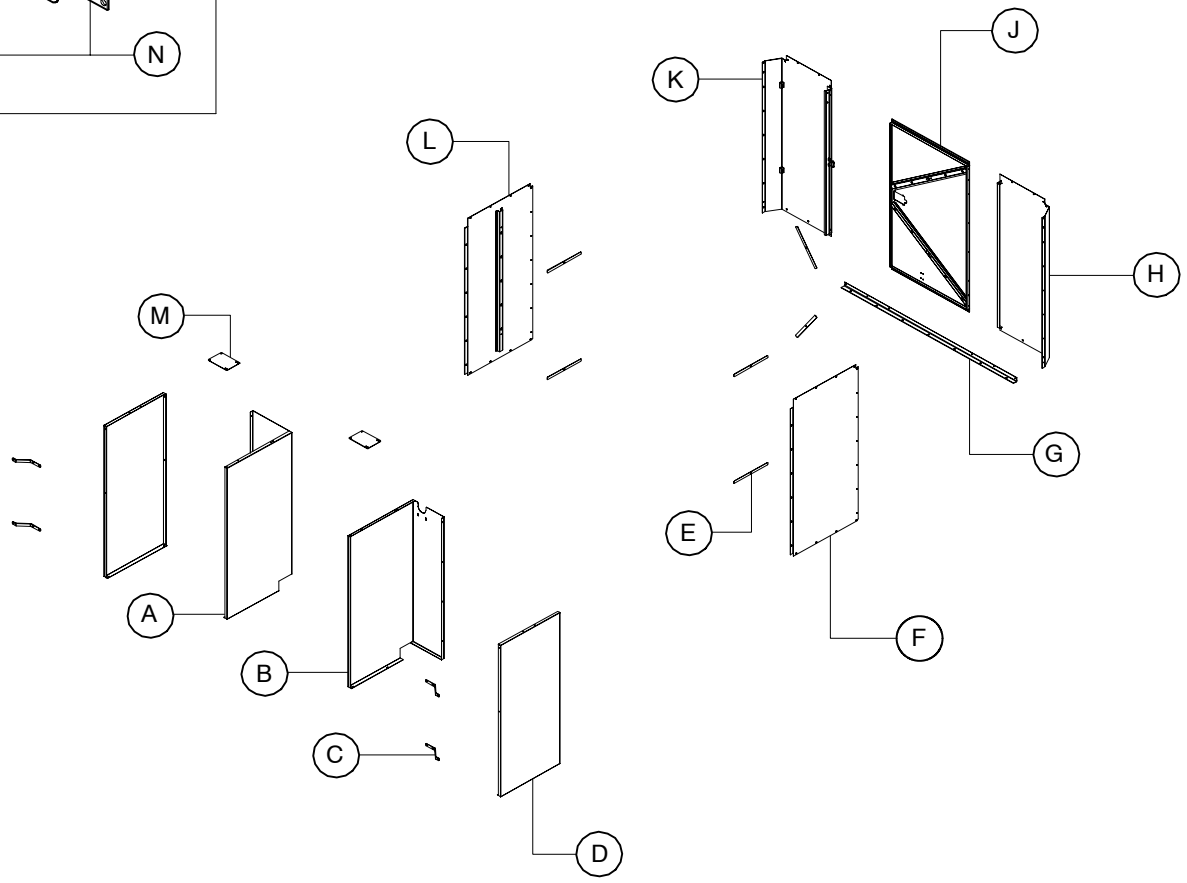
WAGON WHEEL ENCLOSURE





ITEM	CPN	QTY	DESCRIPTION
A	54688239	1	BAFFLE , R.H.
B	54688221	1	BAFFLE , L.H.
C	54641022	4	SUPPORT , BAFFLE
D	54688247	2	BAFFLE , OUTSIDE
E	54718184	6	STRAP , FOAM
F	54663265	1	PANEL , L.H. REAR SIDE
G	54576921	1	ANGLE , REAR MOUNTING
H	54576954	1	PANEL , L.H. REAR
J	36863363	1	DOOR , REAR
	36793602	1	LATCH , SLAM
	36863413	1	HINGE
K	54576962	1	PANEL , R.H. REAR
L	54663273	1	PANEL , R.H. SIDE
M	54641006	2	PLATE , TIE
N	36849925	1	HOLDER , DOOR

NOTE: ALL OTHER ENCLOSURE PARTS ARE SHOWN ON COMMON ENCLOSURE DRAWING.

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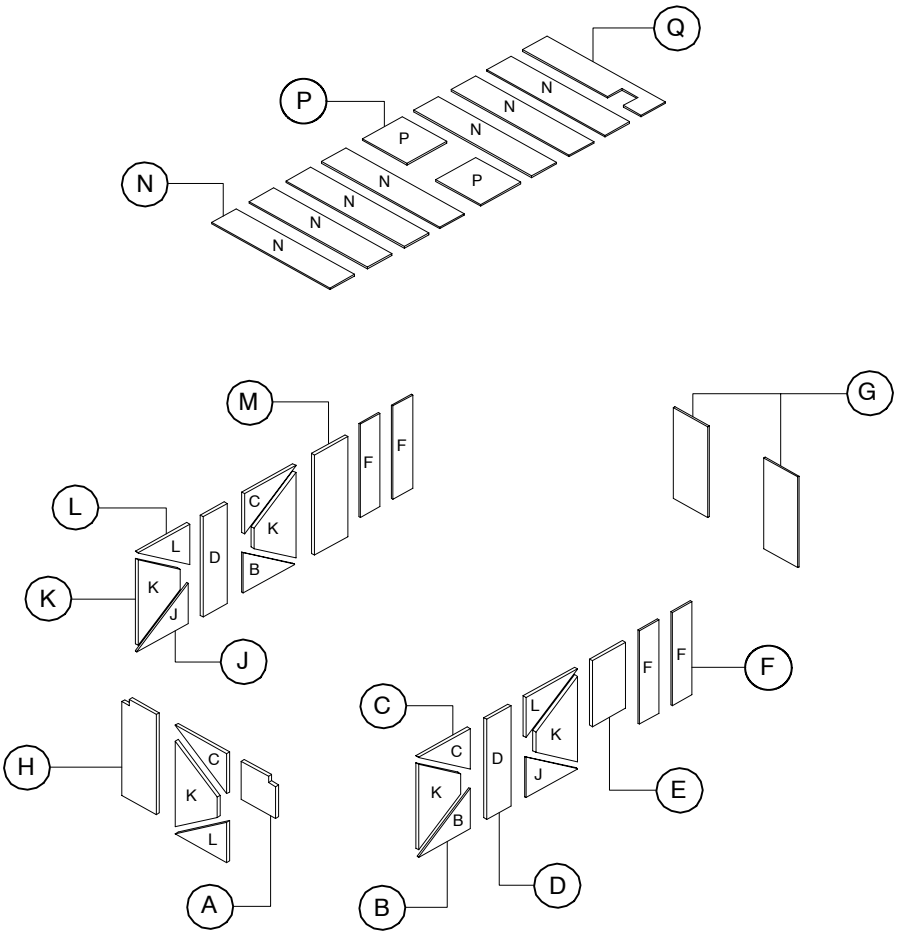
COMMON FOAM



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	54721204	1	FOAM , L.H. FRONT TOP				
B	54719703	2	FOAM , DOOR				
C	54719711	3	FOAM , DOOR				
D	54719646	2	FOAM , CENTER PANEL				
E	54719695	1	FOAM , L.H. SIDE				
F	54759519	4	FOAM , R.H. / L.H. REAR SIDE				
G	54759527	2	FOAM , REAR				
H	54721675	1	FOAM , R.H. FRONT				
J	54720065	2	FOAM , DOOR				
K	54719661	5	FOAM , CENTER DOOR				
L	54720057	3	FOAM , DOOR				
M	54719653	1	FOAM , R.H. REAR SIDE				
N	54699046	7	FOAM , TOP				
P	54699087	2	FOAM , CENTER TOP				
Q	54710041	1	FOAM , REAR TOP				

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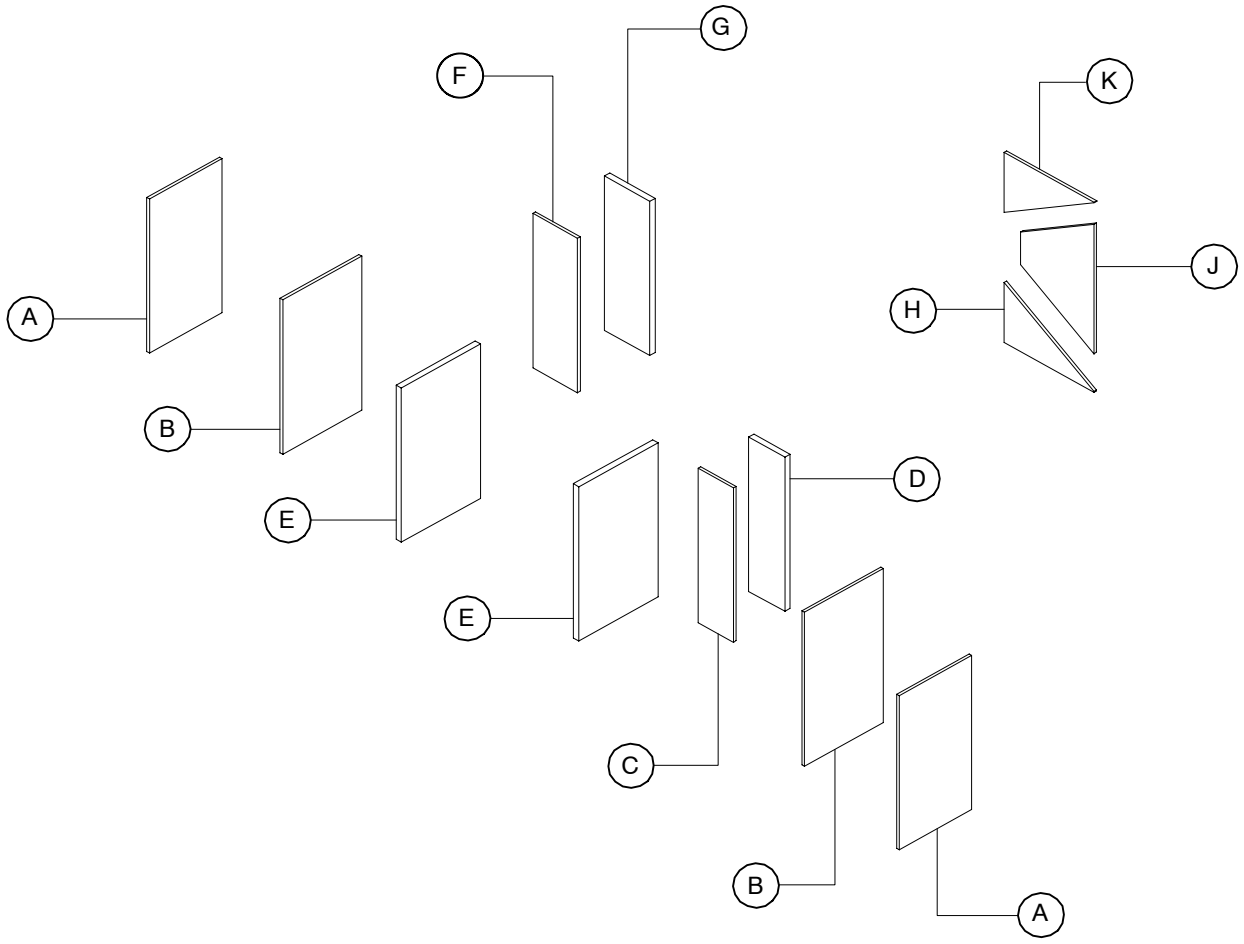
HIGH SPEED RUNNING GEAR FOAM



ITEM	CPN	QTY	DESCRIPTION
A	54675848	1	FOAM , SPLITTER BAFFLE
B	54675830	1	FOAM , SPLITTER BAFFLE
C	54675822	1	FOAM , L.H. BAFFLE
D	54675806	1	FOAM , L.H. BAFFLE
E	54675814	1	FOAM , L.H.
F	54685334	1	FOAM , R.H.
G	54685326	1	FOAM , R.H.
H	54759550	1	FOAM , BOTTOM DOOR
J	54759543	1	FOAM , CENTER DOOR
K	54759535	1	FOAM , TOP DOOR
	54737606	1	FOAM , L.H. BAFFLE (IQ UNITS)
	54737598	1	FOAM , L.H. BAFFLE (IQ UNITS)

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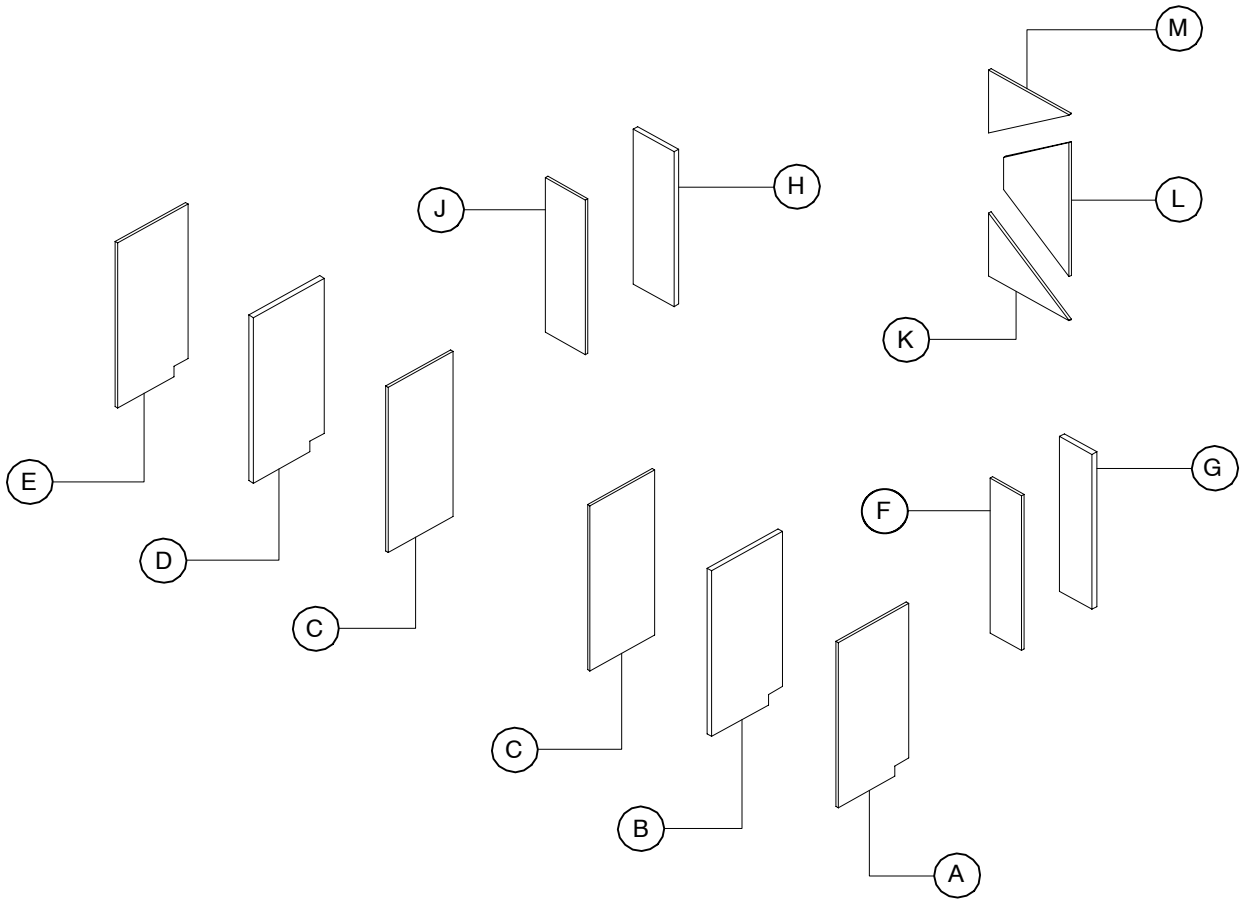
WAGON WHEEL FOAM



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	54691134	1	FOAM , L.H. SPLITTER BAFFLE				
B	54691175	1	FOAM , L.H. SPLITTER BAFFLE				
C	54691118	1	FOAM , SPLITTER BAFFLE				
D	54691191	1	FOAM , R.H. SPLITTER BAFFLE				
E	54691159	1	FOAM , R.H. SPLITTER BAFFLE				
F	54691126	1	FOAM , L.H. BAFFLE				
G	54691167	1	FOAM , L.H. BAFFLE				
H	54691183	1	FOAM , R.H. BAFFLE				
J	54691142	1	FOAM , R.H. BAFFLE				
K	54670459	1	FOAM , BOTTOM DOOR				
L	54760442	1	FOAM , MIDDLE DOOR				
M	54760434	1	FOAM , TOP DOOR				
	54737606	1	FOAM , L.H. BAFFLE (IQ UNITS)				
	54737598	1	FOAM , L.H. BAFFLE (IQ UNITS)				

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VIKING ELECTRICAL COMPONENTS

PART NO.	QTY	DESCRIPTION
54757224	1	IQ WIRING HARNESS
54474572	1	COOLANT LEVEL SWITCH
36896975	1	BATTERY DISCONNECT SWITCH
36920825	1	0-100 PSI PRESSURE TRANSDUCER
✳54765946	1	0-500 PSI PRESSURE TRANSDUCER
36892362	1	24V SEALED RELAY
36785319	1	MAG SPEED SENSOR
36898922	2	THERMISTOR TEMPERATURE PROBE
✳36842300	1	START / RUN SOLENOID
✳36842318	1	COMPRESSOR SOLENOID
✳✳36840841	2	SOLENOID VALVE
36847838	2	AIR FILTER SWITCH
36870608	1	ENGINE OIL PRESSURE SENDER
36841138	2	ENG. & COMP. TEMP SENDER
✳✳36757581	1	COMP. OIL PRESSURE SWITCH
36850691	1	START-UP COMPRESSOR
✳✳54496773	1	0-225 PSI PRESS. TRANSDUCER
36792083	2	FUSE 20 AMP BLADE
22071591	2	FUSE 10 AMP BLADE
35376169	4	DIODE

PART NO.	QTY	DESCRIPTION
35577873	1	AUXILARY START RELAY
54720701	1	ENG. TEMP. SENDER ADAPTOR
36841526	1	CONTROL ORIFICE HEATER
✳✳36864677	1	REGULATOR HEATER
54765367	1	NEGATIVE BATTERY CABLE
54765375	1	POSITIVE BATTERY CABLE
54765383	1	POSITIVE JUMPER BATTERY CABLE
35128982	1	BATTERY JUMPER
35578194	1	FRAME GROUND STRAP
35293075	1	ENGINE GROUND STRAP
54672803	1	FUEL LEVEL SENDER (WAGON WHEEL)
54672811	1	FUEL LEVEL SENDER (HIGH SPEED)
54688411	1	WEDGE CONTROLLER
54654918	1	W1 CHASSIS HARNESS
✳54765953	1	ADDRESS PLUG
✳✳54765649	1	ADDRESS PLUG
✳36841526	1	REGULATOR-HEATER
22060594	1	CONTROL PANEL HARNESS

IQ OPTION

PART NO.	QTY	DESCRIPTION
54757224	1	IQ WIRING HARNESS
54775887	1	IQ HEATER HARNESS
36841526	5	IQ ORIFICE HEATERS
36898310	1	ACTUATOR
36898922	1	THERMISTOR TEMP. PROBE
36892362	1	24V SEALED RELAY
36920643	1	TCU
36899599	1	IQ FILTER SWITCH - 20 PSI
36899615	1	IQ FILTER SWITCH - 25 PSI

✳ DENOTES XHP MACHINES ONLY
✳✳ DENOTES HP MACHINES ONLY

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 39A 3/02 B

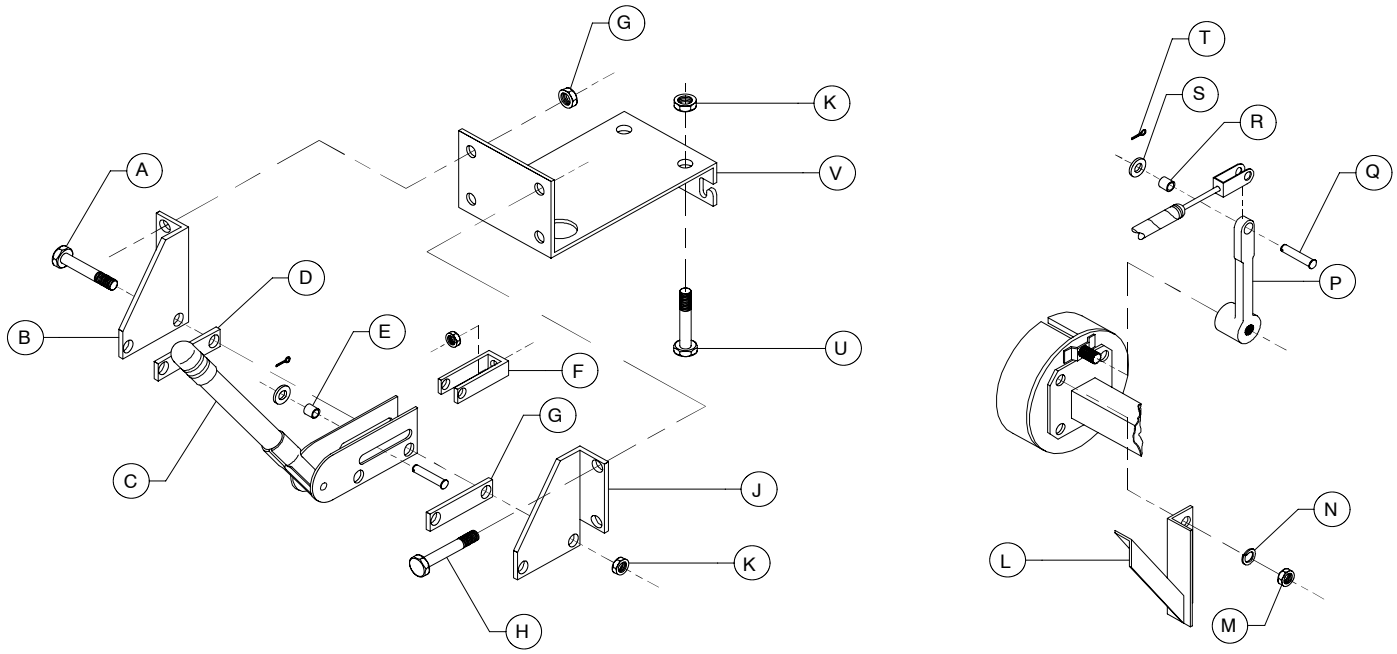
AC HEATER KIT

PART NO.	QTY	DESCRIPTION
36851533	1	BRACKET , PRESSURE SWITCH
36880995	2	SCREW (ATTACH BRACKET)
36879195	2	NUT (ATTACH BRACKET)
54464607	1	AC POWERED COLD START ASSY.
54464664	1	HARNESS , PRESSURE SWITCH
54480298	1	WELL , THERMOSTAT
54464623	1	HEATER , OIL PAN
36920346	1	PAD , HEATER 8D BATTERY
36920338	1	PAD , HEATER 8D BATTERY
35283464	1	ELBOW (IN THREADED PORT OF PRESS. SWITCH)
35114545	1	TEE (IN ADAPTER AT ENG. OIL PORT)
35283472	1	CONNECTOR (IN TEE FACING LIFTING BAIL)

(FOR TEMPERATURES BELOW 10 F°USE IR PERFORMANCE 500 OIL 35382944 / 55 GAL.)

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 39B 12/01 B

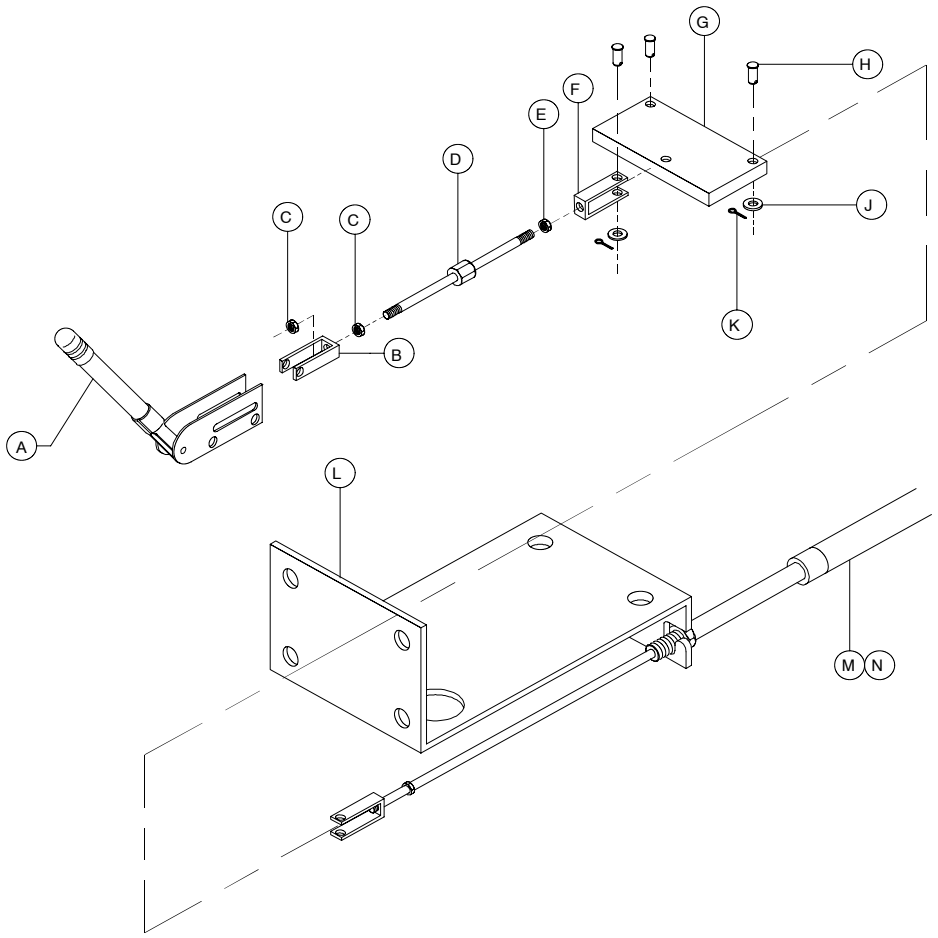
WAGON WHEEL PARKING BRAKE ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION
A	95941100	2	SCREW
B	36847432	1	BRACKET , RH LEVER
C	36782878	1	LEVER , BRAKE
D	35603224	2	PLATE , SPACER
E	--------	2	FURNISHED WITH LEVER
F	35603208	1	CLEVIS , BRAKE LEVER
G	35252618	4	NUT
H	36877793	4	SCREW
J	36847440	1	BRACKET , LH LEVER
K	36879195	4	NUT
L	36786887	1	BRACKET , LH CABLE LATCH
	36786895	1	BRACKET , RH CABLE LATCH
M	95916573	8	NUT
N	95934741	8	WASHER
P	36782035	2	ARM , BRAKE
Q	36783785	2	PIN , CLEVIS
R	36786697	2	BUSHING
S	95935037	2	WASHER
T	95928867	2	PIN , COTTER
U	36880995	2	SCREW
V	36783306	1	BRACKET , FRONT CABLE LATCH

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 44 08/01 A

WAGON WHEEL PARKING BRAKE ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	36782878	1	LEVER , BRAKE				
B	35603208	1	CLEVIS , BRAKE LEVER				
C	35118728	2	NUT				
D	35603182	1	ROD , LINK				
E	95935086	2	NUT				
F	35603216	1	EQUALIZER , CLEVIS				
G	35602846	1	EQUALIZER , CABLE				
H	35357151	3	PIN , CLEVIS				
J	95934998	3	WASHER				
K	95928867	3	PIN , COTTER				
L	36783306	1	BRACKET , FRONT CABLE LATCH				
M	22064141	1	CABLE , LH BRAKE				
N	22064000	1	CABLE , RH BRAKE				

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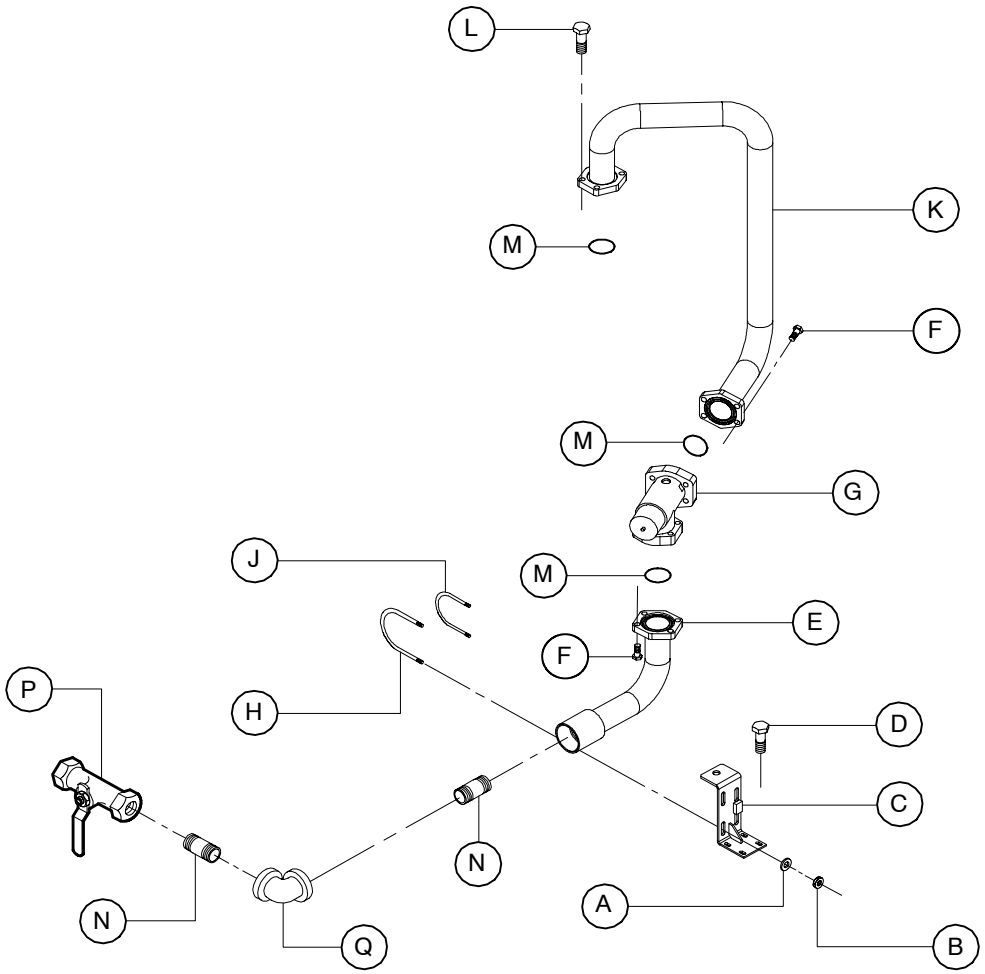
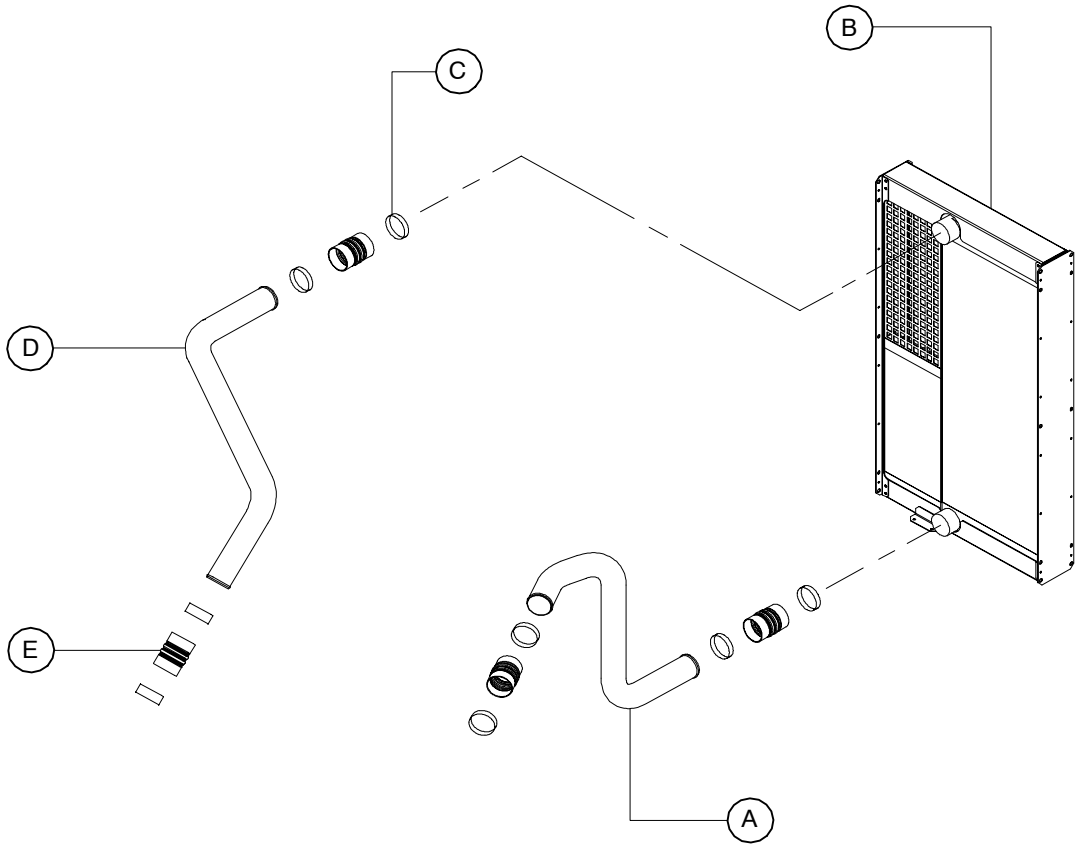
SEPARATOR AIR PIPING



ITEM	CPN	QTY	DESCRIPTION
A	95935003	4	WASHER
B	95922902	4	NUT
C	54668314	1	SUPPORT , PIPE
D	35130293	4	SCREW
E	36898120	1	PIPE
F	95927273	8	SCREW
G	54642152	1	VALVE , MINIMUM PRESSURE
H	36799419	1	CLAMP
J	35586288	1	CLAMP
K	54642137	1	PIPE
L	95929089	4	SCREW
M	95358040	1	O-RING
N	95940946	2	NIPPLE
P	36922995	1	VALVE , BALL
Q	95916581	1	ELBOW

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 46 08/01 A

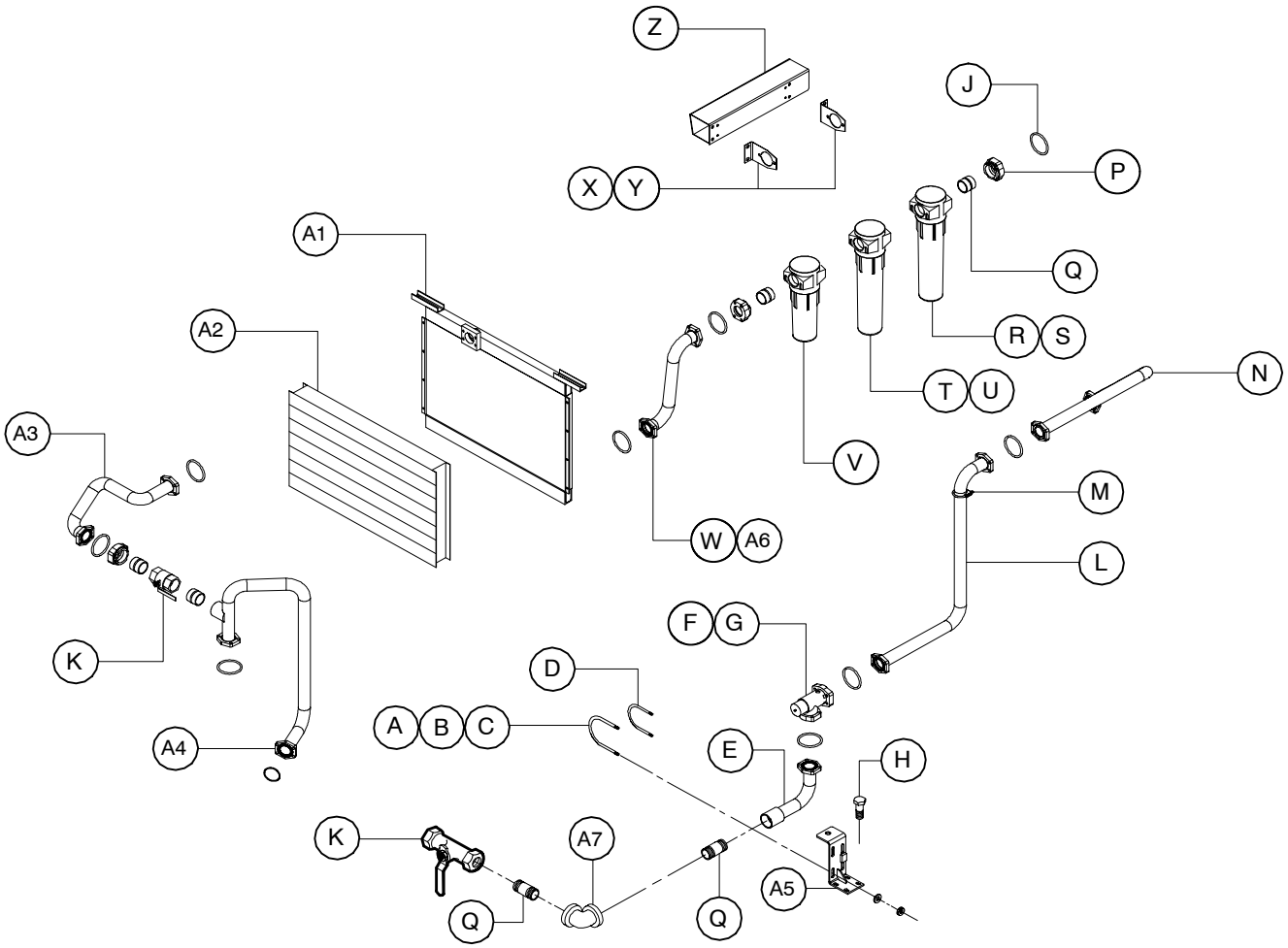
AIR CHARGE PIPING



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	54632690	1	TUBE , BOTTOM A/C				
B	54501846	1	COOLER , AIR CHARGE				
C	54444427	8	CLAMP				
D	54632682	1	TUBE , UPPER A/C				
E	54422522	4	HOSE , RIBBED				

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 47 08/01 A

IQ AIR PIPING



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	36799419	2	U-BOLT	A4	54741087	1	PIPE , MANIFOLD
B	95935003	8	WASHER	A5	54668314	1	SUPPORT , PIPE
C	95922902	8	NUT	A6	95929089	32	SCREW
D	35586288	2	CLAMP	A7	95916581	2	ELBOW
E	36898120	2	PIPE , SERVICE				
F	54642152	2	VALVE , MINIMUM PRESSURE				
G	95927273	36	SCREW				
H	35130293	8	SCREW				
J	95358040	11	O-RING				
K	36922995	3	VALVE , BALL				
L	54735055	1	PIPE				
M	35113646	1	CLAMP				
N	54734983	1	PIPE				
P	36893220	3	ADAPTER , FLANGE				
Q	95940946	8	NIPPLE				
R	54738984	1	FILTER , SECONDARY				
S	54739065	1	ELEMENT , FILTER				
T	54738976	1	FILTER , PRIMARY				
U	54739057	1	ELEMENT , FILTER				
V	54738968	1	SEPARATOR , WATER				
W	54734090	1	PIPE				
X	54739016	1	KIT , BRACKET / WEDGE				
Y	54739024	1	KIT , WEDGE				
Z	54732250	1	BRACKET , FILTERS				
A1	54699129	1	COOLER ASSEMBLY				
A2	54700943	1	LOUVER ASSEMBLY				
A3	547482490	1	PIPE				

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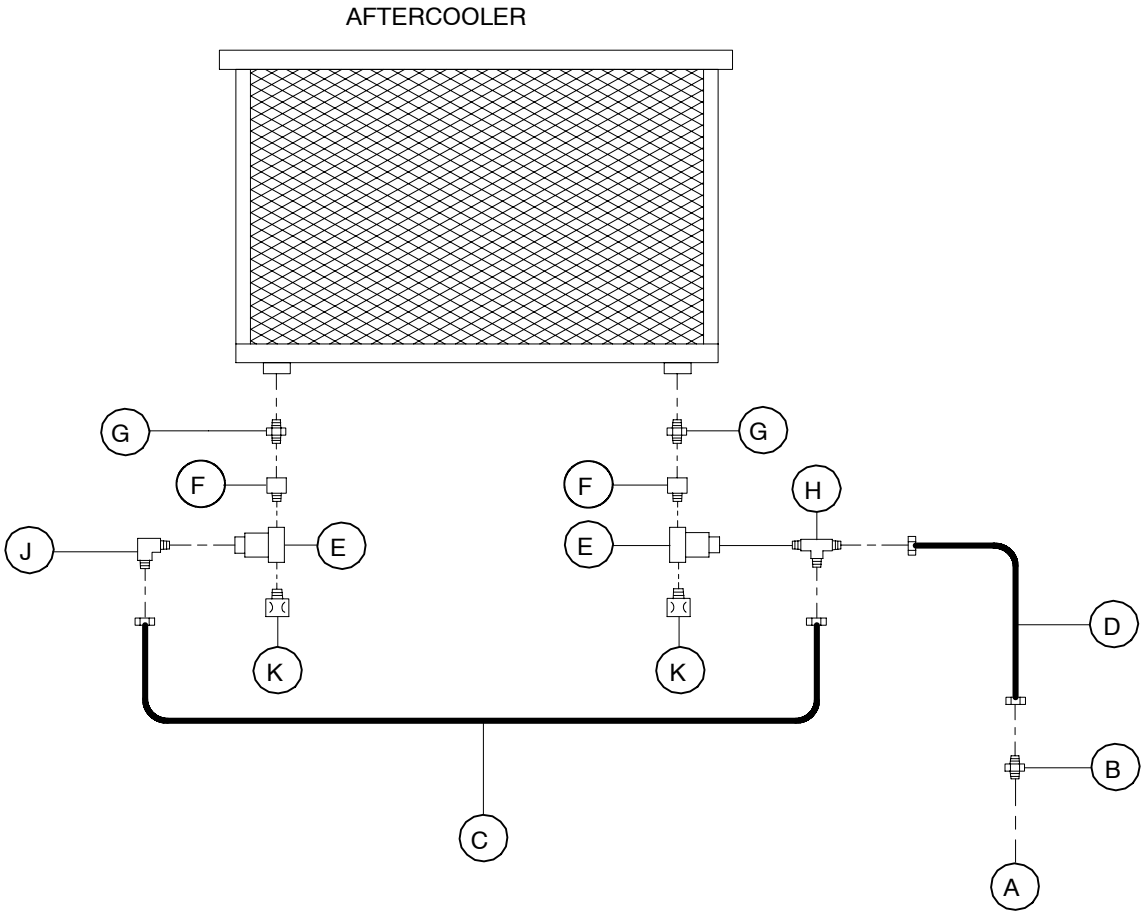

ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	TO AIR END INLET HOUSING AT REAR						
B	95365078	1	CONNECTOR				
C	36844074	1	HOSE ASSEMBLY				
D	35294701	1	HOSE ASSEMBLY				
E	35322379	1	VALVE , BLOWDOWN				
	35379064	1	DIAPHRAM KIT				
F	35367846	1	REDUCER				
G	35284082	1	CONNECTOR				
H	35283050	1	TEE				
J	35279934	1	ELBOW				
K	35248319	1	ORIFICE , .094				
	36898922	1	PROBE , TEMPERATURE				

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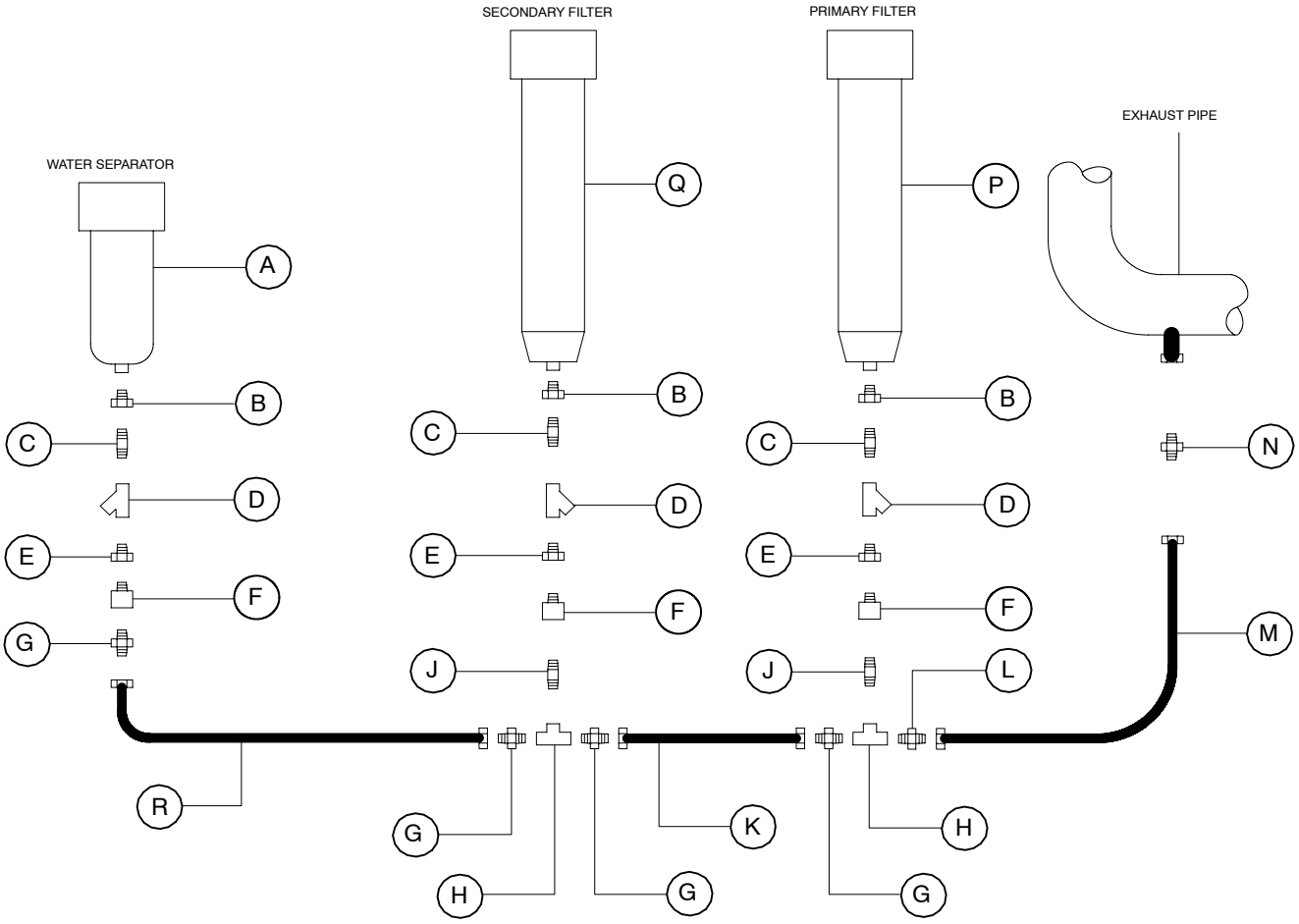
54757919 49 08/01 A

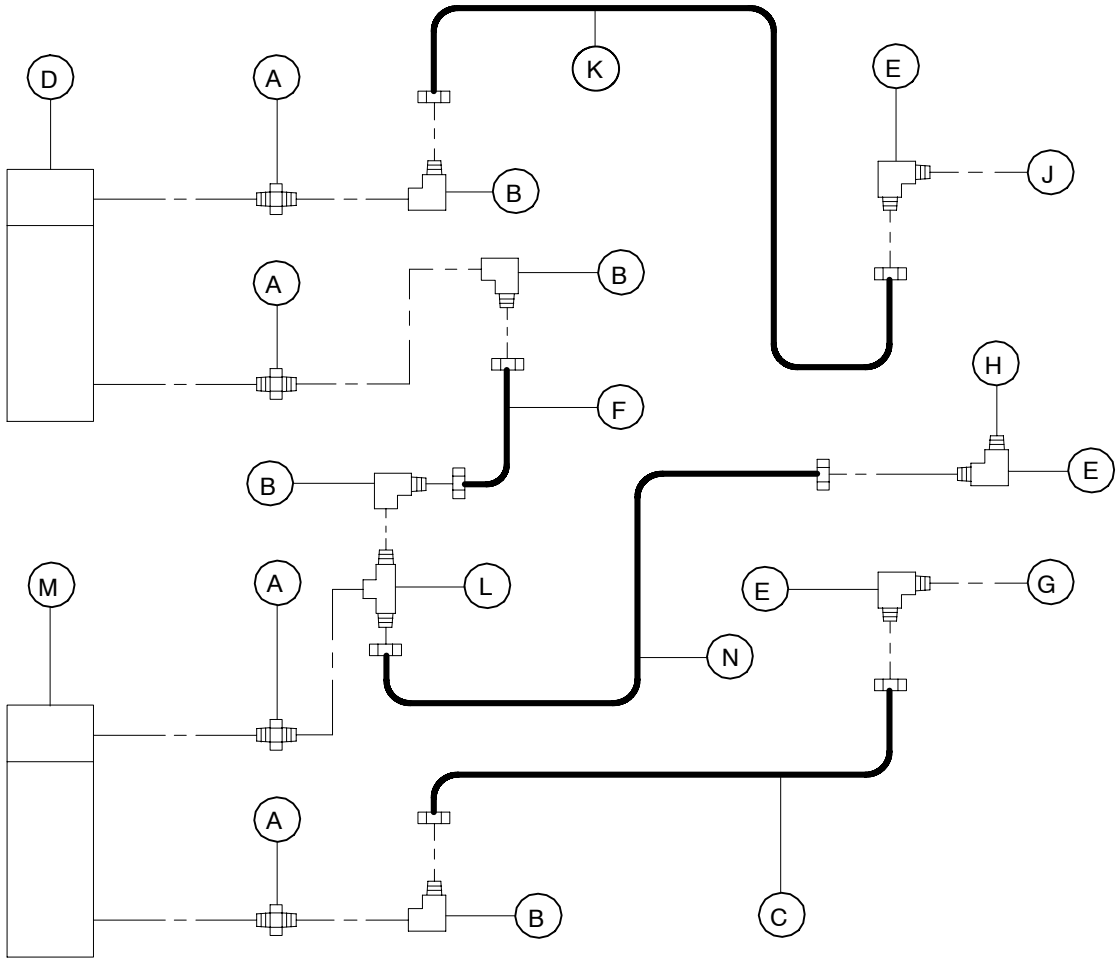
IQ FILTER PIPING



ITEM	CPN	QTY	DESCRIPTION
A	54738968	1	SEPARATOR , WATER
B	95245353	1	ADAPTER
C	95772562	1	NIPPLE
D	36844579	1	Y-STRAINER
E	95940748	1	ADAPTER
F	37081528	1	REDUCER
G	35283472	1	CONNECTOR
H	36882223	1	TEE
J	95452025	1	NIPPLE
K	35310960	1	HOSE ASSEMBLY
L	35284082	1	CONNECTOR
M	35296110	1	HOSE ASSEMBLY
N	35321983	1	CONNECTOR
P	54738976	1	FILTER , PRIMARY
Q	54738984	1	FILTER , SECONDARY
R	35283241	1	HOSE ASSEMBLY

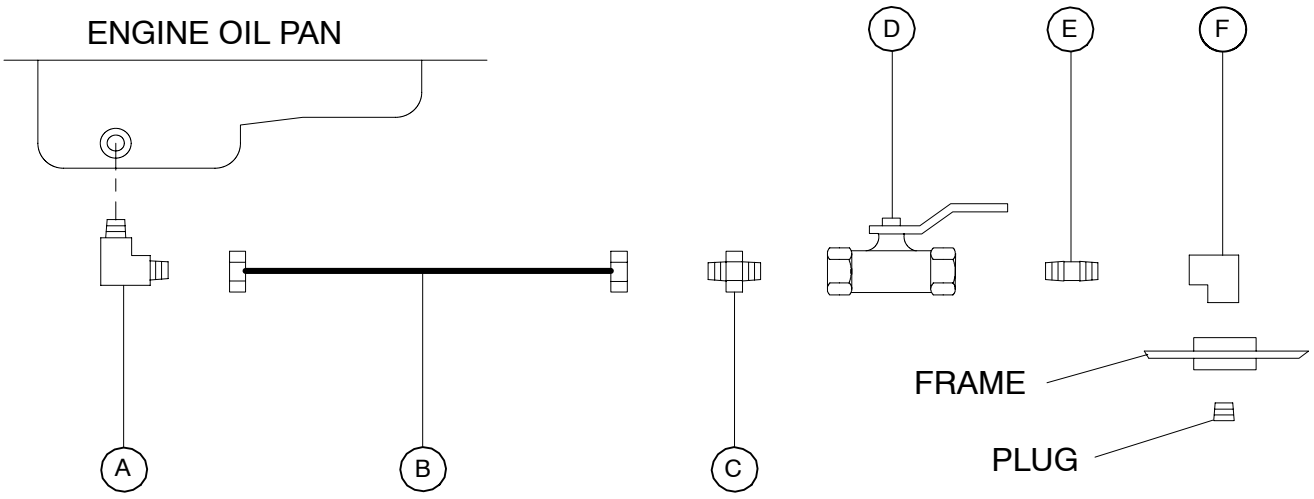
MANUAL NO. — DRAWING NO. DATE / REV:
54757919 50 08/01 A

IQ INDICATOR PIPING



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	36898401	1	CONNECTOR				
B	35290352	1	ELBOW				
C	35310226	1	HOSE ASSEMBLY				
D	36899599	1	INDICATOR , 20 PSI				
E	35283464	1	ELBOW				
F	35310960	1	HOSE ASSEMBLY				
G	TO WATER SEPARATOR TUBE						
H	TO FILTER CROSSOVER TUBE						
J	TO FILTER OUTLET TUBE						
K	35323757	1	HOSE ASSEMBLY				
L	35323591	1	TEE				
M	36899615	1	INDICATOR , 25 PSI				
N	36920650	1	HOSE ASSEMBLY				

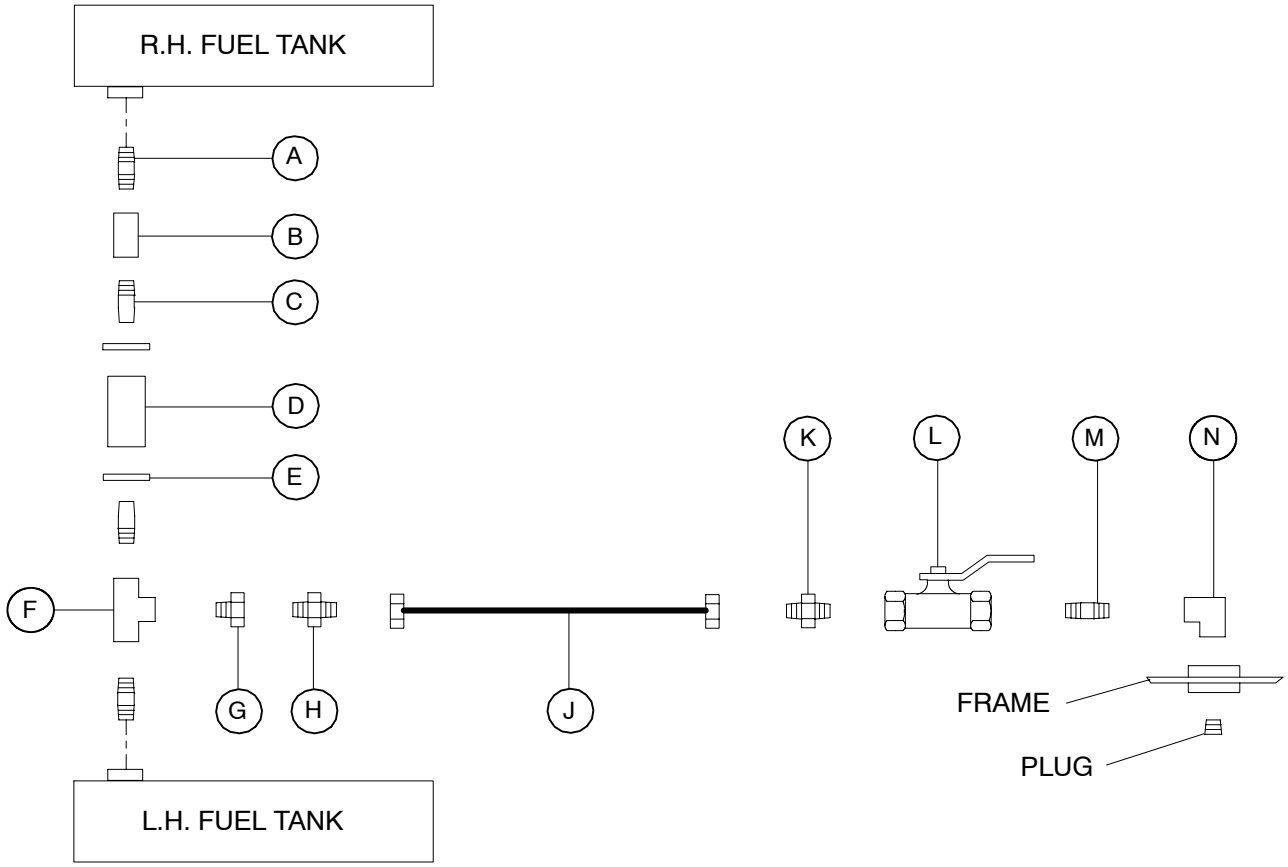
MANUAL NO. — DRAWING NO. DATE / REV:
54757919 51 08/01 A



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	35294750	1	ELBOW				
B	35323880	1	HOSE ASSEMBLY				
C	95219747	1	CONNECTOR				
D	35576115	1	VALVE , BALL				
E	95647939	1	NIPPLE				
F	95928172	1	ELBOW				

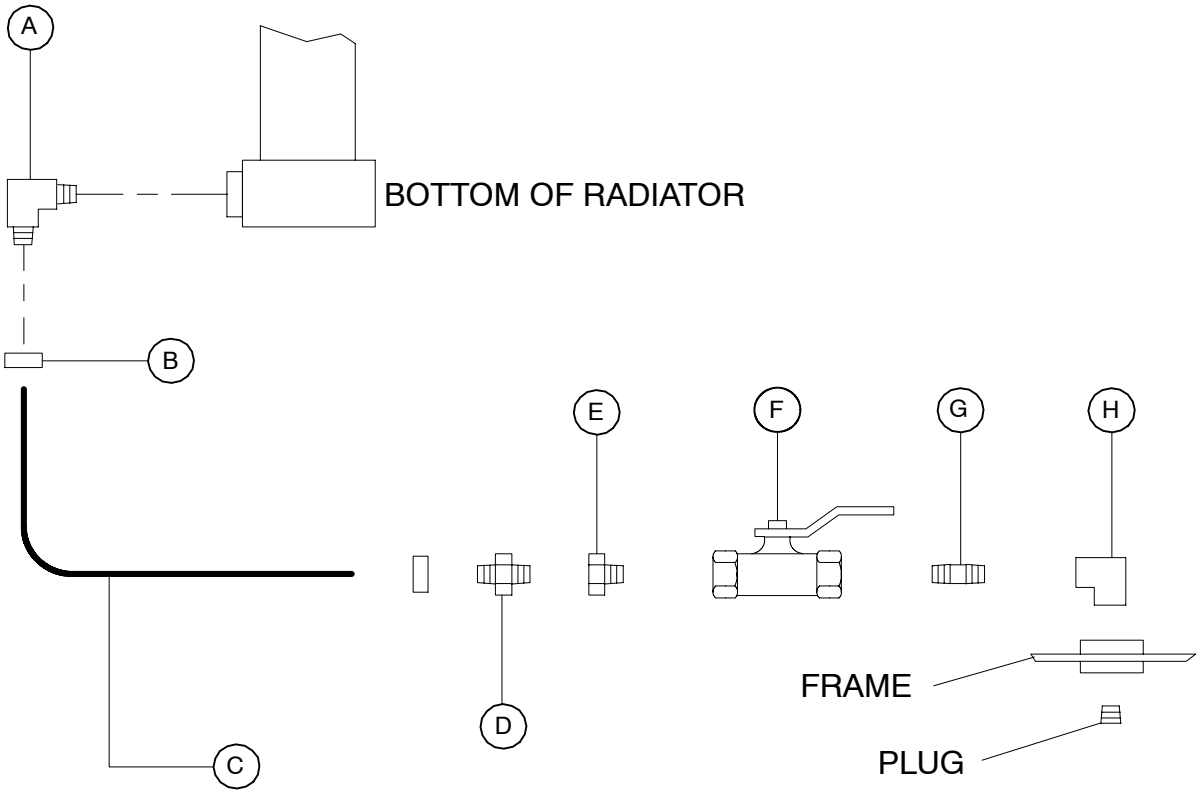
MANUAL NO. — DRAWING NO. DATE / REV:
54757919 52 08/01 A

FUEL TANK DRAIN PIPING



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	95953535	2	NIPPLE				
B	95937454	1	CONNECTOR				
C	54762190	2	FITTING , HOSE				
D	54762182	1	HOSE (19 INCHES)				
E	35221662	2	CLAMP				
F	95954285	1	TEE				
G	95953873	1	REDUCER				
H	95219747	1	CONNECTOR				
J	36893828	1	HOSE ASSEMBLY				
K	95219747	1	CONNECTOR				
L	35576115	1	VALVE , BALL				
M	95647939	1	NIPPLE				
N	95928172	1	ELBOW				

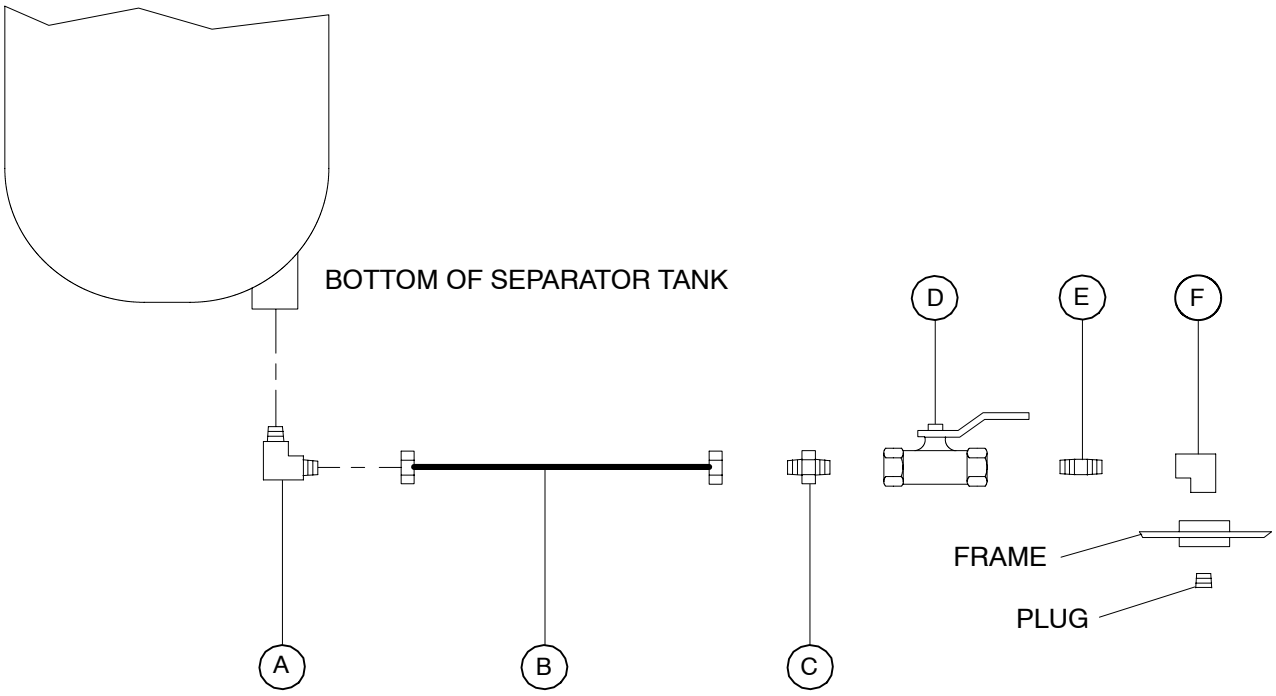
MANUAL NO. — DRAWING NO. DATE / REV:
54757919 53 08/01 A



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	35366665	1	ELBOW				
B	95220844	2	CLAMP				
C	35326578	1	HOSE (115 INCHES)				
D	35326560	1	FITTING , HOSE				
E	95953949	1	REDUCER				
F	35576115	1	VALVE , BALL				
G	95647939	1	NIPPLE				
H	95928172	1	ELBOW				

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 54 08/01 A

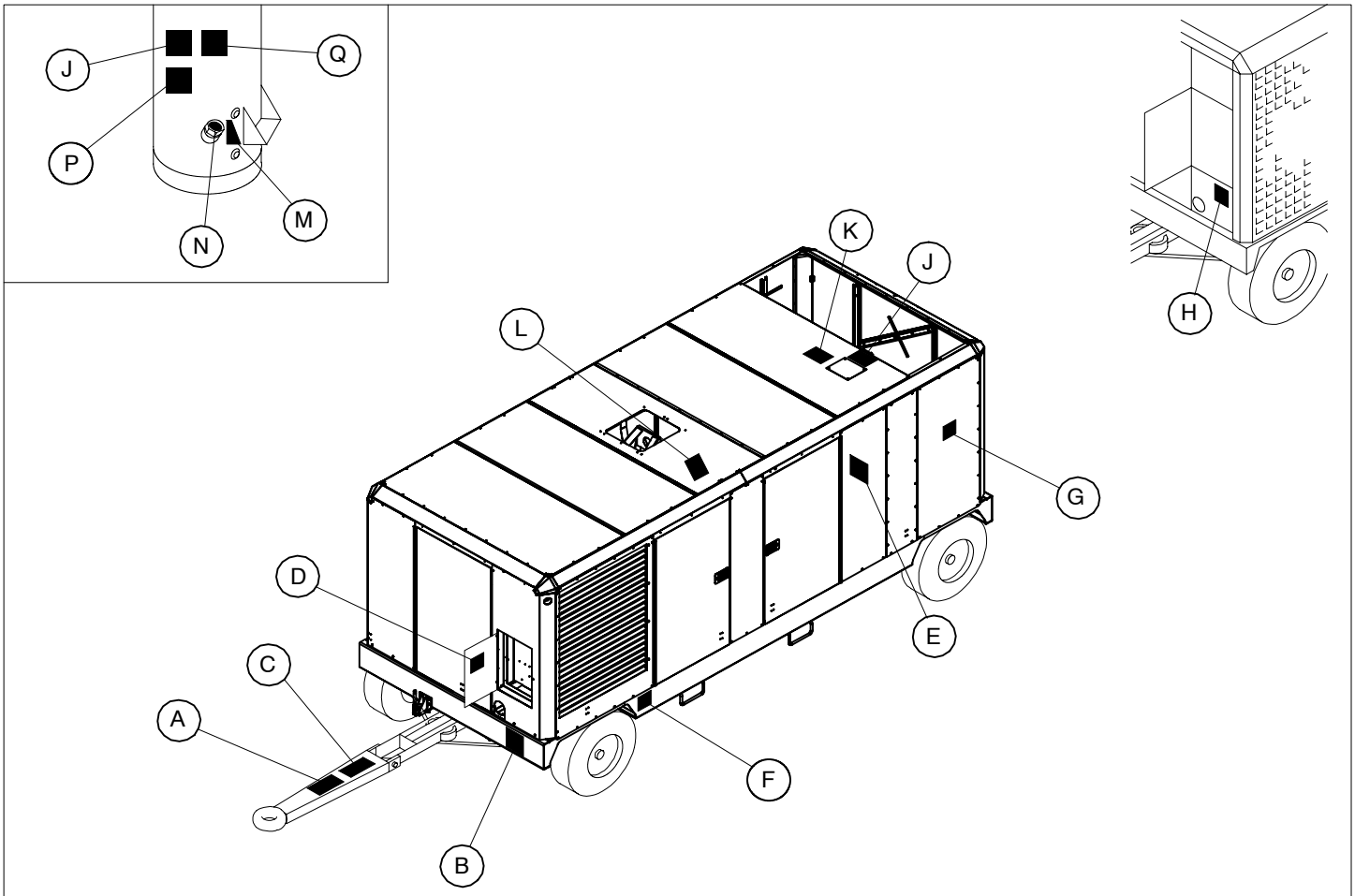
SEPARATOR TANK DRAIN PIPING



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	35294750	1	ELBOW				
B	36878254	1	HOSE ASSEMBLY				
C	95219747	1	CONNECTOR				
D	35576115	1	VALVE , BALL				
E	95647939	1	NIPPLE				
F	95928172	1	ELBOW				

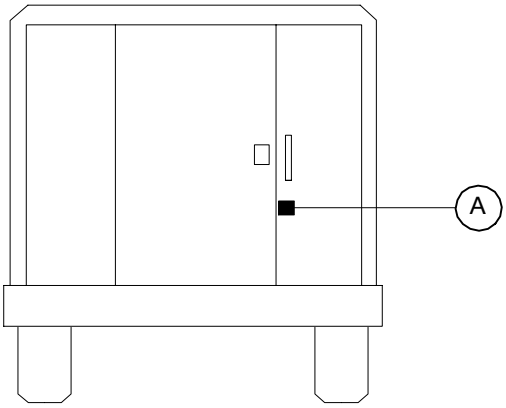
MANUAL NO. — DRAWING NO. DATE / REV:
54757919 55 08/01 A

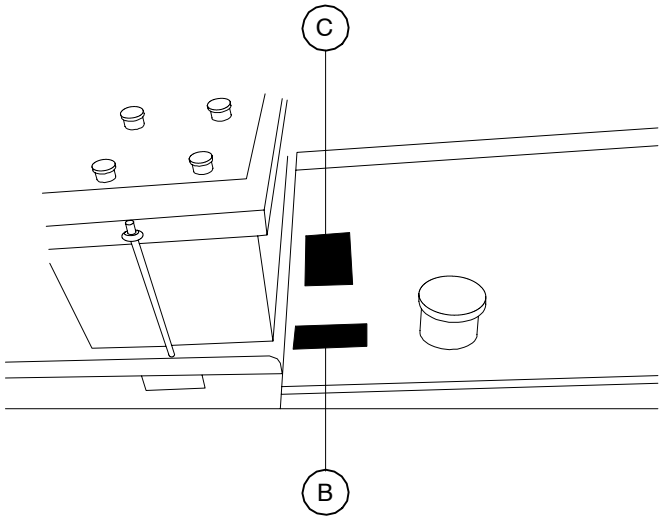
DECAL LOCATION



ITEM	CPN	QTY	DESCRIPTION
A	54568803	1	TOWING DECAL (HIGH SPEED RUNNING GEAR)
B	54629902	1	3-PART WARNING DECAL
C	22055701	1	TOWING DECAL (WAGON WHEEL)
D	54568787	1	IMPROPER OPERATION DECAL
E	54568779	4	ROTATING FAN DECAL
F	54749205	4	NO WELD DECAL
G	54604939	4	FALL OFF UNIT DECAL
H	36514602	1	NOISE EMISSION DECAL
J	54568761	2	HIGH PRESSURE FLUID DECAL
K	54604962	1	RADIATOR FILL DECAL
L	54699400	2	LIFT POINT DECAL
M	22053847	1	OIL LEVEL DECAL
N	54604970	1	OIL FILL DECAL
P	54568795	1	HIGH PRESSURE AIR DECAL
Q	22054365	1	IQ OPERATION DECAL

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 56 01/02 B

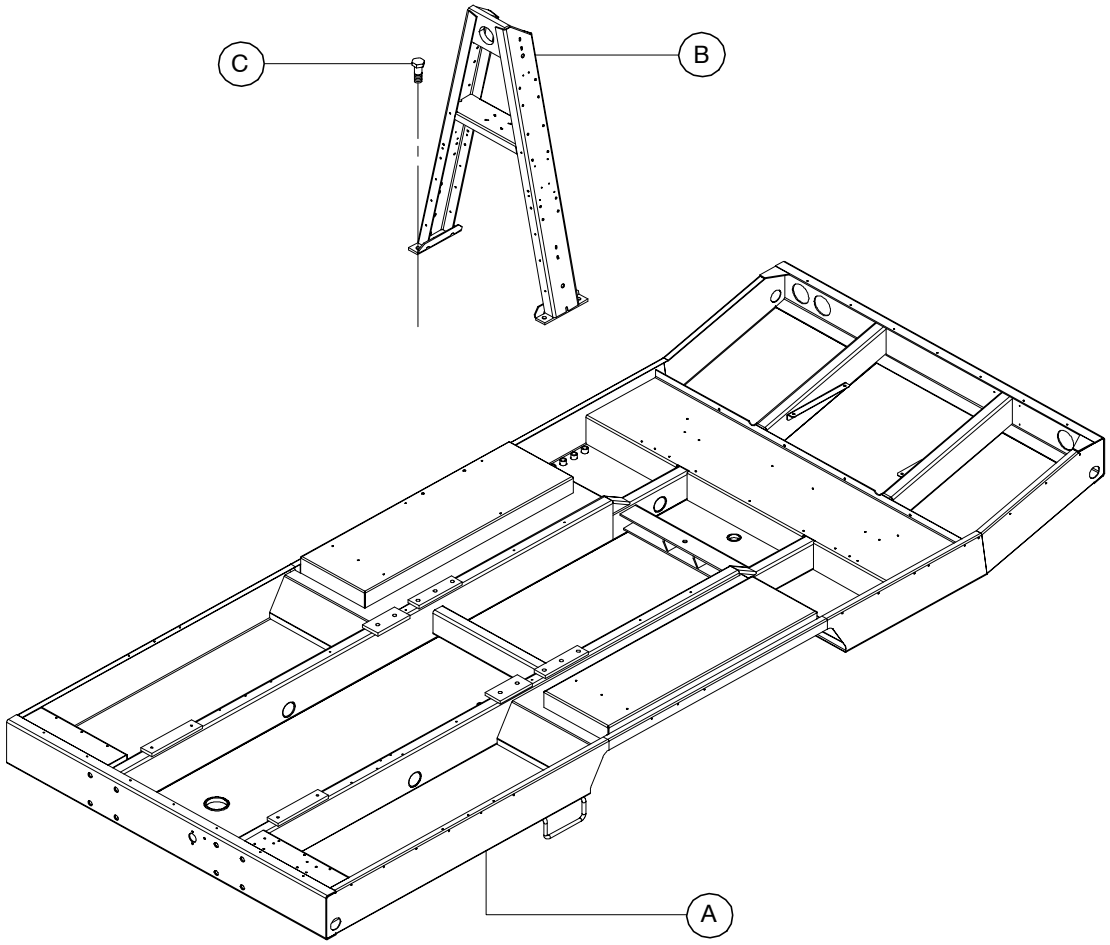




ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	54604988	1	DOOR UNDER PRESSURE DECAL				
B	54625207	2	DIESEL FUEL DECAL				
C	54568753	1	BATTERY GAS DECAL				

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 57 08/01 A

FAST TRACK FRAME ASSEMBLY

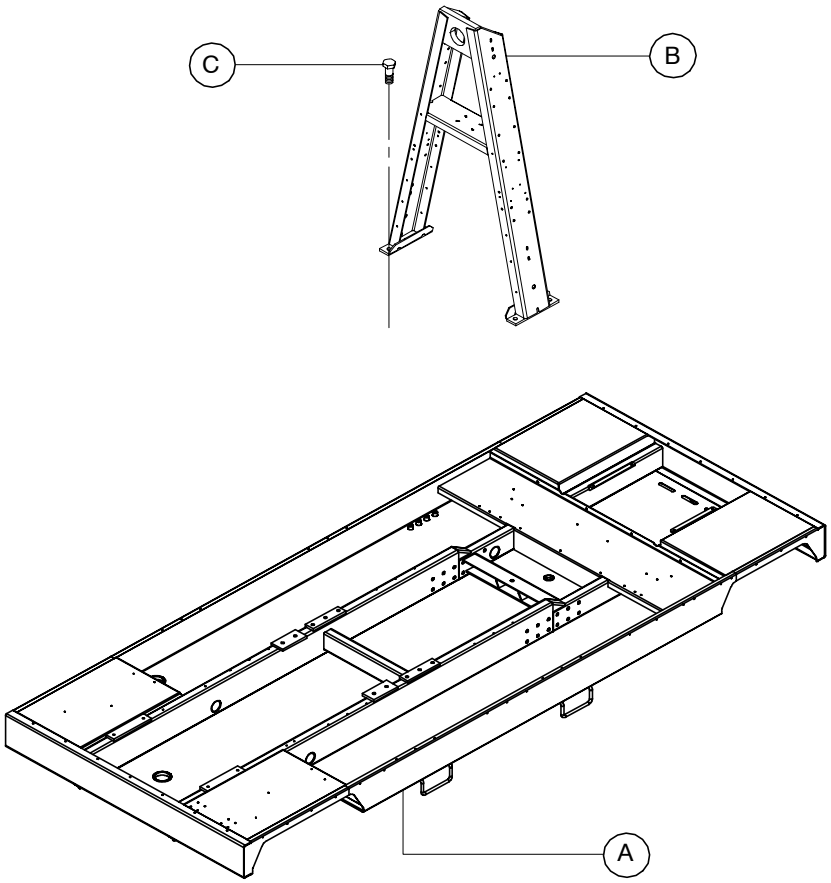


ITEM	CPN	QTY	DESCRIPTION
A	54760202	1	FRAME ASSEMBLY
B	54542543	1	BAIL , LIFTING
C	96720610	4	SCREW

CPN	QTY	DESCRIPTION
LESS RUNNING GEAR OPTION (PARTS)		
22053870	2	MIDDLE SUPPORT ASSEMBLY
22053888	4	LARGE EDGE SUPPORT ASSEMBLY
96727896	4	SCREW (THRU EDGE ASSY. TO FRAME)
36879203	4	NUT (THRU EDGE ASSY. TO FRAME)
36879492	8	SCREW (THRU SIDES OF EDGE SUPPORTS)
36879203	8	NUT (THRU SIDES OF EDGE SUPPORTS)
22054118	2	LARGE FRONT SUPPORT ASSY.
95939914	8	SCREW (THRU SLOTS OF THE SUPPORT)
95941084	8	NUT (TO SCREWS THRU SUPPORTS)
54594098	1	TANK , R.H. FUEL
35279025	24	SCREW (FUEL TANKS TO FRAME)
54594080	1	TANK , L.H. FUEL
22060156	1	HOSE ASSY. (FUEL COOLER TOP TO L.H. TANK)
35136548	1	HOSE ASSY. (R.H. TANK PICK-UP TO ENGINE)

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 2 12/01 B

WAGON WHEEL FRAME ASSEMBLY

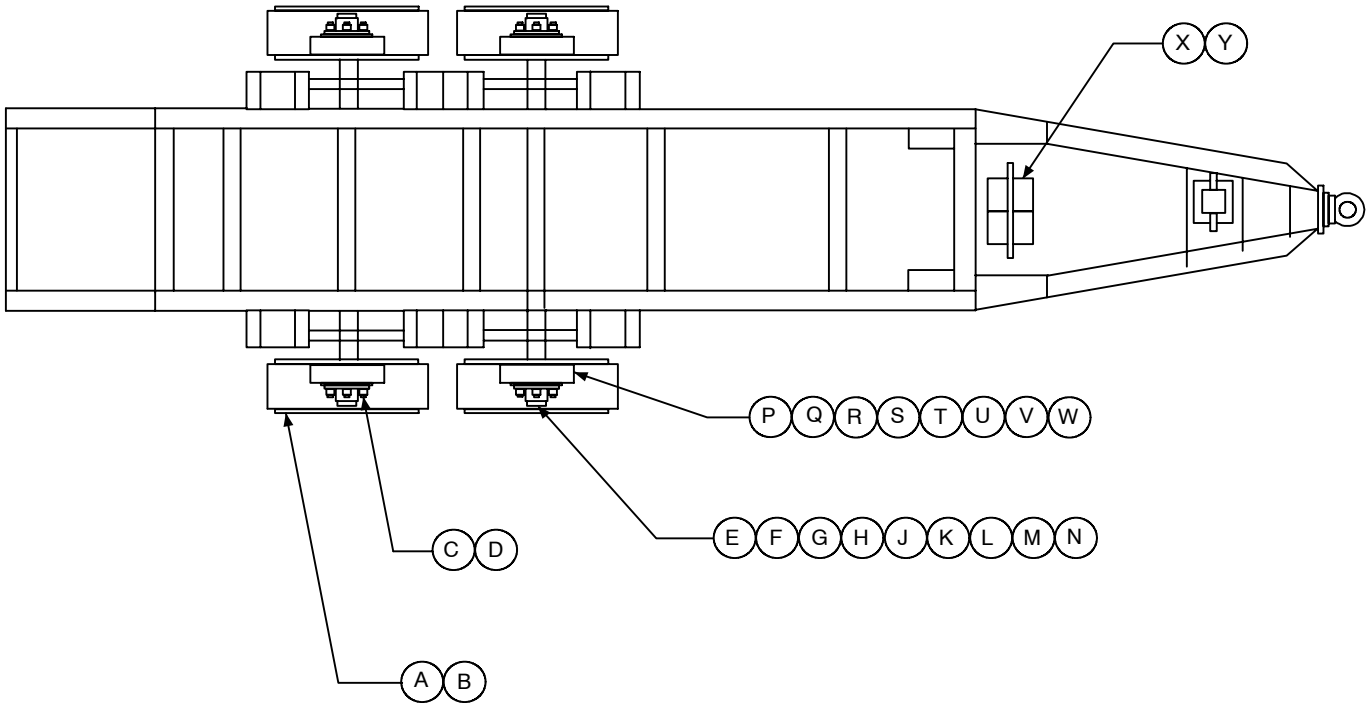


ITEM	CPN	QTY	DESCRIPTION
A	54501796	1	FRAME ASSEMBLY
B	54542543	1	BAIL , LIFTING
C	96720610	4	SCREW

CPN	QTY	DESCRIPTION
LESS RUNNING GEAR OPTION (PARTS)		
22051304	4	SUPPORT (BETWEEN FRAME)
39179072	16	BOLT (SUPPORTS TO FRAME)
96701750	16	NUT (SUPPORTS TO FRAME)
22053706	2	CROSSMEMBER (BETWEEN SUPPORTS)
39179072	8	BOLT (CROSSMEMBER TO SUPPORT LEGS)
96701750	8	NUT (CROSSMEMBER TO SUPPORT LEGS)
54594114	1	TANK , R.H. FUEL TANK
35279025	12	SCREW (FUEL TANK TO FRAME)
54594106	1	TANK , L.H. FUEL TANK
22060149	1	HOSE ASSEMBLY (FUEL COOLER TOP TO L.H. TANK)
35325083	1	HOSE ASSEMBLY (RH FUEL PICK-UP TO ENGINE)

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 3 12/01 B

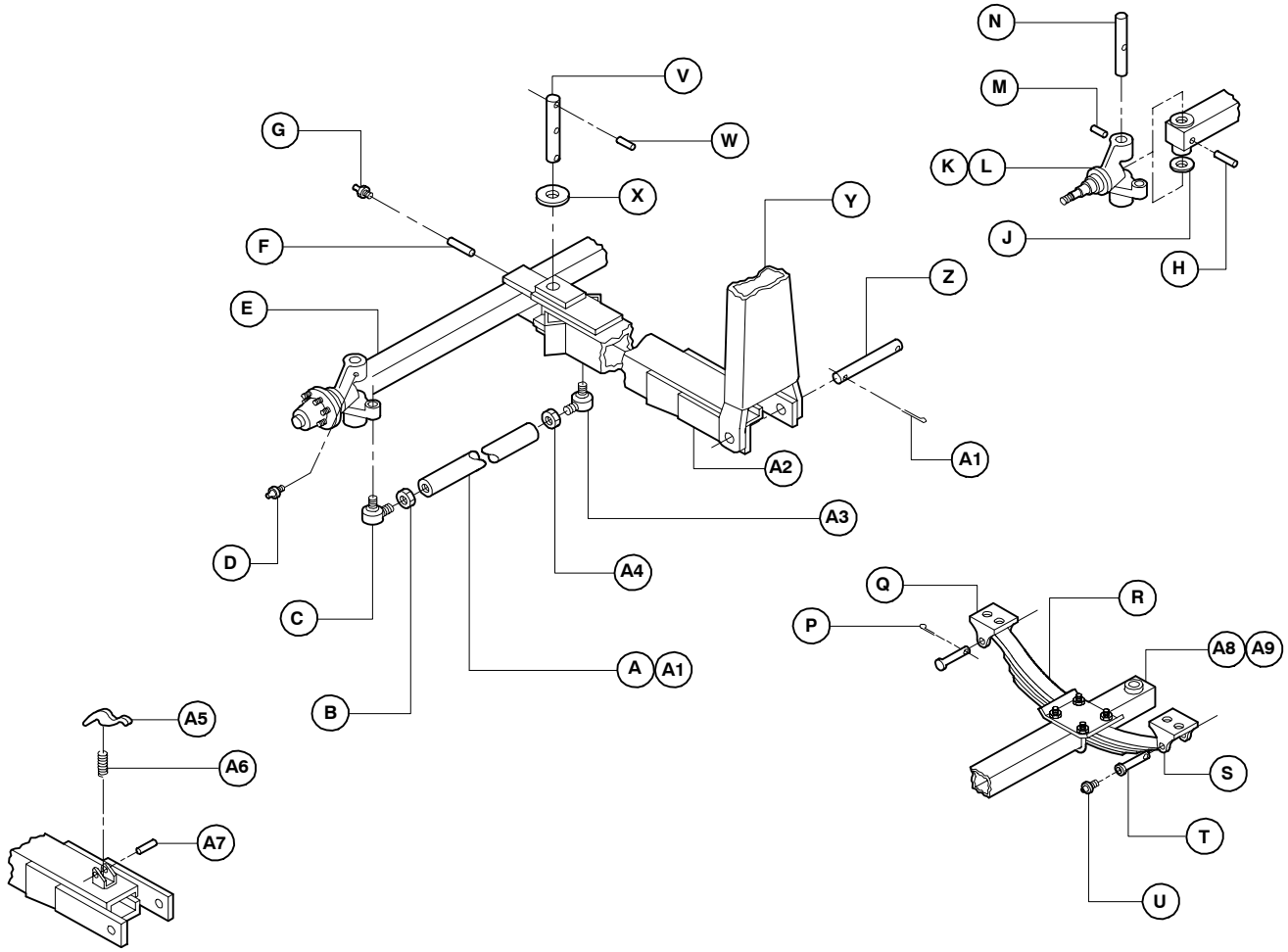
HIGH SPEED RUNNING GEAR



ITEM	CPN	QTY	DESCRIPTION
A	36877991	4	TIRE
B	22077515	4	WHEEL
	36878049	4	CLAMP , PLATE
C	35272150	8	STUD
D	36880276	8	NUT
E	36853091	4	NUT
F	36853109	2	WASHER
G	36853117	2	WASHER , LOCK
H	36851624	1	INNER BEARING CUP
J	36851616	1	OUTER BEARING CUP
K	36851608	1	INNER BEARING
L	36851590	1	OUTER BEARING
M	36851632	1	SEAL
N	36776813	8	CAP , DUST
P	36880268	4	HUB ASSEMBLY
Q	36880292	2	L.H. ELECTRIC BRAKE
R	36880300	2	R.H. ELECTRIC BRAKE
S	36880318	4	SHIELD , BOTTOM DUST
T	36880326	4	SHIELD , TOP DUST
U	36880334	7	BOLT
V	95939955	7	WASHER , LOCK
W	36880342	7	LOCKNUT
X	35603190	2	CHOCK , WHEEL
Y	35333830	2	STRAP , RUBBER

MANUAL NO. — DRAWING NO. DATE / REV:
54757919 5 01/02 B

WAGON WHEEL RUNNING GEAR



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	36504389	2	ROD , TIE	X	95934956	2	WASHER
B	36140730	2	NUT , JAM	Y	36719557	1	DRAWBAR
C	35588961	2	BALL JOINT , OUTER	Z	35107168	1	PIN , HINGE
D	35221894	2	FITTING , LUBE	A1	95201455	2	PIN , COTTER
E	36753259	1	AXLE , FRONT	A2	36753242	1	ARM , CENTER
F	95717369	1	PIN , ROLL	A3	35588953	2	BALLJOINT , INNER
G	35221894	1	FITTING , LUBE	A4	35140722	2	NUT , JAM
H	95338554	2	PIN , ROLL	A5	36719219	1	LATCH
J	95239927	4	WASHER	A6	35141167	1	SPRING
K	36851566	1	L.H. KNUCKLE ASSEMBLY	A7	95098703	2	PIN , ROLL
L	36851574	1	R.H. KNUCKLE ASSEMBLY	A8	36851376	1	FRONT AXLE ASSEMBLY
M	95673042	2	PIN , ROLL	A9	36851384	1	REAR AXLE ASSEMBLY
N	35319045	2	PIN , KING	B1	36853042	2	TIE ROD ASSEMBLY (INCLUDES A,B,C,A3,A4)
P	95018982	2	PIN , COTTER				
Q	36719169	2	BRACKET		22077515	4	WHEEL
R	36719466	2	SPRING		36877991	4	TIRE
S	36719177	2	BRACKET		36878049	4	RING , CLAMP
T	35111590	2	BOLT , SHACKLE				
U	95318556	2	FITTING , LUBE				
V	35588755	1	PIN , CENTER				
W	95717377	2	PIN , ROLL				

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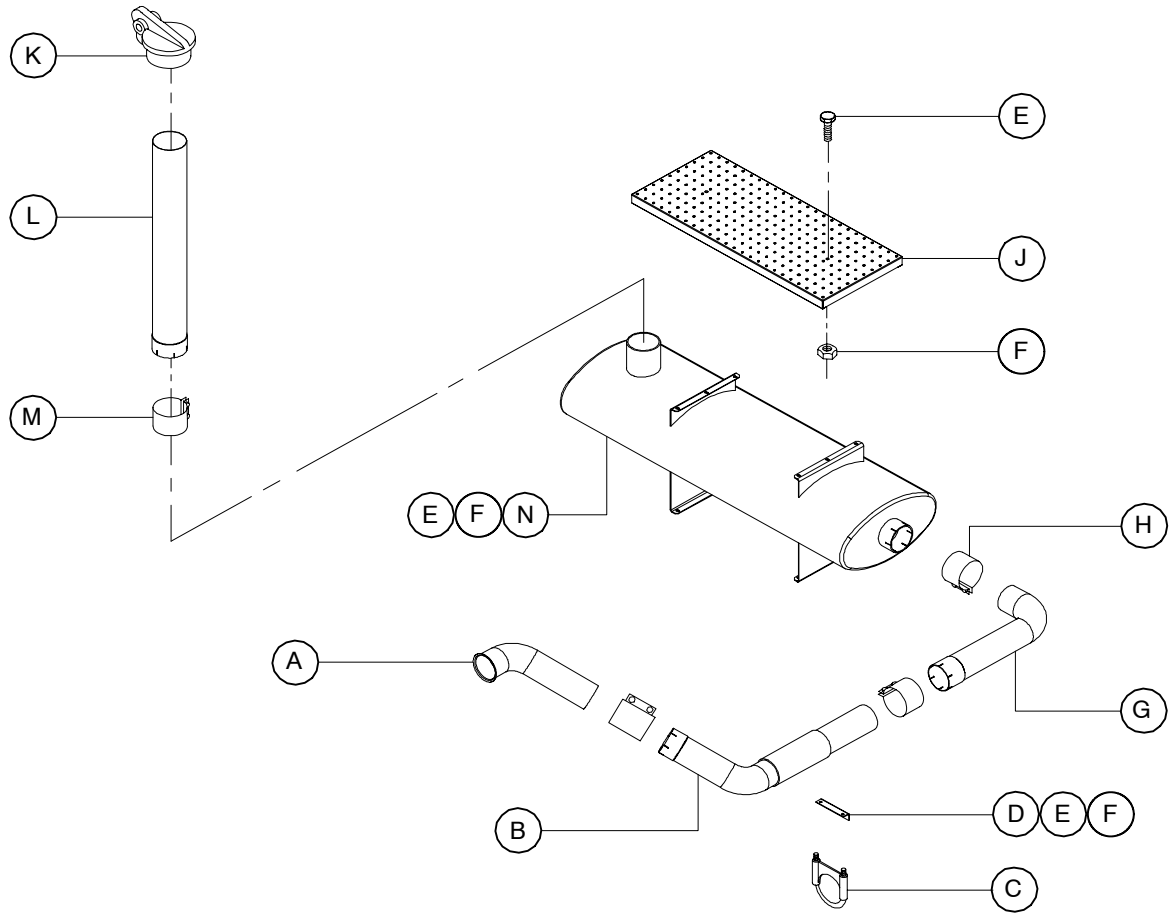
EXHAUST ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	54603774	1	PIPE , ENGINE TURBO				
B	54616552	1	PIPE , EXHAUST (STANDARD)				
	54738752	1	PIPE , EXHAUST (IQ)				
C	35127653	1	CLAMP				
D	35611235	1	SUPPORT , PIPE				
E	36880995	12	SCREW				
F	36879195	12	NUT				
G	54616560	1	PIPE , EXHAUST				
H	35307131	3	CLAMP , SEAL				
J	54629589	1	STEP				
K	35851351	1	CAP , RAIN				
L	54629126	1	PIPE , EXHAUST				
M	36799807	1	CLAMP , SEAL				
N	54603204	1	MUFFLER				
	54662010	1	WRAP , EXHAUST				
	54721105	1	KIT , WRAP WIRE KIT				

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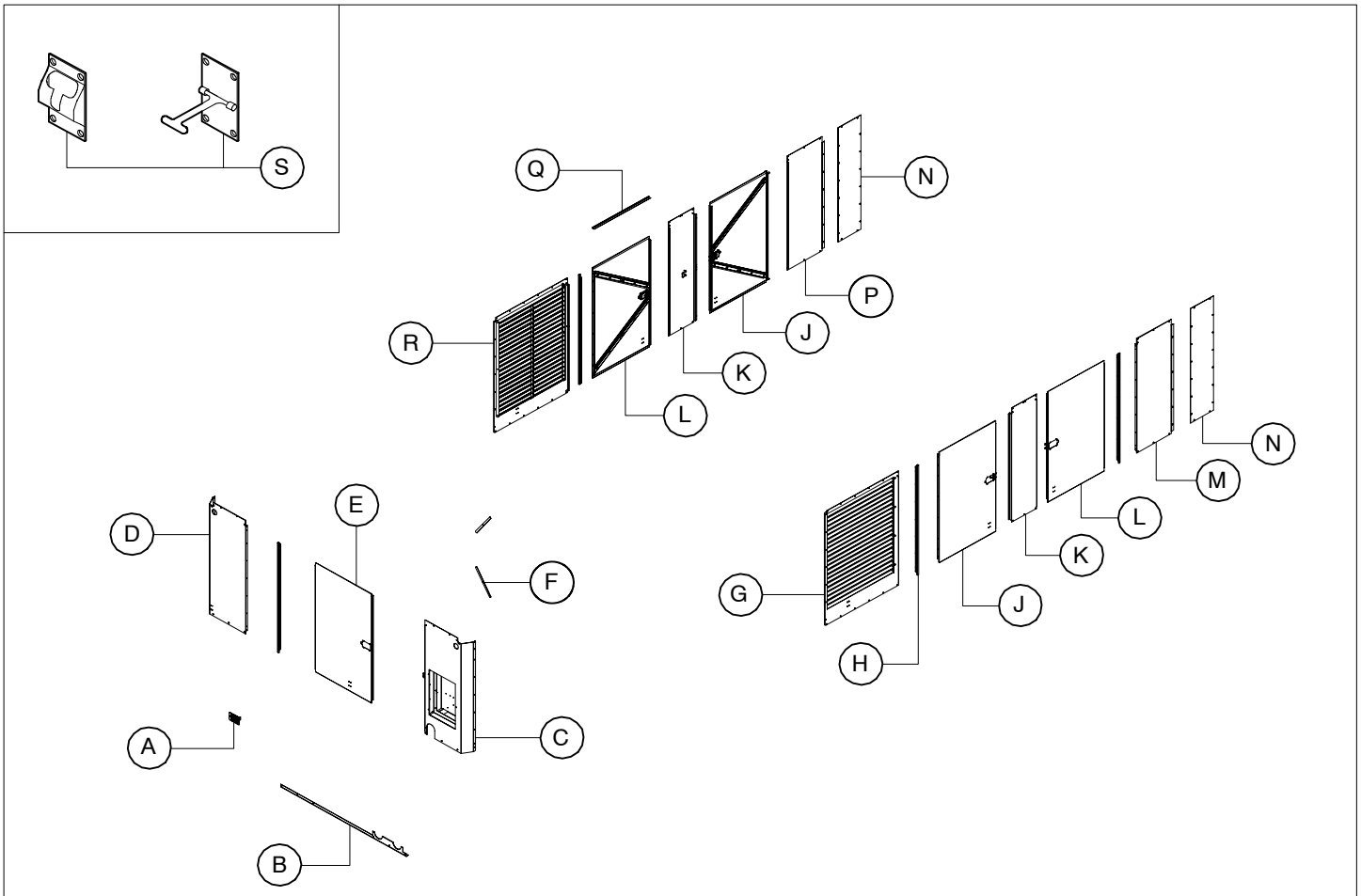
COMMON ENCLOSURE ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION
A	36793602	5	LATCH , DOOR SLAM
B	54576871	1	BRACE , FRONT PANEL
C	54576939	1	PANEL , L.H. FRONT
	54744479	1	PANEL , L.H. FRONT (IQ UNITS)
D	54576947	1	PANEL , R.H. FRONT
	22055750	1	PANEL , R.H. FRONT (IQ UNITS)
E	36863363	1	DOOR , FRONT
F	54718184	2	BRACE , FRONT
G	54587944	1	GRILLE , L.H. FRONT SIDE
H	36863413	5	HINGE
J	36863660	1	DOOR , SIDE
K	54587969	1	PANEL , CENTER
L	36863652	1	DOOR , SIDE
M	54587977	1	PANEL , L.H. REAR SIDE
N	54663240	1	PANEL , REAR SIDE
P	54587985	1	PANEL , R.H. REAR SIDE
Q	36863371	5	ANGLE , DOOR DRIP
R	54587951	1	GRILLE , R.H. FRONT SIDE
S	36849925	5	LATCH , DOOR

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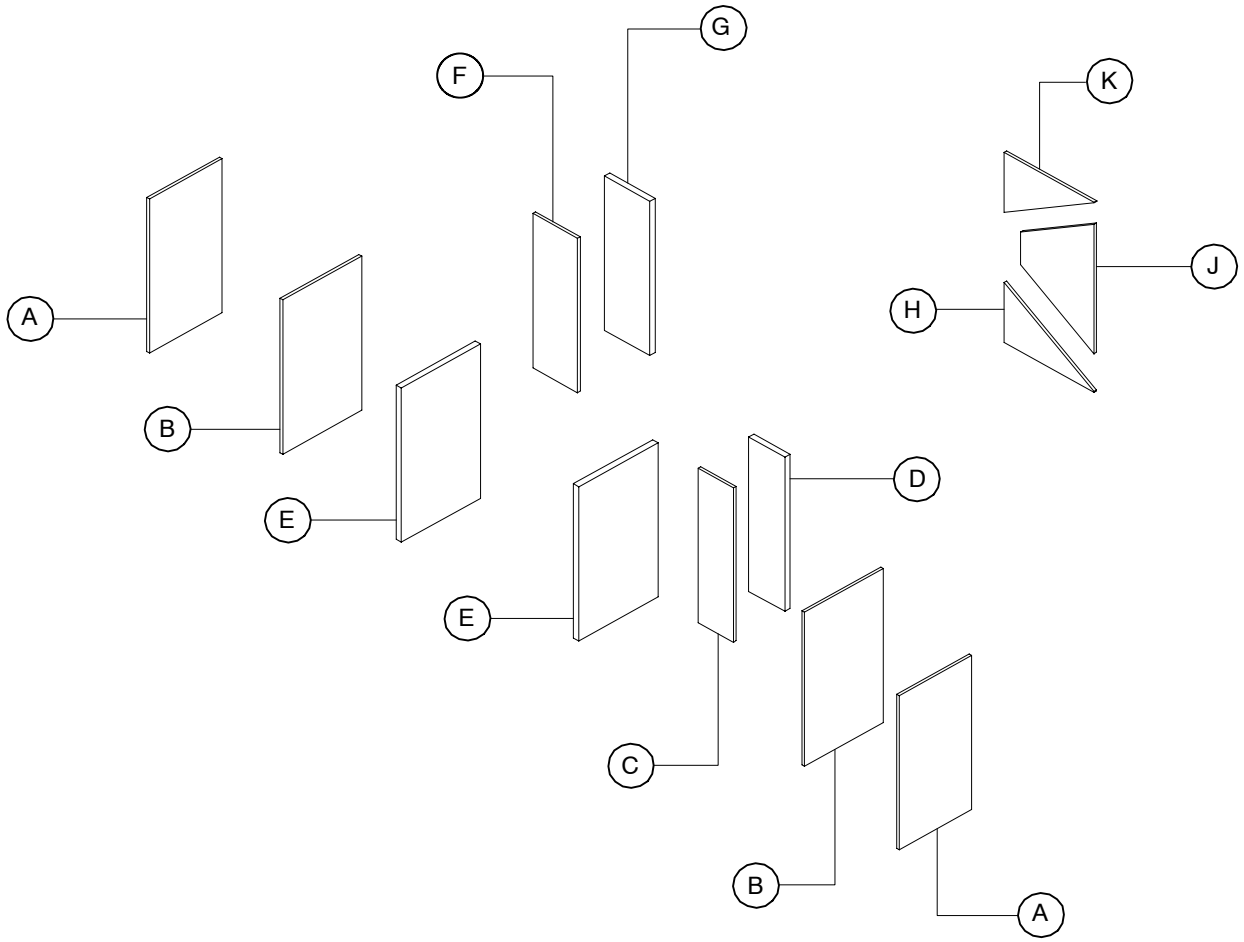
HIGH SPEED RUNNING GEAR FOAM



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	54675848	1	FOAM , SPLITTER BAFFLE				
B	54675830	1	FOAM , SPLITTER BAFFLE				
C	54675822	1	FOAM , L.H. BAFFLE				
D	54675806	1	FOAM , L.H. BAFFLE				
E	54675814	1	FOAM , L.H.				
F	54685334	1	FOAM , R.H.				
G	54685326	1	FOAM , R.H.				
H	54759550	1	FOAM , BOTTOM DOOR				
J	54759543	1	FOAM , CENTER DOOR				
K	54759535	1	FOAM , TOP DOOR				
	54737606	1	FOAM , L.H. BAFFLE (IQ UNITS)				
	54737598	1	FOAM , L.H. BAFFLE (IQ UNITS)				

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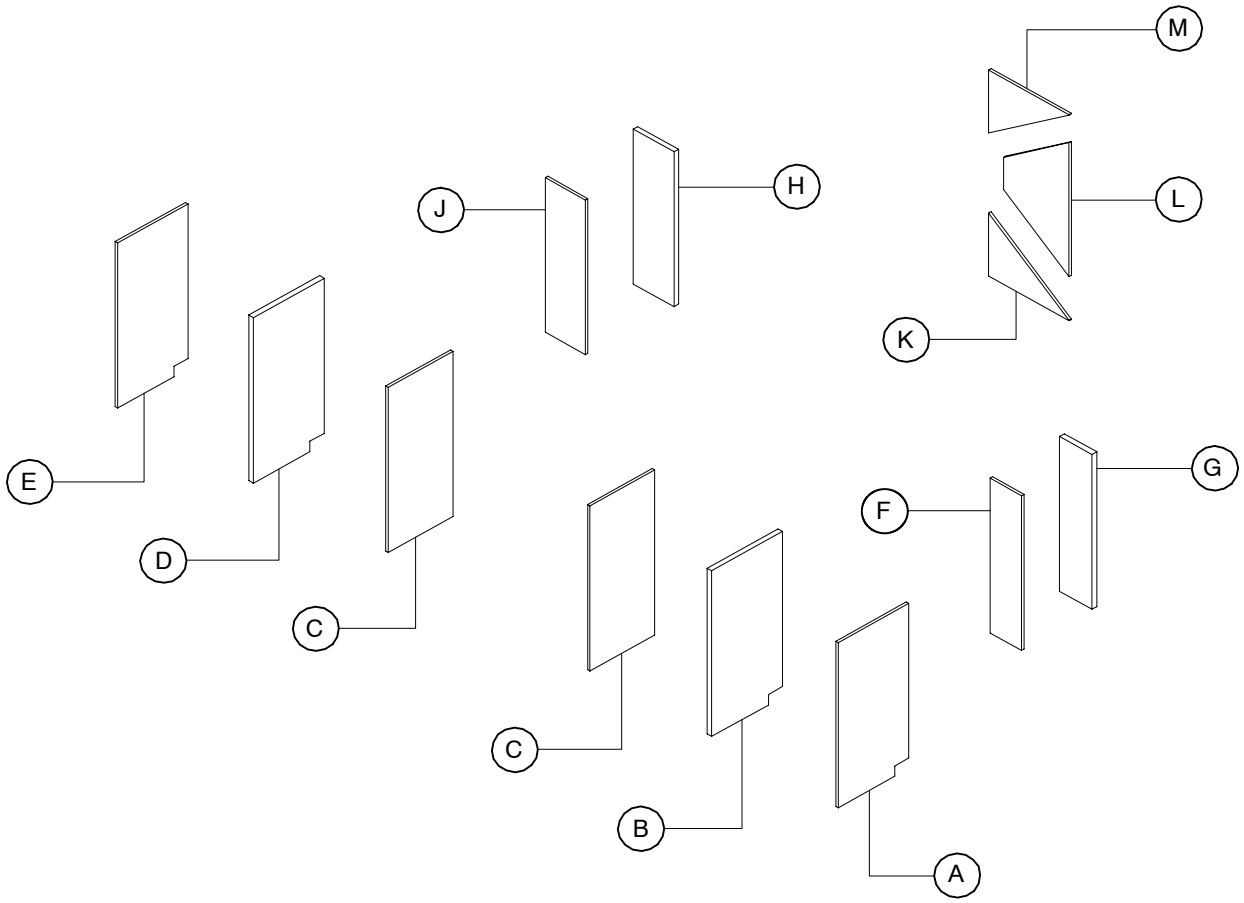
WAGON WHEEL FOAM



ITEM	CPN	QTY	DESCRIPTION
A	54691134	1	FOAM , L.H. SPLITTER BAFFLE
B	54691175	1	FOAM , L.H. SPLITTER BAFFLE
C	54691118	1	FOAM , SPLITTER BAFFLE
D	54691191	1	FOAM , R.H. SPLITTER BAFFLE
E	54691159	1	FOAM , R.H. SPLITTER BAFFLE
F	54691126	1	FOAM , L.H. BAFFLE
G	54691167	1	FOAM , L.H. BAFFLE
H	54691183	1	FOAM , R.H. BAFFLE
J	54691142	1	FOAM , R.H. BAFFLE
K	54670459	1	FOAM , BOTTOM DOOR
L	54760442	1	FOAM , MIDDLE DOOR
M	54760434	1	FOAM , TOP DOOR
	54737606	1	FOAM , L.H. BAFFLE (IQ UNITS)
	54737598	1	FOAM , L.H. BAFFLE (IQ UNITS)

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VIKING ELECTRICAL COMPONENTS

PART NO.	QTY	DESCRIPTION
54757224	1	IQ WIRING HARNESS
54474572	1	COOLANT LEVEL SWITCH
36896975	1	BATTERY DISCONNECT SWITCH
36920825	1	0-100 PSI PRESSURE TRANSDUCER
✳54765946	1	0-500 PSI PRESSURE TRANSDUCER
36892362	1	24V SEALED RELAY
36785319	1	MAG SPEED SENSOR
36898922	2	THERMISTOR TEMPERATURE PROBE
✳36842300	1	START / RUN SOLENOID
✳36842318	1	COMPRESSOR SOLENOID
✳✳36840841	2	SOLENOID VALVE
36847838	2	AIR FILTER SWITCH
36870608	1	ENGINE OIL PRESSURE SENDER
36841138	2	ENG. & COMP. TEMP SENDER
✳✳36757581	1	COMP. OIL PRESSURE SWITCH
36850691	1	START-UP COMPRESSOR
✳✳54496773	1	0-225 PSI PRESS. TRANSDUCER
36792083	2	FUSE 20 AMP BLADE
22071591	2	FUSE 10 AMP BLADE
35376169	4	DIODE

PART NO.	QTY	DESCRIPTION
35577873	1	AUXILARY START RELAY
54720701	1	ENG. TEMP. SENDER ADAPTOR
36841526	1	CONTROL ORIFICE HEATER
✳✳36864677	1	REGULATOR HEATER
54765367	1	NEGATIVE BATTERY CABLE
54765375	1	POSITIVE BATTERY CABLE
54765383	1	POSITIVE JUMPER BATTERY CABLE
35128982	1	BATTERY JUMPER
35578194	1	FRAME GROUND STRAP
35293075	1	ENGINE GROUND STRAP
54672803	1	FUEL LEVEL SENDER (WAGON WHEEL)
54672811	1	FUEL LEVEL SENDER (HIGH SPEED)
54688411	1	WEDGE CONTROLLER
54654918	1	W1 CHASSIS HARNESS
✳54765953	1	ADDRESS PLUG
✳✳54765649	1	ADDRESS PLUG
✳36841526	1	REGULATOR-HEATER
22060594	1	CONTROL PANEL HARNESS

IQ OPTION

PART NO.	QTY	DESCRIPTION
54757224	1	IQ WIRING HARNESS
54775887	1	IQ HEATER HARNESS
36841526	5	IQ ORIFICE HEATERS
36898310	1	ACTUATOR
36898922	1	THERMISTOR TEMP. PROBE
36892362	1	24V SEALED RELAY
36920643	1	TCU
36899599	1	IQ FILTER SWITCH - 20 PSI
36899615	1	IQ FILTER SWITCH - 25 PSI

✳ DENOTES XHP MACHINES ONLY
✳✳ DENOTES HP MACHINES ONLY

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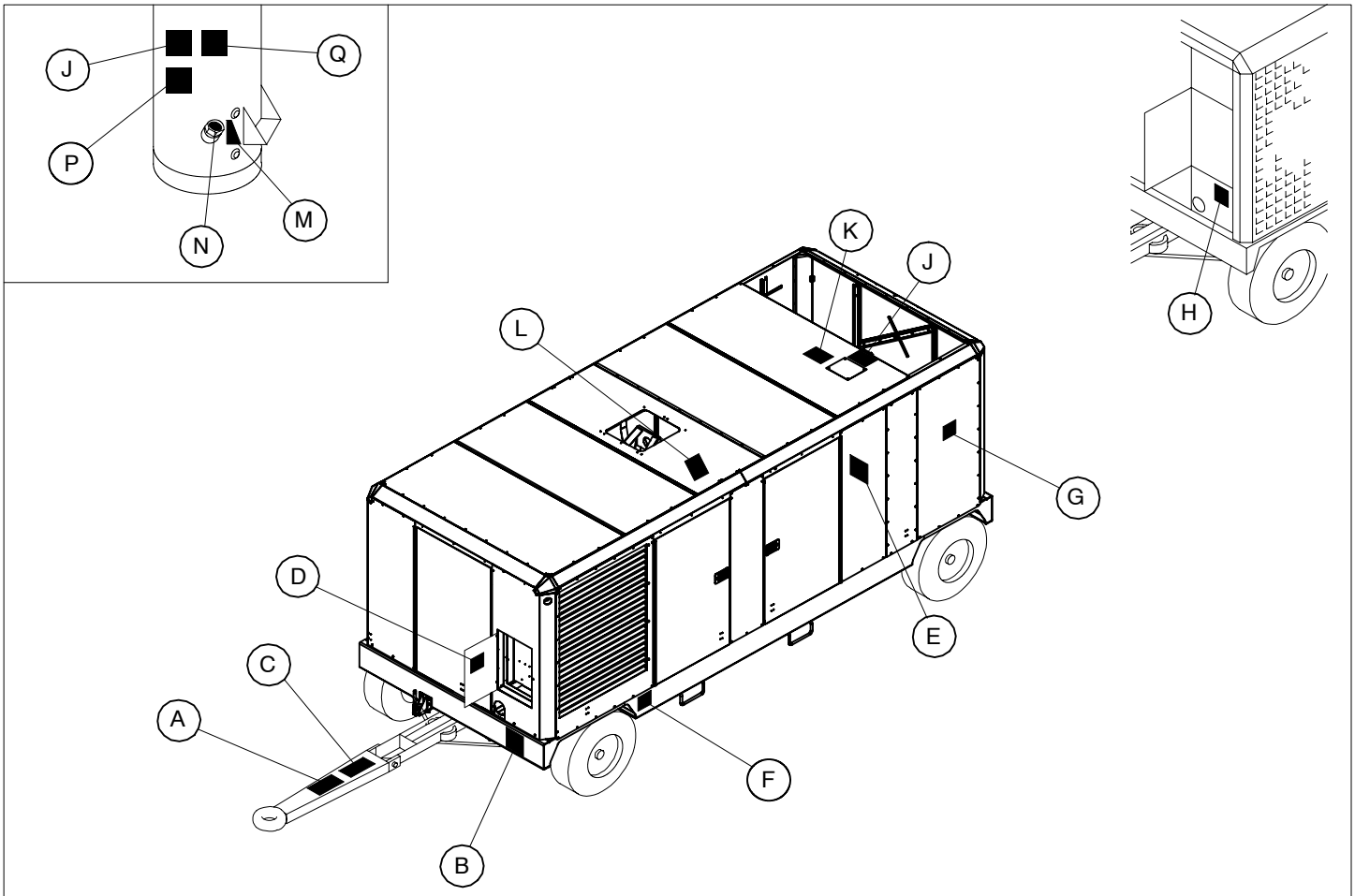
DECAL LOCATION



ITEM	CPN	QTY	DESCRIPTION
A	54568803	1	TOWING DECAL (HIGH SPEED RUNNING GEAR)
B	54629902	1	3-PART WARNING DECAL
C	22055701	1	TOWING DECAL (WAGON WHEEL)
D	54568787	1	IMPROPER OPERATION DECAL
E	54568779	4	ROTATING FAN DECAL
F	54749205	4	NO WELD DECAL
G	54604939	4	FALL OFF UNIT DECAL
H	36514602	1	NOISE EMISSION DECAL
J	54568761	2	HIGH PRESSURE FLUID DECAL
K	54604962	1	RADIATOR FILL DECAL
L	54699400	2	LIFT POINT DECAL
M	22053847	1	OIL LEVEL DECAL
N	54604970	1	OIL FILL DECAL
P	54568795	1	HIGH PRESSURE AIR DECAL
Q	22054365	1	IQ OPERATION DECAL

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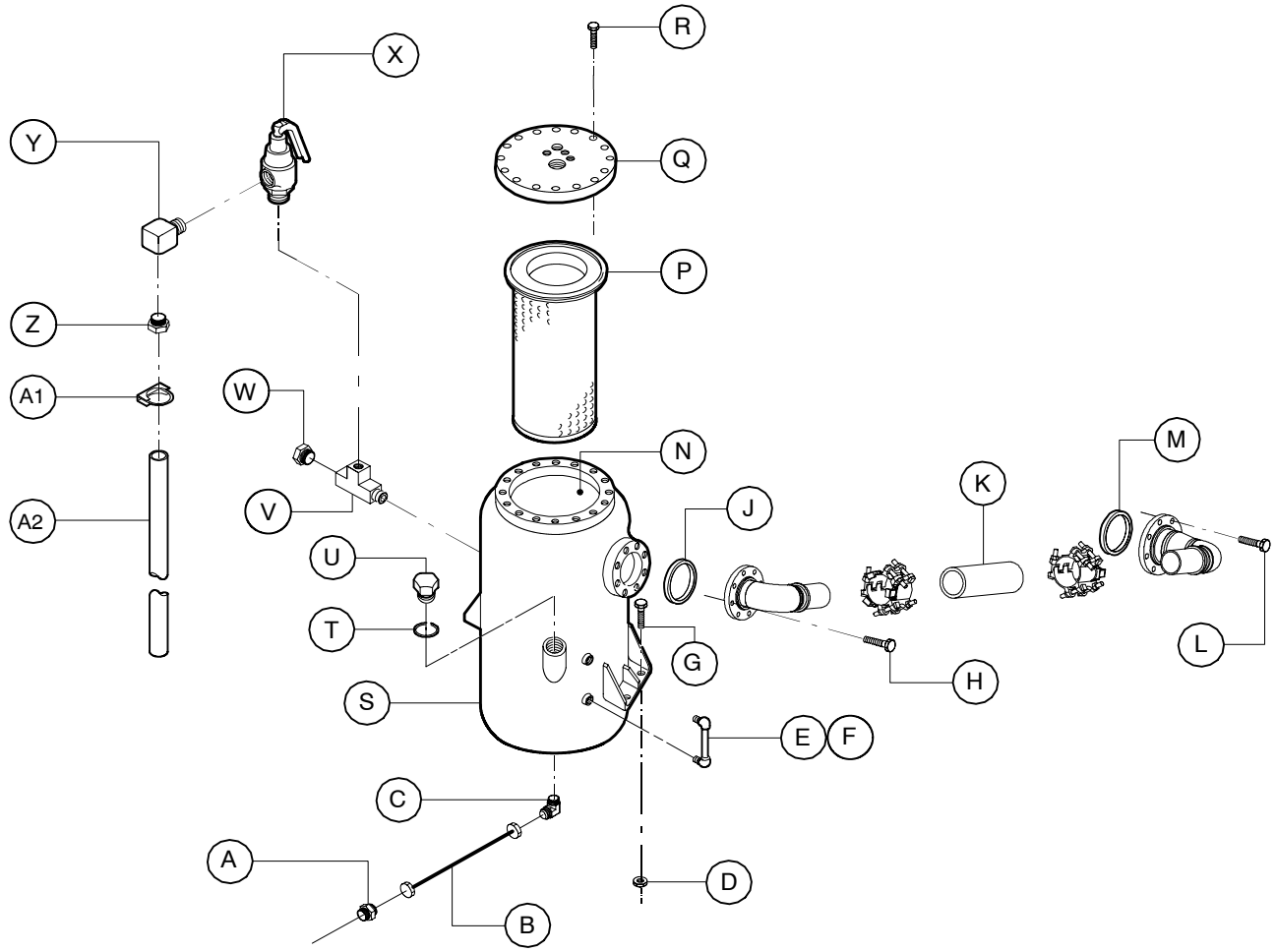
SEPARATOR TANK ASSEMBLY



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	95219747	1	CONNECTOR		36898922	1	PROBE , TEMPERATURE
B	36878254	1	HOSE ASSEMBLY				
C	35294750	1	ELBOW				
D	36879203	2	NUT				
E	54629464	1	GLASS , SIGHT				
F	54627799	2	ELBOW				
G	36877793	2	SCREW				
H	36765121	8	SCREW				
J	36786283	1	GASKET				
K	54612437	1	DISCHARGE HOSE ASSEMBLY				
L	36765121	8	SCREW				
M	36856656	1	GASKET				
N	36754414	1	LINER , SHELL				
P	36754406	1	ELEMENT , SEPARATOR				
	35610617	1	GASKET				
Q	54612429	1	COVER , TANK				
R	95934170	16	SCREW				
S	54612403	1	TANK , SEPARATOR				
T	35277797	1	O-RING				
U	35802933	1	PLUG , OIL FILL				
V	95954285	1	TEE				
W	95942108	1	ADAPTER				
X	36764371	1	VALVE , SAFETY				
Y	95953311	1	ELBOW				
Z	36764389	1	ADAPTER				
A1	35192178	1	CLAMP				
A2	54744149	1	PIPE , SAFETY VALVE				

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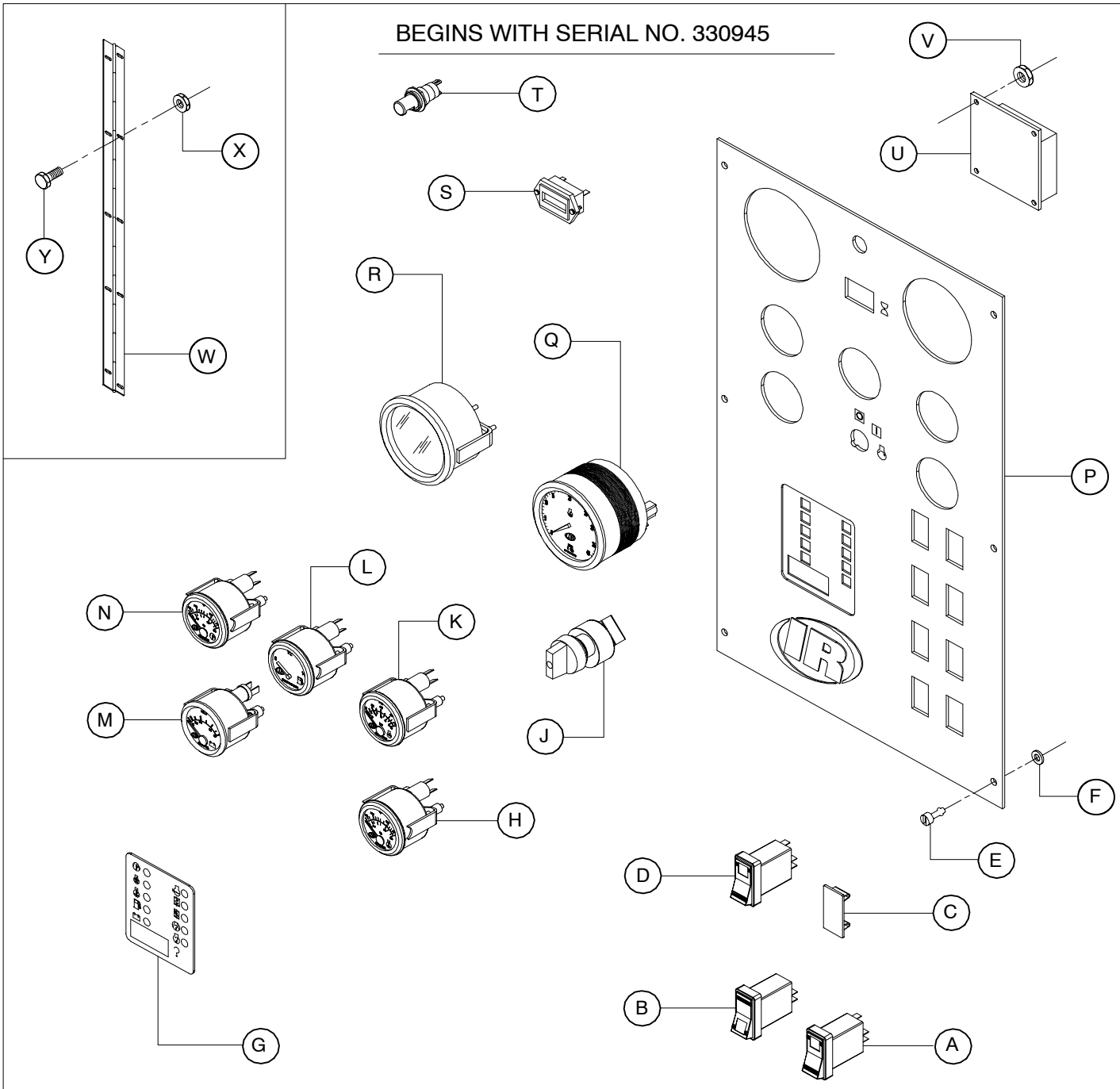
54757919 24 07/02 B

INSTRUMENT PANEL ASSEMBLY

BEGINS WITH SERIAL NO. 330945



ITEM	CPN	QTY	DESCRIPTION	ITEM	CPN	QTY	DESCRIPTION
A	22053896	1	SWITCH , LAMPS	M	36841153	1	GAGE , VOLTAGE
B	22054050	1	SWITCH , HEATER	N	22105613	1	GAGE , AIR DISCHARGE
C	22054142	5	PLUG , SWITCH	P	22105571	1	PANEL , INSTRUMENT
D	22054076	1	SWITCH , AFTER WARM-UP	Q	22055883	1	TACHOMETER
E	36844124	3	SCREW , QUARTER TURN	R	22105639	1	GAGE , 300 PSI PRESSURE
F	35369180	3	RETAINER	S	54766704	1	HOURMETER
G	22055800	1	OVERLAY , MODULE	T	36852622	1	LIGHT , PANEL
H	36870590	1	GAGE , OIL PRESSURE		22113880	1	BULB , LIGHT
J	22127385	1	SWITCH ASSEMBLY	U	54688411	1	MODULE , WEDGE
	22127377	1	SWITCH , START	V	95928800	4	NUT
	22134118	1	KNOB ASSEMBLY	W	36840908	1	HINGE
K	22105621	1	GAGE , WATER TEMPERATURE	X	35144492	3	NUT
L	22050991	1	GAGE , FUEL LEVEL	Y	35365386	3	SCREW
					22137426	7	BULB , GAGE LIGHT

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54757919 30A 7/02 A

AC HEATER KIT

PART NO.	QTY	DESCRIPTION
36851533	1	BRACKET , PRESSURE SWITCH
36880995	2	SCREW (ATTACH BRACKET)
36879195	2	NUT (ATTACH BRACKET)
54464607	1	AC POWERED COLD START ASSY.
54464664	1	HARNESS , PRESSURE SWITCH
54480298	1	WELL , THERMOSTAT
54464623	1	HEATER , OIL PAN
36920346	1	PAD , HEATER 8D BATTERY
36920338	1	PAD , HEATER 8D BATTERY
35283464	1	ELBOW (IN THREADED PORT OF PRESS. SWITCH)
35114545	1	TEE (IN ADAPTER AT ENG. OIL PORT)
35283472	1	CONNECTOR (IN TEE FACING LIFTING BAIL)

(FOR TEMPERATURES BELOW 10 F°USE IR PERFORMANCE 500 OIL 35382944 / 55 GAL.)

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54757919 39B 12/01 B