INGERSOLL-RAND®

OPERATING, MAINTENANCE, PARTS MANUAL

COMPRESSOR MODELS

VHP400 WCU
HP450 WCU
XP525 WCU
P600 WCU

Code A

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.

INGERSOLL-RAND®
AIR COMPRESSORS
Portable Air Compressor Division
P.O. Box 868 - 501 Sanford Ave
Mocksville, N.C. 27028

Book 35392893 (5/00)
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:

Declaration of Conformity

WITH EC DIRECTIVE

98/37/EC

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

We

Represented In EC By:

Ingersoll-Rand Company Limited
Standard Products Division
Swan Lane Hindley Green
Wigan WN2 4EZ
United Kingdom

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

HP1300WCU	VHP825WCU	XHP900WCAT	VHP750WCAT	XHP1070CAT
XP1400WCU	HP935WCU	XHP650WCAT	VHP850WCAT	NXP1300WCU
P1600WCU	XP1050WCU	XHP750WCAT	HP900WCAT	
XP900WCU	HP825WCU	XHP825WCAT	XP1000WCAT	

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

EN1012-1, EN29001, EN202, EN60204-1
PN8NTC2, EN 50081, EN50082

Issued at Mocksville on 1-1-95

Ric Lunsford
Manager of Quality Control

Issued at Hindley Green on 1-1-95

H. Seddon, Q.A. Manager

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.

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.

The safety valve located in the separator tank must be checked periodically for correct operation.

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.

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

Never operate the engine of this machine inside a building without adequate ventilation. Avoid breathing exhaust fumes when working on or near the 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.

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).

Disconnect 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! If too much is injected, it may result in costly damage to the engine.

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.

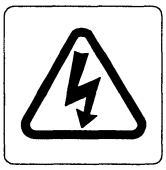
SAFETY LABELS

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.

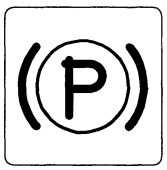
Corrosion risk

Hot Surface

Lifting point



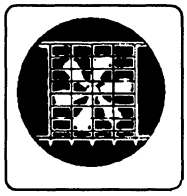
WARNING: Electrical shock risk.



Parking Brake

No open flame

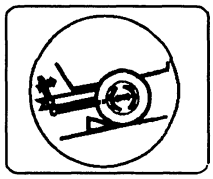
Diesel Fuel.
No open flame.



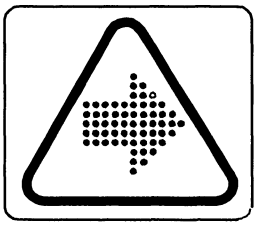
Do not operate the machine without guard being fitted.

Lifting point

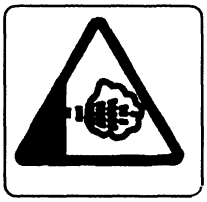
WARNING - Flammable liquid.



When parking use prop stand, handbrake and wheel chocks.



Air/gas flow or Air discharge.

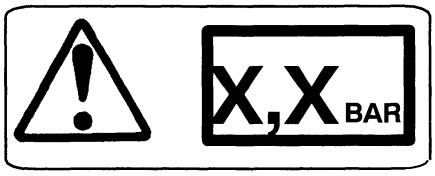


WARNING - Hot and harmful exhaust gas.

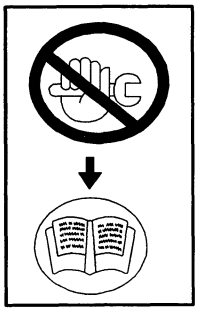
Tie down point

Do not breathe the compressed air from this machine.

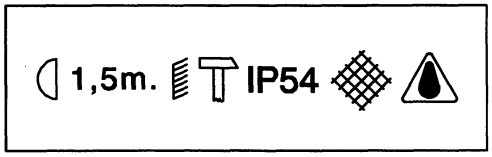
Read the Operation and Maintenance manual before operation or maintenance of this machine is undertaken.



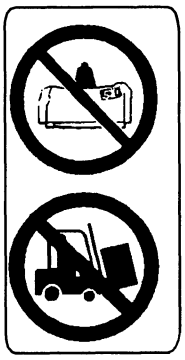
WARNING - Maintain correct tire pressure. (Refer to the *GENERAL INFORMATION* section of this manual).



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

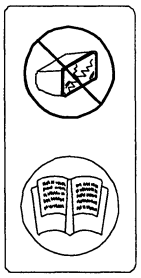


Rough Service Designation
Wet Location Operation

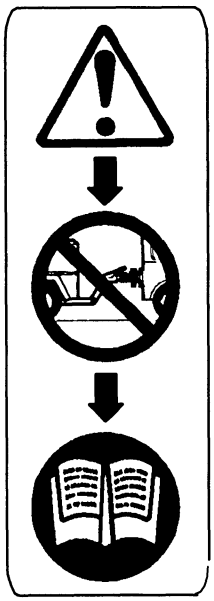


Do not stack

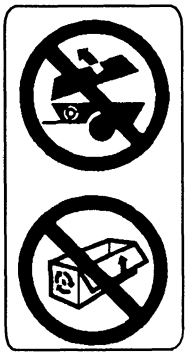
Do not use fork lift truck from this side



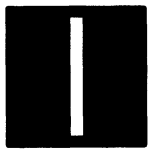
Replace any cracked protective shield.



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

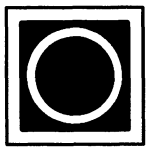


Do not operate with the doors or enclosure open.

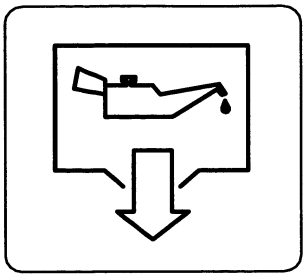


On (power).

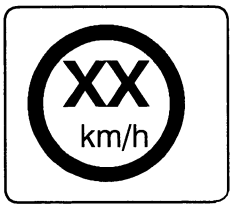
Off (power).



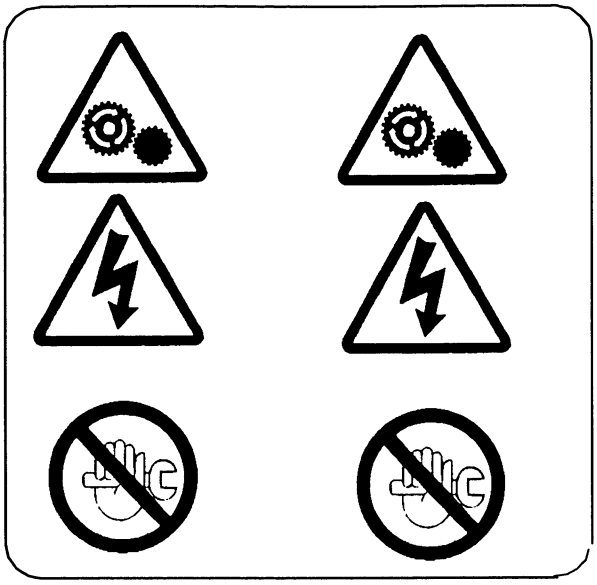
Emergency stop.



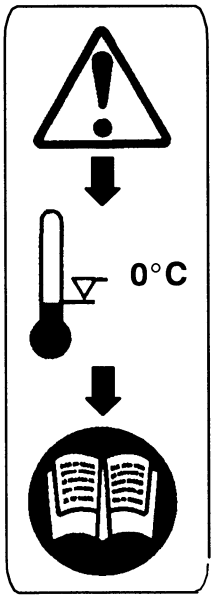
Oil Drain



Do not exceed the speed limit.



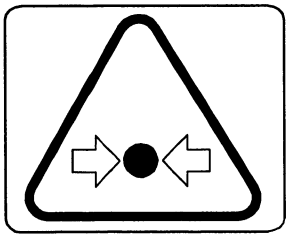
WARNING - Do not undertake any maintenance on this machine until the electrical supply is disconnected and the air pressure is totally relieved.



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

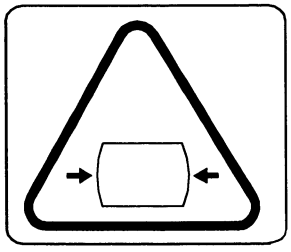
Read the Operation and Maintenance manual before operation or maintenance of this machine is undertaken

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)

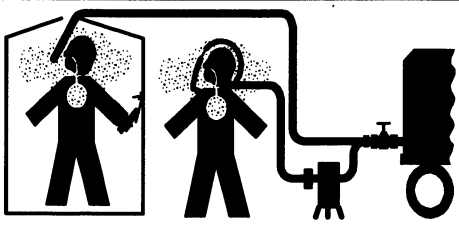
Indicates the presence of a hazard which WILL or can cause injury or property damage, if ignored.

NOTICE

(Blue Background)

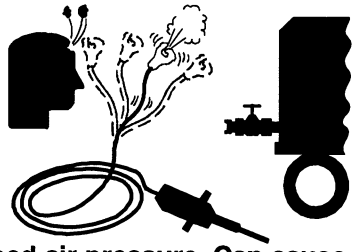
Indicates important set-up, operating or maintenance information.

DANGER



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

WARNING



Trapped air pressure. Can cause serious injury or death.

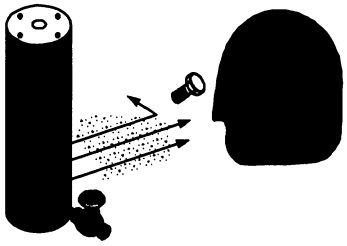
Close service valve and operate tool to vent trapped air before performing any service.

WARNING

Hot pressurized fluid.
Can cause serious burns.

Do not open radiator while hot.

WARNING



High pressure air. Can cause serious injury or death.

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

WARNING

Improper operation of this equipment. CAN cause serious injury or death.

Read Operator's Manual supplied with this machine before operation or servicing.

WARNING

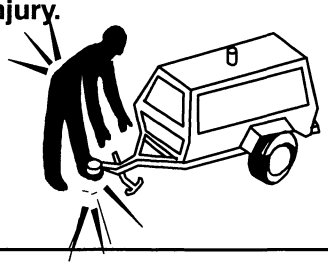
Modification or alteration of this machine. CAN cause serious injury or death.

Do NOT alter or modify this machine without the express written consent of the manufacturer.

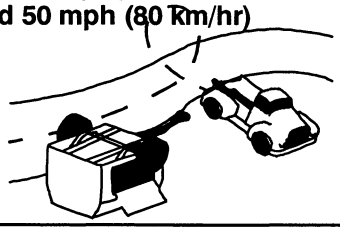
WARNING

Collapsing jack stand. Will cause serious injury.

Insert locking pin completely.

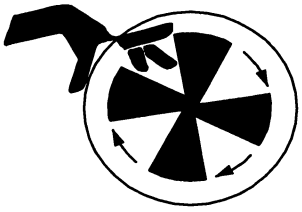


Excessive towing speed. Can cause serious injury or death. Do NOT exceed 50 mph (80 km/hr)



For Highway Towable Units

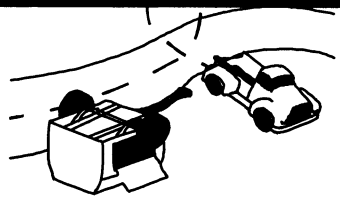
WARNING



Rotating Fan Blade. CAN cause serious injury.

Do NOT operate with guard removed.

WARNING

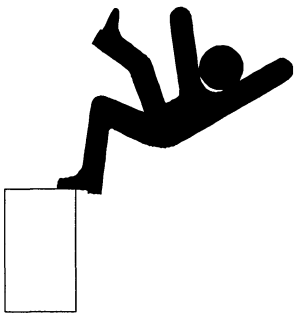


Excessive Towing Speed. CAN cause serious injury or death.

Do NOT Tow on Highway.
Do NOT exceed 20 mph (32 km/h)

For Non-Highway Towable Machines

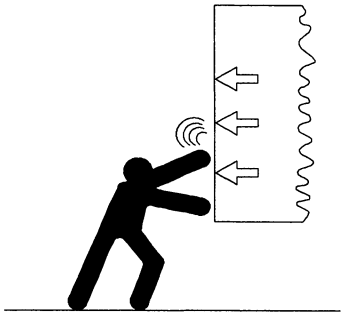
WARNING



Falling off machine. CAN cause serious injury or death.

Access Lifting Bail from inside machine.

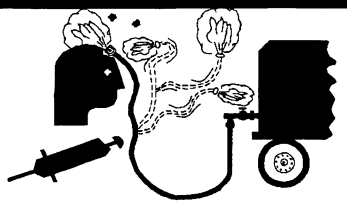
WARNING



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.

WARNING

Combustible Gas. CAN cause serious burns, blindness or death.

Keep sparks and open flames away from batteries.

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), Portable Light Towers and Air Dyers** - The earlier of twelve (12) months from shipment to or the accumulation of 2,000 hours of service by the initial 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:

The original airend is returned assembled and unopened.

Continued use of genuine Ingersoll-Rand parts, fluids, oils and filters.

Maintenance is performed at prescribed intervals.

D. **Genset Generators -** The earlier of twenty-four (24) months from shipment to or the accumulation of 4,000 hours of service by the initial user.

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:

The original airend is returned assembled and unopened.

Continued use of genuine Ingersoll-Rand parts, fluids, oil and filters.

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.

H. **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.

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

EMISSION RELATED SYSTEM DEFECT WARRANTY

Ingersoll-Rand Company warrants to the initial owner and subsequent owner of a certified non-road diesel engine (powering non-road machines and equipment), that the engine is:

1. Designed, built, and equipped so as to conform, at the time of sale, with all applicable regulations adopted by the United States Environmental Protection Agency (EPA) and the California Air Resource Board.

2. Free from defects in materials and workmanship in specific emission related parts for a period of five (5) years or 3,000 hours of operation whichever occurs first, after date of delivery to the initial owner.

If an emission related part fails during the warranty period, it will be repaired or replaced. Any such part repaired or replaced under warranty is warranted for the remainder of the warranty period.

During the term of this warranty, Ingersoll-Rand Company will provide repair or replacement of any warranted part at no charge to the non-road engine owner.

In an emergency, repairs may be performed at any service establishment, or by the owner, using any replacement part.

Ingersoll-Rand Company will reimburse the owner for their expenses, including diagnostic charges for such emergency repair. These expenses shall not exceed Ingersoll-Rand Company suggested retail price for all warranted parts replaced, and labor charges based on Ingersoll-Rand Company recommended time allowance for the warranty repair and the geographically appropriate hourly labor rate.

A part not being available within 30 days constitutes an emergency.

As a condition of reimbursement, replaced parts and receipted invoices must be presented at a place of business of Ingersoll-Rand Company or other establishment authorized by Ingersoll-Rand Company.

This warranty covers the following emission related parts and components.

- Charge Air Cooling System (If Equipped)
- Fuel Injection System
- Intake Manifold
- Exhaust Manifold
- Turbocharger System
- Miscellaneous hoses, clamps, connectors and sealing devices used in the above systems.

If failure of one of these components results in failure of another part, both will be covered by this warranty.

Any Replacement part may be used for maintenance or repairs. The owner should ensure that such parts are equivalent in design and durability to genuine INGERSOLL-RAND parts.

Use of non-genuine INGERSOLL-RAND parts does not invalidate the warranty.

However, Ingersoll-Rand Company is not liable for parts which are not genuine INGERSOLL-RAND parts.

LIMITATIONS AND RESPONSIBILITIES

These warranties are subject to the following:

INGERSOLL-RAND COMPANY RESPONSIBILITIES

During the emission warranty period, if a defect in material or workmanship of a warranted part or component is found, Ingersoll-Rand Company will provide:

- New, Remanufactured, or repaired parts and/or components required to correct the defect.

Note: *Items replaced under this warranty become the property of Ingersoll-Rand Company*

- Labor, during normal working hours, required to make the warranty repair. This includes diagnosis and labor to remove and install the engine, if necessary.

OWNER RESPONSIBILITIES

During the emission warranty period, the owner is responsible for:

- The performance of all required maintenance. A warranty claim will not be denied because the scheduled maintenance was not performed. However, if the lack of required maintenance was the reason for the repair, then the claim will be denied.
- Premium of overtime labor costs.
- Costs to investigate complaints which are not caused by a defect in Ingersoll-Rand Company material or workmanship.
- Providing timely notice of a warrantable failure and promptly making the product available for repair.

LIMITATIONS

Ingersoll-Rand Company is not responsible for resultant damages to an emission related part or component resulting from:

- Any application or installation Ingersoll-Rand Company deems improper as explained in the Instruction Manual.
- Attachments, accessory items, or parts not authorized for use by Ingersoll-Rand Company
- Improper off-road engine maintenance, repair, or abuse.
- Owner's unreasonable delay in making the product available after being notified of a potential product problem.

This warranty is in addition to Ingersoll-Rand Company standard warranty, applicable to the off-road engine product involved.

Remedies under this warranty are limited to the provision of material and services as specified herein. Ingersoll-Rand Company is not responsible for incidental or consequential damages such as downtime or loss-use of engine powered equipment.

CALIFORNIA EMiSSION CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board (CARB) and Ingersoll-Rand Company are please to explain the emission control system warranty on your 1996 and later certified heavy duty off-road engine. In California, new heavy-duty off-road engines must be designed, built and equipped to meet the state's stringent anti-smog standards. Ingersoll-Rand Company must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect, or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system, air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, an authorized INGERSOLL-RAND Dealer will repair the heavy-duty off-road engine at no cost to the owner including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The 1996 and later heavy-duty off-road engines are warranted for a period of five (5) years, or 3000 hours of operation which ever occurs first. If any emission-related part on your engine is defective, the part will be repaired or replaced by an authorized INGERSOLL-RAND Dealer.

OWNER'S WARRANTY RESPONSIBILITIES:

- As the heavy-duty off-road engine owner, you are responsible for the performance of the required maintenance listed in owner's manual (Instruction Manual). Ingersoll-Rand Company recommends that you retain all receipts and records covering the maintenance on your engine, but Ingersoll-Rand Company cannot deny warranty solely for the lack of receipts and records or for your failure to ensure the performance of all scheduled maintenance.
- As the heavy-duty off-road engine owner, you should however be aware that Ingersoll-Rand Company may deny you warranty coverage if your heavy-duty off-road engine, or part has failed due to abuse, neglect, improper maintenance, or unapproved modifications.
- Your engine is designed to operate on commercial diesel fuel only. Use of any other fuel may result in our engine no longer operation in compliance with California's emission requirements.
- You are responsible for initiating the warranty process. The CARB suggests that you present your heavy-duty off-road engine to an authorized INGERSOLL-RAND Dealer as soon as a problem exists. The warranty repairs should be completed by the dealer as expeditiously as possible.

If you have any questions regarding your warranty rights and responsibilities, you should contact Ingersoll-Rand Company, at P.O. Box 868, Mocksville, NC 27028 or the State of California Air Resources Board, Mobile source Operation Division, P.O. Box 8001, at El Monte, CA 91731-2990.

MAINTENANCE RECOMMENDATION:

Some Ingersoll-Rand Company non-road engines are certified by the United States Environmental Protection Agency and California Air Resource Board to comply with smoke and gaseous emission standards prescribed by Federal laws at the time of manufacture.

The engine is certified if it has a special certification label. An INGERSOLL-RAND Dealer can also inform you if the engine is certified.
Efficiency of emission control and engine performance depends on adherence to proper operation and maintenance recommendations and use of recommended fuels and lubrication oils. It is recommended that major adjustments and repair be made by your authorized INGERSOLL-RAND Dealer.

Various chemical fuel additives, which claim to reduce visible smoke, are available commercially. Although additives have been used by individuals to solve some isolated smoke problems in the field, they are not recommended for general use.
Federal smoke regulations require that engines be certified without smoke depressants.

The corrective steps taken immediately on discovery of worn parts, which may affect emission levels, will help assure proper operation of emission control systems. The use of genuine INGERSOLL-RAND parts is recommended. Suppliers of non-INGERSOLL-RAND parts must assure the owner that the use of such parts will not adversely affect emission levels.

Regular maintenance intervals, along with special emphasis on the following items, are necessary to keep exhaust emissions within acceptable limits for the useful life of the engine. Refer to the Maintenance Section of this manual. If the engine is operating under severe conditions, adjust the maintenance schedule accordingly. See your authorized INGERSOLL-RAND Dealer to help analyze your specific application, operating environment and maintenance schedule adjustments.

The following is an explanation of maintenance for emission-related components.
See the Maintenance Schedule for the specific interval for the following items.

FUEL INJECTION PUMPS OR NOZZLES – Fuel injection pumps or nozzles are subject to tip wear as a result to fuel contamination. This damage can cause an increase in fuel consumption, the engine to emit black smoke, misfire or run rough. Inspect, test and replace if necessary. Fuel injection pumps can be tested by an authorized INGERSOLL-RAND Dealer.

TURBOCHARGER – Check for any unusual sound or vibration in the turbocharger. Inspect inlet and exhaust piping and connections. Check bearing condition and perform maintenance as described in the Maintenance Schedule.

Slow engine response and low power may indicate a need for adjustment or repair. Your INGERSOLL-RAND Dealer is equipped with the necessary tools, personnel, and procedures to perform this service.

Owner is encouraged to keep adequate maintenance records, but the absence of such, in and of itself, will not invalidate the warranty.

The machine or equipment owner may perform routine maintenance, repairs and other non-warranty work or have it done at any repair facility. Such non-warranty work need not e performed at a designated warranty station in order for the warranty to remain in force.

CUSTOMER ASSISTANCE – EMISSION CONTROL SYSTEM WARRANTY:

Ingersoll-Rand Company aims to ensure that the Emission Control Systems Warranty is properly administered. In the event that you do not receive the warranty service to which you believe you are entitled under the Emission Control Systems Warranty, call or write:

Ingersoll-Rand Company
P.O. Box 868
Mocksville, NC 27028

Tel.: 336-751-3561

Authorized Dealers are recommended for major maintenance and repair work as they are staffed with trained personnel, proper tools and are aware of the latest maintenance methods and procedures. Owners and others who desire to perform their own work should purchase a Service Manual and obtain current service information from their INGERSOLL-RAND Dealer.

GENERAL WARRANTY INFORMATION

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

Portable Genset	Package	1 year/2000 hours	
	Generator	2 years/4000 hours	

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

ENGINES			
Caterpillar	**Months**	**Hours**	**Extended Coverage**
	12	No Limit	Available at dealer
Cummins	24	2000	Major components 3 yrs/10,000 hours - available at dealer
John Deere	24	2000	Available at dealer
Deutz	24	2000	Available at dealer
Kubota	24	2000	Major components 36 months/3000 hours - parts only
Ingersoll-Rand	24	4000	5 years/10,000 hours when using genuine Ingersoll-Rand fluids and parts. Refer to operator's manual.

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

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

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

Extended Limited Airend Warranty

Ingersoll-Rand Portable Compressor Division is pleased to announce the availability of extended limited airend warranty. Announcement of the extended warranty coincides with the introduction of PRO•TEC™ Compressor Fluid. PRO•TEC™ Compressor Fluid is an amber colored fluid specially formulated for Portable Compressors and is being provided as the factory filled fluid for all machines except [1] XHP650/900/1070 models.

All machines have the standard airend warranty - *The earlier of 24 months from shipment to, or the accumulation of 4000 hours of service.*

The warranty against defects will include replacement of the complete airend, provided the original airend is returned assembled and unopened.

The optional limited warranty is the earlier of 60 months from shipment to, or the accumulation of 10,000 hours of service. The optional warranty is limited to defects in major components (rotors, housings, gears, bearings), and is automatically available when the following three conditions are met:

1. The original airend is returned assembled and unopened.
2. 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.
3. 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**
OPTIONAL	**5 yrs/10,000 hrs**	**100% parts and labor**	**0%**

* Bare Airend - pertains to major airend parts (rotors, housings, gears and bearings).

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

PRO•TEC™ and XHP505 Compressor Fluids are available from the Mocksville Product Support department by calling 1-800-633-5206.

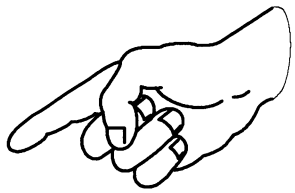
[1] XHP650/900/1070 will continue to use XHP505 and will have the extended warranty when above conditions are met.

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.

Engine Registration:

John Deere requires a separate engine registration be completed and mailed direct to John Deere. Separate engine registration material is included with this literature package for John Deere powered machines. **All other engine manufacturers do not require a separate engine registration.**
You MUST present proof of in-service date at time of requesting engine warranty service.

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.

- *fold* -

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

Attention: Warranty Department

SECTION 3 - NOISE EMISSION

This section pertains only to machines distributed within the United States.

WARNING

TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED

Federal law prohibits the following acts or the causing thereof:

(1) The removal or rendering inoperative by any persons, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new compressor for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; or (2) the use of the compressor after such device or element of design has been removed or rendered inoperative by any person.

Among those acts included in the prohibition against tampering are these:

4. Removal or rendering inoperative any of the following:
   a. the engine exhaust system or parts thereof
   b. the air intake system or parts thereof
   c. enclosure or parts thereof

5. Removal of any of the following:
   a. fan shroud
   b. vibration mounts
   c. sound absorption material

6. Operation of the compressor with any of the enclosure doors open.

Compressor Noise Emission Control Information

A. The removal or rendering inoperative, other than for the purpose of maintenance, repair, or replacement of any noise control device or element of design incorporated into this compressor in compliance with the noise control act;

B. The use of this compressor after such device or element of design has been removed or rendered inoperative.

Note: the above information applies only to units that are built in compliance with the U.S. Environmental Protection Agency.

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

The Purchaser is urged to include the above provisions in any agreement for any resale of this compressor.

NOISE EMISSION CONTROL MAINTENANCE LOG

COMPRESSOR MODEL _____
SERIAL NO. _____
USER UNIT NO. _____

UNIT IDENTIFICATION	**DEALER OR DISTRIBUTOR FROM WHOM PURCHASED:**
Engine Make & Model: _____	
Serial No.: _____	_____
Purchaser or Owner: _____	_____
Address: _____	Date Purchased: _____

The Noise Control Act of 1972 (86 Stat. 1234) prohibits tampering with the noise control system of any compressor manufactured and sold under the above regulations, specifically the following acts or the causing thereof:

(1) the removal or rendering inoperative by any persons, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into new compressor for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; or (2) the use of the compressor after such device or element of design has been removed or rendered inoperative by any person.

NOISE EMISSION WARRANTY

The manufacturer warrants to the ultimate purchaser and each subsequent purchaser that this air compressor was designed, built and equipped to conform at the time of sale to the first retail purchaser, with all applicable U.S. EPA Noise Control Regulations.

This warranty is not limited to any particular part, component, or system of the air compressor. Defects in the design, assembly or in any part, component, or system of the compressor which, at the time of sale to the first retail purchaser, caused noise emissions to exceed Federal Standards are covered by this warranty for the life of the air compressor.

INTRODUCTION

The unit for which this Maintenance Log is provided conforms to U.S. E.P.A. Regulations for Noise Emissions, applicable to Portable Air Compressors.

The purpose of this book is to provide (1) the Maintenance Performance Schedule for all required noise emission controls and (2) space so that the purchaser or owner can record what maintenance was done, by whom, where and when. The Maintenance Schedule and detailed instructions on the maintenance items are given on following page.

MAINTENANCE SCHEDULE

ITEM	AREA	PERIOD
A.	Compressed Air Leaks	As Detected
B.	Safety and Control Systems	As Detected
C.	Acoustic Materials	Daily
D.	Fasteners	100 hours
E.	Enclosure Panels	100 hours
F.	Air Intake & Engine Exhaust	100 hours
G.	Cooling Systems	250 hours
H.	Isolation Mounts	250 hours
I.	Engine Operation	See Operator's Manual
J.	Fuels & Lubricants	See Operator's Manual

A. Compressed Air Leaks

Correct all compressed air leaks during the first shutdown period after discovery. If severe enough to cause serious noise problems and efficiency loss, shut down immediately and correct the leak(s).

B. Safety and Control Systems

Repair or replace all safety and control systems or circuits as malfunction occurs. No compressor should be operated with either system bypassed, disabled, or nonfunctional.

C. Acoustic Materials

In daily inspections, observe these materials. Maintain all acoustic material as nearly as possible in its original condition. Repair or replace all sections that have: 1) sustained damage, 2) have partially separated from panels to which they were attached, 3) are missing, or have otherwise deteriorated due to severe operating or storage conditions.

D. Fasteners

All fasteners such as hinges, nuts, bolts, clamps, screws, rivets, and latches should be inspected for looseness after each 100 hours of operation. They should be retightened, repaired, or if missing, replaced immediately to prevent subsequent damage and noise emission increase.

E. Enclosure Panels

Enclosure panels should also be inspected at 100 hour operational intervals. All panels that are warped, punctured, torn, or otherwise deformed, such that their noise containment function is reduced, should be repaired or replaced before the next operation interval. Doors, access panels, and hatch closures especially, should be checked and adjusted at this time to insure continuous seating between gasket or acoustic material and the mating frame.

F. Air Intake and Engine Exhaust

Engine and compressor air intake and engine exhaust systems should be inspected after each 100 hours of operation for loose, damaged, or deteriorated components. Repairs or replacements should be made before the next period of use.

G. Cooling Systems

All components of the cooling system for engine water and compressor oil should be inspected every 250 hours of use. Any discrepancies found should be corrected before placing the unit back in operation. Unrestricted airflow over the radiator and oil cooler must be maintained at all times during operation.

H. Isolation Mounts

Engine/airend isolation mounts should be inspected after each 250 hours of operation. Those mounts with cracks or splits in the molded rubber, or with bent or broken bolts due to operation or storage in severe environments, all should be replaced with equivalent parts.

I. Engine Operation

Inspect and maintain engine condition and operation as recommended in the manuals supplied by the engine manufacturer.

J. Fuels and Lubricants

Use only the types and grades of fuels and lubricants recommended in the Ingersoll-Rand Company and Engine Manufacturer's Operator and Maintenance Manuals.

MAINTENANCE RECORD FOR NOISE EMISSION CONTROL AND EXTENDED WARRANTY					
ITEM NO.	DESCRIPTION OF WORK	HOURMETER READING	MAINT/ INSPECT DATE	LOCATION CITY/ STATE	WORK DONE BY (NAME)

SECTION 4 - GENERAL DATA

Unit Models	VHP400WCU	HP450WCU	XP525WCU	P600WCU
COMPRESSOR				
Free air delivery-cfm (L per sec.)	400 (189)	450 (212)	525 (247)	600 (283)
Rated operating press.- psig (bars)	200 (13.8)	150 (10.3)	125 (8.6)	100 (6.9)
Pressure range psig ..... (bars)	80 to 200 (5.5 to 13.8)	80 to 150 (5.5 to 10.3)	80 to 125 (5.5 to 8.6)	80 to 100 (5.5 to 6.9)
Air discharge outlets (Qty) size in.	(1) 2" NPT	(1) 2 NPT	(1) 2 NPT	(1) 2 NPT

Engine Speed - RPM (Full Load) 2200

- RPM (No Load) 1400

ENGINE (Diesel)

Manufacturer ..... Cummins

Model B5.9-174

Electrical System ..... 24 VDC

FLUID CAPACITIES - U.S. gallons (litres)

Compressor Lubricant, refill 9.2 (35)
Engine Crankcase Lube (including filter) 4.3 (16.4)
Fuel Tank (Use clean DIESEL fuel) 65 (246)
Engine Coolant (Radiator) 6.63 (25)

UNITS MEASUREMENTS/WEIGHTS

Overall Length - inches(mm) 179 (4547)
Overall Height - inches(mm) 71 (1803)
Overall Width - inches(mm) 64 (1626)
Track Width - inches(mm) 52 (1321)
Weight, ready to run-lb. (kg) 5200 (2360)

RUNNING GEAR

Tire Size/Load Range ..... 8.75 x 16.5/E
Inflation Pressure (Cold) ..... 75 psi (520 kPa)
Towing Speed (Maximum) ..... 50 mph (80 km/hr)

SECTION 5 - OPERATION

BEFORE TOWING

WARNING

Failure to follow these instructions can cause severe injury or death.

CAUTION

- Position the tow vehicle to align its hitch with the pintle eye or coupler of the compressor.

- Engage the parking brake and chock the wheels of the tow vehicle.

- Stand to the side and ensure pin is FULLY inserted (secure) in tube of jack. Crank jack to seat pintle eye or coupler onto hitch. Latch and lock hitch. Cross safety chain(s) under drawbar. Attach to vehicle.

- Crank jack to raise pad off the ground. Pull pin from tube of jack. Fold jack handle down and forward. Swing up jack tube and FULLY insert pin in tube.

Units equipped with hydraulic brakes:

- Check brake fluid level. Top off as required with DOT 3 brake fluid.

- Check condition of brake lines, hoses and cables. Repair or replace damaged parts.

- Attach brake actuator break-a-way chain above hitch or towing vehicle.

SETTING - UP

• Place the unit in an open, well-ventilated area. Position as level as possible. The design of these units permits a 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.

TOWING

WARNING

Failure to follow these instructions can cause severe injury or death.

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

- Ensure that tires are inflated to 75 psi (520kPa).

- Do not tow this unit in excess of 50 mph (80 km/hr).

- Use a tow vehicle whose towing capacity is greater than the gross weight of this unit.

DISCONNECT

- Set the vehicle parking brake. Chock wheels of unit.

- Standing to the side, remove pin from tube of jack. As jack tube swings down, FULLY insert pin in the tube.

- Disconnect safety chains. Crank jack to raise eye or coupler from hitch. Tow vehicle can be moved.

BEFORE STARTING

CAUTION

Do not connect the air discharge on this unit into 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 severe 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).

• Open manual blowdown valve to ensure pressure is relieved in receiver-separator system. Close valve in order to build up full air pressure and ensure proper oil circulation.

.• Check battery for proper connections and condition.

• Check the compressor lubricating oil level. The proper oil level is mid-way on the sight gauge. Add oil if the level falls to the bottom of the sight gauge. Do not overfill.

• Check the engine lubricating oil level. Add oil if low on dipstick.

WARNING

Do not remove the cap from a HOT engine radiator. The sudden release of pressure from a heated cooling system can cause severe injury or death.

CAUTION

The use of water alone in this engine can result in major engine failure.

• At overflow reservoir (plastic bottle) check coolant level and, if necessary, top off to "cold" mark.

• Check the fuel level. Add only CLEAN DIESEL fuel for maximum service from the engine.

Note: To minimize condensation (water) in the fuel tank, 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. Be sure no one is IN or ON the compressor unit.

STARTING

WARNING

Do NOT operate machine with guards removed.

CAUTION

Do NOT operate machine with safety shutdown switches by-passed.

In freezing weather and if so equipped, 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.

Flip the POWER switch to "On". All DIAGNOSTICS lamps will light (glow) for two (2) seconds. Then all lamps should go off except for ALTERNATOR NOT CHARGING and LOW ENGINE OIL PRESSURE.

CAUTION

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

In cold weather, open manual blow down valve and, if so equipped, press the ETHER INJECT button once and release. Then, while cranking, press release button once every five (5) seconds. This injects a measured amount of ether to the engine.

Press both the START and the BY PASS buttons to crank the engine. DO NOT OPERATE THE STARTER MOTOR FOR MORE THAN TEN (10) SECONDS WITHOUT ALLOWING AT LEAST ONE MINUTE COOLING TIME BETWEEN START ATTEMPTS.

Release the START button when the engine starts and sustains running. If the engine does not start after a couple of attempts, refer to Trouble Shooting Section.

Release the BYPASS button after two (2) to three (3) seconds.

All Diagnostic lamps should be off. If not, stop the machine and investigate. If opened above, close manual blowdown valve.

Observe the gauges while the unit warms up for five (5) to ten (10) minutes or until the coolant temperature reaches 140 degrees F (60°C).

Push the SERVICE AIR button. The engine should go to full speed and the discharge pressure rise to slightly over rated pressure. The compressor will unload (intake be throttled or closed) and the engine speed will drop to the idle speed.

Compressor is now ready to furnish air when the service valve is opened.

STOPPING

- Close air service valve (s).
- Allow the unit to run at "no load" for 3 to 5 minutes to reduce the engine temperatures.
- Flip all toggle switches to "Off".

Note: Once the engine stops, the automatic blowdown valve will begin to relieve all pressure from the receiver-separator system.

CAUTION

Never allow the unit to sit stopped with pressure in the receiver-separator system. As a precaution, after the automatic blowdown period (2 minutes), open the manual blowdown valve.

EQUIPMENT PROTECTION

Note: Do NOT wire around or bypass a shutdown sensor or switch.

This unit is protected by five (5) sensors or switches at the following locations:

(1) High engine COOLANT temperature in the engine.

(2) Low engine oil pressure, in the engine.

(3) Low Fuel Level.

High Discharge AIR Temperature -

(4) At the airend outlet.

(5) In the safety valve connection on the separator tank.

AUTOMATIC SHUTDOWN / DIAGNOSTICS

Should any of these problem situations occur, the unit will automatically shutdown and stop. BEFORE restarting the unit or flipping the POWER switch to "Off", check the DIAGNOSTICS area on the instrument panel.

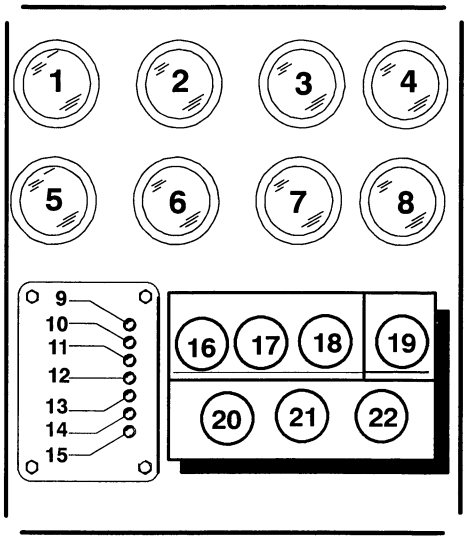
The upper four (4) lamps are electronically "latched" to only respond to the first or primary signal for a shutdown. In other words, if the automatic shutdown is the result of one of these four problems, only that particular problem lamp will be lit. And the lamp will remain lit as long as the batteries provide power.

Refer to OPERATING CONTROLS AND INSTRUMENTS, for the various problem signal criteria (°F, psi, etc.). The indicated problem area should be inspected for a physical cause (low fluid, broken fan belt, evidence of excessive heat, etc.) and corrections made.

The shutdown will automatically reset when the problem condition is corrected.

Other possible causes for an unexpected shutdown are listed on the Trouble Shooting Chart.

Control Panel



Operating Controls/Instruments (Standard)

1. **Compressor Discharge Pressure Gauge -**

Indicates pressure in receiver tank, psi (kPa).

2. **Discharge Air Temp. Gauge (Optional) -**

Indicates in °F and °C. Normal operating range: 185°F/85° to 248°F/120°C.

3. **Engine Oil Pressure Gauge (Optional) -**

Indicates engine oil pressure (psi (kPa).

4. **Engine Speed Gauge (Optional) -**

Indicates engine speed.

5. **Hourmeter -**

Records running time for maintenance.

6. **Fuel Level Gauge -**

Indicates amount of fuel in tank.

7. **Engine Water Temp. Gauge (Optional) -**

Indicates coolant temperature, with normal operating range frm 180°F (82°C) to 210°F (99°C).

8. **Voltmeter (Optional) -**

Indicates battery condition.

DIAGNOSTICS/AUTO SHUTDOWN

9. **High Compressor Temperature -**

248°F (120°C) or more.

10. **Low Engine Oil Pressure** - 12 psi or less

11. **High Engine Temperature -**

Coolant above 220°F (104°C).

12. **Low Fuel Level -**

Must add fuel to operate.

13. **Alternator Not Charging -** needs attention.

14. **Low Coolant Level -**

Must add coolant.

15. **Air Filters Restricted -**

Needs servicing.

CONTROLS

16. **Power Switch -**

Flip "ON" to activate systems prior to Starting. Flip "Off" to stop engine.

19. **Service Air Button -**

After warm up, PUSH. Provides full air pressure at the service outlet.

21. **Start Button -**

PRESS to crank engine. Release when engine sustains firing.

22. **Bypass Button -**

PRESS while engine is starting. Release after 2-3 seconds.

OPTIONAL CONTROLS

17. **Lights Switch -**

Operates Lamps within Gauges.

18. **Heaters Switch -**

Activates control system heaters for operation below 32°F (°C).

20. **Ether Inject Button -**

Injects a measured shot. **USE SPARINGLY.**

SPEED AND PRESSURE REGULATION ADJUSTING INSTRUCTIONS

Before Starting Unit:

1. Adjust jam nut (D) on throttle spring rod (E) to relieve tension on two compression springs (F).

2. Atop separator cover at pressure regulator (PR) loosen locknut (G) counterclockwise. Turn adjusting screw (H) counterclockwise one full turn.

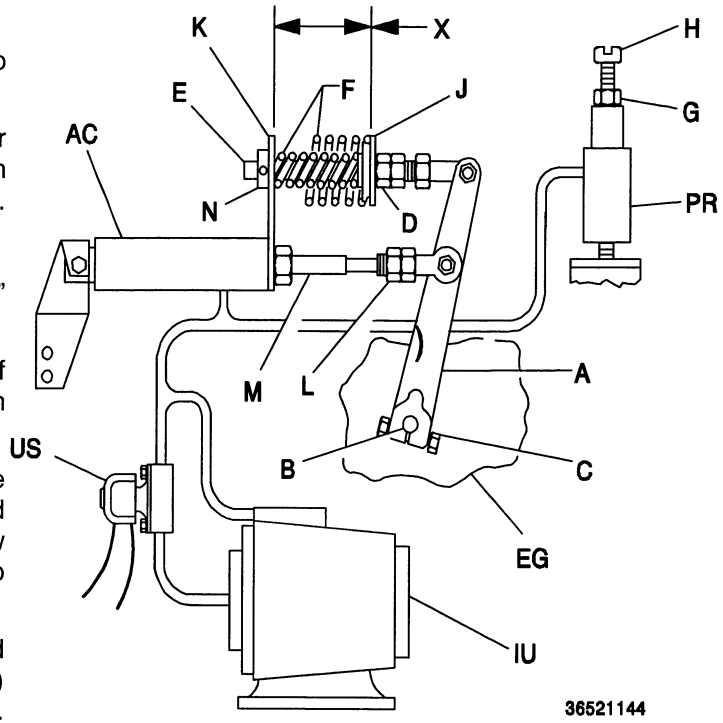
After Starting Unit:

3. Allow unit to warm up, then push "Service Air" button on control panel.

4. 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 and rod (M) fully extended, turn regulator adjusting screw (H) clockwise until throttle arm (A) just begins to move.

5. Insure the pressure is maintained at rated pressure, then turn regulator adjusting screw (H) clockwise until throttle arm (A) just begins to move.



6. Close service valve (engine will slow to no load or idle speed). Loosen jam nut (L) at air cylinder (AC) shaft. Rotate air cylinder shaft (M) to adjust speed to no load rpm, if unable to obtain no load rpm, loosen nuts (C) and rotate throttle arm (A) as required. Moving throttle arm (A) clockwise increases idle speed. Tighten nuts (C) and, if necessary, fine adjust idle speed by rotating air cylinder shaft (M). Then tighten jam nut (L).

7. If necessary, repeat steps 4, 5 and 6.

8. Limit full load engine speed by adjusting the collar (N) on the end of the throttle spring rod (E).

9. Adjust jam nut (D) on throttle spring rod (E) until distance "X" between spring mount (J) and rod guide (K) is 1.75 in. (45 mm).

10. At pressure regulator (PR) tighten locknut (G).

11. To obtain maximum CFM at any pressure between 80 PSI (550kPa) and the rated operating pressure, turn adjusting screw (H) of the 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).

12. Insure unloader solenoid (US) acts to hold pressure in inlet unloader (IU) after shutdown. After start-up, a pressure switch will open unloader solenoid (US).

SECTION 6 - MAINTENANCE

CAUTION

Any unauthorized modification or failure to maintain this equipment may make it unsafe and out of factory warranty.

WARNING

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.

GENERAL

In addition to periodic inspections, many of the components in this unit requires 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.

SCHEDULED MAINTENANCE

The maintenance schedule is based on normal operation of the unit. In the event unusual environmental operating conditions exist, the schedule should be adjusted accordingly.

COMPRESSOR OIL LEVEL

The oil level should be checked before the unit is started. The optimum operating level is midway of the sight tube on the side of the receiver tank. See the decal beside the sight tube. If the oil level is not in the "OK" range, make appropriate corrections (Add or Drain). A totally filled sight tube in which the level is not visible indicates an over-full condition and requires that oil be drained.

AIR CLEANER

This unit is equipped with an AIR FILTERS RESTRICTED lamp on the instrument panel, covering both the engine and the compressor.

This should be checked daily during operation. If the lamp glows (red) with the unit operating at full speed, servicing of the cleaner element is necessary.

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

The air filters restricted sensor will automatically reset after the main power switch is turned to "OFF."

To service the air cleaners proceed as follows:

1. Loosen outer wing nut and remove with cover. Remove 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. Inspect element by placing a bright light inside and rotating slowly. If any holes or tears are found in the paper, discard this element. If no ruptures are found, the element can be cleaned.
5. If a new air filter element is to be used check it closely for shipping damage.

6. Install cleaned or new elements in the reverse order to the above. Tighten wing nut firmly.

7. Inspect to ensure that the end cap seals tightly 360 degrees around the air cleaner body.

In the event that the filter element must be reused immediately, compressed air cleaning (as follows) is recommended since the element must be thoroughly dry. Direct compressed air through the element in the direction opposite to the normal air flow through the element.

Move the nozzle up and down while rotating the element. Be sure to keep the nozzle at least one inch (25.4 mm) from the pleated paper.

NOTE: To prevent damage to the element, never exceed a maximum air pressure of 100 psi (700 kPa).

In the event the element is contaminated with dry dirt, oil or greasy dirt deposits, and a new element is not available, cleaning can be accomplished by washing, using the air cleaner element manufacturer's recommendations.

NOTE: It is recommended that replacement elements be installed in the unit. The elements just removed for cleaning can be washed and stored as future replacement elements.

In addition, 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 leaks.
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

CLEAN fuel in the fuel tanks is vitally important and every precaution should be taken to ensure that only clean fuel is 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.

BATTERY

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-off with clean distilled water.

TIRES

A weekly inspection is recommended. Tires that have cuts or cracks or little tread should be repaired or replaced. Monthly check the wheel lug nuts for tightness.

COMPRESSOR OIL COOLER

The compressor lubricating and cooling oil is cooled by means of the fin and tube-type oil cooler. The lubricating and cooling oil, flowing internally through the core section, 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 oil cooler, its efficiency is impaired. Each month it is recommended that the oil cooler be cleaned by directing compressed air which contains a nonflammable, non-caustic safety solvent through the core of the oil cooler. This should remove the accumulation of grease, oil and dirt from the exterior surfaces of the oil cooler core so that the entire cooling area can transmit the heat of the lubricating and cooling oil to the air stream.

In the event foreign deposits, such as sludge and lacquer, accumulate in the oil cooler to the extent that its cooling efficiency is impaired, a resulting high discharge air temperature is likely to occur, causing shut down of the unit. To correct this situation it will be necessary to clean it using a cleaning compound in accordance with the manufacturer's recommendations.

HOSES

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

To ensure freedom from air leaks, all rubber hose joints and the screw-type hose clamps must be absolutely tight. Regular inspection of these connections for wear or deterioration is necessary.

Premature wear of both the engine and compressor is ASSURED whenever dust-laden air is permitted to enter the engine's combustion chamber or the compressor intake.

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 important they be periodically inspected for wear and deterioration. 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. If so, features are as follows:

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.

NOTICE

The oil filter must be replaced every 500 hours of operation or three (3) months, whichever comes first. On new or overhauled units, replace the element after the first 50 and 150 hours of operation; thereafter, service the oil filter every 500 hours.

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.

NOTICE

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.

NOTICE

Installing a new oil filter element when the old gasket remains on the 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.

RUNNING GEAR

Every month or 500 miles, tighten the wheel lug nuts to 85 - 95 lbs.-ft. Every six months the wheel bearings, grease seals and axle spindles should be inspected for damage (corrosion, etc.) or excessive wear. Replace any damaged or worn parts. Repack wheel bearings. Use a wheel bearing grease conforming to specification MIL-G-10924 and suitable for all ambient temperatures.

Grease can be replaced in a wheel bearing using a special fixture or by hand as follows.

Before installing bearing, place a light coat of grease on the bearing cups which are pressed in the hub.

Place a spoonful of grease in the palm of one hand and take the bearing in the other hand. Push a segment of the wider end of the bearing down into the outer edge of the grease pile closest to the thumb. Keep lifting and pushing the bearing down into the edge of the grease pile until grease oozes out both from the top and from between the rollers. Then rotate the bearing to repeat this operation on the next segment. Keep doing this until you have the entire bearing completely filled with grease.

NOTICE

Excessive grease in the hub or grease cap serves no purpose due to the fact that there is no way to force the grease into the bearing. The manufacturer's standard procedure is to thoroughly pack the inner and outer bearing with grease and then to apply only a very small amount of grease into the grease cap.

If bearing adjustment is required or the hub has been removed for any reason, the following procedure must be followed to ensure a correct bearing adjustment of 0.001 to .012 free play.

1. While rotating hub slowly to seat the bearings, tighten spindle nut to approximately 15 lbs.-ft. Grasp the tire at the top and bottom and rock, in and out. There should be no evidence of looseness (free play) at the bearing.

2. Loosen nut to remove preload torque. Do not rotate hub.

3. Finger tighten nut until just snug. Loosen nut until the first nut castellation lines up with cotter pin hole in spindle. Insert cotter pin.

4. Ensure a definite but minimal amount of free play by rocking the tire.

6. Nut should be free to move with only restraint being the cotter pin.

RECEIVER-SEPARATOR SYSTEMS

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.

- **Open service valve at end of machine.**

- **Ensure pressure is relieved, with BOTH:**
  - **Discharge air pressure gauge reads zero (0).**
  - **No air discharging from service valve.**

When draining oil, remove plug from bottom of separator tank.

When adding oil, remove and replace (make tight) plug on side of separator tank.

In the compressor lubricating and cooling system, separation of the oil from the compressed air takes place in the receiver-separator tank. As the compressed air enters the tank, the change in velocity and direction drop out most of the oil from the air.

Additional separation takes place in the oil separator element which is located in the top of the tank.

Any oil accumulation in this separator element is continuously drained off by means of a scavenge tube which returns the accumulated oil to the system.

The life of the oil separator element is dependent upon the operating environment (soot, dust, etc.) and should be replaced every twelve months or 2000 hours. To replace the element proceed as follows:

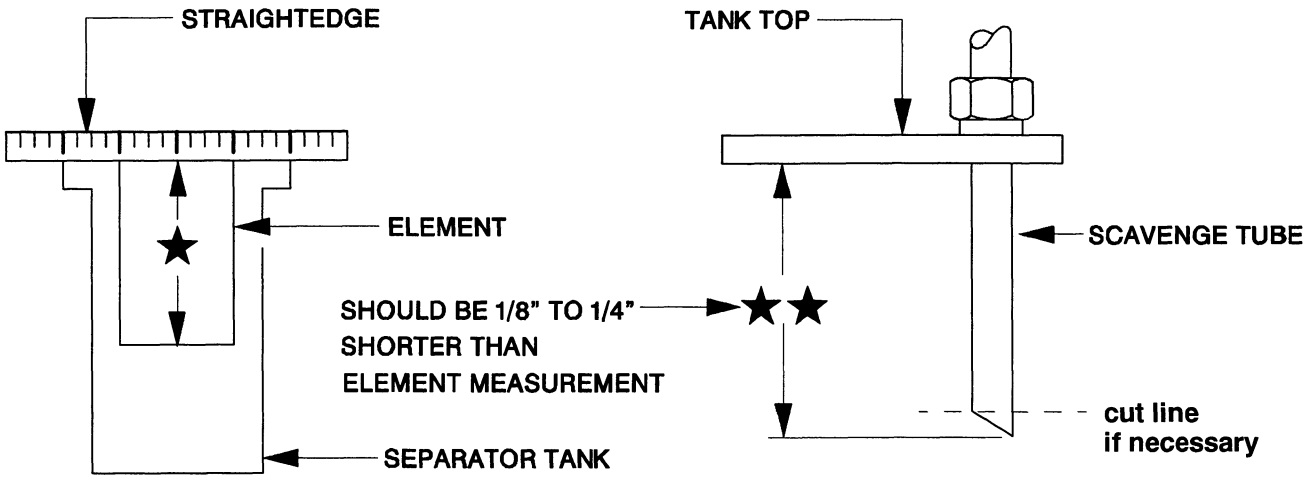
- Ensure the tank pressure is zero.
- Disconnect the hose from the scavenge tube.
- Remove scavenge tube from tank cover.
- Disconnect service line from cover.
- Remove cover mounting screws.
- Remove cover and element.
- Remove any gasket material left on cover or tank.
- Install new element.

NOTICE

Do not remove staples from the element/gasket connection.

- Place a straightedge across top of element and measure from bottom of straightedge to bottom of element (See Fig. 4.1).
- Replace scavenge tube in cover (cover is still off of tank).
- Measure from bottom of cover to end of scavenge tube. Measurement should be from 1/8" to 1/4" less than the element measurement. If not, cut to size.
- Remove scavenge tube.
- Reposition cover (use care not to damage gaskets).
- Replace cover mounting screws: tighten in a crisscross pattern.
- Reconnect service line. Replace scavenge tube. Reconnect hose.
- Close service valve. Start unit and look for leaks.

When replacing the element, the scavenge lines, orifice, filter, and check valve should be thoroughly cleaned and the oil changed.



SCAVENGE LINE

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.

The scavenge line originates at the receiver-separator tank cover and terminates at the compressor airend near the oil filter element. An orifice check valve is located on the scavenge tube.

Once a year or every 2000 hours of operation, whichever comes first, replace the separator element and clean the scavenge orifice/check valve.

NOTE: Excessive oil carry-over may be caused by an oil-logged separator element. Do not replace element without first performing the following maintenance procedure:

1. Check oil level. Maintain as indicated earlier in this section.
2. Thoroughly clean scavenge line, any orifice and check valve.
3. Assure minimum pressure valve/orifice is operational.
4. Run unit at rated operating pressure for 30 to 40 minutes to permit element to clear itself.

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.

MAINTENANCE SCHEDULE

		Daily	Weekly	Monthly	3 MOS . 250 hrs.	6 MOS. 500 hrs	12 MOS. 1000 hrs
Compressor Oil Level		C					
Engine Oil Level		C					
*Radiator Coolant Level		C					
Gauges/Lamps		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 Rad/Oil Cooler	Exterior			C	CLEAN		
Fasteners, Guards					C		
Air Cleaner Elements						WI	
*Fuel/Water Separator Element						R	
Compressor Oil Filter Element						R	
Compressor Oil						R	
*Wheels (bearings, seals, etc)						C	
*Engine Coolant	Test					C	R
Shutdown Switch Settings	Test						C
Scavenger Orifice & Related Parts							CLEAN
Oil Separator Element							R
Lights (running, brake, & turn)		CBT					
Pintle Eye Bolts		CBT					
Engine (oil changes, filters, etc)		Refer to Engine Operator Manual in this book.					

*Disregard if not appropriate for this particular machine.

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

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

SECTION 7 - 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 receiver- separator, piping, and oil 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 oil, close the drain valve. 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 WHEN RUNNING AT FULL LOAD. If not near the middle of the sight tube, stop the unit and make corrections. DO NOT OVERFILL.

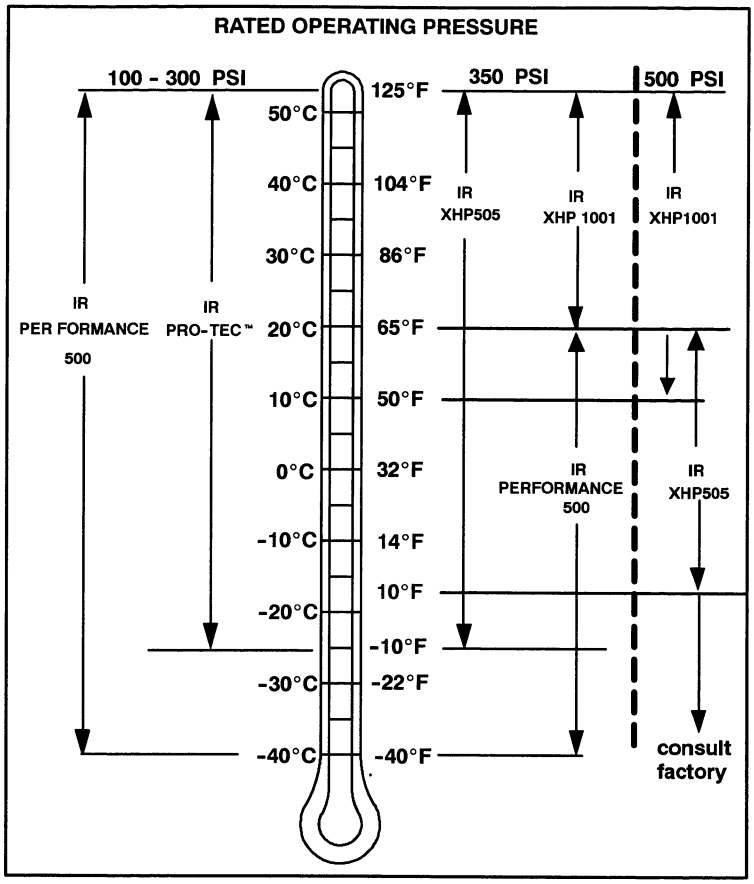
NOTICE

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.

SECTION 7 - 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

SECTION 8 - 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.

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 Switch	Replace switch.
Defective Discharge Air Temp. Switch	Replace switch.
Defective Engine Oil Pressure Switch	Replace switch.
Defective Shutdown Solenoid	Replace solenoid.
Malfunctioning Relay	Replace relay.
* < 16 Volts at Shutdown Solenoid	Check battery and alternator. Make repairs.
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.
* <16 Volts at Shutdown Solenoid	Charge battery and alternator. Make repairs.
Blown Fuse	Replace fuse.
Malfunctioning Start Switch	Replace switch.
Defective Safety Bypass 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 Discharge Air Temp. Switch	Replace switch.
Defective Engine Oil Pressure Switch	Replace switch.
Defective Shutdown Solenoid	Replace solenoid.
Malfunctioning Relay	Replace relay.
Engine Malfunctioning	See Trouble Shooting in Engine Manual.
Airend Malfunctioning	See Complaint 10.

3. Engine Temperature Lamps Stays On:

Broken Engine Fan Belt	Replace fan belt set.
Malfunctioning Circuit Board	Replace circuit board.
* Ambient Temp. >125°F (52°C)	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.
Malfunctioning circuit board.	Replace circuit board.

* : > = greater than, < = less than

4. Engine Oil Pressure Lamp Stays On:

	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.
Malfunctioning circuit board	Replace circuit.

5. Engine Temperature Lamps Stays Off:

Bulb Burned Out	Replace circuit board.
Malfunctioning circuit board	Replace circuit board.

6. Engine Oil Pressure Lamp Stays Off:

Bulb Burned Out	Replace circuit board.
Malfunctioning circuit board	Replace circuit board.

7. Alternator Lamp Stays On:

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.
Malfunctioning circuit board	Replace circuit board.

8. Alternator Lamp Stays Off:

Bulb Burned Out	Replace circuit board.
Loose Wire Connection	Repair or replace connector.
Malfunctioning circuit board	Replace circuit board.

9. Unit Fails To Shutdown:

Defective Low Fuel Shutdown Switch	Pull wire off shutdown solenoid. Replace switch.
Defective Discharge Air Temperature Switch	Pull wire off. Replace switch.
Defective Engine Oil Pressure Switch	Pull wire off. Replace switch.
Defective Shutdown Solenoid	Carefully block air inlet to stop engine. Replace solenoid.
Malfunctioning Relay	Pull wire off shutdown solenoid. Replace relay.
Defective Safety Bypass Switch	Pull wire off shutdown solenoid. Replace defective item.

10. Excessive Compressor Oil Temperature:

	Corrective Action
Ambient Temp. > 125°F (52°C)	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.

11. Engine RPM Down:

Clogged Fuel Filter	Clean primary filter. Replace final filter. Drain tanks. Add CLEAN fuel.
Operating Pressure Too High	Reduce pressure to spec limit.
Incorrect Pressure Regulator Adjustment	See Section 6 in this manual.
Malfunctioning Pressure Regulator	Replace regulator.
Incorrect Linkage Adjustment	See Section 6 in this manual.
Dirty Air Filter	Clean or replace elements.
Malfunctioning Air Cylinder	Replace air cylinder and adjust per Section 6.
Wrong Air Filter Element	Install correct element.
Defective Separator Element	Install new element per page 21.
Engine Malfunctioning	See Trouble Shooting in Engine Manual.
Airend Malfunctioning	Refer to Airend Rebuild Manual.

12. 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.
Anti-rumble valve not working.	Repair or Replace.
Engine idle speed too low.	Raise "No Load" speed per Section 6.

13. Low CFM:

Dirty Air Filter	Clean or replace elements.
Incorrect Linkage Adjustment	See Section 6 in this manual.
Incorrect Pressure Regulator Adjustment	See Section 6 in this manual.
Malfunctioning Pressure Regulator	Replace regulator.
Malfunctioning Inlet Unloader/Butterfly Valve	Inspect valve. Make adjustment per Section 6.
Malfunctioning Air Cylinder	Replace air cylinder.
Defective Minimum Pressure Valve	Repair or replace valve.
Defective Separator Element	Install new element per Page 21.
Wrong Air Filter Element	Install correct element.

14. Short Air Cleaner Life:

	Corrective Action
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.
Oil Pump Drive Coupling	Inspect coupling. If necessary, replace coupling.

15. Excessive Oil In Air:

High Oil Level	Read procedure in this manual.
Out of Level > 15 degrees	Relocate or reposition unit.
Clogged Scavenge Orifice	Remove scavenge orifice. Clean and Replace.
Scavenge Tube Blocked	Remove scavenge tube. Clean and Replace.
Defective Scavenge Check Valve	Remove check valve. Replace with new valve.
Sep. Tank Blow Down Too Quickly	Allow unit to blow down automatically.
Defective Minimum Pressure Valve	Remove valve. Repair valve and replace.

16. Oil Seal Leak:

Contaminated Lube Oil	Drain and flush system. Add new CLEAN oil.
Blocked or Restricted Oil Line(s)	Remove, clean and replace line(s).
Malfunctioning Seal	Refer to Airend Rebuild Manual.
Scored Shaft	See instructions in new seal kit.

17. Will Not Unload:

Leak in Regulator Piping	Find and repair leak(s).
Incorrect Pressure Regulator Adjustment	Refer to Section 6 in this manual.
Malfunctioning Pressure Regulator	Replace regulator.
Malfunctioning Inlet Butterfly Valve	Inspect valve fit. Readjust per Section 6.
Ice in Regulation Lines/Orifice	Apply heat to line(s) and or orifice.

18. Oil In Air Cleaner:

Incorrect Stopping Procedure	Read Procedure in this manual.
Oil Pump Drive Coupling	Inspect coupling. Replace if necessary.
Discharge Check Valve Faulty	Replace.

19. Safety Valve Relieves:

Operating Pressure Too High	Reduce pressure to spec limit.
Leak In Regulator Piping	Repair leak(s).
Incorrect Pressure Regulator Adjustment	Refer to Section 6 in this manual.
Malfunctioning Pressure Regulator	Replace regulator.
Malfunctioning Inlet Unloader/Butterfly Valve	Inspect valve fit. Readjust per Section 6.
Defective Safety Valve	Replace safety valve.
Defective Separator Element	Remove element. Install new.
Ice in Regulation Lines/Orifice	Apply heat to lines and/or orifice.

SECTION 9 - 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 and 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.

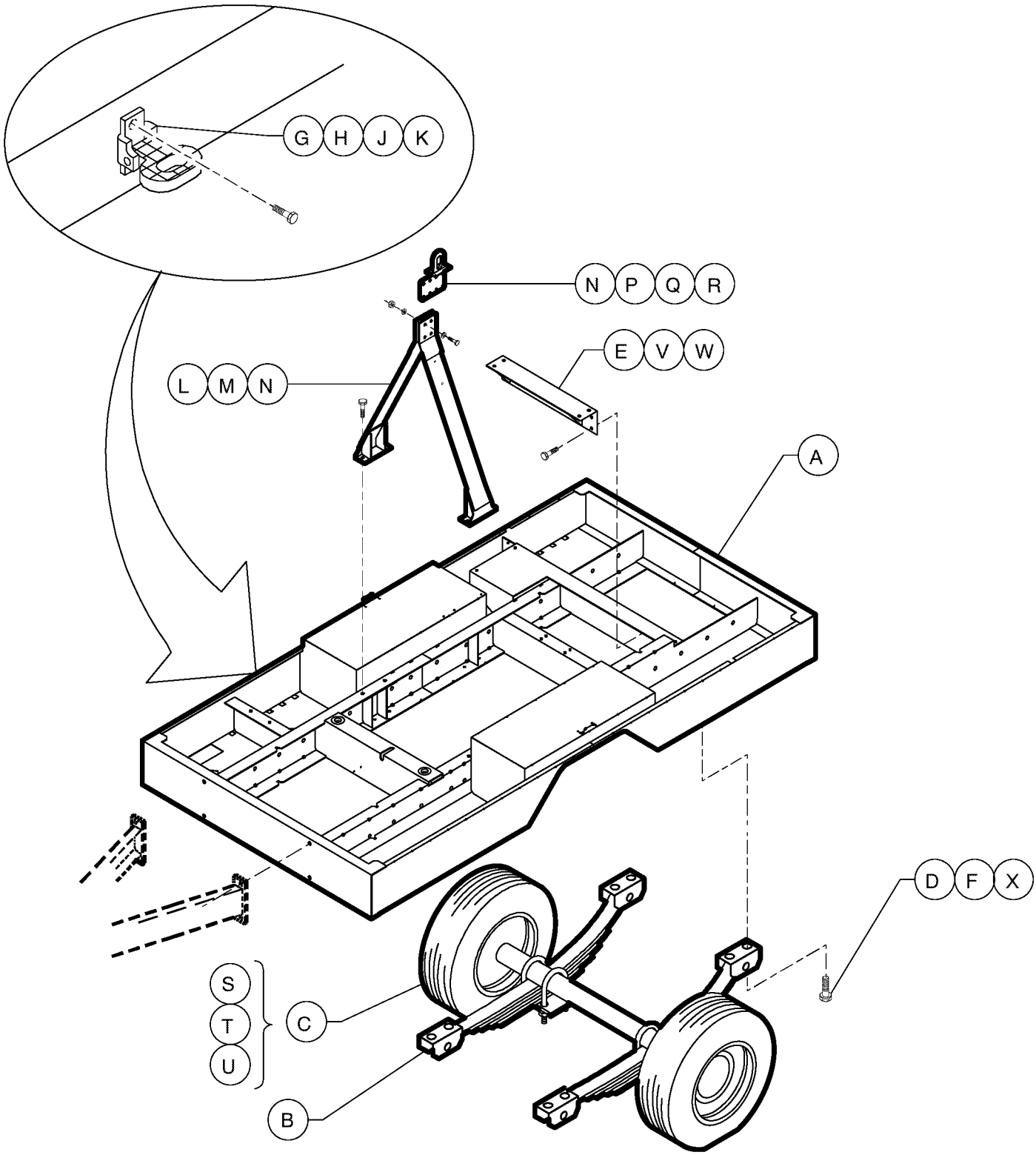
Category "C": The airend must be over five years old.

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.

SECTION 10 - PARTS LIST

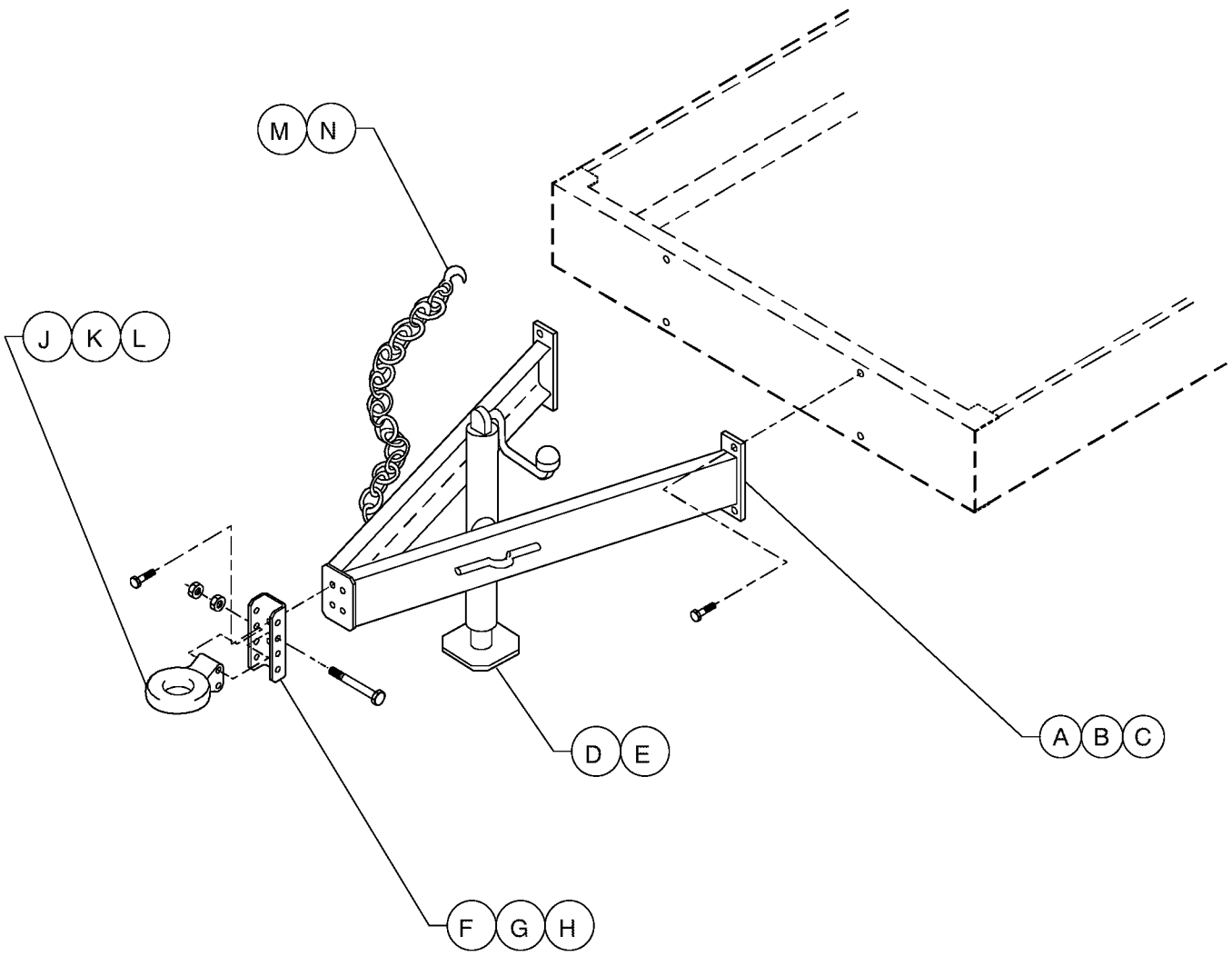
CONTENTS



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 12/31/91 bd	DESCRIPTION FRAME & RUNNING GEAR	
MODEL NO. P-375WCU P-600WCU	MANUAL NO. 35392893-02	DATE/REV: 7/00 D

ITEM	C.P.N.	QTY	DESCRIPTION	
A	36888071	1	FRAME	
B	36723948	1	RUNNING GEAR	**PRIOR TO S/N 320787**
	36799724	1	RUNNING GEAR w/ ELECTRIC BRAKES	**BEGIN with S/N 320787**
C	35284074	2	TIRE AND WHEEL ASSY.	
D	96730395	8	SCREW, HEX HD M12-2.5 X 50	
E	36887545	1	SUPPORT, RADIATOR BOTTOM	
F	35304047	8	NUT, HEX NYLOC M12	
G	35369313	1	FOLDING STEP	
H	35374834	2	SCREW	
J	95934899	2	WASHER	
K	36769743	2	NUT	
L	36844710	2	LIFTING BAIL	
M	36793040	4	SCREW	
N	36879211	8	NUT	
P	36779791	1	LIFTING EYE	
Q	36765121	4	SCREW	
R	95935052	4	WASHER	
S	35148071	1	TIRE	
T	35145234	1	WHEEL	
U	35148204	1	VALVE STEM	
V	36880995	4	SCREW, HEX FLANGE M10-150	
W	36879195	4	NUT, HEX FLANGE M10	
X	95935003	16	WASHER, FLAT	

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 12/31/91 bd	DESCRIPTION: FRAME & RUNNING GEAR	
MODEL NO.: P-375WCU P-600WCU	MANUAL NO.: 35392893-03	DATE/REV: 4/01 H



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2/24/92 bd	DESCRIPTION DRAWBAR	
MODEL NO. P-375WCU P-600WCU	MANUAL NO. 35392893-04	DATE/REV: 3/97 A

ITEM	C.P.N.	QTY	DESCRIPTION	
A	36843803	1	DRAWBAR	
B	36763670	4	SCREW	
C	35356526	4	NUT	
D	36752228	1	JACK ASSEMBLY	**{PRIOR TO S/N 309681}**
	54443577	1	JACK ASSEMBLY	**{BEGIN WITH S/N 309681}**
E	35609544	1	QUICK RELEASE PIN	
F	36757284	1	MOUNTING PLATE	
G	39179072	4	SCREW, M16 X 50	
H	36879211	4	NUT, HEX FLANGE M16	
J	96700885	4	NUT	
K	35605187	1	PINTLE EYE	
L	35376094	2	SCREW	
M	35610377	2	SAFETY CHAIN	
N	35372432	2	COUPLING LINK	

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2/24/92 bd	DESCRIPTION DRAWBAR	
MODEL NO. P-375WCU P-600WCU	MANUAL NO. 35392893-05	DATE/REV: 4/00 D

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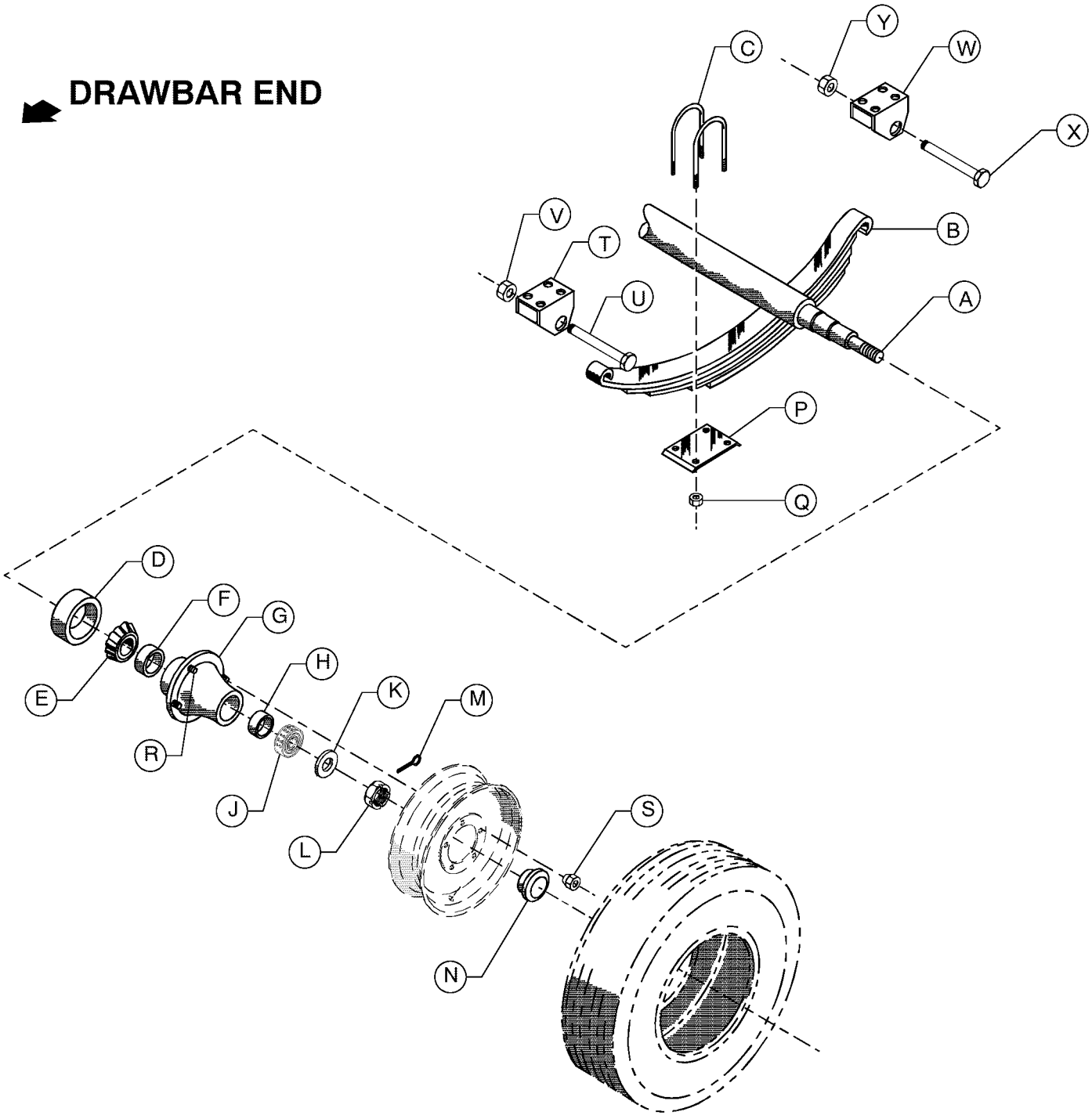


RUNNING GEAR COMPLETE
PART NO. 36723948
DEXTER 8-LUG
PRIOR TO S/N 320787

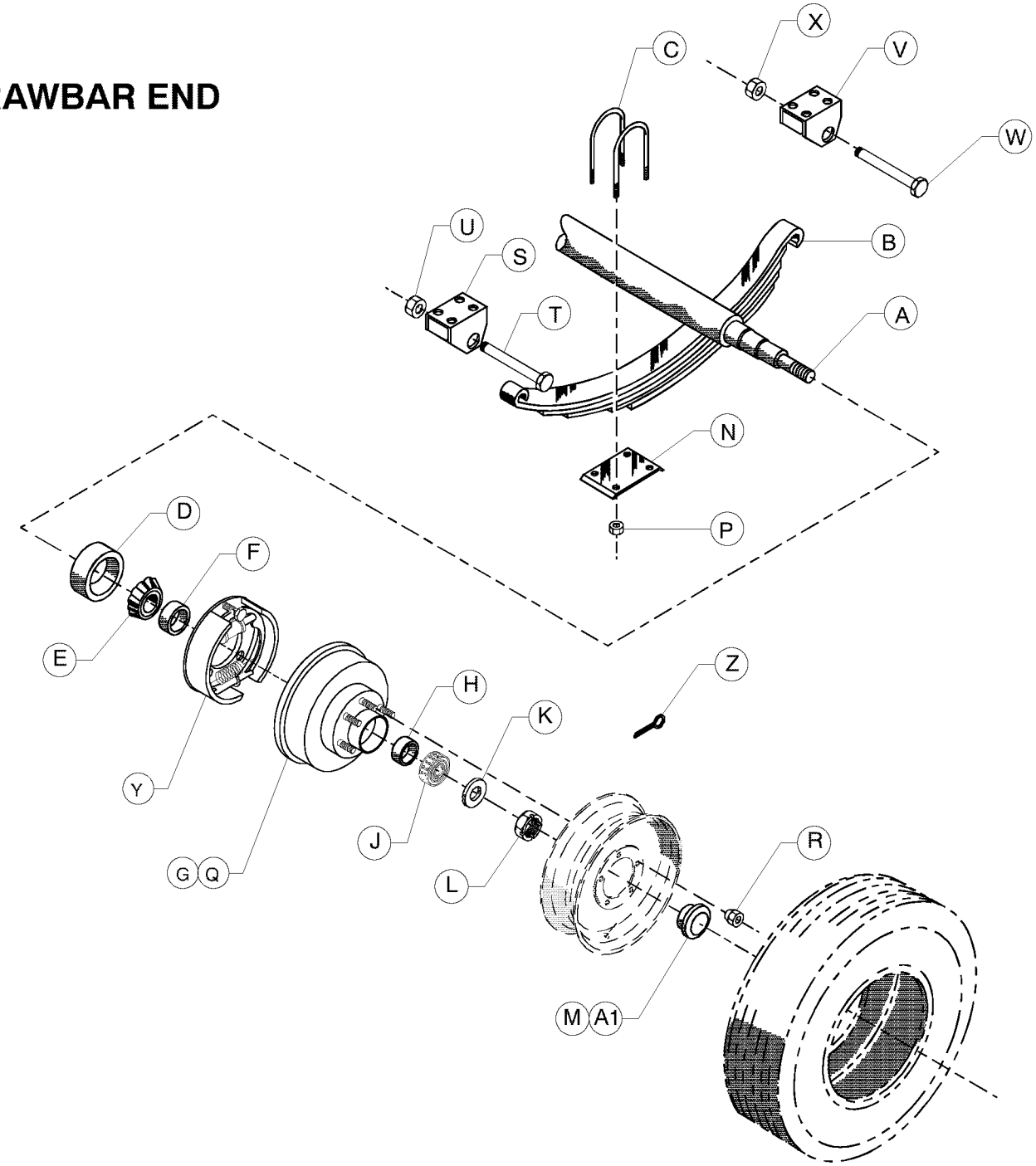
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 5/20/92 bd	DESCRIPTION RUNNING GEAR COMPLETE	
MODEL NO. P-375WCU	MANUAL NO. 35392893-06	DATE/REV: 3/97 B

ITEM	C.P.N.	QTY	DESCRIPTION
A	35316850	1	AXLE
B	35315126	2	SPRING
C	35316959	4	U-BOLT
D	35316868	2	GREASE SEAL
E	35316876	2	BEARING CONE
F	35316884	2	BEARING CUP
G	36770709	2	HUB
H	35316900	2	BEARING CUP
J	35316918	2	BEARING CONE
K	35315209	2	SPINDLE WASHER
L	35315217	2	SPINDLE NUT
M	35315225	2	COTTER PIN
N	35316926	2	GREASE CAP
P	35316967	2	TIE PLATE
Q	35315258	8	NUT
R	35361898	16	WHEEL STUD
S	35315274	16	WHEEL NUT
T	35326958	2	FRONT HANGER
U	35315340	2	SHACKLE BOLT
V	35315357	2	SHACKLE NUT
W	35326966	2	REAR HANGER
X	35315365	2	KEEPER BOLT
Y	35315373	2	KEEPER NUT

RUNNING GEAR COMPLETE
PART NO. 36723948
DEXTER 8-LUG
PRIOR TO S/N 320787

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
5/20/92 bd	RUNNING GEAR COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-375WCU	35392893-07	3/97 B

DRAWBAR END



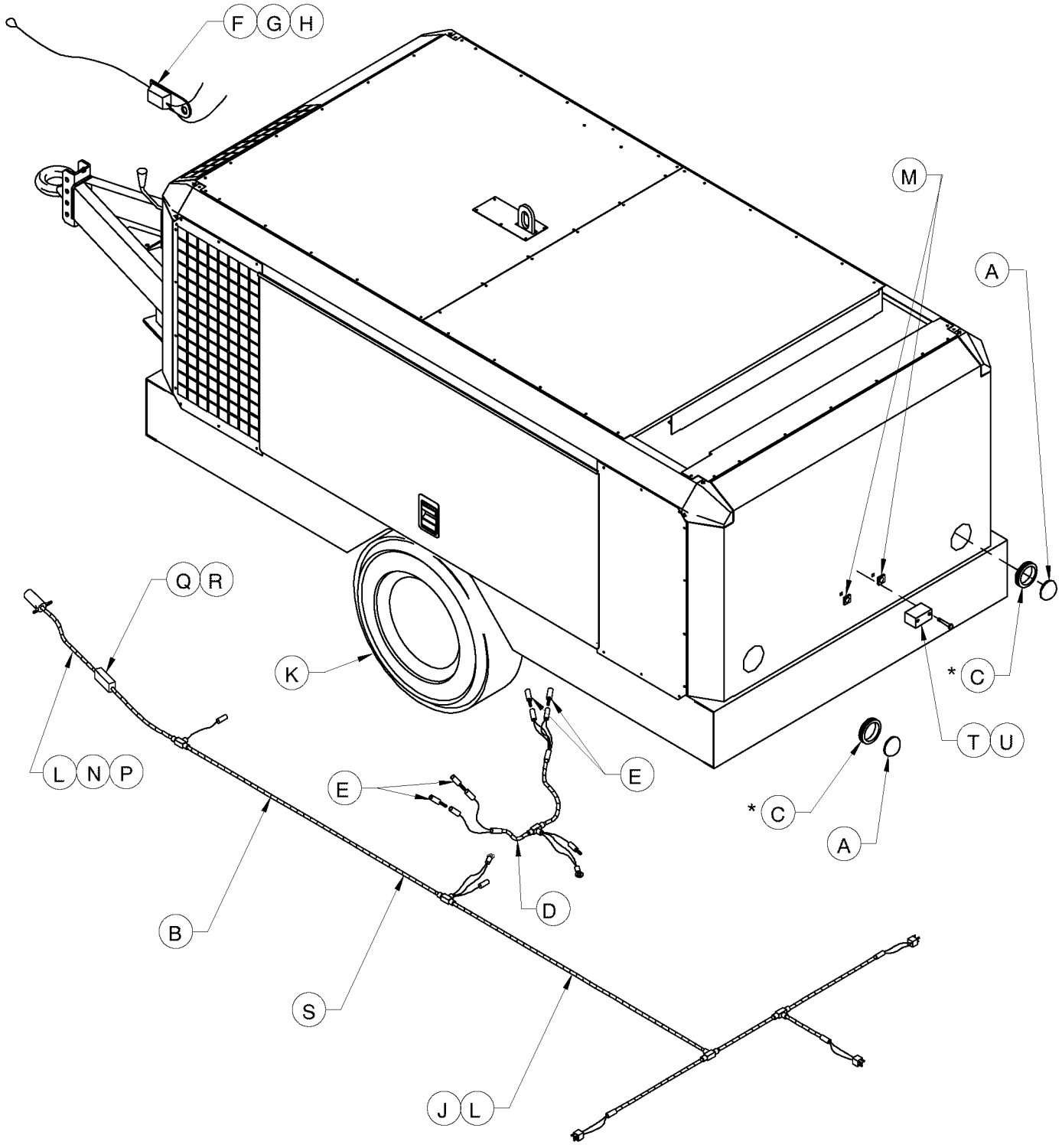
BEGIN with S/N 320787

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
4/14/98 bd	ELEC BRAKE AXLE	
MODEL NO.	MANUAL NO.	DATE/REV:
P600WCU	35392893-06	4/01 B

ITEM	C.P.N.	QTY	DESCRIPTION
A	35316850	1	AXLE
B	35315126	2	SPRING
C	35136959	4	U-BOLT
D	36865962	2	GREASE SEAL
E	35316876	2	BEARING CONE
F	35316884	2	BEARING CUP
G	35388669	2	HUB
H	35316900	2	BEARING CUP
J	35316918	2	BEARING CONE
K	35315209	2	SPINDLE WASHER
L	35315217	2	SPINDLE NUT
M	35393792	2	GREASE CAP
N	35316967	2	TIE PLATE
P	35315258	8	NUT
Q	35361898	16	WHEEL STUD
R	35315274	16	WHEEL NUT
S	35326958	2	FRONT HANGER
T	35315340	2	SHACKLE BOLT
U	35315357	2	SHACKLE NUT
V	35326966	2	REAR HANGER
W	35315365	2	KEEPER BOLT
X	35315373	2	KEEPER NUT
Y	36855377	1	LH BRAKE ASSEMBLY
	36855385	1	RH BRAKE ASSEMBLY
Z	35315225	2	PIN, COTTER
A1	35391135	2	PLUG, EZ LUBE

BEGIN with S/N 320787

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 4/14/98 bd	DESCRIPTION: ELEC BRAKE AXLE	
MODEL NO. P600WCU	MANUAL NO. 35392893-07	DATE/REV: 4/01 B

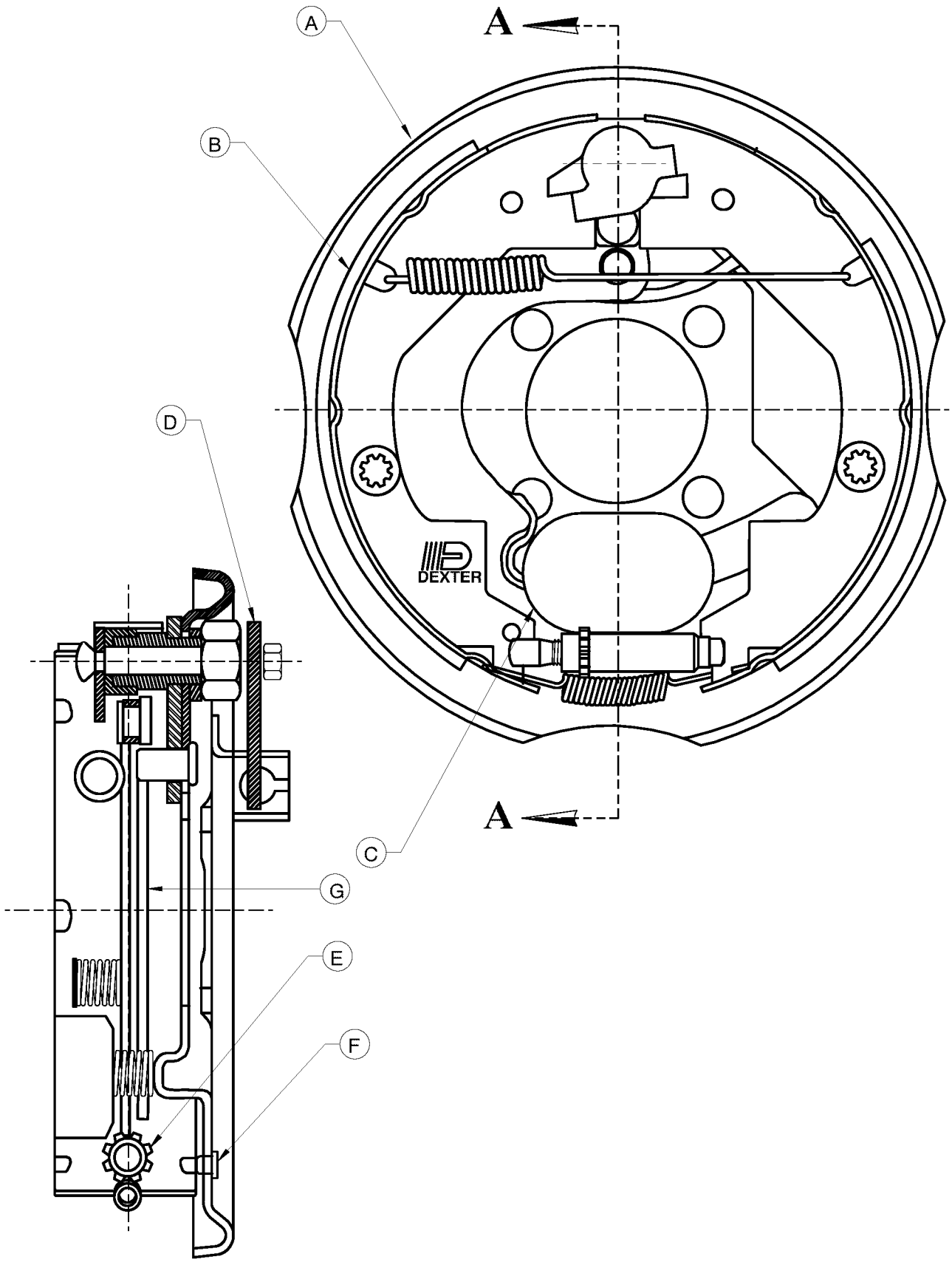


* USE (2) EXISTING GROMMETS

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
9/15/97 bd	ELEC BRK w/ 2-LIGHT ASSY	
MODEL NO.	MANUAL NO.	DATE/REV:
P600WCU	35392893-08	4/01 B

ITEM	C.P.N.	QTY	DESCRIPTION
A	36788081	2	TAIL LIGHT
B	36895282	1	HARNESS, ELECTRIC BRAKE
C	36787968	2	GROMMET
D	36896264	1	HARNESS, TAIL LIGHT
E	35375427	4	TERMINAL, SNAP
F	35315944	1	SWITCH, BREAKAWAY
G	35287572	2	TERMINAL, SPLICE
H	35346337	1	TERMINAL, LUG
J	35253038	16	CLAMP, 3/8
K	36799724	1	GEAR, ELEC BRAKE w/ RUNNING
L	92368687	4	SCREW, TAPPING M06-100 X 14
M	36794774	2	GROMMET, SCREW
N	36789261	1	HARNESS, 6 CONDUCTOR CABLE (STD LENGTH DRAWBAR)
	36787216	1	HARNESS, 6 CONDUCTOR CABLE (EXTENDED LENGTH DRAWBAR)
P	35225093	4	CLAMP, 1/2
Q	35252451	5	SCREW, LOCK 1/4-20 X 1
R	35144492	5	NUT, LOCK 1/4-20
S	35225077	2	CLAMP, 5/8
T	36895860	1	LIGHT, LICENSE
U	36782837	2	SCREW, HEX SHT METAL #10 X 1

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
9/15/97 bd	ELEC BRK w/ 2-LIGHT ASSY	
MODEL NO.	MANUAL NO.	DATE/REV:
P600WCU	35392893-09	4/01 C



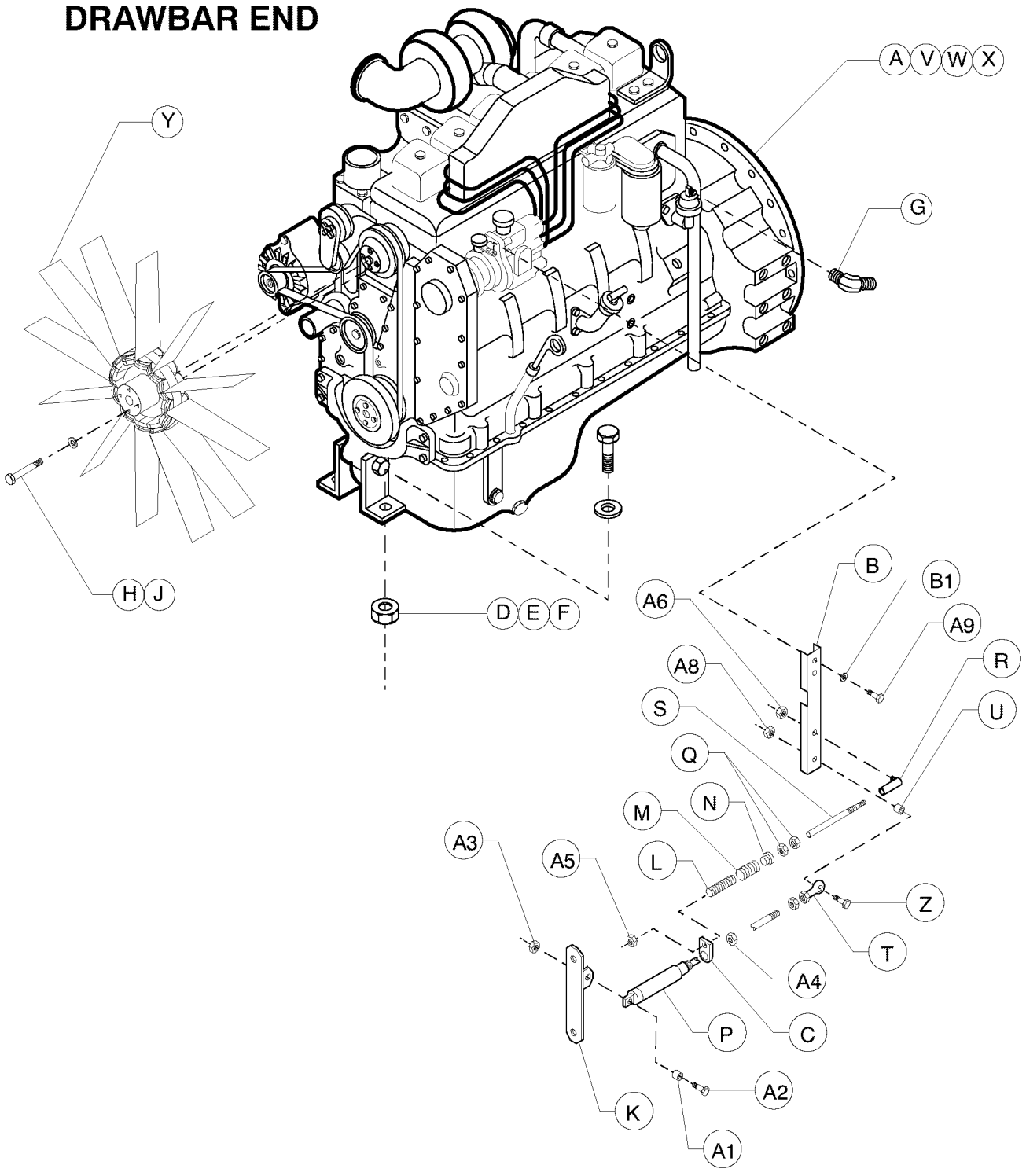
SECTION A - A

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
4/14/98 bd	ELEC BRAKE SHOE	
MODEL NO.	MANUAL NO.	DATE/REV:
P600WCU	35392893-10	4/01 B

ITEM	C.P.N.	QTY	DESCRIPTION
A	35393859	1	LH BACKING PLATE ASSEMBLY
	35393867	1	RH BACKING PLATE ASSEMBLY
B	36895803	2	BRAKE SHOE KIT
C	36895811	2	MAGNET KIT
D	35390913	2	PARKING BRAKE LEVER
E	35393726	2	ADJUSTING SCREW KIT
F	35391069	2	ADJUSTING SLOT PLUG
G	36895829	1	LH PARK BRAKE LEVER KIT
	36895837	1	RH PARK BRAKE LEVER KIT

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 4/14/98 bd	DESCRIPTION: ELEC BRAKE SHOE	
MODEL NO. P600WCU	MANUAL NO. 35392893-11	DATE/REV: 4/01 B

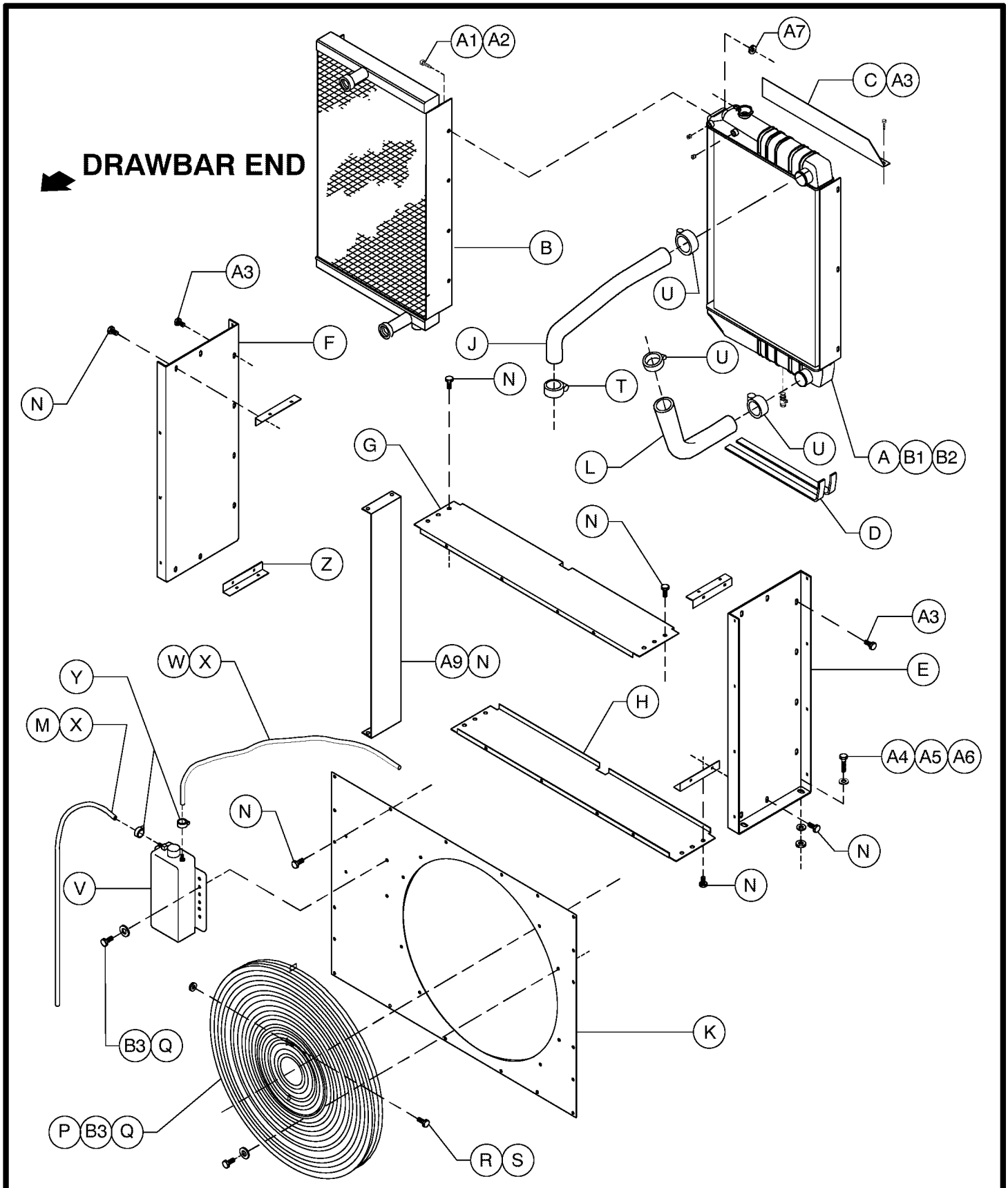
DRAWBAR END



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 5/13/93 bd	DESCRIPTION ENGINE COMPLETE	
MODEL NO. P-600WCU	MANUAL NO. 35392893-12	DATE/REV: 3/97 D

ITEM	C.P.N.	QTY	DESCRIPTION
A	36881688	1	ENGINE
B	36887578	1	LEVER, EXT ENG SPEED
C	35322445	1	GUIDE, ROD / SPRING
D	36763688	4	SCREW, HEX M12-175 X 35
E	95934931	4	WASHER, FLAT
F	36840254	4	NUT, FLANGE HD M12
G	95279527	1	ELBOW
H	96710488	4	SCREW M10-1.50 X 80
J	95935037	4	WASHER, FLAT
K	36887578	1	BRACKET, AIR CYLINDER MOUNTING
L	35329721	1	SPRING, COMPRESSION
M	35322411	1	SPRING, COMPRESSION
N	35322437	1	MOUNT, SPRING
P	35594225	1	CYLINDER
Q	95923082	2	NUT, HEX JAM 3/8-24
R	35322635	1	BALL JOINT, 1/4-28
S	35322429	1	ROD, SPRING THROTTLE
T	35300532	1	BEARING, ROD END 7/16-20
U	35322452	1	BUSHING, ROD END BEARING
V	35374669	1	FUEL ELEMENT WITH WATER SEPARATOR
W	35374677	1	SECONDARY FUEL ELEMENT
X	35387489	1	OIL FILTER ELEMENT
Y	36845410	1	FAN
Z	35145242	1	SCREW, LOCK 1/4-20 X 1 1/4
A1	35288885	1	BUSHING, 3/8 X 5/8
A2	36761476	1	SCREW, SHOULDER SOC HD
A3	95923314	1	NUT, HEX LOCK 5/16-18
A4	95923108	1	NUT, HEX JAM 3/4-16
A5	35324664	1	COLLAR, 3/8
A6	95925939	1	NUT, HEX LOCK 1/4-28
A7	95926028	1	NUT, HEX JAM &/16-20
A8	35144492	1	NUT, LOCK WASHER HD 1/4-20
A9	35307818	2	SCREW, HEX M06-100 X 10
B1	95935029	2	WASHER, FLAT

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 5/13/93 bd	DESCRIPTION: ENGINE COMPLETE	
MODEL NO.: P-600WCU	MANUAL NO.: 35392893-13	DATE/REV.: 3/97 G

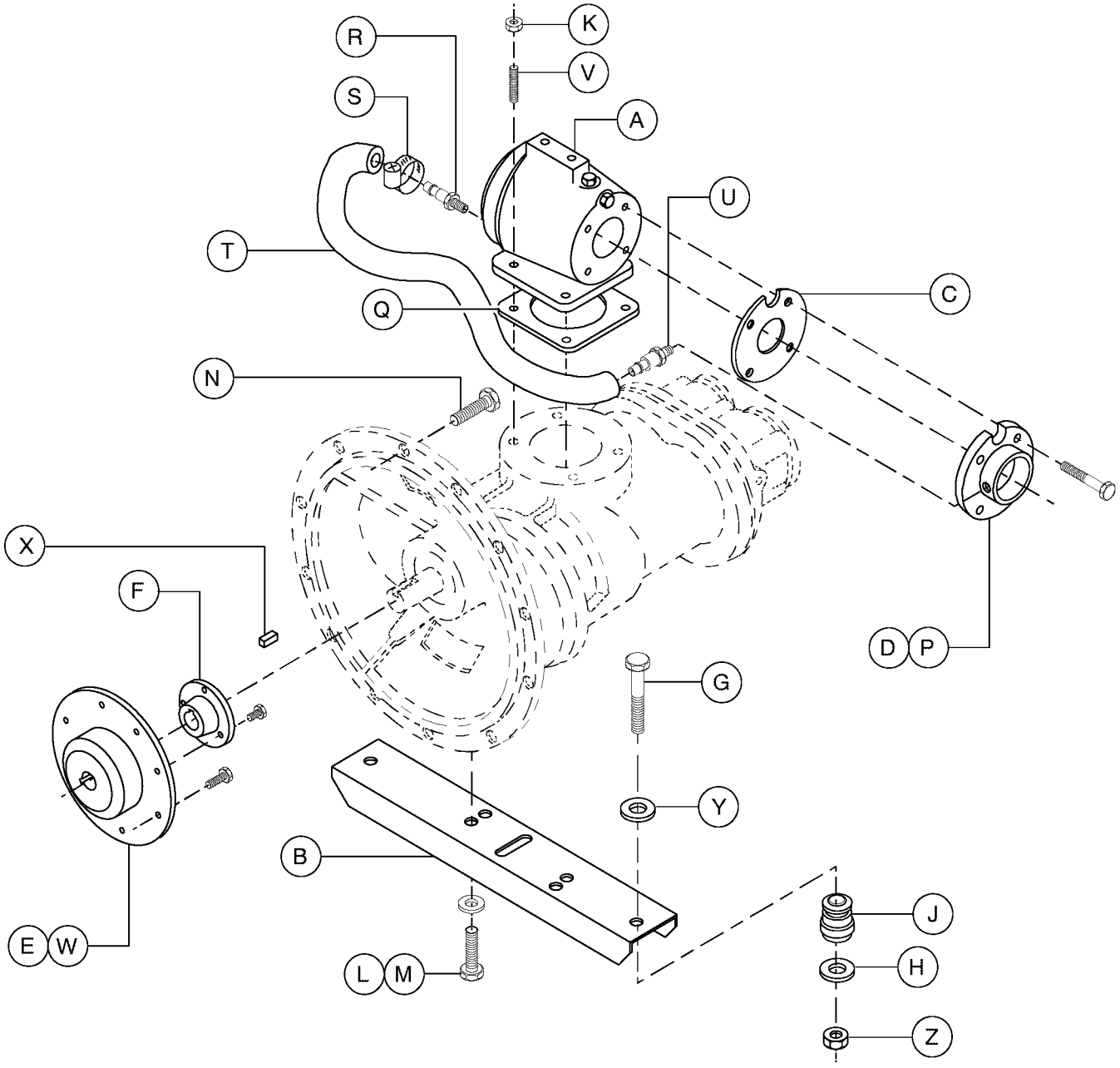


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
7/9/92 bd	LIQ COOLING COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-14	3/97 D

ITEM	C.P.N.	QTY	DESCRIPTION
A	36887644	1	RADIATOR
B	36842953	1	OIL COOLER
C	36888063	1	PLATE, BAFFLE
D	35140409	16.5"	FOAM, 1/4 X 3/4 (2 PCS)
E	36843944	1	RADIATOR SUPPORT
F	36843951	1	OIL COOLER SUPPORT
G	36887552	1	TOP FAN SHROUD
H	36887560	1	BOTTOM FAN SHROUD
J	36887602	1	RADIATOR INLET HOSE
K	36843993	1	FAN SHROUD
L	36887610	1	RADIATOR OUTLET HOSE
M	35360775	48"	HOSE
N	92368687	50	SCREW
P	36846350	1	FAN GUARD
Q	95935029	14	WASHER
R	35144336	4	SCREW
S	35252600	4	NUT
T	35221662	1	CLAMP, 34mm - 57mm
U	35222017	3	CLAMP, 2 1/4 - 3
V	36845600	1	OVERFLOW TANK
W	35360775	34"	HOSE
X	35222538	3	CLAMP, SUPPORT
Y	35296342	3	CLAMP
Z	36846723	4	FAN SHROUD BRACKET
A1	96702055	8	SCREW, HEX M08-125 X 20
A2	95934998	8	WASHER, FLAT 3/8
A3	35279025	8	SCREW, TAPPING M08-125 X 20
A4	36763704	4	SCREW, HEX M12-175 x 30
A5	95935003	8	WASHER, FLAT 1/2
A6	96700877	4	NUT, HEX M12
A7	96700869	4	NUT, HEX M08
A8	~	~	~
A9	36847333	1	BAFFLE FAN SHROUD
B1	35387844	1	RADIATOR CAP
B2	30641278	1	DRAIN COCK
B3	35300771	16	SCREW

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 7/9/92 bd	DESCRIPTION: LIQ COOLING COMPLETE	
MODEL NO.: P-600WCU	MANUAL NO.: 35392893-15	DATE/REV.: 3/97 E

DRAWBAR END

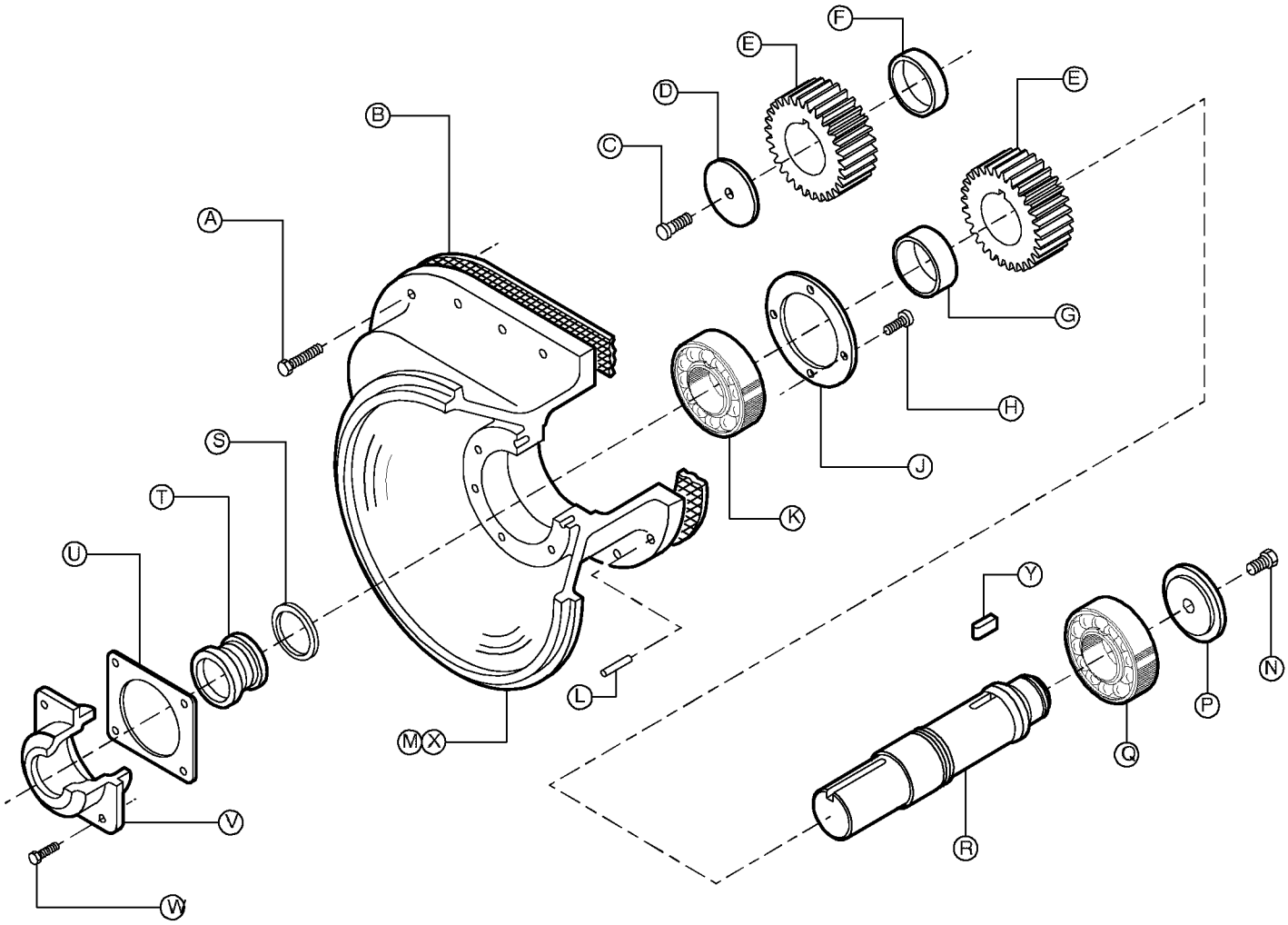


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	AIR END COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-16	11/97 D

ITEM	C.P.N.	QTY	DESCRIPTION
A	36011567	1	UNLOADER ASSEMBLY
B	36845329	1	AIREND SUPPORT
C	35588318	1	GASKET
D	35843168	1	UNLOADER INLET
E	35834787	1	COUPLING
F	35103852	1	BUSHING
G	35290113	2	SCREW
H	35327212	2	WASHER
J	35318229	2	MOUNT
K	16M4JC26M3	4	NUT
L	35375591	2	SCREW
M	11A5D8Z1	2	WASHER
N	35272541	12	SCREW
P	35M2AB359M3	4	SCREW
Q	35589589	1	GASKET
R	35323542	1	ADAPTER
S	35377621	2	CLAMP
T	35282292	14"	TUBING
U	35316587	1	BARBED FITTING
V	35323450	4	STUD
W	119A2A198N	8	SCREW
X	35364975	1	KEY
Y	12M5L29M3	2	WASHER
Z	96704630	2	NUT, NYLOCK 16 mm

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	AIR END COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-17	11/97 D

DRAWBAR END



* NEW 178.5 mm P-600WCU AIREND ASSEMBLY 36010254
* NEW 178.5 mm VHP-400WCU AIREND ASSEMBLY 36018059
* NEW 178.5 mm HP-450WCU AIREND ASSEMBLY 35094440
* NEW 178.5 mm XP-525WCU AIREND ASSEMBLY 35093665

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/11/92 bd	DESCRIPTION AIR END ASSEMBLY	
MODEL NO. P-600WCU	MANUAL NO. 35392893-18	DATE/REV: 3/97 A

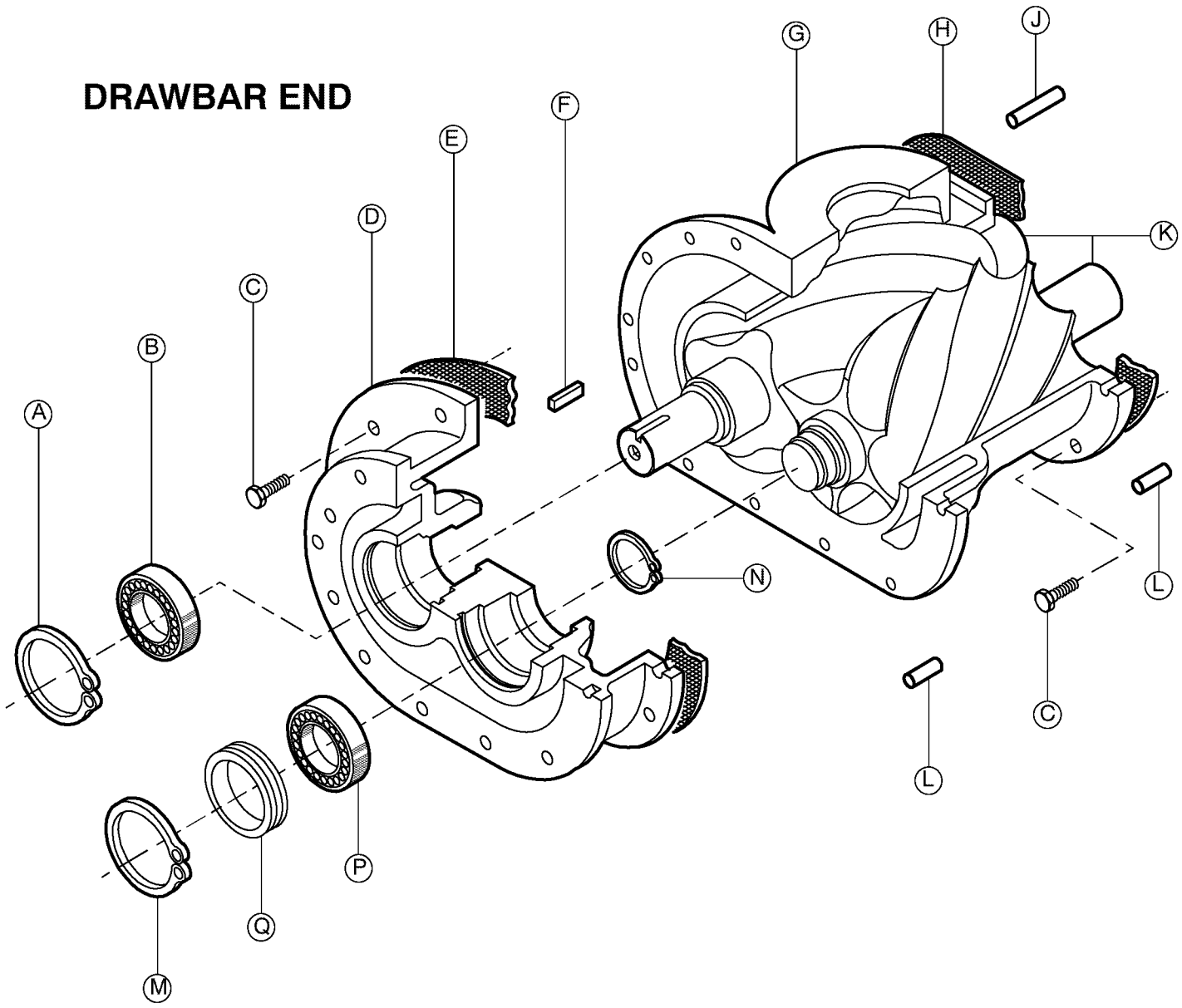
ITEM	C.P.N.	QTY	DESCRIPTION
A	35375385	12	SCREW
B	39437637	1	GASKET
C	35108372	1	SCREW
D	35255827	1	CLAMP PLATE
E	36751659	1	GEAR SET (P-600WCU)
	35303429	1	GEAR SET (VHP-400WCU)
	36751667	1	GEAR SET (HP-450WCU)
	92512516	1	GEAR SET (XP-525WCU)
F	35262716	1	SPACER
G	35269224	1	SPACER BEARING
H	119A2A206N	4	SCREW
J	35573070	1	RETAINING PLATE
K	35601517	1	BEARING
L	17A13A289	2	DOWEL PIN
M	35996164	1	GEAR CASE
N	35336304	1	SCREW
P	36764785	1	GUIDE CAP
Q	35313568	1	BEARING
R	36780906	1	GEAR SHAFT
S	35104082	1	LOCK NUT
T	35593508	1	OIL SEAL
U	W57742	1	GASKET
V	35592757	1	OIL SEAL COVER
W	34M2AB462	6	SCREW
X	36798205	2	GUARD
Y	35361328	1	KEY

* NEW 178.5 mm P-600WCU AIREND ASSEMBLY 36010254
* NEW 178.5 mm VHP-400WCU AIREND ASSEMBLY 36018059
* NEW 178.5 mm HP-450WCU AIREND ASSEMBLY 35094440
* NEW 178.5 mm XP-525WCU AIREND ASSEMBLY 35093665

*** EXCHANGE AIREND OPTION:** INGERSOLL-RAND OFFERS FACTORY REMANUFACTURED AIRENDS THAT ARE BUILT TO THE LATEST DESIGNS. MEANING IT WILL REFLECT ALL THE ENGINEERING UPGRADES AND PERFORMANCE ENHANCEMENTS MADE TO THAT SIZE UNIT. ALL EXCHANGE AIRENDS COME WITH A ONE YEAR WARRANTY. THESE BENEFITS MAKE A FACTORY REBUILT AIREND THE ONLY COST EFFECTIVE OPTION. CALL YOUR LOCAL IR DEALER FOR MORE DETAILS. PLEASE PROVIDE YOUR AIREND SERIAL NUMBER.

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/11/92 bd	DESCRIPTION: AIR END ASSEMBLY	
MODEL NO.: P-600WCU	MANUAL NO.: 35392893-19	DATE/REV: 3/97 C

DRAWBAR END



* NEW 178.5 mm P-600WCU AIREND ASSEMBLY 36010254
* NEW 178.5 mm VHP-400WCU AIREND ASSEMBLY 36018059
* NEW 178.5 mm HP-450WCU AIREND ASSEMBLY 35094440
* NEW 178.5 mm XP-525WCU AIREND ASSEMBLY 35093665

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/11/92 bd	AIR END ASSEMBLY	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-20	3/97 A

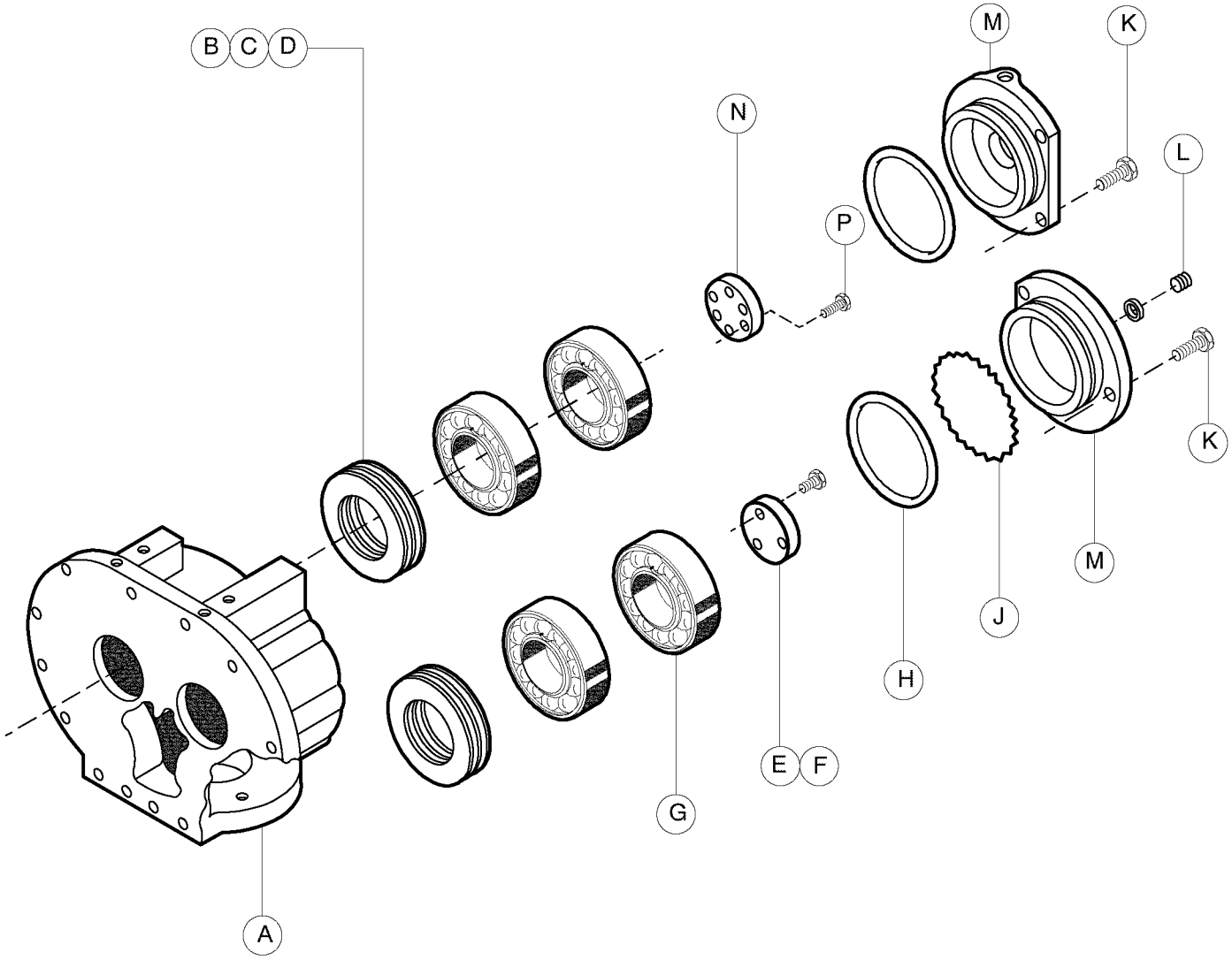
ITEM	C.P.N.	QTY	DESCRIPTION
A	161A13S475	1	SNAP RING
B	35313535	1	ROLLER BEARING
C	35272541	25	SCREW
D	39703921	1	FRT BEARING HOUSING
E	35518497	1	GASKET
F	12A9C135	1	KEY
G	39748942	1	ROTOR HOUSING
H	39437629	1	GASKET
J	95239927	2	DOWEL PIN
K	36008241	1	ROTOR SET
L	35332915	2	DOWEL PIN
M	95223178	1	SNAP RING
N	164A13S215	1	SNAP RING
P	35609361	1	ROLLER BEARING
Q	35270131	1	BEARING SPACER

* NEW 178.5 mm P-600WCU AIREND ASSEMBLY 36010254
* NEW 178.5 mm VHP-400WCU AIREND ASSEMBLY 36018059
* NEW 178.5 mm HP-450WCU AIREND ASSEMBLY 35094440
* NEW 178.5 mm XP-525WCU AIREND ASSEMBLY 35093665

*** EXCHANGE AIREND OPTION:** INGERSOLL-RAND OFFERS FACTORY REMANUFACTURED AIRENDS THAT ARE BUILT TO THE LATEST DESIGNS. MEANING IT WILL REFLECT ALL THE ENGINEERING UPGRADES AND PERFORMANCE ENHANCEMENTS MADE TO THAT SIZE UNIT. ALL EXCHANGE AIRENDS COME WITH A ONE YEAR WARRANTY. THESE BENEFITS MAKE A FACTORY REBUILT AIREND THE ONLY COST EFFECTIVE OPTION. CALL YOUR LOCAL IR DEALER FOR MORE DETAILS. PLEASE PROVIDE YOUR AIREND SERIAL NUMBER.

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/11/92 bd	DESCRIPTION: AIR END ASSEMBLY	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-21	3/97 C

DRAWBAR END



* NEW 178.5 mm P-600WCU AIREND ASSEMBLY 36010254
* NEW 178.5 mm VHP-400WCU AIREND ASSEMBLY 36018059
* NEW 178.5 mm HP-450WCU AIREND ASSEMBLY 35094440
* NEW 178.5 mm XP-525WCU AIREND ASSEMBLY 35093665

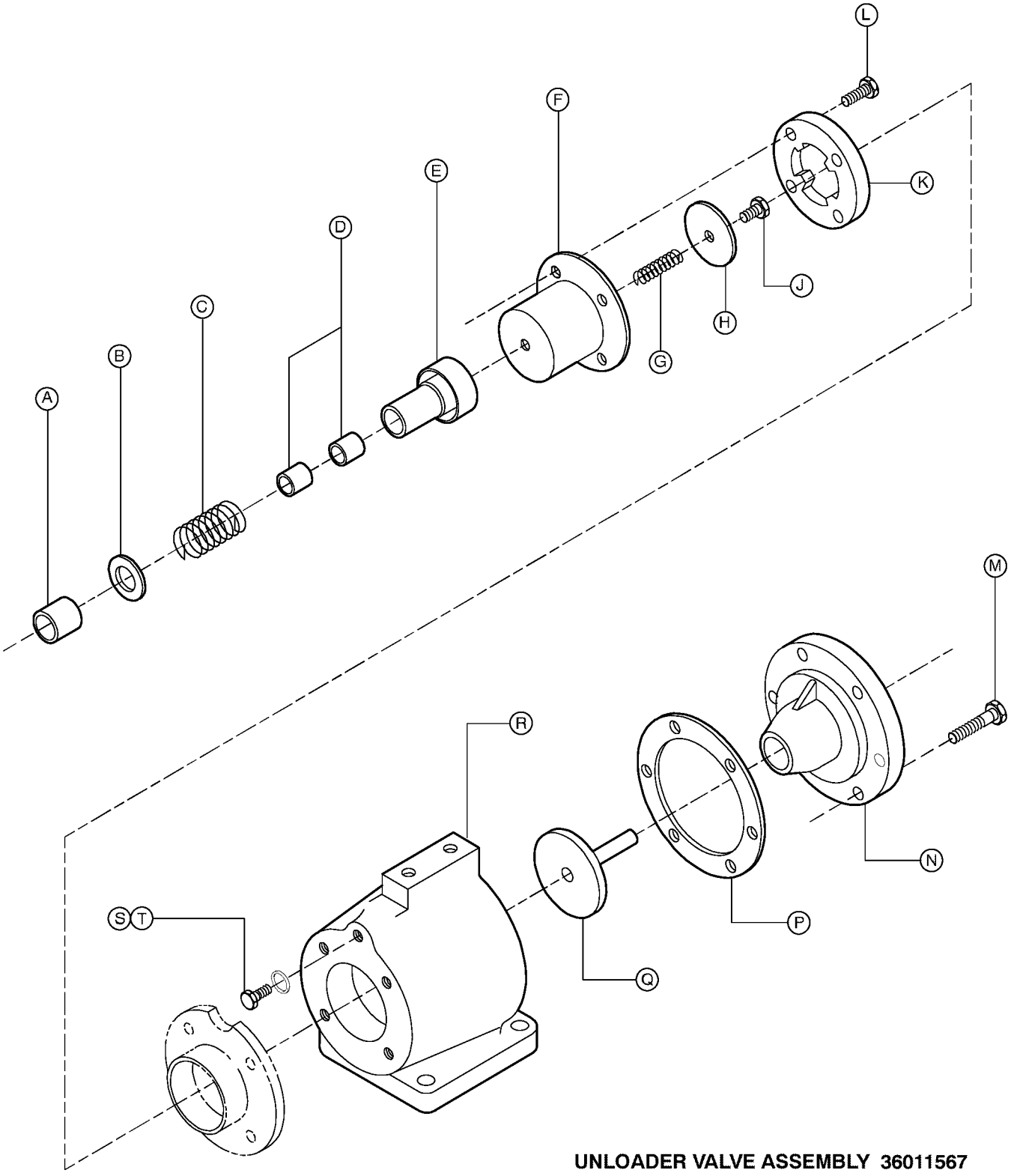
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/11/92 bd	DESCRIPTION AIR END ASSEMBLY	
MODEL NO. P-600WCU	MANUAL NO. 35392893-22	DATE/REV: 3/97 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36769404	1	REAR BEARING HOUSING
B	35313600	4	SHIM, .002
C	35313618	4	SHIM, .003
D	35364769	2	SHIM, .010
E	35262690	1	CLAMP PLATE
F	35104108	3	SCREW
G	39437595	4	BALL BEARING
H	20A11C2M249	2	O-RING
J	35354448	2	SHIM SET
K	34M2AB462	6	SCREW
L	35287556	2	PLUG
M	35600832	2	REAR BEARING COVER
N	39435441	1	CLAMP PLATE
P	119A2A177N	8	SCREW

* NEW 178.5 mm P-600WCU AIREND ASSEMBLY 36010254
* NEW 178.5 mm VHP-400WCU AIREND ASSEMBLY 36018059
* NEW 178.5 mm HP-450WCU AIREND ASSEMBLY 35094440
* NEW 178.5 mm XP-525WCU AIREND ASSEMBLY 35093665

*** EXCHANGE AIREND OPTION:** INGERSOLL-RAND OFFERS FACTORY REMANUFACTURED AIRENDS THAT ARE BUILT TO THE LATEST DESIGNS. MEANING IT WILL REFLECT ALL THE ENGINEERING UPGRADES AND PERFORMANCE ENHANCEMENTS MADE TO THAT SIZE UNIT. ALL EXCHANGE AIRENDS COME WITH A ONE YEAR WARRANTY. THESE BENEFITS MAKE A FACTORY REBUILT AIREND THE ONLY COST EFFECTIVE OPTION. CALL YOUR LOCAL IR DEALER FOR MORE DETAILS. PLEASE PROVIDE YOUR AIREND SERIAL NUMBER.

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/11/92 bd	DESCRIPTION: AIR END ASSEMBLY	
MODEL NO.: P-600WCU	MANUAL NO.: 35392893-23	DATE/REV: 3/97 C



UNLOADER VALVE ASSEMBLY 36011567

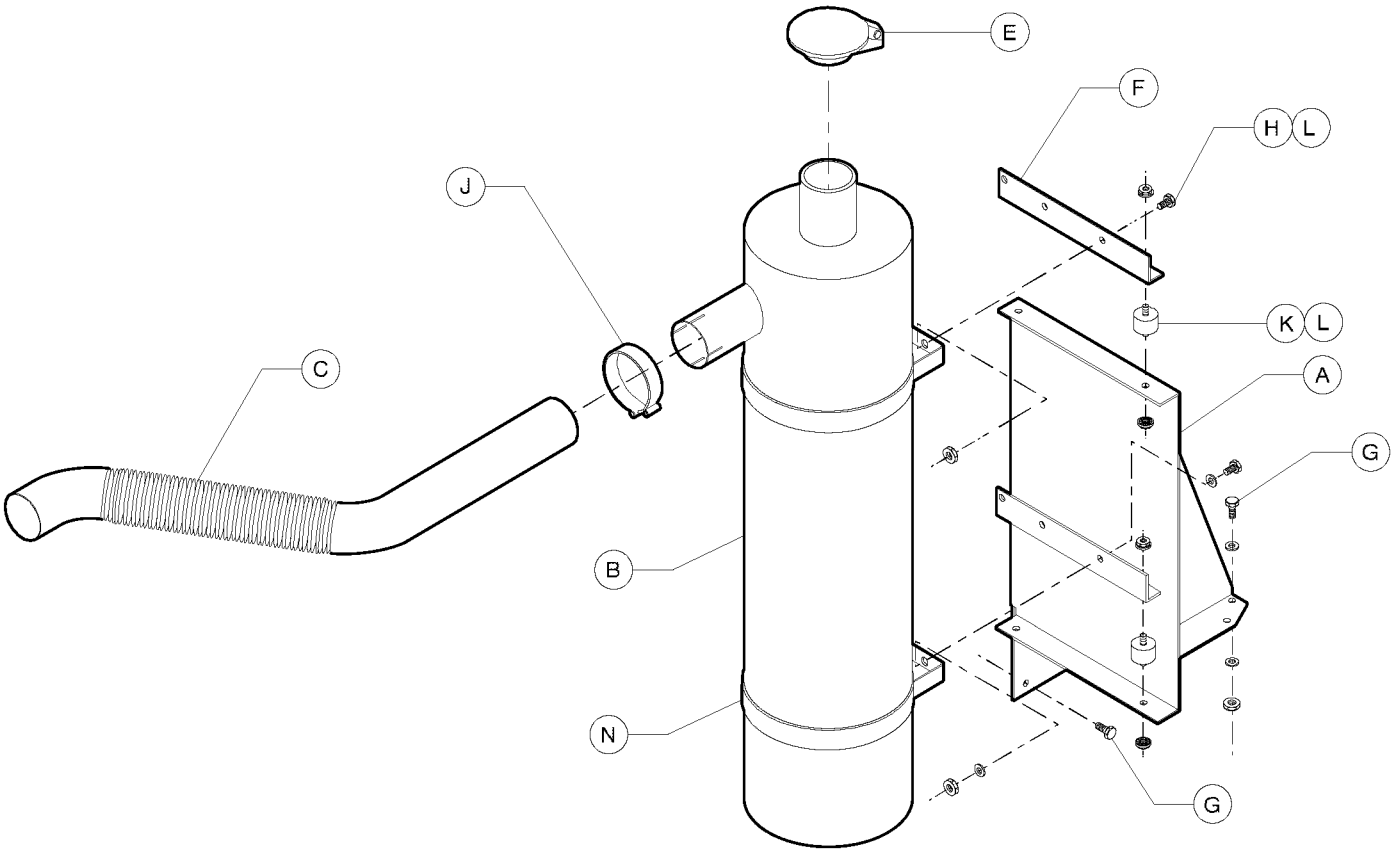
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/12/92 bd	UNLOADER ASSEMBLY	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-24	3/97 B

ITEM	C.P.N.	QTY	DESCRIPTION
A	35318013	1	HOUSING BUSHING
B	35317205	1	WASHER
C	35322767	1	PISTON SPRING
D	35318005	2	PISTON BUSHING
E	35588193	1	PISTON UNLOADER
F	35317197	1	DIAPHRAGM
G	35321603	1	SPRING
H	35317239	1	PISTON WASHER
J	35321595	1	CAPSCREW
K	36849461	1	PISTON COVER
L	35271162	4	SCREW
M	35374842	6	SCREW
N	35833227	1	PISTON HOUSING
P	35588300	1	PISTON GASKET
Q	35591122	1	VALVE PLATE
R	36849453	1	UNLOADER BODY
S	35289057	1	PLUG
T	35279459	1	O-RING

UNLOADER VALVE ASSEMBLY 36011567

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/12/92 bd	UNLOADER ASSEMBLY	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-25	3/97 B

DRAWBAR END

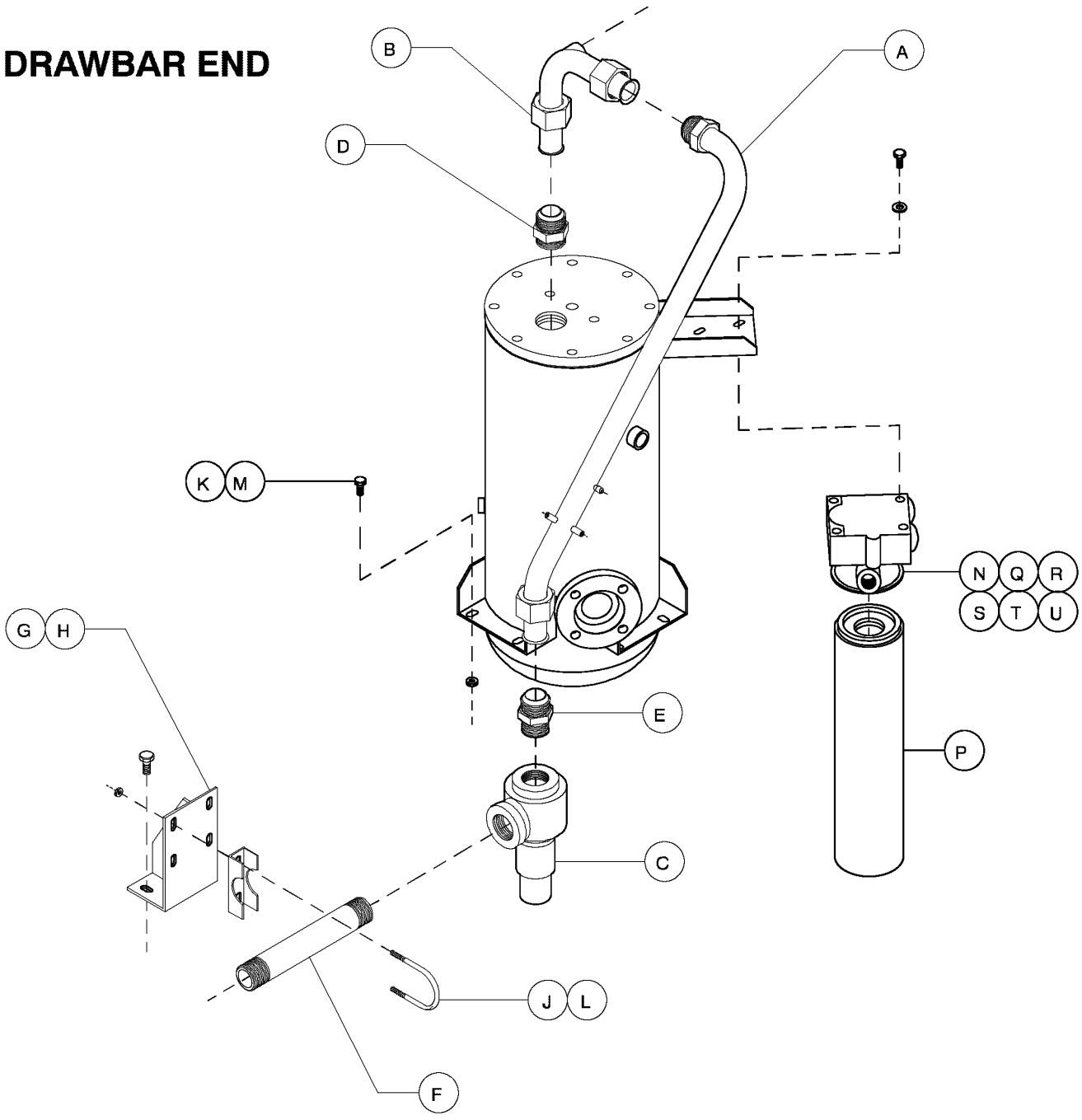


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/23/92 bd	DESCRIPTION EXHAUST COMPLETE	
MODEL NO. P-600WCU	MANUAL NO. 35392893-26	DATE/REV: 3/97 D

ITEM	C.P.N.	QTY	DESCRIPTION
A	36845436	1	MUFFLER BRACKET
B	36842995	1	MUFFLER
C	36845295	1	EXHAUST PIPE
D	~	~	~
E	36869337	1	RAINCAP
F	36845527	2	MUFFLER SUPPORT
G	35130293	6	SCREW
H	35252493	4	SCREW
J	35365311	1	CLAMP
K	35312362	4	ISOLATOR
L	35145077	12	NUT
M	~	~	~
N	35579853	2	MUFFLER MOUNTING BAND

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	EXHAUST COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-27	3/97 D

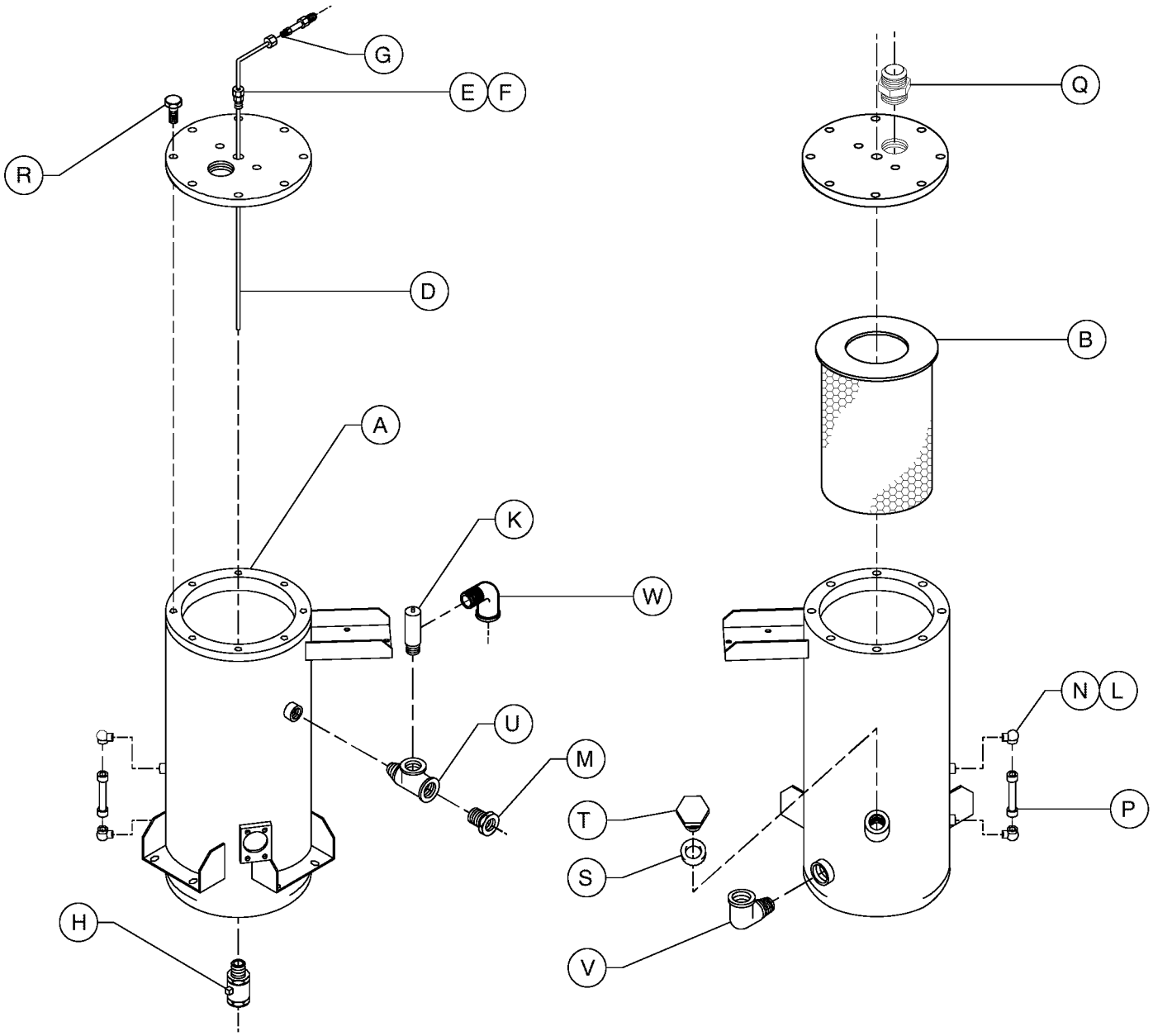
DRAWBAR END



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/15/92 bd	AIR SERVICE COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-28	11/97 F

ITEM	C.P.N.	QTY	DESCRIPTION	
A	36845220	1	BOTTOM TUBE	
B	36845212	1	TOP TUBE	
C	35598770	1	MIN PRESSURE VALVE	
D	35356500	1	CONNECTOR	
E	35335124	1	CONNECTOR	
F	95944658	1	NIPPLE	
G	36845337	1	BRACKET	
H	35279025	2	SCREW	
J	35209048	2	CLAMP	
K	36877793	4	SCREW, HEX FLANGE HD M12 X 40	
L	95934899	4	WASHER, FLAT 3/8"	
M	36879203	4	NUT, HEX FLANGE M12	
N	36871689	1	BY-PASS VALVE	
P	36860336	1	FILTER ELEMENT	**{PRIOR TO S/N 300624}**
	36897346	1	FILTER ELEMENT	**{BEGIN WITH S/N 300624}**
Q	96701479	3	SCREW	
R	95935037	3	WASHER	
S	35388024		RELIEF VALVE KIT	
T	35388032		ELEMENT REPAIR KIT	
U	35388040		O-RING REPAIR KIT	

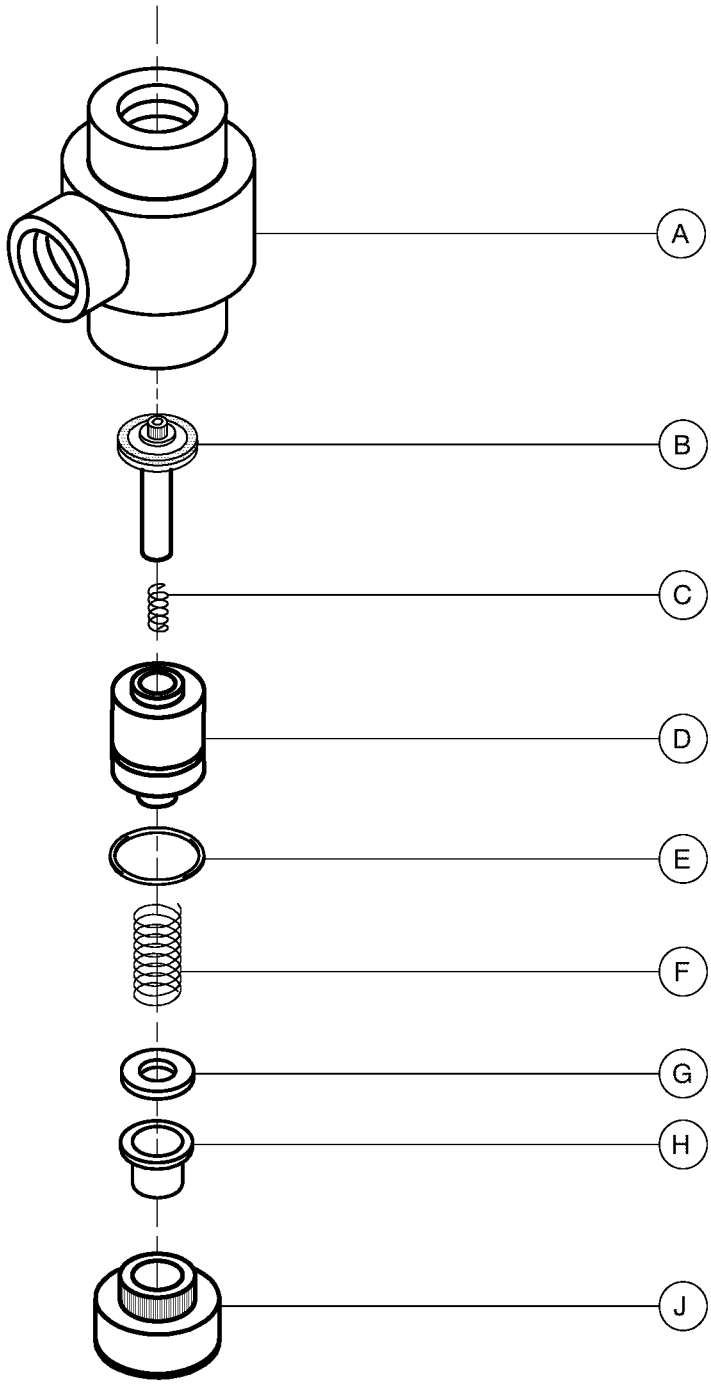
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/15/92 bd	AIR SERVICE COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-29	5/99 H



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/15/92 bd	DESCRIPTION SEP TANK COMPLETE	
MODEL NO. P-600WCU	MANUAL NO. 35392893-30	DATE/REV: 7/00 D

ITEM	C.P.N.	QTY	DESCRIPTION
A	54466701	1	SEPARATOR TANK (P600, HP450,XP525 ONLY)
	54466735	1	SEPARATOR TANK (VHP400 ONLY)
B	36845469	1	ELEMENT
C	~	~	~
D	36794147	1	SCAVENGE TUBE
E	35329309	1	LENZ FITTING
F	23A7S8	1	BUSHING
G	36840411	1	CHECK VALVE
H	36795680	1	BALL VALVE
J	~	~	~
K	35326636	1	SAFETY VALVE (P-600WCU)
	35596972	1	SAFETY VALVE (VHP-400WCU)
	36784114	1	SAFETY VALVE (HP-450WCU)
	36784114	1	SAFETY VALVE (XP-525WCU)
L	35324649	2	GASKET
M	23A7S12Z1	1	BUSHING
N	36860468	1	FITTINGS
P	92121532	1	SIGHT GLASS
Q	35356500	1	CONNECTOR
R	35A2D327Z1	8	SCREW
S	35279942	1	O-RING
T	35579630	1	PLUG
U	35305275	1	STREET TEE
V	35279777	1	ELBOW
W	67A7M8Z1	1	ELBOW (VHP-400 ONLY)

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/15/92 bd	SEP TANK COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-31	7/00 G

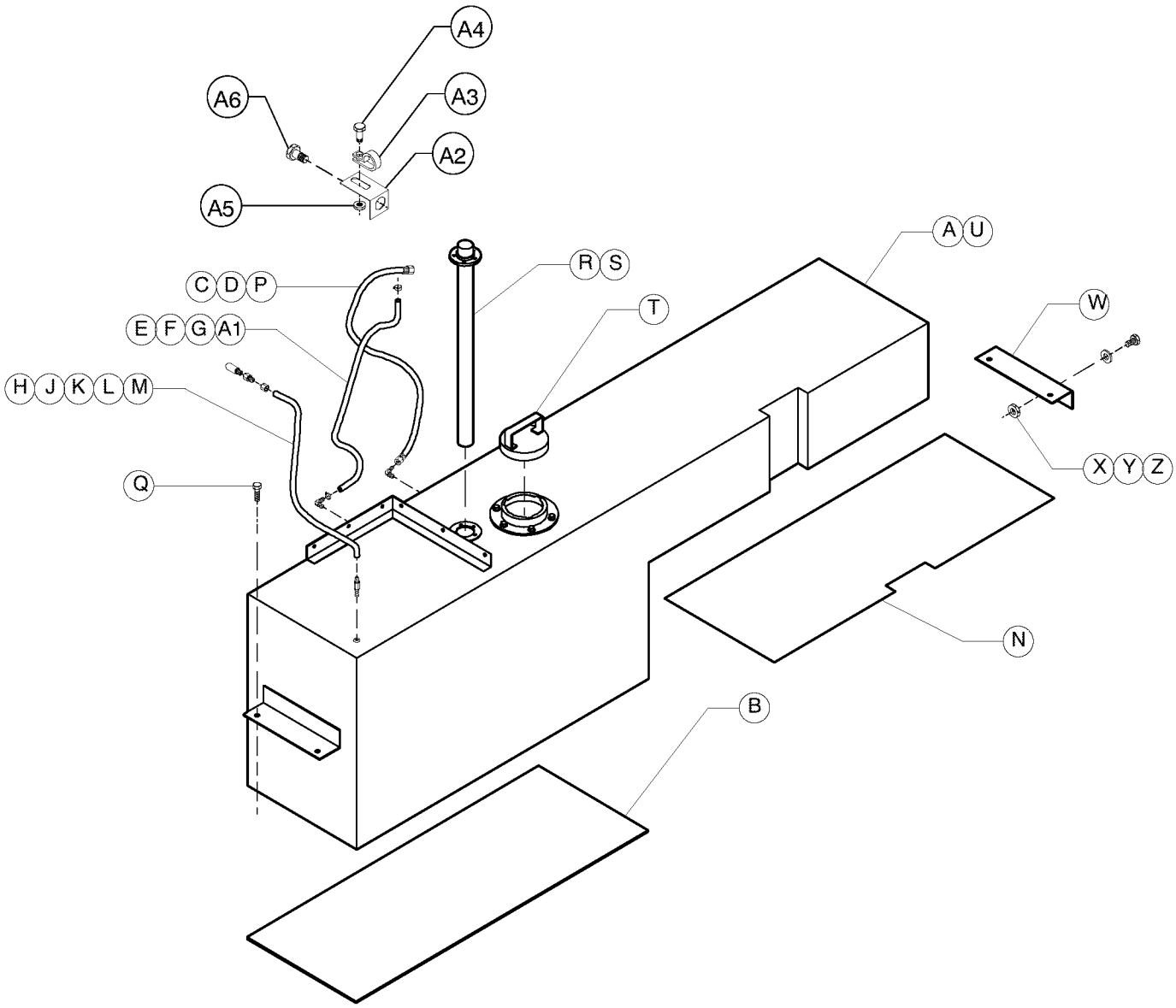


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/15/92 bd	MIN PRESS VALVE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-32	3/97 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	35367333	1	MIN PRESS VALVE BODY
B	35367317	1	CV ASSEMBLY
C	35367358	1	SPRING
D	35367325	1	PISTON
E	35367374	1	O-RING
F	35367366	1	SPRING
G	11A5D6Z1	1	WASHER
H	35367390	1	INSERT
J	35367341	1	CAP
	35598770	1	MIN PRESS VALVE ASSEMBLY

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/15/92 bd	MIN PRESS VALVE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-33	3/97 A

DRAWBAR END

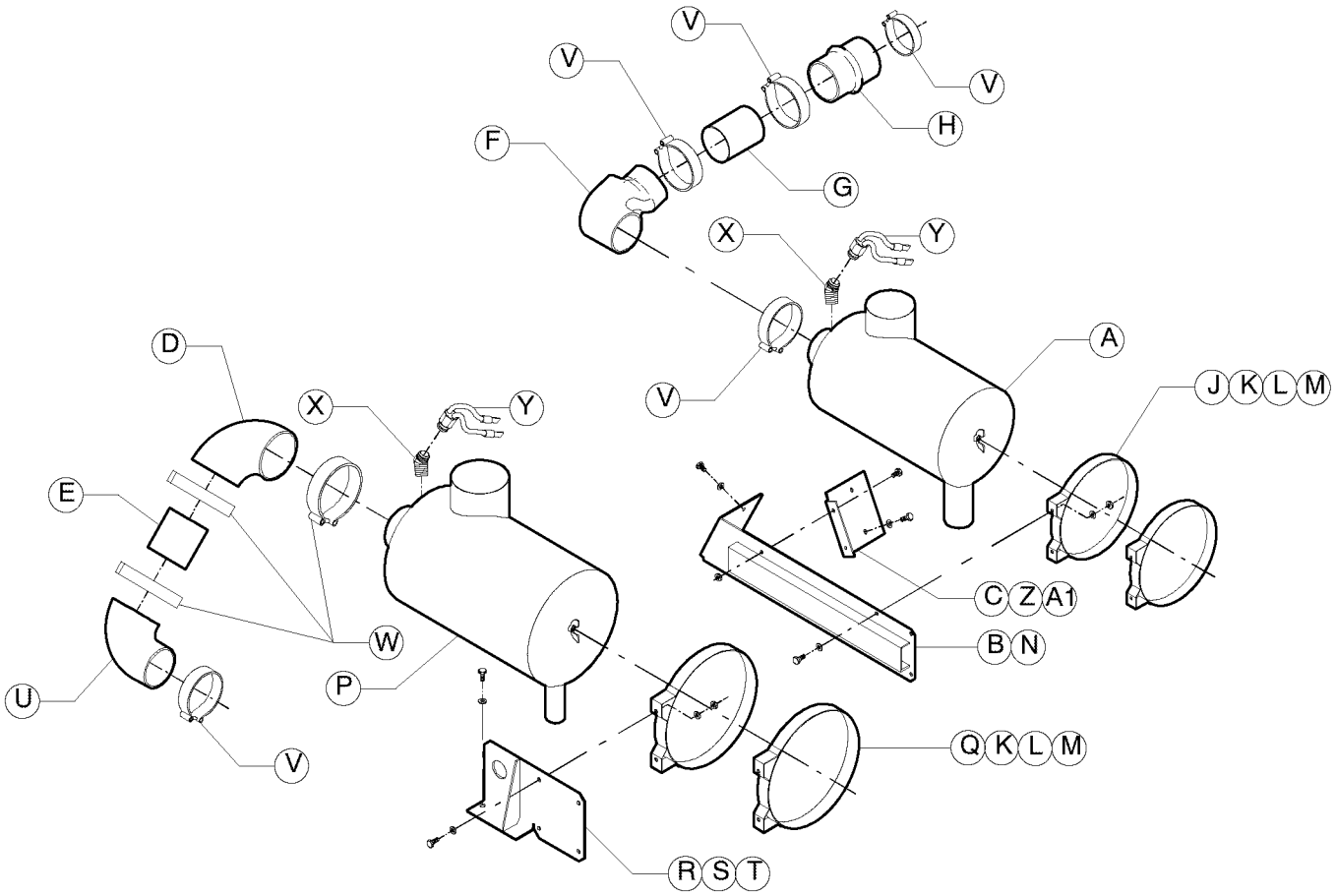


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	FUEL TANK COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-34	6/98 C

ITEM	C.P.N.	QTY	DESCRIPTION
A	36843746	1	FUEL TANK
B	36845550	1	FUEL TANK CUSHION
C	35279934	1	JIC ELBOW, 90 DEGREE
D	35282995	1	SUPPLY HOSE
E	35282078	45"	RETURN HOSE
F	35322668	1	ELBOW BARBED
G	35296342	2	CLAMP
H	35369347	1	TANK CONNECTOR
J	35356484	20"	HOSE, VENT
K	35369339	1	SILENCER CONNECTOR
L	35322395	1	SILENCER
M	35253038	1	CLAMP
N	36845543	1	REAR FUEL TANK CUSHION
P	35225077	1	TUBE CLAMP
Q	35279025	4	SCREW, HEX M08-1.25 X 20
R	36845402	1	FUEL LEVEL SENDER
S	36842102	5	SCREW
T	36845014	1	FUEL FILLER CAP
U	36845022	1	FUEL TANK STRAINER
V	~		~
W	36852606	1	BRACKET
X	35374834	2	SCREW, HEX M08-1.25 X 20
Y	36901396	4	WASHER, FLAT M08
Z	96700869	2	NUT, HEX M08
A1	36890093	41"	CONDUIT, CONVOLUTED
A2	35190487	1	BRACKET, HOSE CLAMP
A3	35225077	1	CLAMP
A4	35144336	1	SCREW, LOCKING 5/16-18 X 3/4"
A5	35252600	1	NUT, LOCKING 5/16-18
A6	95972204	1	SCREW, HEX 7/16-20 X 1"

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	FUEL TANK COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-35	6/98 E

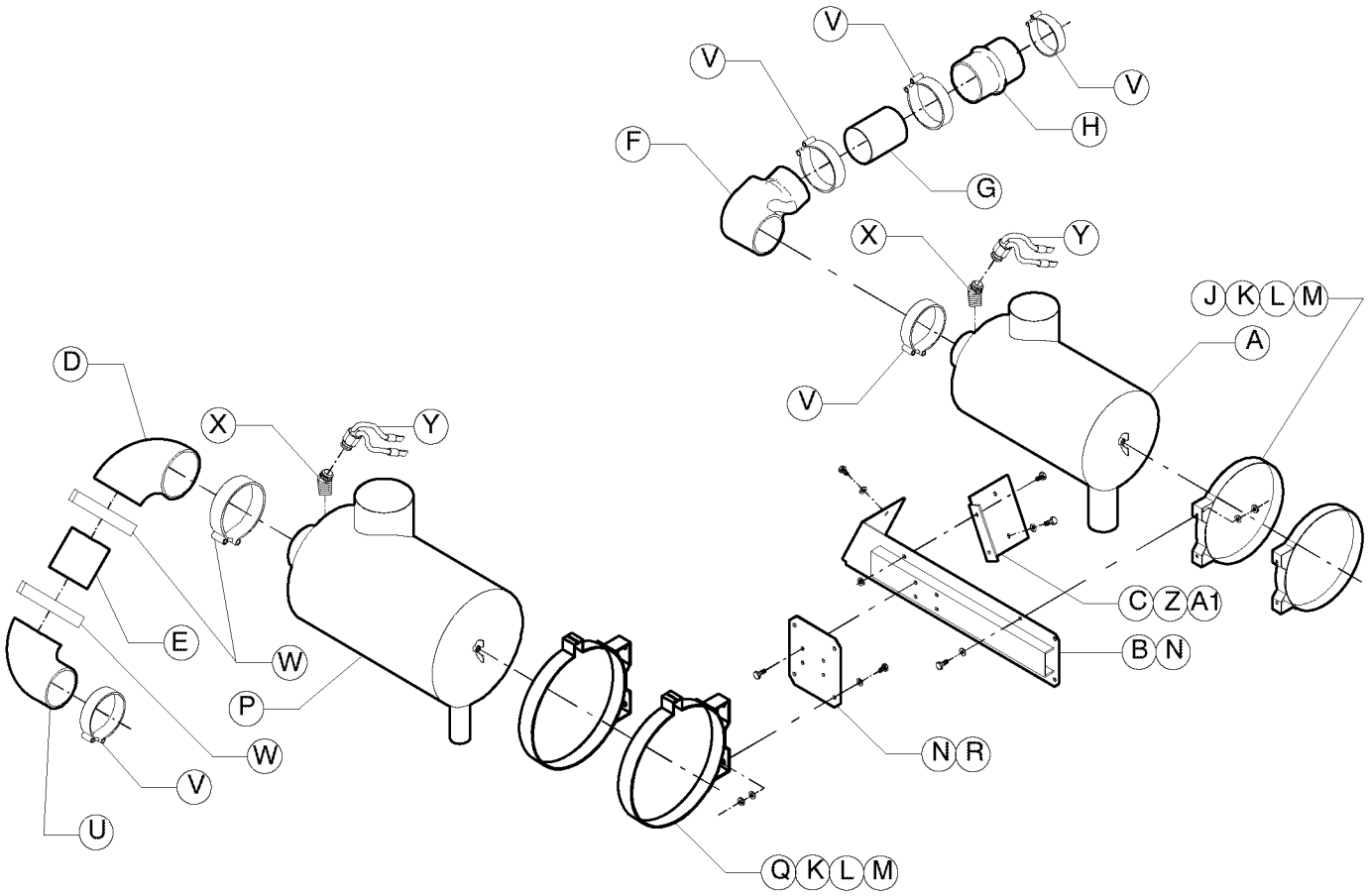
DRAWBAR END



PRIOR TO S/N 320381

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/23/92 bc	DESCRIPTION AIR INTAKE COMPLETE	
MODEL NO. P-600WCU	MANUAL NO. 35392893-36	DATE/REV: 11/97 D

DRAWBAR END



BEGIN with S/N 320381

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/23/92 bd	DESCRIPTION AIR INTAKE COMPLETE	
MODEL NO. P-600WCU	MANUAL NO. 35392893-36	DATE/REV: 4/01 E

ITEM	C.P.N.	QTY	DESCRIPTION
A	36789543	1	ENGINE AIR CLEANER
B	36845873	1	ENG AIR CLEANER BRKT
C	36845881	1	SPRT ENG AIR CLEANER BRKT
D	35135300	1	ELBOW
E	36791226	1	TUBE
F	36845907	1	ELBOW
G	36849487	1	TUBE
H	35287358	1	HOSE, HUMP
J	35820844	2	MOUNTING BANDS
K	35374834	8	SCREW, HEX M08-125 X 25
L	95934998	16	WASHER , FLAT
M	96700869	8	NUT, HEX M08
N	35279025	4	SCREW, TAP M08-125 X 20
P	36845899	1	A/E AIR CLEANER
Q	35803147	2	MOUNTING BANDS
R	36844728	1	A/E AIR CLEANER BRKT
S	96701495	2	SCREW, M12-1.75 X 25
T	95935003	2	WASHER, FLAT 1/2
U	35274703	1	REDUCING ELBOW
V	35279553	5	4.5 CLAMP
W	35161025	3	5.5 CLAMP
X	95956199	2	ELBOW, 45□ 1/8 NPT
Y	36847838	2	SWITCH, VAC
Z	35273408	2	SCREW, HEX M08-1.25 X 20
A1	36881886	2	NUT, FLANGE HD M08-1.25

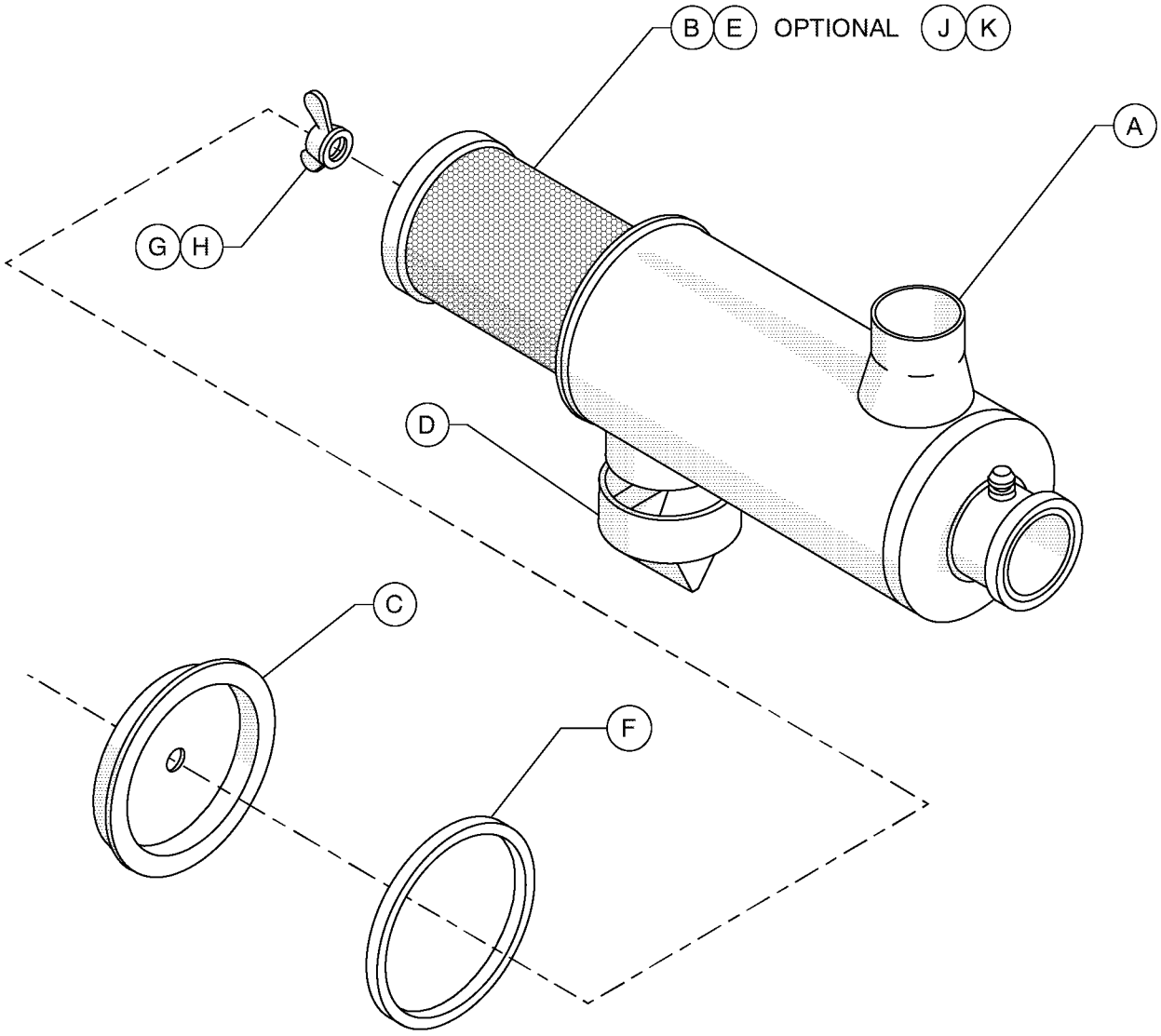
PRIOR TO S/N 320381

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	AIR INTAKE COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-37	11/97 D

ITEM	C.P.N.	QTY	DESCRIPTION
A	36789543	1	ENGINE AIR CLEANER
B	36845873	1	ENG AIR CLEANER BRKT
C	36845881	1	SPRT ENG AIR CLEANER BRKT
D	35135300	1	ELBOW
E	36791226	1	TUBE
F	36845907	1	ELBOW
G	36849487	1	TUBE
H	35287358	1	HOSE, HUMP
J	35820844	2	MOUNTING BANDS
K	35374834	8	SCREW, HEX M08-125 X 25
L	95934998	16	WASHER , FLAT
M	96700869	8	NUT, HEX M08
N	35279025	8	SCREW, TAP M08-125 X 20
P	36845899	1	A/E AIR CLEANER
Q	35803147	2	MOUNTING BANDS
R	54733647	1	A/E AIR CLEANER BRKT
S	~		~
T	~		~
U	35274703	1	REDUCING ELBOW
V	35279553	5	4.5 CLAMP
W	35161025	3	5.5 CLAMP
X	95956199	2	ELBOW, 45□ 1/8 NPT
Y	36847838	2	SWITCH, VAC
Z	35273408	2	SCREW, HEX M08-1.25 X 20
A1	36881886	2	NUT, FLANGE HD M08-1.25

BEGIN with S/N 320381

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/23/92 bd	DESCRIPTION AIR INTAKE COMPLETE	
MODEL NO. P-600WCU	MANUAL NO. 35392893-37	DATE/REV: 4/01 E



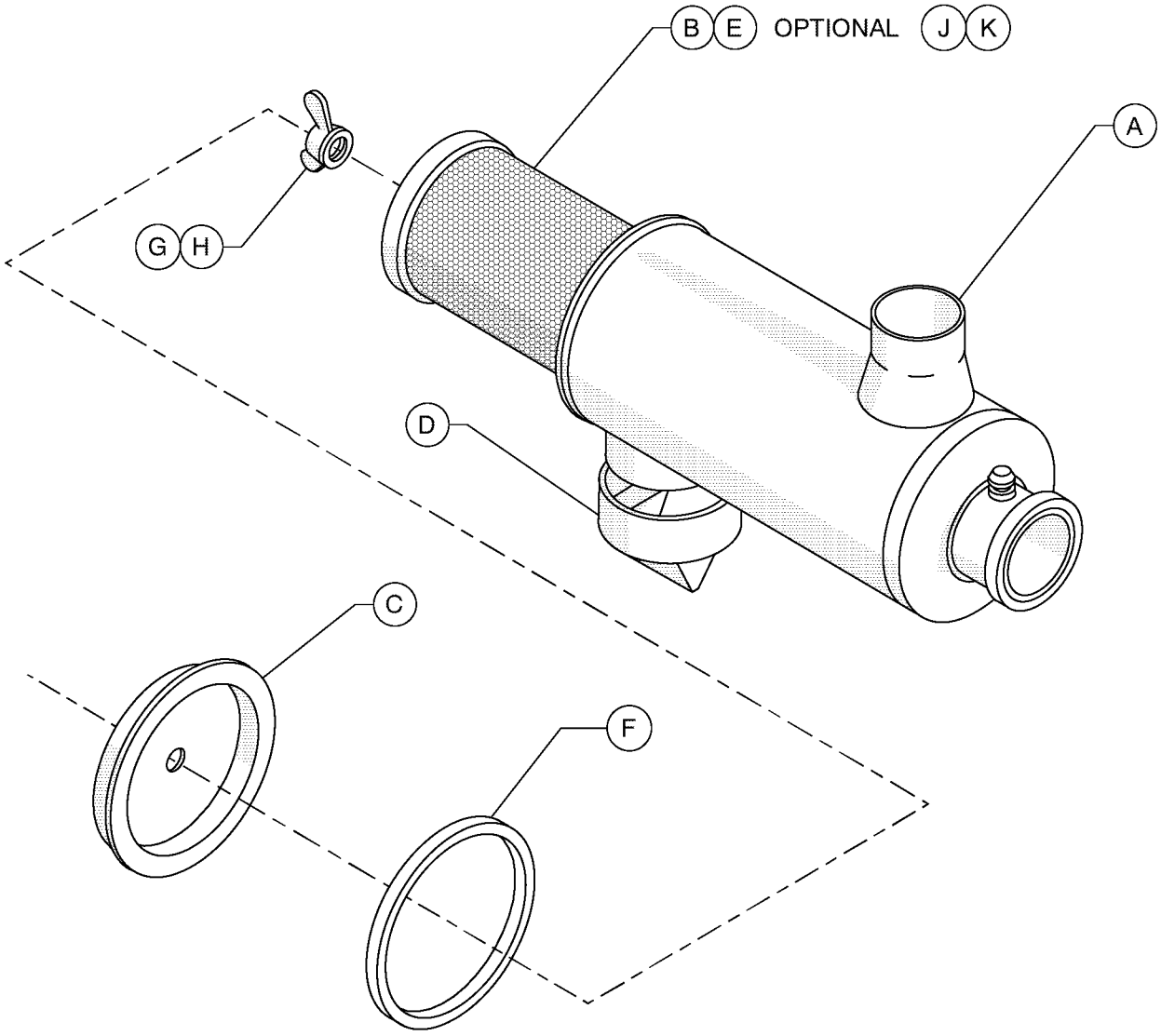
A/E AIR CLEANER ASSEMBLY 36845899

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/18/92 bd	A/E AIR CLEANER ASSY.	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-38	3/97 B

ITEM	C.P.N.	QTY	DESCRIPTION
A	35384601	1	AIR CLEANER BODY
B	35384619	1	ELEMENT
C	35384635	1	COVER
D	35380823	1	VACUATOR VALVE
E	35380815	1	NUT ASSEMBLY
F	35384650	1	GASKET
G	35380856	1	WING NUT
H	35380864	1	WING NUT RETAINER
J	35384627	1	SAFETY ELEMENT (OPTION)
K	35384643	1	NUT ASSEMBLY

A/E AIR CLEANER ASSEMBLY 36845899

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/18/92 bd	DESCRIPTION A/E AIR CLEANER ASSY.	
MODEL NO. P-600WCU	MANUAL NO. 35392893-39	DATE/REV: 3/97 B



ENG AIR CLEANER ASSEMBLY 36789543

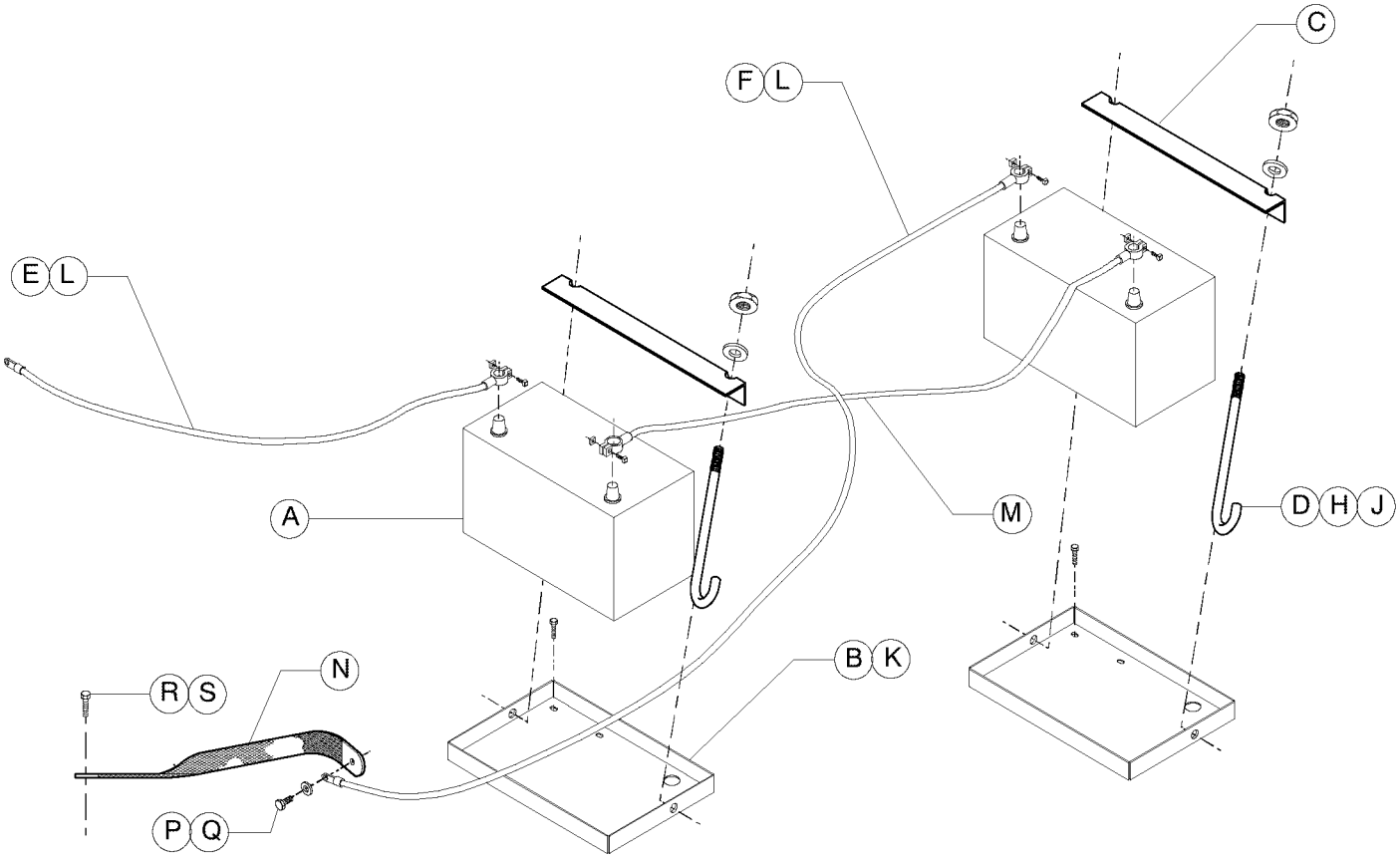
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/18/92 bd	ENG AIR CLEANER ASSY.	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-40	3/97 C

ITEM	C.P.N.	QTY	DESCRIPTION
A	35380765	1	AIR CLEANER BODY
B	35300375	1	ELEMENT
C	35380799	1	COVER
D	35380823	1	VACUATOR VALVE
E	35380815	1	NUT ASSEMBLY
F	35380849	1	GASKET
G	35380856	1	WING NUT
H	35380864	1	WING NUT RETAINER
J	35300383	1	SAFETY ELEMENT (OPTION)
K	35380807	1	NUT ASSEMBLY

ENG AIR CLEANER ASSEMBLY 36789543

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/18/92 bd	ENG AIR CLEANER ASSY.	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-41	3/97 B

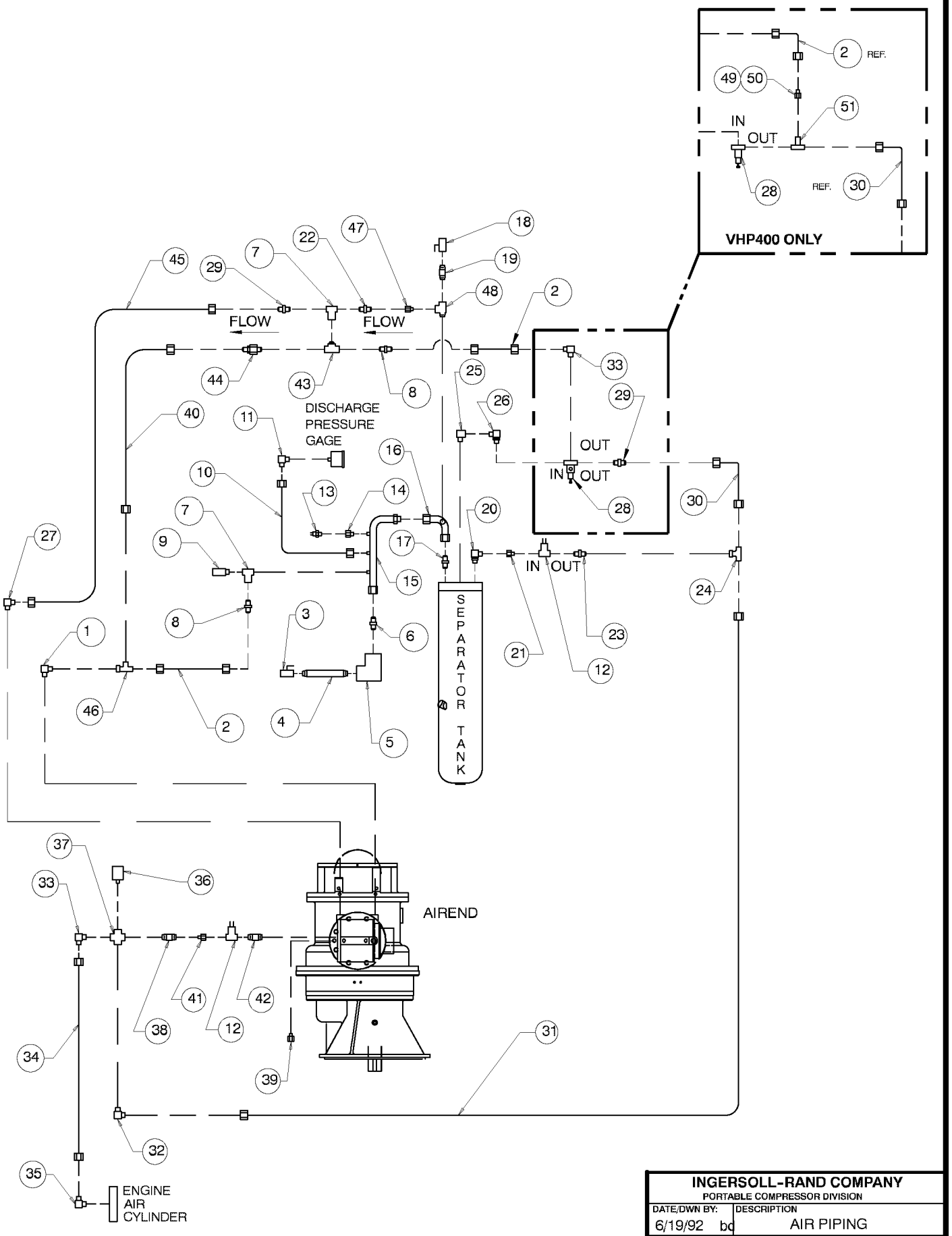
DRAWBAR END



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/19/92 bd	DESCRIPTION BATTERY ASSEMBLY	
MODEL NO. P-600WCU	MANUAL NO. 35392893-42	DATE/REV: 3/97 C

ITEM	C.P.N.	QTY	DESCRIPTION
A	36844975	2	BATTERY, 12 VDC
B	36853232	2	BATTERY TRAY
C	36853257	2	ANGLE
D	36853240	4	J-BOLT
E	35512425	1	POSITIVE BATTERY CABLE
F	35587088	1	NEGATIVE BATTERY CABLE
G	~	~	~
H	36853265	4	WASHER
J	35144492	4	NUT
K	92368687	8	SCREW
L	W88678	4	CLAMP
M	35258789	1	JUMPER CABLE
N	35293075	1	GROUND STRAP
P	34M2AB461M3	1	SCREW
Q	12A5D6Z1	1	WASHER
R	35130301	1	SCREW
S	12A5D3Z1	1	WASHER

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/19/92 bd	DESCRIPTION: BATTERY ASSEMBLY	
MODEL NO.: P-600WCU	MANUAL NO.: 35392893-43	DATE/REV: 3/97 C



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/19/92 bd	DESCRIPTION AIR PIPING	
MODEL NO. P-600WCU	MANUAL NO. 35392893-44	DATE/REV: 6/98 E

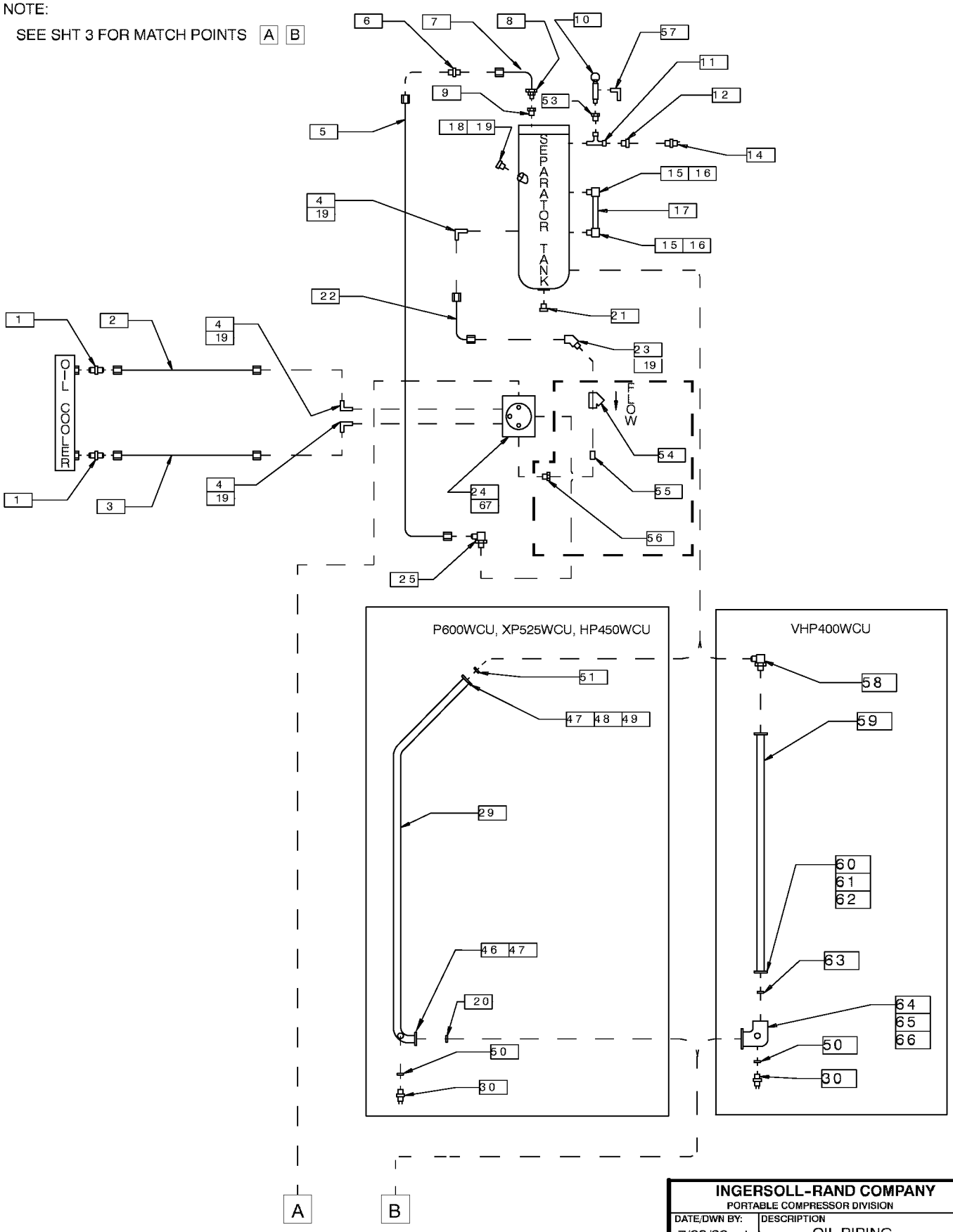
ITEM	C.P.N.	DESCRIPTION
1	144A23S15	ELBOW,90° .562-18 TO -4 JIC W/O-RING
2	35283241	HOSE ASSY -4 X 14" LG
3	35602473	VALVE, BALL 2" NPT
4	19A7S239Z1	NIPPLE, 2.0 NPT X 12.00 LG
5	35598770	VALVE, MIN PRESS
6	35335124	ST. CONN 2.0 NPT TO -32 JIC
* 7	35322379	VALVE, BLOWDOWN
8	35283472	ST. CONN .25 NPT TO -4 JIC
9	36766756	ORIF/MUFF .140"
10	35288034	HOSE ASSY -4 X 37" LG
11	35301225	ELBOW, 90° .125 FNPT TO -4 JIC
12	36840841	SOLENOID VALVE 24 VDC
13	36757573	STARTER PROTECTION
14	23A7S1Z1	RED. BUSHING .25 NPT TO .125 NPT
15	36845220	TUBE ASSY - BOTTOM
16	36845212	TUBE ASSY - TOP
17	35356500	ST. CONN. 2.50-12 X -32 JIC W/O-RING
18	35581792	VALVE, BALL .50
19	19A7J4Z1	NIPPLE, .50 NPT X 1.12 LG
20	109A23S8	ELBOW, 90° .500 NPT TO -6 JIC
21	35368927	ST. CONN SW NUT .372 NPT TO -6 JIC
22	35248145	VALVE, CHECK .25 NPT
23	35290147	ST. CONN .375 NPT TO -6 JIC
24	35283092	TEE, BRANCH SW. NUT -6 JIC
25	35279926	ELBOW, 90° .375 NPT TO -6 JIC
26	35294453	ELBOW, 90° SW. NUT .25 NPT TO -6
27	35279827	ELBOW, 90° .562-18 X -6 JIC W/O-RING
** 28	36847952	REGULATOR (P600WCU & XP525WCU)
**	35359090	REGULATOR (HP450WCU)
**	36896892	REGULATOR (VHP400WCU)
29	35284082	ST. CONN .25 NPT TO -6
30	35282946	HOSE ASSY -6 X 9.5" LG
31	35310994	HOSE ASSY -6 X 39" LG
32	35279934	ELBOW, 90° .25 NPT TO -6 JIC
33	35283464	ELBOW, 90° .25 NPT TO -4 JIC
34	35331842	HOSE ASSY -4 X 53" LG
35	35306687	ELBOW, 90° .125 NPT TO -4 JIC
36	35322346	ORIFICE .156
37	73A7MZ2	CROSS .25 NPT
38	19A7S2Z1	NIPPLE, .25 NPT X .88 LG
39	34A7S3Z1	PLUG, .25 NPT
40	35282920	HOSE ASSY -4 X 30" LG
41	23A7S2Z1	RED, BUSH .375 NPT X 1.00 LG
42	19A7J3Z1	NIPPLE, .375 NPT X 1.50 LG
43	35365600	BR. TEE .25 NPT
44	36840411	CHECK VALVE
45	35294701	HOSE ASSY -6 X 37" LG
46	35302124	TEE, SW RUN, -4 JIC
47	23A7S5Z1	RED BUSHING .50 NPT TO .25 NPT
48	35301373	STREET TEE .50 NPT
49	35306091	REDUCER, -6 JIC X -4 JIC
50	35306109	NUT, TUBE -6JIC
51	35283050	TEE, RUN 1/4 NPT -6 JIC

*	35379064	REPAIR KIT BLOWDOWN VALVE
**	35387919	REPAIR KIT REGULATOR

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/19/92 bd	DESCRIPTION: AIR PIPING	
MODEL NO.: P-600WCU	MANUAL NO.: 35392893-45	DATE/REV.: 9/99 H

NOTE:

SEE SHT 3 FOR MATCH POINTS A B



INGERSOLL-RAND COMPANY		
PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 7/23/92 bd	DESCRIPTION: OIL PIPING	
MODEL NO. P-600WCU	MANUAL NO. 35392893-46	DATE/REV: 3/97 E

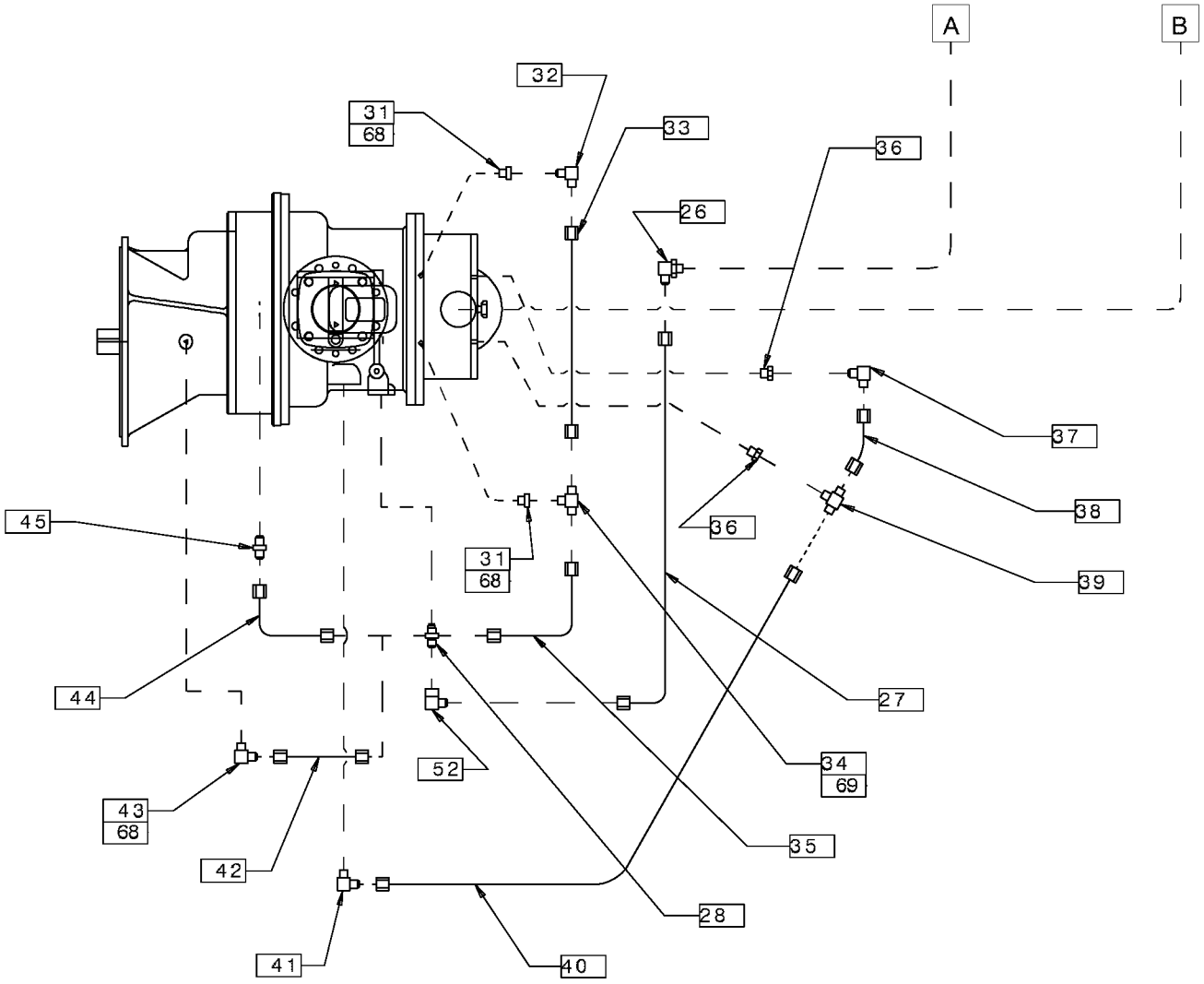
ITEM	C.P.N.	DESCRIPTION
1	36846061	ST. CONN. 1.625-12 W/O-RING
2	36844363	TUBE ASSY-UPPER
3	36844371	TUBE ASSY-LOWER
4	35279777	ELB. CONN. 1.625-12 W/O-RING
5	35358662	HOSE ASSY
6	36840411	CHECK VALVE
7	36794147	TUBE ASSY.
8	35329309	LENZ FITTING
9	95037446	RED. BUSH 3/4 NPT - 3/8 NPT
10	35326636	VALVE SAFETY (P600)
	36784114	VALVE SAFETY (HP450 & XP525)
	35596972	VALVE SAFETY (VHP400)
11	35305275	ST. TEE 1.0 NPT
12	95940060	RED. BUSH 1.0 NPT - .50 NPT
13		
14	36865756	SW. SHUTDOWN
15	36860468	SIGHT TUBE FITTING
16	35324649	GASKET
17	92121532	TUBE, SIGHT
18	35579630	PLUG, VENTED 1.625
19	35279942	O-RING
20	35575570	GASKET
21	36795680	VALVE BALL, .75 NPT X 1.06-12
22	35108638	HOSE ASSY
23	35283191	ELBOW, 45° 1.625-12 W/O-RING (P600, XP525, HP450)
	95219861	ELBOW, 90° 1.25 NPT X -20 JIC (VHP-400)
* 24	36871689	VALVE BYPASS
25	35279876	ELBOW, 90° .437-20 W/O-RING
26		
27		
28		
29	36844397	HOSE ASSY
30	35596436	SW. SHUTDOWN
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46	36765121	SCREW M 16-2 X LG. 45 (4 REQD)
47	95935052	WASHER .68 (4 REQ'D)
48	96700885	NUT M 16 (4 REQ'D)
49	36784064	SCREW M 16-2 X 70 LG. (4 REQ'D)
50	39404165	O-RING
51	36848281	GASKET
52		
53	95940060	RED BUSH 1.0 NPT - .50 NPT (XP525, HP450)
54	95279667	VALVE, CHECK, 1.25 NPT (VHP400)
55	95953709	NIP, CLOSE 1.25 NPT (VHP400)
56	35290154	CONN, 1.625-12 X 1.25 NPTF (VHP400)
57	95953311	ELBOW, 90° ST, 1.25 NPT (VHP400)
58	95944732	ELBOW, 90° 2.50-12 W/ O-RING
59	36866846	HOSE ASSY
60	35292143	FLANGE HALF (2 REQ'D)
61	95934683	WASHER .562 (4 REQ'D)
62	35291640	SCREW M14-2 X 40 LG. (4 REQ'D)
63	95357976	O-RING
64	35575570	GASKET
65	35842160	ELBOW
66	35375385	SCREW M 16-2 X 40 LG. (4 REQ'D)
67	36860336	ELEMENT OIL FILTER **{PRIOR TO S/N 300624}**
	36897346	ELEMENT OIL FILTER **{BEGIN WITH S/N 300624}**
68	35279959	O-RING
69		

* RELIEF VALVE REPAIR KIT 35388024
ELEMENT REPAIR KIT 35388032
O-RING REPAIR KIT 35388040

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
7/23/92 bd	OIL PIPING	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-47	5/99 F

NOTE:

SEE SHT 1 FOR MATCH POINTS A B



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 7/23/92 bd	DESCRIPTION OIL PIPING	
MODEL NO. P-600WCU	MANUAL NO. 35392893-48	DATE/REV: 3/97 D

ITEM	C.P.N.	DESCRIPTION
1		
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26	95376188	ELBOW, 90° 1.625-12 X -16 JIC W/O-RING
27	W92739	HOSE ASSY
28	36845154	OIL MANIFOLD
29		
30		
31	35287945	EXPANDER .437-20 X .562-18 W/O-RING
32	35279827	ELBOW, 90° .562-18 W/O-RING
33	36795482	TUBE ASSY
34	35279843	TEE BRANCH .562-18 W/O-RING
35	36846087	TUBE ASSY
36	36846095	EXPANDER .75-16 X .875-14 W/O-RING
37	35286491	ELBOW, 90° .875-14W/O-RING
38	36846111	TUBE ASSY
39	36846129	TEE BRANCH .875-14 W/O-RING
40	36846103	TUBE ASSY
41	35305622	ELBOW, 90° .75-16 X -10 JIC W/O-RING
42	36846145	TUBE ASSY
43	35279876	ELBOW, 90° .437-20 W/O-RING
44	36846137	TUBE ASSY
45	95402806	ST. CONN .437-20 X -6 JIC W/O-RING
46		
47		
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52	35292051	ELBOW, 90° SW NUT 1.312-12 X -16 JIC
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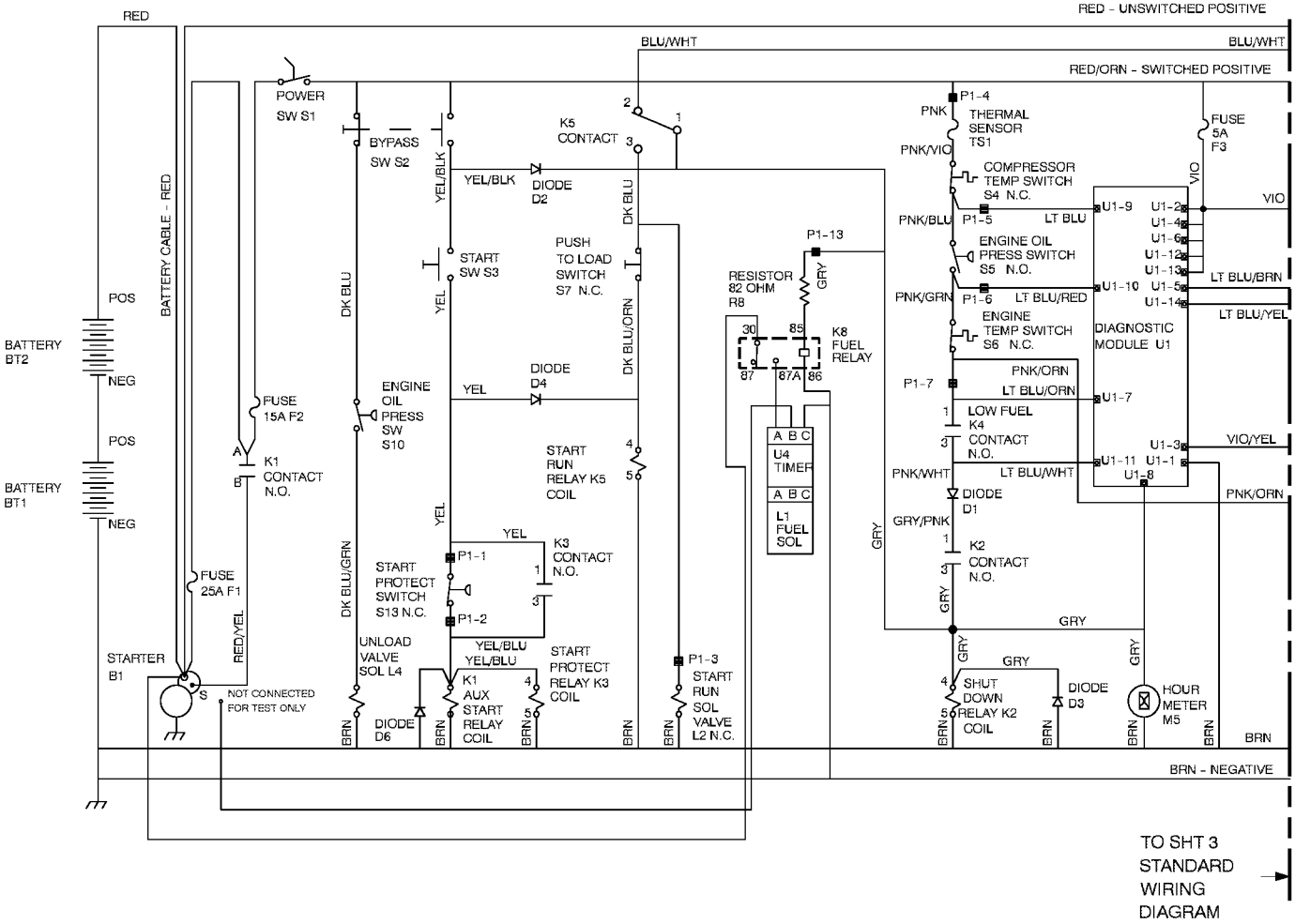
68	35279959	O-RING
69	35278571	O-RING

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
7/23/92 bd	OIL PIPING	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-49	11/97 F

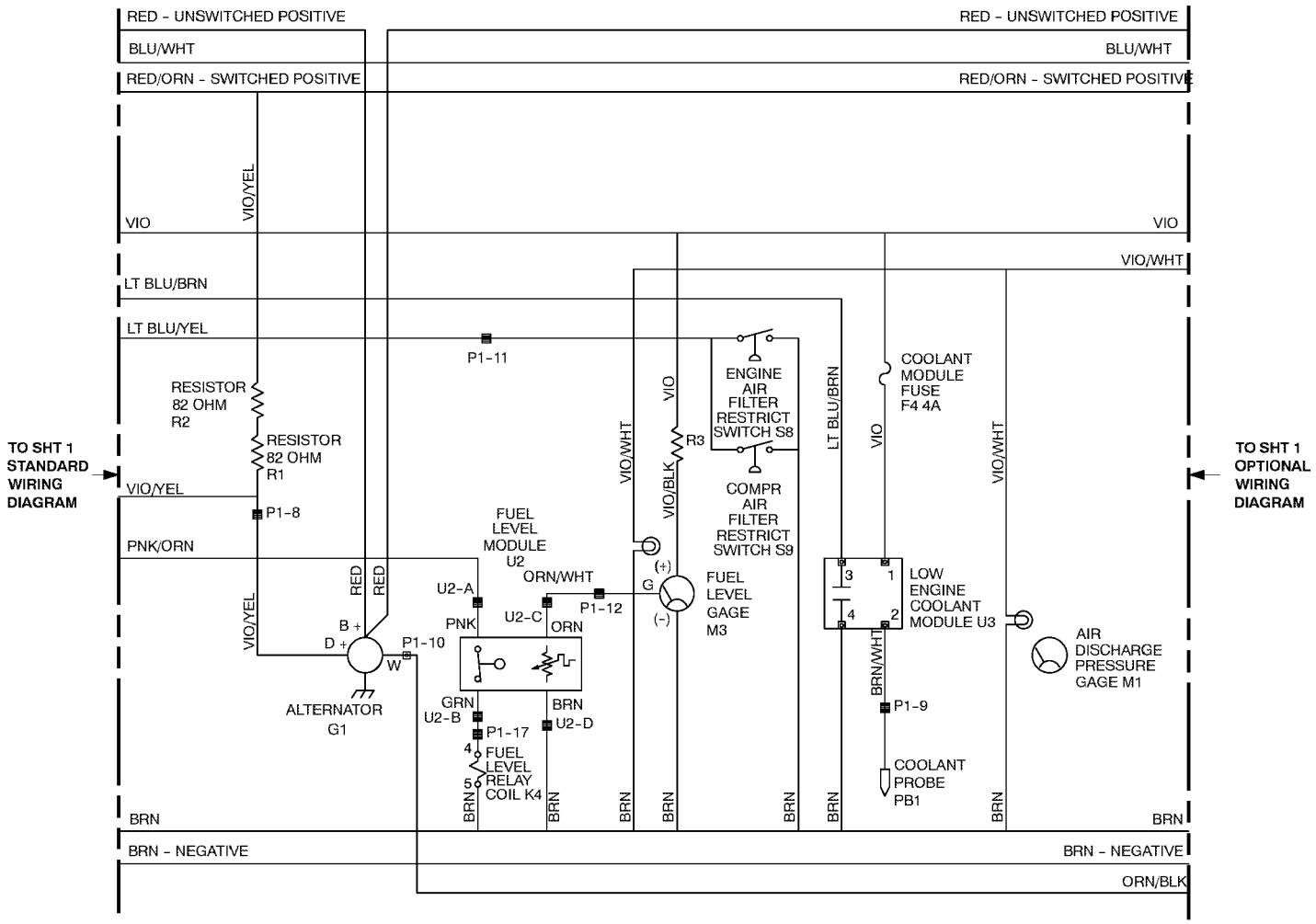


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/24/92 bd	DESCRIPTION STD WIRING DIAGRAM	
MODEL NO. P-600WCU	MANUAL NO. 35392893-50	DATE/REV: 1/01 E

ITEM	C.P.N.	DESCRIPTION
B1	36844942	STARTER
BT1	36844975	BATTERY
BT2	36844975	BATTERY
D1	35376169	DIODE
D2	35376169	DIODE
D3	35376169	DIODE
D4	35376169	DIODE
D5	35376169	DIODE
D6	35376169	DIODE
F1	36793651	25A FUSE
F2	36782464	15A FUSE
F3	36782654	5A FUSE
K1	35577873	START RELAY
K2	35586130	RELAY
K3	35586130	RELAY
K4	35586130	RELAY
K5	35586130	RELAY
K8	36878361	RELAY
L1	★	FUEL SOLENOID
L2	36840841	START/RUN SOLENOID
L4	36840841	UNLOADER SOLENOID
M5	36841245	HOURMETER
S1	35337435	TOGGLE SWITCH
S2	35255561	PUSH BUTTON SWITCH
S3	35255553	PUSH BUTTON SWITCH
S4	35596436	TEMPERATURE SWITCH
S5	36757581	PRESSURE SWITCH
S6	35327691	TEMPERATURE SWITCH
S7	35255561	PUSH BUTTON SWITCH
S10	36843423	ENG OIL PRESSURE SWITCH
S13	36757573	PRESSURE SWITCH
TS1	36865756	THERMAL SENSOR
U1	36771434	DIAGNOSTIC MODULE
U4	36887313	TIMER MODULE
W1	36844744	CHASSIS HARNESS
W2	36844769	CONTROL BOX HARNESS
W3	36887362	ADAPTER HARNESS

★ FURNISHED BY ENGINE MANUFACTURER

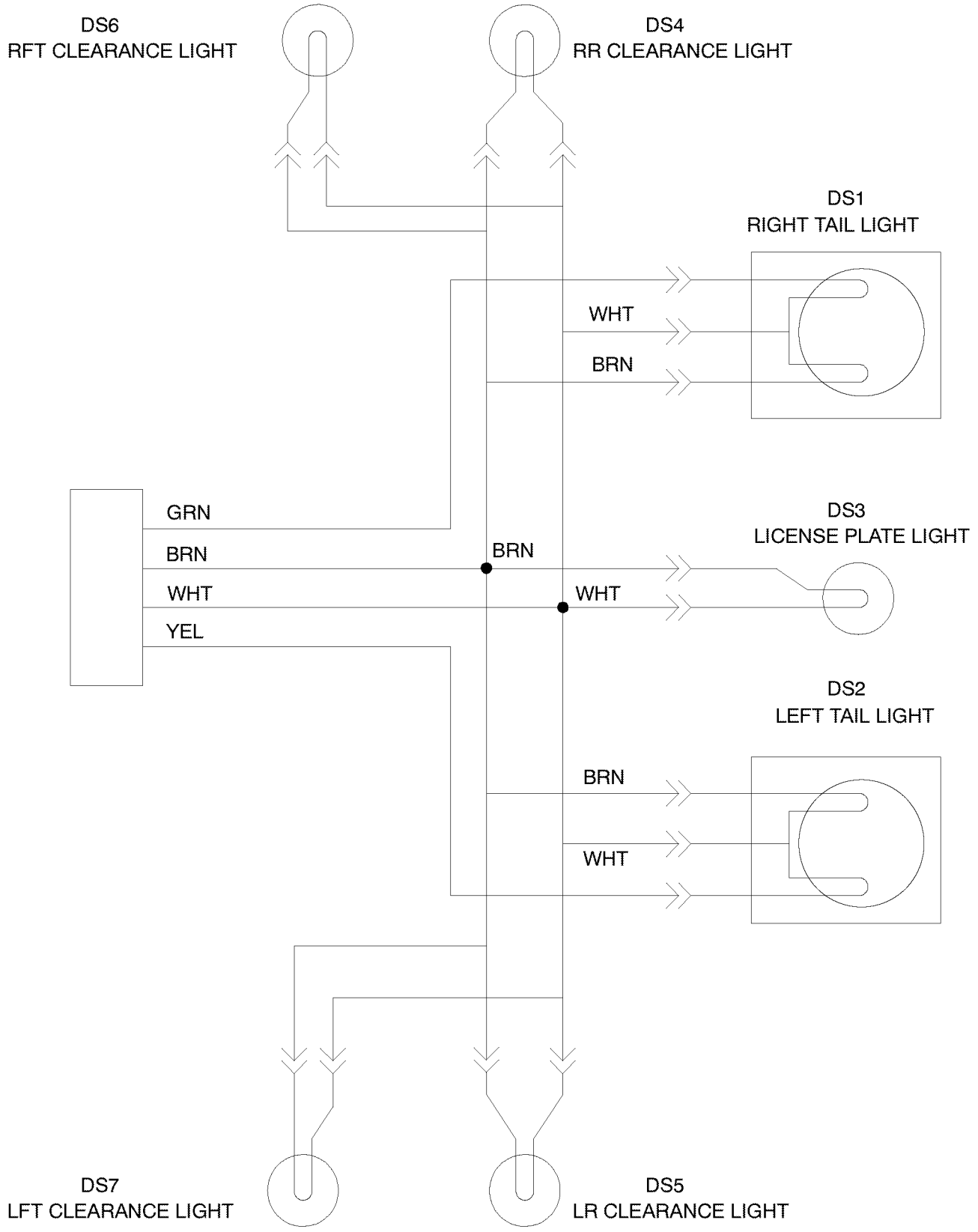
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/24/92 bd	DESCRIPTION STD WIRING DIAGRAM	
MODEL NO. P-600WCU	MANUAL NO. 35392893-51	DATE/REV: 3/97 F



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/24/92 bd	DESCRIPTION STD WIRING DIAGRAM	
MODEL NO. P-600WCU	MANUAL NO. 35392893-52	DATE/REV: 5/97 E

ITEM	C.P.N.	DESCRIPTION
F4	35363472	4A FUSE
G1	36844934	ALTERNATOR
M1	35604065	DISCHG PRESS GAGE (P-600WCU)
	35612233	DISCHG PRESS GAGE (VHP-400WCU)
	36891216	DISCHG PRESS GAGE (HP-450WCU)
	36891216	DISCHG PRESS GAGE (XP-525WCU)
M3	35604099	FUEL LEVEL GAGE
PB1	35356799	COOLANT PROBE
R1	36774198	RESISTOR
R2	36774198	RESISTOR
R3	36841146	RESISTOR / BULB KIT
S8	35368992	RESTRICTION INDICATOR SWITCH
S9	35368992	RESTRICTION INDICATOR SWITCH
U2	36845402	FUEL LEVEL MODULE
U3	35356781	COOLANT MODULE
W1	36844744	CHASSIS HARNESS
W2	36844769	CONTROL BOX HARNESS

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/24/92 bd	DESCRIPTION STD WIRING DIAGRAM	
MODEL NO. P-600WCU	MANUAL NO. 35392893-53	DATE/REV: 12/97 H



NOTE:
WHITE WIRE MAY BE FRAME GROUND.

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 12/12/97 bd	DESCRIPTION STD WIRING DIAGRAM	
MODEL NO. GAMMA	MANUAL NO. 35392893-54	DATE/REV: 1/98 A

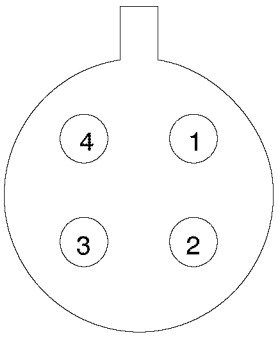
ITEM	C.P.N.	DESCRIPTION
DS1	36788081	LAMP ASSEMBLY
DS2	36788081	LAMP ASSEMBLY
DS3	36895860	LIGHT, LICENSE
DS4	35367044	LAMP, RED CLEARANCE
DS5	35367051	LAMP, YELLOW CLEARANCE
DS6	35367044	LAMP, RED CLEARANCE
DS7	35367051	LAMP, YELLOW CLEARANCE
W2	36895852	HARNESS, 2-LIGHT SYSTEM

AVAILABLE FROM I-R:

PLUG	SOCKET
35288760	35288752

NOTE:

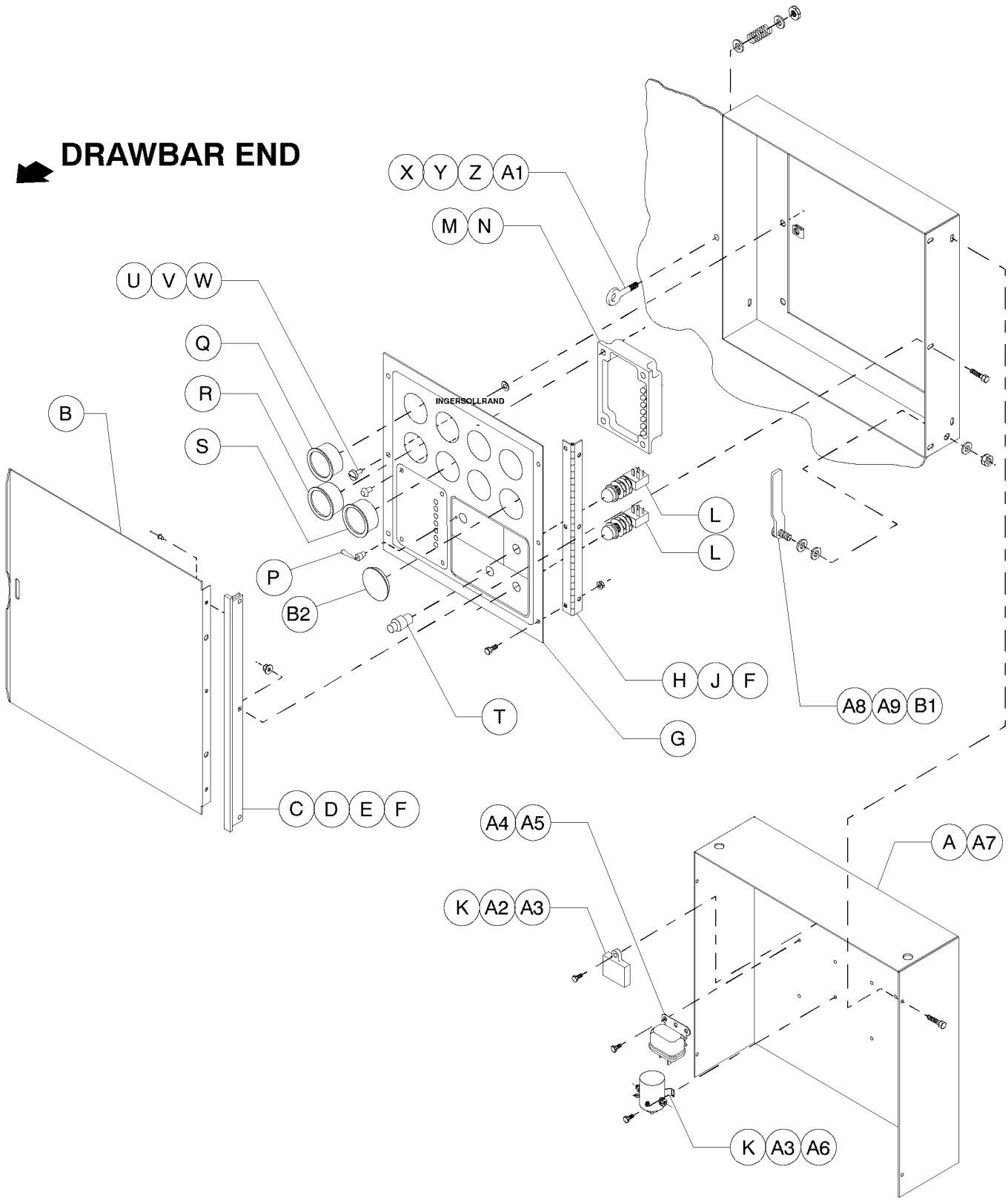
STANDARD MACHINE IS SUPPLIED WITHOUT PLUG ON LIGHT HARNESS.



PLUG / SOCKET WIRING CONNECTIONS

1 YELLOW - LEFT TURN AND STOP-LIGHT
2 BROWN - TAIL LIGHTS
3 WHITE - GROUND
4 GREEN- RIGHT TURN AND STOP-LIGHT

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 12/12/97 bd	DESCRIPTION: STD WIRING DIAGRAM	
MODEL NO.: GAMMA	MANUAL NO.: 35392893-55	DATE/REV: 1/98 A

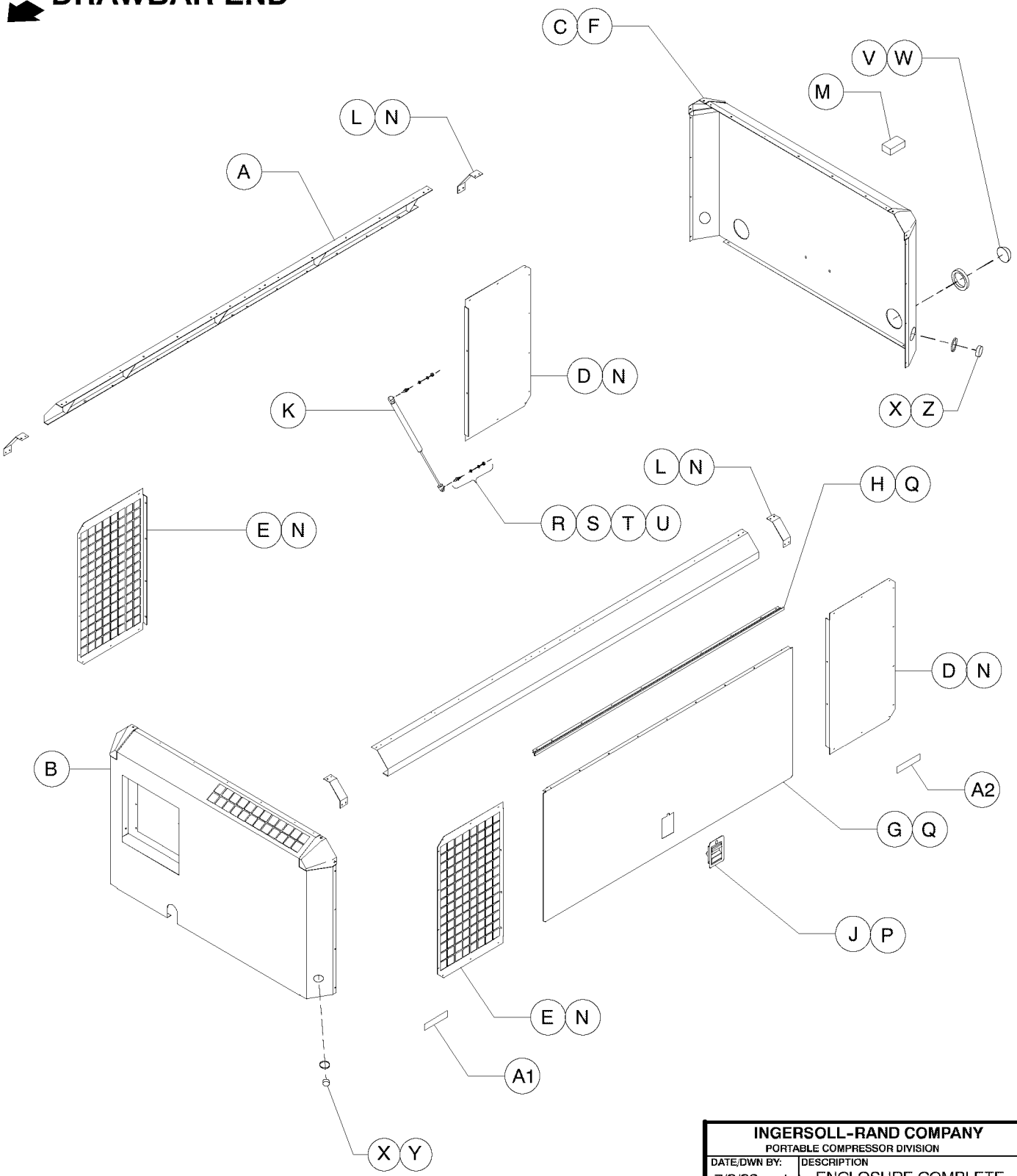


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/19/92 bd	INSTRUMENT PANEL	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-56	3/97 B

ITEM	C.P.N.	QTY	DESCRIPTION
A	36844595	1	PANEL COVER
B	36845394	1	INSTR PNL DOOR
C	36845733	1	DOOR HINGE
D	35356617	3	RIVET
E	35144328	3	SCREW
F	35144492	9	NUT
G	36842656	1	INSTRUMENT PANEL
H	36845725	1	PANEL HINGE
J	35365386	6	SCREW
K	W88678	3	CLAMP
L	35255561	2	BY-PASS SWITCH
M	36771434	1	DIAGNOSTIC MODULE
N	36775484	4	RIVET
P	35337435	1	TOGGLE SWITCH
Q	35604065	1	DISCHG PRESS GAGE (P-600WCU)
	35612233	1	DISCHG PRESS GAGE (VHP-400WCU)
	36891216	1	DISCHG PRESS GAGE (HP-450WCU)
	36891216	1	DISCHG PRESS GAGE (XP-525WCU)
R	36841245	1	HOURMETER
S	35604099	1	FUEL GAGE
T	35255553	1	PUSH BUTTON SWITCH
U	36844124	3	STUD
V	35369180	3	RETAINER
W	35314582	3	RECEIPTACLE
X	35327303	1	EYE BOLT
Y	11A5D3Z1	2	WASHER
Z	35327311	1	SPRING
A1	67A4C2Z1	1	NUT
A2	35356781	1	COOLANT MODULE
A3	92368687	6	SCREW
A4	35586130	4	RELAY
A5	36785905	8	RIVET
A6	35577873	1	MAGNETIC SWITCH
A7	36797652	4	SCREW
A8	35603349	1	DOOR HOLDER
A9	11A5D4Z1	3	WASHER
B1	35273366	1	NUT
B2	36767440	5	PLUG

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/19/92 bd	INSTRUMENT PANEL	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-57	12/97 E

DRAWBAR END

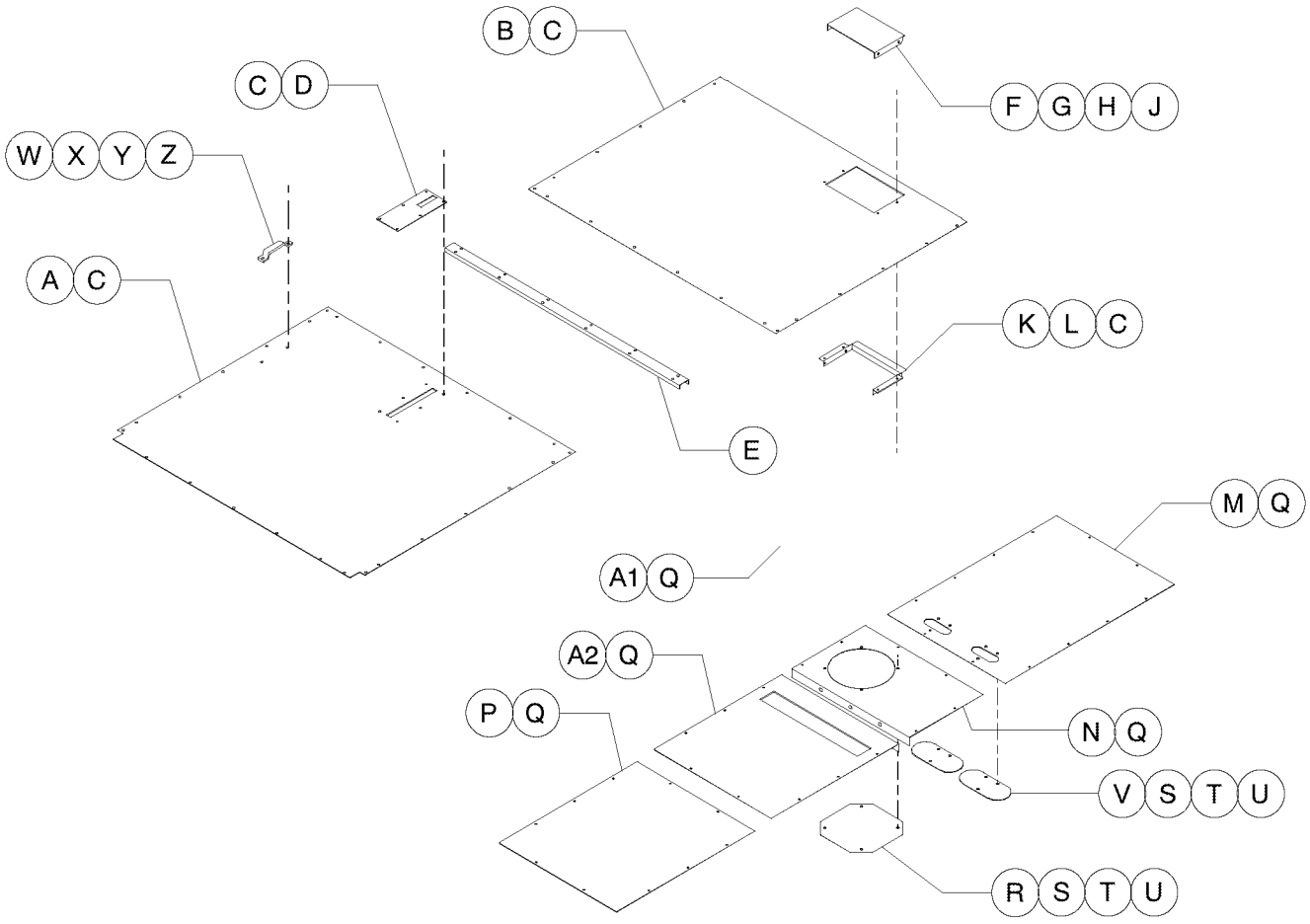


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 7/9/92 bd	DESCRIPTION ENCLOSURE COMPLETE	
MODEL NO. P-600WCU	MANUAL NO. 35392893-58	DATE/REV: 1/98 C

ITEM	C.P.N.	QTY	DESCRIPTION
A	36844256	2	ROOF SIDE PIECE
B	36896249	1	FRONT END CAP
C	36896256	1	REAR END CAP
D	36844173	2	REAR SIDE PANEL
E	36844827	2	SIDE GRILLE
F	36794774	2	LICENSE PLATE NUT
G	36844553	2	SIDE DOOR
H	36708378	2	HINGE
J	36793602	2	SLAM LATCH
K	36844355	4	GAS SPRING
L	36755742	4	STRIP CONNECTOR
M	36895860	1	LIGHT, LICENSE
N	36797652	65	SCREW
P	36794816	8	RIVET
Q	92368687	42	SCREW
R	35337328	8	BALL STUD
S	12A5D3Z1	8	FLAT WASHER
T	14A5C65Z1	8	LOCK WASHER
U	16M4JC22M3	8	NUT
V	36788081	2	LIGHT, TAIL
W	36787968	2	GROMMET
X	36893634	4	GROMMET, CLEARANCE LIGHT
Y	35367051	2	LIGHT, YELLOW CLEARANCE
Z	35367044	2	LIGHT, RED CLEARANCE
A1	36894616	2	REFLECTOR, AMBER
A2	36894608	2	REFLECTOR, RED

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
7/9/92 bd	ENCLOSURE COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-59	1/98 D

DRAWBAR END

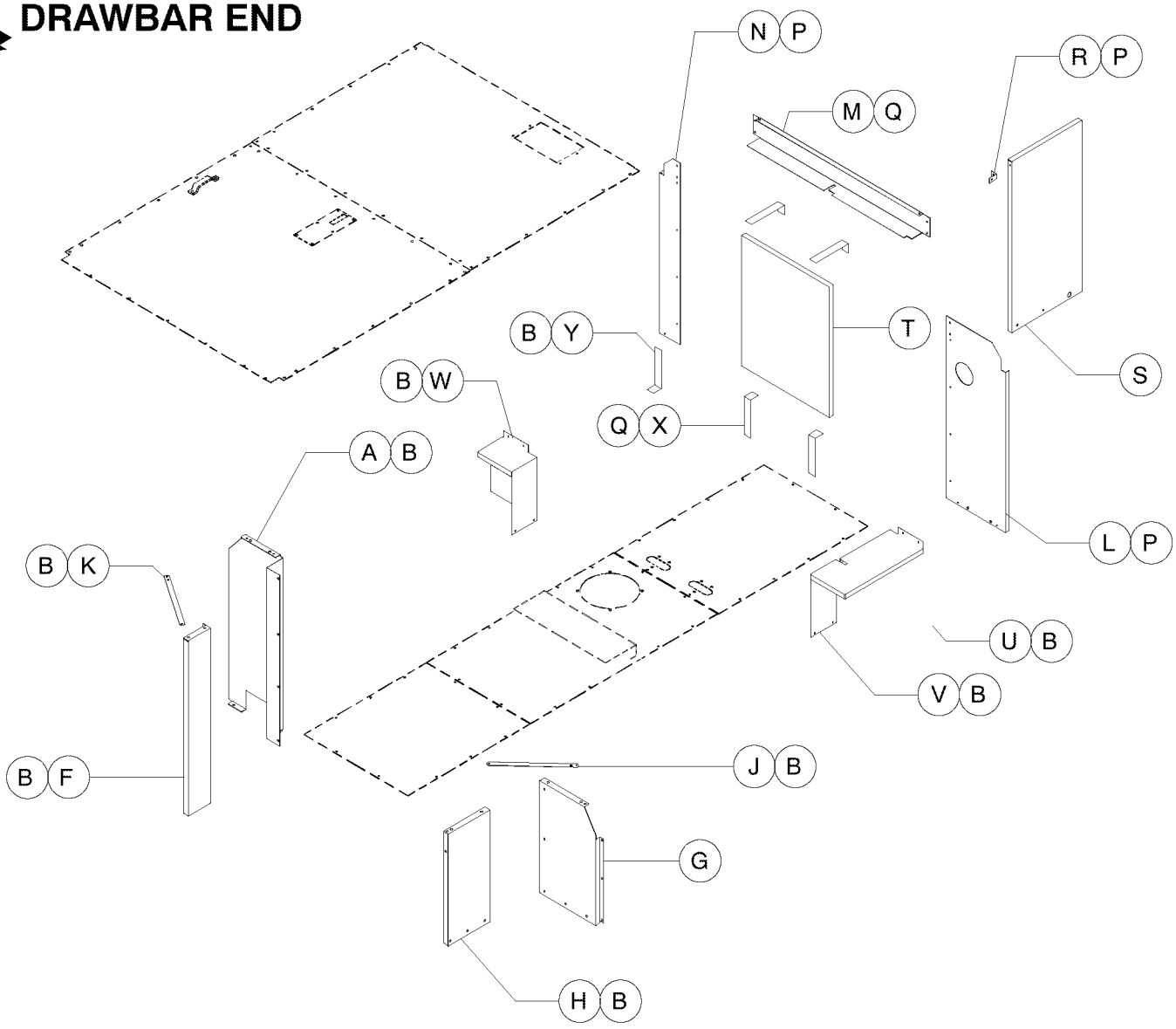


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 7/9/92 bc	DESCRIPTION ENCLOSURE COMPLETE	
MODEL NO. P-600WCU	MANUAL NO. 35392893-60	DATE/REV: 3/97 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36844835	1	FRONT ROOF
B	36844868	1	REAR ROOF
C	36797652	55	SCREW
D	36844850	1	LIFTING BAIL COVER
E	36848208	1	ROOF CHANNEL
F	36844843	1	RADIATOR FILL DOOR
G	121A2A142Z1	2	SHOULDER SCREW
H	12A5D2Z1	2	FLAT WASHER
J	16A4C1Z1	2	NUT
K	36846715	1	RAD FILL DOOR BRKT
L	35278720	1	QUICK RELEASE PIN
M	36845667	1	REAR BELLY PAN
N	36851483	1	MID BELLY PAN
P	36845642	1	FRONT BELLY PAN
Q	92368687	48	SCREW
R	35279413	1	COVER
S	35256452	10	RECEPTACLE CLIP
T	35256429	10	STUD
U	35256445	10	RETAINER
V	35296508	2	REAR DRAIN COVER
W	35130707	1	HAND HOLD
X	35374834	2	SCREW
Y	11A5D3Z1	2	FLAT WASHER
Z	36769743	2	NUT
A1	36851475	1	BOX ASSEMBLY
A2	36851467	1	BELLY PAN

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
7/9/92 bd	ENCLOSURE COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-61	3/97 A

DRAWBAR END

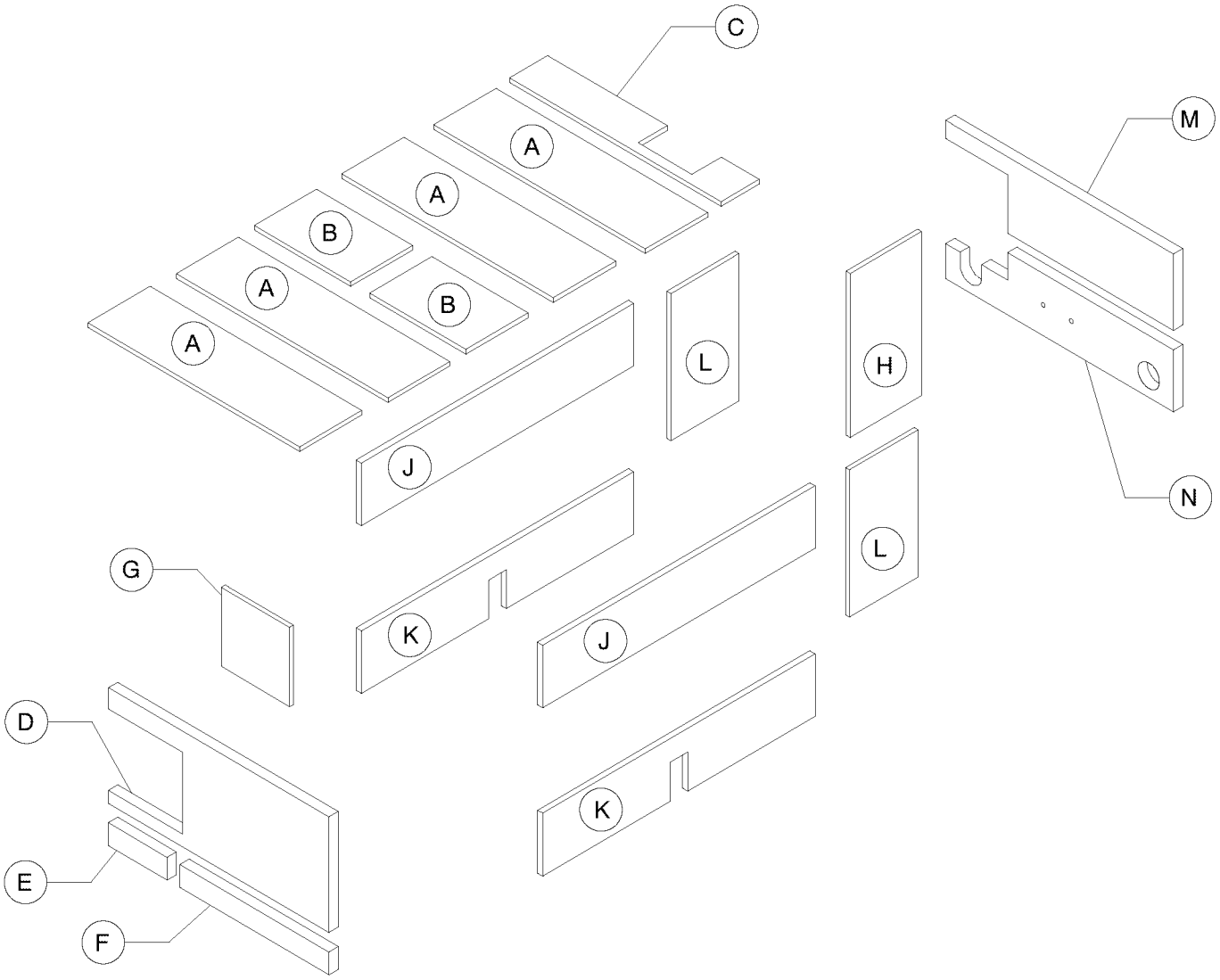


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 7/9/92 bd	DESCRIPTION ENCLOSURE COMPLETE	
MODEL NO. P-600WCU	MANUAL NO. 35392893-62	DATE/REV: 3/97 C

ITEM	C.P.N.	QTY	DESCRIPTION
A	36844900	1	RH FRONT INTAKE BAFFLE
B	92368687	38	SCREW
C	~	~	~
D	~	~	~
E	~	~	~
F	36844884	1	RH INTAKE BAFFLE
G	36844876	1	LH INTAKE BAFFLE
H	36848315	1	LH FRONT INTAKE BAFFLE
J	36844892	1	BRACE BAFFLE
K	36847259	1	BRACE BAFFLE
L	36845345	1	OIL COOLER BAFFLE
M	36887743	1	COOLER TOP BAFFLE
N	36845352	1	OIL COOLER BAFFLE
P	36757652	27	SCREW
Q	36757652	8	SCREW
R	36848794	2	BRACKET
S	36847317	1	MUFFLER BAFFLE
T	36851715	1	BAFFLE
U	36849644	1	STREET INLET DUCT
V	36849636	1	STREET INLET DUCT
W	36849628	1	CURB INLET DUCT
X	36851707	4	SUPPORT
Y	36852580	1	COOLER BAFFLE BRACKET
Z	36852788	1	BRACKET

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
7/9/92 bd	ENCLOSURE COMPLETE	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-63	3/97 D

DRAWBAR END

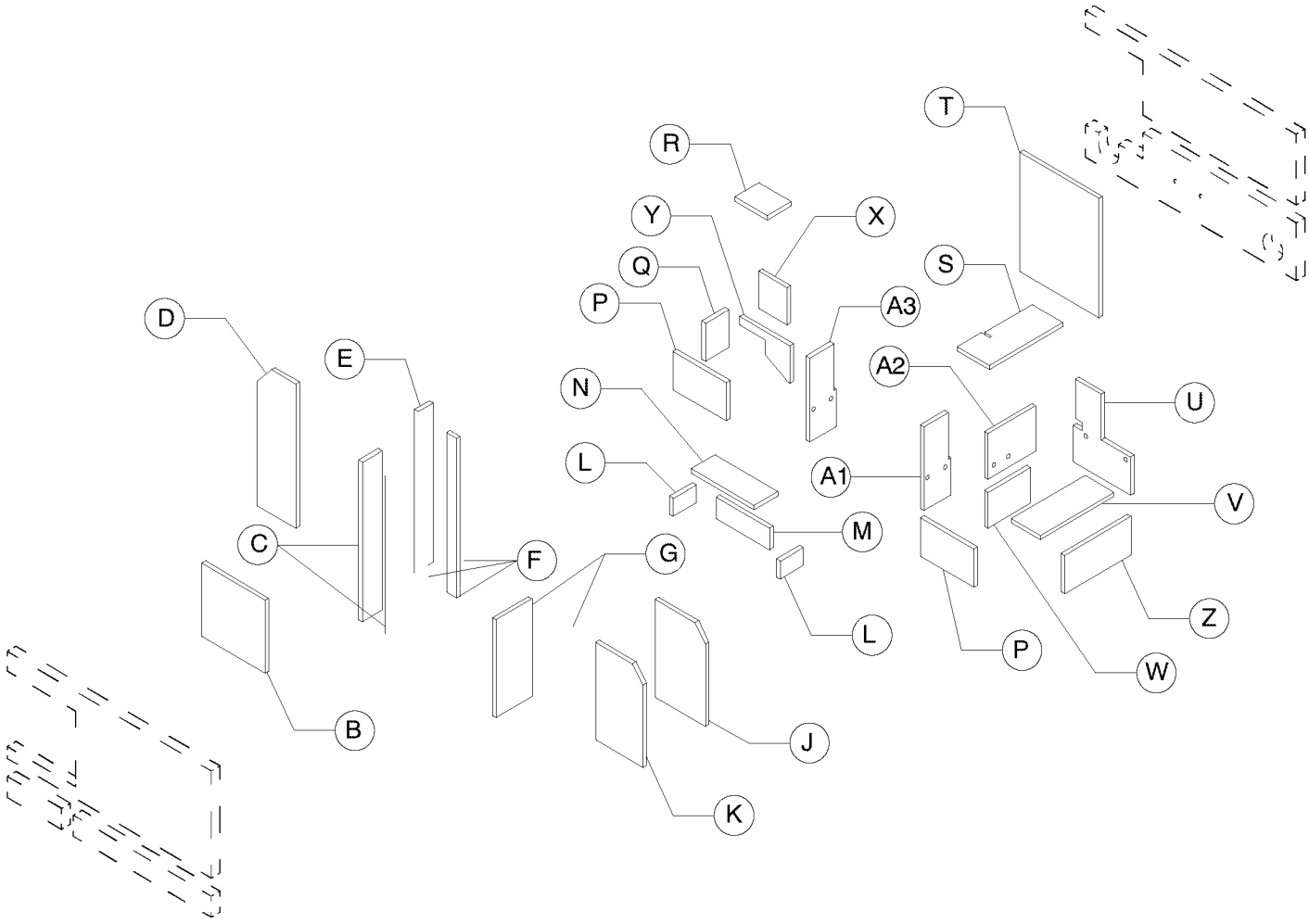


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/29/92 bd	DESCRIPTION FOAM LOCATION	
MODEL NO. P-600WCU	MANUAL NO. 35392893-64	DATE/REV: 3/97 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36849123	4	ROOF ACST PANEL
B	36849131	2	CENTER ROOF ACST PNL
C	36849149	1	REAR ROOF ACST PNL
D	36849222	1	FRONT END ACST PNL
E	36849248	1	RT FRT END ACST PNL
F	36849230	1	LF FRT END ACST PNL
G	36849362	1	INST PNL ACST PNL
H	36849396	1	MUFFLER ACST PNL
J	36849156	2	UPPER DOOR ACST PNL
K	36849164	2	LOWER DOOR ACST PNL
L	36849255	2	SIDE ACST PNL
M	36851863	1	TOP REAR ACST PNL
N	36851855	1	BOT REAR ACST PNL

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/29/92 bd	FOAM LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-65	3/97 A

DRAWBAR END



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/29/92 bd	DESCRIPTION FOAM LOCATION	
MODEL NO. P-600WCU	MANUAL NO. 35392893-66	DATE/REV: 3/97 B

ITEM	C.P.N.	QTY	DESCRIPTION
A	~	~	~
B	36849362	1	INST PNL ACST PNL
C	36519289	2	BAFFLE ACST PNL
D	36849271	1	BAFFLE ACST PNL
E	36849297	1	BAFFLE ACST PNL
F	36849347	3	BAFFLE ACST PNL
G	36849339	2	BAFFLE ACST PNL
H	~	~	~
J	36849313	1	BAFFLE ACST PNL
K	36849321	1	BAFFLE ACST PNL
L	36851749	2	BOX SIDE ACST PNL
M	36851756	1	BOX REAR ACST PNL
N	36851731	1	BOX TOP ACST PNL
P	36849750	2	WHEEL WELL ACST PNL
Q	36849842	1	OUTSIDE CURB ACST PNL
R	36849867	1	BAFFLE CURB ACST PNL
S	36849800	1	BAFFLE TOP ACST PNL
T	36851764	1	REAR BAFFLE ACST PNL
U	36849768	1	BAFFLE ACST PNL
V	36849818	1	BOT BAFFLE ACST PNL
W	36849784	1	FR ACST PNL
X	36849834	1	FAN SHROUD ACST PNL
Y	36849859	1	CROSSMEMBER ACST PNL
Z	36849743	1	OUTSIDE ACST PNL
A1	36849776	1	FR ACST PNL
A2	36849792	1	RAD SUPPORT ACST PNL
A3	36849826	1	FRAME ACST PNL

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/29/92 bd	FOAM LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-67	3/97 B

⚠ WARNING

Improper operation of this equipment.
Can cause serious injury or death.

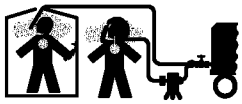
Read Operator's Manual supplied with this machine before operation or servicing.

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.

Ingersoll-Rand 54868787 REV. A

⚠ DANGER



Discharged air can contain carbon monoxide or other contaminants.
Will cause serious injury or death.

Do not breathe this air.

Ingersoll-Rand

⚠ WARNING

Trapped air pressure.
Can cause serious injury or death.

Close service valve and operate tool to vent trapped air before performing any service.

⚠ WARNING

Disconnected air hoses whip.
Can cause serious injury death.

When using air tools attach safety device (OSHA Valve) at source of air supply for each tool.

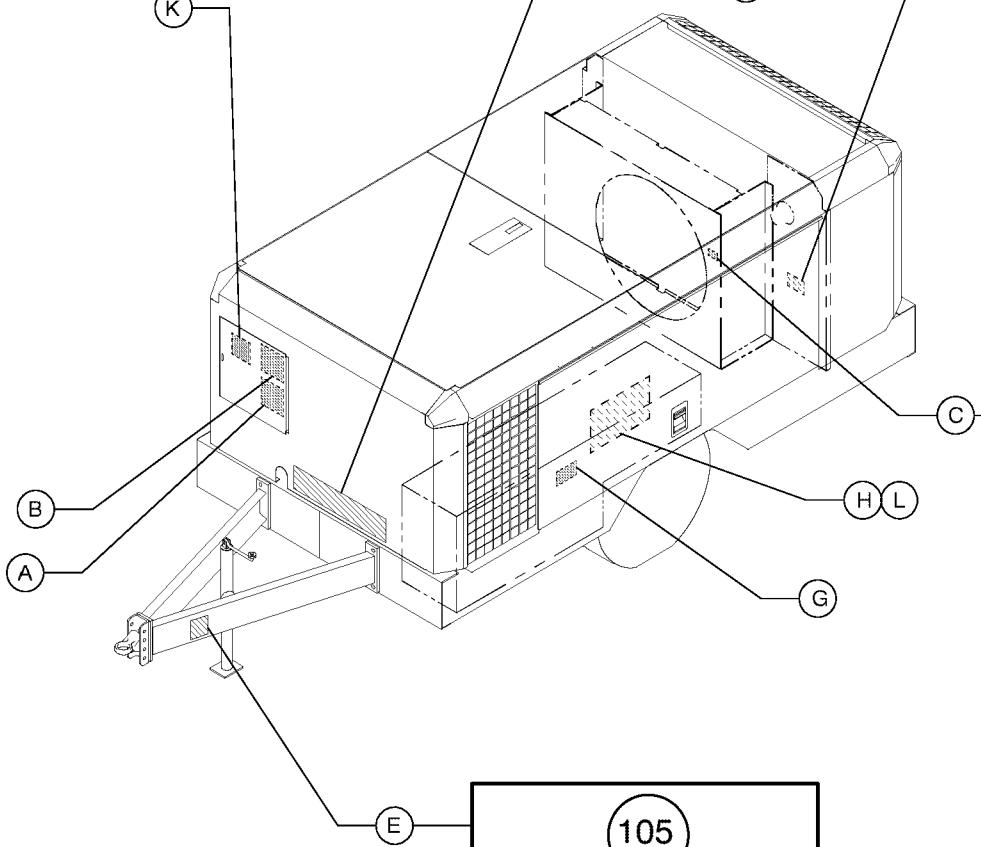
54929602 REV. A

⚠ WARNING

Hot pressurized fluid.
Can cause serious burns.

Do not open radiator while hot.

Ingersoll-Rand 54868781 REV. A



⚠ WARNING

Rotating fan blade.
Can cause serious injury.

Do not operate without guard in place.

Ingersoll-Rand 54868778 REV. A

105 km/h

⚠ WARNING

Collapsing jackstand.
Can cause serious injury.

Insert locking pin completely.

Excessive towing speed.
Can cause serious injury or death.

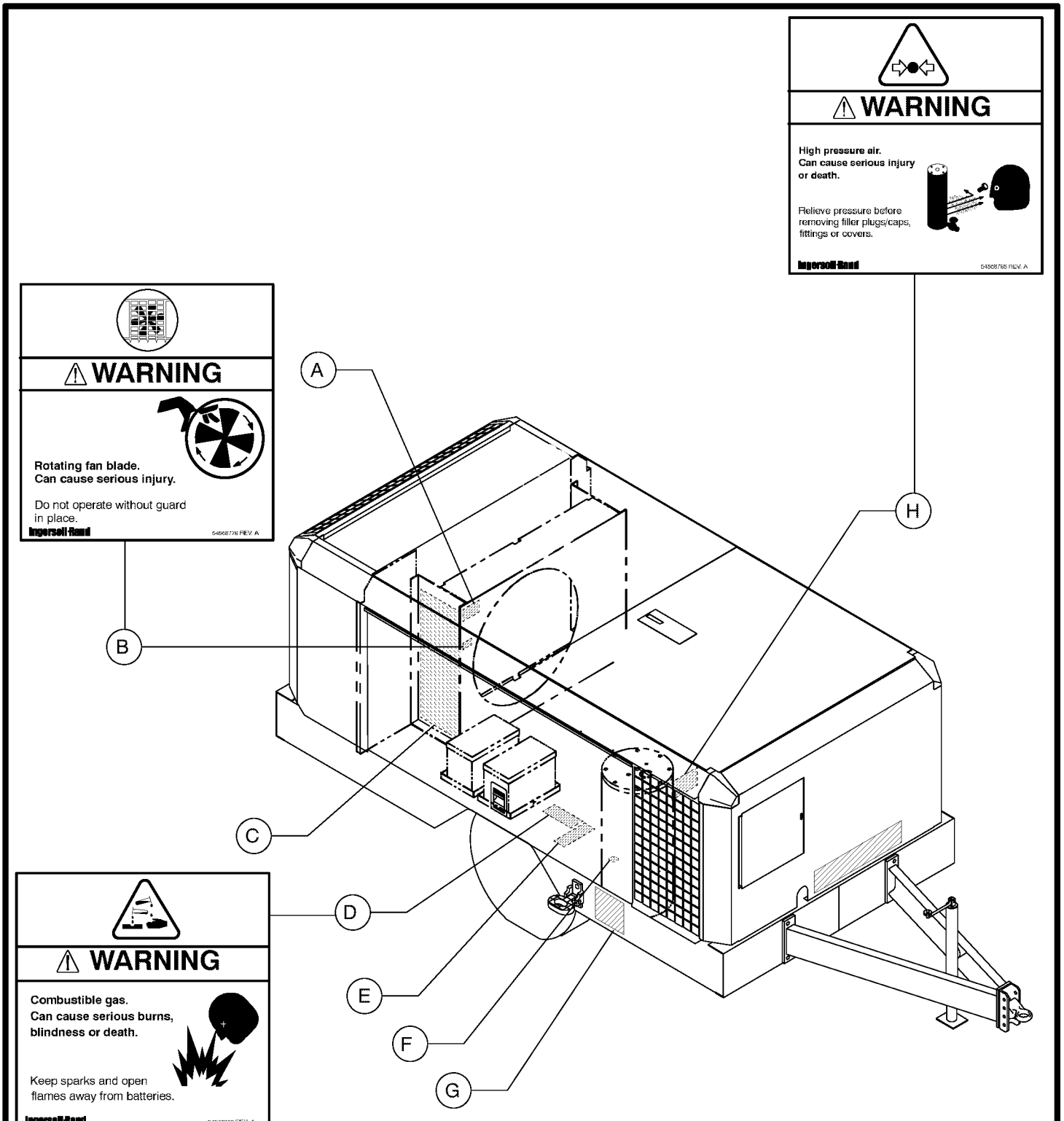
Do NOT exceed 65 mph (105 km/hr.)

Ingersoll-Rand 54868803 REV. A

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/23/92 bd	DESCRIPTION: DECAL LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-68	12/00 F

ITEM	C.P.N.	DESCRIPTION
A	36518744	GENERAL DATA DECAL
B	36519924	OPERATING INSTRUCTIONS
C	54568779	WARNING ROTATING FAN
D	54568761	WARNING HOT FLUID
E	54568803	DECAL 2-PART 65MPH
F	54629902	DANGER/WARNING DECAL
G	54625207	DIESEL FUEL DECAL
H	36522290	SAFETY CARD
J	36847861	CABLE TIE
K	54568787	IMPROPER OPERATION

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	DECAL LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-69	12/00 F



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	DECAL LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-70	12/00 E

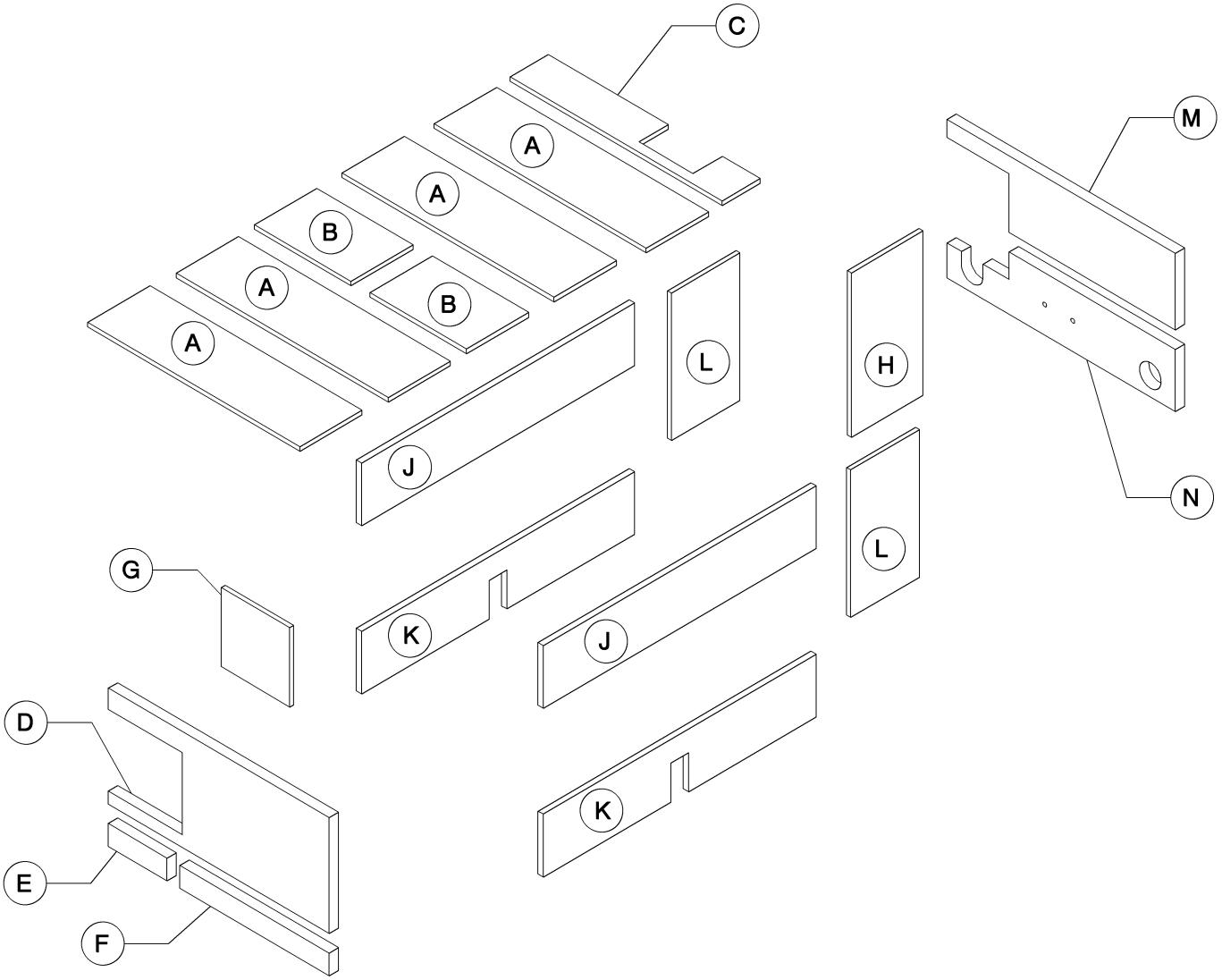
ITEM	C.P.N.	DESCRIPTION
A	54604962	RADIATOR FILL DECAL
B	54568779	WARNING ROTATING FAN
C	36522118	WIRING DIAGRAM
D	54568753	WARNING BATTERY
E	36530715	ADJUSTING INSTRUCTIONS
F	54604970	OIL FILL DECAL
G	36502995	FOLDING STEP DECAL
H	54568795	WARNING HIGH PRESSURE

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/23/92 bd	DESCRIPTION DECAL LOCATION	
MODEL NO. P-600WCU	MANUAL NO. 35392893-71	DATE/REV: 12/00 G

ITEM	C.P.N.	QTY	DESCRIPTION
A	36844900	1	RH FRONT INTAKE BAFFLE
B	92368687	38	SCREW
C	~	~	~
D	~	~	~
E	~	~	~
F	36844884	1	RH INTAKE BAFFLE
G	36844876	1	LH INTAKE BAFFLE
H	36848315	1	LH FRONT INTAKE BAFFLE
J	36844892	1	BRACE BAFFLE
K	36847259	1	BRACE BAFFLE
L	36845345	1	OIL COOLER BAFFLE
M	36887743	1	COOLER TOP BAFFLE
N	36845352	1	OIL COOLER BAFFLE
P	36757652	27	SCREW
Q	36757652	8	SCREW
R	36848794	2	BRACKET
S	36847317	1	MUFFLER BAFFLE
T	36851715	1	BAFFLE
U	36849644	1	STREET INLET DUCT
V	36849636	1	STREET INLET DUCT
W	36849628	1	CURB INLET DUCT
X	36851707	4	SUPPORT
Y	36852580	1	COOLER BAFFLE BRACKET
Z	36852788	1	BRACKET

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 7/9/92 bd	DESCRIPTION ENCLOSURE COMPLETE	
MODEL NO. P-600WCU	MANUAL NO. 35392893-63	DATE/REV: 3/97 D

DRAWBAR END

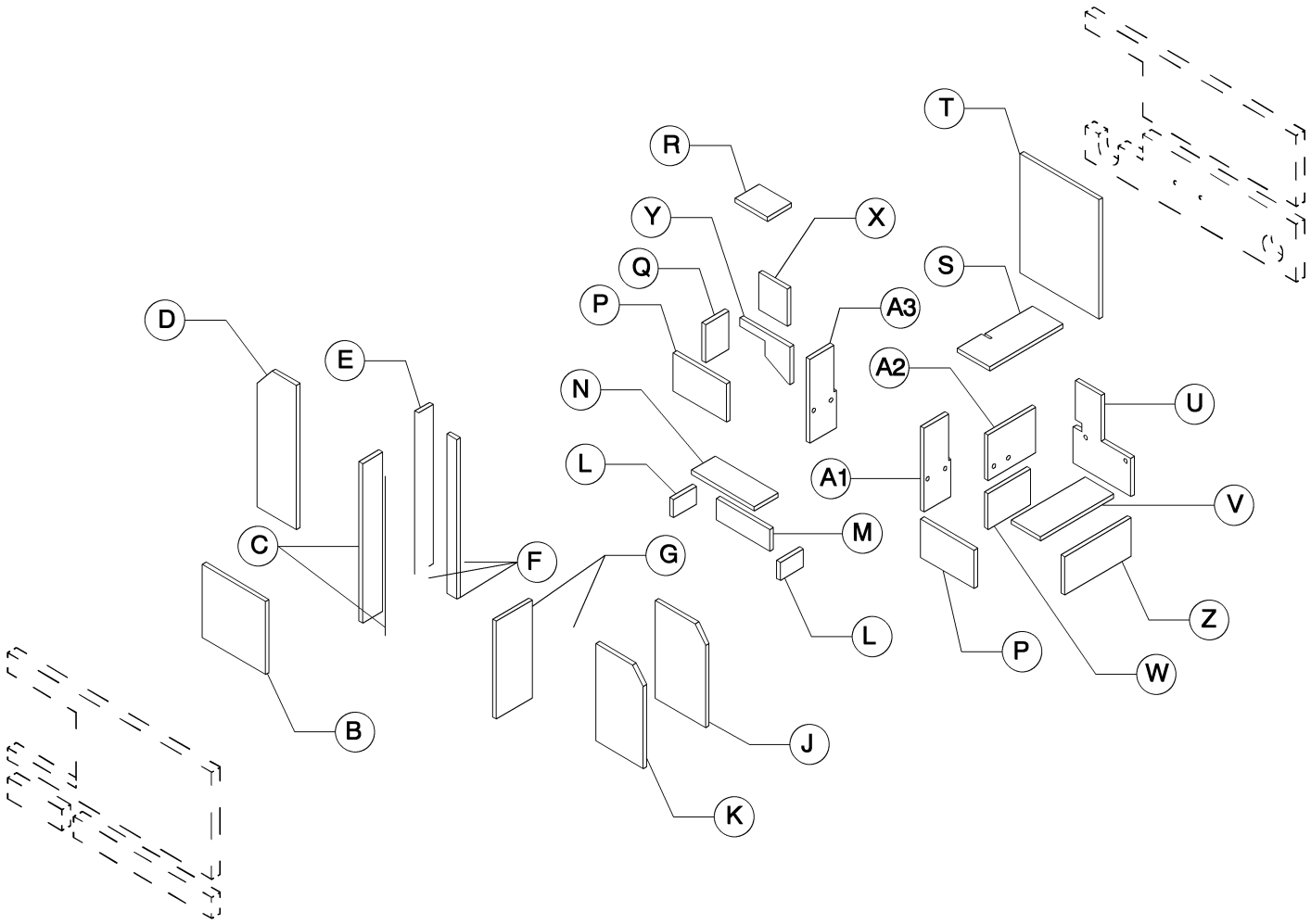


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/29/92 bd	FOAM LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-64	3/97 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36849123	4	ROOF ACST PANEL
B	36849131	2	CENTER ROOF ACST PNL
C	36849149	1	REAR ROOF ACST PNL
D	36849222	1	FRONT END ACST PNL
E	36849248	1	RT FRT END ACST PNL
F	36849230	1	LF FRT END ACST PNL
G	36849362	1	INST PNL ACST PNL
H	36849396	1	MUFFLER ACST PNL
J	36849156	2	UPPER DOOR ACST PNL
K	36849164	2	LOWER DOOR ACST PNL
L	36849255	2	SIDE ACST PNL
M	36851863	1	TOP REAR ACST PNL
N	36851855	1	BOT REAR ACST PNL

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 6/29/92 bd	DESCRIPTION FOAM LOCATION	
MODEL NO. P-600WCU	MANUAL NO. 35392893-65	DATE/REV: 3/97 A

DRAWBAR END



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/29/92 bd	FOAM LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-66	3/97 B

ITEM	C.P.N.	QTY	DESCRIPTION
A	~	~	~
B	36849362	1	INST PNL ACST PNL
C	36519289	2	BAFFLE ACST PNL
D	36849271	1	BAFFLE ACST PNL
E	36849297	1	BAFFLE ACST PNL
F	36849347	3	BAFFLE ACST PNL
G	36849339	2	BAFFLE ACST PNL
H	~	~	~
J	36849313	1	BAFFLE ACST PNL
K	36849321	1	BAFFLE ACST PNL
L	36851749	2	BOX SIDE ACST PNL
M	36851756	1	BOX REAR ACST PNL
N	36851731	1	BOX TOP ACST PNL
P	36849750	2	WHEEL WELL ACST PNL
Q	36849842	1	OUTSIDE CURB ACST PNL
R	36849867	1	BAFFLE CURB ACST PNL
S	36849800	1	BAFFLE TOP ACST PNL
T	36851764	1	REAR BAFFLE ACST PNL
U	36849768	1	BAFFLE ACST PNL
V	36849818	1	BOT BAFFLE ACST PNL
W	36849784	1	FR ACST PNL
X	36849834	1	FAN SHROUD ACST PNL
Y	36849859	1	CROSSMEMBER ACST PNL
Z	36849743	1	OUTSIDE ACST PNL
A1	36849776	1	FR ACST PNL
A2	36849792	1	RAD SUPPORT ACST PNL
A3	36849826	1	FRAME ACST PNL

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/29/92 bd	FOAM LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-67	3/97 B

⚠ WARNING

Improper operation of this equipment.
Can cause serious injury or death.

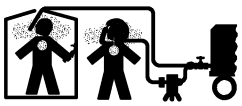
Read Operator's Manual supplied with this machine before operation or servicing.

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.

Ingersoll-Rand 54568787 REV. A

⚠ DANGER



Discharged air can contain carbon monoxide or other contaminants.
Will cause serious injury or death.

Do not breathe this air.

Ingersoll-Rand

⚠ WARNING

Trapped air pressure.
Can cause serious injury or death.

Close service valve and operate tool to vent trapped air before performing any service.

⚠ WARNING

Disconnected air hoses whip.
Can cause serious injury death.

When using air tools attach safety device (OSHA Valve) at source of air supply for each tool.

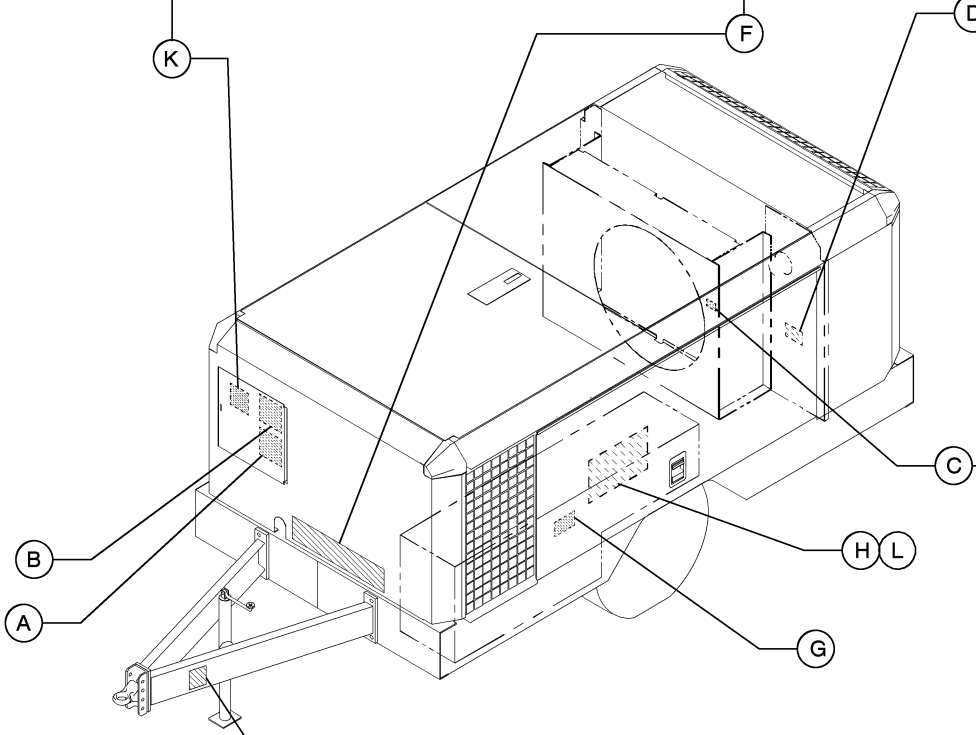
54629902 REV. A

⚠ WARNING

Hot pressurized fluid.
Can cause serious burns.

Do not open radiator while hot.

Ingersoll-Rand 54568761 REV. A



⚠ WARNING

Rotating fan blade.
Can cause serious injury.

Do not operate without guard in place.

Ingersoll-Rand 54568779 REV. A

105 km/h

⚠ WARNING

Collapsing jackstand.
Can cause serious injury.

Insert locking pin completely.

Excessive towing speed.
Can cause serious injury or death.

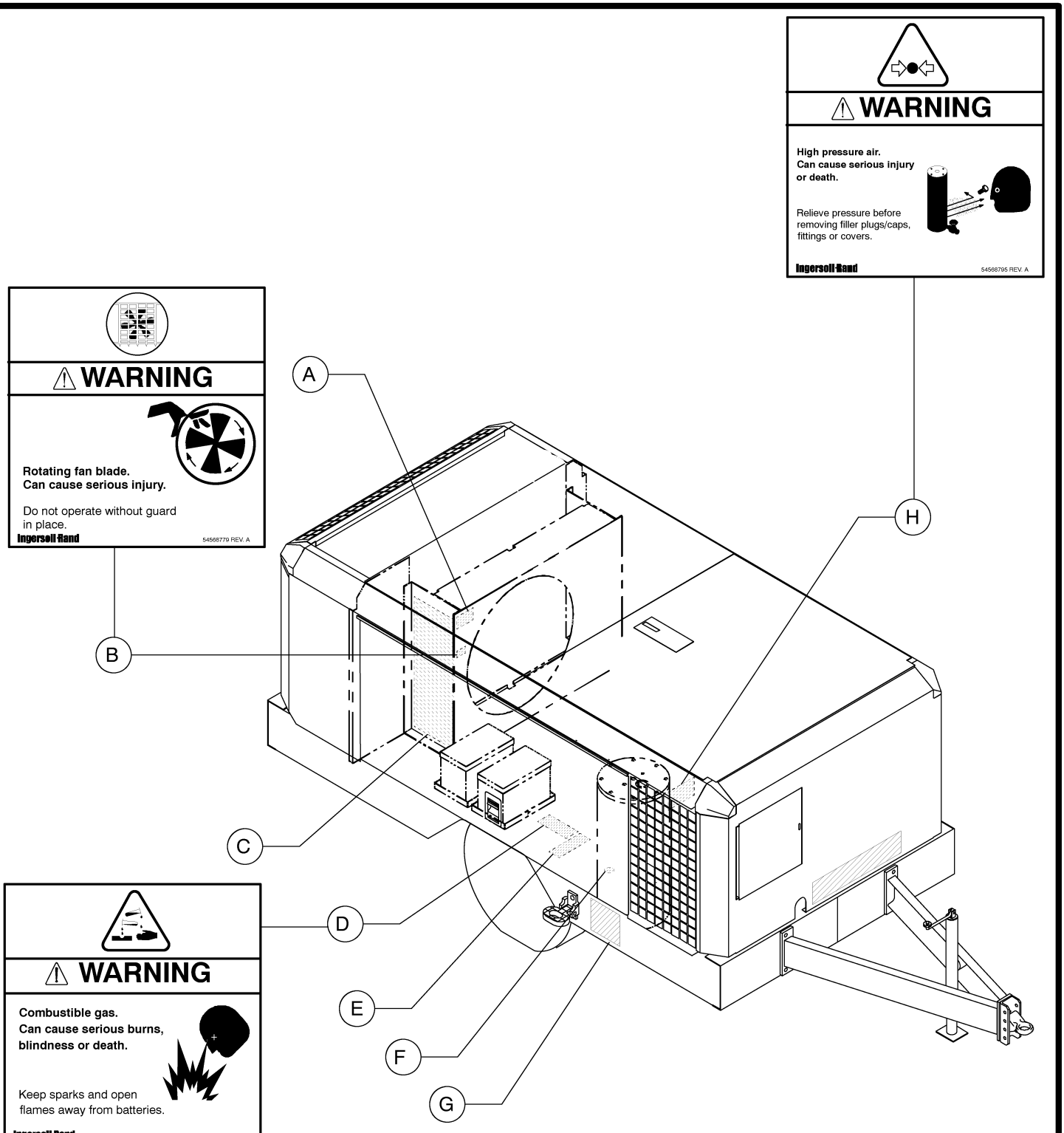
Do NOT exceed 65 mph (105 km/hr.)

Ingersoll-Rand 54568803 REV. A

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	DECAL LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-68	12/00 F

ITEM	C.P.N.	DESCRIPTION
A	36518744	GENERAL DATA DECAL
B	36519924	OPERATING INSTRUCTIONS
C	54568779	WARNING ROTATING FAN
D	54568761	WARNING HOT FLUID
E	54568803	DECAL 2-PART 65MPH
F	54629902	DANGER/WARNING DECAL
G	54625207	DIESEL FUEL DECAL
H	36522290	SAFETY CARD
J	36847861	CABLE TIE
K	54568787	IMPROPER OPERATION

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	DECAL LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-69	12/00 F



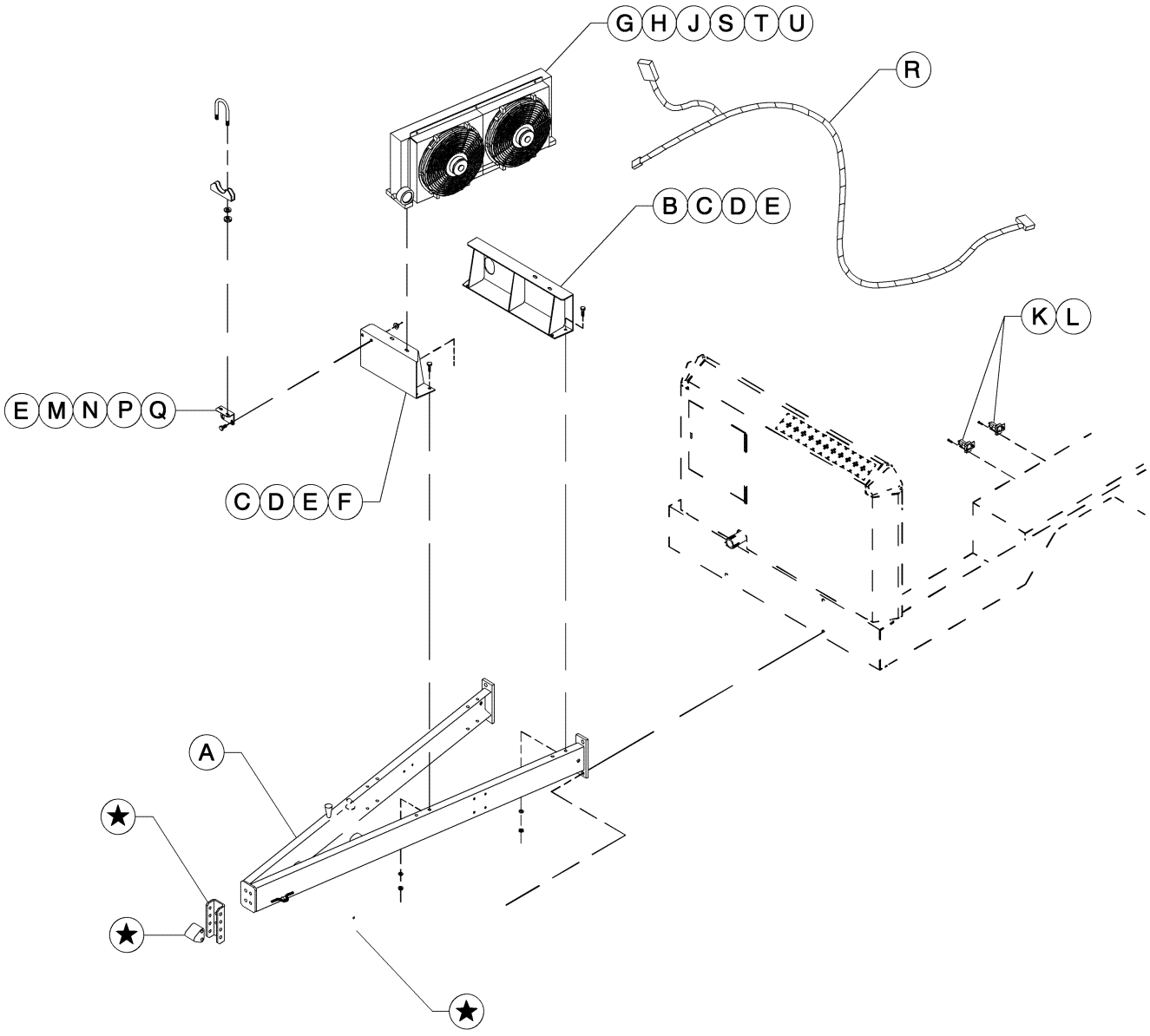
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	DECAL LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-70	12/00 E

ITEM	C.P.N.	DESCRIPTION
A	54604962	RADIATOR FILL DECAL
B	54568779	WARNING ROTATING FAN
C	36522118	WIRING DIAGRAM
D	54568753	WARNING BATTERY
E	36530715	ADJUSTING INSTRUCTIONS
F	54604970	OIL FILL DECAL
G	36502995	FOLDING STEP DECAL
H	54568795	WARNING HIGH PRESSURE

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY:	DESCRIPTION	
6/23/92 bd	DECAL LOCATION	
MODEL NO.	MANUAL NO.	DATE/REV:
P-600WCU	35392893-71	12/00 G

SECTION 11 - OPTIONS LIST

CONTENTS

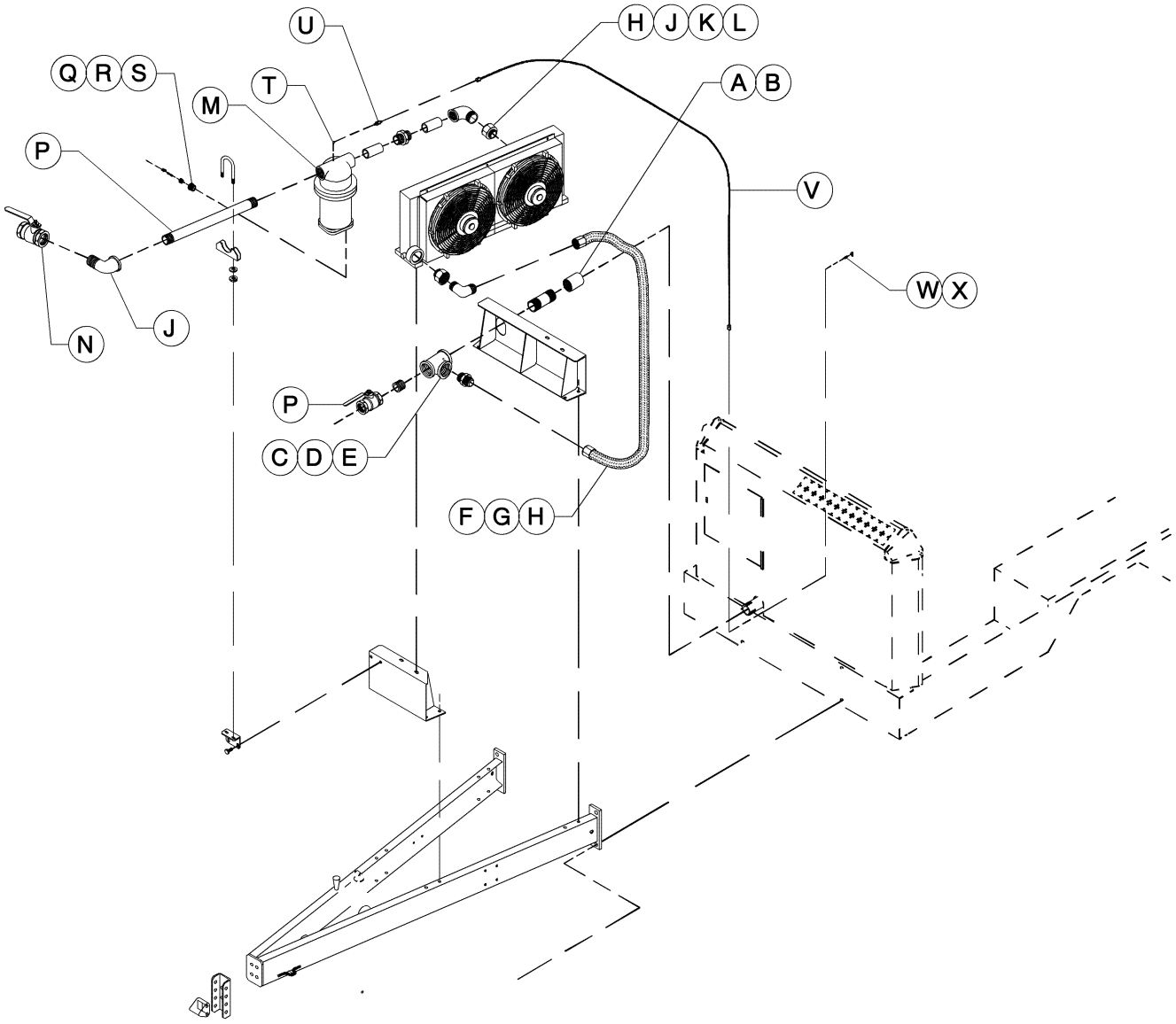


★ **EXISTING ITEMS TO BE RE-USED**

35392893-02 35392901-02	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 6/11/93 bd	DESCRIPTION AFTERCOOLER ASSEMBLY	
	MODEL NO. P-600WCU	MANUAL NO. OPTION	DATE/REV: 5/99 C

ITEM	C.P.N.	QTY	DESCRIPTION
A	36853273	1	DRAWBAR
B	36855401	1	REAR BRACKET
C	35252741	8	SCREW, LOCK 1/2-13 X 1.5
D	35320944	8	WASHER, BEVEL 1/2"
E	35252618	10	NUT, LOCK WASHER 1/2-13
F	36855393	1	FRONT BRACKET
G	36855955	1	AFTERCOOLER
H	95934642	4	SCREW, HEX 1/2-13 X 1
J	95935003	4	WASHER, FLAT 1/2"
K	36856250	2	RELAY
L	36797652	4	SCREW
M	36856946	1	BRACKET
N	35252758	2	SCREW
P	35209048	1	MUFFLER CLAMP
Q	95928966	2	WASHER, FLAT 5/16"
R	36871010	1	HARNESS, FAN
S	36856003	1	CORE AFTERCOOLER
T	36856011	2	FAN AFTERCOOLER
U	36856912	1	SHROUD AFTERCOOLER

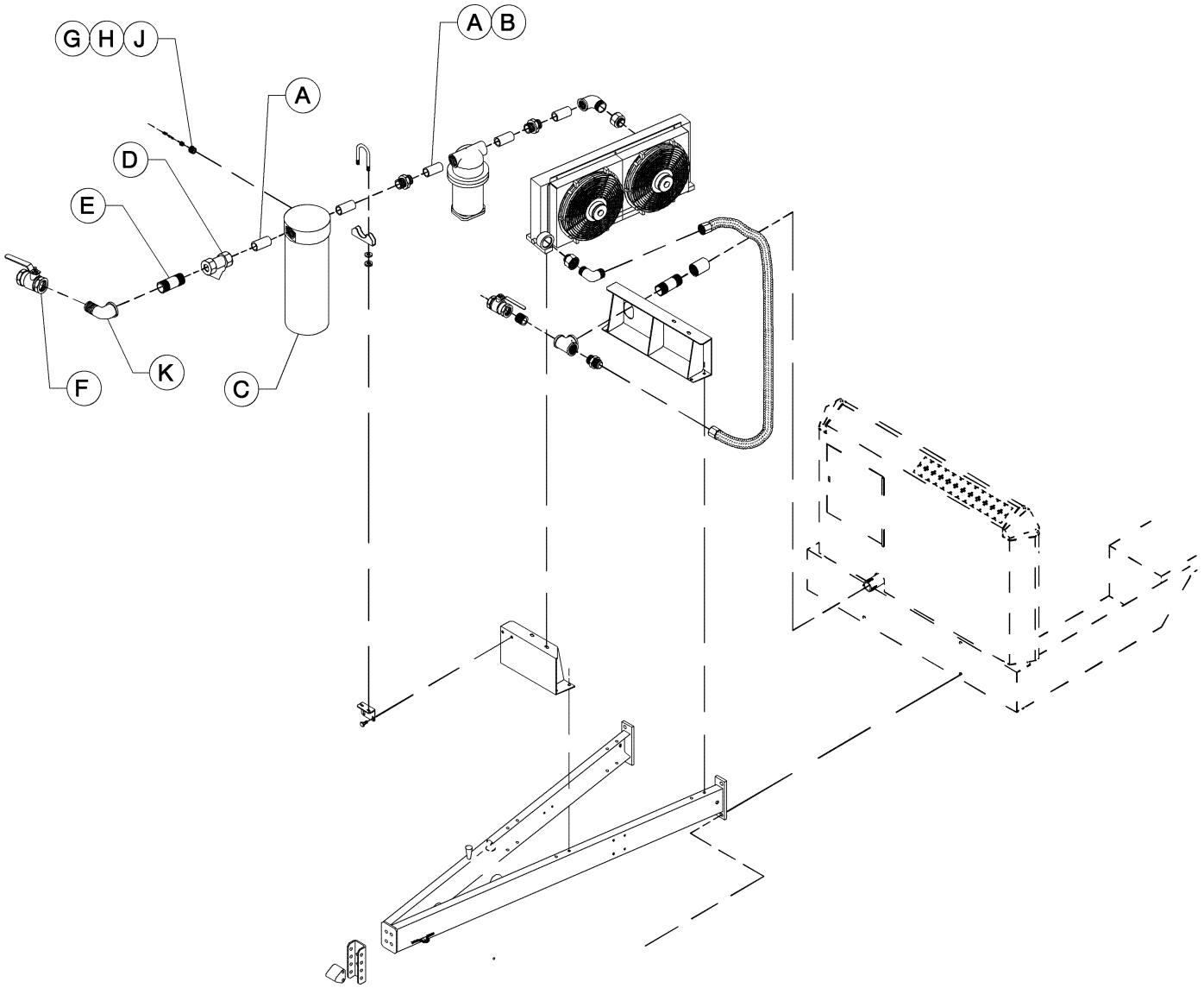
35392893-03 35392901-03	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 6/11/93 bd	DESCRIPTION: AFTERCOOLER ASSEMBLY
MODEL NO.: P-600WCU	MANUAL NO.: OPTION
DATE/REV: 5/99 C	



35392893-04 35392901-04	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION	
	DATE/DWN BY: 6/11/93 bd	DESCRIPTION: AFTERCOOLER ASSEMBLY
	MODEL NO.: P-600WCU	MANUAL NO.: OPTION
		DATE/REV: 5/99 C

ITEM	C.P.N.	QTY	DESCRIPTION
A	95944526	1	COUPLING, 2” PIPE
B	95944591	1	NIPPLE 6”
C	95944682	1	TEE
D	95944609	1	NIPPLE 2”
E	35335124	1	CONNECTOR
F	36856920	1	HOSE
G	36786127	1	ELBOW, 90□ 2” NPT
H	95944641	2	ADAPTER
J	95944674	2	ELBOW, STREET 2” NPT
K	95946174	2	NIPPLE 4”
L	95944534	1	UNION
M	36850840	1	WATER SEPARATOR
N	36856938	1	NIPPLE 25”
P	35602473	1	BALL VALVE
Q	95944633	1	BUSHING
	95944617		BUSHING (ALTERNATE)
R	95944567	1	NIPPLE 1.5”
S	35324839	1	BALL VALVE
T	95944666	1	ELBOW, STREET 1/4 NPT
U	36840437	1	CHECK VALVE
V	35331842	1	HOSE
W	35283472	1	CONNECTOR
X	95944690	1	TEE, STREET 1/4 NPT

35392893-05 35392901-05	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 6/11/93 bd	DESCRIPTION AFTERCOOLER ASSEMBLY	
	MODEL NO. P-600WCU	MANUAL NO. OPTION	DATE/REV: 5/99 C



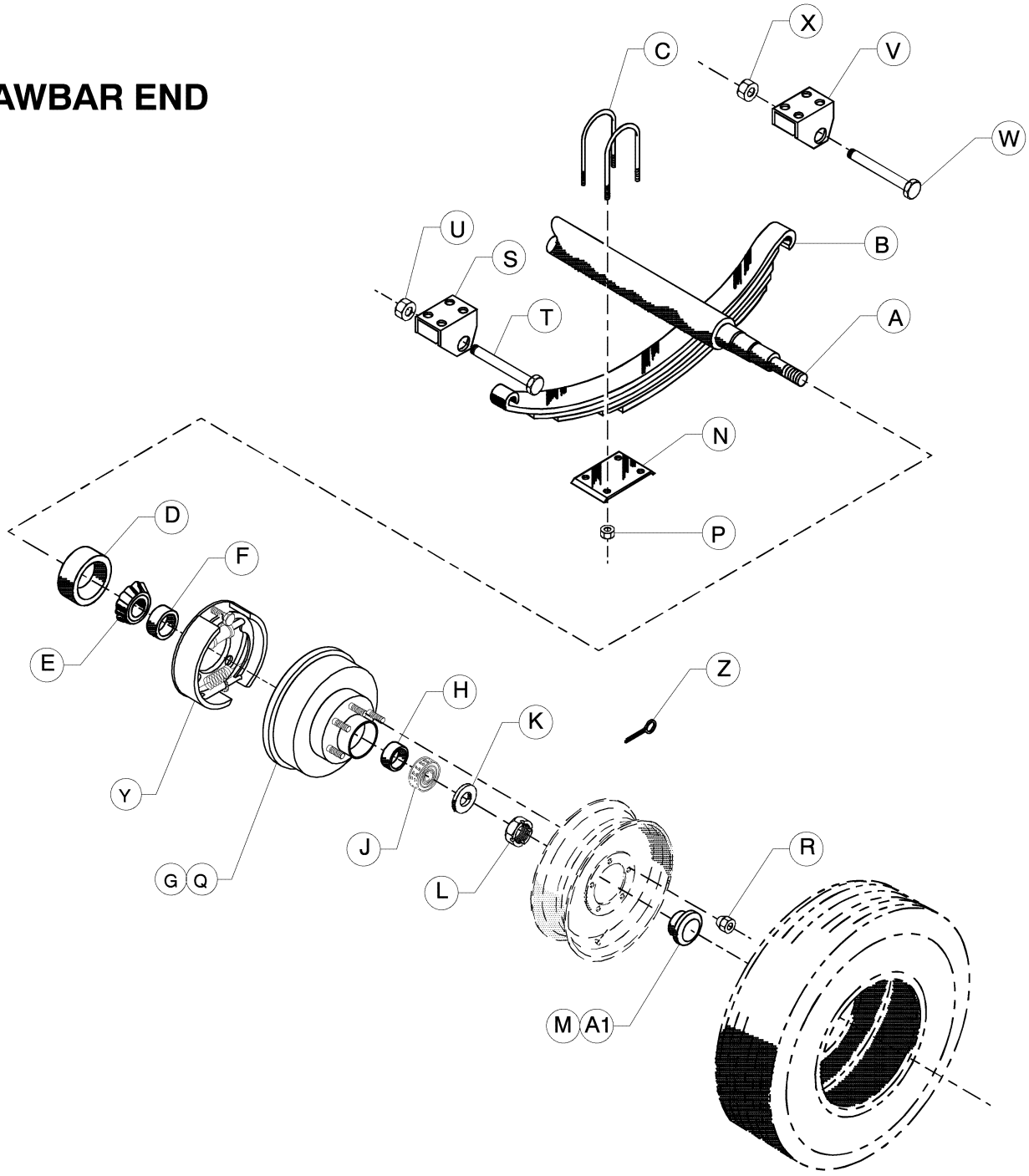
35392893-06 35392901-06	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 5/7/93 bd	DESCRIPTION COALESCING FILTER ASSY.	
	MODEL NO. P-600WCU	MANUAL NO. OPTION	DATE/REV: 5/99 C

ITEM	C.P.N.	QTY	DESCRIPTION
A	95944609	3	NIPPLE 2.5”
B	95944534	1	UNION
C	36856029 *	1	FILTER, HEAD
D	35148014	1	CHECK VALVE
E	95911559	1	NIPPLE 8”
F	35602473	1	BALL VALVE
G	95944633	1	BUSHING
H	95944567	1	NIPPLE 1.5”
J	35324839	1	BALL VALVE
K	95944674	1	ELBOW, STREET 2” NPT

* FILTER ELEMENT 36857381

35392893-07 35392901-07	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 5/7/93 bd	DESCRIPTION COALESCING FILTER ASSY.	
	MODEL NO. P-600WCU	MANUAL NO. OPTION	DATE/REV: 5/99 C

DRAWBAR END

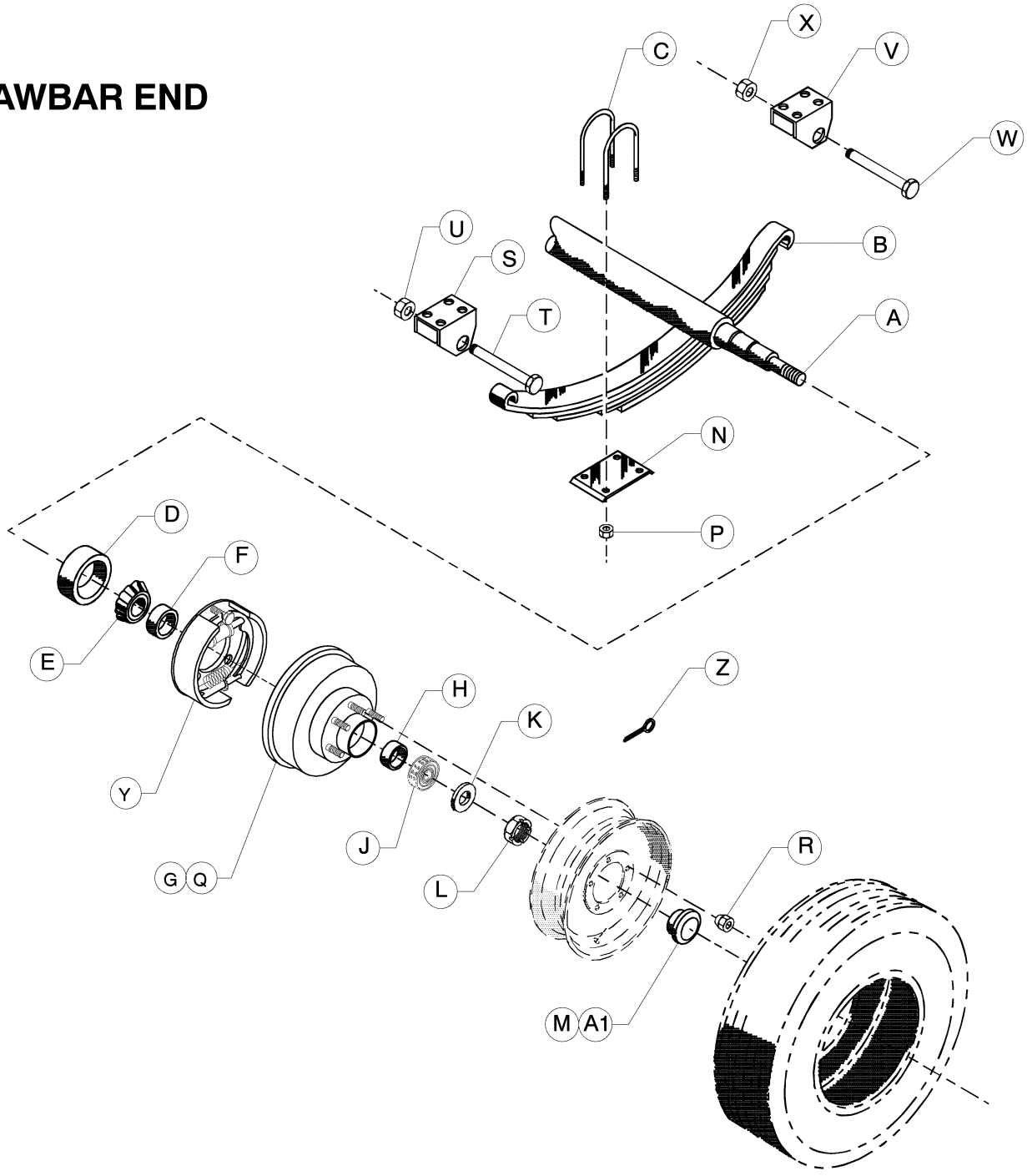


35392893-08 35392901-08	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION	
DATE/DWN BY: 4/14/98 bd	DESCRIPTION ELEC BRAKE AXLE	
MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	35316850	1	AXLE
B	35315126	2	SPRING
C	35136959	4	U-BOLT
D	36865962	2	GREASE SEAL
E	35316876	2	BEARING CONE
F	35316884	2	BEARING CUP
G	35388669	2	HUB
H	35316900	2	BEARING CUP
J	35316918	2	BEARING CONE
K	35315209	2	SPINDLE WASHER
L	35315217	2	SPINDLE NUT
M	35393792	2	GREASE CAP
N	35316967	2	TIE PLATE
P	35315258	8	NUT
Q	35361898	16	WHEEL STUD
R	35315274	16	WHEEL NUT
S	35326958	2	FRONT HANGER
T	35315340	2	SHACKLE BOLT
U	35315357	2	SHACKLE NUT
V	35326966	2	REAR HANGER
W	35315365	2	KEEPER BOLT
X	35315373	2	KEEPER NUT
Y	36855377	1	LH BRAKE ASSEMBLY
	36855385	1	RH BRAKE ASSEMBLY
Z	35315225	2	PIN, COTTER
A1	35391135	2	PLUG, EZ LUBE

35392893-09 35392901-09	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 4/14/98 bd	DESCRIPTION ELEC BRAKE AXLE	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A

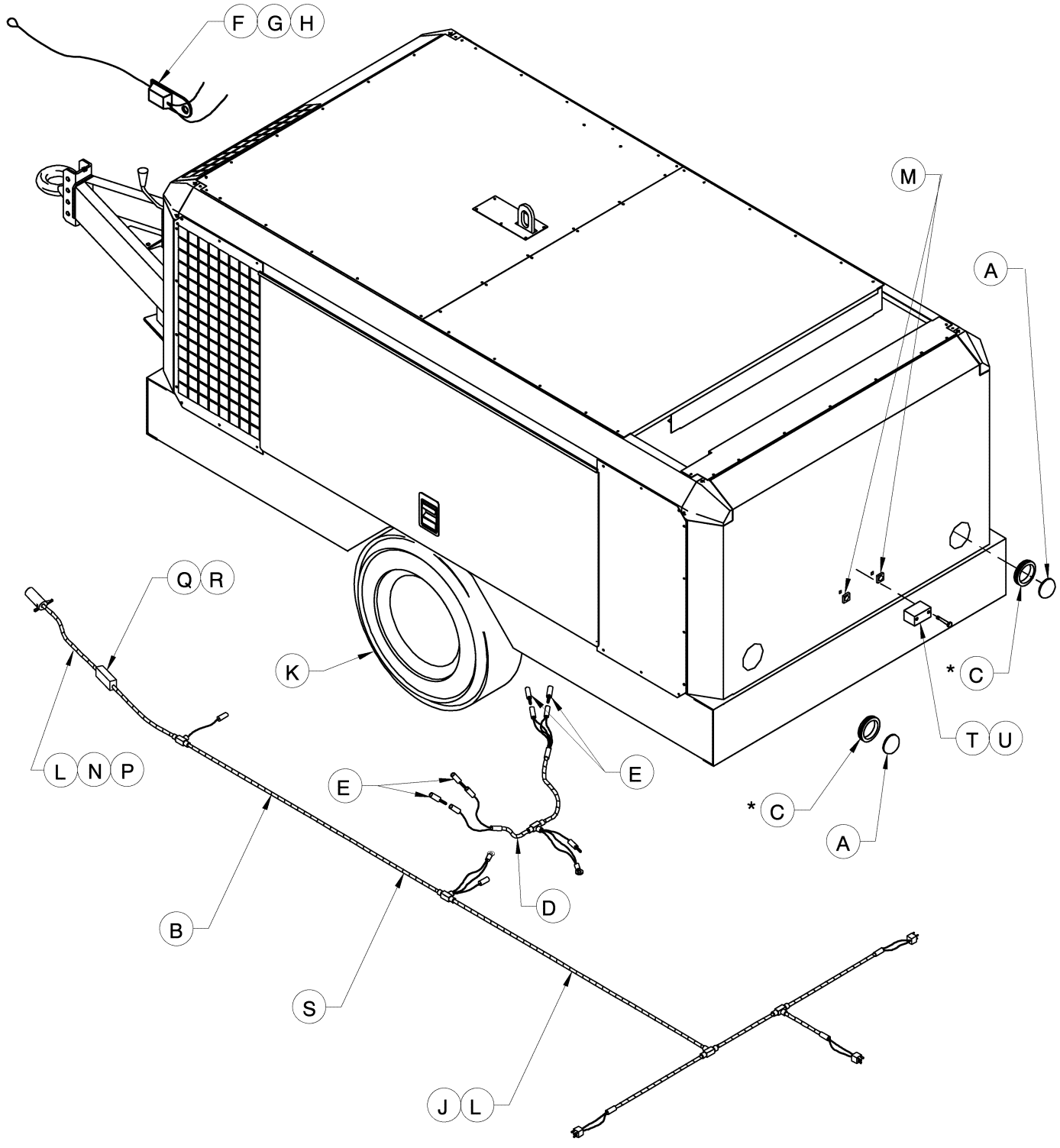
DRAWBAR END



35392893-10 35392901-10	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION	
DATE/DWN BY: 4/14/98 bd	DESCRIPTION HYDRAULIC BRAKE AXLE	
MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	35316850	1	AXLE
B	35315126	2	SPRING
C	35136959	4	U-BOLT
D	36865962	2	GREASE SEAL
E	35316876	2	BEARING CONE
F	35316884	2	BEARING CUP
G	35388669	2	HUB
H	35316900	2	BEARING CUP
J	35316918	2	BEARING CONE
K	35315209	2	SPINDLE WASHER
L	35315217	2	SPINDLE NUT
M	35393792	2	GREASE CAP
N	35316967	2	TIE PLATE
P	35315258	8	NUT
Q	35361898	16	WHEEL STUD
R	35315274	16	WHEEL NUT
S	35326958	2	FRONT HANGER
T	35315340	2	SHACKLE BOLT
U	35315357	2	SHACKLE NUT
V	35326966	2	REAR HANGER
W	35315365	2	KEEPER BOLT
X	35315373	2	KEEPER NUT
Y	35393800	1	LH BRAKE ASSEMBLY
	35393818	1	RH BRAKE ASSEMBLY
Z	35315225	2	PIN, COTTER
A1	35391135	2	PLUG, EZ LUBE

35392893-11 35392901-11	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION	
DATE/DWN BY: 4/14/98 bd	DESCRIPTION ELEC BRAKE AXLE	
MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A

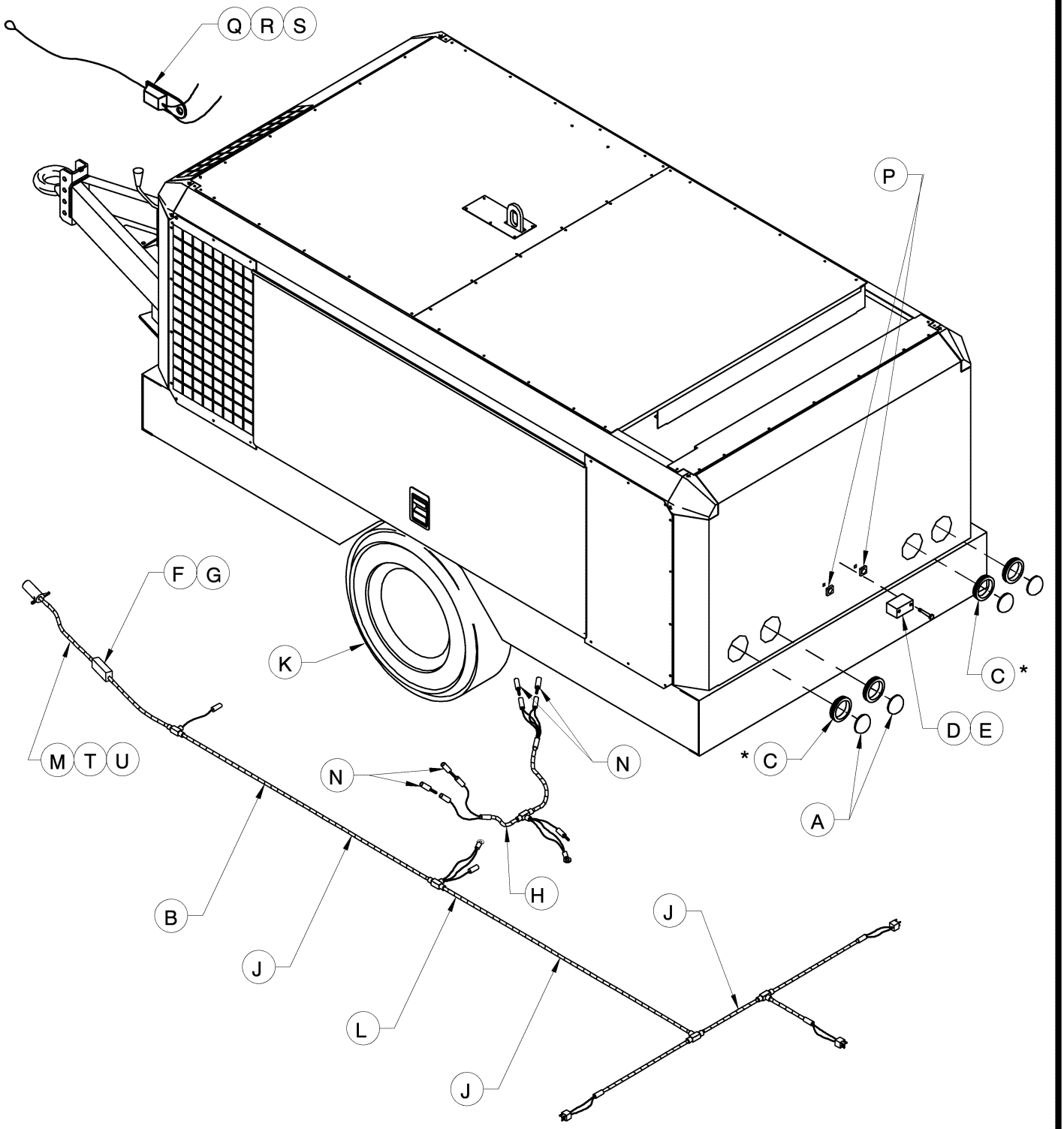


* USE (2) EXISTING GROMMETS

35392893-12 35392901-12	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 9/15/97 bd	DESCRIPTION ELEC BRK w/ 2-LIGHT ASSY	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36788081	2	TAIL LIGHT
B	36895282	1	HARNESS, ELECTRIC BRAKE
C	36787968	2	GROMMET
D	36896264	1	HARNESS, TAIL LIGHT
E	35375427	4	TERMINAL, SNAP
F	35315944	1	SWITCH, BREAKAWAY
G	35287572	2	TERMINAL, SPLICE
H	35346337	1	TERMINAL, LUG
J	35253038	16	CLAMP, 3/8
K	36799724	1	GEAR, ELEC BRAKE w/ RUNNING
L	92368687	4	SCREW, TAPPING M06-100 X 14
M	36794774	2	GROMMET, SCREW
N	36789261	1	HARNESS, 6 CONDUCTOR CABLE (STD LENGTH DRAWBAR)
	36787216	1	HARNESS, 6 CONDUCTOR CABLE (EXTENDED LENGTH DRAWBAR)
P	35225093	4	CLAMP, 1/2
Q	35252451	5	SCREW, LOCK 1/4-20 X 1
R	35144492	5	NUT, LOCK 1/4-20
S	35225077	2	CLAMP, 5/8
T	36895860	1	LIGHT, LICENSE
U	36782837	2	SCREW, HEX SHT METAL #10 X 1

35392893-13 35392901-13	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 9/15/97 bd	DESCRIPTION ELEC BRK w/ 2-LIGHT ASSY	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 6/98 B

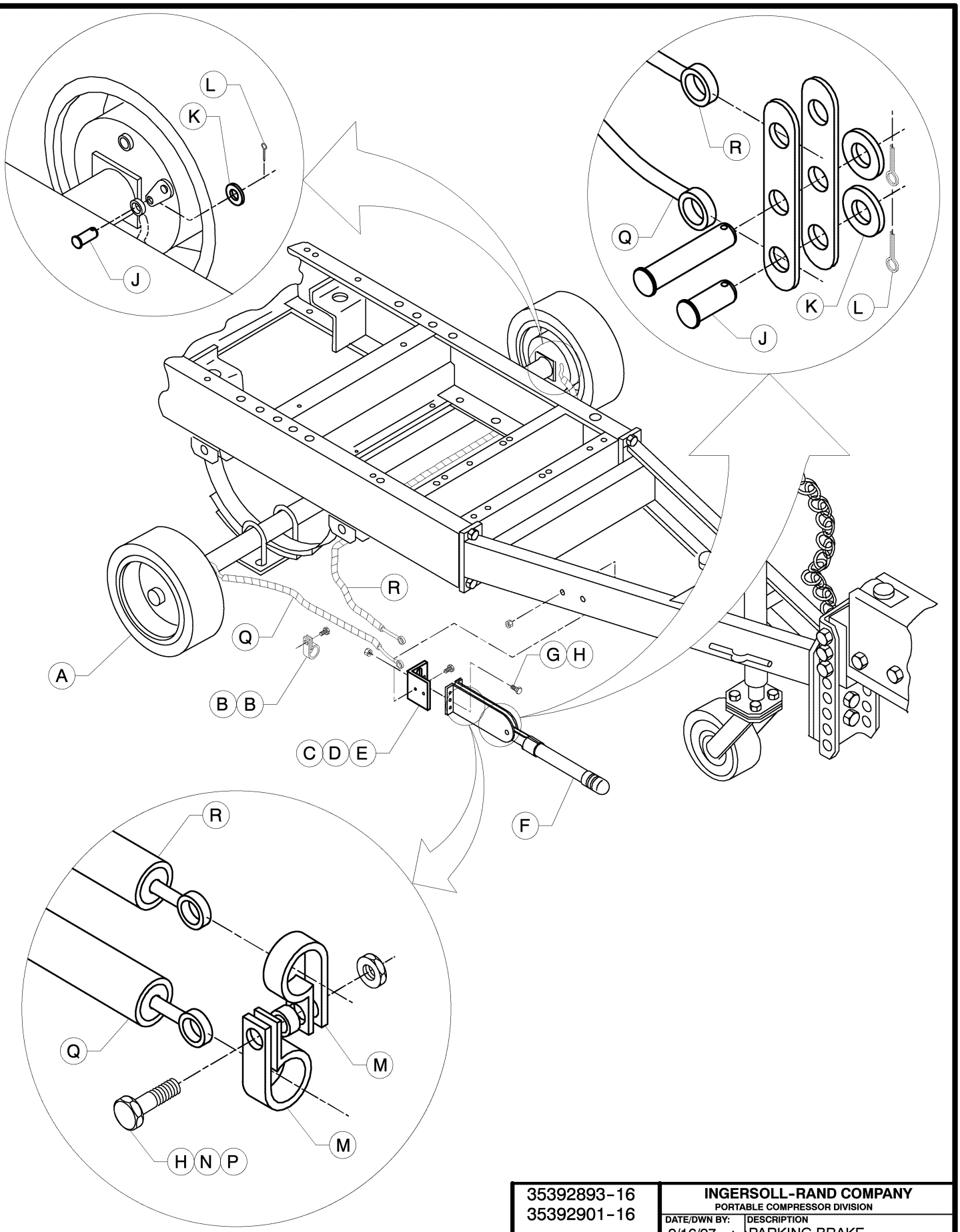


* USE (2) EXISTING GROMMETS

35392893-14 35392901-14	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/16/97 bd	DESCRIPTION: ELEC BRK w/ 4-LIGHT ASSY
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36788081	4	TAIL LIGHT
B	36896264	1	HARNESS, 4-TAIL LIGHT
C	36787968	4	GROMMET
D	36895860	1	LIGHT, LICENSE PLATE
E	36782837	2	SCREW, SHEET METAL
F	35252451	5	SCREW, LOCK 1/4-20 X 1
G	96700851	5	NUT, LOCK WASHER 1/4-20
H	36895282	1	HARNESS, ELECTRIC BRAKE
J	35253038	16	CLAMP, 3/8
K	36799724	1	GEAR, ELEC BRAKE w/ RUNNING
L	35225077	2	CLAMP, RUBBER COATED 5/8
M	92368687	3	SCREW, TAPPING M06-100 X 14
N	35375427	4	TERMINAL, SNAP
P	36794774	2	GROMMET, SCREW
Q	35315944	1	SWITCH, BREAKAWAY
R	35287572	1	TERMINAL, SPLICE
S	35307651	1	TERMINAL, LUG
T	36789261	1	HARNESS, 6 CONDUCTOR CABLE (STD LENGTH DRAWBAR)
	36787216	1	HARNESS, 6 CONDUCTOR CABLE (EXT LENGTH DRAWBAR)
U	35225093	5	CLAMP, 1/2

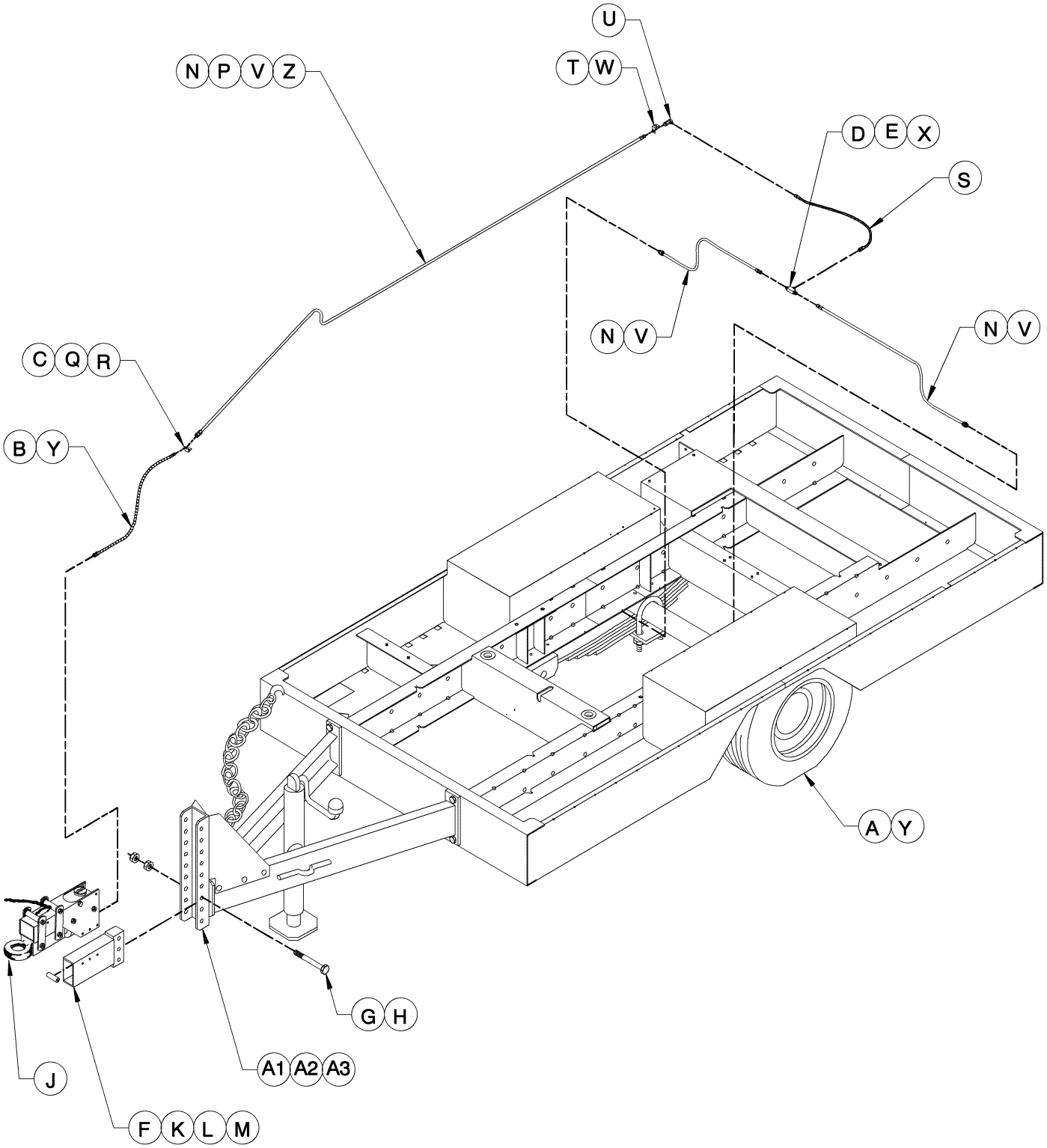
35392893-15 35392901-15	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 9/16/97 bd	DESCRIPTION ELEC BRK w/ 4-LIGHT ASSY	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A



35392893-16 35392901-16	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 9/16/97 bd	DESCRIPTION PARKING BRAKE	
	MODEL NO.	ILLUSTRATION NO. OPTION	SHEET NO. 5/98
			REV: A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36799724	1	RUNNING GEAR W/ BRAKES
B	35225093	6	CLAMP, RUBBER COATED 1/2”
C	35116433	1	BRACKET, BRAKE LEVER
D	35145259	2	SCREW, LOCK 3/8-16 X 1.25
E	35145077	2	NUT, LOCK 3/8-16
F	35370055	1	LEVER, PARKING BRAKE
G	95929006	2	SCREW, HEX 5/16-18 X 1
H	35252600	3	NUT, LOCKING 5/16-18
J	36846780	4	PIN, CLEVIS .31 X .75
K	95934998	4	WASHER, FLAT 3/8
L	95928867	4	PIN, COTTER .09
M	35126325	2	CLAMP, CABLE
N	95943668	1	SCREW, HEX 5/16-18 X 1 3/4
P	35126358	1	SPACER
Q	35589753	1	ASSEMBLY, BRAKE CABLE 90
R	36503134	1	ASSEMBLY, BRAKE CABLE 108

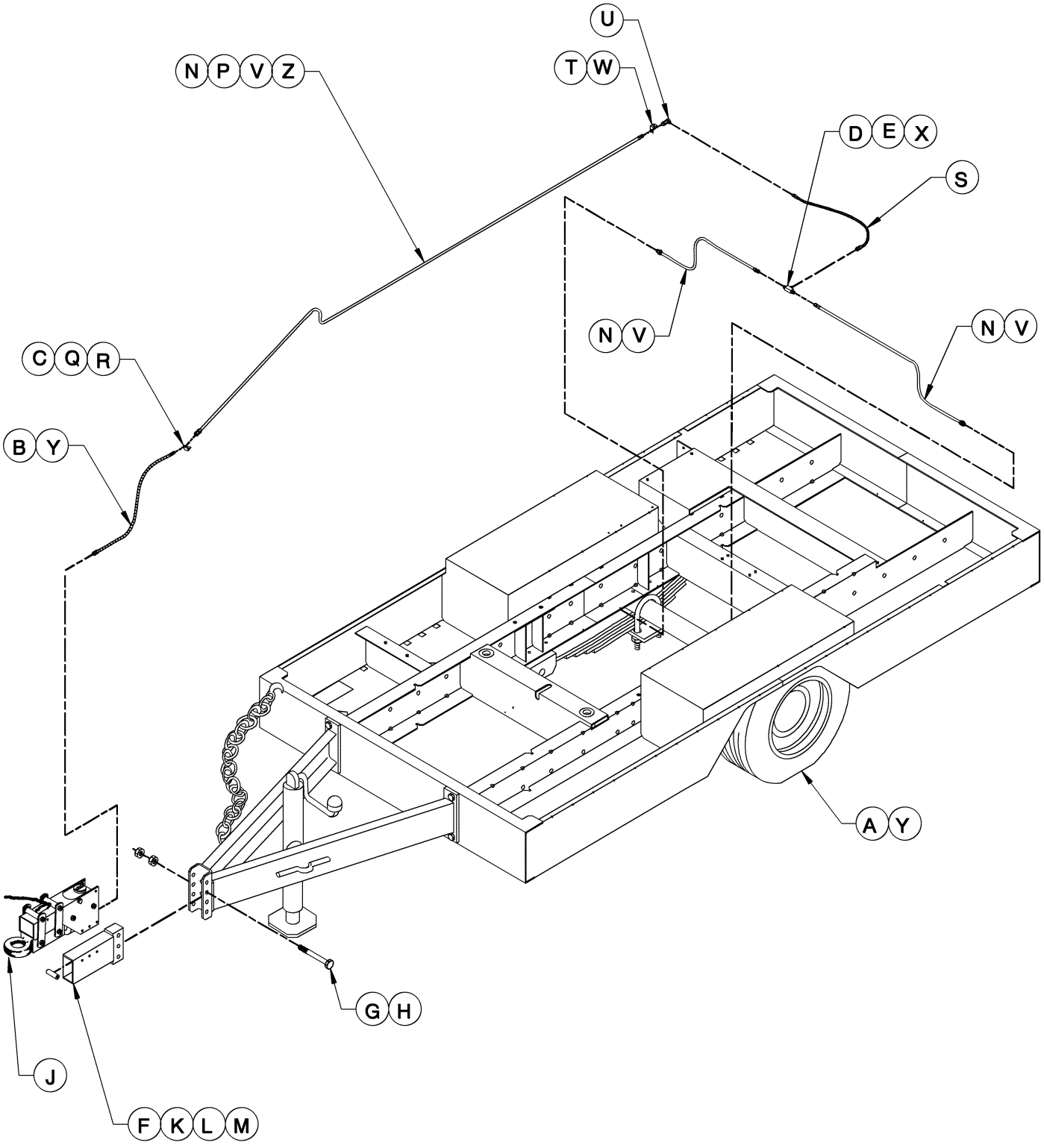
35392893-17 35392901-17	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/16/97 bd	DESCRIPTION: PARKING BRAKE
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A



35392893-18 35392901-18	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 9/18/97 bd	DESCRIPTION HYD BRAKE w/ADJ HT D'BAR	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A

	C.P.N.	QTY	DESCRIPTION
A	35379908	1	GEAR, HYD BRAKE RUNNING
B	35356369	1	HOSE, BRAKE 3/8 X 13
C	35356302	1	CLIP, HOSE
D	35316603	1	TEE, 1/4 INVERTED
E	35141365	1	SCREW, TAPPING 5/16-18 X 1/2
F	36758647	1	SUPPORT, HYDRAULIC ACTUATOR
G	35376094	3	SCREW, HEX M16-2.0 X 120
H	96700885	6	NUT, HEX M16-2.0
J	35316611	1	ACTUATOR, HYDRAULIC BRAKE
K	35333673	3	SPACER, HYDRAULIC DRAWBAR
L	95935169	3	SCREW, 1/2-13 X 4
M	95923348	3	NUT, NYLOC 1/2-13
N	95564373	180”	TUBING, 1/4
P	36853174	4	CLAMP, SUPPORT 1/4
Q	35356310	1	BRACKET, HOSE MOUNTING
R	35279025	1	SCREW, TAPPING M08-1.25 X 30
S	35282904	1	HOSE, BRAKE
T	35315779	1	BRACKET, BULKHEAD FITTING
U	35315712	1	ELBOW, BULKHEAD UNION
V	95209060	5	NUT, TUBE
W	35136423	1	SCREW, TAPPING 1/4-20 X 1/2
X	35315738	1	ADAPTER
Y	35315746	3	ADAPTER
Z	35252279	3	SCREW, TAPPING #10-32 X 1/2
A1	36759207	1	BRACKET, ADJUSTABLE HEIGHT
A2	35252758	6	SCREW, LOCKING 1/2-13 X 1
A3	35252618	6	NUT, LOCK WASHER HD 1/2-13

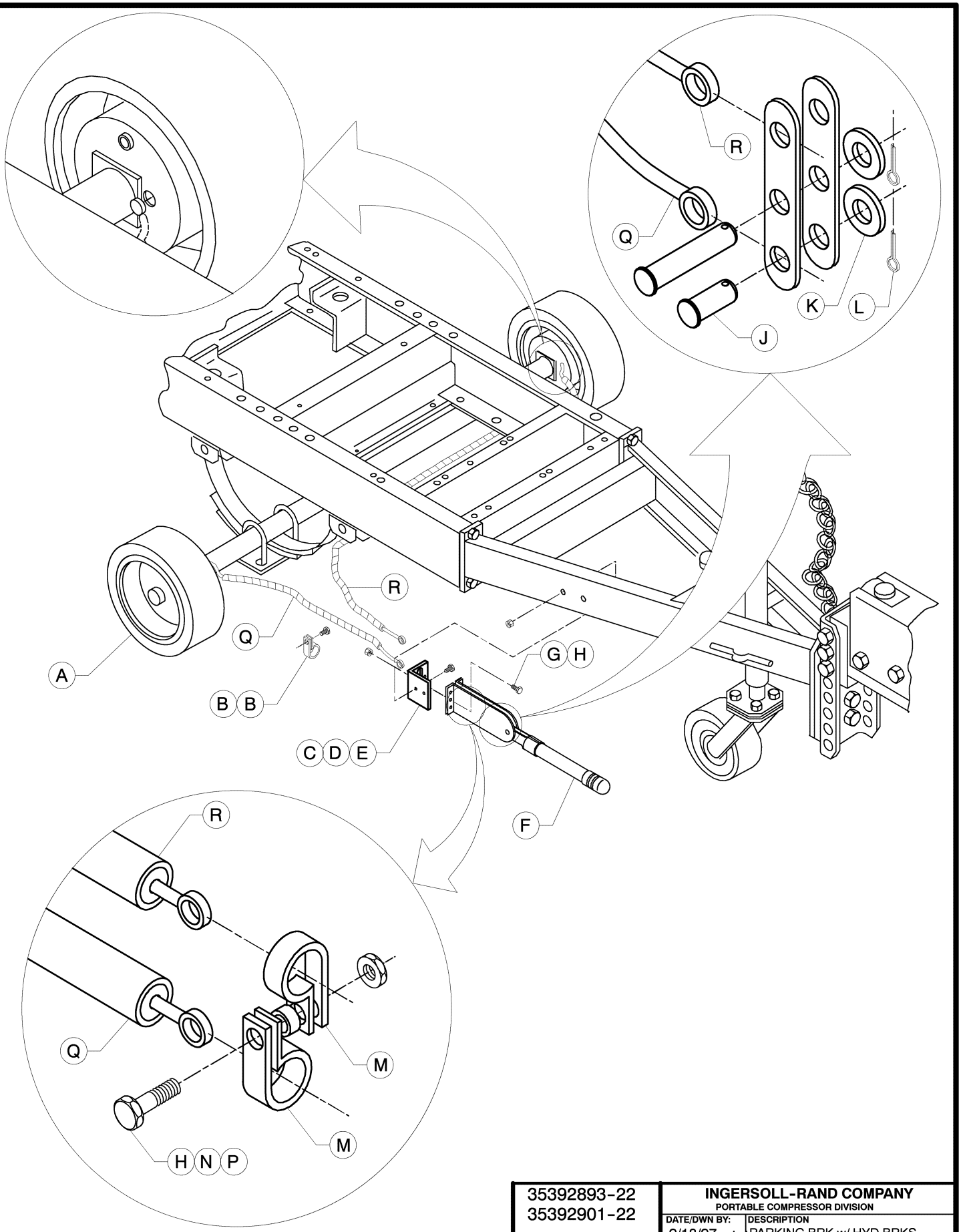
35392893-19 35392901-19	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION	
DATE/DWN BY: 9/18/97 bd	DESCRIPTION HYD BRAKE w/ADJ HT D'BAR	
MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A



35392893-20 35392901-20	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 9/16/97 bd	DESCRIPTION HYD BRAKE w/STD D'BAR	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	35379908	1	GEAR, HYD BRAKE RUNNING
B	35356369	1	HOSE, BRAKE 3/8 X 13
C	35356302	1	CLIP, HOSE
D	35316603	1	TEE, 1/4 INVERTED
E	35141365	1	SCREW, TAPPING 5/16-18 X 1/2
F	36758647	1	SUPPORT, HYDRAULIC ACTUATOR
G	35376094	3	SCREW, HEX M16-2.0 X 120
H	96700885	6	NUT, HEX M16-2.0
J	35316611	1	ACTUATOR, HYDRAULIC BRAKE
K	35333673	3	SPACER, HYDRAULIC DRAWBAR
L	95935169	3	SCREW, 1/2-13 X 4
M	95923348	3	NUT, NYLOC 1/2-13
N	95564373	180”	TUBING, 1/4
P	36853174	4	CLAMP, SUPPORT 1/4
Q	35356310	1	BRACKET, HOSE MOUNTING
R	35279025	1	SCREW, TAPPING M08-1.25 X 30
S	35282904	1	HOSE, BRAKE
T	35315779	1	BRACKET, BULKHEAD FITTING
U	35315712	1	ELBOW, BULKHEAD UNION
V	95209060	5	NUT, TUBE
W	35136423	1	SCREW, TAPPING 1/4-20 X 1/2
X	35315738	1	ADAPTER
Y	35315746	3	ADAPTER
Z	35252279	3	SCREW, TAPPING #10-32 X 1/2

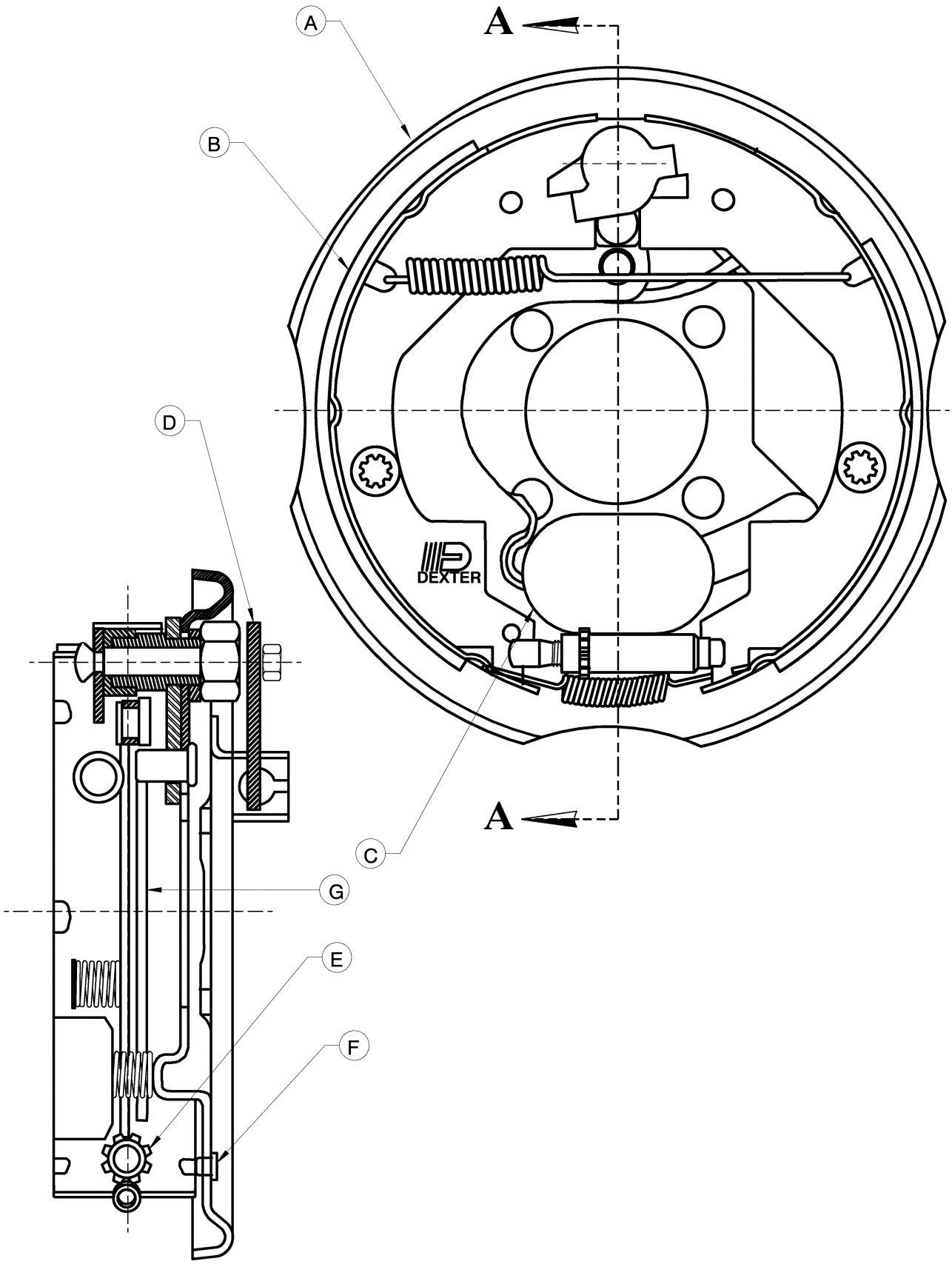
35392893-21 35392901-21	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 9/16/97 bd	DESCRIPTION HYD BRAKE w/STD D'BAR	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A



35392893-22 35392901-22	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION	
DATE/DWN BY: 9/18/97 bd	DESCRIPTION PARKING BRK w/ HYD BRKS	
MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	35379908	1	RUNNING GEAR W/ BRAKES
B	35225093	6	CLAMP, RUBBER COATED 1/2”
C	35116433	1	BRACKET, BRAKE LEVER
D	35145259	2	SCREW, LOCK 3/8-16 X 1.25
E	35145077	2	NUT, LOCK 3/8-16
F	35370055	1	LEVER, PARKING BRAKE
G	95929006	2	SCREW, HEX 5/16-18 X 1
H	35252600	2	NUT, LOCKING 5/16-18
J	36846780	2	PIN, CLEVIS .31 X .75
K	95934998	2	WASHER, FLAT 3/8
L	95928867	2	PIN, COTTER .09
M	35256981	2	CLAMP, CABLE
N	95943668	1	SCREW, HEX 5/16-18 X 1 3/4
P	35126358	1	SPACER
Q	35517168	1	ASSEMBLY, BRAKE CABLE 90
R	35594076	1	ASSEMBLY, BRAKE CABLE 117

35392893-23 35392901-23	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/18/97 bd	DESCRIPTION: PARKING BRK w/ HYD BRKS
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

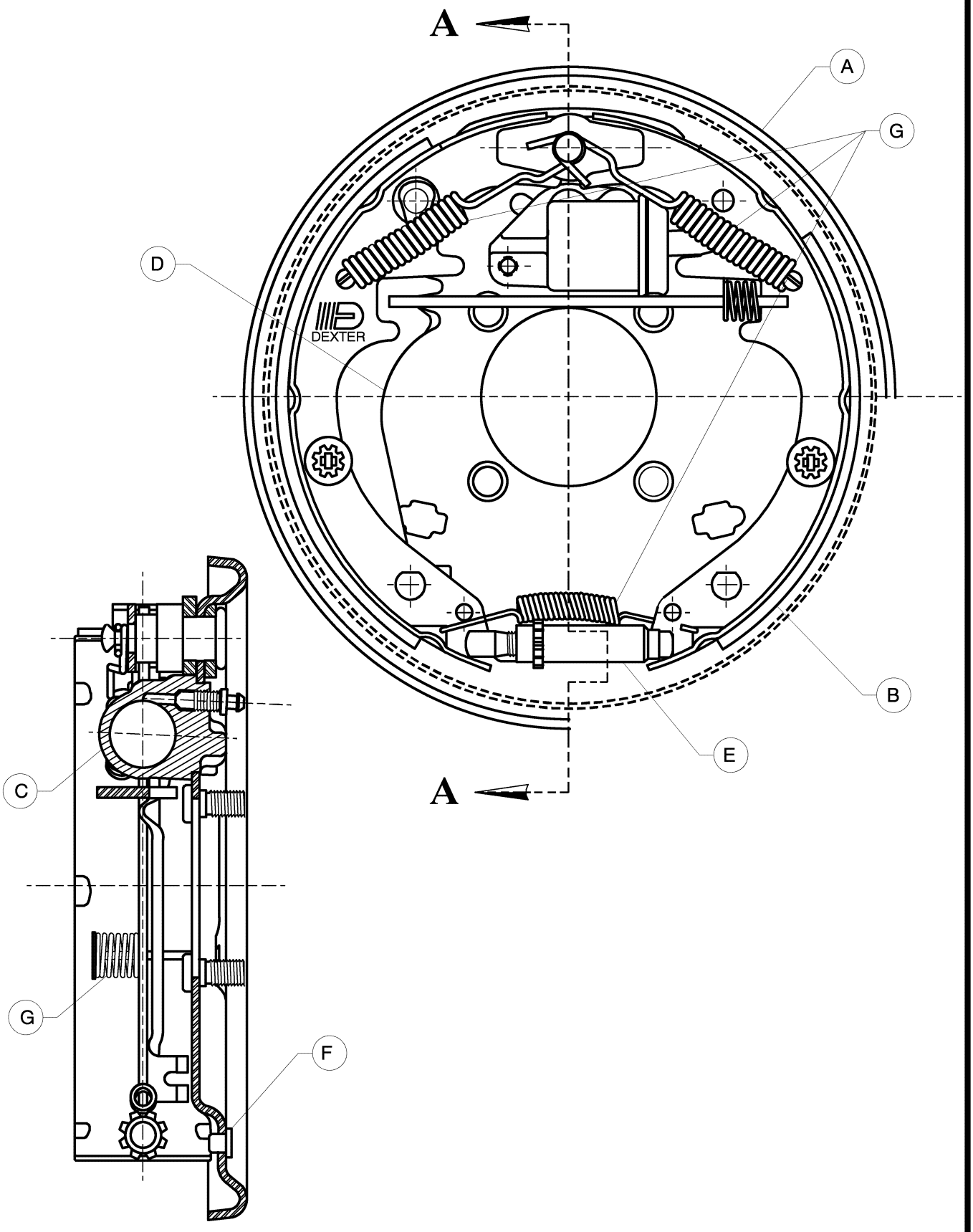


SECTION A - A

35392893-24 35392901-24	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION	
	DATE/DWN BY: 4/14/98 bd	DESCRIPTION: ELEC BRAKE SHOE
	MODEL NO.	MANUAL NO.: OPTION / DATE/REV.: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	35393859	1	LH BACKING PLATE ASSEMBLY
	35393867	1	RH BACKING PLATE ASSEMBLY
B	36895803	2	BRAKE SHOE KIT
C	36895811	2	MAGNET KIT
D	35390913	2	PARKING BRAKE LEVER
E	35393726	2	ADJUSTING SCREW KIT
F	35391069	2	ADJUSTING SLOT PLUG
G	36895829	1	LH PARK BRAKE LEVER KIT
	36895837	1	RH PARK BRAKE LEVER KIT

35392893-25 35392901-25	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 4/14/98 bd	DESCRIPTION: ELEC BRAKE SHOE
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

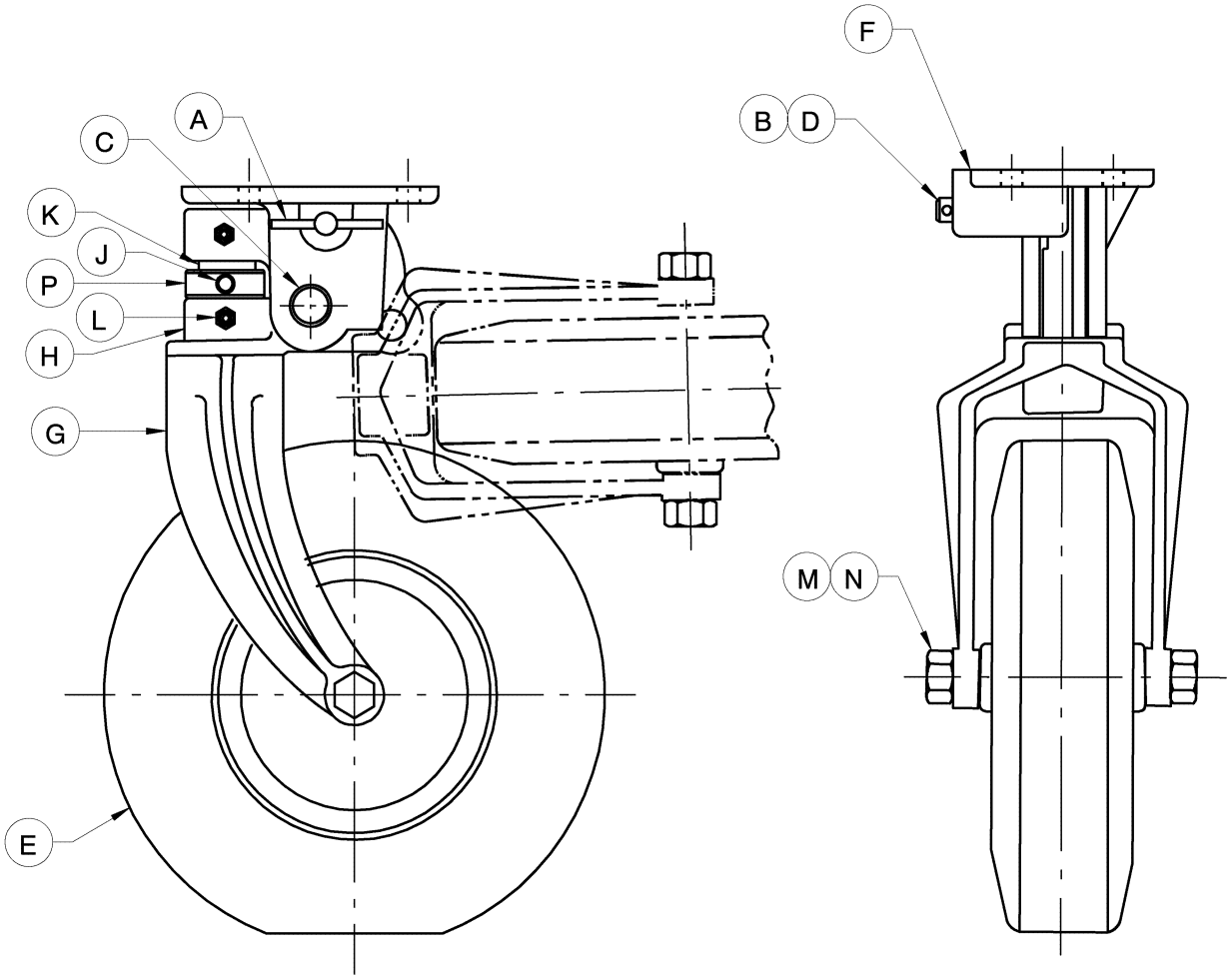


SECTION A-A

35392893-26 35392901-26	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 4/14/98 bd	DESCRIPTION: HYDRAULIC BRAKE SHOE
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	35393834	1	LH BACKING PLATE ASSEMBLY
	35393842	1	RH BACKING PLATE ASSEMBLY
B	35393776	2	BRAKE SHOE KIT
C	36867851	1	CYLINDER, LH BRAKE
	36867885	1	CYLINDER, RH BRAKE
D	35290707	1	LH PARKING BRAKE LEVER
	35290715	1	RH PARKING BRAKE LEVER
E	35393735	2	ADJUSTING SCREW ASSEMBLY
F	35391069	2	ADJUSTING SLOT PLUG
G	36895795	2	BRAKE SPRING KIT

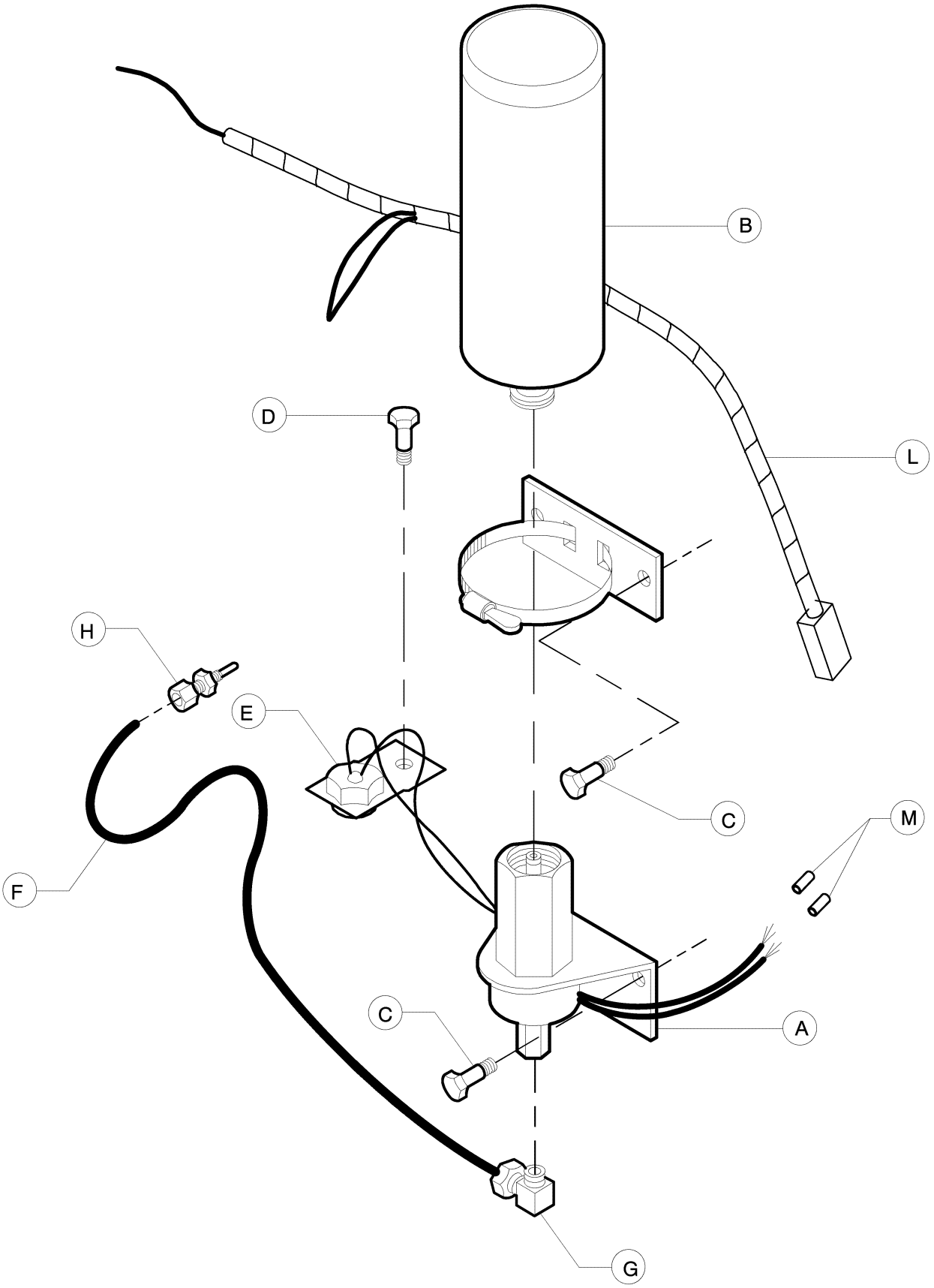
35392893-27 35392901-27	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 4/14/98 bd	DESCRIPTION HYDRAULIC BRAKE SHOE	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A



35392893-28 35392901-28	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/09/97 bd	DESCRIPTION: CASTER WHEEL
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	35366319	1	HANDLE, LOCK PLUNGER
B	35366327	1	SPRING, LOCK PLUNGER
C	35366335	1	PIN, HINGE
D	35366343	1	PLUNGER, LOCK
E	36866994	1	TIRE & WHEEL
F	35366368	1	BRACKET, FRAME
G	35366376	1	FORK
H	35366418	1	HEAD, SWIVEL
J	35366426	1	PIN, COLLAR
K	35366434	1	FORK, SHAFT
L	35366442	1	FITTING, LUBE
M	35366459	1	BOLT, AXLE
N	35366467	1	NUT, AXLE BOLT
P	35366475	1	COLLAR

35392893-29 35392901-29	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/09/97 bd	DESCRIPTION: CASTER WHEEL
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

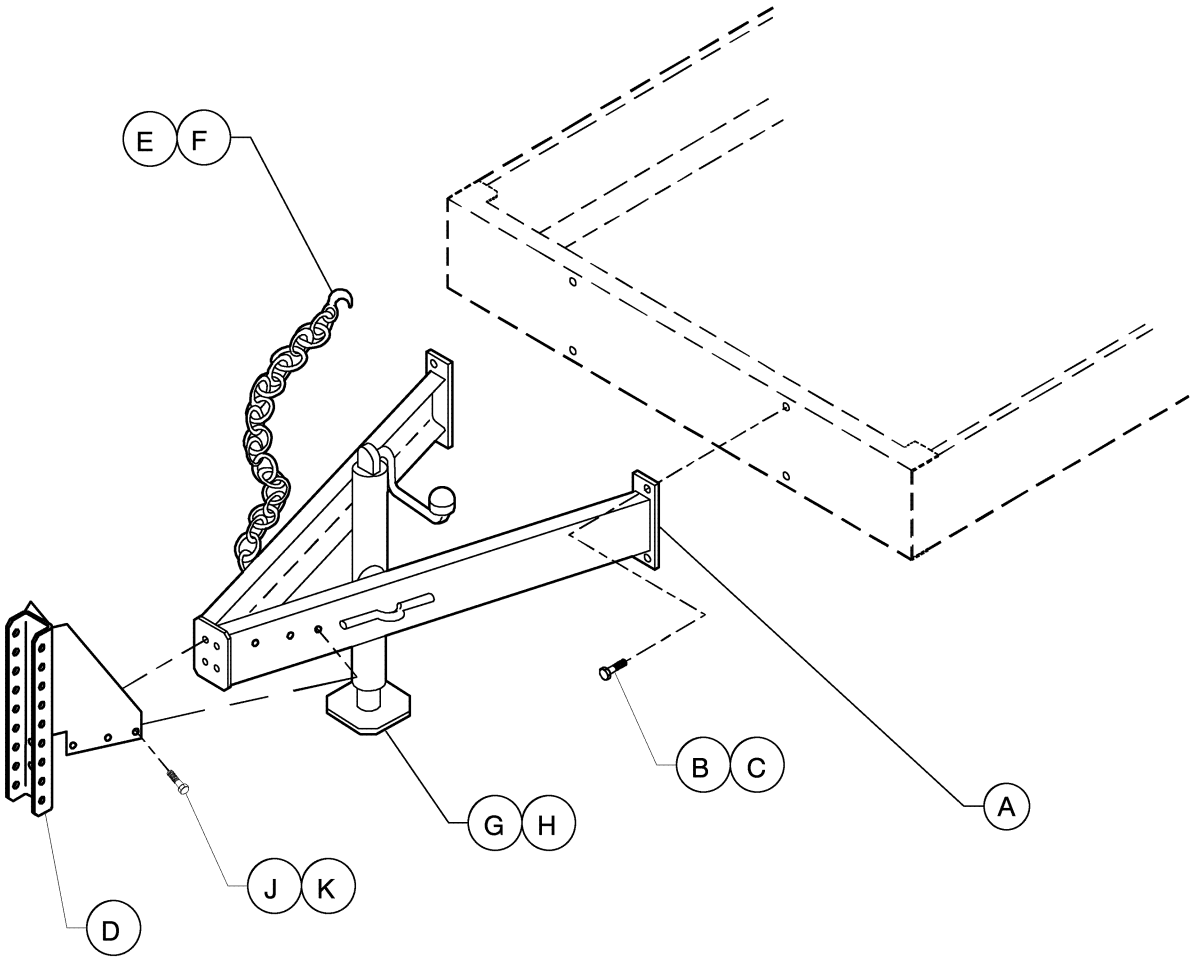


35392893-30 35392901-30	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/5/97 bd	DESCRIPTION: COLD START OPTION
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36857878 *	1	VALVE, 24V COLD START
B	36796910	1	CYLINDER, ETHER
C	92368687	4	SCREW, TAPPING M06-1.0 X 14
D	39183769	1	SCREW, HEX M12-1.75 X 16
E	36857852 *	1	SWITCH, COLD START THERMO
F	36857845 *	1	TUBING, 1/8 X 48"
G	36857837 *	1	ELBOW, 90□ 1/8 NPT
H	35309558	1	ATOMIZER
J	35103506 *	1	CLAMP, CYLINDER BRACKET
K	35255553	1	SWITCH, SPST MOMENTARY PUSH-BUTTON
L	36848760	1	HARNESS, COLD START
M	35306141	2	CONNECTOR, 1/4 MALE

* FURNISHED WITH COLD START KIT 36857811

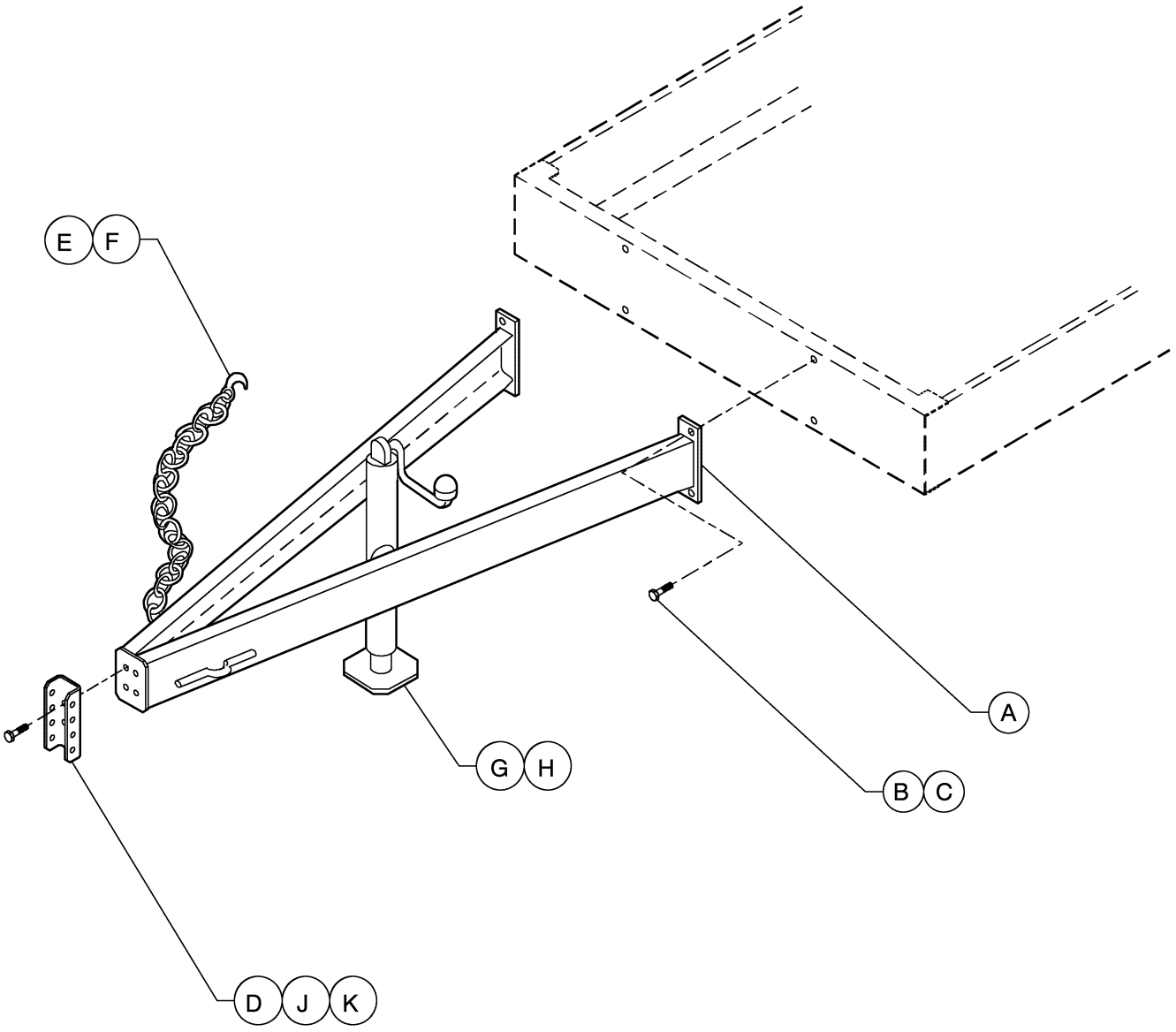
35392893-31 35392901-31	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/5/97 bd	DESCRIPTION: COLD START OPTION
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A



35392893-32 35392901-32	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/07/97 bd	DESCRIPTION: EXT ADJ HT DRAWBAR
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36843803	1	DRAWBAR
B	36763670	4	SCREW, HEX M20-2.50 X 60
C	35356526	4	NUT, TORQ LOCK M20-2.50
D	36759207	1	LUNETTE, ADJ HEIGHT
E	35610377	2	CHAIN, SAFETY
F	35372432	2	LINK, COUPLING
G	36752228	1	JACK ASSEMBLY
H	35609544	1	PIN, QUICK RELEASE
J	35252758	6	SCREW, LOCKING 1/2 -13 X 1
K	35252618	6	NUT, LOCK WASHER HEAD 1/2 -13

35392893-33 35392901-33	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 9/07/97 bd	DESCRIPTION EXT ADJ HT DRAWBAR	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A

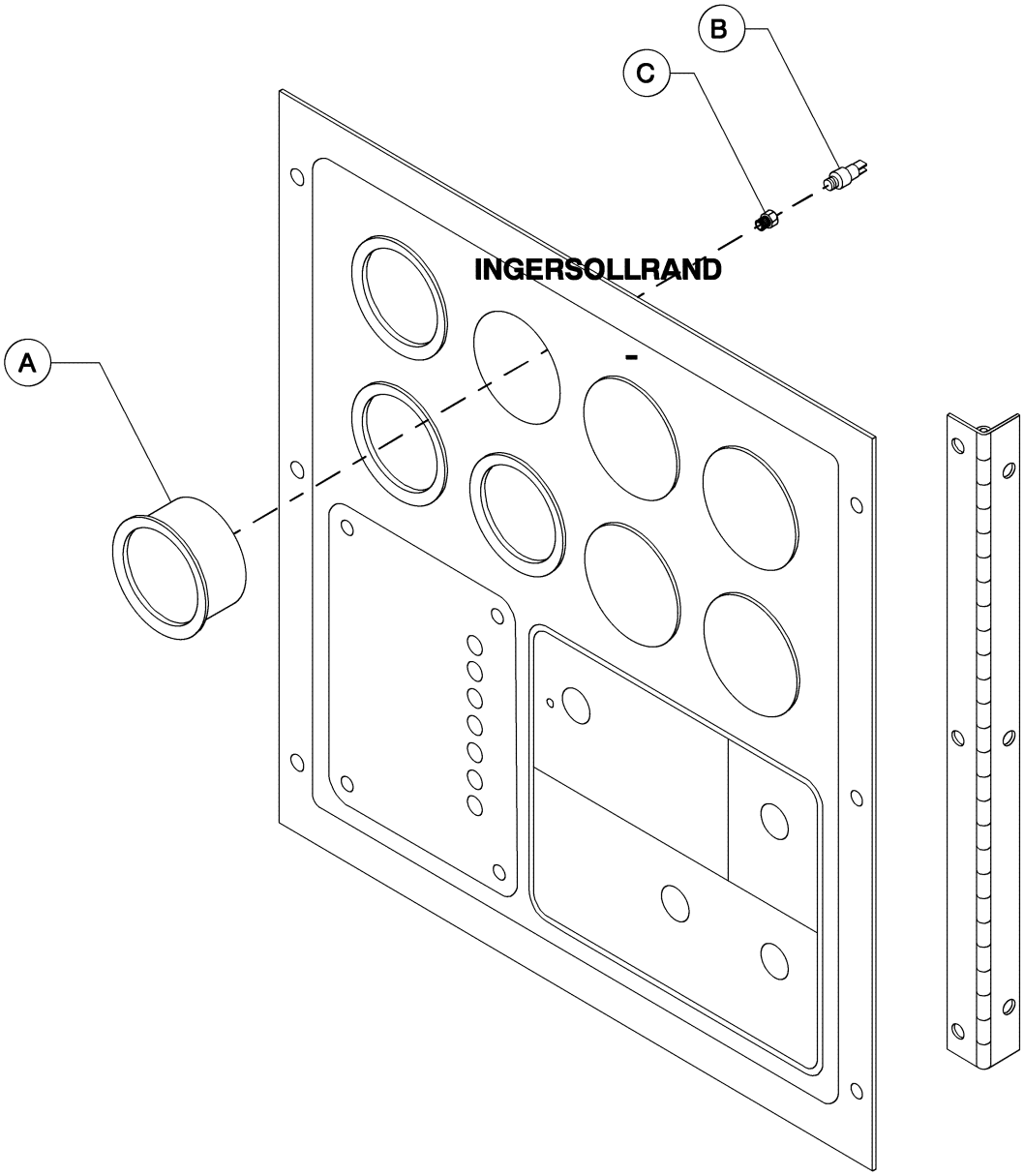


35392893-34 35392901-34	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 9/08/97 bd	DESCRIPTION EXTENDED DRAWBAR	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36853273	1	DRAWBAR, EXTENDED
B	36763670	4	SCREW, HEX M20-2.50 X 60
C	35356526	4	NUT, TORQ LOCK M20-2.50
D	36757284	1	CHANNEL, 3 POS
E	35610377	2	CHAIN, SAFETY
F	35372432	2	LINK, COUPLING
G	36752228	1	JACK ASSEMBLY
H	35609544	1	PIN, QUICK RELEASE
J	39179072	4	SCREW, HEX M16 X 50
K	36879211	4	NUT, HEX FLANGE M16

35392893-35 35392901-35	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/08/97 bd	DESCRIPTION: EXTENDED DRAWBAR
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

DRAWBAR END

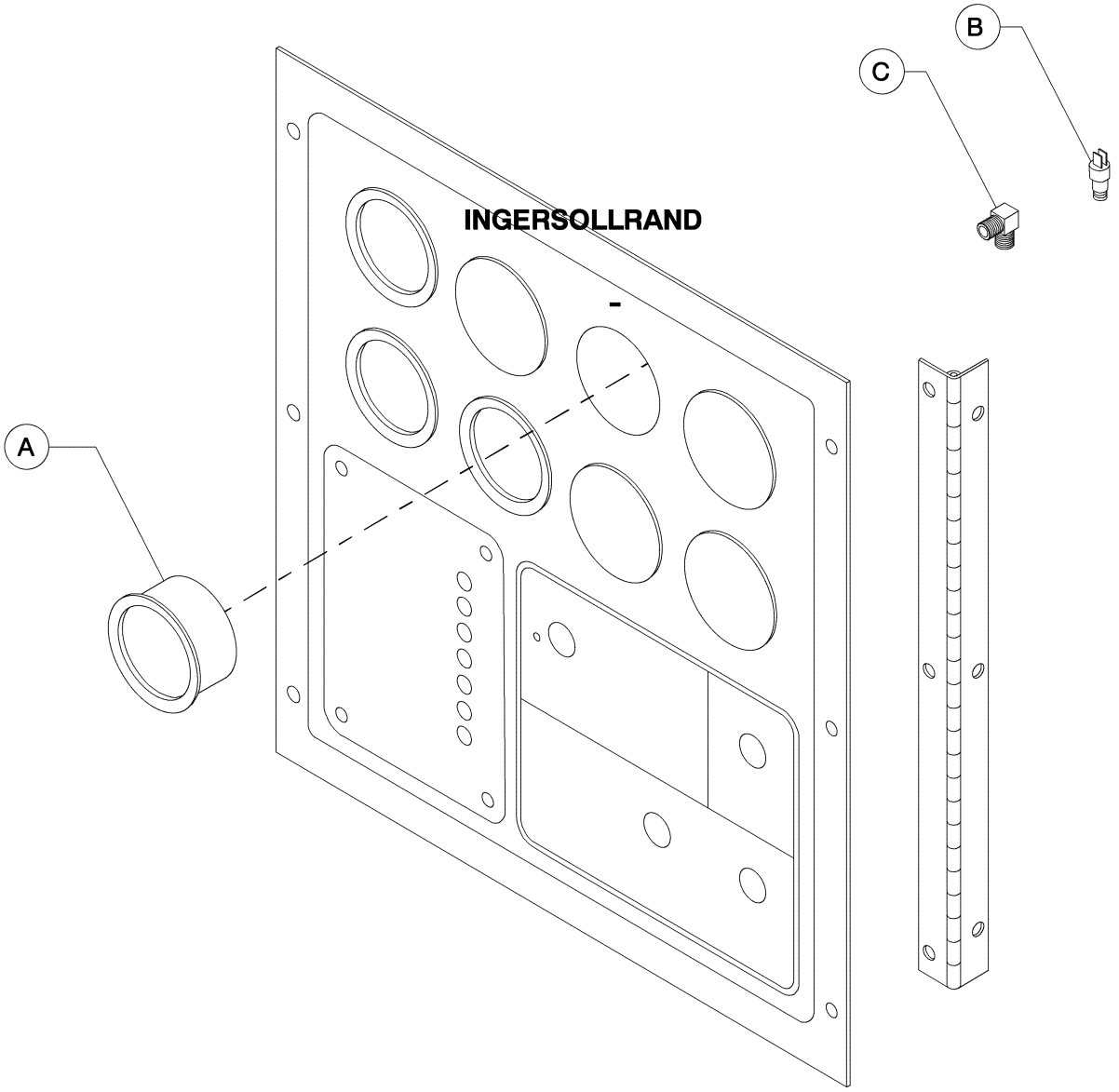


35392893-36 35392901-36	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION	
	DATE/DWN BY: 9/07/97 bd	DESCRIPTION DISCHARGE TEMP OPTION
	MODEL NO.	MANUAL NO. OPTION
		DATE/REV: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	35604115	1	GAGE, TEMPERATURE 300□ F
B	35367218	1	SENDER, TEMPERATURE 300□ F
C	36851319	1	ADAPTER, 3/8 NPTF (VHP400 ONLY)

35392893-37 35392901-37	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/07/97 bd	DESCRIPTION: DISCHARGE TEMP OPTION
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

DRAWBAR END

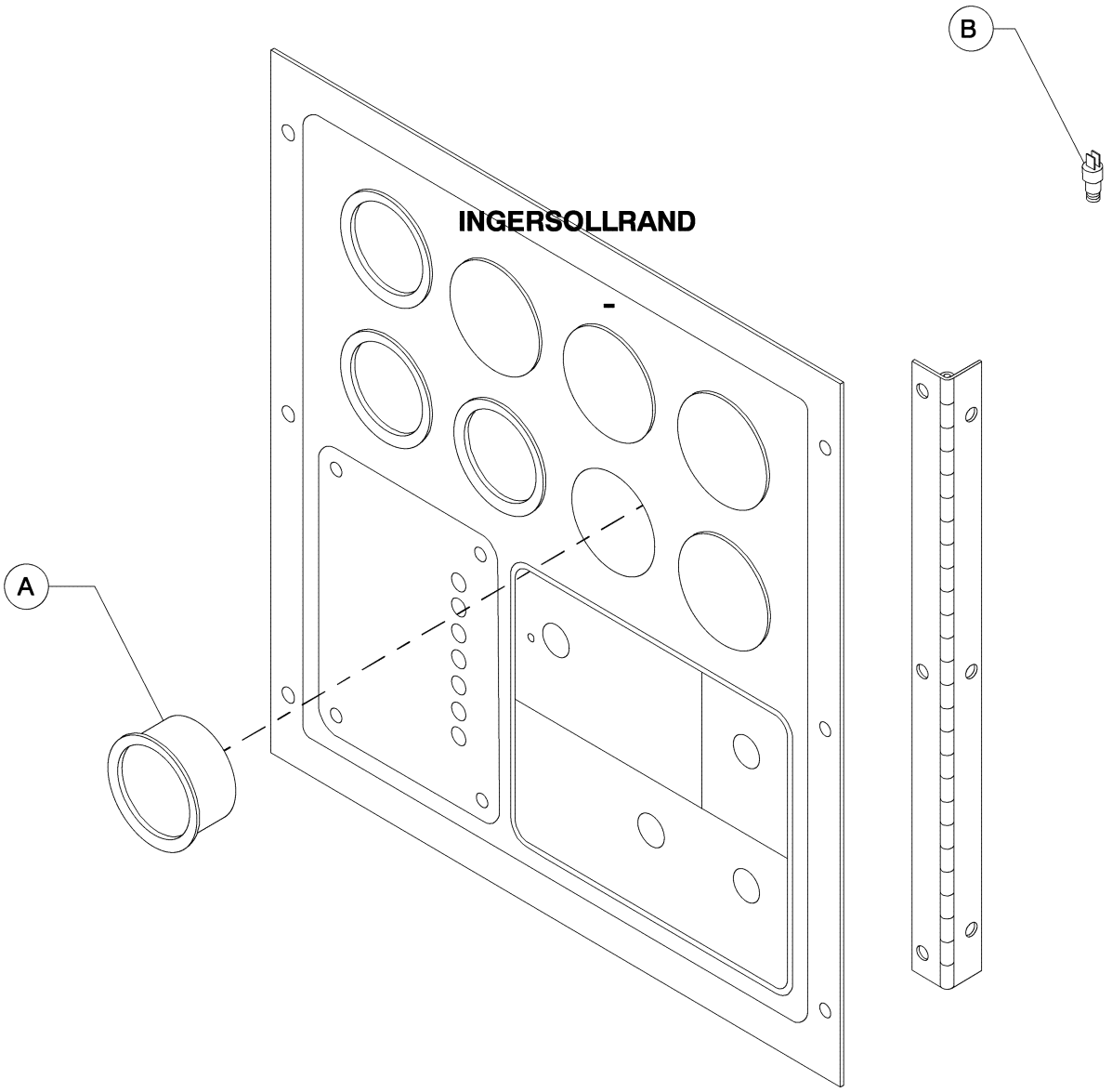


35392893-38 35392901-38	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION	
	DATE/DWN BY: 9/07/97 bd	DESCRIPTION ENGINE OIL PRESS OPTION
	MODEL NO.	MANUAL NO. OPTION
		DATE/REV: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36870590	1	GAGE, ENGINE OIL
B	36870608	1	SENDER, PRESSURE 150 lb
C	95972055	1	ELBOW, 1/8

35392893-39 35392901-39	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/07/97 bd	DESCRIPTION: ENGINE OIL PRESS OPTION
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

DRAWBAR END



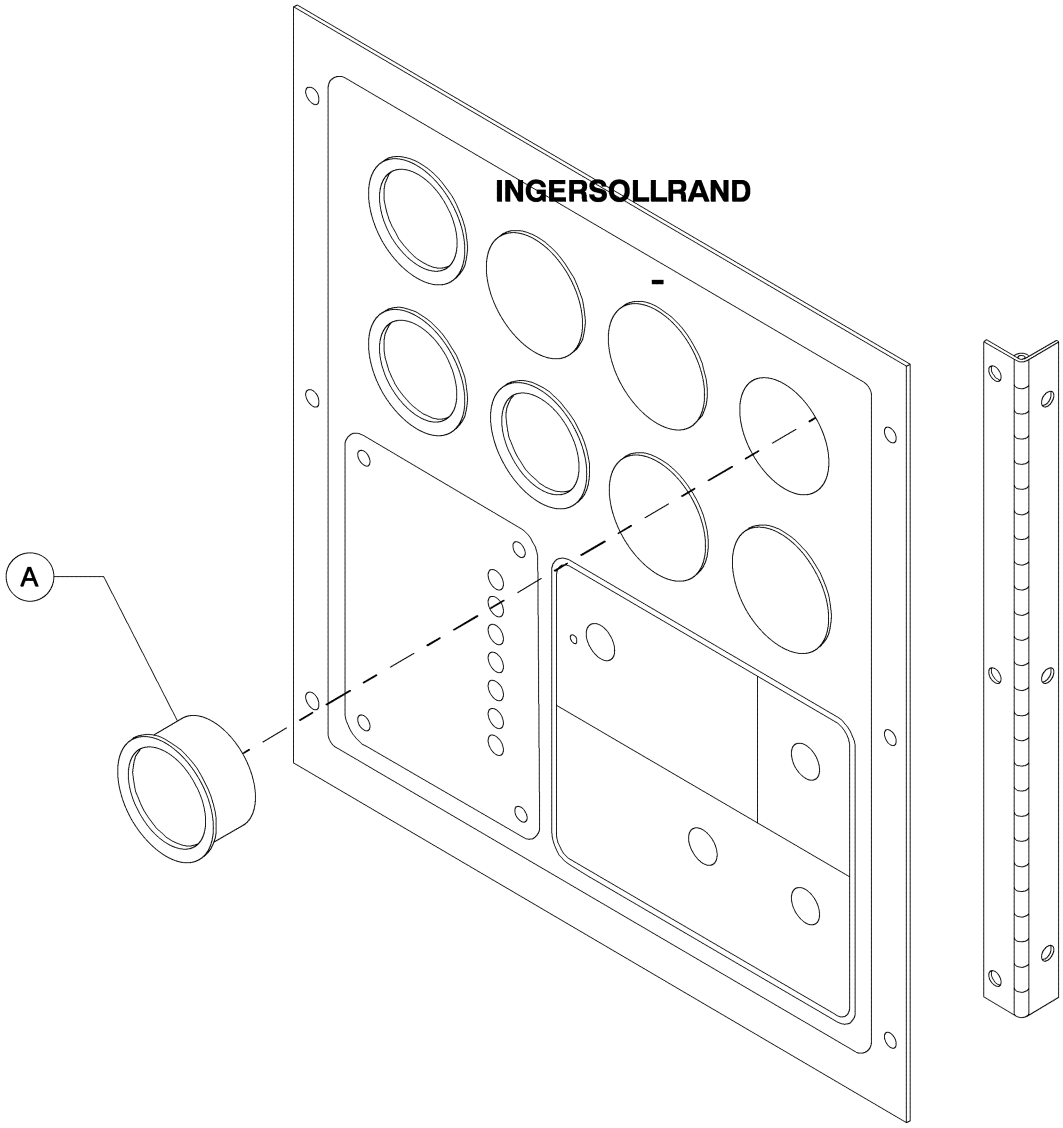
35392893-40 35392901-40	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION	
	DATE/DWN BY: 9/07/97 bd	DESCRIPTION: ENGINE TEMP OPTION
	MODEL NO.	MANUAL NO.: OPTION / DATE/REV.: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	35604115	1	GAGE, TEMPERATURE 300□ F
B	35604180	1	SENDER, TEMPERATURE 300□ F

35392893-41 35392901-41	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION

DATE/DWN BY:	DESCRIPTION	
9/07/97 bd	ENGINE TEMP OPTION	
MODEL NO.	MANUAL NO.	DATE/REV:
	OPTION	5/98 A

DRAWBAR END

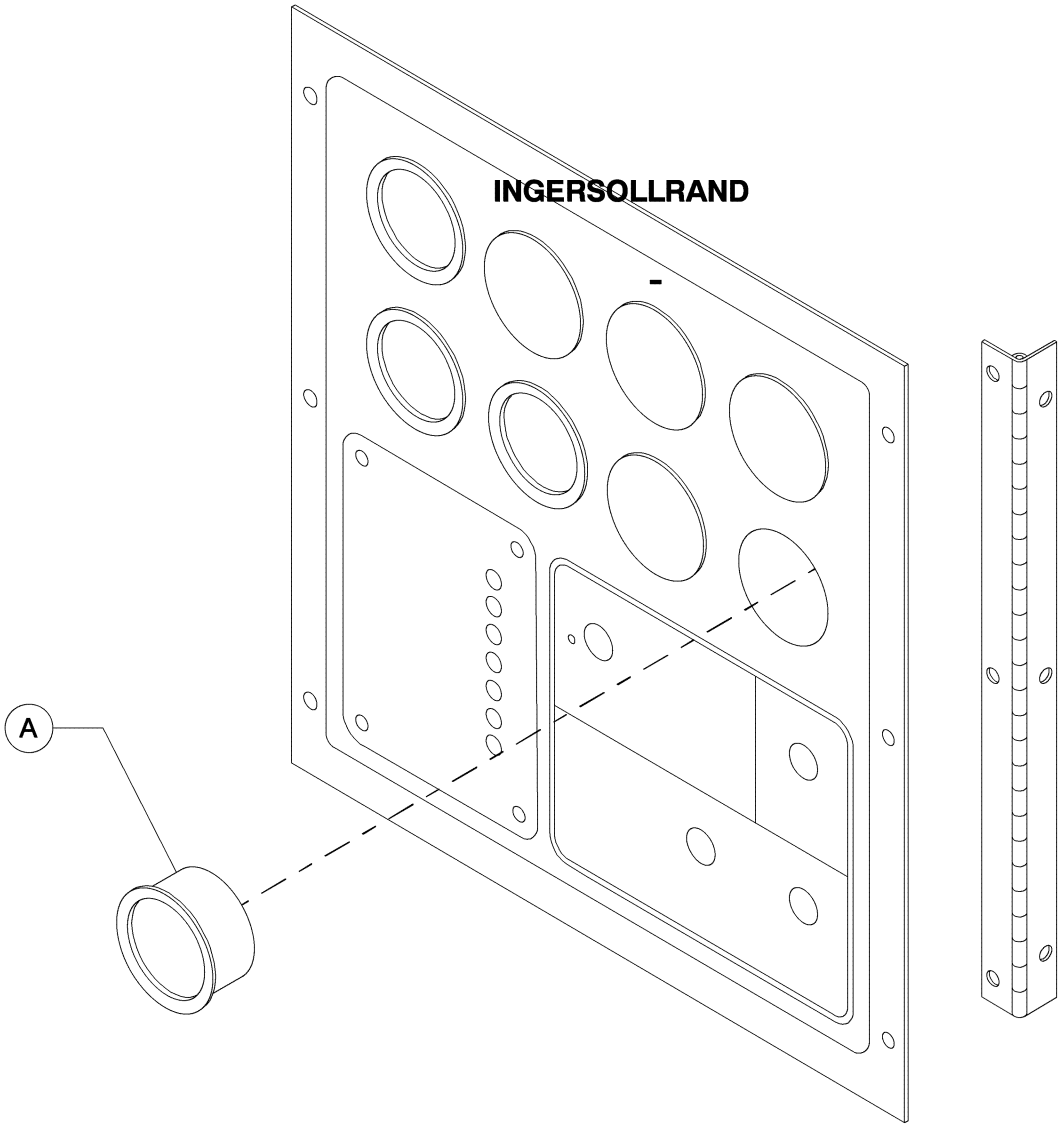


35392893-42 35392901-42	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION	
	DATE/DWN BY: 9/07/97 bd	DESCRIPTION: TACHOMETER OPTION
	MODEL NO.	MANUAL NO.: OPTION / DATE/REV.: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	35371566	1	TACHOMETER, 12 V

35392893-43 35392901-43	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/07/97 bd	DESCRIPTION: TACHOMETER OPTION
MODEL NO.	MANUAL NO.: OPTION — DATE/REV.: 5/98 A

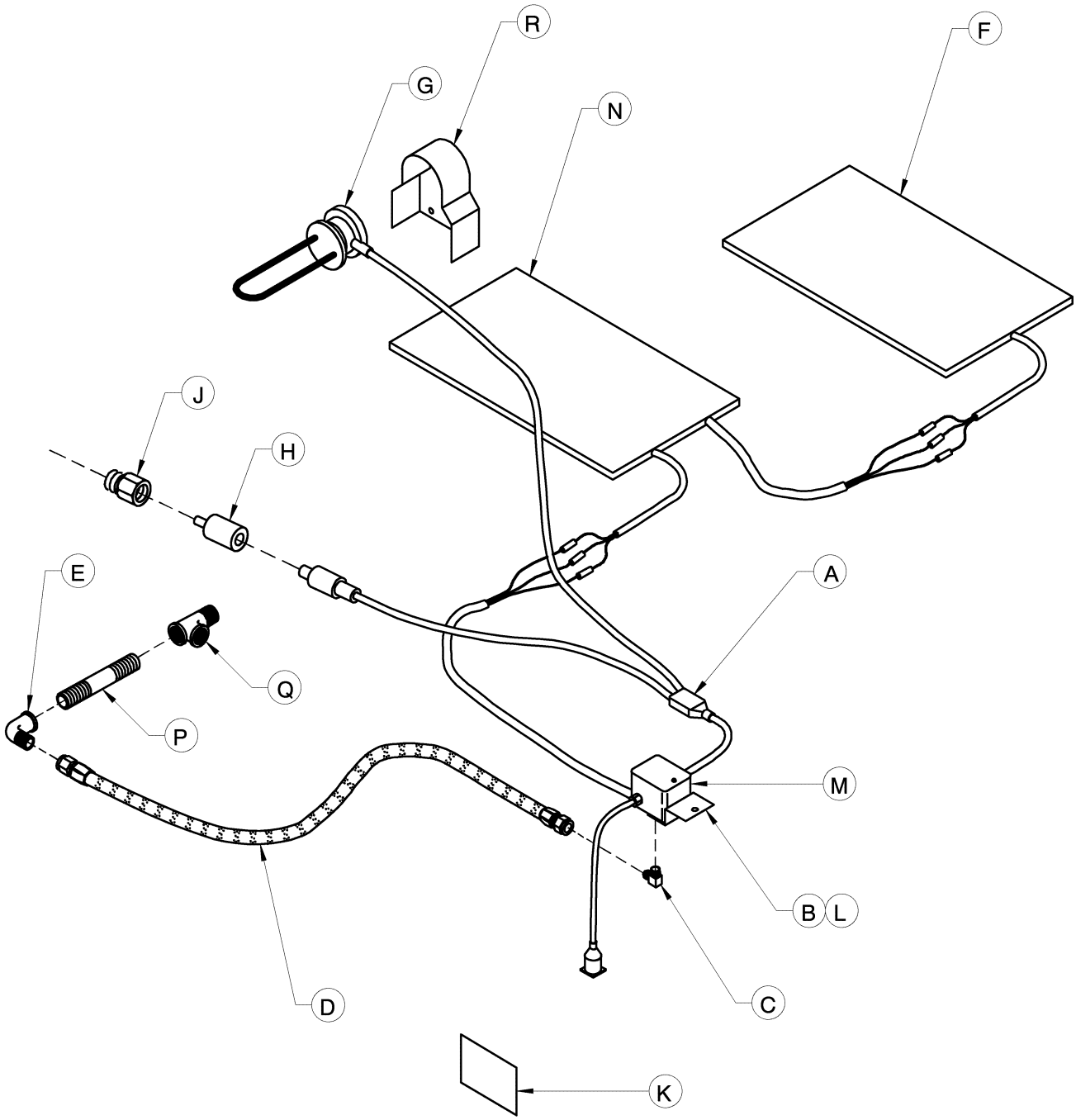
DRAWBAR END



35392893-44 35392901-44	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION	
	DATE/DWN BY: 9/07/97 bd	DESCRIPTION: VOLTMETER OPTION
	MODEL NO.	MANUAL NO.: OPTION / DATE/REV.: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36841153	1	VOLTMETER, 24 VDC

35392893-45 35392901-45	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/07/97 bd	DESCRIPTION: VOLTMETER OPTION
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV: 5/98 A

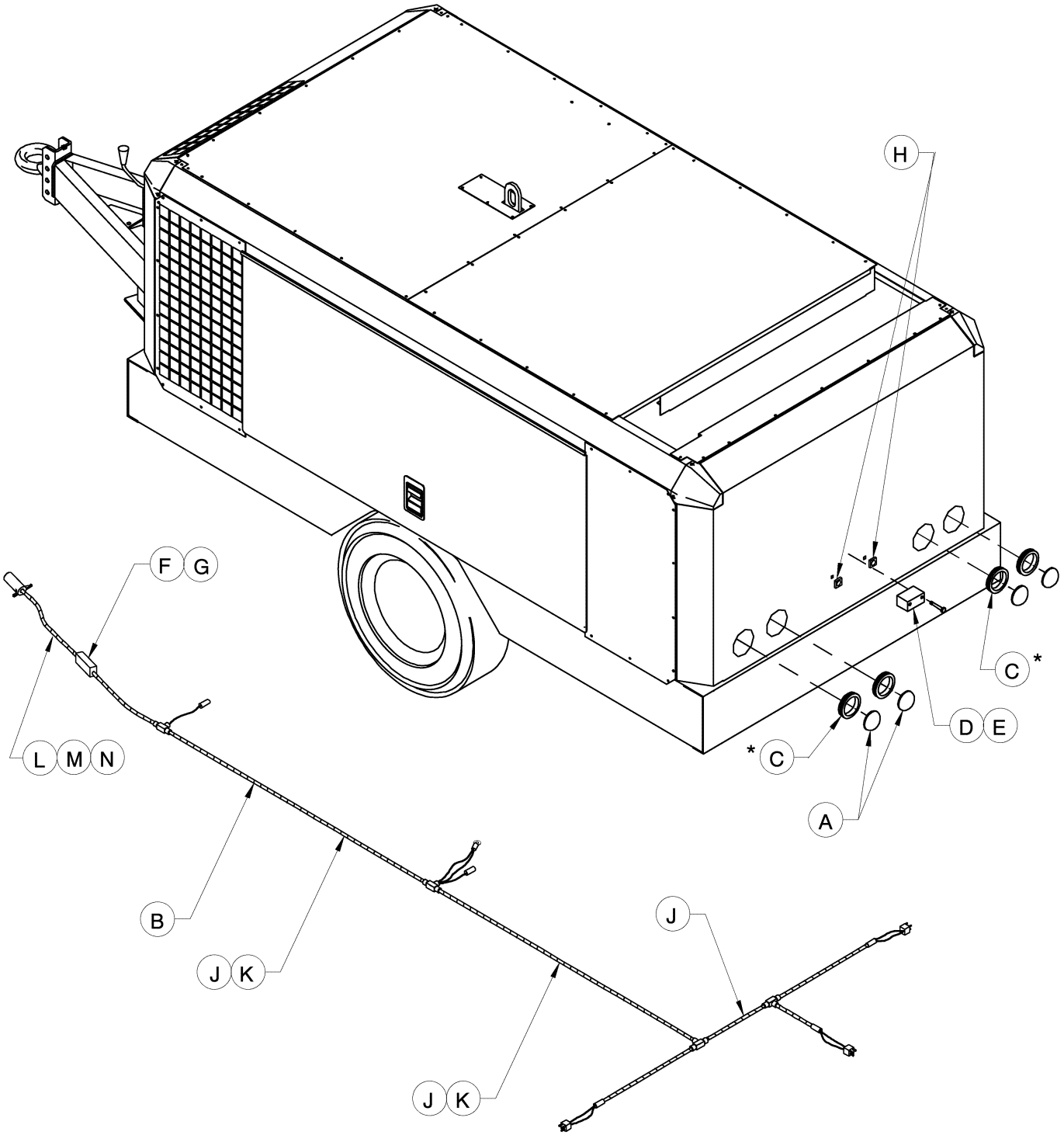


35392893-46 35392901-46	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 9/10/97 bd	DESCRIPTION 110v BTRY/BLK HEATER	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 8/98 B

ITEM	C.P.N.		QTY	DESCRIPTION
A	36859494	*	1	HARNESS, PRESSURE SWITCH
B	36852812		1	BRACKET, PRESSURE SWITCH
C	35283464		1	ELBOW, 90□
D	35315407		1	HOSE
E	35306687		1	ELBOW, 90□
F	36852952	*	1	PAD, BATTERY HEATER
G	36898971	*	1	HEATER, BLOCK
H	36858751	*	1	PLUG, THERMOSTAT
J	95953949		1	BUSHING, REDUCING
K	36518561		1	DECAL, NOTICE 120V HEAT
L	92368687		2	SCREW, TAPPING M06-100 X 14
M	36899086		1	ASSEMBLY, AC POWER
N	36852960	*	1	PAD, 4D BATTERY HEATER
P	19A7J19Z1		1	NIPPLE
Q	95930327		1	TEE, 1/8 NPT
R	36898989	*	1	SHIELD, BLOCK HEATER

* INCLUDED IN 36899086 AC POWER ASSEMBLY

35392893-47 35392901-47	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION	
DATE/DWN BY: 9/10/97 bd	DESCRIPTION 110v BTRY/BLK HEATER	
MODEL NO.	MANUAL NO. OPTION	DATE/REV: 8/98 B

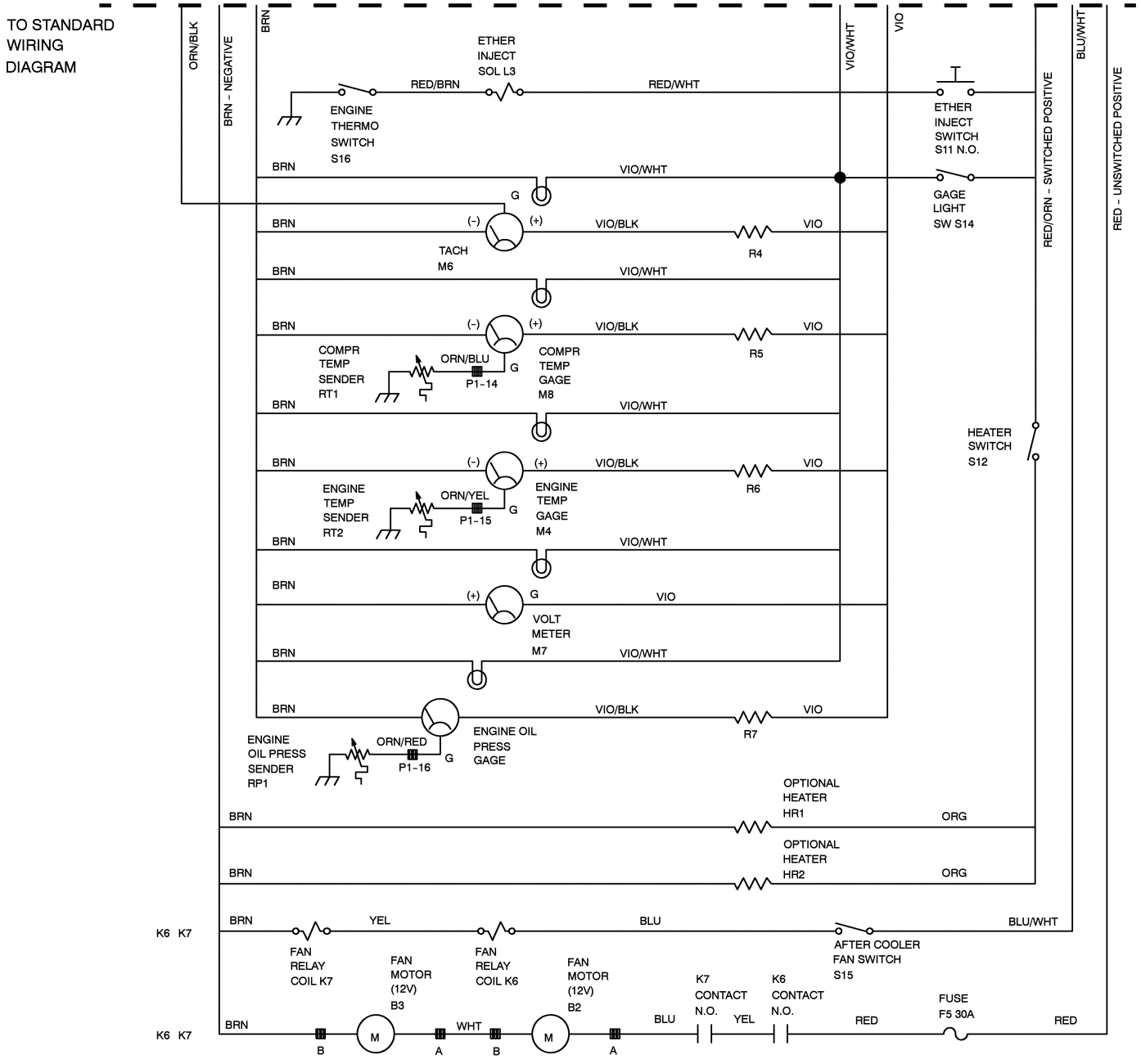


* USE 2 EXISTING GROMMETS

35392893-48 35392901-48	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 9/10/97 bd	DESCRIPTION: 4-LIGHT ASSEMBLY
MODEL NO.	MANUAL NO.: OPTION — DATE/REV.: 5/98 A

ITEM	C.P.N.	QTY	DESCRIPTION
A	36788081	4	TAIL LIGHT
B	36896264	1	HARNESS, 4 LIGHT
C	36787968	4	GROMMET
D	36895860	1	LIGHT, LICENSE PLATE
E	36782837	2	SCREW, SHEET METAL
F	35252451	2	SCREW, LOCK 1/4-20 X 1
G	35144492	2	NUT, LOCK WASHER 1/4-20
H	36794774	2	GROMMET, SCREW
J	35253038	11	CLAMP, 3/8
K	35225077	2	CLAMP, 5/8 RUBBER COATED
L	36789261	1	HARNESS, CABLE 6 CONDUCTOR (STD LENGTH DRAWBAR)
	36787216	1	HARNESS, CABLE 6 CONDUCTOR (EXT LENGTH DRAWBAR)
M	92368687	3	SCREW, TAPPING M06-1.0 X 14
N	35225093	3	CLAMP, 1/2

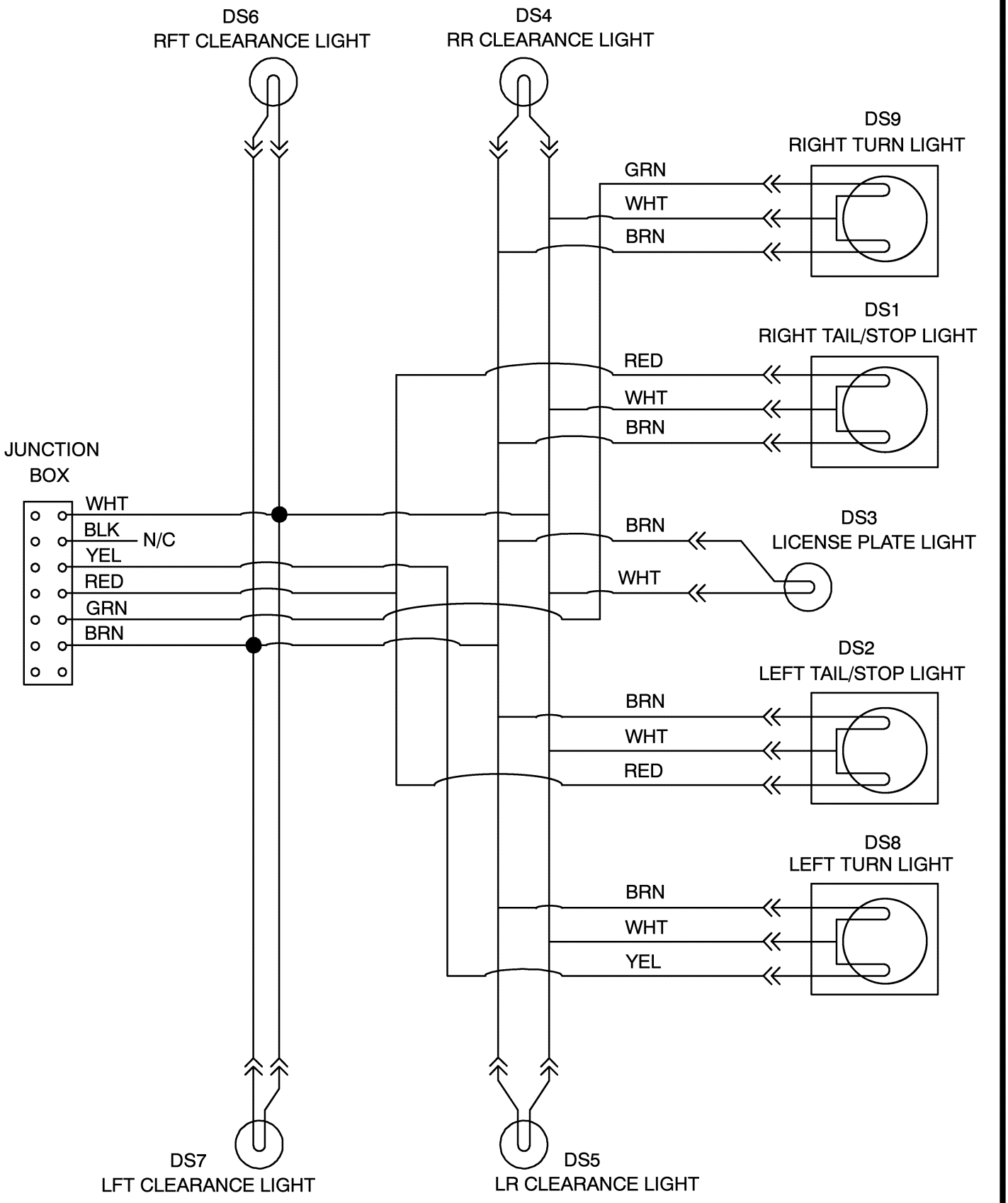
35392893-49 35392901-49	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
	DATE/DWN BY: 9/10/97 bd	DESCRIPTION 4-LIGHT ASSEMBLY	
	MODEL NO.	MANUAL NO. OPTION	DATE/REV: 5/98 A



35392893-50 35392901-50	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION	
	DATE/DWN BY: 9/11/97 bd	DESCRIPTION: OPT WIRING SCHEMATIC
	MODEL NO.	MANUAL NO.: OPTION / DATE/REV.: 1/01 B

ITEM	C.P.N.	DESCRIPTION
B2	36856011	FAN MOTOR
B3	36856011	FAN MOTOR
F5	36786259	30A FUSE
HR1	36852960	HEATER
HR2	36853952	HEATER
K6	36856250	RELAY
K7	36856250	RELAY
L3	36857878	SOLENOID VALVE
M2	35373729	ENGINE OIL PRESSURE GAGE
M4	35604115	ENGINE TEMPERATURE GAGE
M6	35371566	TACHOMETER
M7	36841153	VOLTMETER
M8	35604115	COMPRESSOR TEMPERATURE GAGE
R4	36842136	RESISTOR
R5	36842136	RESISTOR
R6	36842136	RESISTOR
R7	36842136	RESISTOR
RP1	35373737	ENGINE OIL PRESSURE SENDER
RT1	35367218	COMPRESSOR TEMPERATURE SENDER
RT2	35604180	ENGINE TEMPERATURE SENDER
S11	35255553	ETHER SWITCH
S12	36899086	AC POWER ASSEMBLY
S14	35337435	LIGHT SWITCH
S15	35337435	TOGGLE SWITCH
S16	36857852	ENGINE THERMO SWITCH
W3	36846632	8 GAGE HARNESS
W4	36846640	LIGHT HARNESS
W5	36848760	ETHER HARNESS
W6	36871010	AFTERCOOLER HARNESS

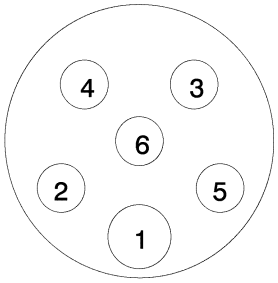
35392893-51 35392901-51	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION	
	DATE/DWN BY: 9/11/97 bd	DESCRIPTION: OPT WIRING SCHEMATIC
	MODEL NO.	ILLUSTRATION NO.: OPTION
		DATE/REV: 1/01 B



NOTE:
WHITE WIRE MAY BE FRAME GROUND.

35392893-52 35392901-52	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 11/20/97 bd	DESCRIPTION: 4 LIGHT WIRING DIAGRAM
MODEL NO.	MANUAL NO.: OPTION
	DATE/REV.: 5/98 A

ITEM	C.P.N.	DESCRIPTION
DS1	36788081	LAMP ASSEMBLY
DS2	36788081	LAMP ASSEMBLY
DS3	36895860	LIGHT, LICENSE
DS4	35367044	LAMP, RED CLEARANCE
DS5	35367051	LAMP, YELLOW CLEARANCE
DS6	35367044	LAMP, RED CLEARANCE
DS7	35367051	LAMP, YELLOW CLEARANCE
DS8	36788081	LAMP ASSEMBLY
DS9	36788081	LAMP ASSEMBLY
W3	36895878	HARNESS, 4-LIGHT SYSTEM



PLUG / SOCKET WIRING CONNECTIONS

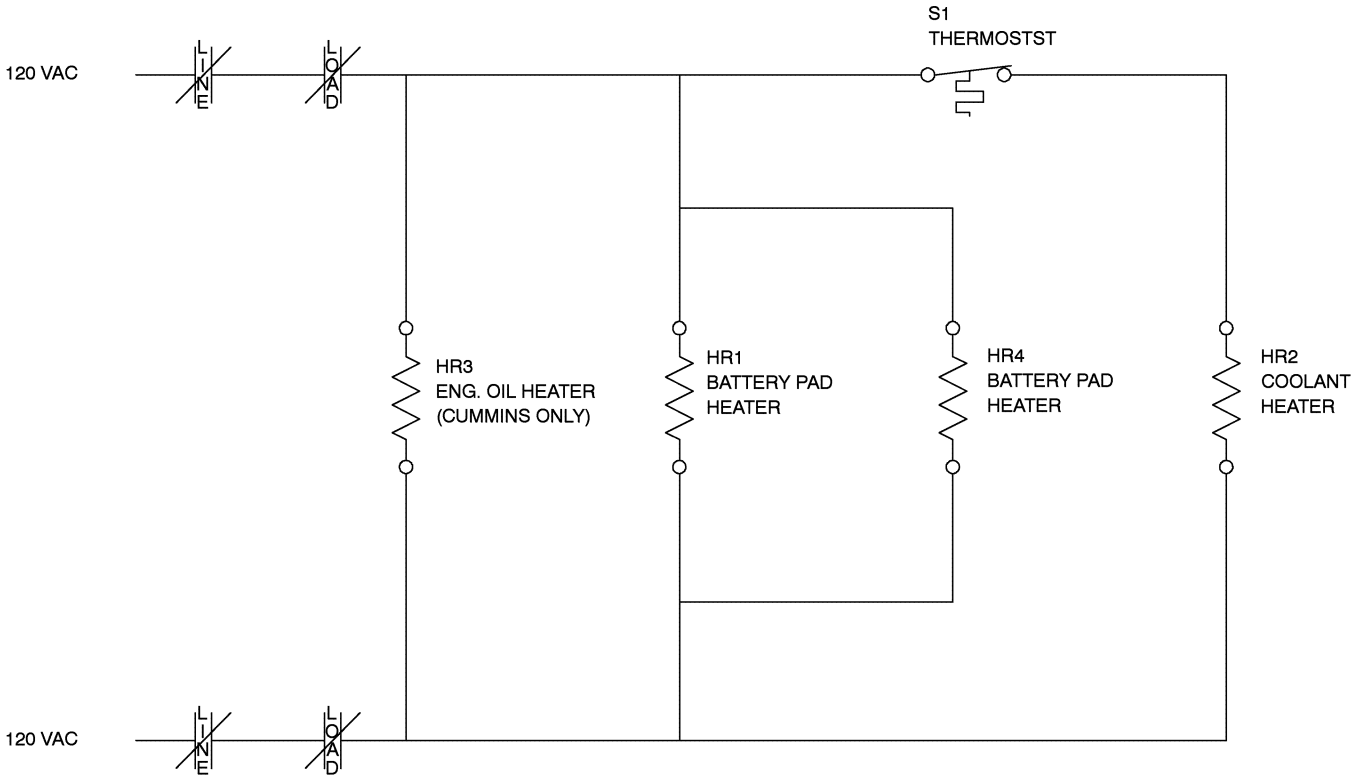
1 WHITE - GROUND
2 YELLOW - LEFT TURN SIGNAL
3 RED - STOP LIGHT
4 GREEN - RIGHT TURN SIGNAL
5 BROWN - TAIL / CLEARANCE LIGHTS
6 BLUE - ELECTRIC BRAKES

35392893-53 35392901-53	**INGERSOLL-RAND COMPANY** PORTABLE COMPRESSOR DIVISION
DATE/DWN BY: 11/18/97 bd	DESCRIPTION: 4 LIGHT WIRING DIAGRAM
MODEL NO.	MANUAL NO.: OPTION DATE/REV.: 5/98 A

C.P.N.	DESCRIPTION
36780252	KEY IGNITION SWITCH
36794345	KEY LOCK CYLINDER
35612746	KEY (REPLACEMENT)
35370469	COUPLER, 2.31" BALL
35376094	SCREW, HEX M16-2.0 X 120
96700885	NUT, HEX M16
36509073	COUPLER, 2" BALL
35131499 *	LIP
35131481 *	SPRING
35131457 *	NUT, LOOP HANDLE
35131465 *	BOLT
35376094	SCREW, HEX M16-2.0 X 120
96700885	NUT, HEX M16

* FURNISHED WITH 2" COUPLER

35392893-54 35392901-54	INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION	
	DATE/DWN BY: 9/11/97 bd	DESCRIPTION: MISCELANEOUS OPTIONS
	MODEL NO.	MANUAL NO. OPTION / DATE/REV: 5/98 A



NOTE: REFER TO MODEL FOR LIST OF OPTIONAL HEATERS AVAILABLE

	P100-P160	P100-P160	J DEERE P175-XP185	CUMMINS P250-P375 E25-E50	KUBOTA L5; L6-L8	CUMMINS VHP400-P600
HR1	~	~	36920387	36920387	36920387	36920379
HR2	36843563	35379221	36874659	36898971	36898252	36898971
HR3	~	~	~	~	~	~
HR4	~	~	~	~	~	36920387
S1	~	~	36858751	36858751	~	36858751
W1	~	~	36920361	36920361	36898245	36920361

	CUMMINS HP600-XP825	J DEERE HP600-XP825	CAT XHP600-XHP900	CUMMINS VHP825-XP1050	CAT VHP750-XP1000	CUMMINS HP100-P1600
HR1	36920411	36920411	36920338	36920411	36920411	36920338
HR2	36874642	36874659	36871325	36852614	36871283	36882520
HR3	36874675	~	~	36869691	~	36882512
HR4	36920429	36920429	36920346	36920429	36920429	36920346
S1	36858751	36858751	36858751	36858751	36858751	36858751
W1	36920437	36920403	36871317	36852598	36871275	36920320

35392893-55 35392901-55	35380277-44 35393396-44 35393065-40 35393628-40 54437173-93	35391825-93 35391713-93 35391721-93 35391739-93 35392984-93	35390095-84 35391093-84 35392877-84 35392885-84 35393172-84

INGERSOLL-RAND COMPANY
PORTABLE COMPRESSOR DIVISION

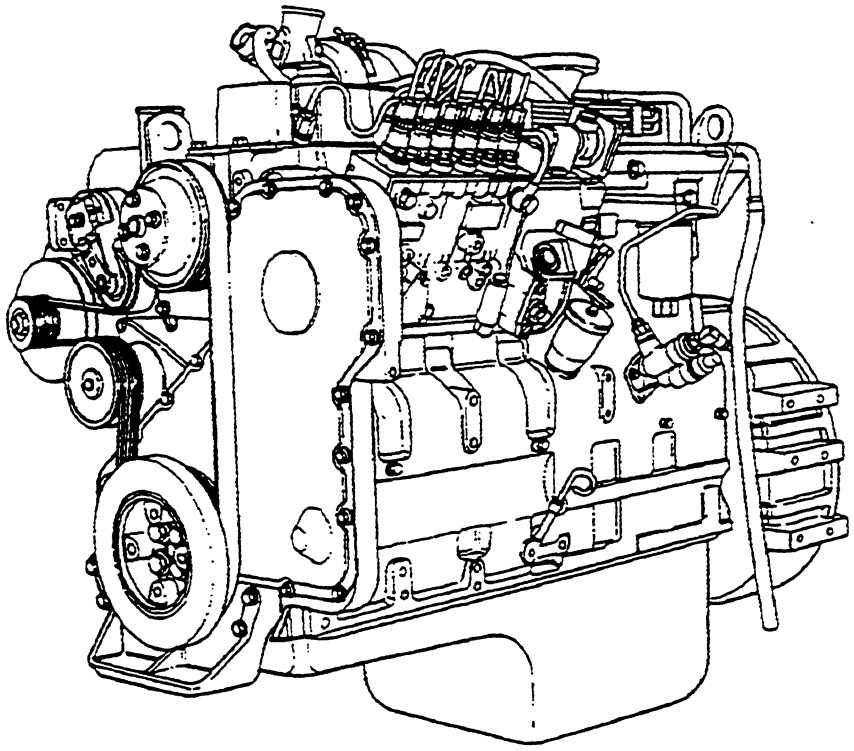
DATE/DWN BY:	DESCRIPTION	
7/6/99 bd	110 VAC HEATER WIRING	
MODEL NO.	MANUAL NO.	DATE/REV:
	OPTION	7/99 A

Cummins

Operation and Maintenance Manual – B Series Engines

U.S.A., Canada, Australia, New Zealand, and Puerto Rico

SECTION 12 - ENGINE INFORMATION



This information compiled from Cummins Bulletin 3810205–11.

Supplied by: Cummins Engine Company

Table of Contents

To The Owner and Operator

Preventative maintenance is the easiest and least expensive type of maintenance. Follow the maintenance schedule recommendations outlined in Maintenance Guidelines (Section 2).

Keep records of regularly scheduled maintenance.

Use the correct fuel, oil and coolant in your engine as specified in Engine Specifications (Section V).

Cummins Engine Company, Inc. uses the latest technology and the highest quality components to produce its engines. Cummins recommends using only genuine Cummins parts and ReCon exchange parts.

Personnel at Cummins Authorized Repair Locations have been trained to provide expert service and parts support. If you have a problem that cannot be resolved by a Cummins Authorized Repair Location, follow the steps outlined in the Service Assistance (Section S).

About the Manual

This manual contains information needed to correctly operate and maintain your engine as recommended by Cummins Engine Company, Inc. Additional service literature (Shop Manual, Troubleshooting and Repair Manual, etc.) can be ordered by filling out and mailing the Literature Order Form located in Service Literature, Section L.

This manual does **not** cover vehicle or equipment maintenance procedures. Consult the vehicle or equipment manufacturer for specific maintenance recommendations.

Both metric and U.S. customary values are listed in this manual. The metric value is listed first, followed by the U.S. customary in brackets.

Numerous illustrations and symbols are used to aid in understanding the meaning of the text. Refer to page i-5 for a complete listing of symbols and their definitions.

Each section is preceded by a "Section Contents" to aid in locating information more quickly.

How to Use the Manual

This manual is organized according to intervals at which maintenance on your engine is to be performed. A table which states the required intervals and the checks to be made is located in Section 2. Locate the interval at which you are performing maintenance then follow the steps given in that section for all the procedures to be performed. In addition, all the procedures done under previous maintenance intervals **must** be performed also.

Keep a record of all the checks and inspections made. A record form for recording date, mileage/kilometer or hours, and which maintenance checks were performed is located in Section 2.

Refer to Section T for a guide to troubleshooting your engine. Follow the directions given on page T-2 to locate and correct engine problems.

Refer to Section V for specifications recommended by Cummins Engine Company, Inc., for your engine. Specifications and torque values for each engine system are given in that section.

Symbols

The following symbols have been used in this manual to help communicate the intent of the instructions. When one of the symbols appears, it conveys the meaning defined below:

WARNING - Serious personal injury or extensive property damage can result if the warning instructions are **not** followed.

CAUTION - Minor personal injury can result or a part, an assembly, or the engine can be damaged if the caution instructions are **not** followed.

Indicates a **REMOVAL or DISASSEMBLY** step.

Indicates an **INSTALLATION or ASSEMBLY** step.

INSPECTION is required.

CLEAN the part or assembly.

PERFORM a mechanical or time **MEASUREMENT**.

LUBRICATE the part or assembly.

Indicates that a **WRENCH or TOOL SIZE** will be given.

TIGHTEN to a specific torque.

PERFORM an electrical **MEASUREMENT**.

Refer to another location in this manual or another publication for additional information.

The component weighs 23 kg [50 lb] or more. To avoid personal injury, use a hoist or get assistance to lift the component.

General Safety Instructions

Important Safety Notice

⚠ WARNING ⚠

Improper practices or carelessness can cause burns, cuts, mutilation, asphyxiation or other bodily injury or death.

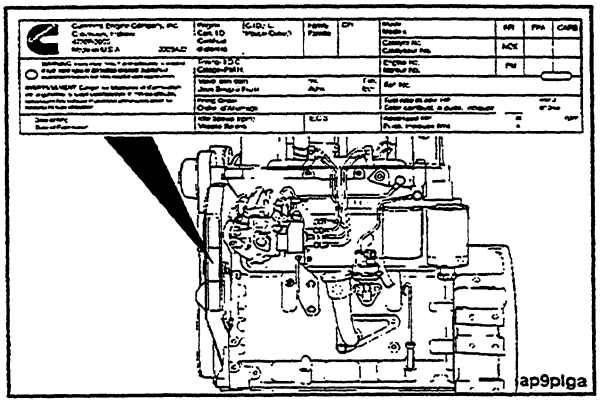
Read and understand all of the safety precautions and warnings before performing any repair. This list contains the general safety precautions that **must** be followed to provide personal safety. Special safety precautions are included in the procedures when they apply.

- Make sure the work area surrounding the product is dry, well lit, ventilated; free from clutter, loose tools, parts, ignition sources and hazardous substances. Be aware of hazardous conditions that can exist.
- **Always** wear protective glasses and protective shoes when working.
- Rotating parts can cause cuts, mutilation or strangulation.
- Do **not** wear loose-fitting or torn clothing. Remove all jewelry when working.
- Disconnect the battery (negative [-] cable first) and discharge any capacitors before beginning any repair work. Disconnect the air starting motor if equipped to prevent accidental engine starting. Put a "Do **Not** Operate" tag in the operator's compartment or on the controls.
- Use ONLY the proper engine barring techniques for manually rotating the engine. Do **not** attempt to rotate the crankshaft by pulling or prying on the fan. This practice can cause serious personal injury, property damage, or damage to the fan blade(s) causing premature fan failure.
- If an engine has been operating and the coolant is hot, allow the engine to cool before you slowly loosen the filler cap and relieve the pressure from the cooling system.
- Do **not** work on anything that is supported ONLY by lifting jacks or a hoist. **Always** use blocks or proper stands to support the product before performing any service work.
- Relieve all pressure in the air, oil, and the cooling systems before any lines, fittings, or related items are removed or disconnected. Be alert for possible pressure when disconnecting any device from a system that utilizes pressure. Do **not** check for pressure leaks with your hand. High pressure oil or fuel can cause personal injury.
- To prevent suffocation and frostbite, wear protective clothing and ONLY disconnect liquid refrigerant (freon) lines in a well ventilated area. To protect the environment, liquid refrigerant systems **must** be properly emptied and filled using equipment that prevents the release of refrigerant gas (fluorocarbons) into the atmosphere. Federal law requires capture and recycling refrigerant.
- To avoid personal injury, use a hoist or get assistance when lifting components that weigh 23 kg [50 lb] or more. Make sure all lifting devices such as chains, hooks, or slings are in good condition and are of the correct capacity. Make sure hooks are positioned correctly. **Always** use a spreader bar when necessary. The lifting hooks **must not** be side-loaded.
- Corrosion inhibitor contains alkali. Do **not** get the substance in your eyes. Avoid prolonged or repeated contact with skin. Do **not** swallow internally. In case of contact, immediately wash skin with soap and water. In case of contact, immediately flood eyes with large amounts of water for a minimum of 15 minutes. IMMEDIATELY CALL A PHYSICIAN. KEEP OUT OF REACH OF CHILDREN.
- Naptha and Methyl Ethyl Ketone (MEK) are flammable materials and **must** be used with caution. Follow the manufacturer's instructions to provide complete safety when using these materials. KEEP OUT OF REACH OF CHILDREN.
- To avoid burns, be alert for hot parts on products that have just been turned OFF, and hot fluids in lines, tubes, and compartments.
- **Always** use tools that are in good condition. Make sure you understand how to use them before performing any service work. Use ONLY genuine Cummins or Cummins Recon® replacement parts.
- **Always** use the same fastener part number (or equivalent) when replacing fasteners. Do **not** use a fastener of lessor quality if replacements are necessary.
- Do **not** perform any repair when fatigued or after consuming alcohol or drugs that can impair your functioning.
- Some state and federal agencies in the United States of America have determined that used engine oil can be carcinogenic and can cause reproductive toxicity. Avoid inhalation of vapors, ingestion, and prolonged contact with used engine oil.

Definition of Terms

AFC	Air Fuel Control
API	American Petroleum Institute
ASA	Air Signal Attenuator
ASTM	American Society of Testing and Materials
C	Celsius
CARB	California Air Resources Board
C.I.D.	Cubic Inch Displacement
Cm	Centimeter
CPL	Control Parts List
cSt	Centistokes
DCA	Diesel Coolant Additive
ECM	Electronic Control Module
E.C.S.	Emission Control System
EPA	Environmental Protection Agency
EPS	Engine Position Sensor
F	Fahrenheit
ft-lb	Foot Pound
GVW	Gross Vehicle Weight
Hg	Mercury
HP	Horsepower
H_2O	Water
in-lb	Inch Pound
kg	Kilograms
km	Kilometers
km/l	Kilometers per Liter
kPa	Kilopascal
l	Liter
m	Meter
mm	Millimeter
MPa	Megapascal
MPH	Miles Per Hour
MPQ	Miles Per Quart
N•m	Newton-meter
OEM	Original Equipment Manufacturer
ppm	Parts Per Million
psi	Pounds Per Square Inch
PTO	Power Takeoff
RPM	Revolutions Per Minute
S.A.E.	Society of Automotive Engineers
STC	Step Timing Control
VS	Variable Speed
VSS	Vehicle Speed Sensor

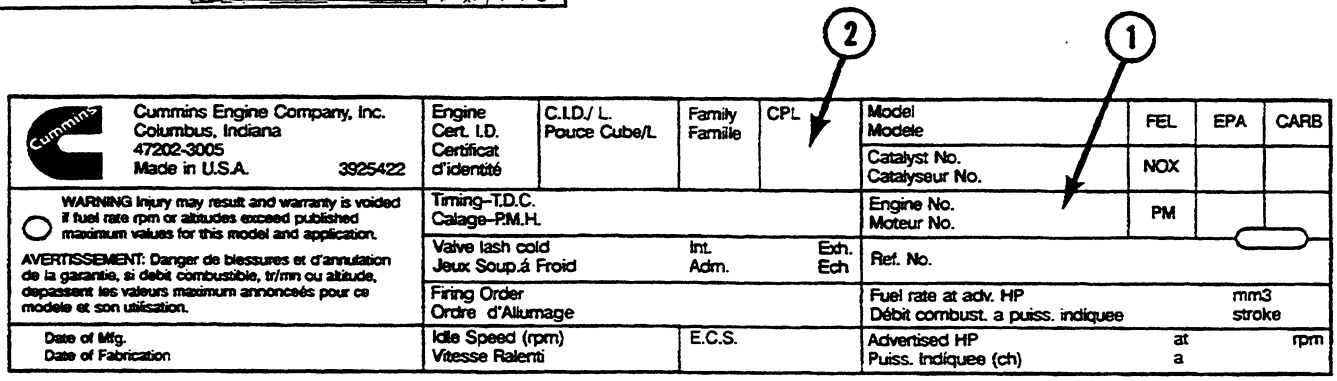
Engine Identification



Engine Dataplate

The engine dataplates show specific information about your engine. The engine serial number (1) and Control Parts List (CPL) (2) provide information for ordering parts and service needs.

NOTE: The engine dataplate **must not** be changed unless approved by Cummins Engine Company, Inc.



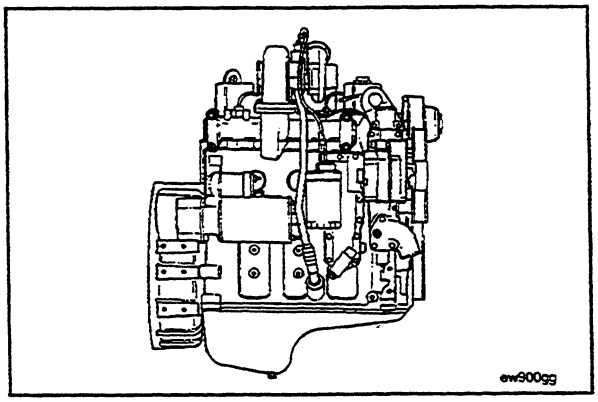
ap9plgb

Industrial Engine Nomenclature

The model name for Industrial engines provides the following engine data:

4 B T A 3.9

- 3.9 — Displacement in Liters
- A — Aftercooled
- T — Turbocharged
- B — Engine Series
- 4 — Number of Cylinders

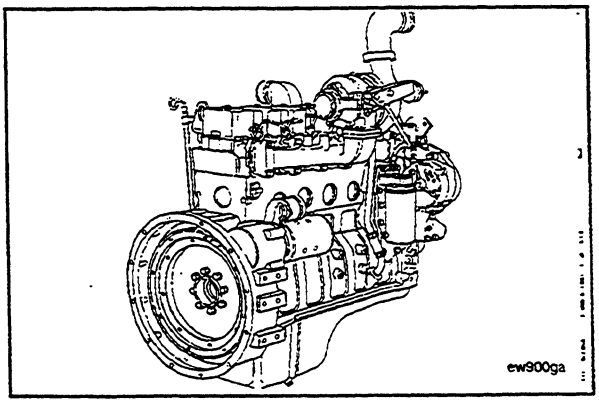


Automotive Engine Nomenclature

The model name for Automotive engines provides the following engine data:

B 5.9 - 190

- 190 — Horsepower Rating
- 5.9 — Displacement in Liters
- B — Engine Series



General Information

Cummins Engine Company, Inc. recommends that the engine be maintained according to the Maintenance Schedule in this section.

If the engine is operating in ambient temperatures consistently below -18°C [0°F] or above 38°C [100°F], perform maintenance at shorter intervals. Shorter maintenance intervals are also required if the engine is operated in a dusty environment or if frequent stops are made. See your Cummins Authorized Repair Location for recommended intervals.

Use the chart provided at the end of this section as a convenient way to keep a record of maintenance performed.

If your engine is equipped with a component or an accessory **not** manufactured by Cummins Engine Company, Inc., refer to the component manufacturer's maintenance recommendations. A listing of suppliers' addresses and telephone numbers is provided in Component Manufacturers, Section C.

Tool Requirements

In the text, a symbol followed by the wrench size or tool description is used to identify the tooling required to perform each step. A list of wrench sizes and descriptions indicate more than one tool is needed.

Sockets	Wrenches	Other Tools
19mm	19mm	Fuel line nuts
17mm	17mm	Filter Wrenches (75-80mm and 90-95mm)
15mm	15mm	Ratchet (1/2 inch drive)
	14mm	Torque Wrench
	13mm	Flat Blade Screwdriver
	10mm	5/16 Allen Wrench
		Feeler Gauges (0.25 mm and 0.51 mm)
		Engine Barring Gear Part No. 3377371.

Maintenance Schedule

Daily or Refueling	Every 10,000 Km [6,000 Mi], 250 Hours or 3 Months	Every 19,000 Km [12,000 Mi], 500 Hours or 6 Months	Every 38,000 Km [24,000 Mi] 1000 Hours or 12 Months	Every 77,000 Km [48,000 Mi], 2000 Hours or 2 Years
Check	Change/Replace			
• Oil Level	• Lube Oil[1]	• Lube Oil	• Lube Oil	• Lube Oil
• Coolant Level	• Lube Filter	• Lube Filter	• Lube Filter	• Lube Filter
• Fan - Inspection		• Fuel Filter[6]	• Fuel Filter	• Fuel Filter
• Drive Belt - Inspection				• Antifreeze[3]
• Fuel Water Trap	Adjust			
			• Valve Lash[2] Clearance	
	Check/Inspect			
	• Air Cleaner	• Air Cleaner	• Air Cleaner	• Air Cleaner
	• Intake System	• Intake System	• Intake System	• Charge Air Cooler[4]
	• Charge Air Cooler	• Antifreeze[3]	• Charge Air Cooler	• Intake System
		• Charge Air Cooler	• Antifreeze	• Fan Hub
			• Fan Hub	• Belt Tensioner Bearing
			• Belt Tensioner Bearing	• Belt Tension
			• Belt Tension	• Damper

[1] Refer to the Oil Change Interval chart given in Section 4 to find the specific oil change interval for your application.

[2] Initial valve lash clearance adjustment, subsequent adjustments to be performed at 77,000 Km [48,000 mile] intervals or every 8th oil change for automotive engines or, 2000 hours, 2 year intervals for industrial engines.

[3] Must use a heavy duty year around antifreeze that meets the chemical composition of GM6038M. The change interval is 2 years or 320,000 Km [200,000 Mi], whichever occurs first. Antifreeze is essential for freeze, overheat and corrosion protection.

[4] Service interval is 2 years or 320,000 Km [200,000 Mi], whichever occurs first.

[6] Service interval is every other oil change or 19,000 Km [12,000 miles], 500 hours or 6 months, whichever comes first.

General Information

All checks or inspections listed under daily or previous maintenance intervals **must** also be performed at this time in addition to those listed under this maintenance interval.

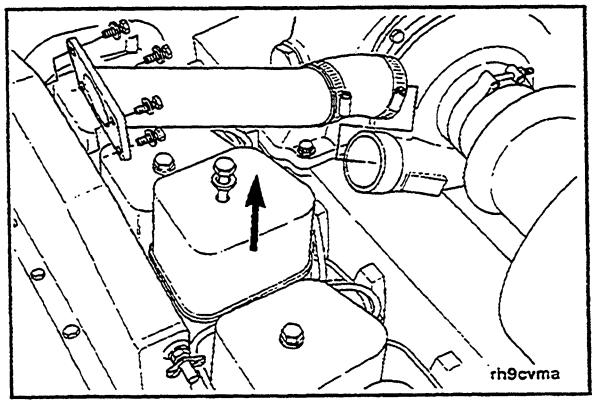
The procedures given in this section for valve lash adjustment are to be performed at the initial 38,000 km [24,000 mi] adjustment. Subsequent adjustments are to be performed at 77,000 km [48,000 mi] intervals.

Valves

Adjustment

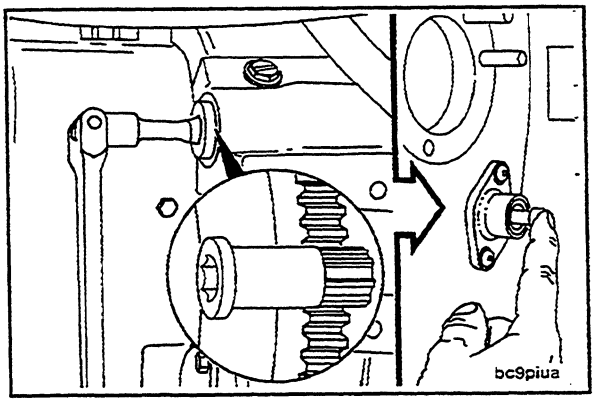
15 mm

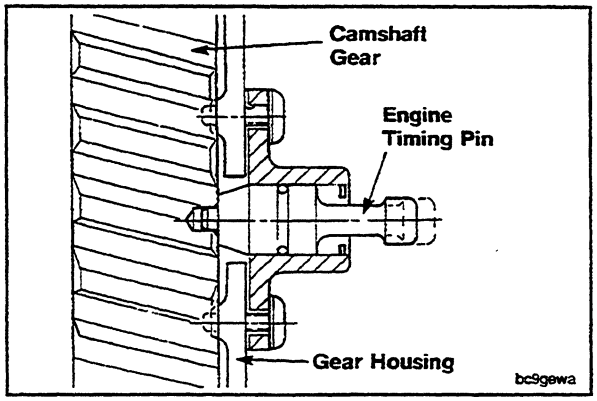
Remove the valve cover.



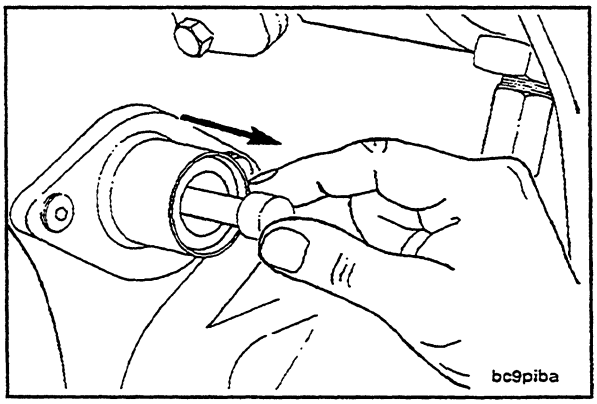
1/2 Inch Drive, 3377371 Engine Barring Gear

Locate Top Dead Center (TDC) for Cylinder Number 1 by barring engine slowly while pressing on the engine timing pin.





When the pin engages the hole in the camshaft gear, Cylinder Number 1 is at TDC on the compression stroke.



Caution: To prevent damage to the engine or pin, be sure to disengage the pin after locating TDC.

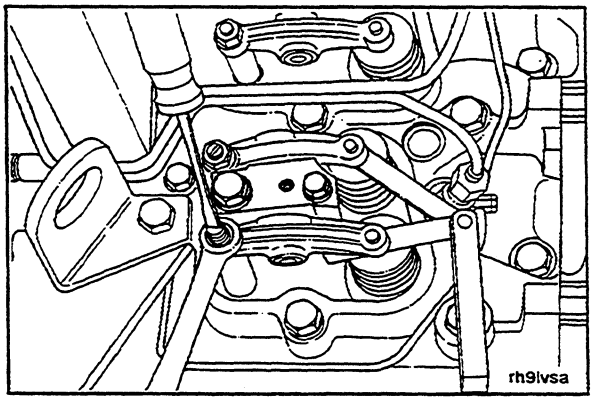
Feeler Gauge

Intake Clearance: 0.254 mm [0.010 IN]

Exhaust Clearance: 0.508 mm [0.020 IN]

Check/set valves with engine cold - **below** 60°C [140°F].

NOTE: The clearance is correct when some resistance is "felt" when the feeler gauge is slipped between the valve stem and the rocker lever.



Four Cylinder Engine Adjustment

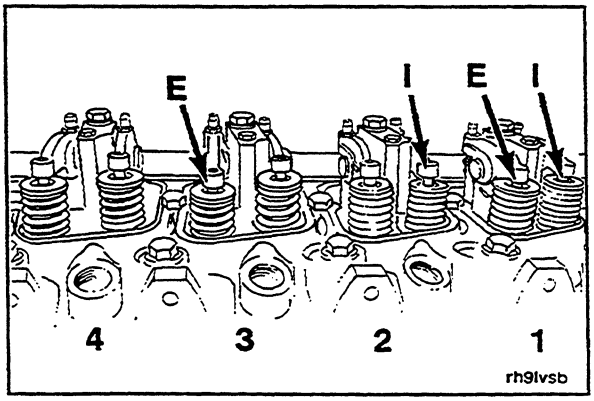
14 mm, Flatblade Screwdriver

Locate Top Dead Center (TDC) for Cylinder Number 1.

Check/adjust the valves as indicated in the illustration (I = Intake; E = Exhaust).

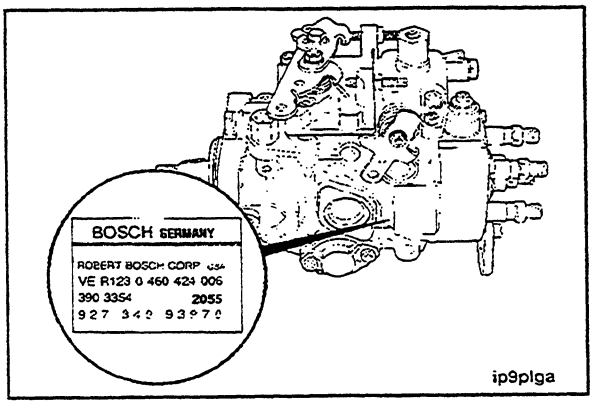
Tighten the locknut and measure the valve lash again.

Torque Value: 24 N•m [18 ft-lb]

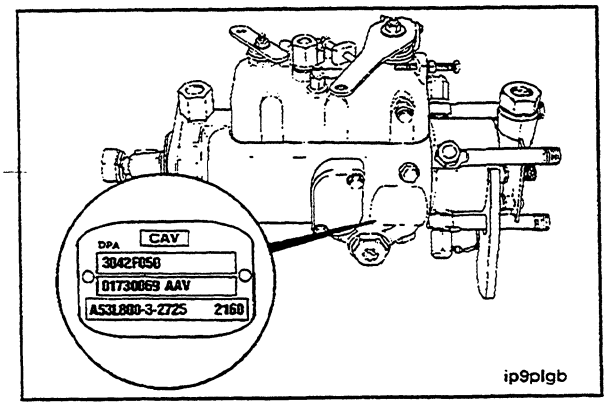


Injection Pump Dataplate

The injection pump dataplate is located on the side of the injection pump. The dataplate provides information for fuel pump calibration.

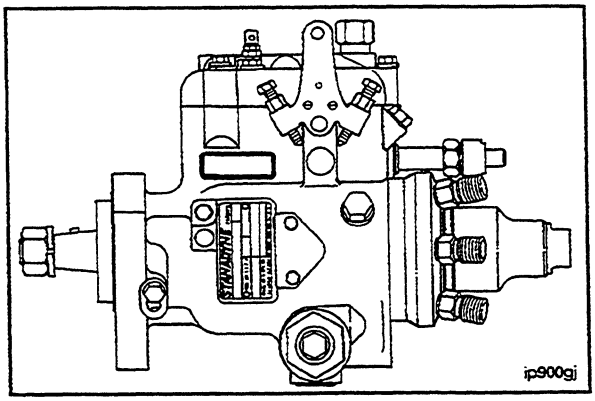


Robert Bosch VE dataplate location.

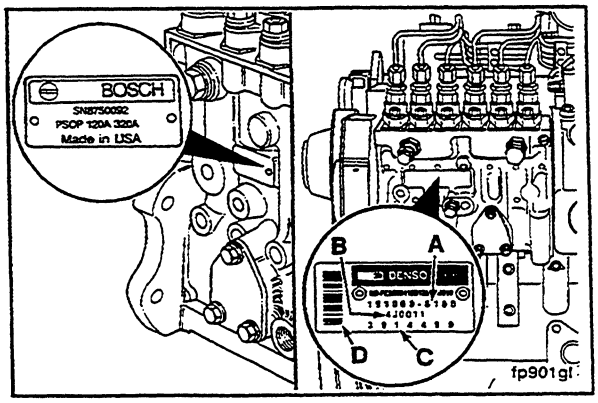


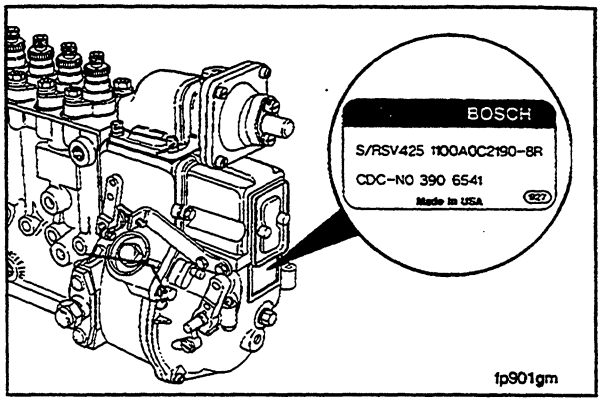
Lucas CAV DPA dataplate location.

Stanadyne DB4 Dataplate Location

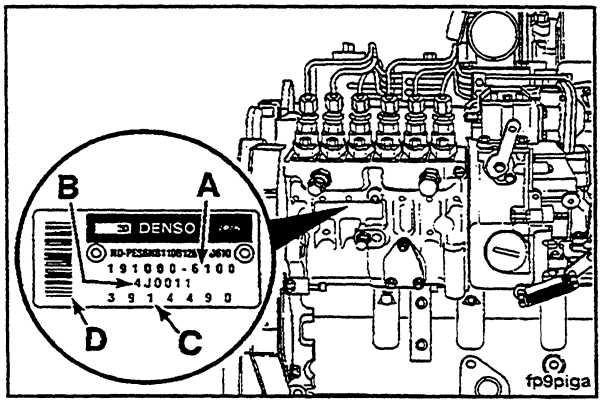


Robert Bosch In-Line Dataplate Location



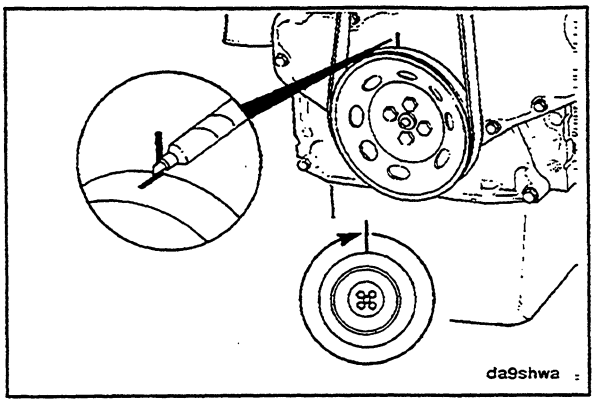


The Cummins part number for the fuel pump-governor combination is located on the governor dataplate.



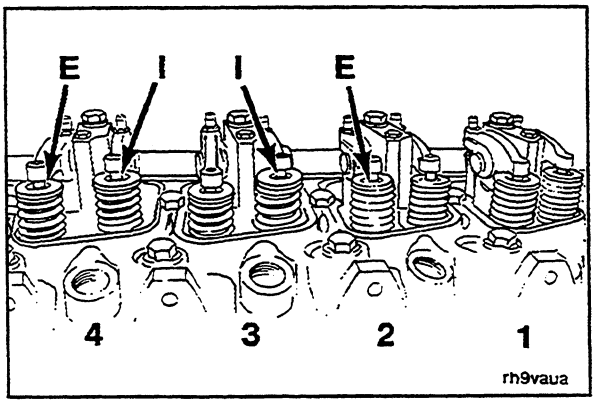
Nippondenso Fuel Injection Pump Dataplate Location

The Nippondenso fuel injection pump dataplate contains the Nippondenso fuel injection pump part number (A), the Nippondenso serial number (B), the Cummins part number (C) and the fuel injection pump bar code (D).



Mark the pulley and rotate the crankshaft 360 degrees.

Caution: To prevent engine or pin damage, be sure timing is disengaged.



14 mm, Flatblade Screwdriver

Adjust the valves as indicated in the illustration.

Tighten the lock nut and measure the valve lash again.

Torque Value: 24 N•m [18 ft-lb]

Six-Cylinder Engine Adjustment

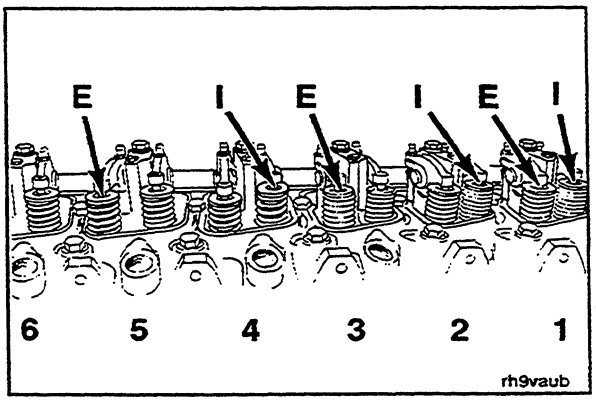
14 mm, Flatblade Screwdriver

Locate Top Dead Center (TDC) for Cylinder Number 1

Check/adjust the valves as indicated in the illustration (I = Intake, E = Exhaust).

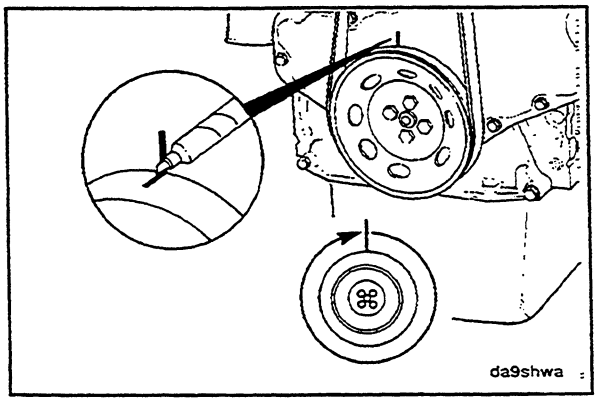
Tighten the lock nut and measure the valve lash again.

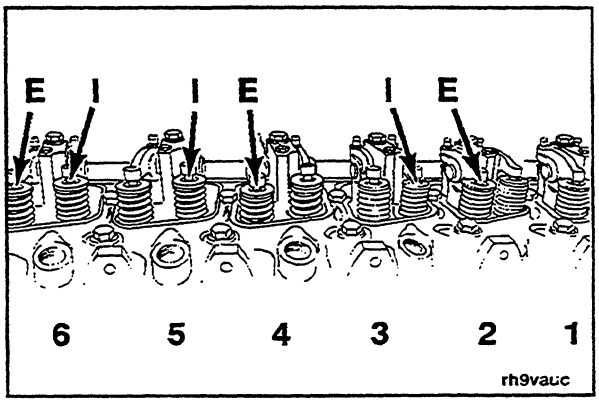
Torque Value: 24 N•m [18 ft-lb]



Mark the pulley/vibration damper and rotate the crankshaft 360 degrees.

Caution: To prevent engine or pin damage, be sure timing pin is disengaged.

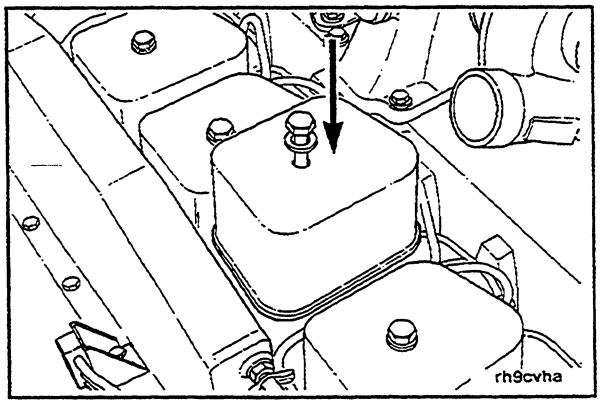




Adjust the valves as indicated in the illustration.

Tighten the lock nut and measure the valve lash again.

Torque Value: 24 N•m [18 ft-lb]



15 mm

Install the valve covers and tighten capscrews.

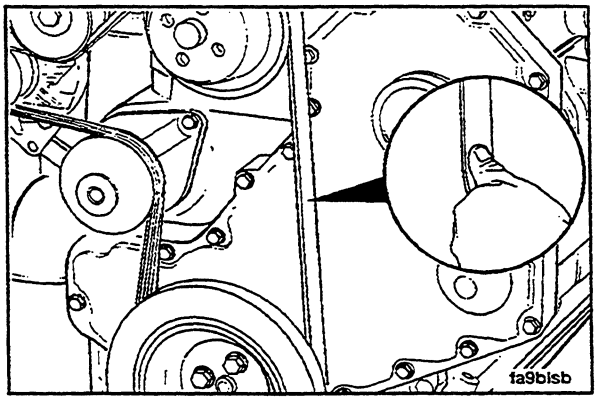
Torque Value: 24 N•m [18 ft-lb]

Drive Belt Tension

Check

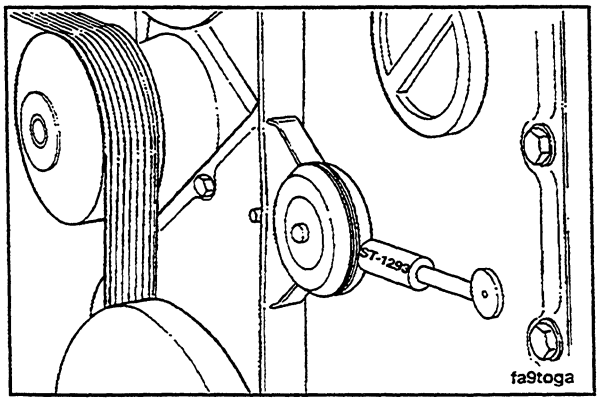
Measure the belt deflection at the longest span of the belt.

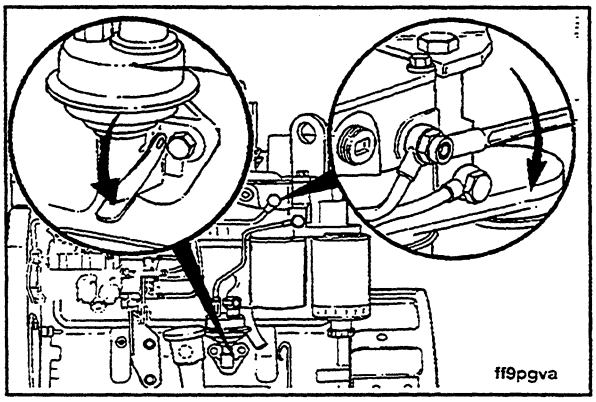
Maximum Deflection: 9.5 to 12.7 mm [3/8 to 1/2 inch]



NOTE: The Cummins belt tension gauge, Part No. ST-1293 can be used.

Gauge Value: 267 to 578 N [60 to 130 Lbf]

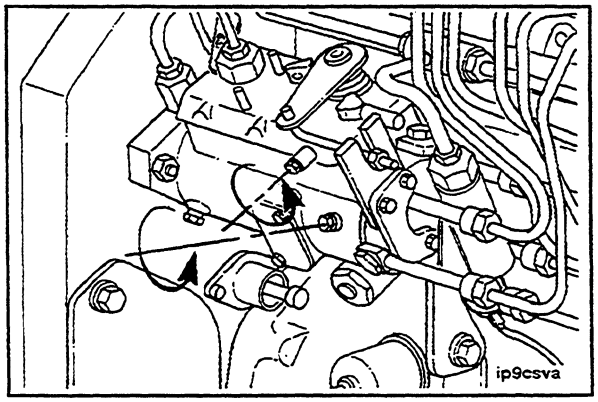




Operate the plunger on the lift pump until the fuel flowing from the fitting is free of air.

Tighten the bleed screw.

Torque Value: 9 N•m [7 ft-lb]



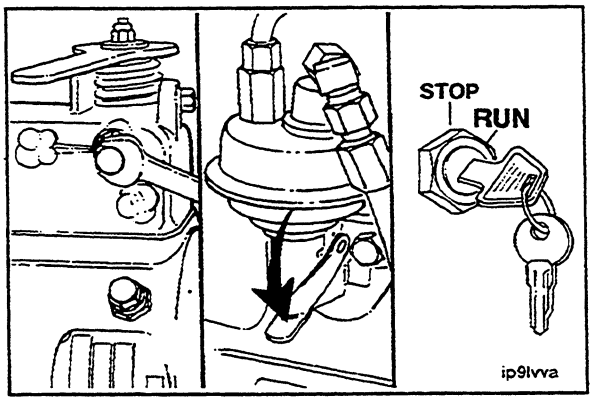
Injection Pump

Venting

8 mm

Bleed the Lucas CAV pump at the location shown in the illustration.

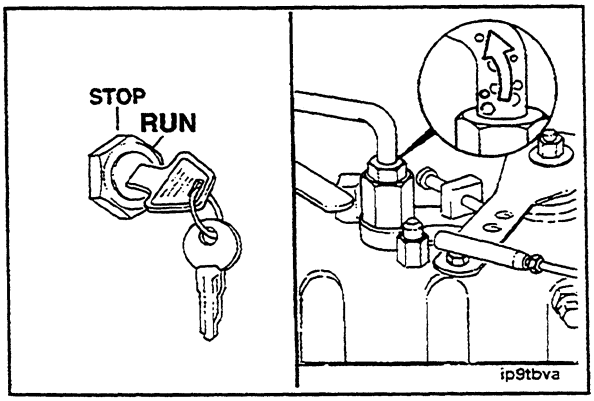
Air/fuel can be pumped from this location with the hand lever on the lift pump if the fuel solenoid valve is energized.

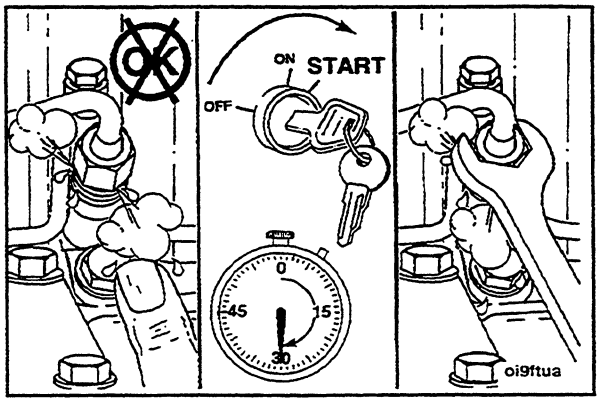


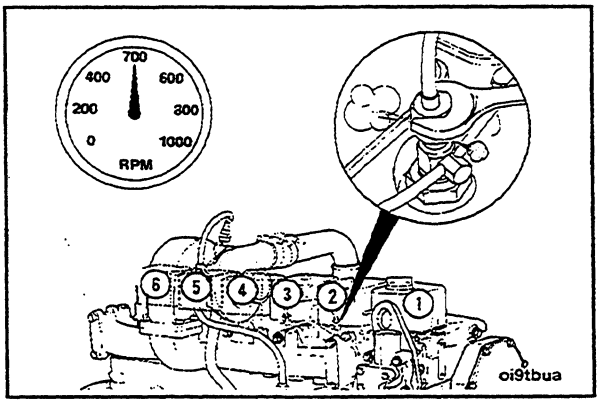
Air can be vented from both pumps through the fuel drain manifold line by operating the starting motor.

Caution: When using the starting motor to vent the system, do not engage it for more than 30 seconds at a time: Wait two (2) minutes between engagements.

Warning: It is necessary to put the engine in the "Run" position. Because the engine may start, be sure to follow all the safety precautions. Use the normal engine starting procedure.







High Pressure Lines (Rotary and In-Line Pumps)

Venting

17 mm, 19 mm

Warning: The pressure of the fuel in the line is sufficient to penetrate the skin and cause serious bodily harm.

Venting is accomplished by loosening one or more fittings at the injectors and cranking the engine to allow entrapped air to bleed from the lines.

Re-Tighten Line Fittings

Torque Value: 30 N•m [22 ft-lb]

Warning: Do not bleed a hot engine as this could cause fuel to spill onto a hot exhaust manifold creating a danger of fire.

Start the engine and vent one line at a time until the engine runs smoothly.

General Information

All checks or inspections listed under daily or previous maintenance intervals must also be performed at this time in addition to those listed under this maintenance interval.

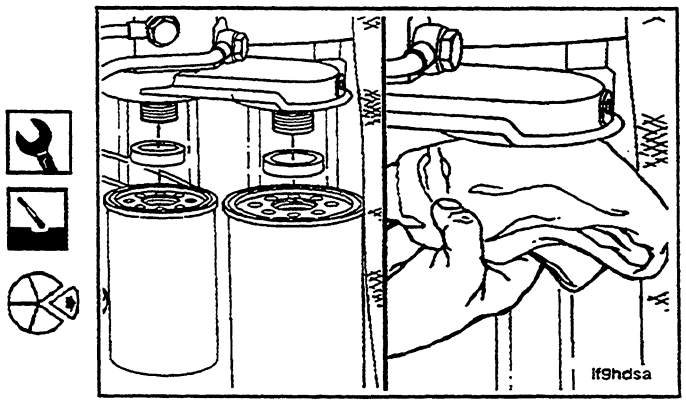
Fuel Filter

Replacement

75-80 mm and 90-95 mm

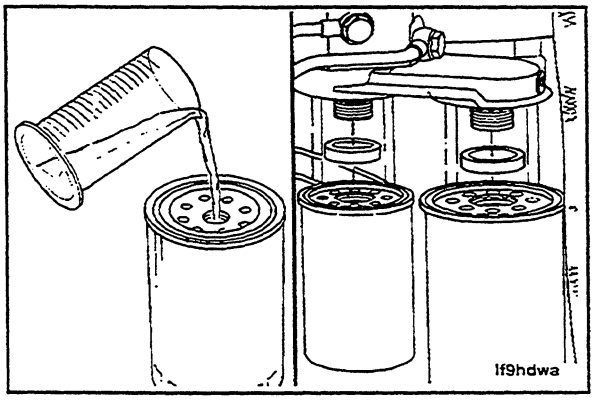
Clean the area around the fuel filter head. Remove the filters. Clean the gasket surface of the filter head.

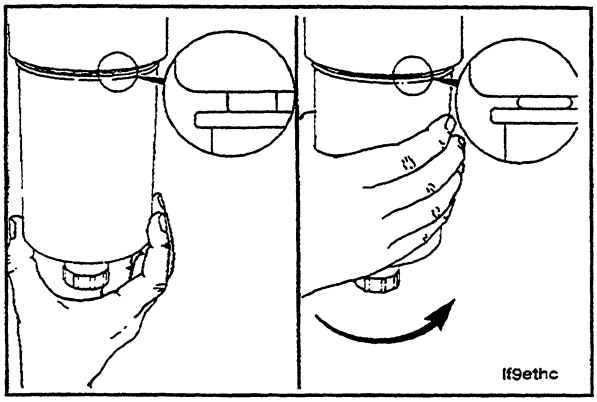
Replace the o-ring.



Fill the new filter(s) with clean fuel and lubricate the o-ring seal with clean lubricating oil.

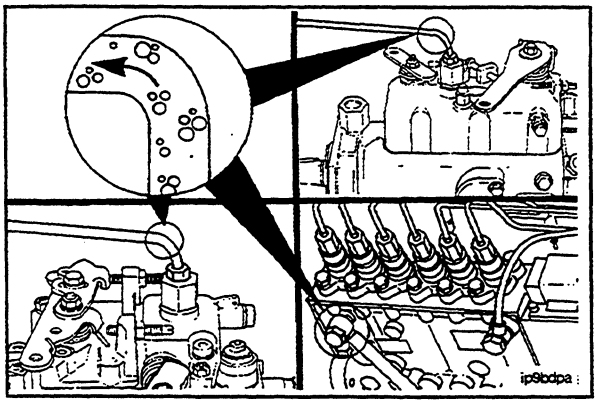
- Standard filter - used as secondary filter in dual filter applications.
- Fuel water separator - used as primary filter in dual filter applications.
- Fuel water separator - used in single filter applications.





Caution: Mechanical tightening will distort the threads, filter element seal or filter can.

Install the filter as specified by the filter manufacturer.



Fuel System

Bleeding

Controlled venting is provided at the injection pump through the fuel drain manifold. Small amounts of air introduced by changing the filters or injection pump supply line will be vented automatically, if the fuel filter is changed in accordance with the instructions. No manual bleeding of fuel lines is required.

NOTE: Manual bleeding is required if:

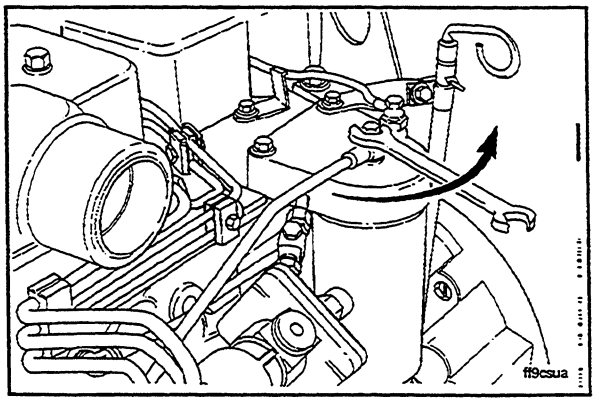
- The fuel filter is not filled prior to installation.
- Injection pump is replaced.
- High pressure fuel line connections are loosened or lines replaced.
- Initial engine start up or start up after an extended period of no engine operation.
- Vehicle fuel tank has run empty.

Low Pressure Lines and Fuel Filter(s)

Venting

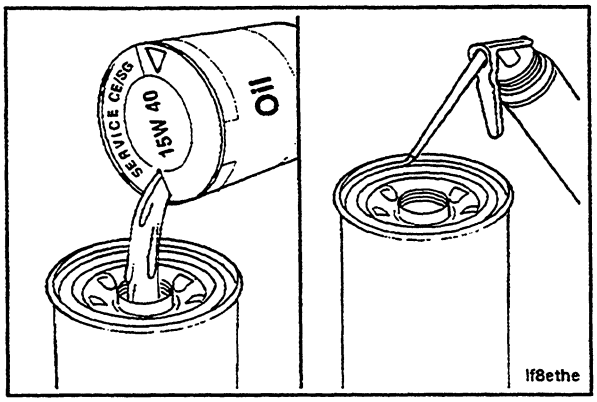
8 mm

Open the vent screw.



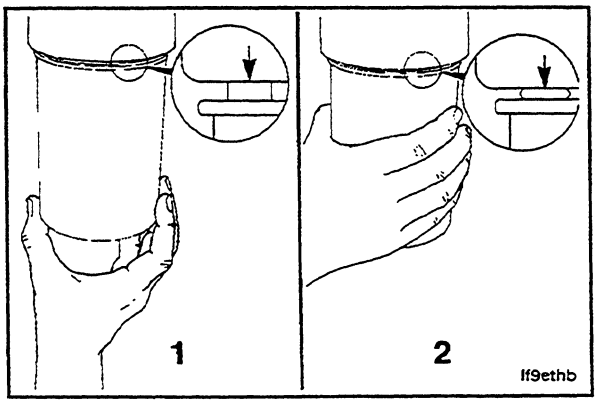
NOTE: Fill the filters with clean lubricating oil before installation.

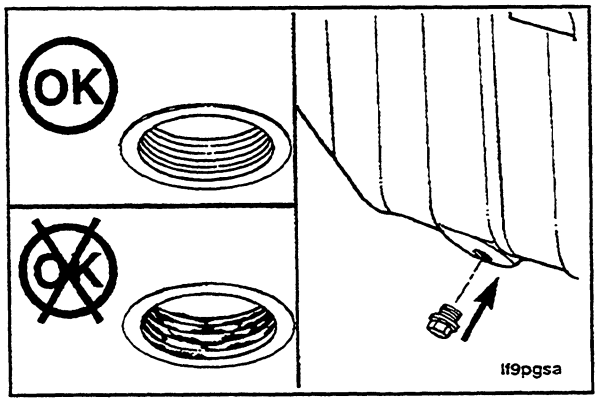
Apply a light film of lubricating oil to the gasket sealing surface before installing the filters.



Caution: Mechanical over-tightening can distort the threads or damage the filter element seal.

Install the filter as specified by the filter manufacturer.



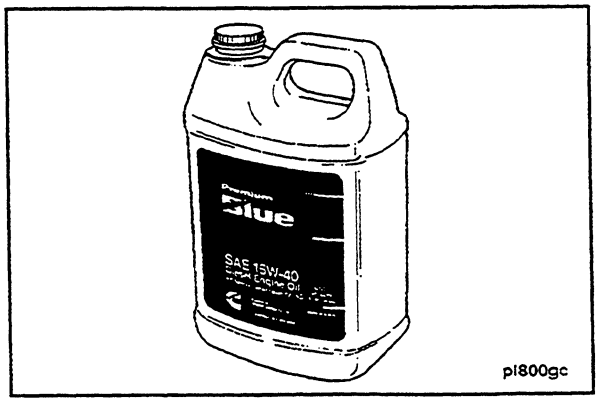


17 mm

Check and clean the oil drain plug threads and sealing surface.

Install the oil drain plug.

Torque Value: 80 N•m [60 ft-lb]



NOTE: Use high quality multi-grade lubricating oil meeting the American Petroleum Institute (API) classification of CE/SG as outlined in Specifications and Torque Values (Section V).

NOTE: CD/SF oil can be used in areas where CE/SG oil is not yet available.

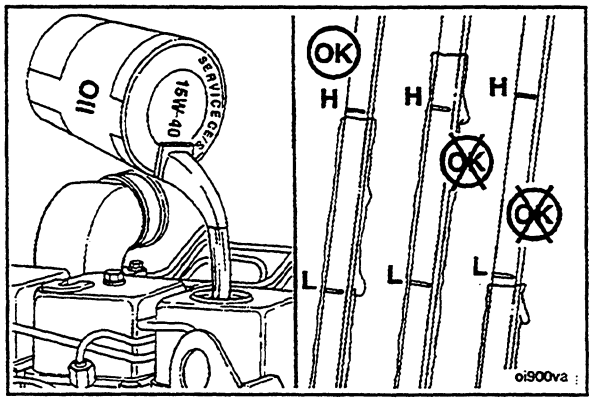
If CD/SF oil is used, change the oil at one-half the recommended intervals.

Fill the engine with clean oil to the proper level.

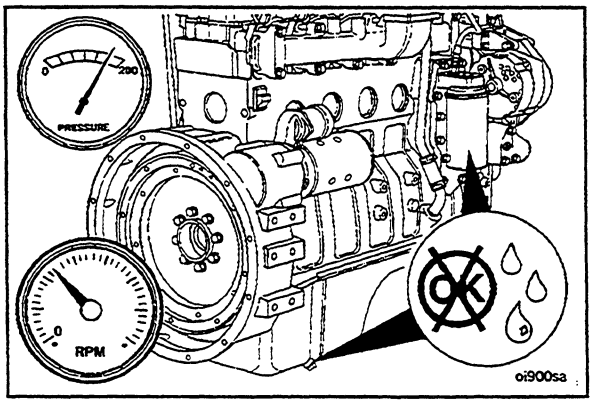
	Four Cylinder	Six Cylinder
Pan Capacity	9.5 Liters [10 U.S. Qts]	14.2 Liters [15 U.S. Qts]
Total System Capacity	10.2 Liters [10.8 U.S. Qts]	15.1 Liters [16 U.S. Qts]

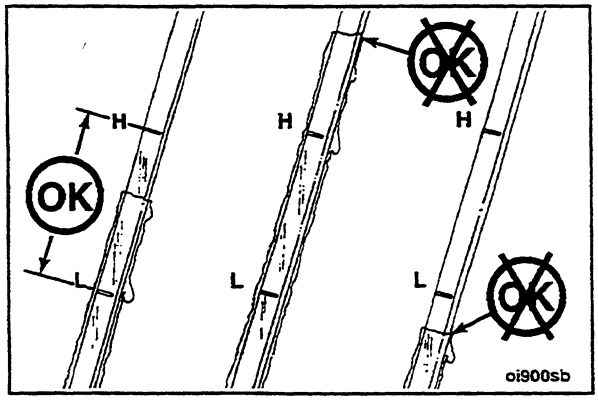
NOTE: Capacities assume standard pan. Total system assumes standard pan plus filter.

Some 6B applications use a reduced capacity pan 10.4 Liters [11 U.S. Qts] and some have increased capacity of 16 liters [17 U.S. Qts.]. Fill quantities **must** be adjusted accordingly.



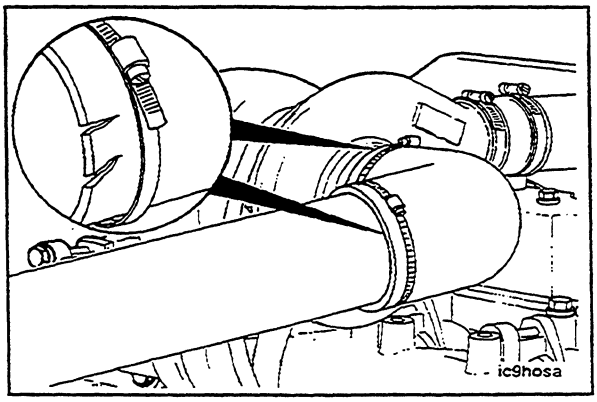
Operate the engine at idle to inspect for leaks at the filters and the drain plug.





Stop the engine. Wait approximately 5 minutes to let the oil drain from the upper parts of the engine. Check the oil level again.

Add oil as necessary to bring the oil level to the "H" (High) mark on the dipstick.



Air Intake System

Inspection

Inspect the intake piping for cracked hoses, loose clamps, or punctures which can allow dirt and debris to enter the engine.

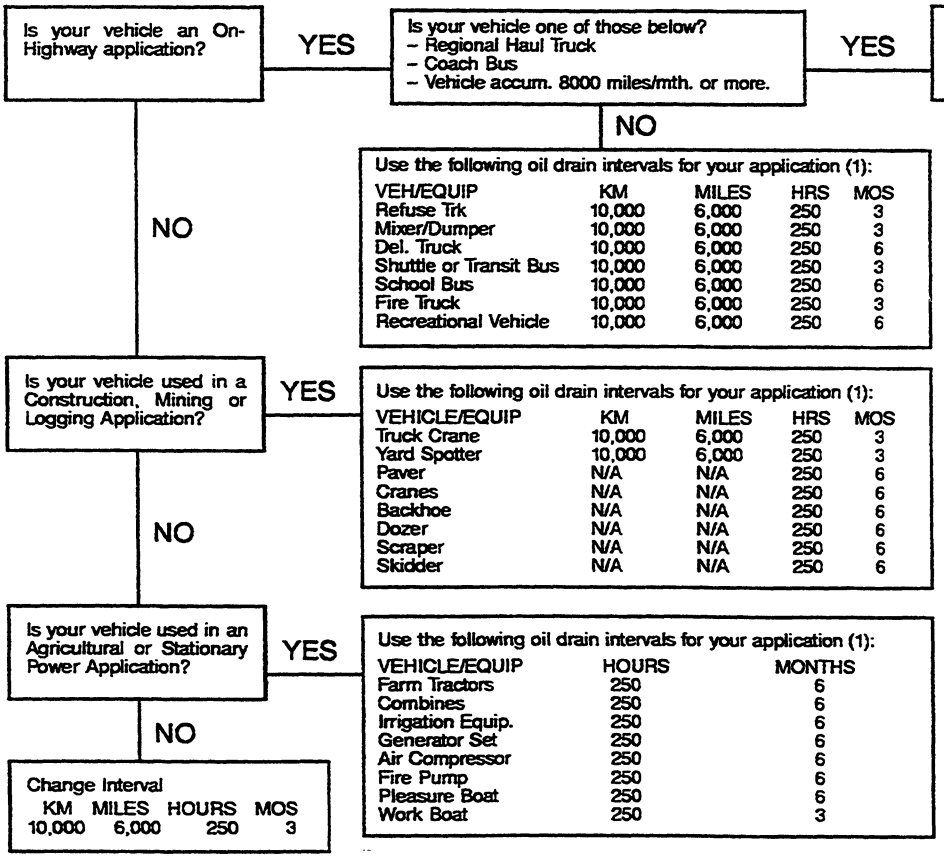
Tighten or replace parts as necessary to make sure the air intake system does not leak.

General Information

All checks or inspections listed under daily or previous maintenance intervals **must** also be performed at this time in addition to those listed under this maintenance interval.

Lubricating Oil and Filter Change Interval

Refer to the following flow chart to determine the **maximum** recommended oil and filter change intervals in kilometers, miles, hours or months; whichever comes first.



(1) Or whichever comes first. If your application accumulates high hours and low mileage, the change interval is determined by hours.

Example: Transit buses and refuse trucks may average 16 Km [10 MPH] when used in all urban routes. Oil drain intervals in those applications are 4800 Km [3,000 mi], or less.

Lubricating Oil and Filter

Changing

Caution: Avoid prolonged and repeated skin contact with used engine oils. Such prolonged and repeated contact may cause skin disorders or other bodily injury.

— Avoid excessive contact - wash thoroughly after contact.

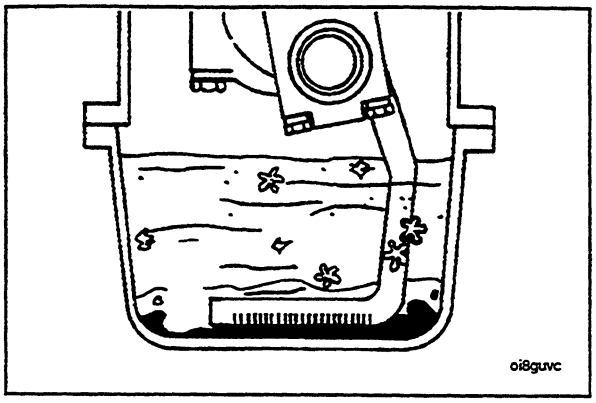
— Keep out of reach of children.

PROTECT THE ENVIRONMENT: Handling and disposal of used engine oil may be subject to federal, state and local law and regulation. Use authorized waste disposal facilities, including civic amenity sites and garages providing authorized facilities for receipt of used oil. If in doubt, contact your state and local environmental authorities or the Environmental Protection Agency for guidance as to proper handling and disposal of used engine oil.

NOTE: If the engine is in service, the oil drain interval of 10,000 Km [6,000 miles] 250 hours or 3 months (or approved extended interval from the Chart on Page 4-3) **must** be observed.

Change the oil and filters to remove the contaminants suspended in the oil.

NOTE: Drain the oil only when it is hot and the contaminants are in suspension.

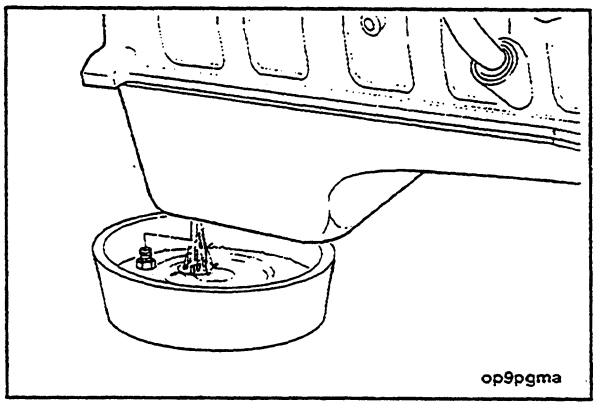


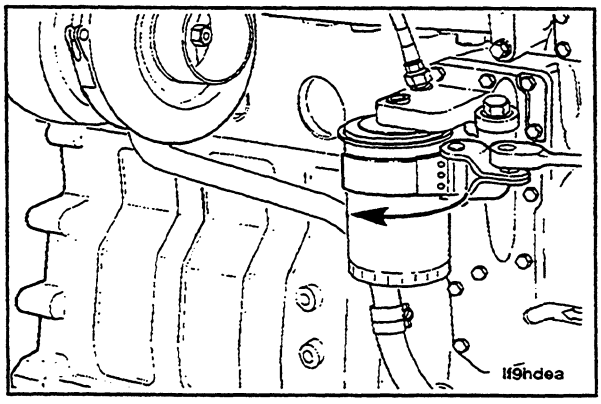
17 mm

Caution: Hot oil can cause personal injury.

Operate the engine until the water temperature reaches 60°C [140°F]. Shut the engine off. Remove the oil drain plug.

NOTE: Use a container that can hold at least 20 liters [15 U.S. qts.] of oil.

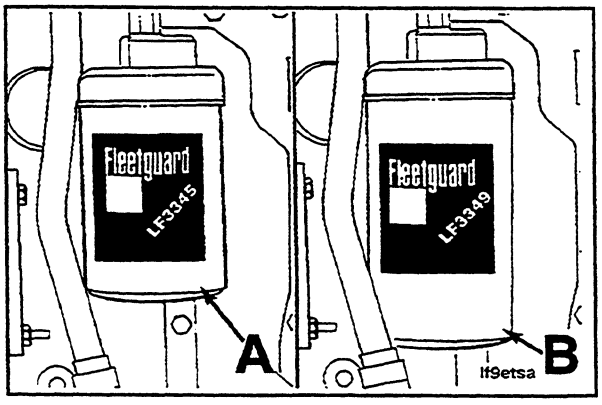




90 to 95 mm Filter Wrench

Clean the area around the lubricating oil filter head. Remove the filter. Clean the gasket surface of the filter head.

NOTE: The o-ring can stick on the filter head. Make sure it is removed before installing the new filter.



Make sure the correct oil filter is used.

The filter for the six-cylinder engine is longer than the filter for the four-cylinder engine.

A = Standard for four-cylinder applications.

B = Standard for six-cylinder applications.

NOTE: A 6 cylinder oil filter can be used on a 4 cylinder engine. **Do not** use a 4 cylinder oil filter on a 6 cylinder engine.

General Information

Preventative maintenance begins with day-to-day awareness of the condition of the engine and its systems.

Before starting the engine, check the oil and coolant levels. Look for:

- Leaks
- Loose or damaged parts
- Worn or damaged belts
- Any change in engine appearance

Fuel-Water Separator

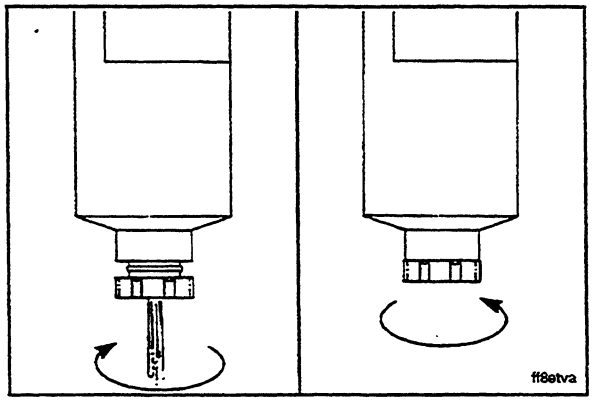
Draining

Drain the water and sediment from the separator daily.

Shut off the engine. Use your hand to open the drain valve. Turn the valve **counterclockwise** approximately 1 1/2- to 2 turns until draining occurs. Drain the filter sump of water until clear fuel is visible.

Caution: Do not overtighten the valve. Overtightening can damage the threads.

Turn the valve **clockwise** to close the drain valve.



Oil Level

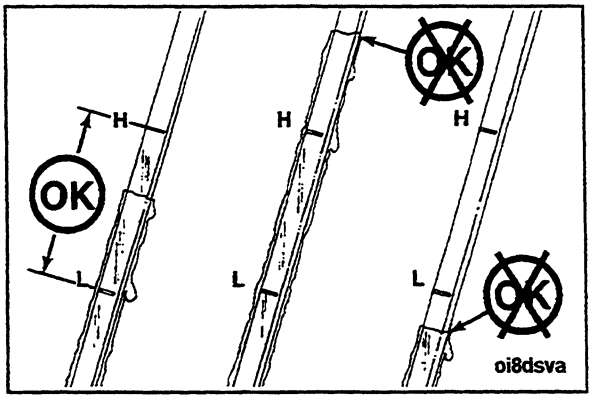
Check

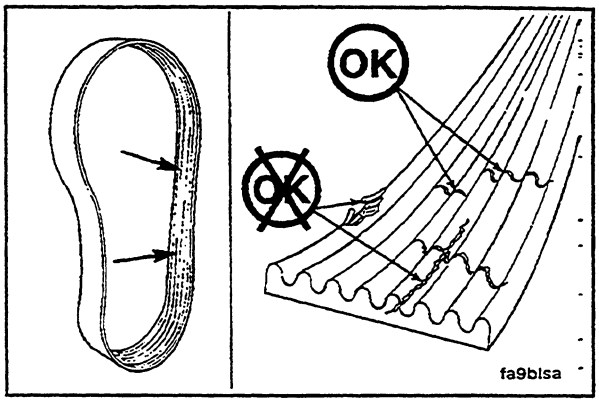
Never operate the engine with the oil level below the "L" (Low) mark or above the "H" (High) mark. Wait at least 5 minutes after shutting off the engine to check the oil. This allows time for the oil to drain to the oil pan.

NOTE: The engine **must** be level when checking the oil level to make sure the measurement is correct.

Low Mark To High Mark Oil Capacity

4 Cylinder - 0.95 Liter [1.0 U.S. Quart]
6 Cylinder - 1.89 Liter [2.0 U.S. Quart]

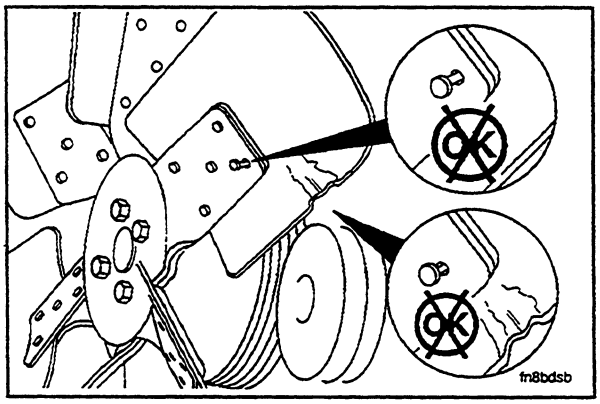




Drive Belt

Inspection

Visually inspect the belt. Check the belt for intersecting cracks. Transverse (across the belt width) cracks are acceptable. Longitudinal (direction of belt length) cracks that intersect with transverse cracks are **not** acceptable. Replace the belt if it is frayed or has pieces of material missing. Refer to **Adjustment and Replacement** (Section A).



Cooling Fan

Inspection

Warning: Personal injury can result from a fan blade failure. Never pull or pry on the fan. This can damage the fan blade(s) and cause fan failure.

NOTE: Rotate the crankshaft by using the engine barring gear.

A visual inspection of the cooling fan is required daily. Check for cracks, loose rivets, and bent or loose blades. Check the fan to make sure it is securely mounted. Tighten the capscrews if necessary. Replace any fan that is damaged.

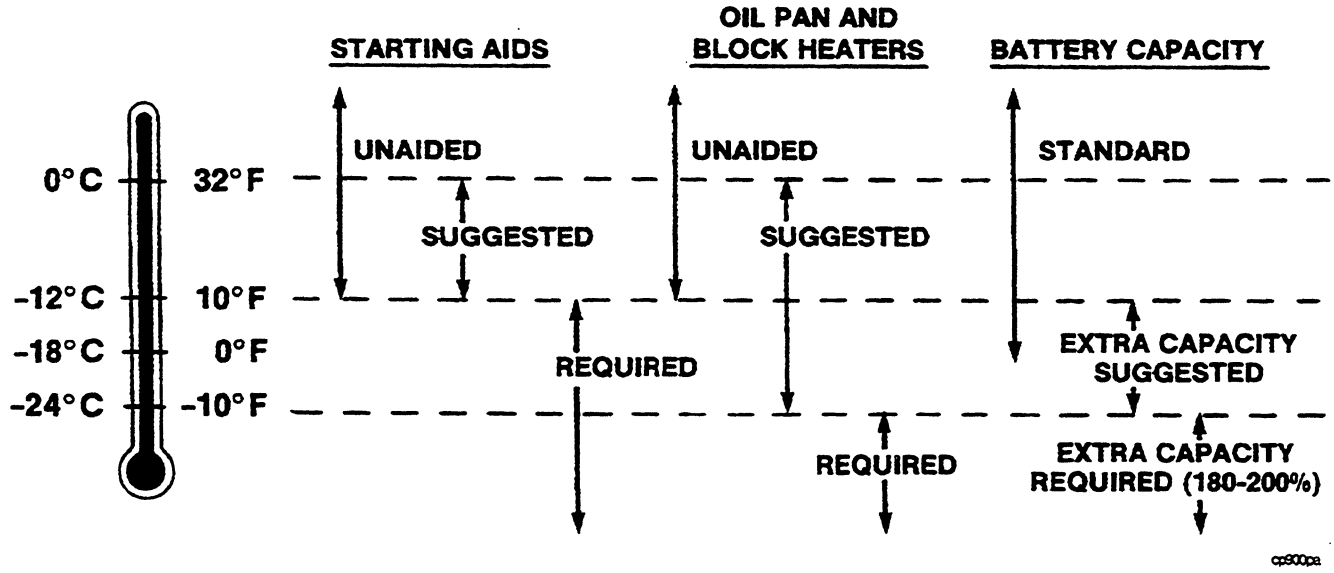
Cold Weather Operation

Starting Aid Requirements

Use the following chart as a reference for required cold weather starting aids:

Operation in ambient temperatures below 0°C [32°F] can require special consideration be given to engine starting.

At temperatures below 0°C [32°F], operate the engine at **moderate** speeds for 5 minutes before full loads are applied.



Cold Weather Starting

Using Starting Fluid With Mechanical or Electrical Metering Equipment

- Set the throttle at **half** speed.
- Disengage the driven unit, or if equipped, put the transmission in neutral.
- Activate the switch to open the fuel pump shut-off valve.
- While cranking the engine, inject metered amounts of starting fluid.
- Engine oil pressure **must** be indicated on the gauge within 30 seconds after starting.

Using Starting Fluid Without Metering Equipment

Warning: Never use starting fluid near an open flame, or with a preheater or flame thrower equipment. This combination can cause an explosion.

Warning: Do not breathe starting fluid fumes. Starting fluid fumes can be harmful to your health.

Caution: Do not use excessive amounts of starting fluid when starting an engine. The use of too much starting fluid will cause engine damage.

- Spray starting fluid into the air cleaner intake while another person cranks the engine.

Warning: Do not use volatile cold starting aids in underground mine or tunnel operations due to the potential of an explosion. Check with the local U.S. Bureau of Mines Inspector for instructions.

Starting Procedure - After Extended Shutdown or Oil Change

Complete the following steps after each oil change, or after the engine has been shut off for more than 30 days to make sure the engine receives the correct oil flow through the lubricating oil system:

- Disconnect the electrical wire from the fuel pump solenoid valve.
- Rotate the crankshaft, using the starting motor, until oil pressure appears on the gauge, or the warning light goes out.
- Connect the electrical wire to the fuel pump solenoid valve.
- Start the engine; refer to Normal Starting Procedures in this section.
- Refer to Fuel System - Bleeding, Section 5, for instructions to vent the fuel system.

Operating the Engine

- Do **not** operate the engine at full throttle below peak torque engine speed (1100 to 1600 RPM, depdendent on engine rating) for extended periods (more than 1 minute) of time.
- Allow the engine to idle 3 to 5 minutes before shutting it off after a full load operation.
- Monitor the oil pressure and coolant temperature gauges frequently. Refer to Lubricating Oil System or Cooling System, Section V, for recommended operating pressures and temperatures. Shut off the engine if any pressure or temperature does **not** meet the specifications.

Caution: Continuous operation with low coolant temperature (below 60°C [140°F]) or high coolant temperature (above 100°C [212°F]) can damage the engine.

- If an overheating condition starts to occur, reduce the power output of the engine by releasing the throttle pressure or shifting the transmission to a lower gear, or both, until the temperature returns to normal operating range. If engine temperature does **not** return to normal, shut off the engine and refer to Troubleshooting, Section T, or contact a Cummins Authorized Repair Location.
- Most failures give an early warning. Look and listen for changes in performance, sound, or engine appearance that can indicate service or engine repair is needed. Some changes to look for are as follows:
  - — Engine misfires
  - — Vibration
  - — Unusual engine noises
  - — Fuel, oil, or coolant leaks
  - — Sudden changes in engine operating temperature or oil pressure
  - — Excessive smoke
  - — Loss of power
  - — An increase in oil consumption
  - — An increase in fuel consumption

General Specifications (Non-Automotive Engines)

GENERAL ENGINE DATA	4B3.9	4BT3.9	4BTA3.9	6B5.9	6BT5.9	6BTA5.9
Bore - mm [in.]	102 [4.02]					
Stroke - mm [in.]	120 [4.72]					
Displacement - liter [in.^{3}]	3.9 [239]			5.9 [359]		
Engine Weight (Dry) Less Flywheel and Electrics - kg [lbs.]	308 [680]	320 [705]	329 [725]	388 [855]	399 [880]	411 [905]
Firing Order	1.3.4.2			1.5.3.6.2.4		
Valve Clearances						
- Intake - mm [in.]	.25 [.010]					
- Exhaust - mm [in.]	.51 [.020]					
Compression Ratio	18.5:1	17.5:1	16.5:1	18.5:1	17.5:1	16.5:1
Rotation, viewed from the Front of the Engine	Clockwise					
Aspiration						
- Naturally Aspirated	X			X		
- Turbocharged		X	X		X	X
- Aftercooled			X			X
- Charge Air Cooled						

NOTE: See additional pages for Automotive Specifications.

LUBRICATION SYSTEM kPa [psi]	4B3.9	4BT3.9	4BTA3.9*	6B5.9	6BT5.9	6BTA5.9*
Minimum Allowable Oil Pressure @ Idle	69 [10]	69 [10]	69 [10]	69 [10]	69 [10]	69 [10]
Minimum Allowable Oil Pressure @ Rated	207 [30]	207 [30]	207 [30]	207 [30]	207 [30]	207 [30]
Regulated Pressure	449 [65]	449 [65]	449 [65]	449 [65]	449 [65]	449 [65]
Differential Pressure to Open Filter Bypass	138 [20]	138 [20]	138 [20]	138 [20]	138 [20]	138 [20]
Oil Capacity L [QT]						
Standard Pan Only	9.5 [10]	9.5 [10]	9.5 [10]	14.2 [15]	14.2 [15]	14.2 [15]
Total System (Pan, Filter, Lines)	10.9 [11.5]	11 [11.6]	11 [11.6]	16.3 [17.2]	16.4 [17.3]	16.4 [17.3]
No. QTS From "L" to "H" on Dipstick	[1]	[1]	[1]	[2]	[2]	[2]
COOLING SYSTEM L [QT]						
Engine Coolant Capacity	7.0 [7.4]	7.0 [7.4]	7.9 [8.4]	9.0 [9.5]	9.0 [9.5]	9.9 [10.5]
Thermostat Modulating Range °C [°F]	83-95 [181-230]	83-95 [181-203]	83-95 [181-203]	83-95 [181-203]	83-95 [181-203]	83-95 [181-203]
Pressure Cap kPa [psi]						
104°C [220°F]	103 [15]	103 [15]	103 [15]	103 [15]	103 [15]	103 [15]
99°C [210°F]	48 [7]	48 [7]	48 [7]	48 [7]	48 [7]	48 [7]

* Jacket-water aftercooled

INTAKE AIR, EXHAUST AND FUEL SYSTEM	4B3.9	4BT3.9	4BTA3.9	6B5.9	6BT5.9	6BTA5.9
Maximum Allowable Intake Restriction at Rated Speed and Load with Dirty Air Filter Element-mm H_2O [in. H_2O]	508 [20]	635 [25]	635 [25]	508 [20]	635 [25]	635 [25]
Maximum Allowable Exhaust Restriction at Rated Speed and Load - mm Hg [in. Hg]	76.2mm [3 in.]					
Maximum Fuel Pressure Drop Across Filters kPa [psi]	34mm [5]					
Maximum Allowable Return Line Restriction - mm Hg [in. Hg]	518mm [20.4 in]					
Maximum Inlet Restriction to fuel transfer pump - mm Hg [in. Hg]	100 [4]					

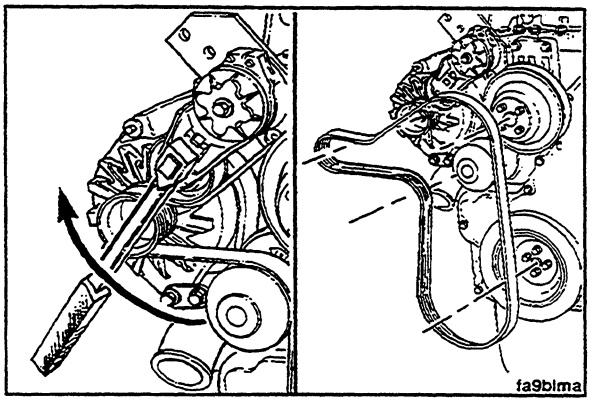
ELECTRICAL SYSTEM	4B3.9	4BT3.9	4BTA3.9	6B5.9	6BT5.9	6BTA5.9
Minimum Recommended Battery Capacity - With Light Accessories*						
- 12 V Starter	625CCA	625CCA	625CCA	800CCA	800CCA	800CCA
- 24 V Starter	312CCA	400CCA	400CCA	400CCA	400CCA	400CCA
With Heavy Accessories**						
- 12 V Starter	800CCA	800CCA	800CCA	950CCA	950CCA	950CCA
- 24 V Starter	400CCA	400CCA	400CCA	475CCA	475CCA	475CCA
Maximum Allowable Resistance of Starting Circuit						
- With 12 V Starter - Ohms	.0012					
- With 24 V Starter - Ohms	.0020					

*Typical light accessories include alternator, small steering pump, and disengaged clutch.

**Typical heavy accessories include hydraulic pump and torque converter.

Batteries (Specific Gravity)

Specific Gravity at 27°C [80°F]	State of Charge
1.260 - 1.280	100%
1.230 - 1.250	75%
1.200 - 1.220	50%
1.170 - 1.190	25%
1.110 - 1.130	Discharged



Drive Belt

Inspection

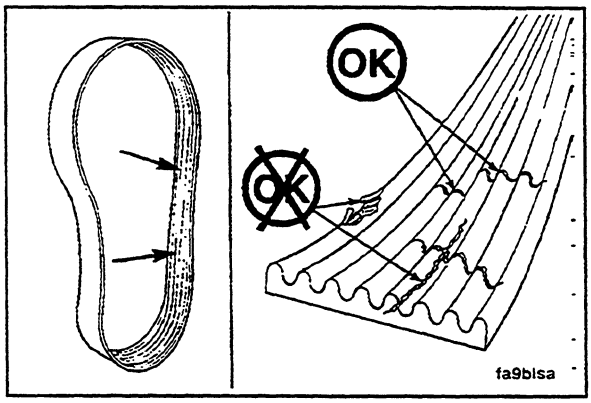
3/8 Inch Square Drive, 13 mm

Remove the drive belt.

Lift the tensioner to remove and install the belt.

NOTE: After the tensioner has been raised to remove/ install the belt, check the torque of the tensioner capscrew.

Torque Value: 43 N•m [32 ft-lb]



Inspect the belt for damage.

Transverse (across the belt width) cracks are acceptable.

Longitudinal (direction of belt length) cracks that intersect with Transverse cracks are **not** acceptable.

Replace the belt if is has unacceptable cracks, is frayed or has pieces of material missing.

General Information

All checks or inspections listed under daily or previous maintenance intervals **must** also be performed at this time in addition to those listed under this maintenance interval.

Cooling System Maintenance

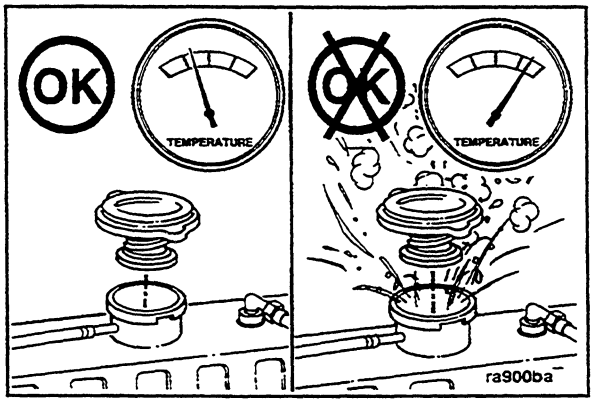
Coolant Draining

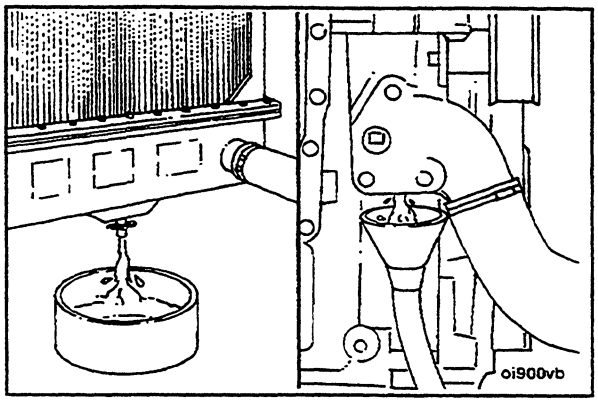
Caution: Avoid prolonged and repeated skin contact with used antifreeze. Such prolonged repeated contact can cause skin disorders or other bodily injury.

- **Avoid excessive contact - wash thoroughly after contact.**
- **Keep out of reach of children.**

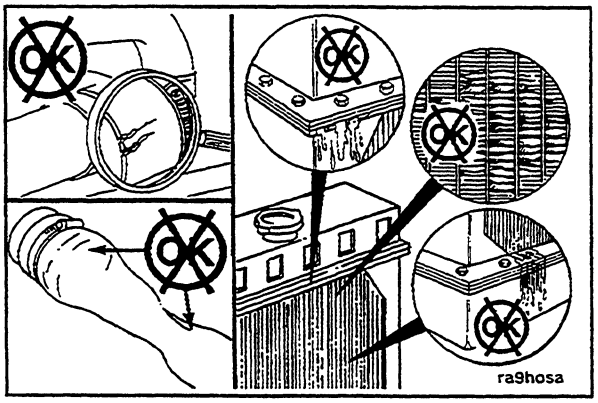
Protect the environment: Handling and disposal of used antifreeze can be subject to federal, state, and local law regulation. Use authorized waste disposal facilities, including civic amenity sites and garages providing authorized facilities for the receipt of used antifreeze. If in doubt, contact your local authorities or the EPA for guidance as to proper handling of used antifreeze.

Caution: Wait until the temperature is below 50°C [120°F] before removing the coolant system pressure cap. Failure to do so can cause personal injury from heated coolant spray.





Drain the cooling system by opening the drain valve on the radiator and removing the plug in the bottom of the water inlet. A drain pan with a capacity of 20 liters [5 U.S. gallons] will be adequate in most applications.

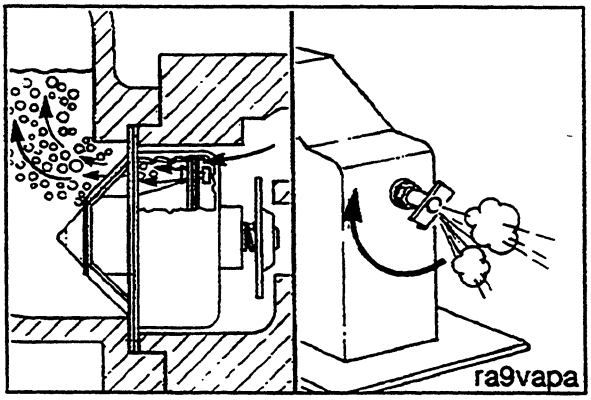


Check for damaged hoses and loose or damaged hose clamps. Replace as required. Check the radiator for leaks, damage and build up of dirt. Clean and repair as required.

Cooling System Flushing

Caution: During filling, air must be vented from the engine coolant passages. The air vents through the "jiggle pin" openings to the top radiator hose and out the fill opening. Additional venting is provided for engines equipped with an aftercooler. Open the petcock during filling.

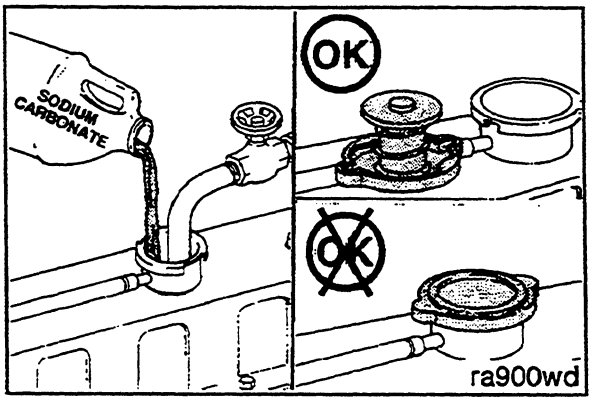
NOTE: Adequate venting is provided for a fill rate of 14 liters/minute [3.5 U.S. Gallon/minute].

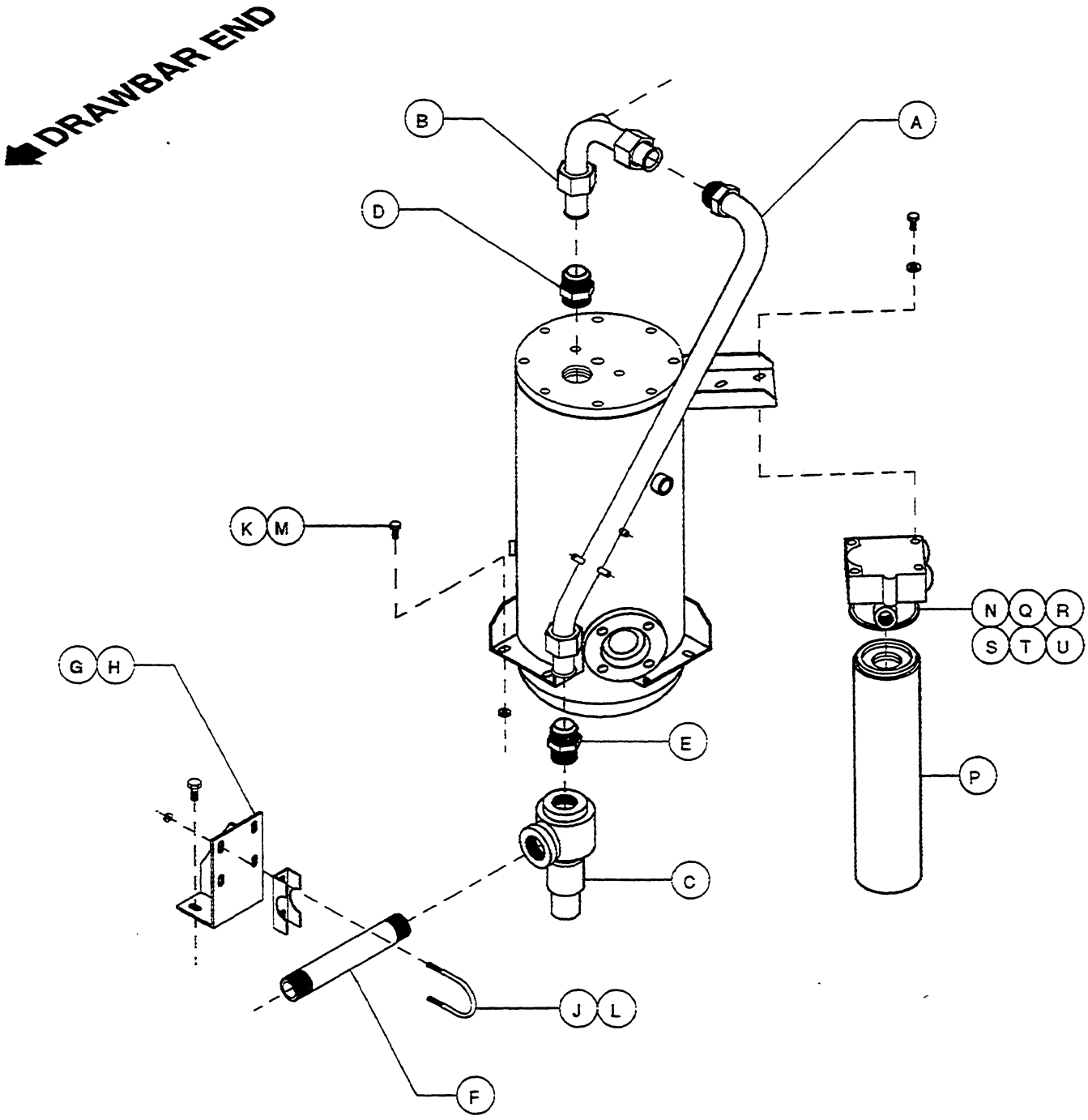


Fill the system with a mixture of sodium carbonate and water (or a commercially available equivalent).

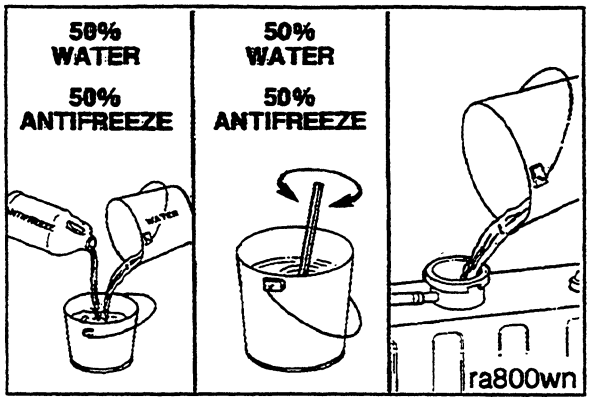
NOTE: Use 0.5 kilogram [1.0 pound] of sodium carbonate for every 23 liters [6.0 U.S. gallons] of water.

Caution: Do not install the radiator cap. The engine is to be operated without the cap for this process.





INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION			
DATE/DWN BY: 6/15/92 bl	DESCRIPTION: AIR SERVICE COMPLETE		
MODEL NO.	ILLUSTRATION NO.	SHEET NO.	REV:
P-600WCU	36518520	1 of 2	F



Use a mixture of 50 percent water and 50 percent ethylene glycol antifreeze to fill the cooling system.

Coolant Capacity (Engine Only)		Liter [U.S. Quarts]	
4B3.9 4BT3.9	4BTA3.9*	6B5.9 6BT5.9	6BTA5.9*
7.0 [7.4]	7.9 [8.4]	9 [9.5]	9.9 [10.5]

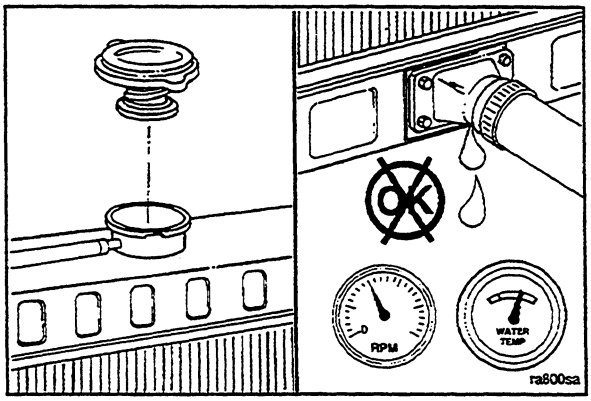
* 4BTA and 6BTA engines use a jacket-water aftercooler. If a Charge Air Cooler is used, the coolant capacity is the same as the naturally aspirated or turbocharged only engines.

Caution: Never use water alone for coolant. Damage from corrosion can be the result of using water alone for coolant.

Install the pressure cap. Operate the engine until it reaches a temperature of 80°C [180°F], and check for coolant leaks.

Check the coolant level again to make sure the system is full of coolant, or that the coolant level has risen to the hot level in the recovery bottle on the system, if so equipped.

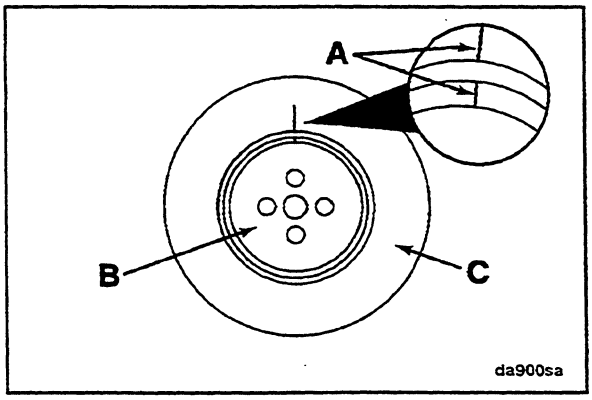
Warning: Before removing the pressure cap, wait until the coolant temperature is below 50°C [120°F]. Failure to do so can cause personal injury from heated coolant spray.

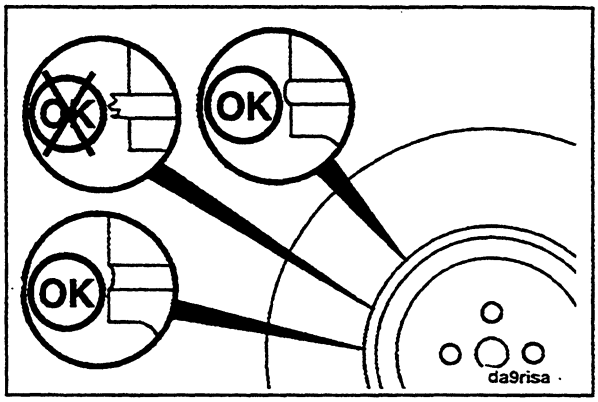


Vibration Damper (Rubber)

Inspection

Check the index lines (A) on the damper hub (B) and the inertia member (C). If the lines are more than 1.59 mm [1/16 inch] out of alignment, replace the damper.





Inspect the rubber member for deterioration. If pieces of rubber are missing or if the elastic member is more than 3.18 mm [1/8 inch] below the metal surface, replace the damper.

NOTE: Also look for forward movement of the damper ring on the hub. Replace the damper if any movement is detected.

Additional Service Literature

The following publications can be purchased by filling in and mailing the Service Literature Order Form:

Bulletin No.	Title Of Publication
3666087	Troubleshooting and Repair Manual
3666017	B Series Engine Shop Manual
3810234	B Series Alternative Repair
3810326	4B Series Standard Repair Times
3810350	6B Series Standard Repair Times
3666025	Specifications Manual

Service Literature Ordering Location

Region	Ordering Location
United States and Canada	Cummins Distributors or Cummins Engine Co., Inc. Publishing Services CMC 95030 Box 3005 Columbus, IN 47202-3005
South and Central America (excluding Brazil and Mexico)	Cummins Americas, Inc. 16085 N.W. 52nd Avenue Hialeah, FL 33104
Australia and New Zealand	Cummins Diesel Australia Maroondah Highway, P.O.B. 139 Ringwood 3134 Victoria, Australia

Obtain current price information from your local Cummins Distributor or (for U.S.A.) by calling Cummins Toll Free Number 1-800-DIESELS (1-800-343-7357).

Engine Specifications (Non-Automotive Engines)

GENERAL ENGINE DATA	4B3.9	4BT3.9	4BTA3.9	6B5.9	6BT5.9	6BTA5.9
Bore - mm [in.]	102 [4.02]					
Stroke - mm [in.]	120 [4.72]					
Displacement - liter [in.^{3}]	3.9 [239]			5.9 [359]		
Engine Weight (Dry) Less Flywheel and Electrics - kg [lbs.]	308 [680]	320 [705]	329 [725]	388 [855]	399 [880]	411 [905]
Firing Order	1.3.4.2			1.5.3.6.2.4		
Valve Clearances						
- Intake - mm [in.]	0.25 [0.010]					
- Exhaust - mm [in.]	0.51 [0.020]					
Compression Ratio	18.5:1	17.5:1	16.5:1	18.5:1	17.5:1	16.5:1
Rotation viewed from the Front of the Engine	Clockwise					
Aspiration						
- Naturally Aspirated	X			X		
- Turbocharged		X	X		X	X
- Aftercooled			X			X
- Charge Air Cooled						

LUBRICATION SYSTEM kPa [psi]	4B3.9	4BT3.9	4BTA3.9*	6B5.9	6BT5.9	6BTA5.9
Minimum Allowable Oil Pressure @ Idle	69 [10]	69 [10]	69 [10]	69 [10]	69 [10]	69 [10]
Minimum Allowable Oil Pressure @ Rated	207 [30]	207 [30]	207 [30]	207 [30]	207 [30]	207 [30]
Regulated Pressure	449 [65]	449 [65]	449 [65]	449 [65]	449 [65]	449 [65]
Differential Pressure to Open Filter Bypass	138 [20]	138 [20]	138 [20]	138 [20]	138 [20]	138 [20]
Oil Capacity L [QT]						
Standard Pan Only	9.5 [10]	9.5 [10]	9.5 [10]	14.2 [15]	14.2 [15]	14.2 [15]
Total System (Pan, Filter, Lines)	10.9 [11.5]	11 [11.6]	11 [11.6]	16.3 [17.2]	16.4 [17.3]	16.4 [16]
No. QTS From "L" to "H" on Dipstick	[1]	[1]	[1]	[2]	[2]	[2]
COOLING SYSTEM L [QT]						
Engine Coolant Capacity	7.0 [7.4]	7.0 [7.4]	7.9 [8.4]	9.0 [9.5]	9.0 [9.5]	9.9 [10.5]
Thermostat Modulating Range °C [°F]	83-95 [181-230]	83-95 [181-203]	83-95 [181-203]	83-95 [181-203]	83-95 [181-203]	83-95 [181-203]
Pressure Cap kPa [psi]						
104°C [220°F]	103 [15]	103 [15]	103 [15]	103 [15]	103 [15]	103 [15]
99°C [210°F]	48 [7]	48 [7]	48 [7]	48 [7]	48 [7]	48 [7]

* Jacket-water aftercooled

INTAKE AIR, EXHAUST AND FUEL SYSTEM	4B3.9	4BT3.9	4BTA3.9	6B5.9	6BT5.9	6BTA5.9
Maximum Allowable Intake Restriction at Rated Speed and Load with Dirty Air Filter Element - mm H_2O [in. H_2O]	508 [20]	635 [25]	635 [25]	508 [20]	635 [25]	635 [25]
Maximum Allowable Exhaust Restriction at Rated Speed and Load - mm Hg [in. Hg]	76.2 mm [3 in.]					
Maximum Allowable Restriction to Transfer Pump - mm Hg [in. Hg]	100 mm [4 in.]					
Maximum Allowable Return Line Restriction - mm Hg [in. Hg]	518 mm [20.4 in.]					
Maximum Fuel Pressure Drop Across Filters kPa [psi]	34 [5]					

ELECTRICAL SYSTEM	4B3.9	4BT3.9	4BTA3.9	6B5.9	6BT5.9	6BTA5.9
Minimum Recommended Battery Capacity - With Light Accessories*						
- 12 V Starter	625CCA	625CCA	625CCA	800CCA	800CCA	800CCA
- 24 V Starter	312CCA	400CCA	400CCA	400CCA	400CCA	400CCA
With Heavy Accessories**						
- 12 V Starter	800CCA	800CCA	800CCA	950CCA	950CCA	950CCA
- 24 V Starter	400CCA	400CCA	400CCA	475CCA	475CCA	475CCA
Maximum Allowable Resistance of Starting Circuit						
- With 12 V Starter - Ohms	0.0012					
- With 24 V Starter - Ohms	0.0020					

* Typical light accessories include alternator, small steering pump, and disengaged clutch.

** Typical heavy accessories include hydraulic pump and torque converter.

Batteries (Specific Gravity)

Specific Gravity at 27°C [80°F]	State of Charge
1.260 - 1.280	100%
1.230 - 1.250	75%
1.200 - 1.220	50%
1.170 - 1.190	25%
1.110 - 1.130	Discharged

General Specifications (Automotive Engines)

Lubricating SystemkPa [psi]	B3.9-110	B3.9-130	B5.9-160	B5.9-175	B5.9-190	B5.9-210	B5.9-230
Bore - mm [in.]	102 [4.02]	102 [4.02]	102 [4.02]	102 [4.02]	102 [4.02]	102 [4.02]	102 [4.02]
Stroke - mm [in.]	120 [4.72]	120 [4.72]	120 [4.72]	120 [4.72]	120 [4.72]	120 [4.72]	120 [4.72]
Displacement - liter [in.^{3}]	3.9 [239]	3.9 [239]	5.9 [359]	5.9 [359]	5.9 [359]	5.9 [359]	5.9 [359]
Engine Weight (Dry) Less Flywheel and Electrics - kg [lbs.]	308 [680]	308 [680]	428 [942]	428 [942]	428 [942]	428 [942]	428 [942]
Firing Order	1-3-4-2	1-3-4-2	1-5-3-6-2-4	1-5-3-6-2-4	1-5-3-6-2-4	1-5-3-6-2-4	1-5-3-6-2-4
Valve Clearances:							
- Intake - mm [in.]	0.25 [0.010]	0.25 [0.010]	0.25 [0.010]	0.25 [0.010]	0.25 [0.010]	0.25 [0.010]	0.25 [0.010]
- Exhaust - mm [in.]	0.51 [0.020]	0.51 [0.020]	0.51 [0.020]	0.51 [0.020]	0.51 [0.020]	0.51 [0.020]	0.51 [0.020]
Compression Ratio	17.6:1	17.6:1	17.5:1	17.5:1	17.1:1	17.1:1	17.1:1
Rotation, viewed from the Front of the Engine	Clockwise	Clockwise	Clockwise	Clockwise	Clockwise	Clockwise	Clockwise
Aspiration:							
- Naturally Aspirated							
- Turbocharged	X	X	X	X	X	X	X
- Aftercooled							
- Charge Air Cooled	X	X	X	X	X	X	X

General Specifications (Automotive Engines)

Lubricating System kPa [psi]	B3.9-110	B3.9-130	B5.9-160	B5.9-175	B5.9-190	B5.9-210	B5.9-230
Min. Allowable Press. @ Idle	69 [10]	69 [10]	69 [10]	69 [10]	69 [10]	69 [10]	69 [10]
Min. Allowable Press. @ Rated	207 [30]	207 [30]	207 [30]	207 [30]	207 [30]	207 [30]	207 [30]
Regulated Pressure	449 [65]	449 [65]	449 [65]	449 [65]	449 [65]	449 [65]	449 [65]
Filter Bypass Diff. Pressure	138 [20]	138 [20]	138 [20]	138 [20]	138 [20]	138 [20]	138 [20]
Oil Capacity L [QT]:							
- Standard Pan Only	9.5 [10]	9.5 [10]	14.2 [15]	14.2 [15]	14.2 [15]	14.2 [15]	14.2 [15]
- Total System	11 [11.6]	11 [11.6]	16.4 [17.3]	16.4 [17.3]	16.4 [17.3]	16.4 [17.3]	16.4 [17.3]
QTS From "L" to "H"	[1]	[1]	[2]	[2]	[2]	[2]	[2]
COOLING SYSTEM L [QT]	**B3.9-105**	**B3.9-120**	**B5.9-160**	**B5.9-180**	**B5.9-190**	**B5.9-210**	**B5.9-230**
Engine Coolant Capacity	7.0 [7.4]	7.0 [7.4]	9.0 [9.5]	9.0 [9.5]	9.0 [9.5]	9.0 [9.5]	9.0 [9.5]
Thermostat Modulating Range:							
C	83-95	83-95	83-95	83-95	83-95	83-95	83-95
[F]	[181-203]	[181-203]	[181-203]	[181-203]	[181-203]	[181-203]	[181-203]
Pressure Cap kPa [psi]:							
- 104C° [220°F]	103 [15]	103 [15]	103 [15]	103 [15]	103 [15]	103 [15]	103 [15]
- 99C° [210°F]	48 [7]	48 [7]	48 [7]	48 [7]	48 [7]	48 [7]	48 [7]

General Specifications (Automotive Engines)

Intake Air, Exhaust, And Fuel System	B3.9-110	B3.9-130	B5.9-160	B5.9-175	B5.9-190	B5.9-210	B5.9-230
Maximum Allowable Intake Restriction at Rated Speed and Load with Dirty Air Filter Element - mm H_20 [in. H_20]	635 [25]	635 [25]	635 [25]	635 [25]	635 [25]	635 [25]	635 [25]
Maximum Allowable Exhaust Restriction at Rated Speed and Load - mm Hg [in. Hg]	152.4 [6]*	152.4 [6]*	152.4 [6]*	152.4 [6]*	152.4 [6]*	152.4 [6]*	152.4 [6]*
Maximum Allowable Restriction to fuel transfer Pump - With Dirty Filter - mm Hg [in. Hg]	100 [4]	100 [4]	100 [4]	100 [4]	100 [4]	100 [4]	100 [4]
Maximum Allowable Return Line Restriction - mm Hg [in. Hg]	518 [20.4]	518 [20.4]	518 [20.4]	518 [20.4]	518 [20.4]	518 [20.4]	518 [20.4]
Maximum Fuel Pressure Drop Across Filters kPa [psi]			34 [5]	34 [5]	34 [5]	34 [5]	34 [5]

* with catalyst

General Specifications (Automotive Engines)

Electrical System	B3.9-110	B3.9-130	B5.9-160	B5.9-175	B5.9-190	B5.9-210	B5.9-230
Minimum-Recommended Battery Capacity - With Light Accessories*:							
- 12 V Starter	625CCA	625CCA	800CCA	800CCA	800CCA	800CCA	800CCA
- 24 V Starter	400CCA	400CCA	400CCA	400CCA	400CCA	400CCA	400CCA
With Heavy Accessories**:							
- 12 V Starter	800CCA	800CCA	950CCA	950CCA	950CCA	950CCA	950CCA
- 24 V Starter	400CCA	400CCA	475CCA	475CCA	475CCA	475CCA	475CCA
Maximum Allowable Resistance of Starting Circuit:							
- With 12 V Starter - Ohms	.0012	.0012	.0012	.0012	.0012	.0012	.0012
- With 24 V Starter - Ohms	.0020	.0020	.0020	.0020	.0020	.0020	.0020

*Typical light accessories include alternator, small steering pump, and disengaged clutch.

**Typical heavy accessories include hydraulic pump and torque converter.

Fuel Recommendations/Specifications

Warning: Do not mix gasoline or alcohol with diesel fuel. This mixture can cause an explosion.

Caution: Due to the precise tolerances of diesel injection systems, it is extremely important that the fuel be kept clean and free of dirt or water. Dirt or water in the system can cause severe damage to both the injection pump and the injection nozzles.

Caution: Do NOT use diesel fuel blended with lube oil in engines equipped with a catalytic convertor (including all model year 1994 and beyond). Damage to legally required emission control may result.

Use ASTM No. 2 D fuel with a minimum Cetane number of 40. No. 2 diesel fuel gives the best economy and performance under most operating conditions. Fuels with Cetane numbers higher than 40 may be needed in high altitudes or extremely low ambient temperatures to prevent misfires and excessive smoke.

At operating temperatures below 0°C [32°F], use a blend of No. 1 D and No. 2 D fuels, also known as "winterized" No. 2 D.

NOTE: No. 1 D fuel can be used, however, fuel economy will suffer.

Use low sulfur content fuel having a cloud point that is at least 10 degrees below the lowest expected fuel temperature. Cloud point is the temperature at which was crystals begin to form in diesel fuel.

The viscosity of the fuel **must** be kept above 1.3 centistokes to provide adequate fuel system lubrication at 40°C [104°F].

For a more detailed description of fuel properties, refer to Fuel For Cummins Engines, Bulletin No. 3379001.

The following chart lists acceptable alternate fuels for MidRange engines.

Acceptable Alternate Fuels - Component Wear/Durability

Fuel Type	Bosch A	Bosch P7100	Bosch VE	Nippondenso EP-9	Stanadyne DB-4	Lucas CAV DPA	Lucas CAV DPS
NO. 1-D Diesel	OK	OK	OK	OK	OK	OK	OK
NO. 2 Fuel Oil	OK	OK	OK	OK	OK	OK	OK
NO. 1-K Kerosene	OK	OK	*	OK	*	*	*
NO. 2-K Kerosene	OK	OK	*	OK	*	*	*
Jet-A	OK	OK	*	OK	*	*	*
Jet A-1	OK	OK	*	OK	*	*	*
JP-5	OK	OK	*	OK	*	*	*
JP-8	OK	OK	*	OK	*	*	*
Jet-B	Not ok	Not ok	Not ok	Not ok	Not ok	Not ok	Not ok
JP-4	Not ok	Not ok	Not ok	Not ok	Not ok	Not ok	Not ok
Cite	Not ok	Not ok	Not ok	Not ok	Not ok	Not ok	Not ok

* OK ONLY if 5% new lube oil is blended with these fuels to increase the lubricity to acceptable level.

Caution: Do NOT use diesel fuel blended with lube oil in engines equipped with a catalytic convertor (including all model year 1994 and beyond). Damage to legally required emission control may result.

NOTE: Any adjustment to compensate for reduced performance with a fuel system using alternate fuel is not warrantable.

NOTE: Wear on any mid-range fuel pump component attributed to the lack of lubrication in the fuel is not a warrantable repair.

Lubricating Oil Recommendations/Specifications

Oil Performance Recommendations

The use of quality engine lubricating oils combined with appropriate oil drain and filter change intervals are critical factors in maintaining engine performance and durability.

Cummins Engine Company, Inc. recommends the use of a high quality SAE 15W-40 heavy duty engine oil (such as Cummins Premium Blue) which meets the American Petroleum Institute (API) performance classification CE/SG.

NOTE: CC/CD or CD/SF engine oils can be used in areas where CE oil is not yet available, but the oil change interval must be reduced to one half the interval given in the maintenance schedule.

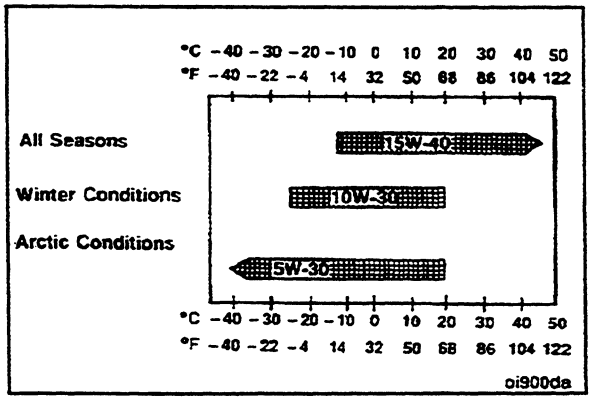
A sulfated ash limit of 1.0 mass percent is suggested for optimum valve and piston deposit and oil consumption control. The sulfated ash **must not** exceed 1.85 mass percent.

Oil Viscosity Recommendations

The use of multi-viscosity lubricating oil has been found to improve oil consumption control and improve engine cranking in cold temperatures while maintaining lubrication at high operating temperatures.

While 15W-40 oil is recommended for most climates, refer to the accompanying table for oil viscosity recommendations for extreme climates.

NOTE: Limited use of low viscosity oils, such at 10W-30 may be used for easier starting and providing sufficient oil flow at ambient temperatures below -5°C [23°F]. However, continuous use of low viscosity oils can decrease engine life due to wear. Refer to the accompanying chart.

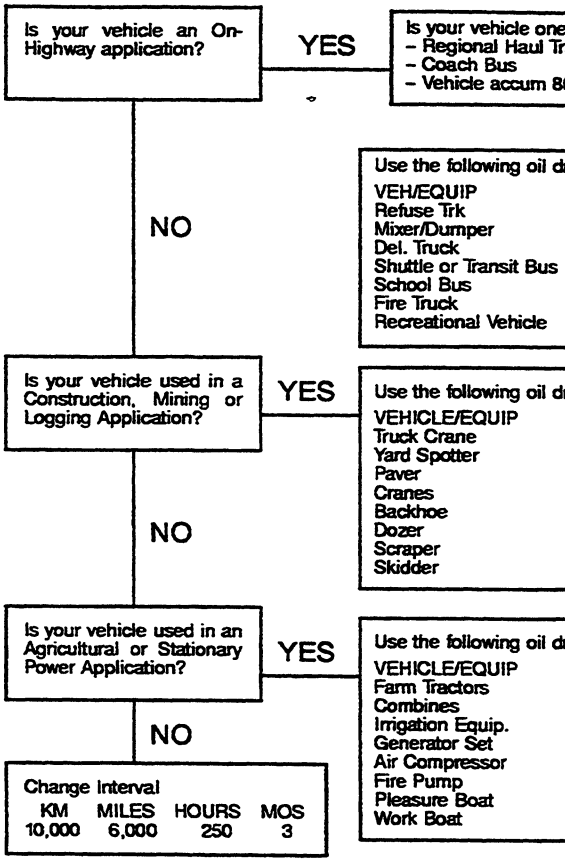


New Engine Break-In Oils

Do not use special "break-in" lubricating oils for new or rebuilt Cummins engines. Use the same type of oil during the "break-in" as that which is used in normal operation.

Recommended Oil Change Intervals

Refer to the following flowchart for the recommended oil change interval based on engine application.



(1) Or whichever comes first. If your application accumulates high hours and low mileage, the change interval is determined by hours.

Example: Transit buses and refuse trucks may average 16 Km/h [10 MPH] when used in an all urban routes. Oil drain intervals in those applications are 4,800 Km [3,000 mi], or less.

Oil Consumption

In addition to the information that follows, a service publication entitled Technical Overview of Oil Consumption is available, Bulletin 3379214-00.

Cummins defines "Acceptable Oil Usage" as outlined in the following table:

ACCEPTABLE OIL USAGE									
ANY TIME DURING COVERAGE PERIOD									
ENGINE FAMILY	HRS PER QT	HRS PER LITER	HOURS PER IMPERIAL QUART	MILES PER QUART	MILES PER LITER	MILES PER IMPERIAL QUART	KILOM PER QUART	KILOM PER LITER	KILOM PER IMPERIAL QUART
4B	10.0	10.6	12.0	400	425	475	650	675	775
6B	10.0	10.6	12.0	400	425	475	650	675	775
6C	10.0	10.6	12.0	400	425	475	650	675	775

Arctic Operation

If an engine is operated in ambient temperatures consistently below -23°C [-10 °F] and there are no provisions to keep the engine warm when it is **not** in operation, use a synthetic CE/SG engine oil with adequate low temperature properties such as; 5W-30.

The oil supplier **must** be responsible for meeting the performance service specifications.

Caution: The use of a synthetic base oil does not justify extended oil change intervals. Extended oil change intervals can decrease engine life due to factors such as; corrosion, deposits and wear.

Additional information regarding lubricating oil availability throughout the world is available in the "E.M.A. Lubricating Oils Data Book for Heavy Duty Automotive and Industrial Engines." The data book may be ordered from the engine Manufacturers Association, One Illinois Center, 111 East Wacker Drive, Chicago, IL U.S.A. 60601. The telephone number is: (312) 644-6610.

Coolant Recommendations/Specifications

Heavy duty diesel engines require a balanced coolant mixture of water and antifreeze. Drain and replace the mixture every 2 years, 320,000 KM [200,000 miles] or 6,000 hours of operation (whichever occurs first) to eliminate buildup of harmful chemicals.

- **Antifreeze is essential in any climate.** It broadens the operating temperature range by lowering the coolant freezing point and by raising its boiling point. Do **not** use more than 50 percent antifreeze in the mixture unless additional freeze protection is required. **Never** use more than 68 percent antifreeze under any condition.
- Use soft water in the coolant mixture. Contaminants in hard water neutralize the corrosion inhibitor components. Water **must not** exceed 300 ppm hardness, or contain more than 100 ppm of either chloride or sulfate.
- **Specifications - Use low silicate antifreeze which meets ASTM4985 test (GM6038M spec.) critera.**

  Concentration - Antifreeze **must** be used in any climate for both freeze and boiling point protection. **Cummins recommends a 50 percent concentration level (40 percent to 60 percent range) of ethylene glycol or propylene glycol in most climates.** Antifreeze at 68 percent concentration provides the maximum freeze protection and **must** never be exceeded under any condition. Antifreeze protection decreases above 68 percent.

Ethylene Glycol	Propylene Glycol
40% = -23°C [-10°F]	40% = -21°C [-6°F]
50% = -37°C [-34°F]	50% = -33°C [-27°F]
60% = -54°C [-65°F]	60% = -49°C [-56°F]
68% = -71°C [-90°F]	68% = -63°C [-82°F]

  Concentration Testing - Antifreeze concentration must be checked using a refractometer (such as Fleetguard Part No. CC2800). "Floating ball" type density testers or hydrometers are not accurate enough for use with heavy duty diesel cooling systems.

Engine Component Torque Value

Socket or Wrench Size MM (Inch)		Torque N•m	(Ft-lb)
10	Aftercooler Mounting	24	[18]
8	Aftercooler Water Hose Clamp	5	[4]
13	Alternator Link (Delco 10-15 SI)	24	[18]
[3/4]	Alternator Link (Delco 20-27 SI)	43	[32]
15	Alternator Mtg. Bolt 10-15 SI	43	[32]
18	Alternator Mtg. Bolt 27 SI	77	[57]
10	Alternator Support (Upper)	24	[18]
Allen 5 mm	Belt Tensioner Flat Bracket	24	[18]
15	Belt Tensioner Mounting	43	[32]
15	Crankshaft Damper & Pulley	137	[101]
[5/16]	Crossover Clamp	5	[4]
11	Tee Bolt Type Clamp	8	[6]
15	Exhaust Manifold	43	[32]
15	Exhaust Outlet Pipe Mtg Bracket	43	[32]
(7/16)	Exhaust Outlet Pipe, V Band Clamp	8	[6]
10	Fan Bracket Mounting	24	[18]
10	Fan Pulley	24	[18]
13	Fan Pulley	43	[32]
19	Flywheel	137	[101]
–	Front Cover Clamp Access Cap	------ Hand Tighten ------	
17	Fuel Drain Line Banjo Screw (Rotary Pump)	15	[11]

Engine Component Torque Value (Continued)

Socket or Wrench Size MM (Inch)		Torque N•m	(Ft-lb)
17	Fuel Banjo Screw (in Filter Head)	24	[18]
10	Fuel Vent Screw (in Banjo)	9	[7]
10	Fuel Banjo Screw (Injector)	9	[7]
75-85	Fuel Filter	3/4 Turn After Contact	
24	Fuel Filter Adapter Nut	32	[24]
17 or 19	Fuel Line Fitting (High Pressure)	24	[18]
22	Fuel Pump Drive Gear (with Pump Unlocked) Rotary	65	[48]
22	Fuel Pump Drive Gear (Pump Unlocked) Nippondenso	123	[92]
30	Fuel Pump Drive Gear (Pump Unlocked) Bosch Inline	165	[122]
10	Fuel Pump Lock (Bosch) Rotary	30	[22]
	Fuel Pump Unlock (Bosch) Rotary	13	[10]
14	Fuel Pump Lock (CAV)	7	[5]
	Fuel Pump Unlock (CAV)	20	[15]
13	Fuel Pump Mounting Nuts (Bosch Rotary)	24	[18]
15	Fuel Pump Mounting Nuts (Bosch In-Line, Nippondenso)	43	[32]
13	Fuel Pump Mounting Nuts (CAV)	30	[22]
13	Fuel Pump Support Bracket	24	[18]
24	Injector Retaining Nut	60	[44]
13	Intake Manifold Cover	24	[18]
10	Lift Pump/Cover Plate	24	[18]
18	Lifting Bracket (Rear)	77	[57]

Socket or Wrench Size MM (Inch)		Torque N•m	(Ft-lb)
75-85	Oil Filter	3/4 Turn After Contact	
10	Oil Cooler Assembly	24	[18]
17	Oil Pan Drain Plug	80	[60]
27	Oil Pan Heater Plug	80	[60]
19	Oil Pressure Regulator Plug	80	[60]
10	Rear Seal Housing	9	[7]
14	Rocker Lever Nut	24	[18]
10	Starter Mounting	43	[32]
10	Tappet Cover/Fuel Drain Line Supports	24	[18]
10	Thermostat Housing	24	[18]
13	Turbine Housing	20	[15]
10	Turbo Compressor Housing Clamp	8.5	[6]
15	Turbo Mounting Nuts	43	[32]
13	Turbo Drain Tube	24	[18]
16	Turbo Oil Supply (Both Ends)	35	[26]
15	Water Inlet Connection	43	[32]
13	Water Pump Mounting	24	[18]
15	Valve Cover	24	[18]
–	Valve Cover Oil Fill	Hand Tighten	

Sealants

Use the sealants listed below or sealants containing equivalent properties.

Description	Sealing Method
1. Pipe Plugs	Precoated teflon or pipe sealer.
2. Cup Plugs	Loctite 277 or 11,264.
3. O-Rings	No sealant required.
4. Rear Camshaft Expansion Plug	Precoated or Loctite 59,241 liquid teflon.
5. Fuel Pump Studs	Loctite 609.
6. Turbo Drain in Block	Loctite 277 or 11,264.
7. Front Seal in Gear Cover	Loctite 277 or 11,264.
8. Rear Seal in Rear Cover	No sealant.
9. Oil Pan at T-Joint	3-Bond 1207C (P/N 3823494)

Capscrew Markings and Torque Values

Caution: When replacing capscrews, always use a capscrew of the same measurement and strength as the capscrew being replaced. Using the wrong capscrews can result in engine damage.

Metric capscrews and nuts are identified by the grade number stamped on the head of the capscrew or on the surface of the nuts. U.S. Customary capscrews are identified by radial lines stamped on the head of the capscrew.

The following examples indicate how capscrews are identified:

Metric - M8-1.25 X 25

M8	1.25	25
Major Thread Diameter in Millimeters	Distance Between Threads in Millimeters	Length in Millimeters

U.S. Customary [5/16 X 18 X 1-1/2]

5/16	18	1-1/2
Major Thread Diameter in Inches	Number Threads per Inch	Length in Inches

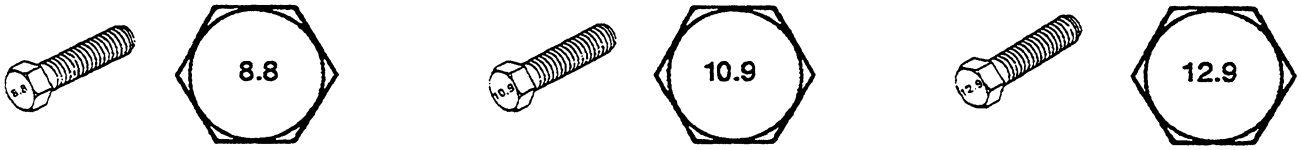
NOTES:

1. **Always** use the torque values listed in the following tables when specific torque values are **not** available.
2. Do **not** use the torque values in place of those specified in other sections of this manual.
3. The torque values in the table are based on the use of lubricated threads.
4. When the ft-lb value is less than 10, give consideration to converting the ft-lb value to in-lb to obtain a better torque with an in-lb torque wrench. Example: 6 ft-lb equals 72 in-lb.

Capscrew Markings and Torque Values - Metric

Commercial Steel Class	8.8	10.9	12.9

Capscrew Head Markings



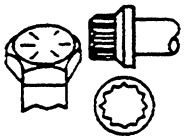
Body Size	Torque				Torque				Torque			
Diam.	Cast Iron		Aluminum		Cast Iron		Aluminum		Cast Iron		Aluminum	
mm	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb
6	9	5	7	4	12	9	7	4	14	9	7	4
7	14	9	11	7	18	14	11	7	23	18	11	7
8	25	18	18	14	33	25	18	14	40	29	18	14
10	45	33	30	25	60	45	30	25	70	50	30	25
12	80	60	55	40	105	75	55	40	125	95	55	40
14	125	90	90	65	165	122	90	65	195	145	90	65
16	180	130	140	100	240	175	140	100	290	210	140	100
18	230	170	180	135	320	240	180	135	400	290	180	135

Capscrew Markings and Torque Values - U.S. Customary

SAE Grade Number	5	8

Capscrew Head Markings

These are all SAE Grade 5 (3) line



Capscrew Body Size	Capscrew Torque - Grade 5 Capscrew				Capscrew Torque - Grade 8 Capscrew			
	Cast Iron		Aluminum		Cast Iron		Aluminum	
	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb	N•m	ft-lb
1/4 - 20	9	7	8	6	15	11	8	6
- 28	12	9	9	7	18	13	9	7
5/16 - 18	20	15	16	12	30	22	16	12
- 24	23	17	19	14	33	24	19	14
3/8 - 16	40	30	25	20	55	40	25	20
- 24	40	30	35	25	60	45	35	25
7/16 - 14	60	45	45	35	90	65	45	35
- 20	65	50	55	40	95	70	55	40
1/2 - 13	95	70	75	55	130	95	75	55
- 20	100	75	80	60	150	110	80	60
9/16 - 12	135	100	110	80	190	140	110	80
- 18	150	110	115	85	210	155	115	85
5/8 - 11	180	135	150	110	255	190	150	110
- 18	210	155	160	120	290	215	160	120
3/4 - 10	325	240	255	190	460	340	255	190
- 16	365	270	285	210	515	380	285	210
7/8 - 9	490	360	380	280	745	550	380	280
- 14	530	390	420	310	825	610	420	310
1 - 8	720	530	570	420	1100	820	570	420
- 14	800	590	650	480	1200	890	650	480

Cummins Warranty - Industrial (U.S. and Canada)

Coverage

PRODUCTS WARRANTED

This warranty applies to new Engines sold by Cummins Engine Company, Inc., hereinafter 'Cummins', and delivered to the first user on or after February 1, 1993, that are used in industrial (off-highway) applications in the United States* and Canada, except for Engines used in marine, generator drive and certain defense applications, for which different warranty coverage is provided.

BASE ENGINE WARRANTY

This warranty covers any failures of the Engine, under normal use and service, which result from a defect in material or factory workmanship (Warrantable Failure).

Coverage begins with the sale of the Engine by Cummins. Coverage continues for two years or 2,000 hours of operation, whichever occurs first, from the date of delivery of the Engine to the first user, or from the date the unit is first leased, rented or loaned, or when the Engine has been operated for 50 hours, whichever occurs first. If the 2,000 hour limit is exceeded during the first year, coverage continues until the end of the first year.

EXTENDED MAJOR COMPONENTS WARRANTY

The Extended Major Components Warranty covers Warrantable Failures of the Engine cylinder block, camshaft, crankshaft and connecting rods (Covered Parts).

Bushing and bearing failures are not covered.

This coverage begins with the expiration of the Base Engine Warranty and ends three years or 10,000 hours of operation from the date of delivery of the Engine to the first user, or from the date the unit is first leased, rented or loaned, or from when the Engine has been operated for 50 hours, whichever occurs first.

CONSUMER PRODUCTS

The warranty on Consumer Products in the United States is a LIMITED warranty. **CUMMINS IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.** Any implied warranties applicable to Consumer Products in the United States terminate concurrently with the expiration of the express warranties applicable to the product. In the United States, some states do not allow the exclusion of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the limitations or exclusions herein may not apply to you.

These warranties are made to all Owners in the chain of distribution, and Coverage continues to all subsequent Owners until the end of the periods of Coverage.

Cummins Responsibilities

DURING THE BASE ENGINE WARRANTY

Cummins will pay for all parts and labor needed to repair the damage to the Engine resulting from a Warrantable Failure.

Cummins will pay for the lubricating oil, antifreeze, filter elements, and other maintenance items that are not reusable due to the Warrantable Failure.

Cummins will pay reasonable costs for mechanics to travel to and from the equipment site, including meals, mileage and lodging, when the repair is performed at the site of the failure.

Cummins will pay reasonable labor costs for Engine removal and reinstallation when necessary to repair a Warrantable Failure.

DURING THE EXTENDED MAJOR COMPONENTS WARRANTY

Cummins will pay for the repair or, at its option, replacement of the defective Covered Part and any Covered Part damaged by a Warrantable Failure of the defective Covered part.

Owners Responsibilities

DURING THE BASE ENGINE WARRANTY

Owner is responsible for the cost of lubricating oil, antifreeze, filter elements and other maintenance items provided during warranty repairs unless such items are not reusable due to the Warrantable Failure.

DURING THE EXTENDED MAJOR COMPONENTS WARRANTY

Owner is responsible for the cost of all labor needed to repair the Engine, including the labor to remove and reinstall the Engine. When Cummins elects to repair a part instead of replacing it, Owner is not responsible for the labor needed to repair the part.

Owner is responsible for the cost of all parts required for the repair except for the defective Covered Part and any Covered Part damaged by a Warrantable Failure of the defective Covered Part.

Owner is responsible for the cost of lubricating oil, antifreeze, filter elements and other maintenance items replaced during repair of a Warrantable Failure.

DURING THE BASE ENGINE AND EXTENDED MAJOR COMPONENTS WARRANTIES

Owner is responsible for the operation and maintenance of the Engine as specified in the applicable Cummins Operation and Maintenance Manual. Owner is also responsible for providing proof that all recommended maintenance has been performed.

Before the expiration of the applicable warranty, Owner must notify a Cummins distributor, authorized dealer or other repair location approved by Cummins of any Warrantable Failure and make the Engine available for repair by such facility. Locations in the United States and Canada are listed in the Cummins Off Highway Authorized Dealer Directory.

Owner is responsible for communication expenses, meals, lodging and similar costs incurred as a result of a Warrantable Failure.

Owner is responsible for non-Engine repairs, "downtime" expenses, cargo damage, fines, all applicable taxes, all business costs and other losses resulting from a Warrantable Failure.

Limitations

Cummins is not responsible for failures or damage resulting from what Cummins determines to be abuse or neglect, including, but not limited to: operation without adequate coolants or lubricants; overfueling; overspeeding; lack of maintenance of lubricating, cooling or intake systems; improper storage, starting, warm-up, run-in or shutdown practices; unauthorized modifications of the Engine. Cummins is also not responsible for failures caused by incorrect oil or fuel or by water, dirt or other contaminants in the fuel or oil.

For power units and fire pumps (package units), this warranty applies to accessories, except for clutches and filters, supplied by Cummins which bear the name of another company.

Except for power units and fire pumps, this warranty does not apply to accessories which bear the name of another company. Such non-warranted accessories include, but are not limited to: alternators, starters, fans, air conditioning compressors, clutches, filters, transmissions, torque converters, steering pumps, and non-Cummins fan drives, engine compression brakes and air compressors.

Cummins Compusave units are covered by a separate warranty.

Before a claim for excessive oil consumption will be considered, Owner must submit adequate documentation to show that consumption exceeds Cummins published standards.

Failures of belts and hoses supplied by Cummins are not covered beyond the first 500 hours or one year of operation, whichever occurs first.

Parts used to repair a Warrantable Failure may be new Cummins parts, Cummins approved rebuilt parts, or repaired parts. Cummins is not responsible for failures resulting from the use of parts not approved by Cummins.

A new Cummins or Cummins-approved rebuilt part used to repair a Warrantable Failure assumes the identity of the part it replaced and is entitled to the remaining coverage hereunder.

CUMMINS DOES NOT COVER WEAR OR WEAROUT OF COVERED PARTS.

CUMMINS IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

THESE WARRANTIES SET FORTH HEREIN ARE THE SOLE WARRANTIES MADE BY CUMMINS IN REGARD TO THESE ENGINES. CUMMINS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

* United States includes American Samoa, the Commonwealth of Northern Mariana Islands, Guam, Puerto Rico and the U.S. Virgin Islands.

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