INGERSOLL-RAND®

OPERATING, MAINTENANCE, PARTS MANUAL

COMPRESSOR MODELS

HP600WCU
HP750WCU
XP750WCU
XP825WCU

Code: C

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 35389915 (4/02) **Revised (09-12)**

QUALITY POLICY

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

CALIFORNIA

Proposition 65 Warning

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

Foreword

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

Declaration of Conformity

WITH EC DIRECTIVE

98/37/EC

We

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

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.

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).

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

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

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

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

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

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

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

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

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

Hazardous Substance Precaution

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

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

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

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

Avoid breathing Exhaust Fumes.

Avoid breathing Brake Lining Dust during maintenance.

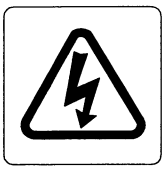
SAFETY LABELS

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

Corrosion risk

Hot Surface

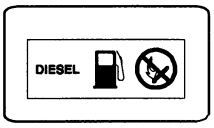
Lifting point



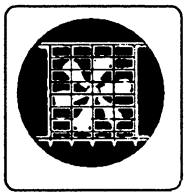
WARNING: Electrical shock risk.

Parking Brake

No open flame



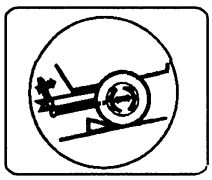
Diesel Fuel.
No open flame.



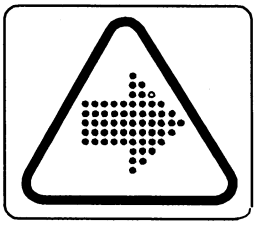
Do not operate the machine without guard being fitted.

Lifting point

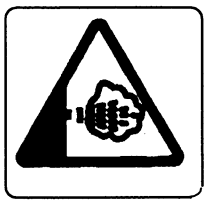
WARNING - Flammable liquid.



When parking use prop stand, handbrake and wheel chocks.

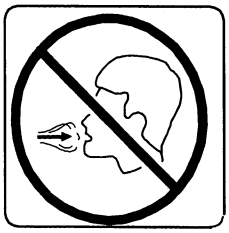


Air/gas flow or Air discharge.



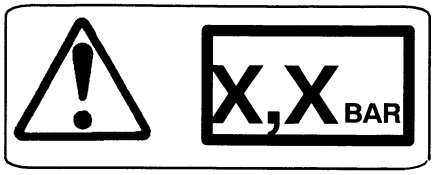
WARNING - Hot and harmful exhaust gas.

Tie down point

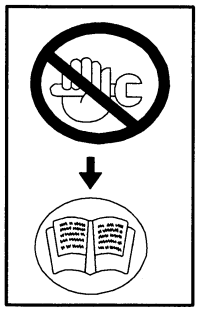


Do not breathe the compressed air from this machine.

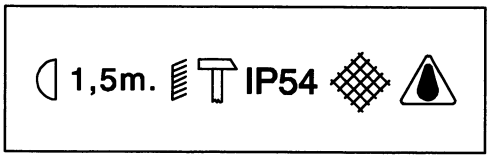
Read the Operation and Maintenance manual before operation or maintenance of this machine is undertaken.



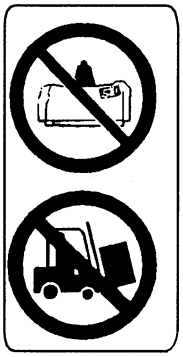
WARNING - Maintain correct tire pressure. (Refer to the *GENERAL INFORMATION* section of this manual).



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

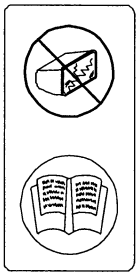


Rough Service Designation
Wet Location Operation

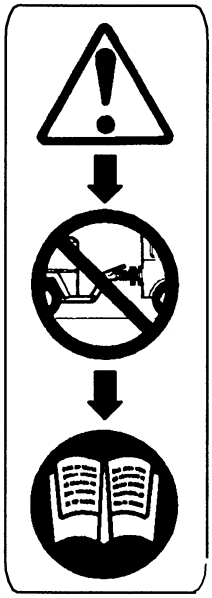


Do not stack

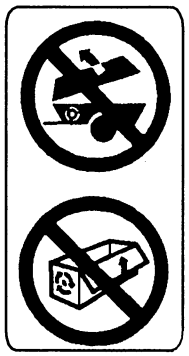
Do not use fork lift truck from this side



Replace any cracked protective shield.



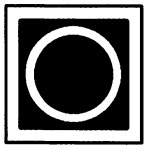
WARNING - Before connecting the tow bar or when preparing to tow, consult the operation and maintenance manual.



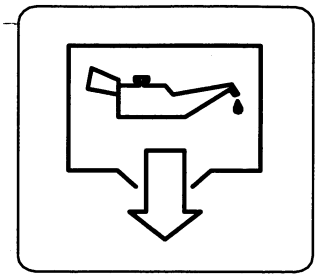
Do not operate with the doors or enclosure open.

On (power).

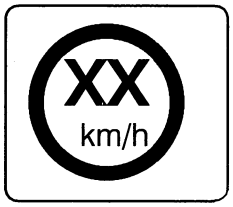
Off (power).



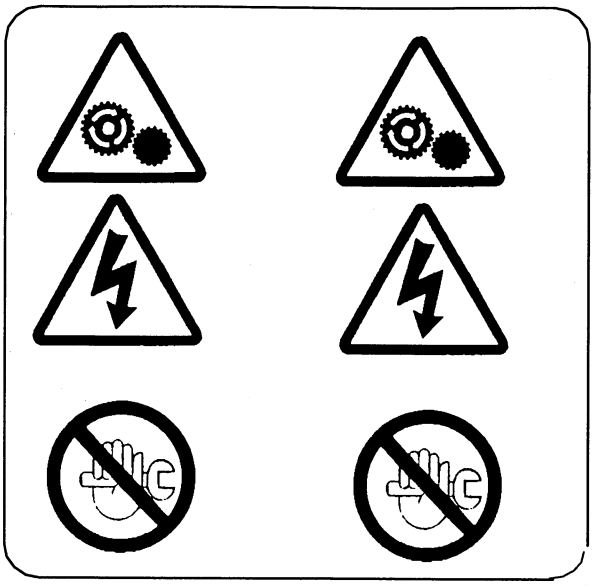
Emergency stop.



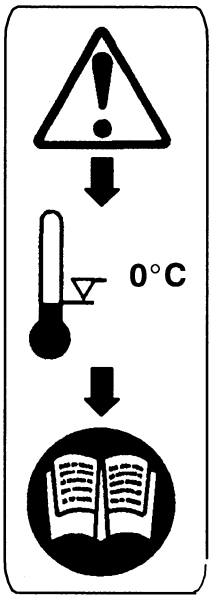
Oil Drain



Do not exceed the speed limit.



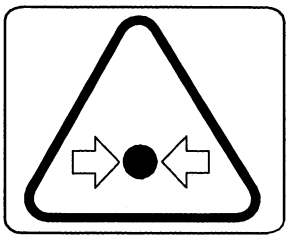
WARNING - Do not undertake any maintenance on this machine until the electrical supply is disconnected and the air pressure is totally relieved.



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

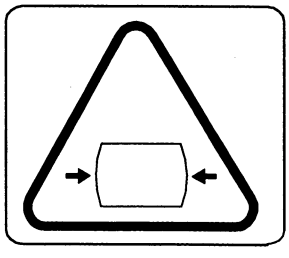
Read the Operation and Maintenance manual before operation or maintenance of this machine is undertaken

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)

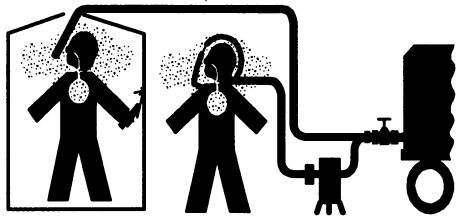
Indicates the presence of a hazard which WILL or can cause injury or property damage, if ignored.

NOTICE

(Blue Background)

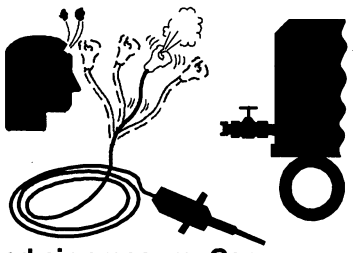
Indicates important set-up, operating or maintenance information.

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.

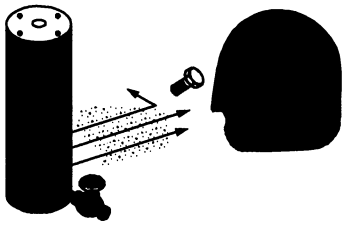
Close service valve and operate tool to vent trapped air before performing any service.

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

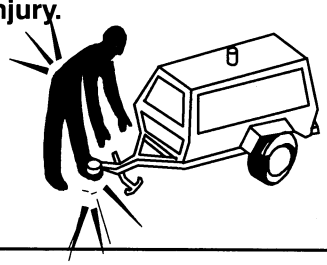
Modification or alteration of this machine. CAN cause serious injury or death.

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

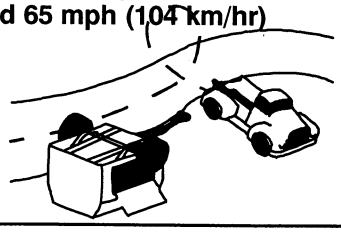
WARNING

Collapsing jack stand. Will cause serious injury.

Insert locking pin completely.

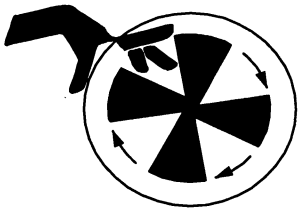


Excessive towing speed. Can cause serious injury or death. Do NOT exceed 65 mph (104 km/hr)



For Highway Towable Units

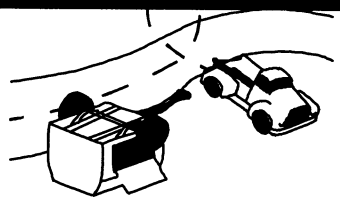
WARNING



Rotating Fan Blade. CAN cause serious injury.

Do NOT operate with guard removed.

WARNING



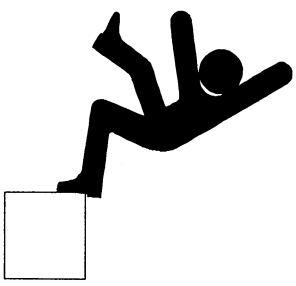
Excessive Towing Speed. CAN cause serious injury or death.

Do NOT Tow on Highway.

Do NOT exceed 20 mph (32 km/h)

For Non-Highway Towable Machines

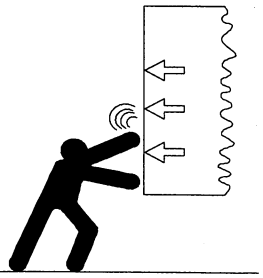
WARNING



Falling off machine. CAN cause serious injury or death.

Access Lifting Bail from inside machine.

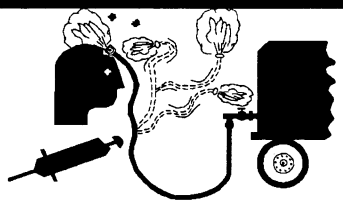
WARNING



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL WARRANTY INFORMATION

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

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

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

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

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

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

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

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

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.

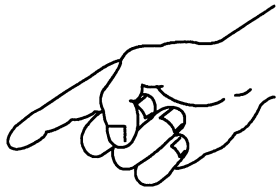
[1] XHP650/900/1070 will continue to use XHP505 and will have the extended warranty when above conditions are met.

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.

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 MODEL	HP600WCU	XP750WCU	HP750WCU	XP825WCU
Air Delivery - cfm (litres/sec)	600 (285)	750 (355)	750 (355)	825 (390)
Engine Speed - RPM (Full Load)	2100	2100	2000	2000
- RPM (No Load)	1400	1400	1400	1400
COMPRESSOR				
Rated Operating Pressure - psi (kpa)	150 (1050)	125 (875)	150 (1050)	125 (875)
Safety Valve Setting - psi (kPa)	200 (1400)	175 (1225)	200 (1400)	175 (1225)
ENGINE (Diesel)				
Manufacturer	Cummins			
Model	6CTA.8.3			
Electrical System	24 VDC			
FLUID CAPACITIES				
Compressor Lubricant	16 gal.			
Engine Lube (including filter)	5.9 gal.			
Engine Coolant - gallons	7.0	7.0	8.0	8.0
Fuel Tank - gallons	86.5	86.5	99.5	99.5
UNITS MEASUREMENTS/WEIGHTS				
Overall Length	191 inches			
Overall Height	88.6 inches			
Overall Width	85.2 inches			
Net Weight (less fuel) pounds	6900	6900	6950	6950
Gross Weight (all fluids) pounds	7500	7500	7650	7650
RUNNING GEAR				
Tire Size	8.00 - 16.5			
Inflation Pressure (Cold)	60 psi			
Towing Speed (Maximum)	50 mph			

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

SECTION 5 - OPERATION

WARNING

Do not climb on top of unit. The lifting eye can be reached through the roof door ONLY from INSIDE of the unit.

When lifting or lowering drawbar, always grasp drawbar firmly and stand to one side.

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

TOWING

Tandem Axle Units

These units are designed to be highway towable. Do NOT exceed 65 mph towing speed.

WARNING

Excessive towing speed can cause serious injury or death. Do NOT exeed 65 mph.

Steerable Axle Units

These units are not designed to be highway towable. Do NOT tow on highway. Do NOT exceed 20 mph towing speed.

WARNING

Excessive towing speed can cause serious injury or death. Do NOT exeed 20 mph.

Note: Use a tow vehicle whose towing capacity is greater than the gross weight of this machine.

SETTING - UP (ALL UNITS)

Place the unit in an open, well-ventilated area. Position as level as possible. The design of these units permits a 15 degree sidewise 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.

CAUTION

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

WARNING

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

Check engine coolant level by removing the radiator top cap and looking for coolant in the filler neck of the radiator. Add coolant as required. Insure that radiator cap is installed properly and tightened. Note: this machine will not allow engine starting if engine coolant is low.

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

CAUTION

No smoking, sparks, or open flame near fuel.

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

NOTICE

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

WARNING

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

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

Be sure no one is IN or ON the compressor unit.

Compressor Mounting

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

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

STARTING -

• 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.

• Press and hold the BYPASS button for ten (10) to fifteen (15) seconds. This operates the 24 volt compressor which pressurizes the inlet valve air cylinder and holds the inlet valve closed for easier starting.

• Press both the START and the BYPASS 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.

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, as required, press the ETHER INJECT button once or twice only while the engine is cranking. This injects a measured amount of ether to the engine.

• 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 BYPASS button when the engine speed reaches 1000 rpm. The engine oil pressure should be above 20 psi.

If the engine oil pressure does not rise within five (5) seconds, stop the unit and refer to Engine Operator's Manual.

WARNING

All DIAGNOSTIC lamps should be off. If not, stop the machine and investigate.

• Watch the gauges while the unit warms up for five (5) to ten (10) minutes or until the coolant temperature reaches 140° 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. If there is no air being consumed, the compressor will unload (intake should be throttled or closed) and the engine speed drop to the no load speed.

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

• 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, open the service valve.

WARNING

Even after pressure is relieved from the receiver-separator system, any air supply line from the compressor to a tool or machine could remain under pressure and cause very serious personal injury or death.

After the compressor stops, carefully open a valve at any tool or machine to exhaust the pressure in any line prior to removal or servicing.

NOTICE

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

All units in this family of machines are 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. (First, the light on the control panel will come on as a warning).

High Discharge AIR Temperature

(4) At the airend outlet.

(5) In the side cover of the separator tank.

All sensors and additional low oil pressure switch (mentioned above) will automatically reset when the problem condition is corrected.

UNITS RATED BELOW 200 PSI (1400 kPa)

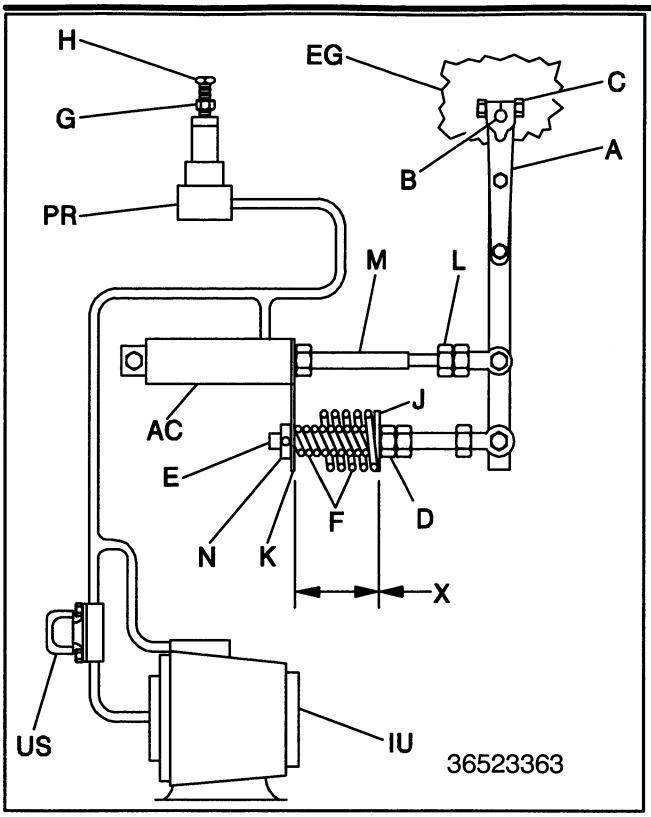
These units include an additional low oil pressure switch in the supply line to the airend bearings.

AUTOMATIC SHUTDOWN / DIAGNOSTICS

Should any of these problem situations occur, the unit will automatically shutdown and stop. BEFORE re-starting 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.



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

Before Starting Unit -

1. At engine governor, (EG), check the position of throttle arm (A) on governor shaft (B). This is done by loosening nut (C) that clamps the throttle arm (A) to the shaft (B). Rotate shaft (B) counterclockwise as far as possible. Rotate throttle arm until it is vertical. Tighten nut (C).
2. Adjust jam nut (D) on throttle spring rod (E) to fully relieve tension on two compression springs (F).
3. Atop separator cover at pressure regulator (PR) loosen locknut (G) counterclockwise. Turn adjustment screw counterclockwise on full turn.

After Starting Unit -

4. Allow unit to warm up, then push "Service Air" button on control panel.
5. 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 adjustment screw (H) clockwise until throttle arm (A) moves against governor stop.

6. Insure that pressure is maintained at rated pressure, then turn regulator adjustment screw (H) counterclockwise until throttle arm (A) just begins to move.

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

7. Adjust jam nut (D) on throttle spring rod (E) until distance "X" between spring mount (J) and rod guide (K) is 2.88 in. (73 mm).
8. 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 nut (C) and rotate throttle arm (A) as required. Moving throttle arm (A) clockwise increases idle speed. Tighten nut (C) and, if necessary, finely adjust idle speed by rotating air cylinder shaft (M). Then tighten jam nut (L).
9. If necessary, repeat steps 5 and 6.
10. At pressure regulator (PR) tighten lock nut (G).
11. Limit full load engine speed by adjusting the collar (N) on the end of the throttle spring rod (E).
12. To obtain maximum CFM at any pressure between 80 PSI (550 kPa) and the rated operating pressure, turn adjustment screw (H) of pressure regulator (PR) to obtain desired discharge pressure at full load engine speed. Always lock and protect pressure setting of adjusting screw (H) with locknut (G).
13. Ensure 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

GENERAL

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

SCHEDULED MAINTENANCE

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

COMPRESSOR OIL LEVEL

The oil level is most consistent when the unit is RUNNING AT FULL LOAD and should be checked at this time.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.

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

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

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

1. Loosen outer wing nut and remove with outer element. Inspect red window on special inner wing nut to find small dot. If dot is not visible, remove cotter pin and special wing nut and inner (safety) element.

2. Inspect air cleaner housing for any condition that might cause a leak and correct as necessary.

3. Wipe inside of air cleaner housing with a clean, damp cloth to remove any dirt accumulation, especially in the area where the element seals against the housing.

4. 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 by one of the following procedures.

5. If a new air filter element is to be used check it closely for shipping damage. To reset the signal indicator in the special wing nut, apply suction to the red window.

6. Install cleaned or new elements in the reverse order to the above. Tighten wing nuts firmly and replace cotter pin.

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.

NOTICE

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.

NOTICE

It is highly recommended that new replacement elements be installed in the unit immediately in order that the unit be returned to service in the shortest possible time. In this manner 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 holes.

Make sure that all clamps and flange joints are tight.

GAUGES

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

FUEL TANK

This unit is equipped with dual tanks that can be filled from either side. Using clean fuel in the fuel tanks is vitally important and every precaution should be taken to ensure that only clean fuel is either poured or pumped into the tank.

When filling the fuel tank on this unit, by methods other than a pump and hose, use a CLEAN non-metallic funnel.

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

BATTERY

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

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.

The high discharge air temperature switch will require approximately 248°F (120° C) to actuate. The engine coolant temperature switch will require approximately 210° F (99° C) to actuate. Replace any defective switch before continuing to operate the unit.

A low oil pressure switch may be tested by removing it and connecting it to a source of controlled pressure while monitoring an ohmmeter connected to the switch terminals. As pressure is applied slowly from the controlled source, the switch should close at 12 psi (.84 kgf per cm 2) and show continuity through the contacts.

As the pressure is slowly decreased to 8 psi (0.56 kgf per cm2) the contacts should open and the ohmmeter should show lack of continuity (infinite ohms) through the contacts. Replace a defective switch before continuing to operate the unit.

COMPRESSOR OIL COOLER

The compressor lubricating and cooling oil is cooled by means of the fin and tube-type oil cooler, located beside the radiator. 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 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. Use only a dependable cleaning compound. This is of prime importance because different cleaners vary in concentration and chemical composition. After completing the cleaning procedure, the oil cooler must be flushed before returning to service.

RADIATOR

WARNING

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

The engine cooling system is filled at the factory with a 50/50 mixture of water and ethylene glycol. This permanent type antifreeze contains rust inhibitors and provides protection to -35° F (-37°C). The use of such a mixture is recommended for both summer and winter operation. When using water alone, be sure to add a reputable brand of rust inhibitor to prevent internal corrosion.

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

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

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 a definite "must" if regulator servicing of the air cleaners is not to prove futile.

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

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

NOTICE

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

COMPRESSOR OIL FILTERS

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

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

NOTICE

The oil filter must be replaced every 500 hours of operation. 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.

WARNING

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

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

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

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 filter gasket contact area for cleanliness and damage. Clean or repair as necessary.

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

5. 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.

5. Bend over cotter pin legs to secure nut and clear grease cap.

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 and replace (make tight) plug at 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:

a. Ensure the tank pressure is zero.

b. Disconnect the hose from the scavenge tube.

c. Remove scavenge tube from tank cover.

d. Disconnect service line from cover.

e. Remove (8) cover mounting screws.

f. . Remove cover, element and inner shell.

g. Remove any gasket material left on cover or . tank.

h. Install new gasket, inner shell and 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 (See Fig. 4.2). Measurement should be from 1/8" to 1/4" less than the element measurement. If not, cut to size.

*Remove scavenge tube.

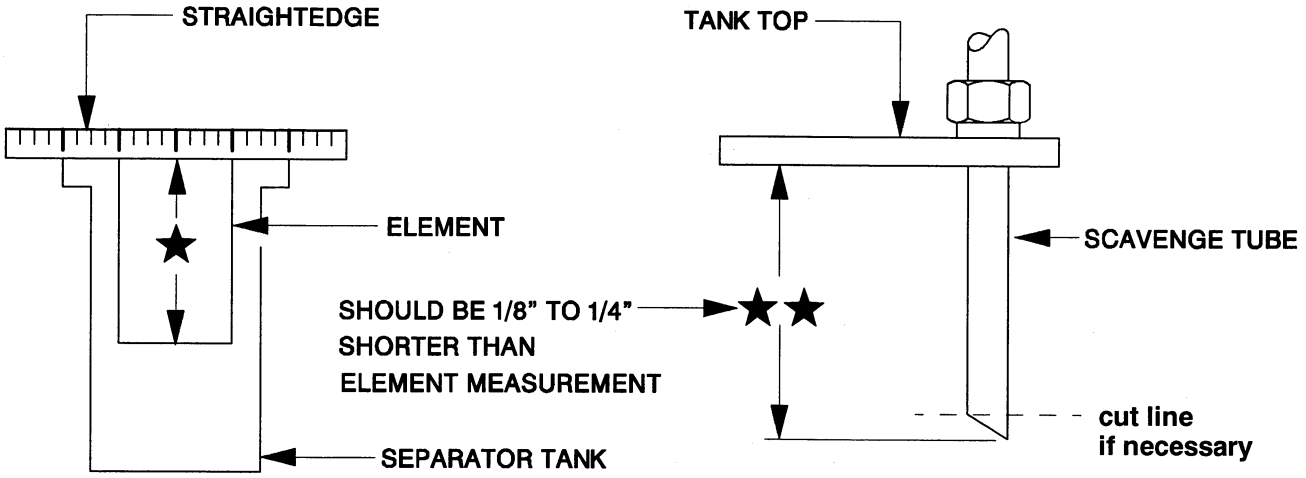
*Reposition cover (use care not to damage gaskets).

*Replace cover mounting screws: tighten in a crisscross pattern to recommended torque value.

*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.
Once a year or every 2000 hours of operation, whichever comes first, remove this line, thoroughly clean, then reassemble.

NOTICE

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 (if so equipped) has proper setting.**
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.

CAUTION

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

If performing more than visual inspections, disconnect battery cables and open manual blowdown valve.

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

Never operate this machine with any guards removed.

Inch and metric hardware was used in the design and assembly of this unit. Consult the parts manual for clarification of usage.

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

MAINTENANCE SCHEDULE

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

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

**Disregard if not appropriate for this particular machine.

*NXP Units - consult manual

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

A = Small Units

B = Large Units

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

SECTION 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.

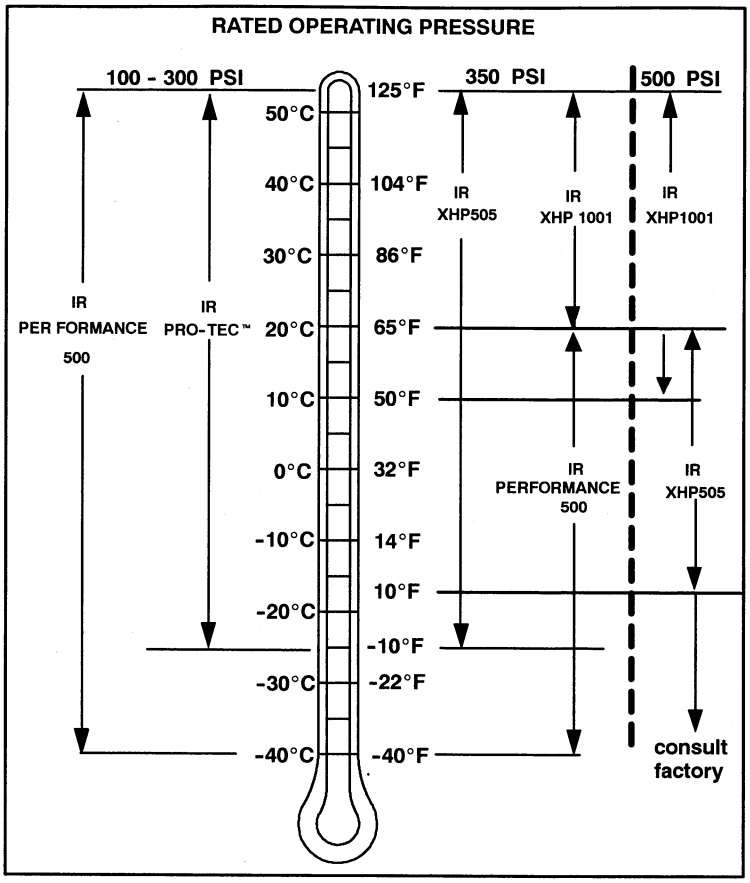
NOTICE

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 Page 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.

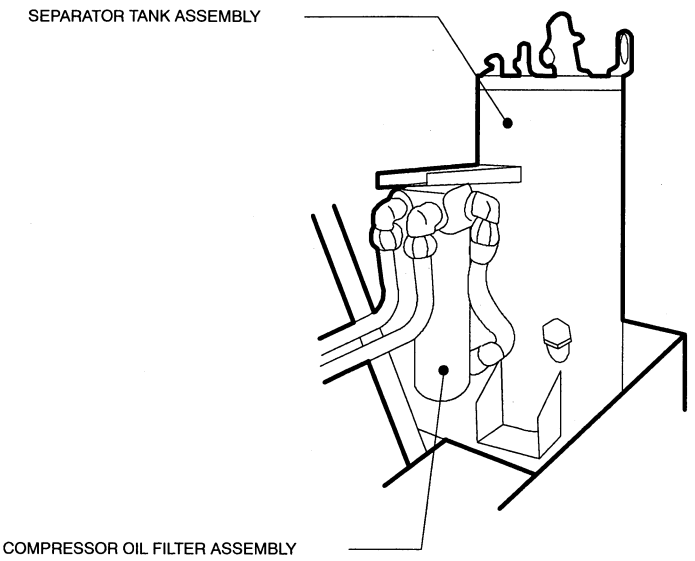
Category "C": The airend must be over five years old.

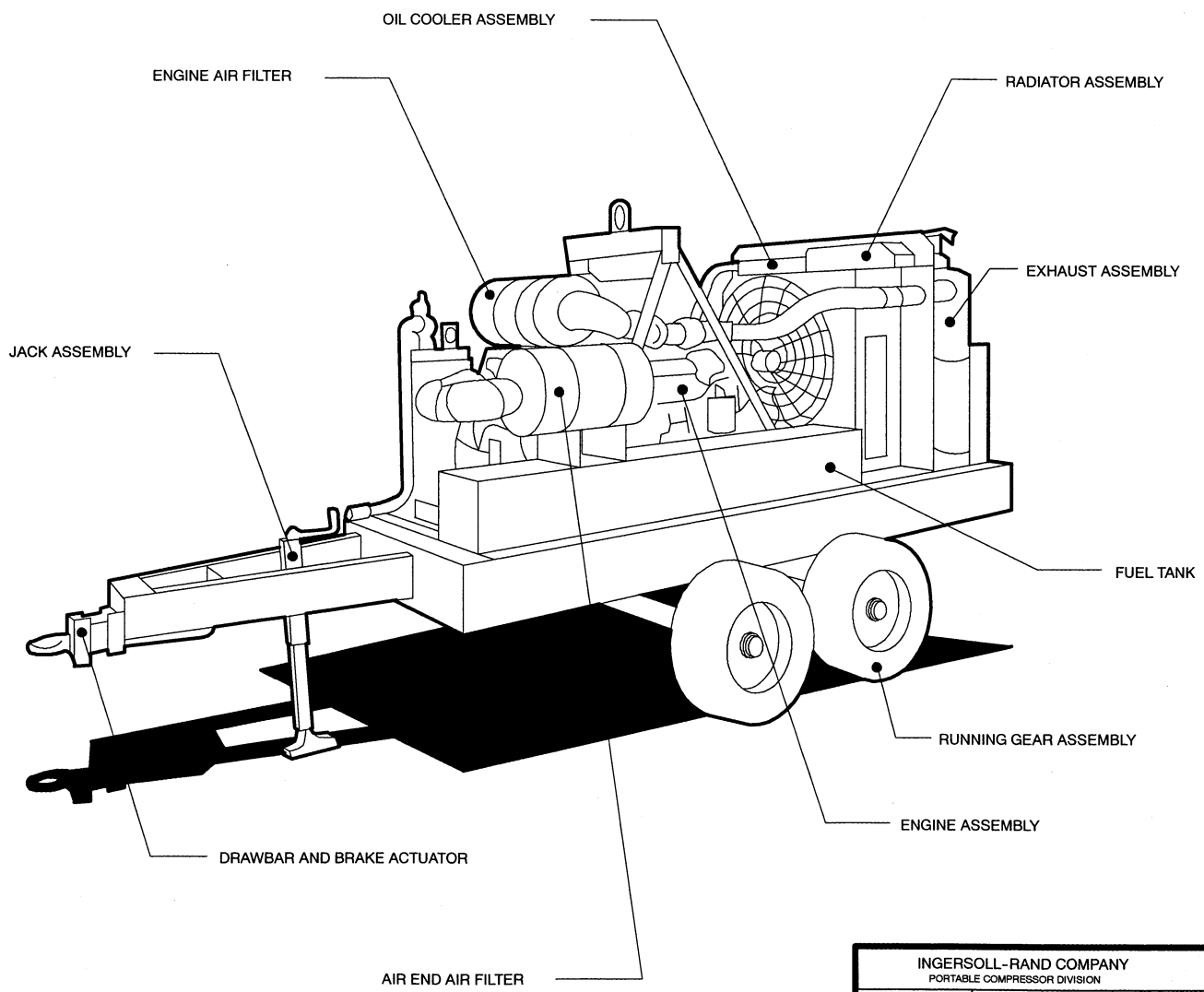
Your nearest sales office, autonomous company or authorized distributor must first contact the Parts Service Department at the factory at which your portable air compressor was manufactured for an airend exchange number. The airend must be tagged with this preassigned number and returned to the factory 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 INDEX

PARTS LIST INDEX





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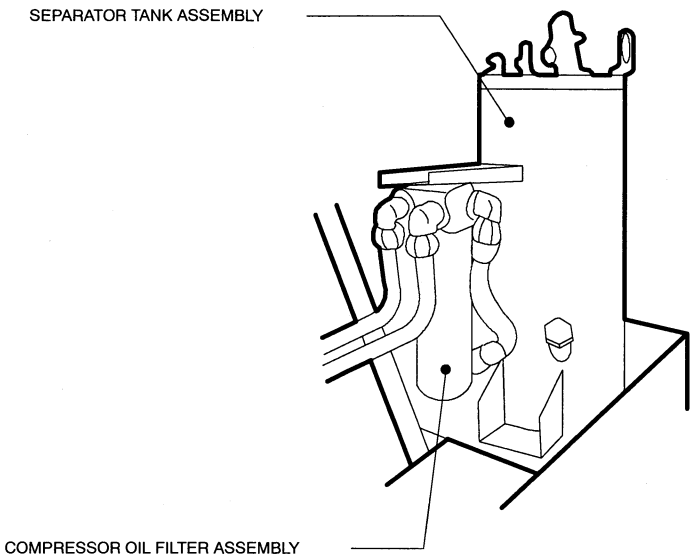
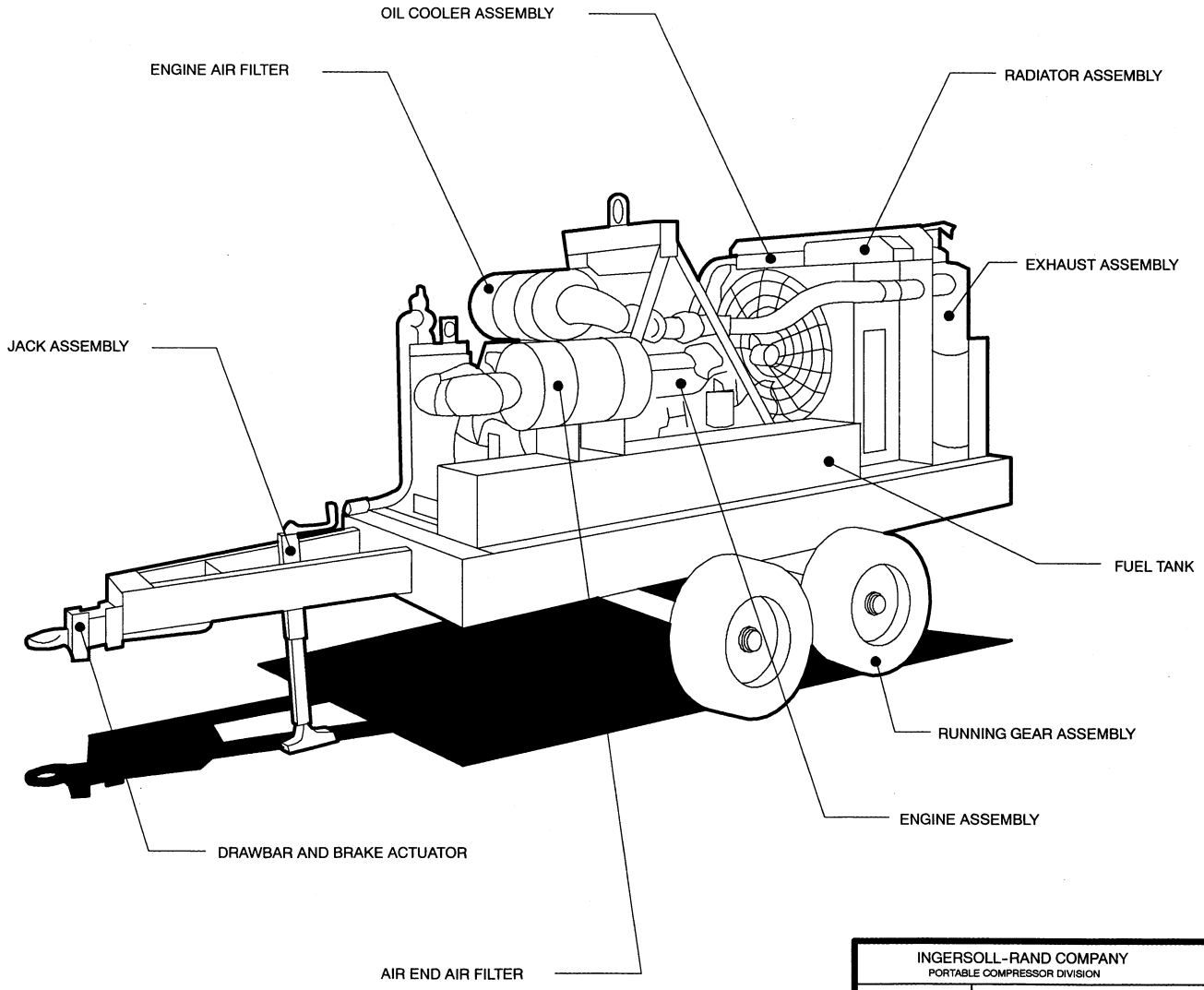
MODEL NO. CU DEUCE	MANUAL NO. 35389915-2	DATE/REV: 2-00/ B





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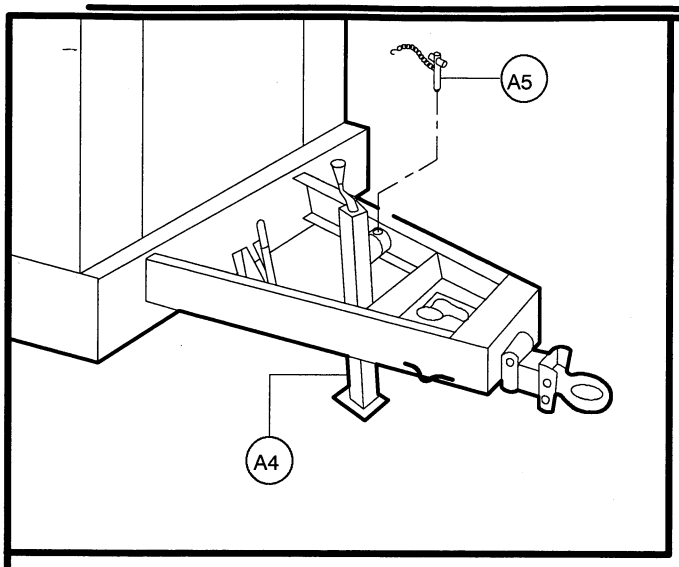

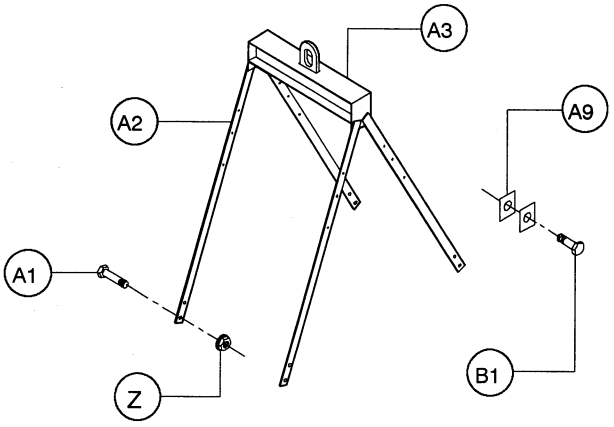

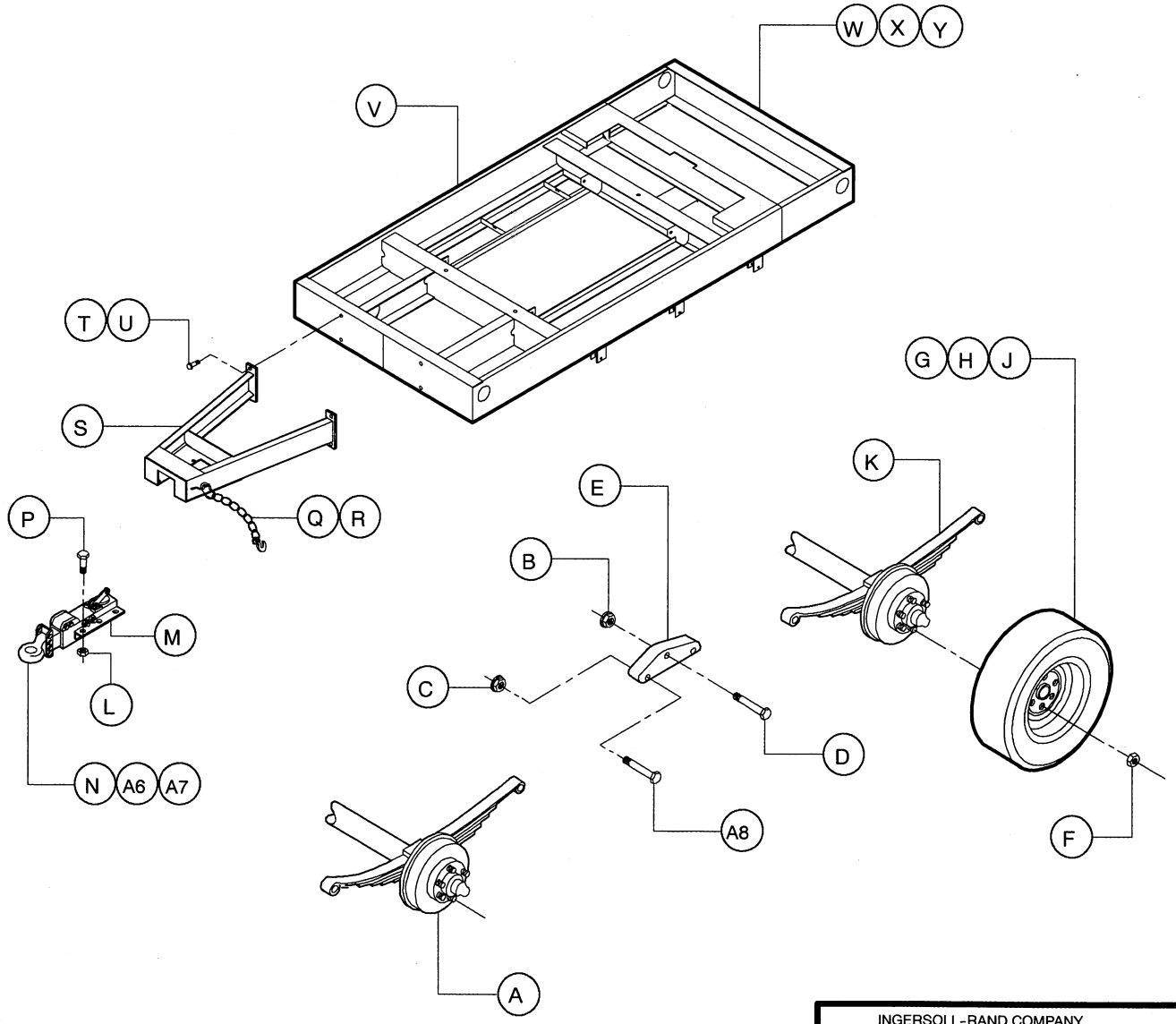

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MODEL NO. CU DEUCE	MANUAL NO. 35389915-3	DATE/REV: 2-00 / C

A	36867588	FRONT AXLE ASSEMBLY	U	35356526	NUT (4 REQD)
B	36784882	NUT , SHACKLE	V	36896801	FRAME , MAIN
C	35315373	NUT , SHACKLE	W	36896819	FRAME , EXTENSION
D	36784874	BOLT , SHACKLE	X	34M2AB462	SCREW (4 REQD)
E	36784866	EQUALIZER	Y	16M4JC26M3	NUT (4 REQD)
F	35385251	NUT (24 REQD)	Z	35297340	NUT (8 REQD)
G	36021806	WHEEL & TIRE ASSEMBLY	A1	34M2AB513	SCREW (8 REQD)
H	35385525	WHEEL	A2	36866333	STRAP , LIFTING BAIL
J	35278332	TIRE	A3	36866341	BAIL , LIFTING
K	36867653	REAR AXLE ASSEMBLY	A4	36752228	JACK
L	35356526	NUT (6 REQD)	A5	35609544	PIN , QUICK RELEASE
M	36867299	ACTUATOR , BRAKE	A6	35376094	SCREW
N	35605187	PINTLE EYE	A7	16M4JC26M3	NUT (4 REQD)
P	35272558	SCREW (6 REQD)	A8	35315365	BOLT , SHACKLE
Q	35610377	CHAIN & HOOK ASSEMBLY	A9	36877546	SPACER
R	35372432	COUPLING	B1	35375385	SCREW
S	36866283	DRAWBAR			
T	35375377	SCREW (4 REQD)			

PARTS NOT ILLUSTRATED

36866317	FRONT BELLY PAN
36866325	ENGINE BELLY PAN
36867174	ENGINE OIL DRAIN COVER
36867182	RADIATOR & OIL COOLER ACCESS COVER

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
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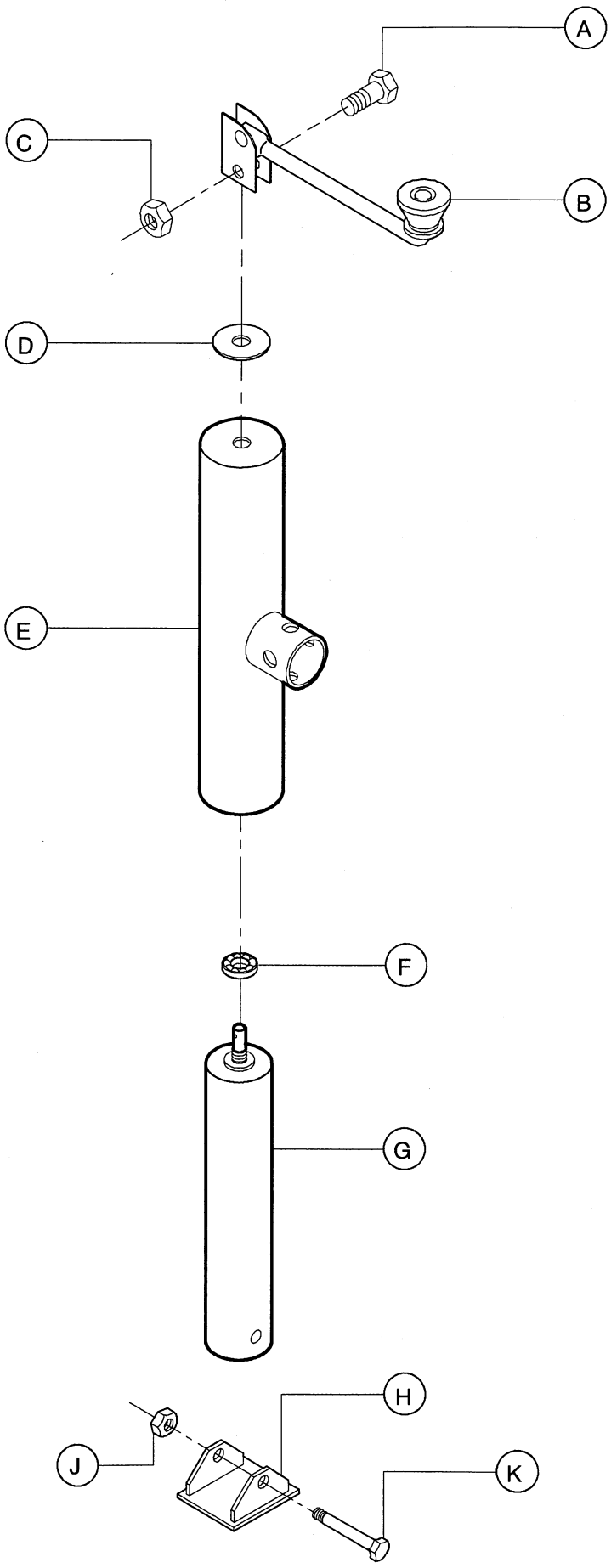
MODEL NO. CU DEUCE	MANUAL NO. 35389915-4	DATE/REV: 2-00 / C



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DATE/DWN BY: 2-00 WAP	DESCRIPTION JACK ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-5	DATE/REV: 2-00 / B

A	35A2D62Z1	BOLT
B	36870061	CRANK ASSEMBLY
C	67A4C2Z1	NUT , LOCK
D	12A5D9Z1	WASHER
E	36870129	TUBE , OUTER
F	36870079	BEARING , THRUST
G	36870053	TUBE , INNER
H	36870145	BASE
J	35336700	NUT , LOCK
K	36A2D281Z1	BOLT

JACK ASSEMBLY / PART NUMBER 36870111

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
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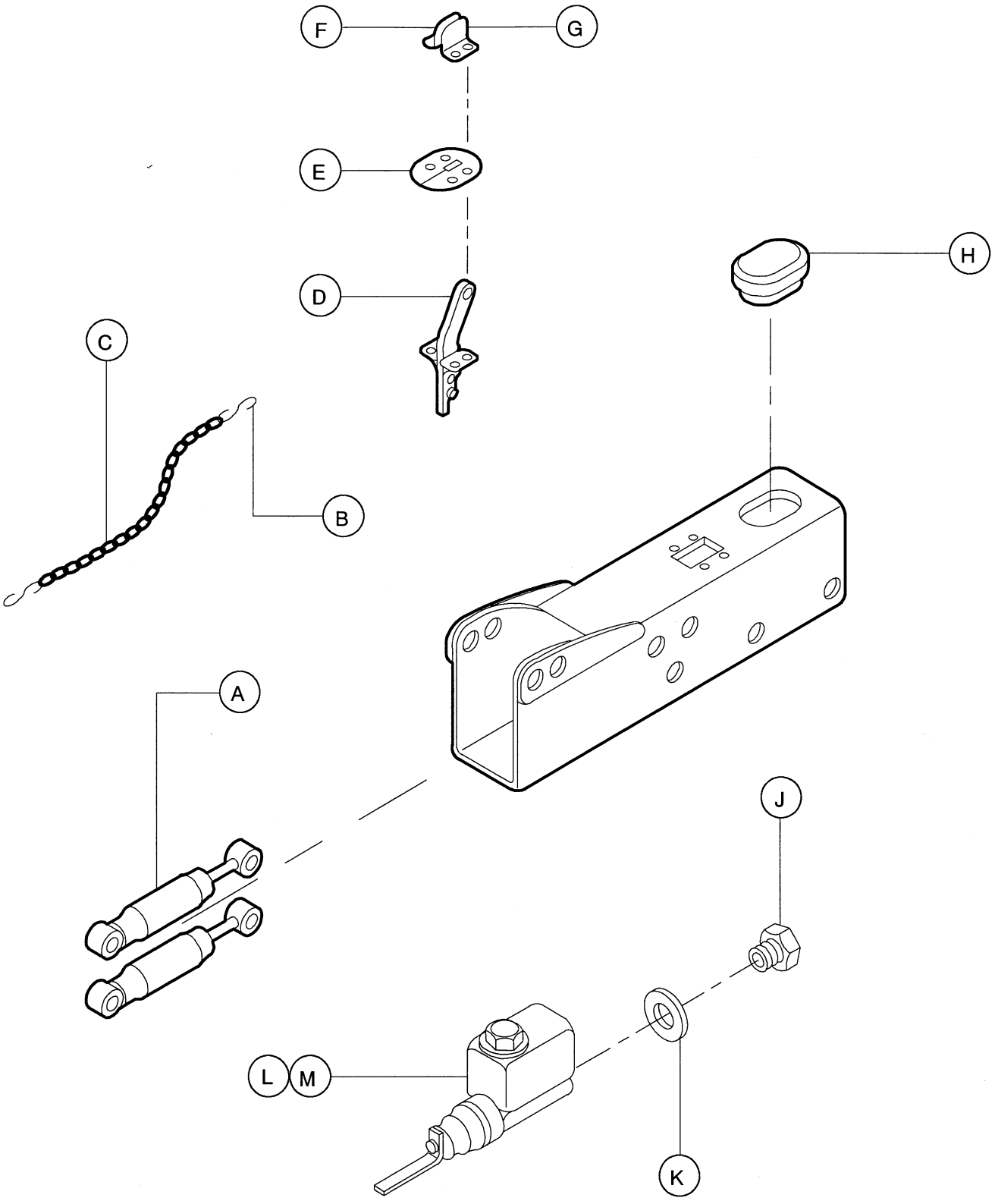
MODEL NO. CU DEUCE	MANUAL NO. 35389915-6	DATE/REV: 2-00 / B



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION BRAKE ACTUATOR ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-7	DATE/REV: 2-00 / B

A	36867562	DAMPER
B	35373083	S-HOOK
C	35373091	CHAIN
D	35373042	LEVER ASSEMBLY
E	35373059	SEAL , WEATHER
F	35373067	LOCK , R.H.
G	35373075	LOCK , L.H.
H	35373034	COVER
J	35373109	CONNECTOR
K	35373125	GASKET
L	35373117	MASTER CYLINDER
M	35376433	REPAIR KIT

HYDRAULIC BRAKE ACTUATOR ASSEMBLY - PART NO. 36867299

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
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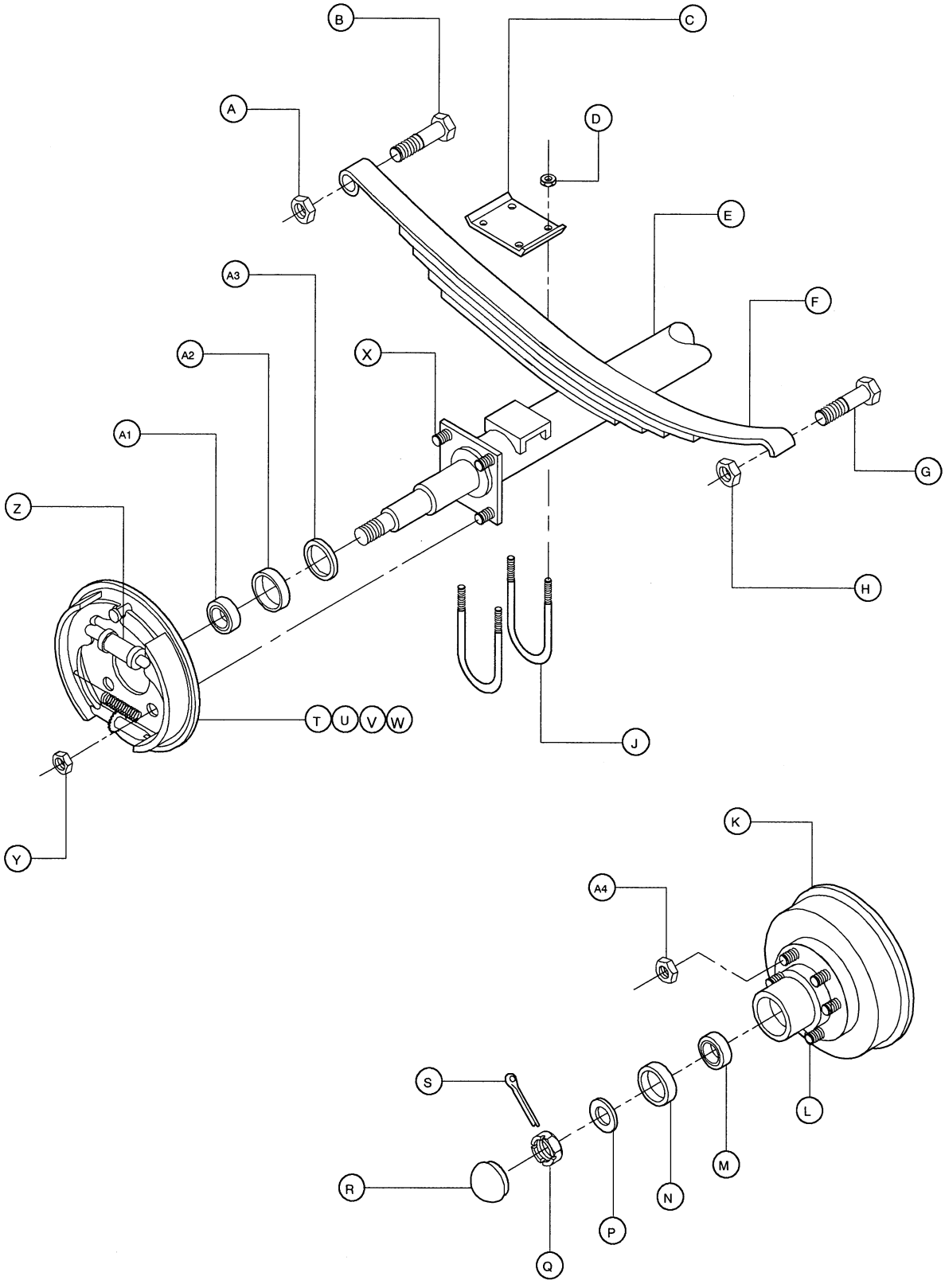
MODEL NO. CU DEUCE	MANUAL NO. 35389915-8	DATE/REV: 2-00 / B

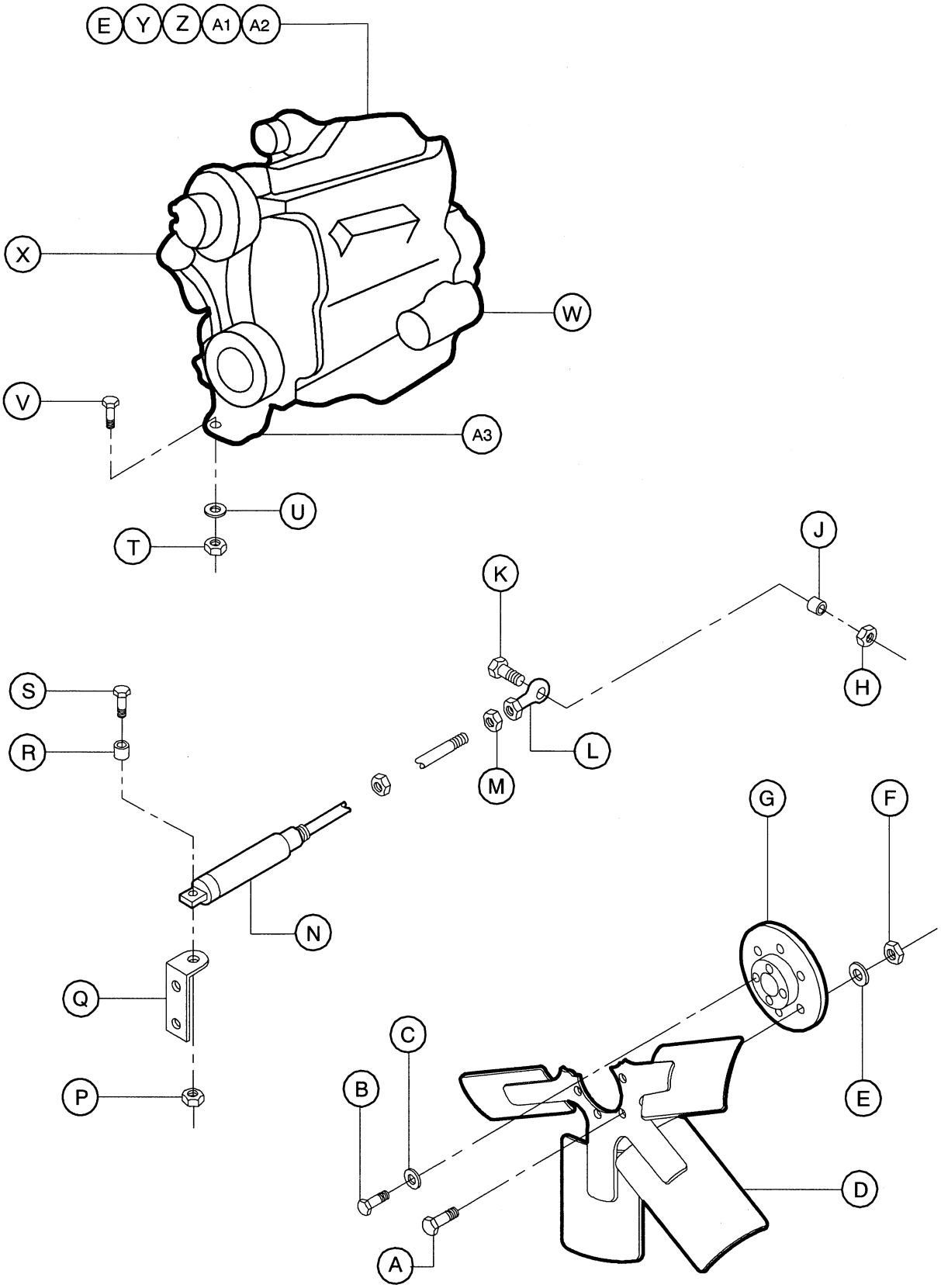


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION RUNNING GEAR ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-9	DATE/REV: 2-00 / B

A	36784882	NUT	
B	36784874	BOLT	
C	36867620	PLATE , TIE	
D	36867646	NUT	(4 REQD)
E	36867588	FRONT AXLE ASSEMBLY	
	36867653	REAR AXLE ASSEMBLY	
F	36867612	SPRING	
G	35315365	BOLT	
H	35315373	NUT	
J	36867638	U-BOLT	(2 REQD)
K	36842144	HUB ASSEMBLY	
L	35385244	STUD	(6 REQD)
M	36844652	BEARING , OUTER	
N	36844660	CUP , OUTER	
P	35315209	WASHER	
Q	35315217	NUT	
R	36844637	CAP , GREASE	
S	35315225	PIN , COTTER	
T	36867661	L.H. BRAKE ASSY. (REAR)	
U	36867679	R.H. BRAKE ASSY. (REAR)	
V	36867596	R.H. BRAKE ASSY.	(FRONT)
W	36867604	L.H. BRAKE ASSY.	(FRONT)
X	36842177	SCREW	(4 REQD)
Y	36842185	NUT	(4 REQD)
Z	36867851	L.H. WHEEL CYLINDER	
	36867885	R.H. WHEEL CYLINDER	
A1	36844694	BEARING , INNER	
A2	36844686	CUP , INNER	
A3	36844702	SEAL , GREASE	
A4	35385251	NUT	(6 REQD)

36867869	BRAKE LINING KIT
36867877	BRAKE SPRING KIT

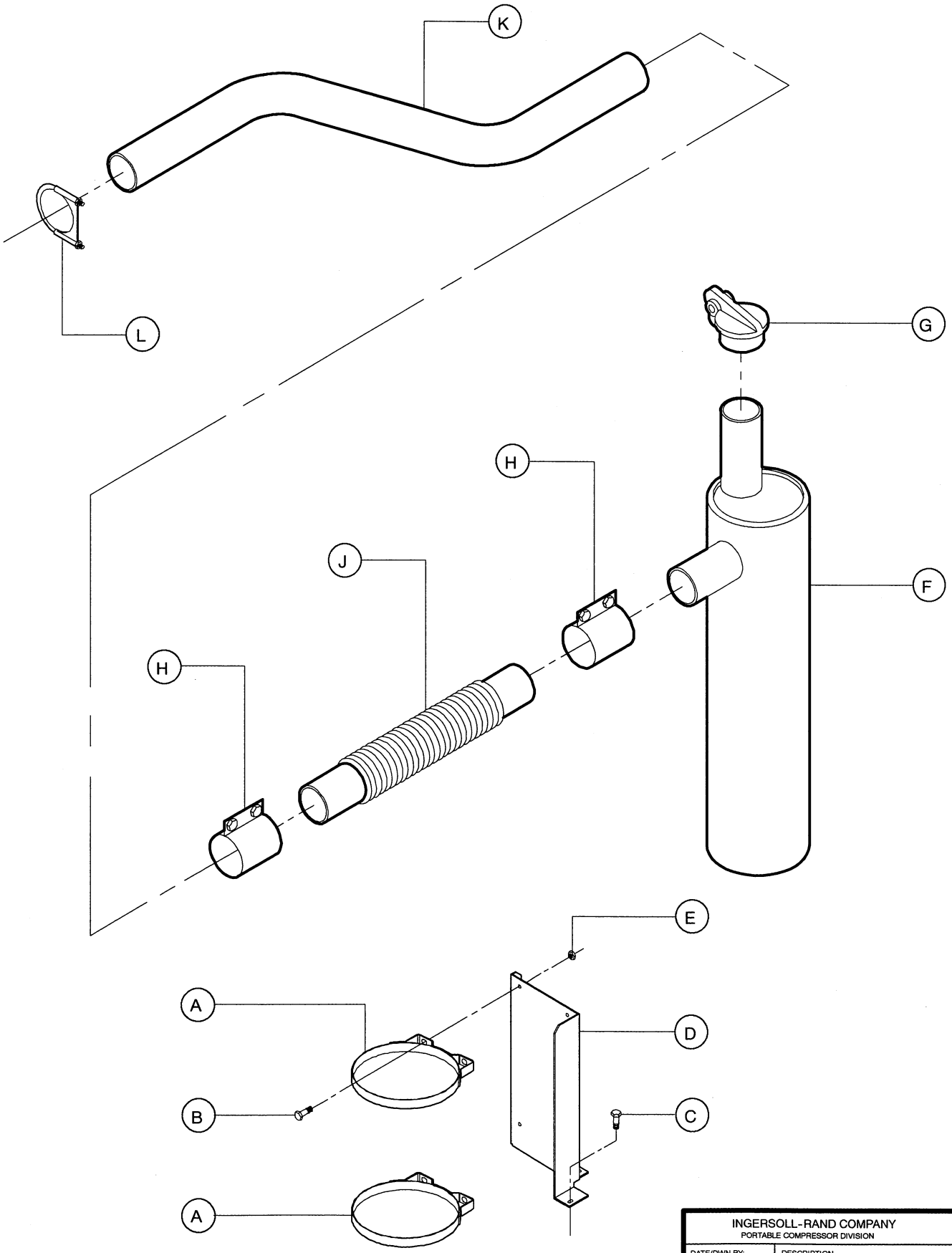
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION RUNNING GEAR ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-10	DATE/REV: 2-00 / B



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION ENGINE AND SPEED CONTROL	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-11	DATE/REV: 11-01 / D

(A)	35371988	SCREW (HP600WCU / XP750WCU)
	36769297	SCREW (HP750WCU / XP825WCU)
(B)	36772598	SCREW (HP600WCU / XP750WCU)
	35299353	SCREW (HP750WCU / XP825WCU)
(C)	96701404	WASHER
(D)	36868826	FAN , 36 INCH (HP600WCU / XP750WCU)
	36876480	FAN , 36 INCH (HP750WCU / XP825WCU)
(E)	35374669	FILTER , PRIMARY FUEL
(F)	96701529	NUT
(G)	36868875	SPACER , FAN (HP600WCU / XP750WCU)
	36877017	SPACER , FAN (HP750WCU / XP825WCU)
(H)	96701529	NUT
(J)	35322452	BUSHING
(K)	35252451	SCREW
(L)	35300532	BEARING , ROD END
(M)	95926028	NUT , JAM
(N)	35594225	CYLINDER , AIR
(P)	95923314	NUT
(Q)	36868131	BRACKET , ENGINE SPEED (HP600WCU / XP750WCU)
	36877561	BRACKET , ENGINE SPEED (HP750WCU / XP825WCU)
(R)	35288885	BUSHING
(S)	36761476	SCREW , SHOULDER
(T)	96701529	WASHER
(U)	96701404	WASHER
(V)	36769297	SCREW
(W)	STARTER FURNISHED WITH ENGINE	
(X)	STARTER FURNISHED WITH ENGINE	
(Y)	36868156	RESISTOR , WATER CORROSION
(Z)	35378546	ELEMENT , ENGINE LUBE
(A1)	36866549	ENGINE , CUMMINS (HP600WCU / XP750WCU)
	36876548	ENGINE , CUMMINS (HP750WCU / XP825WCU)
(A2)	35378546	ELEMENT , ENGINE LUBE
(A3)	54765565	BRACKET , ENGINE

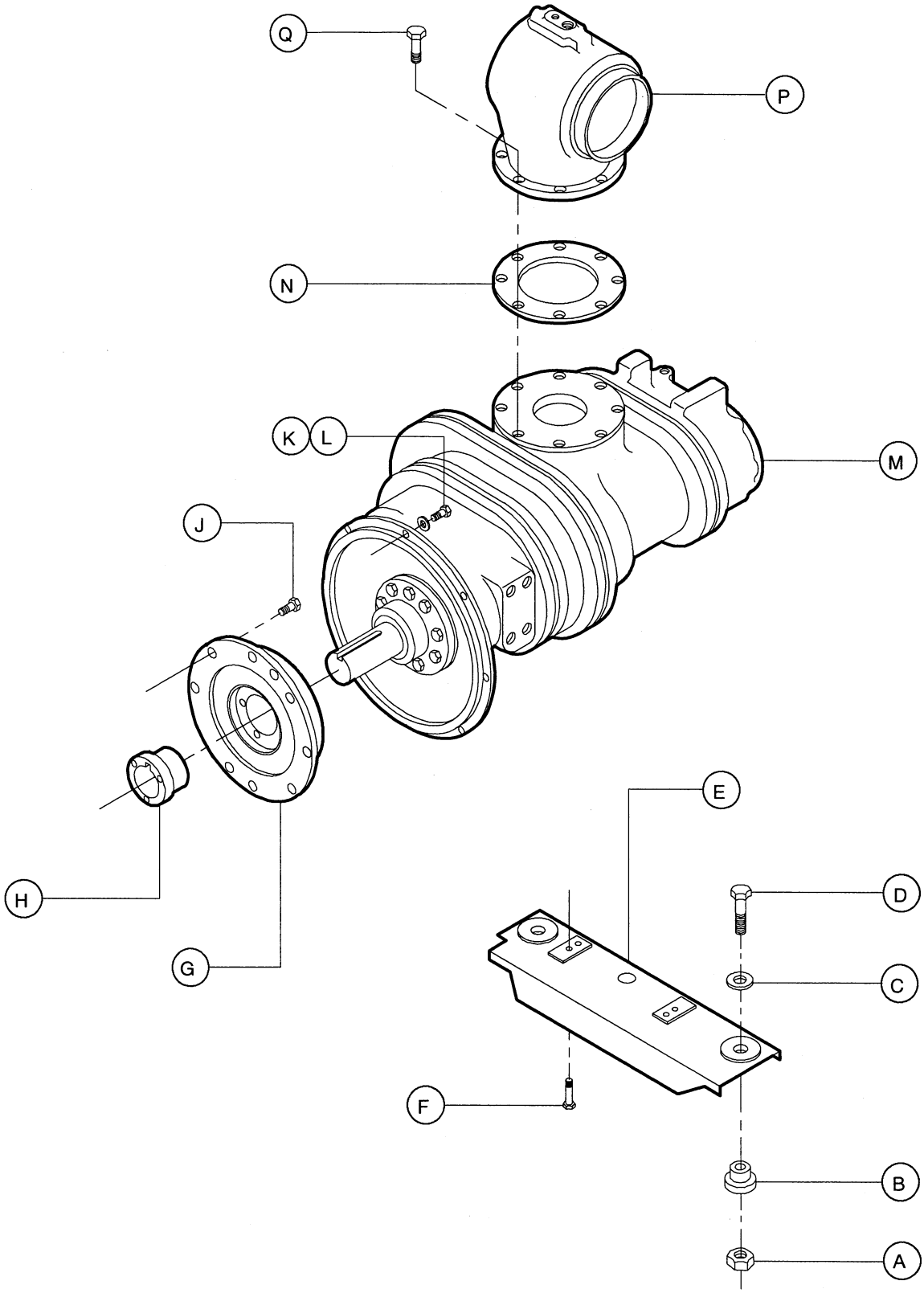
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION ENGINE AND SPEED CONTROL	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-12	DATE/REV: 11-01 / D



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION EXHAUST COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-13	DATE/REV: 2-00 / B

A	36866929	BAND , MUFFLER MOUNTING	
B	35374842	SCREW	(4 REQD)
C	35279025	SCREW	(3 REQD)
D	36866937	BRACKET , MUFFLER	
E	16M4JC23M3	NUT	(4 REQD)
F	36866911	MUFFLER	
G	35857036	CAP , RAIN	
H	35313303	SEALCLAMP	
J	35602549	PIPE , FLEX	
K	36867141	TUBE , EXHAUST	
L	35111731	CLAMP	

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION EXHAUST COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-14	DATE/REV: 2-00 / B



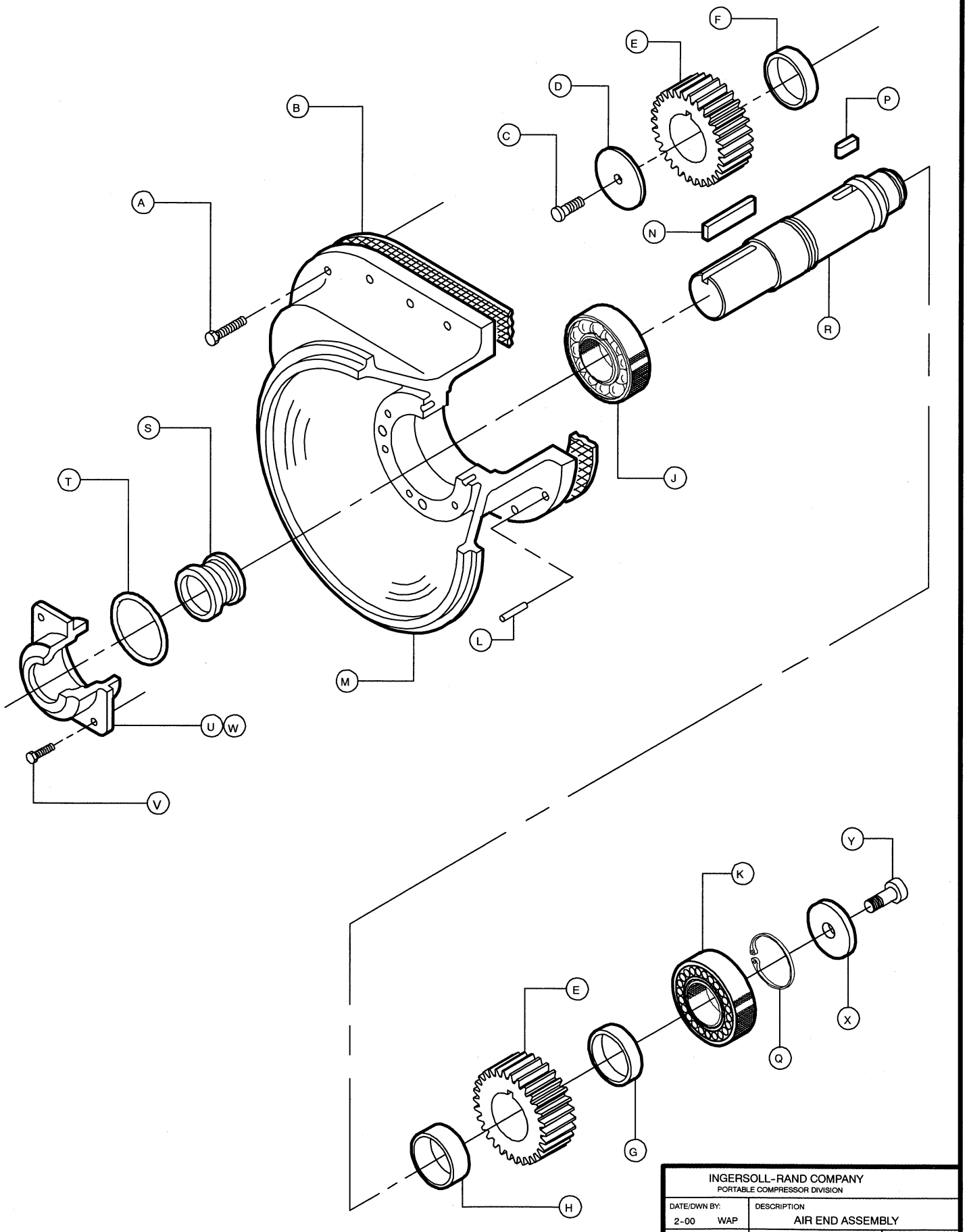
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR END COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-15	DATE/REV: 2-00 / B

A	35356526	NUT	(2 REQD)
B	35302835	MOUNT	(2 REQD)
C	35273937	WASHER	(2 REQD)
D	35M2AB572M3	SCREW	(2 REQD)
E	36865574	BRACKET , AIR END MOUNTING	
F	35358274	SCREW	(4 REQD)
G	35834787	COUPLING , DRIVE	
H	35103852	BUSHING	
J	119A2A198N	SCREW	(8 REQD)
K	35A2D113	SCREW	(12 REQD)
L	14A5C76	WASHER	(12 REQD)
M	36020766	AIR END ASSEMBLY	
N	36786572	GASKET	
P	36734515	UNLOADER ASSEMBLY	
Q	35272558	SCREW	(6 REQD)

AIR END ASSEMBLY ——— 36020766

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: 2-00 WAP	DESCRIPTION AIR END COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-16	DATE/REV: 2-00 / C



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR END ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-17	DATE/REV: 2-00 / B

(A) 35272541 SCREW (14 REQD)

(B) 35611359 GASKET

(C) 34M2AB513 SCREW

(D) 35255819 PLATE , CLAMP

(E) GEAR SET NO.

GEAR SET NO.	UNIT
35298132	XP-750-W-CU XP-750-W-JD
35334853	XP-825-W-CU XP-825-W-JD
35303742	HP-600-X-CU HP-600-W-JD
35335363	HP-750-W-CU HP-750-W-JD

(F) 35299346 SPACER

(G) 36851681 SPACER

(H) 36846418 SPACER

(J) 36846426 BEARING , TAPERED ROLLER

(K) 36854925 BEARING , TAPERED ROLLER

(L) 17A13A289 PIN , DOWEL

(M) 36851459 CASE , GEAR

(N) 35364975 KEY

(P) 35361328 KEY

(Q) 95223145 RING , RETAINING

(R) 36846400 SHAFT , DRIVE

(S) 35593516 SEAL , SHAFT (BEFORE SERIAL NO. 297429)

35593508 SEAL , SHAFT (BEGINNING WITH SERIAL NO. 297429)

(T) 20A11C2M252 0-RING

(U) 36507515 COVER

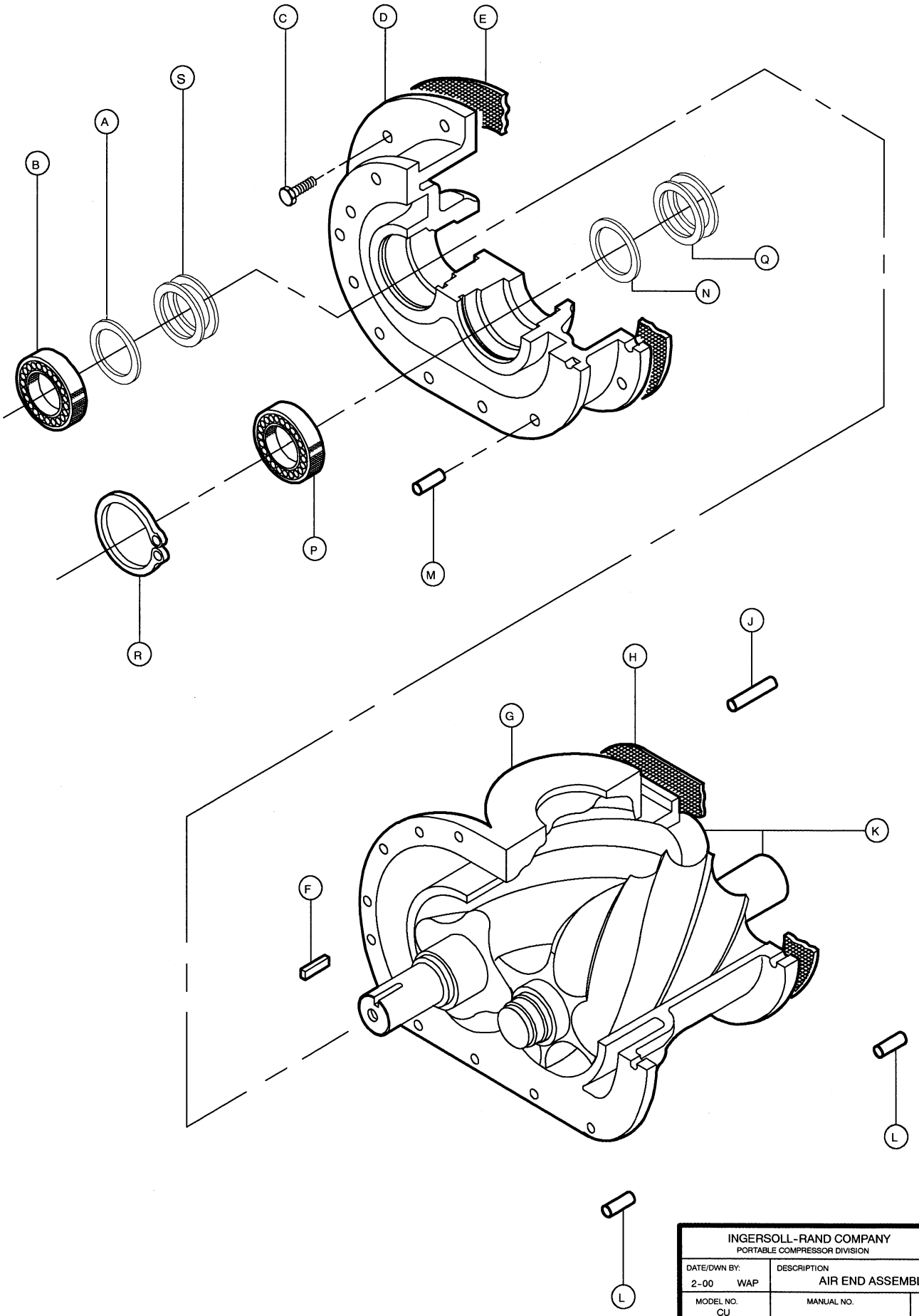
(V) 34M2AB462 SCREW (6 REQD)

(W) 36846442 SHIM

(X) 36764785 CAP

(Y) 35336304 SCREW

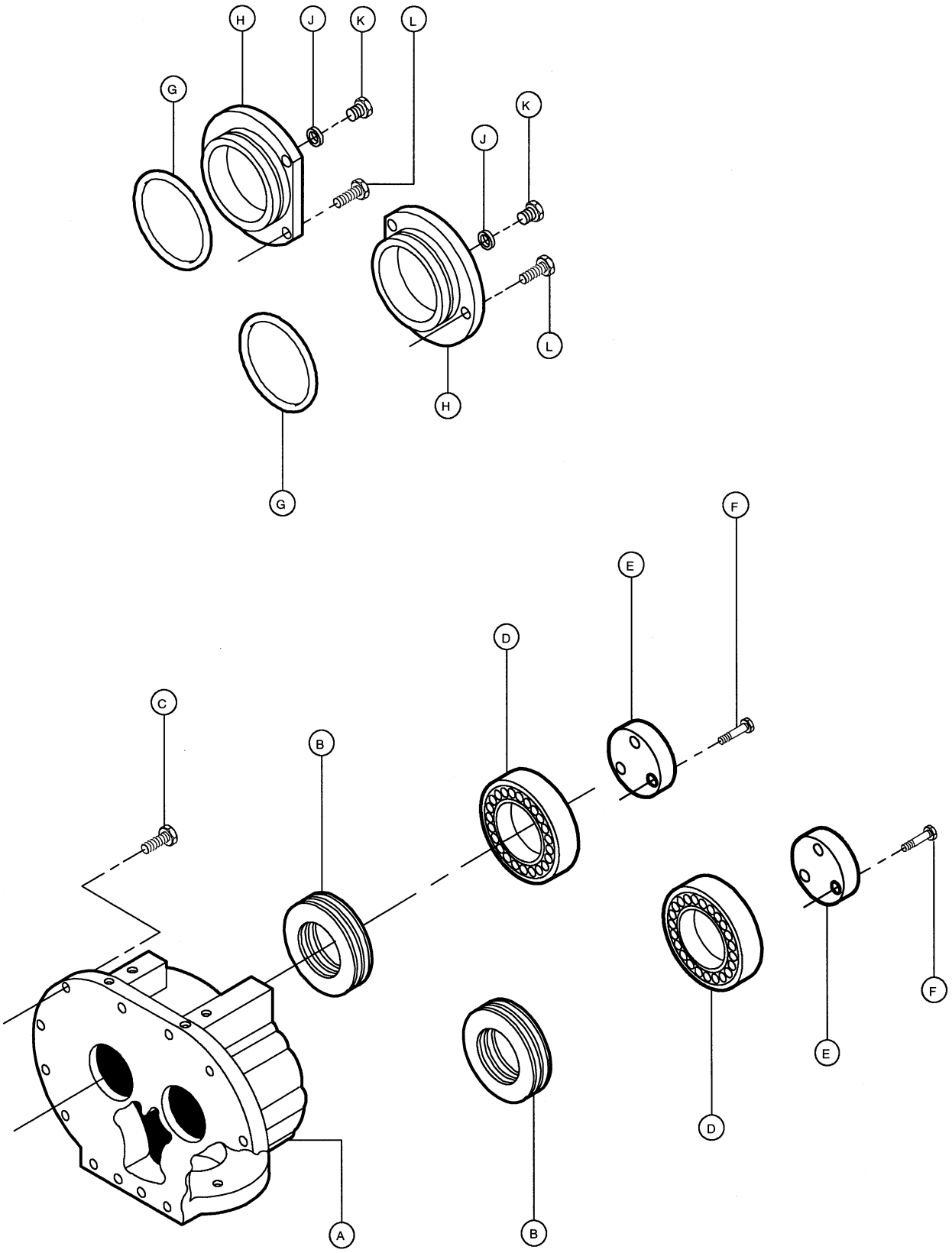
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR END ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-18	DATE/REV: 2-00 / D



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR END ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-19	DATE/REV: 2-00 / B

A	35299296	SPACER	
B	35299262	BEARING , ROLLER	
C	35272541	SCREW	(17 REQD)
D	36711620	HOUSING , FRONT BEARING	
E	36506699	GASKET	
F	35361310	KEY	
G	36794287	HOUSING , ROTOR	
H	35611342	GASKET	
J	17A13A289	PIN , LOCATING	
K	36005023	ROTOR SET	
L	35365261	PIN , LOCATING	
M	35365261	PIN , LOCATING	
N	35299312	SPACER	
P	35299270	BEARING , ROLLER	
Q	35364728	SPRING SET	
R	35299338	RING , SNAP	
S	35364710	SPRING , SET	

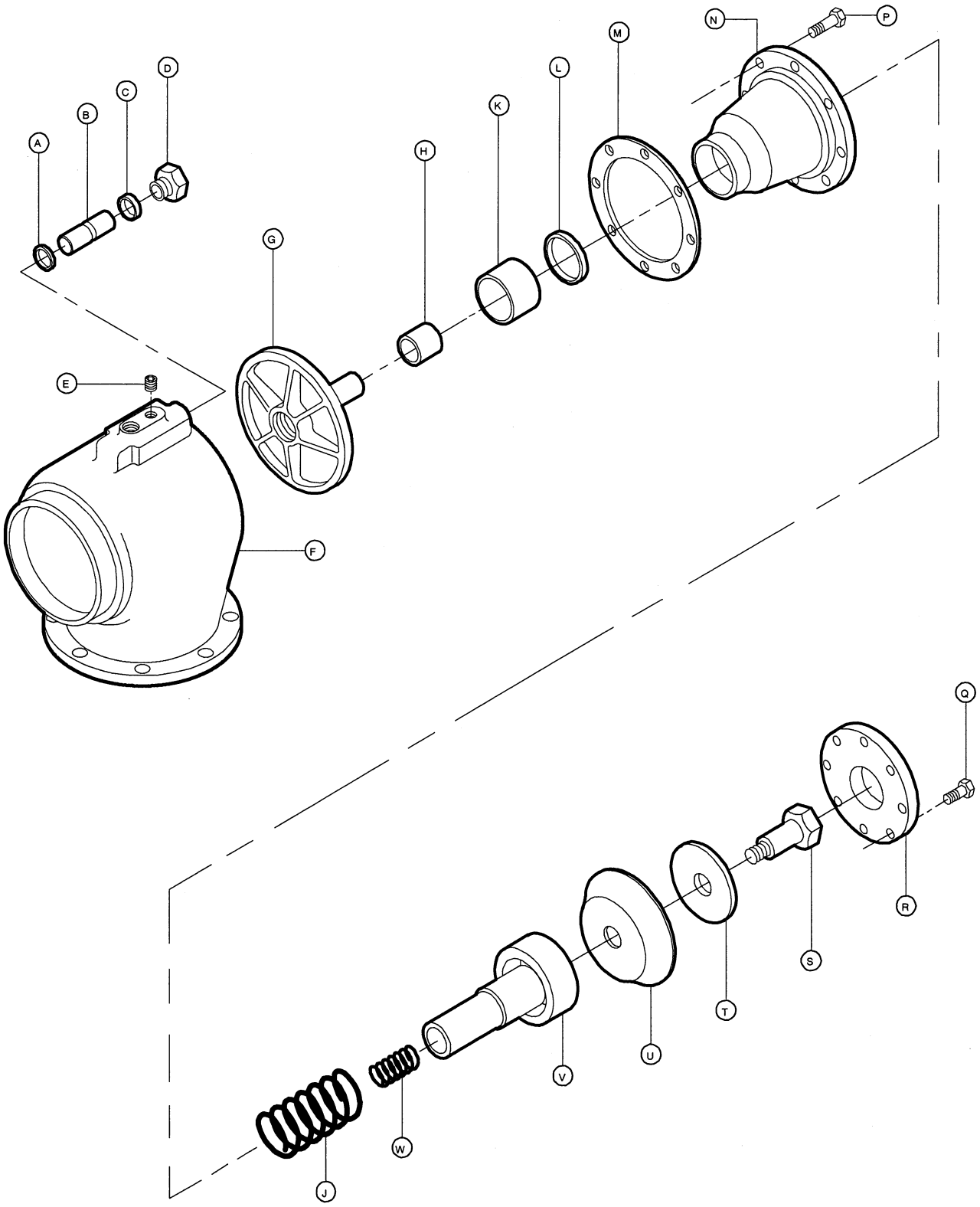
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR END ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-20	DATE/REV: 2-00 / B



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR END ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-21	DATE/REV: 2-00 / B

A	36713881	HOUSING , REAR BEARING	
B	35299361	SHIM SET	
C	34M2AB565	SCREW	(16 REQD)
D	35299254	BEARING , ROLLER	
E	35299320	PLATE , CLAMP	
F	35293869	SCREW	(6 REQD)
G	95358198	O-RING	
H	35579309	COVER , REAR BEARING	
J	35278555	PLUG	
K	35272533	SCREW	(6 REQD)

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR END ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-22	DATE/REV: 2-00 / B

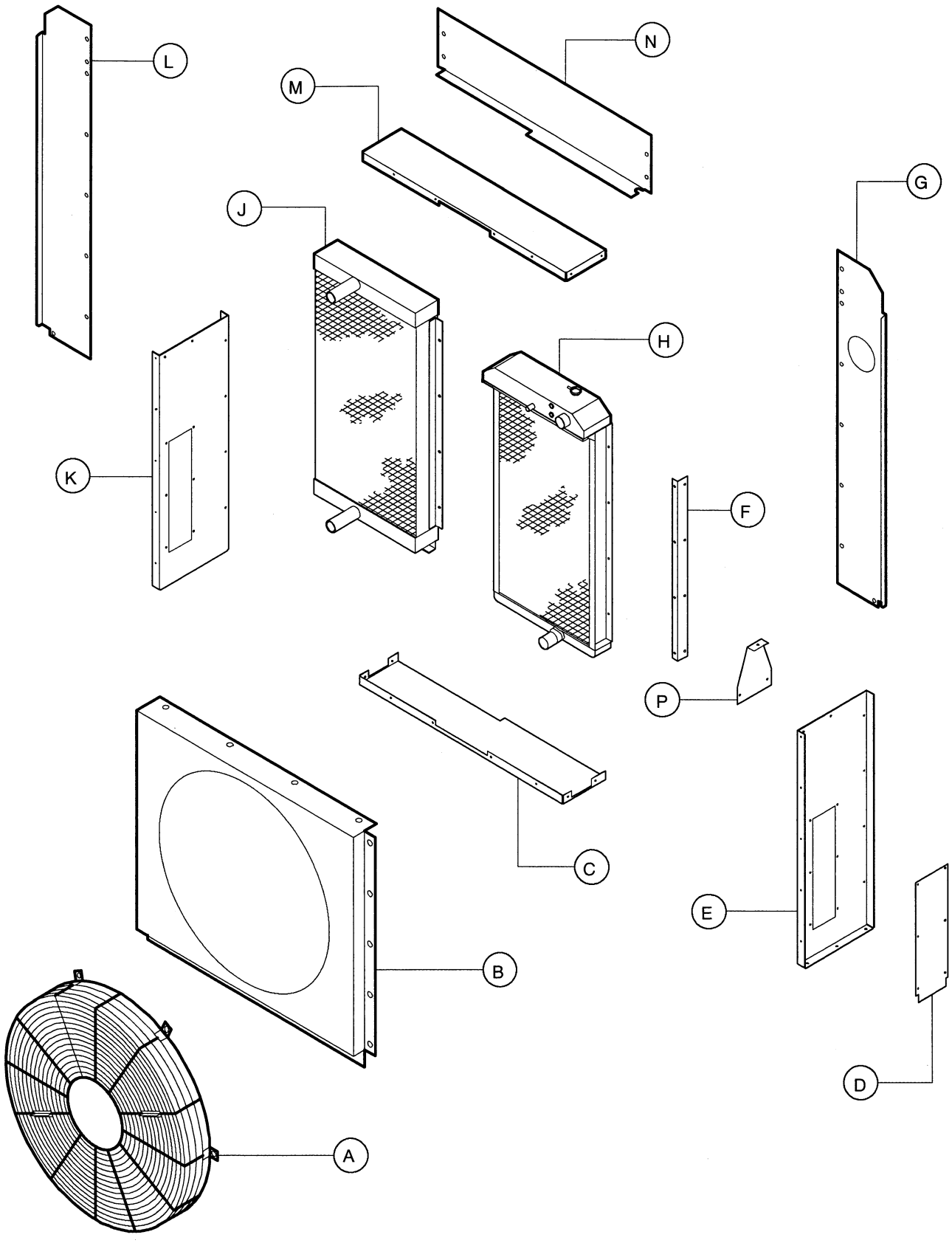


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION UNLOADER ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-23	DATE/REV: 2-00 / C

A	35331586	GROMMET
B	35328210	VALVE
C	35331578	GROMMET
D	35328236	ADAPTER
E	34A7S5	PLUG
F	36734507	BODY
G	35597509	VALVE ASSEMBLY
H	35328269	BUSHING (2 REQD)
J	35332691	SPRING
K	35328228	BUSHING
L	35328244	SEAL
M	35328251	GASKET
N	36722460	HOUSING
P	35271188	SCREW (12 REQD)
Q	35273416	SCREW (8 REQD)
R	35591189	COVER , PISTON
S	35A2D217	SCREW
T	35327204	WASHER
U	35592534	DIAPHRAGM
V	35591163	PISTON
W	35332683	SPRING

UNLOADER ASSEMBLY
PART NO. 36734515

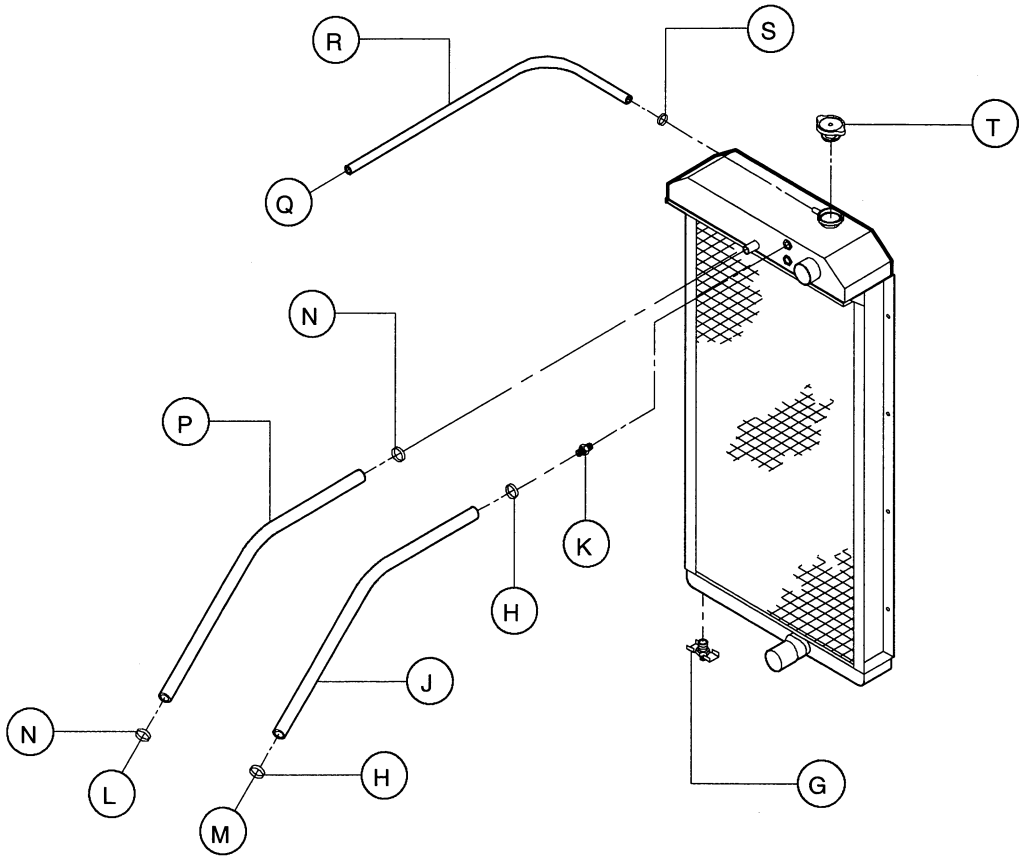
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION UNLOADER ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-24	DATE/REV: 2-00 / C

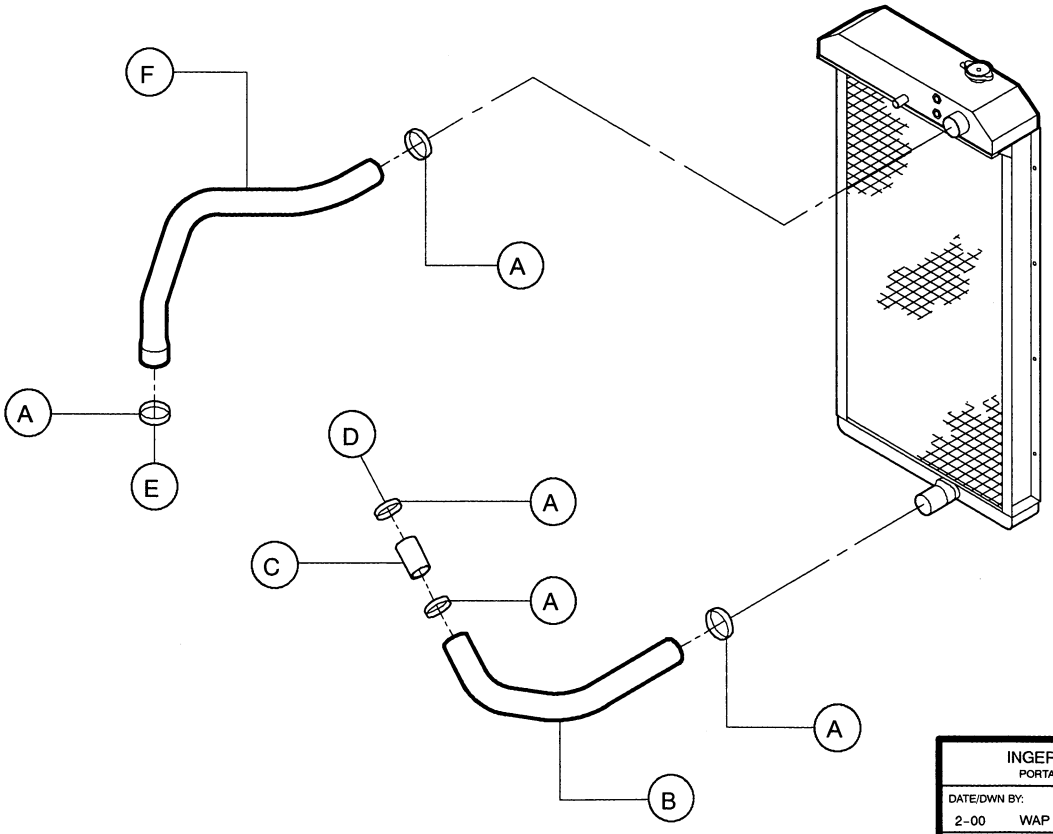


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION RADIATOR AND OIL COOLER COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-25	DATE/REV: 2-00 / C

A	36866408	GUARD , FAN	
B	36866390	ORIFICE , FAN	
C	36866374	SHROUD , BOTTOM COOLER	(HP600WCU / XP750WCU)
	36877439	SHROUD , BOTTOM COOLER	(HP750WCU / XP825WCU)
D	36868412	COVER , ACCESS	
E	36866358	CHANNEL , RADIATOR SIDE	
F	36868420	ANGLE , RADIATOR MOUNTING	
G	36868438	BAFFLE , L.H. REAR	
H	36866192	RADIATOR	(HP600WCU / XP750WCU)
	36877280	RADIATOR	(HP750WCU / XP825WCU)
J	36866200	COOLER , OIL	
K	36866366	CHANNEL , OIL COOLER SIDE	
L	36868446	BAFFLE , R.H. REAR	
M	36866382	SHROUD , TOP COOLER	
N	36868453	BAFFLE , REAR TOP	(HP600WCU / XP750WCU)
	36877421	BAFFLE , REAR TOP	(HP750WCU / XP825WCU)
P	36891331	BRACKET , SUPPORT	(2 REQD)

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION RADIATOR AND OIL COOLER COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-26	DATE/REV: 2-00 / C

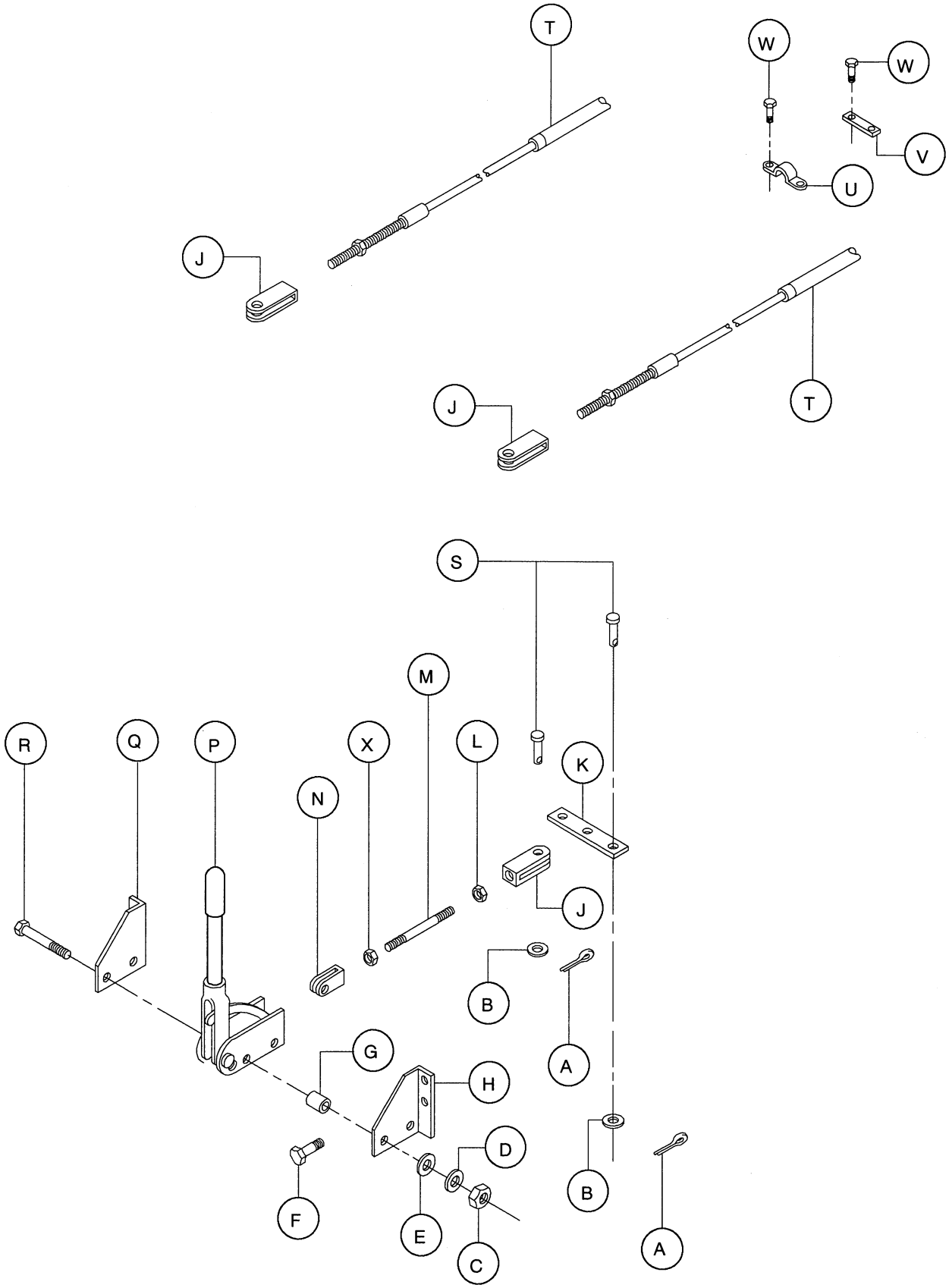




INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION RADIATOR PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-27	DATE/REV: 2-00 / B

(A)	W86719	CLAMP		
(B)	36868081	HOSE , LOWER RADIATOR		
(C)	36868461	TUBE , ENGINE WATER		
(D)	TO ENGINE WATER INLET			
(E)	TO ENGINE WATER OUTLET			
(F)	36868073	HOSE , UPPER RADIATOR		
(G)	X1086T129	DRAIN COCK	(HP600WCU / XP750WCU)	
	67A7M2Z1	ELBOW	(HP750WCU / XP825WCU)	
	36782167	DRAIN COCK	(HP750WCU / XP825WCU)	
(H)	35296342	CLAMP		
(J)	35286772	HOSE	(36 INCHES)	
(K)	35369511	ADAPTER		
(L)	TO ENGINE WATER PUMP			
(M)	TO ENGINE WATER VENT			
(N)	122A23S16	CLAMP		
(P)	35286327	HOSE	(60 INCHES)	(HP600WCU / XP750WCU)
	35286327	HOSE	(41 INCHES)	(HP750WCU / XP825WCU)
(Q)	THROUGH BELLY PAN			
(R)	35360775	TUBING	(66 INCHES)	
(S)	36845592	CLAMP		
(T)	FURNISHED WITH RADIATOR			

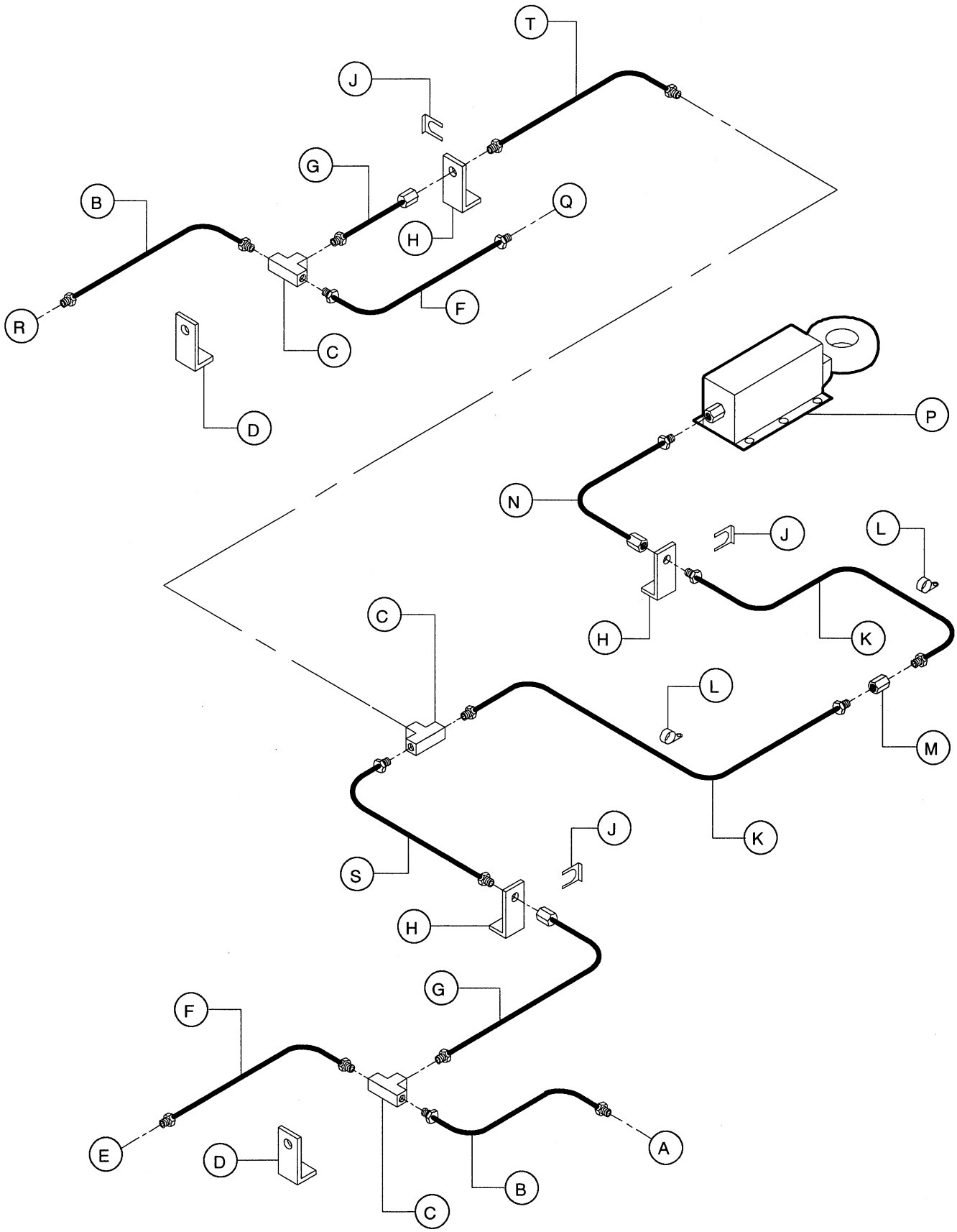
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION RADIATOR PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-28	DATE/REV: 2-00 / B



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION PARKING BRAKES	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-29	DATE/REV: 2-00 / B

A	95211900	PIN , COTTER
B	11A5C3	WASHER
C	92304526	NUT
D	92304674	WASHER
E	12A5C4	WASHER
F	35272533	SCREW
G	35603224	SPACER
H	36847440	BRACKET , L.H.
J	35603208	CLEVIS
K	35602846	BRACKET
L	35118728	NUT
M	35603182	ROD , LINK
N	35603216	CLEVIS
P	35857382	LEVER
Q	36847432	BRACKET , R.H.
R	35295013	SCREW
S	35357151	PIN
T	35857408	CABLE
U	35602895	CLIP
V	35602903	SPACER
W	35279025	SCREW
X	22A4C2	NUT

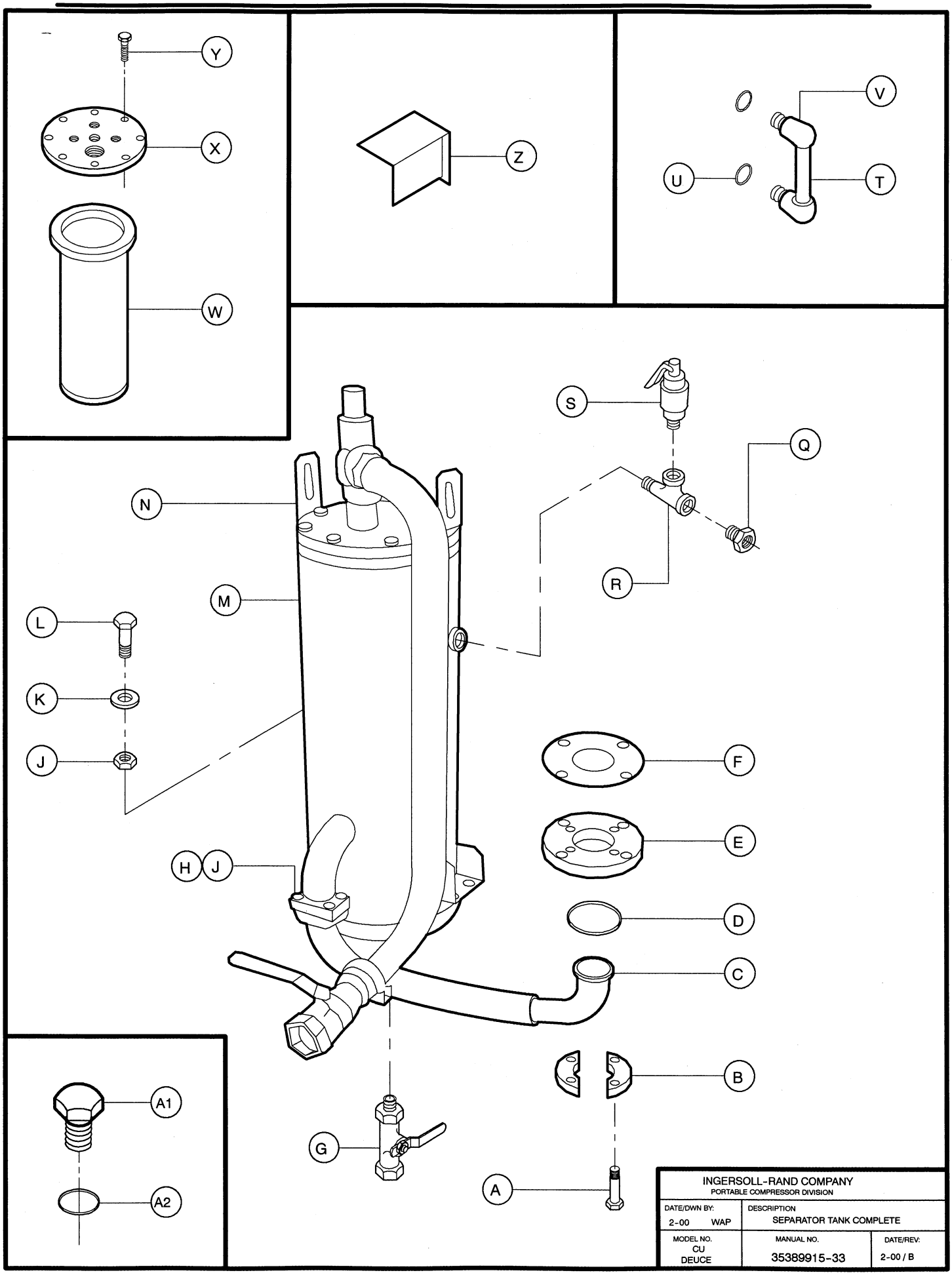
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 8-00 WAP	DESCRIPTION PARKING BRAKES	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-30	DATE/REV: 8-00 / B



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION BRAKE LINE PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-31	DATE/REV: 2-00 / B

A	TO L.H. SIDE / REAR AXLE		
B	36867281	TUBE ASSEMBLY	(65 INCHES)
C	35356328	TEE	
D	36867471	BRACKET , TEE	
E	TO R.H. SIDE / REAR AXLE		
F	36867489	TUBE ASSEMBLY	
G	35356377	HOSE , FLEX	
H	35356310	BRACKET , HOSE MOUNTING	
J	35356302	CLIP , HOSE	
K	35356401	TUBE ASSEMBLY	(40 INCHES)
L	X1182T23	CLAMP , TUBE	
M	35356336	UNION	
N	35356369	HOSE , FLEX	
P	36867299	BRAKE ACTUATOR ASSEMBLY	
Q	TO R.H. SIDE / FRONT AXLE		
R	TO L.H. SIDE / FRONT AXLE		
S	36876209	TUBE ASSEMBLY	
T	36867273	TUBE ASSEMBLY	

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION BRAKE LINE PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-32	DATE/REV: 2-00 / B

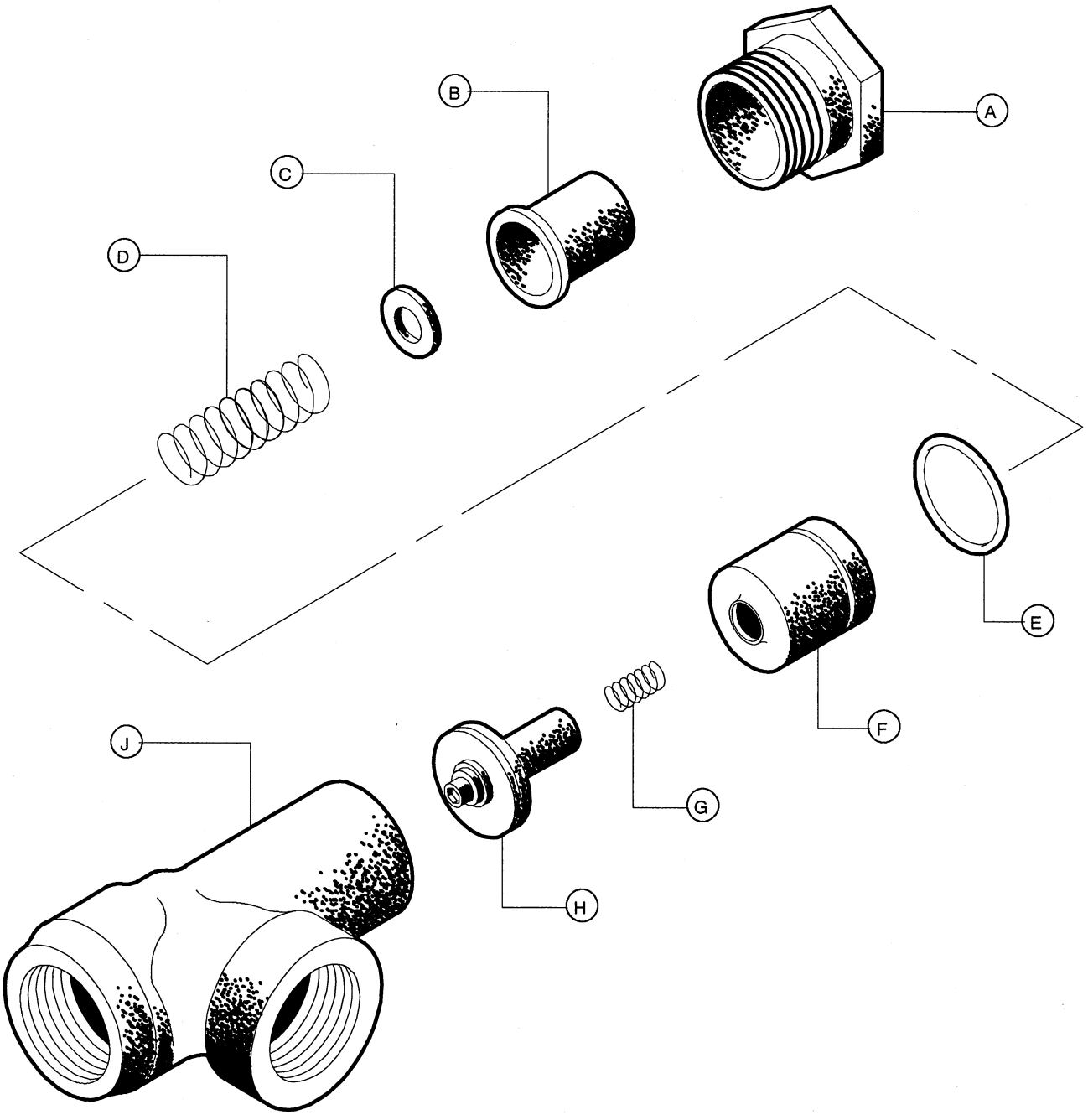


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION SEPARATOR TANK COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-33	DATE/REV: 2-00 / B

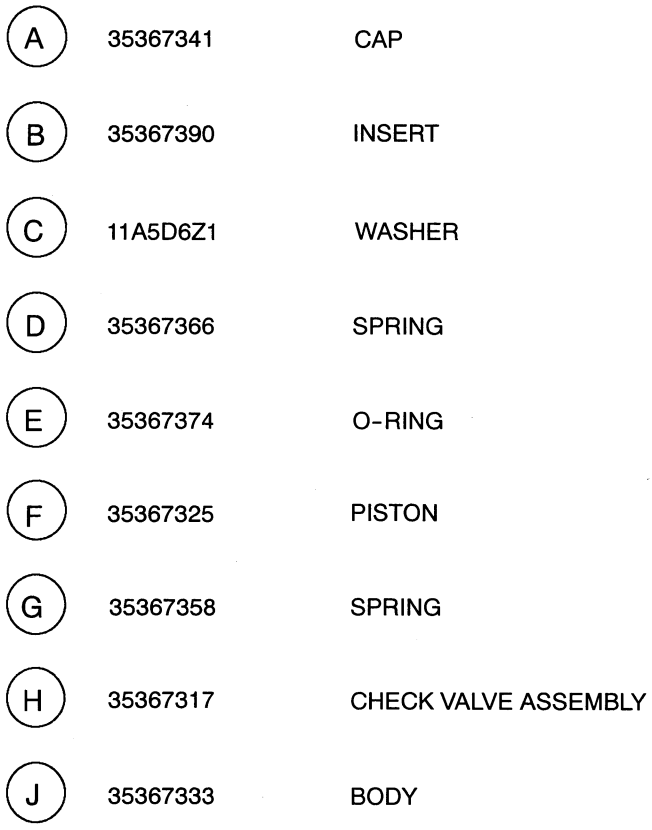
BEGINNING WITH SERIAL NO. 319255

A	35375385	SCREW	(4 REQD)
B	36866010	FLANGE , SPLIT	(4 REQD)
C	36865822	HOSE , DISCHARGE	
D	36866028	O-RING	
E	36866002	PLATE , ADAPTER	
F	36865996	GASKET	
G	36795680	VALVE , BALL	
H	36773737	SCREW	(4 REQD)
J	36879203	NUT	(4 REQD)
K	NOT USED		
L	36877793	SCREW	(4 REQD)
M	54681721	TANK , SEPARATOR / WITH COVER	
N	36785012	BRACKET	(2 REQD)
P	NOT USED		
Q	23A7S12Z1	BUSHING	
R	35305275	TEE , STREET	
S	36845030	VALVE , SAFETY	(HP600 / HP750)
	35326677	VALVE , SAFETY	(XP750 / XP825)
T	92121532	TUBE , SIGHT	
U	35324649	GASKET	
V	36860468	FITTING	
W	36866218	ELEMENT , SEPARATOR	
X	COMES WITH TANK (ITEM M)		
Y	39179072	SCREW	(8 REQD)
	12A5D8Z1	WASHER	(8 REQD)
Z	36871812	BRACKET , VALVE (STANDARD)	
	54492723	BRACKET , VALVE (GALVANNEAL)	
A1	35579630	PLUG	
A2	35279942	O-RING	

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION SEPARATOR TANK COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-34	DATE/REV: 2-01 / D



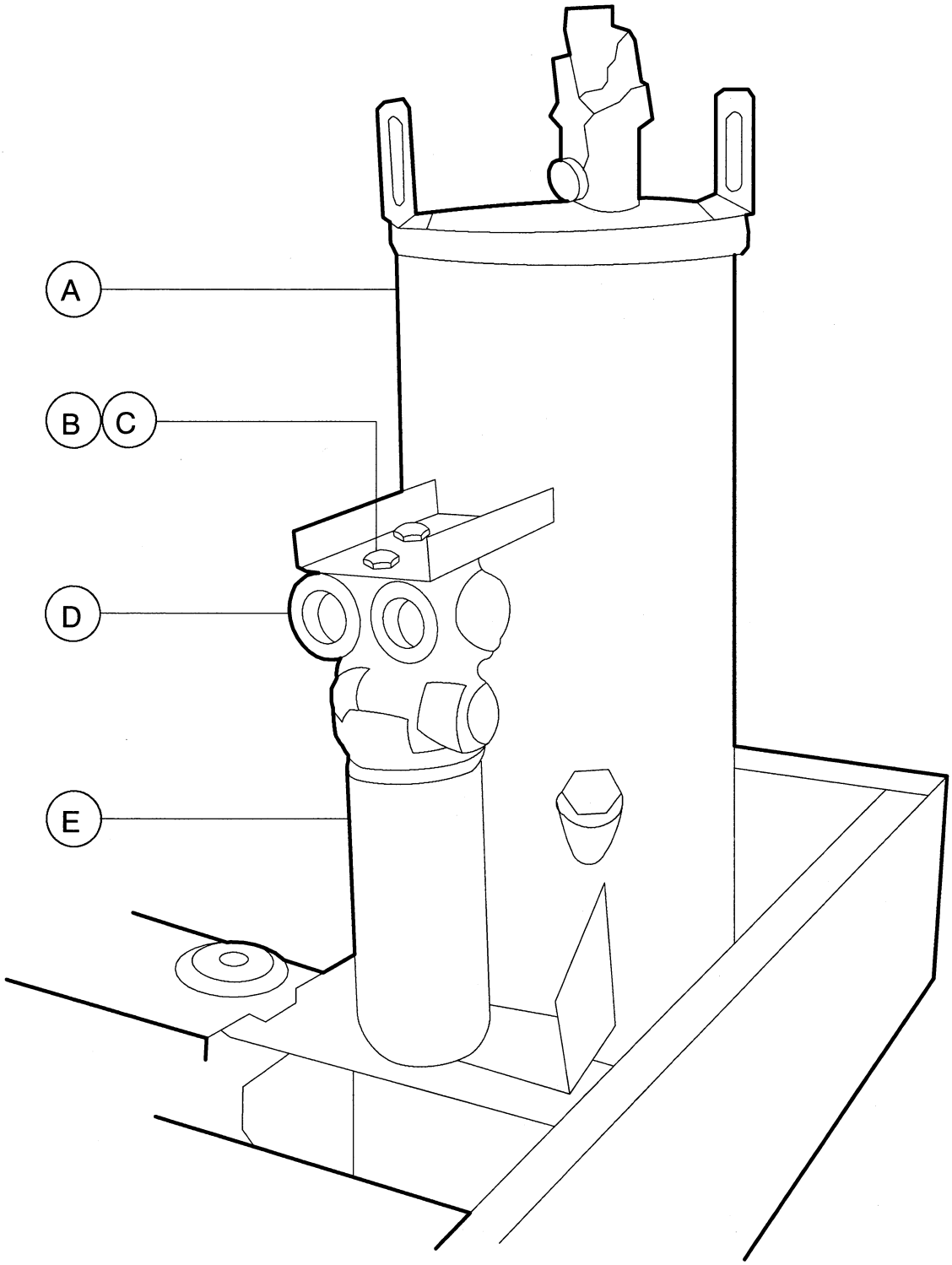
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION MIN. PRESS. CHECK VALVE ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-35	DATE/REV: 2-00 / B



A	35367341	CAP
B	35367390	INSERT
C	11A5D6Z1	WASHER
D	35367366	SPRING
E	35367374	O-RING
F	35367325	PISTON
G	35367358	SPRING
H	35367317	CHECK VALVE ASSEMBLY
J	35367333	BODY

MINIMUM PRESSURE CHECK VALVE ASSEMBLY ——— PART NUMBER 35598770

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION MIN. PRESS. CHECK VALVE ASSEMBLY	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-36	DATE/REV: 2-00 / B



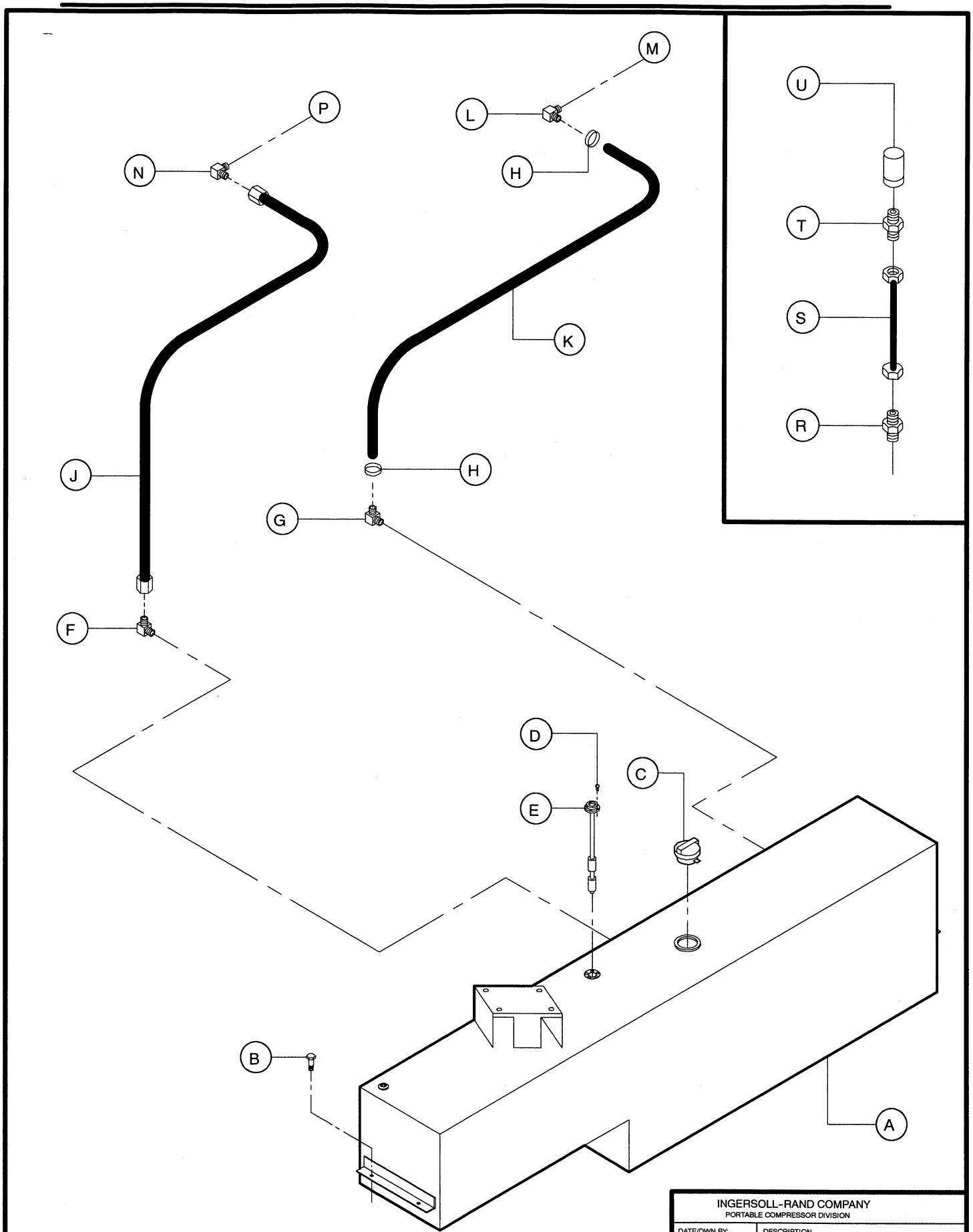
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION OIL TEMP. BY- PASS VALVE AND FILTER	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-37	DATE/REV: 2-00 / B

A	SEPARATOR TANK (REFERENCE ONLY)		
B	34M2AB409M3	SCREW	(3 REQD)
C	12A5D4Z1	WASHER	
D	36871689	VALVE , BY-PASS	
E	36860336	FILTER	

BYPASS VALVE KITS

35388024	RV REPAIR KIT
35388032	ELEMENT REPAIR KIT
35388040	O-RING REPAIR KIT

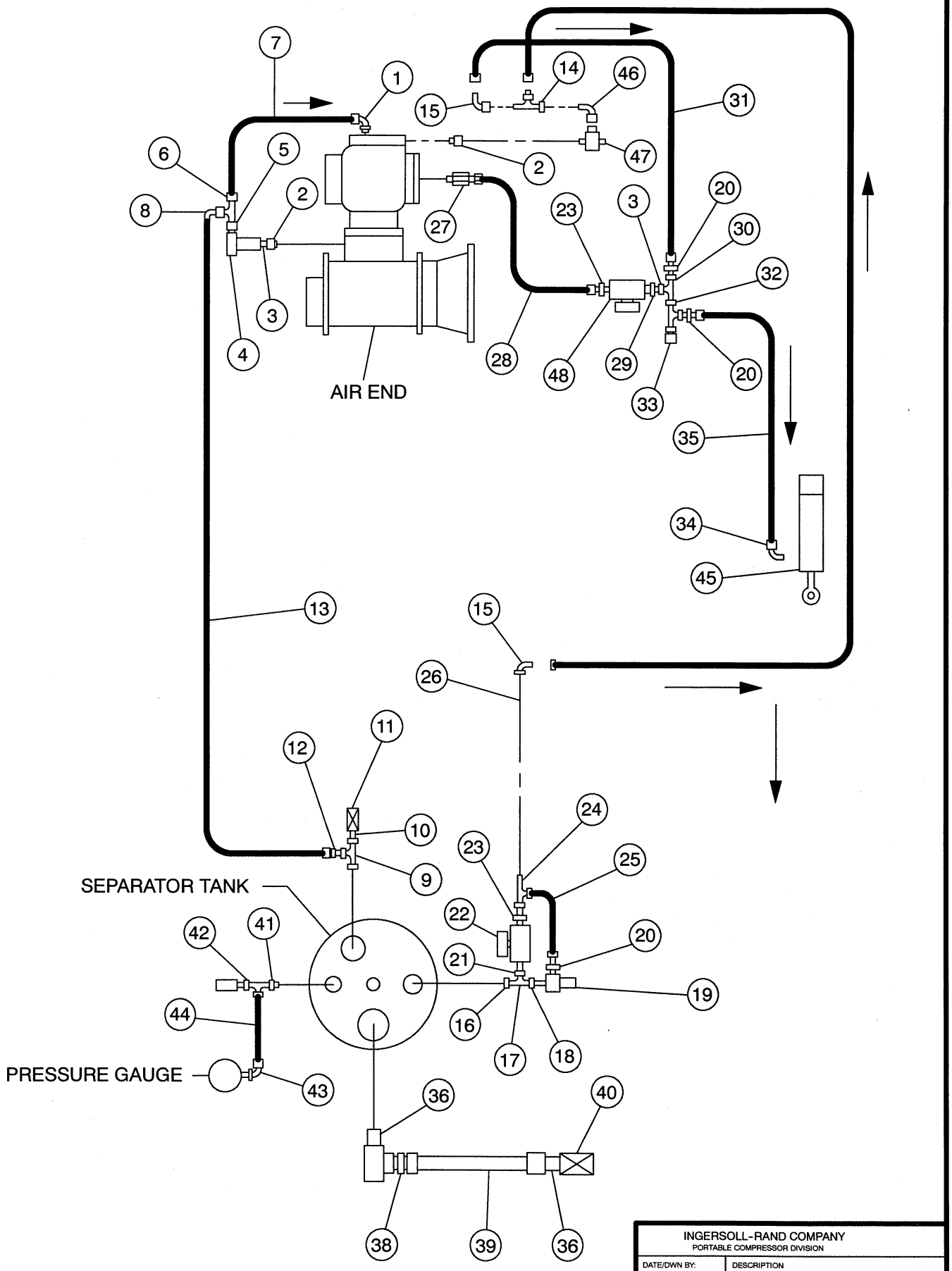
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION OIL TEMP. BY-PASS VALVE AND FILTER	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-38	DATE/REV: 2-00 / B



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION FUEL TANK AND PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-39	DATE/REV: 2-00 / C

A	36887750	TANK , FUEL	
	36886547	TANK , FUEL	(CLEAN-OUT OPTION TANK , 36026763)
B	35279025	SCREW	(4 REQD)
C	36845014	CAP , FUEL FILLER	
D	36842102	SCREW	(5 REQD)
E	36845402	SENDER , FUEL LEVEL	(HP600WJD / XP750WJD)
	36876845	SENDER , FUEL LEVEL	(HP750WJD / XP825WJD)
F	35279934	ELBOW , 90 °	
G	35322668	ELBOW , 90 °	
H	35296342	CLAMP	
J	35311471	HOSE ASSEMBLY	(HP600WJD / XP750WJD)
	35282987	HOSE ASSEMBLY	(HP750WJD / XP825WJD)
K	35282078	HOSE	(32 INCHES)
L	35322460	UNION	
M	TO FUEL RETURN		
N	35322668	ELBOW	
P	TO ENGINE PRIME PUMP		
Q	36867984	PAD , FUEL TANK	(NOT ILLUSTRATED)
R	35369347	CONNECTOR	
S	35356484	TUBING	(16 INCHES)
T	35369339	CONNECTOR	
U	35322395	SILENCER	

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION FUEL TANK AND PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-40	DATE/REV: 11-01 / D



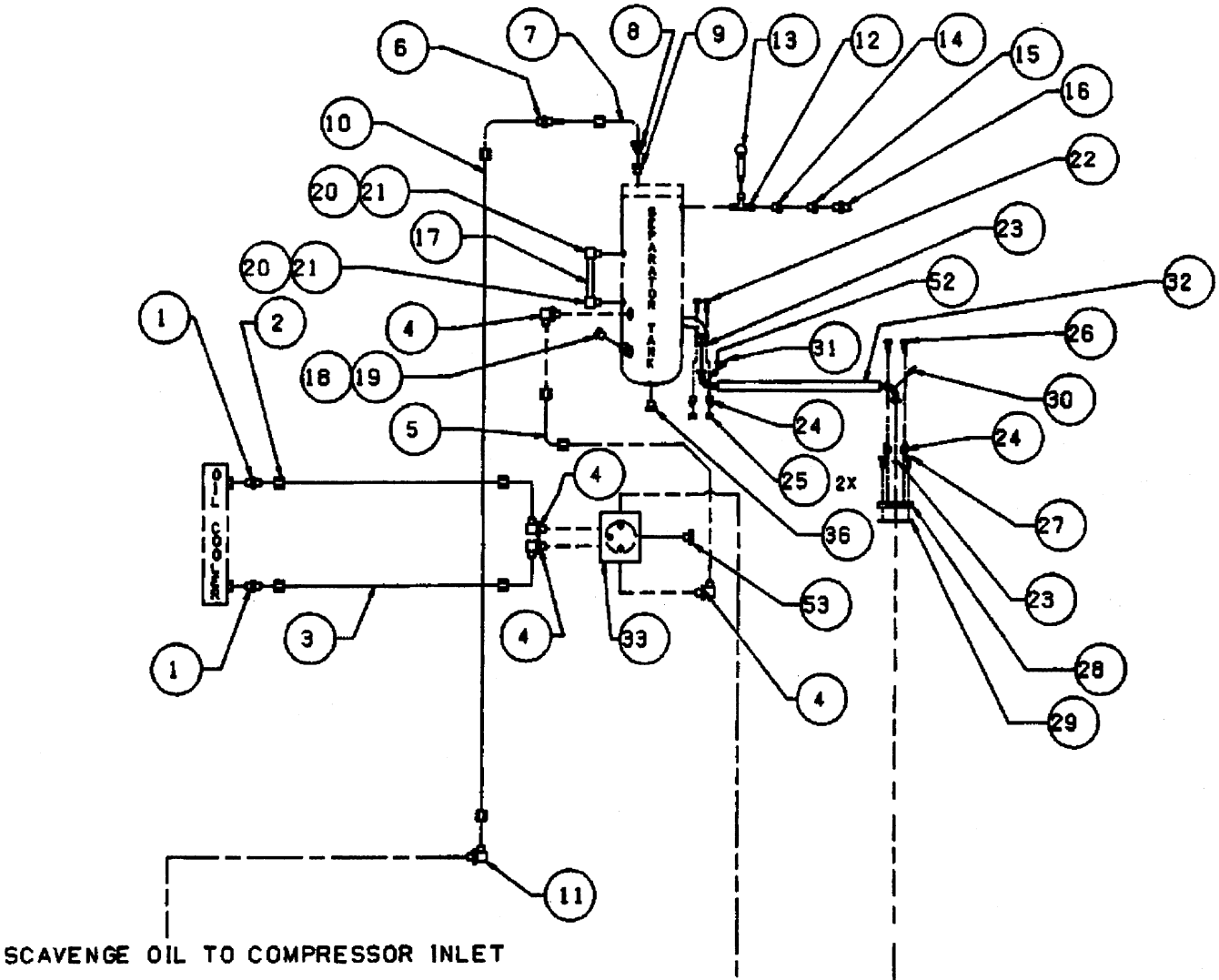
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-41	DATE/REV: 2-00 / C

BEGINNING WITH SERIAL NO. 319255

1	35287937	ELBOW. 90° .56-18 SAE O-RING X -8 JIC
2	35302314	ADAPTER. .56-18 SAE O-RING X .25 NPT
3	19A7JZ2	NIPPLE. CLOSE .25 NPT
4	35322379	VALVE. BLOWDOWN
5	35283134	CONNECTOR. .25 NPT X -8 JIC
6	35287929	TEE. RUN SWIVEL NUT -8 JIC
7	35857176	TUBE. -8 JIC
8	35287911	ELBOW. 90° SWIVEL NUT-8 JIC
9	72A7M5Z1	TEE. STREET .75 NPT
10	19A7J5Z1	NIPPLE. CLOSE .75 NPT
11	35576115	VALVE. BALL .75 NPT
12	35313287	ADAPTER. .75 NPT X -8 JIC
13	35305473	HOSE. -8 JIC X 42.0 LONG
14	35283084	TEE. RUN SWIVEL NUT -6 JIC
15	35283068	ELBOW. 90° SWIVEL NUT-6 JIC
16	23A7S5Z1	BUSHING. REDUCER .50 NPT X .25 NPT
17	35283050	TEE. MALE RUN .25 NPT X -6 JIC
18	35367846	ADAPTER. SWIVEL .25 NPT X -6 JIC
19	36854149	VALVE. PRESSURE REGULATOR (XP750CWCU,XP750WJD,XP825CWCU,XP825WJD)
	36854495	VALVE. PRESSURE REGULATOR (HP600CWCU,HP600WJD,HP750CWCU,HP750WJD)
20	35284082	ADAPTER. .25 X -6 JIC
21	35368927	ADAPTER. SWIVEL .38 NPT X -6 JIC
22	36840841	VALVE. SOLENOID
23	35290147	ADAPTER. .38 NPT X -6 JIC
24	35283084	TEE. SWIVEL RUN -6 JIC
25	35282953	HOSE. -6 JIC X 11.0 LONG
26	35323724	HOSE. -6 JIC X 23.5 LONG
27	36840460	VALVE, RELIEF/CHECK
28	36867554	TUBE. -6 JIC
29	23A7S2Z1	BUSHING. REDUCER .38 NPT X .25 NPT
30	71A7M2Z1	TEE. .25 NPT
31	35282961	HOSE. -6 JIC X 13.0 LONG
32	72A7M2Z1	TEE. STREET .25 NPT
33	35322346	CONNECTOR. ORIFICED .25 NPT X .156 ORF
34	35301126	ELBOW. 90° .12 NPT X -6 JIC
35	35283019	HOSE. -6 JIC X 54.0 LONG
36	19A7S57Z1	NIPPLE. 2.0 NPT X 3.0 LONG
37	35598770	VALVE. MIN PRESS
38	35335124	ADAPTER. 2.0 NPT X -32 JIC
39	36876399	TUBE. SERVICE AIR -32 JIC X 2.0 NPT
40	35602473	VALVE. BALL 2.0 NPT
41	23A7S3Z1	BUSHING. REDUCER .38 NPT X .12 NPT
42	35326503	TEE. STREET .12 NPT X -4 JIC
43	35301225	ELBOW. STREET 90° -4 JIC X .12 NPT
44	35331842	HOSE. -4 JIC X 53.0 LONG
45	35594225	CYLINDER. ENGINE SPEED CONTROL AIR (HP600WJD-XHP825WJD)
	35593144	CYLINDER. ENGINE SPEED CONTROL AIR (HP600CWCU-XHP825CWCU)
46	35279994	ELBOW. .25 NPT X -6 JIC
47	36881951	VALVE. FLOW CONTROL
48	36881944	VALVE. SOLENOID
49	35369347	CONNECTOR. .25 NPT X .375 TBG
50	35356484	TUBING. .375 SYNFLEX
51	35369339	CONNECTOR. .25 NPT X .375 TBG

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-42	DATE/REV: 2-01 / D

BEGINNING WITH SERIAL NO. 319255

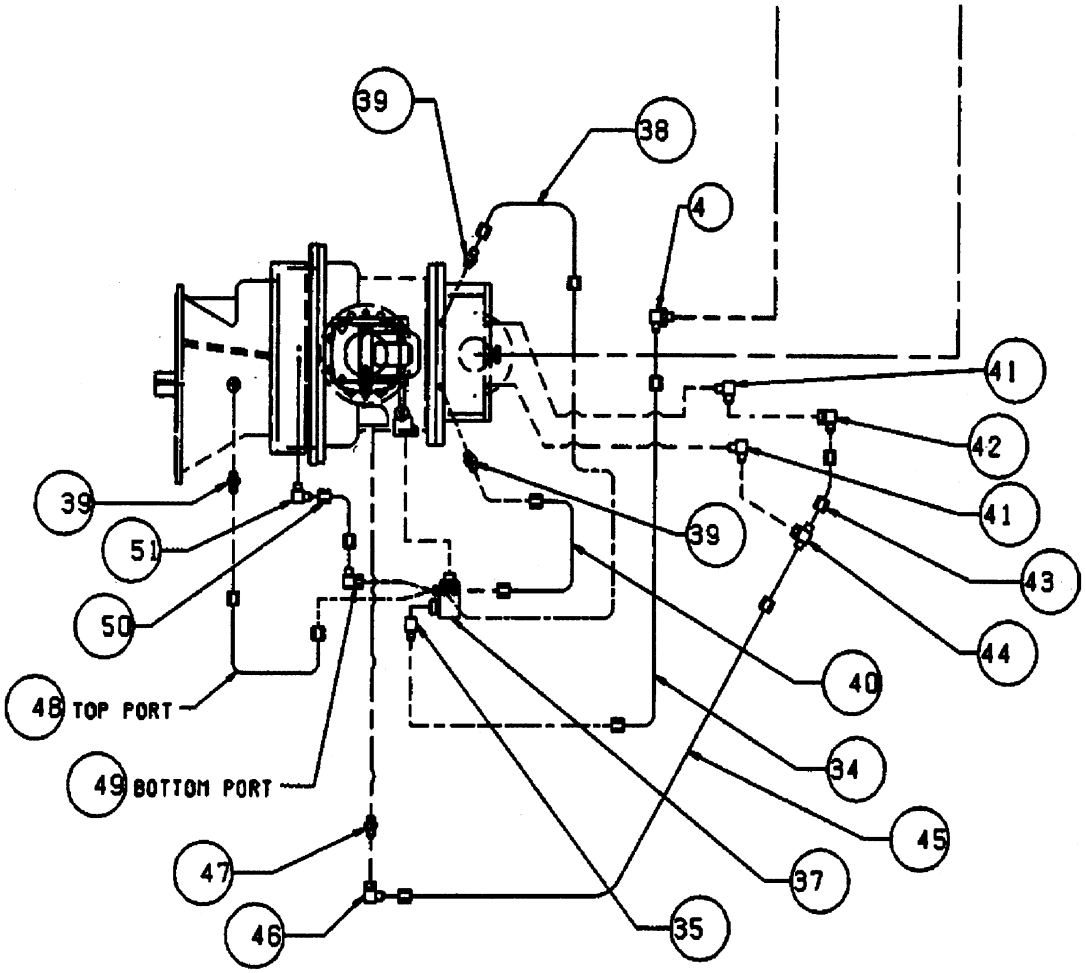


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION OIL PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-43	DATE/REV: 2-01 / D

BEGINNING WITH SERIAL NO. 319255

NO.	PART NO.	DESCRIPTION
1	36846061 36877355	ST. CONN. 1.625-12 W/O-RING CONN-20X7.25 (XP828WJD ONLY)
2	36866226	TUBE ASSY-UPPER
3	36866234	TUBE ASSY-LOWER
4	35279777	ELB. CONN. 1.625-12 W/O-RING
5	W90376	HOSE ASSY
6	36840411	CHECK VALVE
7	36867737	TUBE ASSY
8	35329309	LENZ FITTING
9	23A758Z1	RED. BUSH .75 NPT - .375 NPT
10	36877751	HOSE ASSY
11	35279827	ELBOW 90°, .562-18X-6 JIC
12	35305275	TEE STREET, 1.0 NPT
13	35326677 36845030	SAFETY VALVE 175 PSI (XP750CWCU,XP750WJD,XP825CWCU,XP825WJD) SAFETY VALVE 200 PSI (HP600CWCU,HP600WJD,HP750CWCU,HP750WJD)
14	23A7512Z1	RED. BUSHING 1.0 NPT - .50 NPT
15	23A755Z1	RED. BUSHING .50 NPT - .25 NPT
16	36757573	SWITCH SHUTDOWN
17	92121532	TUBE, SIGHT
18	35579630	PLUG, VENTED 1.625
19	35279942	O-RING
20	36904068	SIGHT TUBE FITTING
21	35324649	GASKET
22	36773737	SCREW,SOCKET HEAD M12-1.75 X 60LG
23	36866028	O-RING
24	36866010	SPLIT FLANGE SAE -40
25	16M4JC24M3	NUT HEX M12 X 1.75
26	36763688	SCREW M12 - 1.75 X 35LG
27	35375385	SCREW HEX M16 - 2.00 X 40LG
28	36866002	FLANGE ADAPTOR
29	36865996	GASKET
30	36865756	SW. SHUTDOWN
31	35367218	TEMPERATURE SENDER
32	36865822	HOSE ASSY. - DISCHARGE
33	36871689	VALVE BYPASS
34	W90434	HOSE ASSY.
35	36868008	REDUCER JIC -24 -20
36	36795680	VALVE - BALL
37	36866531	MANIFOLD
38	36865889	TUBE ASSY
39	36866564	STRAIGHT CONN .437 - 20 X -6 JIC
40	36865897	TUBE ASSY
41	35305622	ELBOW, 90° .75-16 X -10 JIC W/O-RING
42	35305648	ELBOW,SWIVEL 90° .750 - 16 X -10 JIC
43	36865921	TUBE ASSY
44	35356450	TEE SWIVEL .875 - 14 X -10 JIC
45	35856251	TUBE ASSY
46	35305648	ELBOW , 90° .750 - 16 X -10 JIC
47	35286954	STRAIGHT CONN .875 - 14 X - 10 JIC
48	36865905	TUBE ASSY
49	35279827	ELBOW 90° .562 - 18 X -6 JIC
50	36865913	TUBE ASSY
51	36866572	ELBOW 90° .437 - 20 X -6 JIC
52	23A754Z1	RED. BUSH .50NPT - .375 NPT
53	35289057	PLUG, .437-20 (XP825CWCU,XP825WJD,HP750CWCU,HP750WJD)

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION OIL PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-44	DATE/REV: 2-00 / C



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION OIL PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-45	DATE/REV: 2-00 / C

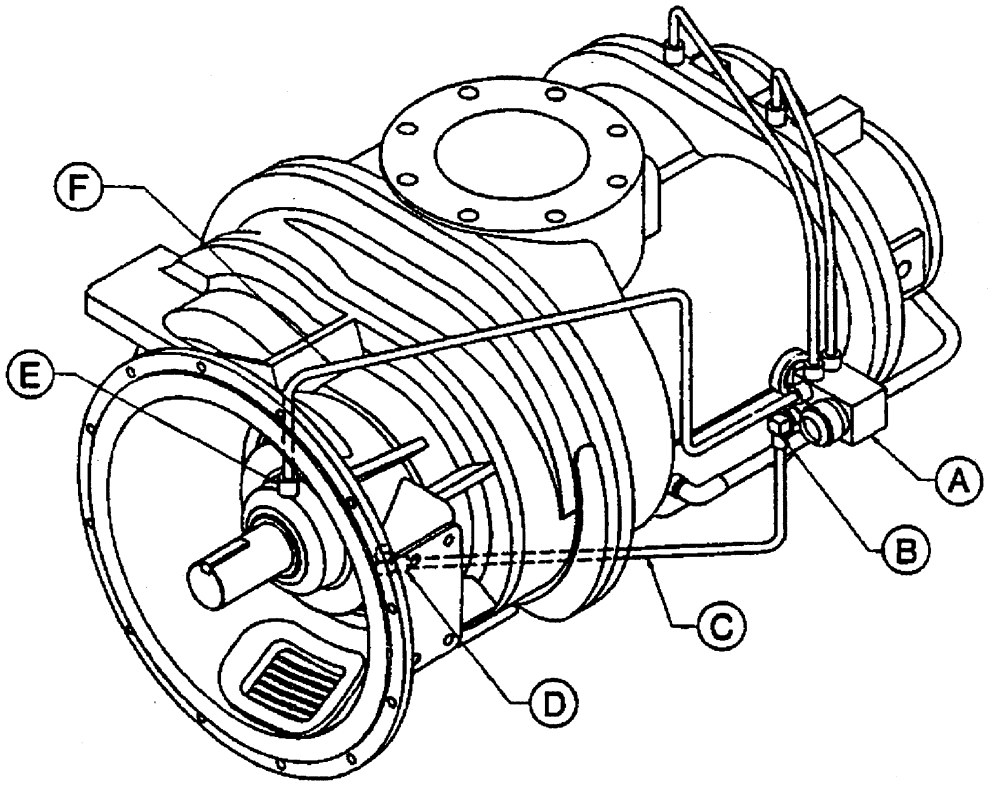
BEGINNING WITH SERIAL NO. 319255

NO.	PART NO.	DESCRIPTION
1	36846061 36877355	ST. CONN. 1.625-12 W/O-RING CONN-20X7.25 (XP825WJD ONLY)
2	36866226	TUBE ASSY-UPPER
3	36866234	TUBE ASSY-LOWER
4	35279777	ELB. CONN. 1.625-12 W/O-RING
5	W90376	HOSE ASSY
6	36840411	CHECK VALVE
7	36867737	TUBE ASSY
8	35329309	LENZ FITTING
9	23A758Z1	RED. BUSH .75 NPT - .375 NPT
10	36877751	HOSE ASSY
11	35279827	ELBOW 90°, .562-18X-6 JIC
12	35305275	TEE STREET, 1.0 NPT
13	35326677 36845030	SAFETY VALVE 175 PSI (XP750CWCU,XP750WJD,XP825CWCU,XP825WJD) SAFETY VALVE 200 PSI (HP600CWCU,HP600WJD,HP750CWCU,HP750WJD)
14	23A751Z1	RED. BUSHING 1.0 NPT - .50 NPT
15	23A755Z1	RED. BUSHING .50 NPT - .25 NPT
16	35757573	SWITCH SHUTDOWN
17	92121532	TUBE, SIGHT
18	35579630	PLUG, VENTED 1.625
19	35279342	O-RING
20	36904068	SIGHT TUBE FITTING
21	35324649	GASKET
22	36773737	SCREW,SOCKET HEAD M12-1.75 X 60LG
23	36866028	O-RING
24	36866010	SPLIT FLANGE SAE -40
25	16M4JC24M3	NUT HEX M12 X 1.75
26	36763688	SCREW M12 - 1.75 X 35LG
27	35375385	SCREW HEX M16 - 2.00 X 40LG
28	36866002	FLANGE ADAPTOR
29	36865996	GASKET
30	36865756	SW. SHUTDOWN
31	35367218	TEMPERATURE SENDER
32	36865822	HOSE ASSY. - DISCHARGE
33	36871689	VALVE BYPASS
34	W90434	HOSE ASSY.
35	36868008	REDUCER JIC -24 -20
36	36795680	VALVE - BALL
37	36866531	MANIFOLD
38	36865889	TUBE ASSY
39	36866564	STRAIGHT CONN .437 - 20 X -6 JIC
40	36865897	TUBE ASSY
41	35305622	ELBOW, 90° .75-16 X -10 JIC W/O-RING
42	35305648	ELBOW,SWIVEL 90° .750 - 16 X -10 JIC
43	36865921	TUBE ASSY
44	35356450	TEE SWIVEL .875 - 14 X -10 JIC
45	35856251	TUBE ASSY
46	35305648	ELBOW , 90° .750 - 16 X -10 JIC
47	35286954	STRAIGHT CONN .875 - 14 X - 10 JIC
48	36865905	TUBE ASSY
49	35279827	ELBOW 90° .562 - 18 X -6 JIC
50	36865913	TUBE ASSY
51	36866572	ELBOW 90° .437 - 20 X -6 JIC
52	23A754Z1	RED. BUSH .50NPT - .375 NPT
53	35289057	PLUG, .437-20 (XP825CWCU,XP825WJD,HP750CWCU,HP750WJD)

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION OIL PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-46	DATE/REV: 2-01 / D

NO.	PART NO.	DESCRIPTION
1	36846061	ST. CONN. 1.625-12 W/O-RING
	36877355	CONN-20X7.25 (XP825WJD ONLY)
2	36866226	TUBE ASSY-UPPER
3	36866234	TUBE ASSY-LOWER
4	35279777	ELB. CONN. 1.625-12 W/O-RING
5	W90376	HOSE ASSY
6	36840411	CHECK VALVE
7	36867737	TUBE ASSY
8	35329309	LENZ FITTING
9	23A7582I	RED. BUSH .75 NPT - .375 NPT
10	35282912	HOSE ASSY (XP750CWCU,XP750WJD,HP600CWCU,HP600WJD)
	36877751	HOSE ASSY (XP825CWCU,XP825WJD,HP750CWCU,HP750WJD)
11	35279876	ELBOW 90° .437-20X-4 JIC (XP750CWCU,XP750WJD,HP600CWCU,HP600WJD)
	35279827	ELBOW 90°, .562-18X-6 JIC (XP825CWCU,XP825WJD,HP750CWCU,HP750WJD)
12	35305275	TEE STREET, 1.0 NPT
13	35326677	SAFETY VALVE 175 PSI (XP750CWCU,XP750WJD,XP825CWCU,XP825WJD)
	36845030	SAFETY VALVE 200 PSI (HP600CWCU,HP600WJD,HP750CWCU,HP750WJD)
14	23A7512I	RED. BUSHING 1.0 NPT - .50 NPT
15	23A755I	RED. BUSHING .50 NPT - .25 NPT
16	36757573	SWITCH SHUTDOWN
17	92121532	TUBE, SIGHT
18	35579630	PLUG, VENTED 1.625
19	35279942	O-RING
20	36904068	SIGHT TUBE FITTING
21	35324649	GASKET
22	36773737	SCREW,SOCKET HEAD M12-1.75 X 60LG
23	36866028	O-RING
24	36866010	SPLIT FLANGE SAE -40
25	16M4JC24M3	NUT HEX M12 X 1.75
26	36763688	SCREW M12 - 1.75 X 35LG
27	35375385	SCREW HEX M16 - 2.00 X 40LG
28	36866002	FLANGE ADAPTOR
29	36865996	GASKET
30	36865756	SW. SHUTDOWN
31	35367218	TEMPERATURE SENDER
32	36865822	HOSE ASSY. - DISCHARGE
33	36871689	VALVE BYPASS
34	W90434	HOSE ASSY.
35	36868008	REDUCER JIC -24 -20
36	36795680	VALVE - BALL
37	36866531	MANIFOLD
38	36865889	TUBE ASSY
39	36866564	STRAIGHT CONN .437 - 20 X -6 JIC
40	36865897	TUBE ASSY
41	35305622	ELBOW, 90° .75-16 X -10 JIC W/O-RING
42	35305648	ELBOW,SWIVEL 90° .750 - 16 X -10 JIC
43	36865921	TUBE ASSY
44	35356450	TEE SWIVEL .875 - 14 X -10 JIC
45	35856251	TUBE ASSY
46	35305648	ELBOW , 90° .750 - 16 X -10 JIC
47	35286954	STRAIGHT CONN .875 - 14 X - 10 JIC
48	36865905	TUBE ASSY
49	35279827	ELBOW 90° .562 - 18 X -6 JIC
50	36865913	TUBE ASSY
51	36866572	ELBOW 90° .437 - 20 X -6 JIC
52	23A754ZI	RED. BUSH .50NPT - .375 NPT
53	35289057	PLUG, .437-20 (XP825CWCU,XP825WJD,HP750CWCU,HP750WJD)

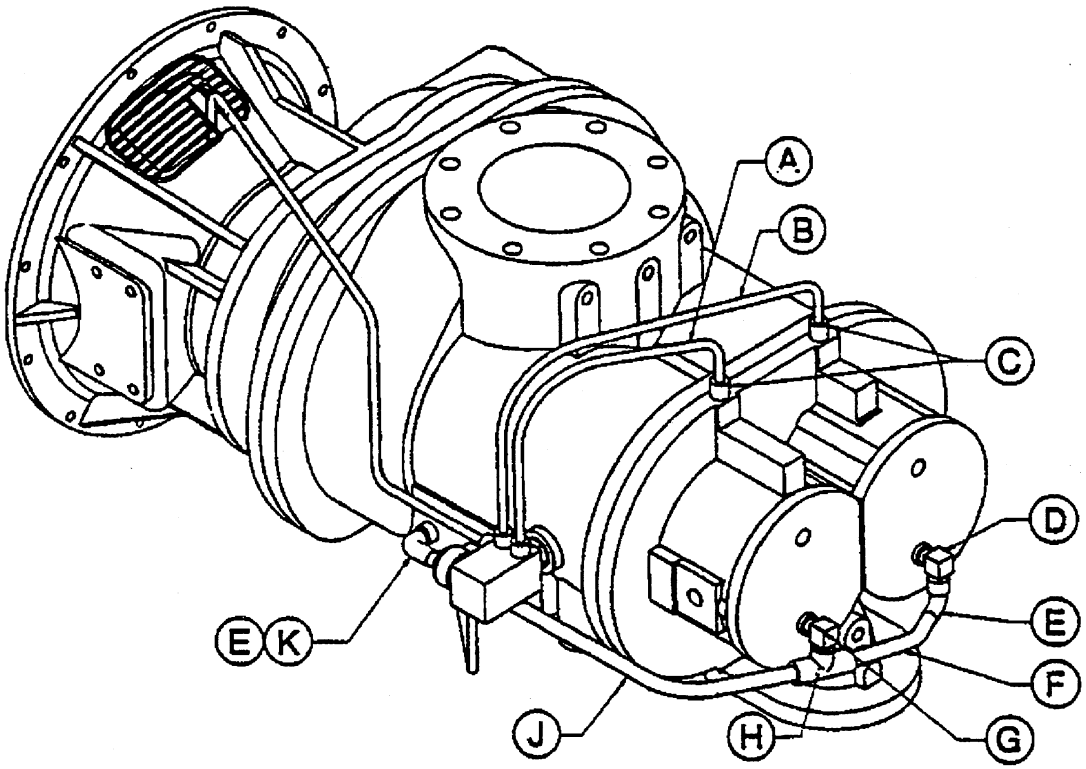
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION OIL PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-46	DATE/REV: 2-00 / C



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR END PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-47	DATE/REV: 2-00 / C

A	36866531	OIL MANIFOLD
B	35279827	ELBOW , 90 °
C	36865913	TUBE , FRONT BEARINGS
D	36866572	ELBOW , 90 °
E	36866564	CONNECTOR
F	36865905	SEAL TUBE

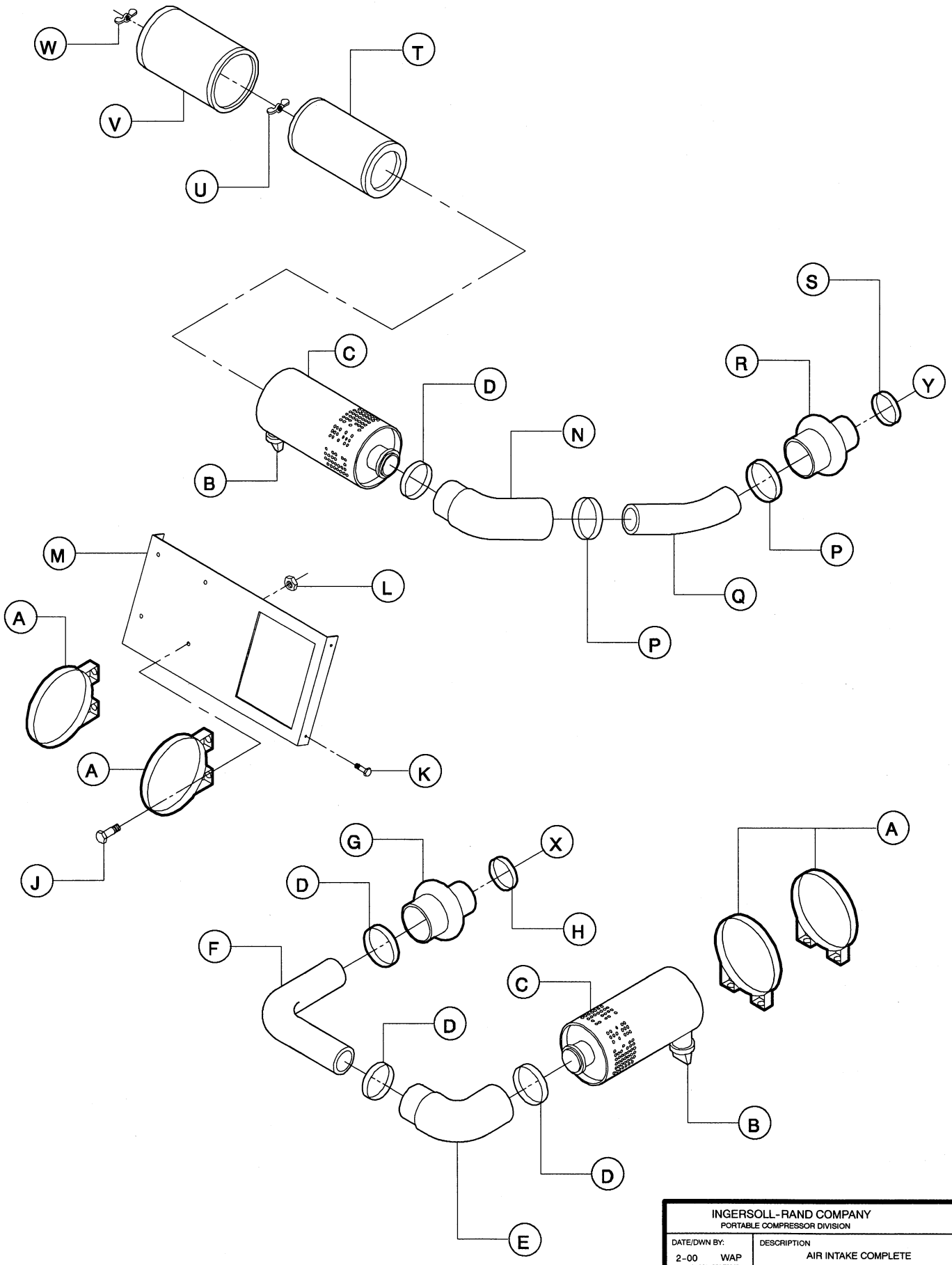
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR END PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-48	DATE/REV: 2-00 / C



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR END PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-49	DATE/REV: 2-00 / C

A	36865897	TUBE , FEMALE DISCHARGE BEARING
B	36865889	TUBE , MALE DISCHARGE BEARING
C	36866564	CONNECTOR
D	35305622	ELBOW , 90 °
E	35305648	ELBOW , 90 °
F	36865921	TUBE , BEARING DRAIN
G	35305622	ELBOW , 90 °
H	35356450	TEE , SWIVEL
J	35866251	TUBE , BEARING SCAVAGE
K	35286954	CONNECTOR

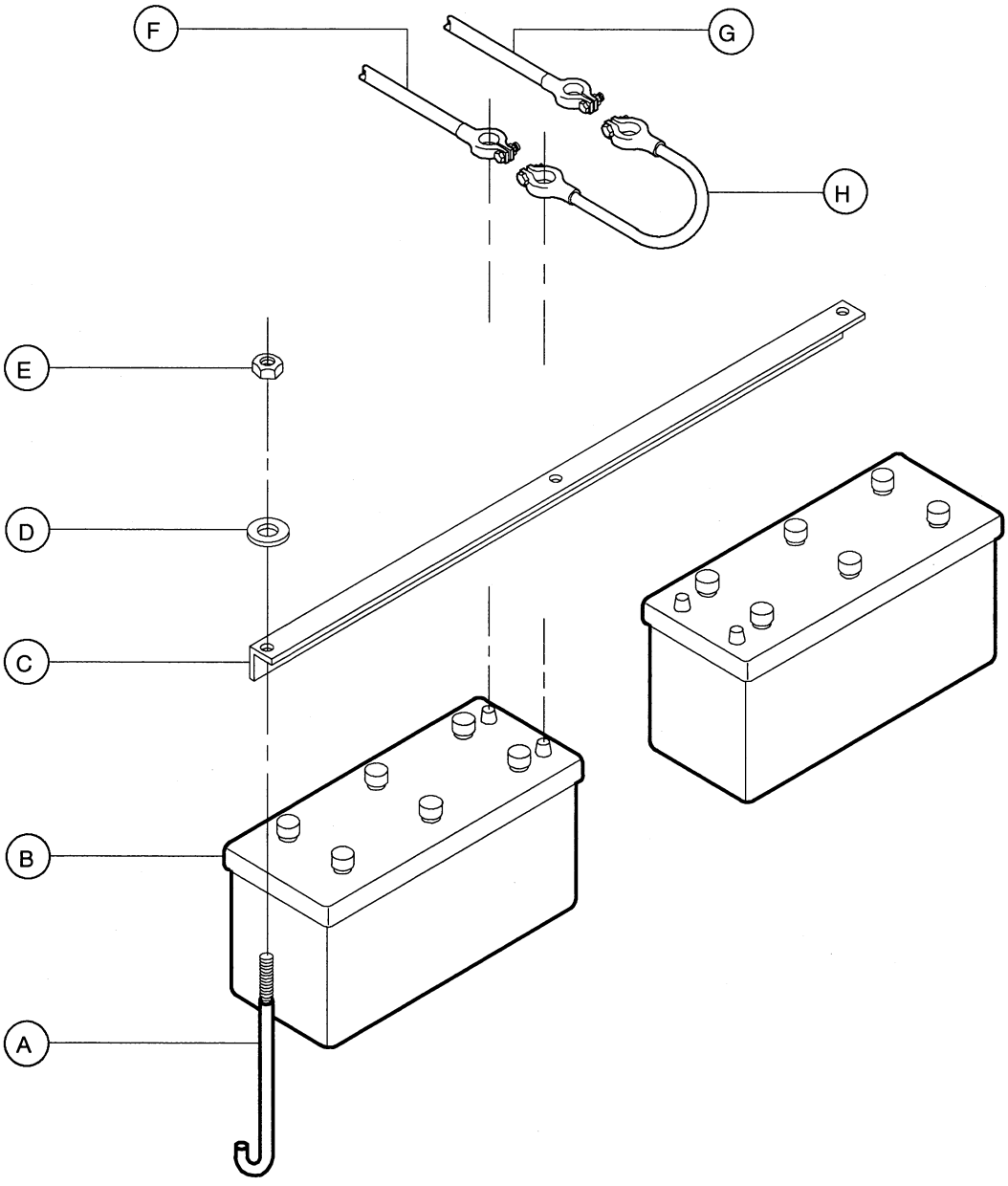
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR END PIPING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-50	DATE/REV: 2-00 / B



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR INTAKE COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-51	DATE/REV: 2-00 / C

A	35863638	BAND , MOUNTING
B	36867778	EJECTOR , DUST
C	36866242	AIR CLEANER ASSY.
D	35116094	CLAMP
E	35117605	ELBOW , RUBBER
F	36886612	TUBE , AIR / END
G	35112333	HOSE , HUMP
H	35119858	CLAMP
J	35374842	SCREW
K	35279025	SCREW
L	16M4JC23M3	NUT
M	36877033	BRACKET , MOUNTING
N	35281328	ELBOW , RUBBER
P	35116615	CLAMP
Q	36866754	TUBE , ENGINE (HP600WJD / XP750WJD)
	36877025	TUBE , ENGINE (HP750WJD / XP825WJD)
R	35274406	HOSE , HUMP (HP600WJD / XP750WJD)
	36866747	HOSE , HUMP (HP750WJD / XP825WJD)
S	35279553	CLAMP
T	36876019	ELEMENT , SAFETY
U	36867794	NUT , WING
V	36867786	ELEMENT , PRIMARY
W	36867794	NUT , WING
X	TO AIR END UNLOADER	
Y	TO ENGINE INTAKE	

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION AIR INTAKE COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-52	DATE/REV. 2-00 / C

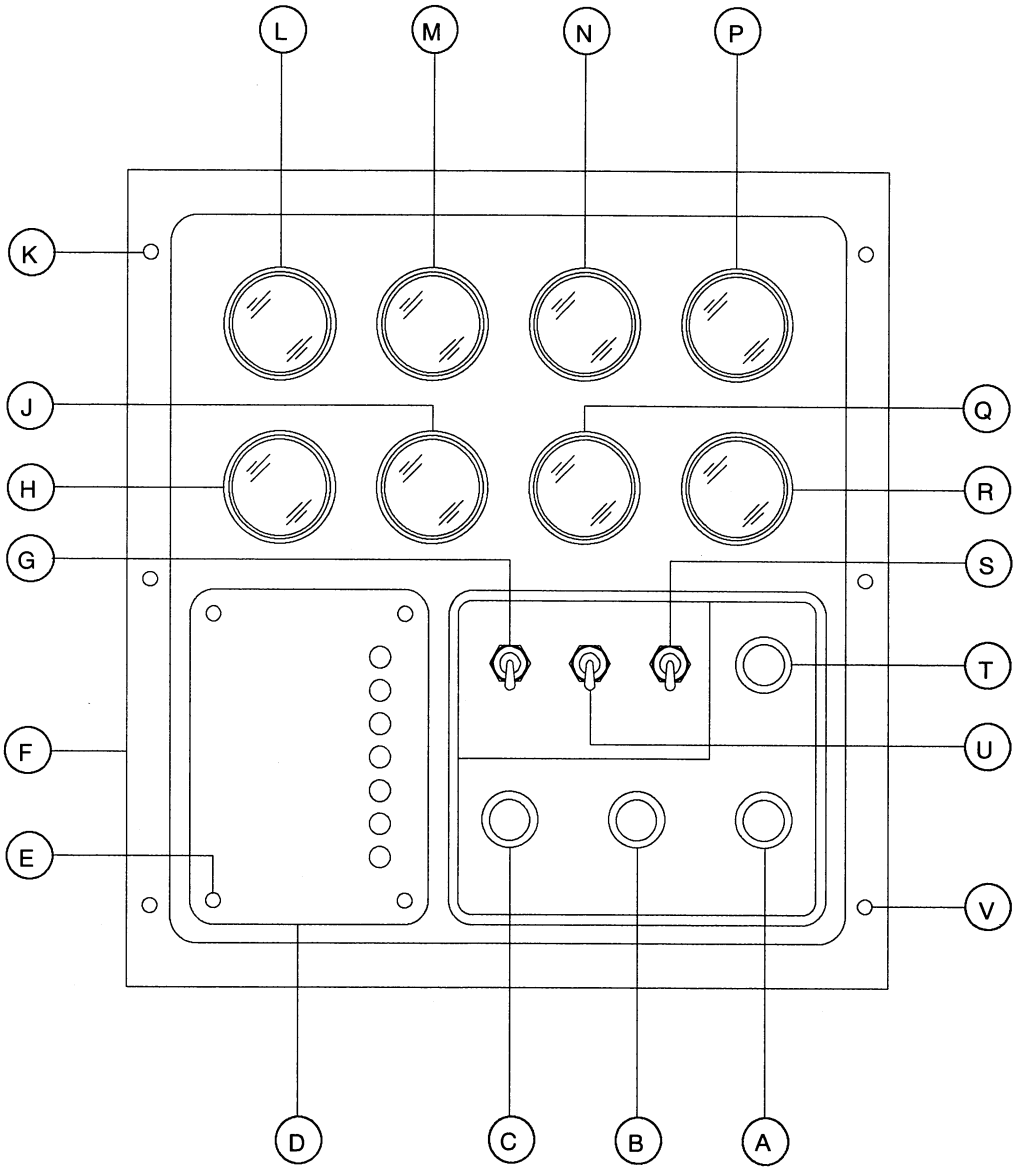


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION BATTERY AND MOUNTING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-53	DATE/REV: 2-00 / B

A	36860005	J-BOLT	(3 REQD)
B	36793545	BATTERY	(2 REQD)
C	36868982	BRACKET , MOUNTING	
D	36853265	WASHER	(3 REQD)
E	35144492	NUT	(3 REQD)
F	35579150	CABLE , POSITIVE	
G	36780609	CABLE , NEGATIVE	
H	W48866	CABLE , JUMPER	

(35293075 STRAP , GROUND NOT ILLUSTRATED)

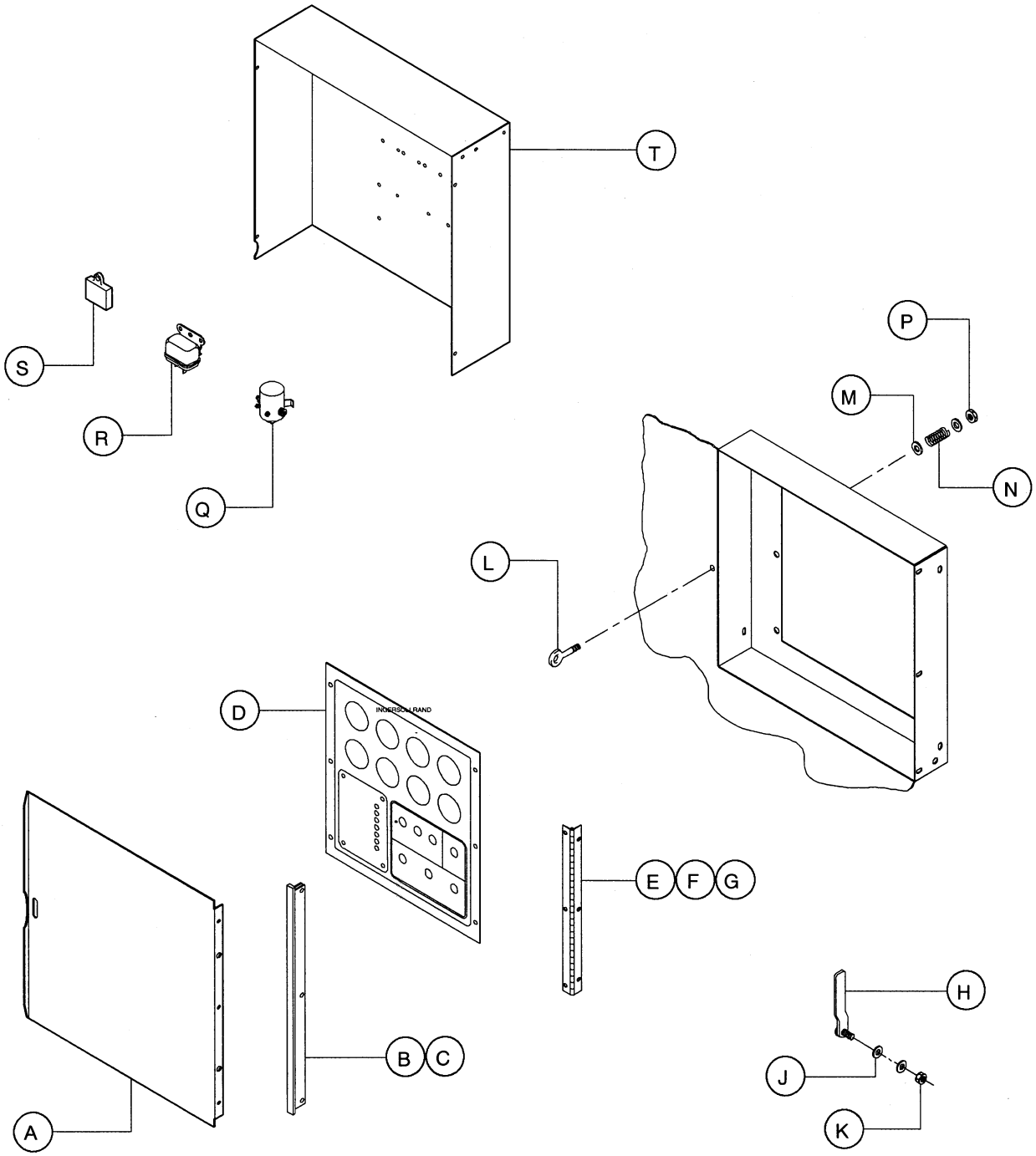
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION BATTERY AND MOUNTING	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-54	DATE/REV: 2-00 / B



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION INSTRUMENT / CONTROL PANEL	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-55	DATE/REV: 2-00 / C

A	35255561	SWITCH , BY-PASS	
B	35255553	SWITCH , START	
C	35255553	SWITCH , ETHER INJECTION	
D	36771434	MODULE , 7 LIGHT	
E	36775484	RIVET , PLASTIC	
F	36842656	PANEL , INSTRUMENT / CONTROL	
G	35337435	SWITCH , ON / OFF POWER	
H	35605229	GAGE , HOURMETER	
J	35604099	GAGE , FUEL LEVEL	
K	36844124	STUD , 1/4 TURN	(3 REQD)
	35369180	RETAINER	(3 REQD)
	35314582	RECEPTACLE	(3 REQD)
L	36891216	GAGE , DISCHARGE PRESSURE	
M	35604115	GAGE , DISCHARGE AIR TEMPERATURE	
	36841146	KIT , RESISTOR / BULB	
N	35373729	GAGE , ENGINE OIL PRESSURE	
P	35371566	TACHOMETER	
Q	35604115	GAGE , ENGINE WATER	
R	36841153	GAGE , VOLTMETER	
S	SWITCH , ACCESSORY	(OPTIONAL)	
T	35255561	SWITCH , SERVICE AIR	
U	SWITCH , LIGHT	(OPTIONAL)	
V	35144328	SCREW	(3 REQD)
	35144492	NUT	(3 REQD)

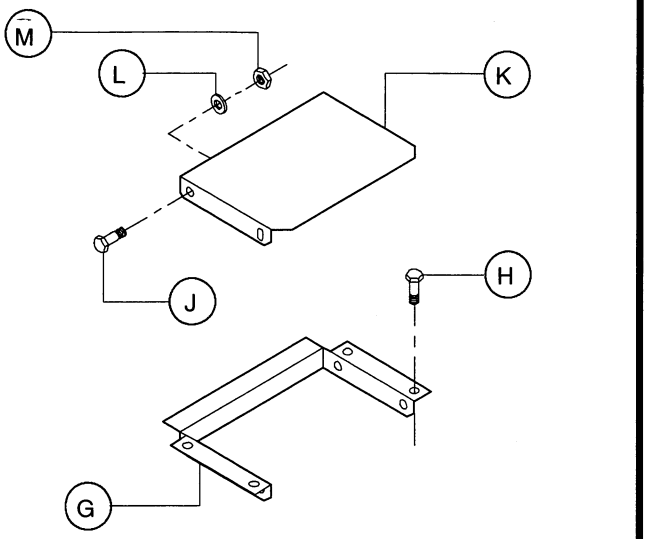
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION INSTRUMENT / CONTROL PANEL	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-56	DATE/REV: 1-02 / E

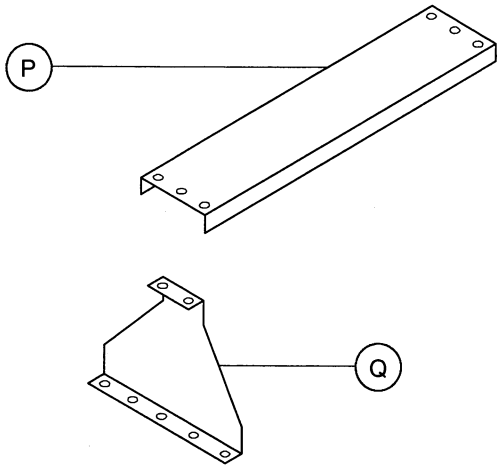


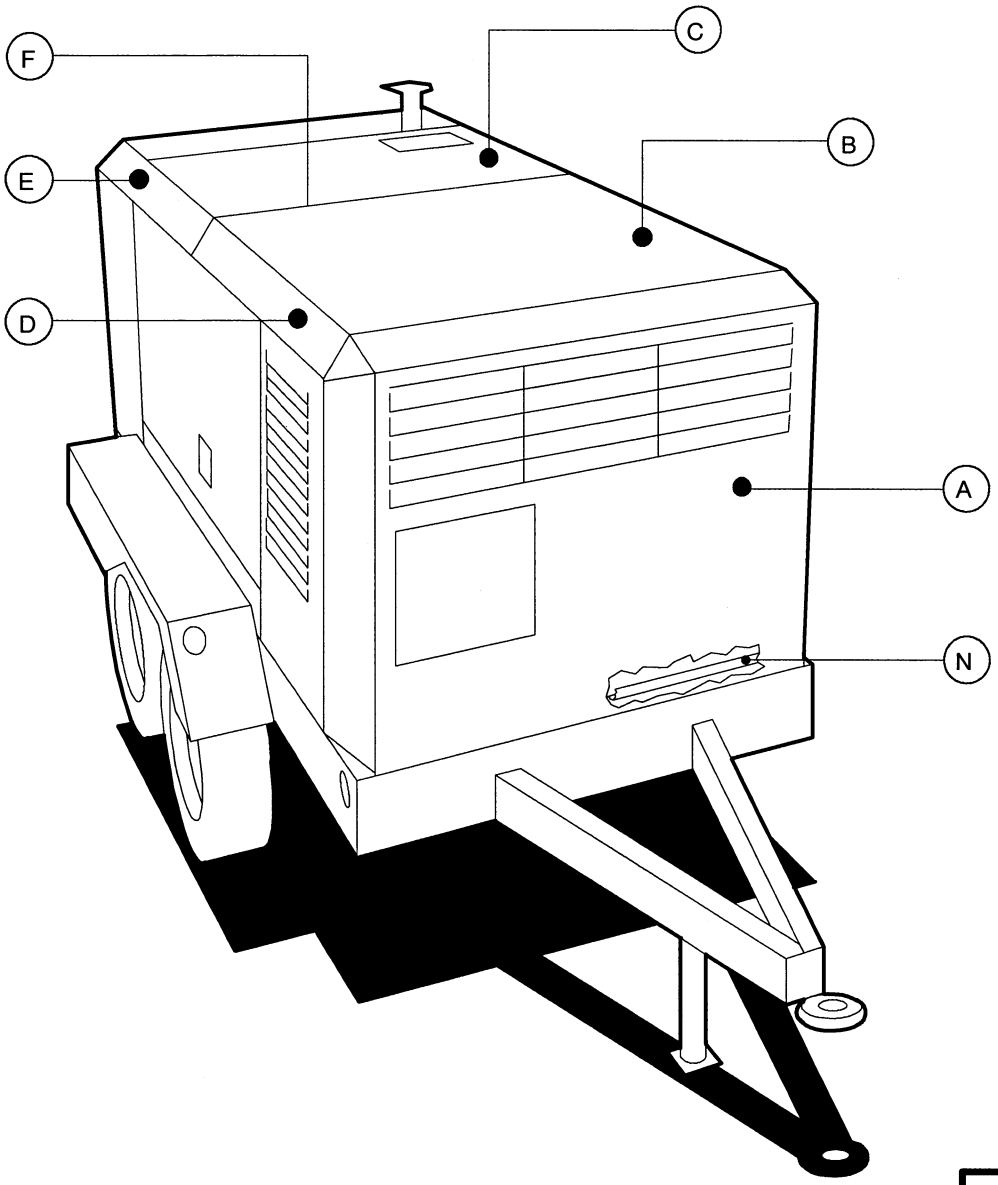
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION INSTRUMENT / CONTROL PANEL	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-57	DATE/REV: 2-00 / C

A	36845394	DOOR , CONTROL PANEL (STANDARD)	
	54494612	DOOR , CONTROL PANEL (GALVANNEAL)	
B	36869485	HINGE	
C	35356617	RIVET	(3 REQD)
D	36842656	PANEL , INSTRUMENT / CONTROL	
E	36845725	HINGE	
F	35365386	SCREW	(3 REQD)
G	35144492	NUT	(3 REQD)
H	35603349	HOLDER	
J	11A5D4Z1	WASHER	(2 REQD)
K	35273366	NUT	
L	35327303	EYEBOLT	
M	11A5D3Z1	NUT	
N	35327311	SPRING	
P	67A4C2Z1	NUT	
Q	35577873	SWITCH , MAG.	
R	35586130	RELAY , POWER SUPPLY	(3 REQD)
S	35356781	MODULE , LOW WATER	
T	36844595	ENCLOSURE , INSTRUMENT PANEL	
	36856979	RELAY , FUEL SHUTDOWN	(NOT SHOWN)

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION INSTRUMENT / CONTROL PANEL	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-58	DATE/REV: 6-00 / D



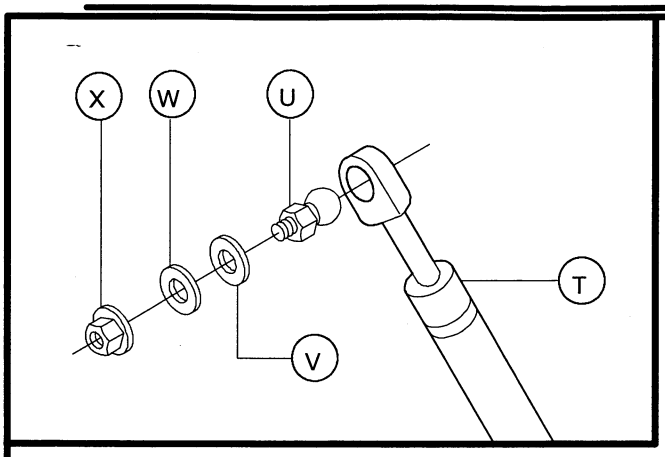


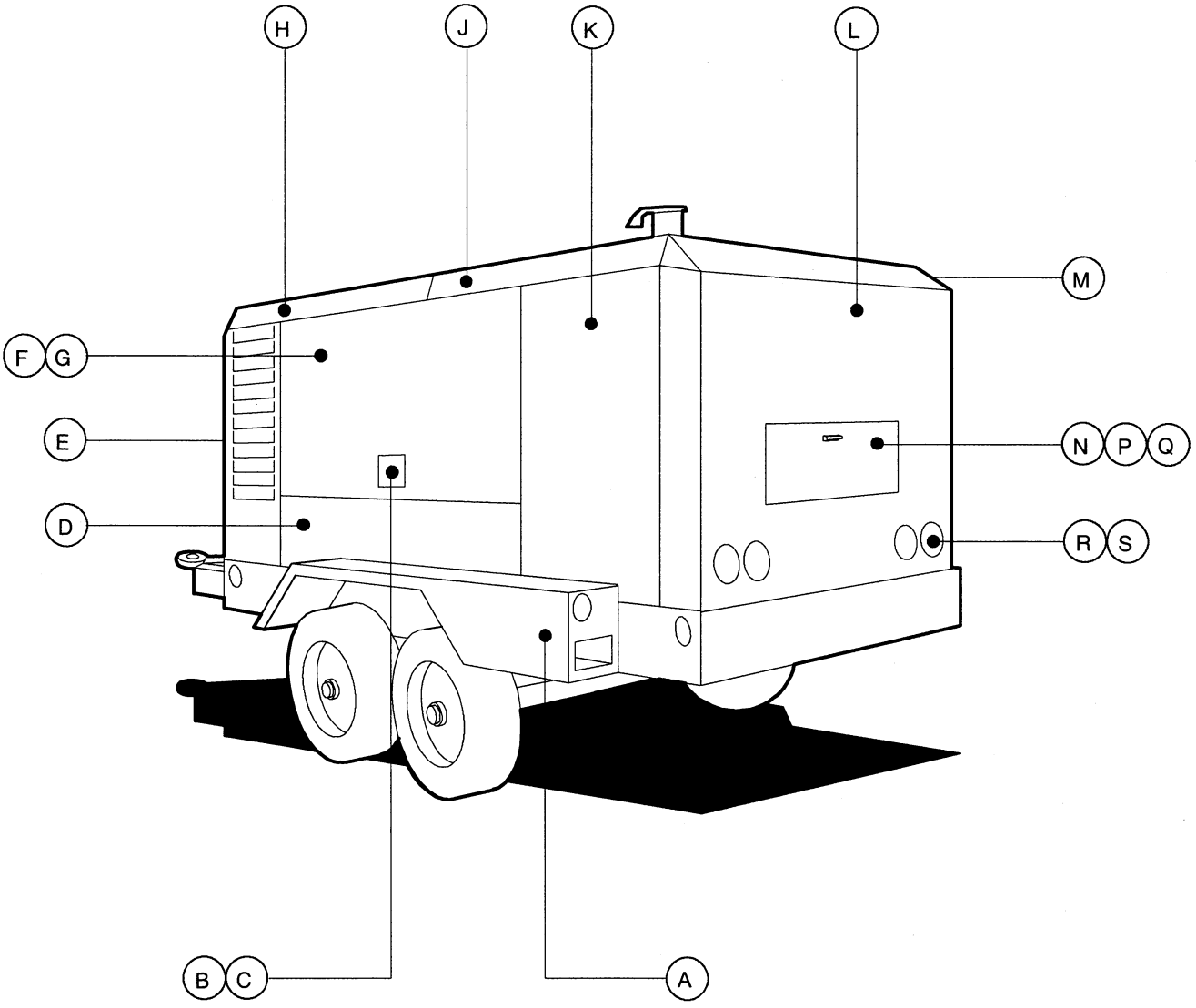


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION ENCLOSURE COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-59	DATE/REV: 6-00 / E

(A)	36888279	PANEL , FRONT (STANDARD) (BEFORE SERIAL NO. 325561)	
	22063440	PANEL , FRONT (STANDARD) (BEGINNING WITH SERIAL NO. 325561)	
	54492806	PANEL , FRONT (GALVANNEAL) (BEFORE SERIAL NO. 325561)	
	22063457	PANEL , FRONT (GALVANNEAL) (BEGINNING WITH SERIAL NO. 325561)	
(B)	36866481	PANEL , FRONT ROOF (STANDARD)	
	54492673	PANEL , FRONT ROOF (GALVANNEAL)	
(C)	36866499	PANEL , REAR ROOF (STANDARD)	
	54492681	PANEL , REAR ROOF (GALVANNEAL)	
(D)	36866465	PANEL , R.H. FRONT TOP (STANDARD)	
	54492651	PANEL , R.H. FRONT TOP (GALVANNEAL)	
(E)	36867372	PANEL , R.H. REAR TOP (STANDARD)	
	54492707	PANEL , R.H. REAR TOP (GALVANNEAL)	
(F)	36887909	BRACE , FRONT AND REAR ROOF	
(G)	36846715	BRACKET , RADIATOR DOOR (STANDARD)	
	54494653	BRACKET , RADIATOR DOOR (GALVANNEAL)	
(H)	36797652	SCREW	(4 REQD)
(J)	121A2A142Z1	SCREW	(2 REQD)
(K)	36844843	DOOR , RADIATOR (STANDARD)	
	54494562	DOOR , RADIATOR (GALVANNEAL)	
(L)	12A5D2Z1	WASHER	(2 REQD)
(M)	16A4C1Z1	NUT	(2 REQD)
(N)	36869980	ANGLE , PANEL SUPPORT	(FRONT & REAR)
	36882421	STRAP , ROOF RETAINER	(2 REQD)
	36882314	STRAP , ROOF RETAINER	(2 REQD)
	36882306	STRAP , ROOF RETAINER	(2 REQD)
(P)	54492798	DEFLECTOR , INLET (BEGINNING WITH SERIAL NO. 313839)	
(Q)	54493374	SUPPORT , INLET DEFLECTOR (BEGINNING WITH SERIAL NO.313839)	

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION ENCLOSURE COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-60	DATE/REV: 11-01 / F

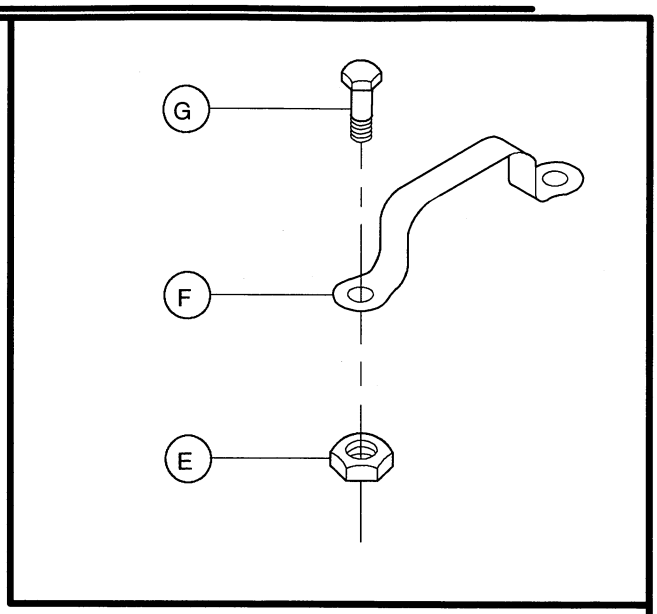


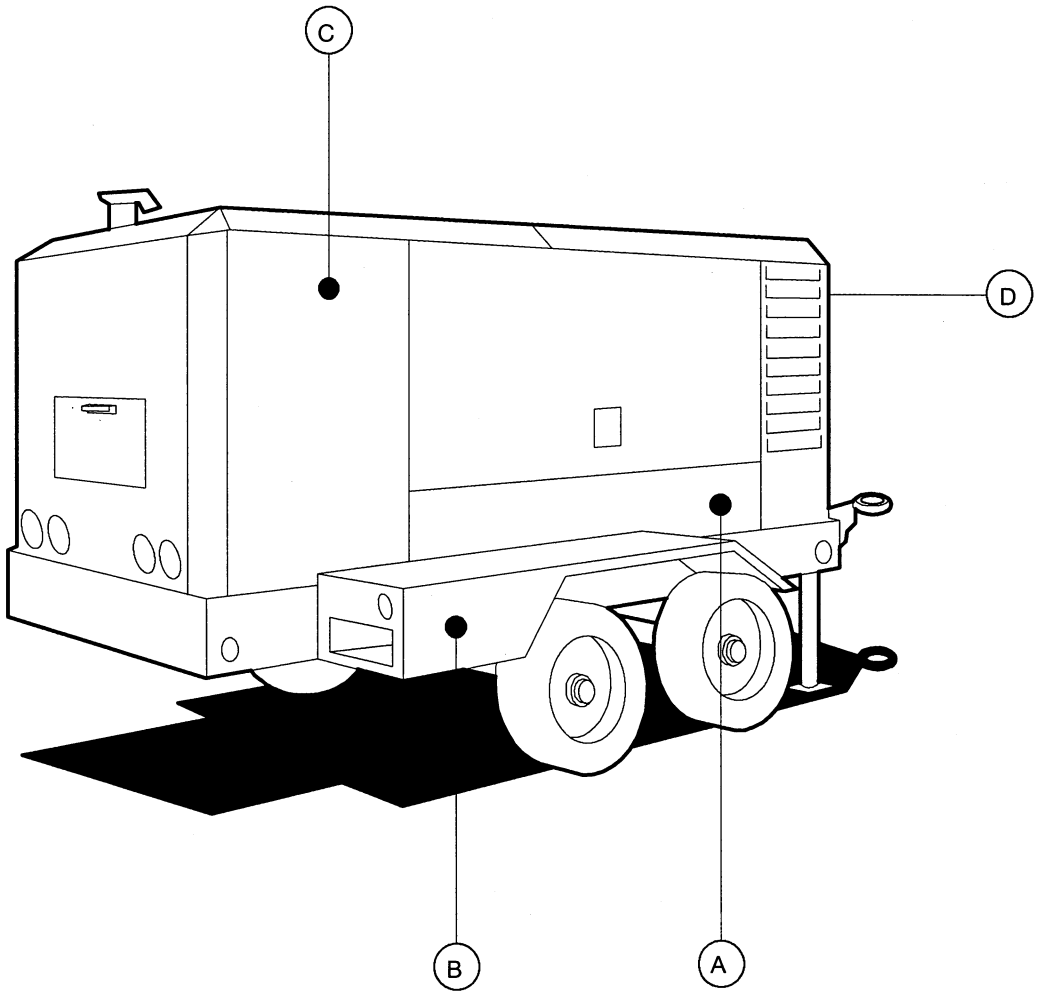


INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION ENCLOSURE COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-61	DATE/REV: 2-00 / E

A	36896827	FENDER , L.H. (STANDARD)
	54494620	FENDER , L.H. (GALVANNEAL)
B	36793602	LATCH , DOOR (2 REQD)
C	36794816	RIVET (8 REQD)
D	36886620	PANEL , L.H. LOWER SIDE (STANDARD)
	54492731	PANEL , L.H. LOWER SIDE (GALVANNEAL)
E	36890002	PANEL , L.H. GRILLE (STANDARD)
	54493093	PANEL , L.H. GRILLE (GALVANNEAL)
F	36844553	DOOR , SIDE (2 REQD) (STANDARD)
	54492632	DOOR , SIDE (2 REQD) (GALVANNEAL)
G	36708378	HINGE , DOOR (2 REQD)
H	36867372	PANEL , L.H. FRONT TOP SIDE (STANDARD)
	54492707	PANEL , L.H. FRONT TOP SIDE (GALVANNEAL)
J	36866465	PANEL , L.H. REAR TOP SIDE (STANDARD)
	54492657	PANEL , L.H. REAR TOP SIDE (GALVANNEAL)
K	36886638	PANEL , L.H. REAR SIDE (STANDARD)
	54492772	PANEL , L.H. REAR SIDE (GALVANNEAL)
L	36896843	PANEL , REAR END (STANDARD)
	54493143	PANEL , REAR END (GALVANNEAL)
M	36755742	STRIP , CONNECTOR (4 REQD)
	36887800	STRIP , CONNECTOR (2 REQD)
N	36868818	DOOR , ACCESS (STANDARD)
	54492715	DOOR , ACCESS (GALVANNEAL)
P	36868917	HINGE , DOOR
Q	36783157	HANDLE , DOOR
R	36787349	REFLECTOR
S	36787968	GROMMET
T	36844355	SPRING , GAS (4 REQD)
U	35337328	STUD , BALL (4 REQD)
V	12A5D3Z1	WASHER , FLAT (8 REQD)
W	14A5C65Z1	WASHER , LOCK (8 REQD)
X	16M4JC22M3	NUT (8 REQD)

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION ENCLOSURE COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-62	DATE/REV: 4-02 / G

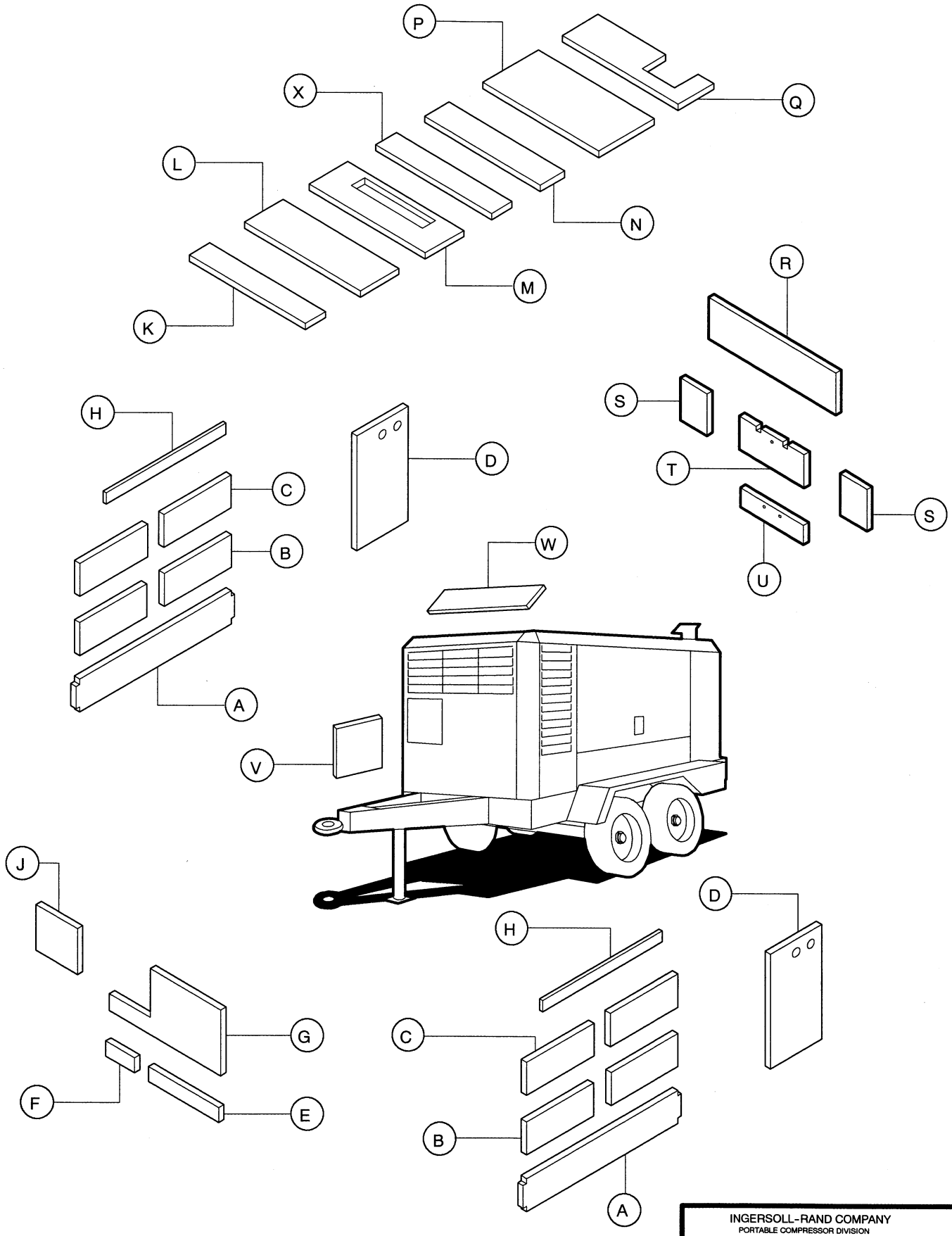




INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION ENCLOSURE COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-63	DATE/REV: 2-00 / E

A	36886620	PANEL , R.H. LOWER SIDE (STANDARD)	
	54492731	PANEL , R.H. LOWER SIDE (GALVANNEAL)	
B	36896835	FENDER , R.H. (STANDARD)	
	54494646	FENDER , R.H. (GALVANNEAL)	
C	36886646	PANEL , R.H. REAR SIDE (STANDARD)	
	54492780	PANEL , R.H. REAR SIDE (GALVANNEAL)	
D	36890010	PANEL , R.H. GRILLE (STANDARD)	
	54493119	PANEL , R.H. GRILLE (GALVANNEAL)	
E	36769743	NUT	(8 REQD)
F	35130707	HOLD , HAND	(4 REQD)
G	35374834	SCREW	(8 REQD)
	36893261	STRAP , ACOUSTIC DOOR	(8 REQD)
	36797652	SCREW (TO HOLD STRAPS)	(8 REQD)

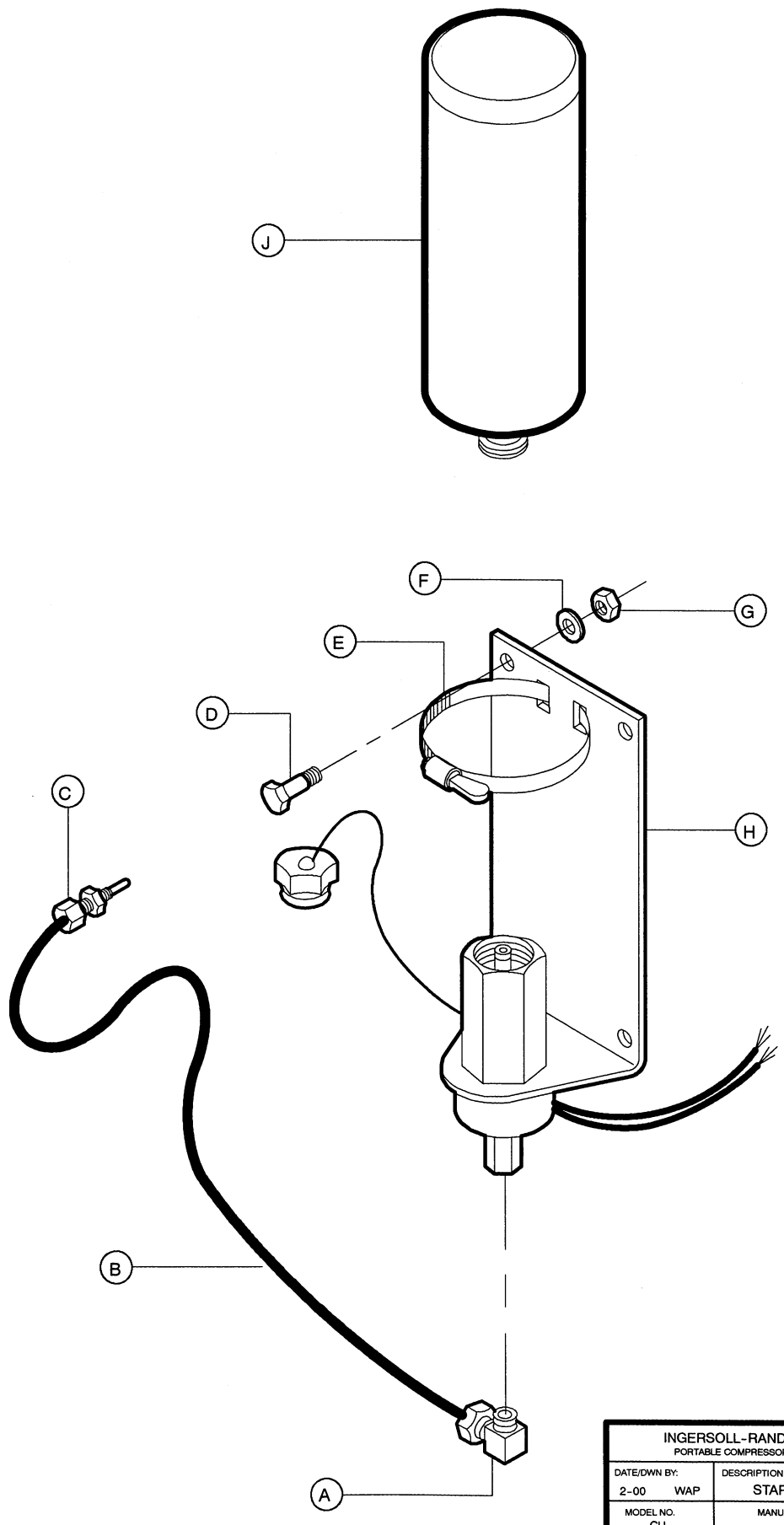
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION ENCLOSURE COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-64	DATE/REV: 6-00 / F



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION ACOUSTIC PANELS	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-65	DATE/REV: 2-00 / C

A	36868321	FOAM , SIDE (UNDER DOOR)
B	36875573	FOAM , BOTTOM OF DOOR
C	36875581	FOAM , TOP OF DOOR
D	36868313	FOAM , REAR SIDE
E	36868362	FOAM , L.H. BOTTOM FRONT
F	36868370	FOAM , R.H. BOTTOM FRONT
G	36868354	FOAM , FRONT END CAP
H	36875755	FOAM , DOOR STIFFNER
J	36875748	FOAM , INSTR. PANEL BOX
K	36868289	FOAM , 1ST AND 4TH ROOF
L	36868297	FOAM , 2ND ROOF
M	36868305	FOAM , 3RD ROOF
N	36868255	FOAM , 5TH ROOF
P	36868263	FOAM , 6TH ROOF
Q	36868271	FOAM , 7TH ROOF
R	36875631	FOAM , REAR END PANEL TOP
S	36875714	FOAM , REAR END PANEL REAR
T	36875722	FOAM , REAR ACCESS DOOR
U	36875623	FOAM , REAR END PANEL BOTTOM
V	36889988	FOAM , FRONT R.H. SIDE PANEL
W	36888386	FOAM , END PANEL TOP BEVEL

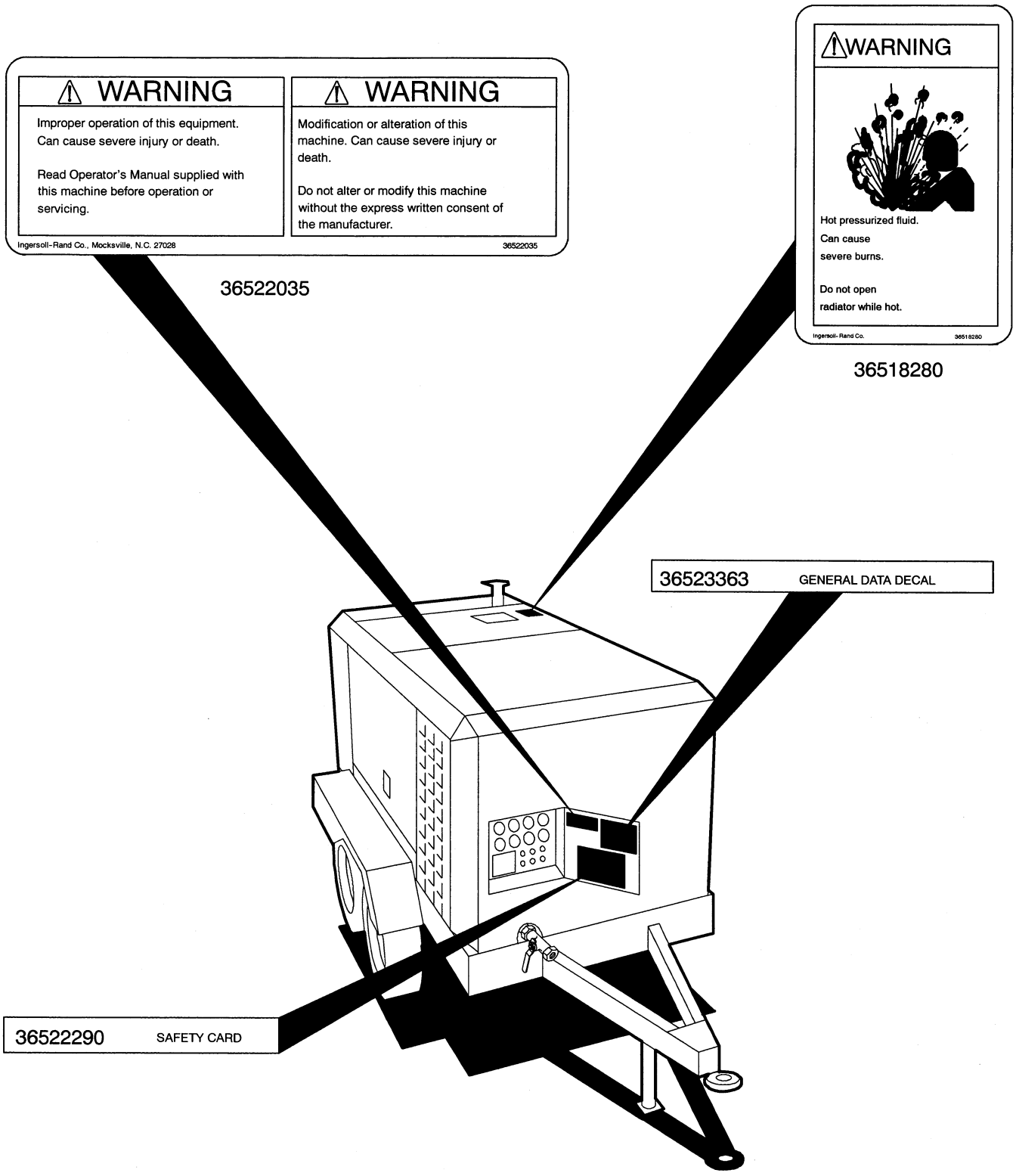
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION ACOUSTIC PANELS	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-66	DATE/REV: 2-00 / C



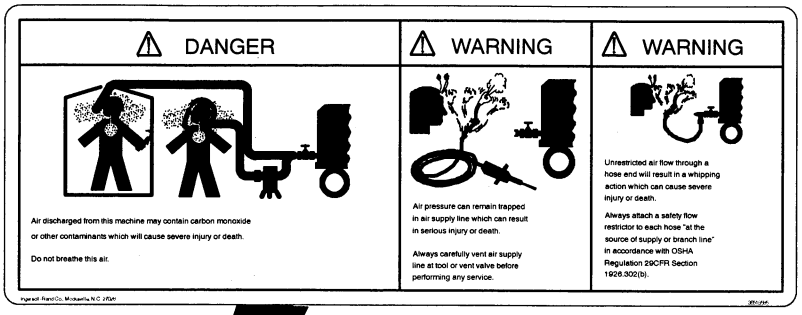
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION STARTING AID COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-67	DATE/REV: 2-00 / B

A	35103498	ELBOW , 90 °	
B	35132166	TUBING	
C	35602812	ATOMIZER	
D	35322908	SCREW	(4 REQD)
E	35103506	CLAMP	
F	14A5C55	WASHER	(4 REQD)
G	92304500	NUT	(4 REQD)
H	35357961	VALVE & BRACKET ASSEMBLY	
J	35112911	CYLINDER , ETHER	
K	35357052	STARTING AID KIT COMPLETE	

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION STARTING AID COMPLETE	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-68	DATE/REV: 2-00 / B

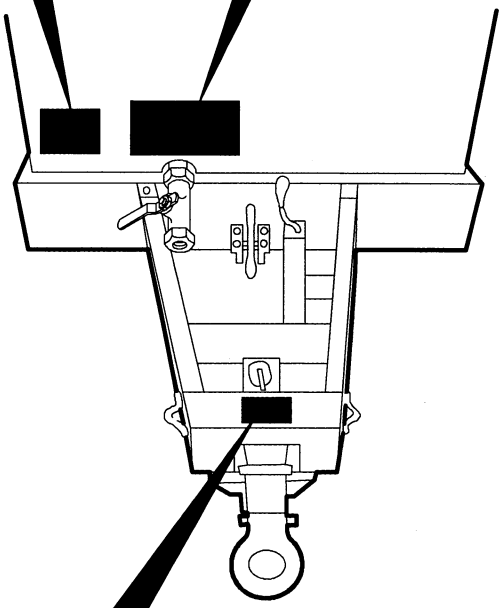


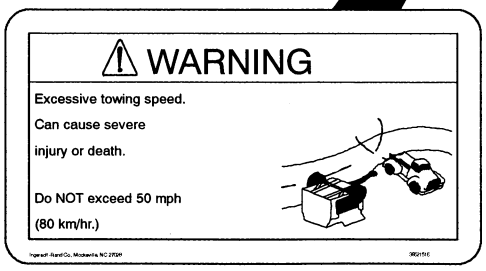
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION DECAL LOCATION	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-69	DATE/REV: 2-00 / B



36522977

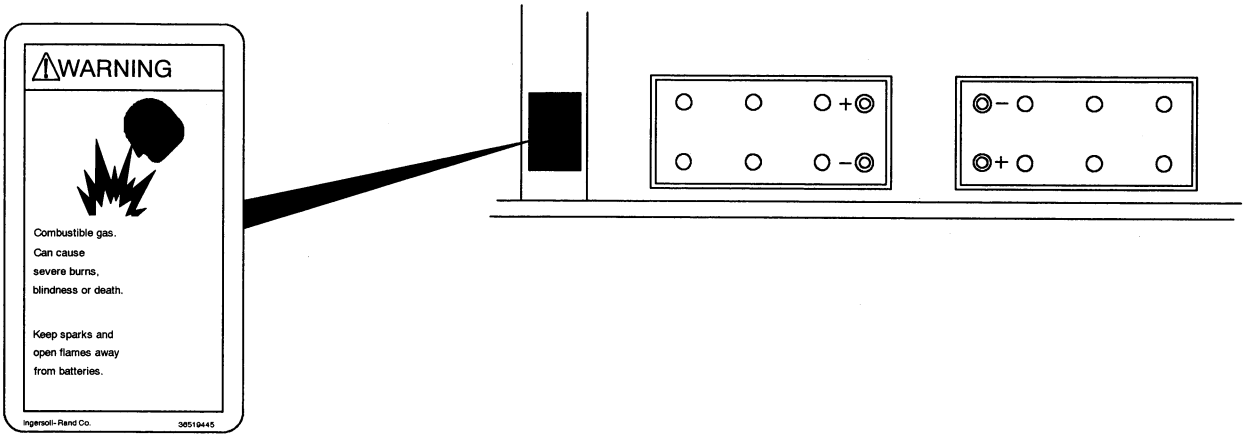
36514602 NOISE EMISSION DECAL



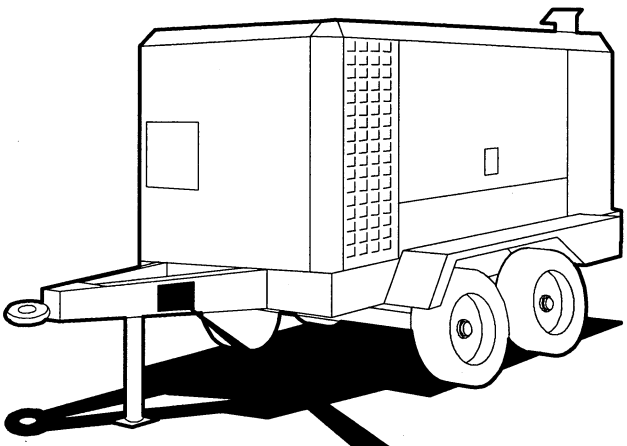


36521516

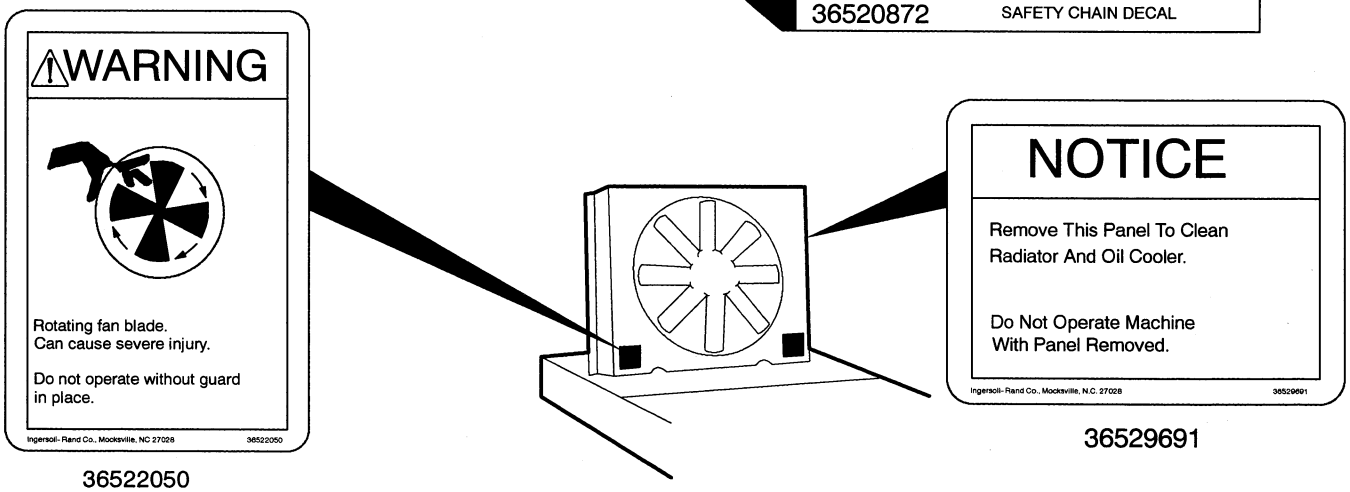
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION DECAL LOCATION	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-70	DATE/REV: 2-00 / B



36519445



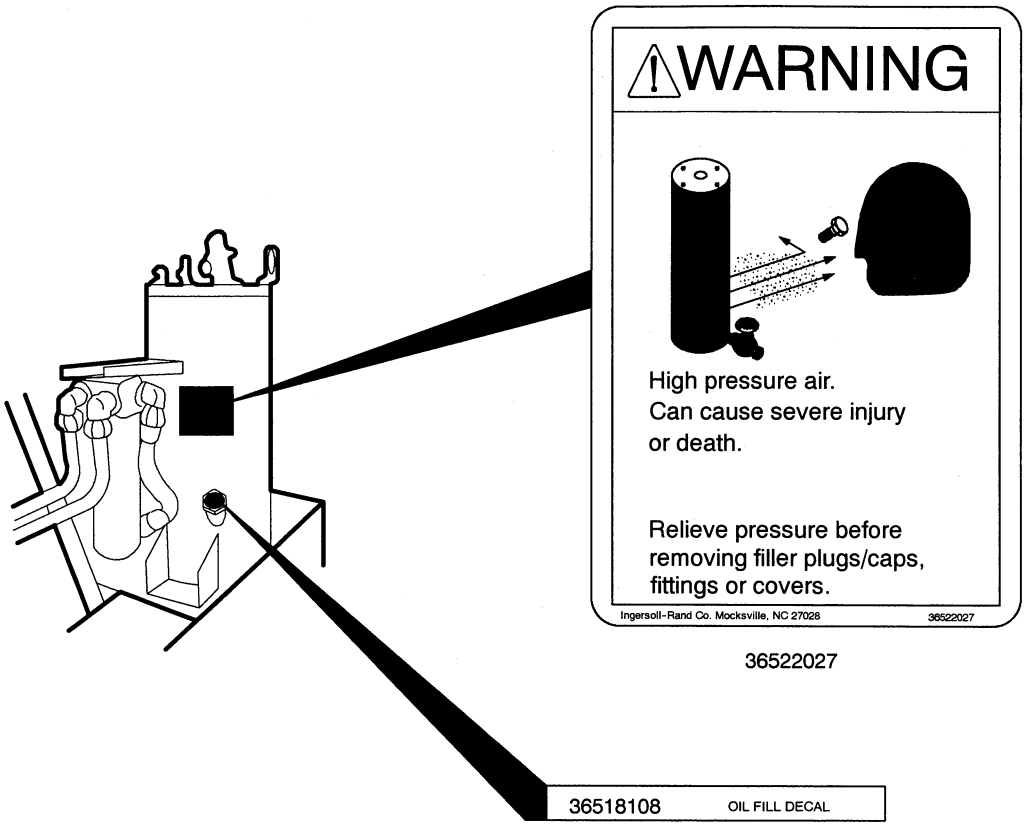
36520872 SAFETY CHAIN DECAL



36522050

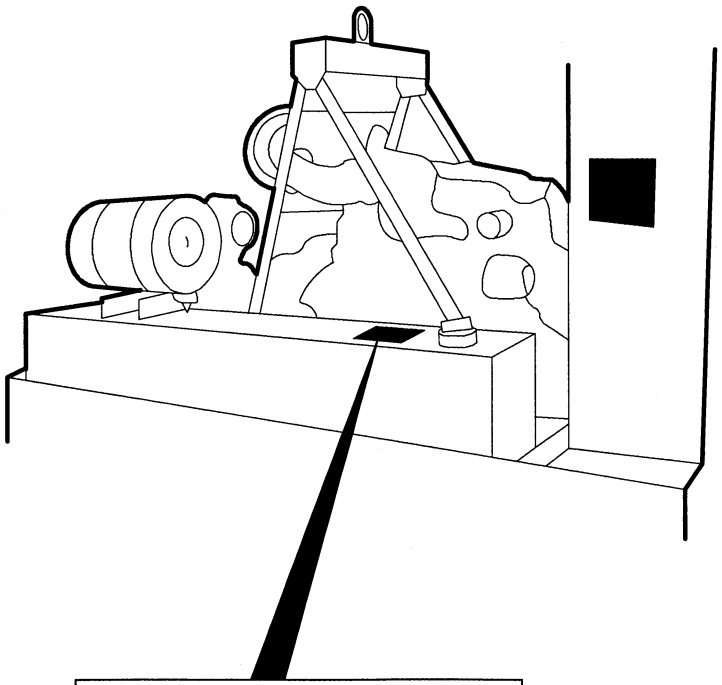
36529691

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION DECAL LOCATION	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-71	DATE/REV. 2-00 / C



36522027

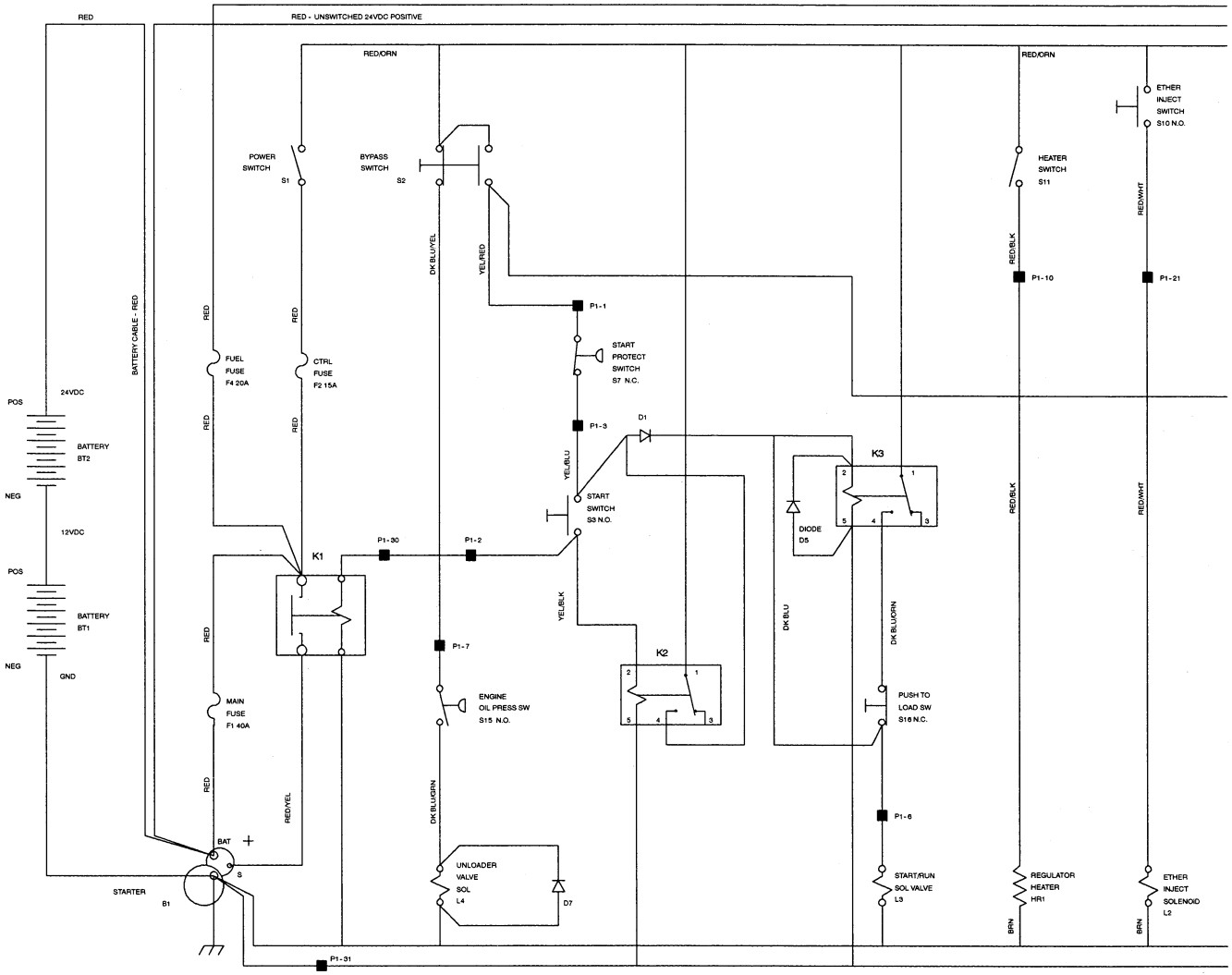
36518108 OIL FILL DECAL



36516474 DIESEL FUEL DECAL

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION DECAL LOCATION	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-72	DATE/REV: 2-00 / B

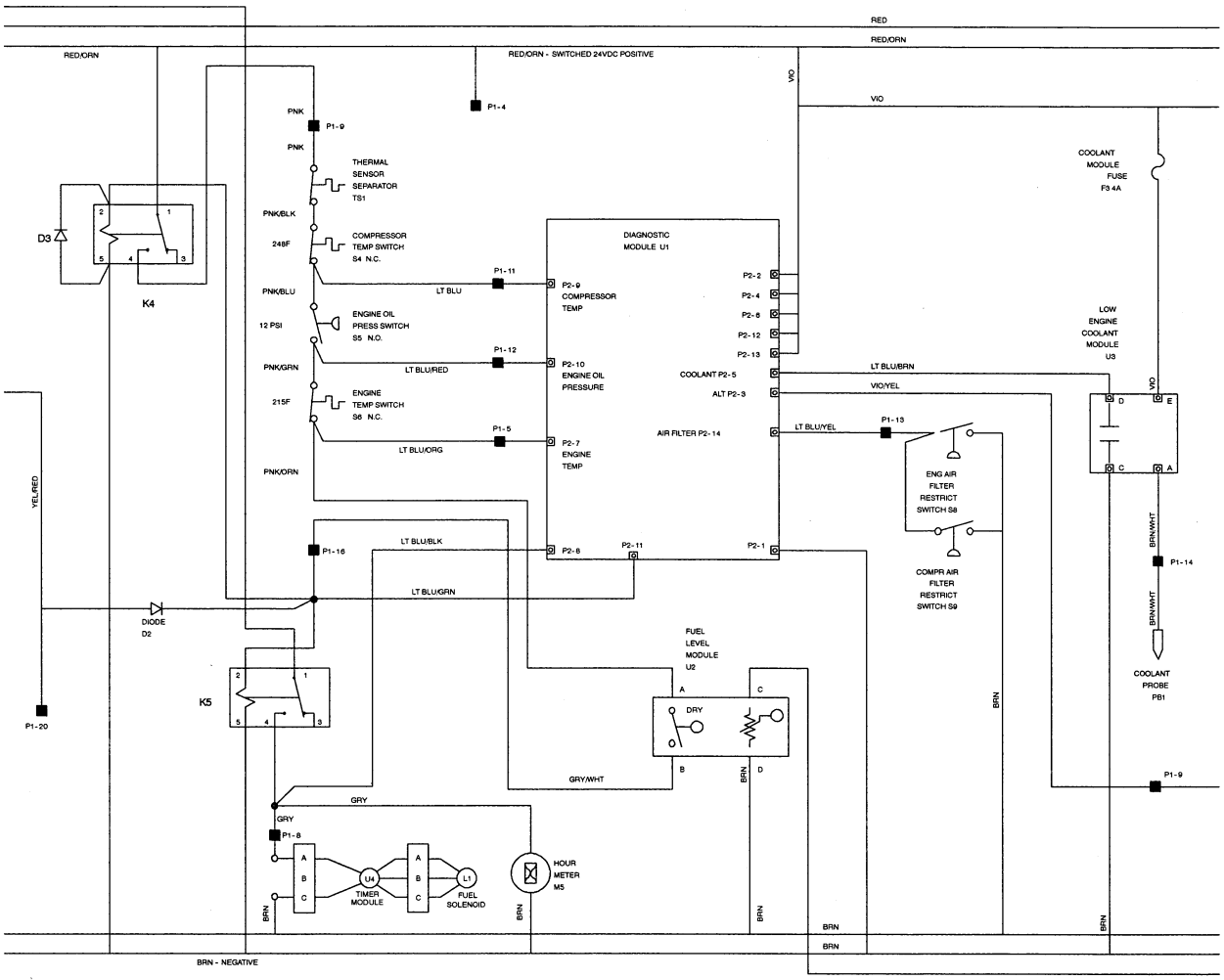
STARTING WITH SERIAL NO. 313839



CUMMINS ENGINE ONLY 54562715 REV.A SHEET 1 OF 4

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION WIRING DIAGRAM AND PARTS LIST	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-73	DATE/REV: 6-00 / C

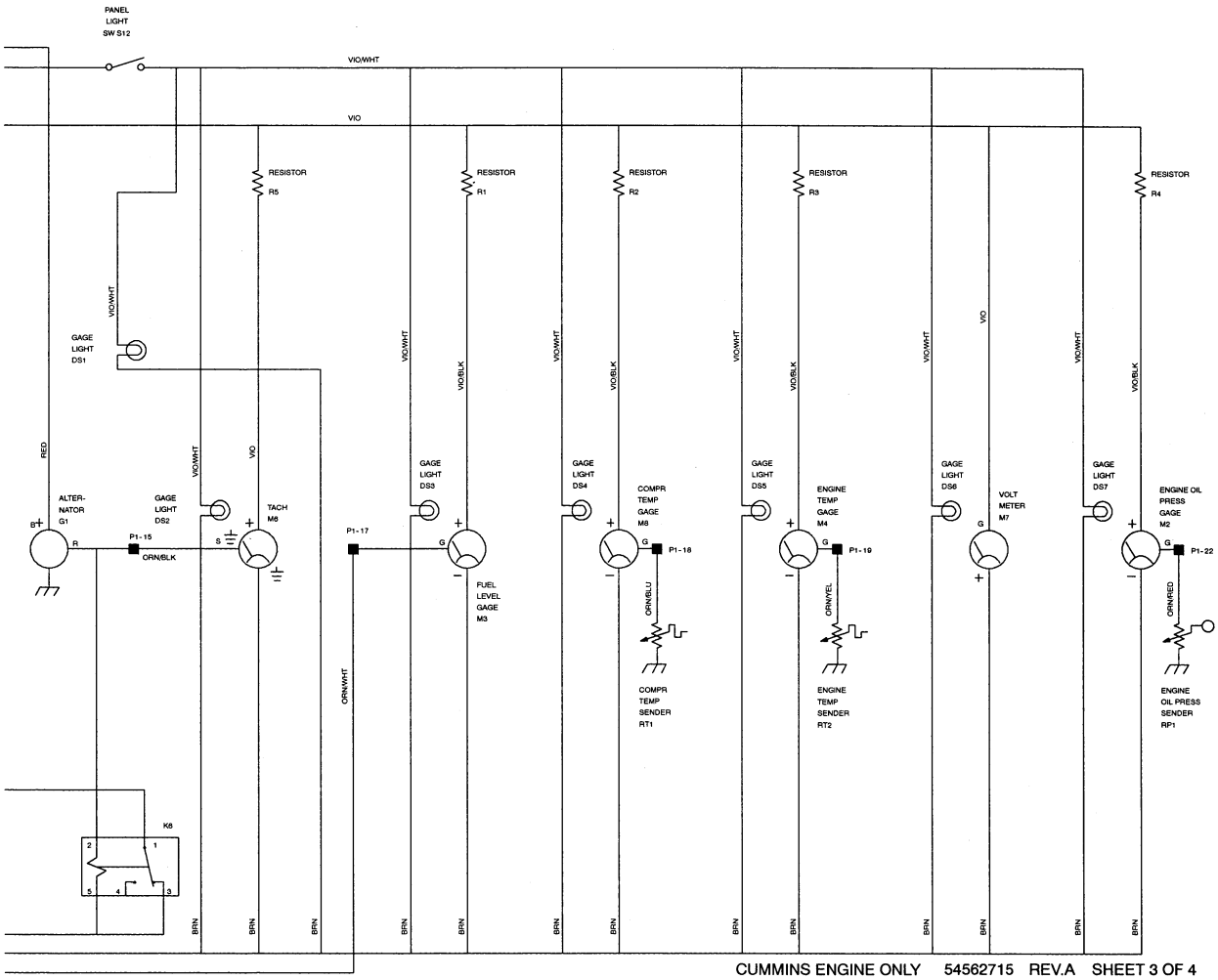
STARTING WITH SERIAL NO. 313839



CUMMINS ENGINE ONLY 54562715 REV.B SHEET 2 OF 4

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION WIRING DIAGRAM AND PARTS LIST	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-74	DATE/REV: 4-01 / D

STARTING WITH SERIAL NO. 313839



CUMMINS ENGINE ONLY 54562715 REV.A SHEET 3 OF 4

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION WIRING DIAGRAM AND PARTS LIST	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-75	DATE/REV: 6-00 / C

STARTING WITH SERIAL NO. 313839

B1	36867828	STARTER
BT1	36793545	BATTERY
BT2	36793545	BATTERY
D1	35376169	DIODE
D2	35376169	DIODE
D3	35376169	DIODE
D5	35376169	DIODE
D7	35376169	DIODE
DS1	36842128	BULB , GAGE LIGHT
F1	36786259	FUSE , 40A
F2	36782456	FUSE , 15A
F3	36782654	FUSE , 5A
F4	54405618	FUSE , 20A
G1	36867836	ALTERNATOR
HR1	36841526	HEATER
K1	35577873	RELAY
K2	36892362	RELAY
K3	36892362	RELAY
K4	36892362	RELAY
K5	36892362	RELAY
K6	36878361	RELAY
L1	FUEL SOLENOID FURNISHED WITH ENGINE	
L2	36840841	START / RUN SOL.
L3	35357052	ETHER INJ. SOL.
L4	36840841	UNLOADER SOL.
M1	35377878	DISCHARGE PRESS. GAGE
M2	36870590	ENGINE OIL PRESS. GAGE
M3	35604099	FUEL LEVEL GAGE
M4	35604115	ENGINE TEMP. GAGE
M5	36841245	HOURMETER
M6	35372416	TACHOMETER
M7	36841153	VOLTMETER
M8	35604115	COMPRESS. TEMP GAGE
PB1	35356799	COOLANT PROBE
RP1	36870608	ENG. OIL PRESS. SENDER
RT1	35367218	COMPRESSOR TEMP. SENDER
RT2	35604180	ENGINE TEMP. SENDER
S1	35337435	POWER SWITCH
S2	35255561	BYPASS SWITCH
S3	35255553	START SWITCH
S4	36865756	AIR DISCH. TEMP. SWITCH
S5	36757581	ENGINE OIL PRESS. SWITCH
S6	35327691	ENG. COOLANT TEMP. SWITCH
S7	35255561	PUSH TO LOAD SWITCH
S8	36847838	FILTER RESTRICTION SWITCH
S9	36847838	FILTER RESTRICTION SWITCH
S10	36843423	ENGINE OIL PRESS. SWITCH
S11	35255553	ETHER INJECT. SWITCH
S12	35337435	HEATER SWITCH
S13	36757573	START. PROTECTION SWITCH
S14	35337435	GAGE LIGHT SWITCH
S17	36865756	SEP. TANK TEMP. SWITCH
U1	36771434	DIAGNOSTIC MODULE
U2	36845402	FUEL LEVEL MODULE
U3	36892370	COOLANT LEVEL MODULE
U4	36887313	TIMER MODULE
W1	54378229	CHASSIS HARNESS
W2	54378237	PANEL HARNESS

CUMMINS ENGINE ONLY 54562715 REV.B SHEET 4 OF 4

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION WIRING DIAGRAM AND PARTS LIST	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-76	DATE/REV: 6-00 / C

STARTING WITH SERIAL NO. 313839

B1	36867828	STARTER
BT1	36793545	BATTERY
BT2	36793545	BATTERY
D1	35376169	DIODE
D2	35376169	DIODE
D3	35376169	DIODE
D5	35376169	DIODE
D7	35376169	DIODE
DS1	36842128	BULB , GAGE LIGHT
F1	36786259	FUSE , 40A
F2	36782456	FUSE , 15A
F3	36782654	FUSE , 5A
F4	54405618	FUSE , 20A
G1	36867836	ALTERNATOR
HR1	36841526	HEATER
K1	35577873	RELAY
K2	36892362	RELAY
K3	36892362	RELAY
K4	36892362	RELAY
K5	36892362	RELAY
K6	36878361	RELAY
L1	36887313	TIMER MODULE
L2	36840841	START / RUN SOL.
L3	35357052	ETHER INJ. SOL.
L4	36840841	UNLOADER SOL.
M1	35377878	DISCHARGE PRESS. GAGE
M2	36870590	ENGINE OIL PRESS. GAGE
M3	35604099	FUEL LEVEL GAGE
M4	35604115	ENGINE TEMP. GAGE
M5	36841245	HOURMETER
M6	35372416	TACHOMETER
M7	36841153	VOLTMETER
M8	35604115	COMPRESS. TEMP GAGE
PB1	35356799	COOLANT PROBE
RP1	36870608	ENG. OIL PRESS. SENDER
RT1	35367218	COMPRESSOR TEMP. SENDER
RT2	35604180	ENGINE TEMP. SENDER
S1	35337435	POWER SWITCH
S2	35255561	BYPASS SWITCH
S3	35255553	START SWITCH
S4	36865756	AIR DISCH. TEMP. SWITCH
S5	36757581	ENGINE OIL PRESS. SWITCH
S6	35327691	ENG. COOLANT TEMP. SWITCH
S7	35255561	PUSH TO LOAD SWITCH
S8	36847838	FILTER RESTRICTION SWITCH
S9	36847838	FILTER RESTRICTION SWITCH
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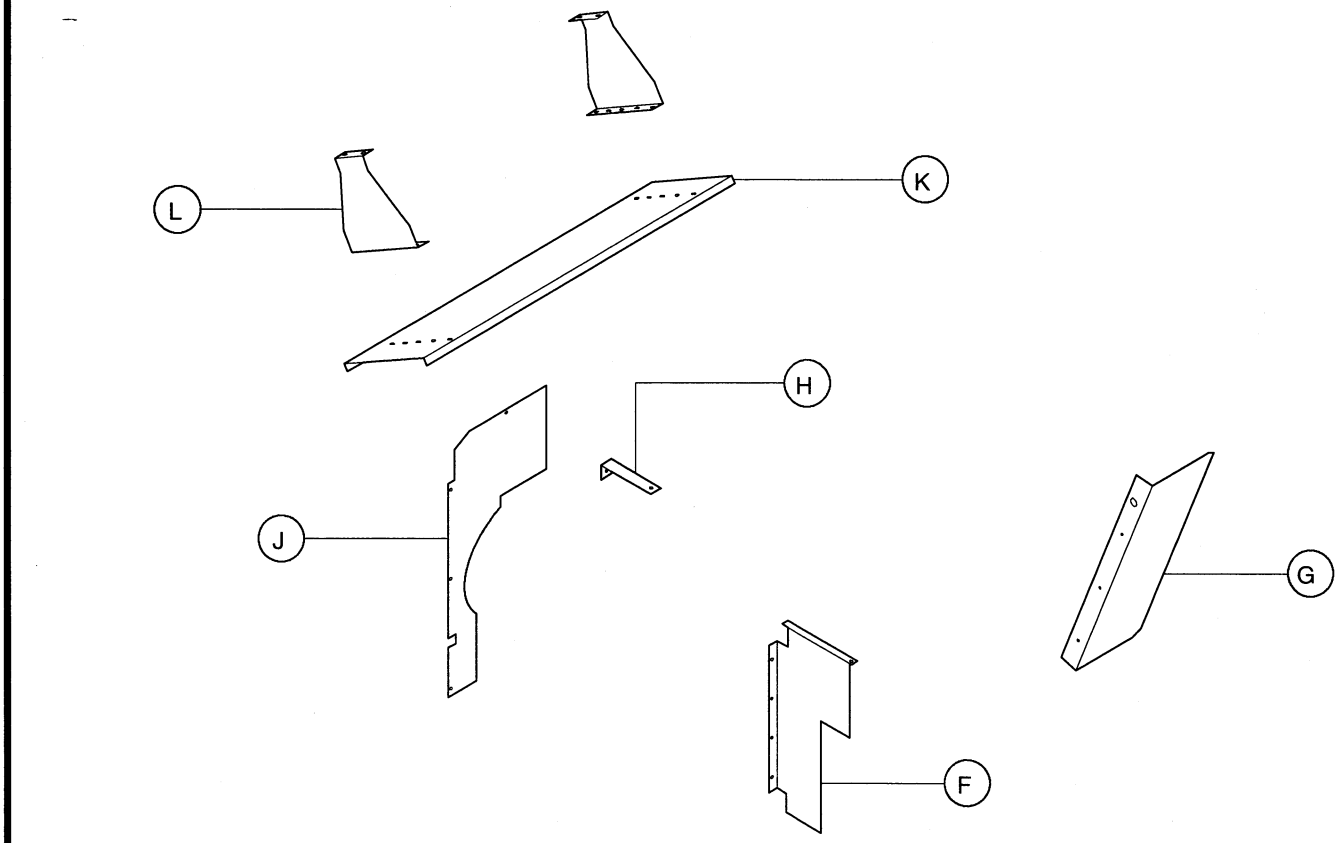
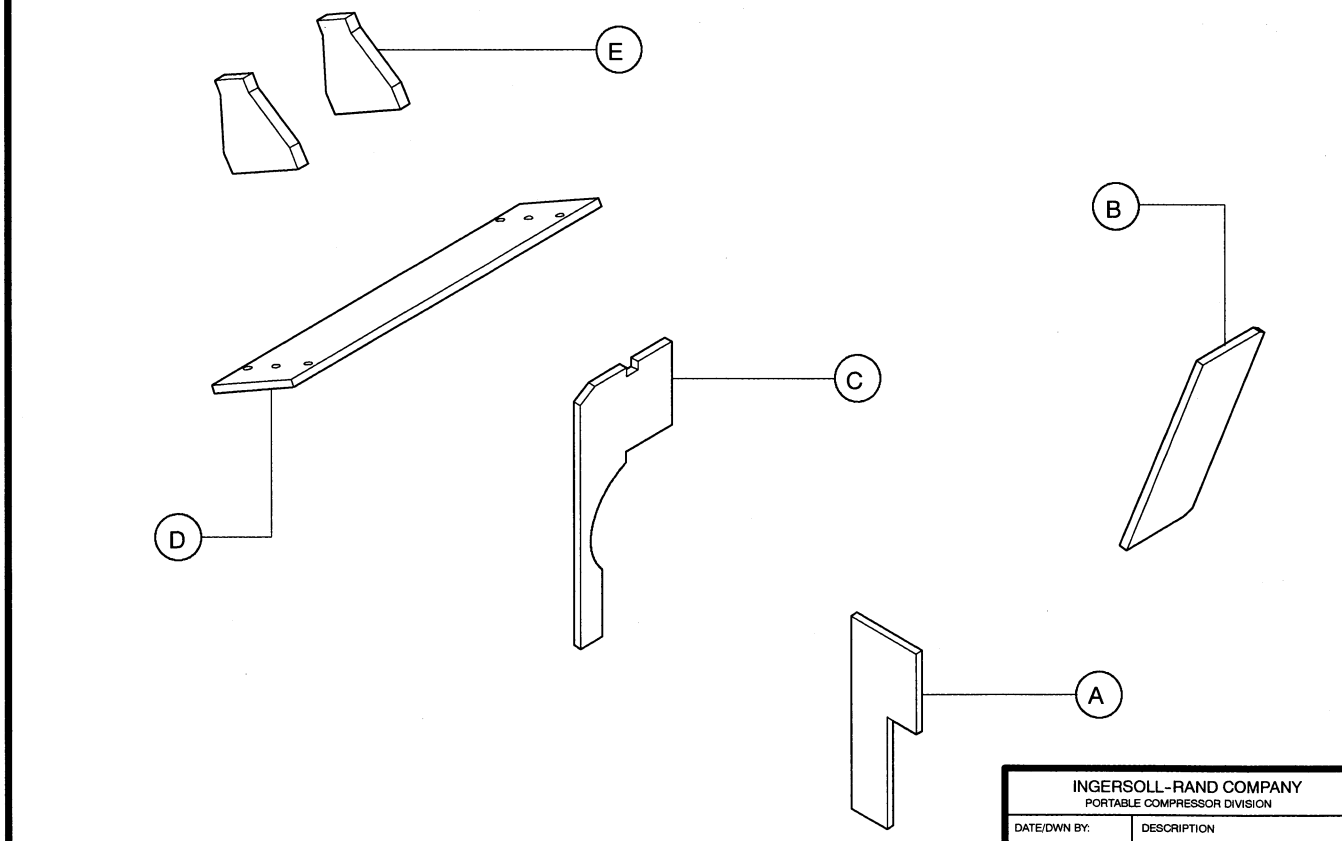
S13	36757573	START. PROTECTION SWITCH
S14	35337435	GAGE LIGHT SWITCH
S17	36865756	SEP. TANK TEMP. SWITCH
U1	36771434	DIAGNOSTIC MODULE
U2	36845402	FUEL LEVEL MODULE
U3	36892370	COOLANT LEVEL MODULE
W1	54378229	CHASSIS HARNESS
W2	54378237	PANEL HARNESS

CUMMINS ENGINE ONLY 54562715 REV.A SHEET 4 OF 4

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION WIRING DIAGRAM AND PARTS LIST	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-76A	DATE/REV: 6-00 / C

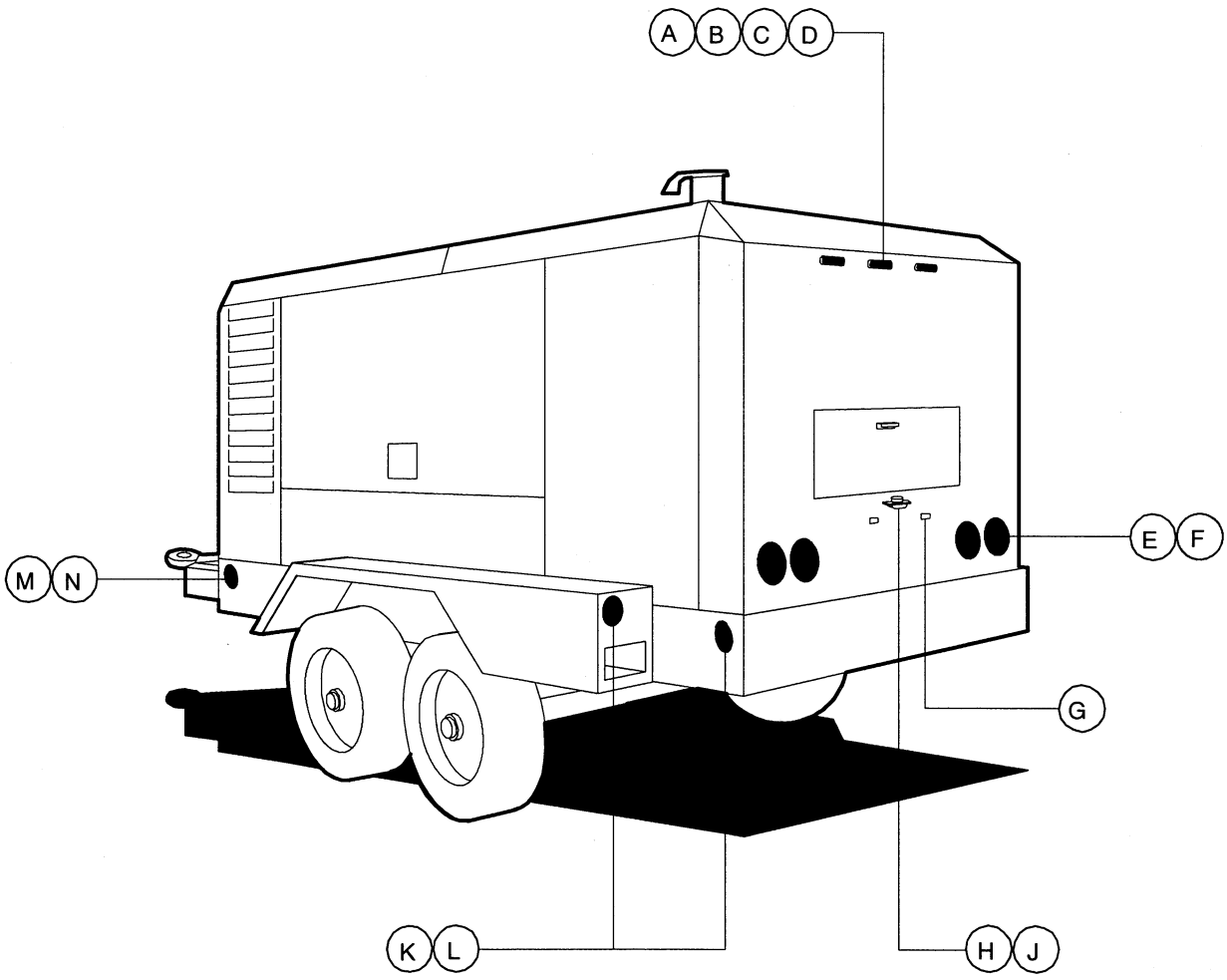




INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION INTERNAL BAFFLES & FOAM	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-77	DATE/REV: 2-00 / B

A	36886703	FOAM , L.H. EXHAUST DEFLECTOR	
	36886711	FOAM , R.H. EXHAUST DEFLECTOR	
B	36889798	FOAM , R.H. SIDE DEFLECTOR	(2 REQD)
C	36889806	FOAM , L.H. INLET DEFLECTOR	
	36889814	FOAM , L.H. INLET DEFLECTOR	
D	36888238	FOAM , BOTTOM INLET DEFLECTOR	
	36888394	FOAM , TOP INLET DEFLECTOR	
E	36888220	FOAM , SUPPORT BRACKET	(4 REQD)
F	36886679	SPLITTER , EXHAUST	
G	36889830	DEFLECTOR , R.H.	
H	36764736	BRACKET , SUPPORT	
J	36889822	DEFLECTOR , L.H.	
K	36888253	DEFLECTOR , FRONT	
L	36888246	SUPPORT , DEFLECTOR	(2 REQD)

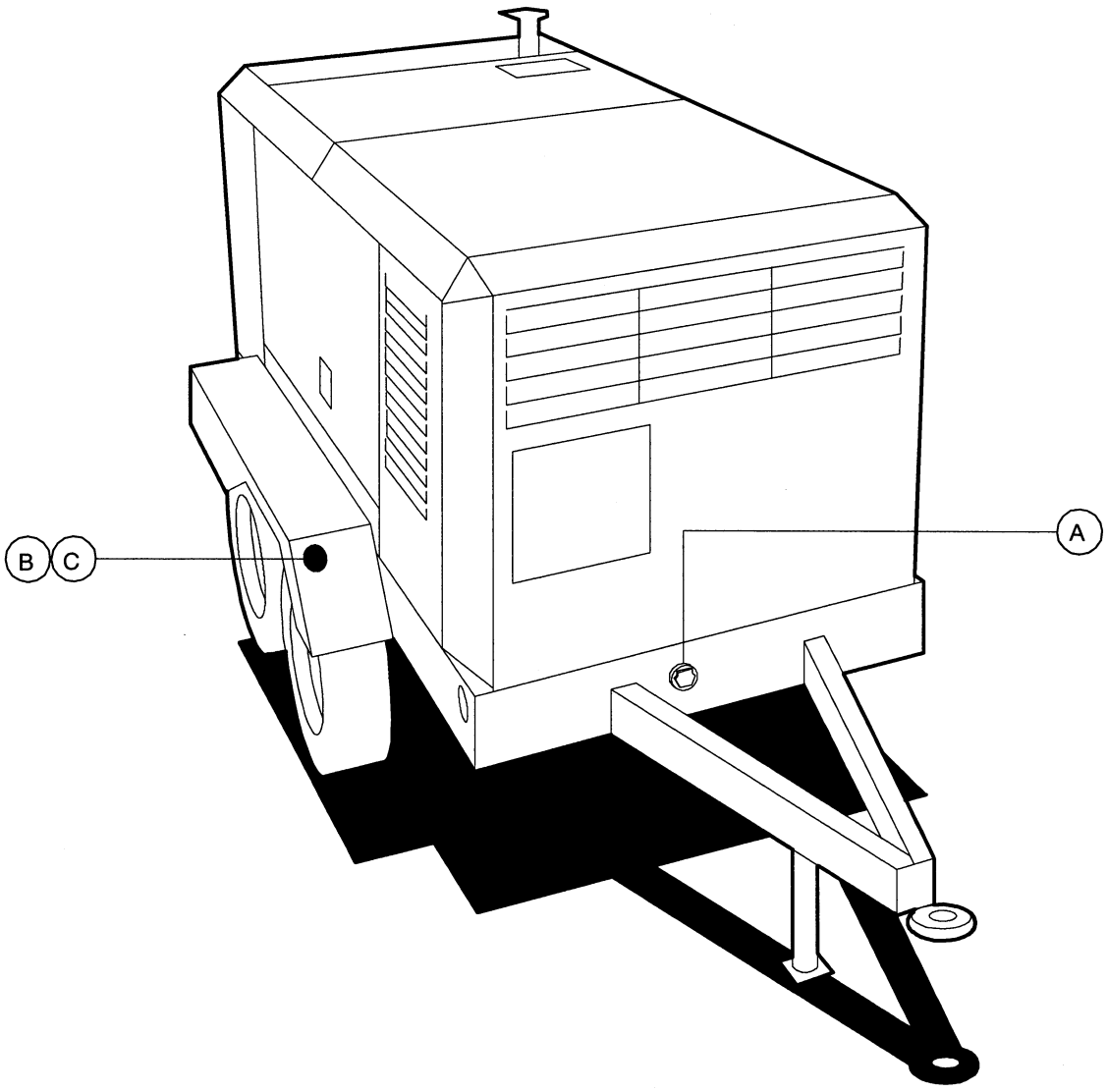
INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION INTERNAL BAFFLES & FOAM	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-78	DATE/REV: 2-00 / B



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION RUNNING LIGHTS	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-79	DATE/REV. 2-00 / B

A	35359207	LIGHT , TRIDENT	
B	95922126	SCREW	(2 REQD)
C	95938692	WASHER	(2 REQD)
D	35306141	CONNECTOR , LIGHT	
E	36859320	LIGHT , COMBO	(4 REQD)
F	36787968	GROMMET	(4 REQD)
G	36794774	GROMMET	(2 REQD)
H	36881910	LIGHT , LISCENSE PLATE	
J	35300771	SCREW	(2 REQD)
K	35367044	LIGHT , RED	
L	36893642	GROMMET	
M	35367051	LIGHT , AMBER	
N	36893634	GROMMET	

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION RUNNING LIGHTS	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-80	DATE/REV: 2-00 / B



INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION RUNNING LIGHTS	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-81	DATE/REV: 2-00 / B

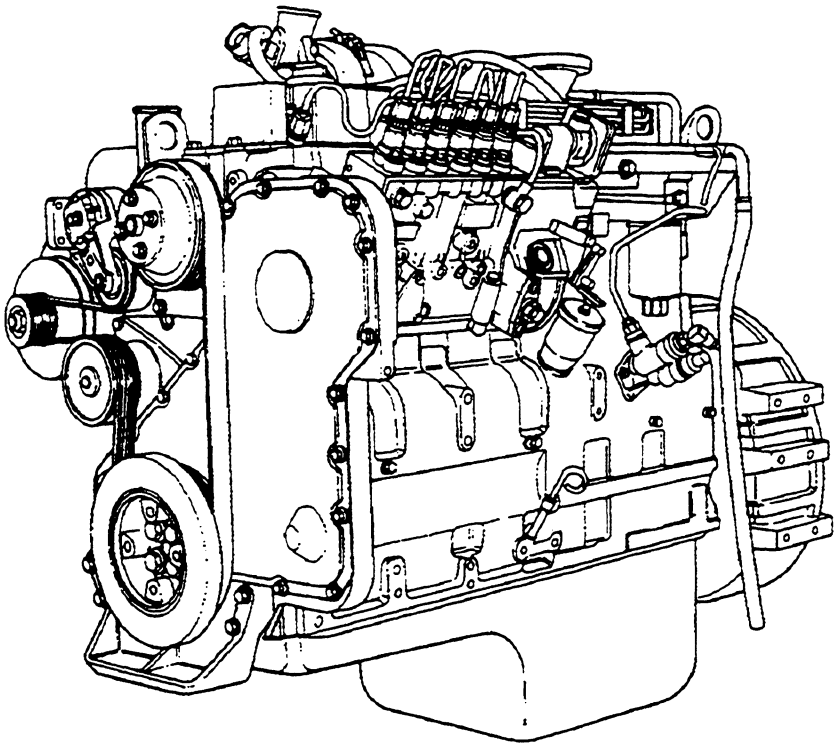
A	36894129	CONNECTOR , HARNESS
B	35367051	LIGHT , AMBER
C	36893634	GROMMET

36896926 —— RUNNING LIGHT HARNESS

INGERSOLL-RAND COMPANY PORTABLE COMPRESSOR DIVISION		
DATE/DWN BY: 2-00 WAP	DESCRIPTION RUNNING LIGHTS	
MODEL NO. CU DEUCE	MANUAL NO. 35389915-82	DATE/REV: 2-00 / B

Operation and Maintenance Manual – C Series Engines

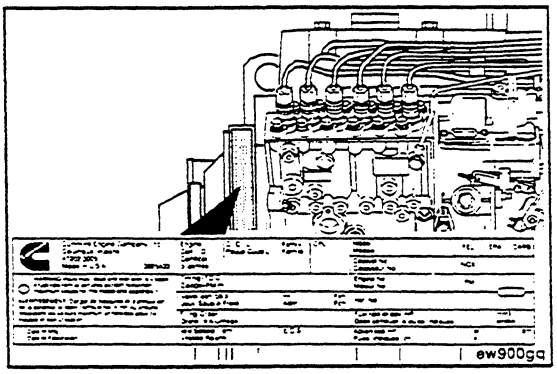
SECTION 12 – ENGINE INFORMATION



This information compiled from Cummins Bulletin 3810248–08.
Supplied by: Cummins Engine Company

ENGINE IDENTIFICATION

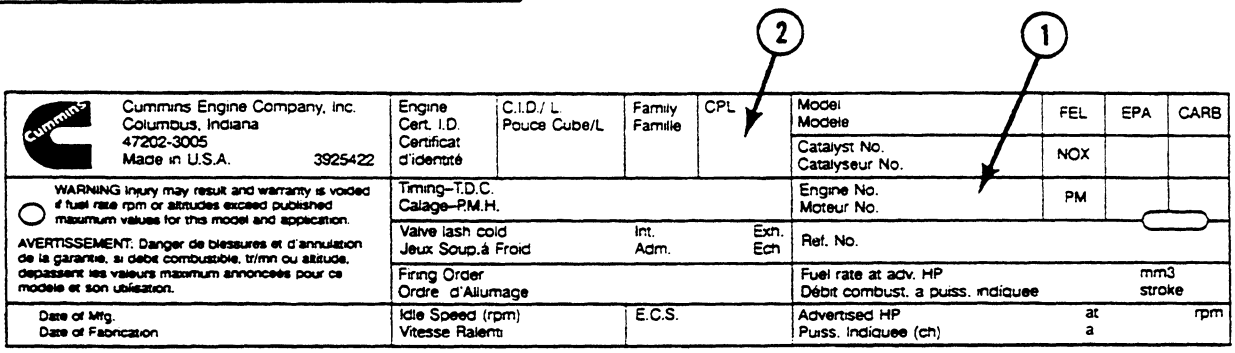
Engine Identification



Engine Dataplate

The engine dataplates show specific information about the 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

Cummins Engine Nomenclature

The model name for engines in automotive applications provides the data shown in the example:

Example

C 8.3-275

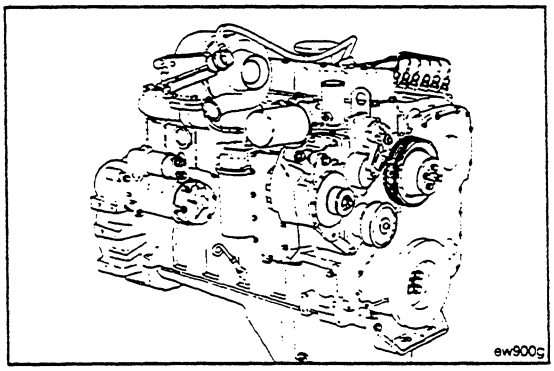
- 275 — Rated Horsepower
- 8.3 — Displacement in Liters
- C — Engine Series

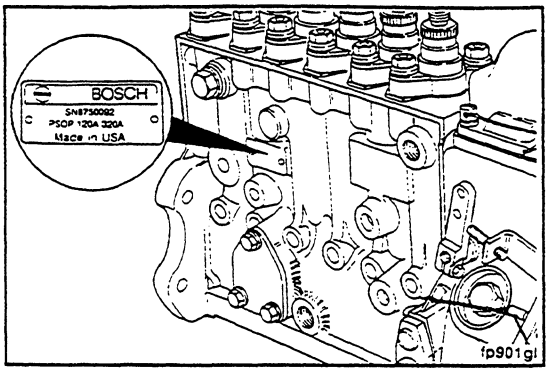
The following example shows a model name of an engine for non-automotive applications:

Example

6 C T A 8.3

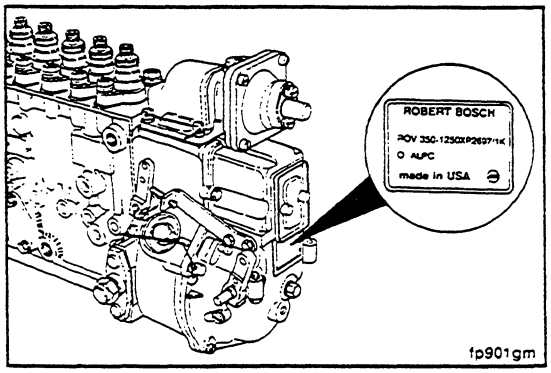
- 8.3 — Displacement in Liters
- A — Aftercooled
- T — Turbocharged
- C — Engine Series
- 6 — Number of Cylinders





Injection Pump Dataplate

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



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

GENERAL SPECIFICATIONS

General Specifications

GENERAL ENGINE DATA	6C8.3	6CT8.3	6CTA8.3	C8.3
Bore - mm [in.]	114 [4.49]			
Stroke - mm [in.]	135 [5.32]			
Displacement - liter [in.^{3}]	8.27 [504.5]			
Engine Weight (Dry) With Standard Accessories	603-612 Kg [1330-1350 lb]			
Wet Weight	635-658 Kg [1400-1450 lb]			
Firing Order	1-5-3-6-2-4			
Valve Clearances				
- Intake - mm [in.]	0.30 [0.012]			
- Exhaust - mm [in.]	0.61 [0.024]			
Compression Ratio	16.4:1	17.3:1	16.5:1	17.3:1*/18:1**
Rotation, viewed from the front of the engine	Clockwise			
Aspiration				
- Naturally Aspirated	X			
- Turbocharged		X		
- Aftercooled			X	
- Charge Air Cooled (CAC)				X

* High Torque

* Low Torque

LUBRICATION SYSTEM	6C8.3	6CT8.3	6CTA8.3	C8.3
Lubricating Oil Pressure at Idle - (Minimum Allowable) kPa [PSI]	69 [10]			
Lubricating Oil Pressure at Rated - (Minimum Allowable) kPa [PSI]	207 [30]			
Regulating Valve Opening Pressure kPa [PSI]	518 [75]			
Differential Pressure to Open the Filter Bypass Valve - kPa [PSI]	138 [20]			
Lubricating Oil Capacity of Pan (High-Low) - Liter [U.S. Qts.]	18.9 [20] 15.1.[16]			
COOLING SYSTEM				
Coolant Capacity (Engine Only) - liter [U.S. Qts.]	9.9 [10.5]	9.9 [10.5]	10.9 [11.5]	9.9 [10.5]
Standard Modulating Thermostat - Range - °C [°F]	Start 81 [178]	Fully Open 95 [203]		
Pressure Cap - kPa [PSI] Minimum	50 [7]			
Maximum Allowable Top Tank Temperature °C [°F]	100°C [212°F]			
Minimum Recommended Top Tank Temperature °C [°F]	70°C [158°F]			

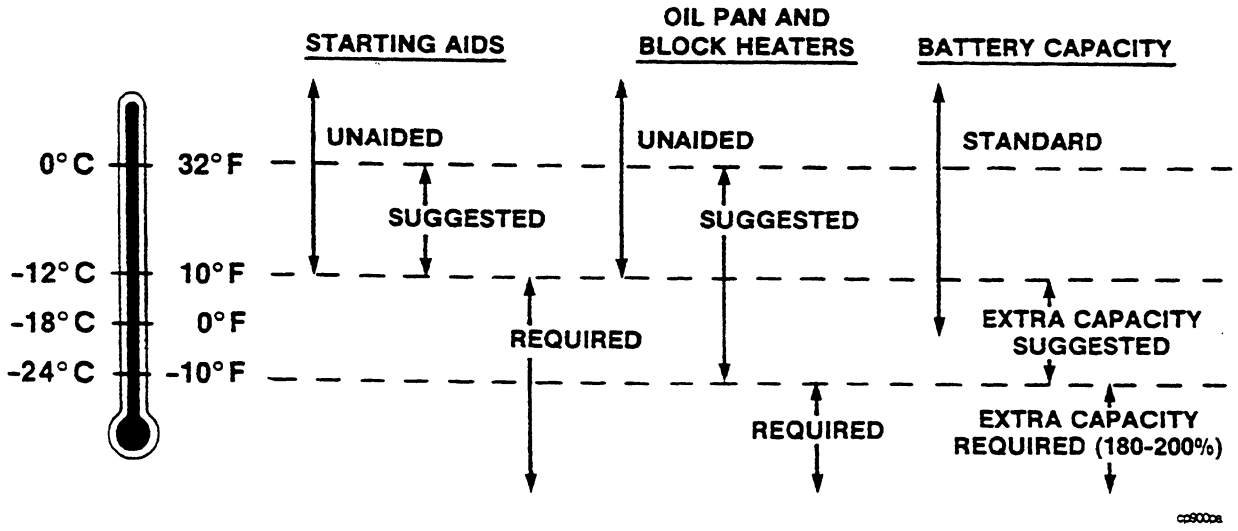
INTAKE AIR, EXHAUST AND FUEL SYSTEM	6C8.3	6CT8.3	6CTA8.3	C8.3
Maximum Allowable Air Intake Restriction at Rated Speed and Load with Dirty Air Filter Element-mm H_20 (in. H_20]	508 [20]	635 [25]	635 [25]	635 [25]
Maximum Allowable Exhaust Restriction at Rated Speed and Load - mm Hg [in. Hg]	76 [3] 152 [6]*			
Maximum Fuel Filter Pressure Drop Across Filters kPa [psi]	34 [5]			
Maximum Allowable Return Line Restriction - mm Hg [in Hg]	-518 [20.4]			
Maximum Inlet Restriction to Fuel Transfer Pump mm Hg [in Hg]	100 [4]			

* with catalyst

OPERATING INSTRUCTIONS

Cold Weather Starting Aids

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



Cold Weather Starting With Starting Fluid

With Mechanical Or Electrical Metering Equipment

NOTE: Industrial engines are equipped with Robert Bosch RSV governors which automatically position the pump controls to the **START** position when the throttle is set at idle. Automotive engines are equipped with Bosch RQV and RQV-K governors. The accelerator pedal must be depressed all the way to the **START** position **after** engaging the starter.

- Disengage the driven unit or put the transmission in neutral.
- Position the fuel shutoff, electrical switch or mechanical control, to the **RUN** position.
- On industrial equipment, set the throttle at idle. For automotive engines, **after engaging the starter**, depress the accelerator pedal all the way to the **START** position and hold the pedal.
- While cranking the engine, inject metered amounts of starting fluid.
- Engine lubricating 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 lubricating oil change, or after the engine has been shut off for more than 7 days to make sure the engine receives the correct oil flow through the lubricating oil system:

- Disconnect the electrical wire from the fuel injection 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 injection 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 (RPM) for extended periods (more than a minute) of time.
- Allow the engine to idle 3 to 5 minutes before shutting the engine off after a full load operation.
- Monitor the lubricating oil pressure and coolant temperature gauges frequently. Refer to **Engine Specifications** (Section V) for recommended operating pressures and temperatures. Shut the engine off 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 engine speed or shift to a lower gear, or both, until the temperature returns to normal operating range. If engine temperature does **not** return to normal, 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:

  — Engine misfires
  — Vibration
  — Unusual engine noises
  — Fuel, oil or coolant leaks
  — Sudden changes in engine operating temperature or pressure
  — Excessive smoke
  — Loss of power
  — An increase in oil consumption
  — An increase in fuel consumption

Engine Operating Range

Caution: Cummins engines are designed to operate successfully at full throttle under transient conditions down to peak torque engine speed (RPM). This is consistent with recommended driving practices for good fuel economy. Excessive full throttle operation below peak torque RPM (peak torque RPM varies from 1,100 RPM to 1,500 RPM, depending upon rated engine speed) will shorten engine life to overhaul, can cause serious engine damage, and is considered engine abuse.

Caution: Operation of the engine below peak torque RPM can occur during gear shifting due to the difference of ratios between transmission gears, but engine operation must not be sustained more than one minute at full throttle below peak torque RPM.

Caution: Operating the engine beyond high idle speed can cause severe engine damage. When descending a steep grade, use a combination of transmission gears and engine or service brakes to control the vehicle and engine speed.

Engine Shut-down Procedure

- Allow the engine to idle 3 to 5 minutes after a full load operation before shutting the engine off. This allows the engine to cool gradually and uniformly.
- Turn the ignition key switch to the **OFF** position.

MAINTENANCE

C Series Engine Maintenance Schedule

Daily or Refueling	Every 10,000 Km (6,000 Mi) Or 250 Hours, 3 Months	Every 19,000 Km (12,000 Mi) Or 500 Hours, 6 Months	Every 38,000 Km (24,000 Mi) Or 1000 Hours, 12 Months	Every 77,000 Km (48,000 Mi) Or 2000 Hours, 2 Years
Check	Change/Replace			
• Lubricating Oil Level	• Lubricating Oil [1]	• Lubricating Oil	• Lubricating Oil	• Lubricating Oil
• Coolant Level	• Lubricating Filter	• Lubricating Filter	• Lubricating Filter	• Lubricating Filter
• Drive Belt	• Coolant Filter	• Coolant Filter [5]	• Coolant Filter	• Coolant Filter
• Fuel Water Trap		• Fuel Filter [5]	• Fuel Filter	• Fuel Filter
				• Antifreeze [3]
				• Fuel Strainer
	Adjust			
			• Valve Lash Clearance [2]	• Valve Lash Clearance
	Check/Inspect			
	• Air Cleaner	• Air Cleaner	• Air Cleaner	• Air Cleaner
	• Intake System	• Intake System	• Intake System	• Intake System
	• Charge Air Cooler	• Antifreeze	• Antifreeze	• Air Compressor
		• Charge Air Cooler	• Fan Hub	• Fan Hub
			• Belt Tensioner Bearing	• Belt Tensioner Bearing
			• Belt Tension	• Belt Tension
			• Charge Air Cooler	• Vibration Damper
				• Charge Air Cooler [4]

[1] Refer to the Lubricating Oil Change Interval chart given in Section 4 to find the correct lubricating oil change interval for the engine application.
[2] Initial valve lash clearance adjustment, subsequent adjustments to be performed at every 4th engine oil change for automotive engines or 77,000 Km (48,000 Mi), 2000 Hrs or 2 years interval, whichever occurs first.
[3] Must use a heavy duty antifreeze that meets the chemical composition of GM6038-M. The change interval is 2 years or 385,000 Km [240,000 Mi] for industrial engines.
[4] Service interval is 2 years, or 320,000 Km [200,000 Mi], whichever occurs first.
[5] Service interval is every other engine oil change or 19,000 Km [12,000 mi], 500 hours or 6 moths.

Fuel-Water Separator

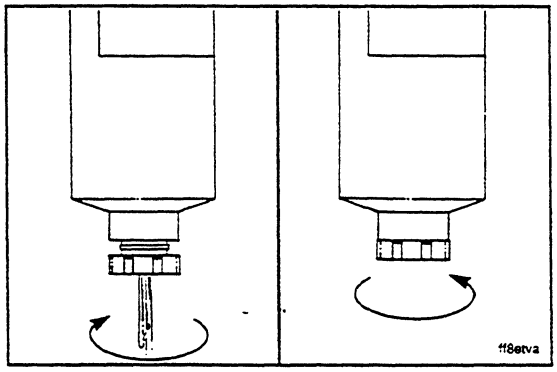
Draining

Drain the water and sediment from the fuel-water separator daily.

Shut off the engine. Open the drain valve. Turn the valve **counterclockwise** approximately 1 1/2- to 2 turns until draining occurs. Drain the fuel-water separator of water and sediment 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.



Lubricating Oil Level

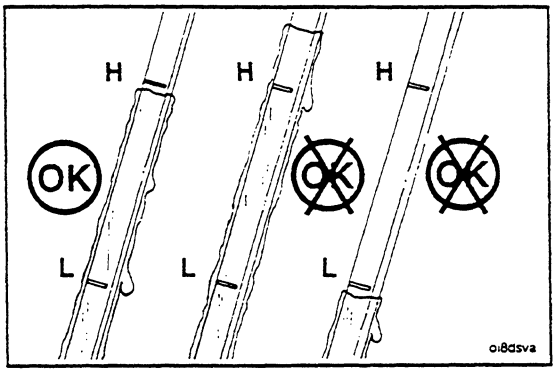
Checking

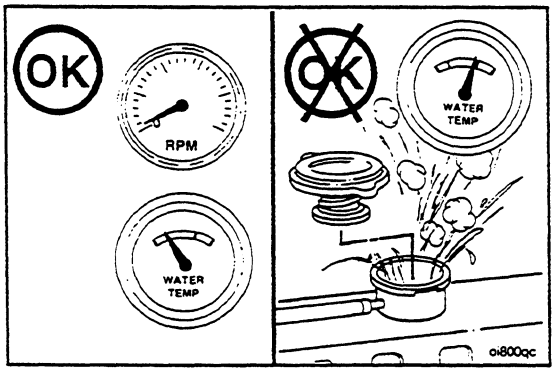
Never operate the engine with the lubricating oil level below the "L" (Low) mark or above the "H" (High) mark. Wait at least 5 minutes after shutting off the engine to check the lubricating oil. This allows time for the lubricating oil to drain to the oil pan.

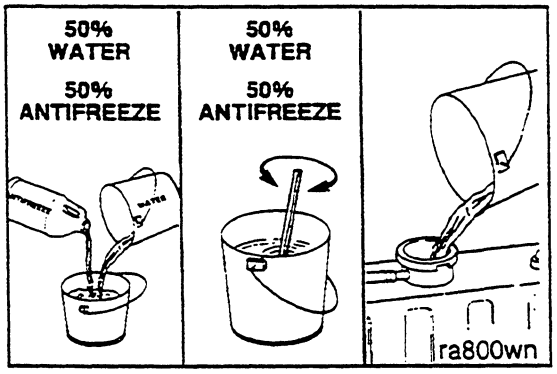
NOTE: The engine **must** be level when checking the lubricating oil level to make sure the measurement is correct.

Lubricating Oil Capacity: Low Mark To High Mark

3.8 Litres [4 U.S. Quarts]







Coolant Level

Checking

Warning: Do not remove the radiator cap from a hot engine. Wait until the temperature is below 50°C [122°F] before removing the pressure cap. Failure to do so can result in personal injury from heated coolant spray or steam. Remove the filler cap slowly to relieve coolant system pressure.

NOTE: Never use a sealing additive to stop leaks in the coolant system. This can result in coolant system plugging and inadequate coolant flow causing the engine to overheat.

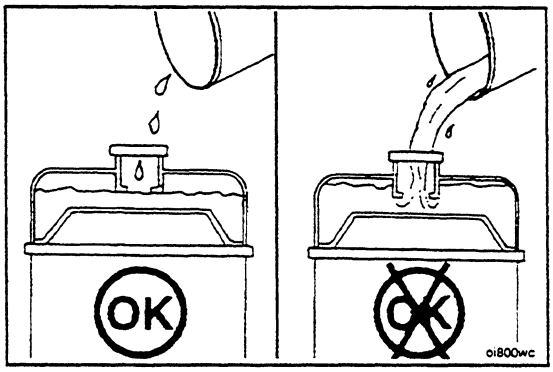
The coolant level **must** be checked daily.

Caution: Do not add cold coolant to a hot engine. Engine castings can be damaged. Allow the engine to cool to below 50°C [122°F] before adding coolant.

NOTE: If additional coolant is added to the cooling system a 50% mixture of water and antifreeze **must** be premixed before added to the system. Since the ability of antifreeze to remove heat from the engine is not as good as water, pouring antifreeze into the engine first could contribute to an over heated condition before the liquids are completely mixed.

Fill the cooling system with coolant to the bottom of the fill neck in the radiator fill or expansion tank.

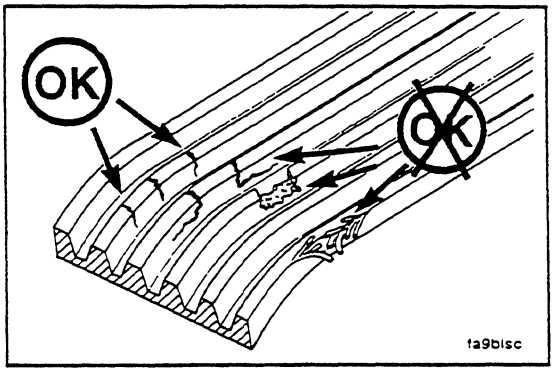
NOTE: Some radiators have two fill necks, both of which **must** be filled when the cooling system is drained.



Drive Belt

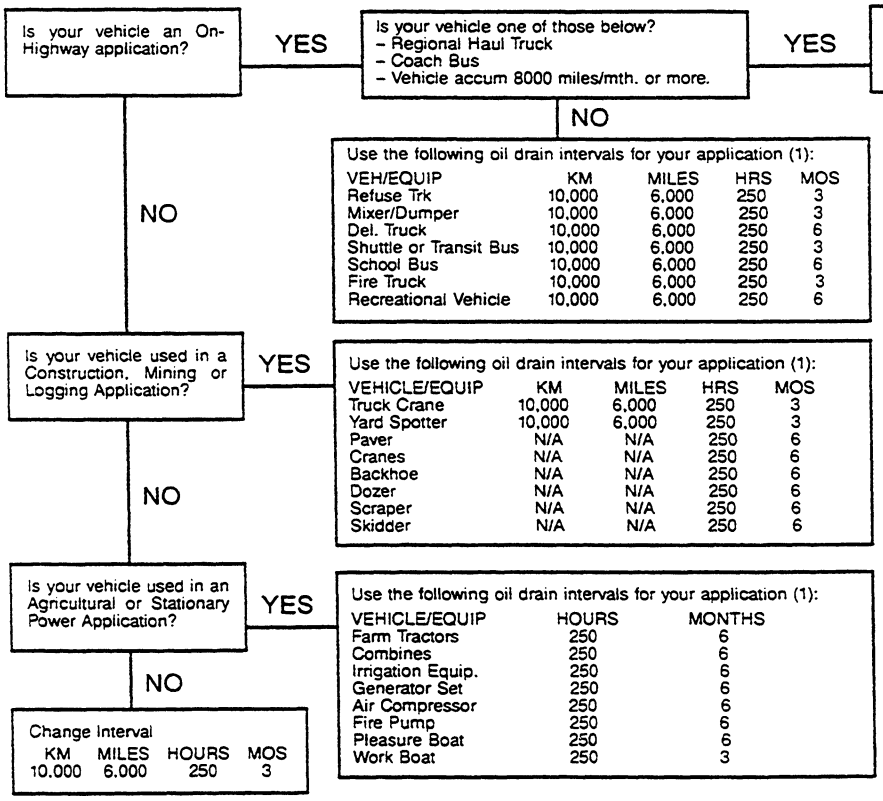
Inspection

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).



Lubricating Oil and Filter Change Interval

Refer to the following charts to determine the maximum recommended lubricating oil and filter change interval in kilometers [miles], hours or months; whichever occurs first:



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

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

Lubricating Oil and Filter

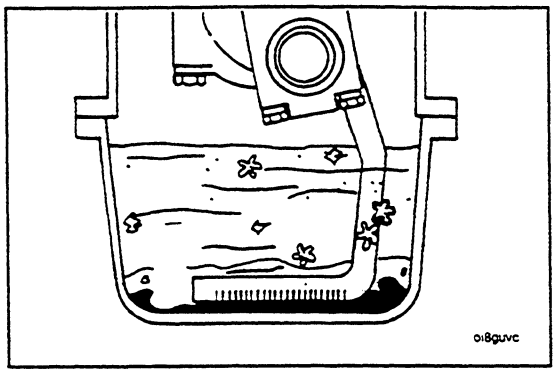
Changing

Caution: Avoid prolonged and repeated skin contact with used engine lubricating 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.

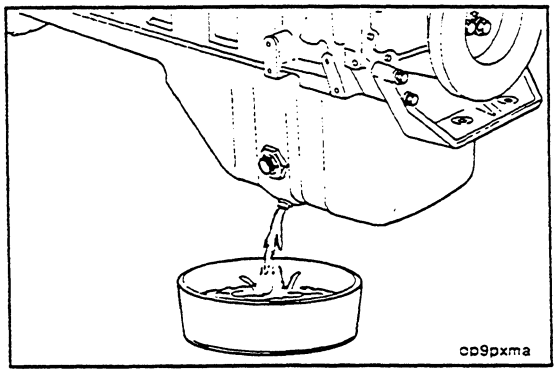
PROTECT THE ENVIRONMENT: Handling and disposal of used engine lubricating oil may be subject to federal, state and local law and regulation. Use authorized waste disposal facilities, including civic amenity sites and garages providing authorized facilities for receipt of used lubricating oil. If in doubt,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



NOTE: If the engine is in service, under no circumstances can the lubricating oil drain interval extend beyond the intervals given in the charts.

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

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



17 mm

Caution: Hot lubricating oil can cause personal injury.

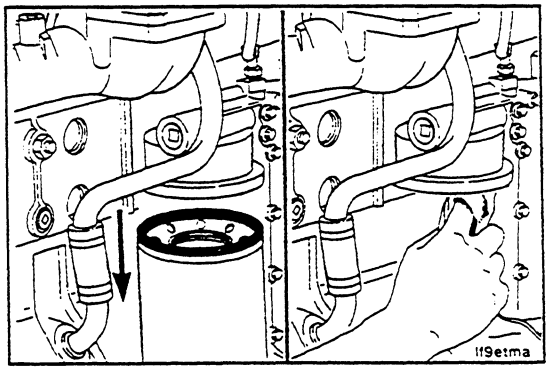
Operate the engine until the water temperature reaches 60°C [140°F]. Shut the engine off. Remove the lubricating oil drain plug.

NOTE: Use a container that can hold at least 25 liters [27 U.S. qts.] of lubricating oil.

118 to 131 mm Filter Wrench

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

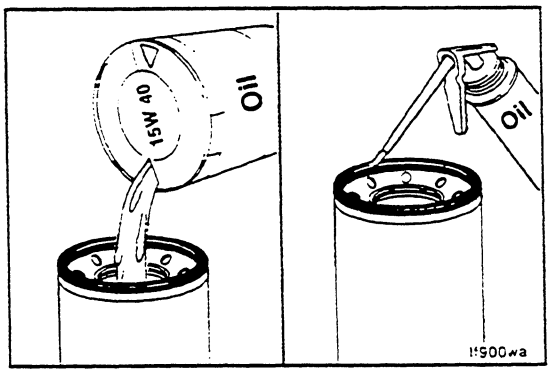
NOTE: The o-ring can stick on the filter head. Make sure it is removed.

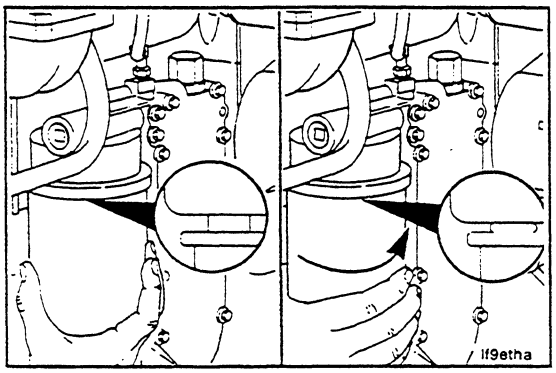


Caution: Fill the filters with clean lubricating oil before installation.

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

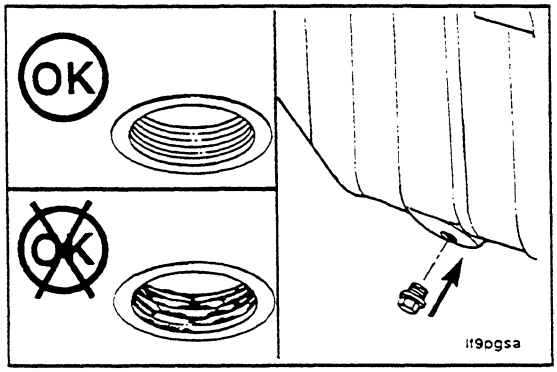
NOTE: The LF3000 lubricating oil filter has two gaskets. Lubricate both gaskets.





Caution: Mechanical over-tightening may distort the threads or damage the lubricating oil filter element seal.

Install the lubricating oil filter as specified by the filter manufacturer.



17 mm

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

Install the lubricating oil pan drain plug.

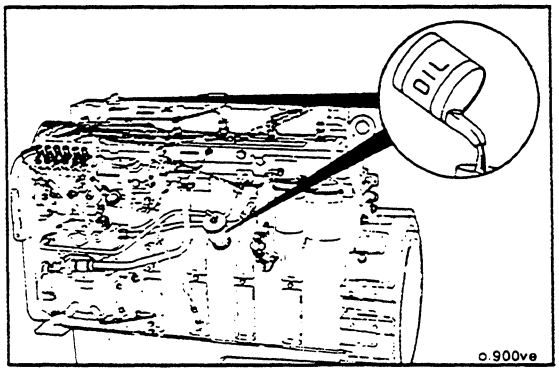
Torque Value: 80 N•m [60 ft-lb]

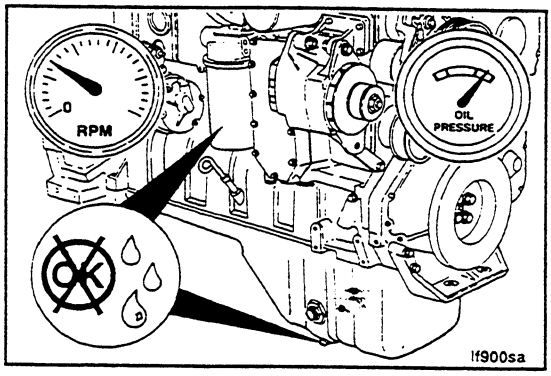
NOTE: Use a high quality 15W-40 multi-viscosity lubricating oil, such as Cummins Premium Blue, or its equivalent in Cummins engines. Choose the correct lubricating oil for your operating climate as outlined in Section V.

Fill the engine with clean lubricating oil to the proper level.

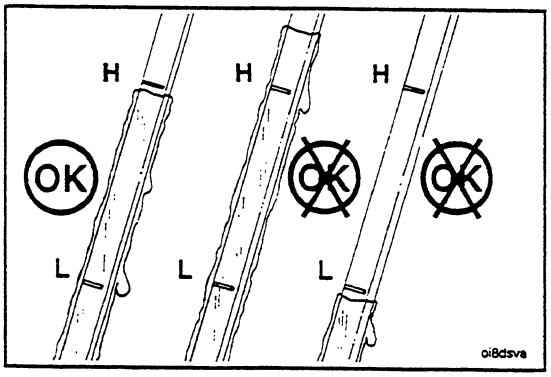
System Capacity

23.8 Liter [25.2 U.S. Quart]





Operate the engine at low idle to inspect for leaks at the lubricating oil filter and the drain plug.



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

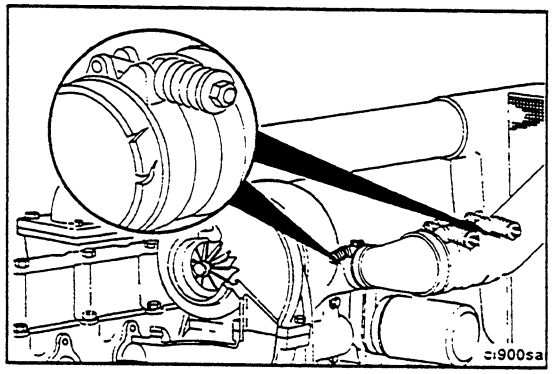
Add lubricating oil as necessary to bring the lubricating oil level to the "H" (High) mark on the dipstick.

Air Intake System

Inspection

Inspect the intake piping for cracked hoses, loose clamps, or punctures which may damage the engine.

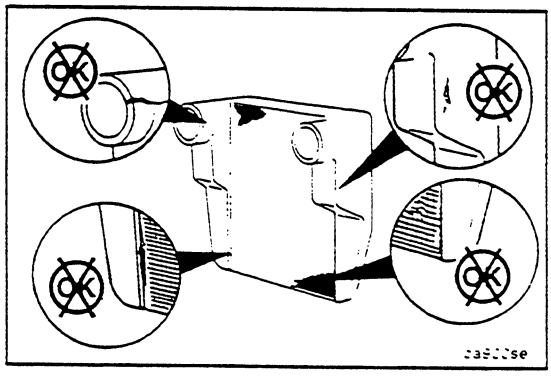
Tighten or replace parts as necessary to make sure the air intake system does not leak.

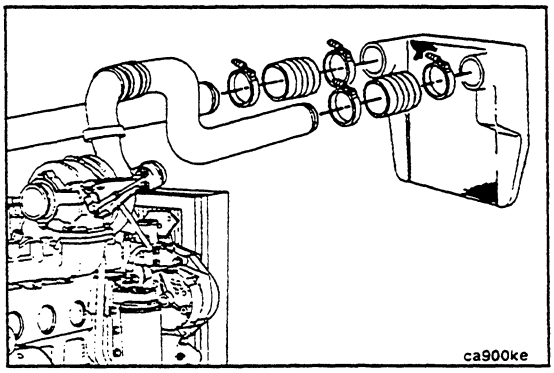


Charge Air Cooler

Visually inspect the CAC for cracks, holes or damage.

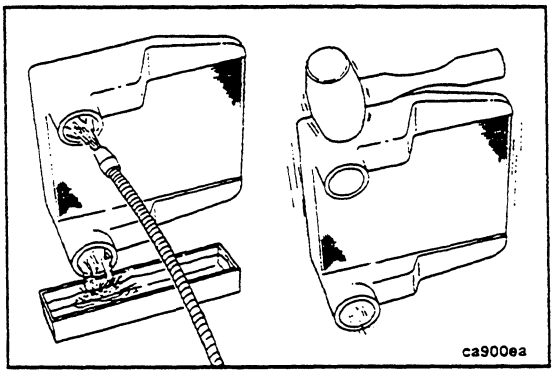
Inspect the tubes, fins and welds for tears, breaks or other damage.





If the engine experiences a turbocharger failure or any other occasion where oil or debris is put into the CAC, the CAC **must** be cleaned.

Remove the CAC from the vehicle. Refer to the vehicle manufacturer's instructions.



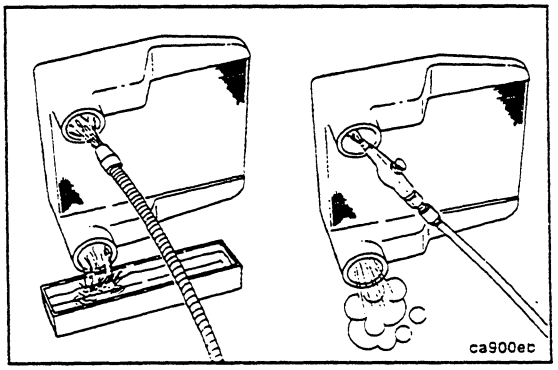
Caution: Do not use caustic cleaners to clean the CAC. Damage to the CAC will result.

Flush the CAC internally with solvent in the opposite direction of normal air flow. Shake the CAC and lightly tap on the end tanks with a rubber mallet to dislodge trapped debris. Continue flushing until all debris or oil is removed.

After the CAC has been thoroughly cleaned of all oil and debris with solvent, wash the CAC internally with hot soapy water to remove the remaining solvent. Rinse thoroughly with clean water.

Blow compressed air into the CAC in the opposite direction of normal air flow until the CAC is dry internally.

Refer to the vehicle manufacturer's instructions for installation.

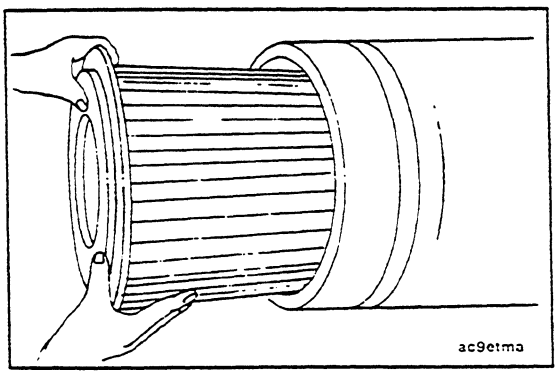


Air Cleaner

Restriction

Maximum intake air restriction is 635 mm [25.0 in.] of water for turbocharged engines. Naturally aspirated engines have a maximum restriction of 510 mm [20.0 in.] of water.

The engine must be operated at rated RPM and full load to check maximum intake air restriction. Replace the air cleaner element when the restriction reaches the maximum allowable limit or clean according to the manufacturer's recommendations.



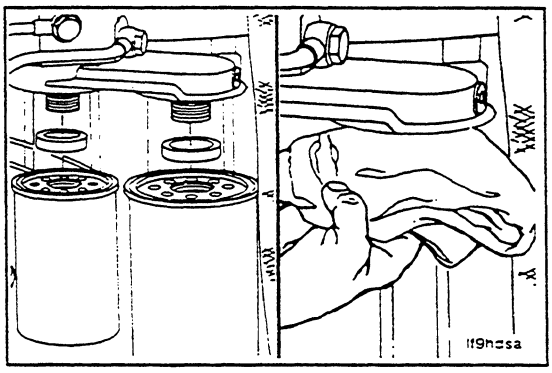
Fuel Filter

Replacement

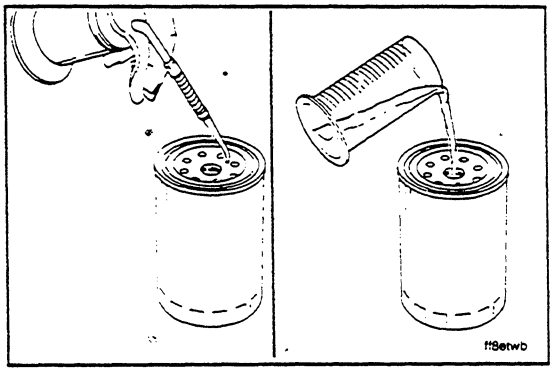
75-80 mm and 90-95 mm

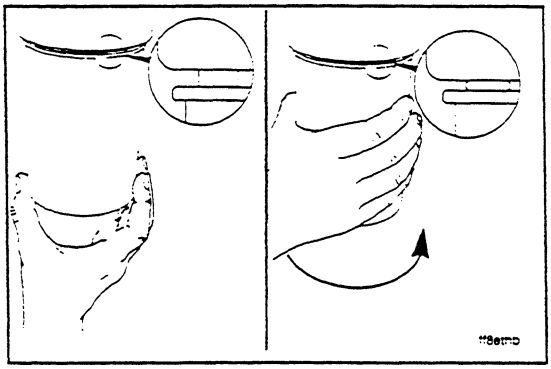
Clean the area around the fuel filter head. Remove the filters. Clean the gasket surface of the fuel filter head.

Replace the o-ring.



Fill the new fuel filter(s) with clean fuel and lubricate the o-ring seal with clean 15W-40 engine lubricating oil.





Caution: To prevent fuel leaks, make sure the fuel filter is installed tightly but not overtightened. Mechanical tightening will damage the fuel filter.

Install the fuel filter as specified by the filter manufacturer.

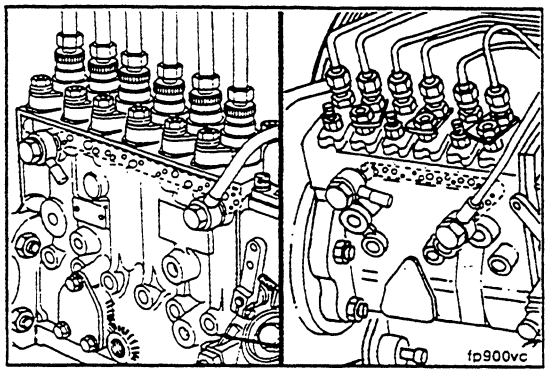
Fuel System

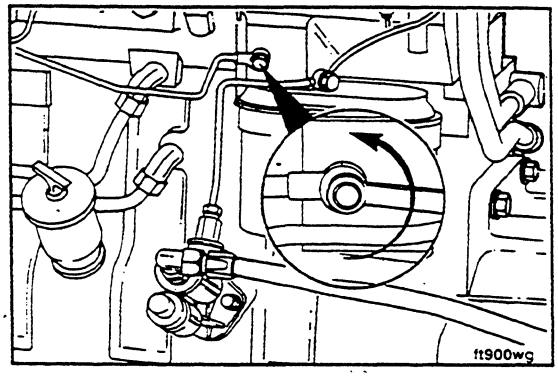
Bleeding

Controlled venting is provided at the injection pump through the fuel drain manifold. Small amounts of air introduced by changing the fuel filters or fuel injection pump supply line will be vented automatically, if the fuel filter is changed in accordance with the instructions.

NOTE: Manual bleeding is required if:

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



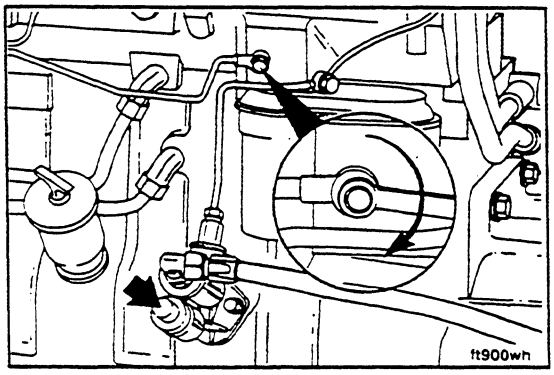


Low Pressure Lines and Fuel Filter(s)

Venting

10 mm

Open the bleed screw.



10 mm

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

Tighten the bleed screw.

Torque Value: 9 N•m [80 in-lb]

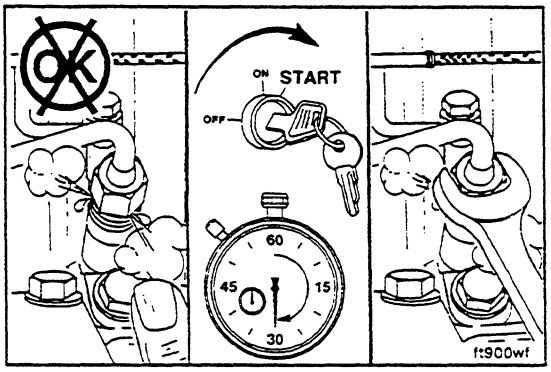
High Pressure Lines

Venting

17 mm (PES.A, PES.MW), 19 mm (PES.P)

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

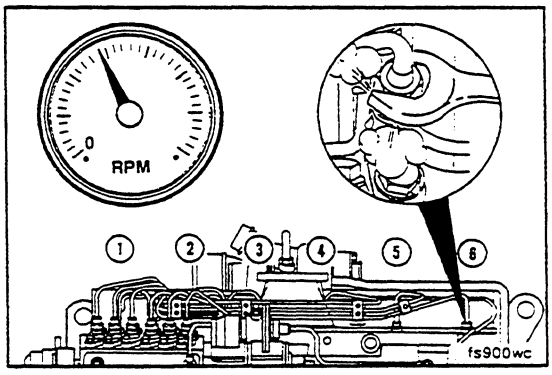
Loosen the fittings at the injectors, and crank the engine to allow entrapped air to bleed from the lines. Tighten the fittings.

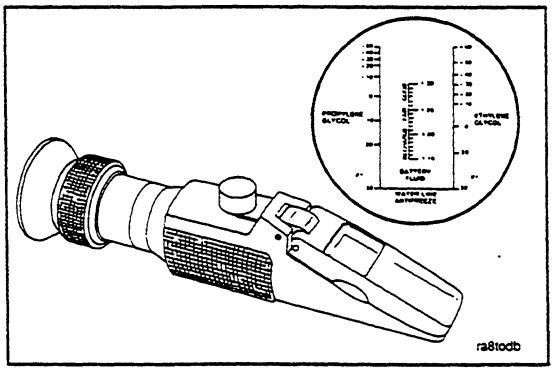


Warning: It is necessary to put the engine in the "RUN" position. Because the engine could start, be sure to follow all the safety precautions. Use the normal engine starting procedure.

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

NOTE: Do not engage the starter for more than 30 seconds each time when it is used to vent the system: wait 2 minutes between engagements.





Antifreeze Concentration

Checking

Check the antifreeze concentration. Use ethylene-glycol base antifreeze to protect the engine to -37°C [-34°F] throughout the year.

Antifreeze is essential in all climates. It broadens the operating temperature range by lowering the coolant freezing point and by raising the coolant boiling point.

Coolant Additive Concentration

Checking

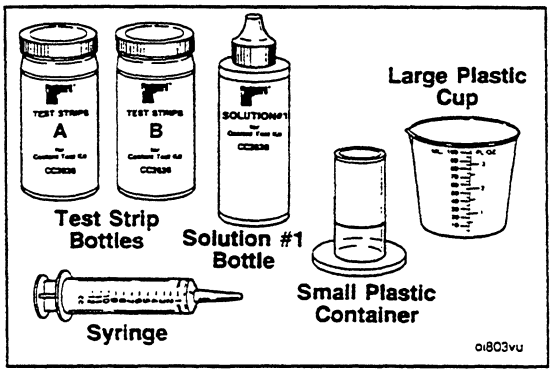
Caution: Inadequate concentration of the coolant additive can result in major corrosive damage to cooling system components. Over concentration can cause formation of "gel" that can cause restriction, plugging of coolant passages, and overheating.

NOTE: If the engine coolant is changed, the coolant filters must also be changed.

Coolant Additive Concentration
Page 5-9

The cooling system must contain the proper coolant additive units to provide the best chemical protection. Refer to the **Engine Specifications** (Section V).

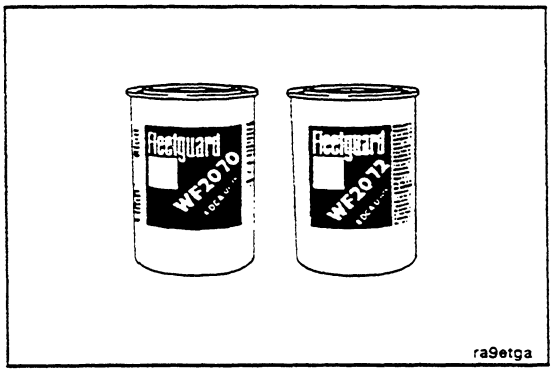
DCA4 Test Kit: Use only DCA4 Coolant Test Kit, Fleetguard® Part No. CC-2626 to check the coolant additive concentration in the cooling system.

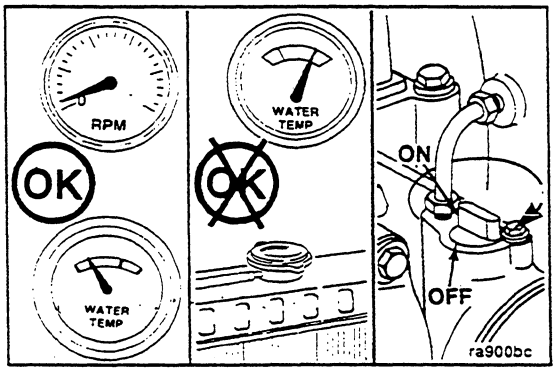


Coolant Filter/DCA4 Corrosion Resistor Cartridge

The correct coolant filter to be used is determined by the total cooling system capacity and other operational factors.

Refer to the DCA4 Maintenance Guide in Engine Specifications (Section V) for the correct selection of the filter.

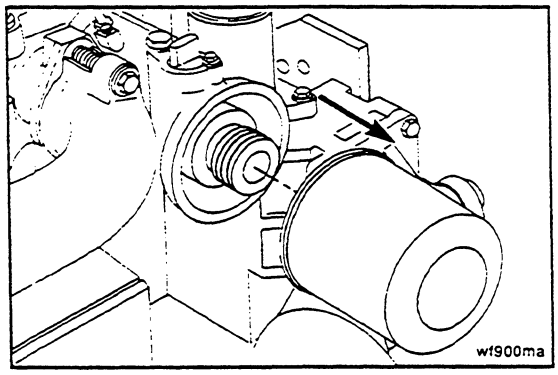




Coolant Filter

Replacement

Warning: Do not remove the radiator cap from a hot engine. Hot steam will cause serious personal injury. Wait until the coolant temperature is below 50°C [122°F] before removing the pressure cap. Remove the coolant system pressure cap and close the shutoff valve before removing the coolant filter. Failure to do so can result in personal injury from heated coolant spray.



Remove and discard the coolant filter. Clean the coolant filter gasket surface.

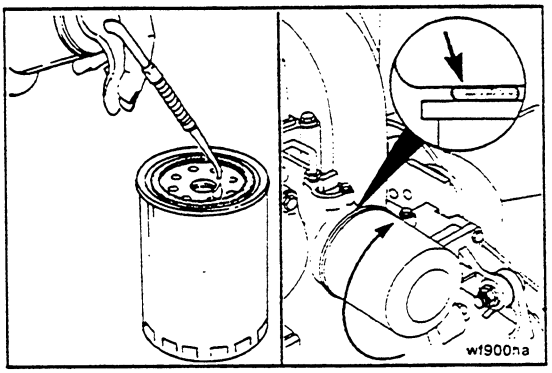
Maintenance Procedures at 19,000 Km [12,000 Mi.]
C Series

Coolant Filter
Page 5-11

Apply a light film of clean 15W-40 lubricating oil to the gasket sealing surface before installing the coolant filter.

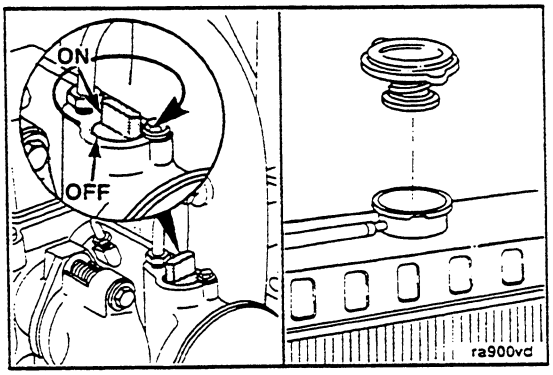
Caution: Mechanical over-tightening may distort the threads or damage the coolant filter head.

Install the filter as specified by the filter manufacturer.



Open the engine coolant shutoff valve and install the coolant system pressure cap.

NOTE: Failure to open the engine coolant shutoff valve can result in severe engine damage.



Maintenance Procedures at 38,000 Kilometers [24,000 Mi]
C Series

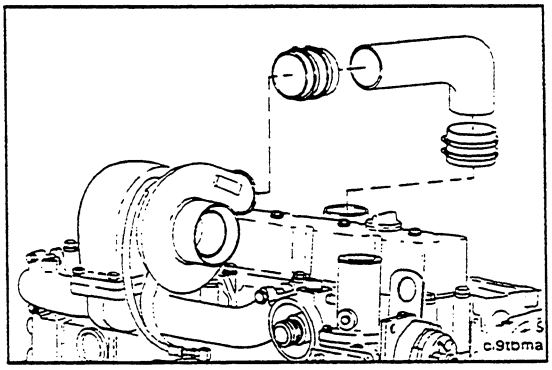
Valve Clearance
Page 6-3

Valve Clearance

Adjusting

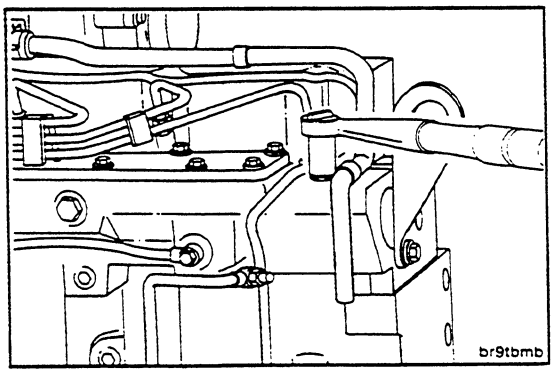
Screwdriver

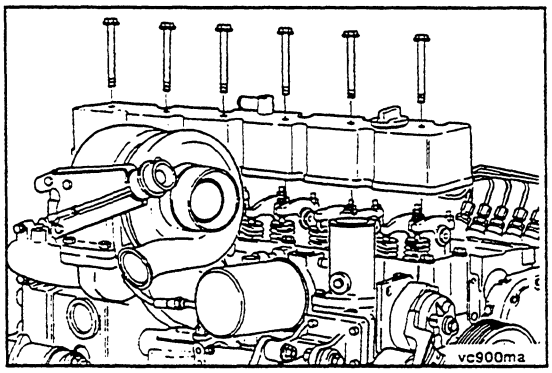
Remove the air crossover tube if the engine is so equipped.



10 and 15 mm

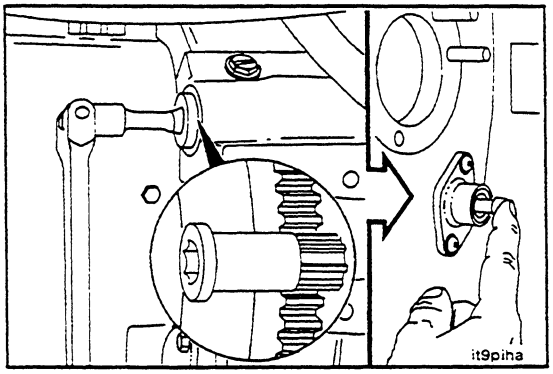
Disconnect the support clamps, hose clamp and waste-gate sensing line. Remove the crankcase vent tube and any other parts that would prevent removal of the valve cover.





15 mm

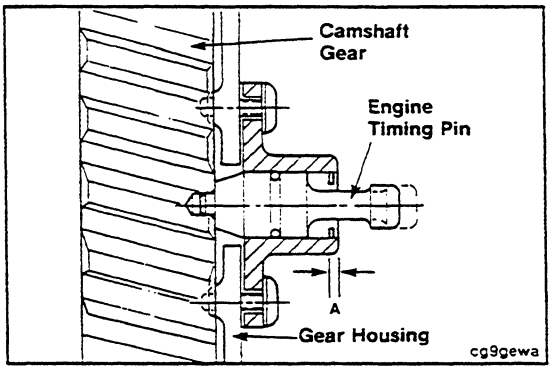
Remove the valve cover.



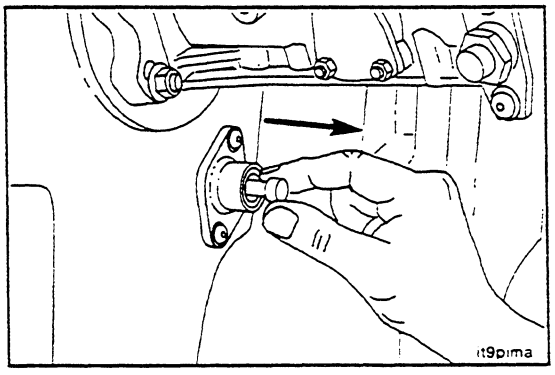
1/2 Inch Drive, 3377381 Barring Gear

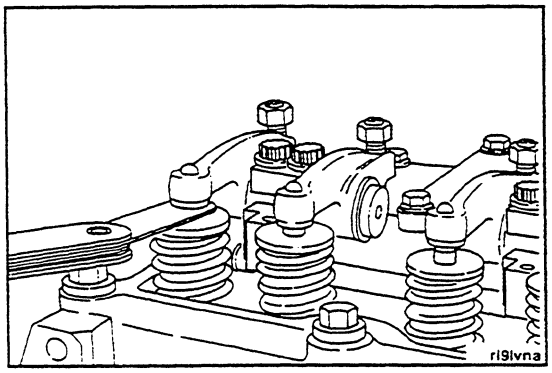
Locate Top Dead Center (TDC) for Cylinder Number 1 by rotating the crankshaft slowly while pressing on the engine timing pin.

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



Caution: Be sure to disengage the engine timing pin after locating TDC to prevent damage to the engine timing pin.





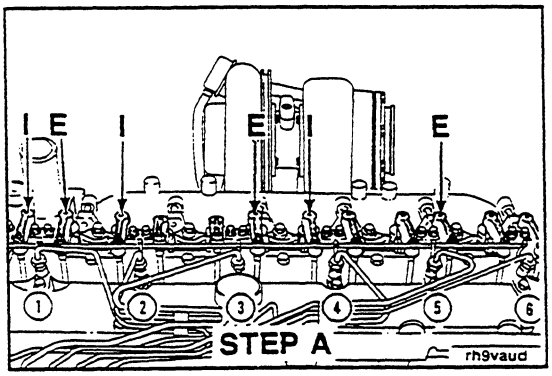
Feeler Gauge

Intake Clearance: 0.30 mm [0.012 inch]

Exhaust Clearance: 0.61 mm [0.024 inch]

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.



14 mm, Flatblade Screwdriver

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

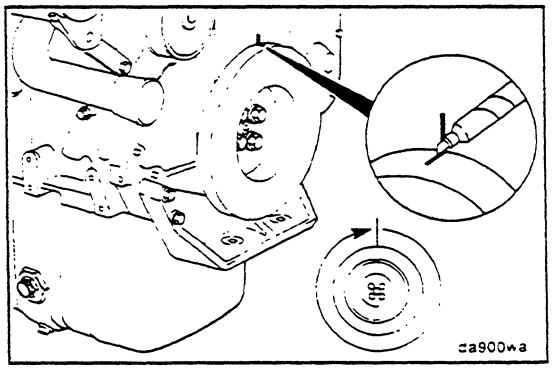
Check/adjust the valves indicated for STEP A (I = Intake; E = Exhaust).

After tightening the rocker lever lock nut, check the valve clearance to make sure the valve clearance has not changed.

Torque Value: 24 N•m [18 ft-lb]

Mark the vibration damper and rotate the crankshaft 360 degrees.

Caution: Be sure the engine timing pin is disengaged to prevent damage to the engine timing pin.

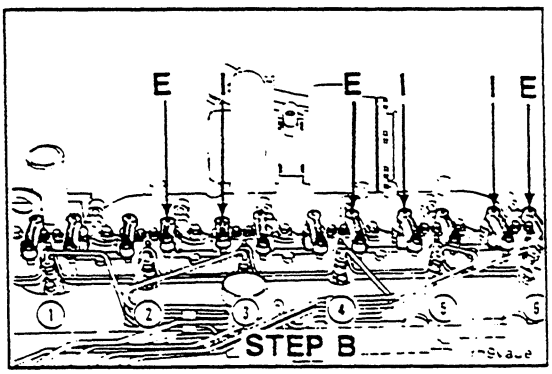


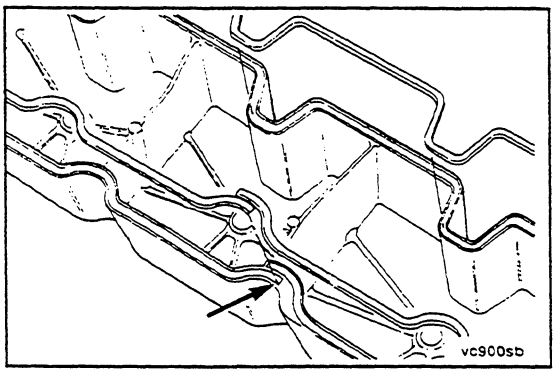
14 mm, Flatblade Screwdriver

Set the valves indicated for STEP B.

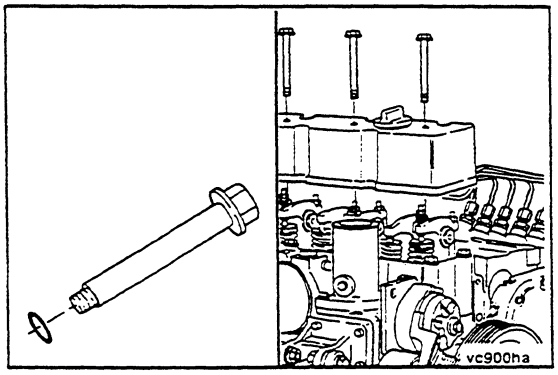
After tightening the rocker lever lock nut, check the valve clearance to make sure the valve clearance has not changed.

Torque Value: 24 N•m [18 ft-lb]





Install the rubber seal into the groove in the valve cover. Start the installation at the overlap area shown in the illustration. **Do not stretch the rubber seal.**



15 mm

Install new sealing o-rings on the capscrews.

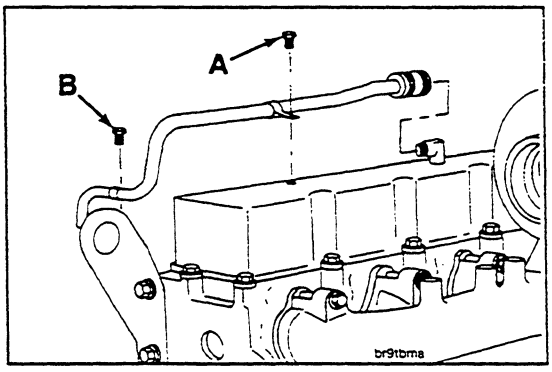
Install the valve cover and wastegate sensing tube.

Torque Value: 24 N•m [18 ft-lb]

10 and 15 mm

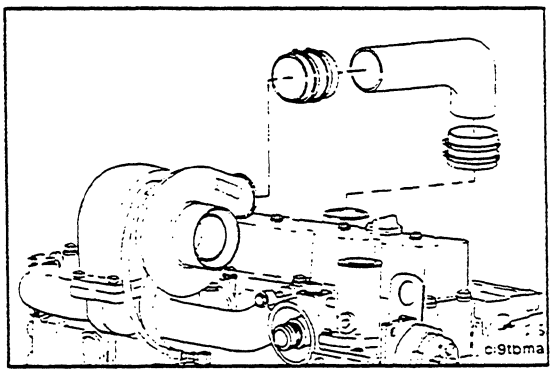
Install the crankcase vent tube and secure with the support clamps and hose clamp.

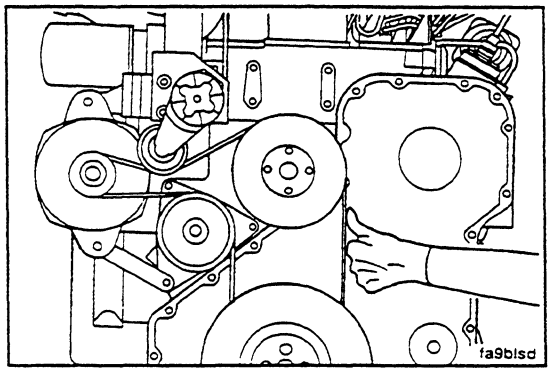
A = 24 N•m [18 ft-lb]
B = 43 N•m [32 ft lb]



Screwdriver

Install the air crossover tube and any other parts previously removed to gain access to the valve cover.



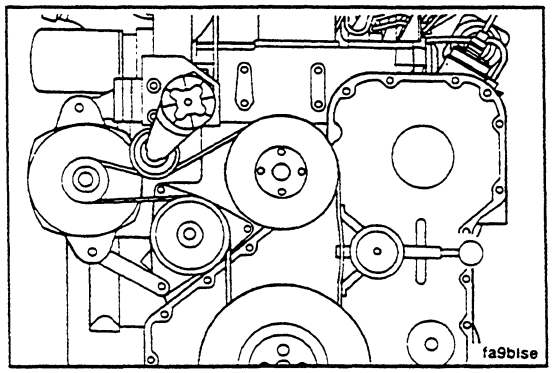


Drive Belt Tension

Checking

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

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



NOTE: The Cummins belt tension gauge ST-1293 can be used.

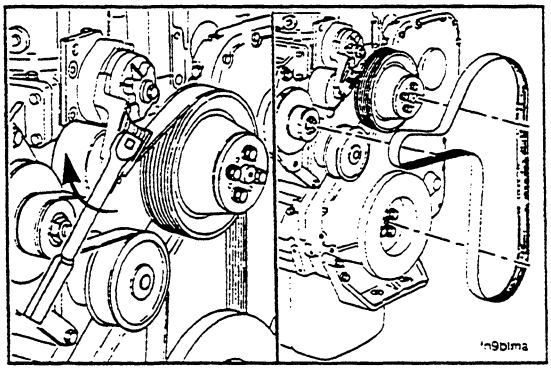
Tension Limit: 360 to 490 N [80 to 100 lbf]

Drive Belt, Tensioner Bearing and Fan Hub

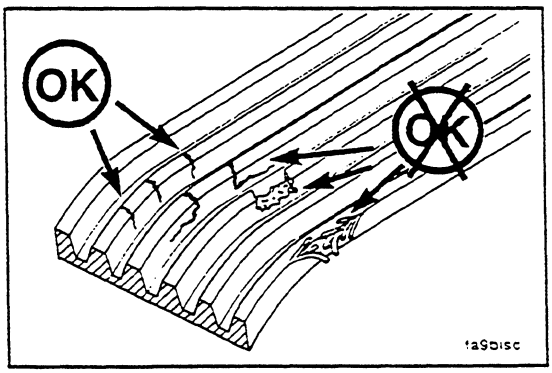
Inspection

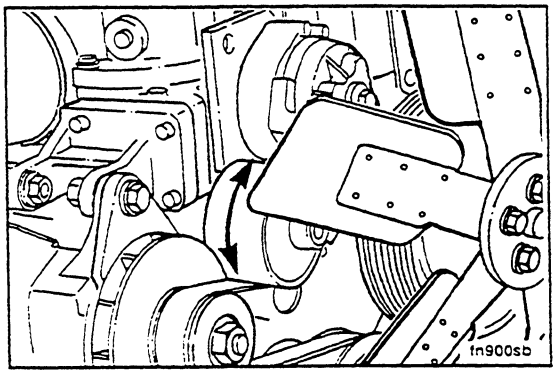
Wrench Size: 3/8 Inch Square Drive

Remove the drive belt and complete the following steps:



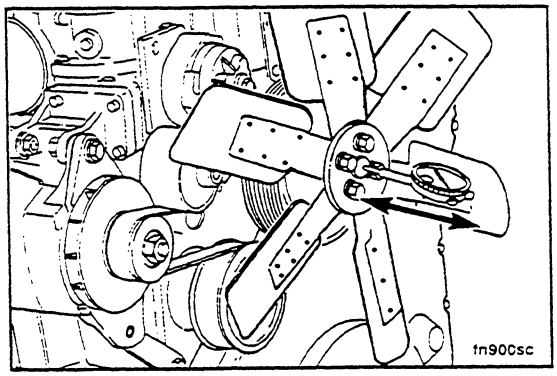
- Inspect the drive belt for damage.





NOTE: The tensioner pulley should rotate freely.

- Check the tensioner bearing.



NOTE: The fan hub should rotate without any wobble or excessive end play.

- Check the fan hub bearing.

Maximum End Play: 0.15 mm [0.006 in.]

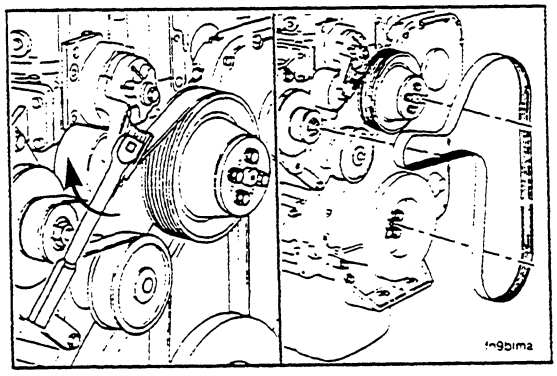
3/8 Inch Square Drive, 13 mm

Install the drive belt.

Service Tip: If difficulty is experienced installing the drive belt (the belt seems too short), position the belt over the grooved pulleys first and then, while holding the tensioner up, slide the belt over the water pump pulley.

NOTE: After the tensioner arm has been raised, check the torque of the tensioner capscrew.

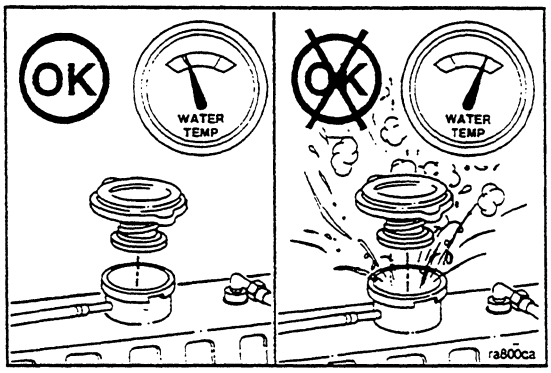
Torque Value: 43 N•m [32 ft-lb]



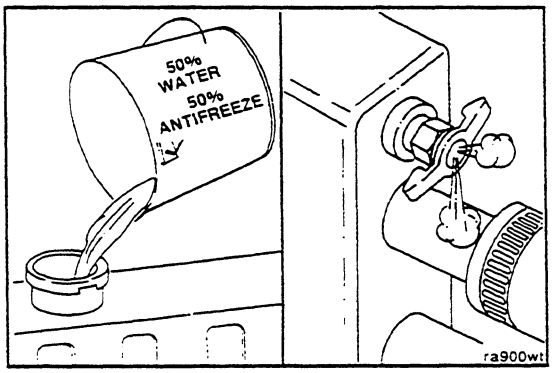
Cooling System Maintenance

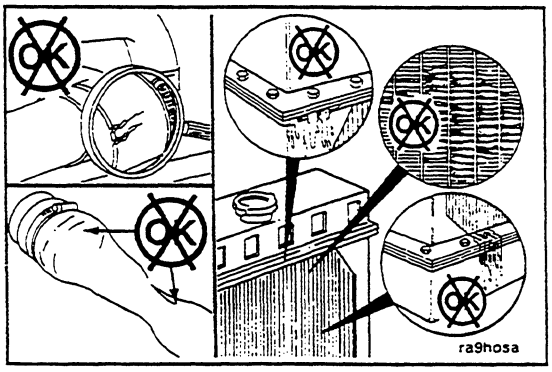
Coolant Draining

Warning: Wait until the temperature is below 50°C [122°F] before removing the coolant system pressure cap. Failure to do so can cause personal injury from heated coolant spray.

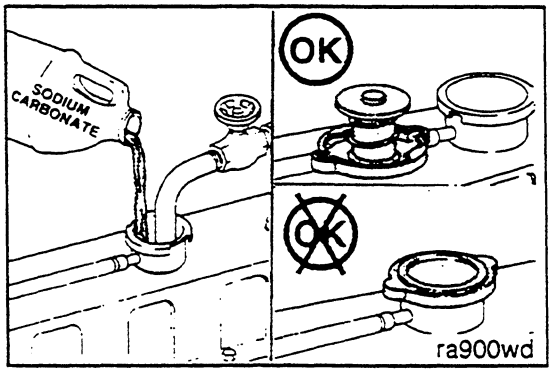


Drain the cooling system by opening the drain valve on the radiator and engine lubricating oil cooler. A drain pan with a capacity of 25 liters [27 U.S. quarts] will be adequate in most applications.





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.



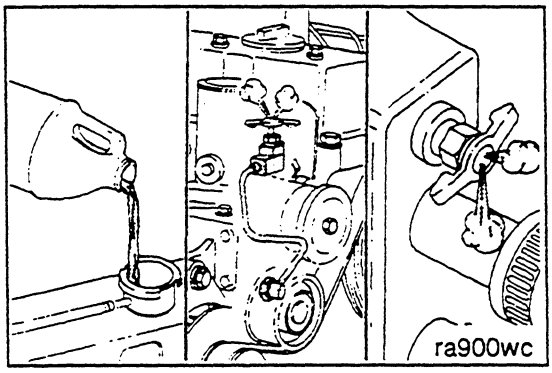
Coolant System Flushing

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.

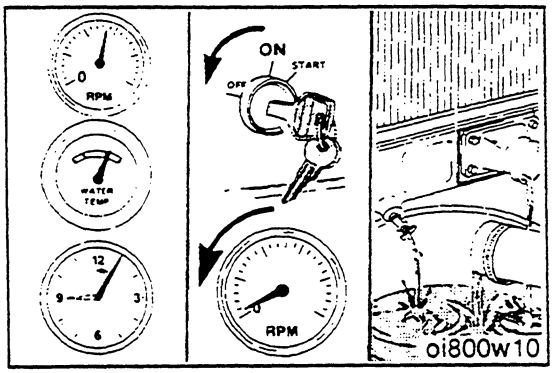
Caution: Do not install the radiator cap. The engine is to be operated without the radiator cap for the coolant system flushing process.

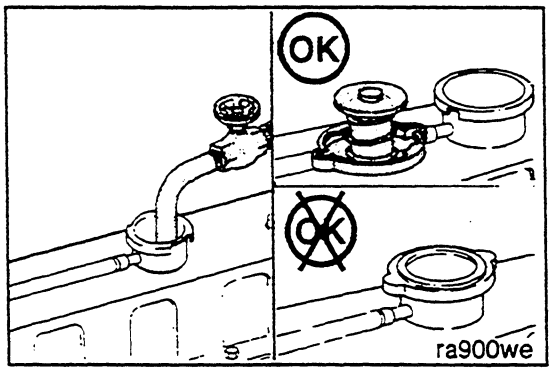
Caution: During filling, air must be vented from the engine coolant passages. Open the engine venting petcock and the petcock on the aftercooler for aftercooled engines. The system must be filled slowly to prevent air locks. Wait 2 to 3 minutes to allow air to be vented, then add mixture to bring the level to the bottom of the radiator filler neck.



Operate the engine for 5 minutes with the coolant temperature above 80°C [176°F].

Shut the engine off, and drain the cooling system.

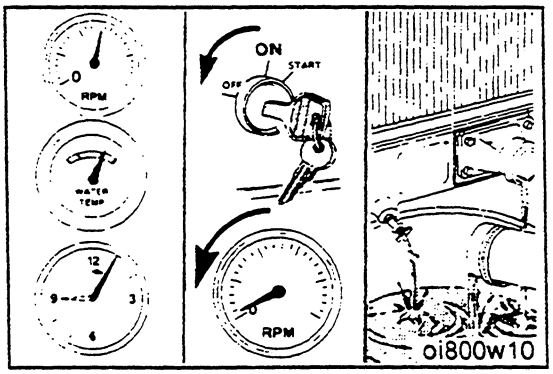




Fill the cooling system with clean water.

NOTE: Be sure to vent the engine and aftercooler for complete filling.

NOTE: Do not install the radiator cap or the new coolant filter.



Operate the engine for 5 minutes with the coolant temperature above 80°C [176°F].

Shut the engine off, and drain the cooling system.

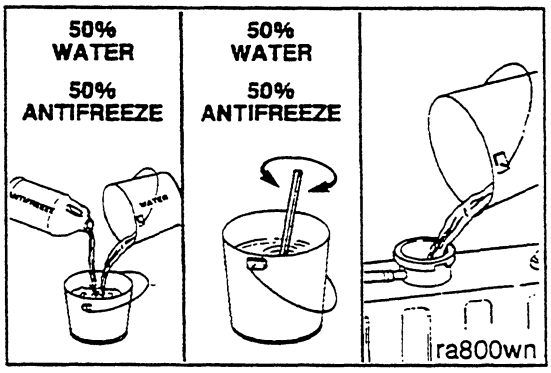
NOTE: If the water being drained is still dirty, the system must be flushed again until the water is clean.

Coolant System Filling

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

NOTE: A 50 percent mixture of antifreeze and water **must** be premixed before filling the system. The ability of antifreeze to remove heat from the engine is not as good as water, so pouring antifreeze into the engine first could contribute to an over heated condition before the liquids are completely mixed.

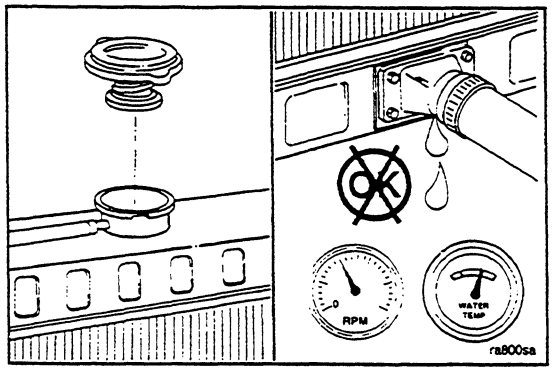
Close all drain valves and fill the system. Use a mixture of 50 percent water and 50 percent ethylene glycol anti-freeze to provide freeze protection to -36°C [-34°F].



Coolant Capacity (Engine Only)		
Liter		U.S. Quarts
10.1	6C8.3	10.5
10.1	6CT8.3*	10.5
12.3	6CTA8.3	13.0

* Same capacity for charge air cooled engines.

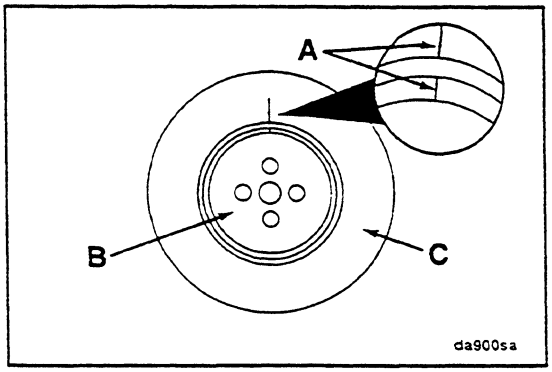
Use the amount of DCA4 corrosion inhibitor given in Section V to protect the cooling system.



Warning: Wait until the coolant temperature is below 50°C [122°F] before removing the pressure cap. Failure to do so can result in personal injury from heated coolant spray.

Caution: During filling, air must be vented from the engine coolant passages. Open the engine venting petcock and the petcock on the aftercooler for aftercooled engines. The system must be filled slowly to prevent air locks. Wait 2 to 3 minutes to allow air to be vented, then add coolant to bring the level to the bottom of the radiator filler neck.

Install the pressure cap. Operate the engine until it reaches a temperature of 80°C [176°F], and check for coolant leaks and add coolant as necessary.



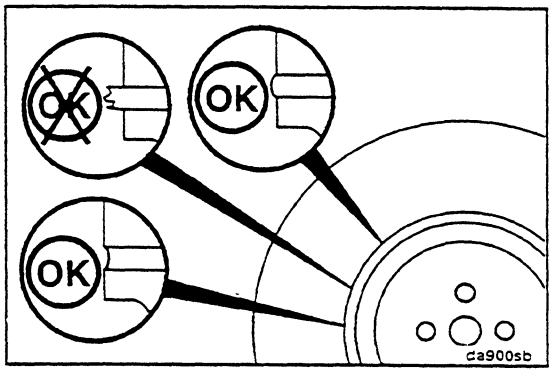
Vibration Damper

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.

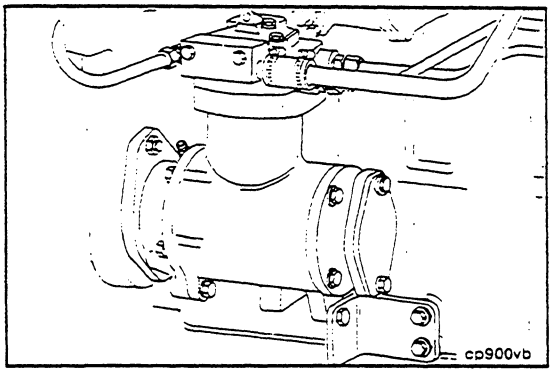
NOTE: Also look for forward movement of the damper ring on the hub. Replace the damper if any movement is detected.



Air Compressor

Inspection

NOTE: All air compressors have a small amount of lubricating oil carry over which lubricates the piston rings and moving parts. When this lubricating oil is exposed to normal air compressor operating temperatures over a period of time, the lubricating oil will form varnish or carbon deposits. If the following inspections are **not** done, the air compressor piston rings will be affected by high operating temperatures and pressures and will **not** seal correctly.



SPECIFICATIONS & RECOMMENDATIONS

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 fuel injection pump and the nozzles.

NOTE: The use of diesel fuel blended with lube oil is **not** acceptable for engines equipped with a catalytic convertor. Automotive engines for model year 1994 and beyond are equipped with a catalyst as a part of emission control.

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 decrease.

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 at 40°C [104°F] to provide adequate fuel system lubrication.

For a more detailed description of fuel properties, refer to Fuel For Cummins Engines, Bulletin No. 3379001-04.

The following chart lists acceptable alternate fuels for MidRange engines.

Acceptable Alternate Fuels Component Wear/Durability

Fuel Type	Bosch Inline Pumps	Nippondenso EP-9
NO. 1-D Diesel	OK	OK
NO. 2 Fuel Oil	OK	OK
NO. 1-K Kerosene	OK	OK
NO. 2-K Kerosene	OK	OK
Jet-A	OK	OK
Jet A-1	OK	OK
JP-5	OK	OK
JP-8	OK	OK
Jet-B	Not ok	Not ok
JP-4	Not ok	Not ok
Cite	Not ok	Not ok

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 injection pump component attributed to the lack of lubrication in the fuel is not a warrantable repair.

Engine Lubricating Oil Recommendations

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

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

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

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

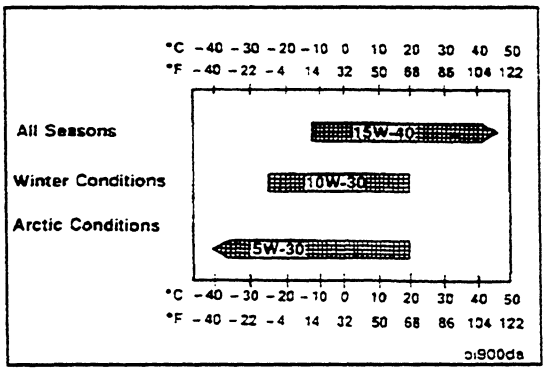
Lubricating Oil Viscosity Recommendations

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

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

For further details and discussion of engine lubricating oils for Cummins engines, refer to Bulletin No. 3810340, Cummins Engine Oil Recommendations.

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



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 CC/CE engine lubricating oil with adequate low temperature properties such as; 5W-20 or 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 lubricating oil change intervals. Extended lubricating oil change intervals can decrease engine life due to factors such as; corrosion, deposits and wear.

Special "break in" engine lubricating oils are **not** recommended for new or rebuilt Cummins engines. Use the same type lubricating oil during the "break in" as that which is used in normal operation.

Caution: A sulfated ash limit of 1.85% has been placed on all engine lubricating oils recommended for use in Cummins engines. Higher ash lubricating oils may cause valve and/or piston damage and lead to excessive lubricating oil consumption.

For natural gas engines, a sulfated ash range of .03 to .85 mass percent is recommended. Cummins Engine Company, Inc., does **not** recommend the use of ashless lubricating oils for natural gas engines.

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

ANTIFREEZE

SPECIFICATIONS - Use low silicate antifreeze which meets ASTM4985 test (GM6038M spec.) criteria.

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.

COOLANT CHANGE RECOMMENDATION - The coolant must be drained and replaced every 385,000 km [240,000 miles], 6,000 hours or 2 years (whichever occurs first) to eliminate buildup of harmful chemicals.

SUPPLEMENTAL COOLANT ADDITIVES

SUPPLEMENTAL COOLANT ADDITIVES (SCA) - Are recommended for all Cummins cooling systems. Antifreeze alone does not provide sufficient corrosion protection for heavy duty diesel engines.

DCA4 is the recommended SCA for all Cummins engines. Other brands can be used provided they provide adaquate engine protection and do not cause seal or gasket degredation or corrosion/fouling.

SCA CONCENTRATION - The recommended concentration level of DCA4 is 1.5 units per 3.7 liter [1 U. S. gallon]. The DCA4 concentration must never exceed 3.0 units per 3.7 liter [1 U.S. gallon] nor fall below 1.2 units per 3.7 liter [1 U.S. gallon].

DCA4 FILTER CHANGE INTERVAL - Supplemental Coolant Addatives deplete during normal engine operation. Cummins recommends that the level be maintained by installation of a service coolant filter on the engine at every 10,000 km [6,000 miles] 250 hours or 3 months interval.

COOLANT TEST KITS

DCA4 CONCENTRATION TESTS - As noted above, the primary method is to maintain proper DCA4 concentration levels by changing the service coolant filter at every 10,000 [6,000 mi] 250 hours or 3 months. Fleetguard DCA4 "dip strip" test Kit Part No. CC 2626 or Fleetguard Monitor C Part No. CC2700 must be used if testing is deemed necessary due to:

- addition of untreated make up coolant in excess of 5.7 liters [6 U.S. quarts] between maintenance intervals.
- troubleshooting of cooling system problems in the fleet (such as corrosion or seal leakage)
- An optional program in some fleets to monitor SCA levels to determine if maintenance intervals are acceptable.

NOTE: The practice of using a test kit to determine when to add or change the coolant filter is specifically not recommended. No other test kit (such as the Fleetguard Titration Test Kit Part No. 3300846-S or the 3825379-S) can be used on Cummins engines with DCA4.

WARRANTY

Cummins Warranty - U.S.A./Canada Industrial

Coverage

PRODUCTS WARRANTED

This warranty applies to new Engines sold by Cummins Engine Company and delivered to the first user on or after February 1, 1993, that are used in 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 results from a defect in material or 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 from the date the Engine reaches 50 hours of operation in demonstration use, whichever of the three 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 after 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 the date the Engine reaches 50 hours of operation in demonstration use, whichever of the three 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 such products. 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 above limitations or exclusions 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, belts, hoses and other maintenance items that are not reusable due to a 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 Cummins Operations and Maintenance Manuals. 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 product 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 coolant or lubricants; overfueling; over-speeding; 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 fuel or by water, dirt or other contaminants in the fuel.

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. This category includes, but is 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 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.

Warranty Continued –

CUMMINS DOES NOT COVER WEAR OR WEAROUT OF COVERED PARTS.

CUMMINS IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

THESE WARRANTIES SET FORTH HEREINAFTER 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.

SERVICE LITERATURE

Additional Service Literature

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

Bulletin No.	Title Of Publication
3666003	C Series Troubleshooting and Repair Manual (1991 Engines)
3666008	C Series Engine Shop Manual (1991 Engines)
3666021	C Series Specifications Manual (1991 Engines)
3810354	C Series Operation & Maintenance Manual - Generator Set
3810428	C Series Operation & Maintenance Manual - Power Unit
3810327	C Series Standard Repair Times Manual

Parts Catalogs

3884251	6CT/CTA-8.3 - Automotive
3884303	6CTA-8.3 Automotive charge air cooled
3884236	6C/CT/CTA-8.3 - Construction
3884253	6CT/CTA-8.3 - Generator Drive
3884311	6C-8.3 - Power Unit
3884312	6CT-8.3 - Power Unit
3884313	6CTA-8.3 - Power Unit

Service Literature Ordering Location

Region	Ordering Location
United States and Canada	Cummins Distributors or Contact 1-800-DIESELS (1-800-343-7357)
U.K., Europe, Mid-East, Africa, and Eastern European Countries	Cummins Engine Co., Ltd. Royal Oak Way South Daventry Northants, NN11 5NU, England
South and Central America (excluding Brazil and Mexico)	Cummins Americas, Inc. 16085 N.W. 52nd Avenue Hialeah, FL 33104
Brazil and Mexico	Cummins Engine Co., Inc. International Parts Order Dept., MC 40931 Box 3005 Columbus, IN 47202-3005
Far East (excluding Australia and New Zealand)	Cummins Diesel Sales Corp. Literature Center 8 Tanjong Penjuru Jurong Industrial Estate Singapore
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. and Canada) by calling Cummins Toll Free Number 1-800-DIESELS (1-800-343-7357).

Literature Order Form

Use this form for prompt handling of your literature order.

Item	Bulletin Number	Title of Publication	Quantity	U.S. Price Each	Amount
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3					
4					
5					
6					
				Order Total	$

Contact your Cummins distributor for prices and availability.

For problems with literature orders, contact 1-800-DIESELS (1-800-343-7357) (for U.S.A. and Canada).

Prices subject to change without notice.

This manual is available in the following languages:

English	35389915
Spanish	35393644
Portuguese	35393164