

# Atlas Copco

# Instruction Manual



Instruction Manual  
for Portable Compressors  
English

XATS 156C - XATS 350  
XAHS 166C - XAHS 350  
XAS 186C - XAS 375  
XAVS 206C - XAVS 450  
XAHS 206C - XAHS 450

Engine - 4BTAA3.9-C125  
6BTAA5.9-C180

*Atlas Copco*



**Instruction Manual  
for Portable Compressors**

**XATS 156C - XATS 350  
XAHS 166C - XAHS 350  
XAS 186C - XAS 375  
XAHS 206C - XAHS 450  
XAVS 206C - XAVS 450**

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ATLAS COPCO - PORTABLE ENERGY DIVISION  
[www.atlascopco.com](http://www.atlascopco.com)

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**Atlas Copco**

Engine - 4BTAA3.9-C125  
6BTAA5.9-C180

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### **Warranty and Liability Limitation**

Use only authorized parts.

Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.

The manufacturer does not accept any liability for any damage arising from modifications, additions or conversions made without the manufacturer's approval in writing.

Neglecting maintenance or making changes to the setup of the machine can result in major hazards, including fire risk.

While every effort has been made to ensure that the information in this manual is correct, Atlas Copco does not assume responsibility for possible errors.

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## Preface

Please read the following instructions carefully before starting to use your machine. Follow the instructions in this booklet and we guarantee you years of troublefree operation.

Always keep the manual available near the machine. In all correspondence always mention the compressor type and serial number, shown on the data plate.

The company reserves the right to make changes without prior notice.

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# Safety precautions



To be read attentively and acted accordingly before towing, lifting, operating, performing maintenance or repairing the unit.

## INTRODUCTION

The policy of Atlas Copco is to provide the users of their equipment with safe, reliable and efficient products. Factors taken into account are among others:

- the intended and predictable future use of the products, and the environments in which they are expected to operate,
- applicable rules, codes and regulations,
- the expected useful product life, assuming proper service and maintenance,
- providing the manual with up-to-date information.

Before handling any product, take time to read the relevant instruction manual. Besides giving detailed operating instructions, it also gives specific information about safety, preventive maintenance, etc.

Keep the manual always at the unit location, easy accessible to the operating personnel.

See also the safety precautions of the engine and possible other equipment, which are separately sent along or are mentioned on the equipment or parts of the unit.

These safety precautions are general and some statements will therefore not always apply to a particular unit.

Only people that have the right skills should be allowed to operate, adjust, perform maintenance or repair on Atlas Copco equipment.

It is the responsibility of management to appoint operators with the appropriate training and skill for each category of job.

### Skill level 1: Operator

An operator is trained in all aspects of operating the unit with the push-buttons, and is trained to know the safety aspects.

### Skill level 2: Mechanical technician

A mechanical technician is trained to operate the unit the same as the operator. In addition, the mechanical technician is also trained to perform maintenance and repair, as described in the instruction manual, and is allowed to change settings of the control and safety system. A mechanical technician does not work on live electrical components.

### Skill level 3: Electrical technician

An electrical technician is trained and has the same qualifications as both the operator and the mechanical technician. In addition, the electrical technician may carry out electrical repairs within the various enclosures of the unit. This includes work on live electrical components.

### Skill level 4: Specialist from the manufacturer

This is a skilled specialist sent by the manufacturer or its agent to perform complex repairs or modifications to the equipment.

In general it is recommended that not more than two people operate the unit, more operators could lead to unsafe operating conditions.

Take necessary steps to keep unauthorized persons away from the unit and eliminate all possible sources of danger at the unit.

When handling, operating, overhauling and/or performing maintenance or repair on Atlas Copco equipment, the mechanics are expected to use safe engineering practices and to observe all relevant local safety requirements and ordinances. The following list is a reminder of special safety directives and precautions mainly applicable to Atlas Copco equipment.

These safety precautions apply to machinery processing or consuming air. Processing of any other gas requires additional safety precautions typical to the application and are not included herein.

Neglecting the safety precautions may endanger people as well as environment and machinery:

- endanger people due to electrical, mechanical or chemical influences,
- endanger the environment due to leakage of oil, solvents or other substances,
- endanger the machinery due to function failures.

All responsibility for any damage or injury resulting from neglecting these precautions or by non-observance of ordinary caution and due care required in handling, operating, maintenance or repair, also if not expressly mentioned in this instruction manual, is disclaimed by Atlas Copco.

The manufacturer does not accept any liability for any damage arising from the use of non-original parts and for modifications, additions or conversions made without the manufacturer's approval in writing.

If any statement in this manual does not comply with local legislation, the stricter of the two shall be applied.

Statements in these safety precautions should not be interpreted as suggestions, recommendations or inducements that it should be used in violation of any applicable laws or regulations.

## GENERAL SAFETY PRECAUTIONS

- 1 The owner is responsible for maintaining the unit in a safe operating condition. Unit parts and accessories must be replaced if missing or unsuitable for safe operation.
- 2 The supervisor, or the responsible person, shall at all times make sure that all instructions regarding machinery and equipment operation and maintenance are strictly followed and that the machines with all accessories and safety devices, as well as the consuming devices, are in good repair, free of abnormal wear or abuse, and are not tampered with.
- 3 Whenever there is an indication or any suspicion that an internal part of a machine is overheated, the machine shall be stopped but no inspection covers shall be opened before sufficient cooling time has elapsed; this to avoid the risk of spontaneous ignition of oil vapour when air is admitted.
- 4 Normal ratings (pressures, temperatures, speeds, etc.) shall be durably marked.
- 5 Operate the unit only for the intended purpose and within its rated limits (pressure, temperature, speeds, etc.).
- 6 The machinery and equipment shall be kept clean, i.e. as free as possible from oil, dust or other deposits.
- 7 To prevent an increase in working temperature, inspect and clean heat transfer surfaces (cooler fins, intercoolers, water jackets, etc.) regularly. See the **Preventive maintenance schedule for the compressor**.
- 8 All regulating and safety devices shall be maintained with due care to ensure that they function properly. They may not be put out of action.
- 9 Care shall be taken to avoid damage to safety valves and other pressure-relief devices, especially to avoid plugging by paint, oil coke or dirt accumulation, which could interfere with the functioning of the device.
- 10 Pressure and temperature gauges shall be checked regularly with regard to their accuracy. They shall be replaced whenever outside acceptable tolerances.
- 11 Safety devices shall be tested as described in the maintenance schedule of the instruction manual to determine that they are in good operating condition. See the **Preventive maintenance schedule for the compressor**.
- 12 Mind the markings and information labels on the unit.
- 13 In the event the safety labels are damaged or destroyed, they must be replaced to ensure operator safety.
- 14 Keep the work area neat. Lack of order will increase the risk of accidents.
- 15 When working on the unit, wear safety clothing. Depending on the kind of activities these are: safety glasses, ear protection, safety helmet (including visor), safety gloves, protective clothing, safety shoes. Do not wear the hair long and loose (protect long hair with a hairnet), or wear loose clothing or jewellery.
- 16 Take precautions against fire. Handle fuel, oil and anti-freeze with care because they are inflammable substances. Do not smoke or approach with naked flame when handling such substances. Keep a fire-extinguisher in the vicinity.

## **SAFETY DURING TRANSPORT AND INSTALLATION**

Transport of the unit has to be done by authorized/experienced people.

When towing, lifting or transporting the compressor in any way, the battery switch must always be switched off.

To lift a unit, all loose or pivoting parts, e.g. doors and towbar, shall first be securely fastened.

Do not attach cables, chains or ropes directly to the lifting eye; apply a crane hook or lifting shackle meeting local safety regulations. Never allow sharp bends in lifting cables, chains or ropes.

Helicopter lifting is not allowed.

It is strictly forbidden to dwell or stay in the risk zone under a lifted load. Never lift the unit over people or residential areas. Lifting acceleration and retardation shall be kept within safe limits.

### **1 Before towing the unit:**

- ascertain that the pressure vessel(s) is (are) depressurized,
- check the towbar, the brake system and the towing eye. Also check the coupling of the towing vehicle,
- check the towing and brake capability of the towing vehicle,
- check that the towbar, jockey wheel or stand leg is safely locked in the raised position,
- keep hands/fingers away from the coupling device and all other potential pinch points. Keep feet away from the towbar to avoid injury if it should slip,
- ascertain that the towing eye can swivel freely on the hook,

- check that the wheels are secure and that the tyres are in good condition and inflated correctly,
  - connect the signalisation cable, check all lights and connect the pneumatic brake couplers, ascertain that the signalisation cable can not drag on the ground when towing the unit,
  - attach the safety break-away cable or safety chain to the towing vehicle,
  - remove wheel chocks, if applied, and disengage the parking brake,
  - check whether springs on wheelchocks are missing or broken.
- 2 To tow a unit use a towing vehicle of ample capacity. Refer to the documentation of the towing vehicle.
  - 3 If the unit is to be backed up by the towing vehicle, disengage the overrun brake mechanism (if it is not an automatic mechanism).
  - 4 Never exceed the maximum towing speed of the unit (mind the local regulations).
  - 5 Place the unit on level ground and apply the parking brake before disconnecting the unit from the towing vehicle. Unclip the safety break-away cable or safety chain. If the unit has no parking brake or jockey wheel, immobilize the unit by placing chocks in front of and/or behind the wheels. When the towbar can be positioned vertically, the locking device must be applied and kept in good order. The unit must always be used/parked/stored in a non publicly accessible area, locked away from access by unauthorized persons.
  - 6 To lift heavy parts, a hoist of ample capacity, tested and approved according to local safety regulations, shall be used.
  - 7 Lifting hooks, eyes, shackles, etc., shall never be bent and shall only have stress in line with their design load axis. The capacity of a lifting device diminishes when the lifting force is applied at an angle to its load axis.
  - 8 For maximum safety and efficiency of the lifting apparatus all lifting members shall be applied as near to perpendicular as possible. If required, a lifting beam shall be applied between hoist and load.
  - 9 Never leave a load hanging on a hoist.
  - 10 A hoist has to be installed in such a way that the object will be lifted perpendicular. If that is not possible, the necessary precautions must be taken to prevent load-swinging, e.g. by using two hoists, each at approximately the same angle not exceeding 30° from the vertical.
  - 11 Locate the unit away from walls. Take all precautions to ensure that hot air exhausted from the engine and driven machine cooling systems cannot be recirculated. If such hot air is taken in by the engine or driven machine cooling fan, this may cause overheating of the unit; if taken in for combustion, the engine power will be reduced.

## SAFETY DURING USE AND OPERATION

- 1 When the unit has to operate in a fire-hazardous environment, each engine exhaust has to be provided with a spark arrester to trap incendiary sparks.
- 2 The exhaust contains carbon monoxide which is a lethal gas. When the unit is used in a confined space, conduct the engine exhaust to the outside atmosphere by a pipe of sufficient diameter; do this in such a way that no extra back pressure is created for the engine. If necessary, install an extractor. Observe any existing local regulations. Make sure that the unit has sufficient air intake for operation. If necessary, install extra air intake ducts.
- 3 When operating in a dust-laden atmosphere, place the unit so that dust is not carried towards it by the wind. Operation in clean surroundings considerably extends the intervals for cleaning the air intake filters and the cores of the coolers.
- 4 Close the compressor air outlet valve before connecting or disconnecting a hose. Ascertain that a hose is fully depressurized before disconnecting it. Before blowing compressed air through a hose or air line, ensure that the open end is held securely, so that it cannot whip and cause injury.
- 5 The air line end connected to the outlet valve must be safeguarded with a safety cable, attached next to the valve.
- 6 No external force may be exerted on the air outlet valves, e.g. by pulling on hoses or by installing auxiliary equipment directly to a valve, e.g. a water separator, a lubricator, etc. Do not step on the air outlet valves.
- 7 Never move a unit when external lines or hoses are connected to the outlet valves, to avoid damage to valves, manifold and hoses.
- 8 Do not use compressed air from any type of compressor, without taking extra measures, for breathing purposes as this may result in injury or death. For breathing air quality, the compressed air must be adequately purified according to local legislation and standards. Breathing air must always be supplied at stable, suitable pressure.
- 9 Distribution pipework and air hoses must be of correct diameter and suitable for the working pressure. Never use frayed, damaged or deteriorated hoses. Replace hoses and flexibles before the lifetime expires. Use only the correct type and size of hose end fittings and connections.
- 10 If the compressor is to be used for sand-blasting or will be connected to a common compressed-air system, fit an appropriate non-return valve (check valve) between compressor outlet and the connected sand-blasting or compressed-air system. Observe the right mounting position/direction.
- 11 Before removing the oil filler plug, ensure that the pressure is released by opening an air outlet valve.
- 12 Never remove a filler cap of the cooling water system of a hot engine. Wait until the engine has sufficiently cooled down.
- 13 Never refill fuel while the unit is running, unless otherwise stated in the Atlas Copco Instruction Book (AIB). Keep fuel away from hot parts such as air outlet pipes or the engine exhaust. Do not smoke when fuelling. When fuelling from an automatic pump, an earthing cable should be connected to the unit to discharge static electricity. Never spill nor leave oil, fuel, coolant or cleansing agent in or around the unit.
- 14 All doors shall be shut during operation so as not to disturb the cooling air flow inside the bodywork and/or render the silencing less effective. A door should be kept open for a short period only e.g. for inspection or adjustment.
- 15 Periodically carry out maintenance works according to the maintenance schedule.
- 16 Stationary housing guards are provided on all rotating or reciprocating parts not otherwise protected and which may be hazardous to personnel. Machinery shall never be put into operation, when such guards have been removed, before the guards are securely reinstalled.
- 17 Noise, even at reasonable levels, can cause irritation and disturbance which, over a long period of time, may cause severe injuries to the nervous system of human beings. When the sound pressure level, at any point where personnel normally has to attend, is:
  - below 70 dB(A): no action needs to be taken,
  - above 70 dB(A): noise-protective devices should be provided for people continuously being present in the room,
  - below 85 dB(A): no action needs to be taken for occasional visitors staying a limited time only,
  - above 85 dB(A): room to be classified as a noise-hazardous area and an obvious warning shall be placed permanently at each entrance to alert people entering the room, for even relatively short times, about the need to wear ear protectors,
  - above 95 dB(A): the warning(s) at the entrance(s) shall be completed with the recommendation that also occasional visitors shall wear ear protectors,
  - above 105 dB(A): special ear protectors that are adequate for this noise level and the spectral composition of the noise shall be provided and a special warning to that effect shall be placed at each entrance.

- 18 The unit has parts, which may be accidentally touched by personal, of which the temperature can be in excess of 80°C (176°F). The insulation or safety guard, protecting these parts shall not be removed before the parts have cooled down to room temperature. As it is technically not possible to insulate all hot parts or to install safety guards around hot parts (e.g. exhaust manifold, exhaust turbine), the operator / service engineer must always be aware not to touch hot parts when opening a machine door.
- 19 Never operate the unit in surroundings where there is a possibility of taking in flammable or toxic fumes.
- 20 If the working process produces fumes, dust or vibration hazards, etc., take the necessary steps to eliminate the risk of personal injury.
- 21 When using compressed air or inert gas to clean down equipment, do so with caution and use the appropriate protection, at least safety glasses, for the operator as well as for any bystander. Do not apply compressed air or inert gas to your skin or direct an air or gas stream at people. Never use it to clean dirt from your clothes.
- 22 When washing parts in or with a cleaning solvent, provide the required ventilation and use appropriate protection such as a breathing filter, safety glasses, rubber apron and gloves, etc.
- 23 Safety shoes should be compulsory in any workshop and if there is a risk, however small, of falling objects, wearing of a safety helmet should be included.
- 24 If there is a risk of inhaling hazardous gases, fumes or dust, the respiratory organs must be protected and depending on the nature of the hazard, so must the eyes and skin.
- 25 Remember that where there is visible dust, the finer, invisible particles will almost certainly be present too; but the fact that no dust can be seen is not a reliable indication that dangerous, invisible dust is not present in the air.
- 26 Never operate the unit at pressures or speeds below or in excess of its limits as indicated in the technical specifications.

## **SAFETY DURING MAINTENANCE AND REPAIR**

Maintenance, overhaul and repair work shall only be carried out by adequately trained personnel; if required, under supervision of someone qualified for the job.

- 1 Use only the correct tools for maintenance and repair work, and only tools which are in good condition.
- 2 Parts shall only be replaced by genuine Atlas Copco replacement parts.
- 3 All maintenance work, other than routine attention, shall only be undertaken when the unit is stopped. Steps shall be taken to prevent inadvertent starting. In addition, a warning sign bearing a legend such as "work in progress; do not start" shall be attached to the starting equipment. On engine-driven units the battery shall be disconnected and removed or the terminals covered by insulating caps. On electrically driven units the main switch shall be locked in open position and the fuses shall be taken out. A warning sign bearing a legend such as "work in progress; do not supply voltage" shall be attached to the fuse box or main switch.
- 4 Before dismantling any pressurized component, the compressor or equipment shall be effectively isolated from all sources of pressure and the entire system shall be relieved of pressure. Do not rely on non-return valves (check valves) to isolate pressure systems. In addition, a warning sign bearing a legend such as "work in progress; do not open" shall be attached to each of the outlet valves.
- 5 Prior to stripping an engine or other machine or undertaking major overhaul on it, prevent all movable parts from rolling over or moving.

- 6 Make sure that no tools, loose parts or rags are left in or on the machine. Never leave rags or loose clothing near the engine air intake.
- 7 Never use flammable solvents for cleaning (fire-risk).
- 8 Take safety precautions against toxic vapours of cleaning liquids.
- 9 Never use machine parts as a climbing aid.
- 10 Observe scrupulous cleanliness during maintenance and repair. Keep away dirt, cover the parts and exposed openings with a clean cloth, paper or tape.
- 11 Never weld on or perform any operation involving heat near the fuel or oil systems. Fuel and oil tanks must be completely purged, e.g. by steam-cleaning, before carrying out such operations. Never weld on, or in any way modify, pressure vessels. Disconnect the alternator cables during arc welding on the unit.
- 12 Support the towbar and the axle(s) securely if working underneath the unit or when removing a wheel. Do not rely on jacks.
- 13 Do not remove any of, or tamper with, the sound-damping material. Keep the material free of dirt and liquids such as fuel, oil and cleansing agents. If any sound-damping material is damaged, replace it to prevent the sound pressure level from increasing.
- 14 Use only lubricating oils and greases recommended or approved by Atlas Copco or the machine manufacturer. Ascertain that the selected lubricants comply with all applicable safety regulations, especially with regard to explosion or fire-risk and the possibility of decomposition or generation of hazardous gases. Never mix synthetic with mineral oil.
- 15 Protect the engine, alternator, air intake filter, electrical and regulating components, etc., to prevent moisture ingress, e.g. when steam-cleaning.
- 16 When performing any operation involving heat, flames or sparks on a machine, the surrounding components shall first be screened with non-flammable material.
- 17 Never use a light source with open flame for inspecting the interior of a machine.
- 18 When repair has been completed, the machine shall be barred over at least one revolution for reciprocating machines, several revolutions for rotary ones to ensure that there is no mechanical interference within the machine or driver. Check the direction of rotation of electric motors when starting up the machine initially and after any alteration to the electrical connection(s) or switch gear, to check that the oil pump and the fan function properly.
- 19 Maintenance and repair work should be recorded in an operator's logbook for all machinery. Frequency and nature of repairs can reveal unsafe conditions.
- 20 When hot parts have to be handled, e.g. shrink fitting, special heat-resistant gloves shall be used and, if required, other body protection shall be applied.
- 21 When using cartridge type breathing filter equipment, ascertain that the correct type of cartridge is used and that its useful service life is not surpassed.
- 22 Make sure that oil, solvents and other substances likely to pollute the environment are properly disposed of.
- 23 Before clearing the unit for use after maintenance or overhaul, check that operating pressures, temperatures and speeds are correct and that the control and shutdown devices function correctly.

## **TOOL APPLICATIONS SAFETY**

Apply the proper tool for each job. With the knowledge of correct tool use and knowing the limitations of tools, along with some common sense, many accidents can be prevented.

Special service tools are available for specific jobs and should be used when recommended. The use of these tools will save time and prevent damage to parts.

## SPECIFIC SAFETY PRECAUTIONS

### Batteries

When servicing batteries, always wear protecting clothing and glasses.

- 1 The electrolyte in batteries is a sulphuric acid solution which is fatal if it hits your eyes, and which can cause burns if it contacts your skin. Therefore, be careful when handling batteries, e.g. when checking the charge condition.
- 2 Install a sign prohibiting fire, open flame and smoking at the post where batteries are being charged.
- 3 When batteries are being charged, an explosive gas mixture forms in the cells and might escape through the vent holes in the plugs. Thus an explosive atmosphere may form around the battery if ventilation is poor, and can remain in and around the battery for several hours after it has been charged. Therefore:
  - never smoke near batteries being, or having recently been, charged,
  - never break live circuits at battery terminals, because a spark usually occurs.
- 4 When connecting an auxiliary battery (AB) in parallel to the unit battery (CB) with booster cables: connect the + pole of AB to the + pole of CB, then connect the – pole of CB to the mass of the unit. Disconnect in the reverse order.

### Pressure vessels

(according to directive 87/404/EEC annex II § 2)

Maintenance/installation requirements:

- 1 The vessel can be used as pressure vessel or as separator and is designed to hold compressed air for the following application:
  - pressure vessel for compressor,
  - medium AIR/OIL,and operates as detailed on the data plate of the vessel:
  - the maximum working pressure ps in bar (psi),
  - the maximum working temperature Tmax in °C (°F),
  - the minimum working temperature Tmin in °C (°F),
  - the capacity of the vessel V in l (US gal).
- 2 The pressure vessel is only to be used for the applications as specified above and in accordance with the technical specifications. Safety reasons prohibit any other applications.
- 3 National legislation requirements with respect to re-inspection must be complied with.
- 4 No welding or heat treatment of any kind is permitted to those vessel walls which are exposed to pressure.
- 5 The vessel is provided and may only be used with the required safety equipment such as manometer, overpressure control devices, safety valve, etc.
- 6 Draining of condensate shall be performed daily when vessel is in use.
- 7 Installation, design and connections should not be changed.
- 8 Bolts of cover and flanges may not be used for extra fixation.

### Safety valves

All adjustments or repairs are to be done by an authorized representative of the valve supplier (see also **Preventive maintenance schedule for the compressor**).

# Leading particulars

## DESCRIPTION OF SAFETY PICTOGRAMS USED IN THIS MANUAL

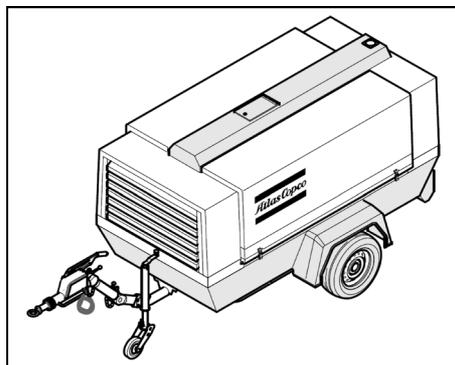


This symbol draws your attention to dangerous situations. The operation concerned may endanger persons and cause injuries.



This symbol is followed by supplementary information.

## GENERAL DESCRIPTION



The compressors XATS 156C - XATS 350, XAHS 166C - XAHS 350, XAS 186C - XAS 375, XAHS 206C - XAHS 450 and XAVS 206C - XAVS 450 are silenced, single-stage, oil-injected screw compressors, built for a nominal effective working pressure, ranging from 7 bar (102 psi) up to 14 bar (175 psi) (see chapter **Technical specifications**).

### Engine

The compressors are driven by a liquid-cooled diesel engine.

The engine's power is transmitted to the compressor through a heavy-duty coupling.

## Compressor

The compressor casing houses two screw-type rotors, mounted on ball and roller bearings. The male rotor, driven by the engine, drives the female rotor. The element delivers pulsation-free air.

Injected oil is used for sealing, cooling and lubricating purposes.

### Compressor oil system

The oil is boosted by air pressure. The system has no oil pump.

The oil is removed from the air, in the air/oil vessel at first by centrifugal force, secondly by the oil separator element.

The vessel is provided with an oil level indicator.

### Regulation

The compressor is provided with a continuous regulating system and a blow-down valve which is integrated in the unloader assembly. The valve is closed during operation by air receiver pressure and opens by air receiver pressure via the compressor element when the compressor is stopped.

When the air consumption increases, the air receiver pressure will decrease and vice versa.

This receiver pressure variation is sensed by the regulating valve which, by means of control air to the unloader and engine speed regulator, matches the air output to the air consumption. The air receiver pressure is maintained between the pre-selected working pressure and the corresponding unloading pressure.

## Cooling system

The engine is equipped with a liquid cooler and intercooler. All compressors are equipped with an oil cooler.

The cooling air is generated by a fan, driven by the engine.

## Safety devices

A thermal shut-down switch protects the compressor against overheating. The air receiver is provided with a safety valve.

The engine is equipped with low oil pressure and high oil temperature shut-down switches.

## Frame and axle

The compressor/engine unit is supported by rubber buffers in the frame.

The standard unit has a non-adjustable towbar with a towing eye.

As an option the unit can be equipped with an adjustable towbar, an overrun and parking brake and towing eyes type DIN, ball, ITA, GB, NATO, AC (France), (see chapter **Available options**).

The braking system consists of an integrated parking brake and overrunbrake. When driving backwards the overrunbrake is not engaged automatically.

## Bodywork

The bodywork has openings at the shaped front and rear end for the intake and outlet of cooling air and hinged door for maintenance and service operations. The bodywork is internally lined with sound-absorbing material.

## Lifting eye

A lifting eye is accessible when the small door at the top of the unit is unlocked.

## Control panel

The control panel grouping the air pressure gauge, control switch etc., is placed in the center at the rear end.

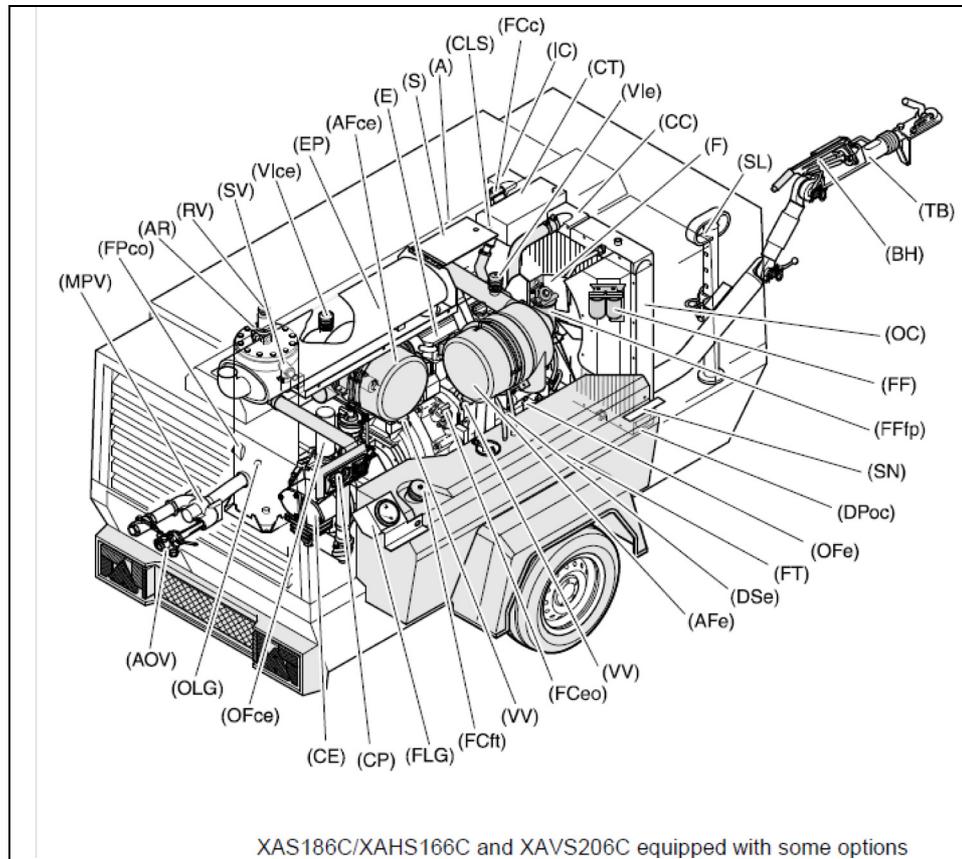
## Data plate

The compressor is furnished with a data plate showing the product code, the unit number and the working pressure (see chapter **Data Plate**).

## Serial number

The serial number is located on the right-hand side towards the front on the upper edge of the frame and also on the data plate.

# Main Parts

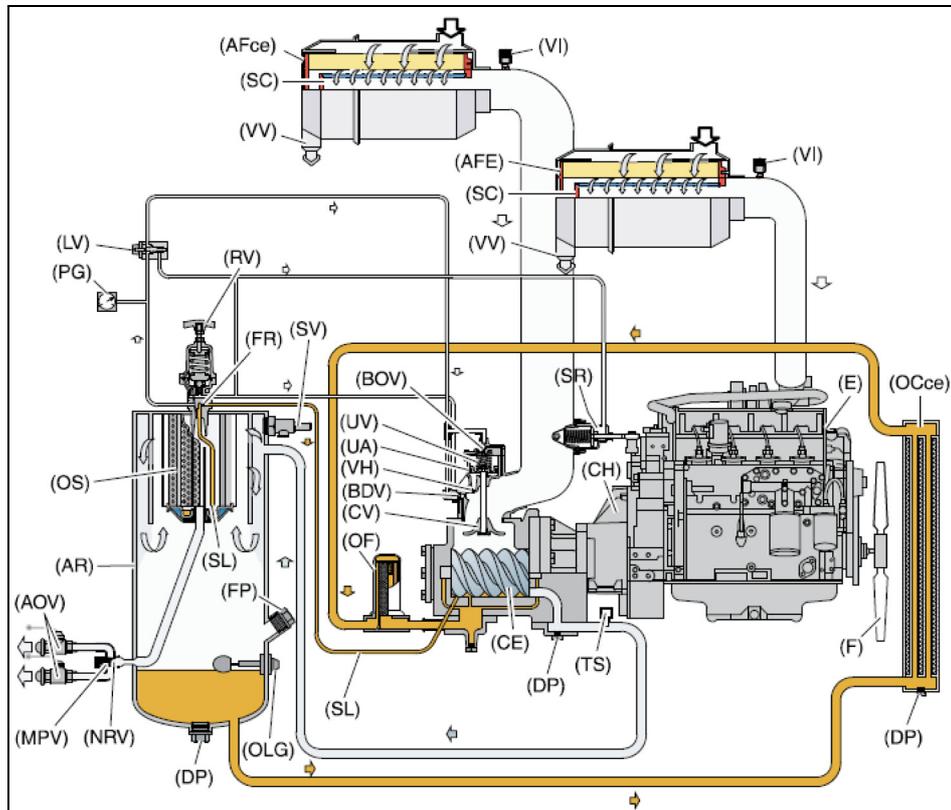


Reference	Name
A	Alternator
AFce	Air Filter (compressor element)
AFe	Air Filter (engine)
AOV	Air Outlet Valves
AR	Air Receiver
BH	Battery
CC	Coolant Cooler
CE	Compressor Element
CLS	Coolant Level Switch
CP	Control Panel
CT	Coolant Tank
DPoc	Drain Plug Oil Cooler
DSe	Engine Oil Level Dipstick
E	Engine
EP	Exhaust Pipe
F	Fan
FCeo	Filler Cap (engine oil)
FCft	Filler Cap (fuel tank)
FCc	Filler Cap (coolant)
FF	Fuel Filter
FFfp	Fuel Prefilter
FLG	Fuel Level Gauge
FPco	Filler Plug (compressor oil)
FT	Fuel Tank

Reference	Name
IC	Intercooler
MPV	Minimum Pressure Valve
OC	Oil Cooler
OFce	Oil Filter (compressor element)
OFe	Oil Filter (engine)
OLG	Oil Level Gauge (compressor element)
RV	Regulating Valve
S	Starting Motor
SL	Support Leg
SN	Serial Number
SV	Safety Valve
TB	Towbar
VIce	Vacuum Indicator (compressor element)
VIe	Vacuum Indicator (engine)
VV	Vacuator Valve

## COMPRESSOR REGULATING SYSTEM

### OVERVIEW (LOAD CONDITION)



Reference	Name
AFce	Air Filter (compressor element)
AFe	Air Filter (engine)
AOV	Air Outlet Valves
AR	Air Receiver
BDV	Blow Down Valve
BOV	Blow Off Valve
CE	Compressor Element
CH	Coupling Housing
CV	Check Valve
DP	Drain Plug
E	Engine
F	Fan
FP	Filler Plug
FR	Flow Restrictor
LV	Loading Valve
MPV	Minimum Pressure Valve
NRV	Non Return Valve
OCce	Oil Cooler (compressor element)
OF	Oil Filter
OLG	Oil Level Gauge
OS	Oil Separator

Reference	Name
PG	Pressure Gauge
RV	Regulating Valve
SC	Safety Cartridge (option)
SL	Scavenge Line
SR	Speed Regulator
SV	Safety Valve
TS	Temperature Switch
UA	Unloader Assembly
UV	Unloader Valve
VH	Vent Hole
VI	Vacuum Indicator
VV	Vacuator Valve

## AIR FLOW

### The system comprises:

AF	Air filter
AR/OS	Air receiver/oil separator
CE	Compressor element
UA/UV	Unloader assembly with unloader valve
BDV	Blow-down valve
LV	Loading valve

Air drawn through the airfilter (AFce) into the compressor element (CE) is compressed. At the element outlet, compressed air and oil pass into the air receiver/oil separator (AR/OS).

The check valve (CV) prevents blow-back of compressed air when the compressor is stopped. In the air receiver/oil separator (AR/OS), most of the oil is removed from the air/oil mixture; the remaining oil is removed by the separator element.

The oil collects in the receiver and on the bottom of the separator element.

The air leaves the receiver via a minimum pressure valve (MPV) which prevents the receiver pressure from dropping below the minimum working pressure (specified in section **Limitations**), even when the air outlet valves are open. This ensures adequate oil injection and prevents oil consumption.

A temperature switch (TS) and a working pressure gauge (WPG) are comprised in the system.

A blow-down valve (BDV) is fitted in the unloader assembly to automatically depressurise the air receiver (AR) when the compressor is stopped.

## OIL SYSTEM

### The system comprises:

AR/OS	Air receiver/oil separator
OC	Oil cooler
OF	Oil filter

The lower part of the air receiver (AR) serves as an oil tank.

Air pressure forces the oil from the air receiver/oil separator (AR/OS) through the oil cooler (OCce) and oil filter (OF) to the compressor element (CE).

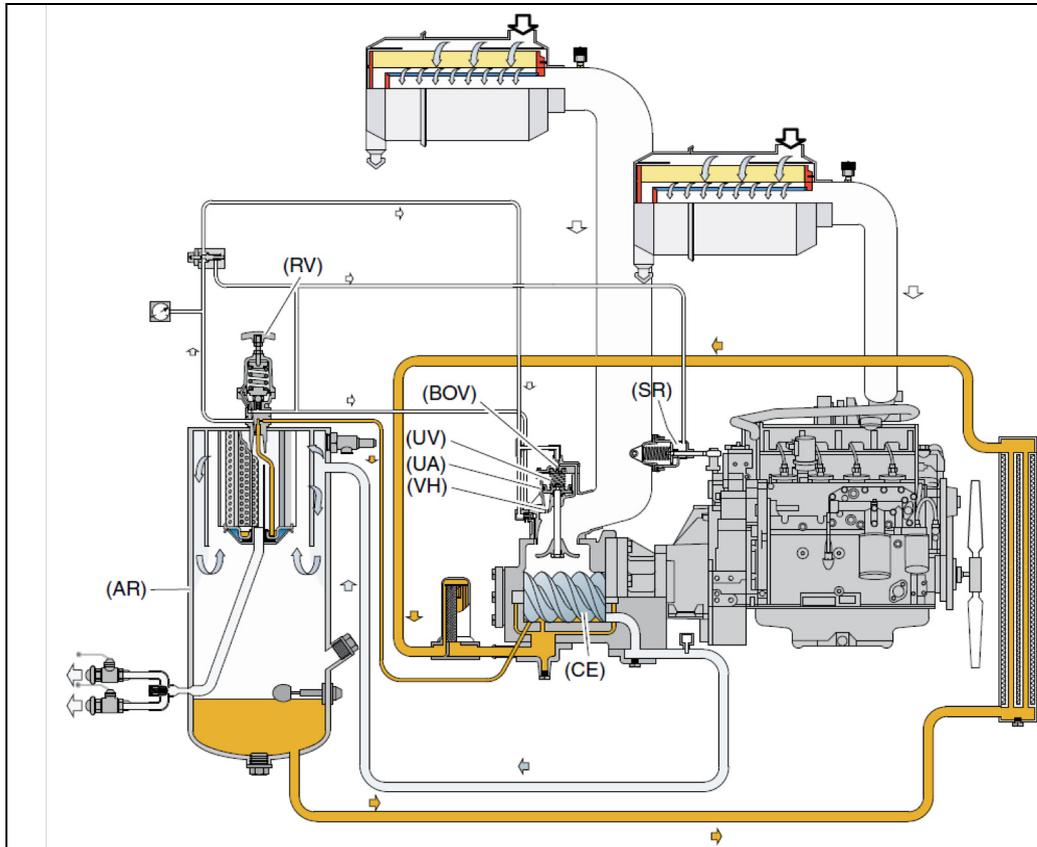
The compressor element has an oil gallery in the bottom of its casing. The oil for rotor lubrication, cooling and sealing is injected through holes in the gallery.

Lubrication of the bearings is ensured by oil injected into the bearing housings.

The injected oil, mixed with the compressed air, leaves the compressor element and re-enters the air receiver, where it is separated from the air as described in section **Air flow**. The oil that collects on the bottom of the oil separator element is returned to the system through a scavenging line (SL), which is provided with a flow restrictor (FR).

The oil filter by-pass valve opens when the pressure drop over the filter is above normal because of a clogged filter. The oil then by-passes the filter without being filtered. For this reason, the oil filter must be replaced at regular intervals (see section **Preventive maintenance schedule for the compressor**).

## CONTINUOUS REGULATING SYSTEM



**The system comprises:**

RV	Regulating valve
UA	Unloader assembly
SR	Speed regulator

The compressor is provided with a continuous regulating system. This system is provided with a blow-down valve, which is integrated in the unloader assembly (UA). The valve is closed during operation by air receiver pressure and opens by air receiver pressure via the compressor element when the compressor is stopped.

When the air consumption increases, the air receiver pressure will decrease and vice versa. This receiver pressure variation is sensed by the regulating valve which, by means of control air to the unloader, matches the air output to the air consumption. The air receiver pressure is maintained between the pre-selected working pressure and the corresponding unloading pressure.

When starting the compressor, the unloader valve (UV) is kept open by spring force, the engine runs at maximum speed. The compressor element (CE) takes in air and pressure builds up inside the receiver (AR).

The air output is controlled from maximum output (100%) to no output (0%) by:

1. Speed control of the engine between maximum load speed and unloading speed (the output of a screw compressor is proportional to the rotating speed).
9. Air inlet throttling.
10. Blow off valve (BOV).

If the air consumption is equal to or exceeds the maximum air output, the engine speed is held at maximum load speed and the unloading valve is fully open.

If the air consumption is less than the maximum air output, the regulating valve supplies control air to unloader valve (UV) to reduce the air output and holds air receiver pressure between the normal working pressure and the corresponding unloading pressure at approx. 1.5 bar (22 psi) above the normal working pressure.

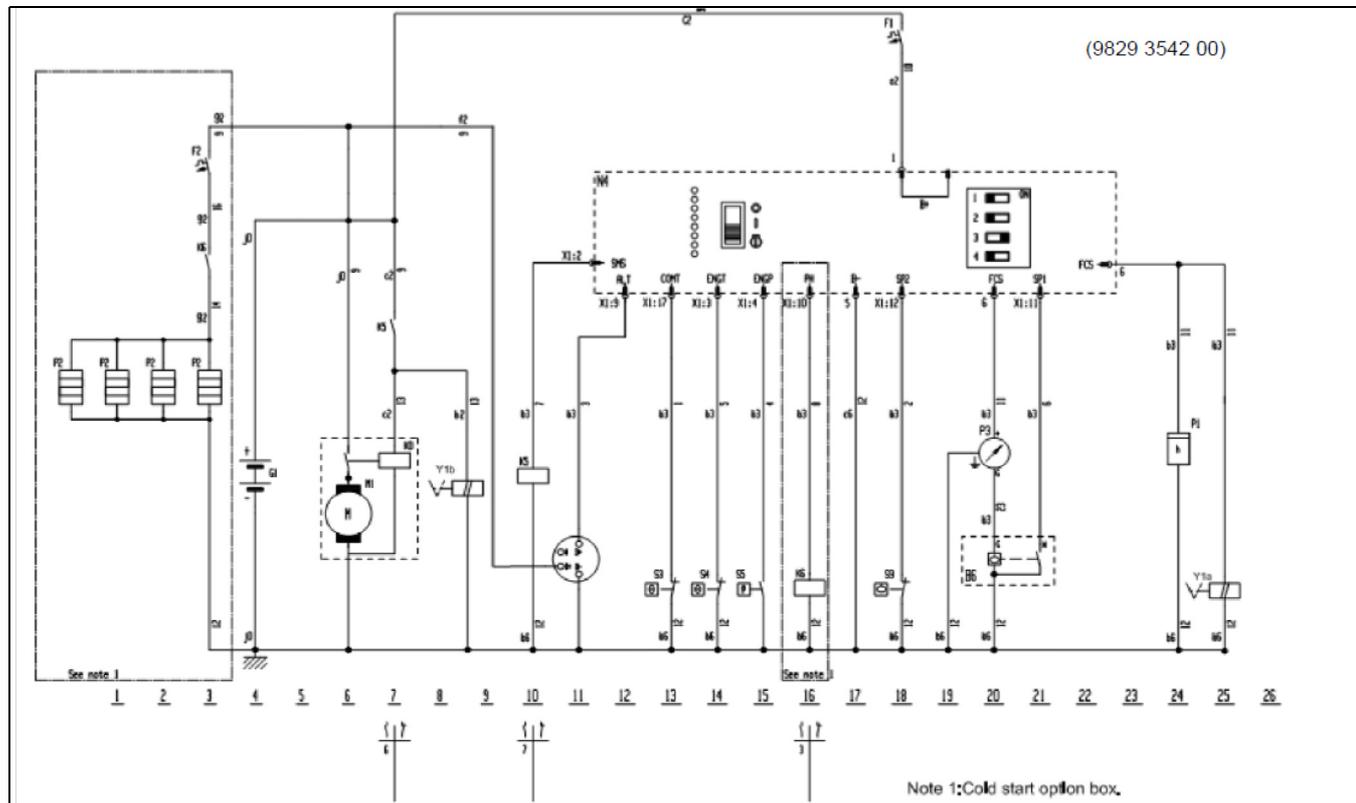
When the air consumption is resumed, the blow off valve (BOV) closes and the unloader valve (UV) gradually opens the air intake and the speed regulator (SR) increases the engine speed.

The construction of the regulating valve (RV) is such that any increase (decrease) of the air receiver pressure above the pre-set valve opening pressure results in a proportional increase (decrease) of the control pressure to the unloading valve and the speed regulator.

Part of the control air is vented into the atmosphere, and any condensate discharged, through the vent holes (VH).

## ELECTRICAL SYSTEM

All compressors are equipped with a negative earthed system.



Reference	Name
1	To be used with Cold Start Option.
2	To be used with Refinery Equipment.
3	Position of DIP-switches.
B6	Fuel Level Sensor
F1	Circuit Breaker
G1	Battery 12V
G2	Charging Alternator
K0	Starter Solenoid
K5	Auxiliary Starter Relay
K6	Cold Start Relay
K9	Overspeed Relay
M1	Starter Motor
N4	Control Module
N5	Overspeed Control Module
P1	Hourmeter
P2	Glowplug
P3	Fuel Level Gauge
S3	Compressor Temperature Switch
S4	Engine Temperature Switch
S5	Engine Low Oil Pressure Switch
S7	Overspeed Control Test Switch
S8	Push Button
S9	Coolant Level Switch
X1	Module Connector

Reference	Name
Y1	Fuel Stop Solenoid
Y2	Excess Fuel Provider
Y3	Overspeed Solenoid



**For correct functioning of the module, the dip switches at the back of the module should be positioned as follows.**

#### **DIP SWITCHES FOR XAVS 206C / XAHS 166C / XAS 186C**

Standard (no coldstart)

With coldstart option



Not used  
Preheat-Coldstart  
Low fuel level  
Low coolant level



## MARKINGS AND INFORMATION LABELS

	Compressor outlet temperature too high.
	Compressor outlet temperature.
	Compressor outlet pressure.
	Dangerous outlet gases.
	Danger, hot surface.
	Electrocution hazard.
	Atlas Copco mineral compressor oil.
	Atlas Copco synthetic compressor oil.
	Atlas Copco mineral engine oil.
	Atlas Copco synthetic engine oil.
	Manual.
	Read the instruction manual before working on the battery.
	Reset fuse.

	On / off button.
	Hours, time.
	Prohibition to open air valves without connected hoses.
	Compressor loaded.
	Runlamp.
	Airfilter.
	Compressor temperature too high.
	Rotation direction.
	Inlet.
	Outlet.
	Compressor oil drain.
	Read the instruction manual before starting.

	Service every 24 hours.
	Warning! Part under pressure.
	Do not stand on outlet valves.
	Start-Stop indication of switch.
	Do not run the compressor with open doors.
	Lifting permitted.
	Use diesel fuel only.
	7 bar (102 psi) Tyre pressure.
	Sound power level in accordance with Directive 2000/14/EC (expressed in dB (A)).
	Sound power level in accordance with Directive 2000/14/EC (expressed in dB (A)).
	Sound power level in accordance with Directive 2000/14/EC (expressed in dB (A)).
	Horizontal towbar position required in case of coupling.

# Operating instructions

## PARKING, TOWING AND LIFTING INSTRUCTIONS

### Safety precautions



Never load the vehicles in excess of the permissible total weight.

Never overstress the coupling or suspension system due to reckless or aggressive driving or mishandling. Avoid subjecting the axles to any impacts or jolting. Adapt your driving speed at all times to the road conditions.

Ensure that wheels and tyres are not misaligned or out-of-balance.

Only use the jacking points indicated by Atlas Copco.

The operator is expected to apply all relevant safety precautions, including those mentioned on the pages 9 - 15 of this book.

### Attention:



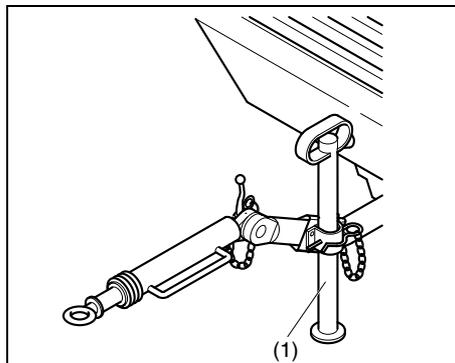
Before putting the compressor into use, check the brake system as described in section Brake (= option) adjustment.

After the first 100 km travel - Yearly or every 5000 km:

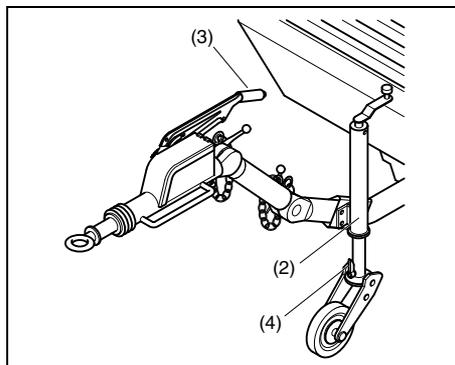
Check and retighten the wheel nuts and towbar bolts to the specified torque. See section Height adjustment and section Torque values.

Check the brake adjustment. See section Brake (= option) adjustment.

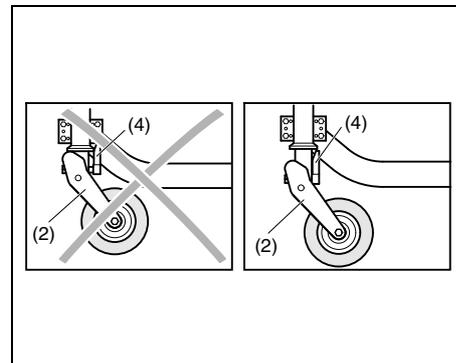
## PARKING INSTRUCTIONS



*Non-adjustable towbar with standard support leg without brakes*



*Adjustable towbar with jockey wheel and brakes*



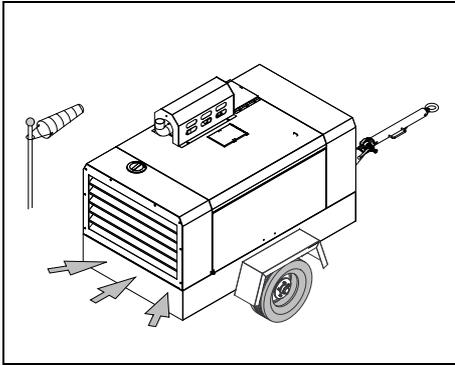
*Parking position of jockey wheel*



**It must be noted that, with the parking brake activated, the vehicle can roll back about 30 cm until the braking force takes full effect.**

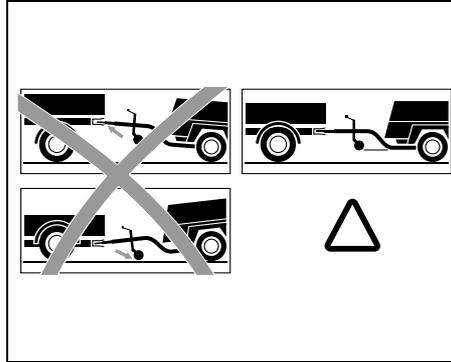
When parking a compressor, secure support leg (1) or jockey wheel (2) to support the compressor in a level position. Be sure that the jockey wheel (2) is blocked by the blocking pin (4).

Apply parking brake by pulling parking brake handle (3) upwards. Place the compressor as level as possible; however, it can be operated temporarily in an out-of-level position not exceeding 15°. If the compressor is parked on sloping ground, immobilize the compressor by placing wheel chocks (available as option) in front of or behind the wheels.



Locate the rear-end of the compressor upwind, away from contaminated wind-streams and walls. Avoid recirculation of exhaust air from the engine. This causes overheating and engine power decrease.

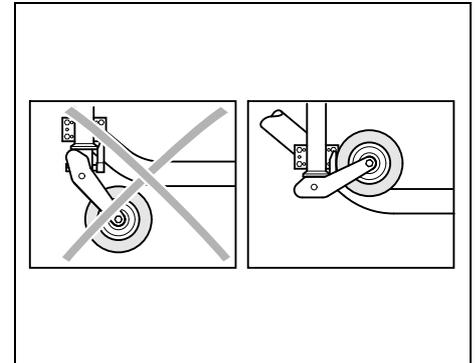
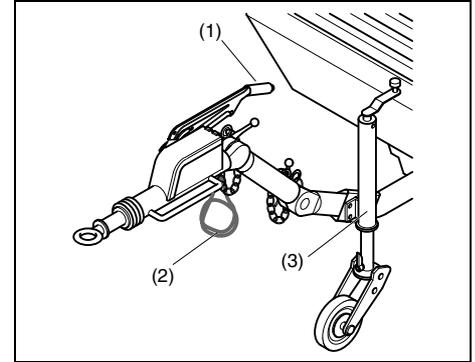
## TOWING INSTRUCTIONS



*Label on towbar*

### Inspections, prior to each run

- Check tyre pressure and tyre condition
- Check wheel fixation
- Check screwed joints on firm seating.
- Check functioning of lighting and braking systems (option)
- The jockey wheel must be parallel to the direction of travel at all times.
- Inspect the coupling. The ball joint must fully enclose the ball and be locked.
- At height adjustable towing facility (option), check the joint connection for a tight fit.



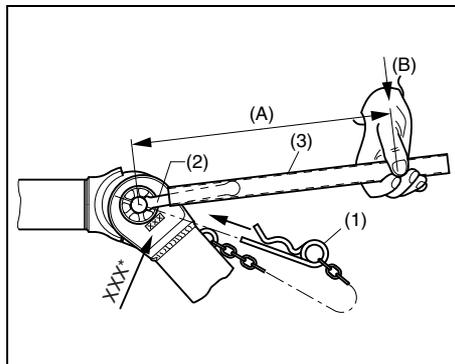


**Before towing the compressor, ensure that the towing equipment of the vehicle matches the towing eye or ball connector and ensure that the service doors are closed and locked properly.**

For both non-adjustable - and adjustable towbar, the towbar should be as level as possible and the compressor and towing eye end in a level position.

Push the hand brake lever (1) completely downwards and connect breakaway cable (2) to the vehicle. Secure jockey wheel (3) or support leg in the highest possible position (see figure). The jockey wheel is prevented from turning.

### HEIGHT ADJUSTMENT (with adjustable towbar)



**Before towing the compressor, make sure that the joints of the towbar are secured with maximum strength without damaging the towbar. Be sure that there is no clearance between the teeth of the joints.**

- Remove spring pin (1).

**For specific instruction see below!**

Type	M [Nm/lbf.ft.]	"A" [mm/in]	"B" [N/lbf]
ZV 2000	250 - 300 / 184.5 - 221.4	600 / 23.4	420 - 500 / 94.5 - 112.5
ZV 2500	350 - 400 / 258.3 - 295.2	600 / 23.4	580 - 660 / 130.5 - 148.5

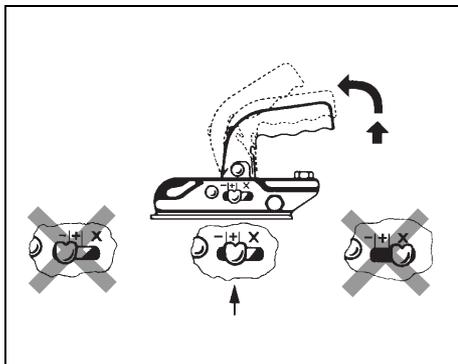
- Release locking nut (2) with support tools (Extension tube 3).
- Adjust required height of the towbar.
- Tighten locking nut (2) by hand first.
- Secondly tighten locking nut (2) with a tightening torque corresponding to table. With an extension tube (3) ("A" corresponding to table) and handforce ("B" corresponding to table) easy tightening is possible.
- Fix locking nut (2) with spring pin (1).



#### Attention:

- Height adjustment should be undertaken on levelled ground and in coupled condition.
- When readjusting, make sure that the front point of the towbar is horizontal with the coupling point.
- Before starting a trip, ensure that the adjustment shaft is secure, so that stability and safety is guaranteed while driving. If necessary, tighten the locking nut (2) corresponding with table.

## INSTRUCTIONS BALL COUPLING (OPTION)



**The handle of the ball coupling and the handbrake lever may never be used as a manoeuvring aid; internal components may get damaged!**

The coupling (ball coupling) on the tow bar is type approved. The maximum load at the coupling may not be exceeded.

When coupling lower the jockey wheel to the ground. Reverse the car up to the compressor or, in the case of a small compressor, manoeuvre the compressor up to the car's trailer coupling.

### COUPLING:

Open coupling jaw by pulling the lever vigorously upwards in the direction of the arrow. Lower the opened coupling onto the ball of the vehicle coupling and the lever will automatically be lowered. Closing and locking are carried out automatically. Check the

"+" (see figure) position!

Connect the breakaway cable and electrical plug (option) to the towing vehicle. Raise the jockey wheel up fully and secure by firmly clamping it. Release parking brake before setting off.

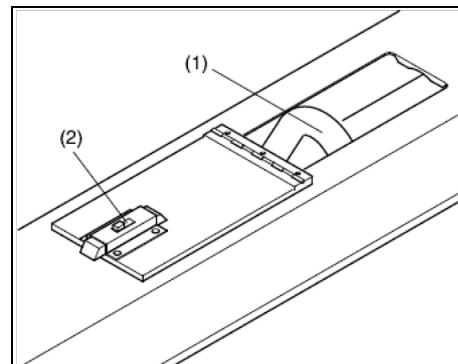
**Visual check: the ball should no longer be visible in coupled condition.**

### UNCOUPLING:

Lower the jockey wheel. Disconnect breakaway cable and electrical plug. Pull the lever vigorously upwards in the direction of the arrow and hold. Wind down jockey wheel (option) and lift the compressor off the ball of the towing vehicle.

Secure the compressor by means of a wheel chock and/or by applying the parking brake.

## LIFTING INSTRUCTIONS



When lifting the compressor, the hoist has to be placed in such a way that the compressor, which must be placed level, is lifted vertically. Keep lifting acceleration and retardation within safe limits.

Preferably use the lifting eye (1) herefore open the small door (2).



**Lifting acceleration and retardation must be kept within safe limits (max. 2g).**

**Helicopter lifting is not allowed.**

**Lifting is not allowed when the unit is running.**

## STARTING/STOPPING

### BEFORE STARTING

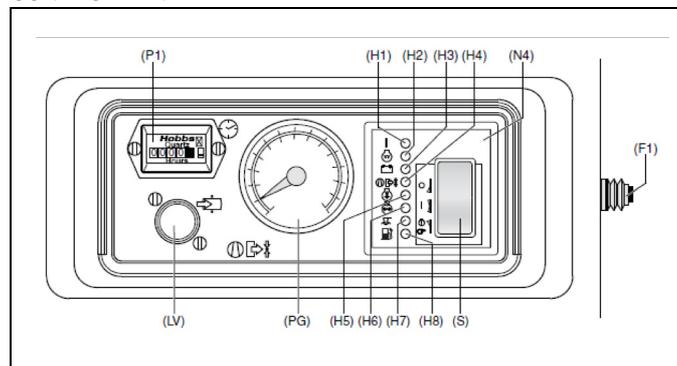
1. Before initial start-up, prepare battery for operation if not already done. See section **Battery care**.
2. With the compressor standing level, check the level of the engine oil. Add oil, if necessary, up to the upper mark on the dipstick. Consult the Engine Operation Manual for the type and viscosity grade of the engine oil.
3. Check the level of the compressor oil. See section **Compressor regulating system**. The pointer of the oil level gauge (OLG) should register in the green range. Add oil if necessary. See section **Coolant specifications** for the oil to be used.



**Before removing the oil filler plug (FP), ensure that the pressure is released by opening an air outlet valve.**

4. Check that the fuel tank contains sufficient fuel. Top up, if necessary. Consult the Engine Operation Manual for the type of fuel.
5. Drain any water and sediment from the fuel filter until clean fuel flows from the drain cock.
6. Press vacuator valves (VV) of the air filters to remove dust.
7. Check the air filter vacuum indicators (VI). If the yellow piston reaches the red marked service range, replace the filter element. Reset the indicator by pushing the reset button.
8. Open air outlet valve to allow air flow to the atmosphere.

## CONTROL PANEL



P1	Hourmeter
PG	Working pressure gauge
LV	Loading Valve
N4	Control Module
S	Start/Stop Button
H1	LED (green) Fuel ON
H2	LED (green) Preheat (option)
H3	LED (red) Charge Indication
H4	LED (red) Compressor Oil Temperature
H5	LED (red) Engine Coolant Temperature
H6	LED (red) Engine Oil Pressure
H7	LED (red) Low Coolant
H8	LED (red) Low Fuel



**Never push the start button when the engine is running.**

Make sure the fuel tank is filled up.

Before starting, first operate the circuit breaker button (F1) at the right side of the control panel (open righthand service door first).

To start, the start/stop button (S) is switched to position "I", the green fuel ON lamp (H1), the red charge indication lamp (H3) and preheat lamp (H2) go on (preheat lamp only, if "cold start" option is installed). After preheating, the preheat lamp goes out. Push the start/stop button in position. Max. 3 cycles are allowed. The starter motor will set the engine in motion. Lamps H1 and H3 will go out as soon as the engine has been started. After the start/stop button is released, it automatically springs back to position "I".

Run the engine a few minutes at no-load to warm up. When the engine is running smoothly, press loading valve (LV) and release as soon as pressure starts to build up.

Shutting down is simply done by pushing the start button in the "0" position.

The control panel in addition indicates receiver pressure (PG) and accumulated operating hours (P1).

### **Fault situations and protective devices (Also refer to chapter Problem solving):**

- The starter motor is protected against prolonged starting.
- (max. cranking time: 20 sec. (60 sec. for XAHS 186 Dd)).
- A fault which occurs with the engine, either alternator voltage (too low), coolant temperature too high, oil pressure too low or fuel level too low will always and immediately cause the engine to cut out and one of the control lamps H3, H5, H6, H7 or H8 to light up
- When the outlet temperature of the element becomes too high, a thermocontact will also switch off the unit immediately.
- Control lamp H4 will light up.
- The control lamps will remain on until the unit has been reset (start button switched to position "0")

### **DURING OPERATION**



**When the engine is running, the air outlet valves (ball valves) must always be put in a fully opened or fully closed position.**

### **REGULARLY CARRY OUT FOLLOWING CHECKS:**

1. That regulating valve (see section **Main Parts**, RV) is correctly adjusted, i.e. starts decreasing the engine speed when reaching the preset working pressure in the receiver.
2. Check the air filter vacuum indicators (see section **Main Parts**, VI). If the yellow piston reaches the red marked service range, replace the filter element. Reset the indicators by pushing the reset button.



**The doors must be closed during operation and may be opened for short periods only.**

# Maintenance

## USE OF SERVICE PAKS

Service Paks include all genuine parts needed for normal maintenance of both compressor and engine.

Service Paks minimize downtime and keep your maintenance budget low.

Order Service Paks at your local Atlas Copco dealer.

## PREVENTIVE MAINTENANCE SCHEDULE FOR THE COMPRESSOR

The schedule contains a summary of the maintenance instructions. Read the respective section before taking maintenance measures.

When servicing, replace all disengaged packings, e.g. gaskets, O-rings, washers.

For engine maintenance refer to Engine Operation

Manual.

The maintenance schedule has to be seen as a guideline for units operating in a dusty environment typical for compressor applications. Maintenance schedule can be adapted depending on application environment and quality of maintenance.

<i>To determine the maintenance intervals, use service hours, or calendar time, whichever occurs first.</i>				
<b>Maintenance schedule (running hrs)</b>	<b>Daily</b>	<b>50 hrs after initial start-up</b>	<b>Every 250 hours Or 3 months</b>	<b>Every 1000 hours Or yearly</b>
<b>Service Paks</b>				
XA(T,H)S 156C-186C - XA(T,H)S 350-375		1625 0572 00	3002 3071 60	3002 6071 70
XA(H,V) 206C - XA(H,V) 450		1625 0572 00	3002 6071 80	3002 6071 90
Oil Separator Kit				2911 0075 00
Engine oil level	Check			
Compressor oil level	Check			
Coolant level (3)	Check			
Coolant (7)			Analysis	Analysis
Air filter vacuator valves	Empty			
Fuel filter water drain	Drain			
Air intake vacuum indicators	Check			
Electrolyte level and terminals of battery		Check	Check	Check

*(to be continued on page 34)*

<b>Maintenance schedule (running hrs)</b> <i>(continuation of page 33)</i>	<b>Daily</b>	<b>50 hrs after initial start-up</b>	<b>Every 250 hours Or 3 months</b>	<b>Every 1000 hours Or yearly</b>
Leaks in air-, oil- or fuel system		Check	Check	Check
Coolers (Oil, Coolant, Inter-)			Clean	Clean
Engine minimum and maximum speeds		Check	Check	Check
Torque of wheel nuts		Check	Check	Check
Brake system (if installed)		Check/Adjust	Check/Adjust	Check/Adjust
Safety valve				Test
Door hinges			Grease	Grease
Shutdown switches				Check
Pressure drop over separator element (2)			Measure	Replace (6)
Fan V-belts (3)			Adjust	Adjust
Fuel tank			Clean	Clean
Compressor oil				Change
Compressor oil filter		Replace		Replace
Air filter elements (1)				Replace
Safety cartridges (1) (option)				Replace
Engine oil (3) (4)			Change	Change
Engine oil filter (3)			Replace	Replace
Fuel filter (3) (5)			Replace	Replace
Fuel prefilter (3)			Replace	Replace
Engine inlet and outlet valves (3)				Adjust
PD/QD filter (option)				Replace

## Notes



1. More frequently when operating in a dusty environment.
2. Replace the element when the pressure drop exceeds 0.8 bar (11.6 psi).
3. Refer to the Cummins operation manual.
4. 500 hours only valid when using PAROIL E.
5. In case of poor fuel quality, replace fuel filter more frequently.
6. Clean retainer when replacing element.
7. The following part numbers can be ordered from Atlas Copco to check on inhibitors and freezing point:
  - 2913 0028 00 refractometer
  - 2913 0029 00 pH meter



**Keep the bolts of the housing, the lifting beam, tow bar and axles securely tightened. For torque values see section Technical specifications.**

<b>Maintenance schedule</b>	<b>Initially</b>	<b>Interval</b>
<b>Wheels</b>		
Tyre pressure		Before each run
Check wheel bolts for firm seating	Before first run	
Check hub caps for firm seating		2,500km/annually
Check tyres for uneven wear		2,500km/annually
Check lateral play of bearings	After 500 km	2,500km/annually
Check brake lining wear		5,000km/annually
<b>Towbar</b>		
Check coupling head for wear, operation and fastening	Before first run	5,000km/annually
Check brake play	After first run	2,500km/annually
Check height adjustment facility	Before each run, during first 500 km	5,000km/annually
Check reversing lever for ease of motion	2,500 km	5,000km/annually
Check safety cable and bowden cable for damage		5,000km/annually
Check/ adjust brake system (if installed)	Before first run	2,500km/annually
<b>Lubrication</b>		
Coupling head and all its moving parts/shaft	Before first run	2,500km/annually
Overrun brake	Before first run	5,000km/annually
Reversing lever	Before first run	5,000km/annually
Overrun coupling	Before first run	5,000km/annually
Joints of height adjustable towbar		5,000km/annually
Bearings (conventional bearings only)		5,000km/annually

## FUEL

For fuel specifications, please contact your Atlas Copco Customer Center.

## LUBRICATION OILS

High-quality, mineral, hydraulic or synthesized hydrocarbon oil with rust and oxidation inhibitors and anti-foam and anti-wear properties is recommended. The viscosity grade should

correspond to the ambient temperature and ISO 3448, as follows:

Type of lubricant	Compressor**	Engine*
between -25°C (-13°F) and +40°C (104°F)	PAROIL S	PAROIL E xtra
between -10°C (14°F) and +40°C (104°F)	PAROIL M Xtreme	PAROIL E

PAROIL from Atlas Copco is the ONLY oil tested and approved for use in all engines built into Atlas Copco compressors and generators.

Extensive laboratory and field endurance tests on Atlas Copco equipment have proven PAROIL to match all lubrication demands in varied conditions. It meets stringent quality control specifications to ensure your equipment will run smoothly and reliably.

The quality lubricant additives in PAROIL allow for extended oil change intervals without any loss in performance or longevity.

PAROIL provides wear protection under extreme conditions. Powerful oxidation resistance, high chemical stability and rust-inhibiting additives help reduce corrosion, even within engines left idle for extended periods.

PAROIL contains high quality anti-oxidants to control deposits, sludge and contaminants that tend to build up under very high temperatures.

PAROIL's detergent additives keep sludge forming particles in a fine suspension instead of allowing them to clog your filter and accumulate in the valve/rocker cover area.

PAROIL releases excess heat efficiently, whilst maintaining excellent bore-polish protection to limit oil consumption.

PAROIL has an excellent Total Base Number (TBN) retention and more alkalinity to control acid formation.

PAROIL prevents Soot build-up

PAROIL is optimized for the latest low emission EURO -3 & -2, EPA TIER II & III engines running on low sulphur diesel for lower oil and fuel consumption.

PAROIL E xtra is a Synthetic ultra high performance diesel engine oil with a high viscosity-index. Atlas Copco PAROIL E xtra is designed to provide excellent lubrication from start-up in temperatures as low as -25°C (-13°F).

PAROIL E is a mineral based high performance diesel engine oil with a high viscosity- index. Atlas Copco PAROIL E is designed to provide a high level of performance and protection in ‘standard’ ambient conditions as from -15°C (5°F).



\*

**If you want to use another brand of oil, consult the Engine Operation Manual.**



\*\*

**It is strongly recommended to use Atlas Copco branded lubrication oils for both compressor and engine. If you want to use another brand of oil, consult Atlas Copco.**



**Never mix synthetic with mineral oil.**

**Remark:**

**When changing from mineral to synthetic oil (or the other way around), you will need to do an extra rinse:**

**After a complete change over to synthetic oil, run the unit for a few minutes to allow proper and complete circulation of the synthetic oil.**

**Then drain the synthetic oil again and fill again with new synthetic oil. To set correct oil levels, follow the normal instructions.**

#### Mineral compressor oil PAROIL M Xtreme

	Liter	US gal	Order number
can	5	1.3	1615 5958 00
can	20	5.3	1615 5959 00
barrel	210	55.2	1615 5960 00

#### Synthetic compressor oil PAROIL S

	Liter	US gal	Order number
can	5	1.3	1615 5950 01
can	20	5.3	1615 5951 01
barrel	210	55.2	1615 5952 01
container	1000	265	1604 7422 00

#### Mineral engine oil PAROIL E

	Liter	US gal	Order number
can	5	1.3	1615 5953 00
can	20	5.3	1615 5954 00
barrel	210	55.2	1615 5955 00

#### Synthetic engine oil PAROIL E xtra

	Liter	US gal	Order number
can	5	1.3	1630 0135 01
can	20	5.3	1630 0136 01
barrel	210	55.2	1626 0102 00

#### OIL LEVEL CHECK



**Never mix oils of different brands or types.**

**Use only non-toxic oils where there is a risk of inhaling delivered air.**

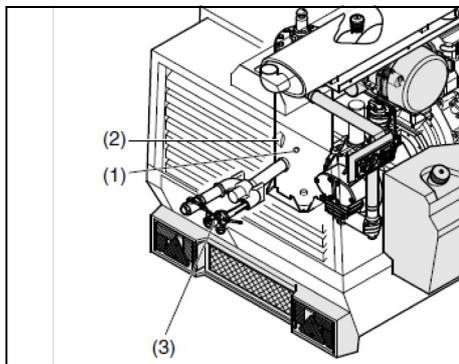
#### CHECK ENGINE OIL LEVEL

Consult also the Engine Operation Manual for the oil specifications, viscosity recommendations and oil change intervals.

For intervals, see **Preventive maintenance schedule for the compressor.**

Check engine oil level according to the instructions in the Engine Operation Manual and top up with oil if necessary.

## CHECK COMPRESSOR OIL LEVEL



With the unit standing level, check the level of the compressor oil. The pointer of the oil level gauge (1) must register in the upper extremity of the green range. Add oil if necessary.



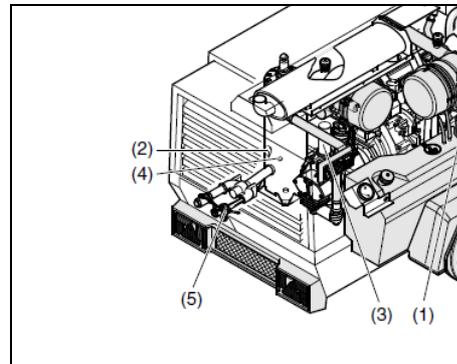
**Before removing oil filler plug (2), ensure that the pressure is released by opening an air outlet valve.**

## OIL AND OIL FILTER CHANGE

### ENGINE OIL AND OIL FILTER CHANGE

See section **Preventive maintenance schedule for the compressor.**

## COMPRESSOR OIL AND OIL FILTER CHANGE



The quality and the temperature of the oil determine the oil change interval.

The prescribed interval is based on normal operating conditions and an oil temperature of up to 100 °C (212 °F) (see section **Preventive maintenance schedule for the compressor**).

When operating in high ambient temperatures, in very dusty or high humidity conditions, it is recommended to change the oil more frequently.



**In this case, contact Atlas Copco.**

1. Run the compressor until warm. Close the outlet valve(s) (1) and stop the compressor. Wait until the pressure is released through the automatic blow-down valve. Unscrew the oil filler plug (2) by a single turn. This uncovers a vent hole, which permits any pressure in the system to escape.

2. Drain the compressor oil by removing all relevant drain plugs. Drain plugs are fitted at the air receiver (DPar), compressor element (DPcv, DPosv) and compressor oil cooler (DPoc). Catch the oil in a drain pan. Unscrew the filler plug (2) to speed up draining. After draining, reposition and tighten the drain plugs.
3. Remove the oil filters (3), e.g. by means of a special tool. Catch the oil in a drain pan.
4. Clean the filter seat on the manifold, taking care that no dirt drops into the system. Oil the gasket of the new filter element. Screw it into place until the gasket contacts its seat, then tighten one half turn only.
5. Fill the air receiver until the oil level reach the bottom of oil filler neck. Be sure that no dirt gets into the system. Reinstall and tighten the filler plug (2).
6. Start the compressor and let it run unloaded for a few minutes.
7. Stop the compressor, wait a few minutes and top up with oil until the pointer of the oil level gauge is in the upper part of the green area.



**Never add more oil. Overfilling results in oil consumption.**

## COOLANT SPECIFICATIONS



Never remove the cooling system filler cap while coolant is hot.

The system may be under pressure. Remove the cap slowly and only when coolant is at ambient temperature. A sudden release of pressure from a heated cooling system can result in personal injury from the splash of hot coolant.



It is strongly recommended to use Atlas Copco branded coolant.

The use of the correct coolant is important for proper heat transfer and protection of liquid-cooled engines. Coolants used in these engines must be mixtures of good quality water (distilled or de-ionised), special coolant additives and anti-freeze, if required. Coolant that is not to manufacturer's specification will result in mechanical damage of the engine.

The freezing point of the coolant must be lower than the freezing point that can occur in the area. The difference must be at least 5°C (9°F). If the coolant freezes, it may crack the cylinder block, radiator or coolant pump.

Consult the engine's operation manual and follow the manufacturer's directions.



Never mix different coolants and mix the coolant components outside the cooling system.

## PARCOOL EG

**PARCOOL EG is the only coolant that has been tested and approved by all manufacturers of engines currently used in Atlas Copco compressors and generators.**

Atlas Copco's PARCOOL EG extended life coolant is the new range of organic coolants purpose-designed to meet the needs of modern engines. PARCOOL EG can help prevent leaks caused by corrosion. PARCOOL EG is also fully compatible with all sealants and gasket types developed to join different materials used within an engine.

PARCOOL EG is a ready to use Ethylene Glycol based coolant, premixed in an optimum 50/50 dilution ratio, for antifreeze protection guaranteed to -40°C (-40°F).

### PARCOOL EG

	Liter	US gal	Order number
can	5	1.3	1604 5308 00
can	20	5.3	1604 5307 01
barrel	210	55.2	1604 5306 00

To ensure protection against corrosion, cavitation and formation of deposits, the concentration of the additives in the coolant must be kept to certain limits, as stated by the manufacturer's guidelines. Topping up the coolant with water only, changes the concentration and is therefore not allowed.

Liquid-cooled engines are factory-filled with this type of coolant mixture.

### PARCOOL EG Concentrate

	Liter	US gal	Order number
can	5	1.3	1604 8159 00

Because PARCOOL EG inhibits corrosion, deposit formation is minimized. This effectively eliminates flow restriction problems through the engine coolant ducts and the radiator, minimizing the risk of engine overheating and possible failure.

It reduces water pump seal wear and has excellent stability when subjected to sustained high operating temperatures.

PARCOOL EG is free of nitride and amines to protect your health and the environment. Longer service life reduces the amount of coolant produced and disposal requirements, which limits environmental impact.

## HANDLING GENCOOL EG

PARCOOL EG should be stored at ambient temperatures, while periods of exposure to temperatures above 35°C (95°F) should be minimized. PARCOOL EG can be stored for a minimum of 5 years in unopened containers without any effect on the product quality of performance.

PARCOOL EG is compatible with most other coolants based on ethylene glycol, but you only get the benefits of 5 years protection when its used on its own. Exclusive use of PARCOOL EG is recommended for optimum corrosion protection and sludge control.

For simple density-measuring of Ethylene Glycol and Propylene Glycol in general the standard available 'density' measuring devices are used to measure the concentration of EG. In case a device is used to measure EG, no PG can be measured afterwards as a result of the difference in the density. More specific measurements can be done by the use of a refractometer. This device can measure both EG and PG. A mix of both products will be show unreliable results!

Mixed EG coolants with identical glycol type can be measured by use of a refractometer as well as the 'density' system. The mixed coolants will be considered as one product.

The use of distilled water is recommended. If you have exceptionally soft water it would be acceptable, as well. Basically, the engine metals are going to corrode to some extent no matter what water you use, and hard water will encourage the resulting metal salts to precipitate.

PARCOOL EG comes as a pre-mixed coolant to safeguard the quality of the complete product.

It is recommended that topping up of the cooling system is always done with PARCOOL EG.

## COOLANT CHECK



**Never remove the cooling system filler cap while coolant is hot.**

**The system may be under pressure. Remove the cap slowly and only when coolant is at ambient temperature. A sudden release of pressure from a heated cooling system can result in personal injury from the splash of hot coolant.**

In order to guarantee the lifetime and quality of the product, thus optimising engine protection, regular coolant-condition-analysis is recommended.

The quality of the product can be determined by three parameters:

### Visual check

- Verify the appearance of the coolant with regard to its colour and make sure that no loose particles are floating around.

### pH measurement

- Check the pH value of the coolant using a pH-measuring device.
- The pH-meter can be ordered from Atlas Copco with part number 2913 0029 00.
- Typical value for EG = 8.6.
- If the pH-level is below 7 or above 9.5, the coolant should be replaced.

## Glycol concentration measurement

- To optimise the unique engine protection features of the PARCOOL EG, the concentration of the Glycol in the water should always be above 33 vol.%.
- Mixtures exceeding a 68 vol.% mix ratio in water are not recommended, as this will lead to high engine operating temperatures.
- A refractometer can be ordered from Atlas Copco with part number 2913 0028 00.



**In case of a mix of different coolant products this type of measuring might provide incorrect values.**

## TOPPING UP/REPLACING COOLANT

- Verify whether the engine cooling system is in a good condition (no leaks, clean,...).
- Check the condition of the coolant.
- If the condition of the coolant is no longer up to standard, the complete coolant should be replaced (see section **Replacing the coolant**).
- Always top-up with PARCOOL EG Concentrate / PARCOOL EG.
- Topping up the coolant with water only, changes the concentration of additives and is therefore not allowed.

## TOPPING UP WITHOUT DRAINING FROM THE COOLING SYSTEM

The quantity of PARCOOL EG Concentrate to be topped up can be estimated with the following formula and/or graph:

### Corrections concentrate in measured system towards 50% volume by using PARCOOL EG Concentrate

PN: 1604 8159 01

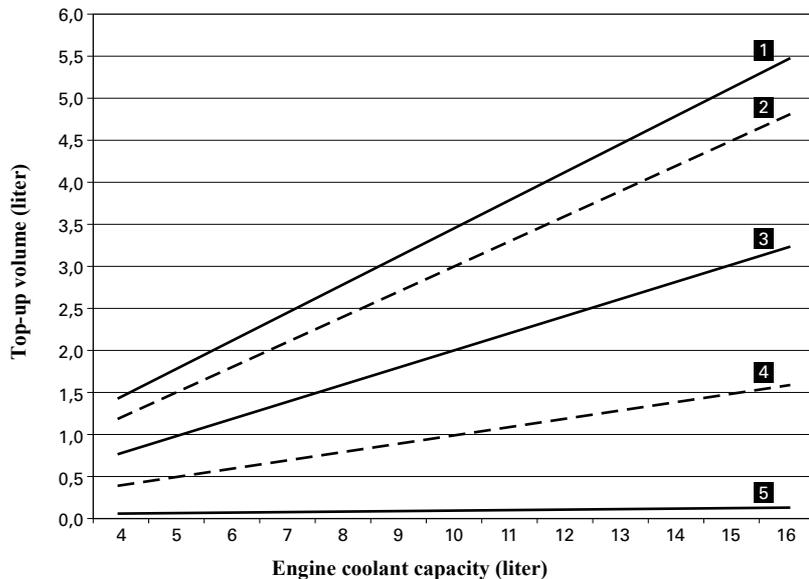
#### Example:

Total volume coolant = 14 Liter

Measured concentration = 33 Vol. %

$$50 - \frac{33}{33} = 17 * \frac{14}{50} = 4,8 \text{ Liter PARCOOL EG Concentrate}$$

#### Top-up volume PARCOOL EG Concentrate without drainage



In case of expansion tank at low level, this quantity is to be filled without draining from the cooling system.

1. Refractometer indication -20° C (-4° F) (33%)
- 11 Refractometer indication -22° C (-7.6° F)
- 12 Refractometer indication -25° C (-13° F)
- 13 Refractometer indication -30° C (-22° F)
- 14 Refractometer indication -36° C (-32.8° F)

## TOPPING UP AFTER LIMITED QUANTITY DRAINING FROM THE COOLING SYSTEM

The quantity of PARCOOL EG Concentrate to be topped up after draining a calculated volume from the cooling system, can be estimated with the following formula and/or graph:

### Corrections concentrate in measured system towards 50% volume by using PARCOOL EG Concentrate

PN: 1604 8159 01

#### Example:

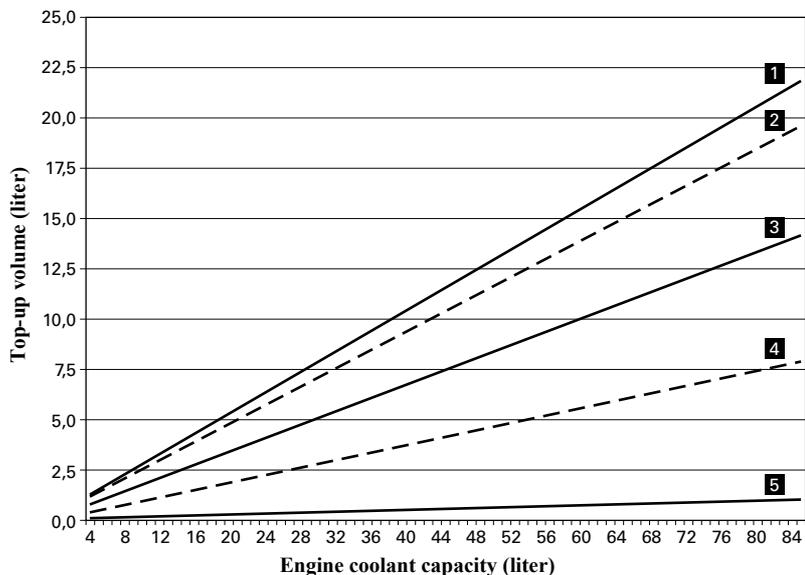
Total volume coolant = 80 Liter

Measured concentration = 33 Vol. %

50- 33 = 17 \* 80 / 67 = 20 Liter PARCOOL EG Concentrate

100- 33 = 67

Top-up volume PARCOOL EG Concentrate with drainage



In case of expansion tank at normal level, this quantity is to be drained from the cooling system.

1. Refractometer indication -20° C (-4° F) (33%)
- 15 Refractometer indication -22° C (-7.6° F)
- 16 Refractometer indication -25° C (-13° F)
- 17 Refractometer indication -30° C (-22° F)
- 18 Refractometer indication -36° C (-32.8° F)

## REPLACING THE COOLANT

### Drain

- Completely drain the entire cooling system.
- Used coolant must be disposed of or recycled in accordance with legislation and local regulations.

### Flush

- Flush twice with clean water. Used coolant must be disposed of or recycled in accordance with legislation and local regulations.
- Using the Atlas Copco Instruction book, determine the amount of PARCOOL EG required and pour into the radiator top tank.
- It should be clearly understood that proper cleaning reduces contamination risks.
- In case of "other" coolant residues inside the system, the coolant with the lowest properties influences the quality of the 'mixed' coolant.

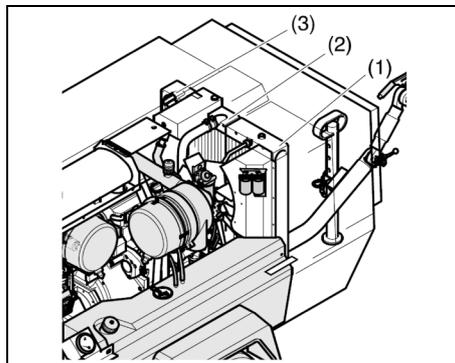
### Fill

- To assure proper operation and the release of trapped air, run the engine until normal engine operation temperature is reached. Turn off the engine and allow to cool.
- Recheck coolant level and add coolant mixture if necessary.



**In case of a mix of different coolant products this type of measuring might provide incorrect values.**

## CLEANING COOLERS



Keep the coolers clean to maintain the cooling efficiency.



**Remove any dirt from the coolers with a fibre brush. Never use a wire brush or metal objects.**

Then clean by air jet in reverse direction of normal flow.

Steam cleaning in combination with a cleansing agent may be applied.



**To avoid damaging the coolers, angle between jet and coolers should be approx. 90° (do not use jet at max. power).**



**Protect the electrical and controlling equipment, air filters, etc. against penetration of moisture.**

Close the service door(s).



**Never leave spilled liquids such as fuel, oil, water and cleansing agents in or around the compressor.**



**Caution: do not top up when the engine is hot.**

## BATTERY CARE



**Before handling batteries, read the relevant safety precautions and act accordingly.**

If the battery is still dry, it must be activated as described in section **Activating a dry-charged battery**.

The battery must be in operation within 2 months from being activated; if not, it needs to be recharged first.

## ELECTROLYTE



**Read the safety instructions carefully.**

Electrolyte in batteries is a sulphuric acid solution in distilled water.

The solution must be made up before being introduced into the battery.

## ACTIVATING A DRY-CHARGED BATTERY

- Take out the battery.
- Battery and electrolyte must be at equal temperature above 10°C (50°F).
- Remove cover and/or plug from each cell.
- Fill each cell with electrolyte until the level reaches 10 mm (0.4 in) to 15 mm (0.6 in) above the plates, or to the level marked on the battery.
- Rock the battery a few times so that possible air bubbles can escape; wait 10 minutes and check the

level in each cell once more; if required, add electrolyte.

- Refit plugs and/or cover.
- Place the battery in the compressor.

## RECHARGING A BATTERY

Before and after charging a battery, always check the electrolyte level in each cell; if required, top up with distilled water only. When charging batteries, each cell must be open, i.e. plugs and/or cover removed.



**Use a commercial automatic battery charger according to its manufacturer's instructions.**

Apply with preference the slow charging method and adjust the charge current according to the following rule of thumb:

battery capacity in Ah divided by 20 gives safe charging current in Amp.

## BATTERY MAINTENANCE

- Keep the battery clean and dry.
- Keep the electrolyte level at 10 to 15 mm above the plates or at the indicated level; top up with distilled water only. Never overfill, as this will cause poor performance and excessive corrosion.
- Keep the terminals and clamps tight, clean, and lightly covered in petroleum jelly.

## STORAGE

Run the compressor regularly, e.g. twice a week, until warm.

Load and unload the compressor a few times to operate the unloading and regulating components. Close the air outlet valves after stopping.



**If the compressor is going to be stored without running from time to time, protective measures must be taken.**

## SERVICE PAKS

A Service Pak is a collection of parts to be used for a specific maintenance measure.

It guarantees that all necessary parts are replaced at the same time keeping down time to a minimum.

The order number of the Service Paks are listed in the Atlas Copco Parts List.

## SERVICE KITS

A service kit is a collection of parts to fit a specific repair or rebuilding task.

It guarantees that all necessary parts are replaced at the same time which improves the uptime of the unit.

The order numbers of the Service Kits are listed in the Atlas Copco Parts List.



**Contact Atlas Copco.**

## **COMPRESSOR ELEMENT OVERHAUL**

When a compressor element is due for overhaul, it is recommended to have it done by Atlas Copco. This guarantees the use of genuine parts and correct tools with care and precision.

## **LIABILITY**

The manufacturer does not accept any liability for any damage arising from the use of non-original parts and for modifications, additions or conversions made without the manufacturer's approval in writing.

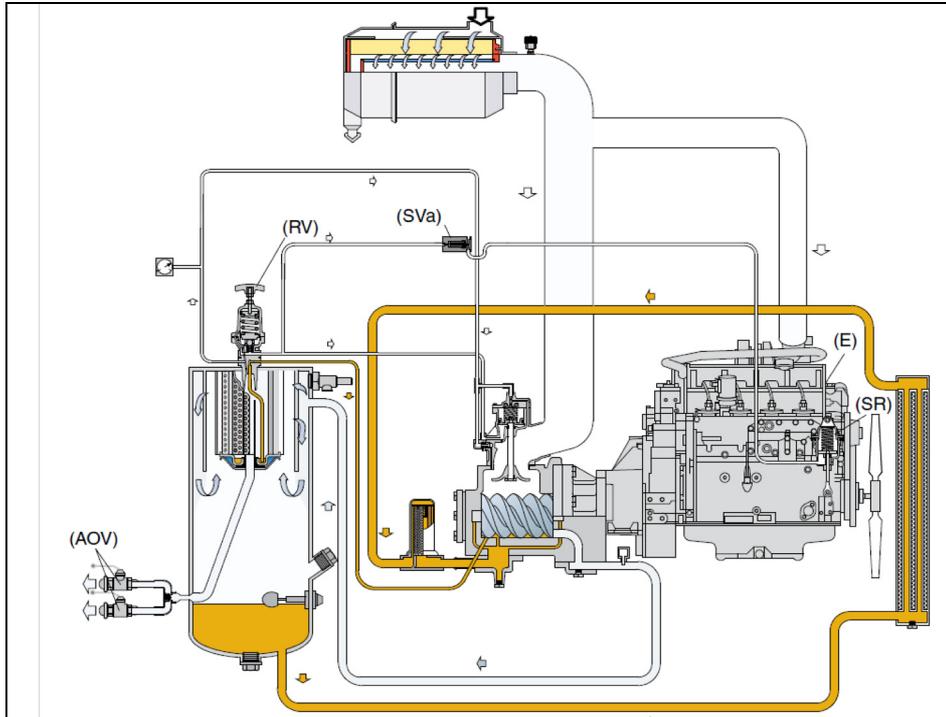
# Adjustments and servicing procedures

## ADJUSTMENT OF THE CONTINUOUS REGULATING SYSTEM

The working pressure is determined by the tension of

the spring in the regulating valve (RV). This tension can be increased to raise the pressure and decreased to lower it by turning the adjusting wheel clockwise

and anti-clockwise respectively.

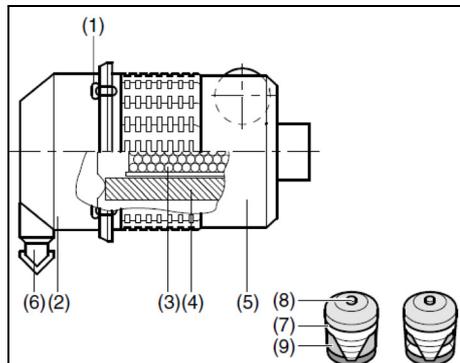


		<b>X</b>	<b>Y</b>	<b>Z1 – Z2</b>
<b>XATS 156C</b>	bar	11.8	10.3	15.3-15.7
<b>XATS 350</b>	psi	171	149	222-228
<b>XAHS 166C</b>	bar	13.5	12	13.2-13.6
<b>XAHS 350</b>	psi	196	174	191.5-197.5
<b>XAS 186C</b>	bar	8.5	7	8.1 – 8.5
<b>XAS 375</b>	psi	120.5	101.5	117.5 – 123.5
<b>XAHS 206C</b>	bar	13.5	12	13.2-13.6
<b>XAHS 450</b>	psi	196	174	191.5-197.5
<b>XAVS 206C</b>	bar	15.5	14	15.2-15.8
<b>XAVS 450</b>	psi	224.5	203	220.5-229

To adjust the normal working pressure, proceed as follows:

1. Start and warm up the engine (see section **Starting/Stopping**).
2. With the outlet valves (AOV) closed, loosen the regulating valve's lock nut and adjust the regulating valve (RV) until a pressure of X bar(e) is reached (see table).
3. Check the minimum speed of the engine. Adjust minimum speed stop screw if necessary.
4. Open an outlet valve (AOV) just enough to let the engine (E) run at maximum speed. The working pressure must be Y bar(e); adjust if necessary with regulating valve (RV) (see table).
5. Check the engine maximum speed. Adjust the maximum speed by means of adjusting eccentric nut on top of speed regulator (SR).
6. Close the outlet valves (AOV), check that the pressure is between Z1 and Z2 bar(e) (see table). Lock the regulating valve (RV) by fixing the lock nut.

## AIR FILTER ENGINE/COMPRESSOR



- |                              |                     |
|------------------------------|---------------------|
| 1. Snap clips                | 6. Vacuator valve   |
| 2. Dust trap cover           | 7. Vacuum indicator |
| 3. Safety cartridge (option) | 8. Reset button     |
| 4. Filter element            | 9. Yellow indicator |
| 5. Filter housing            |                     |

## CLEANING THE DUST TRAP

Remove dust daily.

To remove dust from the dust trap squeeze the vacuator valve (6) several times.

## RECOMMENDATIONS



**The Atlas Copco air filters are specially designed for the application. The use of non-original air filters may lead to severe damage of engine and/or compressor element.**

**Never run the compressor without air filter element.**

New elements must also be inspected for tears or punctures before installation.

Discard the element (4) when damaged.

A dirty safety cartridge (3) is an indication of a malfunctioning air filter element. In that case replace the element and safety cartridge.

The safety cartridge cannot be cleaned.

## REPLACING THE AIR FILTER ELEMENT

1. Release the snap clips (1) and remove the dust trap (2). Clean the trap.
2. Remove the element (4) and the safety cartridge.
3. Reassemble in reverse order of dismantling. Make sure the vacuator valve (6) points down.
4. Inspect and tighten all air intake connections.
5. Reset the vacuum indicator by pressing the reset button (5).

## AIR RECEIVER

The air receiver (1) is tested according to official standards. Carry out regular inspections in conformity with local regulations.

## SAFETY VALVE

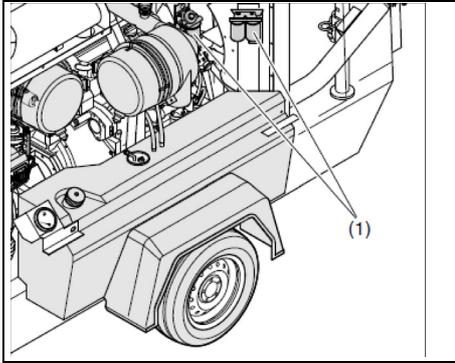


**All adjustments or repairs are to be done by an authorized representative of the valve supplier.**

Following checks must be carried out on the safety valve (2):

- a check of the opening of the lifting gear, twice a year. This can be done by screwing the cap of the valve anti-clockwise.
- an annual check of the set pressure according to local regulations. This check cannot be done on the machine and must be carried out on a proper test bench.

## FUEL SYSTEM



### Replacing the filter element

1. Unscrew the filter element (1) from the adapter head.
2. Clean the adapter head sealing surface. Lightly oil the gasket of the new element and screw the latter onto the header until the gasket is properly seated, then tighten with both hands.
3. Check for fuel leaks once the engine has been restarted.

## BRAKE (= OPTION) ADJUSTMENT



Before jacking up the compressor, connect it to a towing vehicle or attach a minimum weight of 50 kg (110 lb) to the towbar.

### BRAKE SHOE ADJUSTMENT

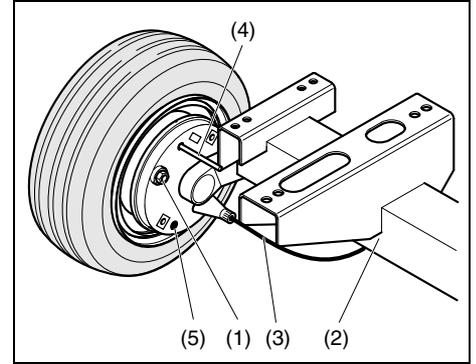
Check the thickness of the brake lining. Remove both black plastic plugs (5), one on each wheel. When the brake lining has been worn down to a thickness of 1 mm (0.039 in) or less, the brake shoes have to be replaced. After inspection and/or replacement re-insert both plugs.

Brake shoe adjustment re-establishes the brake lining-to-drum clearance and compensates for lining wear.

Lift and support the compressor. Make sure that all brakes are off (overrunbrake and hand brake lever). The brake cables must be free from tension. Lock the swivel cams of the wheel brake from the outside by means of a pin  $\varnothing$  4 mm (4) through the hole as shown in the Figure.

Turn the adjusting bolt (1) clockwise with a wrench till the wheel locks up. Center the brake shoes by actuating the parking brake several times.

Turn the adjusting bolt anti-clockwise until the wheel is running free in direction of travel (approx. 1 full turn of the adjusting bolt).



- |                   |                           |
|-------------------|---------------------------|
| 1. Adjusting bolt | 4. Pin $\varnothing$ 4 mm |
| 2. Axle           | 5. Plug                   |
| 3. Brake cable    |                           |

Check the position of the equalizer (see section **Brake cable adjustment**, 6) with the parking brake actuated.

Perpendicular position of equalizer = identical clearance of wheel brakes.

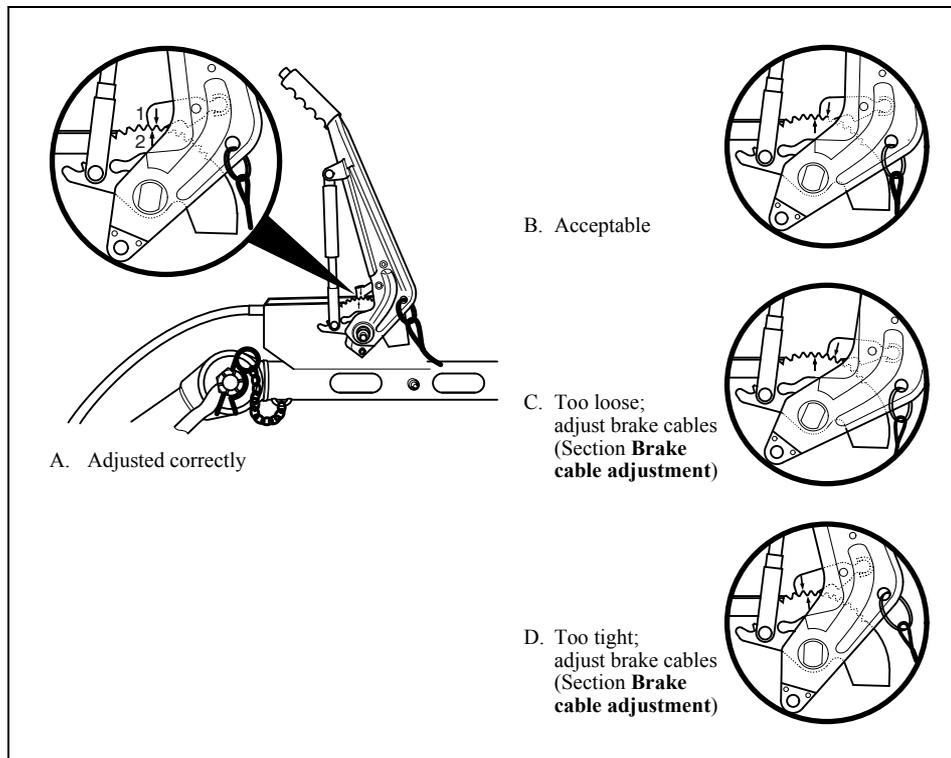
Re-adjust the brake shoes, if necessary.

To test, slightly apply the parking brake and check identical brake torque on left and right side.

Remove locking pin (4). Remove clearance from brake cables.

Check all lock nuts (**Brake cable adjustment**, 2).

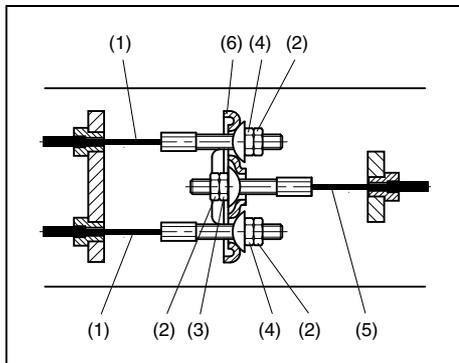
## TEST PROCEDURE OF BRAKE CABLE ADJUSTMENT



### Correct and wrong position of markings

1. Check if the towing eye rod of the overrun brake mechanism is in the outmost position.
2. Check if the adjustable towbar (= option) is in the actual towing position.
3. Apply the hand brake lever.
4. Push the compressor a few centimeters backwards so that the brake lever is automatically pulled up further.
5. Check the position of the arrow marking "1" at the catch lock in combination with the arrow marking "2" at the toothed sector, according to A,B,C,D.

## BRAKE CABLE ADJUSTMENT

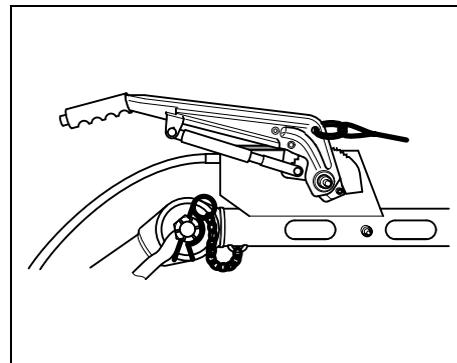


- |                  |                     |
|------------------|---------------------|
| 1. Brake cable   | 4. Brake cable nut  |
| 2. Lock nut      | 5. Main brake cable |
| 3. Adjusting nut | 6. Equalizer        |

1. With the towing eye pulled out in the outmost position and the hand brake lever in the downward position (see Figure), loosen the lock nuts (2). Turn adjusting nuts and brake cable nuts (4) clockwise until there is no slack in the brake mechanism.

The equalizer (6) must remain perpendicular to main brake cable (5).

2. Apply the hand brake lever several times and repeat the adjustment. Tighten the nuts with their lock nuts (2). Remove the jack and the blocks.
3. Road test the compressor and brake several times. Check brake shoe and brake cable adjustment and adjust if necessary.



*Hand brake lever downward - brake not operated*

## WHEELS

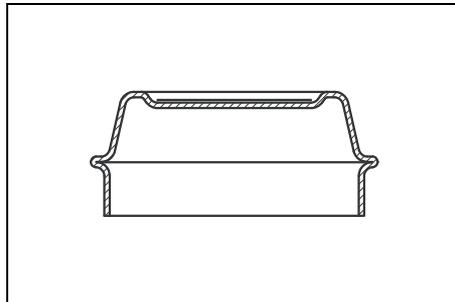
### WHEEL CHECK

- Check wheel bolts for firm seating (initially)
- Check hub caps for firm seating (every 2,500 km or annually)
- Check tyres for uneven wear (every 2,500 km or annually)
- Check lateral play of wheel bearing. If necessary, readjust.

Compact bearings (every 2 years)

Conventional bearings (after 500 km, every 2,500 km or annually)

## LUBRICATION



*Tapered type hub cap*

### Taper roller bearings and deep groove ball bearing

Axles fitted with taper roller bearings are recognizable by a tapered type hub cap, see Figure.

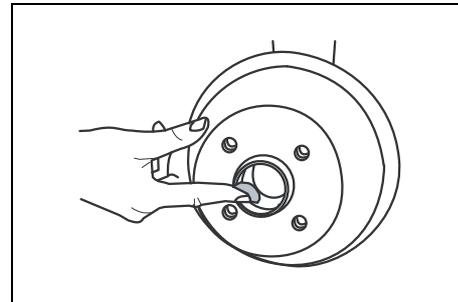
Remove wheels and wheel hubs.

Mark dismantled wheel hubs and bearing races so that their identity is not mistaken during reassembly.

Clean wheel hubs thoroughly inside and outside. Remove old grease totally.

Clean taper roller bearings and seals (using diesel oil) and check for reusability.

Work BPW special longlife grease ECO\_Li 91 into the cavities between the taper roller and cage. Smear grease into the hub's outer bearing race.

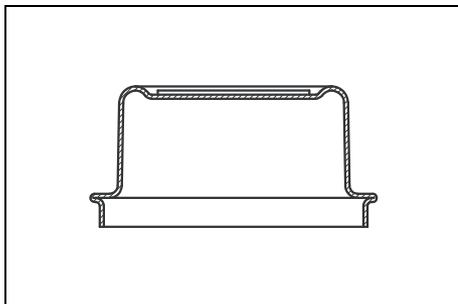


*Greasing bearing race*

Fill the hub caps to 3/4 full with grease.

Fit wheel hubs, adjust the bearing play and fit the hub caps.

## WHEEL BOLTS CHECK



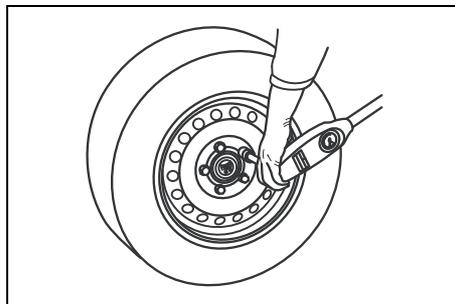
*Cylindrical hub cap shape*

### Compact bearings

Compact bearings are recognizable by cylindrical hub cap shape, see Figure.

Compact bearings are maintenance-free due to permanent lubrication and are designed for high mileages.

Therefore, there is no grease change or regreasing necessary.



*Wheel bolts tightening*



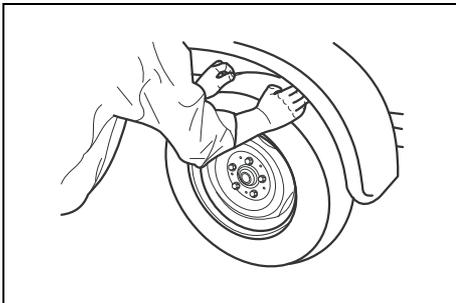
**After the first run, likewise after each wheel change.**

Tighten wheel bolts crosswise using a torque wrench and tightening torque in compliance with the table.

### Tightening torques of wheel bolts

Spanner width (mm)	Thread	Tightening torque Nm (lbf.ft)
17 (19)	M 12x1.5 80	100 Nm
19	M 14x1.5 110	120 Nm
24	M 18x1.5 270	280 Nm

## WHEEL BEARING ADJUSTMENT



*Bearing play*

Jack up the compressor, release brakes.

Turn wheels manually and rock.

If any bearing play is perceivable, adjust the bearings.

### Conventional taper roller bearings

Taper roller bearings are recognisable by the conical profile of the hub cap.

- Lever off hub cap. Remove split pin from axle nut and tighten so that rotation of the wheel is slightly braked.
- Turn back the axle nut to the next possible split pin hole, by a maximum of 30 degrees.
- Insert split pin and bend ends slightly outwards.
- Check wheel rotation, fit hub cap.

### Important:

The grease in the hub cap and bearing must not be contaminated with dirt during this job!

### Compact bearings

Compact bearings are recognizable by their cylindrical hub cap shape.



**If noticeable bearing play is felt, the compact bearings should be replaced.**

## TOWBAR AND OVERRUN BRAKE

### TOWBAR AND OVERRUN BRAKE CHECK

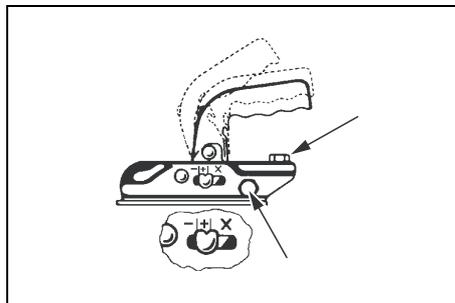
#### Check coupling head

 **First initially, then every 5,000 kilometres or annually.**

Check coupling head for wear and correct operation.

Check the wear indicator (use within the "+" range only).

Check the coupling head fastenings (see arrows, Figure) at regular intervals for firm seating.



*Check the coupling head fastenings*

#### Check height adjustment facility

 **Initially, before every journey, up to 500 kilometres, then every 5,000 kilometres or annually.**

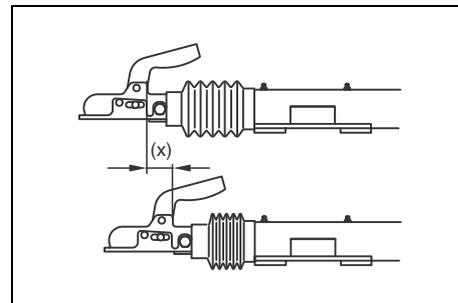
After every adjustment the clamping nuts must be tightened and secured with the spring elements.

Tightening torque:

M 24 = 250 - 350 Nm

M 32 = 350 - 400 Nm

Check tight fit of the clamping nuts and correct positioning of the adjustment facility.



*Brake play check*

#### Brake play check

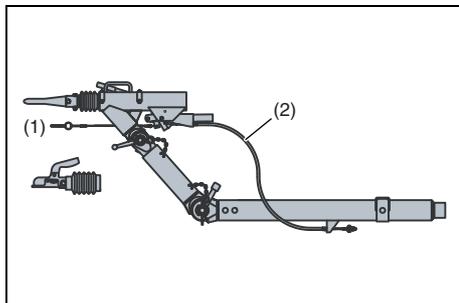
 **After the first run, then every 2,000 - 3,000 kilometres.**

The check is carried out visually on the stroke (x) of the overrun coupling.

As soon as this is more than 50 mm when the brakes are applied, adjust the wheel brakes.

Check towbar, handbrake lever, spring actuator, reversing lever, linkage and all movable parts for ease of movement.

## LUBRICATION

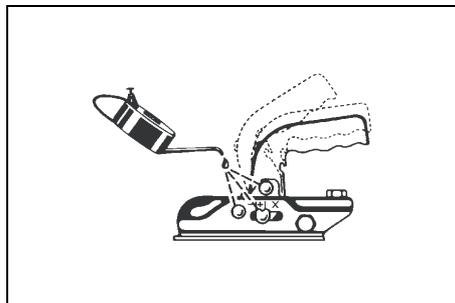


*Towbar*

 **First initially, then every 5,000 kilometres or annually.**

Check safety cable (1) for damage; every 5,000 kilometres or annually.

Check Bowden cable (2) on height-adjustable connection devices for damage; every 5,000 kilometres or annually.



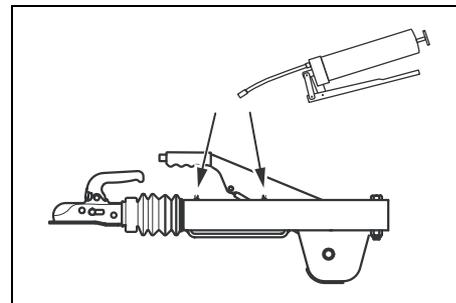
*Lubrication coupling head*

**Lubricate the coupling head**

 **At regular intervals.**

Oil ball coupling at regular intervals in the specified locations and moving parts.

Grease the contact surface of the ball of the towing vehicle.

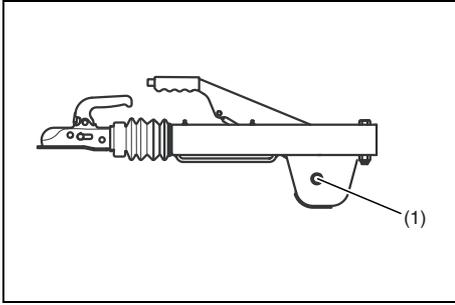


*Greasing towbar*

**Towbar bushes on the housing of the overrun coupling**

 **Initially, after 2,000 - 3,000 kilometres, every 5,000 kilometres.**

Apply general purpose grease via the grease nipples until fresh grease can be seen emerging from the bushes.



*Reversing lever*

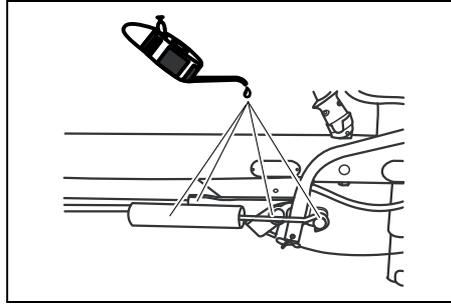
### Reversing lever

 **Initially, after 2,000 - 3,000 kilometres, every 5,000 kilometres.**

Check reversing lever (1) for ease of motion.

If fitted, apply general purpose grease via the grease nipple until fresh grease can be seen emerging from the bush.

If grease nipples are not fitted, then apply oil to the reversing lever bush.

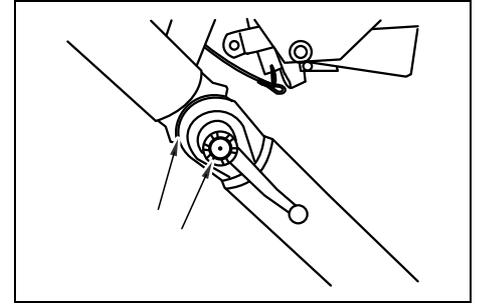


*Lubrication points*

### Lubricate all moving parts and pivot pins at the overrun coupling

 **Initially, after 2,000 - 3,000 kilometres, every 5,000 kilometres.**

All moving parts of drawbar, handbrake lever, spring actuator, reversing lever, linkages etc. are to be oiled or greased as required.



*Height adjusting device*

### Grease sliding locations on the height-adjusting device

 **For the first time after 2,000 - 3,000 kilometres travelled, then every 5,000 kilometres.**

Oil threaded parts and grease toothed parts.

# Problem solving

It is assumed that the engine is in good condition and that there is adequate fuel flow to the filter and injection equipment.

Make sure that the wires are not damaged and that they are clamped tight to their terminals.



**An electrical fault must be traced by an electrician.**



**For position of dip switches refer to section Electrical system.**

Problem	Possible faults	Corrective actions
1. Starter motor does not crank engine after switching start button (S) to "ⓘ".	a. Low battery output.	a. Check electrolyte level and charge battery. If no cells are shorted and battery is discharged, trace cause and correct.
2. Starter motor cranks engine when switching start button (S) to "ⓘ", but engine does not fire.	a. Low battery output.	a. See corrective action 1.
3. Engine fires, but engine stops when releasing start button (S).	a. Alternator drive belt broken or slipping. b. Alternator/regulator defective.	a. Check and correct if necessary. b. Have assembly repaired.
4. Hourmeter (P1) does not count running time.	a. a. Hourmeter (P1) defective.	a. Replace.
5. Engine is running, but shuts down immediately after start button (S) has been released.	a. Start button (S) released too soon. b. Insufficient engine oil pressure. c. Fuel tank contains insufficient fuel.	a. Release button after engine oil pressure has built up above the minimum allowed level. b. Stop at once, consult the engine instruction manual. c. Fill fuel tank.
6. Compressor is loaded automatically to full capacity after starting.	a. Loading valve stuck in loading position. b. Air intake throttle valve stuck in opened position. c. Air leaks in regulating system.	a. Remove and dismantle loading valve. Correct if necessary. b. Check and, if necessary consult Atlas Copco. c. Check hoses and their fittings. Stop leaks; replace leaking hoses.
7. Unit does not load after pressing the loading button.	a. Regulating valve defective.	a. Check and if necessary consult Atlas Copco.
8. Engine does not speed up immediately after compressor loading valve button has been pressed and compressor does not deliver air.	a. Regulating valve defective. b. Air intake throttle valve stuck in closed position.	a. Check and, if necessary consult Atlas Copco. b. Check and, if necessary consult Atlas Copco.
9. Excessive compressor oil consumption. Oil mist being discharged from air outlet valves.	a. Compressor oil level too high.	a. Check oil level. Release pressure and drain oil to correct level.

<b>Problem</b>	<b>Possible faults</b>	<b>Corrective actions</b>
10. Compressor capacity or pressure below normal.	<ul style="list-style-type: none"> <li>a. Air consumption exceeds capacity of compressor.</li> <li>b. Choked air filter elements.</li> <li>c. Unloading valve not completely open.</li> </ul>	<ul style="list-style-type: none"> <li>a. Check equipment connected.</li> <li>b. Remove and inspect elements.</li> <li>c. Check and, if necessary consult Atlas Copco.</li> </ul>
11. Compressor does not unload and engine keeps running at max. speed when closing the air outlet valves, safety valve blows.	<ul style="list-style-type: none"> <li>a. Regulating valve incorrectly set or defective.</li> <li>b. Air leaks in regulating system.</li> <li>c. Unloading valve stuck.</li> </ul>	<ul style="list-style-type: none"> <li>a. Check and, if necessary consult Atlas Copco.</li> <li>b. Check hoses and their fittings. Stop leaks and, if necessary consult Atlas Copco.</li> <li>c. Check and, if necessary consult Atlas Copco.</li> </ul>
12. Working pressure rises during operation and causes safety valve to blow.	<ul style="list-style-type: none"> <li>a. Regulating valve incorrectly set or defective.</li> <li>b. Air leaks in regulating system.</li> <li>c. Unloading valve stuck.</li> <li>d. Safety valve defective.</li> </ul>	<ul style="list-style-type: none"> <li>a. Check and, if necessary consult Atlas Copco.</li> <li>b. Check hoses and their fittings. Stop leaks and, if necessary consult Atlas Copco.</li> <li>c. Check and, if necessary consult Atlas Copco.</li> <li>d. Check safety valve; consult Atlas Copco.</li> </ul>
13. After working some time, the unit stops through a shutdown switch. Problem.	<ul style="list-style-type: none"> <li>a. Fuel tank contains insufficient fuel.</li> <li>b. Air in fuel system, or insufficient fuel supply.</li> <li>c. Engine oil pressure too low.</li> <li>d. Engine temperature too high.</li> <li>e. Compressor temperature too high.</li> <li>f. Low coolant level. Possible faults</li> </ul>	<ul style="list-style-type: none"> <li>a. Fill fuel tank.</li> <li>b. Check filters and hoses for leaks, dirt and bends.</li> <li>c. Refer to the engine instruction manual.</li> <li>d. See corrective actions 15.</li> <li>e. See corrective actions 16.</li> <li>f. Top up cooling system. Corrective actions</li> </ul>
14. Air and oil mist expelled from air filters immediately after stopping.	<ul style="list-style-type: none"> <li>a. Unloader valve jammed.</li> <li>b. Wrong oil type (without foam-retarding additives).</li> </ul>	<ul style="list-style-type: none"> <li>a. Check and, if necessary consult Atlas Copco.</li> <li>b. Consult Atlas Copco.</li> </ul>
15. Engine overheating.	<ul style="list-style-type: none"> <li>a. Insufficient engine cooling.</li> <li>b. Engine oil cooler clogged externally.</li> </ul>	<ul style="list-style-type: none"> <li>a. Relocate compressor.</li> <li>b. Clean engine oil cooler. Refer to section Cleaning</li> </ul>
16. Compressor overheating.	<ul style="list-style-type: none"> <li>a. Insufficient compressor cooling.</li> <li>b. Oil cooler clogged externally.</li> <li>c. Oil level too low.</li> </ul>	<ul style="list-style-type: none"> <li>a. Locate compressor away from walls; when banked with other compressors, leave space between them.</li> <li>b. Clean oil cooler. Refer to section Cleaning coolers.</li> <li>c. Check oil level. Top up with recommended oil.</li> </ul>
17. After working for some time, the unit stops for no apparent reason. Problem.	<ul style="list-style-type: none"> <li>a. Air in fuel system, or insufficient fuel supply. Possible faults</li> </ul>	<ul style="list-style-type: none"> <li>a. Check filters and hoses for leaks, dirt and bends. Corrective actions</li> </ul>

### **Alternator precautions**

1. Never reverse the polarity of the battery or the alternator.
2. Never break any alternator or battery connections while the engine is running.
3. When recharging the battery, disconnect it from the alternator. Before using booster cables to start the engine, be sure of the polarity and connect the batteries correctly.
4. Never operate the engine without the main or voltage sensing cables connected in the circuit.

## Available options

<b>Vessel type:</b>	EURO SQ/SQE/ASME/AS1210
	ASME/MOM
<b>Towbar:</b>	Adjustable with brakes (A)
	Fixed with brakes (A)
	Fixed without brakes
<b>Without towbar:</b>	Support (without undercarriage)
<b>Towing eyes:</b>	Atlas Copco
	DIN
	Ball
	Italian
	GB
	NATO
	AC (France)
<b>Towbar support:</b>	Support leg
	Jockey wheel
<b>Road signalisation:</b>	Full (B)
<b>Safety:</b>	Wheel chocks
	Safety cartridge
<b>Refinery equipment:</b>	Spark arrestor
	Inlet shut down valve
<b>Air quality equipment:</b>	Aftercooler + water separator
	Aftercooler + water separator + fine filter PD
	Aftercooler + water separator + fine filter PD + QD

	Aftercooler + water separator + fine filter PD + reheater (C)
	Aftercooler + water separator + fine filter PD + QD + reheater (C)
	Aftercooler + water separator + reheater
	Lubricator on 7 bar units
<b>Safety:</b>	Wheel chocks
	Safety cartridge
<b>Refinery equipment:</b>	Spark arrestor
	Inlet shut down valve
<b>Cold start:</b>	-20 °C (-4 °F)
<b>Customer colour:</b>	Single
	Double
	Triple

- A. These units meet your local safety regulations and are available parking brakes
- B. Reflectors and lights for safety on the road.
- C. Quality air through the aftercooler, reheater and fine filters.

# Technical specifications

## TORQUE VALUES

### FOR GENERAL APPLICATIONS

The following tables list the recommended torques applied for general applications during assembly of the compressor.

#### For hexagon screws and nuts with strength grade 8.8

Thread size	Torque value (Nm / lbf.ft)
M6	9 (6.64)
M8	23 (16.97)
M10	46 (34.69)
M12	80 (59.04)
M14	125 (92.25)
M16	205 (151.29)

#### For hexagon screws and nuts with strength grade 12.9

Thread size	Torque value (Nm / lbf.ft)
M6	15 (11.07)
M8	39 (28.78)
M10	78 (57.56)
M12	135 (99.63)
M14	210 (154.98)
M16	345 (254.61)

### CRITICAL TORQUE VALUES

Assemblies	Torque value (Nm / lbf.ft)
Wheel nuts	120 (88.56) +/- 15
Bolts, axle/beams	205 (151.29) +/- 20
Bolts, towbar/axle	80 (59.04) +/- 10
Bolts, towbar/bottom	205 (151.29) +/- 20
Bolts, towing eye/towbar	80 (59.04) +/- 10
Bolts, lifting eye/flywheel housing	80 (59.04) +/- 10
Bolts, engine/drive housing (M12)	80 (59.04) +/- 10
Bolts, engine/drive housing (M14)	125 (92.25) +/- 10
Bolts, compressor element/drive housing	80 (59.04) +/- 5
Safety switches	35 (25.83) +/- 5
Joints adjustable towbar (M24)	275 (202.95) +/- 25
Joints adjustable towbar (M32)	375 (276.75) +/- 25



Secure the drain cock and tank cap of the fuel tank handtight.

# Performance Parameter

Designation		XAS 186C XAS 375	XAHS 166C XAHS 350	XAVS 206C XAVS 450	XATS 156C XATS 350	XAHS 206C XAHS 450
Reference condition					1	1
Absolute inlet pressure	bar	1	1	1	0	0
Relative air humidity	%	0	0	0	20	20
Air inlet temperature	°C	20	20	20	7	7
Nominal effective working pressure	bar	7	12	14	10.3	12
The inlet conditions are specified at the air inlet grating outside the canopy.						

## LIMITATIONS

Designation		XAS 186C XAS 375	XAHS 166C XAHS 350	XAVS 206C XAVS 450	XATS 156C XATS 350	XAHS 206C XAHS 450
Minimum effective receiver pressure	bar	4	4	4	4	4
Maximum effective receiver pressure	bar	8.5	13.5	15.5	11.8	13.5
Maximum ambient temperature at sealevel	°C	50	50	50	50	50
Minimum starting temperature	°C	-10	-10	-10	-10	-10
Minimum starting temperature with cold start equipment	°C	-20	-20	-20	-20	-20
Altitude capability	m	3500	3500	3500	3500	3500

## PERFORMANCE DATA

Designation		XAS 186C XAS 375	XAHS 166C XAHS 350	XAVS 206C XAVS 450	XATS 156C XATS 350	XAHS 206C XAHS 450
Engine shaft speed, normal and maximum <sup>1)</sup>	r/min	2300	2300	2400	2300	2400
Engine shaft speed, compressor unload	r/min	1600	1600	1500	1600	1500
Free air delivery <sup>2)</sup>	l/s	191	167	202		
Fule consumption						
-at full load	Kg/h	19.4	20.4	31.2	20.4	27.9
-at unload	Kg/h	7.16	8.88	12.12	8.88	12.12
Engine oil consumption	Kg/h	0.097	0.102	0.156	0.1	0.12
Typical oil content of compressed air	mg/m <sup>3</sup>	<5	<5	<5	<5	<5
Compressed air temperature at outlet valves	°C	90	90	90	90	90

**ENGINE**

<b>Designation</b>		<b>XAS 186C XAS 375</b>	<b>XAHS 166C XAHS 350</b>	<b>XAVS 206C XAVS 450</b>	<b>XATS 156C XATS 350</b>	<b>XAHS 206C XAHS 450</b>
Brand		Cummins	Cummins	Cummins	Cummins	Cummins
Type		4BTAA3.9-C125	4BTAA3.9-C125	6BTAA5.9-C180	4BTAA3.9-C125	6BTAA5.9-C180
Cooling		Coolant	Coolant	Coolant	Coolant	Coolant
No of cylinders		4	4	6	4	6
Bore	mm	102	102	102	102	102
Stroke	mm	120	120	120	120	120
Displacement	L	3.9	3.9	5.9	3.9	5.9
Power	kW	93	93	132	93	132
Lube system capacity						
Initial fill	L	9	9	16.3	9	16.3
Refill(max) 4)	L	10	10	14	10	14
Capacity of cooling system	L	8.3	8.3	9	8.3	9

## Unit

Designation		XAS 186C XAS 375	XAHS 166C XAHS 350	XAVS 206C XAVS 450	XATS 156C XATS 350	XAHS 206C XAHS 450
Capacity of compressor oil system	L	24	24	26.5	24	26.5
Net capacity of air receiver	L	42	42	42	42	42
Capacity of fuel tank	L	175	175	175	175	175
Air volume at inlet grating (approx.) <sup>3)</sup>	m <sup>3</sup> /s	3.9	3.9	6.5	3.9	6.5

## Unit dimensions

Designation		XAS 186C XAS 375	XAHS 166C XAHS 350	XAVS 206C XAVS 450	XATS 156C XATS 350	XAHS 206C XAHS 450
Fixed towbar:						
Length	mm	3941	3941	3941	3941	3941
Width	mm	1716	1716	1716	1716	1716
Height	mm	1661	1661	1816	1661	1816
Weight	kg	1600	1600	1800	1600	1800

1. At reference condition, if applicable, and at normal shaft speed, unless otherwise stated.
2. Free Air Delivery is measured according to ISO 1217 ed.3 1996 annex D

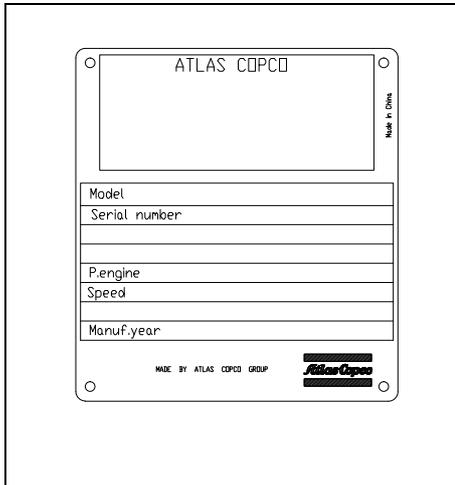
Tolerance:

- $\pm 5\%$   $25L/S < FAD < 250L/S$
- $\pm 4\%$   $250L/S < FAD$

The international standard ISO 1217 corresponds to following national standards:

- British BSI 1571 part 1
  - German DIN 1945 Part 1
  - Swedish SS-ISO 1217
  - American ANSI PTC9
3. Air required for engine and compressor cooling, combustion and for compression.
  4. With filter change.

# Data Plate



- 1 Company code
- 2 Product code
- 3 Unit serial number
- 4 Name of the manufacturer
- 5 EEC or national type approval number
- 6 Vehicle identification number
- 7 Undercarriage
  - A Maximum permitted total weight of the vehicle
  - B Maximum permitted load on the towing eye
  - C Maximum permitted load on axle (or front axle on dual axle units)
  - D Maximum permitted load on rear axle (on dual axle units)
- 8 Model
- 9 Working pressure
- 10 Speed
- 11 Engine power
- 12 Manufacturing year
- 13 CE mark in accordance with Machine Directive 89/392 EC
- 14 Register number or number of notified body

# Disposal

## GENERAL

When developing products and services, Atlas Copco tries to understand, address, and minimize the negative environmental effects that the products and services may have, when being manufactured, distributed, used and disposed.

Recycling and disposal policy are part of the development of all Atlas Copco products. Atlas Copco company standards determine strict requirements.

Material selection, substantial recyclability, disassembly possibilities and separability of materials and assemblies are considered, as well as environmental perils and dangers to health during the recycling and disposal of the unavoidable rates of non-recyclable materials.

Your Atlas Copco compressor consists for the most part of metallic materials, that can be remelted in steelworks and smelting works and are therefore almost infinitely recyclable. The plastic used is labelled; sorting and fractioning of the materials for recycling in the future is foreseen.



**This concept can only succeed with your help. Support us by disposing professionally. By assuring correct disposal of the product you help prevent possible negative consequences for environment and health as a result of inappropriate waste handling.**

**Recycling and re-usage of material help preserve natural resources.**

## DISPOSAL OF MATERIALS

Dispose of contaminated substances and material separately, in accordance with locally applicable environmental legislation.

Before dismantling a machine at the end of its operating lifetime drain and dispose of all fluids of according the applicable local disposal regulations.

Remove the batteries. Do not throw batteries into the fire (explosion risk) or residual waste. Separate the machine into metal, electronics, wiring, hoses, insulation and plastic parts.

Dispose of all components in accordance with applicable disposal regulations.

Remove spilled fluid mechanically; pick up the rest using an absorbing agent (for example sand, sawdust) and dispose of it in accordance with local disposal regulations. Do not drain into the sewage system or surface water.





