

Content	Page
A 1 DANGEROUS NATURE OF THE TURBOMACHINE.....	3
A 2 SPECIFIC SAFETY PRECAUTIONS, USED PICTOGRAPHS AND SIGNS	3
A 3 PROPER AND DUE APPLICATION.....	5
A 4 SELECTION AND QUALIFICATION OF PERSONNEL	5
A 5 THINK SAFETY	6
A 6 NATIONAL REGULATIONS, LAWS AND RULES	7
A 7 SAFETY INSTRUCTIONS ABOUT PRESSURE EQUIPMENT	7

A 1 Dangerous nature of the turbomachine

This turbomachinery unit has been designed and manufactured in keeping with the state of the art and recognised safety rules. Still, its application might entail danger of bodily injury to users or third parties and/or damage to other material assets.

The turbomachinery unit must only be operated when it is in perfect state. Its operating instructions, all safety instructions and danger warnings must be strictly complied with. In particular all interference that might impair safety must be eliminated at once.

Atlas Copco shall honour its obligations deriving from the guarantee conditions stipulated in the purchase agreement only if all rules and instructions contained in the machinery instruction manual have been adhered to.

For any and all turbomachine emission data refer to the operating data sheet.

A 2 Specific safety precautions, used pictographs and signs

The **turbomachinery manuals** contain the following terms, pictographs or signs which are used for especially important indications:



WARNING

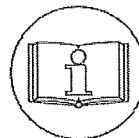
Compliance mandatory; non-compliance entails the danger of bodily injury.



Special information on the prevention of material damage



Special notes and instructions for safe operation











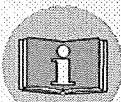
Read manufacturer's instruction manual



Environmental friendly disposal of packing materials, detergents and fluids required for operation

The following warning and obligatory signs with the following meaning might be attached to **turbomachinery plants**. Adherence is mandatory, as non-compliance may lead to bodily injuries.

Danger signs attached to turbomachinery plants must not be removed or painted. Signs must be kept clean and left at readily visible places.

Sign No.	Potential danger or unavoidable residual risk
	Part/component is subjected to internal pressure, danger by pressure impact.
	Danger of body parts being drawn or pulled into the machine, pinched or squashed off
	Machine can be started automatically or remote controlled from control room
	Danger by high temperatures
	Danger by low temperatures
	Danger by electric voltage
	Ear protection required
	Ear protection and hard hat required
	Danger by ignorance of operating instructions

A 3 Proper and due application

Proper and due application of turbomachinery is specified on the data sheets.

For safe operation of the turbomachinery plant, compliance with specified performance data is imperative to make sure that the existing limit values are not exceeded. This applies in particular to used fluids, operating pressures and temperatures, and mass flows and speeds.

If it is your intention to operate the turbomachinery unit at operating conditions deviating from those specified, you are obliged to contact the Atlas Copco Parts and Service Centre to have them authorised; Any involuntary excess in data might result in impermissible high loads exerted on the turbomachinery unit or its plant parts and thus in alarms and trips being triggered.

In addition, it is absolutely imperative to protect the turbomachinery plant against hazardous environmental impacts (dust, sand, corrosive agents) to rule out any increased wear and tear.

It is of special importance to keep the gases that enter the turbomachinery unit free of

- liquids
- dust, sand
- solid particles

(or at most to limit them as specified), as their presence will lead to extensive damage when they enter the impeller.

Unauthorised modifications, in particular those that will impair machine safety, are prohibited. The plant user shall be liable for any damage resulting from such action.

The following rule applies in EC-member states:

- If the user modifies essential parts of the plant he was handed over (e.g. driver) he shall be obliged to update the Certificate of Conformity.
- The same applies if the plant is converted to another fluid handled.

Unauthorised modification of the PLC software programs without prior permission by Atlas Copco is prohibited.

Proper and due application also means compliance with the instructions for inspections and maintenance. The intervals for recurring maintenance, inspections and revisions stipulated in the manuals must be adhered to.

A 4 Selection and qualification of personnel

CAUTION

Unqualified staff shall be prohibited to work on the machine.

Turbomachinery is dangerous, unless it is installed, operated, maintained and repaired by authorised, qualified and trained staff.

We recommend to call for Atlas Copco Energas personnel to carry out such activities as installation, commissioning and revisions.

Any work that has to be done on the turbomachinery unit in the course of the guarantee period must always be carried out by Atlas Copco personnel. Exceptions in emergencies must be authorised by Atlas Copco.

If this requirement is not met, Atlas Copco is entitled to withdraw from a part or all of its contractual/statutory obligations. In particular, the Atlas Copco guarantee liability for defects shall become void, if and when these defects were caused by

- improper handling,
- the use of unsuited operating auxiliaries,
- insufficient or incorrect installation,
- improper conduct of piping.

Work on electrical equipment of the turbomachinery plant must only be carried out by expert staff in keeping with the rules of the art.

A 5 Think safety

Adherence to any national, local or plant-specific regulations shall be mandatory. This shall also apply to the accident prevention rules.

The operating instructions, better still the complete manuals, must always be handy at the site of application.

The staff in charge of carrying out activities on the turbomachinery unit must have understood the relevant chapters of the machine manuals, especially the safety precautions, prior to doing any work. This applies in particular to staff which is working only temporarily on the machine in question, i.e. maintenance and repair staff.

Staff is to be trained in safety-related matters by the plant safety supervisor on the basis of the machinery manuals. The plant safety supervisor is obliged to thoroughly go into the requirements included in the manuals, the local conditions prevailing at the plant and the safety instructions issued specifically for the plant.

The plant user has to provide the safety relevant chapters of the manuals in the language of the country of erection.

These safety training courses should be carried out in regular intervals.

The turbomachinery unit must only be operated, if it is in perfect state.

Any safety-relevant changes of the machine or of its operating characteristics must be immediately reported to the competent company unit. In interference, the plant must be shut down at once.

Work on the machine must only be carried out when the machine is standing still and depressurised. Motors and other driving equipment must be protected against restart.

Protective devices must only be removed when the turbomachinery unit is standing still. Prior to re-commissioning the unit, it must be checked, whether these devices were re-installed.

You are obliged to carry out a functional test in regular intervals as specified in the maintenance plan.

A 6 National regulations, laws and rules

You are requested to adhere to the laws, regulations and rules that are applicable to your plant.

Adherence to the following regulations, laws and rules along with the EC - regulations applicable to the operation of the plant supplied by Atlas Copco is mandatory:

- Regulations for the prevention of accidents and
- Other safety rules issued by trade associations,
- Industrial Code, this includes e.g. technical instructions for silencing equipment
- Regulation governing hazardous materials and the regulation for working materials

Even if there is no direct danger of bodily injury, the following regulations must also be adhered to:

- Technical instructions to keep the air clean
- Regulation for materials harmful to water
- Regulation for used oil,
- Regulation for waste disposal
- Transport of special and non-recyclable waste as per law governing dangerous goods

A 7 Safety instructions about pressure equipment



WARNING

May lead to severe injuries or death.

Pressure equipment and associated safety devices must not be manipulated.

Subsequent welding is absolutely prohibited.

Warnings stuck to pressure equipment must not be removed or hidden by paint.

Pressure equipment must be installed, operated and serviced to manufacturer's instructions.



Observe the official inspection intervals applicable to pressurized components (pressure equipment). Also observe the national laws, rules and regulations valid in your country, refer also to manufacturer's documentation.

