



TRANE®

Maintenance manual

Reciprocating Chillers



November 99

CG-SVD02A-EN



Dear customer,

Thank you for your confidence **in choosing TRANE.**

The commissioning of your TRANE equipment has been completed in accordance with our standard start-up procedures.

We confirm that the machine run log has been completed and registered with our factory under our **ISO 9001** Quality Management System.

The first stage of your warranty has been validated.

To keep your TRANE equipment operating at peak efficiency during the warranty period and to extend its life we recommend that regular maintenance procedures as detailed in the timetable contained within this maintenance guide must be carried out.

To guarantee that the service you receive is efficient, reliable and carried out by technically competent factory trained technicians certificated to the refrigerant handling standard, we strongly recommend that you enroll in one of our "**SécuriTrane**" Maintenance Programs.

As a commitment to our customers, we have created a nationwide service division called **Trane ServiceFirst**. At **Trane ServiceFirst** we offer all the benefits of after sales service direct from the manufacturer and we are committed to our mission statement to provide customer Care second to none.

We would be delighted to discuss your individual requirement with you. For further information regarding **SécuriTrane** please contact your local **TRANE ServiceFirst** Center.

We at Trane ServiceFirst look forward to providing you with Customer care second to none and again thank you for your confidence in choosing Trane.

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Recommended yearly service routine frequencies

Year	Seasonal maintenance	Seasonal shut-down	Annual maintenance	Preventive maintenance	15000 Hrs top overhaul	30000 Hrs major overhaul	Tube Analysis
1	X	X	X	X		XX	
2	X	X	X	XXX			
3	X	X	X	XXX			
4	X	X		XXX	X		
5	X	X	X	XXX			X (1)
6	X	X	X	XXX		X	
7	X	X	X	XXX			
8	X	X	X	XXX			
9	X	X	X	XXX			
10	X	X		XXX	X		X (1)
+10	Every year	Every year	Every year	3 every year	Every 15000 Hrs	Every 30000 Hrs	Every 3 years

This timetable is applicable to for units operating in normal conditions with an average of 4000 hours per year. If operating conditions are abnormally severe, an individual timetable must be made for that unit.

(1) Tube testing required if aggressive water conditions exist. Applies to condensers only on water cooled units.

Seasonal start up and shut down are mainly recommended for Comfort Air Conditioning and annual and preventive maintenance are mainly recommended for Process Application.

Maintenance routine

Seasonal shut down

- Record operating pressures, amperages and voltage.
- Carry out leak test.
- Carry out oil analysis
- Check operation of machines/compare conditions of operation against original commissioning data.
- Fill the seasonal shut down visit log sheet and review with the operator.

Preventive Maintenance

- Carry out leak test.
- Check operation of machines/compare conditions of operation against original commissioning data.
- Fill the inspection visit log sheet and review with the operator.

Seasonal Start-up

- Check water flows and interlocks.
- Check operational set points and performance.
- Calibrate controls.
- Check operation of all safety devices.
- Inspect contacts & tighten terminals.
- Meg the motor compressor.
- Record operating pressures, amperages and voltage.
- Carry out leak test.
- Check configuration of unit controls module.
- Carry out oil analysis
- Change the oil as required based upon results of the oil analysis
- Replace line drier cores on each circuit (if applicable).
- Lubricate motors/dampers /bearing (where applicable)
- Check operation of machines/compare conditions of operation against original commissioning data.
- Fill the seasonal start up visit log sheet and review with the operator.

Maintenance routine

Annual Maintenance

- Check water flows and interlocks.
- Check operational set points and performance.
- Calibrate controls.
- Check operation of all safety devices.
- Inspect contacts & tighten terminals.
- Meg the motor compressor.
- Record operating pressures, amperages and voltage.
- Carry out leak test.
- Check configuration of unit controls module.
- Carry out oil analysis
- Change the oil as required based upon results of the oil analysis
- Replace line drier cores on each circuit (if applicable).
- Lubricate motors/dampers /bearing (where applicable)
- Check operation of machines/compare conditions of operation against original commissioning data.
- Complete maintenance check sheet and review with the operator

15000 hours « top end overhaul »

Inspection visit plus Maintenance visit plus Overhaul of Trane multi cylinder compressors:

- Replace all suction and dishrag valves and valve springs.
- Replace all necessary compressor gaskets and "o" rings on unloads
- Offer all replaced parts to customer for inspection.
- Fill the 15000 hours visit log sheet and review with the operator.

30000 hours « major overhaul »

Inspection visit plus Maintenance visit plus Top end overhaul plus Major overhaul of Trane multi cylinder compressors:

- Replace all piston rings and oil discharge valves.
- Check crankshaft journals and con rods for tolerance and report if out of recommended limits and replace if instructed.
- Fill the 30000 hours visit log sheet and review with the operator.

Additional services

System upgrade

This Service provides a consulting service.

Up grading your equipment will increase the unit reliability and can reduce the functioning costs by optimizing the controls.

A list of solutions / recommendations to the system will be explained to the customer.

Actual upgrade for the system will be under different quotation.

Operator training

This service includes one day of training for the system operators or building engineers for unit on site. They will gain overall understanding and improve the ability to operate and maintain the chiller.

Water treatment

This Service provides all of the necessary chemicals to properly treat each water system for the period designated.

The inspections will be conducted at agreed upon intervals and will submit a written report to the customer after each inspection. These reports will indicate the conditions of corrosion, scaling, and alga growth of the system.

Refrigerant analysis

This Service includes a thorough analysis for contamination and solution upgrade

It is recommended that this analysis be performed every six months.

Annual cooling tower maintenance

This Service includes the inspection and maintenance of the cooling tower at least once a year.

This involves checking the motor, drive and removing the debris.

Tube analysis (if applicable)

- Eddy Current Tube Testing for prediction of tube failure/ wear.
- Frequency-every 5 years for first 10 years (depending on the water quality), then every 3 years thereafter.

24 hours duty

This service includes emergency calls outside of the office normal working hours.

This Service is only available with our Ally Maintenance Contract, where available.



Additional services

Training

Our Trane Training Center is able to support all your training needs, about the refrigeration, theoretical, practical, general and specific trainings dedicated for our units. These trainings can be done in our Training Center or in an area defined by you.

Tube cleaning/coil cleaning

This Service includes mechanical or chemical cleaning of the tubes or coils

ESP (Extended Service Programs)

This Service, only available within a Maintenance contract, provides three different warranty levels

ESP one Parts only

ESP two Parts and Labor

ESP three Parts, Labor
and refrigerant

5 years moto-compressor warranty

This Service will provide 5 year parts and labor warranty for the motor compressor only. This Service is only available for units covered by a 5Year Maintenance contract.

Remote monitoring service

This Service will require Trane technicians to log onto the customer's system. It is used within the maintenance contract to optimize the maintenance and repair. A diagnosis log report with the following information will be provided to the customer on a scheduled basis.

Scope of coverage

Description	Seasonal Shut-down	Seasonal start-up	Preventive maintenance	Annual maintenance	15 000 Hrs top overhaul	30 000 Hrs major overhaul
Carry out leak test						
Calibrate Controls						
Check configuration and functions of electronic modules						
Check operational set points and performance						
Check operation of all safety devices and interlocks						
Inspect Contacts & Tighten Terminals						
Meg the compressor motor						
Carry out spectrometric oil analysis or oil replacement						
Replace line drier cores each circuit						
Lubricate motor/dampers/bearings (where applicable)						
Check unit operation						
Record operating pressures, amperages and voltage.						
Compare operation against original commissioning data						
Replace all suction and discharge valves and valve springs						
Offer all replaced parts to customer for inspection						
Fill the 15000 hours visit log sheet and review with the operator						
Replace all piston rings and oil discharge valves						
Check crankshaft journals and con rods for tolerance and report if out of recommended limits and replace if instructed						
Fill the 30000 hours visit log sheet and review with the operator						
Complete seasonal shut down visit procedure check sheet and review with the operator.						
Complete seasonal start up visit procedure check sheet and review with the operator.						
Complete inspections visit procedure check sheet and review with the operator.						
Complete maintenance visits procedure check sheet and review with the operator.						



Recommended yearly service routine frequencies

Year	Seasonal maintenance	Seasonal shut-down	Annual maintenance	Preventive maintenance	15000 Hrs top overhaul	30000 Hrs major overhaul	Tube Analysis
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Seasonal start up and shut down are mainly recommended for Comfort Air Conditioning and annual and preventive maintenance are mainly recommended for Process Application

Notes



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An American Standard Company



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Literature stocking location in Europe

Trane reserves the right alter any information without prior notice.



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