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Revisions

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Material receipt letter and declaration

This user manual, which can be downloaded in printable digital format from the website https://www.axf-axles.com/, is intended for users of axles and rudders by **FRENCO S.r.I.**, so that they are used correctly in order to avoid damage to people or things.

Compliance with the provisions contained herein is a necessary condition for operating responsibly and safely.

For all the elements and components included in the **FRENCO S.r.l.** supply, but not produced by **FRENCO S.r.l.**, the user must consult the specific manuals which, if not present, must be requested from **FRENCO S.r.l.**

FRENCO S.r.I. cannot be held responsible for damages that may arise from use of its supplies that does not fully comply with this manual. Modifications to the equipment or its parts or to the control or safety systems are considered tampering and such interventions automatically invalidate the supply guarantee. In no case, **FRENCO S.r.I.** may be held responsible for damages deriving from defects or in any case from the use of equipment not of its production, even if the use takes place in compliance with the relevant users' manuals.

In any case, the USER remains the sole responsible for the safe use of the machine/equipment, according to the provisions of the applicable legislation and in full compliance with the machine/equipment user manual.

- **FRENCO S.r.l.** delivered the device to the user and, upon delivery, it was inspected to ensure that all safety mechanisms and devices, safety and information plates were present, correctly affixed or installed.
- The user and any other possible operator have read the Use and Maintenance Manual.
- The user and any other possible operator are aware and acknowledge that the instructions for use and maintenance prescribe the obligation for any future potential user, operator, maintenance technician or worker who may work with or on the device to carefully consult this publication before any intervention.
- The user and any other possible operator have received appropriate training in its use. The user acknowledges and assumes full responsibility for the implementation of what prescribed in the Use and Maintenance Manual.
- The user is aware and acknowledges the responsibility to provide adequate training to future operators, maintenance technicians or workers who may operate with the device, in accordance with what indicated in the publication "Instructions for use and maintenance".
- The user guarantees that every possible operator will use the device according to the use intended by the Manufacturer described in the publication "Instructions for use and maintenance".

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1 General information

1.1 NOTES ON MANUAL USE

1.1.1 Manual storage

- The manual must always accompany the machine/equipment to which it refers.
- Handle the manual with care, always making sure your hands are clean so as not to damage contents.
- Do not remove, tear or rewrite any part of the manual for any reason.
- · Keep the manual in areas protected from humidity and heat.
- Keep this manual, together with all related publications, in an accessible place known to all operators/maintenance technicians.

1.1.2 Manual update

FRENCO S.r.I. reserves the right to modify this manual; any updates sent to the customer must be kept as an attachment to this manual.

1.1.3 Definitions and terminology used in the manual

1.1.3.1 Definition of Attention, Warning, Danger, Note and Information

Some important references are stressed in the manual, boxed in a contrasting colour. They are divided into five classes of different levels of importance.

Safety instructions



DANGER

It is used to draw attention on a danger with risk of injury, even fatal. Failure to observe the warnings marked with this symbol can lead to a situation of serious danger for the safety of the operator and/or exposed persons.



WARNING

Indicates a hazardous situation which - if not avoided - could result in death or serious injury.



ATTENTION

Indicates a hazardous situation which - if not avoided - could result in minor or moderate injury.

1.2 INFORMATIONAL TEXT BOX

1.2.1 Messages

NOTE

This text indicates situations or operating errors that could result in property damage or data loss.

Information

This box provides important operating instructions. Failure to follow these instructions may inhibit or prevent from successfully completing the activities described in the paragraph.

1.3 GENERAL SYMBOLOGY

Colour and shape of the signage based on the information it must provide.

SYMBOL	DESCRIPTION	INDICATIONS AND PRESCRIPTIONS
0	P category Prohibition signs	Alt - Stop - Emergency devices - Quick clear
	F category Fire prevention systems	Identification and Location
	W category Warning signals	Attention, Caution, Check
	W category Warning signals	Obligation or specific action - Obligation to wear Personal Protective Equipment (PPE)
	E category Evacuation route, safety devices, location or safety devices, safety action (signalling of safety conditions)	Doors - Exits - Paths - Materials - Stations - Rooms - Recovery

Table 1 - Table of symbols used in accordance with UNI EN ISO 7010:2012

1.4 TRAINING LEVEL OF THE OPERATOR IN CHARGE FOR READING THE MANUAL

The verification of the staff capacity to use the device and of the compliance with the skills and professionalism described below is the sole responsibility of the user.

1.5 RECIPIENTS OF THE MANUAL

1.5.1 Operator/ Device User

Trained Operator / Technician; after an appropriate training course in the use of the device, capable of carrying out the tasks assigned.

1.5.2 Assembly staff

Qualified technician capable of working on mechanical parts.

1.5.3 Mechanical maintainer

Qualified technician able to intervene on mechanical systems and parts for adjustments, maintenance, repairs. Not authorised to work on live electrical systems.

1.5.4 FRENCO S.r.l. specialist technician

Technician qualified by **FRENCO S.r.I**. able to use the device like the operator, to intervene on the mechanical parts/systems for adjustments, maintenance and repairs and for complex operations, when agreed with the customer.

1.5.5 Exposed person

Any person who has not been trained and/or is not used to operate the device and who is wholly or partially in a dangerous area, i.e.: general public, adjacent operators, people with little knowledge of the dangers but well educated on safety procedures of the establishment (e.g. administrative staff), people who may have little knowledge of the dangers and procedures (visitors, the public, children).

NOTE



In the event of any doubts and any qualifications acquired, **FRENCO S.r.l.** suggests that you always use common sense, read the following manual before each activity and contact the manufacturer for further information.

NOTE

Provide training and information for every person involved in using the device (depending on the activities to be performed).

We suggest a (annual) review and/or verification of the training, through tests or trials to the personnel responsible for using the device, in order to ensure long-term understanding and effectiveness.

1.6 PURPOSE OF THE MANUAL AND INTENDED USE OF THE DEVICE

1.6.1 Purpose of the manual

This manual applies to the axles, semi-axles and buffers produced by the company FRENCO S.r.I..

This manual contains the instructions relating to the use of these devices, with particular reference to information relating to safety, operation and maintenance, limited to the maintenance operations pertaining to the user.

The maintenance operations, illustrated in Chapter 5 with specific prescriptions relating to higher-level maintenance skills (personnel specifically trained for maintenance operations) must not be carried out by the user.

So, in case of higher-level maintenance operations, a request to the maintenance body will be necessary and the latter, assessing its specific competence, will arrange the intervention of specialised personnel properly equipped.

Read the "Chapter - Safety Standards" with particular attention.

All the information that makes up the manual is divided into chapters, which will clarify the following aspects:

- Safety: safety systems.
- Technical descriptions of the devices.
- Maintenance.

NOTE

- 1. This manual is an integral part of the supply; it contains useful information so that all personnel can operate safely and guarantee perfect efficiency, throughout its life.
- 2. For correct use, and to comply with safety standards, it is recommended that the work environment is in line with current regulations regarding safety and hygiene.
- **3.** The documentation cannot replace a training course for the staff, aimed at complete knowledge and use of the product to the fullest extent of its functionality.
- 4. This manual contains drawings and diagrams in reduced format.

1.6.2 Intended use

 The devices covered in this publication must only be integrated by trained staff who have understood the instructions contained in the accompanying manuals.



DANGER

Failure to observe the safety rules can cause injury to personnel and damage to components.

- 1. Before starting work, the operator must be perfectly familiar with the characteristics of the devices, the position and operation of all the controls; he must also have read and fully understood this manual.
- 2. The instructions, warnings and general accident prevention rules contained in this manual must be complied with in full.
- 3. The devices supplied may only be used while in optimal psychophysical conditions.
- 4. In the event of malfunctions, the devices must be brought to safety conditions waiting for the intervention of the maintenance technician, who will restore normal operation and guarantee the safety of the system.
- 5. The unauthorised tampering or replacement of one or more parts of the devices, the use of accessories, tools, consumables other than those recommended by the manufacturer may represent a risk of injury and release the manufacturer from civil and criminal liability.

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2 Safety rules

2.1 INTRODUCTION

This section contains the information, prescribed by the Community Directives and/or by the legislation in force, essential for the respect and observance of the safety standards both in a general sense and in the specific use of the supply.

Failure to observe these indications and the additional instructions contained in this manual can make the safety conditions foreseen in the design phase ineffective and cause injury to the operator.

FRENCO S.r.I. declines all responsibility for damage or for the physical safety of the operator or third parties, deriving from failure to observe the safety standards indicated in the technical documentation supplied with the devices themselves.

FRENCO S.r.I. declines all responsibility for damage or for the physical safety of the operator or third parties, deriving from failure to observe the safety standards indicated in the technical documentation supplied.

2.2 WARNINGS AND SAFETY INSTRUCTIONS

This manual contains important warnings and instructions to be followed in order to work safely.

The supply described in this manual is intended exclusively for the specified area of application. The manual also provides indications regarding the essential requirements for the application and operation of the product, as well as the safety measures to be taken to ensure regular operation. **FRENCO S.r.I.** does not provide any guarantee nor does it assume any responsibility for applications other than those described or in which the essential requirements and the foreseen safety measures are not respected.

The supply must be used exclusively by qualified personnel able to adopt the necessary safety measures. Any accessory used must be supplied or approved by **FRENCO S.r.I.**

Any adjustment or maintenance operation must be carried out by a professional technician trained and informed about the risks and the correct management.

2.3 RESPONSIBILITIES OF THE MANUFACTURER AND USER

FRENCO S.r.I. declines all responsibility, deriving from the incorrect or improper use of the devices supplied and:

- from any damage caused by the use of non-original spare parts;
- from maintenance operations not performed correctly;
- from circuit tampering;
- from connected external elements which are not part of the supply.

The responsibility for the application of the following safety requirements lies with the customer who, coordinating the planned activities, must ensure that:

- authorised personnel are qualified to carry out the requested activity;
- the personnel are aware of and scrupulously observe the instructions contained in this document;
- the general safety standards applicable to the devices are scrupulously observed. The personnel in charge of using and monitoring the devices must be instructed by their employer on the risks of accidents, on any safety elements installed and on the general accident prevention rules established by the Community Directives and/or by the legislation in force in the country of destination of the supply.

2.4 IMPORTANT INFORMATION



DANGER

The following information must be strictly followed to avoid serious risk of death.

- 1. Installation, troubleshooting and repairs must only be carried out by trained personnel who have sufficient knowledge of the supply, the intervention method and the possible risks.
- 2. Assign operating/maintenance activities to competent and/or trained personnel who have sufficient knowledge on the installation, operation, maintenance of the devices and, where applicale, the inherent danger. In addition, personnel must be able to use personal protective equipment (PPE) appropriately in accordance with the safety procedures as required by the applied standards.
- **3.** To avoid injuries/accidents caused by involuntary movement of the trailer, place blocking wedges before unhitching it or before starting any maintenance activity.
- 4. It is forbidden to carry out welding works.
- 5. Undetected damage in the bearings can progress over time causing the wheel to come off; In case of suspected bearing malfunction, consult the specialised workshop urgently.
- **6.** Only use the trailer in a perfectly functional state.
- **7.** Consult the specialised workshop or authorised dealers in the event that a presumed anomaly occurs or when in doubt.
- **8.** Pay the utmost attention when unhooking the trailer for parking, when the parking brake is pressed the trailer could move by around 20/30 cm, always secure the trailer with the parking wedges.
- 9. The labels affixed to each axle/half axle/buffer must always be present and well legible.
- **10.** Balance the load so as not to overload one side at the expense of the other.
- 11. It is forbidden to load the axles beyond the load capacity indicated on the identification plate.
- **12.** It is forbidden to manoeuvre the trailer with fully loaded tandem/tridem axles by making it rotate on itself.

Information

Failure to comply with the above prescriptions **relieves the manufacturer of any liability** for damage caused to people and things.

Failure to comply with the above prescriptions causes the **immediate forfeiture of the warranty on the equipment.**

2.5 CLOTHING

The clothing of those who operate or carry out maintenance on the devices forming part of the supply must always be suitable for the type of operation in progress. Furthermore, it must comply with the safety requirements established by the legislation in force in the country of use and by any internal factory regulations.

In general, the operator must wear safety-type shoes with non-slip soles and therefore the use of moccasins, clogs, slippers or other types of footwear that could compromise the person's mobility is not permitted.

The clothes worn must be suitable for the work to be carried out: the overalls or apron must be made of natural, non-flammable fibre (for example cotton). When working in areas characterised by heat emission, use special heat-protective fireproof gloves.

During maintenance operations, the operator and/or maintenance technician must always be equipped with earmuff caps or earplugs.



DANGER

Do not wear bracelets, watches, rings, chains, ties, accessories or clothing that can dangle, hinder the movements or hold the operators preventing their movements.



DANGER

When working near moving parts, pay the utmost attention that your clothing is suitable to avoid hooking up with these devices (sleeves, shirt tails, hair, etc.).

2.6 CONDUCT IN THE EVENT OF AN ACCIDENT

In the event that the personnel involved in the use and maintenance phases suffer an accident or find themselves subject to potentially dangerous conditions:

- immediately suspend operations and move away from elements that could cause danger;
- move carefully, never run;
- bring the trailer to a safe state;
- as soon as you have escaped the danger and have put it in a safe condition, report the event to a
 manager, in order to identify and remove the causes that led to the dangerous situation.

2.7 OPERATING ENVIRONMENTAL CONDITIONS



WARNING

Inadequate operating environmental conditions can cause damage or negatively affect the functioning of the mechanical components.

NOTE

A constant and meticulous cleaning of the work areas, as well as consistently reducing the risk of accidents, ensures maximum efficiency of the supply.

Pay particular attention in correctly disposing of products and substances that are potentially dangerous for the environment (such as, for example, used lubricating oil, batteries, accumulators or pressurised containers, paper, dust, shavings, etc.).

2.8 PERSONAL PROTECTIVE EQUIPMENT (PPE)



ATTENTION

General Prescriptions

Wear personal protective equipment when necessary to protect yourself from any danger.



Wear eye protection!

Wear face and eye protection whenever necessary to protect against chemical, environmental, and radiological, as well as irritant and mechanical hazards.



Safety helmet!

This PPE must comply with the EN 397, EN 14052 or EN 812 standards, depending on the use.



Wear protective gloves!

Wear appropriate protective gloves whenever you expose your hands to hazards, including skin absorption of harmful substances, cut or laceration, abrasion, puncture, chemical burn, high temperature, harmful radiation, or hazards associated with the use of other materials. Keep hands out of the cutting area, the point of processing, or any cutting equipment such as shears.

Insulating gloves!

Insulating gloves "are the most important PPE for electrical work: they are the first line of defence with live parts; they can be used as direct (work in contact) or secondary protection (in combination with insulating tools)". According to the EN 60903 standard, insulating gloves are divided into 6 categories (00, 0, 1, 2, 3 and 4) according to the recommended operating voltage: from 500 V to 36,000 V AC.



Insulating footwear!

These PPE must comply with the EN 50321 standard which provides for two protection classes and dielectric tests on the complete shoe (not just the sole!). In compliance with the standard, there are also special over-shoes (to be worn over work shoes) to increase the level of protection.

3 Packing, transport, decommissioning and demolition

NOTE

Packing and transport activities are managed by FRENCO S.r.I., that's why instructions are not included here.

3.1 DECOMMISSIONING

For disposal, refer to LEGISLATIVE DECREE 9 April 2008, n. 81 - Implementing article 1 of the law 3 August 2007, n. 123, regarding the protection of health and safety in the workplace - as possibly updated.

Listed below are some key points for the correct execution of the disposal of materials, related to the test room in question:

- Verify that you are acting safely by disconnecting all devices.
- For the removal, handling and disposal of all components, refer to the individual component datasheets.
- It is recommended to divide all materials, according to their composition, and to put them in a safe area.
- Contact a designated and certified body that takes care of transport and disposal.
- Request the final documentation from the body.

3.2 DEMOLITION



ATTENTION

During the demolition operations, particular attention must be paid to the disposal of the components, in compliance with the regulations and laws in force on the subject.



ATTENTION

Before starting disassembly, sufficient space must be created to allow all movements to be performed without risk to personnel.

For example, it is necessary to separate the plastic parts, which must be sent to separate collection from all the rest, in compliance with current regulations.

3.3 PROLONGED STOP

In the event of a prolonged stop/ storage of the trailer:

- Block the trailer with wheel chocks.
- Release the handbrake.
- Unload the trailer and, if possible, lift the wheels off the ground to relieve the suspension.
- Suitably cover the trailer with protective sheeting.
- Ensure good air circulation to avoid rust formation.

4 Description

4.1 SCF BRAKED AXLE

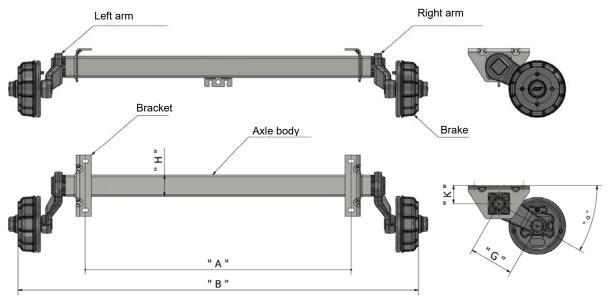


Figure 1 - SCF braked axle

4.2 SC UN-BRAKED AXLE

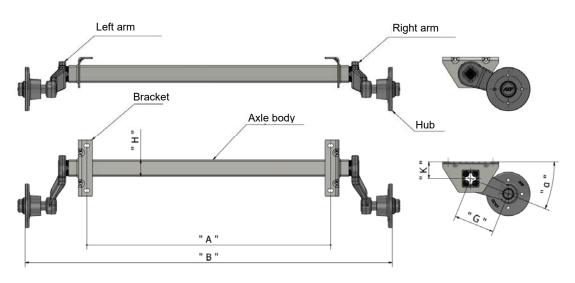


Figure 2 - SC un-braked axle

Туре	Brake	α	Α	В	G	Н	К
SCF	yes	lever tilt	brackets centre	track	lever centre	axle body	bracket height
SC	no		distance		distance	square	Height

Table 2 - Type of axles

4.3 OVERRUN DEVICES

4.3.1 Overrun devices square

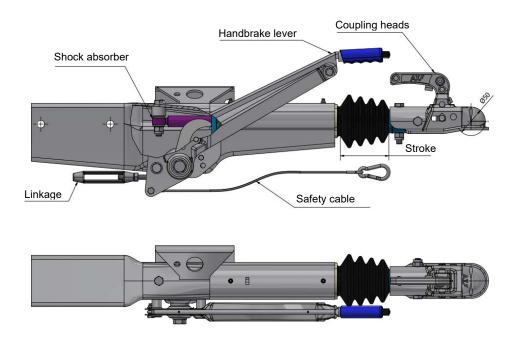


Figure 3 - Overrun devices square

4.3.2 Overrun devices "V"

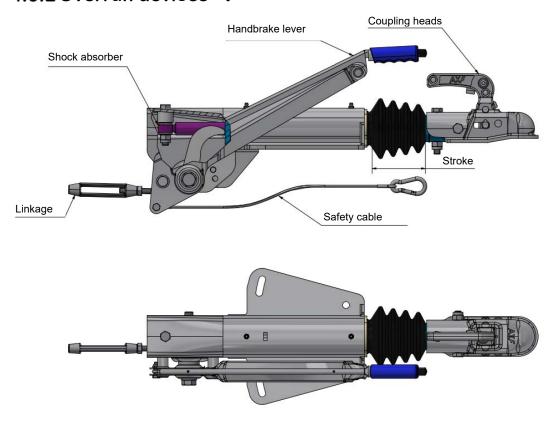


Figure 4 - Overrun devices "V"

5 Maintenance

NOTE

The scheduled maintenance activities are indicated in the table below.

The ordinary maintenance activities and their frequency are indicated in the "Maintenance Plan".

For spare components, refer to the "Spare Parts List" chapter.

This Chapter indicates all the information needed to find the spare parts to be used in the ordinary for the health and safety of operators.

Maintenance and repairs must be carried out by specialised personnel or by authorised AXF dealers.

FRENCO S.r.l. declines all responsibility in relation to activities of any kind carried out by unauthorised personnel not specifically trained for this task who, with unsuitable behaviour, could cause damage to people and/or things.

5.1 SCHEDULED MAINTENANCE PLAN



ATTENTION

Compliance with the maintenance intervals envisaged and the revision deadlines present in the directives of the European Parliament and in the Highway Code is strictly mandatory.

Maintenance and repairs must only be carried out by a specialised workshop

Control type	Frequency	Frequency [km]
First service Brake adjustment check Bearing clearance check	1	500
Bowden cables check	12 months	5.000
Bearing clearance check	12 months	5.000
Friction material wear check - sp. min 1mm	12 months	5.000
Brake adjustment	12 months	5.000
Coupling head wear check*	12 months	5000
Lubrication of the coupling head and overrun device joints	12 months	5000
Greasing of the coupling head cap and overrun device sliding bar	12 months	5000
Shock absorber integrity check	12 months	5000

Table 2 - Scheduled Maintenance

^{*}To check wear, refer to the label located on the coupling head.



Figure 5 - Wear indicator plate



ATTENTION

In case of intensive use or frequent use in mountainous environments, more frequent maintenance intervals may become necessary.

In case of long winter journeys wash the axle with fresh water.

The compact type bearings do not require maintenance / greasing, the clearance check must be carried out as indicated in the table.

The replacement of the brake shoes, which must be carried out on both drums of the same axle, must be carried out at an authorised workshop.

When replacing tyres, the brake shoe kit or the drum kit, check the tightening torque of the wheel fastening screws after first use / 50km.

In the event of whistling or noise from the bearings, promptly contact a specialised workshop.



ATTENTION

It is strongly discouraged to carry out hauling and, in general, completely immersing the wheels. After immersion, wash the axle with fresh water and grease the bearings if they are tapered roller bearings.

5.2 DON'TS

- Never disassemble the drums unless strictly necessary to carry out maintenance activities.
- Do not weld on axle or overrun device.
- Do not cover or damage the axle and overrun device identification tag.
- Do not pull the angular contact thrust ball bearings (compact bearings) out of their seat.

5.3 TROUBLESHOOTING

Fault	Cause	Remedy	
	Worn brake shoes	Brake shoes replacement	
	Bowden cables blocked - damaged - oxidized	Cable replacement	
Inefficient braking	Excessive brake actuation stroke	Adjust linkage and brakes	
	The moving parts of the overrun device do not work properly or are blocked	Lubricate	
Unbalanced braking on both sides	Uneven brake adjustment	Adjust brakes and linkage	
	Jammed brake shoes	Check assembly	
Proke everbeeting	Wrong linkage adjustment	Perform adjustment	
Brake overheating	Bowden cables blocked	Replace cables	
	Handbrake on	Release handbrake lever	
	Brake actuation stroke too long	Adjust brakes and linkage	
Parking braking not sufficient	gas spring damaged or discharged	Replace the handbrake lever	
	The handbrake lever is not pulled far enough	Pull the handbrake lever harder	
Difficulty manoeuvring backwards	Adjustment of the linkage and brakes pre-tensioned	Loosen the linkage	
Dackwalus	Sliding brake shoes blocked	Replace the sliding brake shoes	
When braking, the overrun device reaches the end of stroke	Exhausted or damaged shock absorber	Replace the shock absorber	

Table 3 -Troubleshooting sheet

6 Spare parts list

The spare parts list is available on the website https://www.axf-axles.com/ricambi/

If necessary, contact **Frenco S.r.l.** or one of its dealers providing the type and code of axle and/or buffer indicated in the identification table.

For further information please contact:

Frenco S.r.l. - Via Indipendenza 5/7 - 25018 Novagli di Montichiari (BS) ITALY Telephone +39 030 9981758 - Fax +39 030 9981779

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