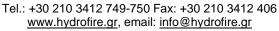


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Fierre Srl

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Installation, Operation and Maintenance Manual Self-Oscillating Monitor FI-SO





In case of technical questions or ordering of spare parts, always quote the order number, serial number and product designation.

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1. GENERAL INFORMATION

This manual explains the features of Self-Oscillating Monitors.

These facilities have been designed and manufactured in compliance with the European Directives, specified in the declaration of conformity accompanying this user manual.

This document contains all the elements so that the operator can use these products and provide maintenance in a simple, effective and safe way.

The devices are designed for the uses described in this manual, any use outside of the indications is considered improper and therefore potentially dangerous for people, things and their surroundings.

Before carrying out any activity, it is the responsibility and care of the customer to read up carefully on the full content of this manual and instructing their staff. The instructions are to be considered part of the equipment and therefore one copy of this manual must always be available for consultation in the proximity of the machine and, however, stored in protected locations or sheltered from damages for possible consultations until the final disposal of the machinery.

Fierre S.r.l. will not assume any liability resulting from:

- Improper use of the machine by untrained personnel.
- Use contrary to the laws and regulations.
- Improper installation.
- Defects in the power supply.
- Deficiencies and / or failures in the scheduled maintenance.
- Changes and / or unauthorized intervention by Fierre S.r.l.
- Use in different conditions as shown on the data plate in the specifications of the machine and in this manual.
- Use of non-original parts or not specific to the machine.
- Total or partial inobservance of the Instruction Manual.
- Exceptional events.

Fierre S.r.l. reserves at any time and without notice to make changes to the contents of this manual aimed at improving the product.

Fierre S.r.l. also informs that no part of these instructions may be reproduced or copied in any form without written permission of the same Fierre S.r.l., which are reserved rights.

1.1 TARGET

The main targets of this manual are the heads of maintenance and security establishment, and all personnel involved in operating the machine.

The manual has the aim of:

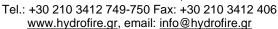
- Providing information regarding the risks determinants from improper handling of the machine.
- Providing useful and essential information for installation, operation and maintenance of the specific equipment.
- Facilitate ordering spare parts and accessories.







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The Instruction Manual can never replace the user's proper experience. The Instruction Manual may be only a reminder of the main operations, possibly referring to the need to resort to personnel who have received specific training for particular problems.

Important.: For any questions or clarification, please contact our internal service assistance:

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Tel. +39 0382 957124 Fax +39 0382 957126

To allow the user to perform various activities in safety, the following criteria have been adopted in this manual:

- All prescriptions are preceded by the symbol
- All recommendations are preceded by the symbol $\ \square$

1.2 WARNINGS AND LIMITATIONS

This equipment can be used in the conditions and in the manner described in this Instruction Manual in the specification and in accordance with the Maintenance Instructions, respecting the expected operating conditions.



SELF-OSCILLATING MONITORS MOD. FI-SO MUST BE USED ONLY FOR THE PROVISION OF WATER OR LIQUID



BEFORE STARTING THE EQUIPMENT, MAKE SURE THAT THE PRODUCTS ARE USED WITH THE CORRESPONDENTS AND CONGRUOS DIRECTIONS ABOVE REPORTED.



The equipment is designed for the uses described in this manual, any use outside of the indications is $oldsymbol{\Lambda}$ considered improper and therefore potentially dangerous for people, things and the environment surroundings.



Observe the operating limits specified either on the data plate of the product in this Manual.



IF IT IS REQUESTED TO INTRODUCE ONE OR MORE VARIABLES, COMPARED TO PROJECT DATA, THE USER MUST INFORM THE MANUFACTURER, WHICH WILL CONSIDER AND EVALUATE THE POSSIBILITY OF OPERATING THE MACHINE ACCORDING TO THE NEW REQUESTS.



THIS EQUIPMENT IS NOT SUITABLE TO OPERATE IN POTENTIALLY EXPLOSIVE ATMOSPHERES, AS **DEFINED IN THE DIRECTIVES ATEX 94/9/CE E 99/92/CE.**



The employer (user) has the obligation, in the early stages of use, maintenance and possible disposal, of the respect of the Laws, Rules and Directives concerning the use of this equipment in the context of the plant where it will be installed.



Competent operators, who know the risks associated with operations, must perform any operation of transport, installation or maintenance.



The equipment is generally not suited to operate in corrosive atmospheres or characterized by temperatures other than those provided in the Technical Data and on the data plate.

It is forbidden to remove the mobile parts for inspection and protection while the equipment is in operation.

It is forbidden not to comply with the safety provisions, proper of the production department, regarding the use of the most appropriate PPE (Personal Protective Equipment).







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GENERAL NOTES

The equipment has been realized in accordance to the standards and guidelines pertaining to the CE certification.

This presents no danger to the operator when used according to instructions given by Fierre S.r.l., providing that the safety devices are always maintained in the correct way.

Upon delivery of the Equipment, safety devices are functioning, and together with the equipment is delivered the documentation that the operator assumes the responsibility to carefully follow.

The Fierre S.r.l. hopes that you can fully utilize all the performances of our product.

2. RISKS, RISKS IDENTIFICATION, SAFETY

2.1 Risks and Safety Prescriptions

Definitions:

Operator: Person responsible for the installation, operation, adjustment, maintenance, cleaning, repair or transport of the Equipment.

Danger zone: Any part of the Equipment or the area close to it, in which a person is exposed to risk of injury or damage to health.

Exposed person: Any person wholly or partially in a danger zone.

List of the types of considered risks:

- Danger of crushing the fingers or hand between the moving parts.
- Risk of falling of the machine during installation.



Improper use of the Equipment, together with the lack of maintenance can provide serious injuries and even death.



Always refer to Directive 1999/92 / CE - ATEX (Production Zones) to meet additional safety requirements in order to reduce the danger level of the entire plant.



Pay close attention during positioning and mounting: danger of crushing.



Do not lean and do not use parts of the Equipment as decking points. If necessary, use scaffoldings to do the installation and maintenance.



The operator must wear appropriate PPE such as safety shoes, gloves, helmet, goggles and suit sleeve tight. Avoid loose clothing, watches, chains, bracelets or any other clothing that could be tangled.



IF IN THE AREAS WHERE IT IS INSTALLED THE EQUIPMENT IS PRESENT A POTENTIALLY EXPLOSIVE ATMOSPHERE, EQUIPMENT THAT CAN GENERATE SPARKS AND / OR FLAMES (WELDING, MOLE, LIGHTERS, ECC.) SHOULD NOT BE USED.



SAFE OPERATION OF THE EQUIPMENT CAN BE GUARANTEED ONLY IF ONE OPERATOR USES THE DEVICE. This is to prevent interference with any maneuver performed by other operators, may be due to inadvertent drives the movable parts.

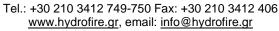
Do not omit to fix mechanically the machine to the ground, if expressly indicated.







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- Not inhibit or tamper none of the safety devices, connected with the Equipment.
- Do not start the operations of use and maintenance of the equipment without wearing the appropriate clothing and protections such as facemasks, gloves, aprons, boots and anything else required by safety rules.

2.2 SPECIFIC RISKS (see also attachments)

PARTS OF THIS MONITOR, WHICH COULD, DURING OPERATION, EXPOSE PEOPLE EVENTUALLY PRESENT ON SITE TO RISKS AND INJURIES ARE HEREBY REPORTED:

- 2.2.1 ROTATING GEAR (SPROCKET COGWHEEL POS. 1, 2)
- 2.2.2 HYDRAULIC TURBINE (POS. 3)
- 2.2.3 GEARBOX (POS.4)

NOTE: THE MEMBERS INDICATED IN 2.2.2 AND 2.2.3 ARE PROVIDED WITH DEDICATED PROTECTION AGAINST THE INTRODUCTION OF EXTERNAL BODIES. IT IS FORBIDDEN TO REMOVE THIS PROTECTION DURING OPERATION AND/OR DURING ACTIVITIES THAT ARE NOT DIRECTLY RELATED TO MAINTENANCE INTERVENTIONS. WITH REFERENCE TO 2.2.3, THE PART IS PROVIDED WITH A FIXED CARTER, LUBRICATED IN THE REALIZATION PHASE. SPECIALIZED TECHNICIANS SHOULD CARRY OUT THE EVENTUAL REMOVAL.

FIERRE S.r.I. DOES NOT TAKE RESPONSIBILITY OF POSSIBLE DAMAGES, TO PEOPLE AND/OR THINGS, CAUSED BY INOBSERVANCE OF THE ABOVE STATEMENT.

2.3 RESIDUAL RISKS

The residual risks specific to this equipment, given the mode of use thereof, have low probability of occurrence. They are typical for the use and maintenance of this type of products.

The moving parts during operation of the Equipment are not physically protected, for operating requirements of the product. The risk of contact with moving parts can therefore be considered negligible, if the operators comply with all the instructions provided in this manual.

In case of provision of the sole monitor, the installer will comply with the above cited.

These devices are CE marked and comply with the essential requirements of various Directives of relevance.

Other risks may result from improper use of the machine.

3. HANDLING, TRANSPORT AND PACKING



Specialized operators must carry out transport operations and packaging opening. After receiving the equipment, check that the packaging (if any) is not damaged, that the supply matches the specifications of the order and that there is no damage deriving from shocks.



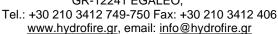
All the operations of lifting and subsequent handling must be performed: with ropes and / or means according to the regulations, of adequate capacity (generally greater than at least 20% to the weight to be lifted) and checking continuously the correct positioning of the center of gravity of the eventual packaging and/or of the device.







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Transporting the equipment near the installation site ensuring that unauthorized person are not standing nearby during handling operations.



Do not stand under hanging loads.

During handling operations, the equipment must lie perfectly and must be adequately secured, safely and properly protected from external agents. Eventual damages occurred during transportation are borne by the client.

If during transportation damages due to the handling might be identified, necessary actions should be adopted.

During transportation, the product should not be exposed to temperatures below -20 ° C and above + 50 ° C. A maximum temperature of 70° C could be considered acceptable for a period of maximum 24 hours, under the condition that the packaging will not be directly exposed to solar rays.

In case the equipment is not immediately installed, it should not be left under exposition to atmospheric agents, but kept in a dry, moisture free and dust free storage.

The storage temperature should exceed the temperature range of [-20° C - +50° C].

4. INSTALLATION



Competent operators who know with the risks associated with the operations must perform all the installation operations.



In case of accidental impact it is necessary to verify the integrity of the equipment, proceeding (if necessary) to the complete dismantling of the same, following precise instructions given by Fierre S.r.l.



The operator must wear appropriate PPE (protective personal equipment) such as safety shoes, gloves, helmet, goggles and suit sleeve tight. Avoid loose clothing, watches, chains, bracelets or any other clothing that could be tangled.

Do not lean and not use parts of the equipment as points of foot traffic. If necessary, use scaffolding or an accident prevention ladder to do the installation and maintenance.

For a correct installation:

The user is obligated to define the location of the equipment at the place of installation making sure there is enough space from the walls and / or from other machines to allow easy maintenance and start-up operations. By mounting the equipment, it is important to consider this aspect, to avoid incidents every time inspections and maintenance are performed.



THIS EQUIPMENT IS NOT SUITABLE TO OPERATE IN POTENTIALLY EXPLOSIVE ATMOSPHERES, AS **DEFINED IN THE DIRECTIVES ATEX 94/9/CE E 99/92/CE.**







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For a correct installation, follow these instructions:

- INSTALL A SHUT OFF VALVE AND A VALVE FOR WATER-DRAINAGE IN THE WATER SUPPLY LINE CLOSE TO THE MONITOR IN ORDER TO DRAIN MONITOR AFTER USE.
- MAKE SURE THAT NO OBSTRUCTIONS CAN INTERFERE IN THE RANGE OF THE MONITOR AND THE WATER JET WHEN THE MONITOR IS IN OPERATION.
- FLUSH THE WATER SUPPLY LINE THOROUGHLY AT LEAST FOR 15 MINUTES, IN ORDER TO ELIMINATE
 POSSIBLE WELDING RESIDUE OR OTHER PARTICLES THAT COULD BE INSIDE THE TUBING AFTER
 CONSTRUCTION.
- INSTALL THE MONITOR ON THE SUPPLY FLANGE, LIFTING IT WITH APPROPRIATE LIFTING EQUIPMENT TAKING
 INTO ACCOUNT THE WEIGHT OF THE MONITOR. MANUALLY SCREW THE FLANGE COUPLING NUTS AND
 BOLTS, THEN, KEY TIGHTEN THEM CROSSING THE TIE-RODS OF 180°, UP TO THE RIGHT VALUES OF
 TIGHTENING TORQUE, AS INDICATED IN THE REPORTED TABLE.

FLANGE DIAMETER (UNI PN16)	DN80 – DN100
TIE-RODS DIAMETER	M16 – M16
TIE-RODS LENGTH (mm)	65 – 65
TIGHTENING TORQUE [Nm]	250

NOTE: QUALIFIED PERSONNEL IN ACCORDANCE WITH THE APPLICABLE CODES MUST EXECUTE THE INSTALLATION. FIERRE S.R.L. DOES NOT TAKE ANY RESPONSIBILITY IN CASE OF MALFUNCTIONING.

 REALIZE THE HYDRAULIC CONNECTION FOR THE ACTUATION OF THE NOZZLE JET REGULATION (IF INSTALLED), CONNECTING TO THE FRESHWATER NETWORK, WITH A MAXIMUM PRESSURE OF 16 Bar.

5. DEMOLITION AND DISPOSAL



Qualified operators who know the risks associated with the operations must perform any operation.



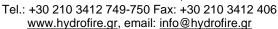
The disposal of material wear must be carried out according to the rules.







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6. DESCRIPTION OF EQUIPMENT

OPERATION INSTRUCTIONS:

The described monitor, equipped with a proper delivery nozzle or branch pipe connected to the exit flange, is used to remote discharge the extinguishing agent (water, foam). The performing capacity of the monitor, in terms of flow rate and range, depends on the type of nozzle or delivering lance and on the supply pressure parameters generated by the supplying pumps or other propelling media. Independently from the typology, the extinguishing agent is discharged under high pressure and in relevant quantities, therefore constituting and generating risk for injuries, even serious in the case of direct pointing towards people, as well as risk of damaging structures or delicate equipment, such as non-unbreakable windowing, car bodies, etc.

For safety reasons do not supply the monitors with pressure values higher than the maximum design pressure.

Moreover, the monitor under consideration is characterized by a self-oscillating system hydraulically actuated, which, thanks to a small hydraulic turbine and gears, allows the automatic rotation of the monitor for a selected number of degrees set by mechanical limit switches.

Fierre S.r.l. is not responsible for any accidents and/or injuries that occur by not using the device in accordance with the above stated recommendations.

- · Adjust the elevation of the monitor by means of the dedicated devices for manual handling.
- Set the rotation by acting on the dedicated limit switches.
- · Set the nozzle in the position of full jet (JET) or sprayed jet (FOG)
- Flush the monitor with water, by opening the switch-off valve

7. MANTENAINCE INSTRUCTIONS

The operations of inspection, maintenance and restoration are fundamental for keeping unchanged through time technical, productive and safety conditions set by the manufacturer. Since such operations may imply risks for the authorized personnel, it is important to follow the following reported procedure.

Competent operators who know the risks associated with the operations must perform any maintenance activity.



Qualified personnel, equipped with the required protective equipment and with appropriate tools, should perform all maintenance and repair activities.



Follow all the procedures reported in this manual.



For the replacement of various parts, require only original spare parts.



All servicing must be authorized in accordance with the internal regulations of the industrial facility.



The maintainer should make sure that unauthorized people are absent during the operations.



Once completed the various maintenance operations, proceed with the start-up of the monitor







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7.1 PERIODIC INSPECTION AND ORDINARY MAINTENANCE

NOTES:

- It is not possible to determine exactly the frequency of cleaning and / or replacement operations, since this
 could depend on the actual operating conditions of the equipment.
- A visual inspection inside and outside of the equipment should be carried at least every day, in order to
 identify any damage. In case of the presence of damaged parts, the equipment must not be used to avoid
 that its use becomes dangerous.

The equipment is composed of several parts assembled together, guaranteeing the requested performances.

The following list shows the maintenance intervals relative to all devices.

The inspection intervals and maintenance have been calculated for a service under normal conditions of a few hours daily. For more extreme operating conditions, it is necessary to reduce the frequencies of those intervals.

WARNING: IT IS FORBIDDEN TO PERFORM CLEANING AND LUBRICATION OPERATIONS OF MOVING PARTS.

- EVERY 15 DAYS: PERFORM SOME MANUAL MANEUVERS OF HANDLING OF ELEVATION AND ROTATION, AIMING
 AT VERIFTING THE FLUIDITY OF THE MOVEMENT OF JOINTS AND THE FUNCTIONALITY OF MECHANICAL
 MEMBERS.
- EACH MONTH: PERFORM A COMPLETE WORK CYCLE OF THE MONITOR, DELIVERING WATER FOR AT LEAST 5
 MINUTES. WHILE DOING THIS, PERFORM SOME MANEUVERS ON THE JET REGULATION OF THE NOZZLE (IF ANY).
- PERIODICALLY CHECK THE PAINT CONDITIONS, READJUSTING IF NECESSARY. MOREOVER, VERIFY THE PRESENCE
 OF CRACKS OR OTHER DAMAGES, EVENTUALLY CAUSED BY VIOLENT ACCIDENTAL SHOCKS EXPERIENCED BY THE
 MONITOR.
- ANNUALLY PROCEED TO REMOVE THE COVER OF THE GEAR BOX, CLEAN THE GREASE THOROUGHLY AND RESTORE THE GREASING OF ALL PARTS WITH A LITHIUM GREASE TO BE APPLIED WITH A BRUSH. CLOSE THE BOX BY RESTORING THE LIQUID GASKET. THE USE OF MOTORSIL-D IS RECOMMENDED.

The present advices do not substitute what prescribed by the set of rules EN-13565.

CLEANING OF THE EQUIPMENT

WARNING: IT IS FORBIDDEN TO PERFORM CLEANING AND LUBRICATION OPERATIONS OF MOVING PARTS

Equipment should be cleaned periodically with a dry cloth (not wet).

Do not use solvents or detergents, which could damage the paint.

To clean the internal parts of the equipment use compressed air at low pressure (max. 3 Bar).

GREASING AND PERIODIC MANTENAINCE

ALL THE PARTS WHERE GREASERS ARE PRESENT, SUCH AS ELEVATION ROTATIONAL JOINT, SHOULD BE CONSIDERED LUBRICATED FOR THEIR ENTIRE LIFE CYCLE. EACH ADDITIONAL INSERTION OF GREASE, WITH RESPECT TO THE QUANTITY DOSED BY FIERRE, IS TO BE CONSIDERED COUNTERPRODUCTIVE OR EVEN DAMAGING FOR THE FUNCTIONING OF THE DEVICE ITSELF. IN CASE OF IDENTIFICATION OF ABNORMAL DROP OF GREAS FROM THE ROTATIONAL JOINTS, IMMEDIATELY CONTACT FIERRE.

ALL THE MOVING PARTS DETECTABLE BY SIGHT OR COVERED BY A CARTER MUST BE KEPT CLEANED AND GREASED.







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Type of grease and use	Suggested Brand	Quantity
Bearing grease	Molikote BR2 plus	As required
Gear box grease	LITHIUM GREASE	Yearly/ as needed

Brands of greases are indicative without reference to quality and product. It is possible to use others provided with the same features.

Important: For any malfunction, please contact our internal service assistance:

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8. POSSIBLE INCONVENIENCES AND SOLUTIONS

<u>Product</u>	PROBLEM	POSSIBLE CAUSE	SOLUTION
Self-Oscillating Monitor FI-SO	The monitor does not turn	A foreign element slows the rotation	Verify and remove the foreign element
		The bears are not greased	Grease the bearings
		The bears are blocked	Replace the bearings, this must be done by qualified personnel.
		Couplings are seize	Due to lack maintenance. Contact the manufacturer

9. Attachments tab

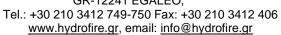
Attachments	Ref. Document	
Technical drawings	Attachment 1	
Gear box drawing	Attachment 2	







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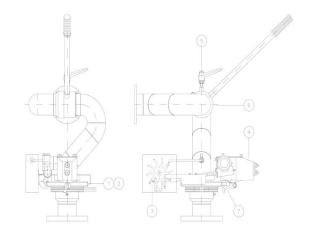








Attachment 1: Technical Drawing

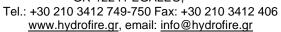








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Attachment 2: Gear box drawing

