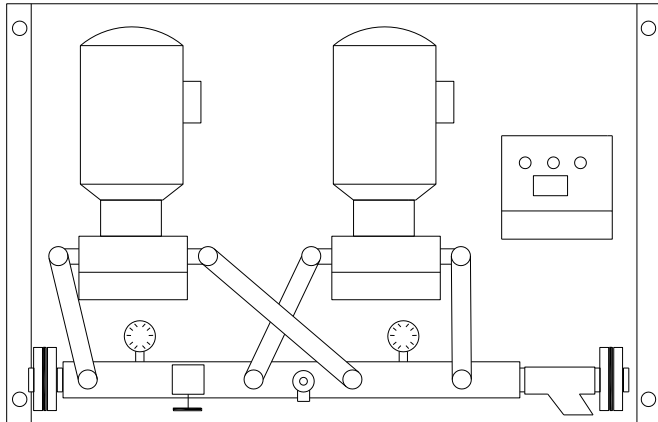




**INSTALLATION, MAINTENANCE AND OPERATING
INSTRUCTIONS FOR FEED PUMP SETS
TYPE: RL and FP**



All RL and FP models are suitable for EL fuel oil, tested and certified in accordance with DIN EN 12514-1.

ATTENTION !!!

When a tank system is being used with several tanks, the feed pump set must always be switched off before switching over from one tank to another tank.

The closed circuit pumps units type RL are designed to be used to supply automatic oil burners with heating oil EL. The VbF (German abbrev. for regulation on combustible fluids) must be observed for the selection of the installation site for this unit.

For the installation in a dome shaft, we would like to point out that only our separate versions with rigid Cu pipe lines have been approved for such use.

The standard pump sets should not be installed outside without weatherproof optional cabinet.

The filter cartridge has to keep back foreign substances with a grain size $>0,1$ mm.

Do not install a check valve or foot valve into the tank on the suction side in order that the oil column breaks away in case of leakage (TRbF 231).

Miscellaneous “im” control for discontinuous flow :

The pump unit only works if the burners need oil by driving the burners over an electric trip line with a miscellaneous circuit (type RL im).

Type RL ZW ZU will always be delivered with miscellaneous IM output for discontinuous flow. Drive of the burners with an electric trip line. Connection for malfunction-remote-indication 230 V.

Installation, maintenance and starting must be executed by competent technician.

Protection rating: IP 50, Motor: IP-55

Data subject to technical change.

Ring main type Circuit Pumps Units - RL

Model RL pumping unit is designed for installation within closed circuit.

Installation as continuously operating pump:

By means of the pressure regulation valve set the line pressure to at least 0.8 bar. Switch on the device and maintain pressure on the white starter button until the device runs by itself. Should the pressure drop below 0.5 bar (breakage in the line, tank empty, etc.), the device will switch over to fault mode.

The vacuum indicator:

A vacuum indicator is installed at the intake side.

This indicates the vacuum between gear pump and oil filter. The vacuum must not drop below 0.5 bar, since this involves the danger of gas separating out from the fuel oil. Among other things, this causes howling in the pumps. Any increase over the original vacuum indicates that resistance is encountered within the intake line (cavitation limit), mostly due to contaminated fuel oil filter. Should this occur, the filter must be cleaned.

The internal geared pumps installed within the units are self priming and can lift fuel oil up to 5 m from tank bottom. Regarding the allowable height and length of intake line, we refer to the attached diagram. The precondition for the suction effect is, however, that the unit should be unpressurized. Therefore during suctioning open all valves at the delivery side. Once the fuel had been suctioned, which is determined on the filter, the shutoff devices can be closed. Once the set pressure is reached the oil burners must be vented in order that the column of oil should be continuous right up to the burners.

Over- pressure line:

When several tanks are used, the over- pressure line must at all times be connected with the tank from which fuel oil is being drawn.

Model RL 0 - 10:

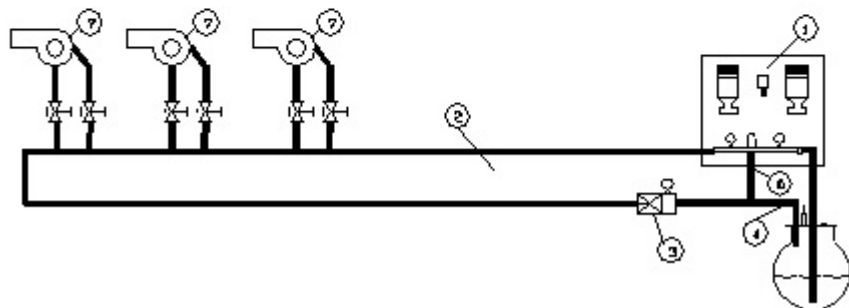
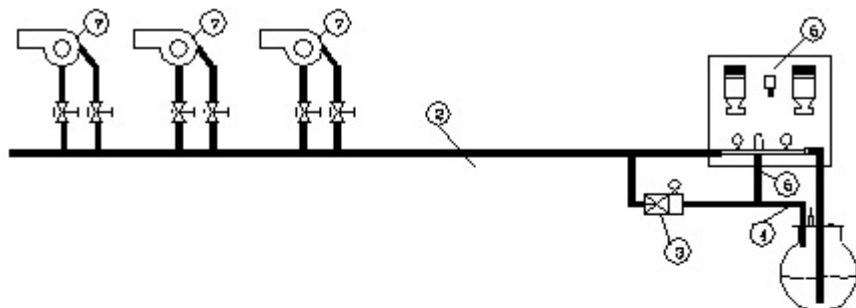
This is equipped with built-in corner overpressure and discharge valve. In accordance with VbF specification , this must be connected to the return line. A knurled ring is fitted to the corner overpressure and discharge valve. When this is screwed home by turning it to the right, then this is the position for the overpressure valve . When the knurled ring is loosened by turning it to the left, then the valve serves for emptying the entire installation, which thus becomes depressurized. In the normal position the knurled ring is at all times screwed towards the right to the stop.

Installation with parallel oil burners:

Model "RL" or Model "RL ZW ZU" pumps: model "RL" is additionally equipped with built-in timer switch relay. This is needed to allow the necessary operating pressure to build up. Should the pressure drop, or not enough oil be available, the device will automatically switch over to fault mode.

In case of twin units, model 'RL ZW ZU ' , a clock relay is additionally fitted in order that the two pumps could operate alternately. Should one pumping system fail, due to release of the protective motor switch, the unit will continue to operate with the remaining pump, until the second pump is again serviceable. The fault will be indicated by fault indicator light.

We refer to the attached diagram.



1= Pressure unit, type RL

2= Supply line

3= Pressure regulating valve

4= Return line to the tank

5= Overpressure line, return line to the tank.

6= RL pump set

7= Oil burner

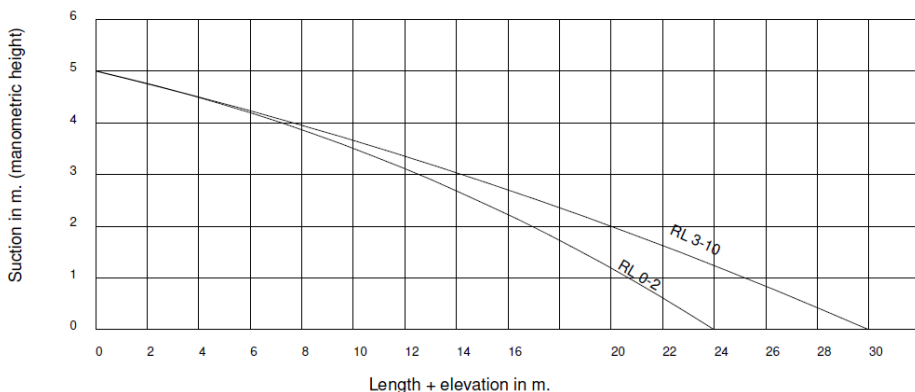
Connection to the hydraulic circuit :

Model Suction: Drive: Overpressure:

RL 0	N/GE	1/2 "	1/2 "	1/2 "
RL 1	N/GE	DN-20	DN-20	1/2 "
RL 2	N/GE	DN-20	DN-20	1/2 "
RL 3	N/GE	DN-25	DN-25	3/4 "
RL 4	N/GE	DN-25	DN-25	1 "
RL 5	N/GE	DN-32	DN-32	DN-32
RL 6	N/GE	DN-40	DN-40	DN-40
RL 7	N/GE	DN-40	DN-40	DN-40
RL 8	N/GE	DN-40	DN-40	DN-40
RL 9	N/GE	DN-50	DN-40	DN-40
RL 10	N/GE	DN-65	DN-50	DN-40

Maintenance and repair :

- 1) There must be payed attention of extremely tightness especially of the suction line. If after a longer stationary period the device is on mal function, the first step is to examine the tightness at suction line.
- 2) Clean the fuel oil filter periodically by cleaning the filter insert. Carefully position the sealing ring in the filter bowl.



Accessories:

Overflow valve:

Technical characteristics:

Flow: Models from 0-10.000 l/h (Consult)

Pressure: 1= 1 to 4 bar (standard),

other pressure rating available: 0 = 0,5 -1,5 bar,

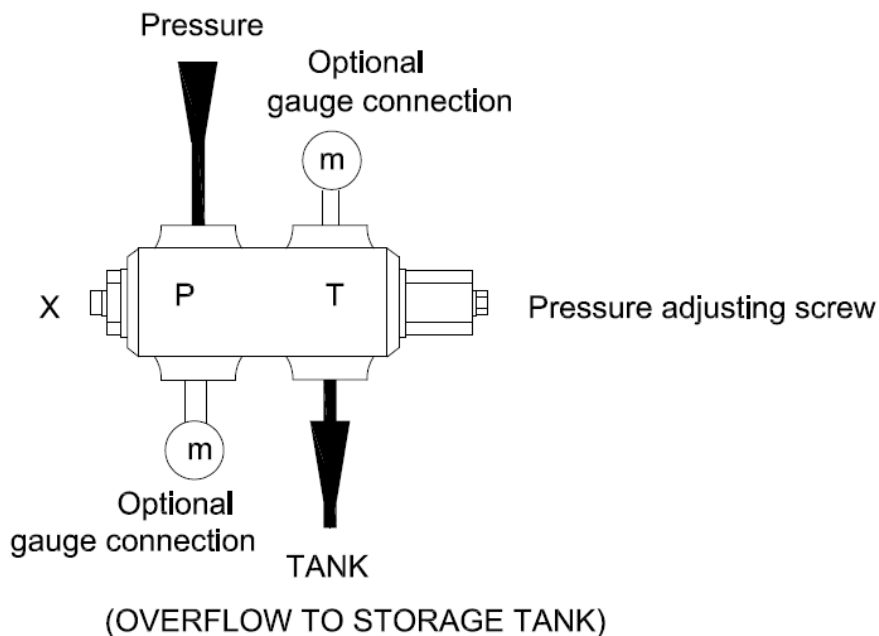
2 = 2 - 9 bar

3 = 6 - 26 bar

4 = 15 - 40 bar

Size: see Inpro general catalogue.

Installation example:



Feed Pump Units : INPRO FP

Model FP feed pump is designed for conveyance from tank to tank and is controlled by float switch.

Installation and start-up: model FP:

The transfer unit should be installed as close as possible to the fuel oil tank. The in- take and delivery sides are equipped with the following connections:

Connections:

Model	Drive	Suction	Overpressure
FP 10	1/2"	1/2"	1/2"
FP 23	1/2"	1/2"	1/2"
FP 41	1/2"	1/2"	1/2"
FP 90	3/4"	1"	3/4"
FP 120	1"	1"	1"
FP 240	DN – 32	DN - 32	DN - 32
FP 360	DN – 42	DN - 42	DN - 42
FP 570	DN – 42	DN - 42	DN - 42
FP 20 D ZW ATEX	DN – 25	DN – 25	1"
FP 40 D ZW ATEX	DN – 25	DN – 25	1"
FP 80 D ZW ATEX	DN – 40	DN – 40	1" 1/2
FP100 DZW ATEX	DN – 40	DN – 50	1" 1/2
FP200 DZW ATEX	DN – 50	DN – 65	1" 1/2

The vacuum indicator:

A vacuum indicator is installed at the intake side. This indicates the vacuum between gear pump and oil filter.

The vacuum must not drop below 0.5 bar, since this involves the danger of gas separating out from the fuel oil.

Among other things, this causes howling in the pumps.

Any increase over the original vacuum indicates that resistance is encountered with in the intake line (cavitation limit), mostly due to contaminated fuel oil filter. Should this occur, the filter must be cleaned.

The internal gear pumps installed within the units are self-priming and can convey fuel oil up to 5 m. Regarding the allowable height and length of intake line.

Maintenance and repair :

1) There must be paid attention of extremely tightness especially of the suction line. If after a longer stationary period the device is on mal function, the first step is to examine the suction line due to tightness.

2) Clean the fuel oil filter periodically by cleaning the filter insert. Carefully position the sealing ring in the filter bowl.

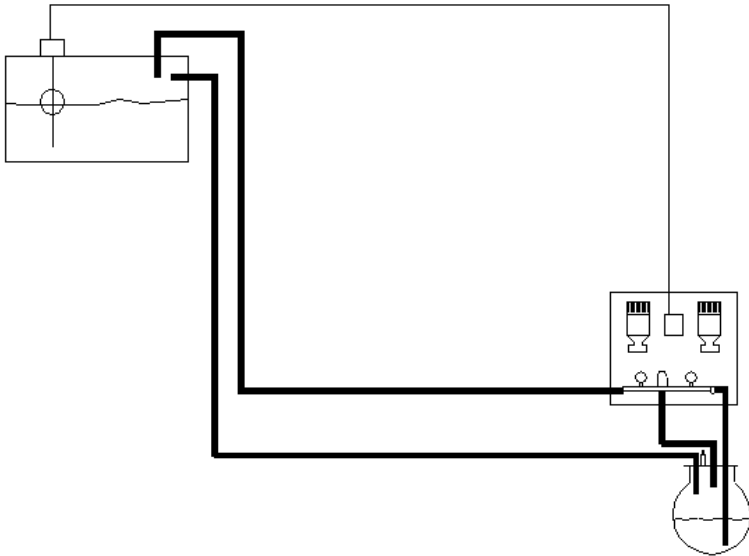
NOTE: The standard model are suitable only for indoor installations. For outdoor installations, it can be mounted in an optional weatherproof cabinet. Please ask the manufacturer.

The filter should prevent the passage of particles having a size greater than 0.1 mm.

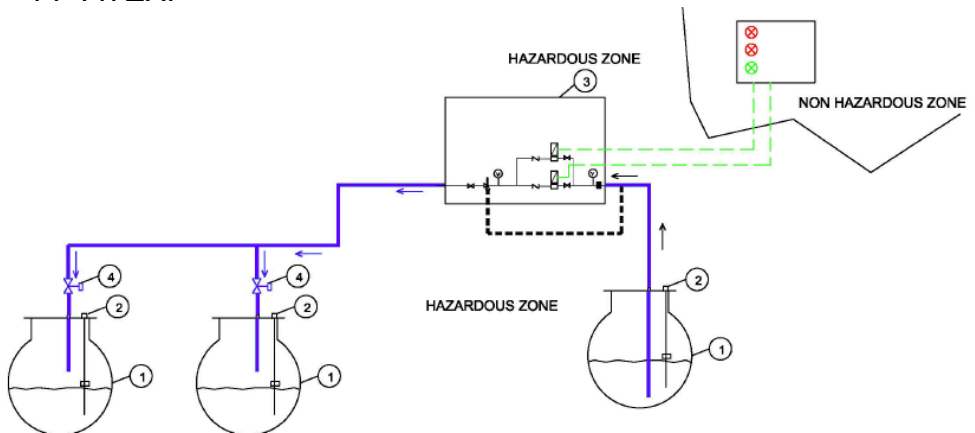
On the suction side, any check valve or no foot valve must be installed inside the tank to thereby detect possible air intakes.

Installation examples:

Standard FP:

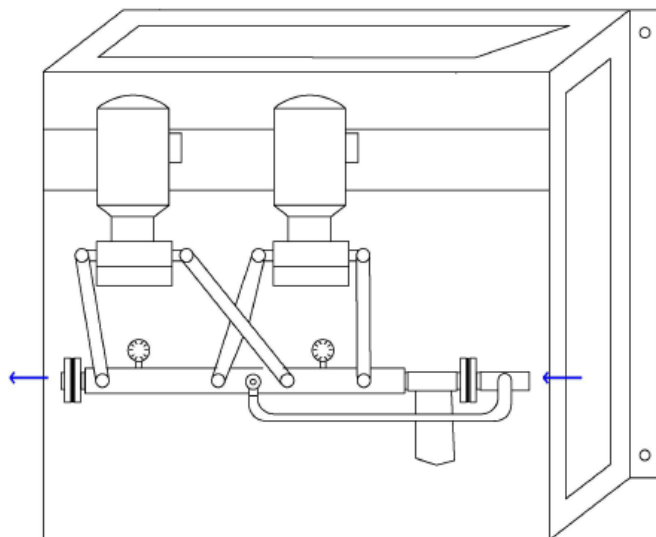


FP ATEX:



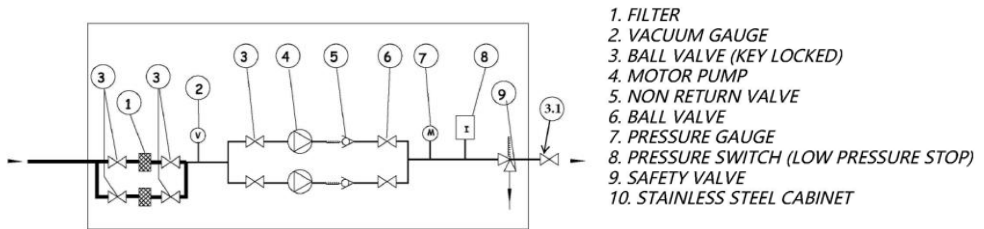
- 1.- MAIN STORAGE TANK
- 2.- LEVEL PROBE (STOP FP FOR LOW LEVEL)
- 3.- OIL TRANSFER PRESSURE PUMP SET MOD. INPRO FP (ATEX VERSION)
- 4.- LEVEL PROBE (START / STOP FP FOR LOW / HIGH LEVEL)
- 5.- DAILY TANK
- 6.- FP PUMPS CONTROL BOX IN NON HAZARDOUS ZONE

FP 20 ATEX General Aspect



Optional Double Filtering System for FP and RL

Optional Metal Cabinet for FP and RL



How to clean the filtering element (not applied for selfcleaning filters):

- 1.- Close the 2 ball valves from the filter to clean, keeping the other 2 ball valves opened.
- 2.- Unscrew the filter bowl, and clean or substitute the filtering element, and eventually the bowl seal ring.
- 3.- Screw again that filter bowl, placing correctly the bowl seal ring.
- 4.- Close the general outlet valve from the pump assembly
- 5.- Open again the 2 ball valves from the cleaned filter.
- 6.- Open the safety valve (counterclockwise), till pressure gauge display 0 bar, and keep this status during 15 seconds. That will allow bleeding the air existing at the replaced filter.
- 7.- Open again the safety valve (clockwise), and open the general outlet valve from the pump assembly ®.1.
- 8.- Isolate again the second filter by closing his ball valves ®.

Troubleshooting:

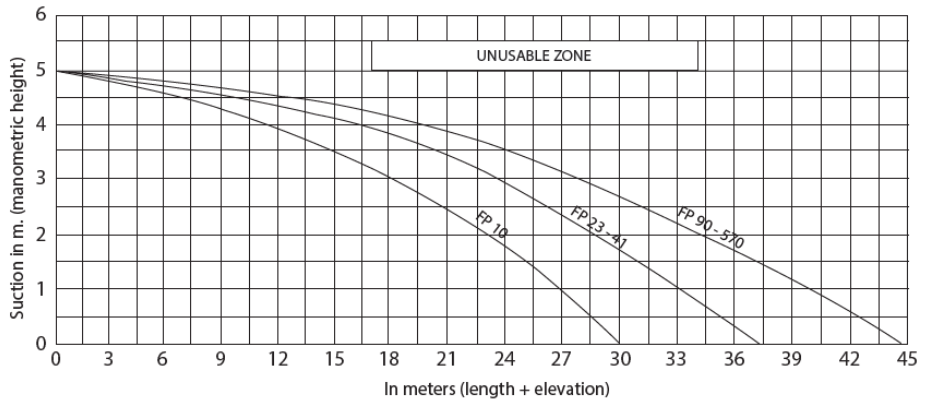
1. **Low Pressure:** If the pressure descends under the set point of the pressure switch due to a pipeline break, tank emptiness, etc. the unit stops and indicates an error for low pressure. The unit has to be reinitiated and the commissioning must be done again.
2. **Thermal Relay:** When it appears over-intensity at the pump, and the thermal relay would be activated, if the unit has only one pump, it would be stopped and the unit must be rearmed manually. If the equipment has two pumps (on automatic mode) the pump on service would be stopped and the second pump would be activated. This action would also activate an error signal at the unit.
3. **Leakage:** When the leak oil detector is activated, the unit indicates the error and stops the unit until verification is carried out. When it is done, the unit must be rearmed manually and the commissioning must be done again.

Elements:

1. **Filter:** The filter avoids particles on the unit bigger than 0,1 mm.
2. **Vacuum Gauge:** The gauge indicates the vacuum between the tank and the pump. This vacuum should never reach 0,6 bar or 0,50 cmHg, to avoid the gasification of the diesel. The appearance of gasification it is revealed because the pumps start to make more noise. A higher vacuum could be caused by the appearance of a resistance in the aspiration pipe that must be cleaned. The filter and the aspiration pipe should be checked out.
3. **Pumps:** These are self-priming pumps until a height of 5 meter (see graphic). The pumps could be monophasic or three phasic and with flow rates according to the different models.
4. **Pressure Switch:** It controls the minimum pressure which the equipment must work with.
5. **Manometer:** It indicates the pressure at the exit of the unit.
6. **Safety Valve:** The valve protects the pumps and the installation. When the pressure reaches 6,5 bar, the valve

releases all the fuel by the overpressure pipe. Above this valve there is a ring in order to be able to open the valve manually. If the ring is turned counter clockwise, all the system is discharged and leaving it without pressure. However the ring should be kept turned at the right position.

FP Suction chart



Inspection & Maintenance:

- **Suction pipe:** It is very important to keep the equipment leakage free, specially all along the suction pipe. In case of a possible failure after a large inactive time of the equipment, the aspiration pipe must be checked out for possible resistance or air leak that would increase the vacuum between tank and pumps.
- **Filter:** When the vacuum gauge indicates a higher resistance, the basket filter should be checked out and cleaned up (If the filter is self-cleaning type, turn a couple of times the handle). The filter should be cleaned up once a year. It is important in case of disassembling the filter, to refit correctly the joints when reassemble.
- **Pressure Switch:** The regulation must be checked out (every switch is supplied regulated and sealed) If a new adjusting is necessary, the switch must be resealed.
- **Connections:** 6 month periodic review. Or when excessive noise.
- **Motor:** If the engine's colour becomes faded, it is due to an overheating, this indicates that the engine is not optimally working. In order to overcome the engine malfunction, the phase consumption must be checked out (all 3 must be equal); and if there is excessive noise, the bearing must be checked out. If the engine does not work at all, the electric supply must be checked out.
- Verify the low pressure lamp.
- Verify the thermal relay.
- **Non-return valve:** check for eventual malfunction on valve closure (caused i.e. by a particle).
- **Safety valve:** Must be replaced every 5-6 years, or in case of leak appearance.
- **Circuit Breaker:** If it does not work even with intensity: A) Thermal relay rearm; B) Verify electrical continuity; C) Verify coil.
- **Frequency converter:** If pump controller not work, turn off and switch it on again. If it still does not work and an alarm has appeared, please contact the technical department.

Caution:

- Improper transport can cause damage to the equipment.
- Do not throw, or drop, the equipment as it could be damaged or even damage to third parties.
- The equipment must be protected during transport of water, humidity, dust and dirt.
- Condensation can affect sealing areas, metallic components and electrical operation.
- Inpro Pressure groups have an emission sound level of less than 70 dB (A).

Safety:

Before carrying out any operation involving the handling of chemical products (gas, oil, etc.), the safety and hygiene measures recommended by the manufacturer in the safety or packaging label of the product must be adopted.

1. The personnel of the installation, service, maintenance and inspection must be qualified to perform this type of work.
2. The equipment must be maintained in a safe working condition at all times. It must be examined periodically for function purposes by competent personnel trained by Inpro SL procedures. Please contact Inpro in case of training need.
3. The equipment must not be used for any other purpose that for which it was designed.
4. Do not use spare parts other than those recommended and supplied by Inpro R&D, S.L.
5. Any modification carried out by the client on the equipment will be exclusive responsibility of the client. Inpro R&D, S.L will advised the client about any possible and presented modification.
6. In addition to the safety instructions cited in this manual, all regulatory safety rules must be taken into account.
7. Failure to follow the safety instructions in this manual can cause hazards to people and equipment.

8. Before repairing or replace of part of the equipment, the pressure of the line must be removed. The power supply must be disconnected as well.
9. Both the working conditions and the working limits stipulated in this manual must not be exceeded in any case.
10. It is recommended that the appropriate extinguishing media be available at the equipment location.
11. It is recommended to have at the installation protection against indirect contacts (Differential) and against maximal current (Circuit breakers).
12. The placement must be properly ventilated.

In case of accidental leakage, you should turn off the equipment, eliminate ignition sources, see diesel safety sheet supplied by the diesel supplier. In the latest you will have guidelines to avoid personal injuries or environment damages.



 C / Invierno 4-6 - P.I. el Malvar
28500 Arganda del Rey - Madrid - Spain

 (+34) 91 871 92 94
 (+34) 91 871 92 56

www.inprogroup.net