

# FIRE PUMP SYSTEMS INSTALLATION GUIDE

√ TS EN 12845



According to the legislation accepted by the Grand National Assembly (TBMM), installations with sprinkler system

contains fire booster sets produced in compliance with the obligatory European Union norm.

All details are given in the booklet translated by TSE regarding these booster sets. Upon request, you can have more information by asking our sales department for technical brochure of fire pump systems in accordance with TS EN 12845+A2 standard, you can get more information about installation of the unit by watching the installation video of the fire booster set which is delivered in modular form in the after sales service section on our web site.

### **Usage of Fire Booster Sets**

Electric motors used in fire booster sets do not have thermal protection which protects the motor according to EN 12845+A2 standard. The intended purpose here is that, even though the electric motor remains in two phases at the time of the fire, the pumps continue to operate until the motor windings are burned. For this reason, boosters can not be connected to any other facility other than the fire system, it can not be used for the water supply purposes. If it is used, any faults that will occur in the device will not be covered by the guarantee.

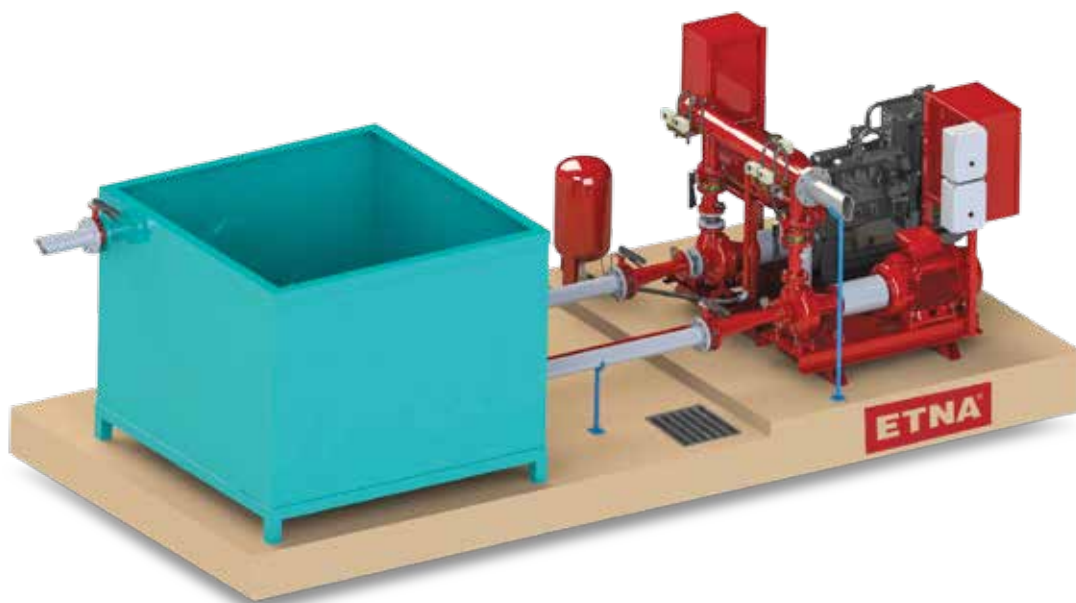
### **Characteristics of Fire Booster Set Suction Line (Sucking From Storage With The Same Elevation Difference)**

- First examine the detailed drawing related with the installation of the device.
- It is necessary that the suction lines of the pumps are smaller than the pump suction diameter and laying the installation pipes parallel to the floor at the shortest distance to the pump suction line from the reservoir without using too many elbows and to avoid formation of possible air pockets.
- Water suction will be easier if the suction line is laid as properly as possible. Easy flow of water through the pump suction line will prevent the pump from running under negative conditions which are described as cavitation (local evaporation and condensation cycle of the fluid in the pump).
- In the fire pump assembly drawing, how to connect the suction pipe to the reservoir storage is shown in detail. Here, attention must be paid to the dimensions.

**Characteristics of Fire Booster Set Suction Line (Sucking From Storage or Well With Minus Elevation Difference)**

- First examine the detailed drawing related with the installation of the device.
- At the pump connections, it is an undesirable and unfavorable condition for the pump to operate by sucking from the negative elevation difference . Problems such as the formation of an air gap in the suction line or an increase in the NPSH value occur. (The NPSH value is the minimum positive pressure that must be in the pump suction line.) However, if necessary, installation may be carried out (as explained in the drawing) provided that the conditions specified are met.
- It is recommended that the suction lines of the pumps have the same or a larger diameter than the pump suction diameter. A separate suction line is required for each pump. The collector must not be used in the suction line. Separate lines should also be laid to these lines for the jockey pump. Water suction will be easier if the suction line laid has the proper diameter. Easy flow of water through the pump suction line will prevent the pump from running under negative conditions which are described as cavitation (local evaporation and condensation cycle of the fluid in the pump).
- The maximum suction depth of the pump should not exceed 3.2 meters. In practice, it is desirable that the pump be located at the shortest distance to suction location. It is necessary to submerge each suction tube with an elbow and to put a filtered flap at the end of the suction tube. This flap will prevent emptying the suction pipe filled with water.
- The shut-off valve should not be placed on the suction line.
- EN 12845+A2 standard requires that the operating tank installed for each pump has suction from negative elevation difference. These tanks are used to continuously supply water to the suction line against the risk of water leakage from the flap at the end of the suction pipe. In this way, formation of the air gap in the suction line of the pump and the possibility of suction of the pump becoming impossible will be avoided. Inside these tanks there is an inlet for the tank to be filled with mains water and after this inlet a floater tap is placed into the tank. If the tank is emptied, the tank will be filled from this inlet and floater tap will prevent overflow. Also, if there is a floater switch in the tank and if the water level in the tank is low, a “Low Water” warning will be sent to the main panel to trigger the main pump and alert them with an audible alarm.
- The filter at the end of the suction flap should be cleaned from time to time and prevented from clogging due to foreign matter. During the cleaning, the reserve tank (operating tank) should not be evacuated and the suction pipe must be removed.

**IN LINE WITH THE TS EN 12845+A2 STANDARD  
WATER BOOSTER SYSTEMS**



**Explanations on the Installation Location of the Fire Booster Set**

- The fire pump room, where the booster set is installed must have a minimum temperature of +10°C for closed diesel engines and minimum +4°C for electric motors (against the risk of water freezing and diesel engine not working smoothly) and must be free from moisture and dust, ventilation must be provided for indoor.
- In order to perform the service works easily around the fire pump, it must be easily accessible from every side for a minimum of 80 cm.
- A required size of water discharge must be provided to evacuate water against risk of explosion of the pipe in the fire pump chamber.
- The exhaust pipe of the diesel engines should not be smaller than the diameter of the flexible pipe placed at the silencer outlet of the diesel engine. If the line is long, this should be larger than this diameter.
- The exhaust pipe should be made of iron pipes, insulated from the outside and fastened with clamps to the ceiling, so as to be out of the building (outdoors).

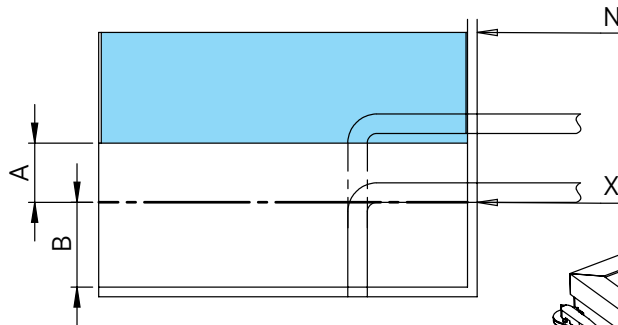
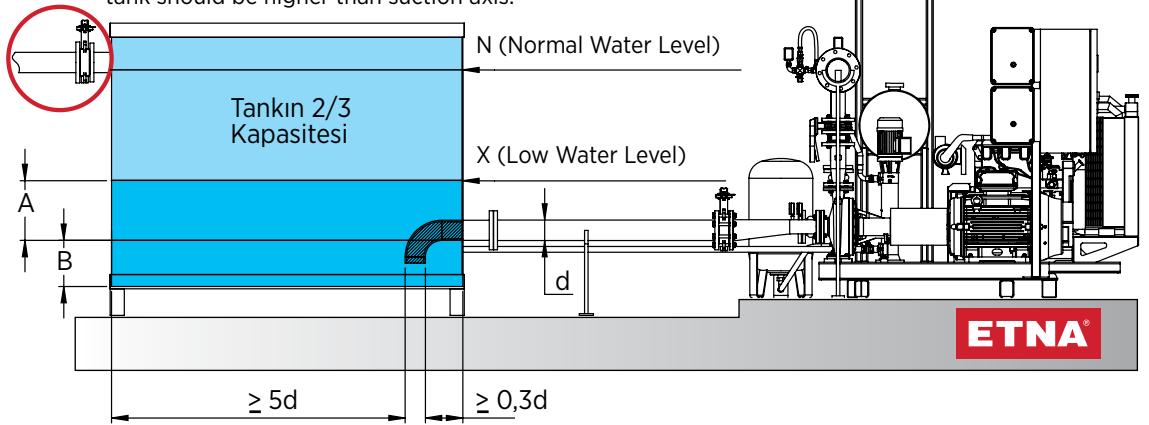
**Attention Should be Paid to the Following During Installation**

- The fire pumps must be placed on a level surface and they must be tightly fixed on the floor's concrete by means of steel dowels.
- Securing the pipes on suction line as well as delivery line to the floor by means of metal struts will prevent pressure of those lines on the pump and will not allow the damaging of pump coupling settings.
- The panel of the fire pump and the pump to be put into the reservoir should be connected by the floater level switch which will give a warning when the water is emptied.
- During the weekly testing process of the fire pump, there is a potential for damage due to overheating of the pump body and heat of the mechanical seal because there is no water consumption in the plumbing. To prevent this situation, a return pipe with 8 mm diameter should be laid to the water tank from the connection point on the pump body. This line is called the pump body circulation line.
- Power cables must be laid separately to the motors of the fire pump for each pump and care must be taken to ensure that these cables are fire resistant. Cables laid from the main conduit box must have diameters suitable to the length. Please see page 58 for a chart of cable cross-sections to calculate the diameters.

# POSITIVE SUCTION CONNECTION

Water with a capacity of 2/3 of the reserve tank should be higher than suction axis.

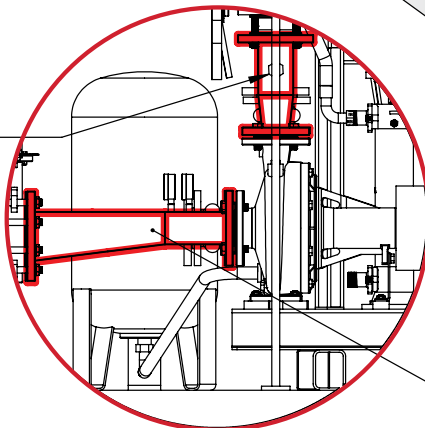
Pump suction axis in the tank should be in accordance with TS EN 12845 Article 9.3.5 Figure 4, Chart 15.



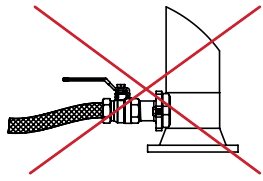
Water Feeding

d	A	B
Water inlet pipe rated diameter (mm)	Minimum (m)	Minimum (m)
65	0,25	0,08
80	0,31	0,08
100	0,37	0,1
150	0,5	0,1
200	0,62	0,15
250	0,75	0,2
300	0,9	0,2
400	1,05	0,3
500	1,2	0,35

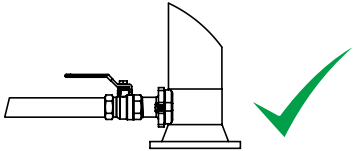
Concentric reduction is used in order to eliminate losses in the pressure line.



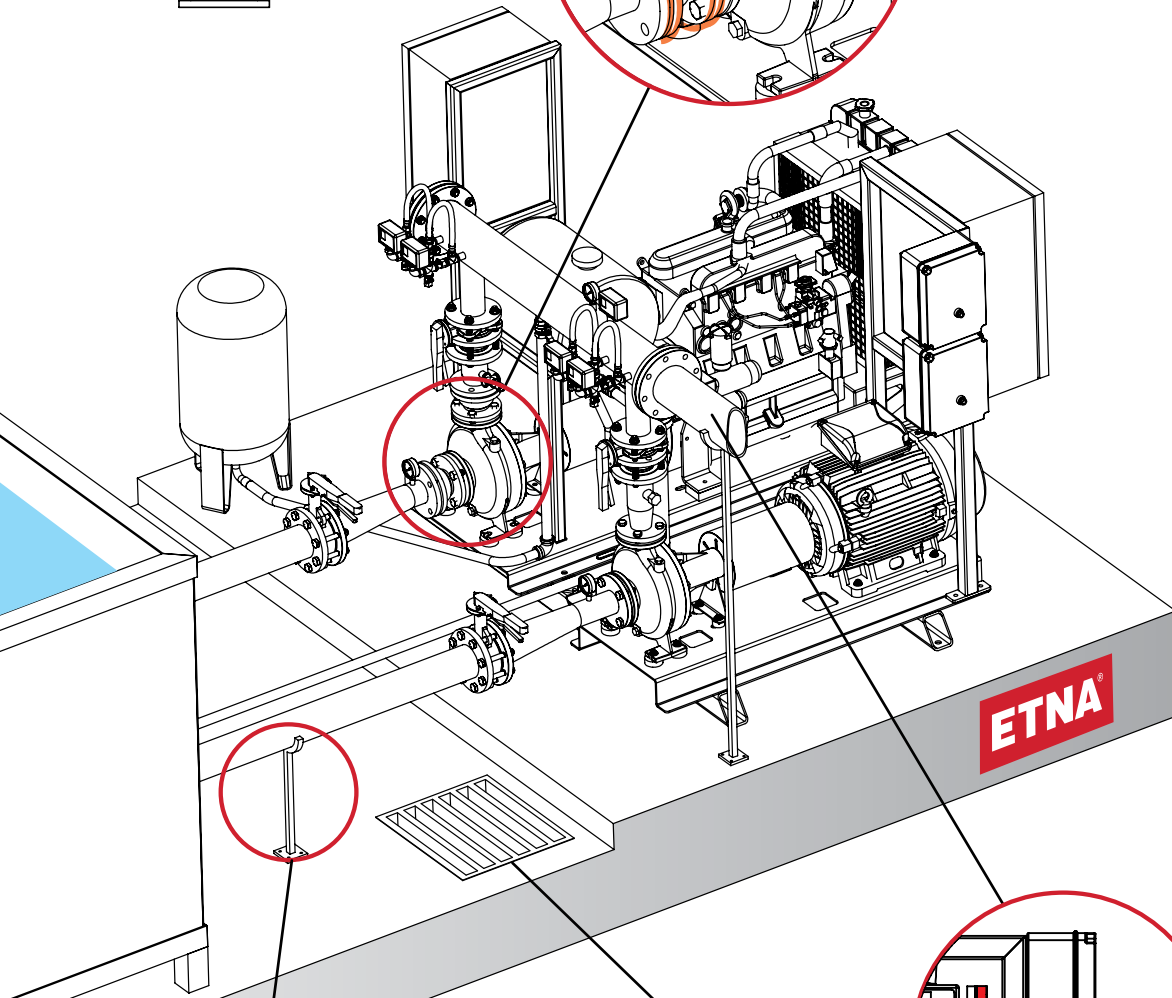
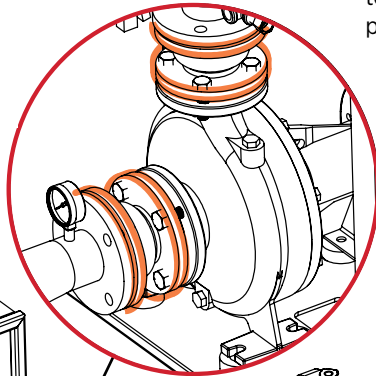
Eccentric suction kit is used in order to eliminate air pockets during pump suction.



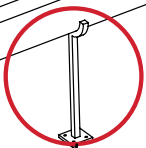
Flexible pipe can't be connected to pilot pump suction, pipe which is suitable for suction diameter should be used.



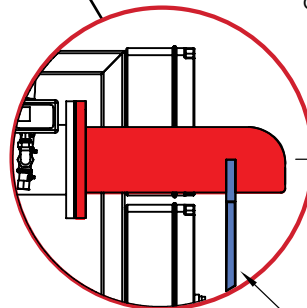
In diesel module, compensators should be connected as shown in the figure in order to absorb vibrations at the suction and the pressure line.



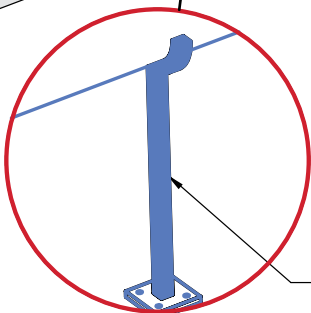
Exhaust port should be metallic and should reach to outside air with minimum number of elbows.



There should be a large water outlet in water booster chamber for drainage, otherwise pumps may submerge.



Suction and Pressure lines must be supported with baseplates.

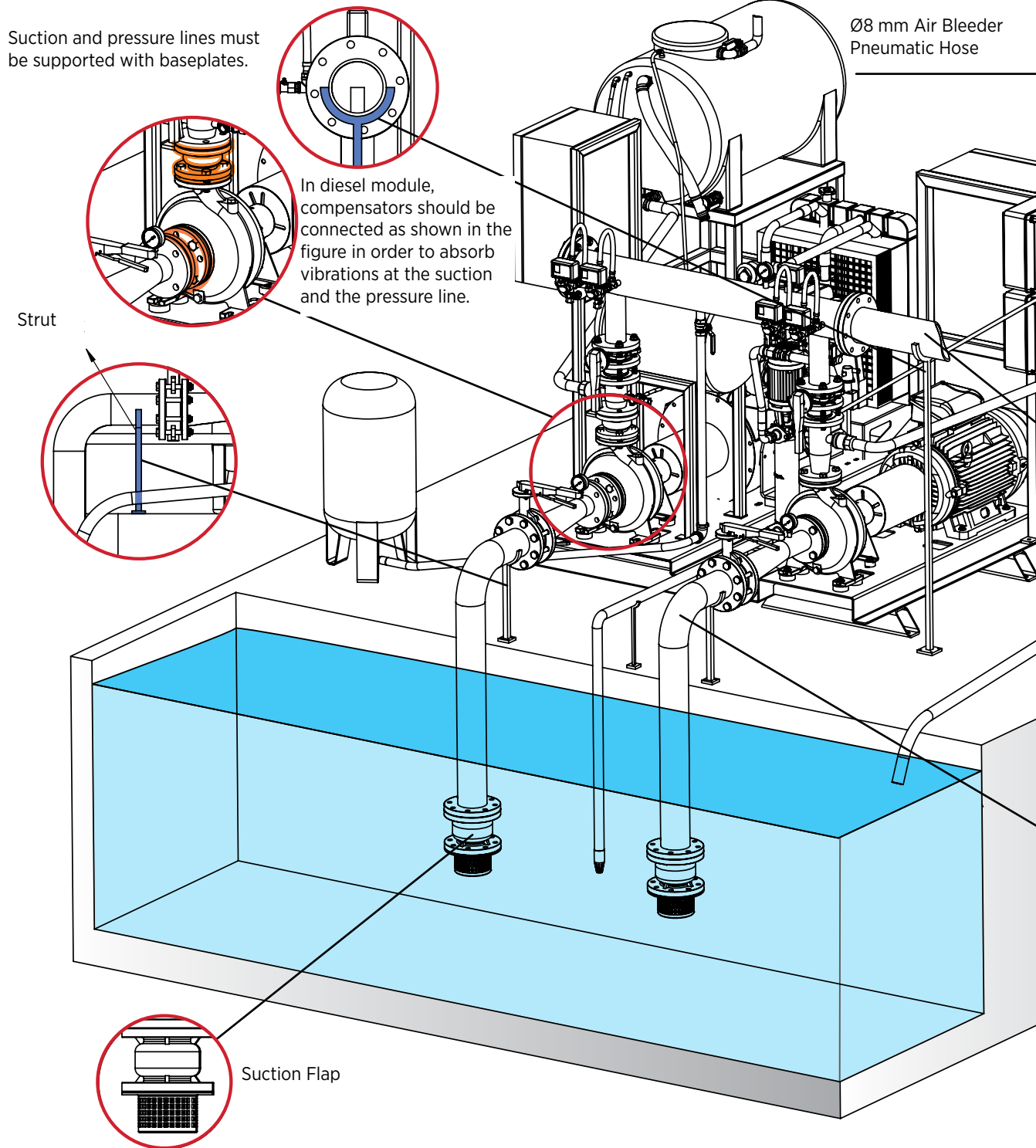


Strut

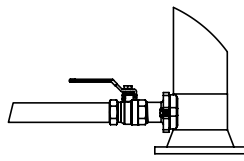
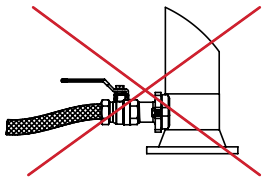
# NEGATIVE SUCTION CONNECTION

## Floater Connection

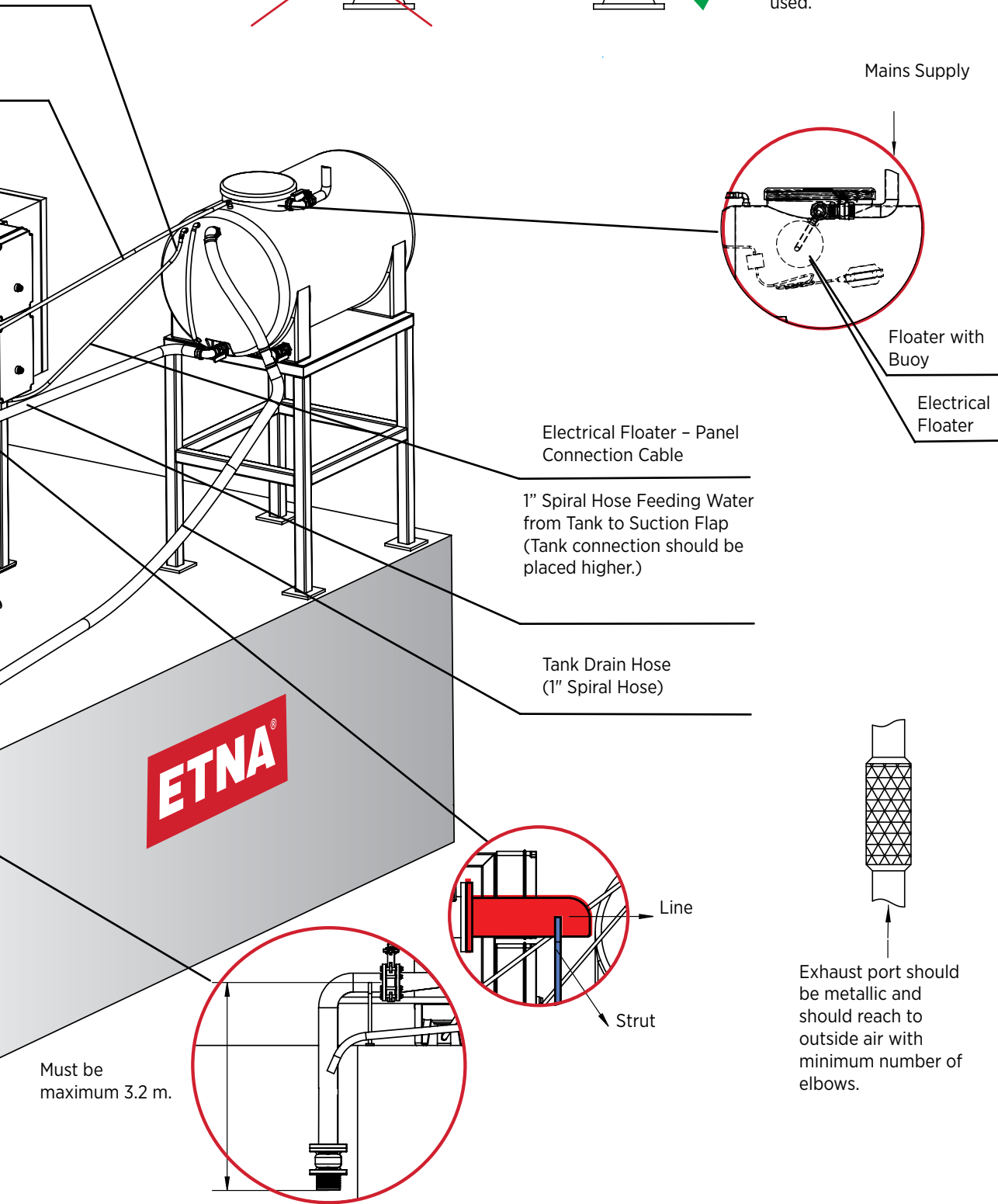
Should be connected to terminal no. 5 and 6 on electrical module panel and terminal no. 2 and 3 on diesel module panel.







Flexible pipe can't be connected to pilot pump suction, pipe which is suitable for suction diameter should be used.



Mains Supply

Floater with Buoy

Electrical Floater

Electrical Floater - Panel Connection Cable

1" Spiral Hose Feeding Water from Tank to Suction Flap (Tank connection should be placed higher.)

Tank Drain Hose (1" Spiral Hose)

Line

Strut

Must be maximum 3.2 m.



Exhaust port should be metallic and should reach to outside air with minimum number of elbows.

# FIRE CONTROL VALVES

## DRF - 80FP / DRF - 60FP CONTROL VALVES TECHNICAL DIMENSIONS AND VALUES

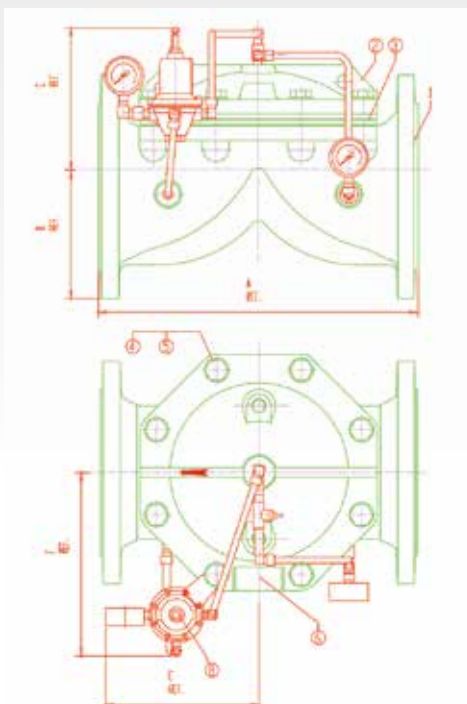
DIAMETERS	2"	3"	4"	6"	8"
-----------	----	----	----	----	----

MATERIALS	
BODY	Nodular Cast Iron
COVER	Nodular Cast Iron
DIAPHRAGM	Nylon Fibre Reinforced Rubber
COATING	Rilsan - Nylon 11 (Red or Blue)
PILOT BODY and COVER	Brass
MEMBRANE	Nylon Fibre Reinforced Rubber
PILOT INTERIOR MATERIAL	303 SS
PIPING	Copper
FITTINGS	Brass
TEMPERATURE CLASS	39°F - 150°F

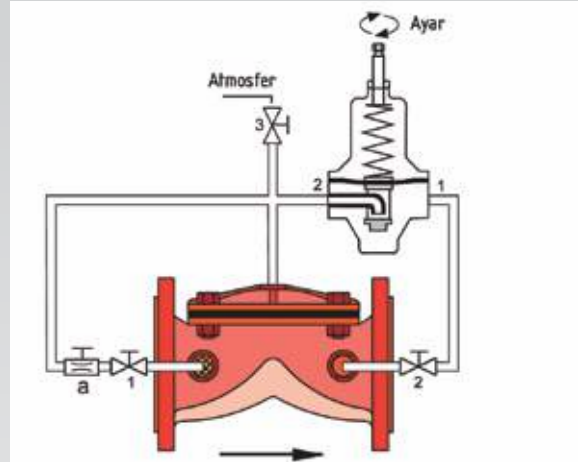
Valve Capacity in Accordance with NFPA 20 / FM					
CAPACITY	2"	3"	4"	6"	8"
GPM	250	500	1000	2500	5000

Class	Flanged/ Threaded	Pressure Class	Pilot Valve Adjustment Springs - Min - Max			
			BLUE	RED	GREEN	YELLOW
PN-16	PN-16	12 BAR	7-70	7-90	30-145	30-230
125	125	175 PSI				
PN-16	PN-16	12 BAR	7-70	7-90	30-145	30-230
125	125	175 PSI				

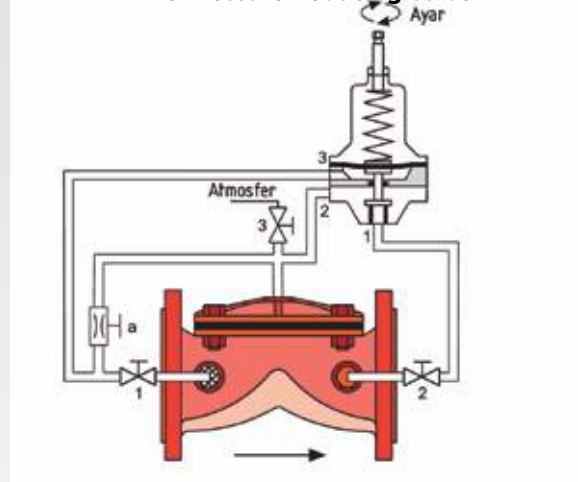
Measures (mm)						
Diameter	A	B	C	E	F	Kg.
2"	190	82	175	163	208	10.5
3"	283	100	198	180	235	21.2
4"	305	111	211	201	246	29.2
6"	406	142	241	171	292	53.6
8"	470	170	277	173	330	75.4



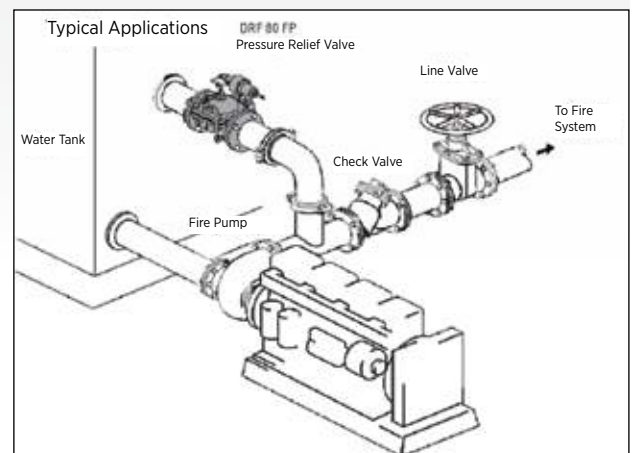
## FIRE CONTROL VALVES



### DRF 60FP Fire Pressure Reducing Valve



### DRF 80FP Fire Relief Valve





## After-Sales Services

We are here for you with our more than 35 years of sector experience, 104 service points all around Turkey, and customer-oriented after-sales service approach (commissioning, maintenance and repair, spare part supply).



Dudullu Organize Sanayi Bölgesi Nato Yolu Caddesi No: 267/B  
34775 Ümraniye İstanbul / Turkey  
Tel. +90 216 561 47 74 (Pbx) • Fax: +90 (216) 561 47 50  
[www.etna.com.tr](http://www.etna.com.tr) • [info@etna.com.tr](mailto:info@etna.com.tr)



# ETNA®

0850 455 38 62  
müşteri hizmetleri