



Use of different materials

What is it in relation to piping?

When dissimilar metals (= anode and cathode) are in contact with each other AND are exposed to an electrically conducting solution (=electrolyte, typically water). So not dry pipe systems.

This is an electrochemical process where ions move from the anode to the cathode and electrons move the opposite way

In galva, there is a lot of Zinc and it's the Zinc that will corrode

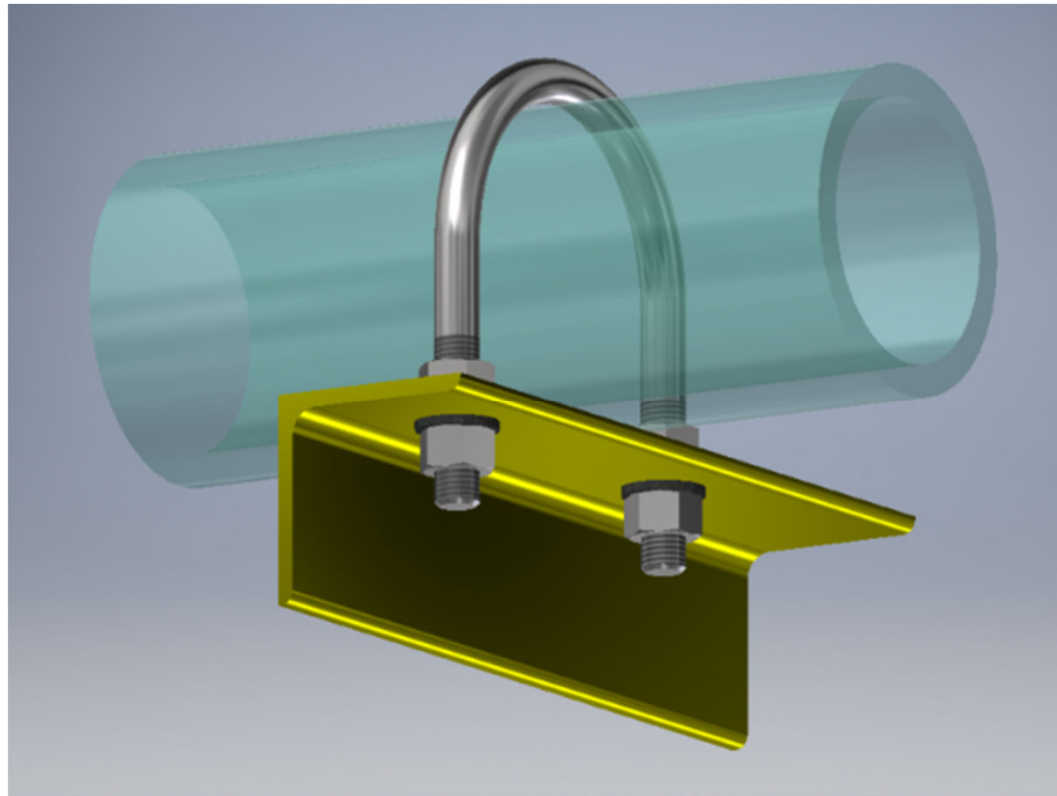
Use of different materials



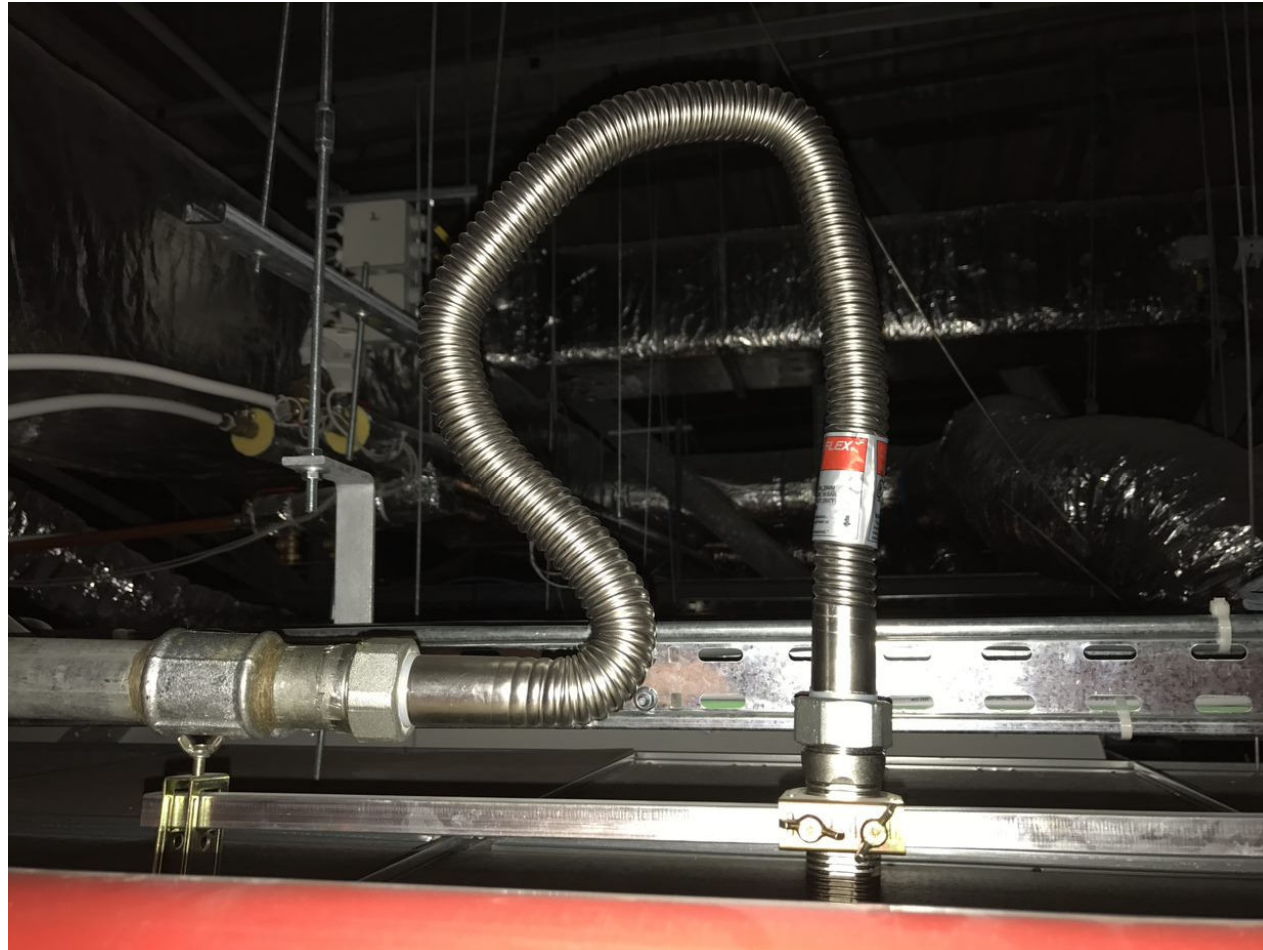
Hangers



Hangers



Flexible hoses



Flexible hoses



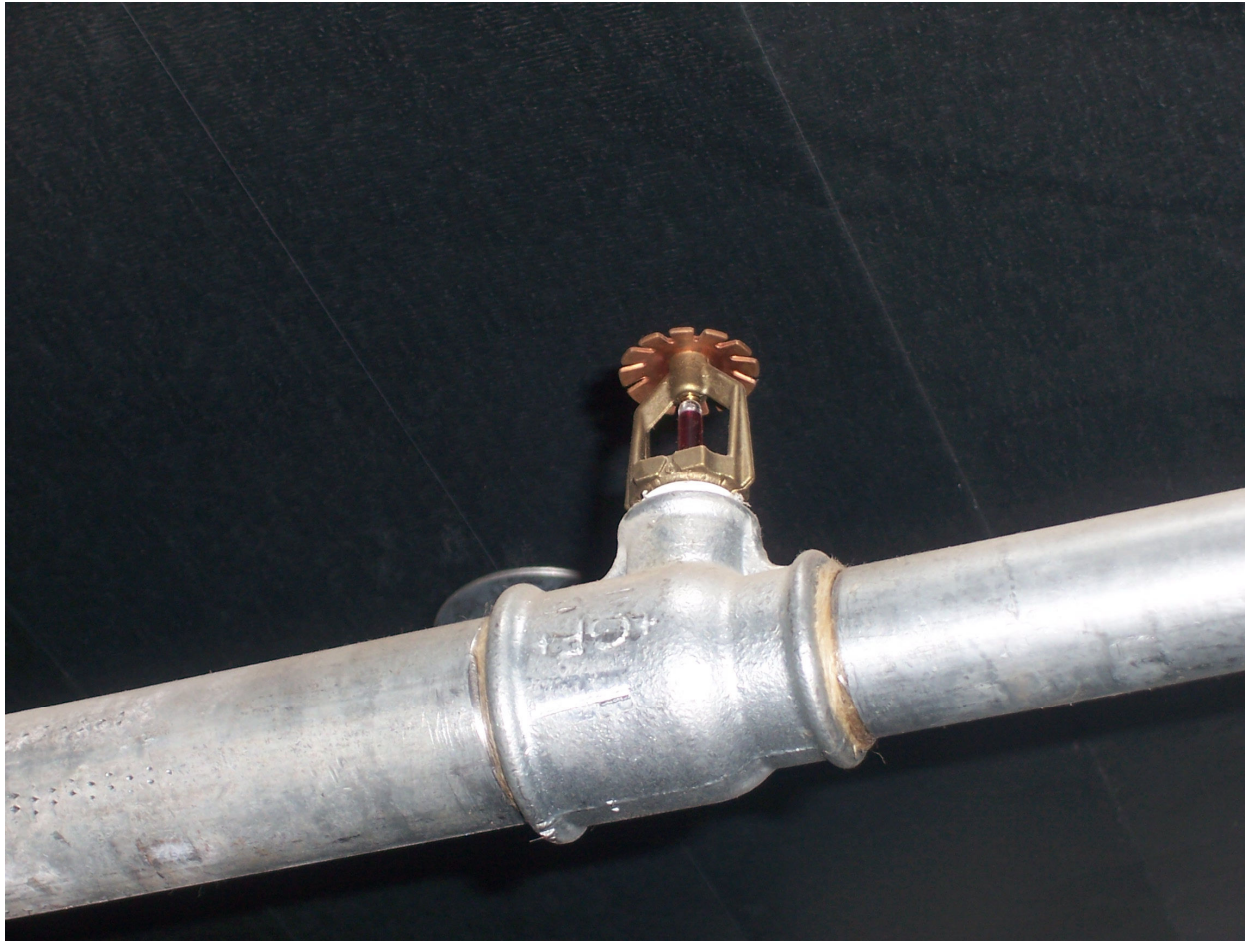
Flexible hoses

Technical Data

Table A

Maximum Working Pressure		FM: 200 psi (13.8 bar) UL: 175 psi (12.1 bar)
Maximum Working Temperature		300°F (149°C)
Connections	Inlet/Branch Line	1" NPT
	Outlet/Reducer	1/2" or 3/4" NPT
Minimum Bending Radius		UL: 3" (76 mm) FM: 7" (178 mm)
Maximum Number of Bends		See Friction Loss Chart
Maximum K-Factor	1/2" Outlet	5.6 (80 metric)
	3/4" Outlet	14.0 (200 metric)

Conventional sprinklers



FM Approved material



FM Approved material

Approval Guide

Find the product you need in the *Approval Guide*

When you need the right materials to address exposures and protect your facilities, only FM Approved products will do. The *Approval Guide* houses real-time information about tens of thousands of products and services tested and FM Approved.

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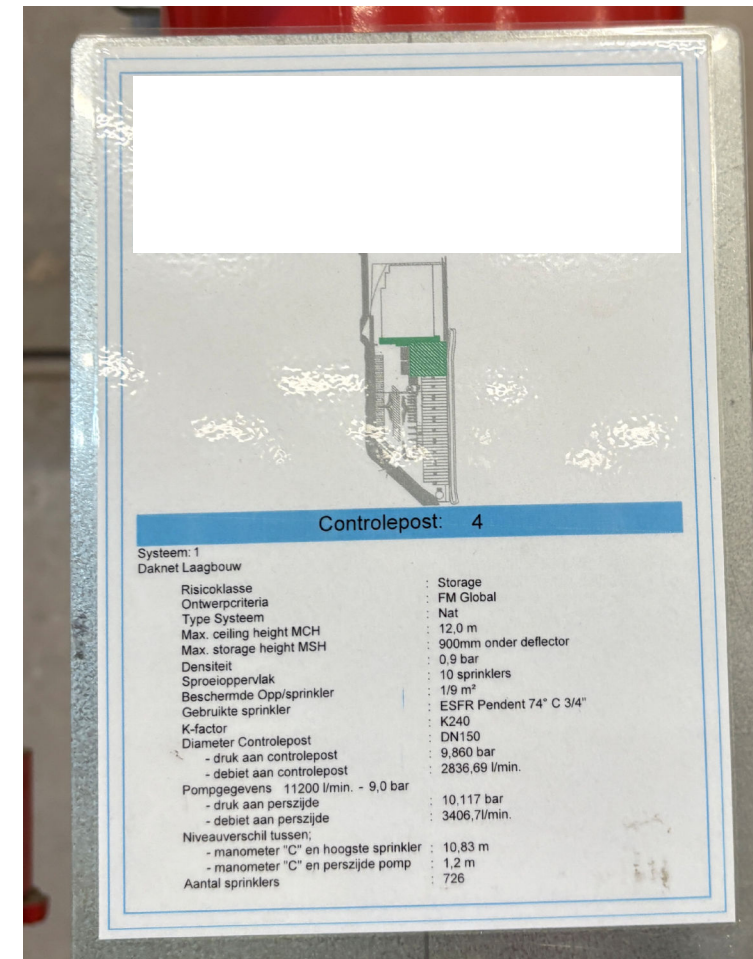
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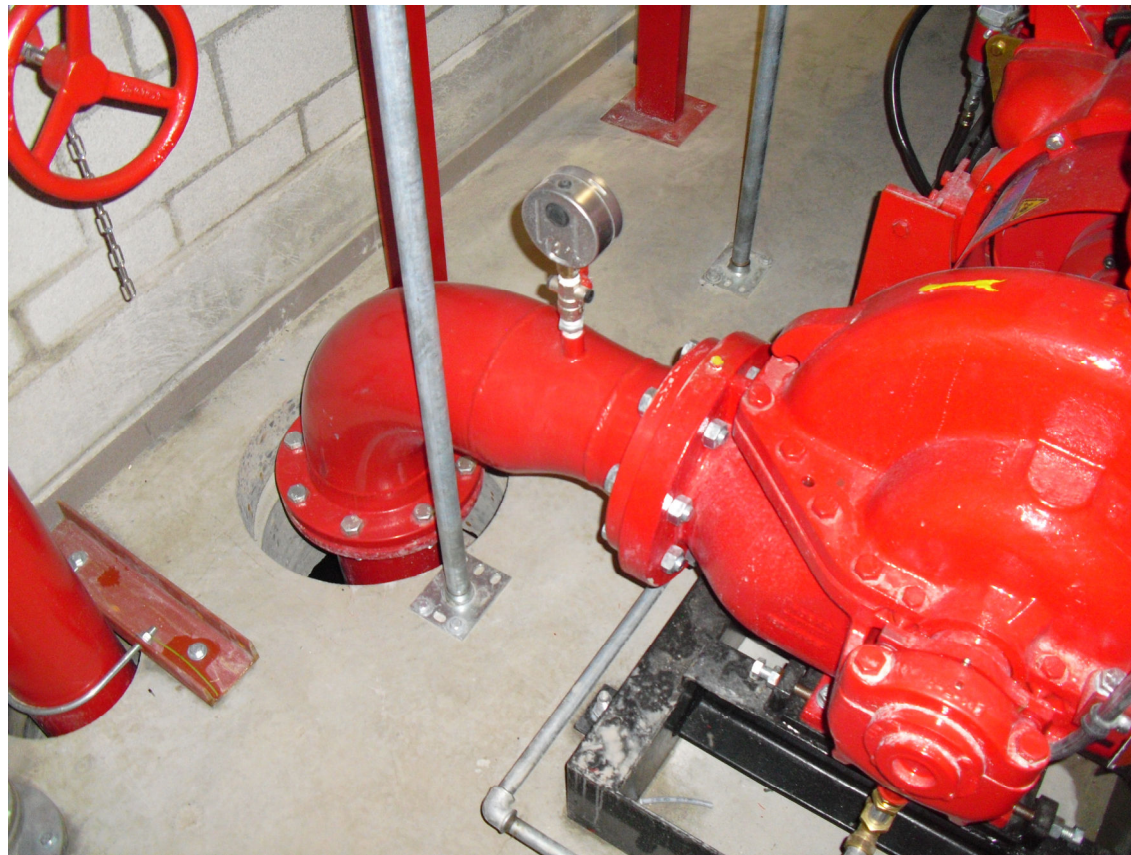
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Sprinkler riser plate



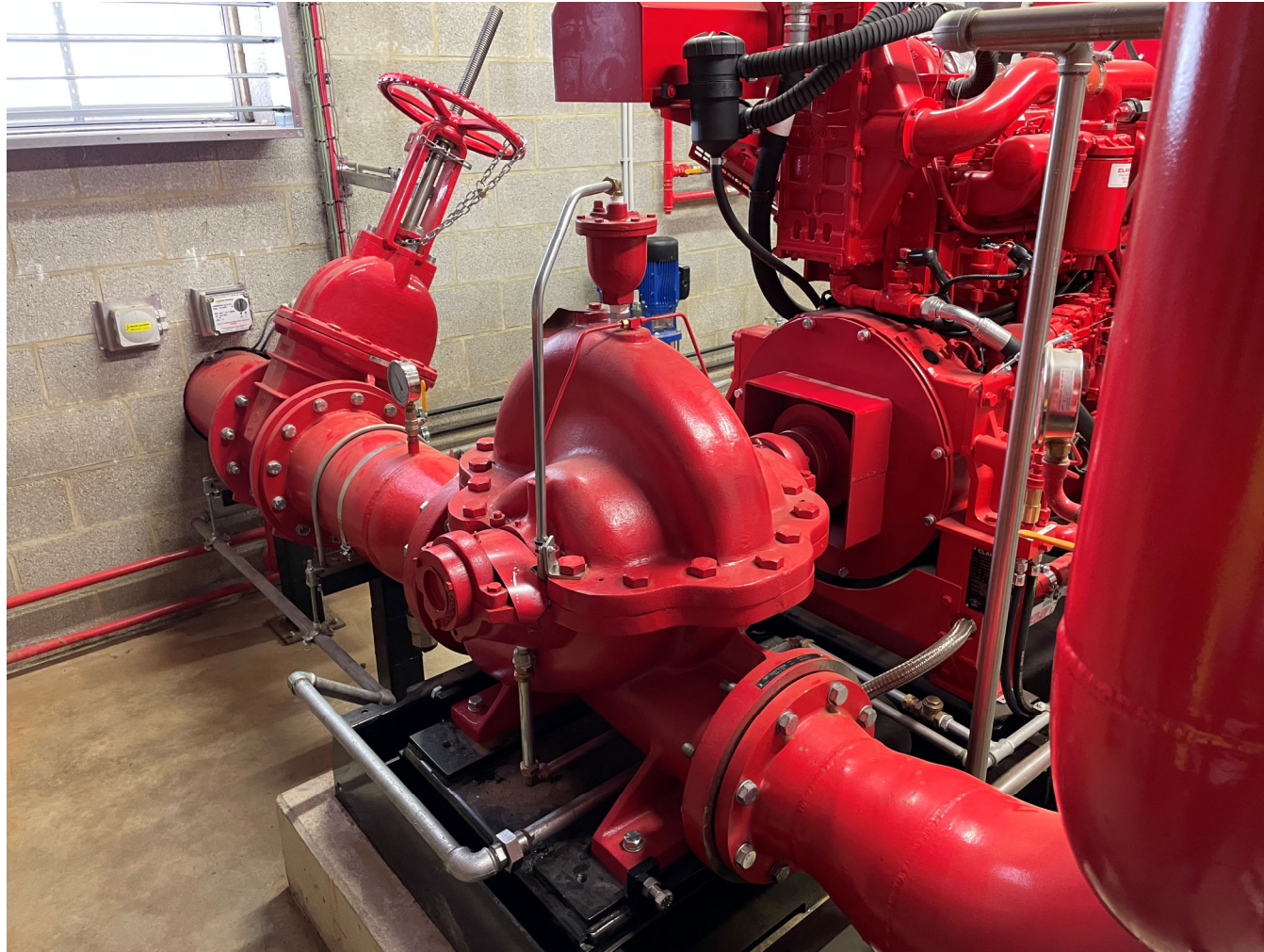
Suction pipe



Suction pipe



Suction pipe



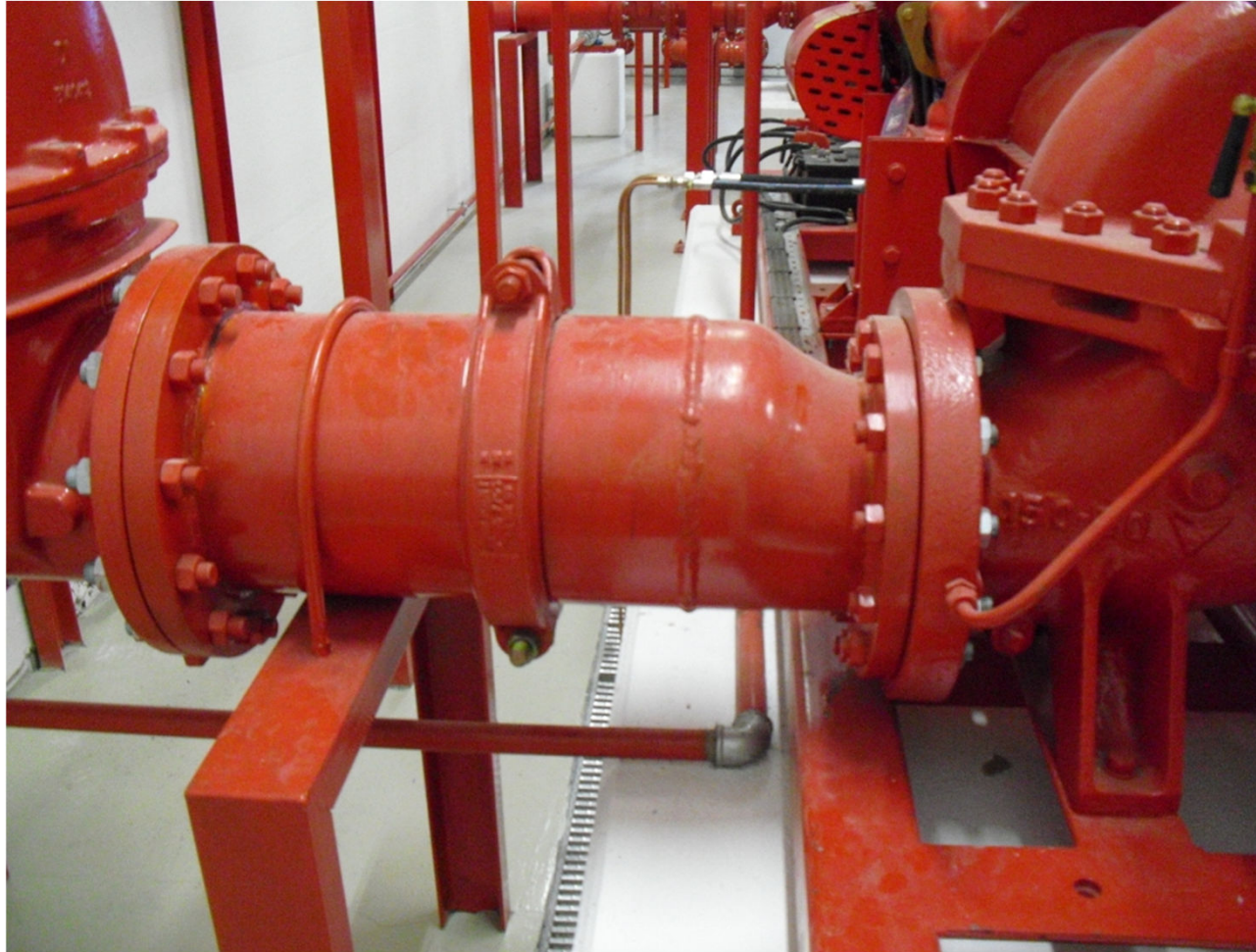
Suction pipe



Suction pipe



Suction pipe



Suction pipe

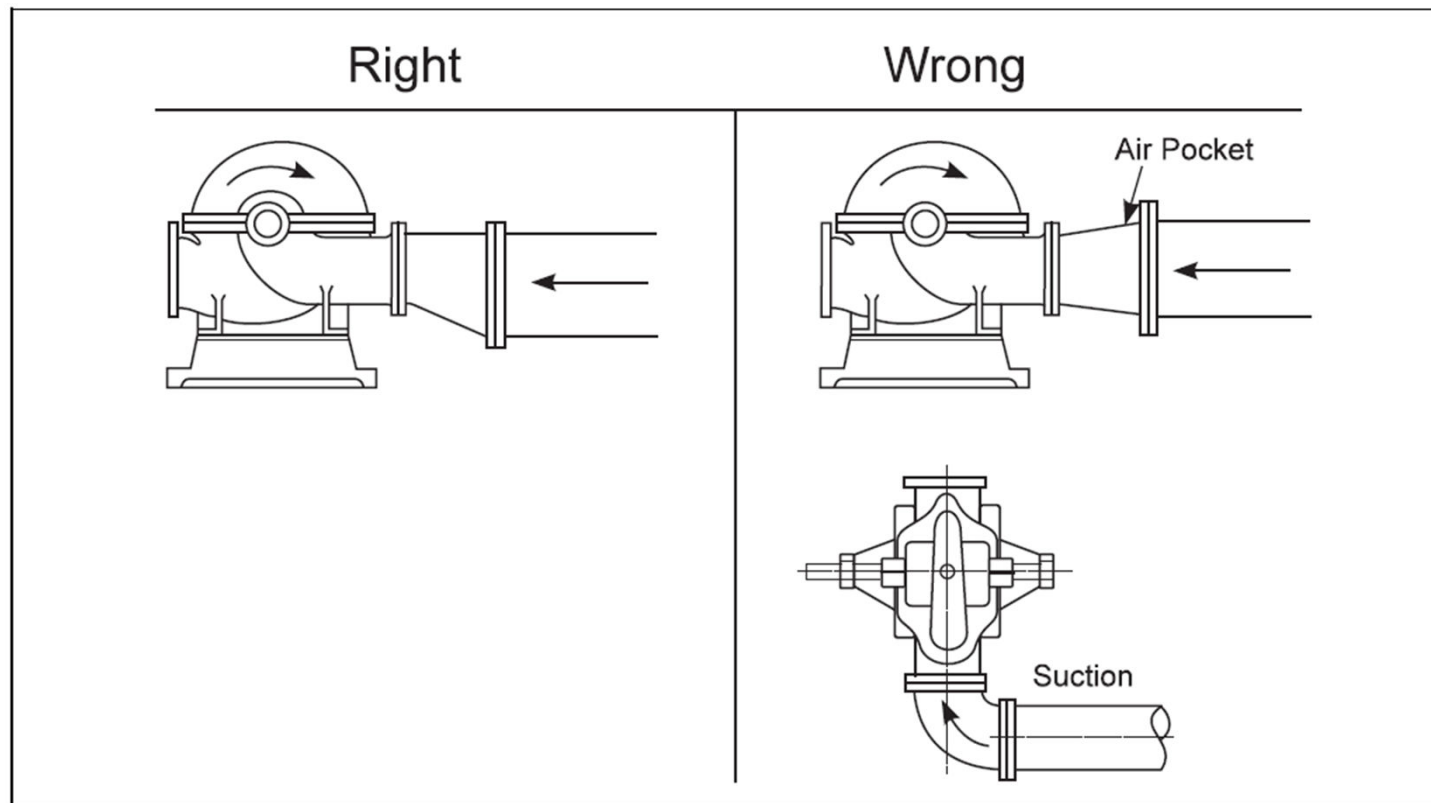


Fig. 2.3.2.3-1. Right and wrong pump suction pipe arrangements

Pressure sensing line





Flushing and hydrostatic testing

Hydrostatic testing

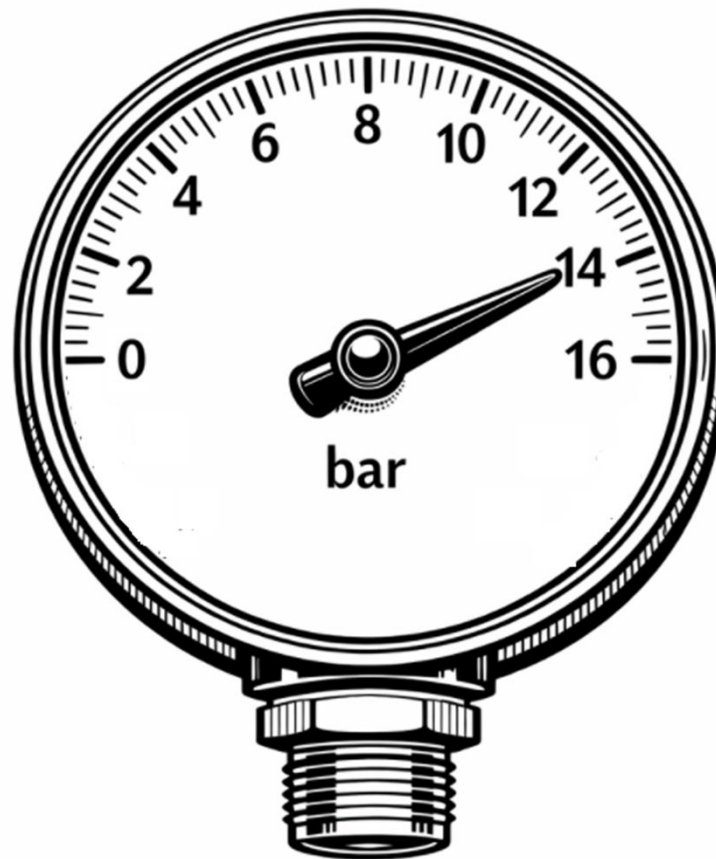
Underground main



Hydrostatic testing

Under ground main

Hydrostatic test



Hydrostatic testing

Under ground main

Hydrostatic test



Hydrostatic testing

Under ground main

Hydrostatic test

<i>Nominal Pipe diameter</i>		<i>Max. allowable leakage rate</i>	
in.	mm	gal/hr/100 ft	L/hr/100 m
2	50	0.019	0.236
4	100	0.03	0.472
6	150	0.057	0.708
8	200	0.076	0.944
10	250	0.096	1.19
12	300	0.115	1.43
14	350	0.134	1.66
16	400	0.153	1.9
18	450	0.172	2.14
20	500	0.191	2.37
24	600	0.229	2.84

Flushing underground main

Underground piping – Full Flushing

Table 2.3.2.1. Flushing Flows

Pipe Size		Flow Rate	
<i>in.</i>	<i>mm</i>	<i>gpm</i>	<i>l/min</i>
4	100	390	1500
6	150	880	3300
8	200	1560	5900
10	250	2440	9200
12	300	3500	13,300

Note: Flow rates based on nominal values of pipe diameters.

Flushing underground main

Underground piping – Flushing

Strainer



Flushing Underground main

Underground piping – Flushing

Strainer



Flushing Underground main

Underground piping – Flushing

Strainer



Flushing Underground main

Underground piping – Flushing

Strainer



Flushing Underground main

Underground piping – Flushing

Strainer



Flushing Underground main

Underground piping – Flushing

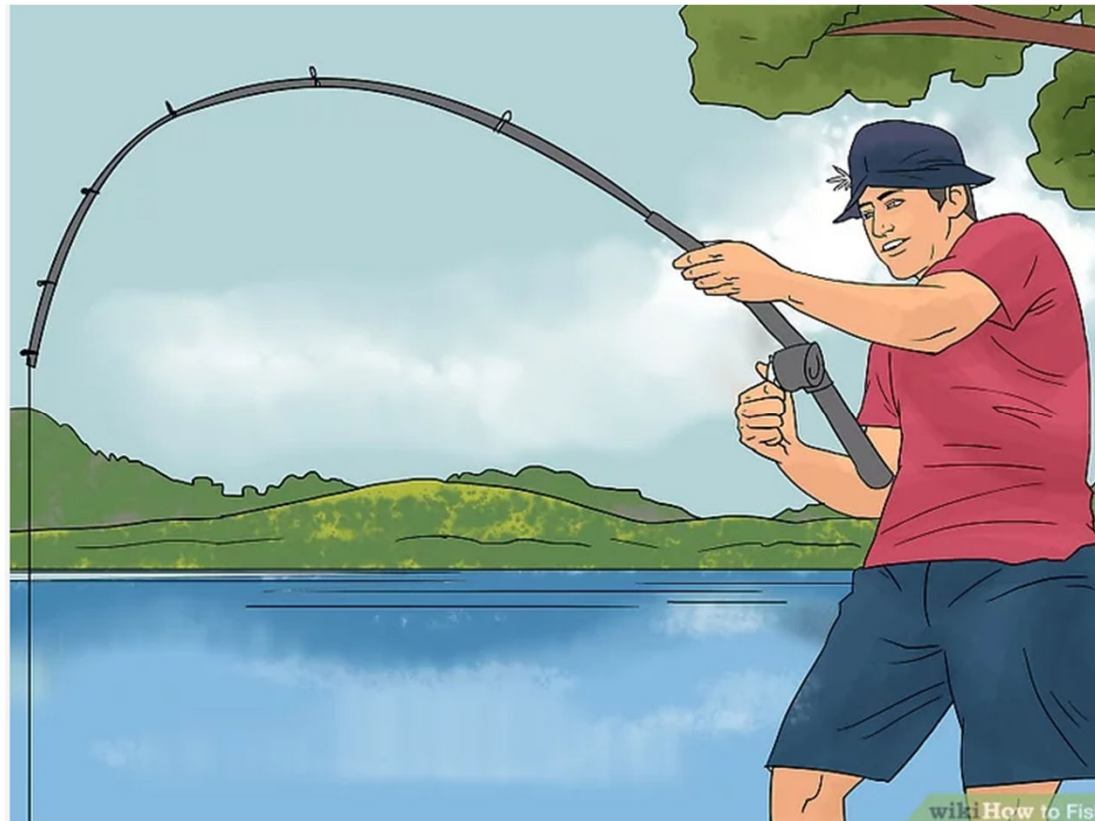
Strainer



Flushing Underground main

Underground piping – Flushing

Result



Flushing Underground main

Underground piping – Flushing

Result



Flushing Underground main

Underground piping – Flushing

Result



Flushing Underground main

Underground piping – Flushing

Result



Flushing Underground main

Underground piping – Flushing

Result



Flushing Underground main

Underground piping – Flushing

Result



Flushing Underground main

Underground piping – Flushing

Result



Flushing Underground main

Underground piping – Flushing

Result



Flushing Underground main

Underground piping – Flushing

Result



Flushing Underground main

Underground piping – Flushing

Result



Flushing Underground main

Underground piping – Flushing

Result



Hydrostatic testing above ground pipe



Hydrostatic testing above ground pipe

A pneumatic test at not less than 2.8 bar should prove absence of leakage over a 24-hours timeframe. The automatic sprinkler system should be modified if there is more than 0.1 bar pressure difference over 24-hours.

A hydrostatic test at not less than 14 bar (or at 3.5 bar above the static pressure in excess of 10.3 bar) should prove the absence of leakage for a minimum of 2 hours.

Duly completed contractor certificates should then be submitted for review to FM.

Flushing above ground pipe



Final sprinkler acceptance

The final acceptance will be after field examination by a visiting FM engineer and after the receipt of the completed and signed Contractors Material and Test Certificates.



Pump acceptance

Pump alignment



SPP SPP LIMITED
READING RG3 7SP ENGLAND
A MEMBER OF THE SPP GROUP

PUMP TYPE	TD15F	SERIAL NO.	9426033B
CAPACITY	99.96 L/s	LINE	1
SPEED	2675 RPM	HEAD	61.58 m

Merk: SPP
Type: TD15F
S°: 9426033 B
Vpaq: Diesel 1

voor:



Alignment data from software:

Horizontal	+0.54 /100
Vertical	-0.19
Motor	+0.51
Base	+5.75



na:



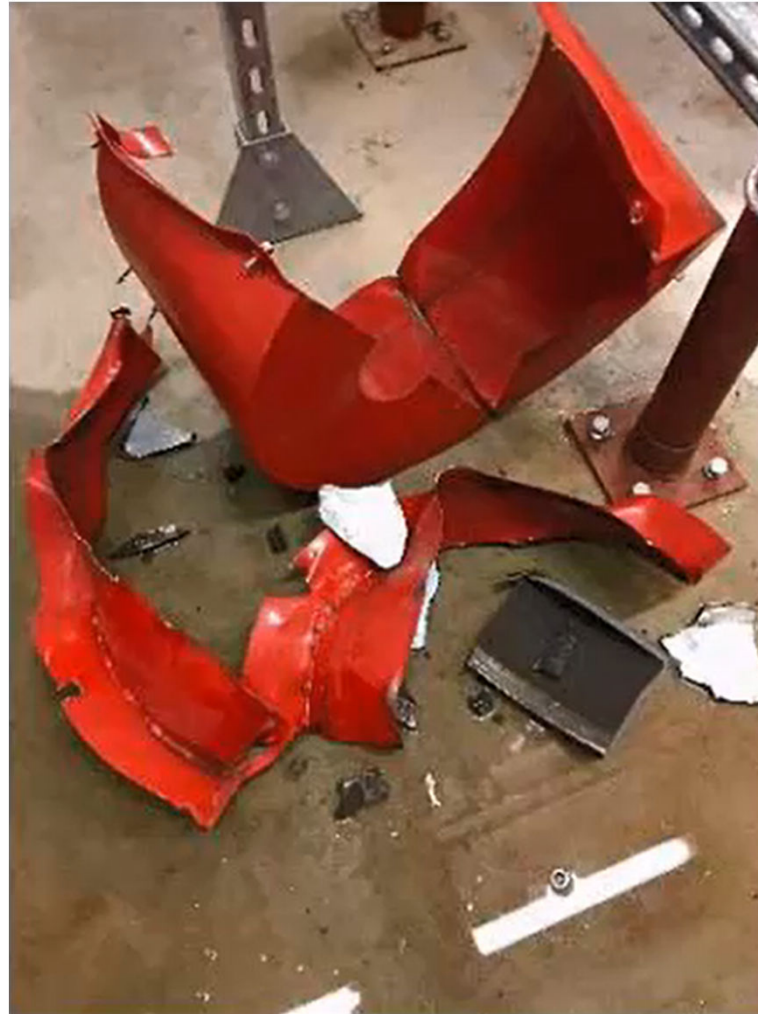
Alignment data from software:

Horizontal	+0.07 /100	-0.09	+0.01	+0.56
Vertical	+0.06 /100	+0.07	+0.15	+0.63

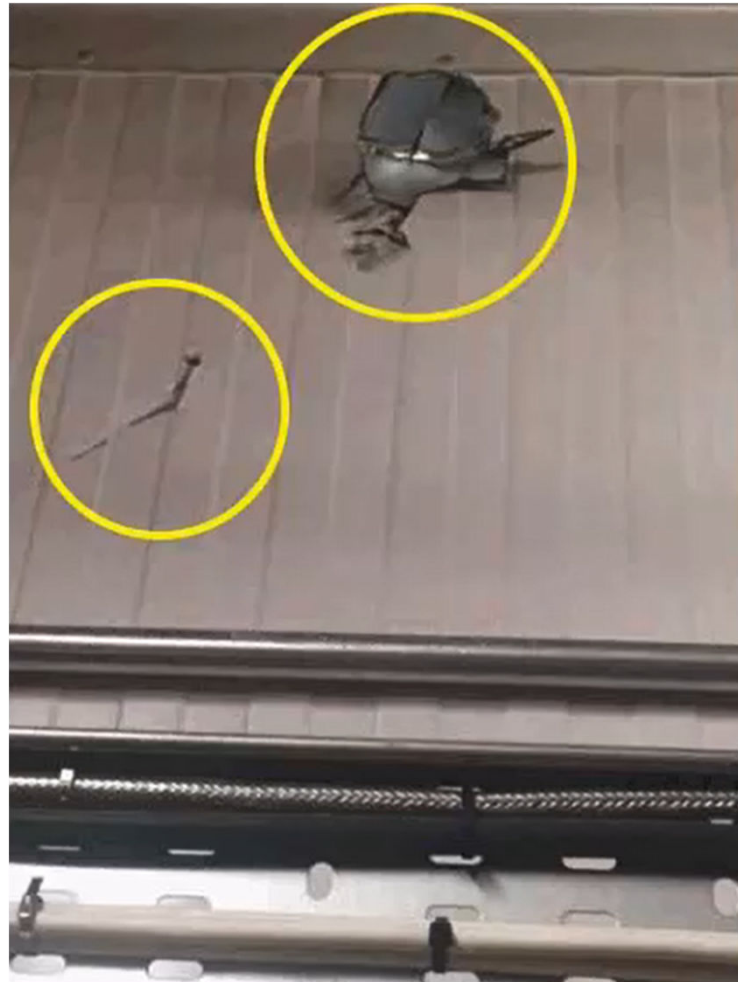
Motor: 0.08 / 0.10

we care your pump beat

Pump alignment



Pump alignment



Pump acceptance

Water supply data

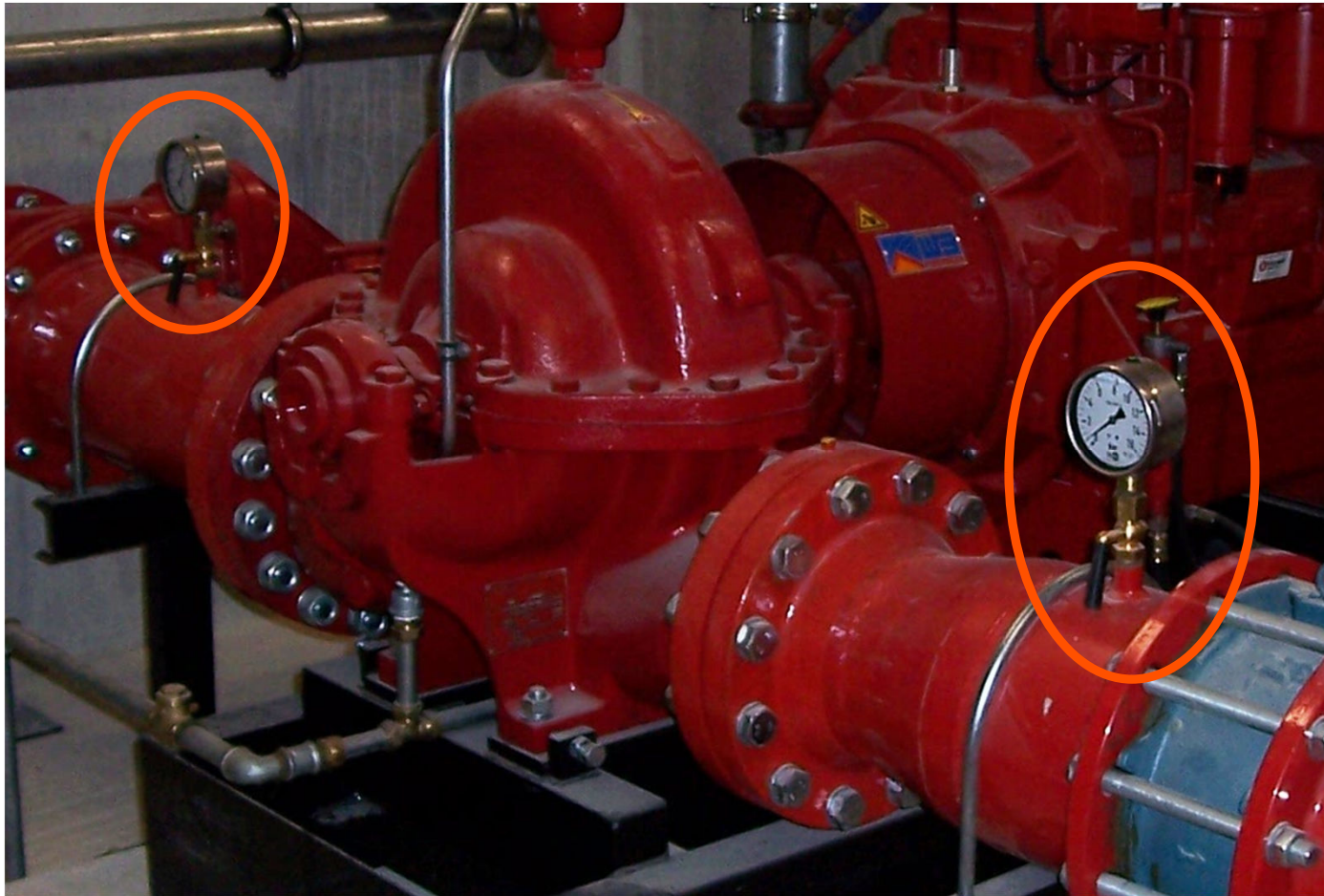
PUMP	MANUFACTURER
	APPROVED
	HORIZONTAL
	VERTICAL
	SHOP OR SERIAL
	NO.
	MODEL OR TYPE
	RATED GPM
	RATED HEAD
	RATED RPM
	YEAR

DRIVER	MANUFACTURER
	APPROVED
	SHOP OR SERIAL
	NO.
	MODEL OR TYPE
	RATED HP
	RATED RPM
	YEAR

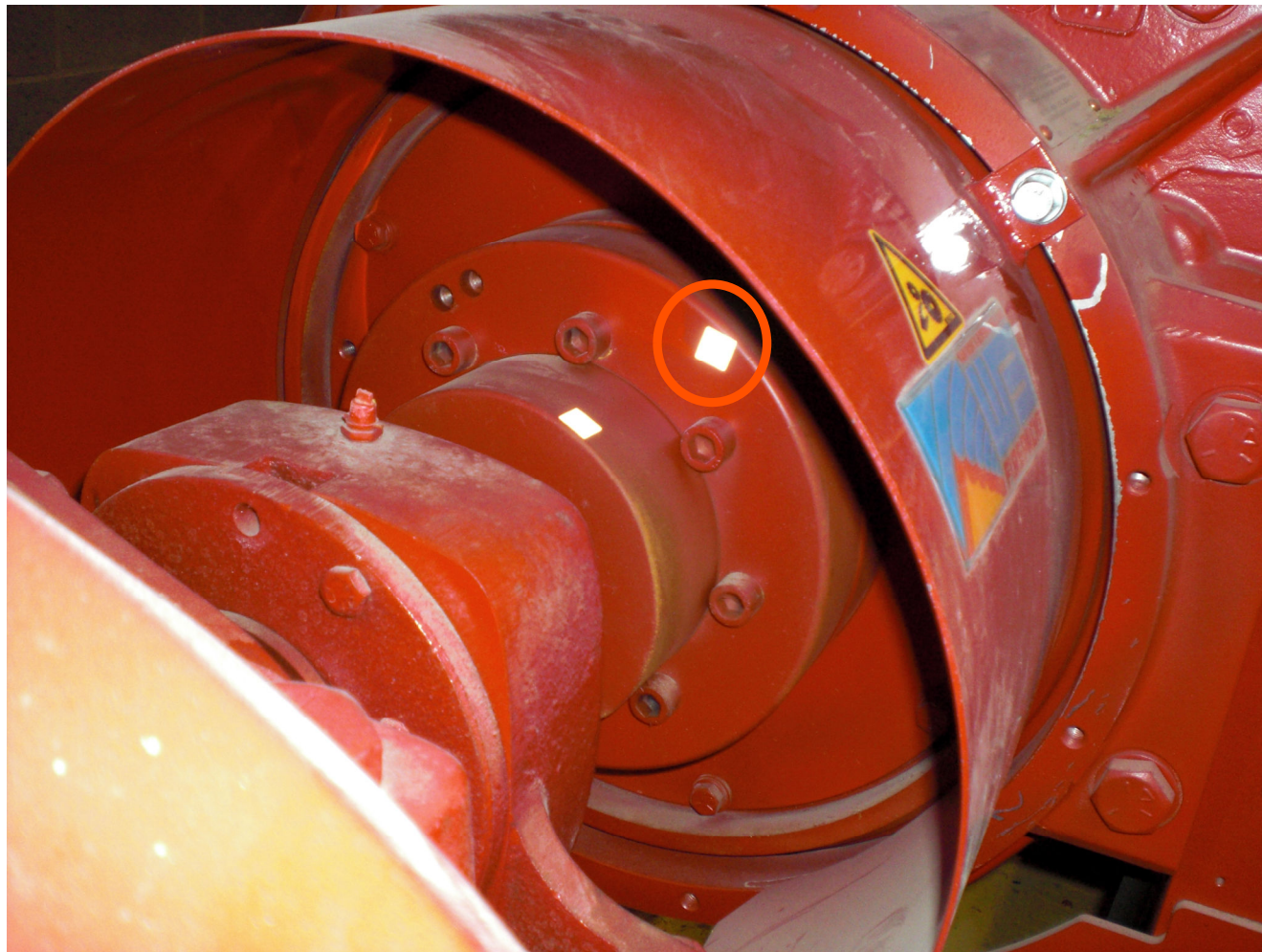
CONTROLLER	MANUFACTURER
	APPROVED
	SHOP OR SERIAL
	NO.
	MODEL OR TYPE
	TEAR

WATERTANK	SUCTION FROM
	MANUFACTURER
	APPROVED
	TANK SIZE
	TANK HEIGHT
	YEAR

Pump acceptance



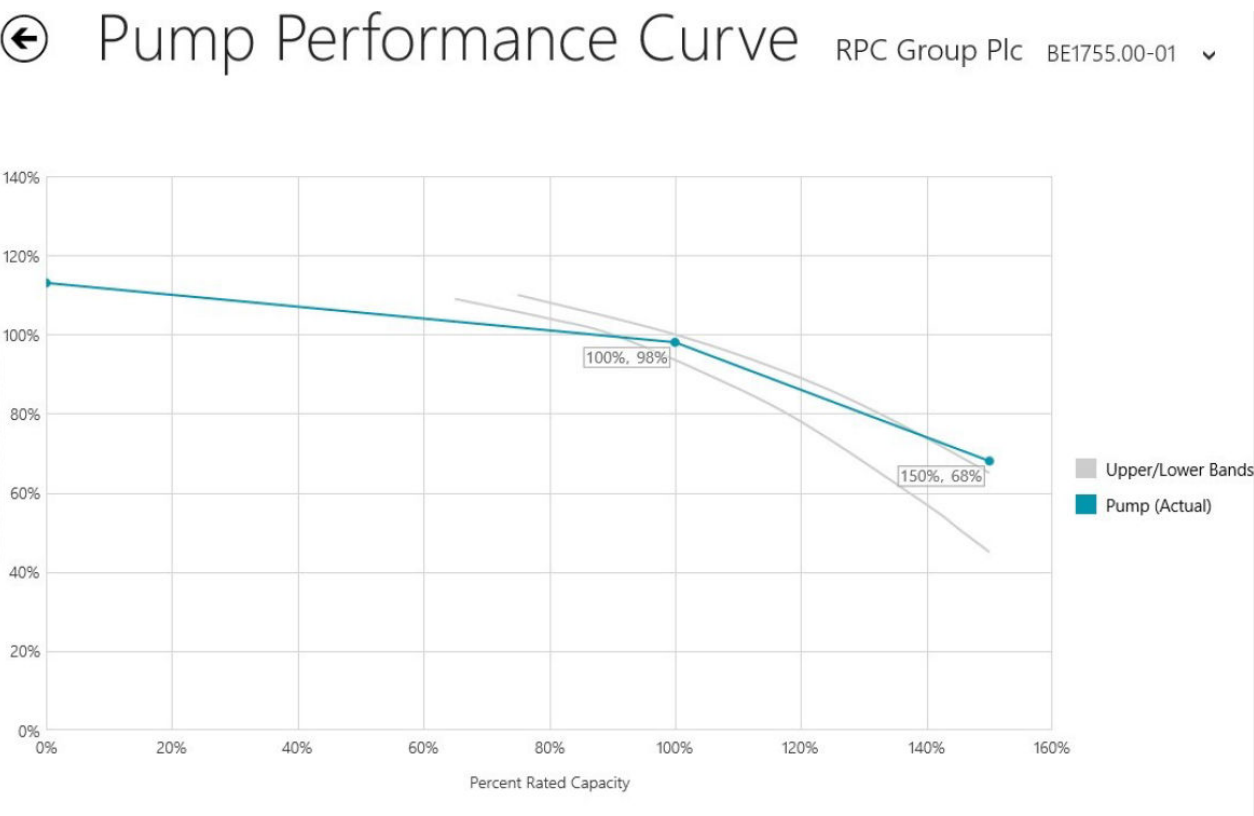
Pump acceptance



Pump acceptance

PUMP PERFORMANCE				SUCTION PRESSURE	DISCHARGE PRESSURE	NET PRESSURE	RPM
%	Gpm	Ltr/min	m³/h	Bar	Bar	Bar	tr/min
0	0	0	0				
50	0	0	0				
75	0	0	0				
100							
125	0	0	0				
150	0	0	0				

Pump acceptance



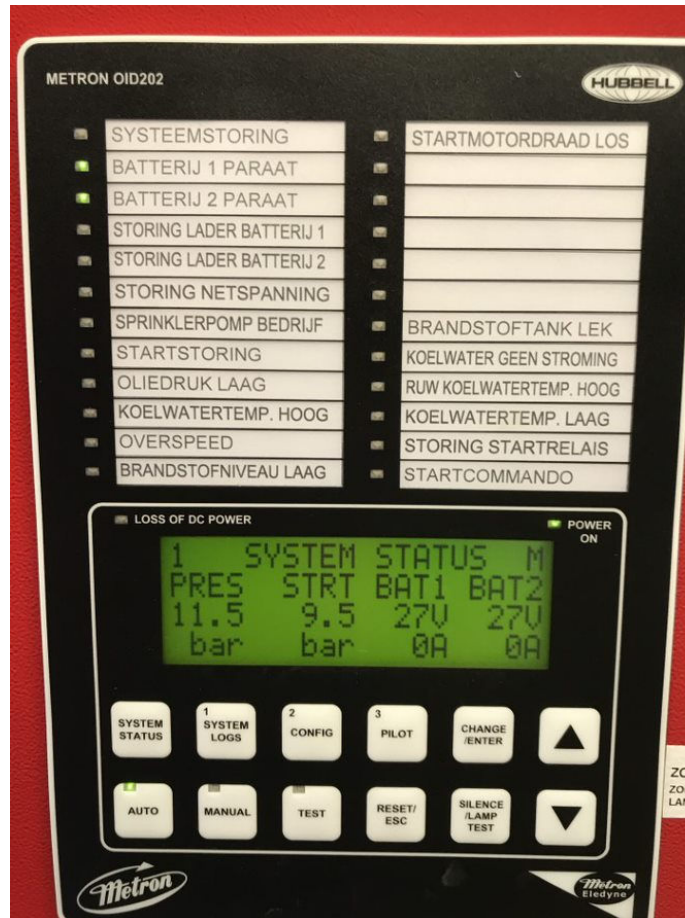
Alarm testing



Alarms to test

	YES	NO
PUMPROOM ALARM TESTING		
DIESEL OPERATING		
PUMP AUTOMATIC		
SYSTEM FAIL		
BATTERY 1 READY		
BATTERY 2 READY		
BATTERY LOADER 1 FAIL		
BATTERY LOADER 1 FAIL		
POWER 220 V FAIL		
SPRINKLER POMP WORK		
START FAIL - CRANCK TEST		
OIL PRESSURE LOW		
COOLING WATER TEMPERATURE HIGH		
COOLING WATER NO FLOW		
OVERSPEED		
FUEL LEVEL LOW		
START MOTOR WIRE LOOSE		
DYNAMO		
FUEL LEAK		
START COMMANDO		
PUMP ROOM LOW TEMPERATURE		
WATER TANK LOW WATER		
WATER TANK LOW TEMPERATURE		
SUCTION VALVE		
DISCHARGE VALVE		
ITC PUMP ROOM		
LOW TEMPERATURE PUMP ROOM		

Alarm testing



Alarm transmission

Pump running

Loss of Power

Controler off/in manual position

Failure to start

General pump operation failure

Overspeed

Low oil pressure

High cool water temperature

Engine failure

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All valves open and locked

