masdaf

FIRE PROTECTION PUMPS

masdaf.com


Making
The World
Better!

What are UL and FM?

What is UL?

Underwrites Laboratories® is an independent certification body that sets standards for product safety and tests the safety of products in accordance with those standards. UL has certified over 19,000 products. Annually, over 20 Stationary products bearing the UL brand are utilized globally, sourced from 7,200 manufacturers. UL provides testing and certification services to its customers across 110 countries. UL establishes standards across various sectors, including building materials, food, lighting, and fire systems.

Since 1894, UL has been dedicated to the testing and reliability of products. UL testing and certification services provide significant benefits for manufacturers and users of fire prevention systems. A product guide from UL can be accessed on their website. This directory provides a comprehensive list of companies authorized to utilize UL, along with essential information for regulatory bodies, building owners, and insurance providers.

What is FM?

FM (Factory Mutual) is the independent technical organization of FMI (Factory Mutual Insurance), a company that insures special and major risks, and approves the performance of materials and systems.

FM approval for fire pumps is based on the requirements of NFPA 20. However, as additional requirements beyond NFPA 20 are pursued, FM approval is recognized as the product quality approval with the most stringent conditions and the highest standard among the quality approvals awarded to fire pumps and environmental elements.

UL/FM in Masdaf

Masdaf, established in Turkey in 1977 as a domestic pump manufacturer, has successfully applied for UL and FM certifications for its fire pumps, becoming the first domestic manufacturer to achieve UL listing and FM approval. Masdaf provides customers with end-suction and horizontal split-case fire pumps that are engineered in accordance with UL 448 "Centrifugal Stationary Pumps for Fire-Protection Service," FM 1319 "Approval Standard for Centrifugal Fire Pumps (Horizontal, End Suction Type)," and FM 1311 "Approval Standard for Centrifugal Fire Pumps (Axial or Radial Split-Case Type)" standards.

Specifications of Fire pumps

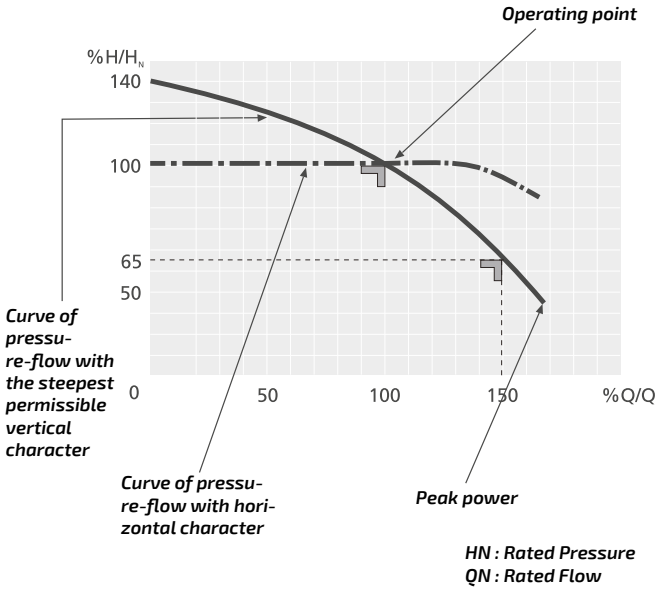
What are the design requirements for fire pumps according to UL 448, FM 1319, and FM 1311?

UL 448 is a standard that includes the design and testing processes for end suction, double suction, and line-type pumps. Fire pumps can be approved by UL and FM for certain flow rates. The values are presented in the following table:

The impeller, impeller wear ring, impeller nut, casing wear ring, packing irrigation ring, gland, gland nut, gland bolt, shaft bushing, in-pump bolts, and setscrews must be made of corrosion-resistant material. The bearing, whether it is the casing or the bearing itself, must be permanently labeled with a pump label. This label must be made of corrosion-resistant material. A drain plug must be installed on the casing. The material must be corrosion-resistant and a minimum of 1/2" in size. The pump must be equipped with soft packing and packing box. Ball bearings must have a service life of 5000 hours at maximum load.

Flow Range			
gpm	**l/m**	**gpm**	**l/m**
25	95	1000	3785
50	189	1250	4731
100	379	1500	5677
150	568	2000	7570
200	757	2500	9462
250	946	3000	11355
300	1136	3500	13247
350	1514	4000	15140
400	1703	4500	17032
450	1892	5000	18925
750	2839		

What are the performance requirements for fire pumps according to UL 448, FM 1319, and FM 1311?



Pumps must be at the nominal flow rate provided in the table and the minimum pump pressure must be 40 psi (276 kPa = 2.76 Bar). The pressure produced by the pump at 150% of the rated flow rate of the test must not be less than 65% of the rated pressure. The pump shall be tested at rated engine speeds. Performance curves include tests at closed valve, rated flow rate and 150% of rated flow rate and selected intercurrent flow rates. Besides, the engine power is determined by the peak power of the pump. The mercury manometer in the suction line requires end suction pumps to have a net positive suction head of -4.57 meters at 150% rated flow rate.

What is NFPA?

NFPA (National Fire Protection Association) is the American Fire Protection Association, to which our company is also a member. This is an organization that sets and publishes the standards of matters that affect fire and safety, required to be implemented in the United States, and initiates the implementation. Compared to siShaftar standard organizations of other countries, it stands as the most referenced, respected, and applied standard globally, including in our country. Masdaf Fire Pumps Series pumps are produced in compliance with the applicable NFPA standards for two significant reasons. The NFPA is recognized globally as the leading standard, known for its rigorous requirements, particularly concerning pump systems. In our country, nearly all technological systems, particularly systems for extinguishing fires with water, such as automatic sprinklers, indoor fire cabinets, and outdoor hydrant systems, have been designed in accordance with NFPA standards. For integrity, as a general rule, whichever standard a system is designed according to, the performance characteristics of the products to be used in that system must also comply with the same standard. Otherwise, incompatibility between design and product is inevitable. Since MAS YP Series pumps comply with NFPA, they can be used in full compatibility with water-based fire extinguishing systems designed according to NFPA standards (automatic sprinklers, indoor fire cabinets, outdoor hydrants, flood spray, and foam systems).

What is NFPA?

NFPA 20 (Standard for the Installation of Centrifugal Fire Pumps) is a standard of NFPA related to fire pumps and specifies the properties, performances, and installation rules of fire pumps and pump groups, engine control systems, and ancillary elements that should be employed.

Specifications of Fire pumps

What are the specifications of fire pumps according to NFPA 20?

The NFPA has established a standard for material and performance specifications, recognizing the critical importance of fire pumps. The compliance of a fire pump to NFPA 20 requires the fulfilment the satisfaction of these requirements. Upon examination of these specifications, a significant distinction between general-purpose pumps and fire pumps appears. The fire pumps are engineered to ensure optimal reliability and consistent outlet pressure throughout their operational lifespan. The design criterion for general-purpose pumps focuses on achieving maximum efficiency and maintaining economical operation.

Listed fire pumps are available for flow rates ranging from 100 to 8000 gpm. The nominal pressure values for horizontal shaft pumps are 30-262 psi (20 mwc-185 mwc), whereas vertical shaft pumps are 26-510 psi (18.55 mwc-358.55 mwc). Centrifugal pumps are classified under four types: horizontal shaft end suction, in-line, horizontally split body, and turbine with vertical shaft turbine.

Listed Pump Types Pressure and Flow Ranges				
Pump Type	Flow rate		Pressure	
	gpm	m^3/h	psi	mWC
End-suction with horizontal shaft	50-1250	11-284	58-203	40-140
In-Line type	50-750	11-170	43-164	30-115
Horizontally split case	100-8000	22-1800	30-262	20-185
Turbine with vertical shaft	250-5000	56-1135	25-510	18-358

NFPA 20'ye göre yangın pompalarının Material Properties

Pump casing: Pump casing material must be GG 25 grey cast iron or GGG40 nodular cast iron according to the pressure class.

Pump Impeller: NFPA 20, UL 448, and FM require that the fire pump impeller be cast from bronze or stainless steel. As with general-purpose pumps, the impeller composed of grey cast iron is never used.

Pump Shaft: The pump shaft must be made of AISI316 stainless steel material. Furthermore, the FM and UL 448 standards have introduced strict design rules for the shafts used in fire pumps.

Sealing: The system requires the inclusion of soft packing, and the packing gland must be engineered to accommodate a minimum of five lines of packing. No restrictions for the use of mechanical packing.

Bearing Housing: The bearings must be ball bearings lubricated with grease. The bearings used must be selected to operate smoothly for at least 5000 hours at maximum load.

Performance specifications of fire pumps according to NFPA 20

The characteristic curve of fire pumps, as specified by NFPA 20, is defined by three points.

Shut-off Discharge Pressure: The shut-off discharge pressure of the pump (with the valve turned off and at zero flow rate) must not exceed 140% of the rated pressure.

Rated Value: The pump characteristic curve must either pass through the point where the rated flow rate and rated pressure intersect or lie above that point.

Maximum Load (Overload): The pump must be able to operate at 150% of the rated flow, if required. The pump should be able to deliver a pressure that is 150% of the rated flow, or at least 65% of the rated pressure.

Material properties of fire pumps according to NFPA 20

- The water velocity is highly important for fire pumps, and according to NFPA 20, the water velocity in the pump suction installation should be max. 4.6 m/sec at 150% flow rate; therefore, the water velocity should not exceed 3 m/sec on average at the rated flow rate. Pipe diameters in the designed system should be selected according to this value.
- All measurements and calculations should be made for clean water at +20°C. If otherwise, it should be shared with the manufacturer.
- The engine power should be determined in accordance with the operating conditions, including 150% of the rated flow rate.
- To verify that the pump performs as indicated, the manufacturer should run a test with water for each pump, and a certificate indicating the results of the test should be issued. This certificate should contain pressure-flow, shaft power, and efficiency curves.
- Fire pumps (except the turbine with vertical shaft turbine) should not be operated negatively for negative suction. Each pump must be equipped with a metal label identifying its rated pressure, flow rate, and speed.
- All pumps must be equipped with pressure gauges (manometer, vacuum meter) showing suction and discharge pressure and mounted on the center of the pump suction-discharge flange.
- All pumps must be equipped with a “casing relief valve” to cool the casing at shut-off discharge pressure.
- Pump-engine couplings and other movable parts must be covered with protective caps.


“ Product Groups ”

YNM Series

End-Suction Centrifugal Fire Pumps

Pumped Liquids

- It is used for pumping clean water and seawater that do not contain solid particles.

Design

- They are single-stage and end-suction centrifugal pumps with volute casings. Pump performances comply with NFPA standards.
- The single inlet shut-off impeller is dynamically balanced against axial loads using balance holes and wear rings.
- The pump and engine is connected via a flexible coupling, and the unit is mounted on a common base plate. Pump maintenance is quite simple and the impeller, shaft and other rotating parts can be removed during maintenance works without disconnecting the pump from the installation.

Bearing Housing

- The pump is equipped with maintenance-free self-grease lubricated bearings.

Sealing

- The fire groups with certified shaft sealing prefers soft packing.

masdaf

YNM 100 - 250

Pump Type	Discharge Flange DN (mm)	Nominal Impeller Diameter (mm)

Technical Specifications	
Suction Flange	DN65/DN125
Discharge Flange	DN40/DN100
Flow Rate	11-227 m^3/h
Discharge Pressure	30-140 mt

Material Properties	
Casing	GG25/GGG 40 Bronze Stainless Steel
Impeller	Bronze or Stainless Steel
Shaft	AISI 316
Sealing	Gland Packing Soft Packing
Bearing Housing	Ball Bearing
Suction/Discharge Flanges	PN16 (DIN 2533)

Driver Options

Electrical

Diesel

Capacity

50-1000 gpm
11-227 m^3/h

43-200psi
30-140 mWC

Hazard Categories

Minor

Marginal

Areas of Application

Fire Cabinet

Hydrant

Sprinkler

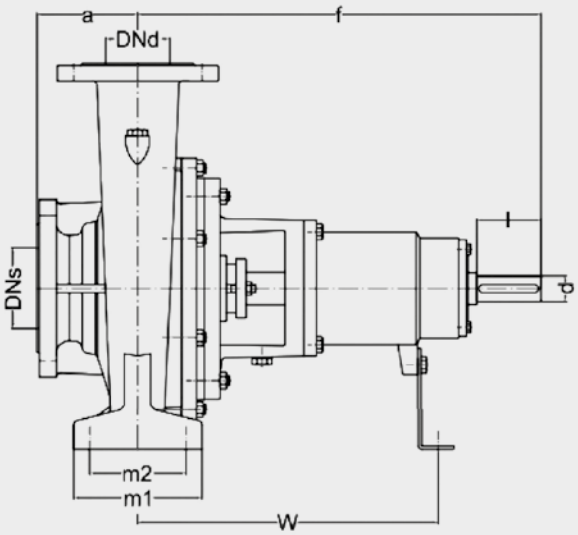
Overflow

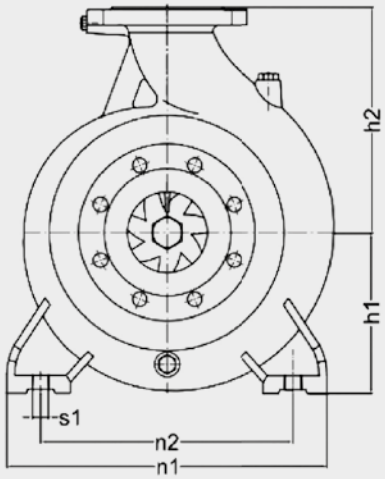
Foam

YNM Series

End-Suction Centrifugal Fire Pumps

Pump Dimensions





General Pump Dimensions

Pump Type	Pump Dimensions (mm)						Foot Dimensions (mm)							Shaft Outlet	
	DNs	DNd	a	f	h1	h2	b	m1	m2	n1	n2	s1	w	d	l
YNM 32-200	50	32	80	360	160	180	50	100	70	240	190	M12	260	24	50
YNM 32-250	50	32	100	360	180	225	50	125	95	320	250	12	260	24	50
YNM 40-250	65	40	100	500	180	225	65	125	95	320	250	12	370	32	80
YNM 50-250	65	50	125	500	180	225	65	125	95	320	250	12	370	32	80
YNM 50-315	80	50	100	470	225	280	80	160	120	360	280	16	330	32	80
YNM 65-250	80	65	125	500	200	250	80	160	120	360	280	76	370	32	80
YNM 65-315	80	65	125	470	225	280	80	160	120	400	315	76	340	32	80
YNM 80-250	100	80	125	500	200	280	80	160	120	400	315	76	370	32	80
YNM 80-315	100	80	125	470	250	315	80	160	120	400	315	76	340	32	80
YNM 100-250	125	100	140	470	225	280	80	160	120	400	315	76	340	32	80

YNM Series

End-Suction Centrifugal Fire Pumps

YNM NFPA Series Fire Pumps Selection Table						
Pump Type	Dimension	Flow Range	Pressure Range	Pressure Range	Rotation Speed	Max. Operating Pressure
	DNs - DNd	GPM	psi	bar	rpm	bar
YNM 32-250	50-32	50-100	58-145	4-10	2900	16
YNM 40-250	65-40	100-200	87-159	6-11	2900	16
YNM 50-250	65-50	150-300	87-159	6-11	2900	16
YNM 50-315	80-50	150-300	101-188	7-13	2900	16
YNM 65-250	80-65	300-500	72-159	5-11	2900	16
YNM 65-315	80-65	300-500	101-203	7-14	2900	16
YNM 80-250	100-80	400-750	87-159	6-11	2900	16
YNM 80-315	100-80	500-1000	116-188	8-13	2900	16
YNM 100-250	125-100	500-1000	87-145	6-10	2900	16

YNM Series

End-Suction Centrifugal Fire Pumps

Design

- Pump performance tests are run in accordance with UL 448 and FM 1319 certifications.
- There is a flange structure in accordance with ANSI/ASME B16.1 Class 250.
- An electric motor in accordance with UL 1004-5, a diesel engine in accordance with UL 1247/FM 1333, and a control panel in accordance with UL 218 and FM 1321/FM 1323 are used.
- Shaft sealing is provided with soft packing.

Technical Specifications	
Flow Range	50 -1250 gpm (10 - 280 m^3/h)
Man. Pressure Range	80-155psi(55-110m)
Operating Pressure	14 bar
Operating Temperature	0-60°C
Engine Speed Range	2900 rpm
Suction Flange	3"-8"
Discharge Flange	2"-6"

Material Properties	
Casing	Cast Iron
Impeller	Bronze
Shaft	AISI 316
Sealing	Gland Packing Soft Packing
Bearing Housing	Ball Bearing
Suction/Discharge Flanges	ANSI / ASME B16.1 Class 250

End-Suction Centrifugal Fire Pumps

Driver Options

Electrical

Diesel

Capacity

50-1000 gpm
10-280 m³/h

80-155psi
55-110 mWC

Hazard Categories

Minor

Marginal

Areas of Application

Fire Cabinet

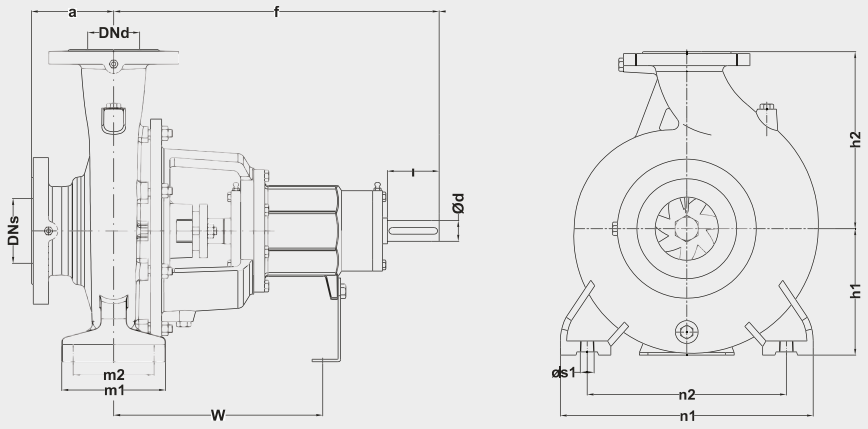
Hydrant

Sprinkler

Overflow

Foam

Pump Dimensions



General Pump Dimensions															
Pump Type	Pump Dimensions (mm)						Foot Dimensions (mm)							Shaft Outlet	
	DNs	DNd	a	f	h1	h2	b	m1	m2	n1	n2	s1	w	d	l
YNM 525	3"	2°	125	500	180	225	65	125	95	320	250	14	370	32	87.5
YNM 825	5"	3"	125	500	225	280	80	160	120	400	315	14	370	32	87.5
YNM 1531	8"	6"	160	530	530	400	100	200	150	550	450	14	355	42	82

YNM Series

End-Suction Centrifugal Fire Pumps

YNM UL/FM Pumps Selection Table							
YNM UL Listed/FM Approved Fire Pumps Selection Table							
Flow Rate		Dimension	Model Type	Net Pressure Range		Max. Operating Pressure	
GPM	m3/h	inch		psi	m	rpm	psi
50	11	3-2	YNM 525	98-154	69-108	2900	200
100	23	3-2	YNM 525	99-154	70-108	2900	200
150	34	3-2	YNM 525	99-155	70-109	2900	200
200	45	3-2	YNM 525	99-155	70-109	2900	200
250	57	3-2	YNM 525	98-155	69-109	2900	200
300	68	3-2	YNM 525	95-153	67-108	2900	200
300	68	5-3	YNM 825	91-144	64-101	2900	200
400	91	5-3	YNM 825	86-143	60-101	2900	200
450	102	5-3	YNM 825	84-143	59-101	2900	200
500	114	5-3	YNM 825	81-143	57-101	2900	200
500	114	8-6	YNM 1531	115-154	81-108	2900	200
750	170	8-6	YNM 1531	112-153	79-108	2900	200
1000	227	8-6	YNM 1531	108-152	76-107	2900	200
1250	284	8-6	YNM 1531	103-148	72-104	2900	200

YPH Series

In-line Fire Pumps

Pumped Liquids

- It is used for pumping clean water and seawater that do not contain solid particles and fibre.

Design

- They are single-stage, vertical-shaft, in-line centrifugal pumps with volute casing. Pump performances comply with NFPA standards.
- The single-suction, shut-off impeller is dynamically balanced against axial loads using balance holes and wear rings.
- The pump and engine are connected through an adapter and a special rigid coupling.
- Since the pump can be disconnected from the installation, keeping the casing connected to the installation, maintenance and repair works can be carried out easily.
- According to the NFPA fire standard, shaft sealing is provided with soft packing.
- The design adopts the principle of interchangeability of the main parts. Thus, the supply for spare parts is expedited. It provides ease of direct start-up with low electric motor power.
- It occupies a little space with its compact structure.

Sealing

- The fire groups with certified shaft sealing prefers soft packing.

YPH 100 - 280

- YPH — Pump Type
- 100 — Discharge Flange DN (mm)
- 280 — Nominal Impeller Diameter (mm)

Technical Specifications	
Suction Flange	DN65/DN125
Discharge Flange	DN40/DN100
Flow Rate	11-700 m³/h (50-750 gpm)
Discharge Height	30 -115 m (43-164 psi)

Material Properties	
Casing	GG25 (PN16)
Impeller	Bronze or Cast Stainless Steel
Shaft	AISI 316
Sealing	Gland Packing Soft Packing
Bearing Housing	Ball Bearing
Suction/Discharge Flanges	PN16 (DIN 2533)

Driver Options

Electrical

Diesel

Capacity

50-750 gpm
11-770 m³/h

43-164 psi
30-155 mWC

Hazard Categories

Minor

Marginal

Areas of Application

Fire Cabinet

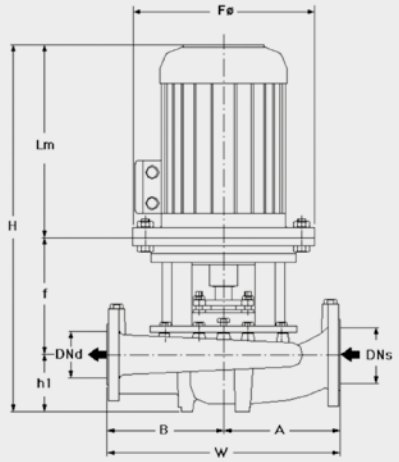
Hydrant

Sprinkler

Overflow

Foam

Pump Dimensions



YPH Series Fire Pumps Dimension Table

		ENGINE			FLANGES	GENERAL	PUMP				
		KW	IEC	Lm	DNs-DNd	H	hl	f	W	A	B
				mm	mm	mm	mm	mm	mm	mm	mm
40-200	2 Poles	3	100L	315	40	590	95	180	380	190	190
		4	112M	332		607	95	180	380	190	190
		5,5	132S	375		675	95	205	380	190	190
		7,5	132S	375		675	95	205	380	190	190
		77	160M	497		816	95	230	380	190	190

		ENGINE			FLANGES	GENERAL	PUMP				
		KW	IEC	Lm	DNs-DNd	H	hl	f	W	A	B
				mm	mm	mm	mm	mm	mm	mm	mm
40-250	2 Poles	5,5	1325	375	40	688	100	213	440	215	225
		7,5	1325	375		688	100	213	440	215	225
		11	160M	491		829	100	238	440	215	225
		15	160M	491		829	100	238	440	215	225

In-line Fire Pumps

		ENGINE			FLANGES	GENERAL	PUMP				
		KW	IEC	Lm	DNs-DNd	H	hl	f	W	A	B
				mm	mm	mm	mm	mm	mm	mm	mm
65-280	2 Poles	22	180M	549	40	989	110	330	475	225	250
		30	200L	637		1077	110	330	475	225	250
		37	200L	637		1077	110	330	475	225	250
		45	225M	680		1120	110	330	475	225	250
		55	250M	755		1195	110	330	475	225	250

		ENGINE			FLANGES	GENERAL	PUMP				
		KW	IEC	Lm	DNs-DNd	H	hl	f	W	A	B
				mm	mm	mm	mm	mm	mm	mm	mm
80-280	2 Poles	37	2255	637	125/80	1102	125	340	525	250	275
		45	225M	680		1145	125	340	525	250	275
		55	250M	755		1220	125	340	525	250	275
		75	2805	767		1232	125	340	525	250	275

		ENGINE			FLANGES	GENERAL	PUMP				
		KW	IEC	Lm	DNs-DNd	H	hl	f	W	A	B
				mm	mm	mm	mm	mm	mm	mm	mm
100-280	2 Poles	45	225M	680	150/100	1200	150	370	580	280	300
		55	250M	755		1305	150	400	580	280	300
		75	2805	767		1317	150	400	580	280	300
		90	280M	818		1368	150	400	580	280	300

YPSP Series

Split Case Double Suction Centrifugal Fire Pumps

Pumped Liquids

- It is used for pumping clean water and seawater that do not contain solid particles and fibre.

Design

- They are single-stage double-suction centrifugal pumps with horizontally split casing and radial impeller. Pump performances comply with NFPA standards.
- The back-to-back design of the double suction radial impeller resets the axial load. The inlet and outlet flanges are located on the same axis.
- They are easy to install.
- They have the advantage of low NPSH characteristic of double suction pumps.
- The pump and electric motors are connected with flexible couplings on standard frames. It is also possible to propel with a diesel engine.
- The impeller, casing, wear ring, and gland are made of bronze, and the shaft is made of stainless steel.

Sealing

- The fire groups with certified shaft sealing prefers soft packing.

Bearing Housing

- The pump is equipped with maintenance-free self-grease lubricated bearings.

YPSP 100 - 250

- YPSP — Pump Type
- 100 — Discharge Flange DN (mm)
- 250 — Nominal Impeller Diameter (mm)

Technical Specifications	
Suction Flange	DN80/DN400
Discharge Flange	DN65/DN350
Flow Rate	50-1800m3/h
Discharge Pressure	20-185 m
Operating Pressure	16-20 bar
Speed Range	1450 -3600 rpm

Material Properties	
Casing	GG25 (PN16) / GGG40 (PN 25)
Impeller	Bronze or Cast Stainless Steel
Shaft	AISI 316
Sealing	Soft Packing
Bearing Housing	Ball Bearing
Suction/Discharge Flanges	PN16 (DIN 2533)

Driver Options

Electrical

Diesel

Capacity

220-8000 gpm
50-1800 m³/h

30-262 psi
0-185 mWC

Hazard Categories

Minor

Marginal

Critical

Catastrophic

Areas of Application

Fire Cabinet

Hydrant

Sprinkler

Overflow

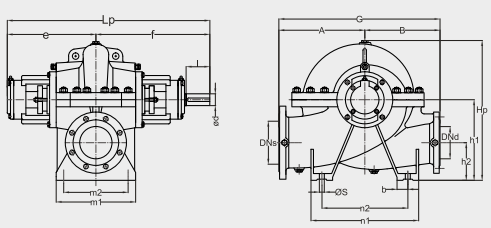
Foam

YPSP Series

Split Case Double Suction Centrifugal Fire Pumps

General Pump Dimensions																		
Pump Type	Flanges		Lp	e	f	h1	h2	b	m1	m2	n1	n2	sØ	A	A	l	dØ	Hp	G
	DNs	DNd																	
65-250	100	65	585	260	325	250	115	90	240	200	350	275	18	275	225	60	28	432	500
80-250	125	80	674	294	380	280	140	80	234	190	400	340	19	300	275	80	35	482	575
80-360	125	80	674	294	380	315	135	80	234	190	400	340	19	325	275	80	35	555	600
100-250	150	100	712	312	400	315	155	80	270	225	400	340	19	325	275	80	35	525	600
100-315	150	100	820	350	470	355	145	110	290	230	435	350	22	365	325	110	45	587	690
125-315	200	125	874	377	497	400	200	75	250	200	470	400	20	400	350	110	45	665	750
150-250	200	150	870	375	495	375	175	100	340	270	500	400	23	400	325	110	45	640	725
125-400	150	125	942	412	530	375	175	100	370	300	600	500	23	450	400	110	55	695	850
150-315	200	150	942	412	530	375	175	100	370	300	500	400	23	400	350	110	55	645	750
150-400	200	150	942	412	530	400	200	100	370	300	600	500	23	475	400	110	55	730	875
150-500	200	150	942	412	530	450	250	100	370	300	650	550	23	550	500	110	55	870	1050
200-315	250	200	972	427	545	430	205	100	430	360	500	400	23	450	375	110	55	735	825
200-400	250	200	972	427	545	430	205	100	430	360	600	500	23	525	425	110	55	788	950
250-500	250	200	1042	447	595	475	220	100	460	390	650	550	23	550	500	140	65	876	1050
250-315	300	250	1062	457	605	500	225	100	480	410	650	550	23	525	425	140	65	841	950
250-400	300	250	1042	447	595	500	225	100	460	390	650	550	23	550	450	140	65	873	1000
250-500	300	250	1062	457	605	525	240	100	480	410	650	550	23	600	500	140	65	952	1100
350-400	400	350	1290	570	720	610	295	150	600	500	750	600	28	600	500	140	75	1010	1100
350-500	400	350	1290	570	720	630	315	150	600	500	800	650	28	650	550	140	75	1055	1200

Pompa Dimensionlar



YPSP Series

Split Case Double Suction Centrifugal Fire Pumps

Design

- They are single-stage double-suction pumps with horizontally split casing and radial impeller.
- The back-to-back design of the double-suction radial impeller and the shut-off impeller structure resets the axial load.
- Pump flanges are designed in accordance with ANSI/ASME B16.1 Class 250. The inlet and outlet flanges are located on the same axis. Shaft sealing is provided with soft packing.
- They have the advantage of low NPSH characteristic of double suction pumps.
- The pump and electric motors are connected with flexible couplings on standard frames. It is also possible to propel with a diesel engine.
- The impeller of the pump is made of bronze material; the shaft is made of stainless steel.

Technical Specifications(UL Listed)	
Flow Range	100 - 2000 GPM (23 - 454 m3/h)
Man. Pressure Range	60 - 274 psi (44 -188 m)
Operating Pressure	16-24 bar
Speed Range	1800-2900 rpm
Suction Flange	4"-10"
Discharge Flange	21/2"-8"

Material Properties	
Casing	Dökme Demir
Impeller	Bronze
Shaft	AISI 316
Sealing	Gland Packing Soft Packing
Bearing Housing	Ball Bearing
Flange Standards	ANSI / ASME B16.1 Class 250

Technical Specifications (UL Listed/FM Approved)	
Flow Range	250-1000GPM (56-227m3/h)
Man. Pressure Range	75-171 psi (52-120 m)
Operating Pressure	16-24bar
Speed Range	2900 rpm
Suction Flange	4"-6"
Discharge Flange	2 1/2"-4"

Slit Case Double Suction Centrifugal Pumps

Driver Options

Electrical

Diesel

Capacity

1000-2000 gpm
23-454 m³/h

60-274psi
44-188 mWC

Hazard Categories

Minor

Marginal

Critical

Catastrophic

Areas of Application

Fire Cabinet

Hydrant

Sprinkler

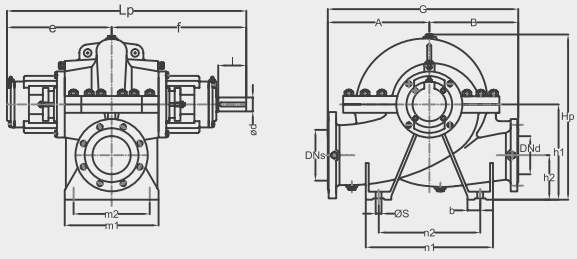
Overflow

Foam

General Pump Dimensions

Pump Type	Flanges		Lp	e	f	h1	h2	Hp	A	B	G	b	m1	m2	n1	n2	Ø5	l	Od
	DNs	DNd																	
65-250	4"	21/2"	585	260	325	250	115	425	285	225	510	70	240	190	350	275	18	60	28
80-250	5"	3"	680	300	380	280	140	455	300	275	575	80	234	190	400	330	18	80	35
80-360	5"	3"	680	300	380	315	135	550	325	275	600	80	734	190	400	330	18	80	35
100-250	6"	4"	715	315	400	315	155	550	325	275	600	80	270	220	400	330	18	80	35
100-315	6"	4"	820	350	470	355	745	585	360	320	680	90	290	230	435	350	23	110	45
150-250	8"	6"	870	375	495	375	775	635	400	325	725	100	340	270	500	400	23	110	45
125-400	6"	5"	945	415	530	375	775	700	450	400	850	100	370	300	500	400	23	110	55
150-315	8"	6'	945	415	530	375	775	645	400	350	750	100	370	300	500	400	23	110	55
150-400	8"	6"	945	415	530	400	200	730	475	400	875	100	370	300	500	400	23	110	55
200-400	10"	8"	975	430	545	430	205	790	525	425	950	100	430	360	600	500	23	110	55

Pump Dimensions



YPSP UL Listed Fire Pumps Selection Table							
Flow Rate		Dimension	Model Type	Net Pressure Range		Speed	Max. Operating Pressure
GPM	m3/h	inch		psi	m	rpm	psi
100	23	4"-21/2"	YPSP 65-250	84-132	59-93	2950	210
100	23	4"-21/2"	YPSP 65-250	75-119	53-84	2800	210
150	34	4"-2 1/2"	YPSP 65-250	83-132	58-93	2950	210
150	34	4"-2 1/2"	YPSP 65-250	75-119	53-84	2800	210
200	45	4"-2 1/2"	YPSP 65-250	82-132	58-93	2950	210
200	45	5"-3"	YPSP 80-250	102-165	72-116	2950	245
200	45	5"-3"	YPSP 80-360	140-274	98-193	2950	345
200	45	4"-2 1/2"	YPSP 65-250	74-119	52-84	2800	210
200	45	5"-3"	YPSP 80-250	92-148	65-104	2800	245
200	45	5"-3"	YPSP 80-360	126-246	89-173	2800	345
200	45	5"-3"	YPSP 80-360	108-212	76-149	2600	345
200	45	5"-3"	YPSP 80-360	89-174	63-122	2350	345
200	45	5"-3"	YPSP 80-360	71-138	50-97	2100	345
250	57	4"-2 1/2"	YPSP 65-250	80-132	56-93	2950	210
250	57	5"-3"	YPSP 80-250	102-165	72-116	2950	245
250	57	5"-3"	YPSP 80-360	140-273	98-192	2950	345
250	57	4"-2 1/2"	YPSP 65-250	72-119	51-84	2800	210
250	57	5"-3"	YPSP 80-250	92-149	65-105	2800	245
250	57	5"-3"	YPSP 80-360	126-246	89-173	2800	345
250	57	5"-3"	YPSP 80-360	109-212	77-149	2600	345
250	57	5"-3"	YPSP 80-360	89-174	63-122	2350	345
250	57	5"-3"	YPSP 80-360	71-138	50-97	2100	345
300	68	4"-2 1/2"	YPSP 65-250	78-132	55-93	2950	210
300	68	5"-3"	YPSP 80-250	102-165	72-116	2950	245
300	68	5"-3"	YPSP 80-360	141-273	99-192	2950	345
300	68	4"-2 1/2"	YPSP 65-250	69-119	49-84	2800	210
300	68	5"-3"	YPSP 80-250	92-149	65-105	2800	245
300	68	5"-3"	YPSP 80-360	127-246	89-173	2800	345
300	68	5"-3"	YPSP 80-360	109-212	77-149	2600	345
300	68	5"-3"	YPSP 80-360	89-173	63-122	2350	345
300	68	5"-3"	YPSP 80-360	70-137	49-96	2100	345
400	91	5"-3"	YPSP 80-250	101-166	71-117	2950	245
400	91	5"-3"	YPSP 80-360	139-270	98-190	2950	345
400	91	5"-3"	YPSP 80-250	91-149	64-105	2800	245
400	91	5"-3"	YPSP 80-360	125-242	88-170	2800	345
400	91	5"-3"	YPSP 80-360	106-209	75-147	2600	345
400	91	5"-3"	YPSP 80-360	86-170	60-120	2350	345
400	91	5"-3"	YPSP 80-360	67-135	47-95	2100	345
450	102	5"-3"	YPSP 80-250	100-166	70-117	2950	245
450	102	5"-3"	YPSP 80-360	137-269	96-189	2950	345
450	102	5"-3"	YPSP 80-250	90-149	63-105	2800	245
450	102	5"-3"	YPSP 80-360	123-242	87-170	2800	345
450	102	5"-3"	YPSP 80-360	105-209	74-147	2600	345

masdaf

YPSP UL Listed Fire Pumps Selection Table							
Flow Rate		Dimension	Model Type	Net Pressure Range		Speed	Max. Operating Pressure
GPM	m3/h	inch		psi	m	rpm	psi
450	102	5"-3"	YPSP 80-360	84-170	59-120	2350	345
450	102	5"-3"	YPSP 80-360	65-135	46-95	2100	345
500	114	5"-3"	YPSP 80-250	99-165	70-116	2950	245
500	114	5"-3"	YPSP 80-360	135-269	95-189	2950	345
500	114	6"-4"	YPSP 100-250	92-180	65-127	2950	265
500	114	6"-4"	YPSP 100-315	154-212	108-149	2950	320
500	114	5"-3"	YPSP 80-250	88-149	62-105	2800	245
500	114	5"-3"	YPSP 80-360	121-242	85-170	2800	345
500	114	6"-4"	YPSP 100-250	84-162	59-114	2800	265
500	114	6"-4"	YPSP 100-315	138-191	97-134	2800	315
500	114	5"-3"	YPSP 80-360	103-207	72-146	2600	345
500	114	6"-4"	YPSP 100-315	119-216	84-152	2600	315
500	114	5"-3"	YPSP 80-360	82-169	58-119	2350	345
500	114	6"-4"	YPSP 100-315	94-177	66-124	2350	315
500	114	5"-3"	YPSP 80-360	64-134	45-94	2100	345
500	114	6"-4"	YPSP 100-315	75-142	53-100	2100	315
750	170	6"-4"	YPSP 100-250	89-178	63-125	2950	265
750	170	6"-4"	YPSP 100-315	150-213	105-150	2950	320
750	170	6"-4"	YPSP 100-250	79-160	56-113	2800	265
750	170	6"-4"	YPSP 100-315	134-192	94-135	2800	315
750	170	6"-4"	YPSP 100-315	114-216	80-152	2600	315
750	170	6"-4"	YPSP 100-315	92-175	65-123	2350	315
750	170	6"-4"	YPSP 100-315	71-141	50-99	2100	315
750	170	6"-5"	YPSP 125-400	121-187	85-132	2100	290
750	170	6"-5"	YPSP 125-400	88-155	62-109	1800	290
1000	227	6"-4"	YPSP 100-250	81-175	57-123	2950	265
1000	227	8"-6"	YPSP 150-250	81-139	57-98	2950	245
1000	227	8"-6"	YPSP 150-315	135-189	95-133	2950	265
1000	227	6"-4"	YPSP 100-250	72-157	51-110	2800	265
1000	227	8"-6"	YPSP 150-250	72-125	51-88	2800	245
1000	227	8"-6"	YPSP 150-315	121-170	85-120	2800	265
1000	227	8"-6"	YPSP 150-315	104-180	73-127	2600	265
1000	227	8"-6"	YPSP 150-315	83-147	58-103	2350	265
1000	227	8"-6"	YPSP 150-400	161-180	113-127	2350	290
1000	227	8"-6"	YPSP 150-315	65-117	46-82	2100	265
1000	227	6"-5"	YPSP 125-400	119-186	84-131	2100	290
1000	227	8"-6"	YPSP 150-400	128-179	90-126	2100	290
1000	227	6"-5"	YPSP 125-400	86-153	60-108	1800	290
1000	227	8"-6"	YPSP 150-400	93-143	65-101	1800	290
1250	284	8"-6"	YPSP 150-250	79-139	56-98	2950	245
1250	284	8"-6"	YPSP 150-315	132-187	93-132	2950	265
1250	284	8"-6"	YPSP 150-250	71-125	50-88	2800	245
1250	284	8"-6"	YPSP 150-315	117-168	82-118	2800	265

YPSP UL Listed Fire Pumps Selection Table							
Flow Rate		Dimension	Model Type	Net Pressure Range		Speed	Max. Operating Pressure
GPM	m3/h	inch		psi	m	rpm	psi
1250	284	8"-6"	YPSP 150-315	100-180	70-127	2600	265
1250	284	8"-6"	YPSP 150-315	80-147	56-103	2350	265
1250	284	8"-6"	YPSP 150-400	158-178	111-125	2350	290
1250	284	8"-6"	YPSP 150-315	63-116	44-82	2100	265
1250	284	6"-5"	YPSP 125-400	116-185	82-130	2100	290
1250	284	8"-6"	YPSP 150-400	125-176	88-124	2100	290
1250	284	10"-8"	YPSP 200-400	119-154	84-108	2100	290
1250	284	6"-5"	YPSP 125-400	82-152	58-107	1800	290
1250	284	8"-6"	YPSP 150-400	89-141	63-99	1800	290
1250	284	10"-8"	YPSP 200-400	87-139	61-98	1800	290
1500	341	8"-6"	YPSP 150-250	78-139	55-98	2950	245
1500	341	8"-6"	YPSP 150-315	128-185	90-130	2950	265
1500	341	8"-6"	YPSP 150-250	70-125	49-88	2800	245
1500	341	8"-6"	YPSP 150-315	114-166	80-117	2800	265
1500	341	8"-6"	YPSP 150-315	97-180	68-127	2600	265
1500	341	8"-6"	YPSP 150-315	77-145	54-102	2350	265
1500	341	8"-6"	YPSP 150-400	155-175	109-123	2350	290
1500	341	8"-6"	YPSP 150-315	60-116	42-82	2100	265
1500	341	8"-6"	YPSP 150-400	121-175	85-123	2100	290
1500	341	10"-8"	YPSP 200-400	119-154	84-108	2100	290
1500	341	8"-6"	YPSP 150-400	86-138	60-97	1800	290
1500	341	10"-8"	YPSP 200-400	87-137	61-96	1800	290
2000	454	10"-8"	YPSP 200-400	117-152	82-107	2100	290
2000	454	10"-8"	YPSP 200-400	84-137	59-96	1800	290

YPSP U/FM Listed Fire Pumps Selection Table							
Product	Capacity (gal/min)	Pressure Range (psi)	Speed (rpm)	Suction Flange	Discharge Flange	Number of Stages	Certificate Class
YPSP 65-250	250	78-131	2950	4	21/2	1	1311
YPSP 65-250	300	75-130	2950	4	21/2	1	1311
YPSP 80-250	300	102-165	2950	5	3	1	1311
YPSP 80-250	400	101-163	2950	5	3	1	1311
YPSP 80-250	450	99-163	2950	5	3	1	1311
YPSP 80-250	500	98-162	2950	5	3	1	1311
YPSP 100-250	500	92-171	2950	6	4	1	1311
YPSP 100-250	750	86-169	2950	6	4	1	1311
YPSP 100-250	1000	80-168	2950	6	4	1	1311

ENM Series

End-Suction Volute Casing
Fi-Fi System Pumps

Pumped Liquids

- It is used for pumping clean water and seawater that do not contain solid particles and fibre.

Design

- They are horizontal-type, single-stage centrifugal pumps with a single inlet, a suction nozzle on the horizontal axis, a discharge nozzle on top, a shut-off impeller, and a volute casing.
- Since the volute is symmetrical, it can be mounted to operate in both directions. Due this specification, it can also be connected to left-turn engines.
- ENM pump impellers are of the double-inclined type. The impellers are dynamically balanced in an electronic balancing machine. The axial thrust force is balanced using a rear hanging ring and balance holes.
- The pumps are equipped with a rigid shaft that can operate at different loads.
- There is one water-lubricated plain bearing inside the suction body.
- It has a compact structure due to the bending-resistant shaft and short distance between the bearing and volute. Due to this feature, it is suitable for applications with limited volumes (such as marine fire brigades).
- In normal applications, two ball bearings are used. The cantilever bearing used is optional.

Sealing

- As standard, the shaft sealing is provided by soft packing that is cooled and lubricated by the pumped water. Mechanical packing is also available as an option according to our customers' requirements.

Bearing Housing

- ENM series pumps employ two types of bearings: slide and ball bearings. While the ball bearing is mounted on the engine side, the slide bearing is located on the other side, on the pump side.

ENM 300 - 500

- ENM — Pump Type
- 300 — Discharge Flange DN (mm)
- 500 — Nominal Impeller Diameter (mm)

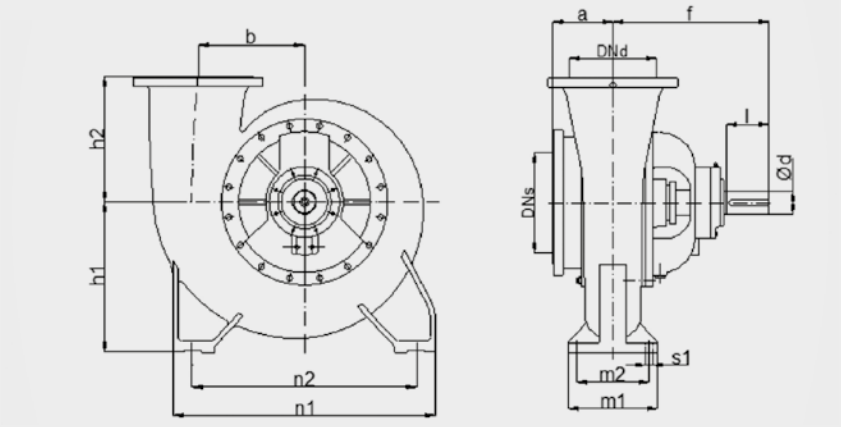
Material Options

PART	Sfero Cast Iron (GGG40)	Cast Bronze (G-CuSn10)	Stainless Steel (AISI 329)	Stainless Steel (AISI 420)	Stainless Steel (AISI 304)	Stainless Steel (AISI 316)
Casing	●	●			●	●
Impeller	●	●			●	●
Wear Ring		●			●	●
Shaft			●	●	●	●

Consult our companies for different material options.

Technical Specifications	
Flow Range	400- 4000 m3/h
Discharge Height	60-150 m
Operating Pressure	16 bar
Operating Temperature	-20-110 °C
Speed Range	1000-1800 rpm
Suction Flange	DN300-DN500
Discharge Flange	DN250-DN400

Pump Dimensions



General Pump Dimensions

Pump Type	Flanges (PN16)		a	f	h1	h2	b	m1	m2	n1	n2	m2	s1	d	l
	DNs	DNd													
ENM 250-550	300	250	230	544	500	425	400	300	240	800	650	650	30	75	140
ENM 300-550	350	300	230	544	550	500	400	300	240	800	650	650	30	75	140
ENM 350-550	400	350	240	625	600	500	425	360	290	1050	900	900	30	90	170
ENM 400-550	500	400	280	640	600	550	400	360	290	1050	900	900	30	90	170

Cabin Systems

Cabin

- Cabinet fire extinguishing systems are applicable to all fire group pumps (such as YNM, YPSP and YPH series).

Advantages of Cabin Applications

- It brings significant advantages, particularly when pumps cannot be installed in places, such as archeological sites, i.e. within a building where desired.
- Cabinet system shields the pump inside from the adverse impacts of the surrounding environment and isolates the pump noise from being transmitted to the surrounding environment.
- The cabinet can be manufactured from containers that meet international requirements, as well as in custom sizes with unique sound insulation.
- Especially our pumps with container cabinet system incorporate equipment that is readily transportable by truck, lorry, train, ship, or aircraft, as well as liftable by a crane.
- It brings effective solutions for fire extinguishing operations in a variety of industries, including industrial plants, mining, agriculture, energy, and building systems, while also being simple to assemble and maintain.

Container Applications

Container Applications

- You can locate your pump groups wherever you want in the building or facility. It can operate smoothly. It features an easy layout of valves and equipment inside the system.

Advantages of Container Applications

- Easy access to equipment in case of emergency repair with simple and safe maintenance feature. Efficient system operation due to high performance electric motors.
- Easy monitoring of system performance values.
- Engine protections that keep the engine dry and safe to operate.
- Ability to provide a safe and easy working environment for maintenance and operation. Dry, comfortable and easy system operation that eliminates any disturbance to the environment.
- All container fire set systems are equipped with flow meters that can constantly measure system performance. They bring the ability to run weekly tests for each pump separately.
- The suction line is fed against all kinds of unfavorable conditions in the suction line, ensuring that the suction pipe and pump are always full of water.
- All fire pumps that refer to low-medium-high hazard class can be used in fire containers. All necessary valves and fittings can be provided in the suction and discharge lines as well as motor fire pumps and control panels (fuel tank and battery for diesel pump) and jockey pump and control panel in the container.

According to NFPA 20

Motor Specifications of Fire Groups

Electric Motors

- Electric motors must comply with the standards.
- Motors must be designed for continuous duty operation
- Where splash water is likely to occur, the motors must be designed as totally enclosed.
- There must be a power line to supply the motors, even if the electricity in the building where fire safety is secured is cut off. In case of an unreliable electricity supply, a backup source must be provided.
- In case of generator supply, the system must be designed according to NFPA 37 and NFPA 110 Type 10 standards.

Diesel Engines

- Diesel engines to be used in fire pumps must be reliable, first-class, and designed for fire extinguishing systems.
- They must be equipped with the necessary mechanism to be operated for at least 30 minutes a week. The engine power must have at least 10% more power than the required maximum shaft power.
- When selecting the engine power, necessary corrections should be made by taking into account the conditions, such as ambient temperature and altitude above sea level, etc.
- The pump and engine should be connected with flexible coupling.
- There should be an automatic throttle mechanism to keep the engine speed constant within a 10% range even under shut-off discharge pressure and maximum load conditions.
- There should be an overspeed shutdown mechanism to stop the engine if the engine speed exceeds 20% more than the rated speed.
- There must be a tachometer showing the engine speed.
- There must be an oil pressure gauge showing the engine oil pressure.
- There must be a temperature gauge showing the engine coolant temperature.
- All engine equipment must be fitted to a suitably fixed equipment panel.

According to NFPA 20

Motor Specifications of Fire Groups

- All cables that must be connected to the control unit must be connected at the factory and transported to a terminal group.
- The start-up process must utilize the battery group.
- There must be two battery groups, main and backup.
- The battery groups must be selected to provide twice the power needed for six start-ups, each lasting three minutes. Both battery groups should be equipped with a hand-controlled contactor that allows the voltage to be supplied manually.
- According to the motor power used, a fuel tank should be used in accordance with the capacity calculation specified in NFPA 20.

- **Diesel Engine Types:**
  - Water/Air Cooled (with radiator)
  - Water Cooled (with heat exchanger)

- **Conventional Diesel Engine Types:**
  - Air Cooled
  - Water Cooled

Engine Options by Pump Type

Pump Type	Electric Motor	Diesel Engine	
		Approved	Conventional
In-Line Type	✓	—	—
End Suction	✓	✓	✓
Horizontally Split Casing	✓	✓	✓

Environmental Elements (Optional)

- According to the pump nominal flow rate, a valve can be selected from the table below.
- The suction line must be connected to the control units with a rising shaft, the discharge line with a rising shaft or butterfly valve, and the valve monitoring switch (optional).
- If the diameters of the pump suction and suction pipe are different, eccentric reduction should be used. (Pump suction diameter should not be reduced).
- If the diameters of the pump discharge flange and discharge pipe are different, concentric reduction must be used.
- The fire pump must be equipped with a casing relief valve, an automatic air relief valve (in pumps with horizontal split casing), and pressure gauges.

Rated Flow (GPM)	Suction Pipe Diameter**	Discharge Pipe Diameter**	Safety Valve Diameter	Safety Valve Drain Pipe Diameter	Flow Meter Diameter	Testing Valve Number-Diameter	Testing Valve Collector Diameter
25	1 "-DN 25	1 "-DN 25	3/4" -DN 15	1"-DN 25	1 1/4 -DN 32	1 x 1 1/2	1"-DN 25
50	1 1/2 -DN 40	1 1/4-DN 32	1 1/4 -DN 32	1 1/2 -DN 40	2 "-DN 50	1 x 1 1/2	11/2 -DN 40
100	2 "-DN 50	2 "-DN 50	1 1/2 -DN 40	2 "-DN 50	2 1/2-DN 65	1 x 2 1/2	21/2-DN 65
150	2 1/2-DN 65	2 1/2-DN 65	2 "-DN 50	2 1/2 -DN 65	3 "-DN 80	1 x 2 1/2	2 1/2 -DN 65
200	3 "-DN 80	3 "-DN 80	2 "-DN 50	2 1/2 -DN 65	3 "-DN 80	1 x 2 1/2	2 1/2 -DN 65
250	4 "-DN 100	3 "-DN 80	2 "-DN 50	2 1/2-DN 65	4 "-DN 100	1 x 2 1/2	3"-DN 80
300	4 "-DN 100	4 "-DN 100	2 1/2 -DN 65	4 "-DN 100	4 "-DN 100	1 x 2 1/2	3"-DN 80
400	4 "-DN 100	4 "-DN 100	3 "-DN 80	5 "-DN 125	4 "-DN 100	2 x 2 1/2	4"-DN 100
450	5 "-DN 125	5 "-DN 125	3 "-DN 80	5 "-DN 125	4 "-DN 100	2 x 2 1/2	4"-DN 100
500	5 "-DN 1251	5"-DN 125	3 "-DN 80	5 "-DN 125	5 "-DN 125	2 x 2 1/2	4"-DN 100
750	6 "-DN 150	6 "-DN 150	4 "-DN 100	6 "-DN 150	5 "-DN 125	3 x 2 1/2	6"-DN 150
1000	8 "-DN 200	6 "-DN 150	4 "-DN 100	8 "-DN 200	6 "-DN 150	4 x 2 1/2	6"-DN 150
1250	8 "-DN 200	8 "-DN 200	6 "-DN 150	8 "-DN 200	6 "-DN 150	6 x 2 1/2	8"-DN 200
1500	8 "-DN 200	8 "-DN 200	6 "-DN 150	8 "-DN 200	8 "-DN 200	6 x 2 1/2	8"-DN 200
2000	10 "-DN 250	10 "-DN 250	6 "-DN 150	10"-DN 250	8 "-DN 200	6 x 2 1/2	8"-DN 200
2500	10 "-DN 250	10 "-DN 250	6 "-DN 150	10"-DN 250	8 "-DN 200	6 x 2 1/2	10"-DN 250
3000	12 "-DN 300	12 "-DN 300	8 "-DN 200	12 "-DN 200	8 "-DN 200	6 x 2 1/2	10"-DN 250

NFPA20 Table-4.27(a)
**Prepared per NFPA 20 by using 4" instead of 3 ½".*
*** Valid for the section at a pre-suction length of 10 diameter.*
*** *** Pump flanges may differ from pipe diameter*

Jockey Pump

- It must be capable of at least 1 gpm or capable of restoring the pressure to the required level by meeting a permissible leakage within 10 minutes.
- It must not be pressurized lower than the minimum pressure required for the aqueous fire extinguishing system.

According to NFPA 20

Control Panel for Electric-Motor Fire Pump

General Specifications

- The panel must be manufactured with first-class workmanship and quality materials and must meet the quality level of international industrial products.
- The panel must have been inspected and tested at the factory before shipment.
- The terminal connection instructions must be affixed to the panel, and the circuit diagram, spare lamps, and telephone and fax numbers to be contacted when necessary must

Panel Case

- The panel must be made of red electrostatic powder-painted (RAL 3000 or RAL 3020), phosphated 1.5 mm DKP sheet metal.
- The panel must have a protection (IP 55) that prevents “splashing and jetting water” against liquid ingress and “dust accumulation” against dust intrusion.
- The panel must be grounded permanently at every point.
- The panel must be the surface-mounted (or free-standing) type, and the parts required for mounting must be provided with the panel.
- The panel door must be equipped with a quality lock and must be lockable to prevent being opened by those who have no key.
- There should not be any non-standard elements on the panel cover; indicators and control elements that need to be monitored from outside the panel must be installed on the fixed wing.
- When the panel door is locked, no settings and elements shall be accessible. The wiring terminals must be located at the bottom of the panel.

Control Mechanism

- The pressure switches that allow the pumps to operate and halt must be installed in the system; the system pressure measurement line must be suitable for connection to the pressure switch with a pipe.
- The pressure switch must be of a type that is not affected by vibration, the upper and lower set values can be adjusted independently from each other, and the set value must be displayed on it.
- The pump can be operated automatically depending on the pressure switch or manually by means of the push button on the panel or the button on the field connected to the panel terminals.
- This operation button must not be connected to the AUTO-MANUAL selector switch (no off position). Upon activation of the pump via the START button, the system is required to maintain operation until the STOP button is engaged.
- The pump ceases operation upon activation of the STOP button, irrespective of whether it is in automatic or manual mode. Should the system pressure fall below the required threshold, the pump must be restarted by releasing the STOP button. The STOP button must not be of the locked type.
- If the pump operates automatically and is equipped with an automatic shut-off device, the pump must stop after all conditions revert to normal and run for at least 10 minutes. A Minimum Operation Timer must be provided in the unit to ensure this operation.
- 10ptionally, there may be a fully automatic test device connected to the weekly timer to start up the fire pump on a certain day and time of the week and stop after at least 10 minutes of operation; in order to do this, the weekly timer discharges the water by keeping an electrically controlled solenoid valve open on the line to which the pressure switch is connected at the scheduled day, hour, and minute and enables the pump to start by simulating the pressure drop in the system.
- The jockey pump must be equipped with an AUTO-OFF-MANUAL operation button.

Signalization

- The panel must include information lights that facilitate a clear understanding of the system and enable effective error tracking.
- The information lights must consist of at least following:
  - System Activated
  - Automatic Operation Activated
  - Automatic Operation Disabled
  - Phase Line Failure
  - Insufficient Phase
- On the panel, there should be muteable, audible, and light error alarms that cannot be switched off.
- For information lights, lights with long lamp life that are easily visible even under bright light and easy to replace should be used.

Power Circuit

- The cut-off switch of the panel must be selected with a current value of 15% more than the total load during motor start-up. The operating contactor of the fire pump must have a rated contact current 50% more than the direct start-up current of the pump motor.
- The fire pump must not be thermally protected. The jockey pump must be thermally protected.
- The motor of the jockey pump must be direct start-up.

Performance Attributes

- The panel is required to include a phase number and sequence relay to ensure that all three energy supply phases are present and that their sequence is correct.
- The pumps to be used under humid conditions must be equipped with a thermostat-controlled heater inside the control panels to prevent water condensation.

Wiring

- Cable inputs and outputs for the panel must be fitted with bushings.
- All cables must be enumerated to avoid any disconnection and deformeation. All cables must be wired in accordance with the cable colour coding.
- The power cables must go directly into the cut-off switch terminals without running inside the panel. Earthing inlet and terminal must be independent.

According to NFPA 20

Control Panel for Diesel-Engine Fire Pump

General Specifications

- The panel must be manufactured with first-class workmanship and quality materials and must meet the quality level of international industrial products.
- The panel must have been inspected and tested at the factory before shipment.
- The terminal connection instructions must be affixed to the panel, and the circuit diagram, spare lamps, and telephone and fax numbers to be contacted when necessary must be available.
- The entire control system design must be highly reliable; the design and materials used must be cleared of any elements that may interfere with its functioning.
- The description of all lights, buttons, etc. on the panel must be permanently labeled to prevent damage and be easily readable.

Panel Case

- The panel must be made of red electrostatic powder-painted (RAL 2000), phosphated 1.5 mm DKP sheet metal. The panel must have a protection (IP 55) that prevents “splashing and jetting water” against liquid ingress and “dust accumulation” against dust intrusion.
- The panel must be grounded permanently at every point.
- The panel must be the surface-mounted (or free-standing) type, and the parts required for mounting must be provided with the panel.
- The panel door must be equipped with a quality lock and must be lockable to prevent being opened by those who have no key.
- There should not be any non-standard elements on the panel cover; indicators and control elements that need to be viewed from outside the panel must be installed on the fixed wing.
- When the panel door is locked, no settings and elements shall be accessible. The wiring terminals must be located at the bottom of the panel.

Control Mechanism

- The pressure switches that allow the pumps to operate and halt must be installed in the system; the system pressure measurement line must be suitable for connection to the pressure switch with a pipe.
- Pressure switches and settings must not be changed unless the locked panel door is opened.
- The pump can be operated automatically depending on the pressure switch or manually by means of the push button on the panel or the button on the field connected to the panel terminals.
- This operation button should be not be connected to the AUTO-MANUAL selector switch (no off position).
- Upon activation of the pump via the START button, the system is required to maintain operation until the STOP button is engaged.
- The pump ceases operation upon activation of the STOP button, irrespective of whether it is in automatic or manual mode. Should the system pressure fall below the required threshold, the pump must be restarted by releasing the STOP button. The STOP button must not be of the locked type.
- If the pump operates automatically and is equipped with an automatic shut-off device, the pump must stop after all conditions revert to normal and run for at least 10 minutes. A Minimum Operation Timer must be provided in the unit to ensure this operation.
- The panel must have two independent start-up buttons, each of which is controlled from another battery group, and either one of the two buttons must be pressed to start-up the pump.
- There should be be a fully Automatic test device connected to the weekly timer to start up the fire pump on a certain day and time of the week and stop after at least 30 minutes of operation, in order to do this weekly timer discharges the water by keeping an electrically controlled solenoid valve open on the line to which the pressure switch is connected at the scheduled day, hour, and minute and enables the pump to start by simulating the pressure drop in the system.
- When the pump is running during the weekly test, the control system must be able to shut down the pump immediately with a 'safety shut-down' if the pump signals a low oil pressure level and high temperature.
- If the pump is operated automatically by means of a pressure switch, the control system must only shut down the engine automatically and trigger an alarm in case of an "overspeed fault.' In other conditions, the control unit should issue an alarm, but the engine must continue to run.
- The control unit must start up the engine by pressing the starter six times consecutively for 15 seconds, waiting for 15 seconds, and if these attempts fail, it must lock the starter and issue an alarm.

Wiring

- Cable inputs and outputs for the panel must be fitted with bushings.
- All cables must be enumerated to avoid any disconnection and deformeation. All cables must be wired in accordance with the cable colour coding.
- The power cables must go directly into the cut-off switch terminals without running inside the panel. Earthing inlet and terminal must be independent.
- The cables between the control panel and the diesel engine-control unit must be housed in a steel mesh conduit.

Signalization

- The panel must include information lights that facilitate a clear understanding of the system and enable effective error tracking. The information lights must consist of at least following:
  - System Activated
  - Pump Start Error
  - 1. Battery Insufficient Error
  - 2.Battery Insufficient Error
  - 1. Battery Charge Error
  - 2.Battery Charge Error
  - Engine Overspeed Error
- On the panel, there should be muteable, audible, and light error alarms that cannot be switched off.
- For information lights, lights with long lamp life that are easily visible even under bright light and easy to replace should be used. There should be a recorder on the panel, capable of optionally keeping a record of the system pressure along with the date and time data, and this recorder should be of a type that can function even during a power outage.
- There should be ammeters and voltmeters on the panel that display the charging current and voltage of both battery charger groups separately.

Performance Attributes

- There must be two independent battery chargers to charge both battery banks. The battery chargers must be protected with fast-blowing automatic fuses.
- Battery chargers must be capable of charging in accordance with the battery type and voltage. Battery chargers must be able to fully charge an empty battery in a maximum of 24 hours.
- When a signal to start the pump is sent, if the first battery group fails to start the system, the second battery group should be able to start it after waiting 30 seconds.
- There should be an operating time counter that counts how long the fire pump runs. The minus end of the batteries and the panel must be on the minus (-) pole together with the engine frame.
- The pumps to be used under humid conditions must be equipped with a thermostat-controlled heater inside the control panels to prevent water condensation.
- The connections between the diesel engine and the control unit, necessary for the control panel to fulfill the desired functions, must be wired.
- Even if the control panel is disabled, the control unit on the engine must be able to start up the diesel engine.
- No matter how the diesel engine starts, the solenoid valve of the diesel engine cooling water line (if any) should be automatically turned on to cool the casing.

masdaf

Customer Service
+90 850 888 8 627

Orta Mahallesi Atayolu Caddesi
No:16 Tuzla - İstanbul / Türkiye

masdaf.com