



hayat olan her yerde...
everywhere, the life exists...

www.ferat.com.tr

Ferat[®]

WATER TECHNOLOGIES



EN ISO 9001



hayat olan her yerde...
everywhere, the life exists...





FIRAT MOTOR VE POMPA ELK. SAN. TİC. A.Ş.

firma profili

1990 yılında tamir ve satış amaçlı olarak **FIRAT MOTOR VE POMPA** ismi ile dalgıç pompa sektöründe çalışmalar yapmaya başlayan kuruluşumuz, 1994 yılı itibarıyla dalgıç pompa üretimine başlamıştır. 2005 yılında ise 6.000 m²'si kapalı alan olmak üzere toplam 7.500 m²'lik alanda kurduğu fabrikası ile dalgıç pompa ve dalgıç motor seri üretimine geçmiştir.

"**FERAT**" markasıyla kurumsal kimliğine kavuşan firmamız, 2 m³/h den 400 m³/h kadar değişen kapasite değerlerine sahip döküm ve paslanmaz dalgıç pompaları üretiminin yanı sıra 5" ten 12" e kadar (3 KW dan 380 KW kadar) dalgıç motorları üretimine başlamıştır.

2014 Yılı itibarıyla 15.000 m² kapalı alan olmak üzere toplamda 26.373 m²'lik alanda üretimine devam etmektedir.

Kuruluşundan bu yana sürekli büyümeyi ve müşteri memnuniyetini hedefleyen kuruluşumuz gelişen teknolojiye ayak uydurmaktadır. Üretim standartlarını yükselten firmamız, üretimin tüm aşamalarında modern makineleri kullanmakta müşterilerine kaliteyi sunmanın haklı gururunu taşımaktadır.

Kalitesini ulusal ve uluslararası sertifikalarla kanıtlayan Ferat; dalgıç pompa ve motor imalatını, tecrübeli mühendisleri ve tüm personellerinin katkılarıyla gerçekleştirilmektedir.

Ferat; şehirlerde, endüstriyel alanlarda, tarım arazilerinde, turistik bölgelerde kısacası "**hayat olan her yerde...**" sloganıyla sektöründe lider olmayı hedefleyerek yurtiçi ve yurtdışı pazarlarında kalitesinden ödün vermeden yatırımlarına devam etmektedir.

company profile

Having started working in the sector of submersible pumps for the purpose of repair and sale under the name of **FIRAT MOTOR AND PUMP** in 1990, our company has started the production of submersible pumps by the year 1994. By 2005, we have started serial production of submersible pumps and motors in our factory located on an area of 7500 m² total of which 6000 m² is indoor space.

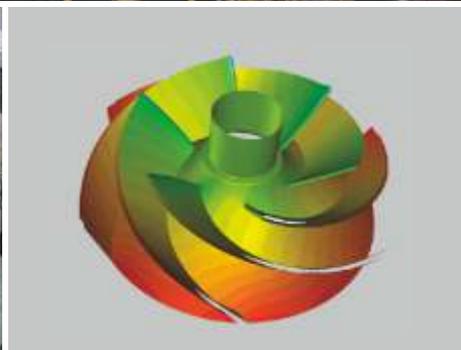
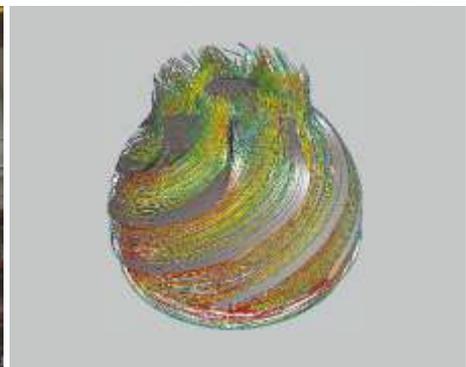
Our company, which has gained its corporate identity under the brand name "**FERAT**", produces cast and stainless steel pumps with capacities ranging from 2 m³/h to 400 m³/h as well as submersible motors varying from 5 inches to 12 inches (from 3 kW to 380 kW) started production.

As of 2014, it has been continuing its production in a total area of 26.373 m² including 15.000 m² closed area.

Since its inception, our company, which aims at continuous growth and customer satisfaction, keeps pace with the developing technology. Having upgraded the standards of production, our company applies the use of modern machines in every phase of production and is proud of serving its customers the best quality products.

Ferat proves its quality with national and international certificates and manufactures submersible pumps and motors with its experienced engineers and all its staff.

Ferat; in the cities, industrial zones, agricultural areas, touristic places, shortly "**everywhere, the life exists...**" by the slogan of, Ferat has aimed the leading at sector and continues its investments in order to keep up its quality in domestic and export markets.



Ferat[®]
WATER TECHNOLOGIES

4" - 6" - 8" - 10"

Paslanmaz Çelik Dalgıç Pompa
Stainless Steel Submersible Pumps

50 Hz Ürün Kataloğu
Product Catalogue



PASLANMAZ ÇELİK DALGIÇ POMPA

Ferat paslanmaz çelik pompa serisi, Ferat mühendisleri tarafından Hesaplamalı Akışkanlar Dinamiği (HAD) yöntemleri kullanılarak tasarlanmıştır. Modern tasarımı ile yüksek verimlilik ve düşük enerji tüketiminin yanında kullandığı kaliteli malzemelerle pompaların uzun ömürlü ve yüksek dayanıklılığa sahip olmasını sağlar. Firmamızda, geniş ürün yelpazesi içinde;

- 4",6",8" ve 10" tiplerinde,
- 0 - 300 m³/h kapasite aralığında,
- 50 Hz (2900 d/dk) ve 60 Hz (3450 d/dk) frekans ve devirlerinde,
- 600 m maksimum basma yüksekliğinde çalışan temiz su pompalarının üretimi yapılmaktadır.

Sevk öncesi tüm pompalarımız; Standartların tanımlarına göre gerekli testlere tabi tutulmuşlardır.

Ürünlerimizde, "Üstün Teknoloji ve Düşük Enerji Tüketimine" önem verilmektedir.

ÇALIŞMA KOŞULLARI

- Temiz ve aşındırıcı olmayan sıvılar
- Maksimum su sıcaklığı 40 °C (Opsiyonel su sıcaklığı 70 °C)
- Maksimum kum miktarı 50 g/m³ olan sıvılar

KULLANIM ALANLARI

- İçme suyu temini ve dağıtım
- Su arıtma tesisleri
- Şehir şebekeleri
- Bahçe ve tarım arazilerinin sulanması
- Endüstriyel uygulamalarda
- Jeotermal kuyularda
- Maden ve kömür ocaklarında su tahliyesinde
- Havuz ve fıskiye uygulamalarında
- Basınç artırma
- Sera ve fidanlıklarda
- Gıda endüstrisinde

AVANTAJLARI

- Geniş ürün yelpazesi
- Yüksek verim
- Düşük enerji tüketimi
- Geliştirilmiş hidrolik tasarım
- Uzun ömür
- Yüksek dayanıklılık
- Ağırlıkça hafif
- Pürüzsüz yüzey
- Kolay montaj ve servis imkânı
- Aşınmaya karşı dayanıklılık
- %100'ü yüksek kaliteli paslanmaz çelik (AISI 304)
- Emiş ve çıkış hazneleri yekpare özel hassas döküm
- Su ile yağlamalı yataklar
- Suyun geri kaçmasını önleyen çekvalf
- TS 11146 ve NEMA MG1 standartlarında motor bağlantısı

STAINLESS STEEL SUBMERSIBLE PUMP

Ferat stainless steel pump series are designed by Ferat engineers using Computational Fluid Dynamics (CFD) methods. With its modern design, high efficiency and low energy consumption, as well as high quality materials, it ensures the pumps to have long life and high durability. In our company, within wide range of products;

- 4",6",8" and 10" types,
- From 0 to 300 m³/h capacity range,
- At 50 Hz (2900 rpm) and 60 Hz (3450 rpm) frequencies and speeds,
- The production of clean water pumps operating at a maximum head of 600 m is made.

All pumps before shipment; they were subjected to the necessary tests according to the definitions of the standards.

In the products, "Superior Technology and Low Energy Consumption" are given importance.

WORKING CONDITIONS

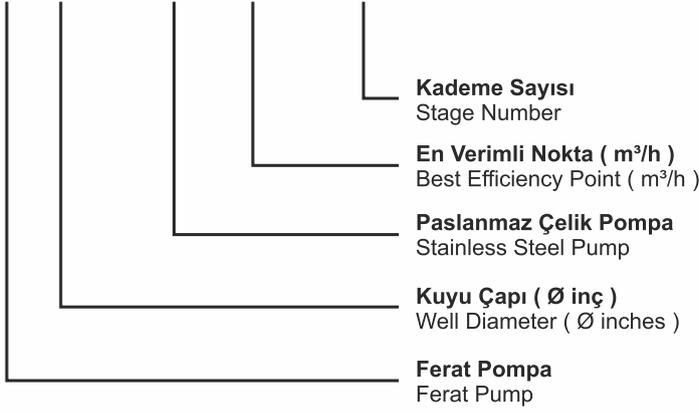
- Clean and nonabrasive liquids
- Maximum water temperature 40 °C (Optional water temperature 70 °C)
- Liquids with a maximum sand amount of 50 g/m³

USAGE AREAS

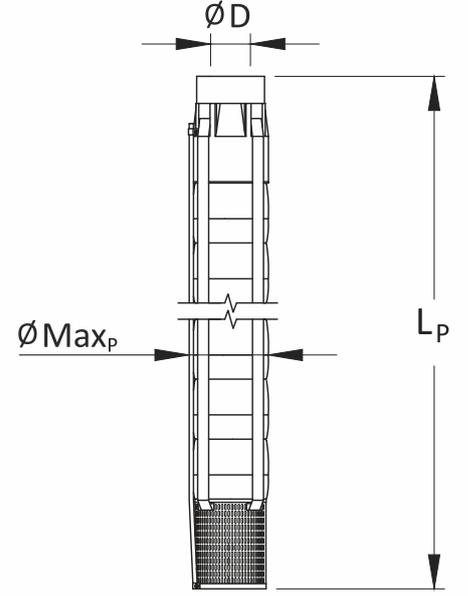
- Municipal water supply and distribution
- Municipal water treatment
- Domestic water supply
- Irrigation in horticulture and agriculture
- Industrial applications
- Geothermal wells
- De-watering in mines and coal cookers
- Pools, fountains, etc.
- Pressure boosting
- Greenhouse and nurseries
- Food industry

ADVANTAGES

- Wide range of sizes
- High efficiency
- Low energy consumption
- State-of-the-art hydraulics design
- Long life
- High durability
- Light in weight
- Smooth surfaces
- Easy installation and service opportunities
- Wear-resistant design
- 100% high-grade stainless steel (AISI 304)
- Suction case and valve casing single piece special precision casting
- Water lubricated bearing
- Check valve to prevent backflow of water
- Motor connection in TS 11146 and NEMA MG1 standards

ÜRÜNÜN TANIMLANMASI
PRODUCT TYPE KEY**F 10 – SP 120 / 07**

Ürün Kodu / Product Code



Ölçüler / Dimensions

PASLANMAZ ÇELİK POMPA SERİSİ
STAINLESS STEEL PUMP SERIES**4"**

F4-SP2
F4-SP3
F4-SP4
F4-SP8
F4-SP12

6"

F6-SP10
F6-SP15
F6-SP30
F6-SP42
F6-SP60

8"

F8-SP72
F8-SP96

10"

F10-SP110
F10-SP120
F10-SP160
F10-SP210

RADYAL AKIŞLI POMPALAR
RADIAL FLOW PUMPS

F4-SP2, F4-SP3, F4-SP4, F4-SP8, F6-SP10, F6-SP15

KARIŞIK AKIŞLI POMPALAR
MIXED FLOW PUMPSF4-SP12, F6-SP30, F6-SP42, F6-SP60, F8-SP72, F8-SP96,
F10-SP110, F10-SP120, F10-SP160, F10-SP210

GRAFİKLERİN OKUNMASI
HOW TO READ THE CURVE CHARTS

Pompa Tipi
Pump Type

F10-SP120

Paslanmaz Çelik Pompa
Stainless Steel Pump
Karışık Akış
Mixed Flow

Ferat
Çoklu Pompa - Submersible Pump

Çalışma Gerilimi ve Frekansı
Operating Voltage and Frequency

Performans Eğrileri
Performance Curves

3x400 V
50 Hz / 2900 rpm

Çalışma Noktası
Performance Point

Pompalama Kapasitesi
Pumping Capacity

Q=120 m³/h

Basma Yüksekliği
Delivery Head

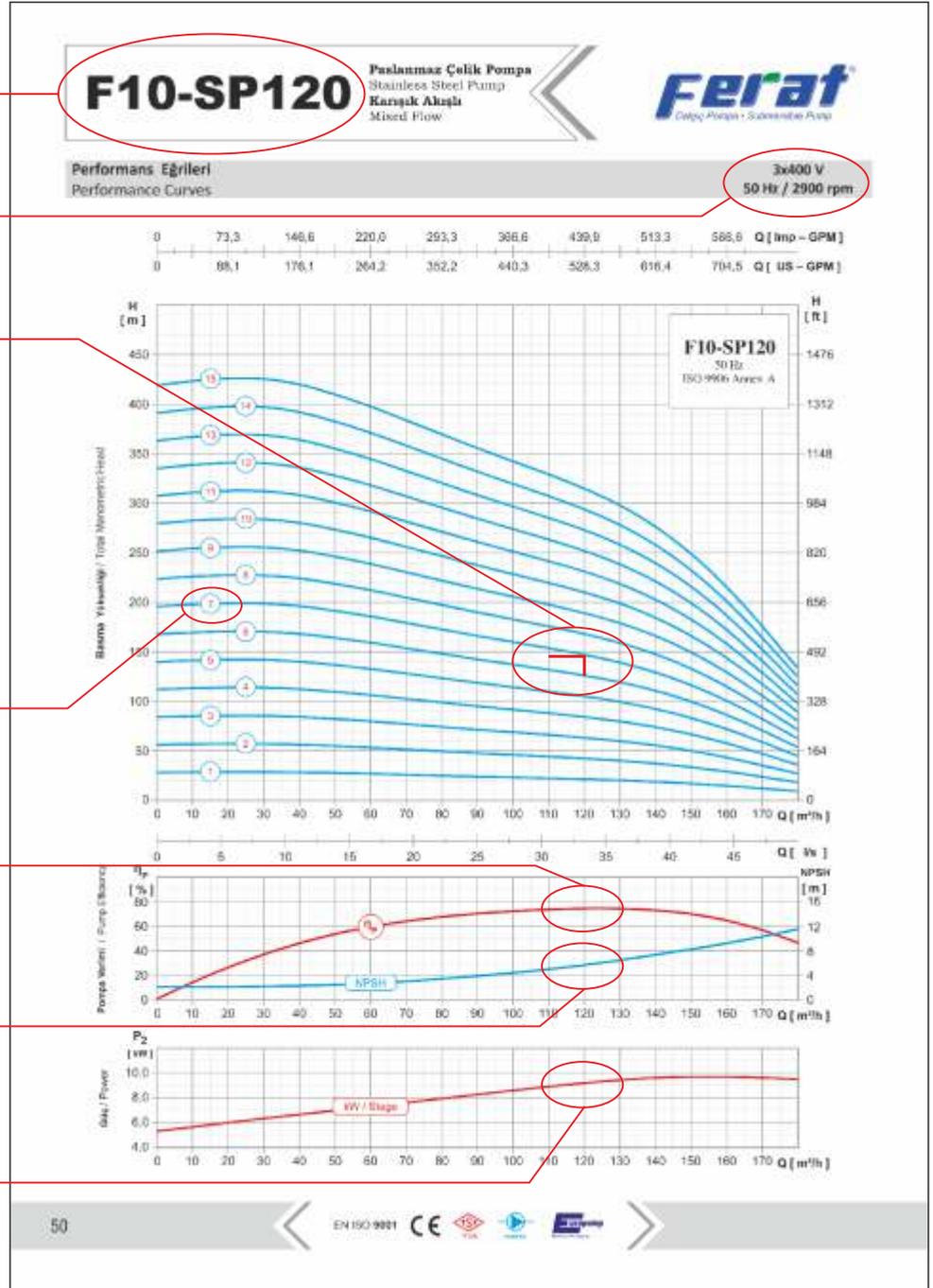
H=147 m

Kademe Sayısı
Number of Stage

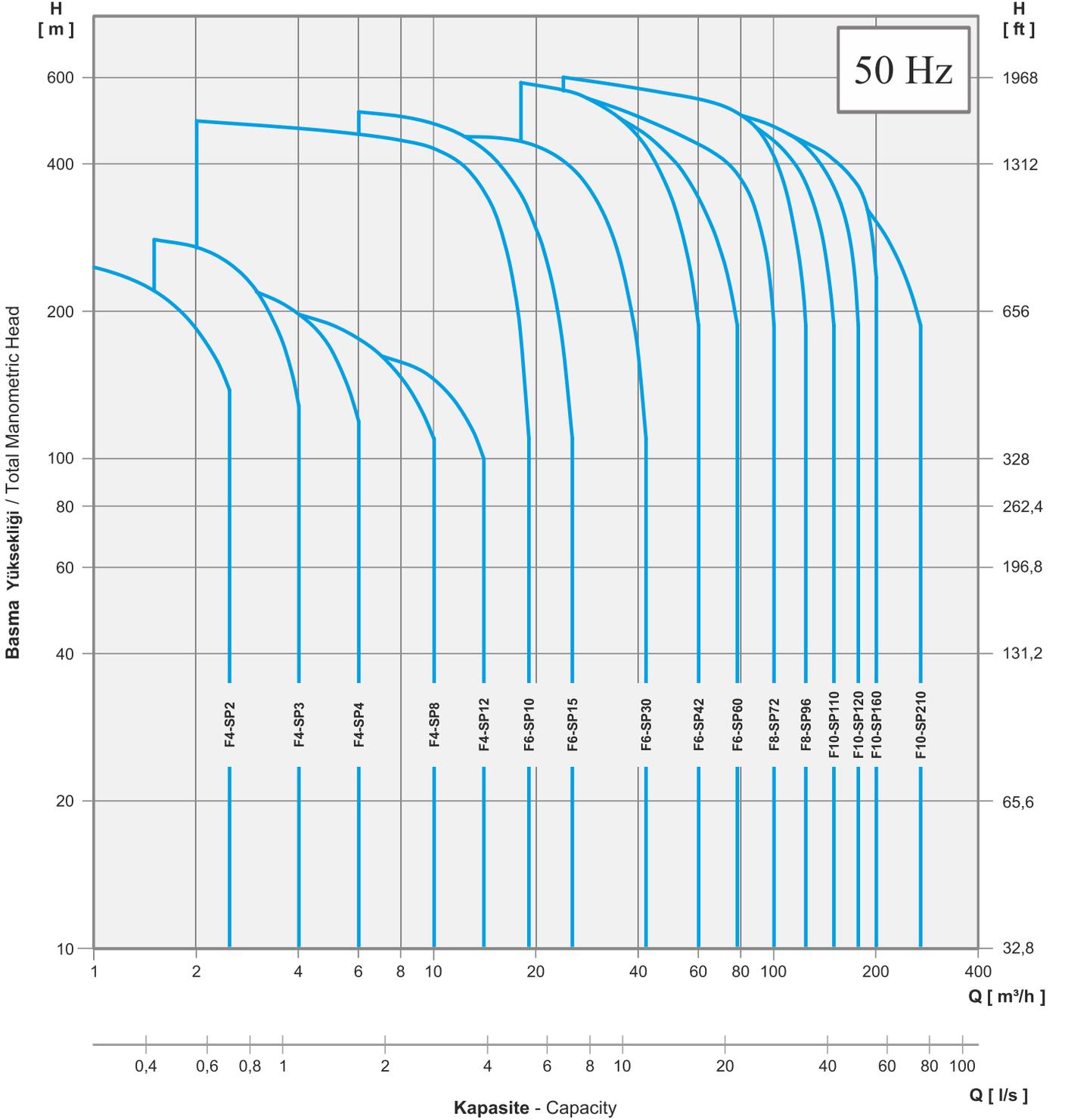
Pompa % Verimi
Pump Efficiency %

Gerekli Giriş Basıncı
Required Inlet Pressure

Kademe Başına Çekilen Güç
Power Consumption Per Stage



PERFORMANS ALANI
PERFORMANCE RANGE





Difüzör

Paslanmaz çelik olarak imal edilen difüzörler, fandan gelen suyun bir üstteki fana geçmesini sağlayan ve fanlara yataklık eden parçadır.

Diffuser

Diffusers made of stainless steel are the parts that allow the water coming from the impeller to pass to the upper impeller and that they are bearing to the impellers.

Difüzör Aşınma Halkası

Difüzör ile fan arasında sızdırmazlık elemanı olarak görev yapan aşınma halkaları NBR + AISI 304 malzemeden imal edilmektedir. Paslanmaz pompalarda kullanıldığından dolayı oksitlenme ve paslanmaya karşı içerisinde AISI 304 paslanmaz çelik halka bulunmaktadır.



Diffuser Neck Ring

The neck rings that serve as sealing elements between the diffuser and the impeller are made of NBR + AISI 304 material. Since it is used in stainless steel pumps, there is an AISI 304 stainless steel ring inside against oxidation and corrosion.



Kum Kanallı Yataklar

Tüm yataklar su yağlamalı olup, kum taneciklerinin pompalanan su ile birlikte pompadan atılmalarına olanak verecek şekilde köşeli kesitlidirler.

Bearings with Sand Channels

All bearings are water-lubricated and have a squared shape enabling sand particles, if any, to leave the pump together with the pumped liquid.

Emiş Haznesi

Paslanmaz çelikten hassas döküm yöntemiyle tek parça olarak imal edilen emiş haznesi, üstün tasarımıyla pompalara daha dayanıklı ve daha güvenilir bir yapı kazandırmaktadır.

Suction Case

Suction case made of stainless steel as a single piece with precision casting method gives the pumps a more durable and more reliable structure with its superior design.



Çıkış Haznesi

Paslanmaz çelikten hassas döküm yöntemiyle tek parça olarak imal edilen çıkış haznesi, pompanın kolon grubuna güvenli ve sağlam bir şekilde bağlanmasını sağlar. Ayrıca içerisinde pompa durduğu zaman geri akış önleyici bir çek-valf bulunmaktadır.

Valve Casing

The Valve Casing, which is manufactured in one piece by precision casting method of stainless steel, provides a secure and sturdy connection of the pump to the column group. There is also a non-return check valve inside the pump when it stops.



Kaplin

Paslanmaz çelik olarak imal edilen kaplin, motorun mil gücünü pompa miline aktaran bağlama parçasıdır. NEMA standartlarına uygun bir şekilde üretimi yapılmaktadır.

Coupling

Coupling made of stainless steel is the coupling part which transfers the shaft power of the motor to the pump shaft. It is produced in accordance with NEMA standards

Süzgeç

Paslanmaz çelik olarak imal edilen süzgeç, iri parçaların pompaya girmesini önleyen, emiş haznesinin üzerine monte edilen emme donanımı parçasıdır.



Strainer

Stainless steel strainer is a piece of suction equipment mounted on the suction chamber to prevent large parts from entering the pump.



Fan

Paslanmaz çelik olarak imal edilen fanlar, pompa milinden aldığı gücü akış enerjisine dönüştüren parçadır.

Impeller

Impellers made of stainless steel are the parts that convert the power received from the pump shaft into flow energy.

Stoper

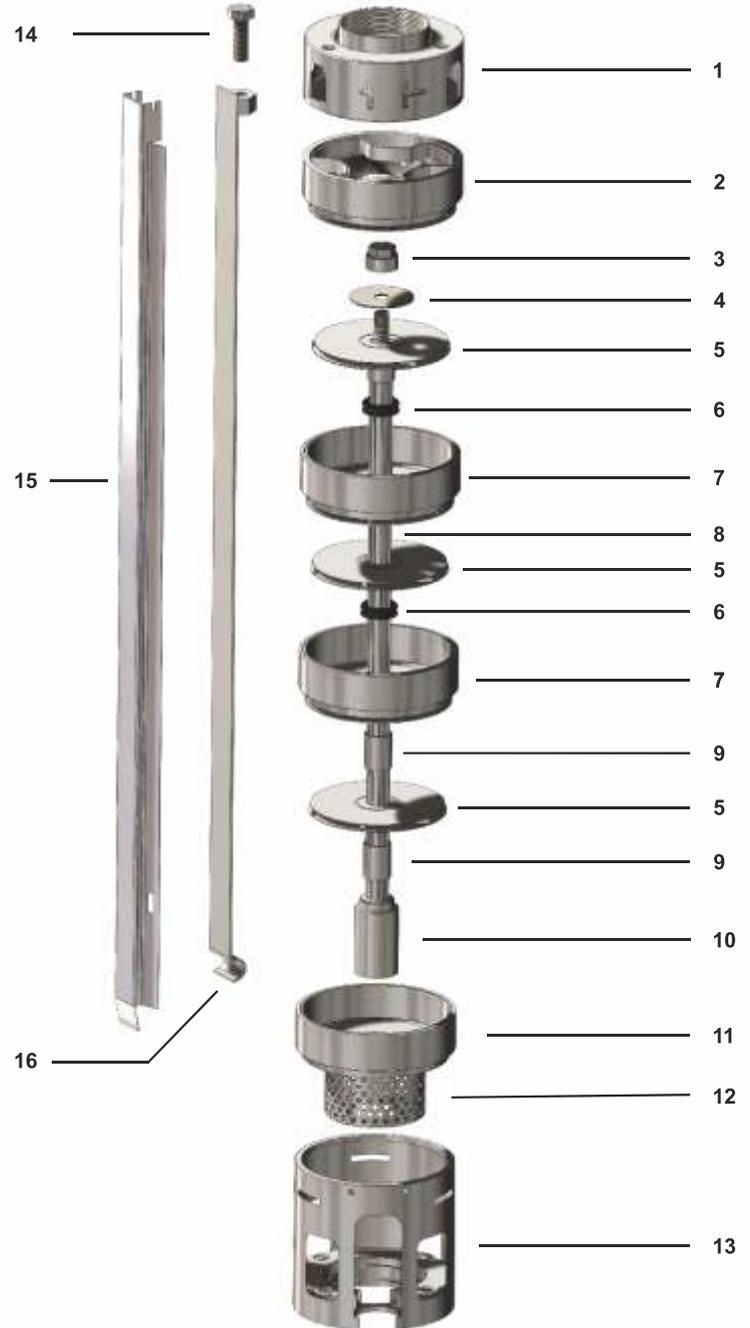
Pompada ilk çalışma anında oluşan yukarı yönlü hareketin, fan grubuna zarar vermesini önleyen karbon alaşımlı parçadır.

Stop Ring

It is a carbon alloy part that occurs during the first operation of the pump and prevents the upward movement from damaging the impeller group.



F4-SP2 & F4-SP3 & F4-SP4 & F4-SP8 & F4-SP12



F4-SP2 & F4-SP3 & F4-SP4 & F4-SP8 & F4-SP12

	Parça Adı	Malzeme
1	Çıkış Haznesi	AISI 304
2	Üst Difüzör	AISI 304
3	Kilitleme Somunu	AISI 304
4	Stoper Pulu	AISI 304
5	Fan	AISI 304
6	Kum Kanallı Difüzör Yatağı	KAUÇUK (NBR)
7	Difüzör	AISI 304
8	Mil	AISI 420
9	Mesafe Ayar Burcu	AISI 304
10	Kaplin	AISI 420
11	Alt Difüzör	AISI 304
12	Süzgeç	AISI 304
13	Emiş Haznesi	AISI 304
14	Gerdirme Laması Civatası	AISI 304
15	Kablo Muhafaza Sacı	AISI 304
16	Gerdirme Laması	AISI 304

	Part Name	Material
1	Valve Casing	AISI 304
2	Top Diffuser	AISI 304
3	Lock Nut	AISI 304
4	Washer for Stop Ring	AISI 304
5	Impeller	AISI 304
6	Diffuser Bearing with Sand Channels	RUBBER (NBR)
7	Diffuser	AISI 304
8	Shaft	AISI 420
9	Spacer	AISI 304
10	Coupling	AISI 420
11	Bottom Diffuser	AISI 304
12	Strainer	AISI 304
13	Suction Case	AISI 304
14	Strap Bolt	AISI 304
15	Cable Guard	AISI 304
16	Strap	AISI 304

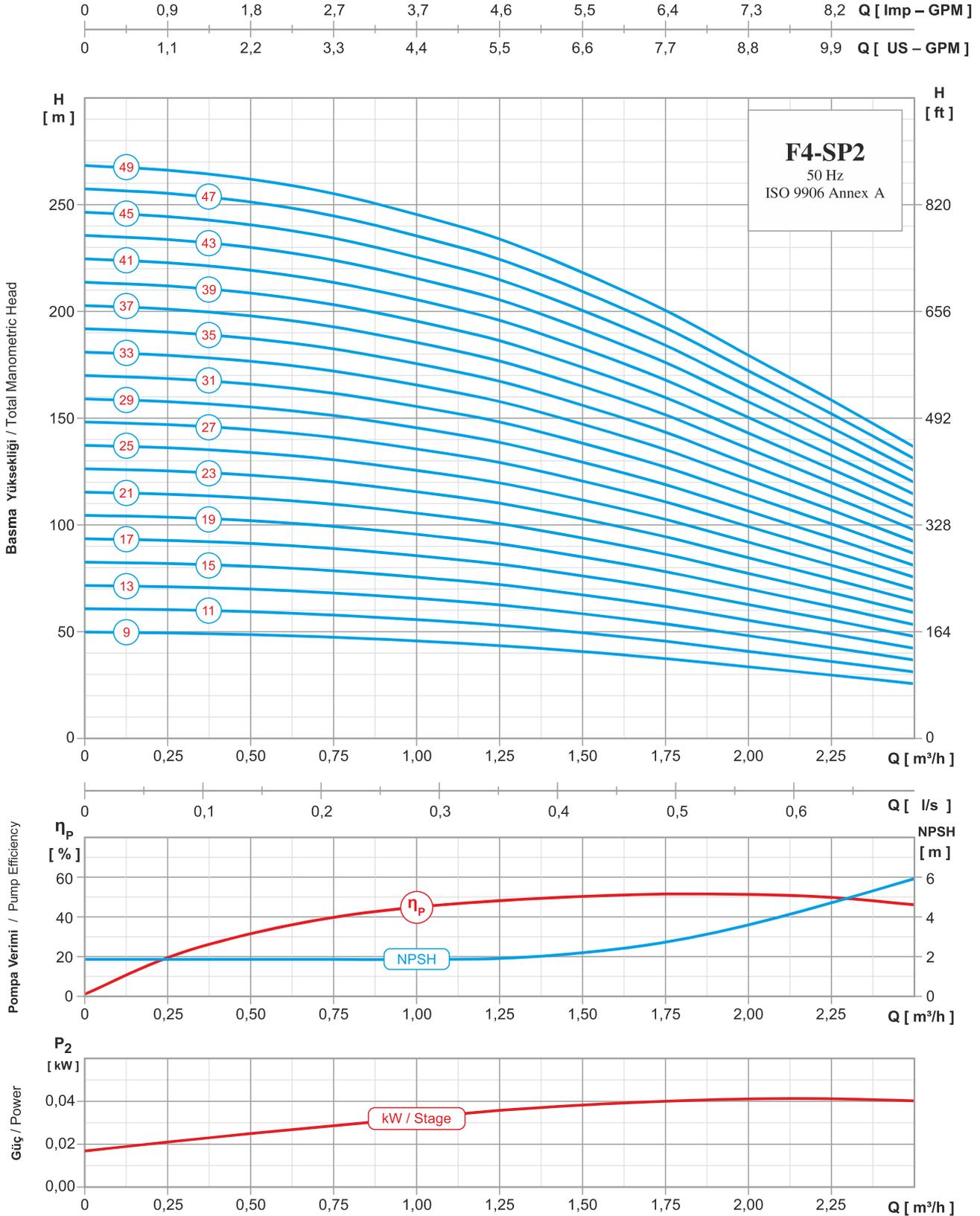
F4-SP2

Paslanmaz Çelik Pompa
Stainless Steel Pump
Radyal Akışlı
Radial Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

1x220 V - 3x400 V
50 Hz / 2900 rpm



Teknik Veriler

Technical Data

1x220 V - 3x400 V
50 Hz / 2900 rpm

Pompa Tipi Pump Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity										
								[Imp - GPM]	0	2,7	3,7	4,6	5,5	6,4	7,3	8,2	9,2	
		[US - GPM]	0	3,3	4,4	5,5	6,6	7,7	8,8	9,9	11,0							
		[l/s]	0	0,21	0,28	0,35	0,42	0,49	0,56	0,63	0,69							
P _N		Ø Max _P	Ø D	L _P	W _P	[H] Basma Yüksekliği / Total Manometric Head [m]												
[kW]	[HP]					[mm]	[inch]	[mm]	[kg]	[m³/h]	0	0,75	1,00	1,25	1,50	1,75	2,00	2,25
F4-SP2 / 09	FM4	0,37	0,5	Ø 98	Rp 1 1/4 (1 1/4" İçten Pasolu 11 Diş) Rp 1 1/4 (1 1/4" Inside Threaded 11 TPI)	356	3,0	Basma Yüksekliği / Total Manometric Head [m]	49	47	45	43	40	37	33	29	25	
F4-SP2 / 10	FM4	0,55	0,75			377	3,2		55	52	50	48	45	41	37	32	28	
F4-SP2 / 11	FM4	0,55	0,75			398	3,4		60	57	55	53	49	45	40	36	31	
F4-SP2 / 12	FM4	0,55	0,75			419	3,6		66	63	60	57	53	49	44	39	33	
F4-SP2 / 13	FM4	0,55	0,75			440	3,8		71	68	65	62	58	53	48	42	36	
F4-SP2 / 14	FM4	0,75	1			461	4,0		77	73	70	67	62	57	51	45	39	
F4-SP2 / 15	FM4	0,75	1			482	4,1		82	78	75	72	67	61	55	48	42	
F4-SP2 / 16	FM4	0,75	1			503	4,3		88	83	80	76	71	65	59	52	44	
F4-SP2 / 17	FM4	0,75	1			524	4,5		93	89	85	81	76	70	62	55	47	
F4-SP2 / 18	FM4	0,75	1			545	4,7		99	94	90	86	80	74	66	58	50	
F4-SP2 / 19	FM4	1,1	1,5			566	4,9		104	99	95	91	85	78	70	61	53	
F4-SP2 / 20	FM4	1,1	1,5			587	5,1		110	104	100	96	89	82	73	65	56	
F4-SP2 / 21	FM4	1,1	1,5			608	5,3		115	109	105	100	94	86	77	68	58	
F4-SP2 / 22	FM4	1,1	1,5			629	5,5		121	115	110	105	98	90	81	71	61	
F4-SP2 / 23	FM4	1,1	1,5			650	5,7		126	120	115	110	102	94	84	74	64	
F4-SP2 / 24	FM4	1,1	1,5			671	5,9		132	125	120	115	107	98	88	78	67	
F4-SP2 / 25	FM4	1,1	1,5			692	6,0		137	130	125	119	111	102	92	81	70	
F4-SP2 / 26	FM4	1,1	1,5			713	6,2		143	136	130	124	116	106	95	84	72	
F4-SP2 / 27	FM4	1,5	2			734	6,4		148	141	135	129	120	111	99	87	75	
F4-SP2 / 28	FM4	1,5	2			755	6,6		154	146	140	134	125	115	103	90	78	
F4-SP2 / 29	FM4	1,5	2			776	6,8		159	151	145	139	129	119	106	94	81	
F4-SP2 / 30	FM4	1,5	2			797	7,0		164	156	150	143	134	123	110	97	83	
F4-SP2 / 31	FM4	1,5	2			818	7,2		170	162	155	148	138	127	114	100	86	
F4-SP2 / 32	FM4	1,5	2			839	7,4		175	167	160	153	143	131	117	103	89	
F4-SP2 / 33	FM4	1,5	2			883	9,7		181	172	165	158	147	135	121	107	92	
F4-SP2 / 34	FM4	1,5	2			904	10,0		186	177	170	162	151	139	125	110	95	
F4-SP2 / 35	FM4	1,5	2			925	10,2		192	182	175	167	156	143	128	113	97	
F4-SP2 / 36	FM4	1,5	2			946	10,5		197	188	180	172	160	147	132	116	100	
F4-SP2 / 37	FM4	2,2	3			967	10,7		203	193	185	177	165	151	135	120	103	
F4-SP2 / 38	FM4	2,2	3			988	11,0		208	198	191	182	169	156	139	123	106	
F4-SP2 / 39	FM4	2,2	3			1009	11,2		214	203	196	186	174	160	143	126	108	
F4-SP2 / 40	FM4	2,2	3			1030	11,5		219	209	201	191	178	164	146	129	111	
F4-SP2 / 41	FM4	2,2	3			1051	11,7		225	214	206	196	183	168	150	132	114	
F4-SP2 / 42	FM4	2,2	3			1072	12,0		230	219	211	201	187	172	154	136	117	
F4-SP2 / 43	FM4	2,2	3			1093	12,2		236	224	216	205	192	176	157	139	120	
F4-SP2 / 44	FM4	2,2	3			1114	12,5		241	229	221	210	196	180	161	142	122	
F4-SP2 / 45	FM4	2,2	3			1135	12,7		247	235	226	215	200	184	165	145	125	
F4-SP2 / 46	FM4	2,2	3			1156	13,0		252	240	231	220	205	188	168	149	128	
F4-SP2 / 47	FM4	2,2	3			1177	13,2		258	245	236	225	209	192	172	152	131	
F4-SP2 / 48	FM4	2,2	3			1198	13,5		263	250	241	229	214	196	176	155	133	
F4-SP2 / 49	FM4	2,2	3			1219	13,7		269	255	246	234	218	201	179	158	136	

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

Çalışma Gerilimi / Operating Voltage	: 1 x 220V - 230V (- %10 / + %6) : 3 x 380V - 400V - 415V (- %10 / + %6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m ³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 12 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm ² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m ³

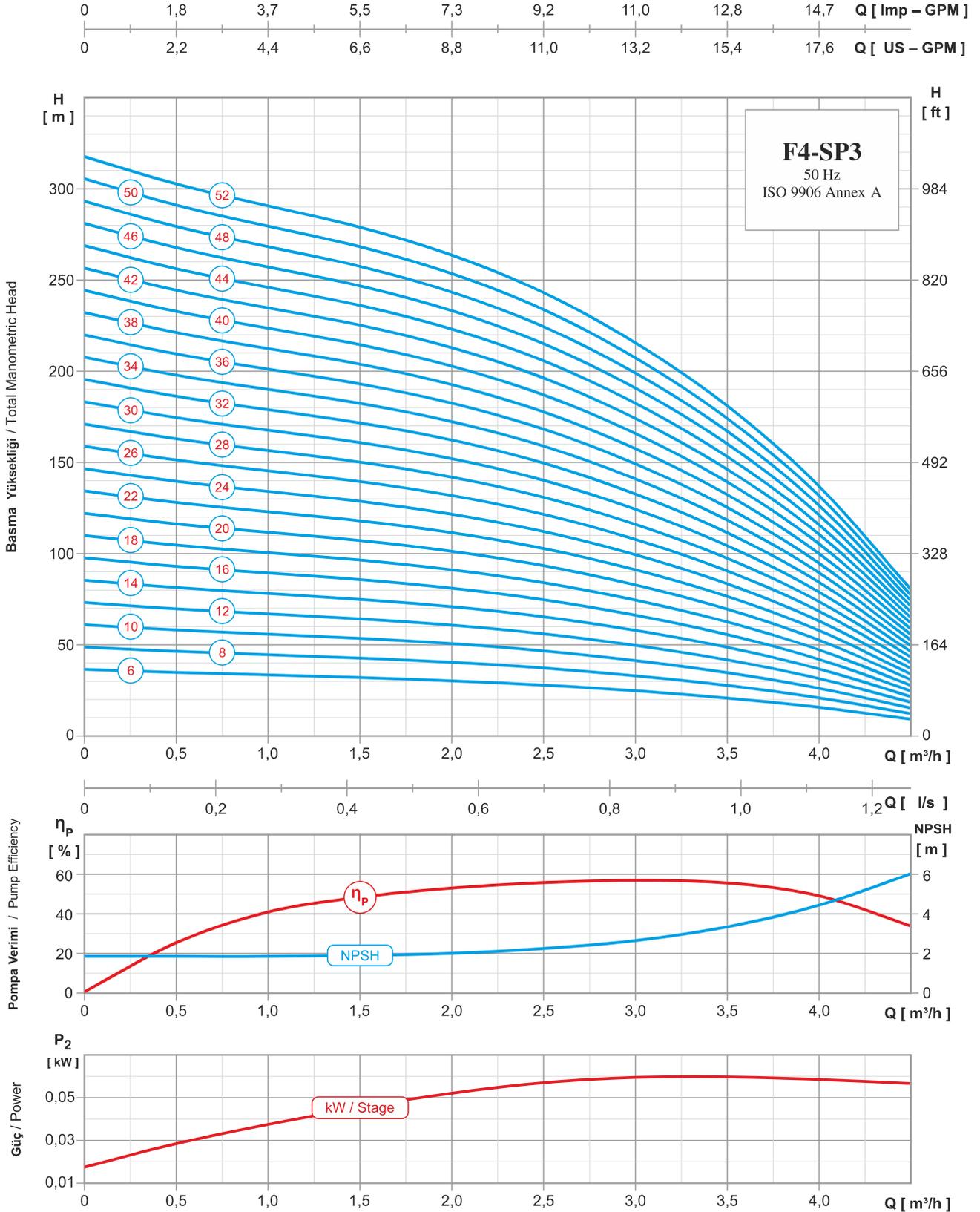
F4-SP3

Paslanmaz Çelik Pompa
Stainless Steel Pump
Radyal Akışlı
Radial Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

1x220 V - 3x400 V
50 Hz / 2900 rpm



Teknik Veriler

Technical Data

1x220 V - 3x400 V
50 Hz / 2900 rpm

Pompa Tipi Pump Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity										
								[Imp - GPM]	0	3,7	5,5	7,3	9,2	11,0	12,8	14,7	16,5	
		[US - GPM]	0	4,4	6,6	8,8	11,0	13,2	15,4	17,6	19,8							
		[l/s]	0	0,28	0,42	0,56	0,69	0,83	0,97	1,11	1,25							
		P _N	Ø Max _P	Ø D	L _P	W _P		[m³/h]	0	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	
		[kW]	[HP]	[mm]	[inch]	[mm]	[kg]											
F4-SP3 / 06	FM4	0,37	0,5	Ø 98	Rp 1 1/4 (1 1/4" İçten Pasolu 11 Diş) Rp 1 1/4 (1 1/4" Inside Threaded 11 TPI)	293	2,4	Basma Yüksekliği / Total Manometric Head [m]	37	34	32	30	28	25	21	16	9	
F4-SP3 / 07	FM4	0,55	0,75			314	2,6		43	39	38	36	33	29	24	19	11	
F4-SP3 / 08	FM4	0,55	0,75			335	2,8		49	45	43	41	37	33	28	21	12	
F4-SP3 / 09	FM4	0,55	0,75			356	3,0		55	50	48	46	42	37	31	24	14	
F4-SP3 / 10	FM4	0,75	1			377	3,2		61	56	54	51	47	42	35	26	16	
F4-SP3 / 11	FM4	0,75	1			398	3,4		67	62	59	56	52	46	38	29	17	
F4-SP3 / 12	FM4	0,75	1			419	3,5		73	67	64	61	56	50	42	32	19	
F4-SP3 / 13	FM4	1,1	1,5			440	3,7		80	73	70	66	61	54	45	34	20	
F4-SP3 / 14	FM4	1,1	1,5			461	3,9		86	78	75	71	66	58	49	37	22	
F4-SP3 / 15	FM4	1,1	1,5			482	4,1		92	84	81	76	70	62	52	40	23	
F4-SP3 / 16	FM4	1,1	1,5			503	4,3		98	90	86	81	75	66	56	42	25	
F4-SP3 / 17	FM4	1,1	1,5			524	4,5		104	95	91	86	80	71	59	45	26	
F4-SP3 / 18	FM4	1,1	1,5			545	4,7		110	101	97	91	84	75	63	48	28	
F4-SP3 / 19	FM4	1,5	2			566	4,9		116	106	102	96	89	79	66	50	30	
F4-SP3 / 20	FM4	1,5	2			587	5,1		122	112	107	102	94	83	70	53	31	
F4-SP3 / 21	FM4	1,5	2			608	5,3		128	118	113	107	98	87	73	56	33	
F4-SP3 / 22	FM4	1,5	2			629	5,4		135	123	118	112	103	91	77	58	34	
F4-SP3 / 23	FM4	1,5	2			650	5,6		141	129	124	117	108	96	80	61	36	
F4-SP3 / 24	FM4	1,5	2			671	5,8		147	134	129	122	112	100	84	63	37	
F4-SP3 / 25	FM4	1,5	2			692	6,0		153	140	134	127	117	104	87	66	39	
F4-SP3 / 26	FM4	2,2	3			713	6,2		159	146	140	132	122	108	91	69	41	
F4-SP3 / 27	FM4	2,2	3			734	6,4		165	151	145	137	126	112	94	71	42	
F4-SP3 / 28	FM4	2,2	3			755	6,6		171	157	150	142	131	116	98	74	44	
F4-SP3 / 29	FM4	2,2	3			776	6,8		177	162	156	147	136	120	101	77	45	
F4-SP3 / 30	FM4	2,2	3			797	7,0		183	168	161	152	140	125	105	79	47	
F4-SP3 / 31	FM4	2,2	3			818	7,2		190	173	167	157	145	129	108	82	48	
F4-SP3 / 32	FM4	2,2	3			839	7,3		196	179	172	162	150	133	112	85	50	
F4-SP3 / 33	FM4	2,2	3			883	9,7		202	185	177	168	155	137	115	87	51	
F4-SP3 / 34	FM4	2,2	3			904	10,0		208	190	183	173	159	141	119	90	53	
F4-SP3 / 35	FM4	3	4			925	10,2		214	196	188	178	164	145	122	93	55	
F4-SP3 / 36	FM4	3	4			946	10,5		220	201	193	183	169	150	126	95	56	
F4-SP3 / 37	FM4	3	4			967	10,7		226	207	199	188	173	154	129	98	58	
F4-SP3 / 38	FM4	3	4			988	11,0		232	213	204	193	178	158	133	100	59	
F4-SP3 / 39	FM4	3	4			1009	11,2		239	218	209	198	183	162	136	103	61	
F4-SP3 / 40	FM4	3	4			1030	11,5		245	224	215	203	187	166	140	106	62	
F4-SP3 / 42	FM4	3	4			1072	12,0		257	235	226	213	197	174	147	111	65	
F4-SP3 / 44	FM4	3	4			1114	12,5		269	246	236	223	206	183	154	116	69	
F4-SP3 / 46	FM4	3	4			1156	13,0		281	257	247	234	215	191	161	122	72	
F4-SP3 / 48	FM4	3	4			1198	13,5		294	269	258	244	225	199	168	127	75	
F4-SP3 / 50	FM4	4	5,5			1240	14,0		306	280	269	254	234	208	175	132	78	
F4-SP3 / 52	FM4	4	5,5			1282	14,5		318	291	279	264	244	216	182	137	81	

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

Çalışma Gerilimi / Operating Voltage	: 1 x 220V - 230V (- %10 / + %6)
	: 3 x 380V - 400V - 415V (- %10 / + %6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 12 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m³

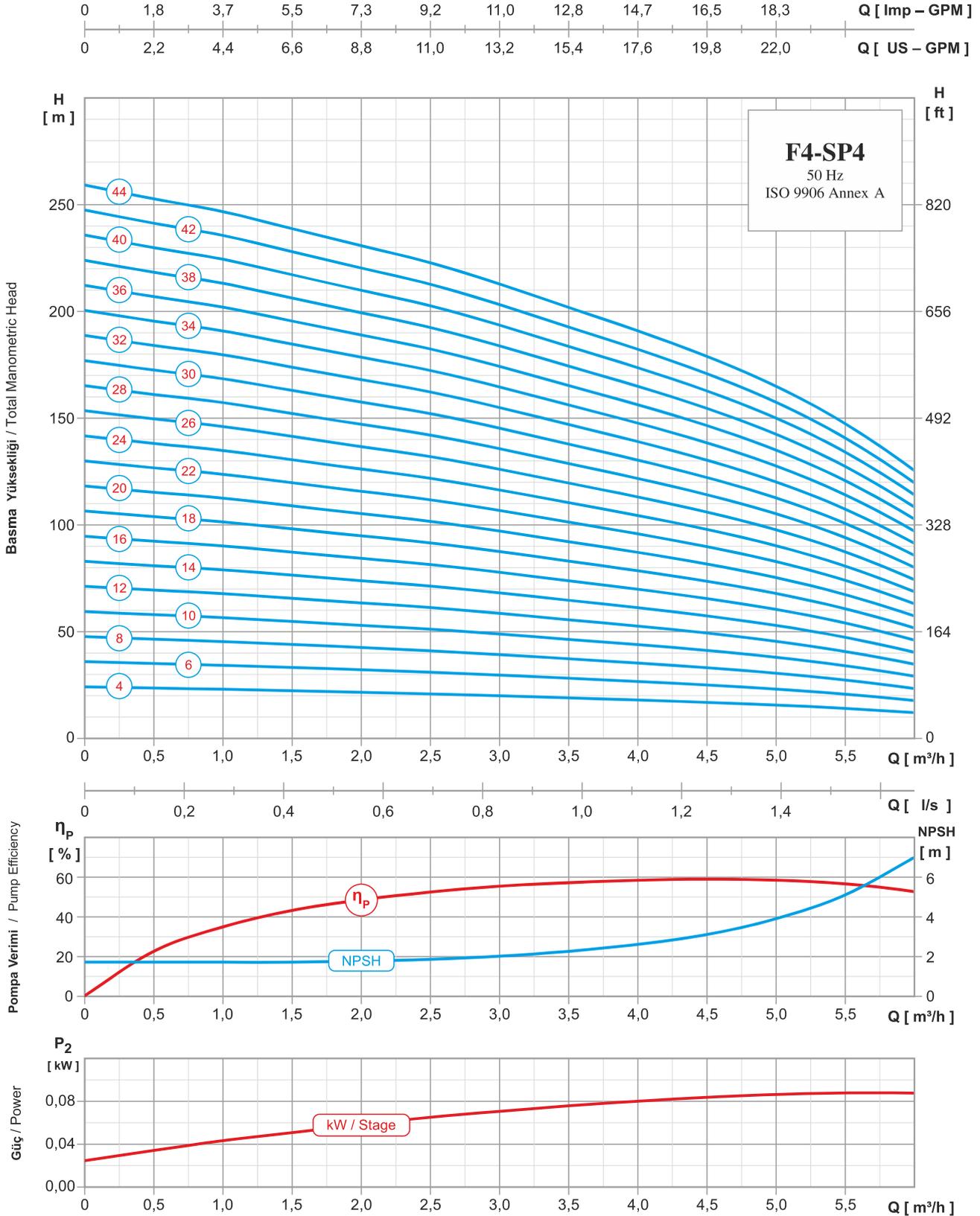
F4-SP4

Paslanmaz Çelik Pompa
Stainless Steel Pump
Radyal Akışlı
Radial Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

1x220 V - 3x400 V
50 Hz / 2900 rpm



Teknik Veriler

Technical Data

1x220 V - 3x400 V
50 Hz / 2900 rpm

Pompa Tipi Pump Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity									
								[Imp - GPM]	0	3,7	7,3	11,0	12,8	14,7	16,5	18,3	20,2
		[US - GPM]	0	4,4	8,8	13,2	15,4	17,6	19,8	22,0	24,2						
		[l/s]	0	0,28	0,56	0,83	0,97	1,11	1,25	1,39	1,53						
P _N		Ø Max _P	Ø D	L _P	W _P	[H] Basma Yüksekliği / Total Manometric Head [m]											
[kW]	[HP]					[mm]	[inch]	[mm]	[kg]	[m ³ /h]	0	1,0	2,0	3,0	3,5	4,0	4,5
F4-SP4 / 04	FM4	0,37	0,5	Ø 98	Rp 1 1/2 (1 1/2" İçten Pasolu 11 Diş) Rp 1 1/2 (1 1/2" Inside Threaded 11 TPI)	251	2,0	Basma Yüksekliği / Total Manometric Head [m]	24	22	21	19	18	17	16	15	13
F4-SP4 / 05	FM4	0,55	0,75			272	2,2		29	28	26	24	23	22	20	19	17
F4-SP4 / 06	FM4	0,55	0,75			293	2,4		35	34	32	29	28	26	24	23	20
F4-SP4 / 07	FM4	0,75	1			314	2,6		41	39	37	34	32	30	28	26	23
F4-SP4 / 08	FM4	0,75	1			335	2,8		47	45	42	39	37	35	33	30	27
F4-SP4 / 09	FM4	1,1	1,5			356	3,0		53	51	47	44	41	39	37	34	30
F4-SP4 / 10	FM4	1,1	1,5			377	3,1		59	56	53	48	46	43	41	38	34
F4-SP4 / 11	FM4	1,1	1,5			398	3,3		65	62	58	53	50	48	45	41	37
F4-SP4 / 12	FM4	1,1	1,5			419	3,5		71	67	63	58	55	52	49	45	40
F4-SP4 / 13	FM4	1,5	2			440	3,7		77	73	68	63	60	56	53	49	44
F4-SP4 / 14	FM4	1,5	2			461	3,9		83	79	74	68	64	61	57	53	47
F4-SP4 / 15	FM4	1,5	2			482	4,1		88	84	79	73	69	65	61	56	50
F4-SP4 / 16	FM4	1,5	2			503	4,3		94	90	84	77	73	69	65	60	54
F4-SP4 / 17	FM4	1,5	2			524	4,5		100	95	89	82	78	74	69	64	57
F4-SP4 / 18	FM4	2,2	3			545	4,7		106	101	95	87	83	78	73	68	60
F4-SP4 / 19	FM4	2,2	3			566	4,9		112	107	100	92	87	82	77	71	64
F4-SP4 / 20	FM4	2,2	3			587	5,0		118	112	105	97	92	87	81	75	67
F4-SP4 / 21	FM4	2,2	3			608	5,2		124	118	110	102	96	91	85	79	70
F4-SP4 / 22	FM4	2,2	3			629	5,4		130	123	116	106	101	95	90	83	74
F4-SP4 / 23	FM4	2,2	3			650	5,6		136	129	121	111	106	100	94	86	77
F4-SP4 / 24	FM4	2,2	3			671	5,8		142	135	126	116	110	104	98	90	80
F4-SP4 / 25	FM4	3	4			692	6,0		147	140	131	121	115	109	102	94	84
F4-SP4 / 26	FM4	3	4			713	6,2		153	146	137	126	119	113	106	98	87
F4-SP4 / 27	FM4	3	4			734	6,4		159	152	142	131	124	117	110	101	91
F4-SP4 / 28	FM4	3	4			755	6,6		165	157	147	136	129	122	114	105	94
F4-SP4 / 29	FM4	3	4			776	6,8		171	163	152	140	133	126	118	109	97
F4-SP4 / 30	FM4	3	4			797	6,9		177	168	158	145	138	130	122	113	101
F4-SP4 / 31	FM4	3	4			818	7,1		183	174	163	150	142	135	126	116	104
F4-SP4 / 32	FM4	3	4			839	7,3		189	180	168	155	147	139	130	120	107
F4-SP4 / 33	FM4	3	4			868	9,6		195	185	173	160	151	143	134	124	111
F4-SP4 / 34	FM4	4	5,5			889	9,9		201	191	179	165	156	148	138	128	114
F4-SP4 / 35	FM4	4	5,5			910	10,1		206	196	184	169	161	152	142	131	117
F4-SP4 / 36	FM4	4	5,5			931	10,4		212	202	189	174	165	156	146	135	121
F4-SP4 / 37	FM4	4	5,5			952	10,6		218	208	194	179	170	161	151	139	124
F4-SP4 / 38	FM4	4	5,5			973	10,9		224	213	200	184	174	165	155	143	127
F4-SP4 / 39	FM4	4	5,5			994	11,1		230	219	205	189	179	169	159	146	131
F4-SP4 / 40	FM4	4	5,5			1015	11,4		236	225	210	194	184	174	163	150	134
F4-SP4 / 41	FM4	4	5,5			1036	11,6		242	230	215	198	188	178	167	154	137
F4-SP4 / 42	FM4	4	5,5			1057	11,9		248	236	221	203	193	182	171	158	141
F4-SP4 / 43	FM4	4	5,5			1078	12,1		254	241	226	208	197	187	175	161	144
F4-SP4 / 44	FM4	4	5,5			1099	12,4		259	247	231	213	202	191	179	165	148

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

Çalışma Gerilimi / Operating Voltage	: 1 x 220V - 230V (- %10 / + %6)
	: 3 x 380V - 400V - 415V (- %10 / + %6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m ³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 12 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm ² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m ³

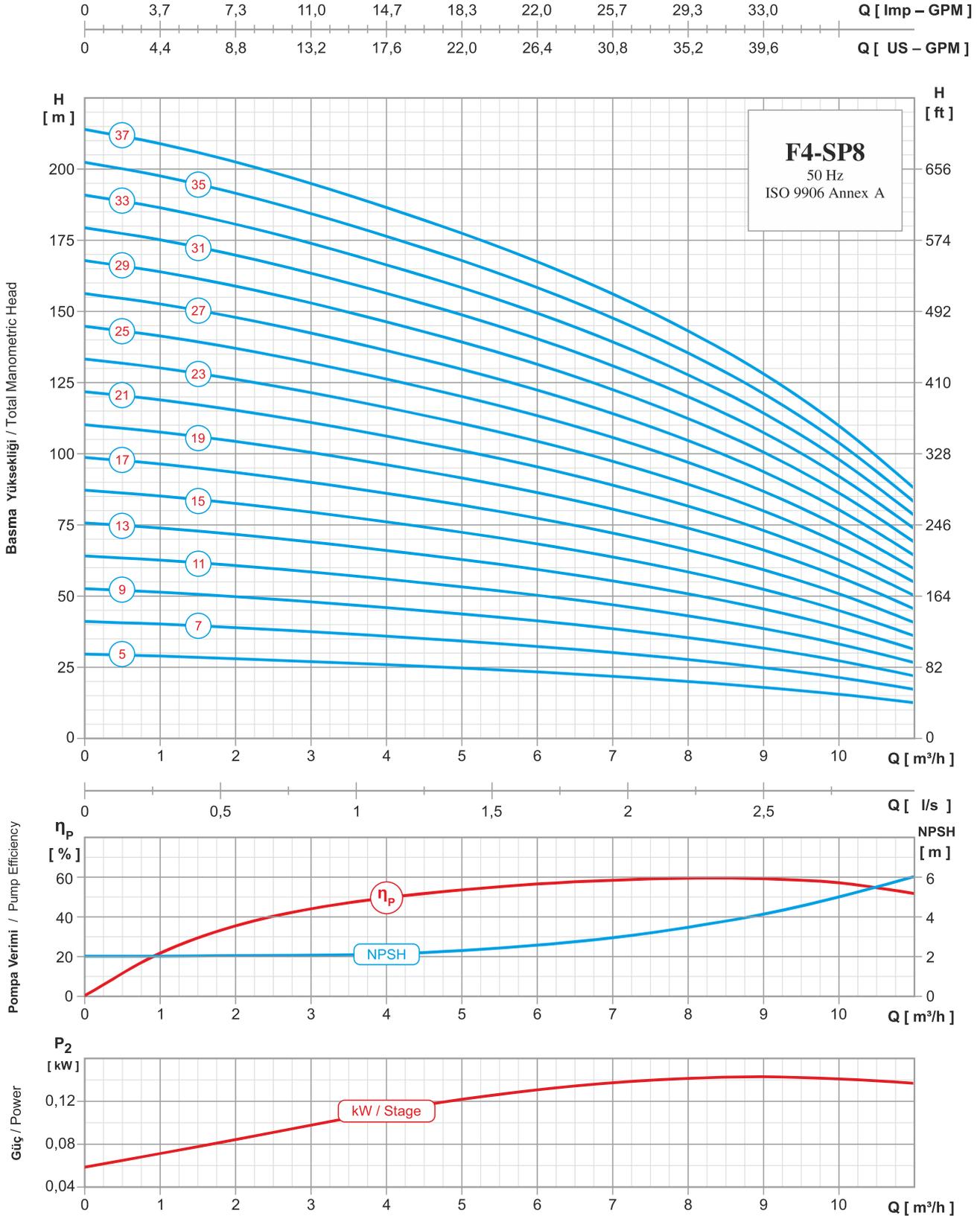
F4-SP8

Paslanmaz Çelik Pompa
Stainless Steel Pump
Radyal Akışlı
Radial Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

1x220 V - 3x400 V
50 Hz / 2900 rpm



Teknik Veriler

Technical Data

1x220 V - 3x400 V
50 Hz / 2900 rpm

Pompa Tipi Pump Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity												
		P _N	Ø Max _P					Ø D	L _P	W _P	[Imp - GPM]	0	7,3	14,7	22,0	25,7	29,3	33,0	36,7	40,3
											[US - GPM]	0	8,8	17,6	26,4	30,8	35,2	39,6	44,0	48,4
		[kW]	[HP]					[mm]	[inch]	[mm]	[kg]	[l/s]	0	0,56	1,11	1,67	1,94	2,22	2,50	2,78
						[m³/h]	0	2	4	6	7	8	9	10	11					
F4-SP8 / 05	FM4	0,75	1	Ø 98	Rp 2 (2" İçten Pasolu 11 Dış) Rp 2 (2" Inside Threaded 11 TPI)	412	4,3	Basma Yüksekliği / Total Manometric Head [m]	29	27	25	23	21	19	17	15	12			
F4-SP8 / 06	FM4	1,1	1,5			454	4,8		35	33	30	27	25	23	21	18	14			
F4-SP8 / 07	FM4	1,1	1,5			496	5,3		40	38	35	32	30	27	24	21	17			
F4-SP8 / 08	FM4	1,5	2			538	5,8		46	44	40	36	34	31	28	24	19			
F4-SP8 / 09	FM4	1,5	2			580	6,3		52	49	45	41	38	35	31	27	21			
F4-SP8 / 10	FM4	1,5	2			622	6,8		58	55	50	45	42	39	35	30	24			
F4-SP8 / 11	FM4	2,2	3			664	7,3		64	60	55	50	46	43	38	33	26			
F4-SP8 / 12	FM4	2,2	3			706	7,8		69	66	60	54	51	46	42	36	29			
F4-SP8 / 13	FM4	2,2	3			748	8,3		75	71	66	59	55	50	45	39	31			
F4-SP8 / 14	FM4	2,2	3			790	8,8		81	77	71	63	59	54	49	42	33			
F4-SP8 / 15	FM4	2,2	3			832	9,3		87	82	76	68	63	58	52	45	36			
F4-SP8 / 16	FM4	3	4			874	9,8		93	88	81	72	68	62	55	48	38			
F4-SP8 / 17	FM4	3	4			916	10,3		98	93	86	77	72	66	59	51	40			
F4-SP8 / 18	FM4	3	4			958	10,8		104	99	91	81	76	70	62	54	43			
F4-SP8 / 19	FM4	3	4			1000	11,3		110	104	96	86	80	74	66	56	45			
F4-SP8 / 20	FM4	3	4			1042	11,8		116	109	101	91	84	77	69	59	48			
F4-SP8 / 21	FM4	4	5,5			1084	12,3		121	115	106	95	89	81	73	62	50			
F4-SP8 / 22	FM4	4	5,5			1126	12,8		127	120	111	100	93	85	76	65	52			
F4-SP8 / 23	FM4	4	5,5			1168	13,3		133	126	116	104	97	89	80	68	55			
F4-SP8 / 24	FM4	4	5,5			1210	13,8		139	131	121	109	101	93	83	71	57			
F4-SP8 / 25	FM4	4	5,5			1252	14,3		145	137	126	113	106	97	87	74	59			
F4-SP8 / 26	FM4	4	5,5			1294	14,8		150	142	131	118	110	101	90	77	62			
F4-SP8 / 27	FM4	4	5,5			1336	15,3		156	148	136	122	114	104	94	80	64			
F4-SP8 / 28	FM4	5,5	7,5			1378	15,8		162	153	141	127	118	108	97	83	67			
F4-SP8 / 29	FM4	5,5	7,5			1420	16,3		168	159	146	131	122	112	100	86	69			
F4-SP8 / 30	FM4	5,5	7,5			1462	16,8		174	164	151	136	127	116	104	89	71			
F4-SP8 / 31	FM4	5,5	7,5			1504	17,3		179	170	156	140	131	120	107	92	74			
F4-SP8 / 32	FM4	5,5	7,5			1546	17,8		185	175	161	145	135	124	111	95	76			
F4-SP8 / 33	FM4	5,5	7,5			1588	18,3		191	181	166	149	139	128	114	98	78			
F4-SP8 / 34	FM4	5,5	7,5			1630	18,8		197	186	171	154	144	132	118	101	81			
F4-SP8 / 35	FM4	5,5	7,5			1672	19,3		202	192	176	158	148	135	121	104	83			
F4-SP8 / 36	FM4	5,5	7,5			1714	19,8		208	197	181	163	152	139	125	107	86			
F4-SP8 / 37	FM4	5,5	7,5			1756	20,3		214	203	186	167	156	143	128	110	88			

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

Çalışma Gerilimi / Operating Voltage	: 1 x 220V - 230V (- %10 / + %6) : 3 x 380V - 400V - 415V (- %10 / + %6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m ³
Dönüş Yönü / Rotation	: Saatin Ters Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 12 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm ² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m ³

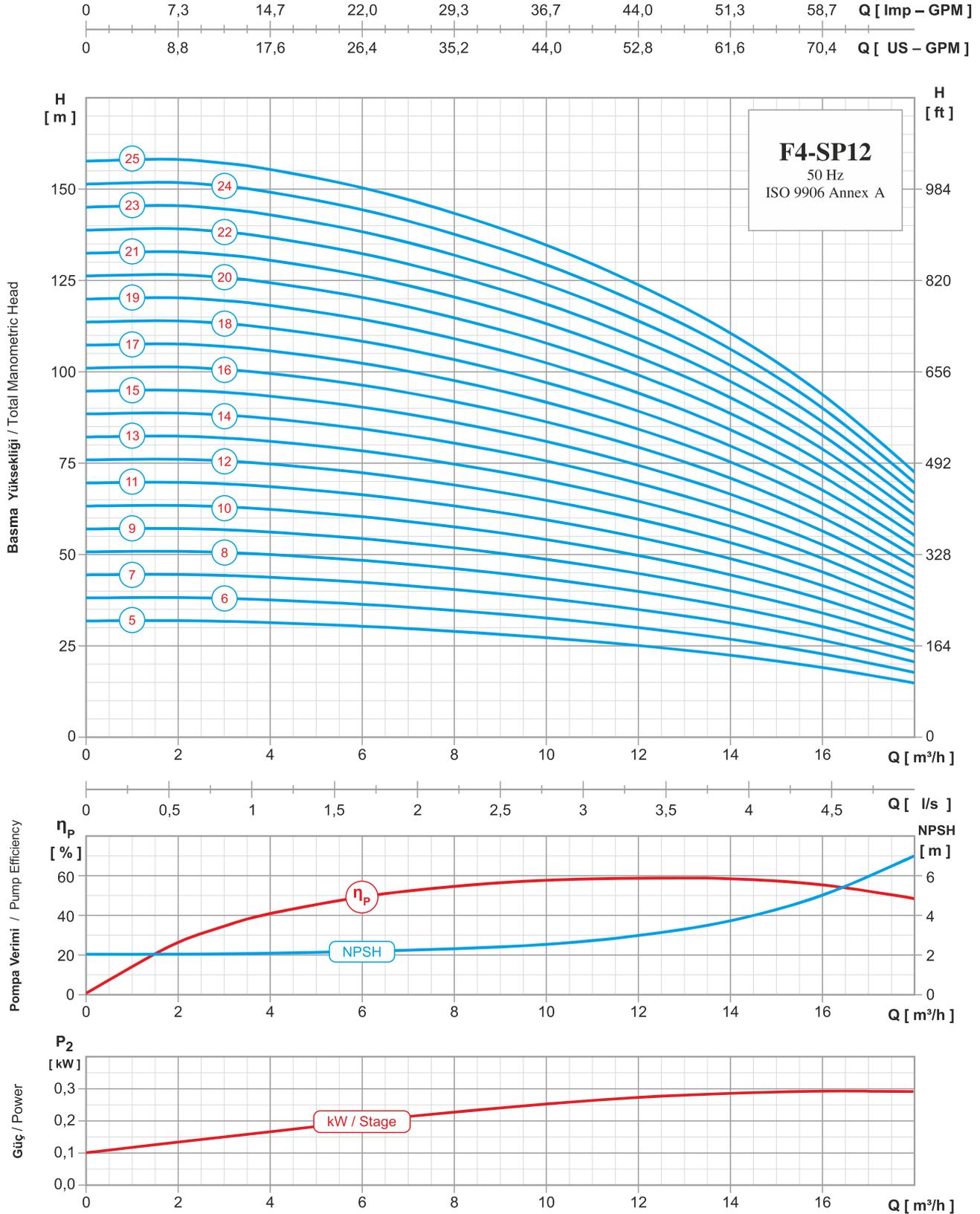
F4-SP12

Paslanmaz Çelik Pompa
Stainless Steel Pump
Karışık Akışlı
Mixed Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

1x220 V - 3x400 V
50 Hz / 2900 rpm



Teknik Veriler
Technical Data

1x220 V - 3x400 V
50 Hz / 2900 rpm

Pompa Tipi Pump Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity										
								[Imp - GPM]	0	14,7	22,0	29,3	36,7	44,0	51,3	58,7	66,0	
		[US - GPM]	0	17,6	26,4	35,2	44,0	52,8	61,6	70,4	79,3							
		[l/s]	0	1,11	1,67	2,22	2,78	3,33	3,89	4,44	5,00							
		P _N	Ø Max _P	Ø D	L _P	W _P	[m ³ /h]	0	4	6	8	10	12	14	16	18		
		[kW]	[HP]	[mm]	[inch]	[mm]	[kg]	[m ³ /h]	0	4	6	8	10	12	14	16	18	
F4-SP12 / 05	FM4	1,5	2	Ø 98	Rp 2 (2" İçten Pasolu 11 Dış) Rp 2 (2" Inside Threaded 11 TPI)	505	5,0	Basma Yüksekliği / Total Manometric Head [m]	32	31	30	29	27	25	22	19	15	
F4-SP12 / 06	FM4	2,2	3			570	5,7		38	37	36	34	32	30	27	23	17	
F4-SP12 / 07	FM4	2,2	3			635	6,3		44	44	42	40	38	35	31	26	20	
F4-SP12 / 08	FM4	3	4			700	7,0		51	50	48	46	43	40	35	30	23	
F4-SP12 / 09	FM4	3	4			765	7,6		57	56	54	52	49	45	40	34	26	
F4-SP12 / 10	FM4	3	4			830	8,2		63	62	60	57	54	50	44	38	29	
F4-SP12 / 11	FM4	4	5,5			895	8,9		69	68	66	63	59	55	49	41	32	
F4-SP12 / 12	FM4	4	5,5			960	9,5		76	75	72	69	65	60	53	45	35	
F4-SP12 / 13	FM4	4	5,5			1025	10,2		82	81	78	75	70	64	58	49	38	
F4-SP12 / 14	FM4	5,5	7,5			1090	10,8		88	87	84	80	76	69	62	53	41	
F4-SP12 / 15	FM4	5,5	7,5			1155	11,4		95	93	90	86	81	74	66	56	44	
F4-SP12 / 16	FM4	5,5	7,5			1220	12,1		101	100	96	92	86	79	71	60	47	
F4-SP12 / 17	FM4	5,5	7,5			1285	12,7		107	106	102	98	92	84	75	64	49	
F4-SP12 / 18	FM4	5,5	7,5			1350	13,4		114	112	108	103	97	89	80	68	52	
F4-SP12 / 19	FM4	7,5	10			1415	14,0		120	118	114	109	103	94	84	71	55	
F4-SP12 / 20	FM4	7,5	10			1480	14,6		126	124	120	115	108	99	89	75	58	
F4-SP12 / 21	FM4	7,5	10			1545	15,3		133	131	127	121	113	104	93	79	61	
F4-SP12 / 22	FM4	7,5	10			1610	15,9		139	137	133	126	119	109	98	83	64	
F4-SP12 / 23	FM4	7,5	10			1675	16,6		145	143	139	132	124	114	102	86	67	
F4-SP12 / 24	FM4	7,5	10			1740	17,2		152	149	145	138	130	119	106	90	70	
F4-SP12 / 25	FM4	7,5	10			1805	17,8		158	156	151	144	135	124	111	94	73	

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

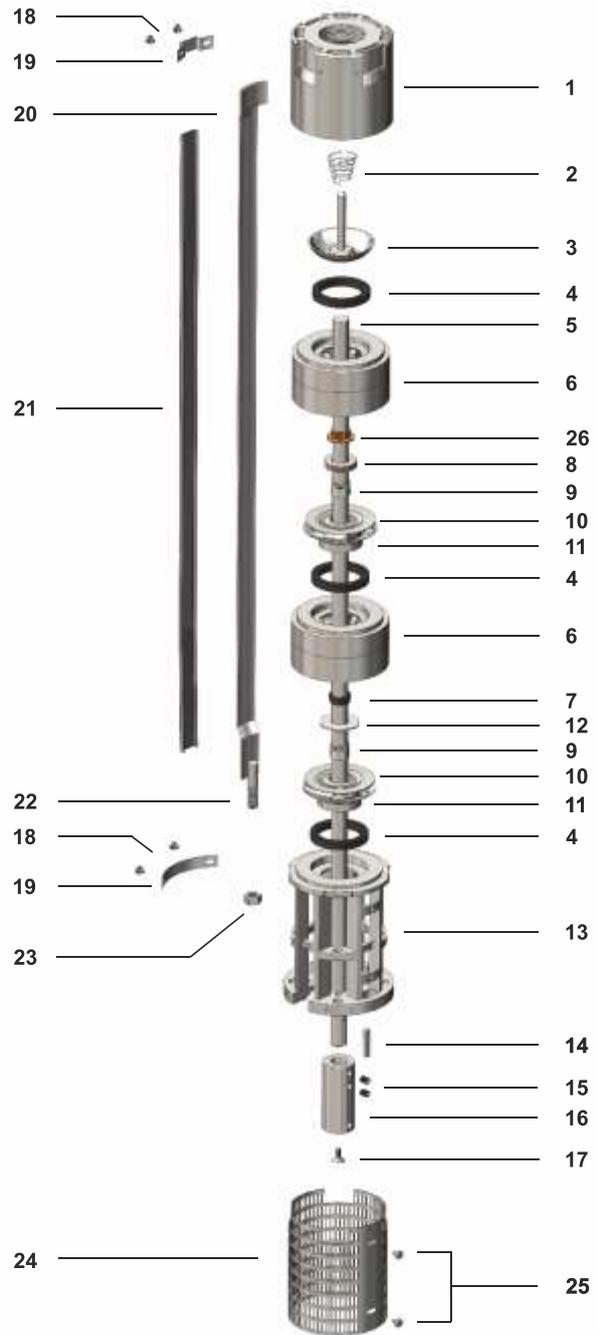
Çalışma Gerilimi / Operating Voltage	: 1 x 220V - 230V (- %10 / +%6)
	: 3 x 380V - 400V - 415V (- %10 / +%6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m ³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 12 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm ² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m ³

F6-SP10 & F6-SP15



F6-SP10 & F6-SP15

Parça Adı		Malzeme
1	Çıkış Haznesi	AISI 304
2	Klepe Yayı	AISI 302
3	Klepe	AISI 304
4	Aşınma Halkası	KAUÇUK (NBR) + AISI 304
5	Mil	AISI 420
6	Difüzör	AISI 304
7	Kum Kanallı Difüzör Yatağı	KAUÇUK (NBR)
8	Stoper Somunu	AISI 304
9	Fan Tespit Burcu	AISI 304
10	Fan	AISI 304
11	Fan Aşınma Bileziği	AISI 304
12	Fan Tespit Somunu	AISI 304
13	Emiş Haznesi	AISI 304
14	Mil Kaması	AISI 304
15	Setskur Civatası	AISI 304
16	Kaplin	AISI 420
17	Kaplin Civatası	AISI 304
18	Kablo Muhafaza Civatası	AISI 304
19	Kablo Muhafaza Bağlantısı	AISI 304
20	Gerdirme Laması	AISI 304
21	Kablo Muhafaza Sacı	AISI 304
22	Gerdirme Laması Saplaması	AISI 304
23	Gerdirme Laması Somunu	AISI 304
24	Süzgeç	AISI 304
25	Süzgeç Civatası	AISI 304
26	Stoper	Bronz ASTM B145 - 4A

Part Name		Material
1	Valve Casing	AISI 304
2	Valve Spring	AISI 302
3	Valve Cone	AISI 304
4	Neck Ring	RUBBER (NBR) + AISI 304
5	Shaft	AISI 420
6	Diffuser	AISI 304
7	Diffuser Bearing with Sand Channels	RUBBER (NBR)
8	Nut for Stop Ring	AISI 304
9	Split Cone	AISI 304
10	Impeller	AISI 304
11	Impeller Wear Ring	AISI 304
12	Split Cone Locknut	AISI 304
13	Suction Case	AISI 304
14	Shaft Key	AISI 304
15	Grub Screws	AISI 304
16	Coupling	AISI 420
17	Coupling Screw	AISI 304
18	Cable Guard Screws	AISI 304
19	Cable Guard Tie	AISI 304
20	Strap	AISI 304
21	Cable Guard	AISI 304
22	Strap Stud	AISI 304
23	Strap Nut	AISI 304
24	Strainer	AISI 304
25	Strainer Screws	AISI 304
26	Stop Ring	Bronze ASTM B145 - 4A

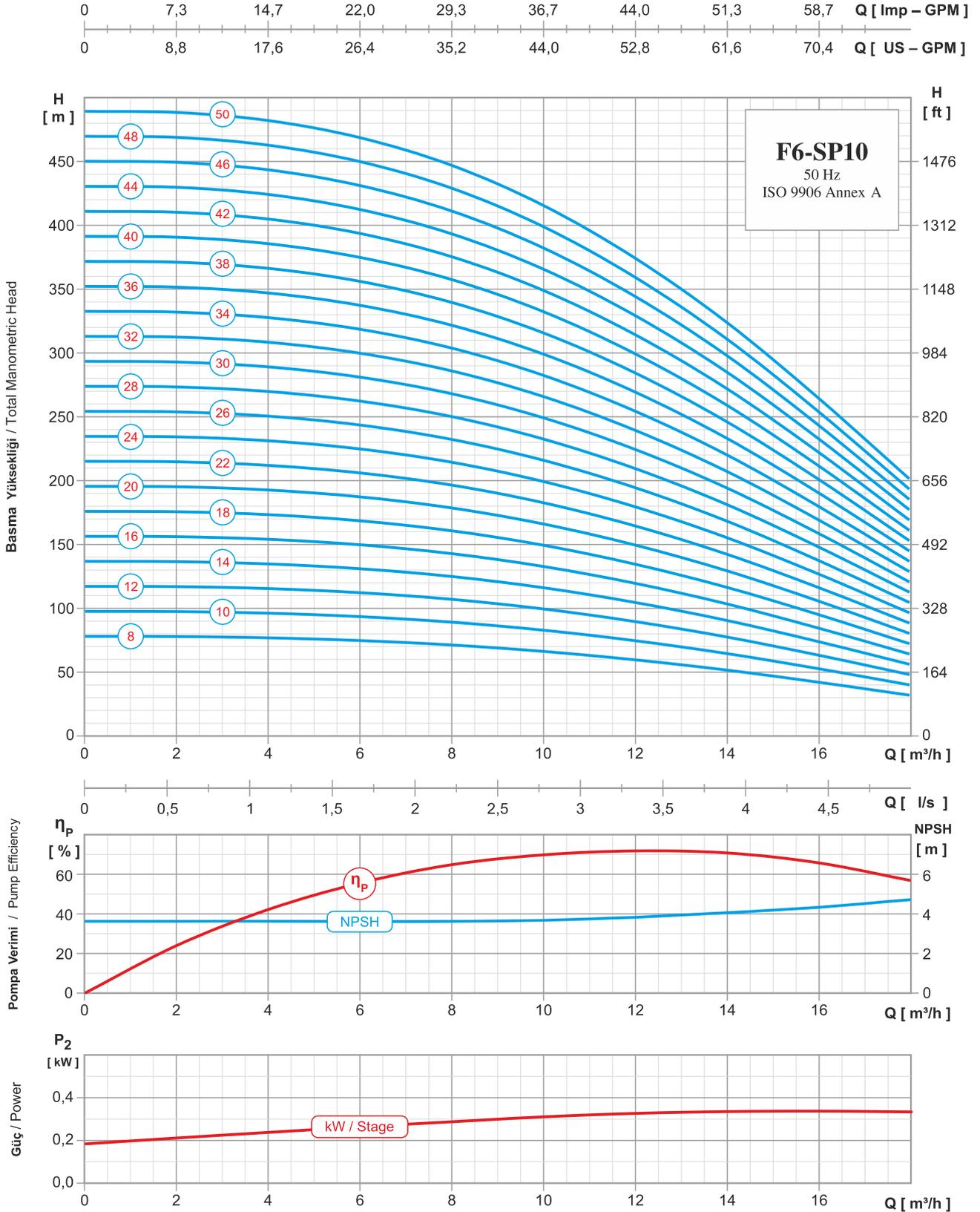
F6-SP10

Paslanmaz Çelik Pompa
Stainless Steel Pump
Radyal Akışlı
Radial Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

3x400 V
50 Hz / 2900 rpm



Teknik Veriler

Technical Data

3x400 V
50 Hz / 2900 rpm

Pompa Tipi Pump Type	Motor Tipi Motor Type	Motor Gücü Motor Power	Akım Current [400 V]	Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity											
								[Imp - GPM]	0	7,3	14,7	22,0	29,3	36,7	44,0	51,3	58,7	66,0	
								[US - GPM]	0	8,8	17,6	26,4	35,2	44,0	52,8	61,6	70,4	79,3	
								[l/s]	0	0,56	1,11	1,67	2,22	2,78	3,33	3,89	4,44	5,00	
		P _N	I _N	Ø Max _p	Ø D	L _p	W _p	[m³/h]	0	2	4	6	8	10	12	14	16	18	
		[kW] [HP]	[A]	[mm]	[inch]	[mm]	[kg]												
F6-SP10 / 08	FM6	4,5	6	11,6	Ø 138 Rp 2 (2" İçten Pasolu 11 Dış) Rp 2 (2" Inside Threaded 11 TPI)	765	19	[H] Basma Yüksekliği / Total Manometric Head [m]	78	78	77	75	72	67	60	52	43	32	
F6-SP10 / 09	FM6	4,5	6	11,6		826	20		88	88	87	84	81	75	68	59	48	36	
F6-SP10 / 10	FM6	4,5	6	11,6		886	21		98	98	96	94	89	83	75	65	53	41	
F6-SP10 / 11	FM6	4,5	6	11,6		947	23		108	108	106	103	98	92	83	72	59	45	
F6-SP10 / 12	FM6	5,5	7,5	13,3		1007	24		117	117	116	113	107	100	90	78	64	49	
F6-SP10 / 13	FM6	5,5	7,5	13,3		1068	26		127	127	125	122	116	108	98	85	69	53	
F6-SP10 / 14	FM6	5,5	7,5	13,3		1128	27		137	137	135	131	125	116	105	91	74	57	
F6-SP10 / 15	FM6	5,5	7,5	13,3		1189	29		147	147	145	141	134	125	113	98	80	61	
F6-SP10 / 16	FM6	7,5	10	17,7		1249	30		157	156	154	150	143	133	120	104	85	65	
F6-SP10 / 17	FM6	7,5	10	17,7		1310	32		166	166	164	159	152	141	128	111	90	69	
F6-SP10 / 18	FM6	7,5	10	17,7		1370	33		176	176	174	169	161	150	135	117	96	73	
F6-SP10 / 19	FM6	7,5	10	17,7		1431	34		186	186	183	178	170	158	143	124	101	77	
F6-SP10 / 20	FM6	7,5	10	17,7		1491	36		196	195	193	188	179	166	150	130	106	81	
F6-SP10 / 21	FM6	7,5	10	17,7		1552	37		206	205	203	197	188	175	158	137	112	85	
F6-SP10 / 22	FM6	9,3	12,5	21,4		1612	39		215	215	212	206	197	183	165	143	117	89	
F6-SP10 / 23	FM6	9,3	12,5	21,4		1673	40		225	225	222	216	206	191	173	150	122	93	
F6-SP10 / 24	FM6	9,3	12,5	21,4		1733	42		235	235	231	225	215	200	180	156	128	97	
F6-SP10 / 25	FM6	9,3	12,5	21,4		1794	43		245	244	241	234	224	208	188	163	133	101	
F6-SP10 / 26	FM6	9,3	12,5	21,4		1854	45		255	254	251	244	233	216	195	169	138	105	
F6-SP10 / 27	FM6	11	15	25,2		1915	46		264	264	260	253	242	225	203	176	144	109	
F6-SP10 / 28	FM6	11	15	25,2		1975	48		274	274	270	263	250	233	210	182	149	113	
F6-SP10 / 29	FM6	11	15	25,2		2036	49		284	283	280	272	259	241	218	189	154	117	
F6-SP10 / 30	FM6	11	15	25,2		2096	50		294	293	289	281	268	250	225	195	160	122	
F6-SP10 / 31	FM6	13	17,5	29,6		2157	52		304	303	299	291	277	258	233	202	165	126	
F6-SP10 / 32	FM6	13	17,5	29,6		2217	53		313	313	309	300	286	266	240	208	170	130	
F6-SP10 / 33	FM6	13	17,5	29,6		2278	55		323	323	318	309	295	275	248	215	176	134	
F6-SP10 / 34	FM6	13	17,5	29,6		2338	56		333	332	328	319	304	283	255	221	181	138	
F6-SP10 / 35	FM6	13	17,5	29,6		2399	58		343	342	338	328	313	291	263	228	186	142	
F6-SP10 / 36	FM6	13	17,5	29,6		2459	59		352	352	347	338	322	300	270	234	192	146	
F6-SP10 / 37	FM6	13	17,5	29,6		2520	61		362	362	357	347	331	308	278	241	197	150	
F6-SP10 / 38	FM6	15	20	33,1		2580	62		372	371	367	356	340	316	285	247	202	154	
F6-SP10 / 39	FM6	15	20	33,1		2641	63		382	381	376	366	349	324	293	254	208	158	
F6-SP10 / 40	FM6	15	20	33,1		2701	65		392	391	386	375	358	333	300	260	213	162	
F6-SP10 / 41	FM6	15	20	33,1	2762	66	401	401	395	384	367	341	308	267	218	166			
F6-SP10 / 42	FM6	18,5	25	42,0	2822	68	411	410	405	394	376	349	315	273	223	170			
F6-SP10 / 43	FM6	18,5	25	42,0	2883	70	421	420	415	403	385	358	323	280	229	174			
F6-SP10 / 44	FM6	18,5	25	42,0	3197	102	431	430	424	413	394	366	330	286	234	178			
F6-SP10 / 45	FM6	18,5	25	42,0	3257	104	441	440	434	422	403	374	338	293	239	182			
F6-SP10 / 46	FM6	185	25	42,0	3318	106	450	450	444	431	411	383	345	299	245	186			
F6-SP10 / 47	FM6	18,5	25	42,0	3378	108	460	459	453	441	420	391	353	306	250	190			
F6-SP10 / 48	FM6	18,5	25	42,0	3439	110	470	469	463	450	429	399	360	312	255	194			
F6-SP10 / 49	FM6	18,5	25	42,0	3499	112	480	479	473	459	438	408	368	319	261	198			
F6-SP10 / 50	FM6	18,5	25	42,0	3560	114	490	489	482	469	447	416	375	325	266	203			

(*) Pompa kılıf içindedir / Pump with sleeve

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

Çalışma Gerilimi / Operating Voltage	: 3 x 380V - 400V - 415V (- %10 / +%6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 20 mm
Mil Ucu / Shaft End	: NEMA Standaardına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m³

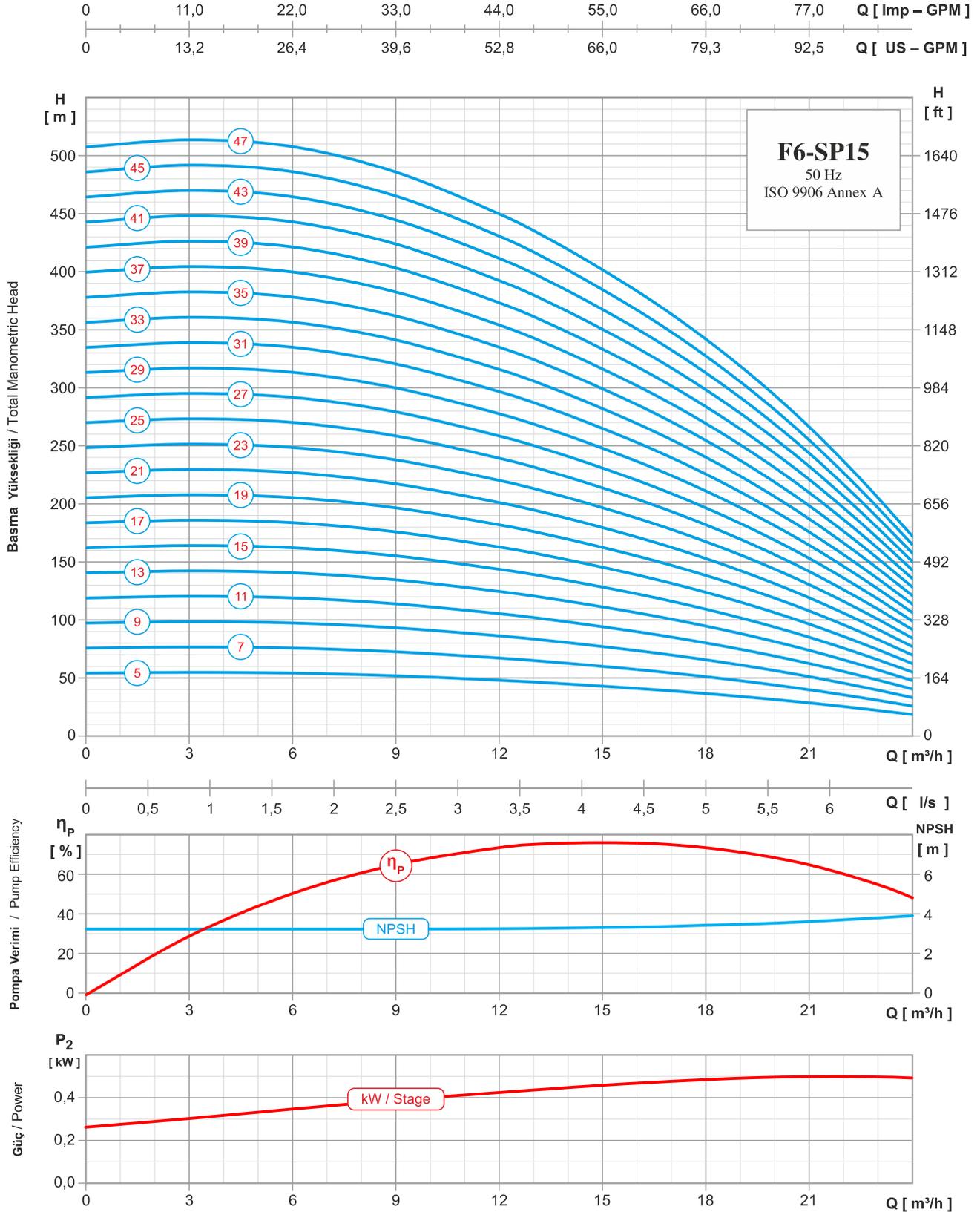
F6-SP15

Paslanmaz Çelik Pompa
Stainless Steel Pump
Radyal Akışlı
Radial Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

3x400 V
50 Hz / 2900 rpm



Teknik Veriler

Technical Data

3x400 V
50 Hz / 2900 rpm

Pompa Tipi Pump Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Akım Current [400 V]	Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity										
		P _N	I _N						Ø Max _p	Ø D	L _p	W _p	[Imp - GPM]	0	11,0	22,0	33,0	44,0	55,0
		[kW]	[HP]	[A]	[mm]	[inch]	[mm]	[kg]	[US - GPM]	0	13,2	26,4	39,6	52,8	66,0	79,3	92,5	105,7	
		[l/s]	0	0,83	1,67	2,50	3,33	4,17	5,00	5,83	6,67								
										[m³/h]	0	3	6	9	12	15	18	21	24
F6-SP15 / 05	FM6	3	4	7,8	Ø 138	Rp 2 1/2 (2 1/2" İçten Pasolu 11 Diş) Rp 2 1/2 (2 1/2" Inside Threaded 11 TPI)	584	14	[H] Basma Yüksekliği / Total Manometric Head [m]	54	55	54	52	48	43	36	28	18	
F6-SP15 / 06	FM6	4,5	6	11,6			644	16		65	66	65	62	57	51	44	34	22	
F6-SP15 / 07	FM6	4,5	6	11,6			705	17		76	77	76	72	67	60	51	40	26	
F6-SP15 / 08	FM6	5,5	7,5	13,3			765	19		86	87	86	83	77	68	58	45	29	
F6-SP15 / 09	FM6	5,5	7,5	13,3			826	20		97	98	97	93	86	77	65	51	33	
F6-SP15 / 10	FM6	5,5	7,5	13,3			886	21		108	109	108	103	96	85	73	57	37	
F6-SP15 / 11	FM6	7,5	10	17,7			947	23		119	120	119	114	105	94	80	62	40	
F6-SP15 / 12	FM6	7,5	10	17,7			1007	24		130	131	130	124	115	103	87	68	44	
F6-SP15 / 13	FM6	7,5	10	17,7			1068	26		140	142	140	134	124	111	95	74	48	
F6-SP15 / 14	FM6	7,5	10	17,7			1128	27		151	153	151	145	134	120	102	79	51	
F6-SP15 / 15	FM6	9,3	12,5	21,4			1189	29		162	164	162	155	144	128	109	85	55	
F6-SP15 / 16	FM6	9,3	12,5	21,4			1249	30		173	175	173	165	153	137	116	91	59	
F6-SP15 / 17	FM6	9,3	12,5	21,4			1310	32		184	186	184	176	163	145	124	96	62	
F6-SP15 / 18	FM6	11	15	25,2			1370	33		194	197	194	186	172	154	131	102	66	
F6-SP15 / 19	FM6	11	15	25,2			1431	34		205	208	205	196	182	162	138	108	70	
F6-SP15 / 20	FM6	11	15	25,2			1491	36		216	219	216	207	191	171	146	113	73	
F6-SP15 / 21	FM6	13	17,5	29,6			1552	37		227	230	227	217	201	179	153	119	77	
F6-SP15 / 22	FM6	13	17,5	29,6			1612	39		238	240	238	227	211	188	160	125	81	
F6-SP15 / 23	FM6	13	17,5	29,6			1673	40		248	251	248	238	220	197	167	130	84	
F6-SP15 / 24	FM6	13	17,5	29,6			1733	42		259	262	259	248	230	205	175	136	88	
F6-SP15 / 25	FM6	15	20	33,1			1794	43		270	273	270	258	239	214	182	142	92	
F6-SP15 / 26	FM6	15	20	33,1			1854	45		281	284	281	269	249	222	189	147	95	
F6-SP15 / 27	FM6	15	20	33,1			1915	46		292	295	292	279	258	231	196	153	99	
F6-SP15 / 28	FM6	15	20	33,1			1975	48		302	306	303	289	268	239	204	159	103	
F6-SP15 / 29	FM6	18,5	25	42,0			2036	49		313	317	313	300	278	248	211	164	106	
F6-SP15 / 30	FM6	18,5	25	42,0			2096	50		324	328	324	310	287	256	218	170	110	
F6-SP15 / 31	FM6	18,5	25	42,0			2157	52		335	339	335	320	297	265	226	176	114	
F6-SP15 / 32	FM6	18,5	25	42,0			2217	53		346	350	346	331	306	274	233	181	117	
F6-SP15 / 33	FM6	18,5	25	42,0			2278	55		356	361	357	341	316	282	240	187	121	
F6-SP15 / 34	FM6	18,5	25	42,0			2338	56		367	372	367	351	325	291	247	193	125	
F6-SP15 / 35	FM6	22	30	49,0	2399	58	378	383	378	362	335	299	255	198	128				
F6-SP15 / 36	FM6	22	30	49,0	2459	59	389	394	389	372	345	308	262	204	132				
F6-SP15 / 37	FM6	22	30	49,0	2520	61	400	404	400	383	354	316	269	210	136				
F6-SP15 / 38	FM6	22	30	49,0	2580	62	410	415	411	393	364	325	277	215	139				
F6-SP15 / 39	FM6	22	30	49,0	2641	63	421	426	421	403	373	333	284	221	143				
F6-SP15 / 40	FM6	22	30	49,0	2701	65	432	437	432	414	383	342	291	227	147				
F6-SP15 / 41	FM6	22	30	49,0	3015	96	443	448	443	424	392	350	298	232	150				
F6-SP15 / 42	FM6	26	35	56,7	3076	98	454	459	454	434	402	359	306	238	154				
F6-SP15 / 43	FM6	26	35	56,7	3136	100	464	470	465	445	412	368	313	244	158				
F6-SP15 / 44	FM6	26	35	56,7	3197	102	475	481	475	455	421	376	320	249	161				
F6-SP15 / 45	FM6	26	35	56,7	3257	104	486	492	486	465	431	385	327	255	165				
F6-SP15 / 46	FM6	26	35	56,7	3318	106	497	503	497	476	440	393	335	261	169				
F6-SP15 / 47	FM6	26	35	56,7	3378	108	508	514	508	486	450	402	342	266	172				

(*) Pompa kılıf içindedir / Pump with sleeve

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

Çalışma Gerilimi / Operating Voltage	: 3 x 380V - 400V - 415V (- %10 / + %6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m ³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 20 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm ² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m ³

F6-SP30

Parça Adı	Malzeme
1 Çıkış Haznesi	AISI 304
2 Klepe Yayı	AISI 302
3 Klepe	AISI 304
4 Aşınma Halkası	KAUÇUK (NBR) + AISI 304
5 Mil	AISI 420
6 Difüzör	AISI 304
7 Kum Kanallı Difüzör Yatağı	KAUÇUK (NBR)
8 Stoper Somunu	AISI 304
9 Fan Tespit Burcu	AISI 304
10 Fan	AISI 304
11 Fan Aşınma Bileziği	AISI 304
12 Fan Tespit Somunu	AISI 304
13 Emiş Haznesi	AISI 304
14 Mil Kaması	AISI 304
15 Setskur Civatası	AISI 304
16 Kaplin	AISI 420
17 Kaplin Civatası	AISI 304
18 Kablo Muhafaza Civatası	AISI 304
19 Kablo Muhafaza Bağlantısı	AISI 304
20 Gerdirme Laması	AISI 304
21 Kablo Muhafaza Sacı	AISI 304
22 Gerdirme Laması Saplaması	AISI 304
23 Gerdirme Laması Somunu	AISI 304
24 Süzgeç	AISI 304
25 Süzgeç Civatası	AISI 304

Part Name	Material
1 Valve Casing	AISI 304
2 Valve Spring	AISI 302
3 Valve Cone	AISI 304
4 Neck Ring	RUBBER (NBR) + AISI 304
5 Shaft	AISI 420
6 Diffuser	AISI 304
7 Diffuser Bearing with Sand Channels	RUBBER (NBR)
8 Nut for Stop Ring	AISI 304
9 Split Cone	AISI 304
10 Impeller	AISI 304
11 Impeller Wear Ring	AISI 304
12 Split Cone Locknut	AISI 304
13 Suction Case	AISI 304
14 Shaft Key	AISI 304
15 Grub Screws	AISI 304
16 Coupling	AISI 420
17 Coupling Screw	AISI 304
18 Cable Guard Screws	AISI 304
19 Cable Guard Tie	AISI 304
20 Strap	AISI 304
21 Cable Guard	AISI 304
22 Strap Stud	AISI 304
23 Strap Nut	AISI 304
24 Strainer	AISI 304
25 Strainer Screws	AISI 304

F6-SP30

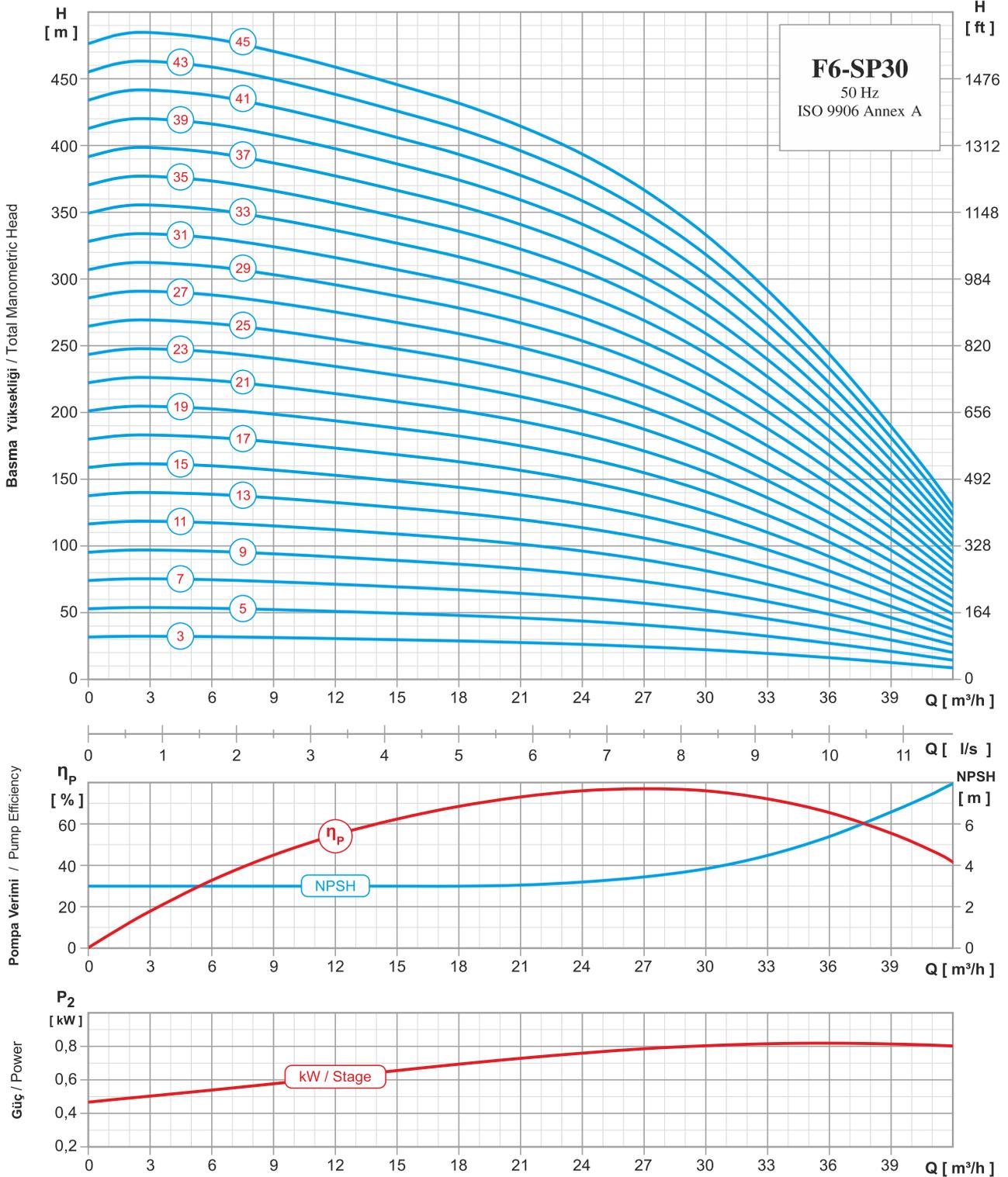
Paslanmaz Çelik Pompa
Stainless Steel Pump
Karışık Akışlı
Mixed Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

3x400 V
50 Hz / 2900 rpm

0 11,0 22,0 33,0 44,0 55,0 66,0 77,0 88,0 99,0 110,0 121,0 132,0 Q [Imp – GPM]
0 13,2 26,4 39,6 52,8 66,0 79,3 92,5 105,7 118,9 132,1 145,3 158,5 Q [US – GPM]



Teknik Veriler

Technical Data

3x400 V
50 Hz / 2900 rpm

Pompa Tipi Pump Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Akım Current [400 V]	Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity											
		[Imp - GPM]							0	33,0	55,0	77,0	88,0	99,0	110,0	121,0	132,0	143,0		
		[US - GPM]							0	39,6	66,0	92,5	105,7	118,9	132,1	145,3	158,5	171,7		
		[l/s]							0	2,5	4,2	5,8	6,7	7,5	8,3	9,2	10,0	10,8		
[kW] [HP]		[A]	[mm]	[inch]	[mm]	[kg]	[m³/h]													
			0	9	15	21	24	27	30	33	36	39								
F6-SP30 / 03	FM6	3	4	7,8	Ø 138	Rp 3 (3" İçten Pasolu 11 Diş) Rp 3 (3" Inside Threaded 11 TPI)	569	14	Basma Yüksekliği / Total Manometric Head [m]	32	31	30	28	26	24	22	19	16	13	
F6-SP30 / 04	FM6	4,5	6	11,6			665	16		42	42	40	37	35	33	30	26	22	17	
F6-SP30 / 05	FM6	5,5	7,5	13,3			761	18		53	52	50	46	44	41	37	32	27	21	
F6-SP30 / 06	FM6	5,5	7,5	13,3			857	20		63	63	59	55	52	49	44	39	33	25	
F6-SP30 / 07	FM6	7,5	10	17,7			953	22		74	73	69	64	61	57	52	45	38	30	
F6-SP30 / 08	FM6	7,5	10	17,7			1049	24		85	84	79	74	70	65	59	52	43	34	
F6-SP30 / 09	FM6	9,3	12,5	21,4			1145	26		95	94	89	83	79	73	67	58	49	38	
F6-SP30 / 10	FM6	9,3	12,5	21,4			1241	28		106	105	99	92	87	81	74	65	54	42	
F6-SP30 / 11	FM6	9,3	12,5	21,4			1337	30		116	115	109	101	96	90	81	71	60	46	
F6-SP30 / 12	FM6	11	15	25,2			1433	32		127	125	119	111	105	98	89	78	65	51	
F6-SP30 / 13	FM6	11	15	25,2			1529	34		138	136	129	120	114	106	96	84	70	55	
F6-SP30 / 14	FM6	13	17,5	29,6			1625	36		148	146	139	129	122	114	104	91	76	59	
F6-SP30 / 15	FM6	13	17,5	29,6			1721	39		159	157	149	138	131	122	111	97	81	63	
F6-SP30 / 16	FM6	15	20	33,1			1817	41		169	167	158	147	140	130	118	104	87	67	
F6-SP30 / 17	FM6	15	20	33,1			1913	43		180	178	168	157	149	139	126	110	92	72	
F6-SP30 / 18	FM6	18,5	25	42,0			2009	45		190	188	178	166	157	147	133	117	98	76	
F6-SP30 / 19	FM6	18,5	25	42,0			2105	47		201	199	188	175	166	155	141	123	103	80	
F6-SP30 / 20	FM6	18,5	25	42,0			2201	49		212	209	198	184	175	163	148	130	108	84	
F6-SP30 / 21	FM6	18,5	25	42,0			2297	51		222	220	208	193	184	171	155	136	114	89	
F6-SP30 / 22	FM6	22	30	49,0			2393	53		233	230	218	203	192	179	163	143	119	93	
F6-SP30 / 23	FM6	22	30	49,0			2489	55		243	240	228	212	201	187	170	149	125	97	
F6-SP30 / 24	FM6	22	30	49,0			2585	57		254	251	238	221	210	196	178	155	130	101	
F6-SP30 / 25	FM6	22	30	49,0			2681	59		265	262	248	230	219	204	185	162	135	105	
F6-SP30 / 26	FM6	22	30	49,0			2777	61		275	272	257	239	227	212	192	168	141	110	
F6-SP30 / 27	FM6	26	35	56,7			2873	63		286	282	267	249	236	220	200	175	146	114	
F6-SP30 / 28	FM6	26	35	56,7			2969	66		296	293	277	258	245	228	207	181	152	118	
F6-SP30 / 29	FM6	26	35	56,7			3065	68		307	303	287	267	254	236	215	188	157	122	
F6-SP30 / 30	FM6	26	35	56,7			3161	70		317	314	297	276	262	244	222	194	163	126	
F6-SP30 / 31	FM6	26	35	56,7			3257	72		328	324	307	285	271	253	229	201	168	131	
F6-SP30 / 32	FM6	30	40	66,4			3353	74		339	335	317	295	280	261	237	207	173	135	
F6-SP30 / 33	FM6	30	40	66,4	3449	76	349	345	327	304	289	269	244	214	179	139				
F6-SP30 / 34	FM6	30	40	66,4	3545	78	360	355	337	313	297	277	252	220	184	143				
F6-SP30 / 35	FM6	30	40	66,4	3641	80	370	366	347	322	306	285	259	227	190	148				
F6-SP30 / 36	FM6	30	40	66,4	3737	82	381	376	356	332	315	293	267	233	195	152				
F6-SP30 / 37	FM7	37	50	76,0	4054	123	392	387	366	341	324	302	274	240	200	156				
F6-SP30 / 38	FM7	37	50	76,0	4149	125	402	397	376	350	332	310	281	246	206	160				
F6-SP30 / 39	FM7	37	50	76,0	4244	127	413	408	386	359	341	318	289	253	211	164				
F6-SP30 / 40	FM7	37	50	76,0	4339	129	423	418	396	368	350	326	296	259	217	169				
F6-SP30 / 41	FM7	37	50	76,0	4434	132	434	429	406	378	359	334	304	266	222	173				
F6-SP30 / 42	FM7	37	50	76,0	4529	135	444	439	416	387	367	342	311	272	228	177				
F6-SP30 / 43	FM7	37	50	76,0	4624	137	455	450	426	396	376	350	318	279	233	181				
F6-SP30 / 44	FM7	45	60	92,0	4719	140	466	460	436	405	385	359	326	285	238	186				
F6-SP30 / 45	FM7	45	60	92,0	4814	142	476	470	446	414	393	367	333	292	244	190				

(*) Pompa kılıf içindedir / Pump with sleeve

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

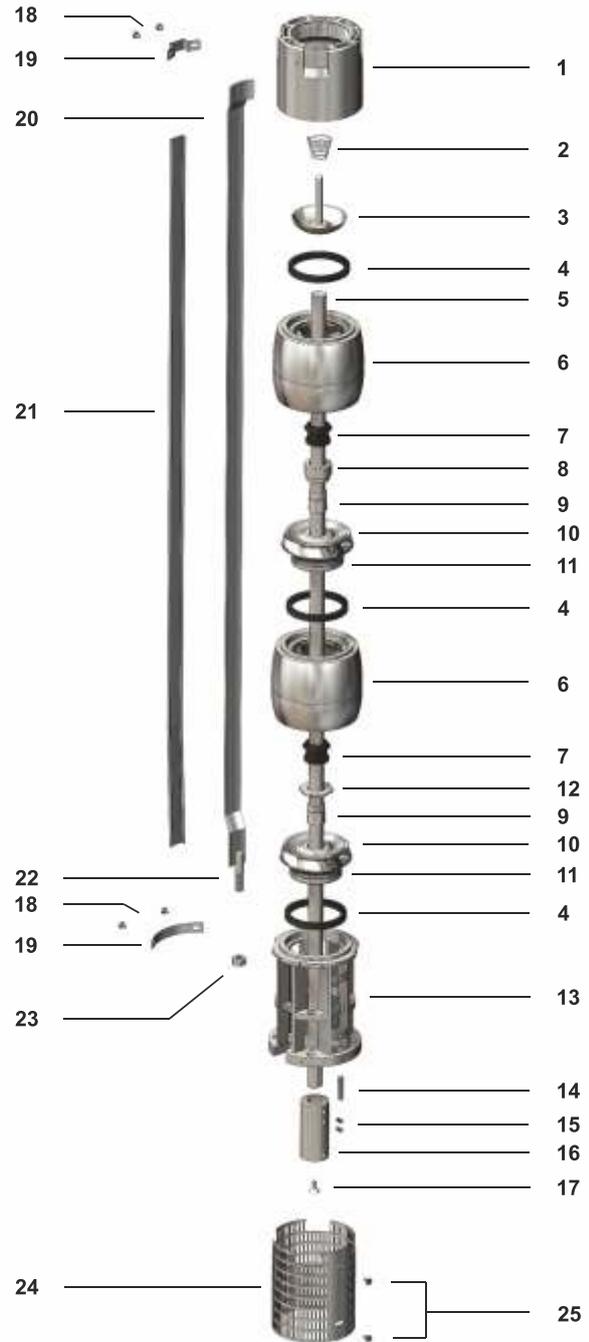
Çalışma Gerilimi / Operating Voltage	: 3 x 380V - 400V - 415V (- %10 / + %6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 22 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m³

F6-SP42 & F6-SP60



F6-SP42 & F6-SP60

Parça Adı	Malzeme	
1	Çıkış Haznesi	AISI 304
2	Klepe Yayı	AISI 302
3	Klepe	AISI 304
4	Aşınma Halkası	KAUÇUK (NBR) + AISI 304
5	Mil	AISI 420
6	Difüzör	AISI 304
7	Kum Kanallı Difüzör Yatağı	KAUÇUK (NBR)
8	Stoper Somunu	AISI 304
9	Fan Tespit Burcu	AISI 304
10	Fan	AISI 304
11	Fan Aşınma Bileziği	AISI 304
12	Fan Tespit Somunu	AISI 304
13	Emiş Haznesi	AISI 304
14	Mil Kaması	AISI 304
15	Setskur Civatası	AISI 304
16	Kaplin	AISI 420
17	Kaplin Civatası	AISI 304
18	Kablo Muhafaza Civatası	AISI 304
19	Kablo Muhafaza Bağlantısı	AISI 304
20	Gerdirme Laması	AISI 304
21	Kablo Muhafaza Sacı	AISI 304
22	Gerdirme Laması Saplaması	AISI 304
23	Gerdirme Laması Somunu	AISI 304
24	Süzgeç	AISI 304
25	Süzgeç Civatası	AISI 304

Part Name	Material	
1	Valve Casing	AISI 304
2	Valve Spring	AISI 302
3	Valve Cone	AISI 304
4	Neck Ring	RUBBER (NBR) + AISI 304
5	Shaft	AISI 420
6	Diffuser	AISI 304
7	Diffuser Bearing with Sand Channels	RUBBER (NBR)
8	Nut for Stop Ring	AISI 304
9	Split Cone	AISI 304
10	Impeller	AISI 304
11	Impeller Wear Ring	AISI 304
12	Split Cone Locknut	AISI 304
13	Suction Case	AISI 304
14	Shaft Key	AISI 304
15	Grub Screws	AISI 304
16	Coupling	AISI 420
17	Coupling Screw	AISI 304
18	Cable Guard Screws	AISI 304
19	Cable Guard Tie	AISI 304
20	Strap	AISI 304
21	Cable Guard	AISI 304
22	Strap Stud	AISI 304
23	Strap Nut	AISI 304
24	Strainer	AISI 304
25	Strainer Screws	AISI 304

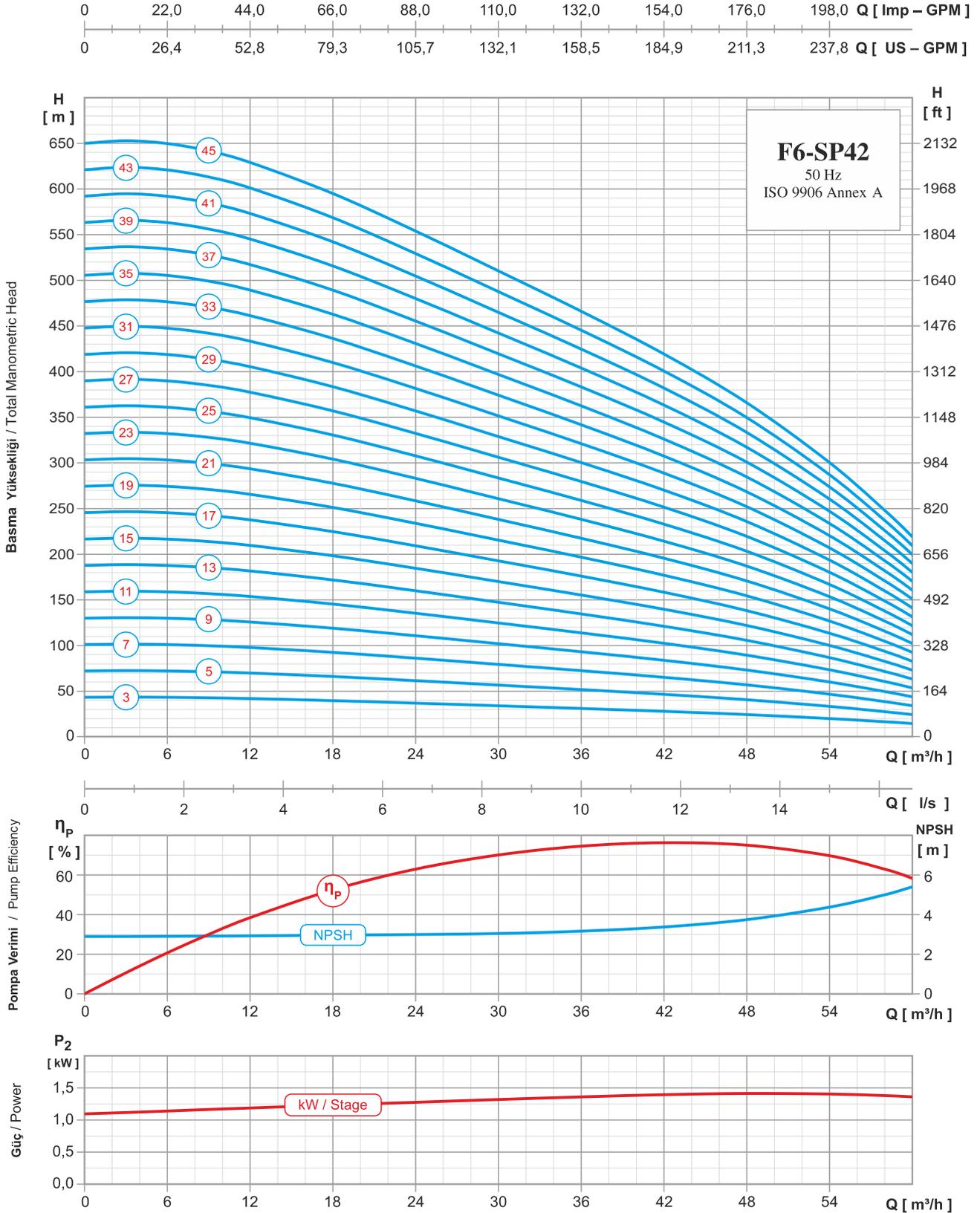
F6-SP42

Paslanmaz Çelik Pompa
Stainless Steel Pump
Karışık Akışlı
Mixed Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

3x400 V
50 Hz / 2900 rpm



Teknik Veriler

Technical Data

3x400 V
50 Hz / 2900 rpm

Pompa Tipi Pump Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Akım Current [400 V]	Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity												
		P _N	I _N						Ø Max _P	Ø D	L _P	W _P	[Imp - GPM]	0	44,0	66,0	88,0	110,0	132,0	154,0	176,0
		[kW]	[HP]	[A]	[mm]	[inch]	[mm]	[kg]	[US - GPM]	0	52,8	79,3	105,7	132,1	158,5	184,9	211,3	237,8	264,2		
		[l/s]	0	3,3	5,0	6,7	8,3	10,0	11,7	13,3	15,0	16,7	[m³/h]	0	12	18	24	30	36	42	48
F6-SP42 / 03	FM6	5,5	7,5	13,3	Ø 144	Rp 3 (3" İçten Pasolu 11 Dış) Rp 3 (3" Inside Threaded 11 TPI)	617	15	Basma Yüksekliği / Total Manometric Head [m]	43	42	40	37	34	31	28	24	20	15		
F6-SP42 / 04	FM6	7,5	10	17,7			729	18		58	56	53	49	45	41	37	33	27	20		
F6-SP42 / 05	FM6	7,5	10	17,7			841	21		72	70	66	62	57	52	47	41	33	24		
F6-SP42 / 06	FM6	9,3	12,5	21,4			953	23		87	84	79	74	68	62	56	49	40	29		
F6-SP42 / 07	FM6	11	15	25,2			1065	26		101	98	93	86	79	73	65	57	47	34		
F6-SP42 / 08	FM6	13	17,5	29,6			1177	29		116	112	106	98	91	83	75	65	54	39		
F6-SP42 / 09	FM6	15	20	33,1			1289	31		130	126	119	111	102	93	84	73	60	44		
F6-SP42 / 10	FM6	15	20	33,1			1401	34		144	140	132	123	113	104	93	81	67	49		
F6-SP42 / 11	FM6	18,5	25	42,0			1513	37		159	154	145	135	125	114	103	90	74	54		
F6-SP42 / 12	FM6	18,5	25	42,0			1625	39		173	168	159	148	136	124	112	98	80	59		
F6-SP42 / 13	FM6	22	30	49,0			1737	42		188	182	172	160	147	135	121	106	87	64		
F6-SP42 / 14	FM6	22	30	49,0			1849	45		202	196	185	172	159	145	131	114	94	68		
F6-SP42 / 15	FM6	22	30	49,0			1961	47		217	210	198	185	170	155	140	122	100	73		
F6-SP42 / 16	FM6	26	35	56,7			2073	50		231	224	212	197	181	166	149	130	107	78		
F6-SP42 / 17	FM6	26	35	56,7			2185	52		246	238	225	209	193	176	158	138	114	83		
F6-SP42 / 18	FM6	30	40	66,4			2297	55		260	252	238	222	204	186	168	147	120	88		
F6-SP42 / 19	FM6	30	40	66,4			2409	58		274	266	251	234	215	197	177	155	127	93		
F6-SP42 / 20	FM6	37	50	81,9			2521	60		289	280	264	246	227	207	186	163	134	98		
F6-SP42 / 21	FM6	37	50	81,9			2633	63		303	294	278	258	238	218	196	171	140	103		
F6-SP42 / 22	FM6	37	50	81,9			2745	66		318	308	291	271	250	228	205	179	147	108		
F6-SP42 / 23	FM6	37	50	81,9	2857	68	332	321	304	283	261	238	214	187	154	112					
F6-SP42 / 24	FM6	37	50	81,9	2969	71	347	335	317	295	272	249	224	195	161	117					
F6-SP42 / 25	FM7	45	60	92,0	3081	74	361	349	331	308	284	259	233	204	167	122					
F6-SP42 / 26	FM7	45	60	92,0	3193	76	376	363	344	320	295	269	242	212	174	127					
F6-SP42 / 27	FM7	45	60	92,0	3305	79	390	377	357	332	306	280	252	220	181	132					
F6-SP42 / 28	FM7	45	60	92,0	3417	82	404	391	370	345	318	290	261	228	187	137					
F6-SP42 / 29	FM7	45	60	92,0	3529	84	419	405	383	357	329	300	270	236	194	142					
F6-SP42 / 30	FM7	52	70	109,5	3937	116	433	419	397	369	340	311	280	244	201	147					
F6-SP42 / 31	FM7	52	70	109,5	4049	120	448	433	410	382	352	321	289	252	207	152					
F6-SP42 / 32	FM7	52	70	109,5	4161	124	462	447	423	394	363	332	298	260	214	156					
F6-SP42 / 33	FM7	52	70	109,5	4273	128	477	461	436	406	374	342	308	269	221	161					
F6-SP42 / 34	FM7	52	70	109,5	4385	132	491	475	450	419	386	352	317	277	227	166					
F6-SP42 / 35	FM7	55	75	118,0	4497	136	506	489	463	431	397	363	326	285	234	171					
F6-SP42 / 36	FM7	55	75	118,0	4609	140	520	503	476	443	408	373	336	293	241	176					
F6-SP42 / 37	FM8	60	80	117,0	4721	144	534	517	489	455	420	383	345	301	247	181					
F6-SP42 / 38	FM8	60	80	117,0	4833	148	549	531	502	468	431	394	354	309	254	186					
F6-SP42 / 39	FM8	60	80	117,0	4945	152	563	545	516	480	442	404	364	317	261	191					
F6-SP42 / 40	FM8	63	85	125,0	5057	156	578	559	529	492	454	414	373	326	268	196					
F6-SP42 / 41	FM8	63	85	125,0	5169	160	592	573	542	505	465	425	382	334	274	200					
F6-SP42 / 42	FM8	67	90	133,0	5281	164	607	587	555	517	476	435	392	342	281	205					
F6-SP42 / 43	FM8	67	90	133,0	5393	168	621	601	569	529	488	446	401	350	288	210					
F6-SP42 / 44	FM8	67	90	133,0	5505	172	636	615	582	542	499	456	410	358	294	215					
F6-SP42 / 45	FM8	70	95	138,0	5617	176	650	629	595	554	510	466	419	366	301	220					

(*) Pompa kılıf içindedir / Pump with sleeve

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

Çalışma Gerilimi / Operating Voltage	: 3 x 380V - 400V - 415V (- %10 / + %6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m ³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 22 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm ² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m ³

F6-SP60

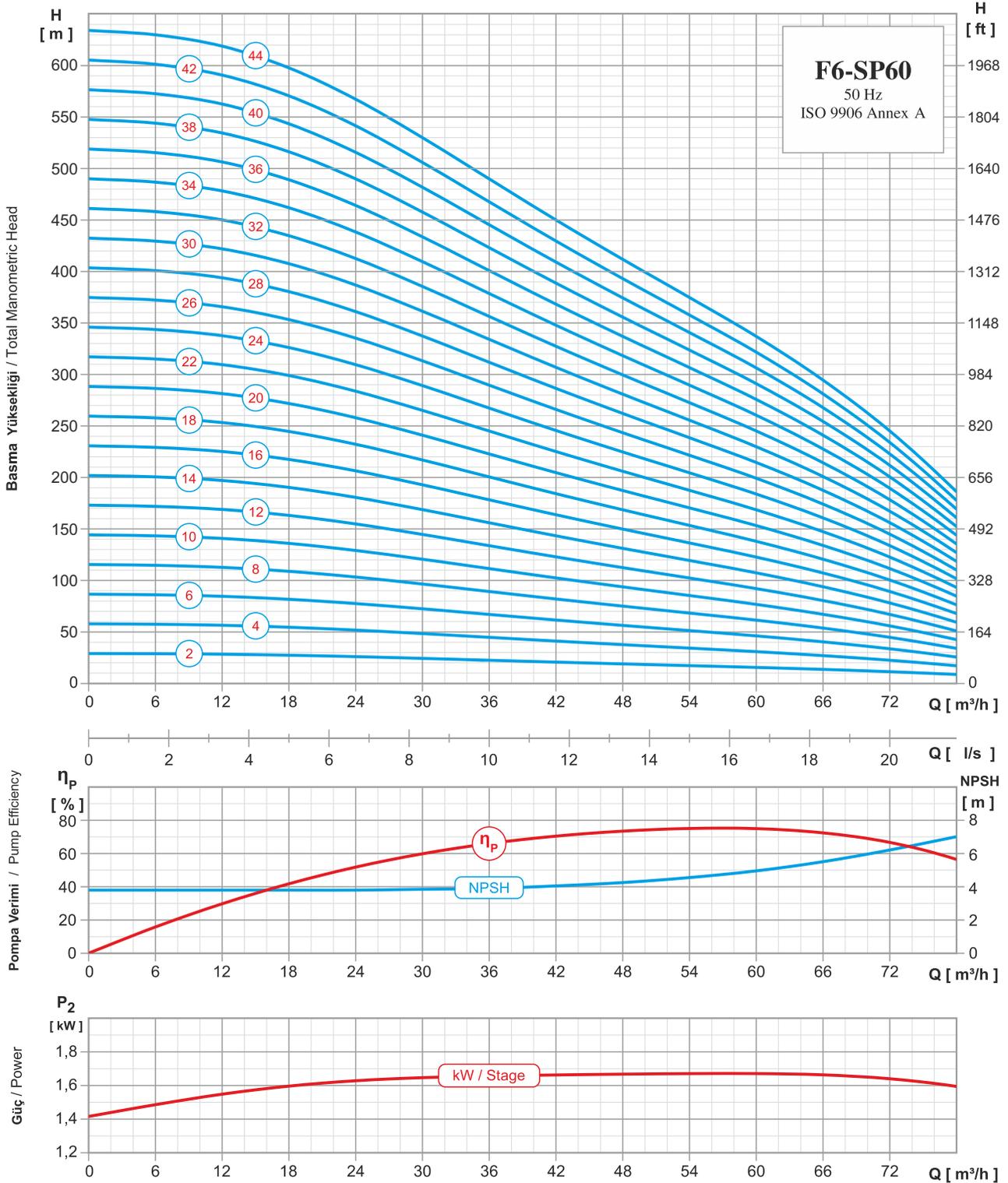
Paslanmaz Çelik Pompa
Stainless Steel Pump
Karışık Akışlı
Mixed Flow



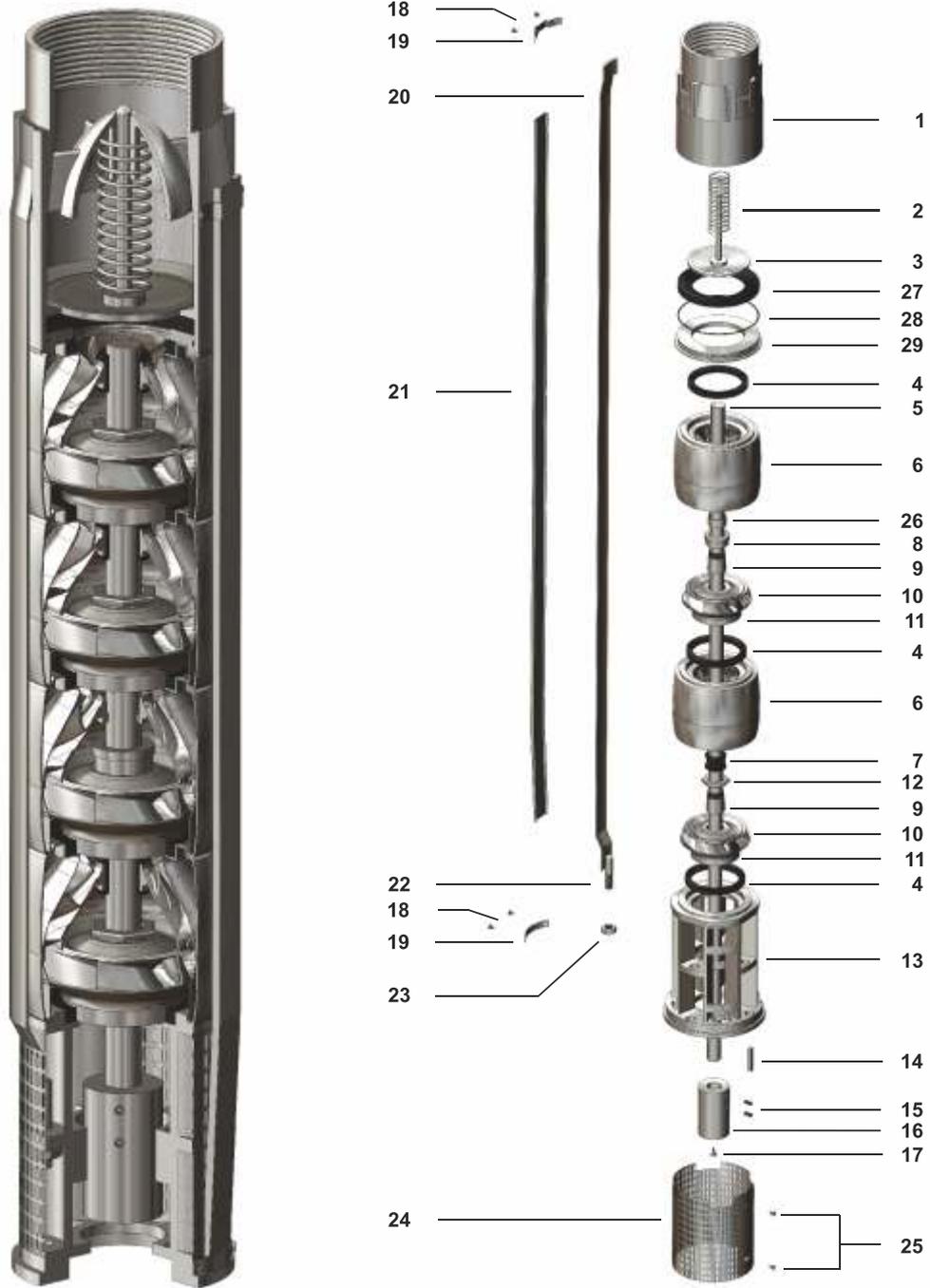
Performans Eğrileri Performance Curves

3x400 V
50 Hz / 2900 rpm

0 22,0 44,0 66,0 88,0 110,0 132,0 154,0 176,0 198,0 220,0 242,0 Q [Imp – GPM]
0 26,4 52,8 79,3 105,7 132,1 158,5 184,9 211,3 237,8 264,2 290,6 Q [US – GPM]



F8-SP72 & F8-SP96



F8-SP72 & F8-SP96

Parça Adı	Malzeme	
1	Çıkış Haznesi	AISI 304
2	Klepe Yayı	AISI 302
3	Klepe	AISI 304
4	Aşınma Halkası	KAUÇUK (NBR) + AISI 304
5	Mil	AISI 420
6	Difüzör	AISI 304
7	Kum Kanallı Difüzör Yatağı	KAUÇUK (NBR)
8	Stoper Somunu	AISI 304
9	Fan Tespit Burcu	AISI 304
10	Fan	AISI 304
11	Fan Aşınma Bileziği	AISI 304
12	Fan Tespit Somunu	AISI 304
13	Emiş Haznesi	AISI 304
14	Mil Kaması	AISI 304
15	Setskur Civatası	AISI 304
16	Kaplin	AISI 420
17	Kaplin Civatası	AISI 304
18	Kablo Muhafaza Civatası	AISI 304
19	Kablo Muhafaza Bağlantısı	AISI 304
20	Gerdirme Laması	AISI 304
21	Kablo Muhafaza Sacı	AISI 304
22	Gerdirme Laması Saplaması	AISI 304
23	Gerdirme Laması Somunu	AISI 304
24	Süzgeç	AISI 304
25	Süzgeç Civatası	AISI 304
26	Stoper	AISI 304
27	Klepe Lastiği	KAUÇUK (NBR) + ÇELİK
28	Klepe Oringi	KAUÇUK (NBR)
29	Klepe Flanşı	AISI 304

Part Name	Material	
1	Valve Casing	AISI 304
2	Valve Spring	AISI 302
3	Valve Cone	AISI 304
4	Neck Ring	RUBBER (NBR) + AISI 304
5	Shaft	AISI 420
6	Diffuser	AISI 304
7	Diffuser Bearing with Sand Channels	RUBBER (NBR)
8	Nut for Stop Ring	AISI 304
9	Split Cone	AISI 304
10	Impeller	AISI 304
11	Impeller Wear Ring	AISI 304
12	Split Cone Locknut	AISI 304
13	Suction Case	AISI 304
14	Shaft Key	AISI 304
15	Grub Screws	AISI 304
16	Coupling	AISI 420
17	Coupling Screw	AISI 304
18	Cable Guard Screws	AISI 304
19	Cable Guard Tie	AISI 304
20	Strap	AISI 304
21	Cable Guard	AISI 304
22	Strap Stud	AISI 304
23	Strap Nut	AISI 304
24	Strainer	AISI 304
25	Strainer Screws	AISI 304
26	Stop Ring	AISI 304
27	Valve Seat	RUBBER (NBR) + STEEL
28	Valve O-ring	RUBBER (NBR)
29	Valve Ring	AISI 304

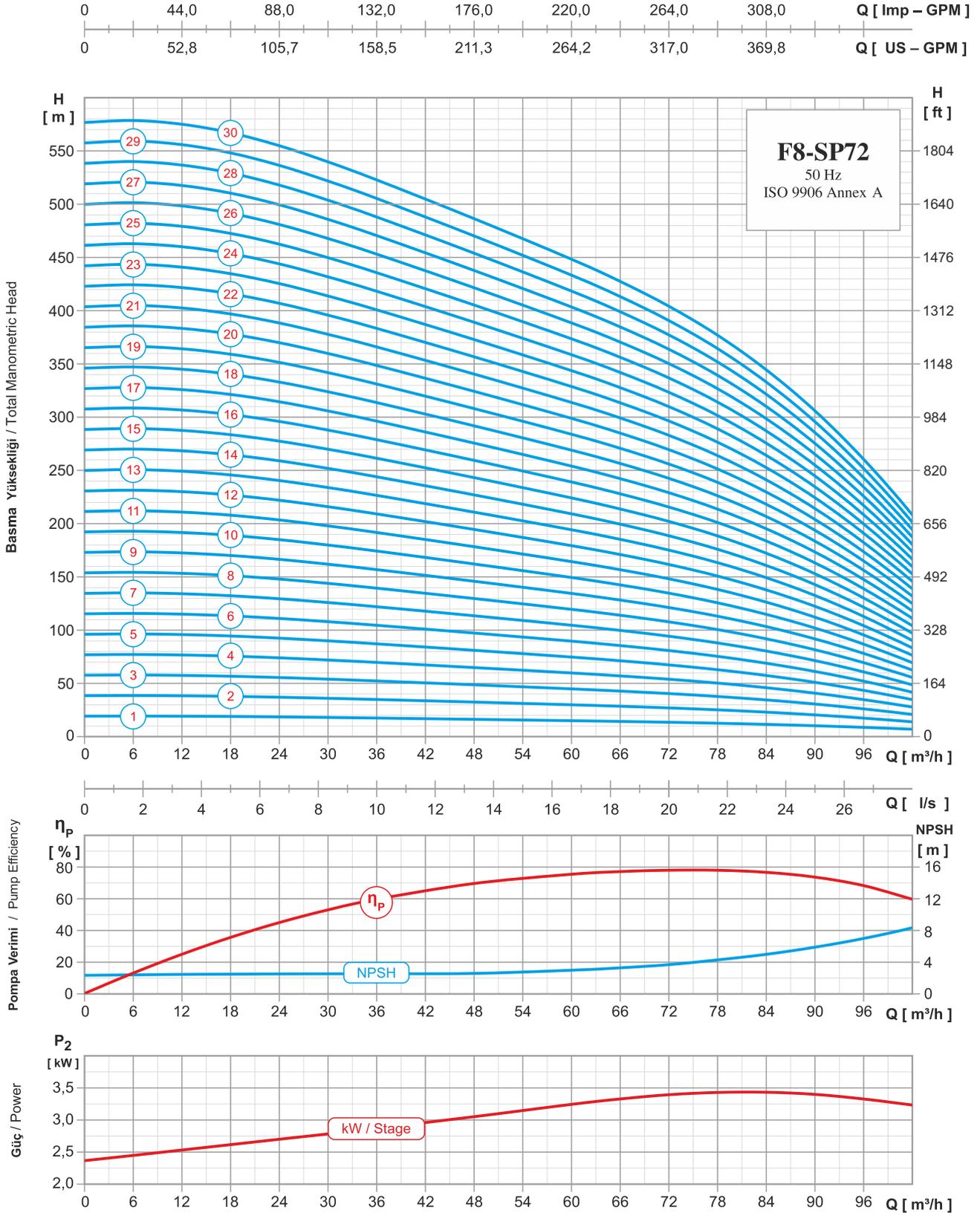
F8-SP72

Paslanmaz Çelik Pompa
Stainless Steel Pump
Karışık Akışlı
Mixed Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

3x400 V
50 Hz / 2900 rpm



Teknik Veriler

Technical Data

3x400 V
50 Hz / 2900 rpm

Pompa Tipi Motor Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Akım Current [400 V]	Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity														
		P _N	I _N						Ø Max _P	Ø D	L _P	W _P	[Imp - GPM]	0	88,0	176,0	220,0	242,0	264,0	286,0	308,0	330,0	352,0
													[US - GPM]	0	105,7	211,3	264,2	290,6	317,0	343,4	369,8	396,3	422,7
													[l/s]	0	6,7	13,3	16,7	18,3	20,0	21,7	23,3	25,0	26,7
[kW]	[HP]	[A]	[mm]	[inch]	[mm]	[kg]	[m ³ /h]	0	24	48	60	66	72	78	84	90	96						
F8-SP72 / 01	FM6	4,5	6	11,6	Ø 184	Rp 5 (5" İçten Pasolu 11 Dış) Rp 5 (5" Inside Threaded 11 TPI)	588	25	Basma Yüksekliği / Total Manometric Head [m]	19	18	16	15	14	13	13	11	10	9				
F8-SP72 / 02	FM6	7,5	10	17,7			716	29		38	37	32	30	29	27	25	23	20	17				
F8-SP72 / 03	FM6	11	15	25,2			844	33		58	55	49	45	43	40	38	34	31	26				
F8-SP72 / 04	FM6	15	20	33,1			972	37		77	74	65	60	57	54	50	46	41	35				
F8-SP72 / 05	FM6	18,5	25	42,0			1100	41		96	92	81	75	71	67	63	57	51	43				
F8-SP72 / 06	FM6	22	30	49,0			1228	45		115	111	97	90	86	81	75	69	61	52				
F8-SP72 / 07	FM6	26	35	56,7			1356	49		135	129	113	105	100	94	88	80	71	61				
F8-SP72 / 08	FM8	30	40	60,0			1484	53		154	148	130	120	114	108	101	92	82	69				
F8-SP72 / 09	FM8	37	50	76,0			1612	57		173	166	146	134	128	121	113	103	92	78				
F8-SP72 / 10	FM8	37	50	76,0			1740	61		192	185	162	149	143	135	126	115	102	87				
F8-SP72 / 11	FM8	45	60	90,0			1868	65		211	203	178	164	157	148	138	126	112	96				
F8-SP72 / 12	FM8	45	60	90,0			1996	69		231	222	195	179	171	162	151	138	122	104				
F8-SP72 / 13	FM8	52	70	103,0			2124	73		250	240	211	194	185	175	163	149	133	113				
F8-SP72 / 14	FM8	52	70	103,0			2252	77		269	259	227	209	200	189	176	161	143	122				
F8-SP72 / 15	FM8	55	75	110,0			2380	81		288	277	243	224	214	202	189	172	153	130				
F8-SP72 / 16	FM8	60	80	117,0			2508	85		308	296	259	239	228	216	201	184	163	139				
F8-SP72 / 17	FM8	63	85	125,0			2636	89		327	314	276	254	242	229	214	195	173	148				
F8-SP72 / 18	FM8	63	85	125,0			2764	93		346	333	292	269	257	243	226	207	184	156				
F8-SP72 / 19	FM8	75	100	148,0			2892	97		365	351	308	284	271	256	239	218	194	165				
F8-SP72 / 20	FM8	75	100	148,0			3020	101		384	370	324	299	285	269	251	230	204	174				
F8-SP72 / 21	FM8	75	100	148,0			3148	105		404	388	340	314	299	283	264	241	214	182				
F8-SP72 / 22	FM10	81	110	159,0			3276	109		423	407	357	329	314	296	276	253	224	191				
F8-SP72 / 23	FM10	81	110	159,0			3404	113		442	425	373	344	328	310	289	264	235	200				
F8-SP72 / 24	FM10	92	125	180,0			3532	117		461	444	389	359	342	323	302	276	245	208				
F8-SP72 / 25	FM10	92	125	180,0			3660	121		481	462	405	374	356	337	314	287	255	217				
F8-SP72 / 26	FM10	110	150	211,0			3788	125		500	481	422	389	371	350	327	299	265	226				
F8-SP72 / 27	FM10	110	150	211,0			3916	129		519	499	438	403	385	364	339	310	275	234				
F8-SP72 / 28	FM10	110	150	211,0			4044	133		538	518	454	418	399	377	352	322	286	243				
F8-SP72 / 29	FM10	110	150	211,0			4172	137		557	536	470	433	413	391	364	333	296	252				
F8-SP72 / 30	FM10	110	150	211,0			4300	141		577	555	486	448	428	404	377	345	306	261				

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

Çalışma Gerilimi / Operating Voltage	: 3 x 380V - 400V - 415V (- %10 / +%6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m ³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 25 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm ² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m ³

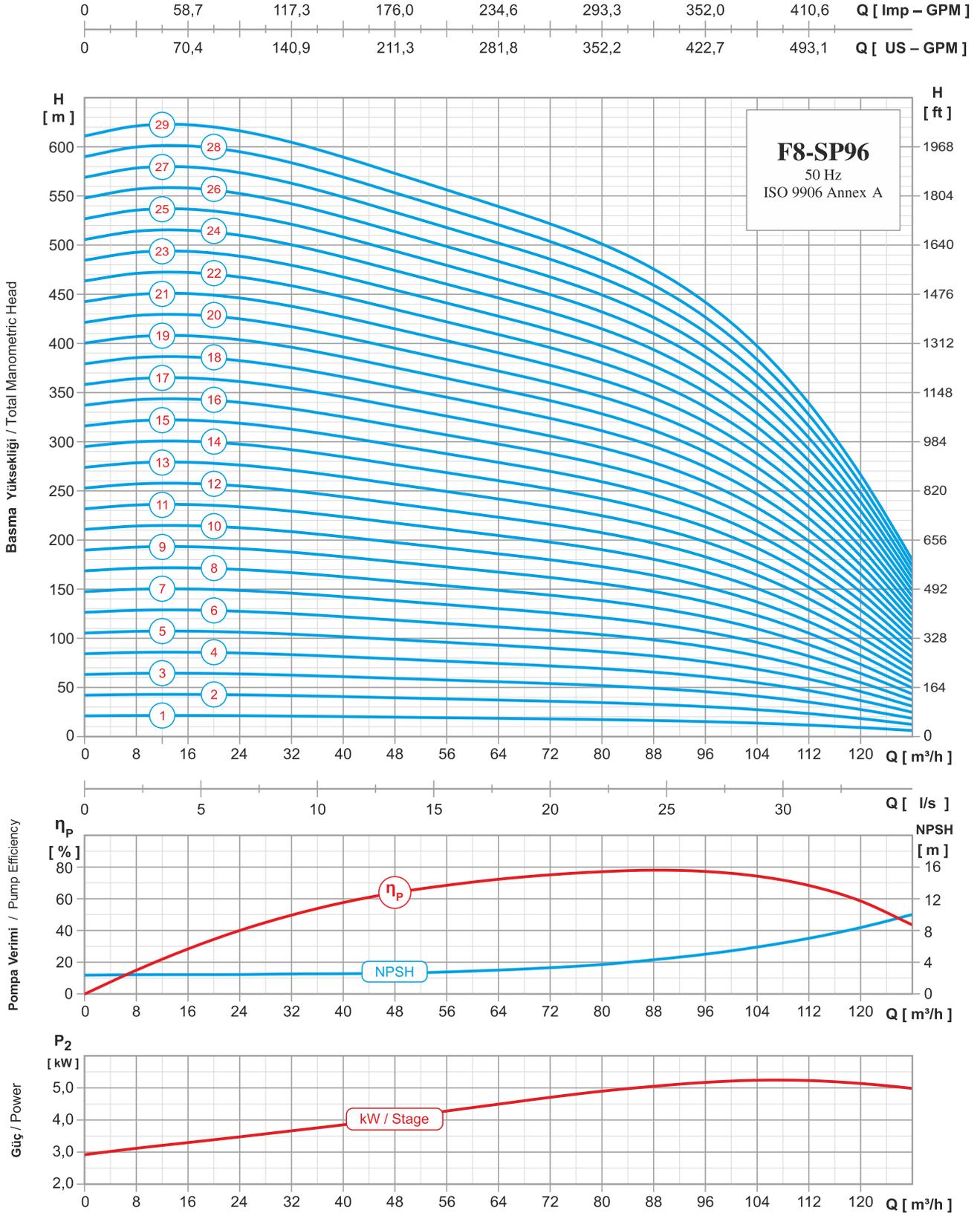
F8-SP96

Paslanmaz Çelik Pompa
Stainless Steel Pump
Karışık Akışlı
Mixed Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

3x400 V
50 Hz / 2900 rpm



Teknik Veriler

Technical Data

3x400 V
50 Hz / 2900 rpm

Pompa Tipi Motor Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Akım Current [400 V]	Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity															
		P _N	I _N						Ø Max _P	Ø D	L _P	W _P	[Imp - GPM]											
													[US - GPM]											
		[kW] [HP]							[A]	[mm]	[inch]	[mm]	[kg]	[l/s]										
							[m³/h]																	
F8-SP96 / 01	FM6	5,5	7,5	13,3	Ø 184	Rp 5 (5" İçten Pasolu 11 Dış) Rp 5 (5" Inside Threaded 11 TPI)	588	25	21	21	20	19	17	16	15	14	12	9						
F8-SP96 / 02	FM6	11	15	25,2			716	29	42	42	40	37	35	33	31	27	23	18						
F8-SP96 / 03	FM6	18,5	25	42,0			844	33	63	63	59	56	52	49	46	41	35	28						
F8-SP96 / 04	FM6	22	30	49,0			972	37	84	83	79	74	69	66	61	55	47	37						
F8-SP96 / 05	FM8	30	40	60,0			1100	41	105	104	99	93	86	82	76	69	59	46						
F8-SP96 / 06	FM8	37	50	76,0			1228	45	126	125	119	112	104	98	92	82	70	55						
F8-SP96 / 07	FM8	37	50	76,0			1356	49	148	146	138	130	121	115	107	96	82	65						
F8-SP96 / 08	FM8	45	60	90,0			1484	53	169	167	158	149	138	131	122	110	94	74						
F8-SP96 / 09	FM8	55	75	110,0			1612	57	190	188	178	167	156	148	137	123	105	83						
F8-SP96 / 10	FM8	55	75	110,0			1740	61	211	209	198	186	173	164	153	137	117	92						
F8-SP96 / 11	FM8	63	85	125,0			1868	65	232	229	217	205	190	181	168	151	129	101						
F8-SP96 / 12	FM8	63	85	125,0			1996	69	253	250	237	223	207	197	183	165	141	111						
F8-SP96 / 13	FM8	75	100	148,0			2124	73	274	271	257	242	225	213	198	178	152	120						
F8-SP96 / 14	FM8	75	100	148,0			2252	77	295	292	277	260	242	230	214	192	164	129						
F8-SP96 / 15	FM10	81	110	159,0			2380	81	316	313	296	279	259	246	229	206	176	138						
F8-SP96 / 16	FM10	92	125	180,0			2508	85	337	334	316	298	277	263	244	219	187	147						
F8-SP96 / 17	FM10	92	125	180,0			2636	89	358	354	336	316	294	279	259	233	199	157						
F8-SP96 / 18	FM10	110	150	211,0			2764	93	379	375	356	335	311	295	275	247	211	166						
F8-SP96 / 19	FM10	110	150	211,0			2892	97	400	396	375	353	328	312	290	261	223	175						
F8-SP96 / 20	FM10	110	150	211,0			3020	101	421	417	395	372	346	328	305	274	234	184						
F8-SP96 / 21	FM10	110	150	211,0			3148	105	443	438	415	391	363	345	320	288	246	194						
F8-SP96 / 22	FM10	129	175	249,0			3276	109	464	459	435	409	380	361	336	302	258	203						
F8-SP96 / 23	FM10	129	175	249,0			3404	113	485	480	454	428	398	377	351	315	269	212						
F8-SP96 / 24	FM10	129	175	249,0			3532	117	506	500	474	446	415	394	366	329	281	221						
F8-SP96 / 25	FM10	147	200	284,0			3660	121	527	521	494	465	432	410	381	343	293	230						
F8-SP96 / 26	FM10	147	200	284,0			3788	125	548	542	514	484	450	427	397	357	305	240						
F8-SP96 / 27	FM10	147	200	284,0			3916	129	569	563	534	502	467	443	412	370	316	249						
F8-SP96 / 28	FM10	166	225	318,0			4044	133	590	584	553	521	484	460	427	384	328	258						
F8-SP96 / 29	FM10	166	225	318,0			4172	137	611	605	573	539	501	476	442	398	340	267						

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

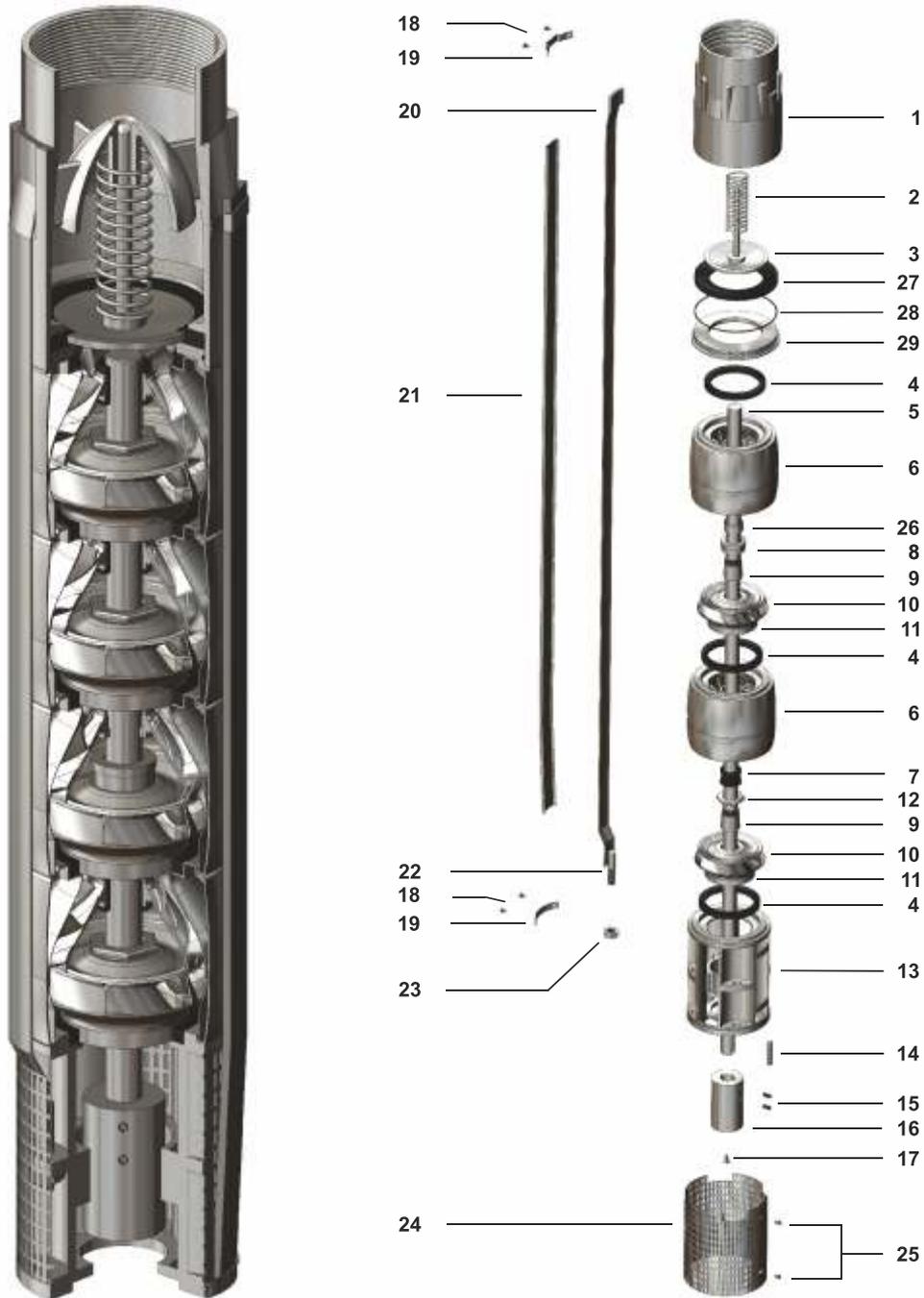
Çalışma Gerilimi / Operating Voltage	: 3 x 380V - 400V - 415V (- %10 / +%6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m ³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 25 mm - Ø 28 mm
Mil Ucu / Shaft End	: NEMA Standaardına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm ² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m ³

F10-SP110 & F10-SP120 & F10-SP160



F10-SP110 & F10-SP120 & F10-SP160

Parça Adı	Malzeme	
1	Çıkış Haznesi	AISI 304
2	Klepe Yayı	AISI 302
3	Klepe	AISI 304
4	Aşınma Halkası	KAUÇUK (NBR) + AISI 304
5	Mil	AISI 420
6	Difüzör	AISI 304
7	Kum Kanallı Difüzör Yatağı	KAUÇUK (NBR)
8	Stoper Somunu	AISI 304
9	Fan Tespit Burcu	AISI 304
10	Fan	AISI 304
11	Fan Aşınma Bileziği	AISI 304
12	Fan Tespit Somunu	AISI 304
13	Emiş Haznesi	AISI 304
14	Mil Kaması	AISI 304
15	Setskur Civatası	AISI 304
16	Kaplin	AISI 420
17	Kaplin Civatası	AISI 304
18	Kablo Muhafaza Civatası	AISI 304
19	Kablo Muhafaza Bağlantısı	AISI 304
20	Gerdirme Laması	AISI 304
21	Kablo Muhafaza Sacı	AISI 304
22	Gerdirme Laması Saplaması	AISI 304
23	Gerdirme Laması Somunu	AISI 304
24	Süzgeç	AISI 304
25	Süzgeç Civatası	AISI 304
26	Stoper	AISI 304
27	Klepe Lastiği	KAUÇUK (NBR) + ÇELİK
28	Klepe Oringi	KAUÇUK (NBR)
29	Klepe Flanşı	AISI 304

Part Name	Material	
1	Valve Casing	AISI 304
2	Valve Spring	AISI 302
3	Valve Cone	AISI 304
4	Neck Ring	RUBBER (NBR) + AISI 304
5	Shaft	AISI 420
6	Diffuser	AISI 304
7	Diffuser Bearing with Sand Channels	RUBBER (NBR)
8	Nut for Stop Ring	AISI 304
9	Split Cone	AISI 304
10	Impeller	AISI 304
11	Impeller Wear Ring	AISI 304
12	Split Cone Locknut	AISI 304
13	Suction Case	AISI 304
14	Shaft Key	AISI 304
15	Grub Screws	AISI 304
16	Coupling	AISI 420
17	Coupling Screw	AISI 304
18	Cable Guard Screws	AISI 304
19	Cable Guard Tie	AISI 304
20	Strap	AISI 304
21	Cable Guard	AISI 304
22	Strap Stud	AISI 304
23	Strap Nut	AISI 304
24	Strainer	AISI 304
25	Strainer Screws	AISI 304
26	Stop Ring	AISI 304
27	Valve Seat	RUBBER (NBR) + STEEL
28	Valve O-ring	RUBBER (NBR)
29	Valve Ring	AISI 304

F10-SP110

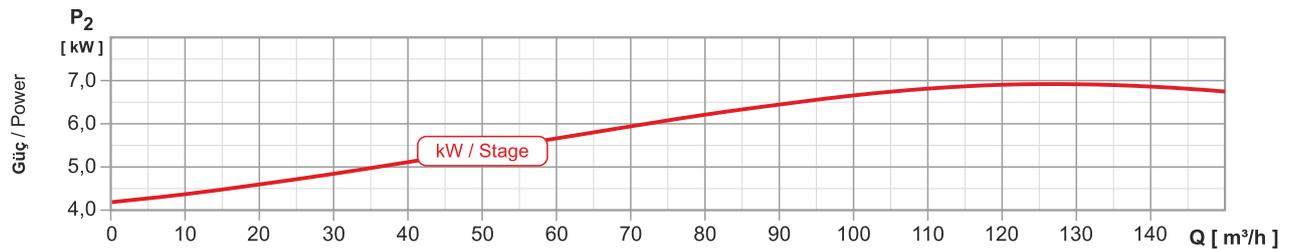
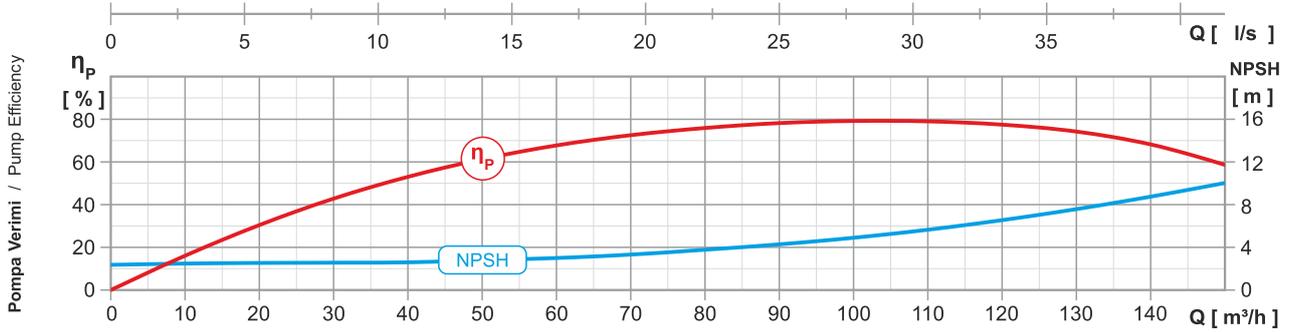
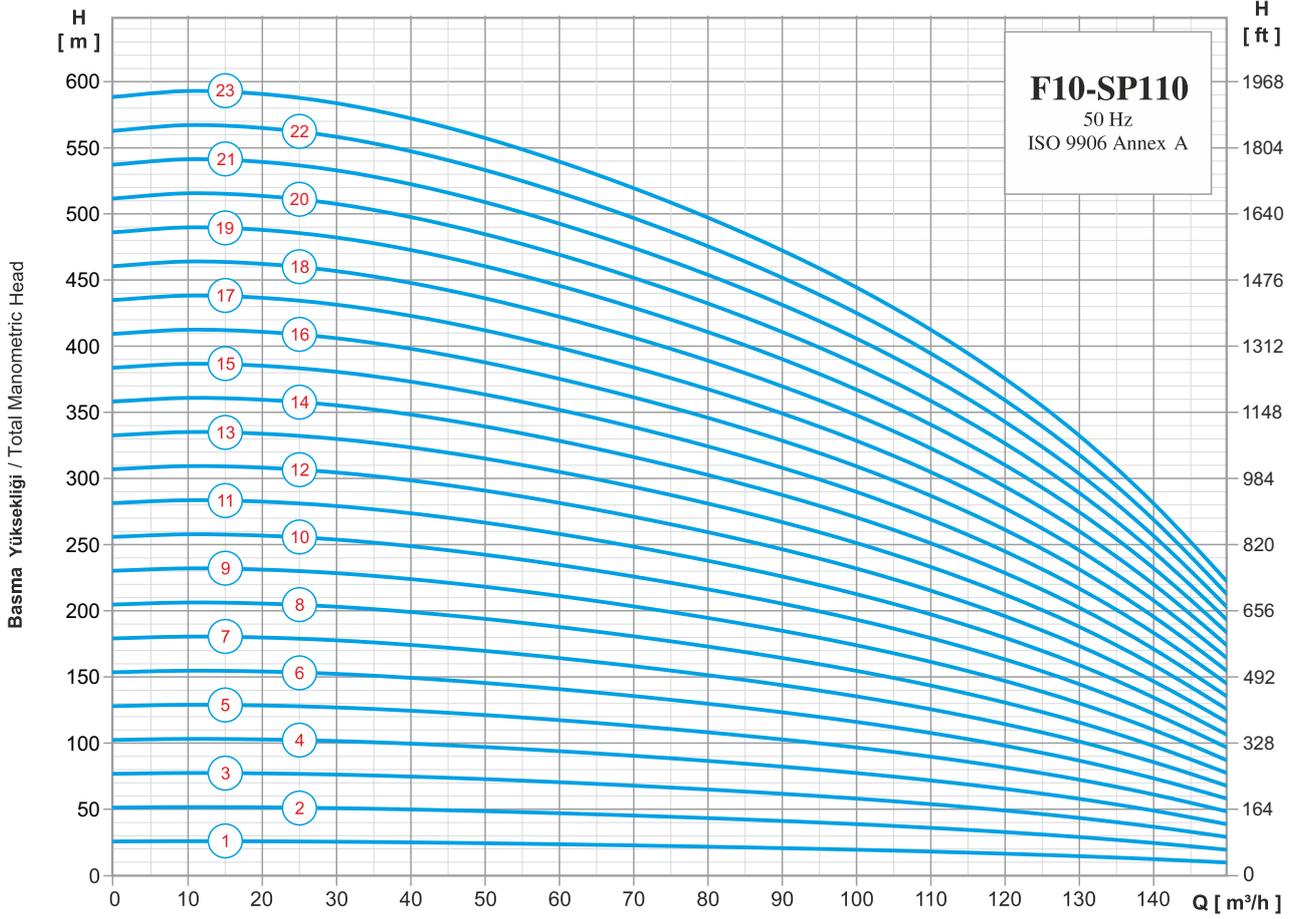
Paslanmaz Çelik Pompa
Stainless Steel Pump
Karışık Akışlı
Mixed Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

3x400 V
50 Hz / 2900 rpm

0 36,7 73,3 110,0 146,6 183,3 220,0 256,6 293,3 330,0 366,6 403,3 439,9 476,6 Q [Imp – GPM]
0 44,0 88,1 132,1 176,1 220,1 264,2 308,2 352,2 396,3 440,3 484,3 528,3 572,4 Q [US – GPM]



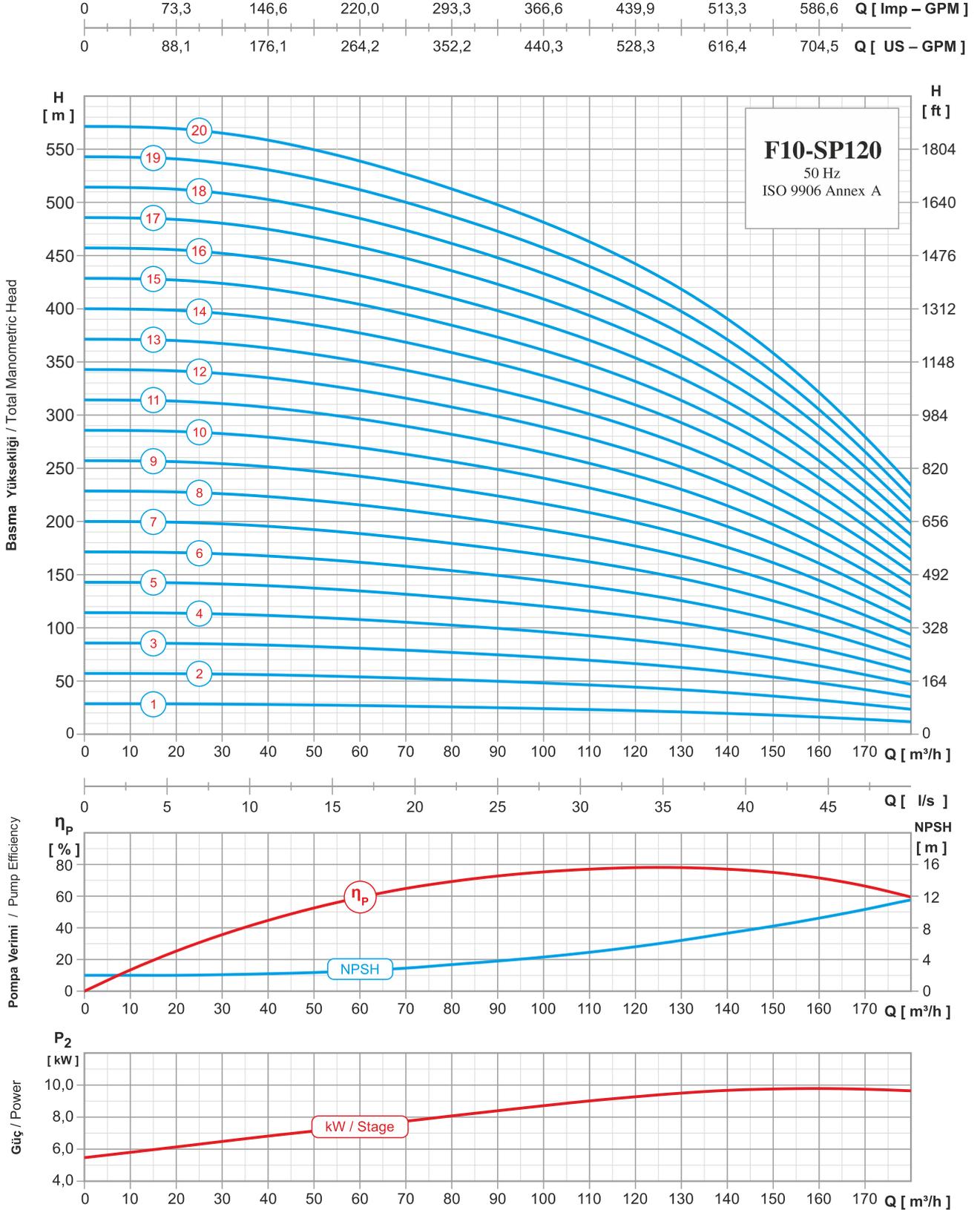
F10-SP120

Paslanmaz Çelik Pompa
Stainless Steel Pump
Karışık Akışlı
Mixed Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

3x400 V
50 Hz / 2900 rpm



Teknik Veriler

Technical Data

3x400 V
50 Hz / 2900 rpm

Pompa Tipi Motor Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Akım Current [400 V]	Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity															
		P _N	I _N						Ø Max _P	Ø D	L _P	W _P	[Imp - GPM]											
													[US - GPM]											
													[l/s]											
[kW] [HP]		[A]	[mm]	[inch]	[mm]	[kg]	[m³/h]																	
F10-SP120 / 01	FM6	11	15	25,2	Ø 226	Rp 6 (6" İçten Pasolu 11 Diş) Rp 6 (6" Inside Threaded 11 TPI)	666	39	Basma Yüksekliği / Total Manometric Head [m]	29	27	26	25	23	22	21	20	18	16					
F10-SP120 / 02	FM6	22	30	49,0			821	45		57	55	53	50	46	44	42	39	36	32					
F10-SP120 / 03	FM8	30	40	60,0			977	51		86	82	79	75	69	66	63	59	54	48					
F10-SP120 / 04	FM8	45	60	90,0			1132	58		114	110	105	100	93	88	84	78	72	64					
F10-SP120 / 05	FM8	55	75	110,0			1288	64		143	137	132	124	116	111	105	98	90	80					
F10-SP120 / 06	FM8	63	85	125,0			1443	70		171	165	158	149	139	133	126	117	107	96					
F10-SP120 / 07	FM8	75	100	148,0			1599	77		200	192	184	174	162	155	146	137	125	112					
F10-SP120 / 08	FM10	81	110	159,0			1754	83		229	220	211	199	185	177	167	156	143	129					
F10-SP120 / 09	FM10	92	125	180,0			1910	89		257	247	237	224	208	199	188	176	161	145					
F10-SP120 / 10	FM10	110	150	211,0			2065	96		286	275	263	249	232	221	209	195	179	161					
F10-SP120 / 11	FM10	110	150	211,0			2221	102		314	302	290	274	255	243	230	215	197	177					
F10-SP120 / 12	FM10	129	175	249,0			2376	108		343	330	316	299	278	265	251	234	215	193					
F10-SP120 / 13	FM10	147	200	284,0			2532	114		371	357	342	324	301	287	272	254	233	209					
F10-SP120 / 14	FM10	147	200	284,0			2687	121		400	385	368	348	324	310	293	273	251	225					
F10-SP120 / 15	FM10	166	225	318,0			2843	127		429	412	395	373	347	332	314	293	269	241					
F10-SP120 / 16	FM10	166	225	318,0			2998	133		457	440	421	398	370	354	335	312	287	257					
F10-SP120 / 17	FM10	185	250	358,0			3154	140		486	467	447	423	394	376	356	332	305	273					
F10-SP120 / 18	FM10	185	250	358,0			3309	146		514	495	474	448	417	398	377	352	322	289					
F10-SP120 / 19	FM12	200	275	386,0			3465	152		543	522	500	473	440	420	397	371	340	305					
F10-SP120 / 20	FM12	220	300	425,0			3620	159		571	550	526	498	463	442	418	391	358	321					

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

Çalışma Gerilimi / Operating Voltage	: 3 x 380V - 400V - 415V (- %10 / +%6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m ³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 32 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm ² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m ³

F10-SP160

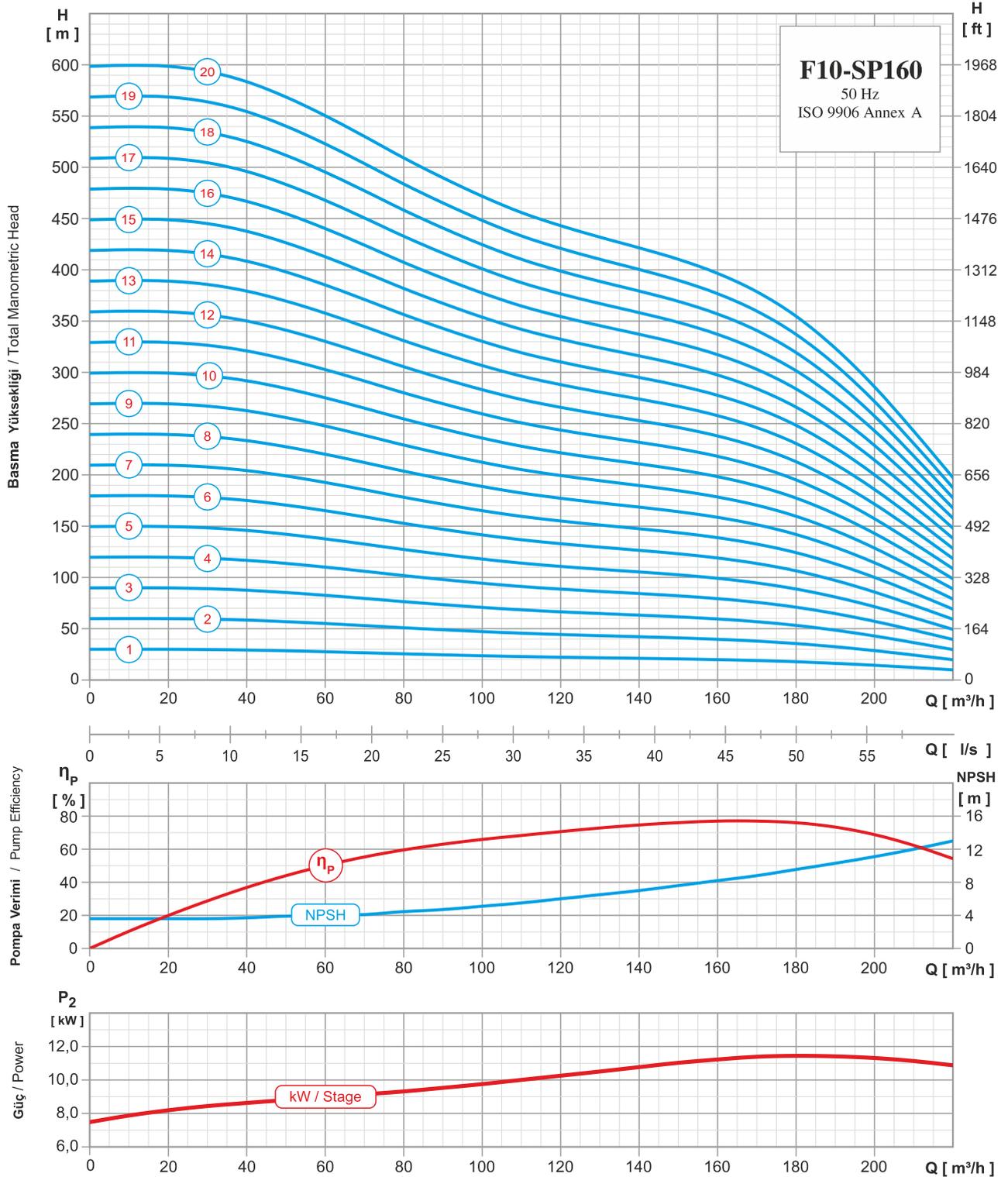
Paslanmaz Çelik Pompa
Stainless Steel Pump
Karışık Akışlı
Mixed Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

3x400 V
50 Hz / 2900 rpm

0 73,3 146,6 220,0 293,3 366,6 439,9 513,3 586,6 659,9 773,2 [Imp – GPM]
0 88,1 176,1 264,2 352,2 440,3 528,3 616,4 704,5 792,5 880,6 Q [US – GPM]



Teknik Veriler

Technical Data

3x400 V
50 Hz / 2900 rpm

Pompa Tipi Motor Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Akım Current [400 V]	Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity															
		P _N	I _N						Ø Max _P	Ø D	L _P	W _P	[Imp - GPM]											
													[US - GPM]											
													[l/s]											
[kW] [HP]		[A]	[mm]	[inch]	[mm]	[kg]	[m³/h]																	
F10-SP160 / 01	FM6	13	17,5	29,6	Ø 226	Rp 6 (6" İçten Pasolu 11 Diş) Rp 6 (6" Inside Threaded 11 TPI)	666	39	Basma Yüksekliği / Total Manometric Head [m]	30	29	28	25	24	22	21	20	18	14					
F10-SP160 / 02	FM6	26	35	56,7			821	45		60	58	55	51	47	44	42	40	35	29					
F10-SP160 / 03	FM8	37	50	76,0			977	51		90	88	83	76	71	66	63	59	53	43					
F10-SP160 / 04	FM8	52	70	103,0			1132	58		120	117	110	102	94	89	84	79	71	57					
F10-SP160 / 05	FM8	60	80	117,0			1288	64		150	146	138	127	118	111	105	99	89	71					
F10-SP160 / 06	FM8	70	95	138,0			1443	70		180	175	165	153	142	133	126	119	106	86					
F10-SP160 / 07	FM10	81	110	159,0			1599	77		209	204	193	178	165	155	148	139	124	100					
F10-SP160 / 08	FM10	92	125	180,0			1754	83		239	233	220	204	189	177	169	159	142	114					
F10-SP160 / 09	FM10	110	150	211,0			1910	89		269	263	248	229	212	199	190	178	160	129					
F10-SP160 / 10	FM10	129	175	249,0			2065	96		299	292	275	255	236	222	211	198	177	143					
F10-SP160 / 11	FM10	129	175	249,0			2221	102		329	321	303	280	260	244	232	218	195	157					
F10-SP160 / 12	FM10	147	200	284,0			2376	108		359	350	330	306	283	266	253	238	213	171					
F10-SP160 / 13	FM10	166	225	318,0			2532	114		389	379	358	331	307	288	274	258	231	186					
F10-SP160 / 14	FM10	166	225	318,0			2687	121		419	408	385	356	330	310	295	278	248	200					
F10-SP160 / 15	FM10	185	250	358,0			2843	127		449	438	413	382	354	332	316	297	266	214					
F10-SP160 / 16	FM12	200	275	386,0			2998	133		479	467	440	407	377	354	337	317	284	229					
F10-SP160 / 17	FM12	200	275	386,0			3154	140		509	496	468	433	401	377	358	337	301	243					
F10-SP160 / 18	FM12	220	300	425,0			3309	146		539	525	495	458	425	399	379	357	319	257					
F10-SP160 / 19	FM12	240	325	469,0			3465	152		569	554	523	484	448	421	400	377	337	271					
F10-SP160 / 20	FM12	240	325	469,0			3620	159		599	584	550	509	472	443	421	397	355	286					

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

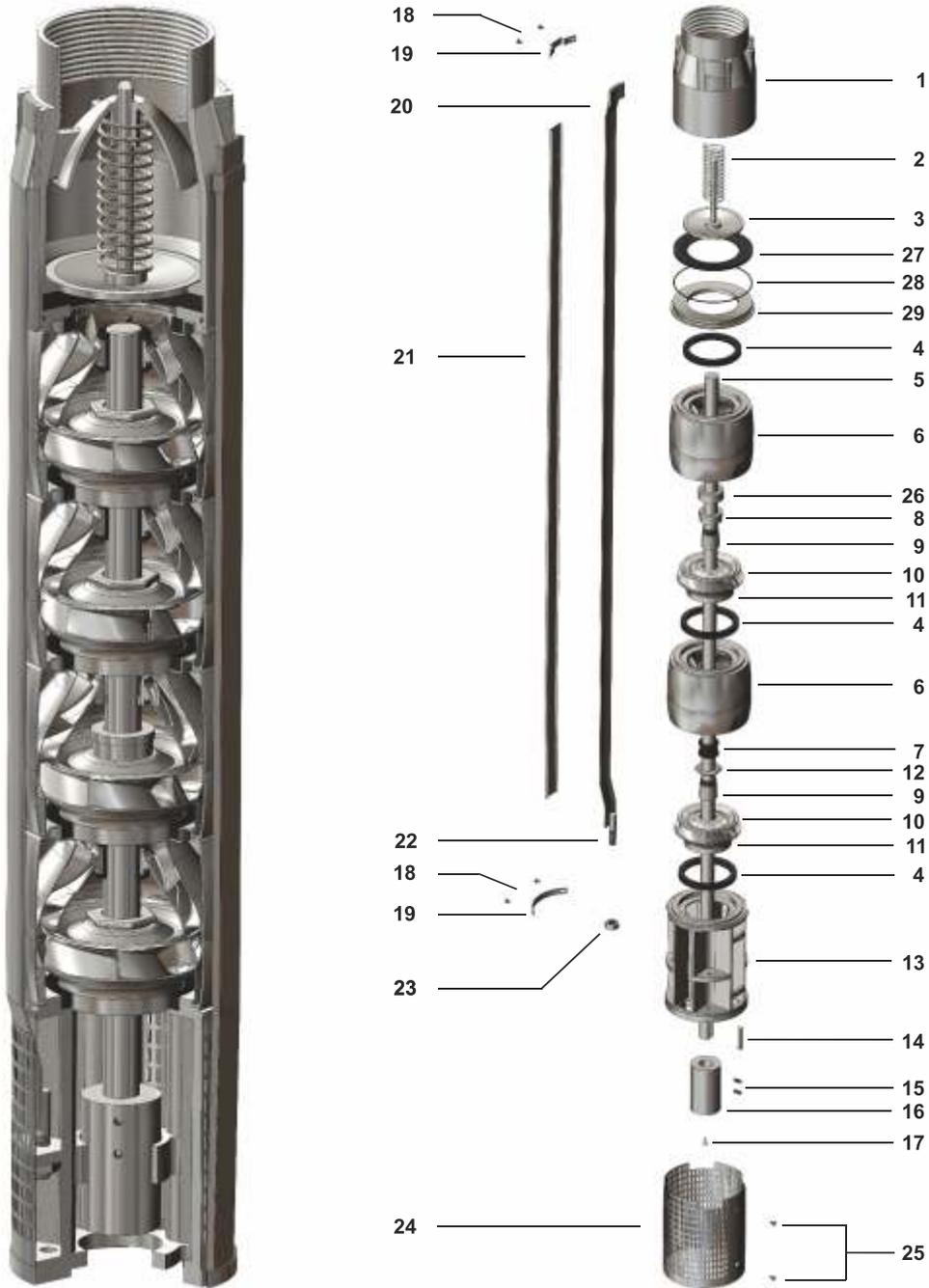
Çalışma Gerilimi / Operating Voltage	: 3 x 380V - 400V - 415V (- %10 / + %6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m ³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 32 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm ² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m ³

F10-SP210





F10-SP210

Parça Adı	Malzeme	
1	Çıkış Haznesi	AISI 304
2	Klepe Yayı	AISI 302
3	Klepe	AISI 304
4	Aşınma Halkası	KAUÇUK (NBR) + AISI 304
5	Mil	AISI 420
6	Difüzör	AISI 304
7	Kum Kanallı Difüzör Yatağı	KAUÇUK (NBR)
8	Stoper Somunu	AISI 304
9	Fan Tespit Burcu	AISI 304
10	Fan	AISI 304
11	Fan Aşınma Bileziği	AISI 304
12	Fan Tespit Somunu	AISI 304
13	Emiş Haznesi	AISI 304
14	Mil Kaması	AISI 304
15	Setskur Civatası	AISI 304
16	Kaplin	AISI 420
17	Kaplin Civatası	AISI 304
18	Kablo Muhafaza Civatası	AISI 304
19	Kablo Muhafaza Bağlantısı	AISI 304
20	Gerdirme Laması	AISI 304
21	Kablo Muhafaza Sacı	AISI 304
22	Gerdirme Laması Saplaması	AISI 304
23	Gerdirme Laması Somunu	AISI 304
24	Süzgeç	AISI 304
25	Süzgeç Civatası	AISI 304
26	Stoper	AISI 304
27	Klepe Lastiği	KAUÇUK (NBR) + ÇELİK
28	Klepe Oringi	KAUÇUK (NBR)
29	Klepe Flanşı	AISI 304

Part Name	Material	
1	Valve Casing	AISI 304
2	Valve Spring	AISI 302
3	Valve Cone	AISI 304
4	Neck Ring	RUBBER (NBR) + AISI 304
5	Shaft	AISI 420
6	Diffuser	AISI 304
7	Diffuser Bearing with Sand Channels	RUBBER (NBR)
8	Nut for Stop Ring	AISI 304
9	Split Cone	AISI 304
10	Impeller	AISI 304
11	Impeller Wear Ring	AISI 304
12	Split Cone Locknut	AISI 304
13	Suction Case	AISI 304
14	Shaft Key	AISI 304
15	Grub Screws	AISI 304
16	Coupling	AISI 420
17	Coupling Screw	AISI 304
18	Cable Guard Screws	AISI 304
19	Cable Guard Tie	AISI 304
20	Strap	AISI 304
21	Cable Guard	AISI 304
22	Strap Stud	AISI 304
23	Strap Nut	AISI 304
24	Strainer	AISI 304
25	Strainer Screws	AISI 304
26	Stop Ring	AISI 304
27	Valve Seat	RUBBER (NBR) + STEEL
28	Valve O-ring	RUBBER (NBR)
29	Valve Ring	AISI 304

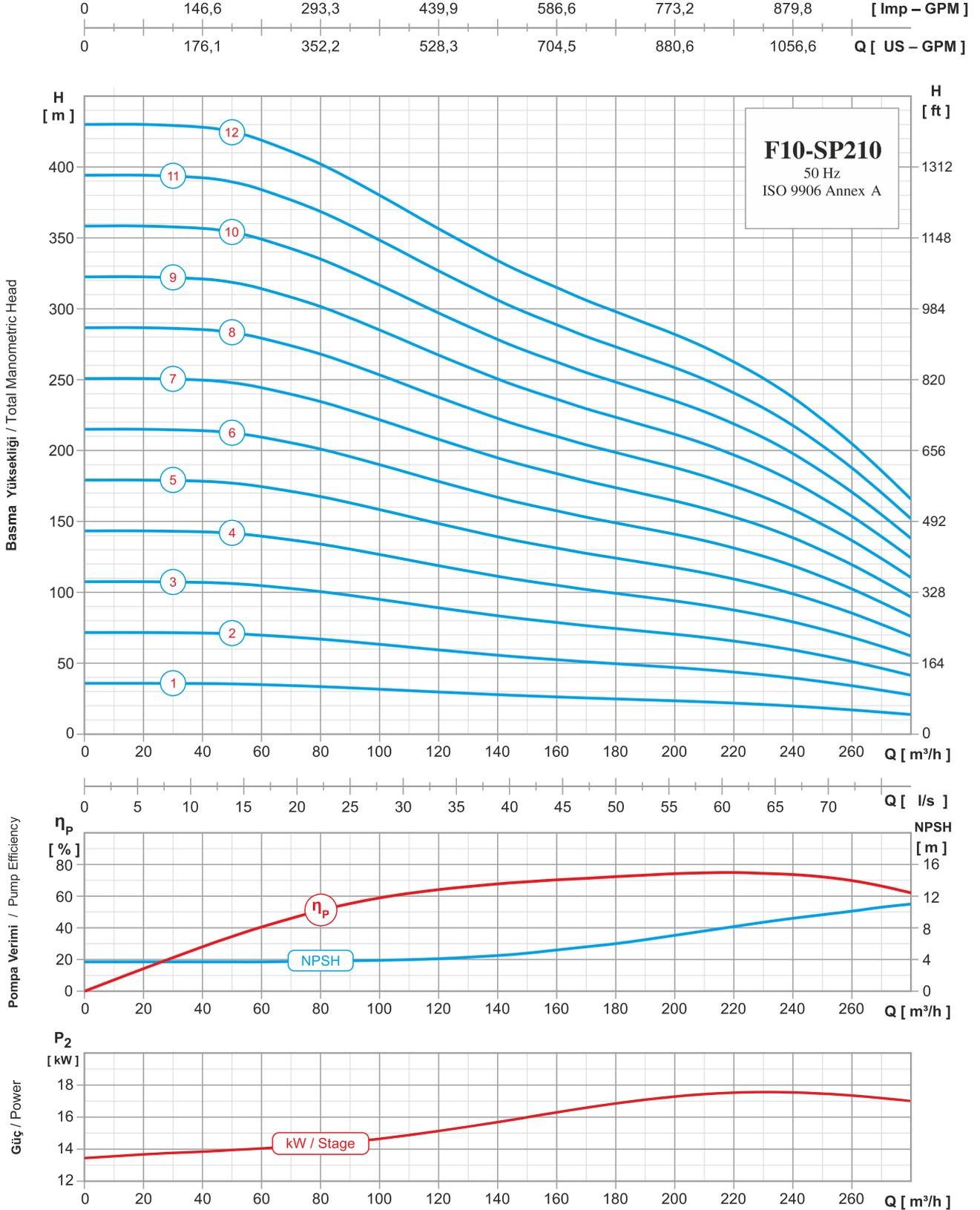
F10-SP210

Paslanmaz Çelik Pompa
Stainless Steel Pump
Karışık Akışlı
Mixed Flow

Ferat
WATER TECHNOLOGIES

Performans Eğrileri Performance Curves

3x400 V
50 Hz / 2900 rpm



Teknik Veriler

Technical Data

3x400 V
50 Hz / 2900 rpm

Pompa Tipi Pump Type	Motor Tipi Motor Type	Motor Gücü Motor Power		Akım Current [400 V]	Maks. Pompa Çapı Max. Pump Dia	Çıkış Çapı Outlet Diameter	Pompa Boyu Pump Length	Pompa Ağırlığı Pump Weight	[Q] Kapasite - Capacity															
		P _N	I _N						Ø Max _P	Ø D	L _P	W _P	[Imp - GPM]											
													[US - GPM]											
		[kW] [HP]							[A]	[mm]	[inch]	[mm]	[kg]	[l/s]										
							[m³/h]																	
F10-SP210 / 01	FM6	18,5	25	42,0	Ø 247	Rp 6 (6" İçten Pasolu 11 Diş) Rp 6 (6" Inside Threaded 11 TPI)	762	51	[H] Basma Yüksekliği Total Manometric Head [m]	36	35	32	27	26	24	23	21	19	16					
F10-SP210 / 02	FM8	37	50	76,0			938	61		72	71	63	54	51	48	46	42	37	31					
F10-SP210 / 03	FM8	55	75	110,0			1114	72		107	106	95	81	77	73	68	63	56	47					
F10-SP210 / 04	FM8	75	100	148,0			1290	83		143	142	127	108	102	97	91	84	74	62					
F10-SP210 / 05	FM10	92	125	180,0			1466	94		179	177	158	135	128	121	114	105	93	78					
F10-SP210 / 06	FM10	110	150	211,0			1642	105		215	212	190	162	153	145	137	126	111	93					
F10-SP210 / 07	FM10	129	175	249,0			1818	115		251	248	222	189	179	169	159	146	130	109					
F10-SP210 / 08	FM10	147	200	284,0			1994	126		287	283	253	216	204	193	182	167	148	124					
F10-SP210 / 09	FM10	166	225	318,0			2170	137		322	319	285	243	230	218	205	188	167	140					
F10-SP210 / 10	FM10	185	250	358,0			2346	148		358	354	317	270	255	242	228	209	185	155					
F10-SP210 / 11	FM12	200	275	386,0			2522	159		394	389	348	297	281	266	250	230	204	171					
F10-SP210 / 12	FM12	220	300	425,0			2698	169		430	425	380	324	306	290	273	251	222	186					

Performans Toleransları / Performance Tolerances : EN ISO 9906

Çalışma Koşulları

Working Conditions

Çalışma Gerilimi / Operating Voltage	: 3 x 380V - 400V - 415V (- %10 / +%6)
Frekans / Frequency	: 50 Hz
Maks. Su Sıcaklığı / Max. Water Temp.	: 40 °C
Maks. Kum Miktarı / Max. Sand Amount	: 50 g / m³
Dönüş Yönü / Rotation	: Saatin Tersi Yönünde / Counterclockwise
Dönüş Hızı / Rotational Speed	: 2900 rpm
Mil Çapı / Shaft Diameter	: Ø 45 mm
Mil Ucu / Shaft End	: NEMA Stadarına Uygun / According to NEMA Standard

Performans Parametreleri

Performance Parameters

Atmosferik Basınç / Atmospheric Pressure	: 1 Bar
Su Sıcaklığı / Water Temp.	: 15 °C
Kinematik Viskozite / Kinematic Viscosity	: 1 mm² / s
Özgül Yoğunluk / Specific Density	: 1000 kg / m³

4" Motor / 1 X 220 V - 50 Hz - 2 Poles

Motor Tipi Motor Type	Motor Gücü Motor Power		Voltaj Voltage	Devir Rotational Speed	Nominal Akım Nominal Current	Verim Efficiency			Güç Faktörü Power Factor		
	P _N					U _N	η _N	I _N	[η %]		
	[kW]	[HP]	[V]	[rpm]	[A]						
FM4	0,37	0,5	220	2830	3,6	53			0,88		
FM4	0,55	0,75	220	2830	4,8	58			0,89		
FM4	0,75	1	220	2830	6,3	60			0,90		
FM4	1,1	1,5	220	2820	8,6	64			0,90		
FM4	1,5	2	220	2820	10,6	70			0,94		
FM4	2,2	3	220	2820	14,0	74			0,96		

4" Motor / 3 X 380 V - 50 Hz - 2 Poles

Motor Tipi Motor Type	Motor Gücü Motor Power		Voltaj Voltage	Devir Rotational Speed	Nominal Akım Nominal Current	Verim Efficiency			Güç Faktörü Power Factor		
	P _N					U _N	η _N	I _N	[η %]		
	[kW]	[HP]	[V]	[rpm]	[A]						
FM4	0,75	1	380	2800	2,2	64			0,81		
FM4	1,1	1,5	380	2810	3,0	68			0,82		
FM4	1,5	2	380	2820	3,85	72			0,82		
FM4	2,2	3	380	2820	5,6	72			0,83		
FM4	3	4	380	2820	7,3	75			0,83		
FM4	4	5,5	380	2820	9,5	77			0,83		
FM4	5,5	7,5	380	2820	12,6	78			0,85		
FM4	7,5	10	380	2820	16,9	79			0,85		

6" Motor / 3 X 400 V - 50 Hz - 2 Poles

Motor Tipi Motor Type	Motor Gücü Motor Power		Voltaj Voltage	Devir Rotational Speed	Nominal Akım Nominal Current	Verim Efficiency [η %]			Güç Faktörü Power Factor [Cos Ø]		
	P _N					U _N	η _N	I _N	% load		
	[kW]	[HP]	[V]	[rpm]	[A]	50 %	75 %	100 %	50 %	75 %	100 %
FM6	3	4	400	2887	7,8	68	73	76	0,53	0,65	0,73
FM6	4,5	6	400	2887	11,6	68	73	76	0,53	0,65	0,73
FM6	5,5	7,5	400	2877	13,3	72	76	76	0,61	0,72	0,79
FM6	7,5	10	400	2893	17,7	75	78	77	0,64	0,74	0,80
FM6	9,3	12,5	400	2888	21,4	78	79	78	0,63	0,74	0,80
FM6	11	15	400	2894	25,2	77	80	79	0,64	0,74	0,81
FM6	13	17,5	400	2897	29,6	78	80	80	0,60	0,72	0,79
FM6	15	20	400	2889	33,1	79	81	81	0,64	0,75	0,81
FM6	18,5	25	400	2880	42,0	78	81	81	0,60	0,72	0,78
FM6	22	30	400	2884	49,0	80	82	83	0,60	0,71	0,78
FM6	26	35	400	2881	56,7	81	83	83	0,60	0,71	0,80
FM6	30	40	400	2858	66,4	80	83	83	0,59	0,71	0,79
FM6	37	50	400	2854	81,9	80	83	83	0,59	0,70	0,79
FM6	45	60	400	2830	97,0	81	84	84	0,60	0,71	0,80

7"- 8" Motor / 3 X 400 V - 50 Hz - 2 Poles

Motor Tipi Motor Type	Motor Gücü Motor Power		Voltaj Voltage	Devir Rotational Speed	Nominal Akım Nominal Current	Verim Efficiency [η %]			Güç Faktörü Power Factor [$\cos \phi$]		
	P_N					U_N	n_N	I_N	% load		
	[kW]	[HP]	[V]	[rpm]	[A]	50 %	75 %	100 %	50 %	75 %	100 %
FM7	22	30	400	2902	48	80	82	83	0,62	0,72	0,80
FM7	30	40	400	2901	64	84	85	84	0,63	0,74	0,81
FM7	37	50	400	2898	76	84	85	84	0,65	0,78	0,84
FM7	45	60	400	2885	92	87	88	86	0,66	0,77	0,83
FM7	55	75	400	2892	118	83	85	85	0,65	0,76	0,80
FM7	63	85	400	2898	128	85	86	85	0,65	0,77	0,84
FM8	22	30	400	2905	44	82,6	83,6	83,1	0,80	0,85	0,87
FM8	30	40	400	2905	60	83,6	85,0	84,3	0,78	0,84	0,87
FM8	37	50	400	2902	76	83,9	85,2	84,6	0,72	0,80	0,84
FM8	45	60	400	2904	90	85,3	86,5	85,9	0,72	0,80	0,84
FM8	55	75	400	2898	110	85,9	87,0	86,4	0,70	0,80	0,84
FM8	63	85	400	2898	125	85,9	87,0	86,4	0,70	0,80	0,84
FM8	70	95	400	2893	138	86,1	87,1	86,4	0,71	0,81	0,85
FM8	75	100	400	2886	148	86,2	87,3	86,7	0,73	0,81	0,85
FM8	81	110	400	2890	163	86,2	87,3	86,7	0,71	0,79	0,83
FM8	92	125	400	2893	183	87,2	88,3	87,8	0,71	0,79	0,83
FM8	110	150	400	2876	218	88,0	88,5	87,9	0,71	0,79	0,83

9" - 10" - 12" Motor / 3 X 400 V - 50 Hz - 2 Poles

Motor Tipi Motor Type	Motor Gücü Motor Power		Voltaj Voltage	Devir Rotational Speed	Nominal Akım Nominal Current	Verim Efficiency [η %]			Güç Faktörü Power Factor [$\cos \phi$]		
	P_N					U_N	n_N	I_N	% load		
	[kW]	[HP]	[V]	[rpm]	[A]	50 %	75 %	100 %	50 %	75 %	100 %
FM9	75	100	400	2910	148	82,5	84,5	84,0	0,77	0,83	0,86
FM9	81	110	400	2915	162	82,5	84,5	84,0	0,77	0,83	0,86
FM9	92	125	400	2913	182	83,5	85,5	85,0	0,77	0,83	0,86
FM9	110	150	400	2920	213	84,5	86,5	86,0	0,78	0,84	0,87
FM9	129	175	400	2920	252	86,0	86,5	86,0	0,73	0,81	0,86
FM10	75	100	400	2910	147	86,0	86,5	85,0	0,82	0,85	0,87
FM10	81	110	400	2915	159	86,0	86,5	85,0	0,82	0,85	0,87
FM10	92	125	400	2913	180	86,0	86,5	85,0	0,82	0,85	0,87
FM10	110	150	400	2920	211	87,0	87,5	86,0	0,83	0,86	0,88
FM10	129	175	400	2912	249	87,0	87,0	87,5	0,80	0,85	0,86
FM10	147	200	400	2920	284	85,0	88,0	87,0	0,78	0,84	0,86
FM10	166	225	400	2909	318	87,0	88,0	87,0	0,78	0,84	0,87
FM10	185	250	400	2921	358	85,0	87,5	88,0	0,74	0,83	0,85
FM12	200	275	400	2935	386	87,0	88,0	87,0	0,79	0,85	0,86
FM12	220	300	400	2930	425	88,0	89,0	87,0	0,80	0,86	0,86
FM12	240	325	400	2930	469	88,0	89,0	87,0	0,81	0,86	0,85
FM12	260	350	400	2930	496	88,0	89,0	88,0	0,81	0,86	0,86
FM12	300	400	400	2925	560	88,0	89,0	88,0	0,85	0,89	0,88
FM12	340	450	400	2925	642	88,0	88,0	87,0	0,82	0,87	0,88
FM12	380	500	400	2925	709	89,0	89,0	89,0	0,82	0,87	0,87

Kablo Seçim Tablosu

Cable Selection Table



Direkt Yol Verme (D.O.L.) • Direct Starting (D.O.L.)

380 V - 50 Hz

Motor Gücü Motor Power		İzin Verilen Max. Besleme Kablo Uzunluğu (m) / Max. Permitted Length of Feeding Cables (m)														30 ° C	
		Kablo Kesiti 3x... (mm ²) / Cable Cross-Section 3x...(mm ²)															
kW	HP	1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300
3	4	77	126	205	301	526											
4,5	6	65	108	172	258	431											
5,5	7,5	48	80	129	193	322	515										
7,5	10	38	64	102	153	256	409										
9,3	12,5		52	83	125	209	334	522									
11	15		45	72	109	181	289	452									
13	17,5			61	92	153	245	383	536								
15	20			53	80	134	214	335	470								
18,5	25				64	107	172	269	376	538							
22	30				55	92	148	231	323	462							
26	35					77	123	192	269	384	538						
30	40					68	110	171	240	343	481						
37	50						88	137	192	275	385	523					
45	60						74	115	160	229	321	435	550				
55	75							92	129	185	259	352	444	555			
63	85							83	120	174	240	330	414	522			
70	95								103	154	210	292	360	462	570		
75	100								94	135	189	257	324	405	501		
81	110									127	178	242	305	381	472	610	
92	125									115	160	217	275	345	423	550	
110	150										130	188	228	294	343	470	588
129	175										112	154	201	252	300	402	504
147	200											136	175	219	265	350	438
166	225											122	158	198	238	316	396
185	250												141	177	215	282	354
200	275												130	162	197	260	324
220	300													147	179	236	294
240	325													135	162	214	270
260	350														150	198	246
300	400														133	174	216
340	450															152	192
380	500															138	174

ISINMA SINIRI
HEATING LIMIT

Yıldız - Üçgen Yol Verme (λ / Δ) • Star - Delta Starting (λ / Δ)

380 V - 50 Hz

Motor Gücü Motor Power		İzin Verilen Max. Besleme Kablo Uzunluğu (m) / Max. Permitted Length of Feeding Cables (m)														30 ° C		
		Kablo Kesiti 3x... (mm ²) / Cable Cross-Section 3x...(mm ²)																
kW	HP	1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185	240	300	
3	4	117	195	308	450	790												
4,5	6	97	161	258	388	647												
5,5	7,5	72	121	193	299	483	772											
7,5	10	57	96	153	230	384	613											
9,3	12,5	47	78	125	188	314	501	783										
11	15	41	68	109	163	272	434	678										
13	17,5	34	57	92	138	230	367	574	804									
15	20		49	79	120	201	321	502	705									
18,5	25		40	64	96	160	258	403	564	807								
22	30			55	82	138	222	346	484	721								
26	35			45	69	116	184	288	403	576	807							
30	40				61	102	165	256	360	514	721							
37	50				51	84	132	205	288	412	577	784						
45	60					71	110	172	241	344	481	653						
55	75					58	91	138	193	277	388	528	665					
63	85						80	125	182	255	360	490	615					
70	95						72	110	155	225	318	433	543	693				
75	100							100	142	202	283	385	485	608				
81	110							92	134	191	267	363	458	572	708			
92	125								120	171	240	325	411	518	635			
110	150								97	138	193	284	342	441	515	705		
129	175									121	169	231	302	378	450	603	756	
147	200										150	204	263	328	398	525	657	
166	225										135	183	237	297	357	474	594	
185	250											163	212	266	323	423	531	
200	275											152	195	243	296	390	486	
220	300												177	220	269	354	441	
240	325													161	203	243	321	405
260	350													149	185	225	297	369
300	400														162	200	261	324
340	450															173	228	288
380	500															158	207	261

ISINMA SINIRI
HEATING LIMIT

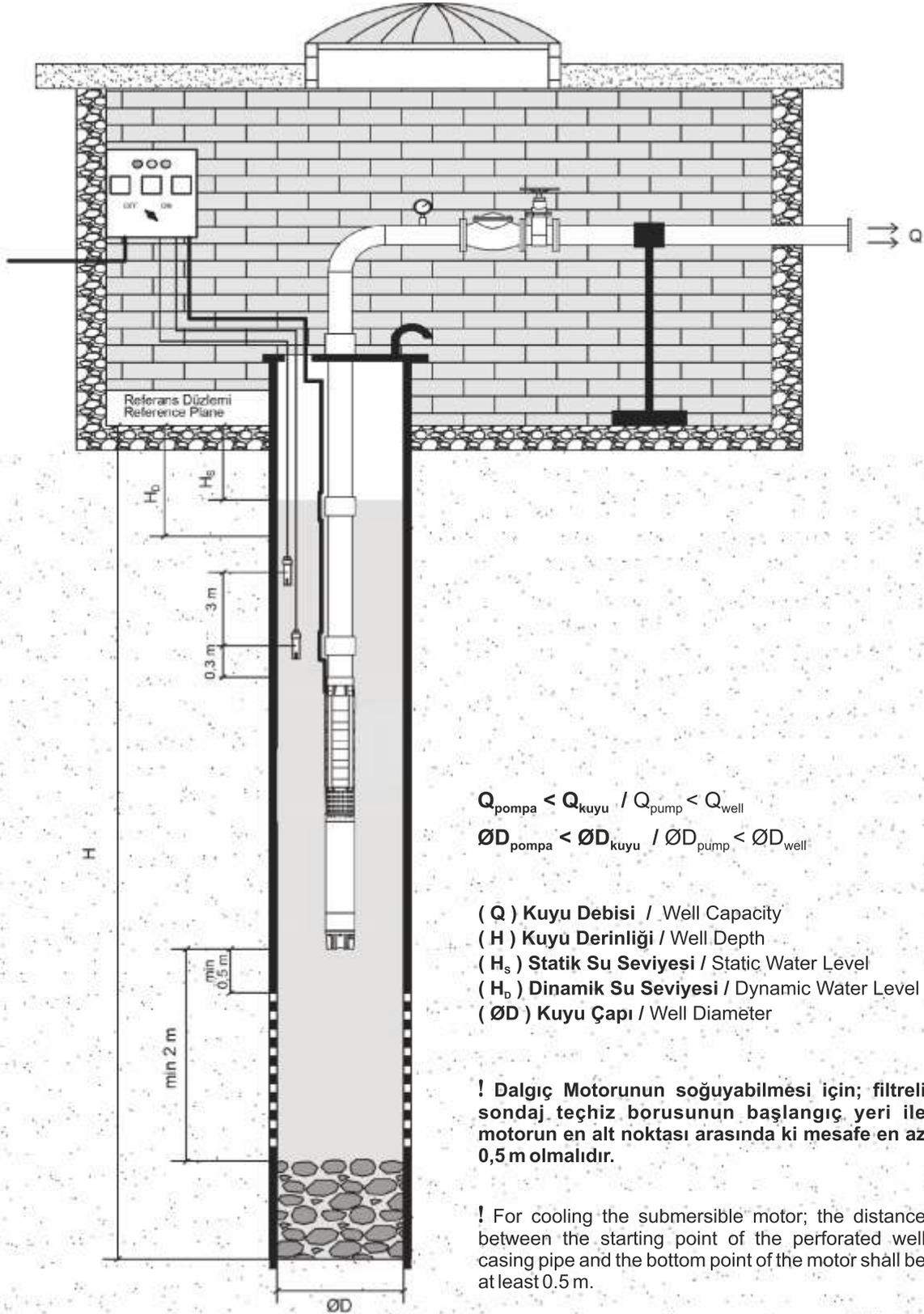
- Tablodaki değerler bakır kesitli kablolar için hesaplanmıştır.
- Müsaade edilen kablo uzunlukları % 3 gerilim düşümüne göre hesaplanmıştır.

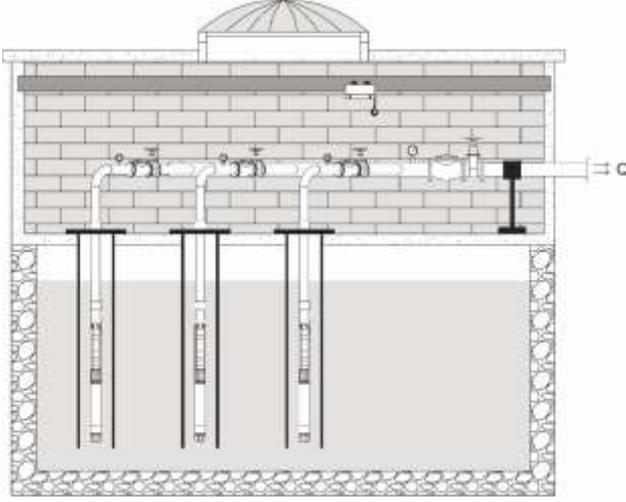
- The values in the table are calculated for copper cross section cables.
- Permitted cable lengths are calculated according to % 3 voltage drop.

Motor Gücü Motor Power		Tavsiye Edilen Minimum Jeneratör Güçleri / Recommended Minimum Generator Powers							
		Direkt Yol Verme Direct Starting		Yıldız-Üçgen Yol Verme Star-Delta Starting		Soft-Start ile Yol Verme Starting with Soft-Start		Inverter ile Yol Verme Starting with Inverter	
kW	HP	kW	kVA	kW	kVA	kW	kVA	kW	kVA
3	4	8	10	6	8	6	8	5	7
4,5	6	10	13	8	10	9	12	7	10
5,5	7,5	13	16	11	14	11	14	9	11
7,5	10	15	19	14	18	15	18	12	15
9,3	12,5	19	24	17	22	18	22	15	19
11	15	23	28	21	26	21	26	17	21
13	17,5	26	33	24	30	24	31	20	26
15	20	30	38	27	34	28	34	23	29
18,5	25	40	50	33	42	34	44	29	37
22	30	45	57	40	50	40	51	33	42
26	35	52	65	45	57	47	59	39	49
30	40	60	75	52	65	54	69	45	57
37	50	75	94	65	81	67	85	56	71
45	60	90	112	77	97	79	94	65	78
55	75	120	150	102	128	95	114	80	95
63	85	-	-	-	-	109	130	91	109
70	95	-	-	-	-	122	143	101	119
75	100	-	-	-	-	130	153	108	127
81	110	-	-	-	-	143	164	119	137
92	125	-	-	-	-	162	187	135	156
110	150	-	-	-	-	192	218	160	182
129	175	-	-	-	-	221	257	184	214
147	200	-	-	-	-	253	295	211	246
166	225	-	-	-	-	286	329	239	274
185	250	-	-	-	-	315	371	263	309
200	275	-	-	-	-	345	401	287	334
220	300	-	-	-	-	379	441	316	368
240	325	-	-	-	-	414	487	345	406
260	350	-	-	-	-	443	515	369	429
300	400	-	-	-	-	511	581	426	484
340	450	-	-	-	-	586	666	489	555
380	500	-	-	-	-	640	736	534	613

- Motoru beslemek için bir elektrik jeneratörünün kullanılması gerektiğinde, dikkatli bir seçim yapılmalıdır.
- Yukarıda ki tabloda motoru beslemek için kullanılacak olan jeneratörün minimum kW ve kVA değerlerini içeren bir çizelge verilmiştir.

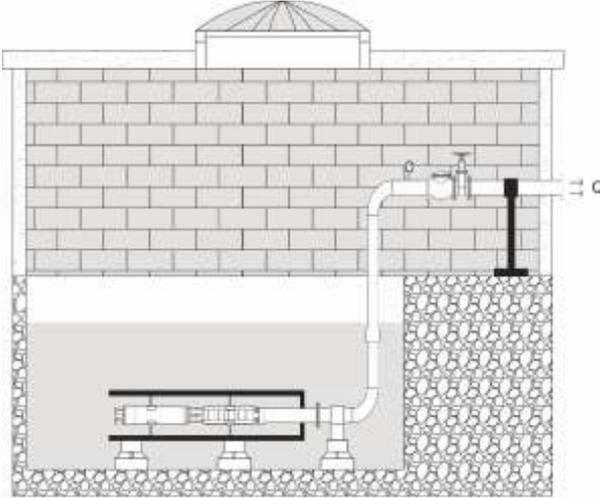
- When an electric generator has to be used to supply the motor, it should be carefully selected.
- A chart is provided giving the minimum rating in kW and kVA of the generators used to supply the motors.





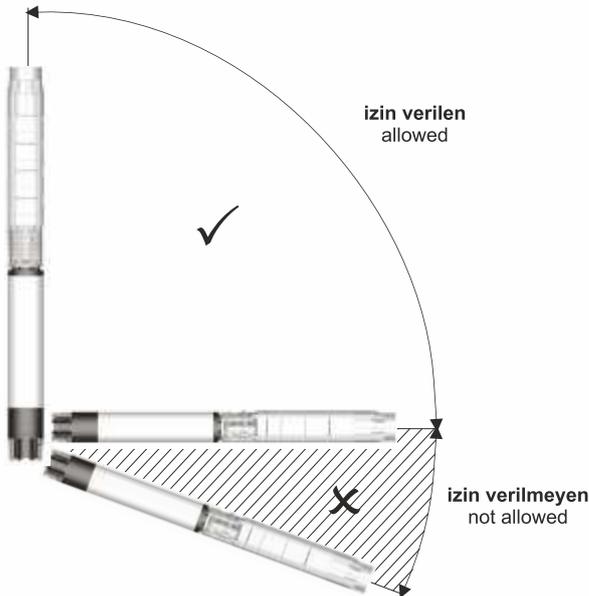
Yüksek debilere ihtiyaç duyulduğunda, birden fazla dalgıç pompanın paralel biçimde bağlanması şekilde gösterilmiştir.

When high capacities are required, the connection of several submersible pumps in parallel is shown in the figure.



Dalgıç pompanın kuyuya yatay şekilde monte edilmesi şekilde gösterilmiştir.

The horizontal installation of the submersible pump in the well is shown in the figure



Dalgıç pompanın izin verilen montaj konumları şekilde gösterilmiştir. Basma ağız asla yatay düzlemin altına düşmemelidir.

The permissible mounting position of the submersible pump are shown in the figure. The discharge port should never fall below the horizontal plane.

HİDROLİK TESİSAT EKİPMANLARI

Vana

• Kuyuda ki mevcut debi ile dalgıç pompanın debisini uyumlu hale getirmek için vana kullanılmalıdır.

• Vananın kısılma oranı pompanın yüklenmesini etkilemektedir.

• Dalgıç pompa kapalı vana konumunda 5 dakikadan fazla çalıştırılmamalıdır.

Çek-Valf

• Terfi hattı üzerinde kuyu başında, pompa ile vana arasında harici bir çek-valf kullanılması ve terfi hattı boyunca her 200 metrede bir tekrarlanması tavsiye edilir.

Manometre

• Dönüş yönü kontrolü amacıyla vana önünde mutlaka manometre olmalıdır. Bu manometrenin ölçüm değeri pompanın maksimum basıncına eşit veya daha büyük olmalıdır.

Kolon Borusu

• Dalgıç pompayı taşır ve suyun yeryüzüne ulaşmasını sağlar.

• Pompalanan debiye uygun çapta ve mukavemette seçilmelidir.

Terfi Hattı

• Uzun terfi hatları, doğrudan yağmurlama, doğrudan damlama gibi yüksek basınca ihtiyaç duyulan tesislerde su darbesi olasılığı yüksektir.

• Su darbesi pompanın ani durması sonucu oluşmaktadır. Ani durmaya elektrik kesilmeleri veya kuyuda ki su seviyesinin düşük olması sebep olmaktadır.

• Su darbesi, motorun aksel yatağına yüklenerek aşırı yüke maruz kalmasına yol açmaktadır.

• Su darbesinin etkisinin önlenmesi için pompada dâhili çek-valf mevcut olmalıdır. Ayrıca kuyu başında da harici çek-valf, darbe önleyici vana ve hava kazanı kullanılmalıdır.

• Terfi hatlarında kullanılacak standart boru çapları için izin verilen debi aralıkları aşağıdaki tabloda gösterilmiştir.

HYDRAULIC INSTALLATION EQUIPMENT

Valve

• The valve should be used to match the flow rate of the submersible pump to the flow in the well.

• The closure ratio of the valve affects the loading of the pump.

• The submersible pump must not be operated for more than 5 minutes in the closed valve position.

Check Valve

• It is recommended that an external check valve be used between the pump and the valve at the head of the well on the force main and repeated every 200 meters along the force main.

Manometer

• There must be a manometer in front of the valve for the direction of rotation control. The measured value of this manometer must be equal to or greater than the maximum pressure of the pump.

Column Pipe

• The column pipe carries the submersible pump.

• It should be selected in diameter and strength suitable for the pumped flow rate.

Force Main

• Long force mains; direct sprinkler, direct drip irrigation such as high pressure is required, the possibility of water hammer is also high.

• Water hammer occurs as a result of sudden stop of the pump. The sudden stop is caused by power cuts or low water level in the well.

• The water hammer is loaded onto the axial thrust bearing of the motor, causing the motor to overload.

• The pump must have an internal check valve to prevent the impact of the water hammer. In addition, an external check-valve, anti-impact valve and air chamber should be used at the well head.

• The permissible flow ranges for the standard pipe diameters to be used in the force mains are shown in the table below.

Nominal Boru Çapı Nominal Pipe Diameter	DN50 2"	DN80 3"	DN100 4"	DN125 5"	DN150 6"	DN200 8"	DN250 10"	DN300 12"	DN350 14"
[l/s]	2 - 5	5 - 11	11 - 19	19 - 30	30 - 41	41 - 71	71 - 121	121 - 171	171 - 250
[m ³ /h]	7 - 18	18 - 40	40 - 68	68 - 108	108 - 148	148 - 256	256 - 436	436 - 616	616 - 900

KUYU VE SU İLE İLGİLİ ŞARTLAR

• Standart dalgıç motorları, 30 °C sıcaklıkta ki sularda çalıştırılmak üzere tasarlanmıştır.

FERAT, özel malzemeler kullanarak 70 °C sıcaklıkta ki sularda çalışabilen dalgıç motorlar üretebilmektedir.

• Dalgıç motor, kuyu dışında ve susuz ortamda asla çalıştırılmamalıdır.

Göl, havuz, depo gibi durgun suların mevcut olduğu yerlerde; motorun dış yüzeyinde 0,2 – 0,5 m/s hızla su akışı sağlayacak soğutma ceketini monte edilmelidir.

• Standartlara göre kuyu suyu içinde izin verilen maksimum kum miktarı 50 g/m³ tür.

Kuyu suyunda ki kum miktarı kontrol edilmeli ve izin verilenden fazla olması durumunda kuyu temizlenmelidir.

• Kuyunun her mevsim için dinamik-statik su seviyeleri ve debileri belirlenmelidir.

Bunun için sondaj kuyularının açılması esnasında karşılaşılan tüm olguların ve uygulanan tüm işlemlerin yer aldığı kuyu künyelerinden faydalanılmalıdır. Kuyu künyeleri pompa tipi seçiminde ve zaman içinde meydana gelebilecek sorunların nedenleri ve çözümleri hakkında doğru kararlar alınmasına yardımcı olur.

POMPA MONTAJ DERİNLİĞİ

• Motor kuyu dibinden minimum 2 metre yukarıda olmalıdır. Motor, kuyu dibinde birikmiş kum ve çamur gibi ortamlara monte edilmemelidir. Bu birikintiler motor etrafında ki su akışını engelleyerek motorun aşırı ısınmasına yol açar.

• Pompanın kuyu montaj derinliği belirlenirken, mevsimlere göre statik ve dinamik su seviyesinin değiştiği göz önüne alınmalıdır. Ayrıca sulama mevsimi içerisinde, çevresinde çalışan kuyuların birbirlerini etkilediği dolayısıyla su seviyelerinin düşebileceğini hesaba katmalıyız. Bu durumda pompa montaj derinliği belirlenirken, dinamik seviyenin inebileceği minimum seviye hesaba katılmalıdır. Pompanın monte edileceği emniyetli derinlik belirlenirken gerekli NPSH değerleri göz önüne alınmalıdır. Gerekli NPSH değerleri pompanın tasarımına ve debisine göre değişiklikler gösterir.

• Kuyu debisinin azaldığı, pompanın otomatik start-stop zamanının sıklaşması ile anlaşılır. Bu durumda pompa debisi bir vana yardımı ile ayarlanmalı ve bir saatteki maksimum yol verme sayısı aşılmamalıdır.

• Pompa, çok kısa bir süre olsa dahi susuz çalıştırılmamalıdır. Pompa emiş haznesinin üzerinde her zaman emniyetli bir su yüksekliği bulunmalıdır. Emniyetli su yüksekliği, pompanın titreşimsiz çalışmasını sağlayarak motor yataklarının ve eksenel yatağın düzgün çalışmasını sağlar. Emniyetli su yüksekliğinin sağlandığından emin olmak için mutlaka su seviye elektrodu kullanılmalıdır.

WELL AND WATER CONDITIONS

• Standard submersible motors are designed for operation in water at 30 °C.

FERAT is able to produce submersible motors capable of operating in water at 70 °C temperature by using special materials.

• The submersible motor must never be operated outside the well and without water.

In places where stagnant waters such as lakes, pools and reservoirs exist; A cooling jacket should be installed on the outer surface of the engine to provide water flow at a rate of 0,2 – 0,5 m/s.

• According to the standards, the maximum amount of sand allowed in the well water is 50 g/m³.

The amount of sand in the well water should be checked and if it is more than allowed, the well should be cleaned.

• Dynamic-static water levels and flow rates of the well should be determined for each season.

For this, the well masthead containing all the cases encountered during the drilling of wells and all the procedures applied should be utilized. Well mastheads help to make the right decisions about pump type selection and the causes and solutions of problems that may occur over time.

PUMP ASSEMBLY DEPTH

• The motor must be at least 2 meters above the bottom of the well. The motor should not be installed in environments such as sand and mud accumulated at the bottom of the well. These accumulations prevent the flow of water around the motor and cause the motor to overheat.

• When determining the well installation depth of the pump, it should be taken into consideration that the static and dynamic water level changes according to the seasons. We should also take into consider that during the irrigation season, wells running around affect each other and therefore water levels may fall. In this case, when determining the pump installation depth, the minimum level at which the dynamic level can be lowered must be taken into consider. The required NPSH values should be considered when determining the safe depth at which the pump will be installed. The required NPSH values vary according to the design and flow rate of the pump.

• The well flow rate is reduced by the be more often in the automatic start-stop time of the pump. In this case, the pump flow rate must be adjusted by means of a valve and the maximum number of starting per hour must not be exceeded.

• The pump must not be operated without water even for a short period of time. There must always be a safe water height above the pump suction chamber. The safe water height ensures smooth operation of the motor bearings and the axial bearing, ensuring that the pump operates without vibration. The water level electrodes must be used to ensure safe water height.

SOĞUTMA CEKETİ KULLANIMI

Dalgıç pompalar sondaj kuyularının yanı sıra göl, baraj, havuz ve su depoları gibi durgun suların mevcut olduğu yerlerde, farklı koşullar altında çalışırlar. Her çeşit motorda olduğu gibi dalgıç motorlarda da pompa mili için gereken gücün üretimi esnasında motor üzerinde ısı fazlalığı açığa çıkar ve bu ısının, motorun sağlıklı çalışmasına engel olmaması için tahliye edilmesi gerekir.

Soğutma işlemi, dalgıç motorlarının su içerisinde çalışmasından dolayı ortamda ki basınçlandırılacak olan su, dalgıç motor yüzeyinden konveksiyon akımı ile geçirilerek sağlanır.

Eğer bir sondaj kuyusunda, sondaj kuyusuna ait teçhiz borusu çapı dalgıç motor çapından çok geniş veya su temini geniş bir hazneden elde ediliyor ise; dalgıç motorunun soğumasını sağlayan konveksiyon akımının hızı motoru soğutmaya yetmez ve dalgıç motorunun yanma riskini artırır. Dalgıç motoru yüzeyinde ki su hızının minimum 0,15 m/s ve maksimum 3 m/s olması gerekmektedir.

Yapılan testler göstermiştir ki, soğutma ceketleri motor ısısını yaklaşık 10 - 20 °C aralığında düşürebilmektedir. Bu hem motorun yanma riskini hem de motorun korozyona uğrama hızını düşürerek daha uzun bir kullanım ömrü sağlamaktadır.

Bu nedenle, soğutma ceketleri dalgıç motorlarda oluşan ısının suya transferi için mutlaka gerekli olan, düşük maliyetli ancak motorun çalışması bakımından hayati öneme sahip bir aksesuardır.

Soğutma için gerekli olan motor yüzeyindeki akış hızı, motor çapına ve gücüne göre değişiklik gösterir.

USE COOLING JACKET

Submersible pumps operate under different conditions where borehole is available, as well as stagnant water such as lakes, dams, pools and reservoirs. As in all types of motors, submersible motors also produce excess heat on the motor during the generate of the power required for the pump shaft and this heat must be evacuated in order not to interfere with the healthy operation of the engine.

The cooling process is ensured by passing the water to be pressurized from the submersible motor surface with convection current due to the operation of the submersible motors in water. If a borehole is provided, the fitting diameter of the borehole is too large from the submersible motor diameter or from a large reservoir of water supply; the speed of the convection current, which allows the submersible motor to cool, is not sufficient to cool the motor and increases the risk of burning of the submersible motor. The water velocity on the submersible motor surface must be a minimum of 0,15 m/s and a maximum of 3 m/s.

Tests have shown that the cooling jackets can reduce the motor temperature in the range of about 10-20 °C. This reduces the risk of burning of the submersible motor as well as the speed of corrosion of the submersible motor, resulting in a longer lifetime.

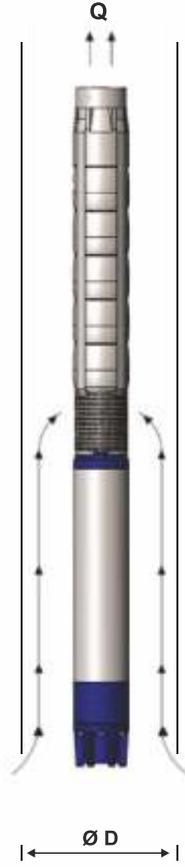
Therefore, the cooling jackets are a low-cost but essential accessory for the operation of the engine, which is absolutely necessary for the transfer of the heat generated in the submersible motors to the water.

The velocity of flow on the motor surface required for cooling varies according to the motor diameter and power.

Motor Tipi Motor Type	Motor Gücü Motor Power	Min. Akış Hızı Min. Flow Rate
6"	3 - 15 kW	0,2 m/s
	18,5 - 45 kW	0,5 m/s
7"	22 - 67 kW	0,2 m/s
8"	22 - 55 kW	0,2 m/s
	63 - 110 kW	0,5 m/s
9"	75 - 129 kW	0,5 m/s
10"	75 - 185 kW	0,5 m/s
12"	147 - 380 kW	0,5 m/s

Standart Kuyu Uygulaması

Standard Well Application



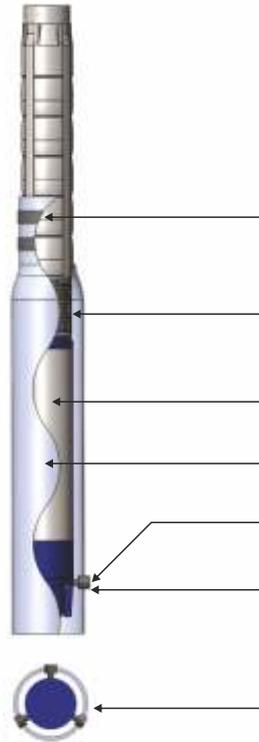
Göl, Baraj, Havuz ve Geniş Kuyu Uygulaması

Lake, Dam, Pool and Wide Well Application



Soğutma Ceketi Yapısı

Structure of Cooling Jacket



Paslanmaz Çelik Kelepçeler / Stainless Steel Clamps

Su Emiş Bölgesi / Intake

Dalgıç Motor / Submersible Motor

Soğutma Ceketi / Cooling Jacket

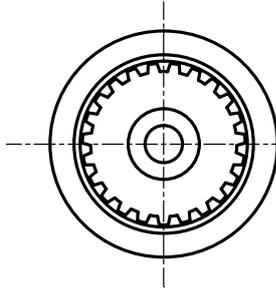
Merkezeleme Civatası (3 adet) / Centering Bolt (3 pcs)

Merkezeleme Civataları Döküm yüzey hızasına sıkılmalıdır. Statör gövdesi hızasına sıkılmamalıdır.

Centering Bolt Must Located on Motor Casting.
Do not Located on Stator Shell.

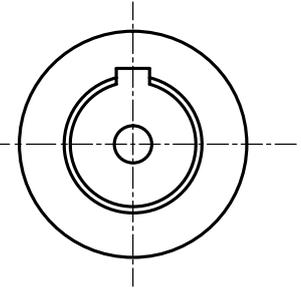
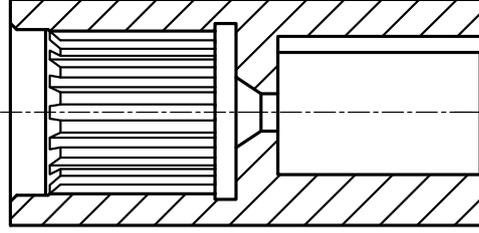
Alt Görünüş / Bottom End View

Kaplinler / Couplings



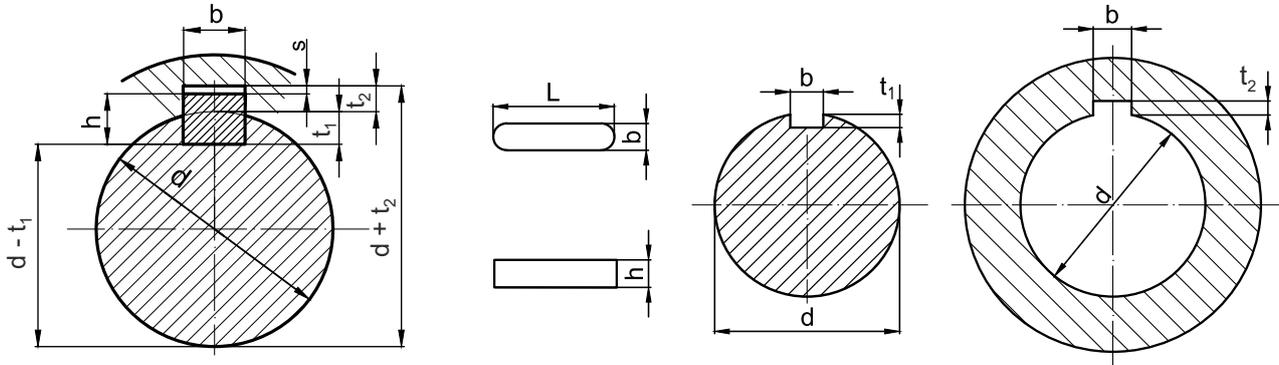
Motor Shaft End

Standards
ANSI B92.1 / NEMA MG 1



Pump Shaft End

Standards
DIN 6885 - A

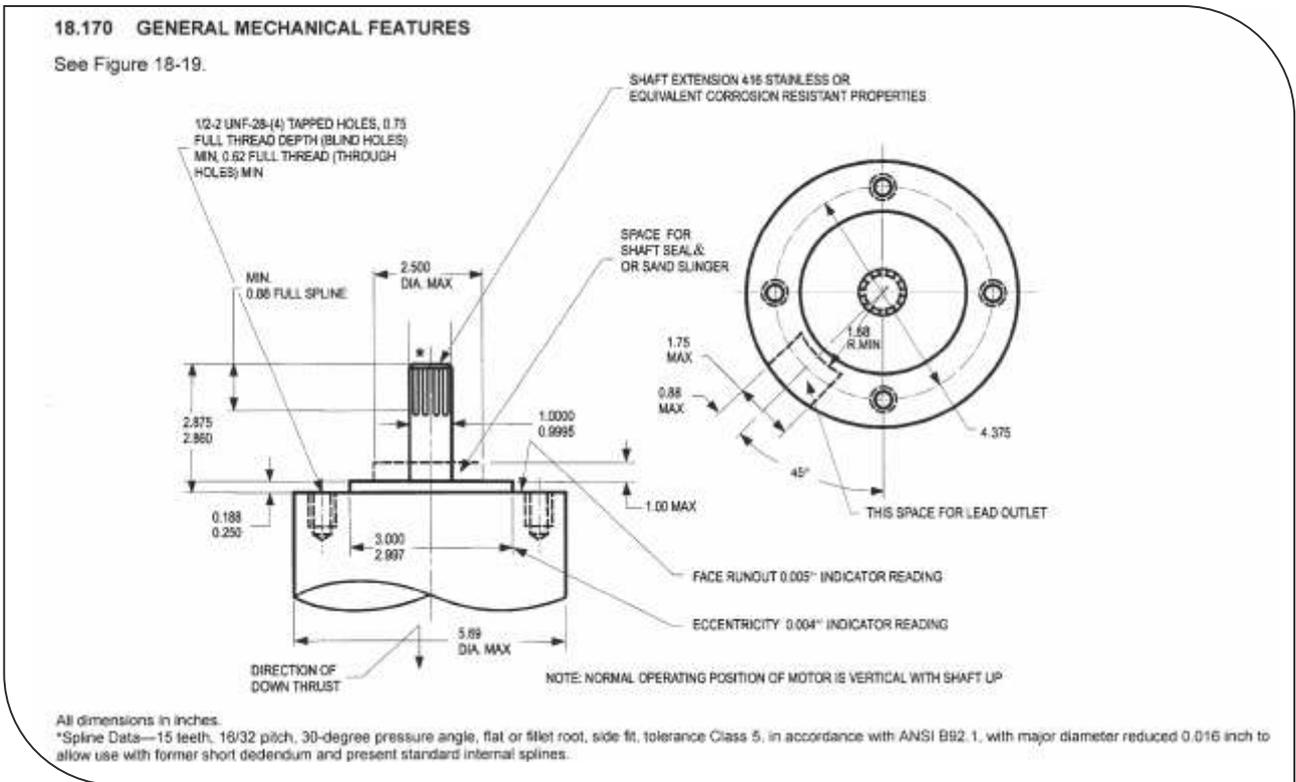


Motor / Pompa Kaplinler • Motor / Pump Couplings

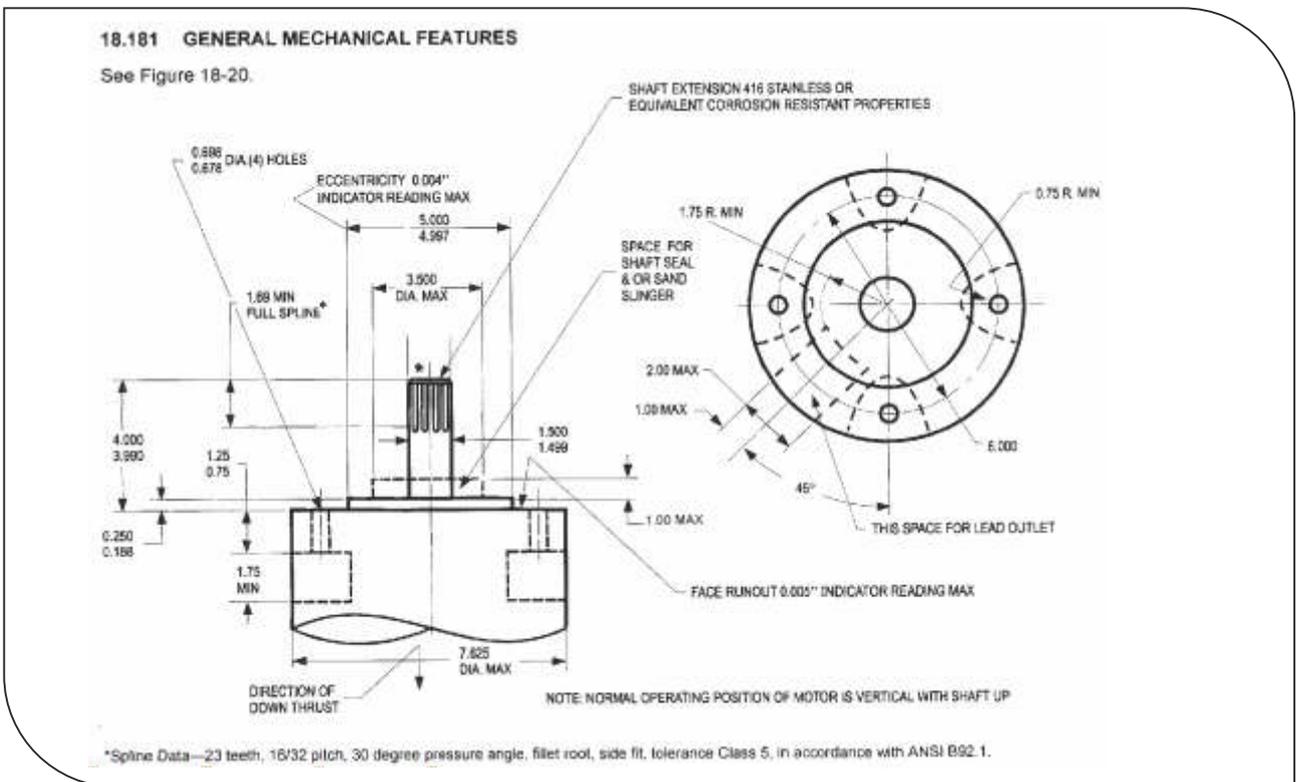
Motor Mil Ucu Tipi Motor Shaft End Type	Pompa Pump			Kanal Derinliği Keyway Depth				Kaplin Coupling		
	Mil Çapı Shaft Dia.	Kama Boyutları Key Size		Mil Shaft		Kaplin Coupling		Çapı Diameter	Boy Length	Malzeme Material
	d	b x h	L	t ₁	d - t ₁	t ₂	d + t ₂			
6" NEMA Spline	Ø 18	6 x 6	40	3,5	14,5	2,8	20,8	Ø 40	90	AISI 420
6" NEMA Spline	Ø 20	6 x 6	40	3,5	16,5	2,8	22,8	Ø 40	90	AISI 420
6" NEMA Spline	Ø 22	6 x 6	40	3,5	18,5	2,8	24,8	Ø 40	90	AISI 420
6" NEMA Spline	Ø 25	8 x 7	50	4	21	3,3	28,3	Ø 40	102	AISI 420
8" NEMA Spline	Ø 22	6 x 6	40	3,5	18,5	2,8	24,8	Ø 55	102	AISI 420
8" NEMA Spline	Ø 25	8 x 7	50	4	21	3,3	28,3	Ø 55	114	AISI 420
8" NEMA Spline	Ø 28	8 x 7	50	4	24	3,3	31,3	Ø 55	114	AISI 420
8" NEMA Spline	Ø 30	8 x 7	50	4	26	3,3	33,3	Ø 55	114	AISI 420
8" NEMA Spline	Ø 32	10 x 8	50	5	27	3,3	35,3	Ø 60	114	AISI 420
8" NEMA Spline	Ø 35	10 x 8	50	5	30	3,3	38,3	Ø 60	114	AISI 420
8" NEMA Spline	Ø 45	14 x 9	60	5,5	39,5	3,8	48,8	Ø 70	120	AISI 420
12" Parallel with Key	Ø 32	10 x 8	60	5	27	3,3	35,3	Ø 88	145	AISI 420
12" Parallel with Key	Ø 35	10 x 8	60	5	30	3,3	38,3	Ø 88	145	AISI 420
12" Parallel with Key	Ø 45	14 x 9	60	5,5	39,5	3,8	48,8	Ø 88	145	AISI 420

Birim / Unit [mm]

Standart Ölçüler / Standard Dimensions



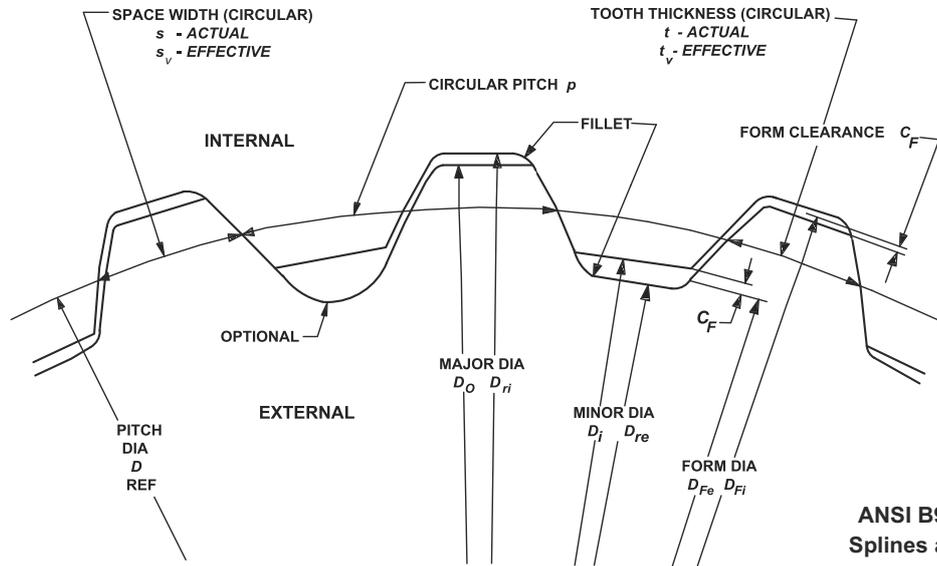
ANSI B92.1 / NEMA MG 1: Motors and Generators (6 - INCH)



ANSI B92.1 / NEMA MG 1: Motors and Generators (8 - INCH)

Standart Ölçüler / Standard Dimensions

30 DEG PRESSURE ANGLE



ANSI B92.1 : Involute Splines and Inspection

FIG. 5 - SPLINE TERMS, SYMBOLS AND DRAWING DATA, 30 DEG PRESSURE ANGLE, FLAT ROOT SIDE FIT

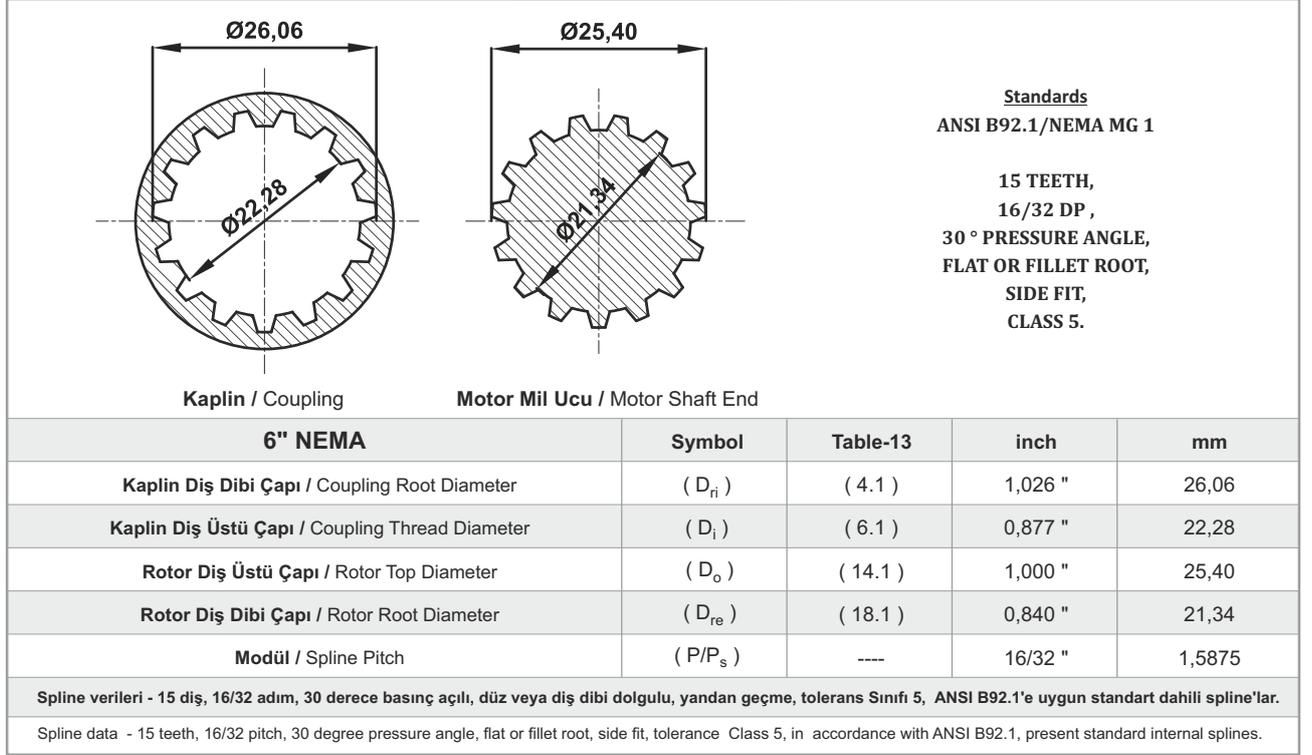
30 DEG PRESSURE ANGLE
TABLE 13 - 30 DEG PRESSURE ANGLE, FLAT ROOT SIDE FIT, 16/32 SPLINE PITCH

Internal and External		Internal (see Drawing Data)				KAPLİNLER COUPLINGS				External (see Drawing Data)				MOTOR MIL UCU MOTOR SHAFT END		
N No. Of Teeth	D Pitch Dia.	D_b Base Dia.	D_{ri} Major Dia. Max.	D_{Fi} Form Dia.	D_i Minor Dia.	s_v Min. Eff. Circ. Space Width = 0.0982 Notes c & d				t_v Max. Eff. Circ. Tooth Thickness = 0.0982 Notes c & d				D_o Major Dia.	D_{Fe} Form Dia.	D_{re} Minor Dia. Min.
						S Max. Actual Circ. Space Width for Tolerance Class				t Min. Actual Circ. Tooth Thickness for Tolerance Class						
						7	6	5	4	4	5	6	7			
1	2	3.1	4.1	5.1	6.1	S_7	S_6	S_5	S_4	t_4	t_5	t_6	t_7	14.1	17.1	18.1
					Note e	Notes a & b								Note g	Note e	
Tolerance in Ten Thousandths					+50 -0									+0 -220		
6	0.3750000	0.3247594	0.463	0.442	0.339	0.1032	0.1017	0.1007	0.1000	0.0964	0.0957	0.0947	0.0932	0.437	0.334	0.278
7	0.4375000	0.3788861	0.526	0.504	0.293	0.1033	0.1017	0.1007	0.1000	0.0964	0.0957	0.0947	0.0931	0.500	0.388	0.340
8	0.5000000	0.4330127	0.588	0.567	0.449	0.1033	0.1018	0.1008	0.1000	0.0964	0.0957	0.0947	0.0931	0.562	0.444	0.403
9	0.5625000	0.4871393	0.651	0.629	0.509	0.1033	0.1018	0.1008	0.1000	0.0964	0.0957	0.0947	0.0931	0.625	0.504	0.465
10	0.6250000	0.5412659	0.713	0.692	0.570	0.1034	0.1018	0.1008	0.1000	0.0964	0.0957	0.0947	0.0930	0.687	0.565	0.528
11	0.6875000	0.5953925	0.776	0.754	0.631	0.1034	0.1019	0.1008	0.1001	0.0963	0.0956	0.0945	0.0930	0.750	0.626	0.590
12	0.7500000	0.6495191	0.838	0.817	0.692	0.1035	0.1019	0.1008	0.1001	0.0963	0.0956	0.0945	0.0929	0.812	0.647	0.653
13	0.8125000	0.7036456	0.901	0.879	0.754	0.1035	0.1019	0.1008	0.1001	0.0963	0.0956	0.0945	0.0929	0.875	0.749	0.715
14	0.8750000	0.7577722	0.963	0.942	0.815	0.1035	0.1019	0.1009	0.1001	0.0963	0.0955	0.0945	0.0929	0.937	0.810	0.777
15	0.9375000	0.8118988	1.026	1.004	0.877	0.1036	0.1020	0.1009	0.1001	0.0963	0.0955	0.0944	0.0928	1.000	0.872	0.840
16	1.0000000	0.8660254	1.088	1.067	0.929	0.1036	0.1020	0.1009	0.1001	0.0963	0.0955	0.0944	0.0928	1.062	0.934	0.902
17	1.0625000	0.9201520	1.151	1.129	1.001	0.1036	0.1020	0.1009	0.1001	0.0963	0.0955	0.0944	0.0928	1.125	0.996	0.965
18	1.1250000	0.9742786	1.213	1.192	1.063	0.1037	0.1020	0.1009	0.1001	0.0963	0.0955	0.0944	0.0928	1.187	1.054	1.027
19	1.1875000	1.028405	1.276	1.254	1.125	0.1037	0.1021	0.1010	0.1002	0.0962	0.0954	0.0944	0.0928	1.250	1.121	1.090
20	1.2500000	1.082532	1.338	1.317	1.188	0.1038	0.1021	0.1010	0.1002	0.0962	0.0954	0.0944	0.0928	1.312	1.183	1.152
21	1.3125000	1.136658	1.401	1.379	1.250	0.1038	0.1021	0.1010	0.1002	0.0962	0.0954	0.0943	0.0926	1.375	1.246	1.214
22	1.3750000	1.190785	1.463	1.442	1.313	0.1038	0.1021	0.1010	0.1002	0.0962	0.0954	0.0943	0.0926	1.437	1.308	1.277
23	1.4375000	1.244912	1.526	1.504	1.375	0.1039	0.1022	0.1010	0.1002	0.0962	0.0954	0.0942	0.0925	1.500	1.371	1.339
24	1.5000000	1.299038	1.588	1.567	1.438	0.1039	0.1022	0.1011	0.1002	0.0962	0.0953	0.0942	0.0925	1.562	1.433	1.402
25	1.5625000	1.353165	1.651	1.629	1.500	0.1039	0.1022	0.1011	0.1002	0.0962	0.0953	0.0942	0.0925	1.625	1.496	1.464

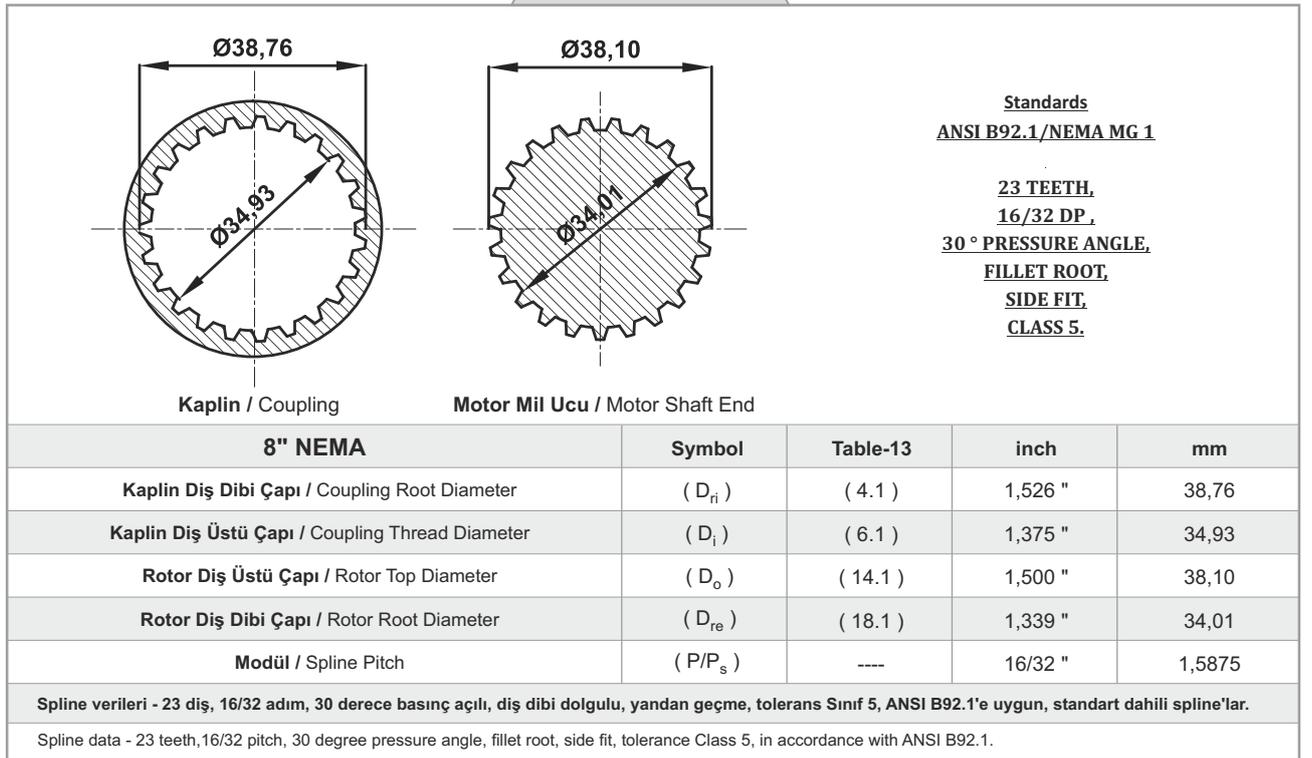
Birim / Unit [inch]

Standart Ölçüler / Standard Dimensions

6" NEMA



8" NEMA



BSPT [R / Rp] (55° - 1:16)
ISO 7-1 / EN 10226 - 1 (DIN 2999)

İngiliz Standart Konik Borusu (Konik Dış ve Silindirik İç Vidalar)
British Standard Tapered Pipe (Taper External Threads and Paralel Internal Threads)

Key

<i>P</i>	pitch
<i>H</i>	0,960491 <i>P</i>
<i>h</i>	0,640327 <i>P</i>
<i>r</i>	0,137239 <i>P</i>

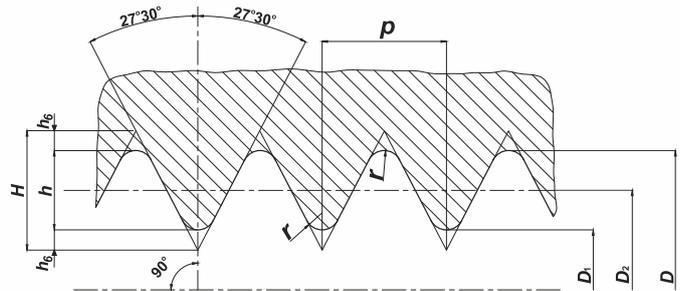


Figure 1 : Rp - Parallel thread (internal)

Key

1	gauge plane
2	taper
<i>P</i>	pitch
<i>H</i>	0,960207 <i>P</i>
<i>h</i>	0,640327 <i>P</i>
<i>r</i>	0,137278 <i>P</i>

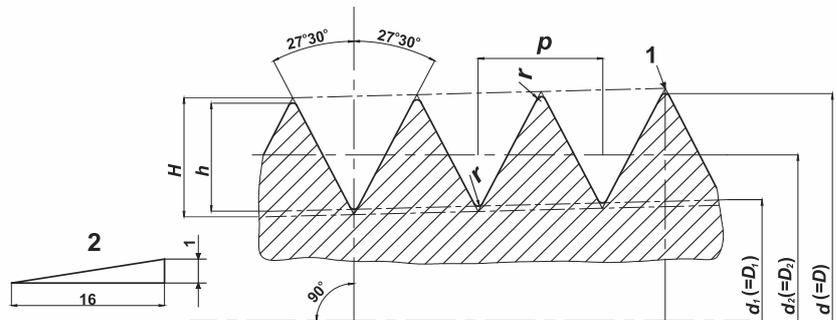


Figure 2 : R - Taper thread (external)

Key

- 1 accommodation length (*L_a*) useful thread length (*L_i*)
- 2 washout thread
- 3 complete thread
- 4 parallel internal threads (Rp)
- 5 gauge diameter (*D*)
- 6 without free runout
- 7 with free runout
- 8 useful thread length
- 9 reference plane
- 10 accommodation length
- 11 gauge plane
- 12 face of internally threaded part at upper limit of tolerance, at hand tight condition
- 13 taper external threads (R)
- 14 gauge diameter (*D*)
- 15 major cone
- 16 wrenching length
- 17 assembly length
- 18 gauge length
- 19 useful thread
- 20 length equivalent to positive tolerance on internal thread plus 0,5 *P*
- 21 incomplete thread
- 22 useful thread length (not less than gauge length plus assembly length)

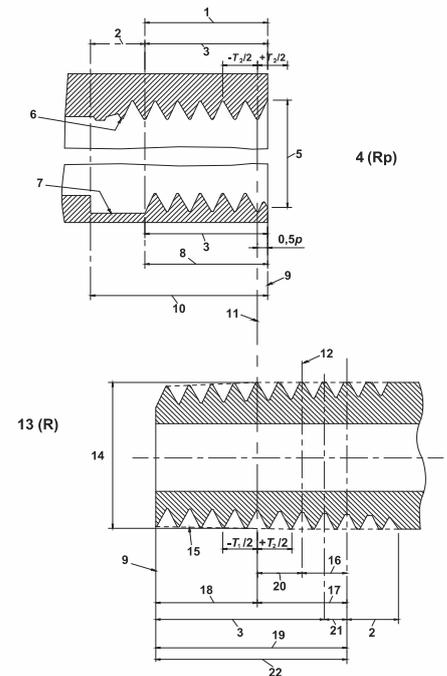


Figure 3 : Terms relating to pipe threads

BSPT [R / Rp] (55° - 1:16)
ISO 7-1 / EN 10226 - 1 (DIN 2999)
İngiliz Standart Konik Borusu (Konik Dış ve Silindirik İç Vidalar)
 British Standard Tapered Pipe (Taper External Threads and Parallel Internal Threads)

Table - Dimensions

1	2	3	4	5			7	8	10			13		14	15			17	18	19	20
				Diameters at gauge plane					Gauge length (external thread)			Assembly length			Length of useful external thread not less than						
Thread size	Number of threads in 25,4 mm	Pitch P	Height of thread h	Major (gauge diameter) d = D	Pitch d ₂ = D ₂	Minor d ₁ = D ₁	Nominal	Tolerance T _{1/2}		Turns of thread	max.	min.	b	Turns of thread	For nominal gauge length	For maximum gauge length	For minimum gauge length	Tolerance T _{2/2}	Turns of thread	Equivalent diametral tolerance ^a on parallel internal threads	
								b	mm												mm
1/16	28	0,907	0,581	7,723	7,142	6,561	4	+/- 0,9	1	4,9	3,1	2,5	2,3/4	6,5	7,4	5,6	+/- 1,1	1,1/4	+/- 0,071		
1/8	28	0,907	0,581	9,728	9,147	8,566	4	+/- 0,9	1	4,9	3,1	2,5	2,3/4	6,5	7,4	5,6	+/- 1,1	1,1/4	+/- 0,071		
1/4	19	1,337	0,856	13,157	12,301	11,445	6	+/- 1,3	1	7,3	4,7	3,7	2,3/4	9,7	11	8,4	+/- 1,7	1,1/4	+/- 0,104		
3/8	19	1,337	0,856	16,662	15,806	14,950	6,4	+/- 1,3	1	7,7	5,1	3,7	2,3/4	10,1	11,4	8,8	+/- 1,7	1,1/4	+/- 0,104		
1/2	14	1,814	1,162	20,955	19,793	18,631	8,2	+/- 1,8	1	10,0	6,4	5,0	2,3/4	13,2	15	11,4	+/- 2,3	1,1/4	+/- 0,142		
3/4	14	1,814	1,162	26,441	25,279	24,117	9,5	+/- 1,8	1	11,3	7,7	5,0	2,3/4	14,5	16,3	12,7	+/- 2,3	1,1/4	+/- 0,142		
1	11	2,309	1,479	33,249	31,770	30,291	10,4	+/- 2,3	1	12,7	8,1	6,4	2,3/4	16,8	19,1	14,5	+/- 2,9	1,1/4	+/- 0,180		
1 1/4	11	2,309	1,479	41,910	40,431	38,952	12,7	+/- 2,3	1	15,0	10,4	6,4	2,3/4	19,1	21,4	16,8	+/- 2,9	1,1/4	+/- 0,180		
1 1/2	11	2,309	1,479	47,803	46,324	44,845	12,7	+/- 2,3	1	15,0	10,4	6,4	2,3/4	19,1	21,4	16,8	+/- 2,9	1,1/4	+/- 0,180		
2	11	2,309	1,479	59,614	58,135	56,656	15,9	+/- 2,3	1	18,2	13,6	7,5	3,1/4	23,4	25,7	21,1	+/- 2,9	1,1/4	+/- 0,180		
2 1/2	11	2,309	1,479	75,184	73,705	72,226	17,5	+/- 3,5	1,1/2	21,0	14,0	9,2	4	26,7	30,2	23,2	+/- 3,5	1,1/2	+/- 0,216		
3	11	2,309	1,479	87,884	86,405	84,926	20,6	+/- 3,5	1,1/2	24,1	17,1	9,2	4	29,8	33,3	26,3	+/- 3,5	1,1/2	+/- 0,216		
4	11	2,309	1,479	113,030	111,551	110,072	25,4	+/- 3,5	1,1/2	28,9	21,9	10,4	4,1/2	35,8	39,3	32,3	+/- 3,5	1,1/2	+/- 0,216		
5	11	2,309	1,479	138,430	136,951	135,472	28,6	+/- 3,5	1,1/2	32,1	25,1	11,5	5	40,1	43,6	36,6	+/- 3,5	1,1/2	+/- 0,216		
6	11	2,309	1,479	163,830	162,351	160,872	28,6	+/- 3,5	1,1/2	32,1	25,1	11,5	5	40,1	43,6	36,6	+/- 3,5	1,1/2	+/- 0,216		

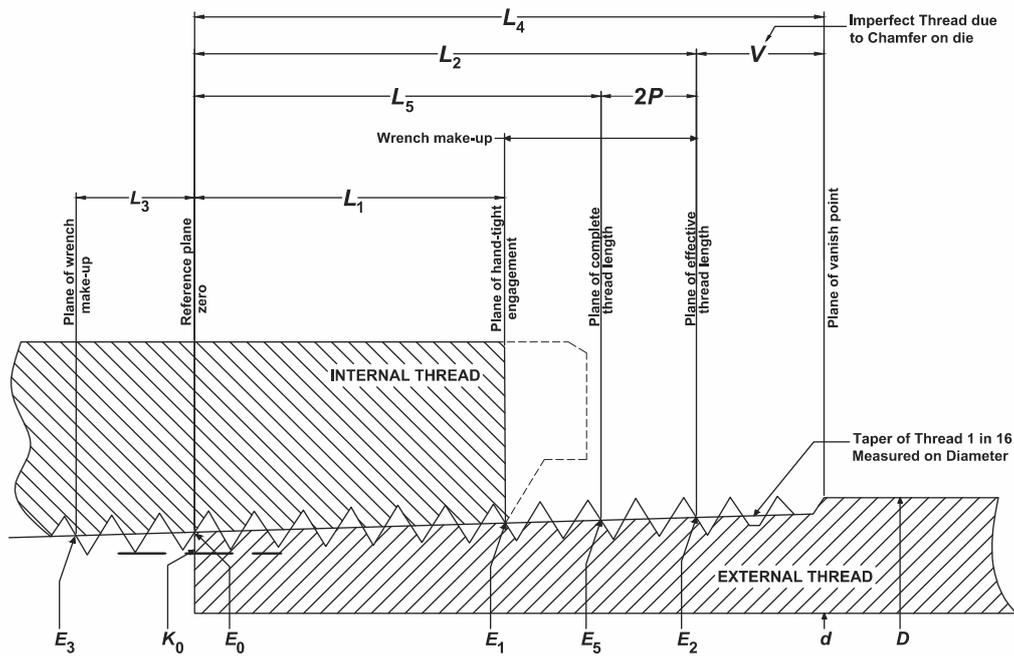
NOTES :

The main dimensions were converted into millimetres on the basis of 1 inch = 25,4 mm, beginning with the number of threads per inch, which determines the pitch P, the formula h (the height of thread) = 0,640 327 P and the major diameter at the gauge plane. Pitch diameter and minor diameter were then compiled by subtracting once or twice respectively the height of thread h from the major diameter. The nominal gauge length, the tolerances and the assembly length were directly computed. The remaining lengths given in table were obtained by subtracting or adding the tolerances or assembly length respectively to the nominal gauge length. Tolerances and assembly lengths are expressed in millimetres and number of turns of thread.

^a For parallel internally threaded parts the diametral tolerances are derived from the tolerances in column 19 by multiplying with the corresponding pitch in column 3 and with 1/16, the amount of taper.

^b Informative tolerances, in millimetres, are obtained from the mandatory values in turns of threads by multiplying with the corresponding pitch in column 3 and rounding to the nearest 0,1 mm.

NPT (60° - 1:16)
ANSI / ASME B1.20.1
Amerikan Ulusal Standart Konik Boru Dişleri
American National Standard Taper Pipe Threads



For all dimensions, see corresponding reference letter in table.

Angle between sides of thread is 60 degrees.

Taper of thread, on diameter, is 3/4 inch per foot.

Angle of taper with center line is 1° 47'.

The basic maximum thread height, h , of the truncated thread is 0.8 x pitch of thread.

The crest and root are truncated a minimum of 0.033 x pitch for all pitches.

1 inch = 24,5 mm.

Formulas :

$$E_0 = D - (0.05 D + 1.1) P$$

$$E_1 = E_0 + 0.0625 L_1$$

$$L_2 = (0.80 D + 6.8) P$$

NPT (60° - 1:16)

ANSI / ASME B1.20.1

Amerikan Ulusal Standart Konik Boru Dişinin Temel Boyutları

Basic Dimensions of American National Standard Taper Pipe Thread

Table - Basic Dimensions of American National Standard Taper Pipe Thread, NPT

Nominal Pipe Size	O.D. of Pipe	Threads / Inch, n	Pitch of Thread, P	Hand-tight Engagement		Effective Thread, External			Wrench Make-Up Length, Internal Thread			Vanish Thread, V	Overall Length, External Thread, L ₄			Nominal Complete External Threads, L ₅			Change in Diameter per Turn of Thread, h	Basic Minor Diameter at Small End of Pipe, K ₀			
				Length, L ₁	Threads	Length, L ₂	Threads	Length, L ₃	Threads	Length, L ₄	Threads		Length, L ₅	Threads	Length, L ₅	Threads							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1/16	0.3125	27	0.03703704	0.27118	0.1600	4.32	0.28118	0.2611	7.05	0.28750	0.1011	2.73	0.1111	3	0.26424	0.1285	3.47	0.3896	0.1870	0.28287	0.02963	0.00231	0.2415
1/8	0.4050	27	0.03703704	0.36351	0.1615	4.36	0.37360	0.2639	7.13	0.38000	0.1024	2.76	0.1111	3	0.35656	0.1285	3.47	0.3924	0.1898	0.37537	0.02963	0.00231	0.3338
1/4	0.5400	18	0.05555556	0.47739	0.2278	4.10	0.49163	0.4018	7.23	0.50250	0.1740	3.13	0.1667	3	0.46697	0.1928	3.47	0.5946	0.2907	0.49556	0.04444	0.00347	0.4329
3/8	0.6750	18	0.05555556	0.61201	0.2400	4.32	0.62701	0.4078	7.34	0.63750	0.1678	3.02	0.1667	3	0.60160	0.1928	3.47	0.6006	0.2967	0.63056	0.04444	0.00347	0.5675
1/2	0.8400	14	0.07142857	0.75843	0.3200	4.48	0.77843	0.5337	7.47	0.79178	0.2137	2.99	0.2143	3	0.74504	0.2479	3.47	0.7815	0.3909	0.78286	0.05714	0.00446	0.7014
3/4	1.0500	14	0.07142857	0.96768	0.3390	4.75	0.98887	0.5457	7.64	1.00178	0.2067	2.89	0.2143	3	0.95429	0.2479	3.47	0.7935	0.4029	0.99286	0.05714	0.00446	0.9106
1	1.3150	11.5	0.08695652	1.21363	0.4000	4.60	1.23863	0.6828	7.85	1.25631	0.2828	3.25	0.2609	3	1.19733	0.3017	3.47	0.9845	0.5089	1.24544	0.06957	0.00543	1.1441
1 1/4	1.6600	11.5	0.08695652	1.55713	0.4200	4.83	1.58338	0.7068	8.13	1.60131	0.2868	3.30	0.2609	3	1.54083	0.3017	3.47	1.0085	0.5329	1.59044	0.06957	0.00543	1.4876
1 1/2	1.9000	11.5	0.08695652	1.79609	0.4200	4.83	1.82234	0.7235	8.32	1.84131	0.3035	3.49	0.2609	3	1.77978	0.3017	3.47	1.0252	0.5496	1.83044	0.06957	0.00543	1.7266
2	2.3750	11.5	0.08695652	2.26902	0.4360	5.01	2.29627	0.7565	8.70	2.31630	0.3205	3.69	0.2609	3	2.25272	0.3017	3.47	1.0582	0.5826	2.30543	0.06957	0.00543	2.1995
2 1/2	2.8750	8	0.12500000	2.71953	0.6820	5.46	2.76216	1.1375	9.10	2.79063	0.4555	3.64	0.2500	2	2.70391	0.4338	3.47	1.5712	0.8875	2.77500	0.10000	0.00781	2.6195
3	3.5000	8	0.12500000	3.34063	0.7660	6.13	3.38850	1.2000	9.60	3.41563	0.4340	3.47	0.2500	2	3.32500	0.4338	3.47	1.6337	0.9500	3.40000	0.10000	0.00781	3.2406
3 1/2	4.0000	8	0.12500000	3.83750	0.8210	6.57	3.88881	1.2500	10.00	3.91563	0.4290	3.43	0.2500	2	3.82188	0.4338	3.47	1.6837	1.0000	3.90000	0.10000	0.00781	3.7374
4	4.5000	8	0.12500000	4.33438	0.8440	6.75	4.38713	1.3000	10.40	4.41563	0.4560	3.65	0.2500	2	4.31875	0.4338	3.47	1.7337	1.0500	4.40000	0.10000	0.00781	4.2343
5	5.5630	8	0.12500000	5.39073	0.9370	7.50	5.44929	1.4063	11.25	5.47863	0.4693	3.75	0.2500	2	5.37511	0.4338	3.47	1.8400	1.1563	5.46300	0.10000	0.00781	5.2907
6	6.6250	8	0.12500000	6.44609	0.9580	7.66	6.50597	1.5125	12.10	6.54063	0.5545	4.44	0.2500	2	6.43047	0.4338	3.47	1.9462	1.2625	6.52500	0.10000	0.00781	6.3460
8	8.6250	8	0.12500000	8.43359	1.0630	8.50	8.50003	1.7125	13.70	8.54063	0.6495	5.20	0.2500	2	8.41797	0.4338	3.47	2.1462	1.4625	8.52500	0.10000	0.00781	8.3335
10	10.7500	8	0.12500000	10.54531	1.2100	9.68	10.62094	1.9250	15.40	10.66563	0.7150	5.72	0.2500	2	10.52969	0.4338	3.47	2.3587	1.6750	10.65000	0.10000	0.00781	10.4453
12	12.7500	8	0.12500000	12.53281	1.3600	10.88	12.61781	2.1250	17.00	12.66563	0.7650	6.12	0.2500	2	12.51719	0.4338	3.47	2.5587	1.8750	12.65000	0.10000	0.00781	12.4328
14	14.0000	8	0.12500000	13.77500	1.5620	12.50	13.87263	2.2500	18.00	13.91563	0.6880	5.50	0.2500	2	13.75938	0.4338	3.47	2.6837	2.0000	13.90000	0.10000	0.00781	13.6749
16	16.0000	8	0.12500000	15.76250	1.8120	14.50	15.87575	2.4500	19.60	15.91563	0.6380	5.10	0.2500	2	15.74688	0.4338	3.47	2.8837	2.2000	15.90000	0.10000	0.00781	15.6624
18	18.0000	8	0.12500000	17.75000	2.0000	16.00	17.87500	2.6500	21.20	17.91563	0.6500	5.20	0.2500	2	17.73438	0.4338	3.47	3.0837	2.4000	17.90000	0.10000	0.00781	17.6499
20	20.0000	8	0.12500000	19.73750	2.1250	17.00	19.87031	2.8500	22.80	19.91563	0.7250	5.80	0.2500	2	19.72188	0.4338	3.47	3.2837	2.6000	19.90000	0.10000	0.00781	19.6374
24	24.0000	8	0.12500000	23.71250	2.3750	19.00	23.86094	3.2500	26.00	23.91563	0.8750	7.00	0.2500	2	23.69688	0.4338	3.47	3.6837	3.0000	23.90000	0.10000	0.00781	23.6124

GENERAL NOTE :

The basic dimensions of the American National Standard Taper Pipe Thread are given in inches to four or five decimal places. While this implies a greater degree of precision than is ordinarily attained, these dimensions are the basis of gage dimensions and are so expressed for the purpose of eliminating errors in computations.

1 inch = 25.4 mm

NOTES:

(1) Also length of L₁ ring gage and length from gaging notch to small end of L₁ plug gage.

(2) Also pitch diameter at gaging notch of L₁ plug gage (hand-tight plane).

(3) Also threaded length of L₁ plug gage.

(4) Reference dimension.

(5) The length L₅ from the end of the pipe determines the plane beyond which the thread form is incomplete at the crest. The next two threads are complete at the root.

(6) Given as information for use in selecting tap drills.

Borularda Sürtünme Kayıpları

Head Losses in Pipes



Metal Borularda Basınç Kayıpları • Head Losses in Metal Pipes [m/100m]

Su Miktarı Quantity of Water			İnç Cinsinden Nominal Boru Çapı ve mm Cinsinden Boru İç Çapı Nominal Pipe Diameter in inches and Internal Diameter in mm											
[m ³ /h]	[l/min]	[l/s]	½" 15,75	¾" 21,25	1" 27,00	1¼" 35,75	1½" 41,25	2" 52,50	2½" 68,00	3" 80,25	3½" 92,50	4" 105,0	5" 130,0	6" 155,5
0,6	10	0,16	0,855 9,910	0,470 2,407	0,292 0,784									
0,9	15	0,25	1,282 20,11	0,705 4,862	0,438 1,570	0,249 0,416								
1,2	20	0,33	1,710 33,53	0,940 8,035	0,584 2,588	0,331 0,677	0,249 0,346							
1,5	25	0,42	2,138 49,93	1,174 11,91	0,730 3,834	0,415 1,004	0,312 0,510							
1,8	30	0,50	2,565 69,34	1,409 16,50	0,876 5,277	0,498 1,379	0,374 0,700	0,231 0,223						
2,1	35	0,58	2,993 91,54	1,644 21,75	1,022 6,949	0,581 1,811	0,436 0,914	0,269 0,291						
2,4	40	0,67		1,879 27,66	1,168 8,820	0,664 2,290	0,499 1,160	0,308 0,368						
3,0	50	0,83		2,349 41,40	1,460 13,14	0,830 3,403	0,623 1,719	0,385 0,544	0,229 0,159					
3,6	60	1,00		2,819 57,74	1,751 18,28	0,996 4,718	0,748 2,375	0,462 0,751	0,275 0,218					
4,2	70	1,12		3,288 76,49	2,043 24,18	1,162 6,231	0,873 3,132	0,539 0,988	0,321 0,287	0,231 0,131				
4,8	80	1,33			2,335 30,87	1,328 7,940	0,997 2,988	0,616 1,254	0,367 0,363	0,263 0,164				
5,4	90	1,50			2,627 38,30	1,494 9,828	1,122 4,927	0,693 1,551	0,413 0,449	0,269 0,203				
6,0	100	1,67			2,919 46,49	1,660 11,90	1,247 5,972	0,770 1,875	0,459 0,542	0,329 0,244	0,248 0,124			
7,5	125	2,08			3,649 70,41	2,075 17,93	1,558 8,967	0,962 2,802	0,574 0,809	0,412 0,365	0,310 0,185	0,241 0,101		
9,0	150	2,50			2,490 25,11	1,870 12,53	1,539 3,903	0,918 1,124	0,659 0,506	0,496 0,256	0,372 0,256	0,289 0,140		
10,5	175	2,92			2,904 33,32	2,182 16,66	1,347 5,179	0,803 1,488	0,576 0,670	0,434 0,338	0,337 0,184			
12	200	3,33			3,319 42,75	2,493 21,36	1,539 6,624	0,918 1,901	0,659 0,855	0,496 0,431	0,385 0,234	0,251 0,084		
15	250	4,17			4,149 64,86	3,117 32,32	1,924 10,03	1,147 2,860	0,823 1,282	0,620 0,646	0,481 0,350	0,314 0,126		
18	300	5,00				3,740 45,52	2,309 14,04	1,377 4,009	0,988 1,792	0,744 0,903	0,577 0,488	0,377 0,175	0,263 0,074	
24	400	6,67				4,987 78,17	3,078 24,04	1,836 6,828	1,317 3,053	0,992 1,530	0,770 0,829	0,502 0,294	0,351 0,124	
30	500	8,33					3,848 36,71	2,295 10,40	1,647 4,622	1,240 2,315	0,962 1,254	0,628 0,445	0,439 0,187	
36	600	10,0					4,618 51,84	2,753 14,62	1,976 6,505	1,488 3,261	1,155 1,757	0,753 0,623	0,526 0,260	
42	700	11,7						3,212 19,52	2,306 8,693	1,736 4,356	1,347 2,345	0,879 0,831	0,614 0,347	
48	800	13,3						3,671 25,20	2,635 11,18	1,984 5,582	1,540 3,009	1,005 1,066	0,702 0,445	
54	900	15,0						4,130 31,51	2,964 13,97	2,232 6,983	1,732 3,762	1,130 1,328	0,790 0,555	
60	1000	16,7						4,589 38,43	3,294 17,06	2,480 8,521	1,925 4,595	1,256 1,616	0,877 0,674	
75	1250	20,8							4,117 26,10	3,100 13,00	2,406 7,010	1,570 2,458	1,097 1,027	
90	1500	25,0							4,941 36,97	3,720 18,42	2,887 9,892	1,883 3,468	1,316 1,444	
105	1750	29,2								4,340 24,76	3,368 13,30	2,197 4,665	1,535 1,934	
120	2000	33,3								4,960 31,94	3,850 17,16	2,511 5,995	1,754 2,496	
150	2500	41,7									4,812 26,26	3,139 9,216	2,193 3,807	
180	3000	50,0										3,767 13,05	2,632 5,417	
240	4000	66,7										5,023 22,72	3,509 8,926	
300	5000	83,3											4,386 14,42	
90 ° dirsek, vana			1,0	1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,6	1,7	2,0	2,5
T bağlantı, çek-valf			4,0	4,0	4,0	5,0	5,0	5,0	6,0	6,0	6,0	7,0	8,0	9,0

Ufak rakamlar suyun hızını m/s cinsinden göstermektedir. Büyük rakamlar düz borular için her 100 metredeki su sütunu kaybını metre cinsinden göstermektedir.
Small figures indicate the velocity of water in m/s. Large figures indicate head loss in meters per 100 meters of straight pipes.

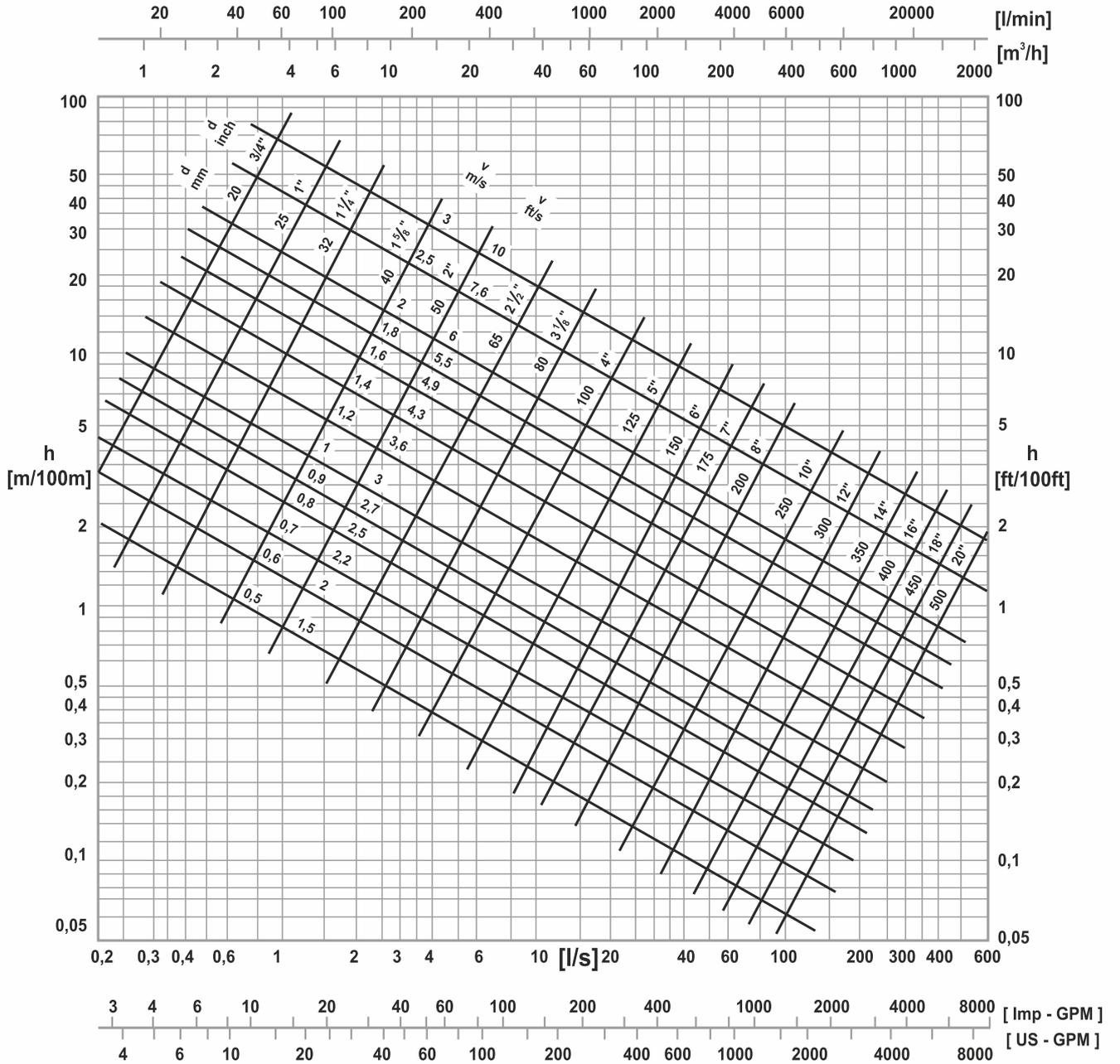
Tablonun son iki satırındaki değerler; dirsekler, vanalar, T bağlantıları ve çek valflerinde oluşan basınç kayıplarına eşdeğer alınması gereken, düz boru uzunluğunun metre cinsinden karşılığıdır.
The head loss in bends, slide valves, T-pieces and non-return valves is equivalent to the meters of straight pipes stated in the last two lines of the table.

PVC Borularda Basınç Kayıpları • Head Losses in Plastic Pipes [m/100m]														
Su Miktarı Quantity of Water			DN.. Cinsinden Nominal Boru Çapı ve mm Cinsinden Boru İç Çapı (PN 10) Nominal Pipe Diameter in DN.. and Internal Diameter in mm (PN 10)											
[m ³ /h]	[l/min]	[l/s]	25 20,4	32 26,2	40 32,6	50 40,8	63 51,4	75 61,4	90 73,6	110 90,0	125 102,2	140 114,6	160 130,8	180 147,2
0,6	10	0,16	0,49 1,8	0,30 0,66	0,19 0,27	0,12 0,085								
0,9	15	0,25	0,76 4,0	0,46 1,14	0,3 0,6	0,19 0,18	0,12 0,63							
1,2	20	0,33	1,0 6,4	0,61 2,2	0,39 0,9	0,25 0,28	0,16 0,11							
1,5	25	0,42	1,3 10,0	0,78 3,5	0,5 1,4	0,32 0,43	0,2 0,17	0,14 0,074						
1,8	30	0,50	1,53 13,0	0,93 4,6	0,6 1,9	0,38 0,57	0,24 0,22	0,17 0,092						
2,1	35	0,58	1,77 16,0	1,08 6,0	0,69 2,0	0,44 0,70	0,28 0,27	0,2 0,12						
2,4	40	0,67	2,05 22,0	1,24 7,5	0,80 3,3	0,51 0,93	0,32 0,35	0,23 0,16	0,16 0,063					
3,0	50	0,83	2,54 37,0	1,54 11,0	0,99 4,8	0,63 1,40	0,40 0,50	0,28 0,22	0,2 0,09					
3,6	60	1,00	3,06 43,0	1,85 15,0	1,2 6,5	0,76 1,90	0,48 0,70	0,34 0,32	0,24 0,13	0,16 0,050				
4,2	70	1,12	3,43 50,0	2,08 18,0	1,34 8,0	0,86 2,50	0,54 0,83	0,38 0,38	0,26 0,17	0,18 0,068				
4,8	80	1,33		2,47 25,0	1,59 10,5	1,02 3,00	0,64 1,20	0,45 0,50	0,31 0,22	0,2 0,084				
5,4	90	1,50		2,78 30,0	1,8 12,0	1,15 3,50	0,72 1,30	0,51 0,57	0,35 0,26	0,24 0,092	0,18 0,05			
6,0	100	1,67		3,1 39,0	2,0 16,0	1,28 4,6	0,80 1,80	0,56 0,73	0,39 0,30	0,26 0,12	0,2 0,07			
7,5	125	2,08		3,86 50,0	2,49 24,0	1,59 6,6	1,00 2,50	0,70 1,10	0,49 0,50	0,33 0,18	0,25 0,10	0,20 0,055		
9,0	150	2,50			3,00 33,0	1,91 8,6	1,20 3,5	0,84 1,40	0,59 0,63	0,39 0,24	0,30 0,13	0,24 0,075		
10,5	175	2,92			3,5 38,0	2,23 11,0	1,41 4,3	0,99 1,80	0,69 0,78	0,46 0,30	0,36 0,18	0,28 0,09		
12	200	3,33			3,99 50,0	2,55 14,0	1,60 5,5	1,12 2,40	0,78 1,0	0,52 0,40	0,41 0,22	0,32 0,12	0,25 0,065	
15	250	4,17				3,19 21,0	2,01 8,0	1,41 3,70	0,98 1,50	0,66 0,57	0,51 0,34	0,40 0,18	0,31 0,105	0,25 0,06
18	300	5,00				3,82 28,0	2,41 10,5	1,69 4,60	1,18 1,95	0,78 0,77	0,61 0,45	0,48 0,25	0,37 0,13	0,29 0,085
24	400	6,67					3,21 19,0	2,25 8,0	1,57 3,60	1,05 1,40	0,81 0,78	0,65 0,44	0,50 0,23	0,39 0,15
30	500	8,33					4,01 28,0	2,81 11,5	1,96 5,0	1,1 2,0	1,02 1,20	0,81 0,63	0,62 0,33	0,49 0,21
36	600	10,0					4,82 37,0	3,38 15,0	2,35 6,6	1,57 2,60	1,22 1,50	0,97 0,82	0,74 0,45	0,59 0,28
42	700	11,7					5,64 47,0	3,95 24,0	2,75 8,0	1,84 3,50	1,43 1,90	1,13 1,10	0,87 0,60	0,69 0,40
48	800	13,3						4,49 26,0	3,13 11,0	2,09 4,5	1,62 2,60	1,29 1,40	0,99 0,81	0,78 0,48
54	900	15,0						5,07 33,0	3,53 13,5	2,36 5,5	1,83 3,20	1,45 1,70	1,12 0,95	0,86 0,58
60	1000	16,7						5,64 40,0	3,93 16,0	2,63 6,7	2,04 3,90	1,62 2,2	1,24 1,2	0,96 0,75
75	1250	20,8							4,89 25,0	3,27 9,0	2,54 5,0	2,02 3,0	1,55 1,6	1,22 0,95
90	1500	25,0							5,88 33,0	3,93 13,0	3,05 8,0	2,42 4,1	1,86 2,3	1,47 1,40
105	1750	29,2							6,86 44,0	4,59 17,5	3,56 9,7	2,83 5,7	2,17 3,2	1,72 1,9
120	2000	33,3								5,23 23,0	4,06 13,0	3,23 7,0	2,48 4,0	1,96 2,4
150	2500	41,7								6,55 34,0	5,08 18,0	4,04 10,5	3,10 6,0	2,45 3,5
180	3000	50,0								7,86 45,0	6,10 27,0	4,85 14,0	3,72 7,6	2,94 5,2
240	4000	66,7									8,13 43,0	6,47 24,0	4,96 13,0	3,92 7,5
300	5000	83,3										8,08 33,0	6,2 18,0	4,89 11,0
90 ° dirsek, vana			1,0	1,0	1,1	1,2	1,3	1,4	1,5	1,6	1,6	1,7	2,0	2,5
T bağlantı, çek-valf			4,0	4,0	4,0	5,0	5,0	5,0	6,0	6,0	6,0	7,0	8,0	9,0

Ufak rakamlar suyun hızını m/s cinsinden göstermektedir. Büyük rakamlar düz borular için her 100 metredeki su sütunu kaybını metre cinsinden göstermektedir.
Small figures indicate the velocity of water in m/s. Large figures indicate head loss in meters per 100 meters of straight pipes.

Tablonun son iki satırındaki değerler; dirsekler, vanalar, T bağlantıları ve çek valflerinde oluşan basınç kayıplarına eşdeğer alınması gereken, düz boru uzunluğunun metre cinsinden karşılığıdır.
The head loss in bends, slide valves, T-pieces and non-return valves is equivalent to the meters of straight pipes stated in the last two lines of the table.

Boru Sürtünme Kaybı
Friction Losses in Pipes
[m / 100m]



Bu tablo 15 °C sıcaklıkta temiz su için yapılmıştır.
Tablo değerleri dökme demir borular için geçerlidir.

Boru tiplerine göre aşağıdaki katsayılar ile çarpılmalıdır.
[h x 0,8] Yeni haddelenmiş çelik borular için
[h x 1,25] Hafif paslanmış çelik borular için
[h x 0,65] PVC borular için
[h x 1,25] Asbestli çimento boruları için
[h x 0,7] Alüminyum borular için

Q = Su miktarı
v = Suyun hızı
d = Boru çapı
h = Sürtünme kaybı

This table was made for clean water at 15 ° C.
Table values apply to cast iron pipes.

Multiply the following coefficients according to the pipe types.
[h x 0,8] For new rolled steel pipes
[h x 1,25] For lightly rusted steel pipes
[h x 0,65] For PVC pipes
[h x 1,25] For asbestos cement pipes
[h x 0,7] For aluminium pipes

Q = Quantity of water
v = Velocity of pipe
d = Diameter of pipe
h = Friction loss

Debi Flow	[m ³ /h]	[l/s]	[l/min]	[US-GPM]	[Imp-GPM]
1 m ³ /h	1	0,2778	16,667	4,4029	3,666
1 l/s	3,6	1	60	15,850	13,198
1 l/min	0,06	0,0167	1	0,264	0,22
1 US-GPM	0,227	0,0631	3,785	1	0,8327
1 Imp-GPM	0,273	0,0758	4,546	1,201	1

Basınç Pressure	[bar]	[mSS]	[Pa]	[kPa]	[psi]	[atm]
1 bar	1	10,2	1x10 ⁵	100	14,5038	0,9869
1 mSS	0,098	1	9804,14	9,804	1,422	0,0968
1 Pa	10 ⁻⁵	0,102x10 ⁻³	1	10 ⁻³	0,145x10 ⁻³	9,87x10 ⁻⁶
1 kPa	10 ⁻²	0,102	1000	1	0,145	9,87x10 ⁻³
1 psi	0,06895	0,7032	6895	6,895	1	0,068
1 atm	1,013	10,335	101,33x10 ³	101,325	14,696	1

Güç Power	[kW]	[HP]	[CV]	[kCal/h]	[Btu/h]	[J/s]
1 kW	1	1,341	1,3596	860,42	3412,14	1000
1 HP (Imperial)	0,7457	1	1,01387	641,62	2544,43	745,7
1 CV (Metric)	0,7355	0,98632	1	632,84	2509,63	735,5
1 kCal/h	1,162x10 ⁻³	1,56x10 ⁻³	1,58x10 ⁻³	1	3,966	1,162
1 Btu/h	293x10 ⁻⁶	393x10 ⁻⁶	398x10 ⁻⁶	0,252	1	0,293
1 J/s	0,001	1,34x10 ⁻³	1,36x10 ⁻³	0,86	3,412	1

Uzunluk Length	[m]	[ft]	[inch]	[yard]	[mile]	[nmi]
1 m	1	3,281	39,37	1,0936	621,37x10 ⁻⁶	539,96x10 ⁻⁶
1 ft	0,3048	1	12	0,333	189,39x10 ⁻⁶	164,58x10 ⁻⁶
1 inch	0,0254	0,0833	1	0,02778	15,78x10 ⁻⁶	13,71x10 ⁻⁶
1 yard	0,9144	3	36	1	568,18x10 ⁻⁶	493,74x10 ⁻⁶
1 mile	1609,34	5280	63360	1760	1	0,868976
1 nmi	1852	6076,12	72913,39	2025,37	1,15078	1

Alan Area	[m ²]	[ft ²]	[inch ²]	[yard ²]	[mile ²]	[ha]
1 m ²	1	10,764	1550	1,196	386,1x10 ⁻⁹	100x10 ⁻⁶
1 ft ²	0,0929	1	144	0,111	35,87x10 ⁻⁹	9,29x10 ⁻⁶
1 inch ²	645x10 ⁻⁶	0,00694	1	771,6x10 ⁻⁶	0,249x10 ⁻⁹	0,064x10 ⁻⁶
1 yard ²	0,836	9	1296	1	322,83x10 ⁻⁹	83,61x10 ⁻⁶
1 mile ²	2,59x10 ⁶	27,88x10 ⁶	4,015x10 ⁹	3,098x10 ⁶	1	259
1 ha	10000	107,64x10 ³	15,5x10 ⁶	11,96x10 ³	3,861x10 ⁻³	1



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