HORIZONTAL MULTI-STAGE CENTRIFUGAL PUMP
FHMW Series - 50Hz

Zirantec

www.zirantec.com

An ISO 9001 Company

CE

Zirantec

ZIRANTEC products are designed & manufactured by well qualified and experienced Engineers in state of the art manufacturing facilities

CERTIFICATION

Member of CISQ Federation
RINA
ISO 9001:2015
Sistema Qualità Certificato

ZIRANTEC Pumps & Motors are from the house of **Fabbrica Italiana Pompe Sommergibili S.r.l.** a four decades old Italian company of high repute, offering complete waste water solutions around the world. Its current product portfolio includes world class Waste Water Pumps of various types, Multistage Centrifugal Pressure Booster Pumps, Borehole Submersible Pumps & Motors, End Suction Centrifugal Pumps, Industrial Pumps for various applications.

Founded as early as 1978 in Rozzano, South of Milan, Italy by Mr.Orfeo Agostini, the company has witnessed steady growth and market expansion continuously ever since. In these four decades of existence, the company has carved a niche for itself in the waste water and sewage pump market in Italy and other countries. Its products are employed in Municipal, Domestic and Industrial applications. The Company is well known for the unique and robust designs of its products and their workmanship. Due to its superior quality ZIRANTEC products are also exported to many European, African and Asian countries.

ZIRANTEC's products are designed and manufactured to meet high quality Standards and they are 'CE' certified. The Facility is accredited with ISO 9001 Certification.

Over the years, the company has metamorphosed and ventured into manufacturing of high quality water pumps, for domestic, agricultural and industrial applications. In the due process, Fabbrica Italiana Pompe Sommergibili S.r.l. has shed its image of an exclusive sewage and waste water pumps manufacturer to a complete pump production company with an ability to manufacture diverse kinds of pumps for different applications.

C O N T E N T S

HORIZONTAL MULTI-STAGE CENTRIFUGAL PUMPS

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GENERAL INFORMATION

HORIZONTAL MULTISTAGE PUMPS

ZIRANTEC Horizontal multi-stage centrifugal pumps are engineered to perfection with innovative design and stringent quality control for trouble free operation. These pumps are robust in construction and tested to a high standard of excellence. High grade materials are used to make these pumps durable, efficient and easy to maintain and all rotating parts are statically & dynamically balanced shaft is made of high quality steel, precision ground of ample size for tr ansmitting the rated horsepower.

These Horizontal multi-stage centrifugal pumps are of Single Suction, non-self priming type. The impellers are of radial flow design and are balanced to handle hydraulic axial thrust. Pump shaft is supplied by roller contact or sliding bearings, and balancing plate is provided to withstand axial force and avoid excessive abrasion of rotating parts. These pumps are also available with multi outlets for specific applications.

Generally these pumps are used to transfer clear water without solid particles and are also used to transfer oil, corrosive & abrasive chemicals, liquids without any solid particles. For which suitable materials of construction and sealing type to be chosen.

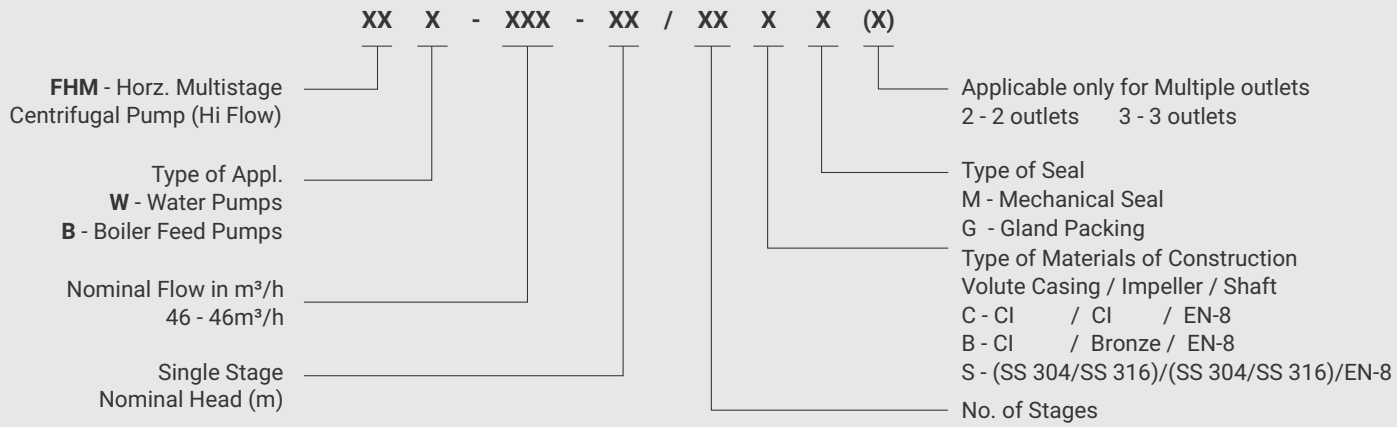
These pumps can be coupled either with electric motors or IC engines.

FEATURES :

- Dynamically balanced rotating par ts
- Rigid Constructions
- High operating efficiency
- Heavy duty bearings ensure long life
- Available with different MOC & wide range for various applications
- Available both in mechanical seal and soft packed stuffing box design
- Available with multi outlets
- These pumps are supplied with Roller bearings with grease lubrication and Sliding bearing with thin oil lubrication is used for high head and high temperature liquid applications.

In view of continuous developments, the information / descriptions / specifications / illustr ations are subject to change without notice.

MODEL IDENTIFICATION CODE



FHMW - 280 - 43/3M : 3stage, 280m³/h, 43m per stage, Horz. Multistage Pump for clear water with M. Seal

APPLICATIONS

- General Water supply
- Drinking water transfer
- Boiler feed
- Pressure Boosting
- Irrigation
- Hot & cold water circulation
- HVAC
- Fire fighting
- Power Plants
- Dewatering
- Various industrial applications

OPERATION LIMITS

Outlet Size range	DN 40 to DN 300 mm
Flow Range	25 to 1100 m³/hr

Head Range

FHMW	up to 1798 m
Speed	1450 & 2900 rpm

Operating Temperature

FHMW	< 80°C

MATERIAL OF CONSTRUCTION

Pump / Stage Casing	Cast Iron / Cast SS / Duplex Steel
Impeller	Cast Iron/ Cast SS / Bronze / Phosphor Bronze / Chrome Steel / Duplex Steel
Casing Wear ring	Cast Iron / Bronze / Steel
Shaft	Carbon Steel / Stainless Steel
Shaft Sleeve	Stainless Steel
Connecting Rods	Carbon Steel / SS 420

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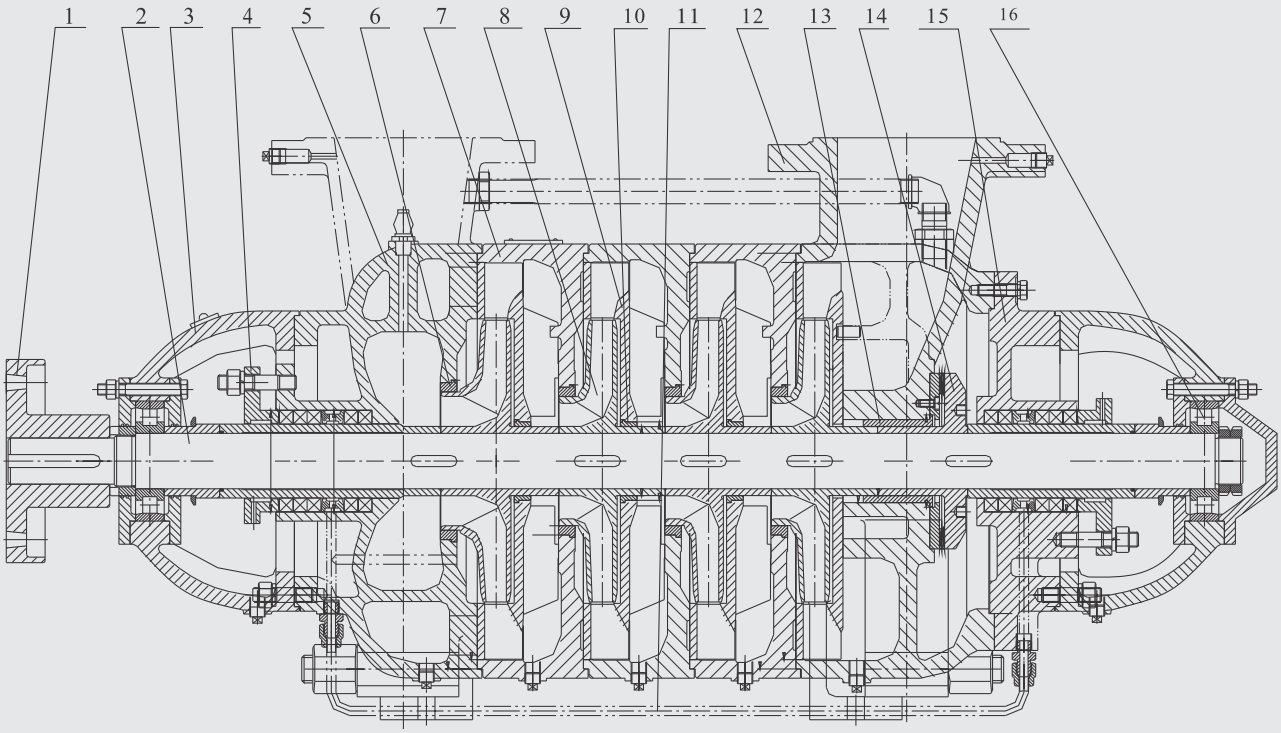
CROSS SECTIONAL DRAWING

FHMW 25-30, 25-50, 46-30, 46-50, 85-45, 85-67, 155-30, 155-67, 280-43, 280-65 360-50, 500-57, 600-60 & 720-60



No	Name	No	Name
1	Clutch Part	9	Guide Vane
2	Shaft	10	Guide vane sleeve
3	Bearing body	11	Water-sealing pipe part
4	Stuffing gland	12	Outlet section
5	Inlet section	13	Balancing disk
6	Seal-ring	14	Balancing disk
7	Middle-section	15	Stuffing box
8	Impeller	16	Bearing

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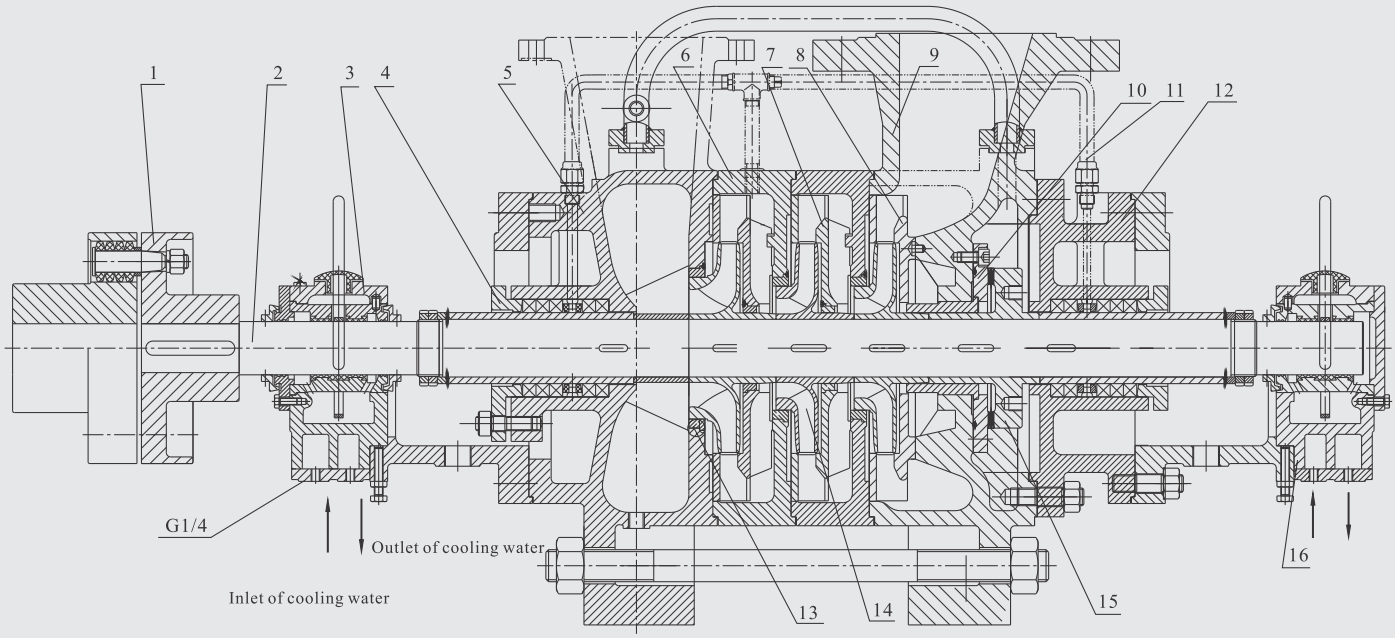
CROSS SECTIONAL DRAWING

FHMW 85-67, 85-80, 150-100, 155-67 & 280-100



No	Name	No	Name
1	Clutch Part	9	Outlet section
2	Shaft	10	Balancing ring
3	Bearing Part	11	Water-sealing pipe part
4	Stuffing gland	12	Stuffing box
5	Inlet section	13	Seal-ring
6	Middle-section	14	Impeller
7	Guide vane	15	Balancing disk
8	Final-stage guide vane	16	Bearing Part

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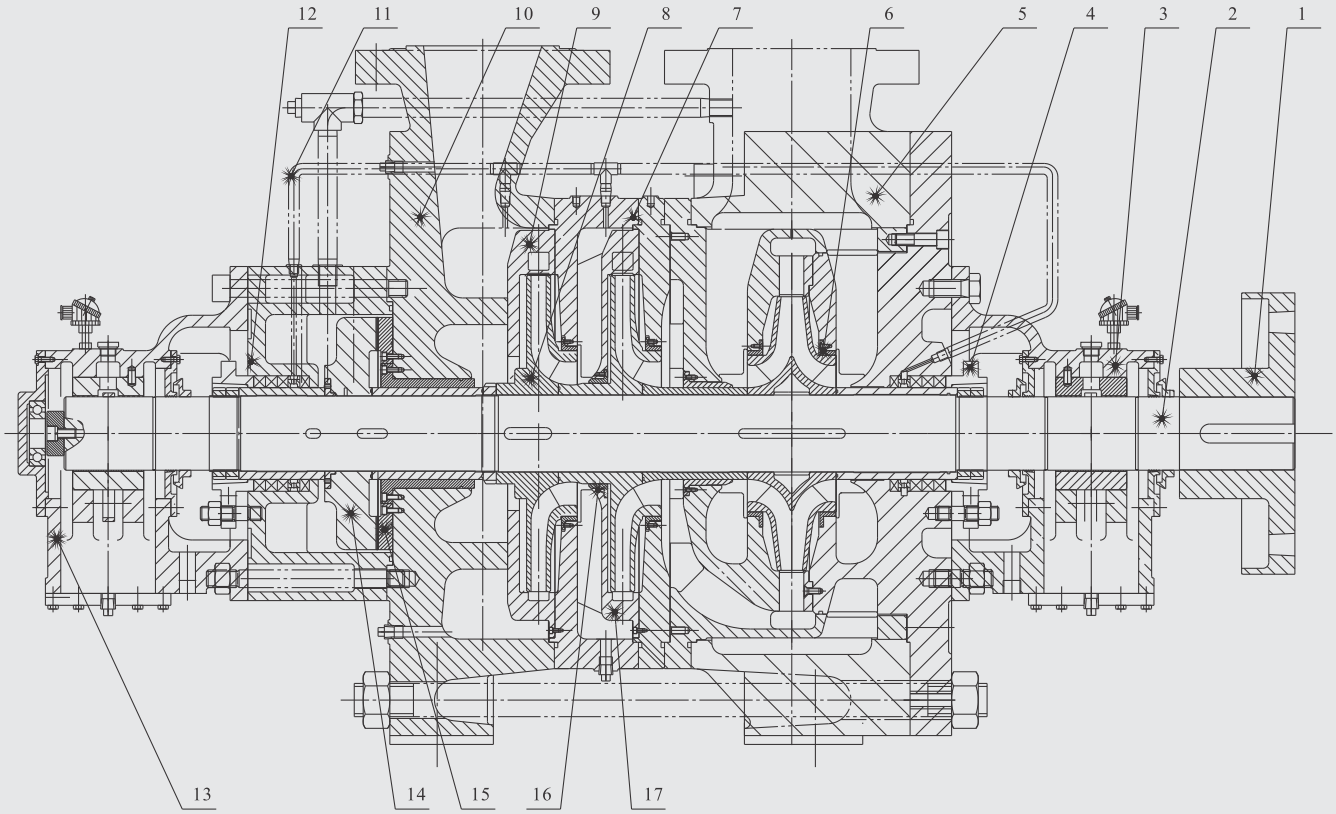
CROSS SECTIONAL DRAWING

FHMW 420-93, 820-100, 110-86



No	Name	No	Name
1	Clutch Part	10	Outlet section
2	Shaft	11	Water-sealing pipe part
3	Bearing Part	12	Stuffing box
4	Stuffing gland part	13	Bearing part
5	Inlet section	14	Balancing disk
6	Seal-ring	15	Balancing ring
7	Middle-section	16	Guide vane set
8	Guide vane	17	Guide vane
9	Final-stage guide vane		

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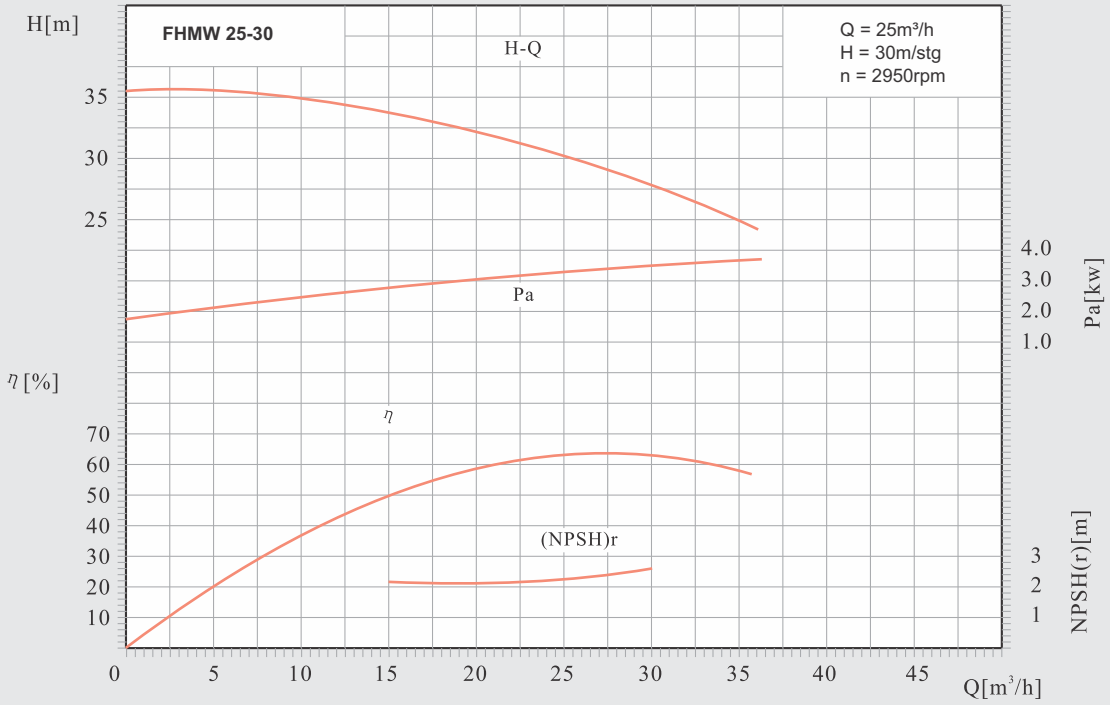
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
3	15 25 30	4.17 6.94 8.33	102 90 83	2950	8.33 9.88 10.70	15.0	50 62 63	2.2 2.2 2.6	215
4	15 25 30	4.17 6.94 8.33	136 120 110	2950	11.11 13.10 14.26	18.5	50 62 63	2.2 2.2 2.6	240
5	15 25 30	4.17 6.94 8.33	170 150 138	2950	13.89 16.47 17.83	22.0	50 62 63	2.2 2.2 2.6	265
6	15 25 30	4.17 6.94 8.33	204 180 165	2950	16.67 19.77 21.40	30.0	50 62 63	2.2 2.2 2.6	290
7	15 25 30	4.17 6.94 8.33	238 210 193	2950	19.44 23.10 24.96	30.0	50 62 63	2.2 2.2 2.6	315
8	15 25 30	4.17 6.94 8.33	272 240 220	2950	22.22 26.40 28.53	37.0	50 62 63	2.2 2.2 2.6	340
9	15 25 30	4.17 6.94 8.33	306 270 248	2950	25.00 29.65 32.10	37.0	50 62 63	2.2 2.2 2.6	365
10	15 25 30	4.17 6.94 8.33	340 300 275	2950	27.80 32.90 35.70	45.0	50 62 63	2.2 2.2 2.6	390

* The 3rd digit of model name 'W' indicates water application. This digit can be changed suitable for other application (Refer the model identification code).

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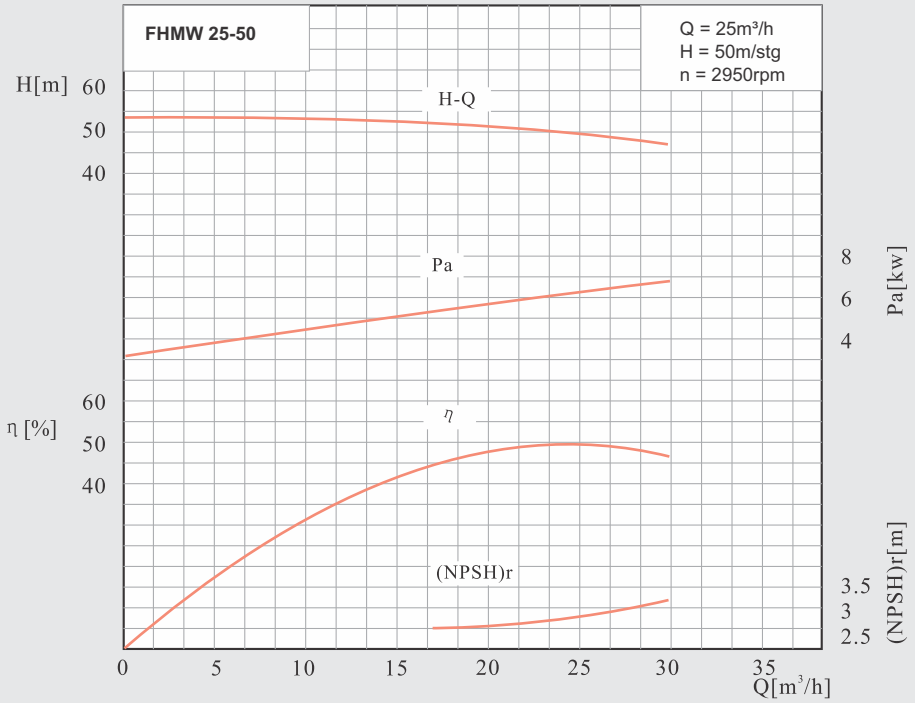
PERFORMANCE CURVE



PERFORMANCE TABLE

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	(m^3/h)	(L/s)			shaft power	Motor power			
3	15 25 30	4.17 6.94 8.33	154.5 150 144	2950	15.78 18.91 20.64	22	42 48 46	2.5 2.8 3.2	290
4	15 25 30	4.17 6.94 8.33	206 200 192	2950	21.04 25.22 27.5	30	42 48 46	2.5 2.8 3.2	310
5	15 25 30	4.17 6.94 8.33	257.5 250 240	2950	26.2 31.52 34.40	37	42 48 46	2.5 2.8 3.2	330
6	15 25 30	4.17 6.94 8.33	309 300 288	2950	31.56 37.82 41.28	45	42 48 46	2.5 2.8 3.2	355
7	15 25 30	4.17 6.94 8.33	380.5 350 336	2950	38.86 44.1 48.16	55	42 48 46	2.5 2.8 3.2	372
8	15 25 30	4.17 6.94 8.33	412 400 384	2950	42 50.45 55.04	75	42 48 46	2.5 2.8 3.2	390
9	15 25 30	4.17 6.94 8.33	463.5 450 432	2950	47.33 56.74 61.92	75	42 48 46	2.5 2.8 3.2	415
10	15 25 30	4.17 6.94 8.33	515 500 480	2950	52.59 63.04 68.8	75	42 48 46	2.5 2.8 3.2	433
11	15 25 30	4.17 6.94 8.33	566 550 528	2950	57.8 69.3 75.68	90	42 48 46	2.5 2.8 3.2	450
12	15 25 30	4.17 6.94 8.33	618 600 576	2950	63.11 75.65 82.56	110	42 48 46	2.5 2.8 3.2	468

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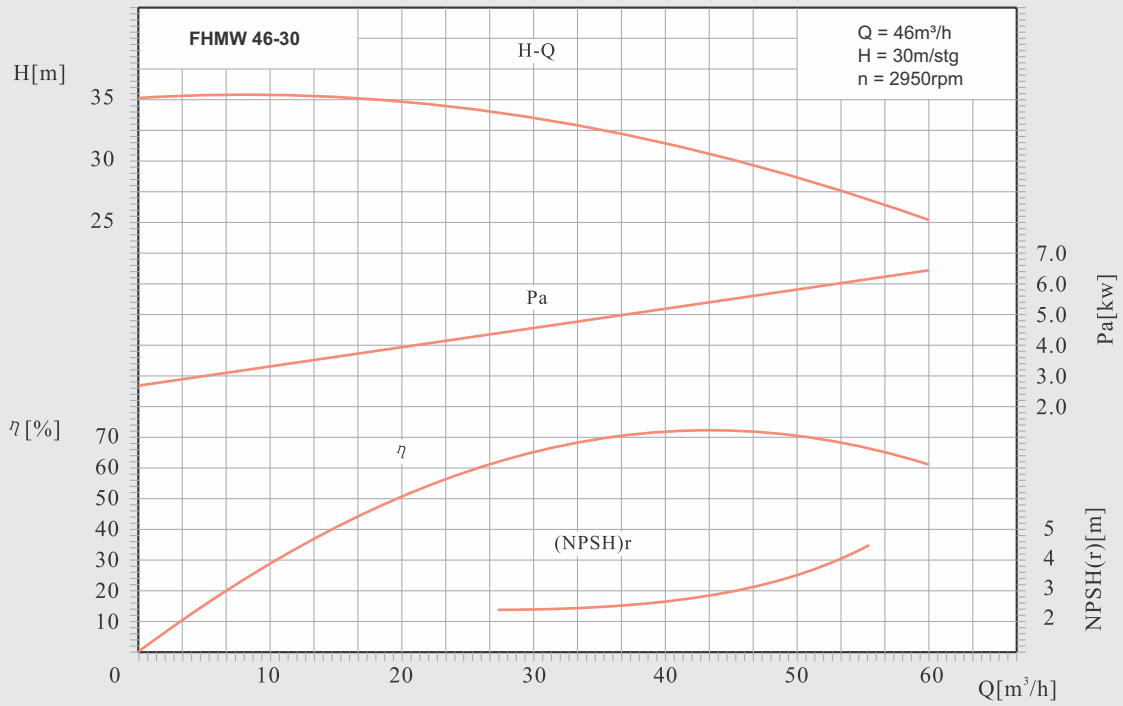

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No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
3	30 46 55	8.33 12.8 15.3	102 90 81	2950	13.02 16.11 17.84	22	64 70 68	2.4 3.0 4.6	210
4	30 46 55	8.33 12.8 15.3	136 120 108	2950	17.36 21.48 23.79	30	64 70 68	2.4 3.0 4.6	236
5	30 46 55	8.33 12.8 15.3	170 150 135	2950	21.7 26.85 29.74	37	64 70 68	2.4 3.0 4.6	261
6	30 46 55	8.33 12.8 15.3	204 180 162	2950	26.04 32.21 35.68	37	64 70 68	2.4 3.0 4.6	286
7	30 46 55	8.33 12.8 15.3	238 210 189	2950	30.38 37.58 41.63	45	64 70 68	2.4 3.0 4.6	311
8	30 46 55	8.33 12.8 15.3	274 240 216	2950	34.72 42.95 47.58	55	64 70 68	2.4 3.0 4.6	336
9	30 46 55	8.33 12.8 15.3	306 270 243	2950	39.06 48.32 53.53	55	64 70 68	2.4 3.0 4.6	362
10	30 46 55	8.33 12.8 15.3	340 300 270	2950	43.4 53.69 59.47	75	64 70 68	2.4 3.0 4.6	388

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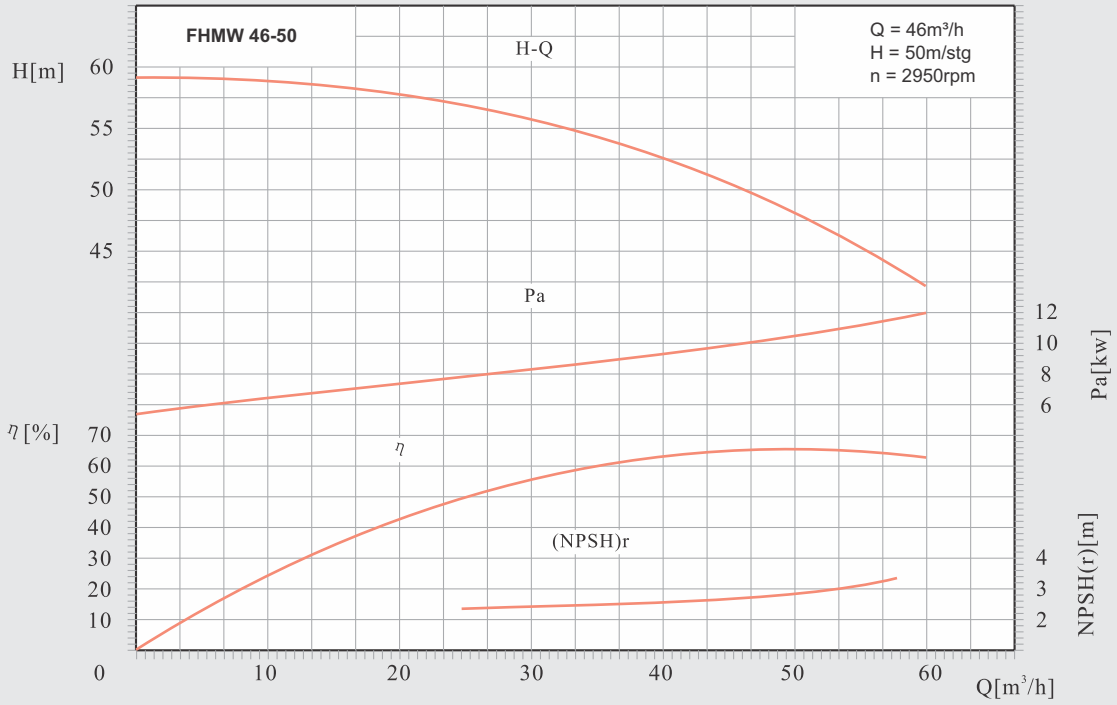
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
3	30 46 55	8.33 12.8 15.3	166.5 150 138	2950	25.19 29.83 32.3	37	54 63 64	2.5 2.8 3.2	357
4	30 46 55	8.33 12.8 15.3	222 200 184	2950	33.59 39.77 43.06	45	54 63 64	2.5 2.8 3.2	390
5	30 46 55	8.33 12.8 15.3	277.5 250 230	2950	41.98 49.72 53.83	55	54 63 64	2.5 2.8 3.2	423
6	30 46 55	8.33 12.8 15.3	330 300 276	2950	50.38 59.65 64.59	75	54 63 64	2.5 2.8 3.2	455
7	30 46 55	8.33 12.8 15.3	388.5 350 322	2950	58.78 69.6 75.36	90	54 63 64	2.5 2.8 3.2	488
8	30 46 55	8.33 12.8 15.3	440 400 368	2950	67.18 79.54 86.12	90	54 63 64	2.5 2.8 3.2	521
9	30 46 55	8.33 12.8 15.3	499.5 450 414	2950	75.57 89.48 96.89	110	54 63 64	2.5 2.8 3.2	554
10	30 46 55	8.33 12.8 15.3	555 500 460	2950	83.97 99.42 107.66	110	54 63 64	2.5 2.8 3.2	586
11	30 46 55	8.33 12.8 15.3	610.5 550 506	2950	92.37 109.36 118.42	132	54 63 64	2.5 2.8 3.2	619
12	30 46 55	8.33 12.8 15.3	666 600 552	2950	100.8 119.3 129.2	132	54 63 64	2.5 2.8 3.2	652

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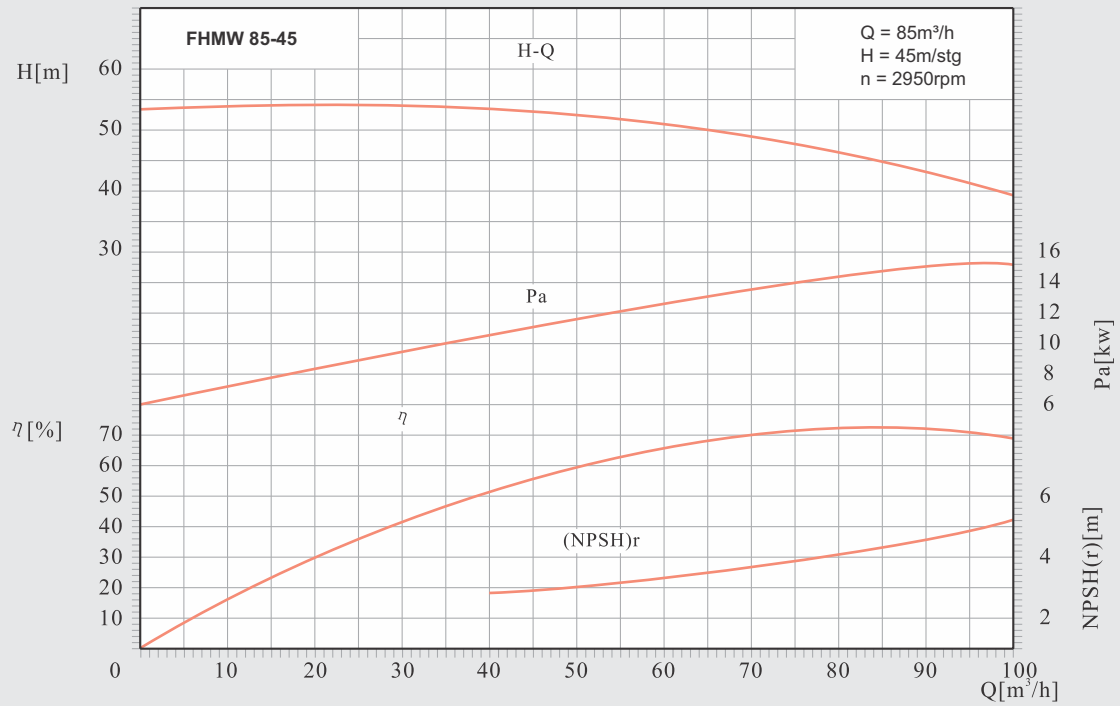
PERFORMANCE CURVE



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No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
2	55 85 100	15.3 23.6 27.8	102 90 78	2950	24.25 28.94 30.35	37	63 72 70	3.2 4.2 5.2	270
3	55 85 100	15.3 23.6 27.8	153 135 117	2950	36.38 43.4 45.53	55	63 72 70	3.2 4.2 5.2	385
4	55 85 100	15.3 23.6 27.8	204 180 156	2950	48.5 57.87 60.7	75	63 72 70	3.2 4.2 5.2	480
5	55 85 100	15.3 23.6 27.8	255 225 195	2950	60.63 72.34 75.86	90	63 72 70	3.2 4.2 5.2	540
6	55 85 100	15.3 23.6 27.8	306 270 234	2950	72.75 86.81 91.04	110	63 72 70	3.2 4.2 5.2	865
7	55 85 100	15.3 23.6 27.8	357 315 273	2950	84.88 101.3 106.2	132	63 72 70	3.2 4.2 5.2	950
8	55 85 100	15.3 23.6 27.8	408 360 312	2950	97.0 115.7 121.4	132	63 72 70	3.2 4.2 5.2	1035
9	55 85 100	15.3 23.6 27.8	459 405 351	2950	109.1 130.2 136.6	160	63 72 70	3.2 4.2 5.2	1120

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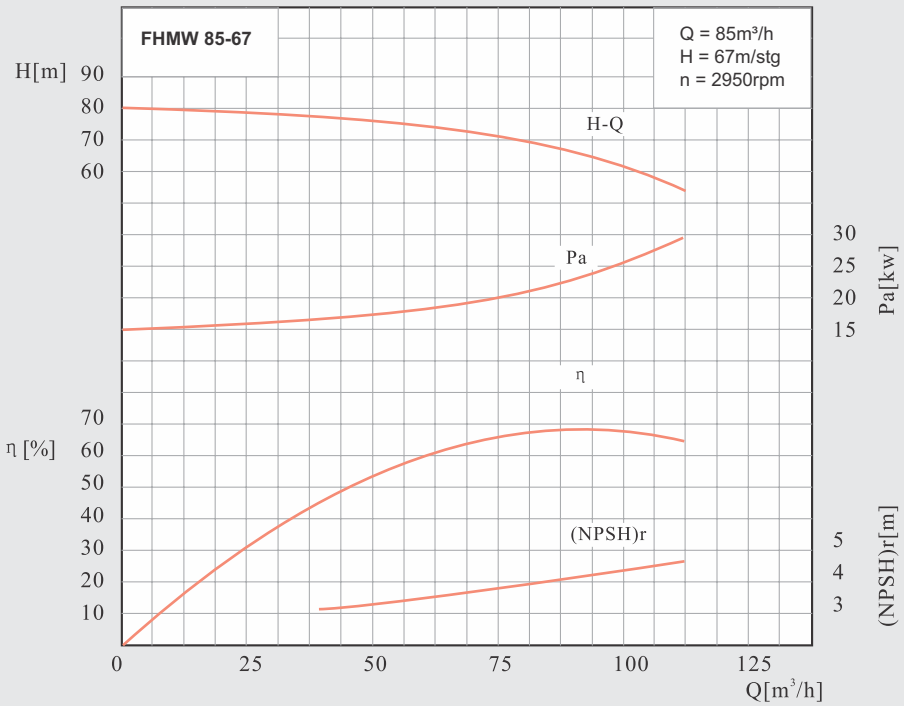
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
3	55 85 100	15.3 23.6 27.8	222 201 183	2950	58.3 68.4 73.3	90	57 68 68	3.3 4.0 4.4	652
4	55 85 100	15.3 23.6 27.8	296 268 244	2950	77.8 91.2 97.8	110	57 68 68	3.3 4.0 4.4	724
5	55 85 100	15.3 23.6 27.8	370 335 305	2950	97.3 114 122.2	132	57 68 68	3.3 4.0 4.4	845
6	55 85 100	15.3 23.6 27.8	444 402 366	2950	116.7 136.9 146.7	160	57 68 68	3.3 4.0 4.4	1135
7	55 85 100	15.3 23.6 27.8	518 469 427	2950	136.2 159.6 171.1	200	57 68 68	3.3 4.0 4.4	1258
8	55 85 100	15.3 23.6 27.8	592 536 488	2950	155.6 182.4 195.5	220	57 68 68	3.3 4.0 4.4	1400
9	55 85 100	15.3 23.6 27.8	666 603 549	2950	175.1 205.2 220.0	250	57 68 68	3.3 4.0 4.4	1560

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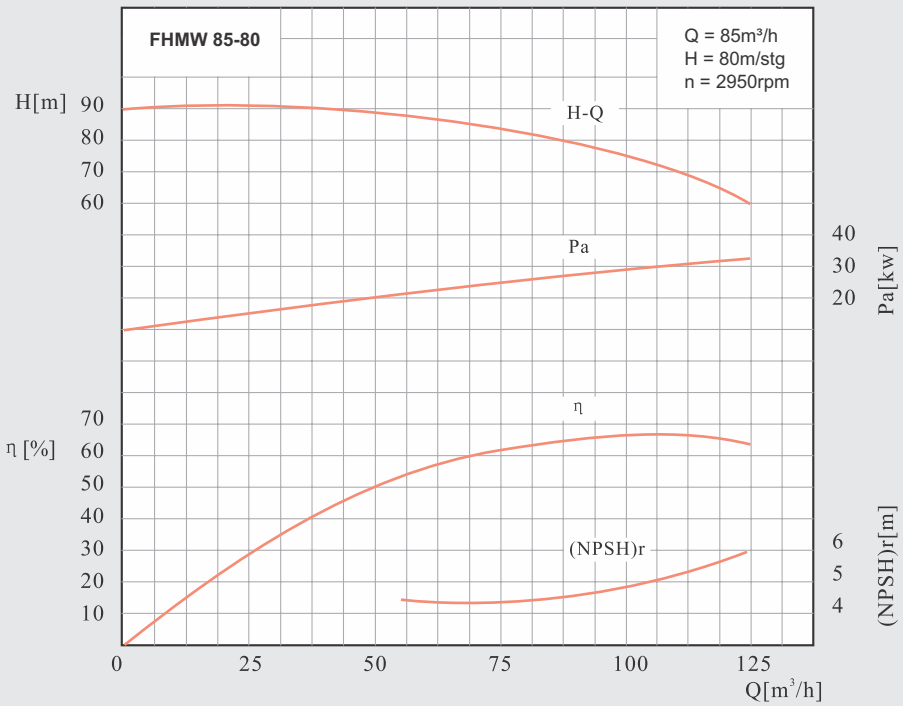
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
3	54 85 108	15.0 23.6 30.0	264 240 210	2950	73.2 85.4 93.5	110	53 65 66	4.2 4.4 5.3	925
4	54 85 108	15.0 23.6 30.0	352 320 280	2950	97.6 113.9 124.7	132	53 65 66	4.2 4.4 5.3	1012
5	54 85 108	15.0 23.6 30.0	440 400 350	2950	122.0 142.3 160.0	160	53 65 66	4.2 4.4 5.3	1100
6	54 85 108	15.0 23.6 30.0	528 480 420	2950	146.4 170.8 187.1	200	53 65 66	4.2 4.4 5.3	1186
7	54 85 108	15.0 23.6 30.0	616 560 490	2950	170.9 199.3 218.4	250	53 65 66	4.2 4.4 5.3	1274
8	54 85 108	15.0 23.6 30.0	704 640 560	2950	195.3 227.8 249.6	280	53 65 66	4.2 4.4 5.3	1361
9	54 85 108	15.0 23.6 30.0	792 720 630	2950	219.8 256.3 280.7	315	53 65 66	4.2 4.4 5.3	1448
10	54 85 108	15.0 23.6 30.0	880 800 700	2950	244.2 284.8 311.9	355	53 65 66	4.2 4.4 5.3	1535
11	54 85 108	15.0 23.6 30.0	968 880 770	2950	268.6 313.2 343	400	53 65 66	4.2 4.4 5.3	1622
12	54 85 108	15.0 23.6 30.0	1056 960 840	2950	292.8 341.7 374.3	400	53 65 66	4.2 4.4 5.3	1710

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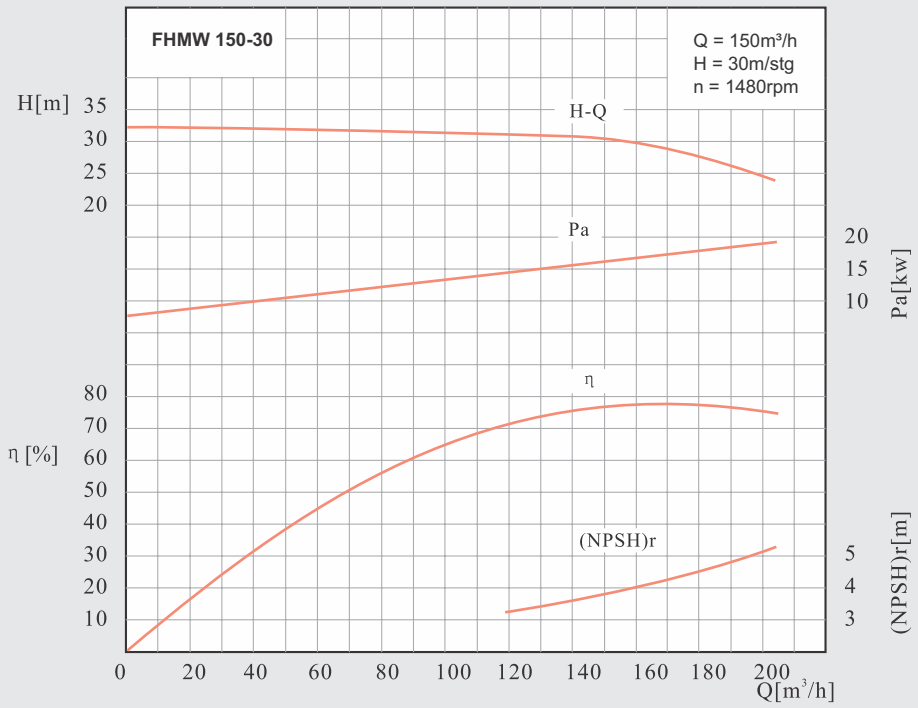

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	(m^3/h)	(L/s)			shaft power	Motor power			
2	119 155 190	33 43 53	64 60 54	1480	28.76 32.84 36.68	55	72.0 77.0 76.5	3.2 3.9 4.8	630
3	119 155 190	33 43 53	96 90 81	1480	43.14 49.26 55.02	75	72.0 77.0 76.5	3.2 3.9 4.8	750
4	119 155 190	33 43 53	128 120 108	1480	57.52 65.68 73.36	90	72.0 77.0 76.5	3.2 3.9 4.8	861
5	119 155 190	33 43 53	160 150 135	1480	71.90 82.10 91.70	110	72.0 77.0 76.5	3.2 3.9 4.8	972
6	119 155 190	33 43 53	192 180 162	1480	86.28 98.52 110.04	132	72.0 77.0 76.5	3.2 3.9 4.8	1084
7	119 155 190	33 43 53	224 210 189	1480	100.66 114.97 128.38	160	72.0 77.0 76.5	3.2 3.9 4.8	1195
8	119 155 190	33 43 53	256 240 216	1480	115.04 131.36 146.72	160	72.0 77.0 76.5	3.2 3.9 4.8	1306
9	119 155 190	33 43 53	288 270 243	1480	129.42 147.78 165.06	200	72.0 77.0 76.5	3.2 3.9 4.8	1418
10	119 155 190	33 43 53	320 300 270	1480	143.80 164.20 183.40	200	72.0 77.0 76.5	3.2 3.9 4.8	1529

* The 3rd digit of model name 'W' indicates water application. This digit can be changed suitable for other application (Refer the model identification code).

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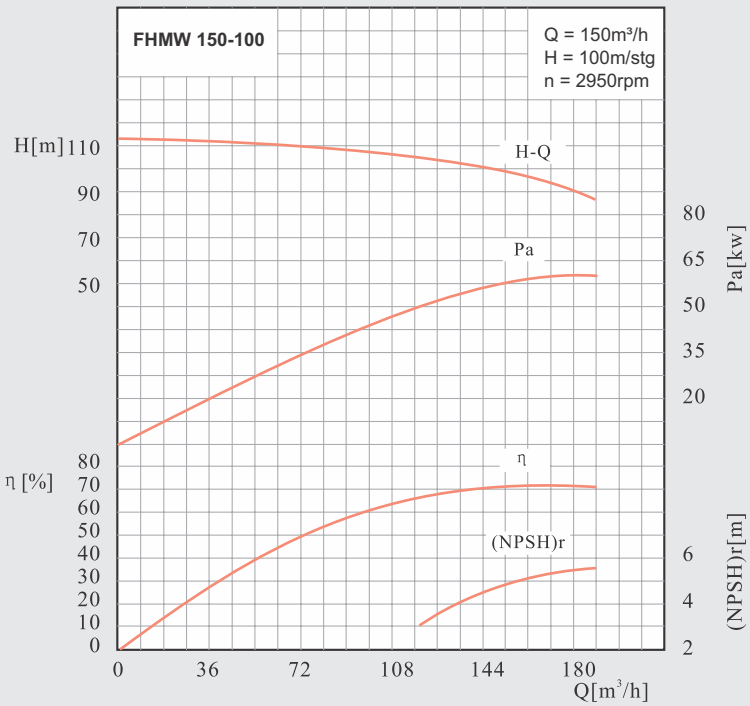
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
3	120 150 180	33.3 41.7 50.0	315 300 270	2950	153 175 184	220	67 70 72	3.4 4.8 5.5	2285
4	120 150 180	33.3 41.7 50.0	420 400 360	2950	205 234 245	280	67 70 72	3.4 4.8 5.5	2435
5	120 150 180	33.3 41.7 50.0	525 500 450	2950	256 292 306	355	67 70 72	3.4 4.8 5.5	2585
6	120 150 180	33.3 41.7 50.0	630 600 540	2950	307 353 368	450	67 70 72	3.4 4.8 5.5	2735
7	120 150 180	33.3 41.7 50.0	735 700 630	2950	358 412 429	500	67 70 72	3.4 4.8 5.5	2885
8	120 150 180	33.3 41.7 50.0	840 800 720	2950	409 470 491	560	67 70 72	3.4 4.8 5.5	3035
9	120 150 180	33.3 41.7 50.0	945 900 810	2950	460 530 552	630	67 70 72	3.4 4.8 5.5	3185
10	120 150 180	33.3 41.7 50.0	1050 1000 900	2950	511 588 613	710	67 70 72	3.4 4.8 5.5	3335

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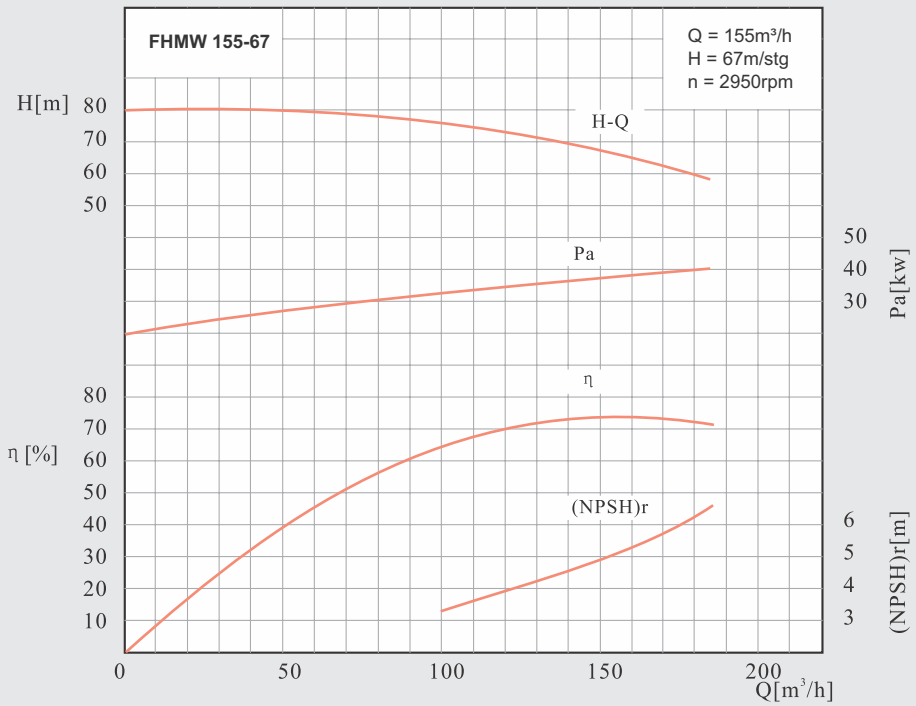
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
3	100 155 185	27.8 43 51.4	228 201 177	2950	97.0 114.7 123.9	132	64 74 72	3.2 5.0 6.6	774
4	100 155 185	27.8 43 51.4	304 268 236	2950	129.4 152.9 165.1	200	64 74 72	3.2 5.0 6.6	869
5	100 155 185	27.8 43 51.4	380 335 295	2950	161.7 191.1 206.4	220	64 74 72	3.2 5.0 6.6	964
6	100 155 185	27.8 43 51.4	456 402 354	2950	194 229.3 247.7	280	64 74 72	3.2 5.0 6.6	1075
7	100 155 185	27.8 43 51.4	532 469 413	2950	226.4 267.5 289	315	64 74 72	3.2 5.0 6.6	1157
8	100 155 185	27.8 43 51.4	608 536 472	2950	258.7 305.7 330.3	355	64 74 72	3.2 5.0 6.6	1242
9	100 155 185	27.8 43 51.4	684 603 531	2950	291.1 344 371.6	450	64 74 72	3.2 5.0 6.6	1320

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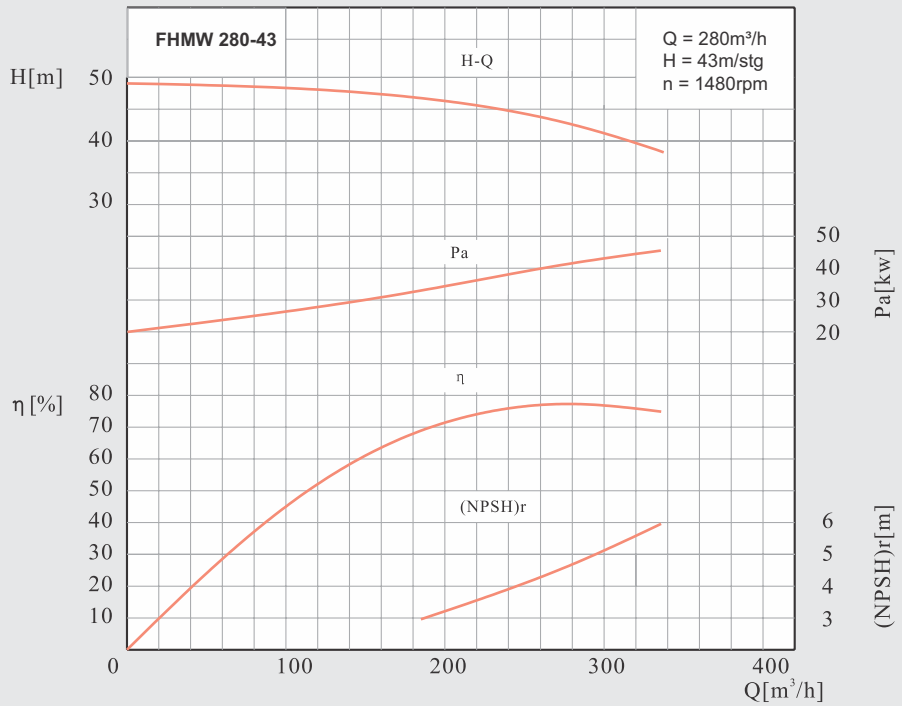
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
2	185 280 335	51.4 77.8 93.1	94 86 76	1480	68.6 85.2 92.4	110	69 77 75	3.0 4.7 6.0	1003
3	185 280 335	51.4 77.8 93.1	141 129 114	1480	103.0 127.7 138.7	160	69 77 75	3.0 4.7 6.0	1205
4	185 280 335	51.4 77.8 93.1	188 172 152	1480	137.3 170.3 184.9	200	69 77 75	3.0 4.7 6.0	1407
5	185 280 335	51.4 77.8 93.1	235 215 190	1480	171.6 212.9 231.1	250	69 77 75	3.0 4.7 6.0	1610
6	185 280 335	51.4 77.8 93.1	282 258 228	1480	205.9 255.5 277.3	315	69 77 75	3.0 4.7 6.0	1812
7	185 280 335	51.4 77.8 93.1	329 301 266	1480	240.2 298.1 323.6	355	69 77 75	3.0 4.7 6.0	2014
8	185 280 335	51.4 77.8 93.1	376 344 304	1480	274.5 340.7 369.8	400	69 77 75	3.0 4.7 6.0	2216
9	185 280 335	51.4 77.8 93.1	423 387 342	1480	308.9 383.2 416.0	450	69 77 75	3.0 4.7 6.0	2418

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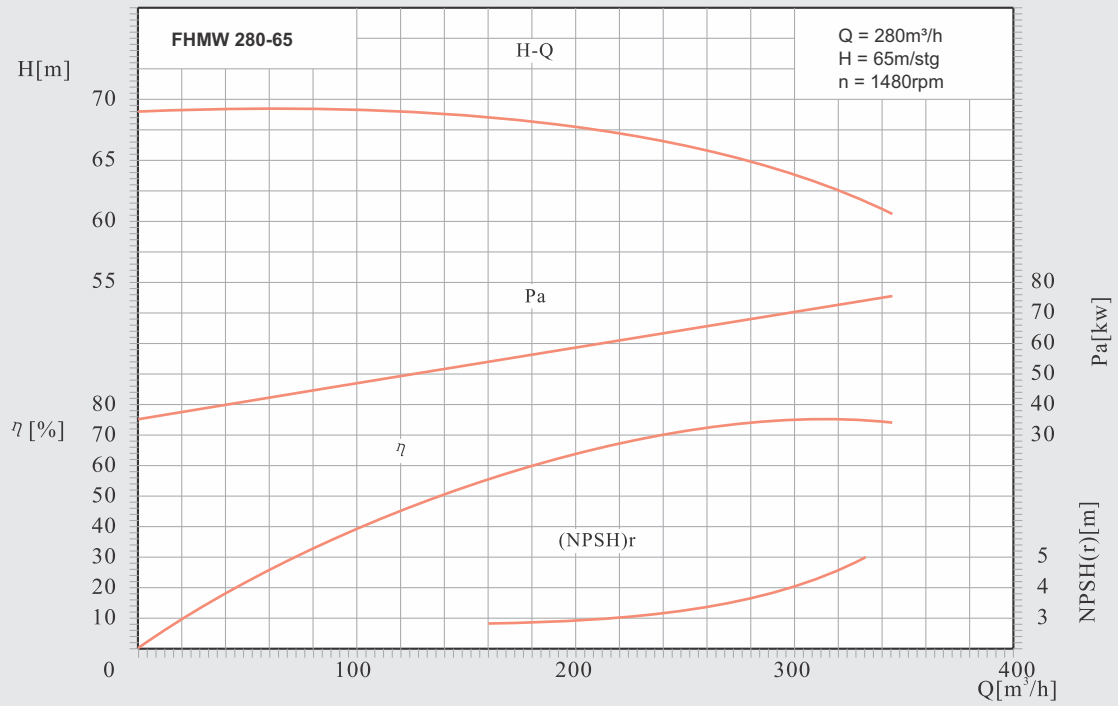
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
6	185	51.4	408	1480	337.0	500	61	2.8	2682
	280	77.8	390		407.4		73	3.7	
	335	93.1	372		452.5		75	5.0	
7	185	51.4	476	1480	393.1	560	61	2.8	2948
	280	77.8	455		475.3		73	3.7	
	335	93.1	434		528.0		75	5.0	
8	185	51.4	544	1480	449.3	630	61	2.8	3213
	280	77.8	520		543.2		73	3.7	
	335	93.1	496		603.3		75	5.0	
9	185	51.4	612	1480	505.5	800	61	2.8	3480
	280	77.8	585		611.1		73	3.7	
	335	93.1	558		678.8		75	5.0	
10	185	51.4	680	1480	561.6	900	61	2.8	3746
	280	77.8	650		679.0		73	3.7	
	335	93.1	620		754.2		75	5.0	

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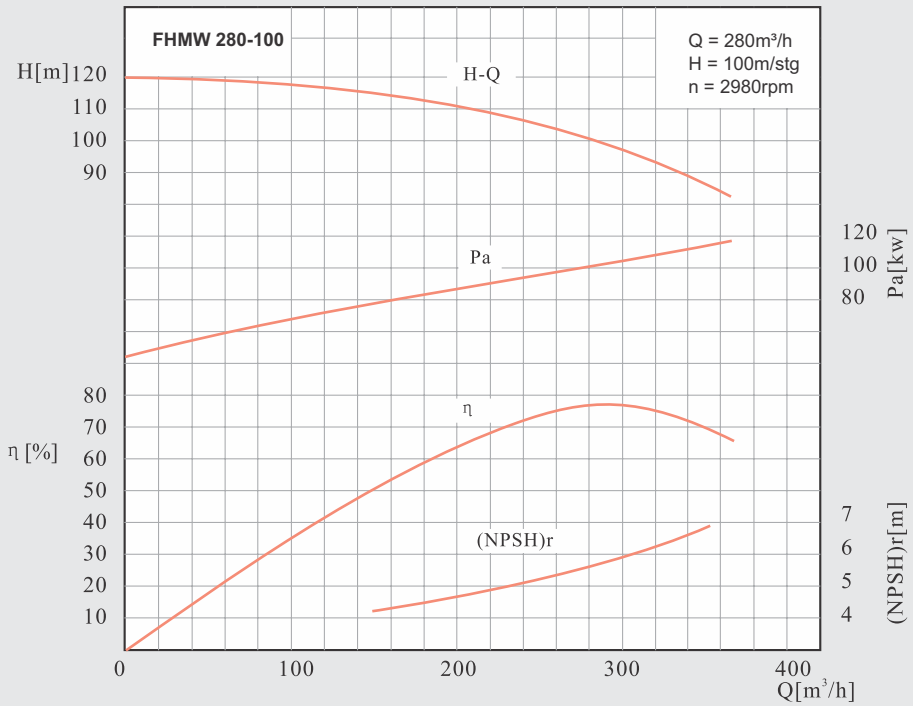
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
2	250 280 300	69.4 77.8 83.3	210 200 196	2980	193.2 198.0 207.8	250	74 77 77	5.1 5.6 5.9	1740
3	250 280 300	69.4 77.8 83.3	315 300 294	2980	289.6 296.9 311.8	400	74 77 77	5.1 5.6 5.9	1920
4	250 280 300	69.4 77.8 83.3	420 400 392	2980	386.3 396.3 416.2	500	74 77 77	5.1 5.6 5.9	2100
5	250 280 300	69.4 77.8 83.3	525 500 490	2980	483.3 495.4 520.3	630	74 77 77	5.1 5.6 5.9	2280
6	250 280 300	69.4 77.8 83.3	630 600 588	2980	580.2 594.5 624.2	710	74 77 77	5.1 5.6 5.9	2460
7	250 280 300	69.4 77.8 83.3	735 700 686	2980	676.6 693.6 728.3	900	74 77 77	5.1 5.6 5.9	2640
8	250 280 300	69.4 77.8 83.3	840 800 784	2980	773.3 792.7 832.3	1000	74 77 77	5.1 5.6 5.9	2820
9	250 280 300	69.4 77.8 83.3	945 900 882	2980	869.9 891.8 936.3	1120	74 77 77	5.1 5.6 5.9	3000
10	250 280 300	69.4 77.8 83.3	1050 1000 980	2980	966.6 990.8 1040.4	1250	74 77 77	5.1 5.6 5.9	3180

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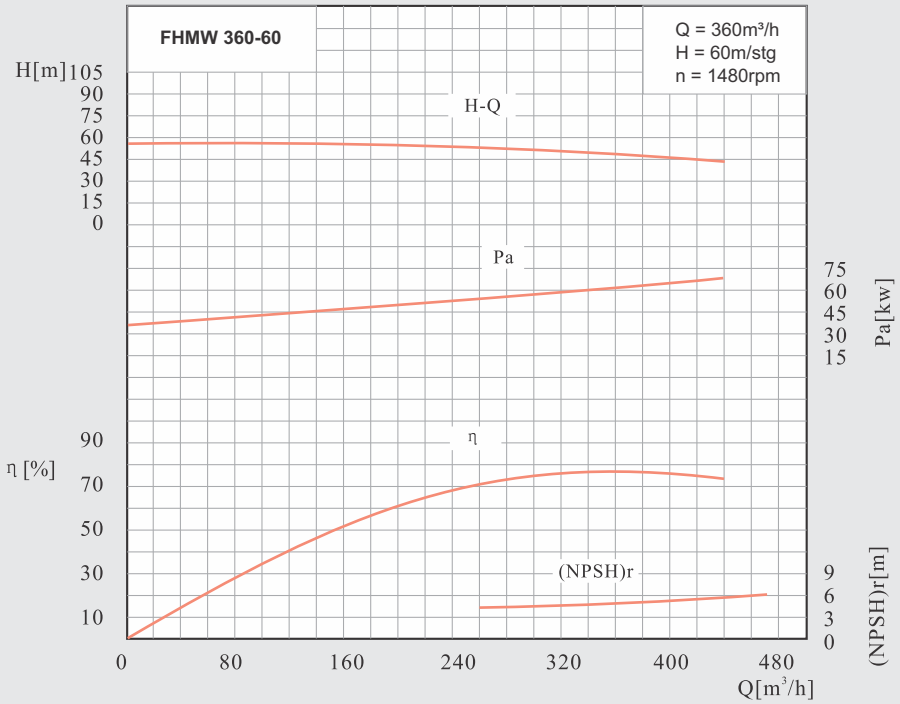
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
2	300 360 440	83.3 100 122.2	106 100 92	1480	115.5 125.8 147	160	75 78 75	4.65 4.7 5.4	676
3	300 360 440	83.3 100 122.2	159 150 138	1480	173.3 188.6 220.6	250	75 78 75	4.65 4.7 5.4	807
4	300 360 440	83.3 100 122.2	212 200 184	1480	231 251.5 294.2	355	75 78 75	4.65 4.7 5.4	938
5	300 360 440	83.3 100 122.2	265 250 230	1480	288.8 314.4 367.7	400	75 78 75	4.65 4.7 5.4	1069
6	300 360 440	83.3 100 122.2	318 300 276	1480	346.6 377.3 441.2	500	75 78 75	4.65 4.7 5.4	1200
7	300 360 440	83.3 100 122.2	371 350 322	1480	404.3 440.2 514.7	560	75 78 75	4.65 4.7 5.4	1331
8	300 360 440	83.3 100 122.2	424 400 368	1480	462.2 503 588.3	630	75 78 75	4.65 4.7 5.4	1462
9	300 360 440	83.3 100 122.2	477 450 414	1480	520 566 661.8	710	75 78 75	4.65 4.7 5.4	1593
10	300 360 440	83.3 100 122.2	530 500 460	1480	577.7 628.8 735.4	800	75 78 75	4.65 4.7 5.4	1724
11	300 360 440	83.3 100 122.2	583 550 506	1480	635.4 692 809	900	75 78 75	4.65 4.7 5.4	1855
12	300 360 440	83.3 100 122.2	636 600 552	1480	693.2 754.6 882.4	1000	75 78 75	4.65 4.7 5.4	1986

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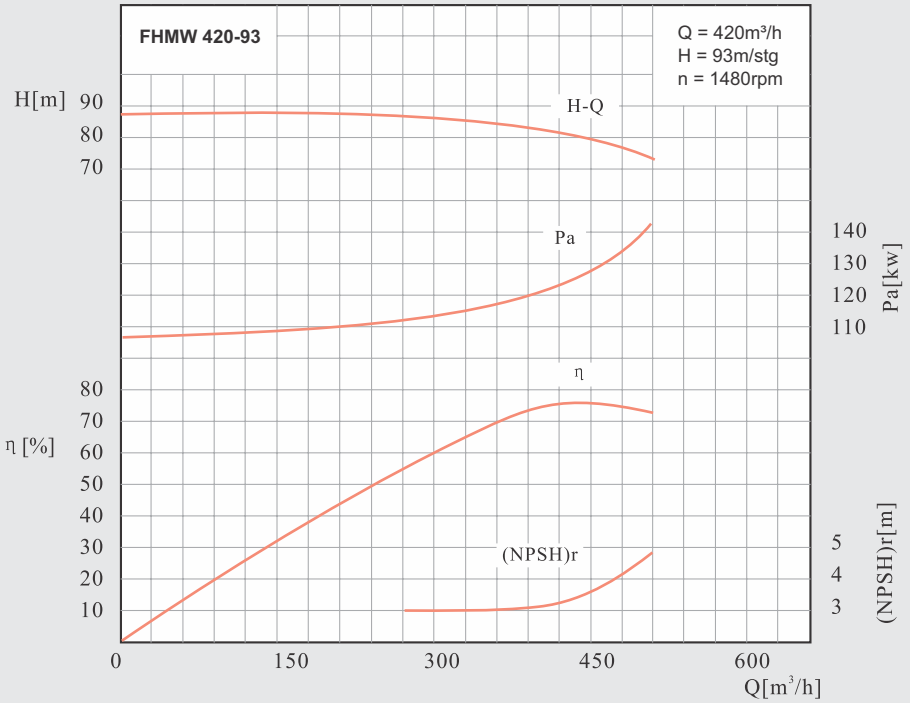
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
2	360 420 480	100 117 134	168.3 163.9 154.7	1480	239 246.1 269.5	315	69 76 75	3.0 3.2 4.2	4000
3	360 420 480	100 117 134	267.3 260.3 245.7	1480	379.8 391.7 428.2	450	69 76 75	3.0 3.2 4.2	4400
4	360 420 480	100 117 134	366.3 356.7 336.7	1480	520.5 536.8 586.8	630	69 76 75	3.0 3.2 4.2	4800
5	360 420 480	100 117 134	465.3 453.1 427.7	1480	661.1 681.9 745.4	800	69 76 75	3.0 3.2 4.2	5200
6	360 420 480	100 117 134	564.3 549.5 518.7	1480	801.8 827 904.1	1000	69 76 75	3.0 3.2 4.2	5600
7	360 420 480	100 117 134	663.3 645.9 609.7	1480	942.5 972.1 1062.7	1120	69 76 75	3.0 3.2 4.2	6100
8	360 420 480	100 117 134	762.3 742.3 700.7	1480	1083.1 1117.2 1221.3	1250	69 76 75	3.0 3.2 4.2	6500
9	360 420 480	100 117 134	861.3 838.7 791.7	1480	1223.8 1262.2 1379.9	1400	69 76 75	3.0 3.2 4.2	6900
10	360 420 480	100 117 134	960.3 935.1 882.7	1480	1036.5 1408.3 1538.5	1600	69 76 75	3.0 3.2 4.2	7300
11	360 420 480	100 117 134	1059.3 1031.5 973.7	1480	1505.1 1552.4 1697.1	1800	69 76 75	3.0 3.2 4.2	7700
12	360 420 480	100 117 134	1153.3 1127.9 1064.7	1480	1645.8 1697.5 1855.7	2000	69 76 75	3.0 3.2 4.2	8100

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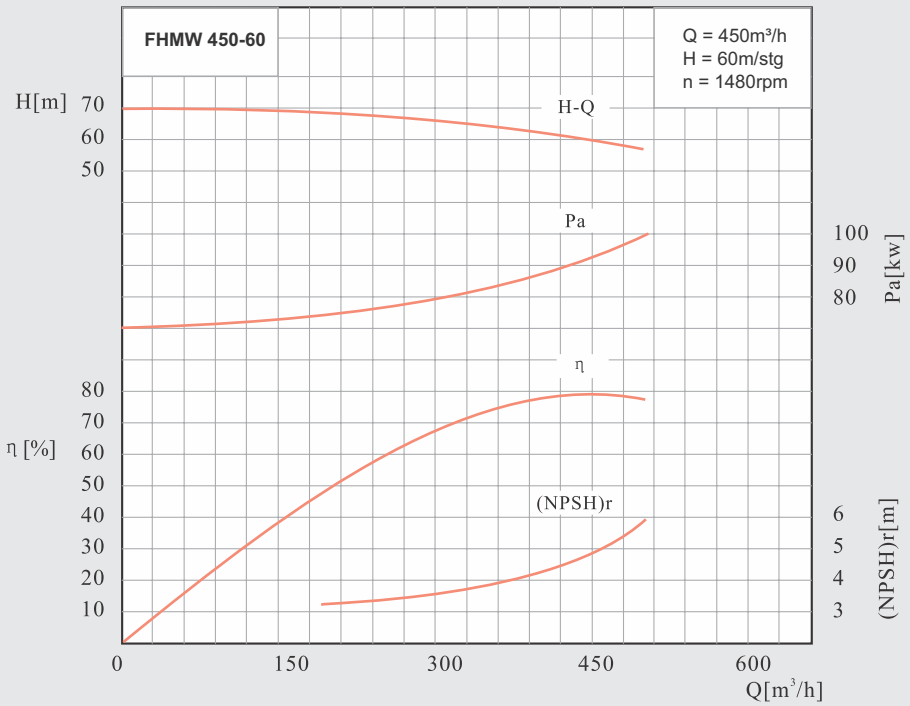
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
2	335 450 500	93.1 125 139	130 120 114	1480	164.7 186.0 199.0	250	72 79 78	3.8 4.9 6.0	1846
3	335 450 500	93.1 125 139	195 180 170	1480	247.1 279.2 298.5	355	72 79 78	3.8 4.9 6.0	2138
4	335 450 500	93.1 125 139	260 240 228	1480	329.4 372.3 398	450	72 79 78	3.8 4.9 6.0	2437
5	335 450 500	93.1 125 139	325 300 285	1480	411.8 465.4 497.5	560	72 79 78	3.8 4.9 6.0	2746
6	335 450 500	93.1 125 139	390 360 342	1480	494.2 558.5 597	630	72 79 78	3.8 4.9 6.0	3054
7	335 450 500	93.1 125 139	455 420 399	1480	576.5 651.5 696.5	800	72 79 78	3.8 4.9 6.0	3362
8	335 450 500	93.1 125 139	520 480 456	1480	658.9 744.6 796	900	72 79 78	3.8 4.9 6.0	3670
9	335 450 500	93.1 125 139	585 540 513	1480	741.2 837.7 895.6	1000	72 79 78	3.8 4.9 6.0	3978
10	335 450 500	93.1 125 139	650 600 570	1480	823.6 930.8 995.1	1120	72 79 78	3.8 4.9 6.0	4287
11	335 450 500	93.1 125 139	715 660 627	1480	906.1 1023.4 1094.9	1250	72 79 78	3.8 4.9 6.0	4595

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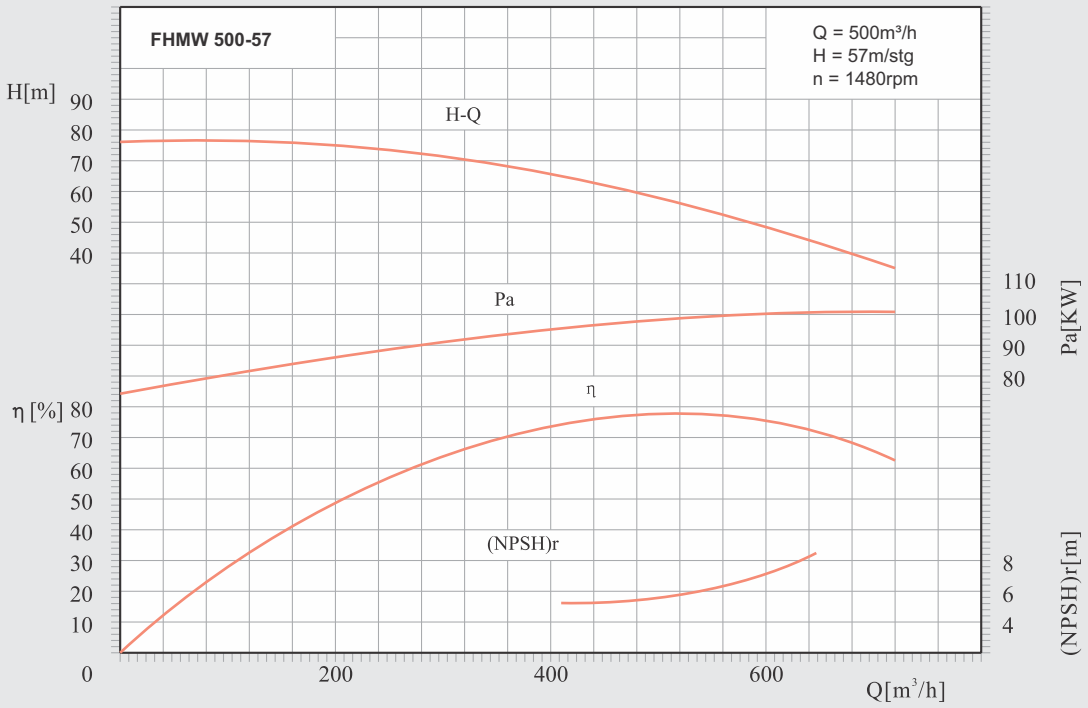
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
2	425 500 600	118 139 167	124 114 100	1480	191.2 196.6 212.5	250	75 77 77	4.6 6.0 7.0	1700
3	425 500 600	118 139 167	186 171 150	1480	286.9 294.6 318.2	355	75 77 77	4.6 6.0 7.0	1950
4	425 500 600	118 139 167	248 228 200	1480	382.8 392.8 424.2	450	75 77 77	4.6 6.0 7.0	2300
5	425 500 600	118 139 167	310 285 250	1480	478.2 491.0 530.3	560	75 77 77	4.6 6.0 7.0	2600
6	425 500 600	118 139 167	372 342 300	1480	573.8 589.2 636.4	710	75 77 77	4.6 6.0 7.0	2900
7	425 500 600	118 139 167	434 399 350	1480	669.5 687.4 742.4	800	75 77 77	4.6 6.0 7.0	3200
8	425 500 600	118 139 167	496 456 400	1480	765.1 785.7 848.5	900	75 77 77	4.6 6.0 7.0	3500
9	425 500 600	118 139 167	558 513 450	1480	860.7 883.8 945.5	1000	75 77 77	4.6 6.0 7.0	4700
10	425 500 600	118 139 167	620 570 500	1480	956.4 982.1 1060.6	1120	75 77 77	4.6 6.0 7.0	4100
11	425 500 600	118 139 167	682 627 550	1480	1051.5 1081.1 1169.2	1250	75 77 77	4.6 6.0 7.0	4400

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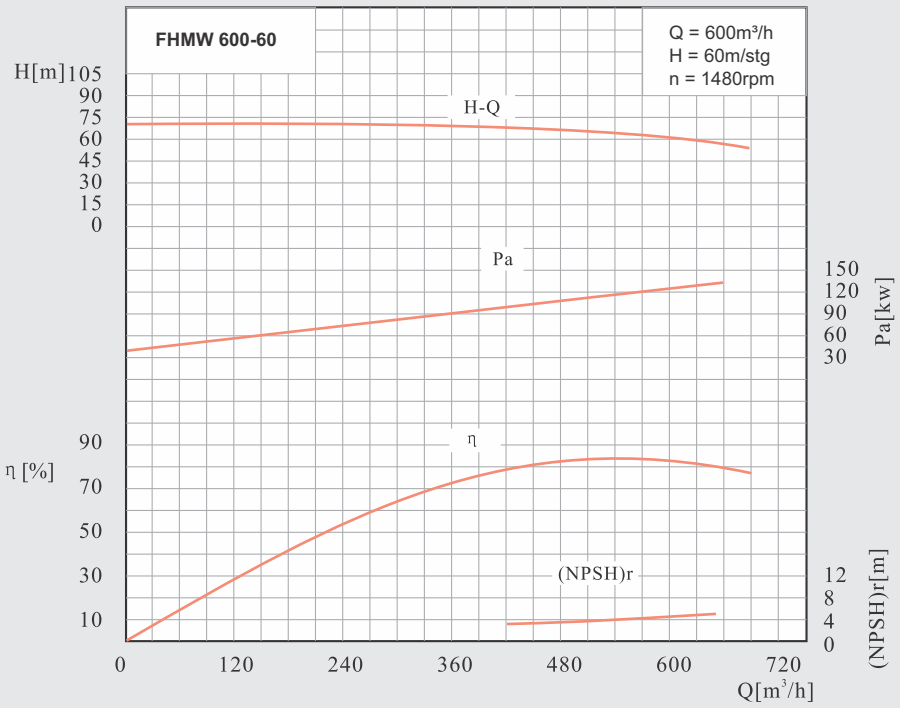
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
2	450 600 638	125 166.6 177.2	130 120 110	1480	201.4 238.8 241.6	280	79 82 79	4.0 4.8 5.2	1750
3	450 600 638	125 166.6 177.2	195 180 165	1480	321.6 328.2 362.4	450	79 82 79	4.0 4.8 5.2	1950
4	450 600 638	125 166.6 177.2	260 240 220	1480	428.8 477.6 483.2	560	79 82 79	4.0 4.8 5.2	2260
5	450 600 638	125 166.6 177.2	325 300 275	1480	536 597 604	710	79 82 79	4.0 4.8 5.2	2570
6	450 600 638	125 166.6 177.2	390 360 330	1480	643.2 716.4 724.8	900	79 82 79	4.0 4.8 5.2	2880
7	450 600 638	125 166.6 177.2	455 420 385	1480	750.4 835.8 845.6	1000	79 82 79	4.0 4.8 5.2	3190
8	450 600 638	125 166.6 177.2	520 480 440	1480	857.6 955.2 966.4	1120	79 82 79	4.0 4.8 5.2	3500
9	450 600 638	125 166.6 177.2	585 540 495	1480	964.8 1074.6 1087.2	1250	79 82 79	4.0 4.8 5.2	3810
10	450 600 638	125 166.6 177.2	650 600 550	1480	1072 1194 1208	1400	79 82 79	4.0 4.8 5.2	4120

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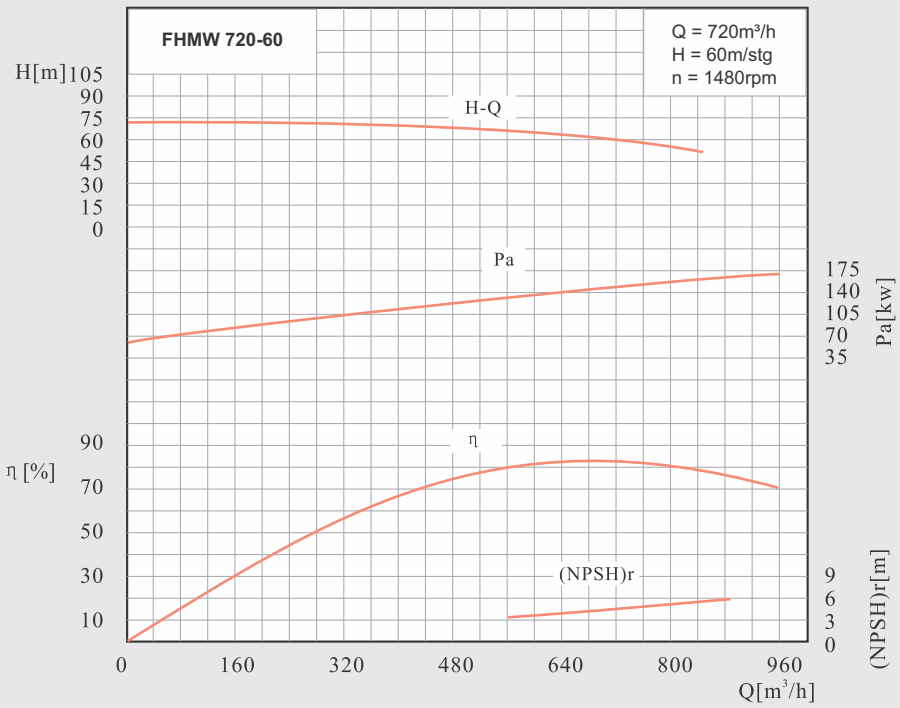
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
2	550 720 850	152.8 200 236	132 120 108	1480	260 294 318.4	355	76 80 78.5	3.5 4.5 5.5	1830
3	550 720 850	152.8 200 236	198 180 162	1480	390 441 477.6	560	76 80 78.5	3.5 4.5 5.5	2040
4	550 720 850	152.8 200 236	264 240 216	1480	520 588 636.8	710	76 80 78.5	3.5 4.5 5.5	2350
5	550 720 850	152.8 200 236	330 300 270	1480	640 735 796	800	76 80 78.5	3.5 4.5 5.5	2650
6	550 720 850	152.8 200 236	396 360 324	1480	780 882 955.2	1000	76 80 78.5	3.5 4.5 5.5	2960
7	550 720 850	152.8 200 236	462 420 378	1480	910 1029 1114.4	1250	76 80 78.5	3.5 4.5 5.5	3280
8	550 720 850	152.8 200 236	528 480 432	1480	1040 1176 1273.6	1400	76 80 78.5	3.5 4.5 5.5	3595

* The 3rd digit of model name 'W' indicates water application. This digit can be changed suitable for other application (Refer the model identification code).

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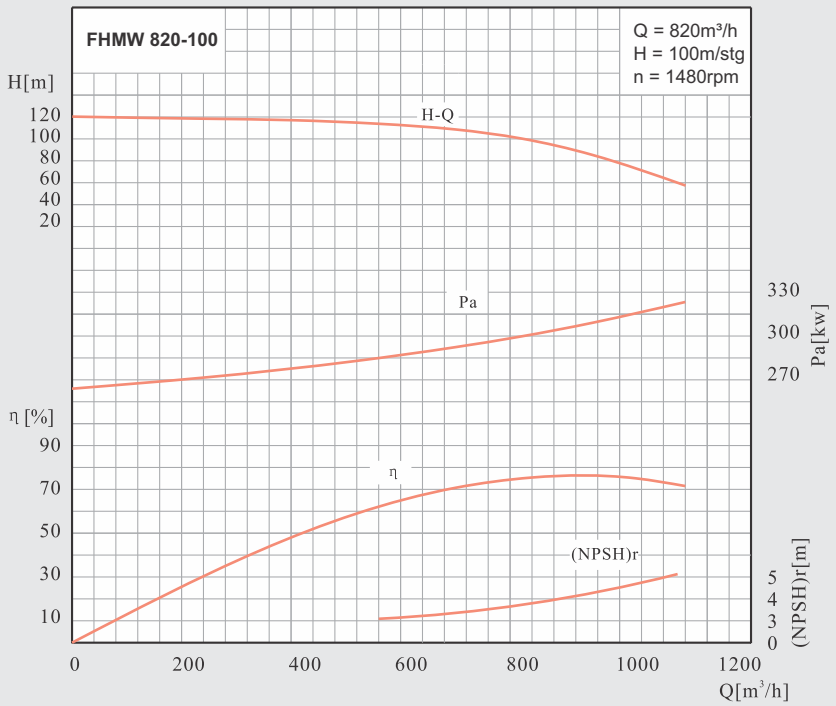
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)	Weight (kg)
	(m^3/h)	(L/s)			shaft power	Motor power			
3	650 820 940	180.6 227.8 261.1	300 290 264	1480	717.3 863.1 888.9	1000	74 75 76	3.4 3.7 4.2	6205
4	650 820 940	180.6 227.8 261.1	400 390 364	1480	956.5 1160.8 1225.6	1250	74 75 76	3.4 3.7 4.2	6720
5	650 820 940	180.6 227.8 261.1	500 490 455	1480	1195.6 1458.4 1532.0	1600	74 75 76	3.4 3.7 4.2	7235
6	650 820 940	180.6 227.8 261.1	600 590 534	1480	1434.7 1756.0 1798.0	1800	74 75 76	3.4 3.7 4.2	7750
7	650 820 940	180.6 227.8 261.1	700 690 637	1480	1673.8 2053.6 2144.8	2240	74 75 76	3.4 3.7 4.2	8265
8	650 820 940	180.6 227.8 261.1	800 790 729	1480	1912.9 2351.3 2454.5	2500	74 75 76	3.4 3.7 4.2	8780
9	650 820 940	180.6 227.8 261.1	900 890 819	1480	2152.0 2648.9 2757.5	2800	74 75 76	3.4 3.7 4.2	9295

* The 3rd digit of model name 'W' indicates water application. This digit can be changed suitable for other application (Refer the model identification code).

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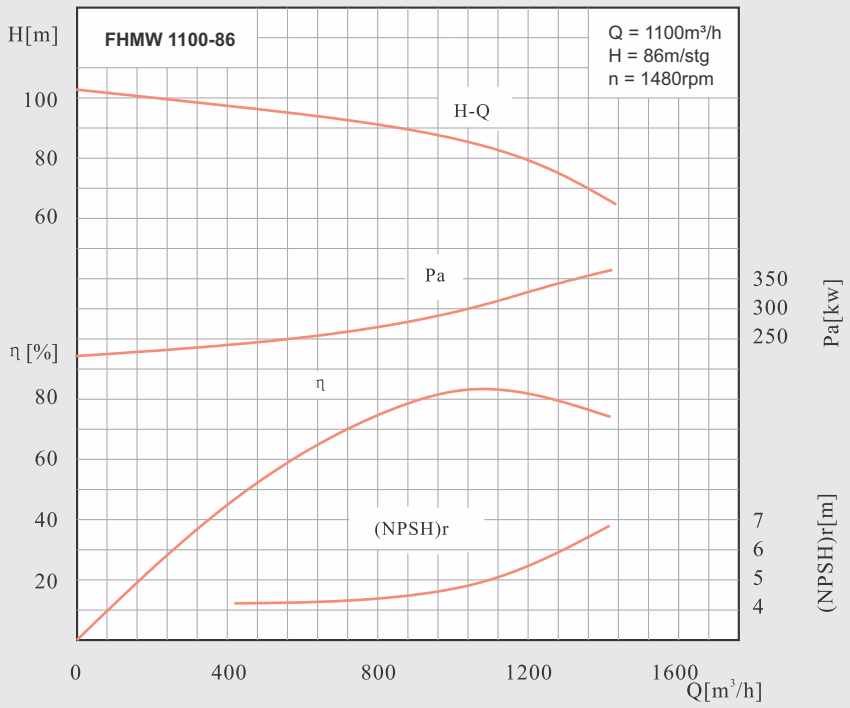
PERFORMANCE CURVE



PERFORMANCE TABLE

No of stage	Capacity		Head (m)	Speed (r/min)	Power (kW)		Efficiency (%)	(NPSH)r (m)
	(m^3/h)	(L/s)			shaft power	Motor power		
3	880 1100 1265	244.4 305.6 351.4	262 250 229	1480	805.4 913.8 986.7	1120	78 82 80	4.5 5.0 5.6
4	880 1100 1265	244.4 305.6 351.4	361 345 317	1480	1109.8 1261.1 1365.9	1600	78 82 80	4.5 5.0 5.6
5	880 1100 1265	244.4 305.6 351.4	460 440 404	1480	1414.2 1608.4 1740.7	1800	78 82 80	4.5 5.0 5.6
6	880 1100 1265	244.4 305.6 351.4	560 535 491	1480	1721.6 1955.7 2115.7	2240	78 82 80	4.5 5.0 5.6
7	880 1100 1265	244.4 305.6 351.4	659 630 578	1480	2026.1 2302.9 2490.5	2500	78 82 80	4.5 5.0 5.6
8	880 1100 1265	244.4 305.6 351.4	758 725 632	1480	2213.1 2650.2 2723.2	2800	78 82 80	4.5 5.0 5.6

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Brief table for the frictional loss of a straight pipe(for evaluation), the lost meters of a 100m straight pipe takes the newly cast iron pipe as the standard and multiple for the old one.

Pipe diameter (mm)	Capacity (L/s)																							
	1	2	4	6	8	10																		
25	32.7	13.0																						
38	3.5	14	55				15	20																
50	0.8	3.1	13	29					25	30														
65		1.6	3.2	7.1	13	20					40	50												
75		0.4	0.8	3.3	5.9	9.6	21.6						60	70										
100			0.23	0.8	1.3	2.1	6.8	8.6	13	19.4					80	90								
125				0.23	0.4	0.63	1.3	2.7	4.1	5.9	10.7						100	110						
150					0.16	0.26	0.58	1.1	1.6	2.3	4.2	6.4	9.4						120	130				
175						0.11	0.27	0.5	0.74	1.05	1.9	2.9	4.3	5.8	7.7	9.6					140	160		
200							0.13	0.26	0.37	0.53	0.93	1.5	2.1	2.9	3.7	4.7	6.1	7.2	8.5				180	200
250								0.07	0.12	0.18	0.30	0.48	0.68	0.93	1.2	1.5	1.9	2.3	2.8	3.3	3.7	4.9	5.2	
300										0.07	0.12	0.19	0.27	0.37	0.49	0.61	0.76	0.9	1.1	1.3	1.5	2.0	2.4	3.0

The length of a straight pipe converted into from both valve and elbow(each)

Variety	Convert into the times of the diameter of a straight pipe	Remark
Standard elbow	12	Multiple in case of unopen
Fully opened gate valve	25	
Back valve	100	
Foot valve	100	Partial block-up multipled

Note:For instance, a 100mmdiameter pipe, the foot valve has a 100×100=10000mm=10m diameter when which is converted into 100 times that of the pipe's diameter. Suppose the flow is 8L/s, looked into the above table, the loss of the straight pipe is 1.3m each 100m, then the one for 100mm is 0.13m, that is, for a 100mm foot valve with a flow 8L/s, its head low is 0.13m.

Limit of the maximun flow for a pipe with a certain diameter

Pipeline diameter (mm)	Maximum flow (L/s)	Maximum flow rate (m/s)	Pipeline diameter (mm)	Maximum flow (L/s)	Maximum flow rate (m/s)
25	1	2.04	125	30.0	2.44
38	2.5	1.69	150	43.0	2.45
50	4.17	2.12	175	60.0	2.49
65	6.67	2.01	200	83.3	2.69
75	10.0	2.26	250	133.0	2.72
100	18.4	2.33	300	192.0	2.71

Note: The pipeline loss would be made greatly increased once the limit is over.

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