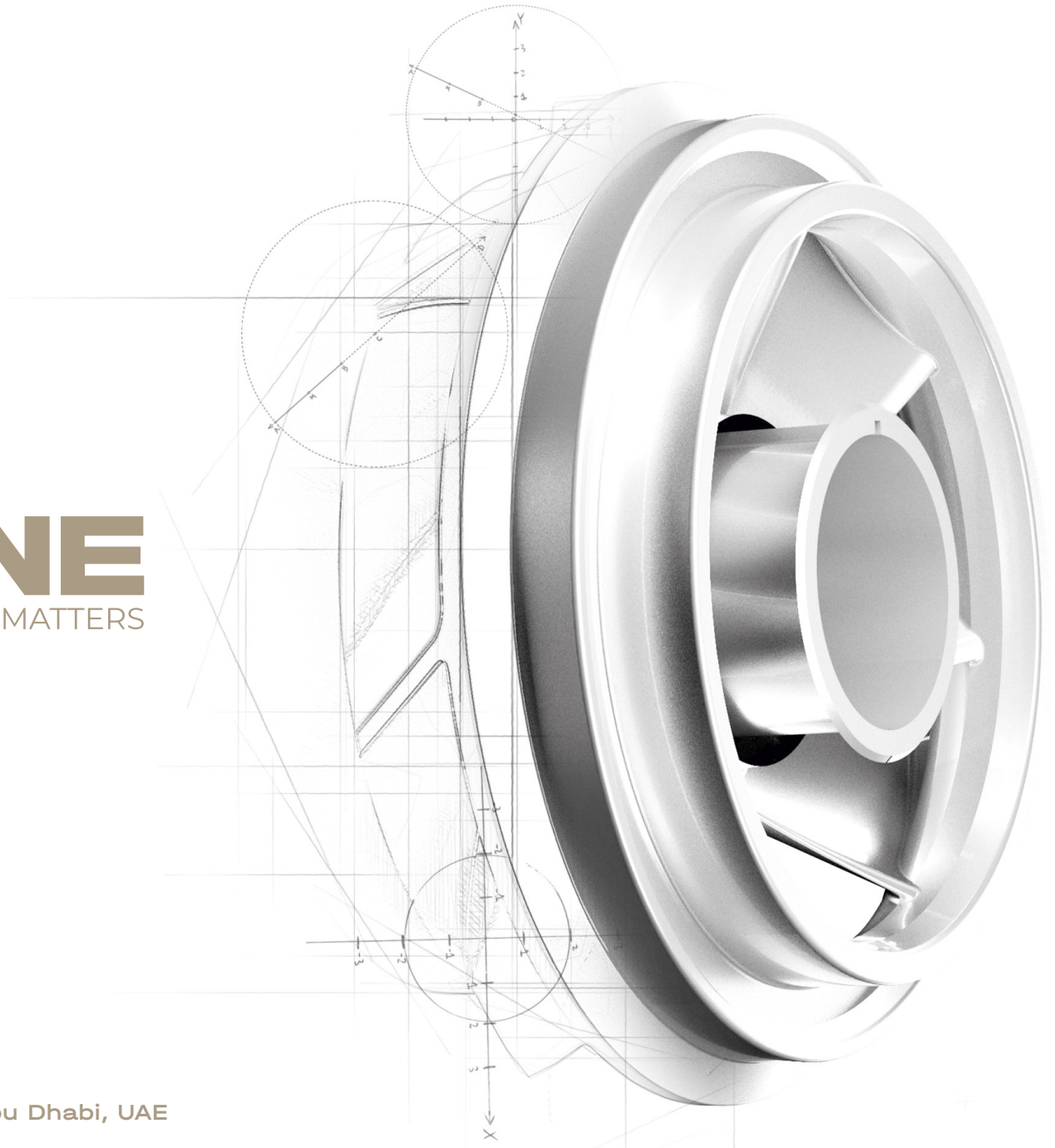
EXCELINE

PERFORMANCE MATTERS



CATALOGUE

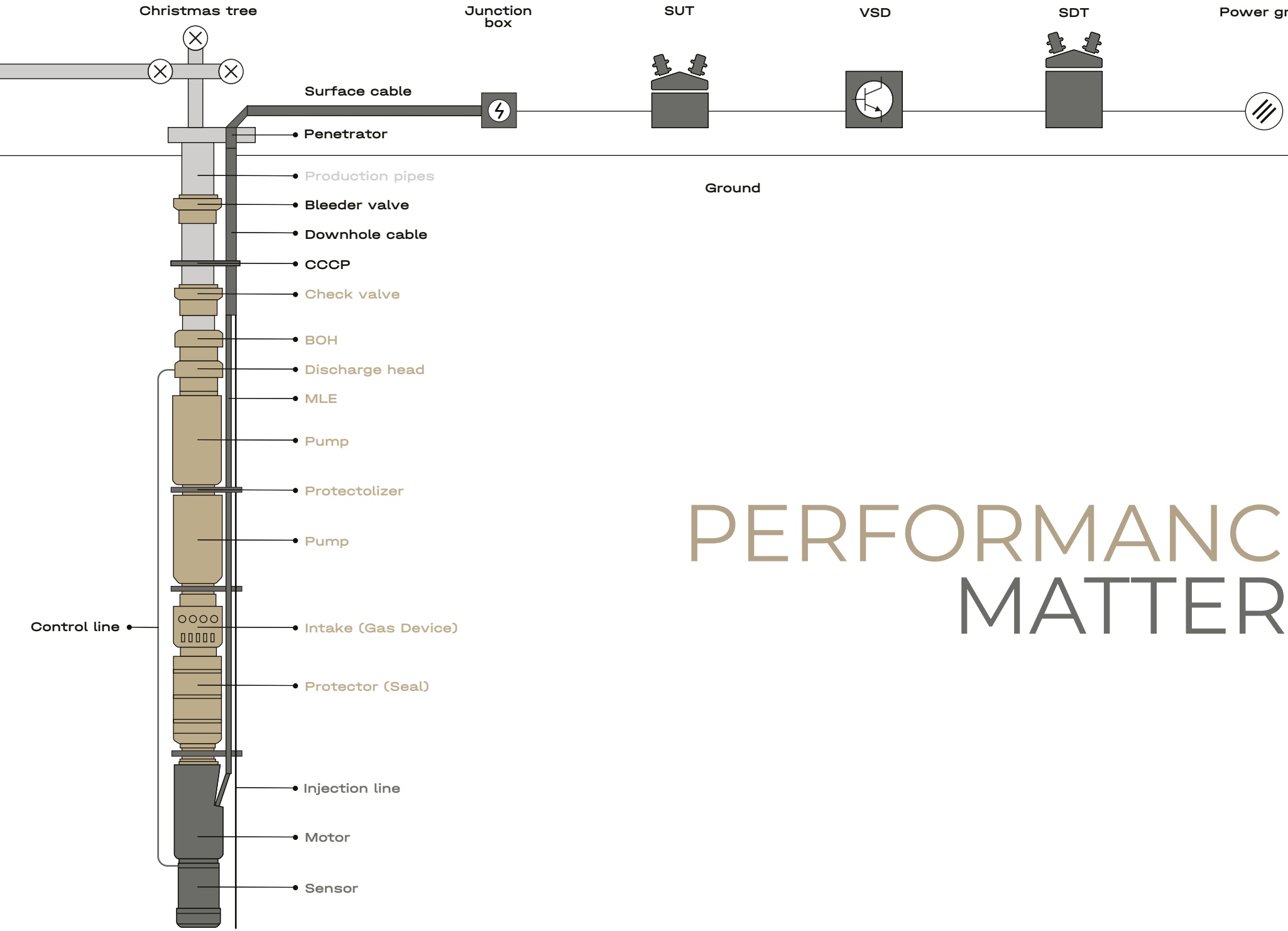
Abu Dhabi, UAE

EXCELINE
PERFORMANCE MATTERS

Exceline®, derives its name from a simple belief that to be a true regional leader in the provisioning of a total Electrical Submersible Pumping (ESP) solution, operational excellence is the only issue that matters.

Exceline®, a UAE based engineering and services company, has heritage of over 14 years' experience, servicing the needs of clients in often highly volatile situations.
Our focus on operational excellence, ensures continuity of crude oil extraction operations for those clients.

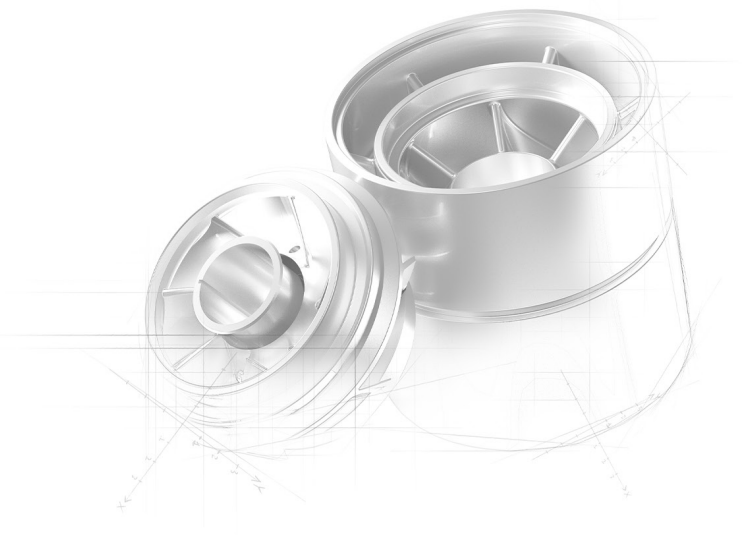
Exceline® is proudly committed to building local and regional manufacturing capacity in Abu Dhabi to compliment repairs and maintenance support services. With a hub and spoke operations model, Exceline® can support operations throughout the Middle East, North and Sub Saharan Africa. Exceline® will support any project throughout the design, manufacturing and installation, and the ongoing service contracts required to maintain on-site production within agreed downtime limits.



PERFORMANCE MATTERS

Downhole equipment

ESP Selection recommendations / questionnaire
141-143 pages



Electric Submersible Pumps

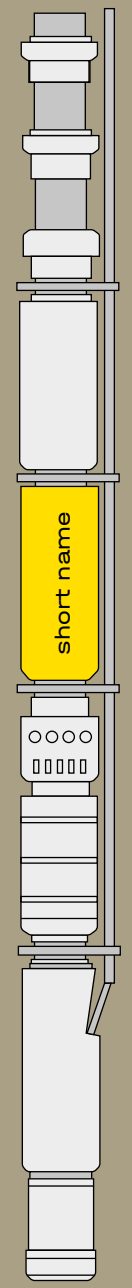
Example of abbreviation
ExP406-200 FLT 0.87 S14 84STG CR1 AR1 10

Short name:
ExP406-200

Ex	P	406	200	FLT	0.87	S14	84STG	CR1	AR1	10
1	2	3	4	5	6	7	8	9	10	11

1	Manufacturer Exceline®
2	P – Pump
3	ESP series
4	ESP flow rate, bpd @ Best Efficiency Point (BEP) at 60 Hz
5	Pump design FLT – floater SCMP – semi-compression CMP – compression
6	Shaft diameter, inch
7	Shaft material and yield strength: S8 Stainless steel (785 MPa) S11 Stainless steel (1080 MPa) S13 Stainless steel (1275 MPa) S14 Stainless steel (1370 MPa) S16 Stainless steel (1570 MPa) M8 Monel alloy (785 MPa) I8 Inconel alloy (785 MPa) I11 Inconel alloy (1080 MPa) I13 Inconel alloy (1275 MPa) I14 Inconel alloy (1370 MPa)

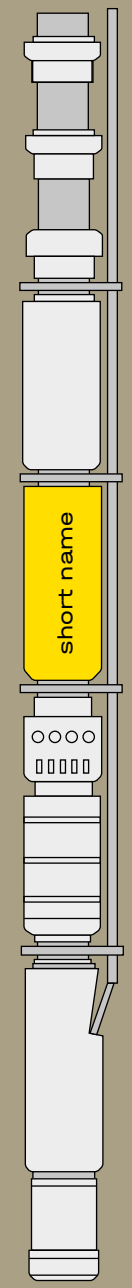
8	Number of stages
9	Corrosion resistance design: CR0 – carbon steel head, base and housing, carbon steel fasteners CR1 – stainless steel head and base, carbon steel housing with anti-corrosion coating (super stainless flame coating), monel fasteners CR2 – stainless steel head, base and housing, monel fasteners
10	Abrasion resistance AR1 – For fluid containing solids up to 175 ptb (500 mg/l). Applicable for all Floater pumps. AR2 – For fluid containing solids up to 350 ptb (1000 mg/l). Applicable only for Compression and Semi-compression pumps.
11	Housing data



Electric Submersible Pumps

Summary

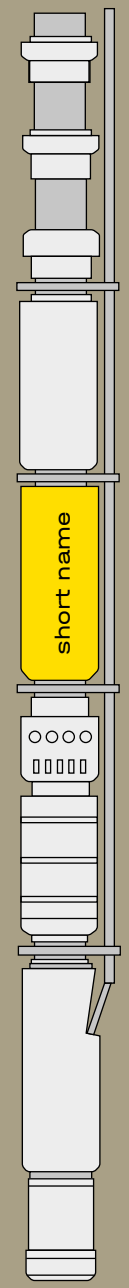
ESP	Housing Diameter	Maximal ESP System OD (incl. MLE AWG#5, 4kV)	Stage type	Efficiency	Shaft Diameter	BEP@50 Hz				BEP@60 Hz			
						Capacity	Optimum Operating Range	Head	Power	Capacity	Optimum Operating Range	Head	Power
	inch mm	inch mm		%	inch mm	BPD m^3	BPD m^3	ft m	HP kW	BPD m^3	BPD m^3	ft m	HP kW
ExP272-150	**272** 69	**3.23** 82	radial	45	**0.5** 12.8	**128** 21	**97–162** 16–26	**8.9** 2.71	**0.02** 0.01	**157** 25	**117–194** 19–31	**12.81** 3.9	**0.03** 0.02
ExP272-260	**272** 69	**3.23** 82	radial	50	**0.5** 12.8	**220** 35	**147–294** 23–47	**8.04** 2.45	**0.03** 0.02	**264** 42	**177–353** 28–56	**11.57** 3.53	**0.05** 0.03
ExP272-390	**272** 69	**3.23** 82	radial	59	**0.5** 12.8	**327** 52	**230–425** 37–68	**9.38** 2.86	**0.04** 0.03	**390** 62	**276–511** 44–81	**13.51** 4.12	**0.07** 0.05
ExP319-200	**3.19** 81	**3.74** 95	radial	40	**0.55** 14	**173** 28	**125–225** 20–35	**11.51** 3.51	**0.04** 0.03	**208** 33	**150–265** 24–43	**16.58** 5.05	**0.06** 0.05
ExP319-300	**3.19** 81	**3.74** 95	radial	49	**0.55** 14	**261** 42	**199–357** 32–57	**13.77** 4.2	**0.05** 0.04	**313** 50	**238–429** 38–68	**19.83** 6.04	**0.09** 0.07
ExP319-700	**3.19** 81	**3.74** 95	radial	57	**0.55** 14	**585** 93	**440–730** 70–116	**10.33** 3.15	**0.05** 0.04	**698** 93	**525–870** 83–135	**14.87** 4.53	**0.09** 0.07
ExP362-200	**3.62** 92	**4.7** 119.3	radial	35	**0.67** 17	**157** 25	**113–220** 18–35	**14.84** 4.52	**0.05** 0.04	**189** 30	**136–264** 22–42	**17.77** 6.51	**0.09** 0.07
ExP362-230	**3.62** 92	**4.7** 119.3	radial	44	**0.67** 17	**189** 30	**126–282** 20–45	**15.67** 4.78	**0.05** 0.04	**226** 36	**153–340** 25–54	**22.57** 6.88	**0.09** 0.07
ExP362-260	**3.62** 92	**4.7** 119.3	radial	45	**0.67** 17	**218** 35	**126–282** 20–45	**15.2** 4.62	**0.06** 0.05	**260** 42	**168–376** 27–60	**21.8** 6.65	**0.1** 0.07
ExP362-380	**3.62** 92	**4.7** 119.3	radial	48	**0.67** 17	**312** 50	**223–408** 36–64	**16.8** 5.1	**0.08** 0.06	**375** 60	**268–490** 43–78	**24.2** 7.4	**0.14** 0.1
ExP362-450	**3.62** 92	**4.7** 119.3	radial	52	**0.67** 17	**370** 59	**255–472** 40–75	**18.21** 5.55	**0.1** 0.07	**447** 71	**305–565** 49–90	**26.23** 7.99	**0.17** 0.13
ExP362-750	**3.62** 92	**4.7** 119.3	radial	58	**0.67** 17	**624** 100	**505–756** 80–120	**18.8** 5.7	**0.15** 0.11	**750** 120	**610–910** 98–143	**27.1** 8.3	**0.26** 0.19
ExP362-940	**3.62** 92	**4.7** 119.3	radial	55	**0.67** 17	**780** 120	**505–1000** 80–160	**18.8** 5.7	**0.2** 0.15	**940** 150	**610–1200** 98–190	**27.1** 8.25	**0.34** 0.25
ExP362-1500	**3.62** 92	**4.7** 119.3	radial	54	**0.79** 20	**1255** 200	**880–1570** 140–250	**15.2** 4.65	**0.27** 0.2	**1500** 240	**1060–1880** 170–300	**22.1** 6.7	**0.47** 0.35
ExP406-200	**4.06** 103	**4.91** 124.8	radial	33	**0.67** 17	**157** 25	**113–219** 18–35	**24.7** 7.51	**0.09** 0.06	**189** 30	**136–264** 22–42	**35.5** 10.82	**0.15** 0.11



Electric Submersible Pumps

Summary

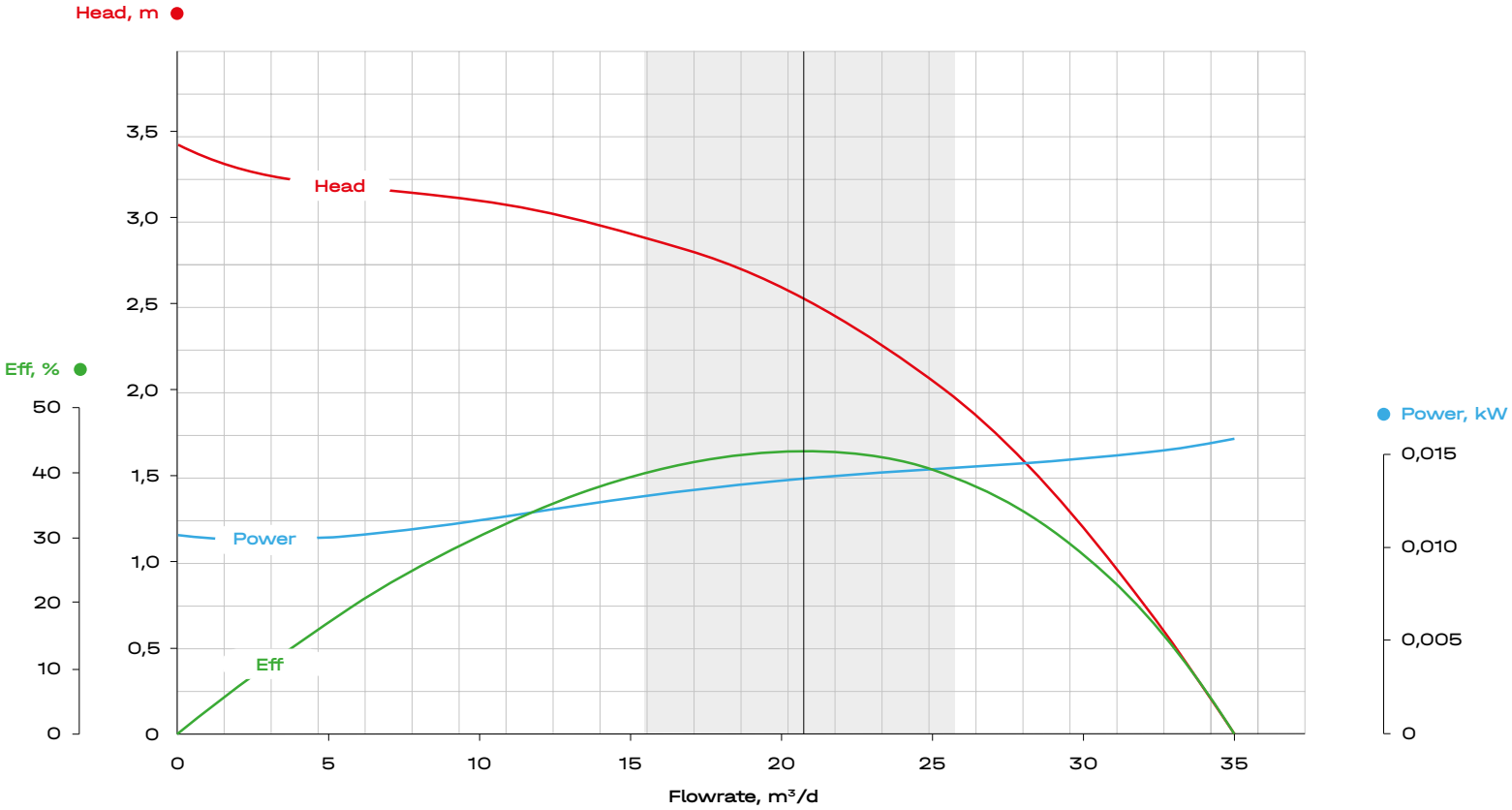
ESP	Housing Diameter	Maximal ESP System OD (incl. MLE AWG#5, 4kV)	Stage type	Efficiency	Shaft Diameter	BEP@50 Hz				BEP@60 Hz			
						Capacity	Optimum Operating Range	Head	Power	Capacity	Optimum Operating Range	Head	Power
	inch mm	inch mm		%	inch mm	BPD m^3	BPD m^3	ft m	HP kW	BPD m^3	BPD m^3	ft m	HP kW
ExP406-260	**4.06** 103	**4.91** 124.8	radial	38	**0.67** 17	**211** 34	**127-281** 20-45	**21.4** 6.5	**0.09** 0.07	**252** 40	**154-337** 24-54	**30.9** 9.4	**0.15** 0.11
ExP406-380	**4.06** 103	**4.91** 124.8	radial	46	**0.67** 17	**311** 50	**190-440** 30-70	**19.7** 6	**0.1** 0.07	**377** 60	**227-528** 36-84	**28.3** 8.63	**0.17** 0.13
ExP406-750	**4.06** 103	**4.91** 124.8	radial	58	**0.79** 20	**629** 100	**440-880** 70-140	**24.3** 7.41	**0.19** 0.15	**755** 120	**530-1055** 85168	**34.98** 10.66	**0.34** 0.25
ExP406-940	**4.06** 103	**4.91** 124.8	radial	58	**0.79** 20	**780** 124	**600-1000** 95-160	**25** 7.62	**0.24** 0.18	**937** 149	**730-1200** 115-190	**36** 10.98	**0.41** 0.31
ExP406-1200	**4.06** 103	**4.91** 124.8	radial	56	**0.79** 20	**1000** 160	**820-1280** 130-200	**23.8** 7.2	**0.31** 0.23	**1200** 190	**990-1540** 160-245	**34.3** 10.4	**0.54** 0.4
ExP406-1500	**4.06** 103	**4.91** 124.8	radial	54	**0.79** 20	**1260** 200	**940-1600** 150-250	**23.2** 7.07	**0.43** 0.32	**1500** 240	**1135-1885** 180-300	**33.4** 10.2	**0.74** 0.55
ExP406-1800	**4.06** 103	**4.91** 124.8	radial	46	**0.79** 20	**1500** 240	**1200-1760** 190-280	**19.8** 6	**0.48** 0.35	**1800** 280	**1440-2110** 180-300	**28.6** 8.7	**0.84** 0.62
ExP406-2100	**4.06** 103	**4.91** 124.8	radial	44	**0.79** 20	**1740** 280	**1390-2200** 220-350	**18.4** 5.63	**0.55** 0.41	**2100** 335	**1660-2640** 265-420	**26.6** 8.1	**0.94** 0.69
ExP535-2600	**5.35** 535	**6.04** 153.5	mix	68	**0.87** 22	**2150** 340	**1300-2700** 210-430	**32.5** 9.9	**0.76** 0.56	**2580** 410	**1600-3200** 380-510	**46.76** 14.25	**1.31** 0.97
ExP535-3500	**5.35** 535	**6.04** 153.5	mix	69	**0.87** 22	**2900** 460	**2000-3800** 320-600	**34.4** 10.6	**1.07** 0.79	**3500** 560	**2400-4600** 380-730	**50** 15.1	**1.85** 1.38
ExP535-4700	**5.35** 535	**6.04** 153.5	mix	73	**0.87** 22	**4000** 630	**2330-4710** 370-750	**36** 11	**1.43** 1.05	**4700** 750	**2830-5660** 450-900	**53.8** 16.4	**2.46** 1.8
ExP535-6800	**5.35** 535	**6.04** 153.5	mix	75	**0.87** 22	**5660** 900	**3780-6920** 600-1100	**28.2** 8.6	**1.6** 1.18	**6800** 1080	**4400-8170** 700-1300	**40.6** 12.4	**2.76** 2.03
ExP535-7600	**5.35** 535	**6.04** 153.5	mix	75	**0.87** 22	**6290** 1000	**3960-7100** 630-1130	**28.8** 8.8	**1.82** 1.34	**7550** 1200	**4750-8520** 760-1350	**41.5** 12.6	**3.13** 2.3
ExP535-9800	**5.35** 535	**6.04** 153.5	mix	76	**1.18** 30	**8170** 1300	**4150-10060** 660-1600	**31.8** 9.7	**2.52** 1.85	**9800** 1560	**4970-12070** 790-1920	**45.8** 14	**4.35** 3.2



ExP272-150

Pump performance curve

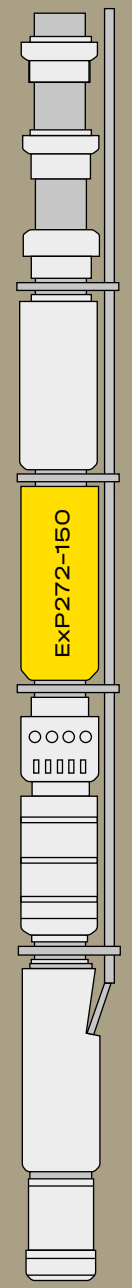
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 272 series (OD 69 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	44%		**Shaft Diameter**	0.50 Inch	12.8 mm
Capacity	128 BPD	21 m³/day	**Shaft broken HP - S13**	75 HP	56 KW
Head	8.36 ft	2.55 m	**Shaft broken HP - S14**	86 HP	64 KW
Optimum Operating Range	97–162 BPD	16–26 m³/day	**Shaft broken HP - S16**	97 HP	72 KW
Pump Housing Diameter	2.72 in	69 mm	**Shaft Cross Sectional Area**	0.20 Inch²	129 mm²
Minimus Casing Size	3.23 in	82 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

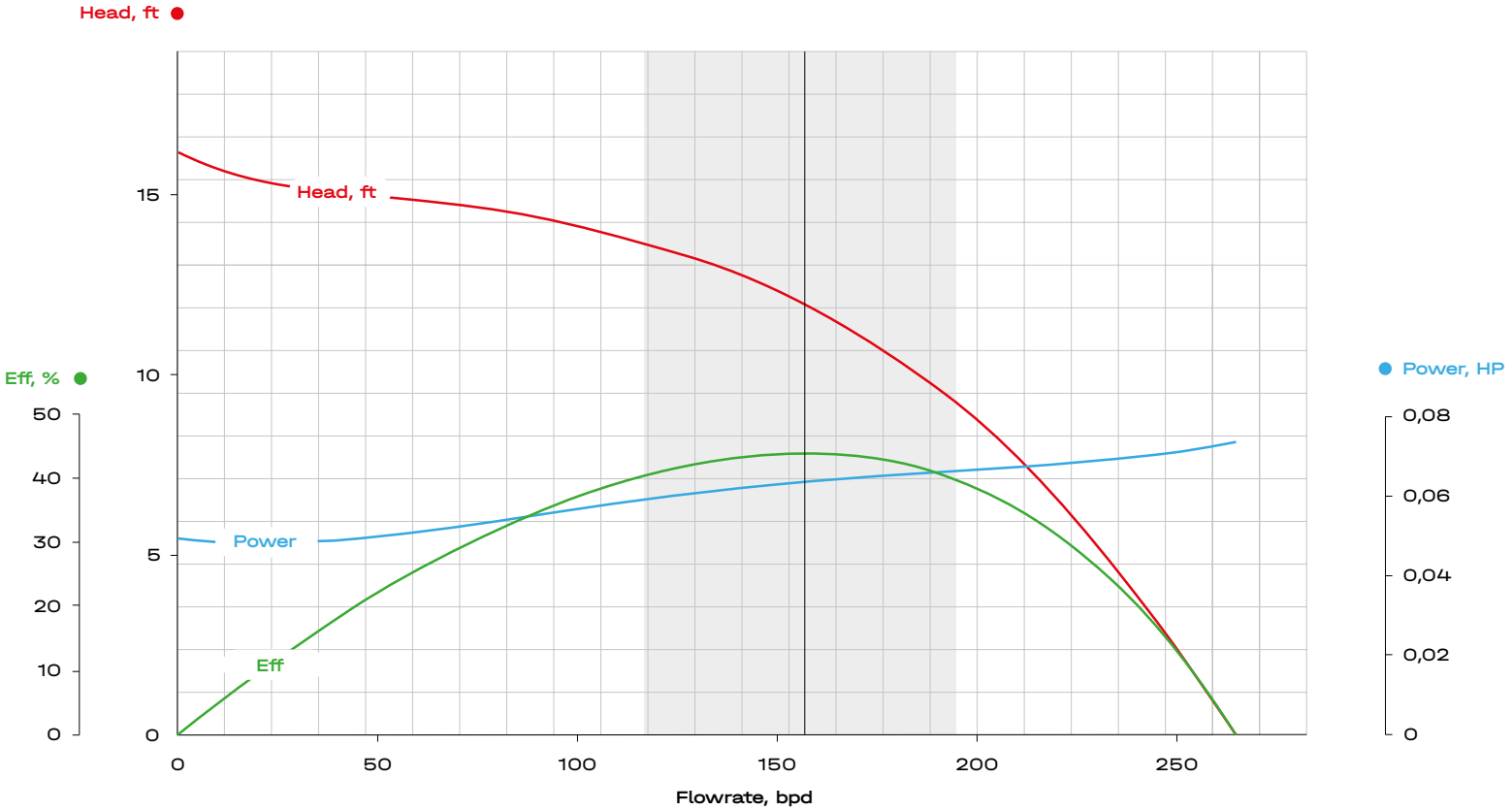
API Recommended Practice 11S2 for Electric Submersible Pump Testing.

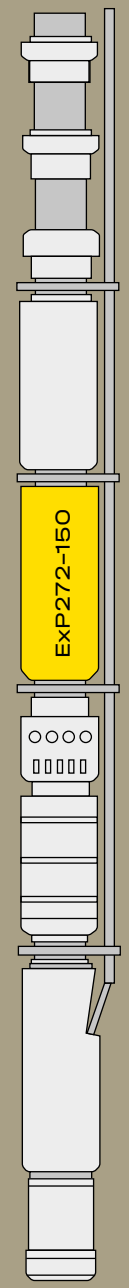


ExP272-150

Pump performance curve

60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 272 series (OD 2.72 in)





Technical data

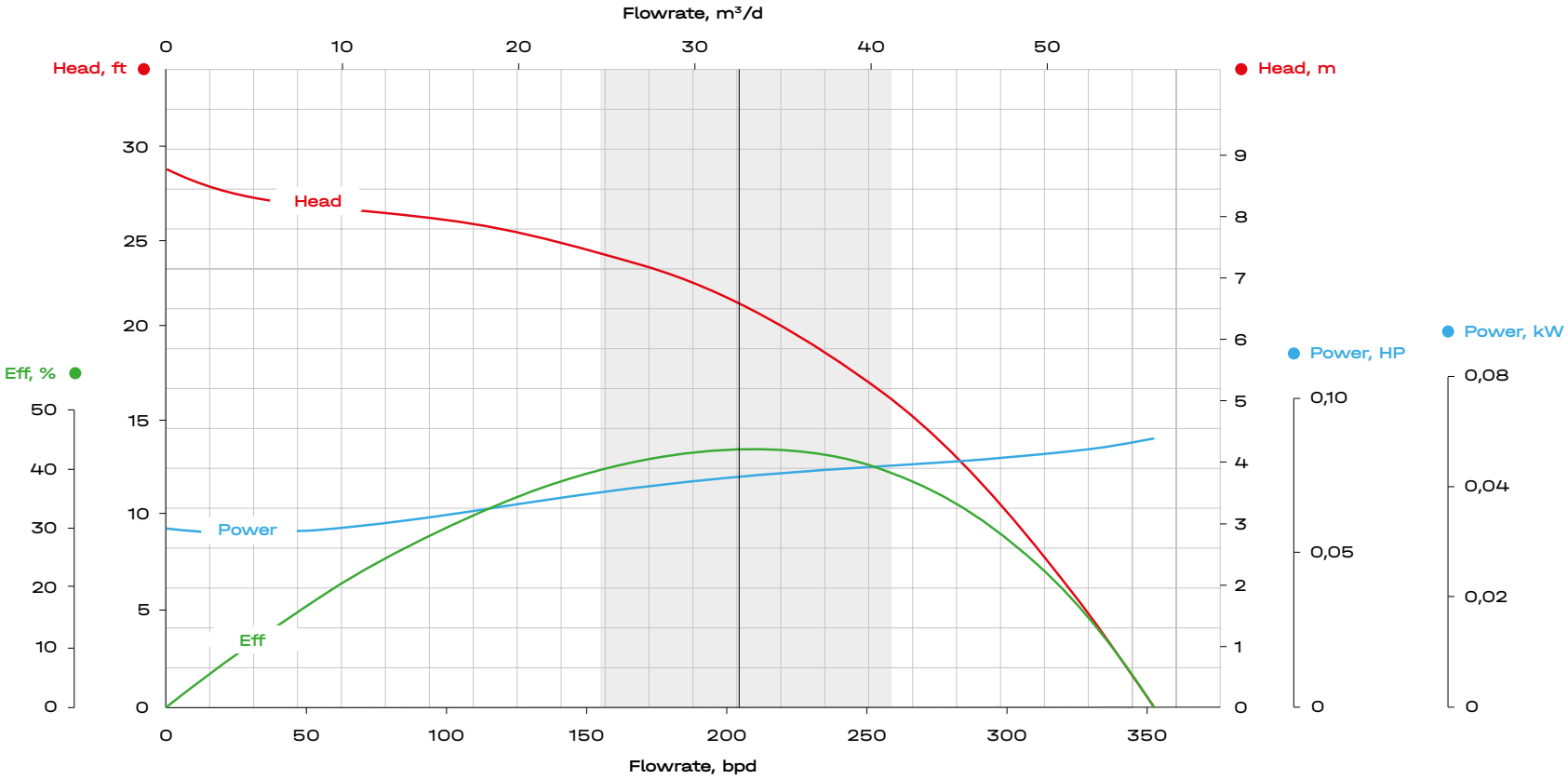
Best Efficiency Point			Limitations		
Efficiency	44%		**Shaft Diameter**	0.50 Inch	12.8 mm
Capacity	157 BPD	25 m^3/day	**Shaft broken HP - S13**	90 HP	67 KW
Head	12.04 ft	3.67 m	**Shaft broken HP - S14**	103 HP	77 KW
Optimum Operating Range	117-194 BPD	19-31 m^3/day	**Shaft broken HP - S16**	116 HP	87 KW
Pump Housing Diameter	2.72 in	69 mm	**Shaft Cross Sectional Area**	0.20 $Inch^2$	129 mm^2
Minimus Casing Size	3.23 in	82 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP272-150

Pump performance curve

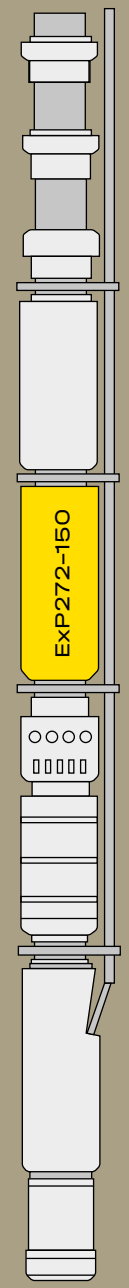
80 Hz/4800 rpm | Sp.Gr. 1 | 1 STG | 272 series (OD 69 mm)



Technical data

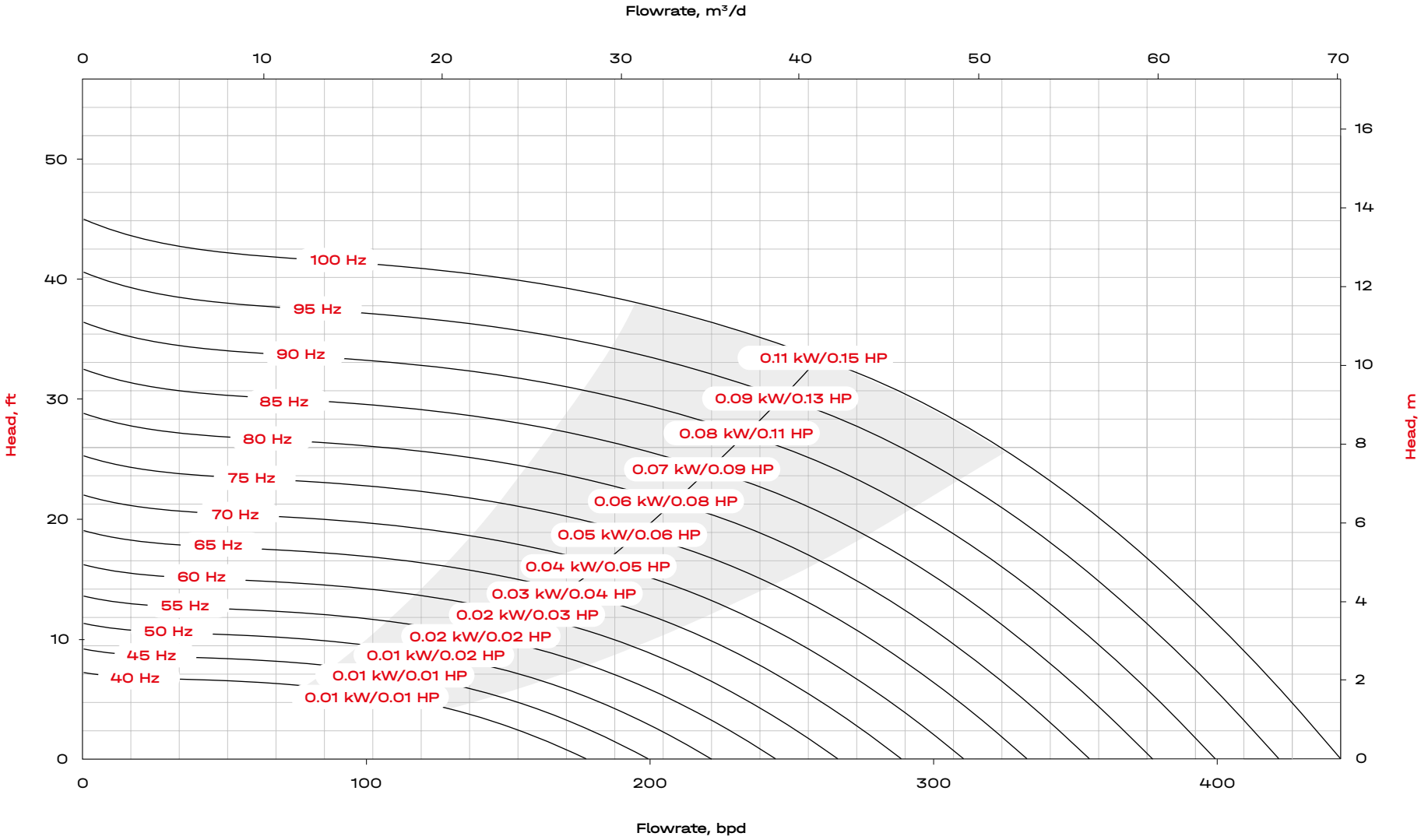
Best Efficiency Point			Limitations		
Efficiency	44%		**Shaft Diameter**	0.50 Inch	12.8 mm
Capacity	208 BPD	33 m³/day	**Shaft broken HP - S13**	119 HP	89 KW
Head	21.41 ft	6.52 m	**Shaft broken HP - S14**	137 HP	102 KW
Optimum Operating Range	156-250 BPD	25-41 m³/day	**Shaft broken HP - S16**	155 HP	115 KW
Pump Housing Diameter	2.72 in	69 mm	**Shaft Cross Sectional Area**	0.20 Inch²	129 mm²
Minimus Casing Size	3.23 in	82 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

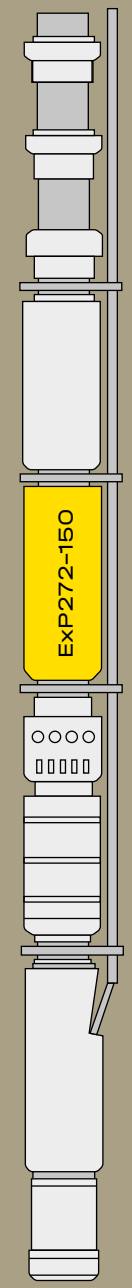
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP272-150 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 272 series

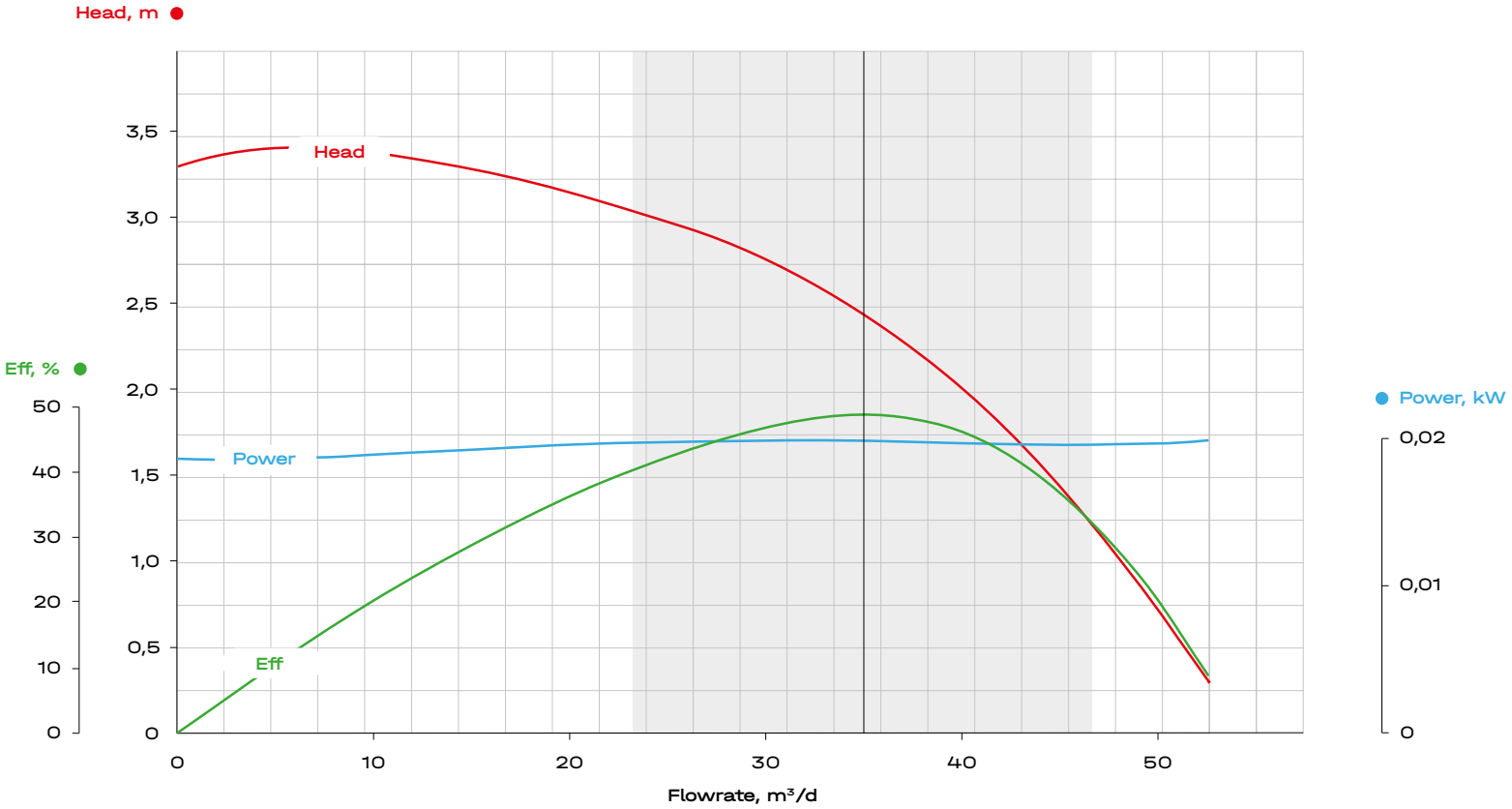


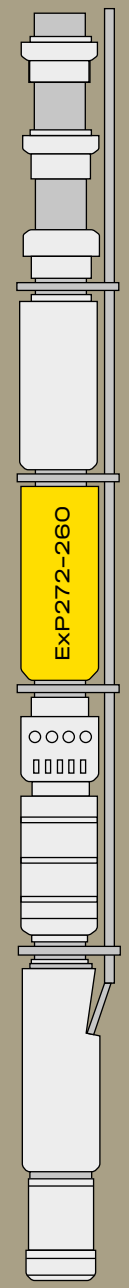


ExP272-260

Pump performance curve

50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 272 series (OD 69 mm)





Technical data

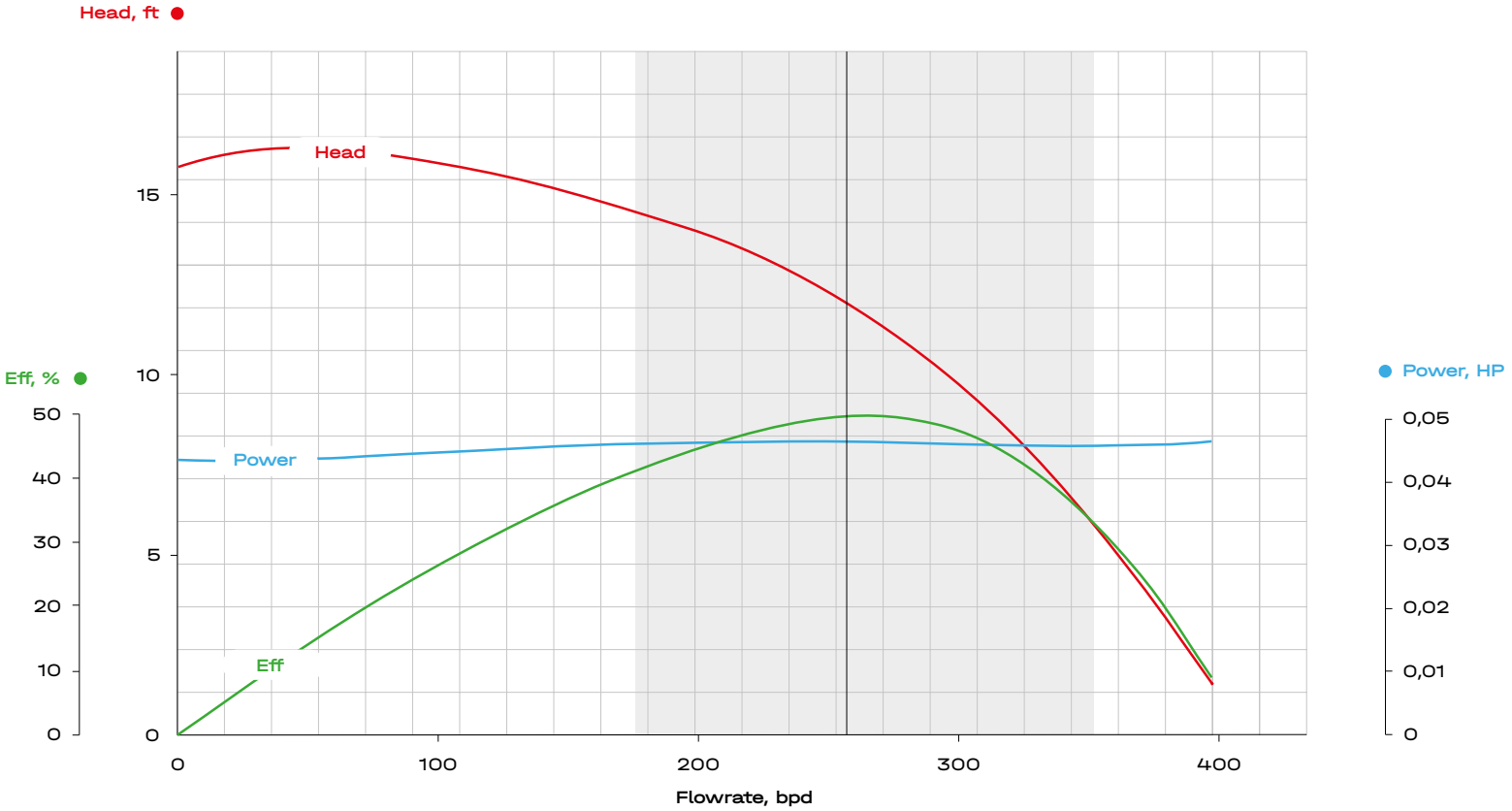
Best Efficiency Point			Limitations		
Efficiency	50%		**Shaft Diameter**	0.50 Inch	12.8 mm
Capacity	220 BPD	35 m³/day	**Shaft broken HP - S13**	75 HP	56 KW
Head	8.04 ft	2.45 m	**Shaft broken HP - S14**	86 HP	64 KW
Optimum Operating Range	147-294 BPD	23-47 m³/day	**Shaft broken HP - S16**	97 HP	72 KW
Pump Housing Diameter	2.72 in	69 mm	**Shaft Cross Sectional Area**	0.20 Inch²	129 mm²
Minimus Casing Size	3.23 in	82 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP272-260

Pump performance curve

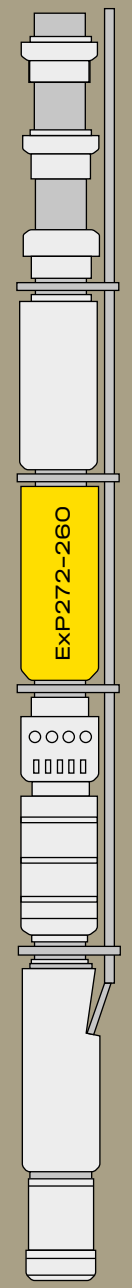
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 272 series (OD 2.72 in)



Technical data

Best Efficiency Point			Limitations		
Efficiency	50%		**Shaft Diameter**	0.50 Inch	12.8 mm
Capacity	264 BPD	42 m^3/day	**Shaft broken HP - S13**	90 HP	67 KW
Head	11.57 ft	3.53 m	**Shaft broken HP - S14**	103 HP	77 KW
Optimum Operating Range	177-353 BPD	28-56 m^3/day	**Shaft broken HP - S16**	116 HP	87 KW
Pump Housing Diameter	2.72 in	69 mm	**Shaft Cross Sectional Area**	0.20 $Inch^2$	129 mm^2
Minimus Casing Size	3.23 in	82 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

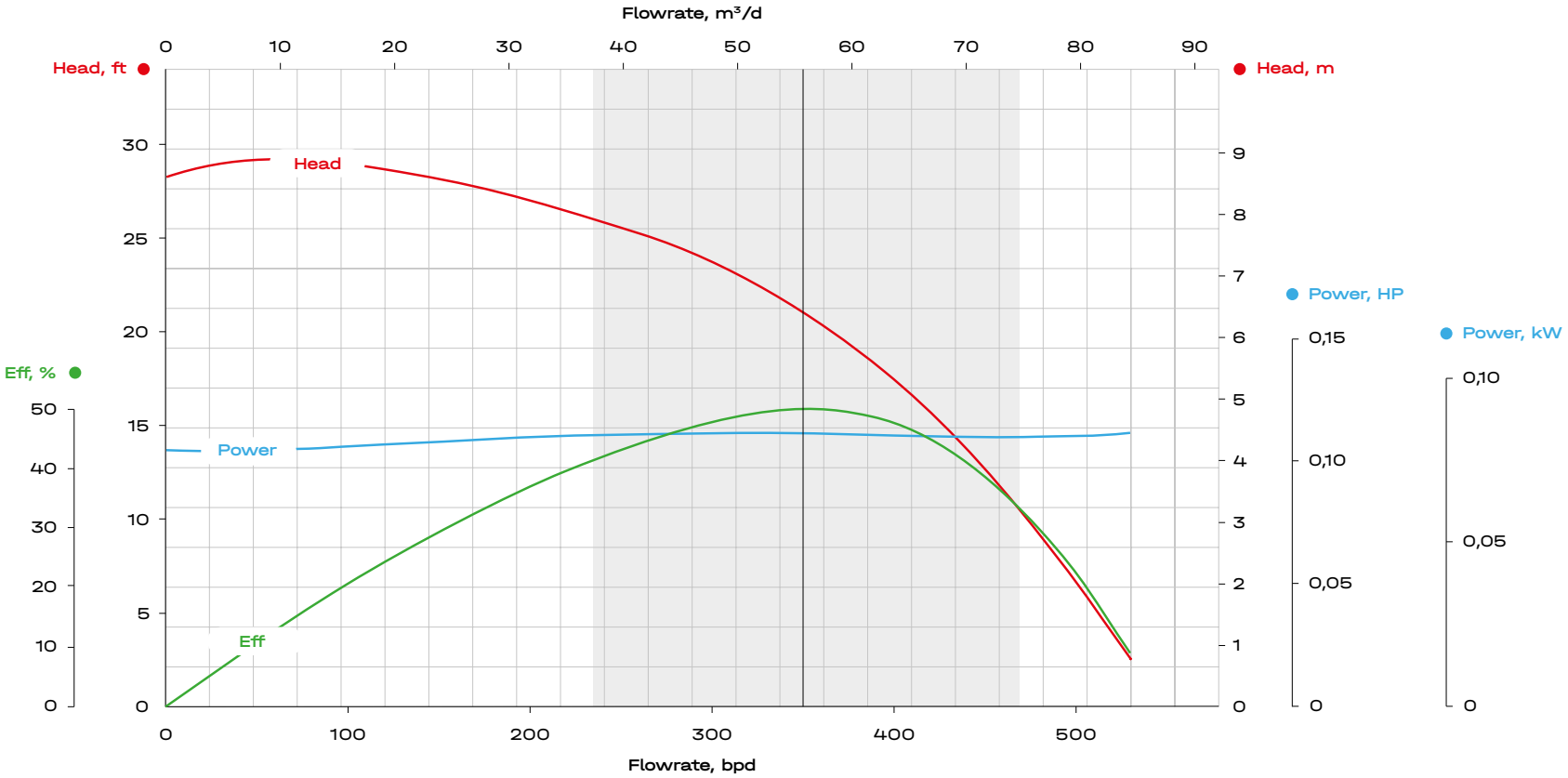
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP272-260

Pump performance curve

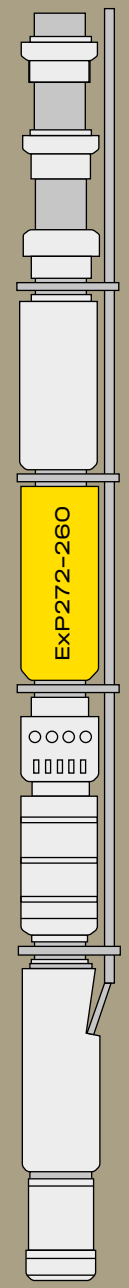
80 Hz/4800 rpm | Sp.Gr. 1 | 1 STG | 272 series (OD 69 mm)



Technical data

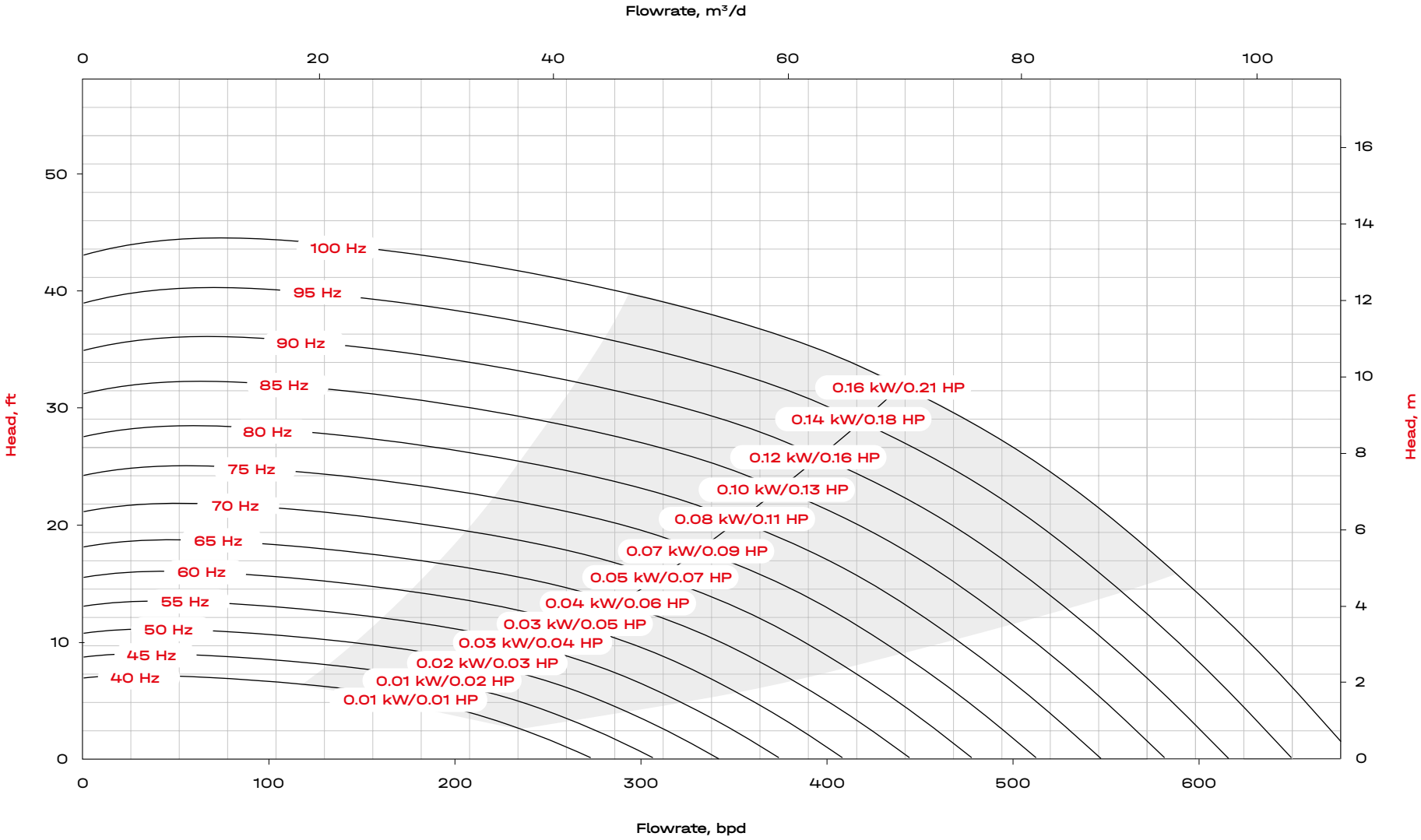
Best Efficiency Point			Limitations		
Efficiency	50%		**Shaft Diameter**	0.50 Inch	12.8 mm
Capacity	352 BPD	56 m³/day	**Shaft broken HP - S13**	119 HP	89 KW
Head	20.58 ft	6.27 m	**Shaft broken HP - S14**	137 HP	102 KW
Optimum Operating Range	236-470 BPD	37-75 m³/day	**Shaft broken HP - S16**	155 HP	115 KW
Pump Housing Diameter	2.72 in	69 mm	**Shaft Cross Sectional Area**	0.20 Inch²	129 mm²
Minimus Casing Size	3.23 in	82 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

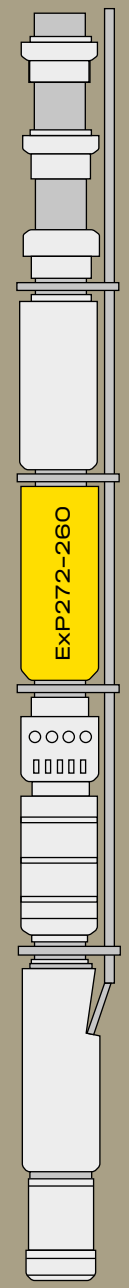
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP272-260 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 272 series

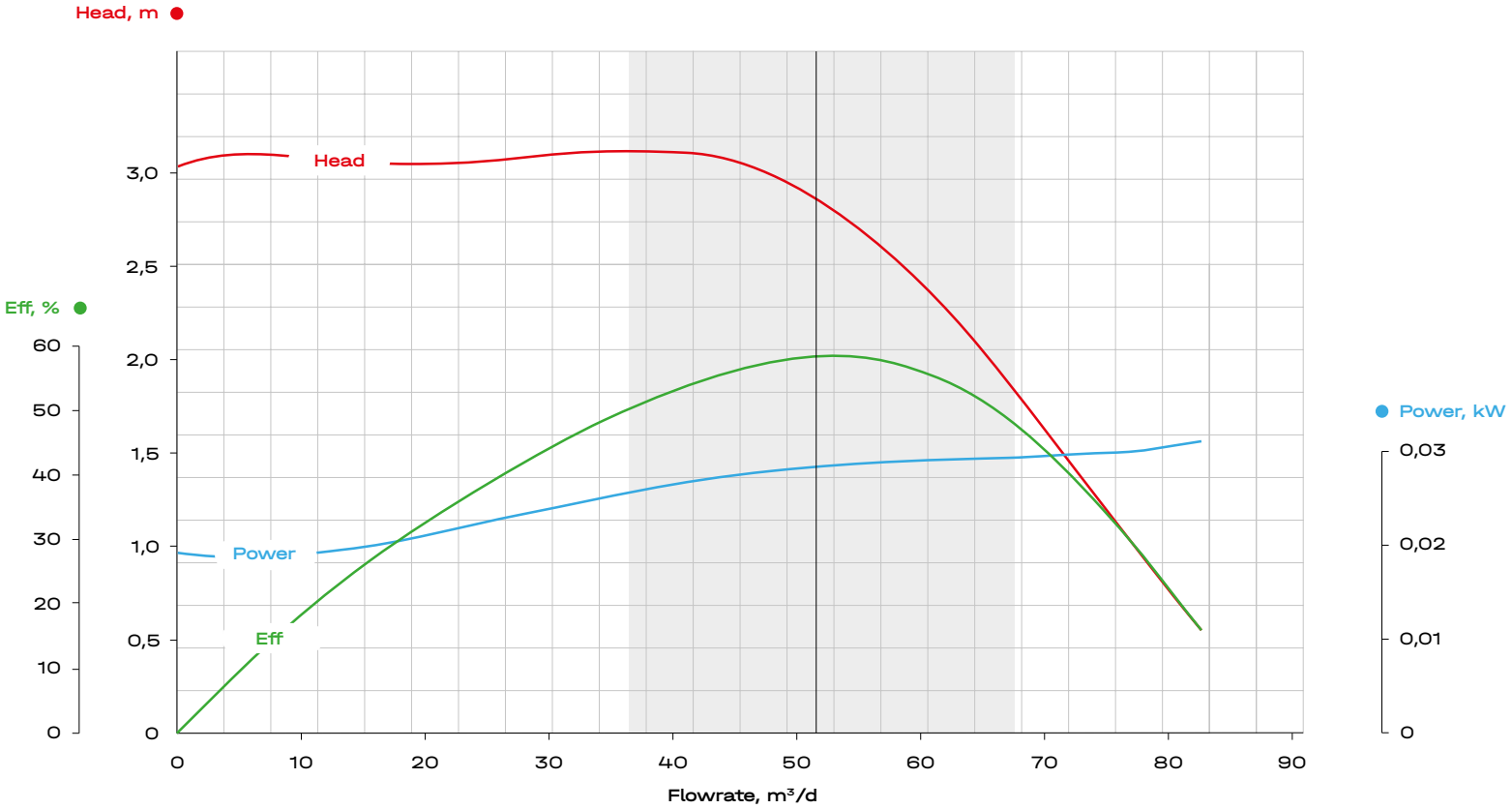


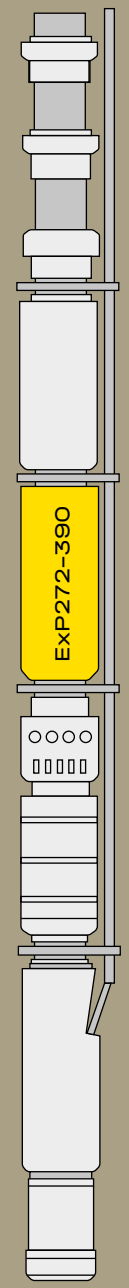


ExP272-390

Pump performance curve

50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 272 series (OD 69 mm)





Technical data

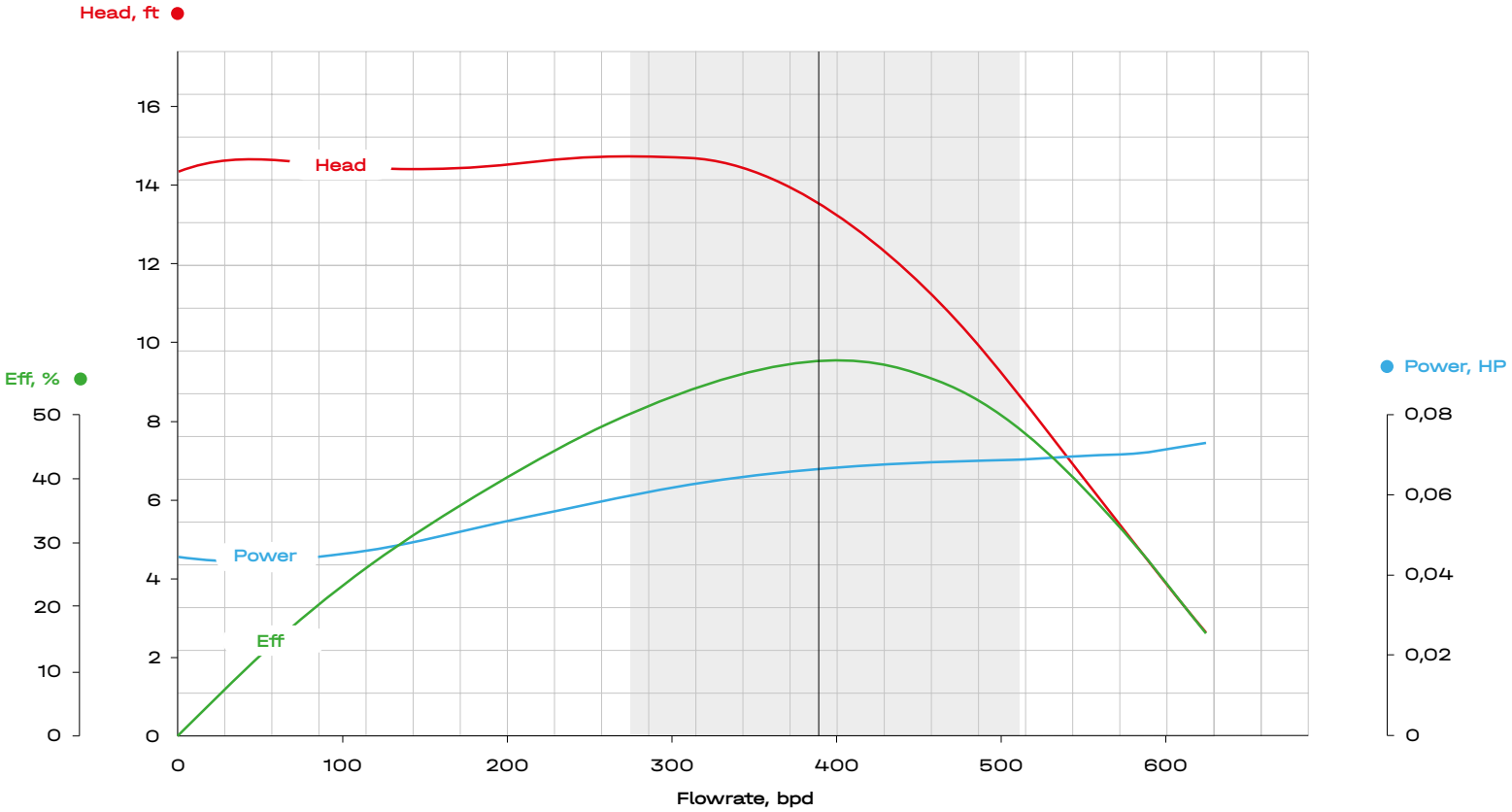
Best Efficiency Point			Limitations		
Efficiency	59%		**Shaft Diameter**	0.50 Inch	12.8 mm
Capacity	327 BPD	52 m³/day	**Shaft broken HP - S13**	75 HP	56 KW
Head	9.38 ft	2.86 m	**Shaft broken HP - S14**	86 HP	64 KW
Optimum Operating Range	230-425 BPD	37-68 m³/day	**Shaft broken HP - S16**	97 HP	72 KW
Pump Housing Diameter	2.72 in	69 mm	**Shaft Cross Sectional Area**	0.20 Inch²	129 mm²
Minimus Casing Size	3.23 in	82 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

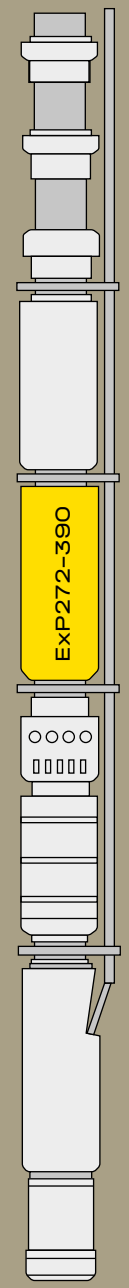
API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP272-390

Pump performance curve

60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 272 series (OD 2.72 in)





Technical data

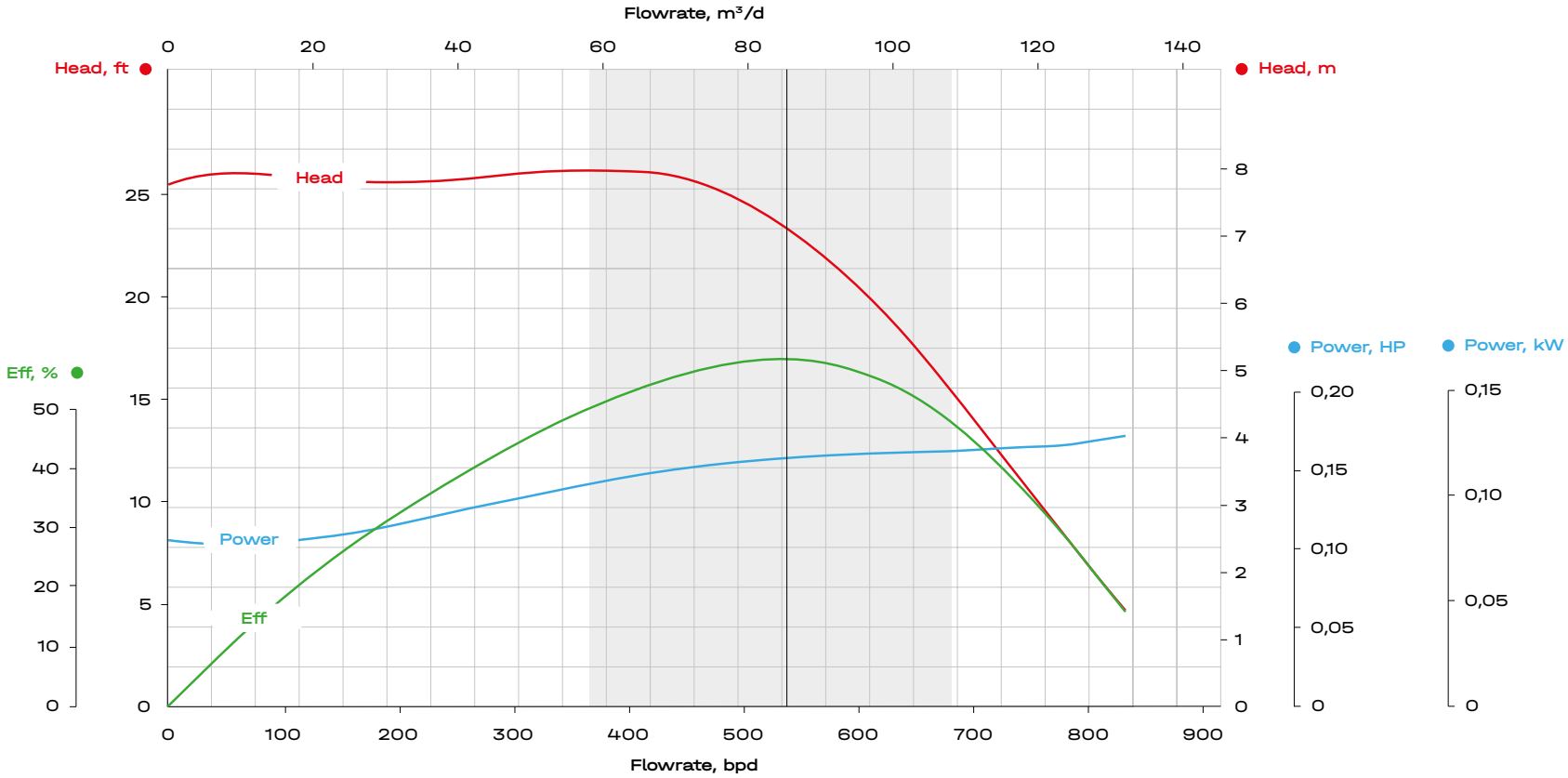
Best Efficiency Point			Limitations		
Efficiency	59%		**Shaft Diameter**	0.50 Inch	12.8 mm
Capacity	390 BPD	62 m^3/day	**Shaft broken HP - S13**	90 HP	67 KW
Head	13.51 ft	4.12 m	**Shaft broken HP - S14**	103 HP	77 KW
Optimum Operating Range	276-511 BPD	44-81 m^3/day	**Shaft broken HP - S16**	116 HP	87 KW
Pump Housing Diameter	2.72 in	69 mm	**Shaft Cross Sectional Area**	0.20 $Inch^2$	129 mm^2
Minimus Casing Size	3.23 in	82 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP272-390

Pump performance curve

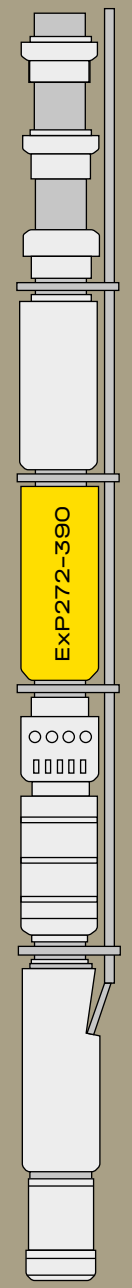
80 Hz/4800 rpm | Sp.Gr. 1 | 1 STG | 272 series (OD 69 mm)



Technical data

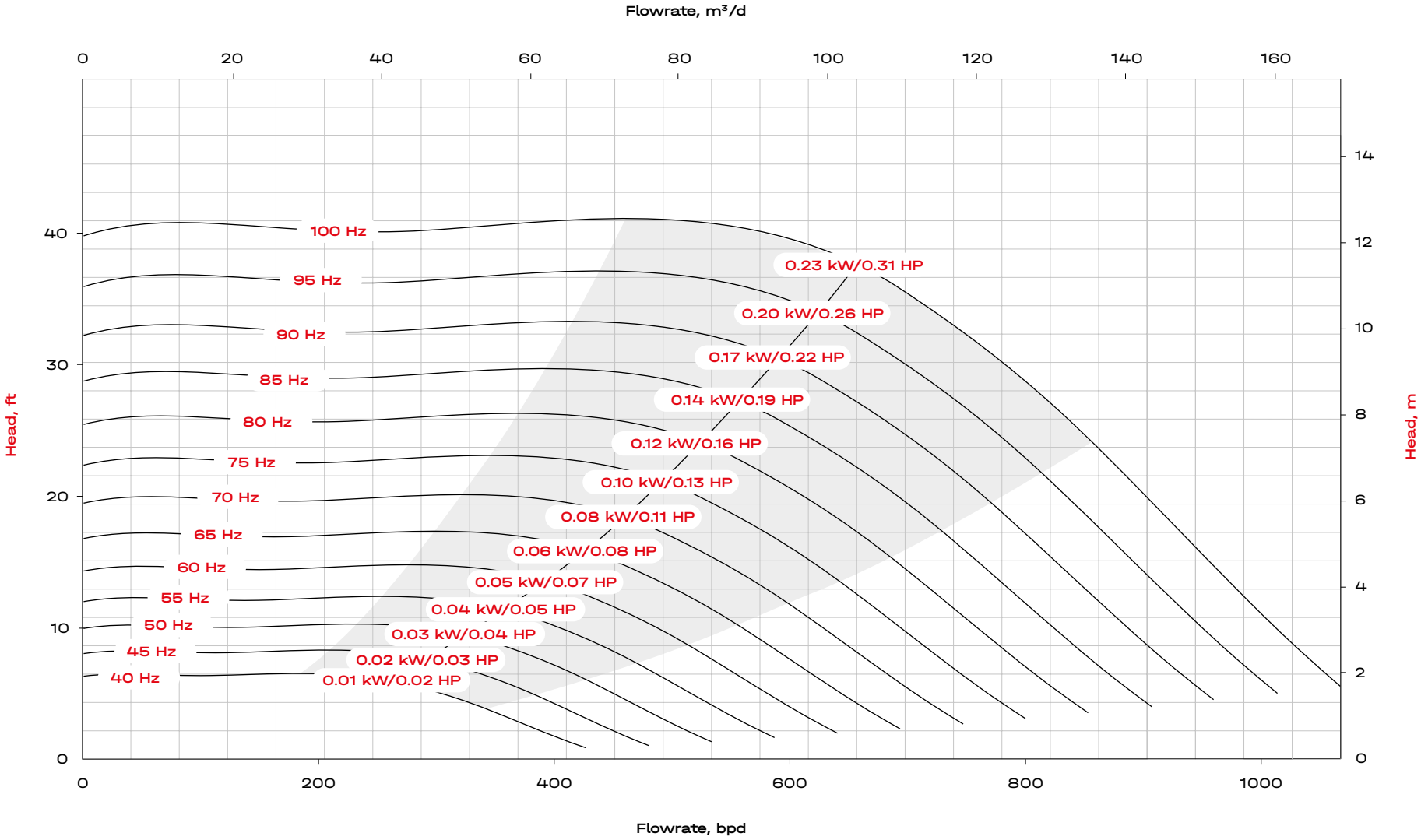
Best Efficiency Point			Limitations		
Efficiency	59%		**Shaft Diameter**	0.50 Inch	12.8 mm
Capacity	522 BPD	83 m³/day	**Shaft broken HP - S13**	119 HP	89 KW
Head	24.02 ft	7.32 m	**Shaft broken HP - S14**	137 HP	102 KW
Optimum Operating Range	370-680 BPD	59-108 m³/day	**Shaft broken HP - S16**	155 HP	115 KW
Pump Housing Diameter	2.72 in	69 mm	**Shaft Cross Sectional Area**	0.20 Inch²	129 mm²
Minimus Casing Size	3.23 in	82 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

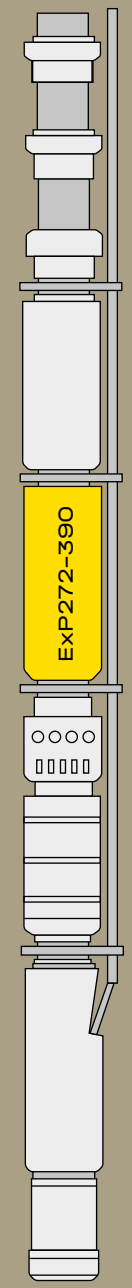
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP272-390 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 272 series

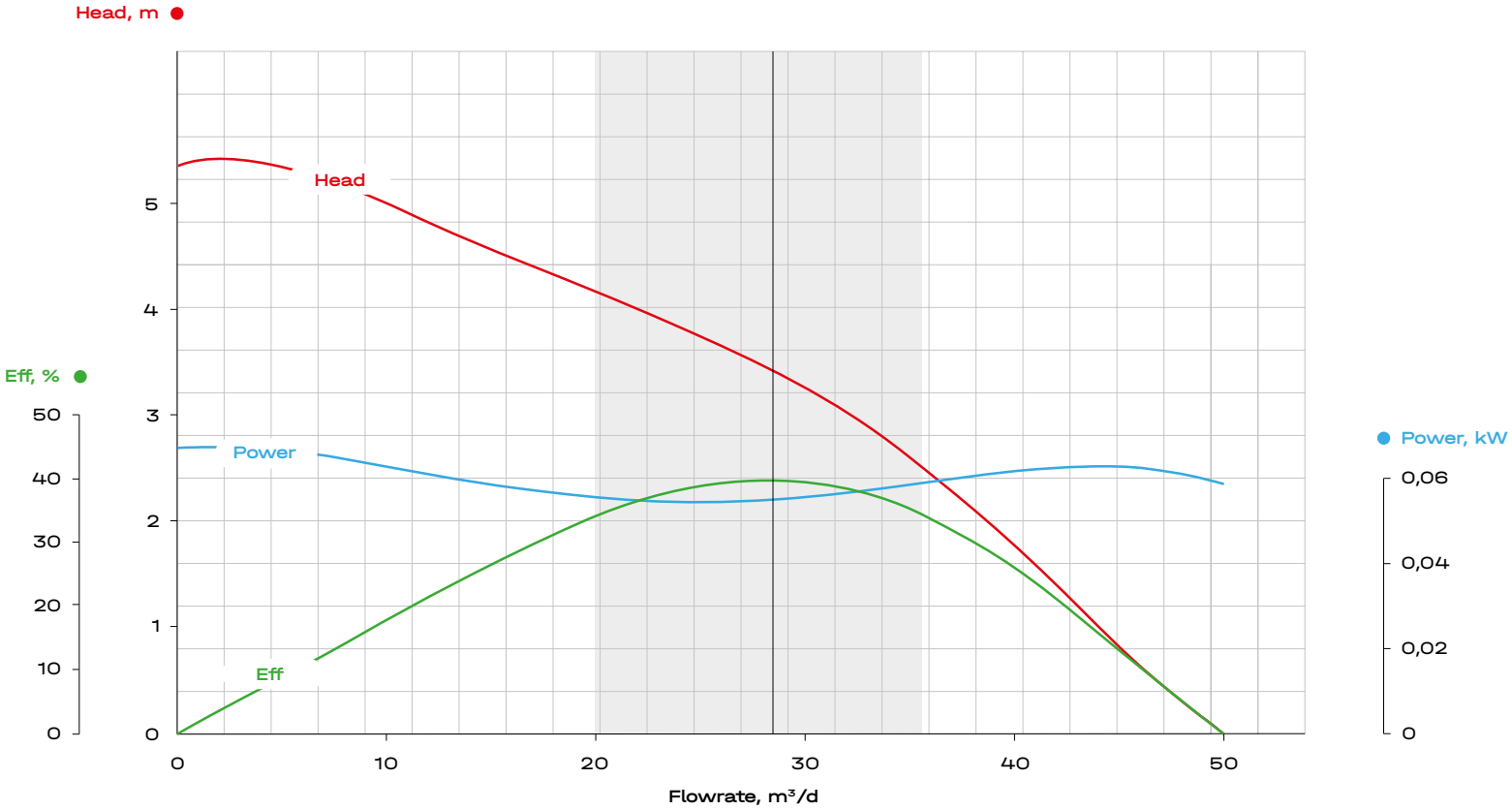




ExP319-200

Pump performance curve

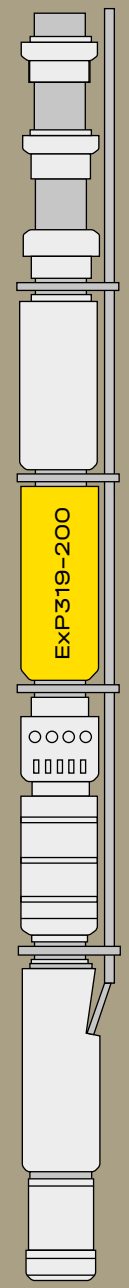
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 319 series (OD 81 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	40%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	173 BPD	28 m³/day	**Shaft broken HP - S13**	75 HP	56 KW
Head	11.51 ft	3.51 m	**Shaft broken HP - S14**	86 HP	64 KW
Optimum Operating Range	125-225 BPD	20-35 m³/day	**Shaft broken HP - S16**	97 HP	72 KW
Pump Housing Diameter	3.19 in	81 mm	**Shaft Cross Sectional Area**	0.24 Inch²	154 mm²
Minimus Casing Size	3.74 in	95 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

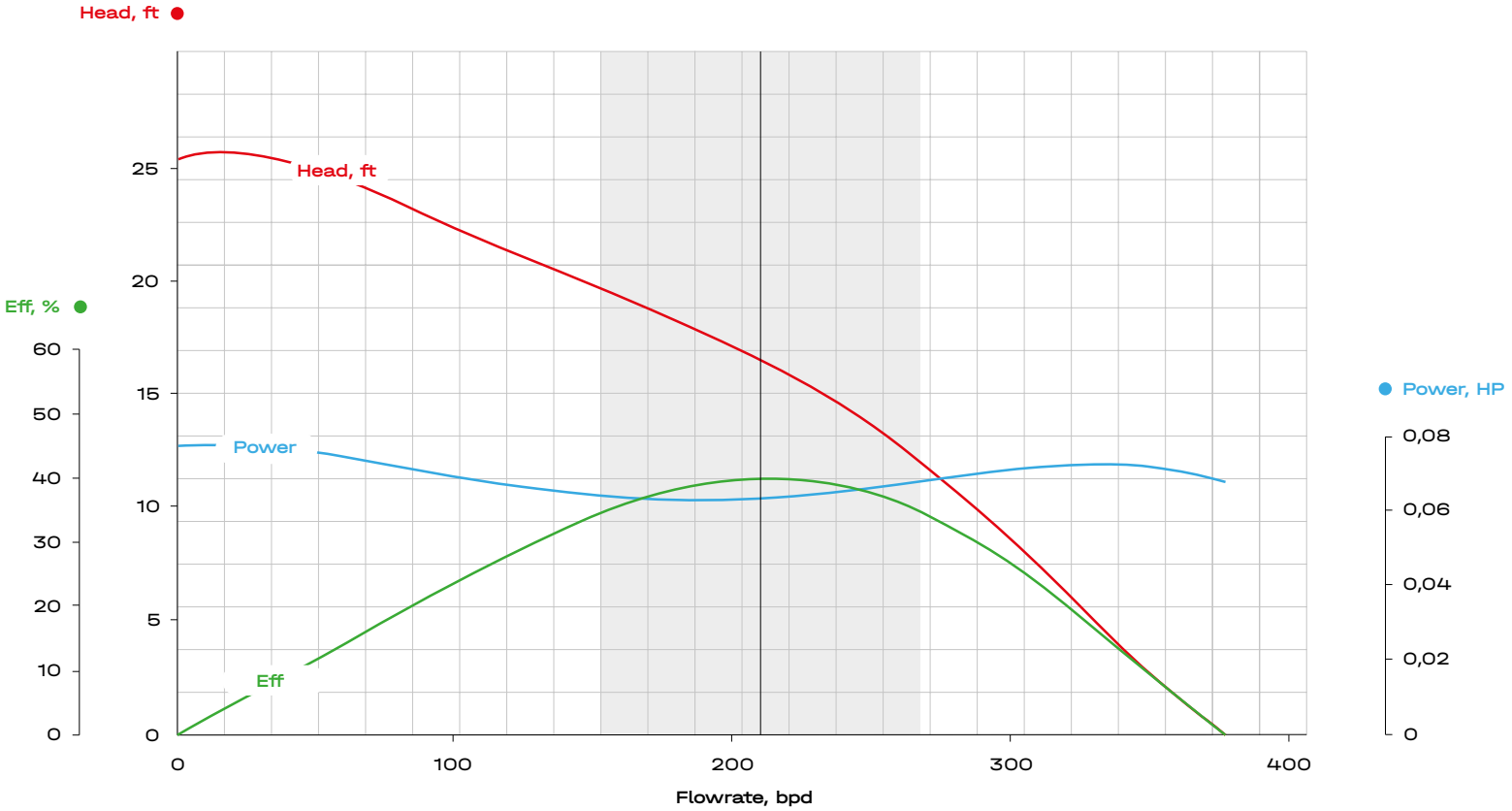
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP319-200

Pump performance curve

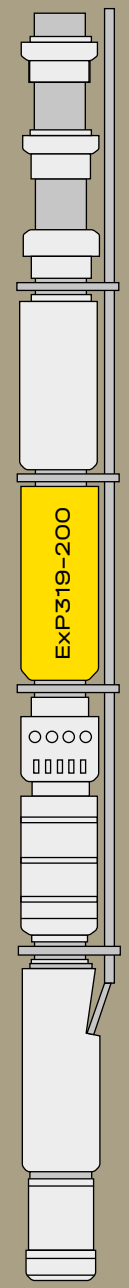
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 319 series (OD 3.19 in)



Technical data

Best Efficiency Point			Limitations		
Efficiency	40%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	208 BPD	33 m^3/day	**Shaft broken HP - S13**	90 HP	67 KW
Head	16.58 ft	5.05 m	**Shaft broken HP - S14**	103 HP	77 KW
Optimum Operating Range	150-265 BPD	24-43 m^3/day	**Shaft broken HP - S16**	116 HP	87 KW
Pump Housing Diameter	3.19 in	81 mm	**Shaft Cross Sectional Area**	0.24 $Inch^2$	154 mm^2
Minimus Casing Size	3.74 in	95 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

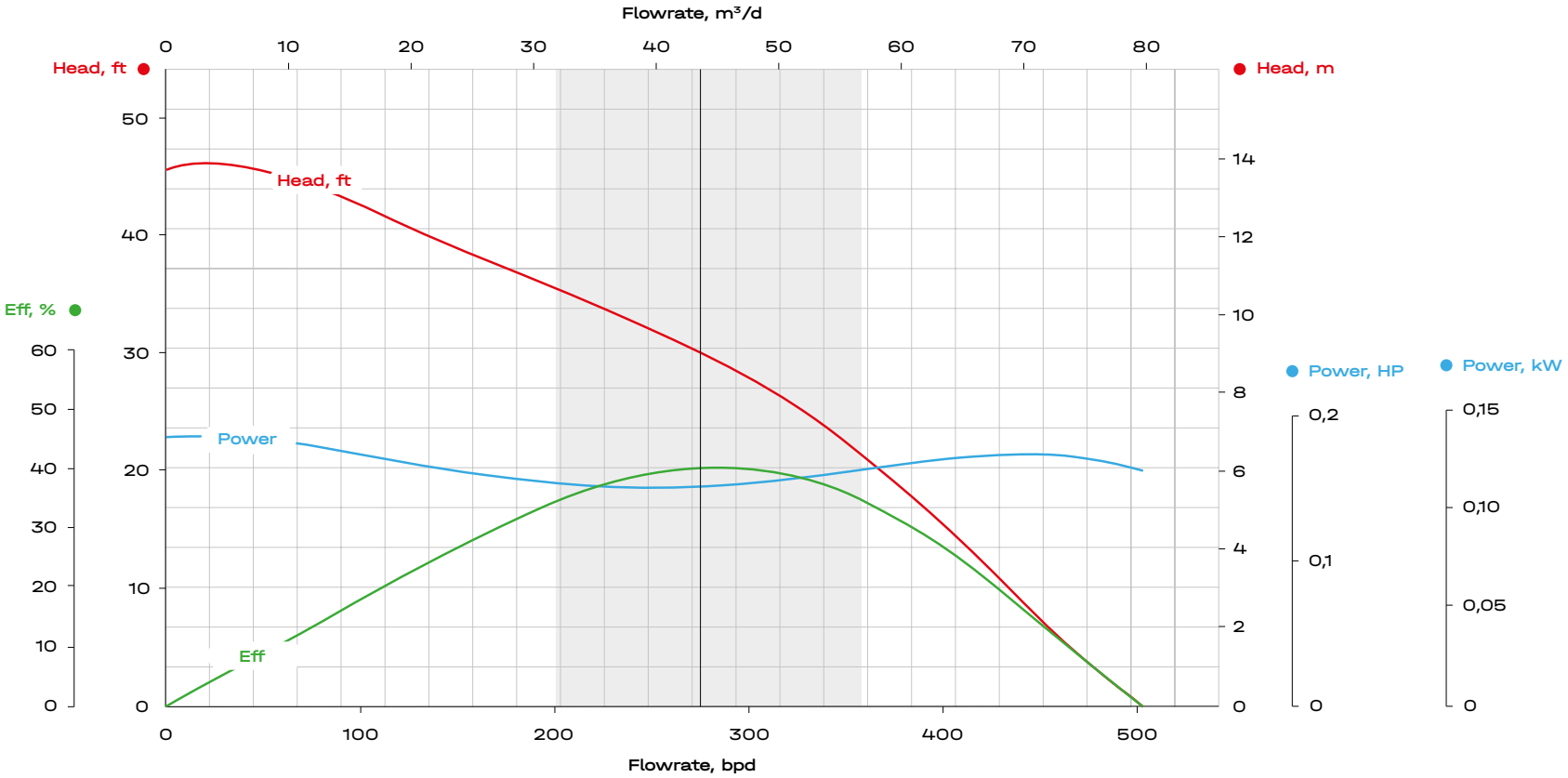
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP319-200

Pump performance curve

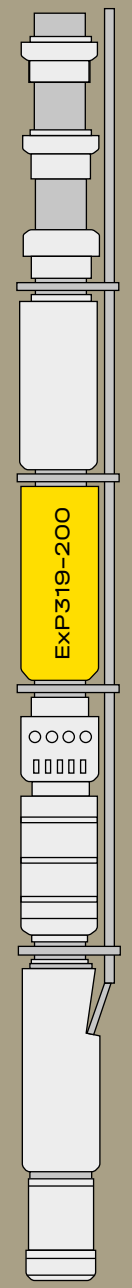
80 Hz/4800 rpm | Sp.Gr. 1 | 1 STG | 319 series (OD 81 mm)



Technical data

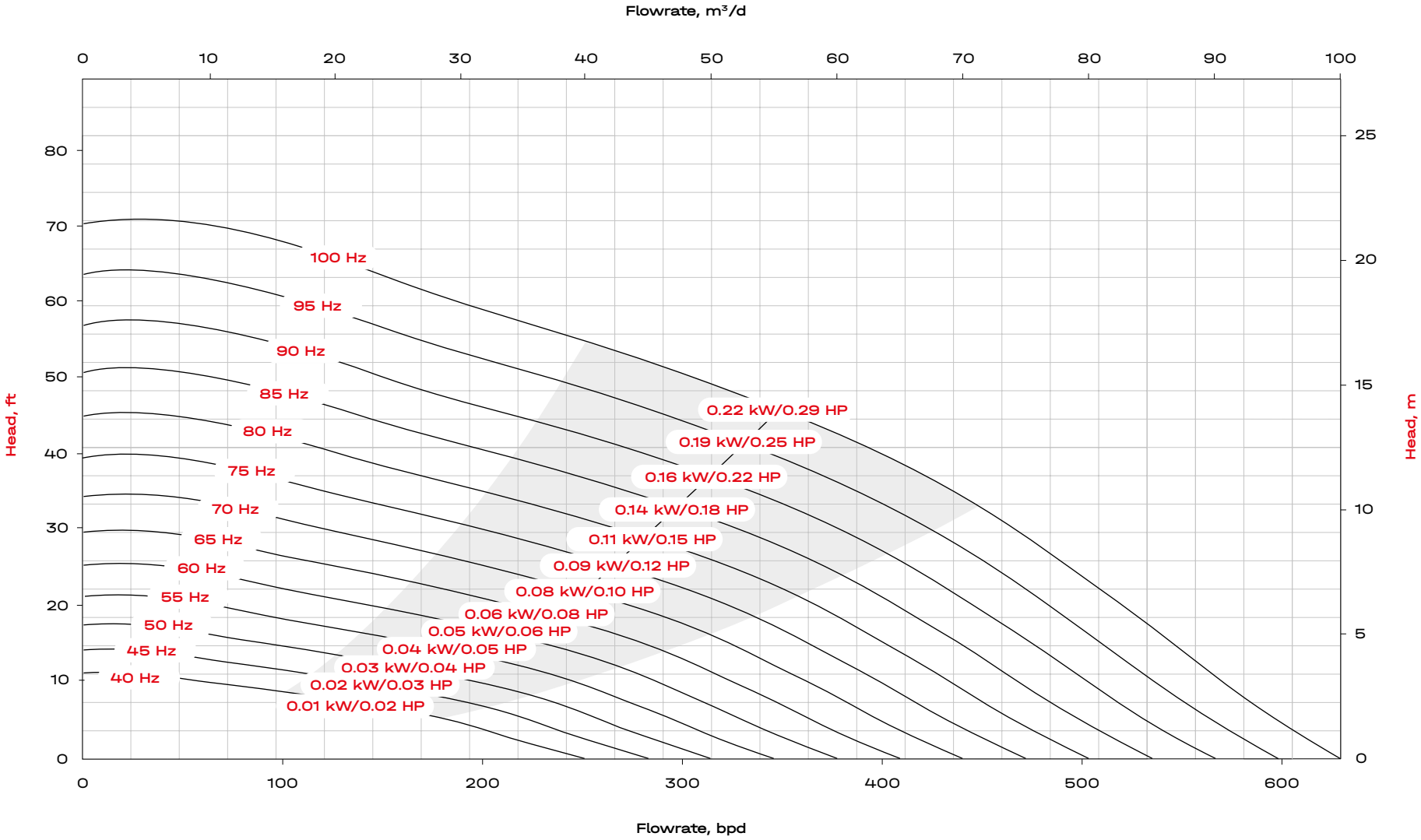
Best Efficiency Point			Limitations		
Efficiency	40%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	276 BPD	44 m³/day	**Shaft broken HP - S13**	119 HP	89 KW
Head	29.47 ft	8.98 m	**Shaft broken HP - S14**	137 HP	102 KW
Optimum Operating Range	200-368 BPD	32-57 m³/day	**Shaft broken HP - S16**	155 HP	115 KW
Pump Housing Diameter	3.19 in	81 mm	**Shaft Cross Sectional Area**	0.24 Inch²	154 mm²
Minimus Casing Size	3.74 in	95 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

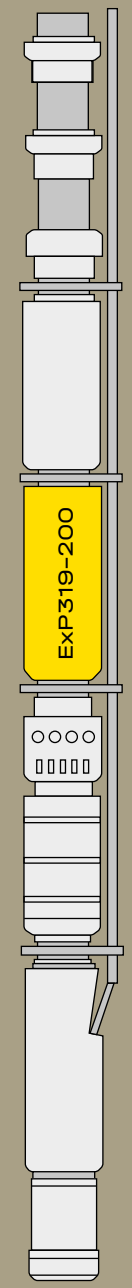
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP319-200 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 319 series

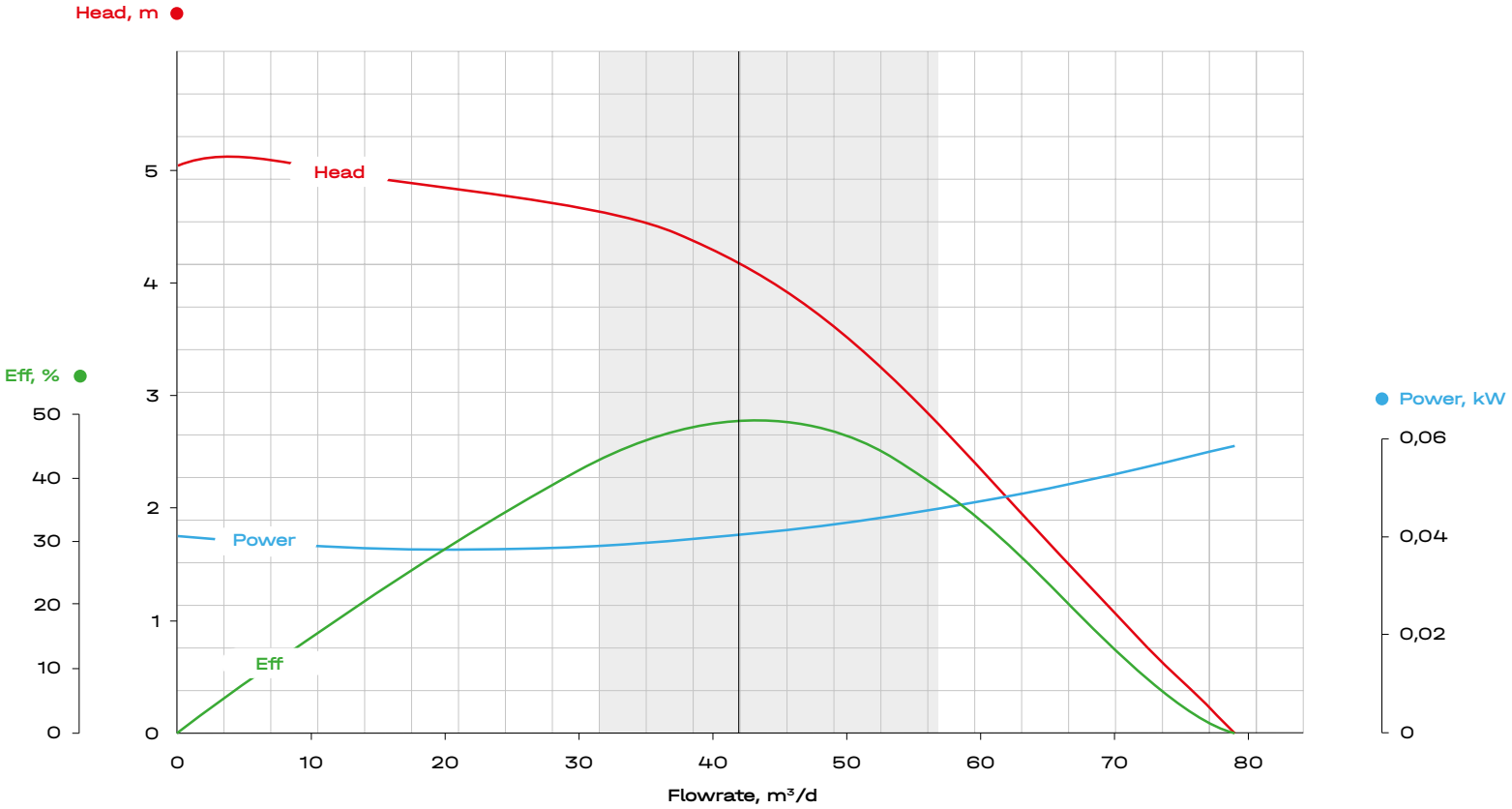




ExP319-300

Pump performance curve

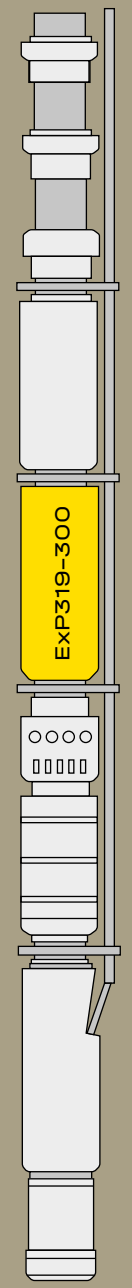
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 319 series (OD 81 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	49%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	261 BPD	42 m³/day	**Shaft broken HP - S13**	90 HP	67 KW
Head	13.77 ft	4.2 m	**Shaft broken HP - S14**	104 HP	77 KW
Optimum Operating Range	199-357 BPD	32-57 m³/day	**Shaft broken HP - S16**	118HP	88 KW
Pump Housing Diameter	3.19 in	81 mm	**Shaft Cross Sectional Area**	0.24 Inch²	154 mm²
Minimus Casing Size	3.74 in	95 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

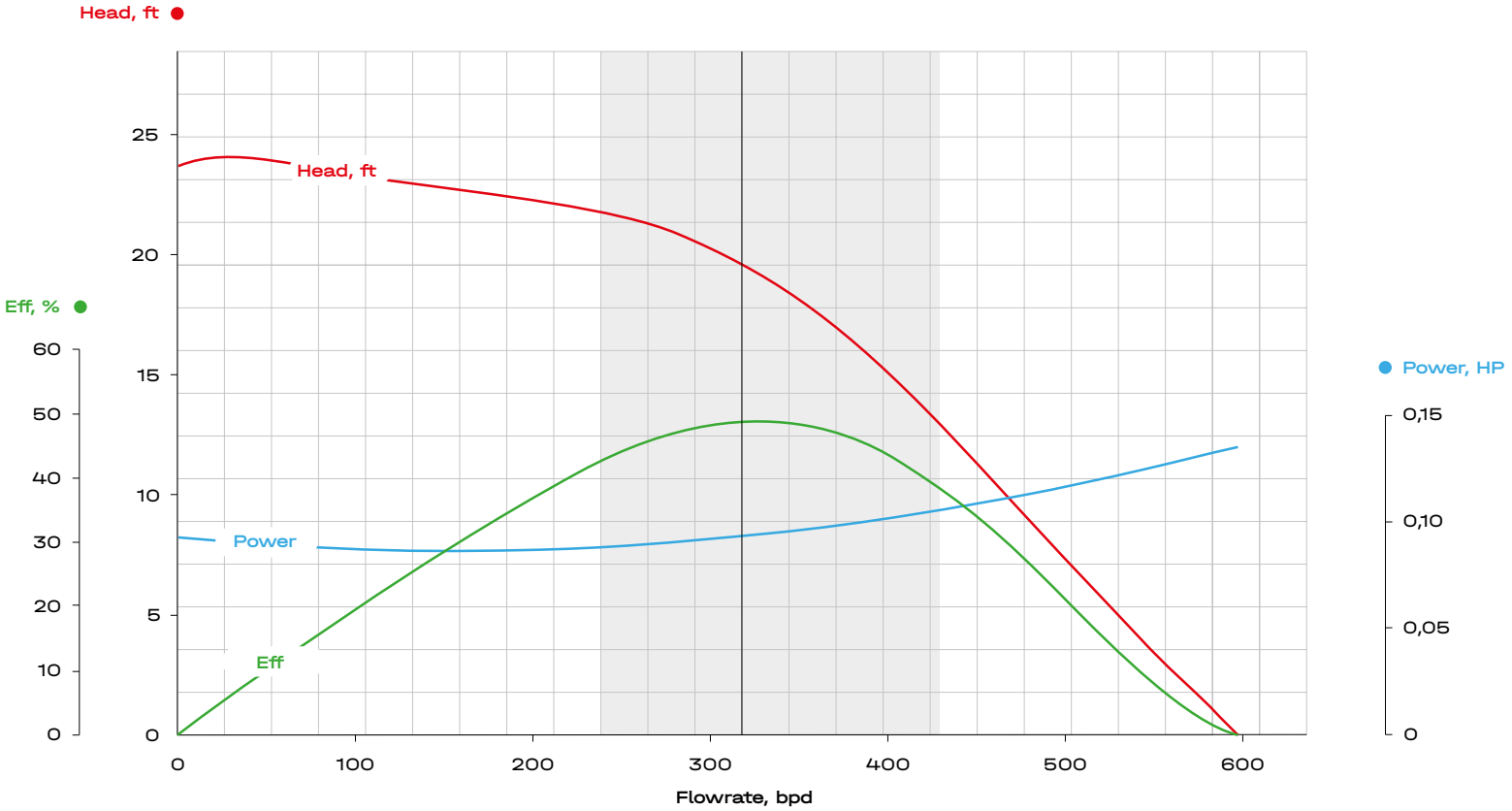
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP319-300

Pump performance curve

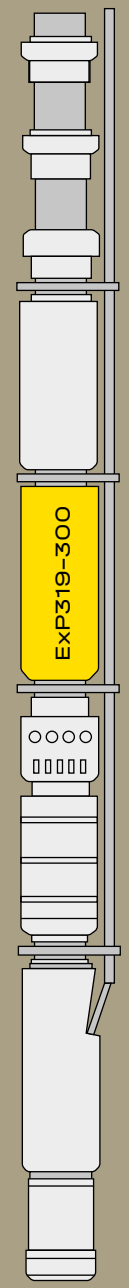
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 319 series (OD 3.19 in)



Technical data

Best Efficiency Point			Limitations		
Efficiency	49%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	313 BPD	50 m^3/day	**Shaft broken HP - S13**	108 HP	80 KW
Head	19.83 ft	6.04 m	**Shaft broken HP - S14**	124 HP	93 KW
Optimum Operating Range	238-429 BPD	38-68 m^3/day	**Shaft broken HP - S16**	141 HP	105 KW
Pump Housing Diameter	3.19 in	81 mm	**Shaft Cross Sectional Area**	0.24 $Inch^2$	154 mm^2
Minimus Casing Size	3.74 in	95 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

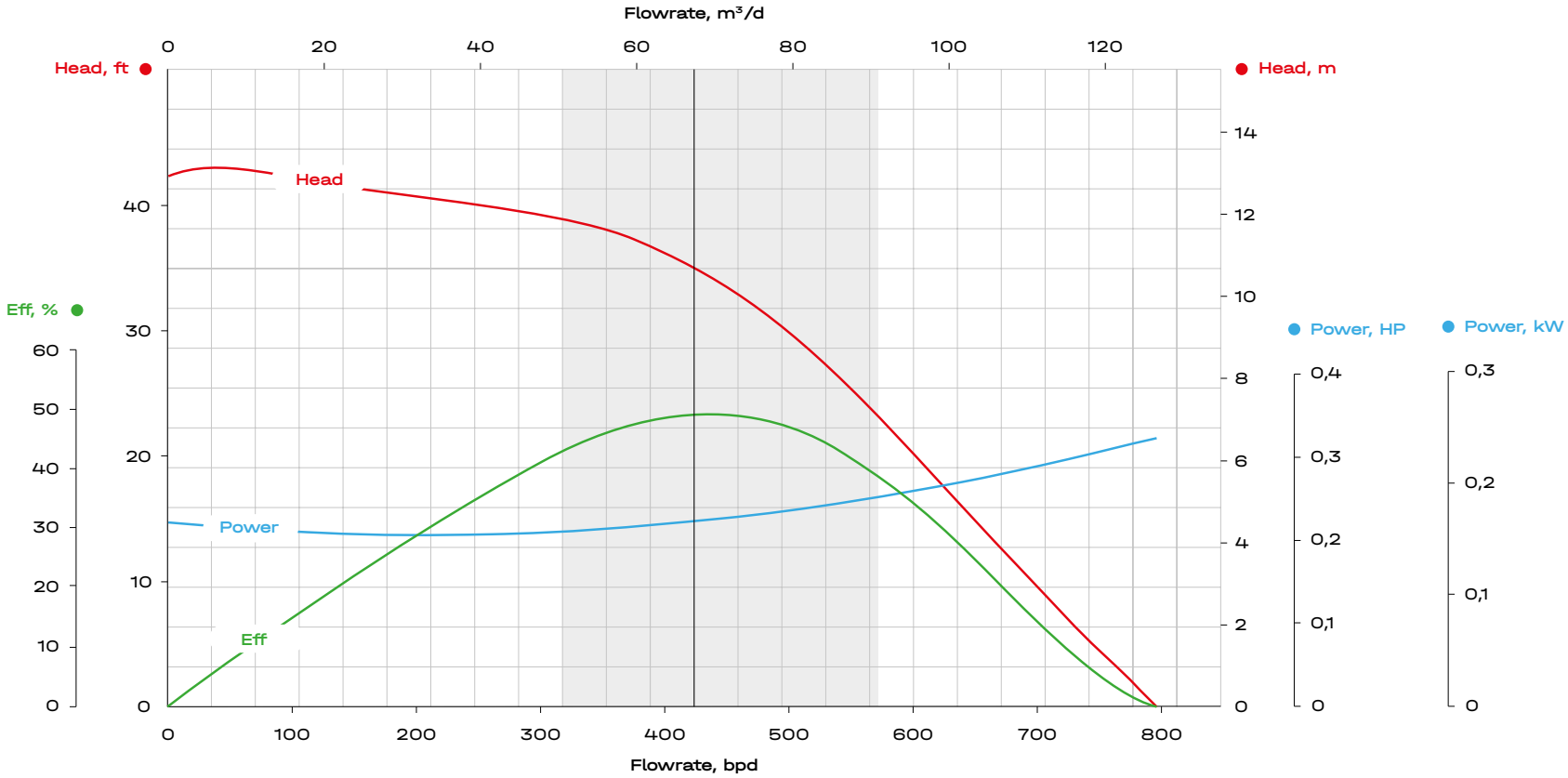
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP319-300

Pump performance curve

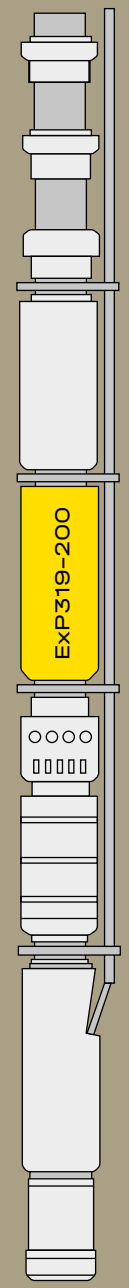
80 Hz/4800 rpm | Sp.Gr. 1 | 1 STG | 319 series (OD 81 mm)



Technical data

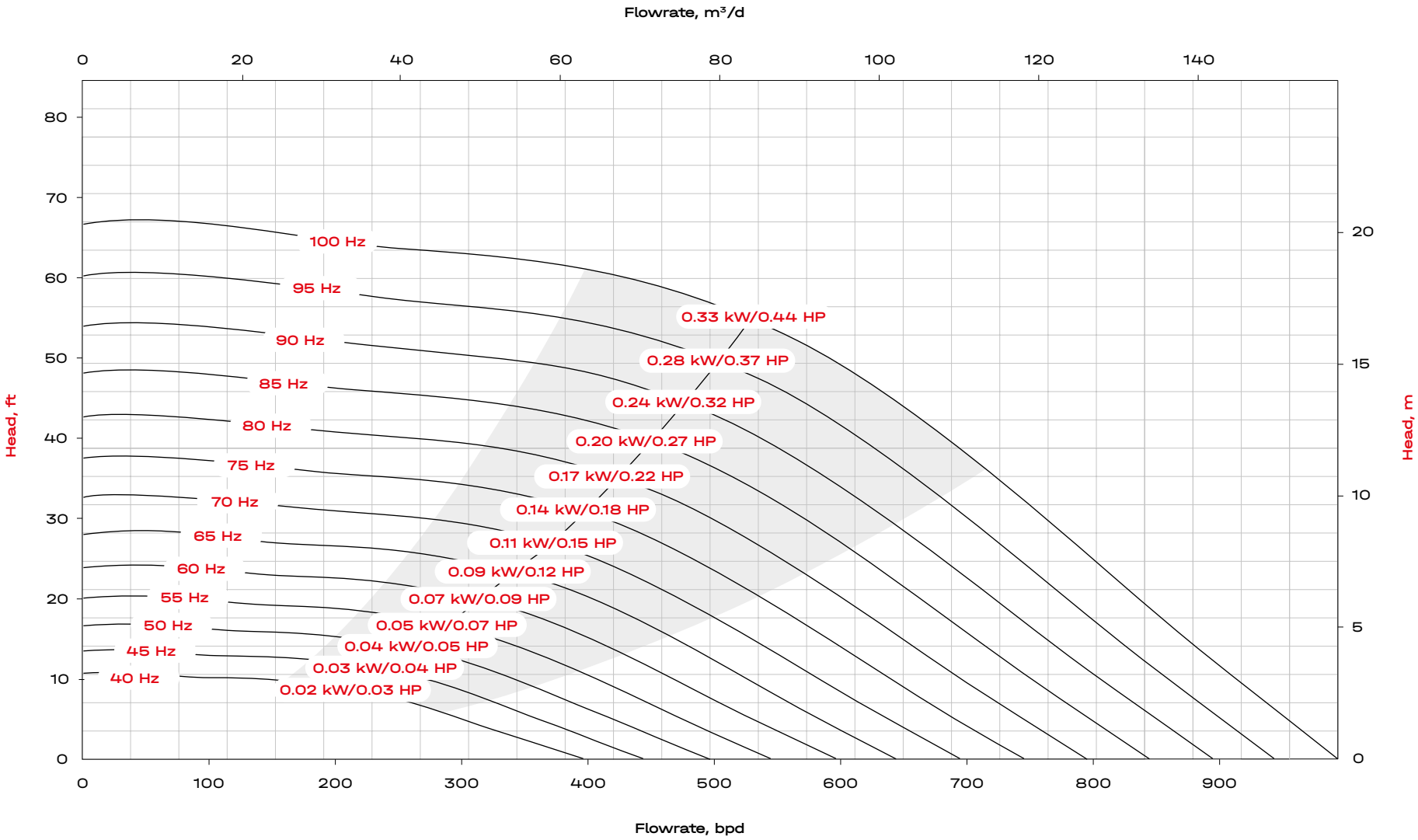
Best Efficiency Point			Limitations		
Efficiency	49%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	418 BPD	67 m³/day	**Shaft broken HP - S13**	144 HP	107 KW
Head	35.24 ft	10.74 m	**Shaft broken HP - S14**	166 HP	124 KW
Optimum Operating Range	318-571 BPD	50-90 m³/day	**Shaft broken HP - S16**	188 HP	140 KW
Pump Housing Diameter	3.19 in	81 mm	**Shaft Cross Sectional Area**	0.24 Inch²	154 mm²
Minimus Casing Size	3.74 in	95 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

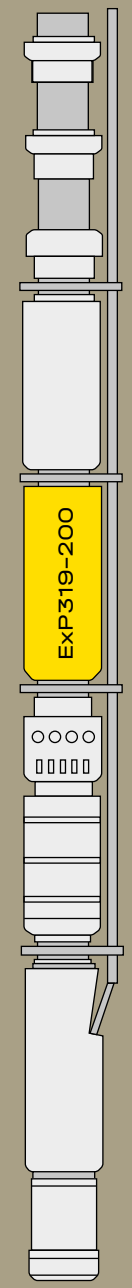
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP319-300 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 319 series

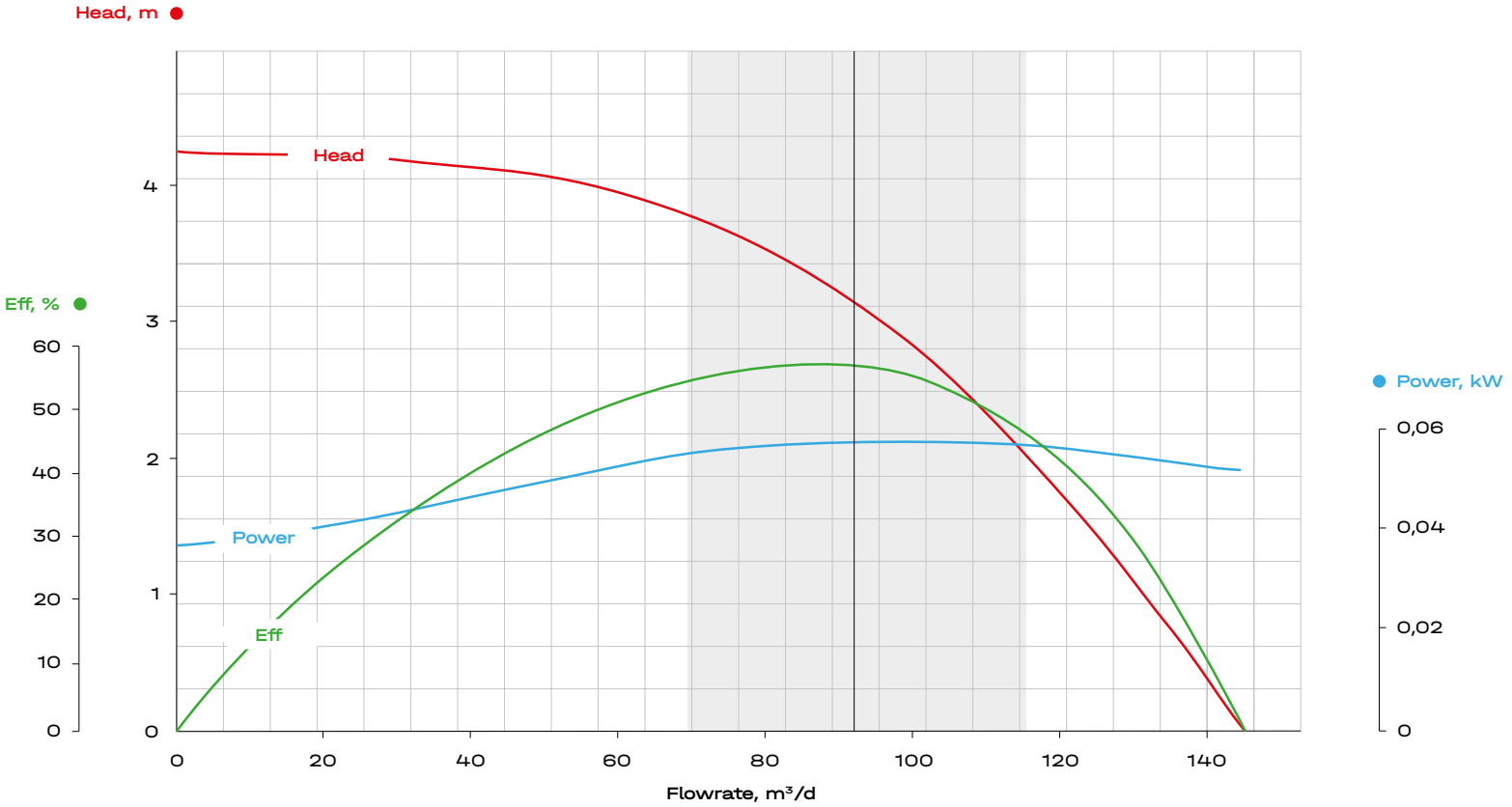




ExP319-700

Pump performance curve

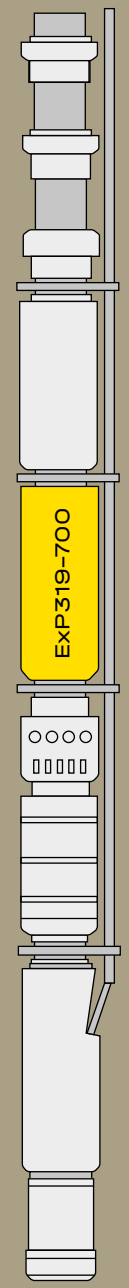
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 319 series (OD 81 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	57%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	585 BPD	93 m³/day	**Shaft broken HP - S13**	90 HP	67 KW
Head	10.33 ft	3.15 m	**Shaft broken HP - S14**	104 HP	77 KW
Optimum Operating Range	440-730 BPD	70-116 m³/day	**Shaft broken HP - S16**	118 HP	88 KW
Pump Housing Diameter	3.19 in	81 mm	**Shaft Cross Sectional Area**	0.24 Inch²	154 mm²
Minimus Casing Size	3.74 in	95 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

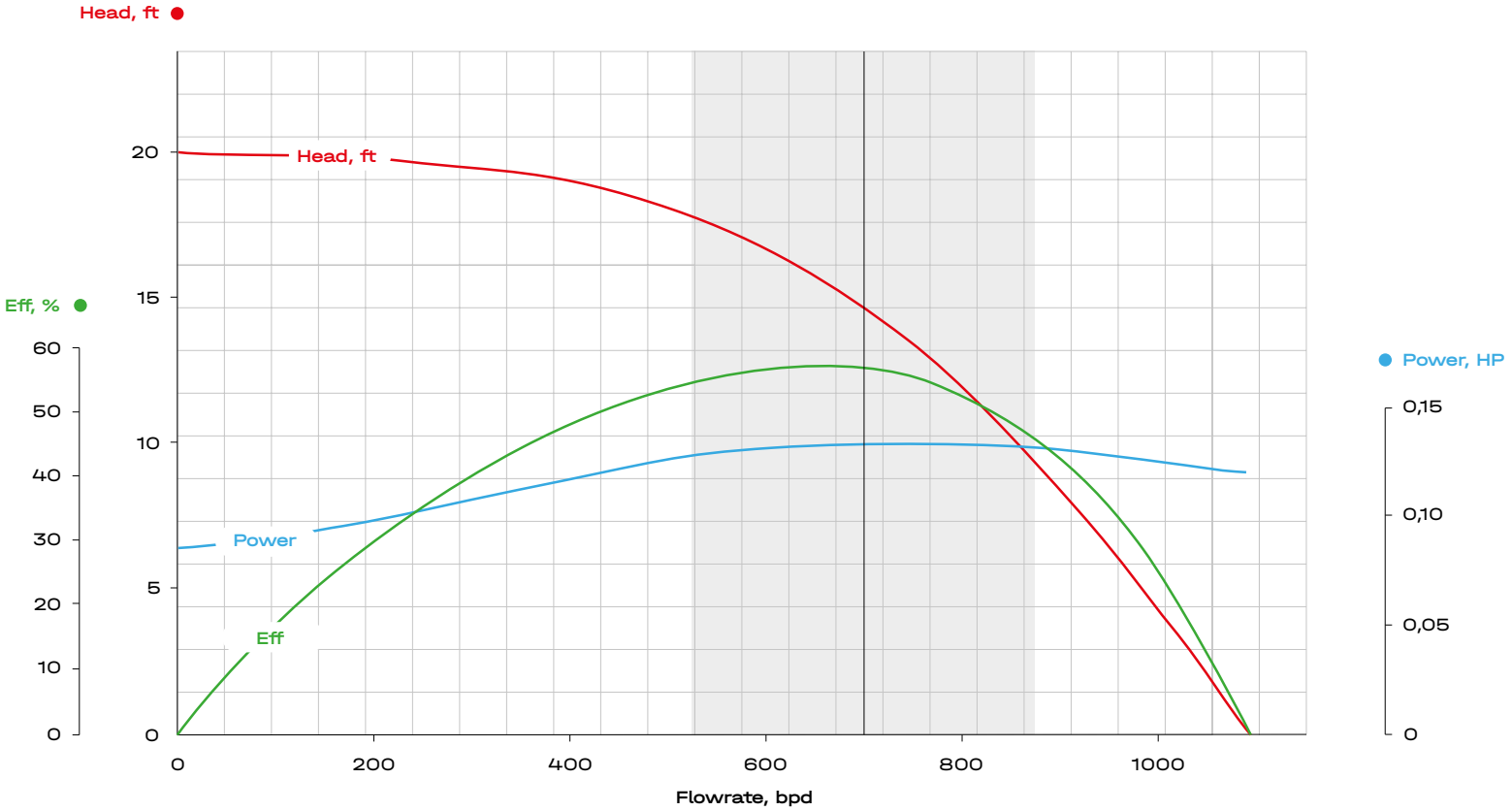
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP319-700

Pump performance curve

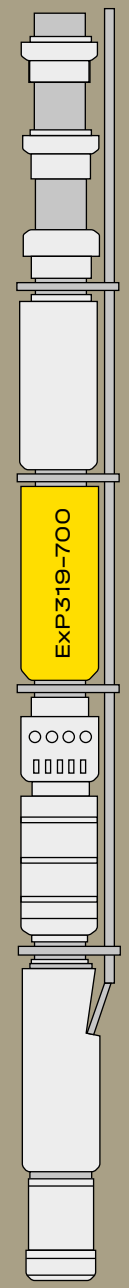
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 319 series (OD 3.19 in)



Technical data

Best Efficiency Point			Limitations		
Efficiency	57%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	698 BPD	112 m^3/day	**Shaft broken HP - S13**	108 HP	80 KW
Head	14.87 ft	4.53 m	**Shaft broken HP - S14**	124 HP	93 KW
Optimum Operating Range	525-870 BPD	83-135 m^3/day	**Shaft broken HP - S16**	141 HP	105 KW
Pump Housing Diameter	3.19 in	81 mm	**Shaft Cross Sectional Area**	0.24 $Inch^2$	154 mm^2
Minimus Casing Size	3.74 in	95 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

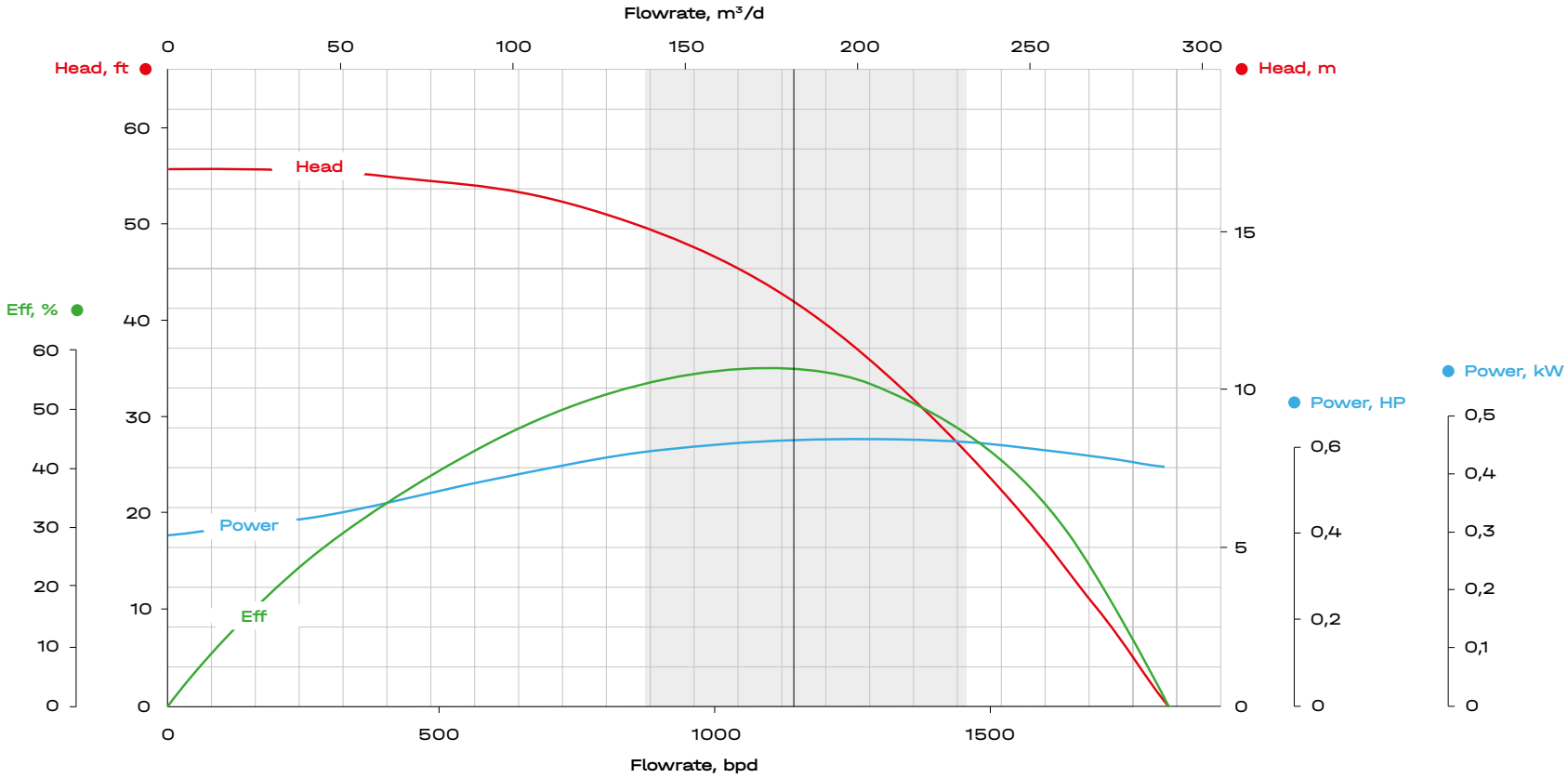
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP319-700

Pump performance curve

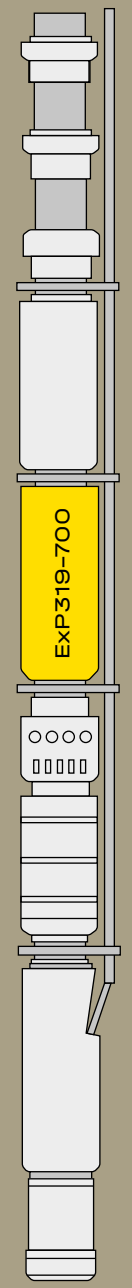
100 Hz/6000 rpm | Sp.Gr. 1 | 1 STG | 319 series (OD 81 mm)



Technical data

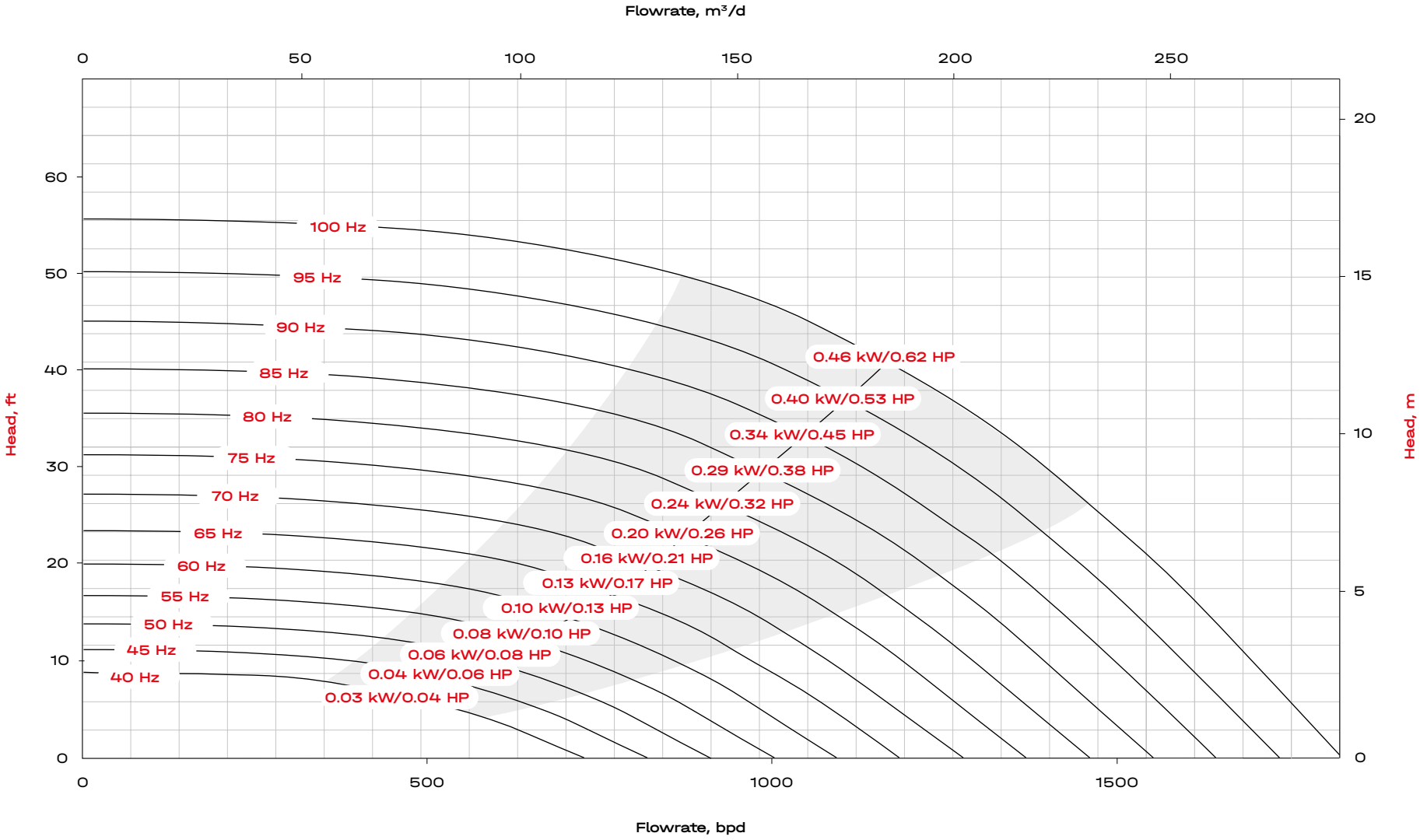
Best Efficiency Point			Limitations		
Efficiency	57%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	1164 BPD	185 m³/day	**Shaft broken HP - S13**	180 HP	134 KW
Head	41.31 ft	12.59 m	**Shaft broken HP - S14**	207 HP	155 KW
Optimum Operating Range	880-1453 BPD	140-232 m³/day	**Shaft broken HP - S16**	235 HP	175 KW
Pump Housing Diameter	3.19 in	81 mm	**Shaft Cross Sectional Area**	0.24 Inch²	154 mm²
Minimus Casing Size	3.74 in	95 mm	**Housing Burst Pressure Limit**	5550 psi	382 bar

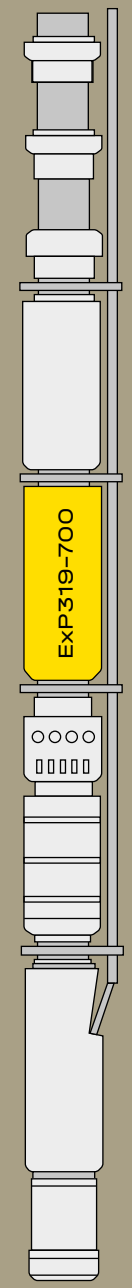
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP319-700 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 319 series

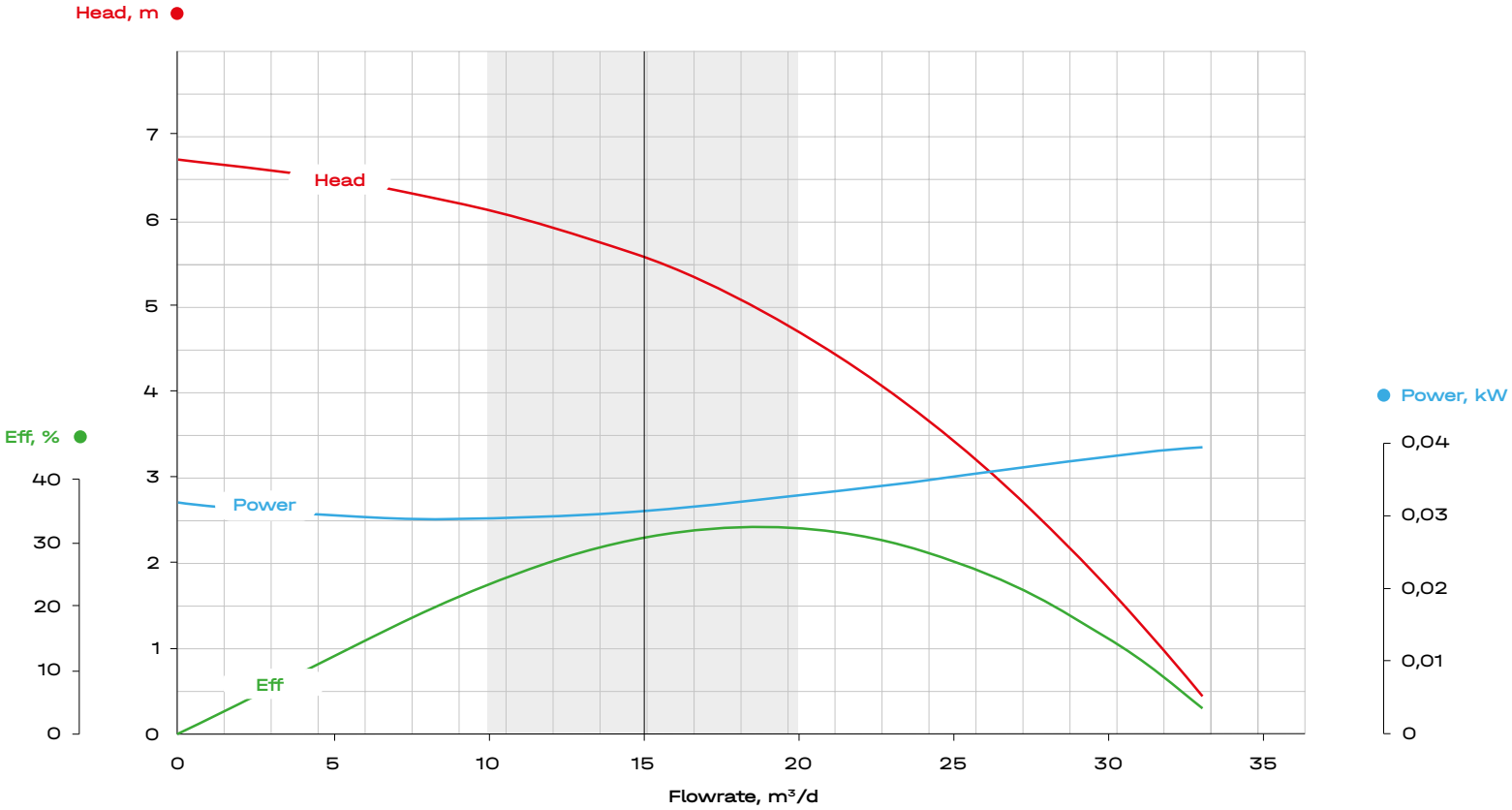




ExP362-110

Pump performance curve

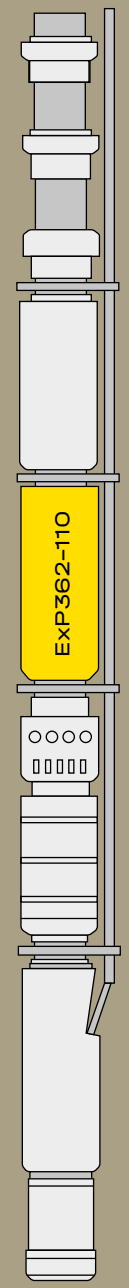
50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 362 series (OD 92 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	31%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	94 BPD	15 m³/day	**Shaft broken HP - S13**	87 HP	65 KW
Head	18.31 ft	5.58 m	**Shaft broken HP - S14**	101 HP	75 KW
Optimum Operating Range	10-20 BPD	18-35 m³/day	**Shaft broken HP - S16**	114 HP	85 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.24 Inch²	154 mm²
Minimus Casing Size	4.7 in	119.3 mm²	**Housing Burst Pressure Limit**	6000 psi	414 bar

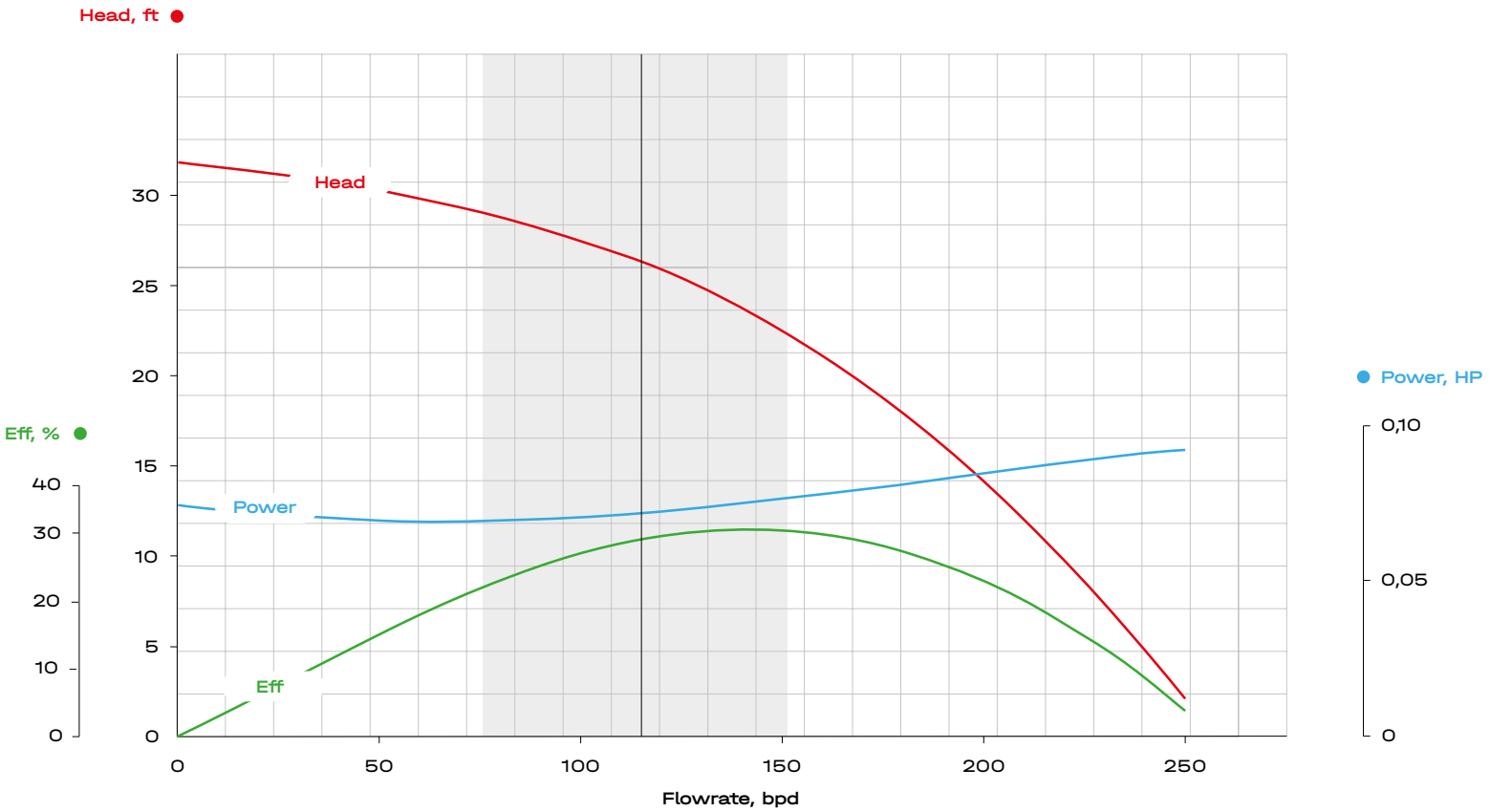
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-110

Pump performance curve

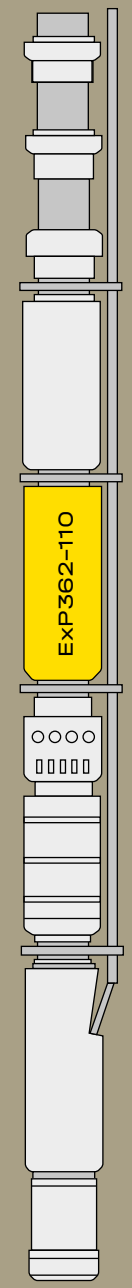
60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 362 series (OD 3.62 in)



Technical data

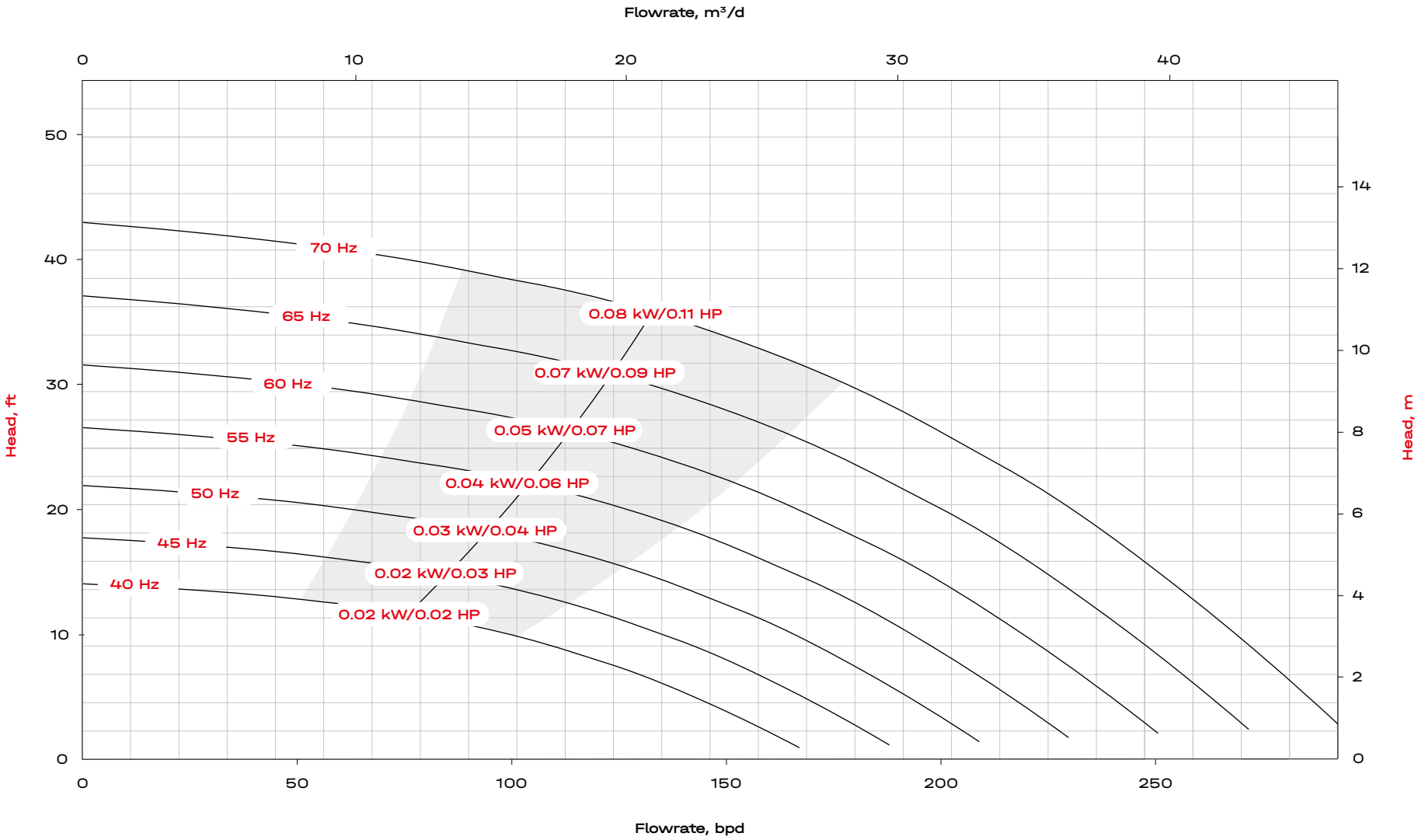
Best Efficiency Point			Limitations		
Efficiency	31%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	113 BPD	18 m^3/day	**Shaft broken HP - S13**	105 HP	78 KW
Head	26.37 ft	8.04 m	**Shaft broken HP - S14**	121 HP	90 KW
Optimum Operating Range	75-150 BPD	12-24 m^3/day	**Shaft broken HP - S16**	137 HP	102 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.24 $Inch^2$	154 mm^2
Minimus Casing Size	4.7 in	119.3 mm^2	**Housing Burst Pressure Limit**	6000 psi	465 bar

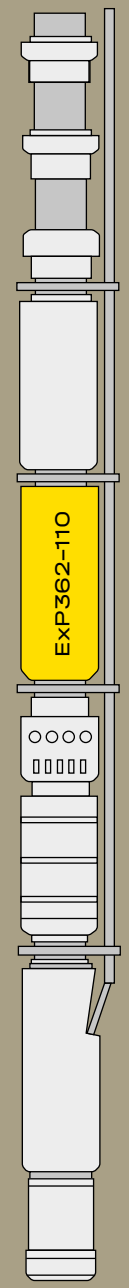
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-110 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 362 series

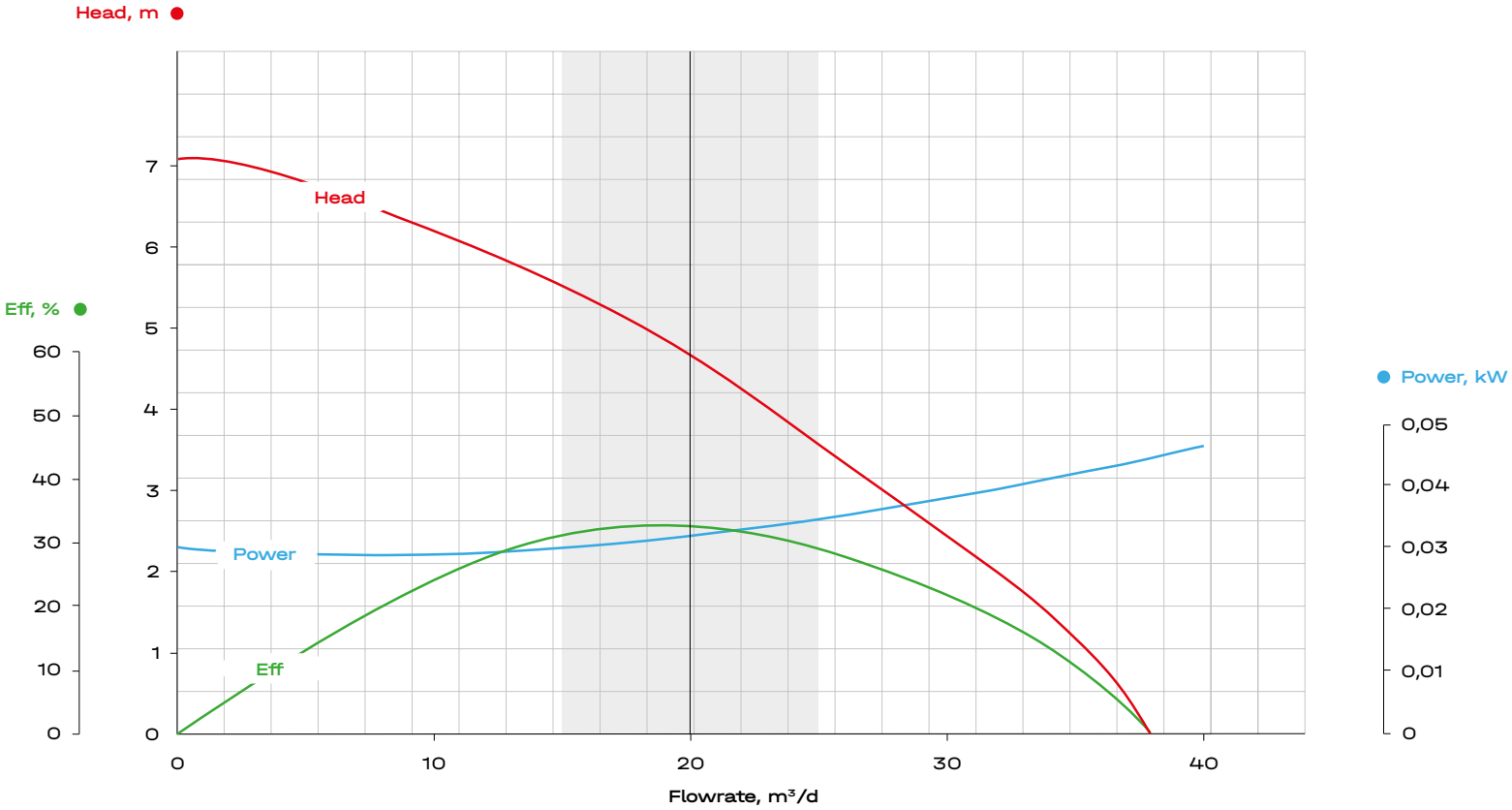




ExP362-150

Pump performance curve

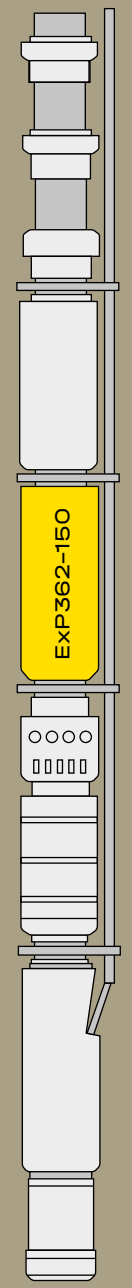
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 362 series (OD 92 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	33%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	126 BPD	20 m³/day	**Shaft broken HP - S13**	87 HP	65 KW
Head	15.34 ft	4.68 m	**Shaft broken HP - S14**	101 HP	75 KW
Optimum Operating Range	95-157 BPD	18-35 m³/day	**Shaft broken HP - S16**	114 HP	85 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.24 Inch²	154 mm²
Minimus Casing Size	4.7 in	119.3 mm²	**Housing Burst Pressure Limit**	6000 psi	414 bar

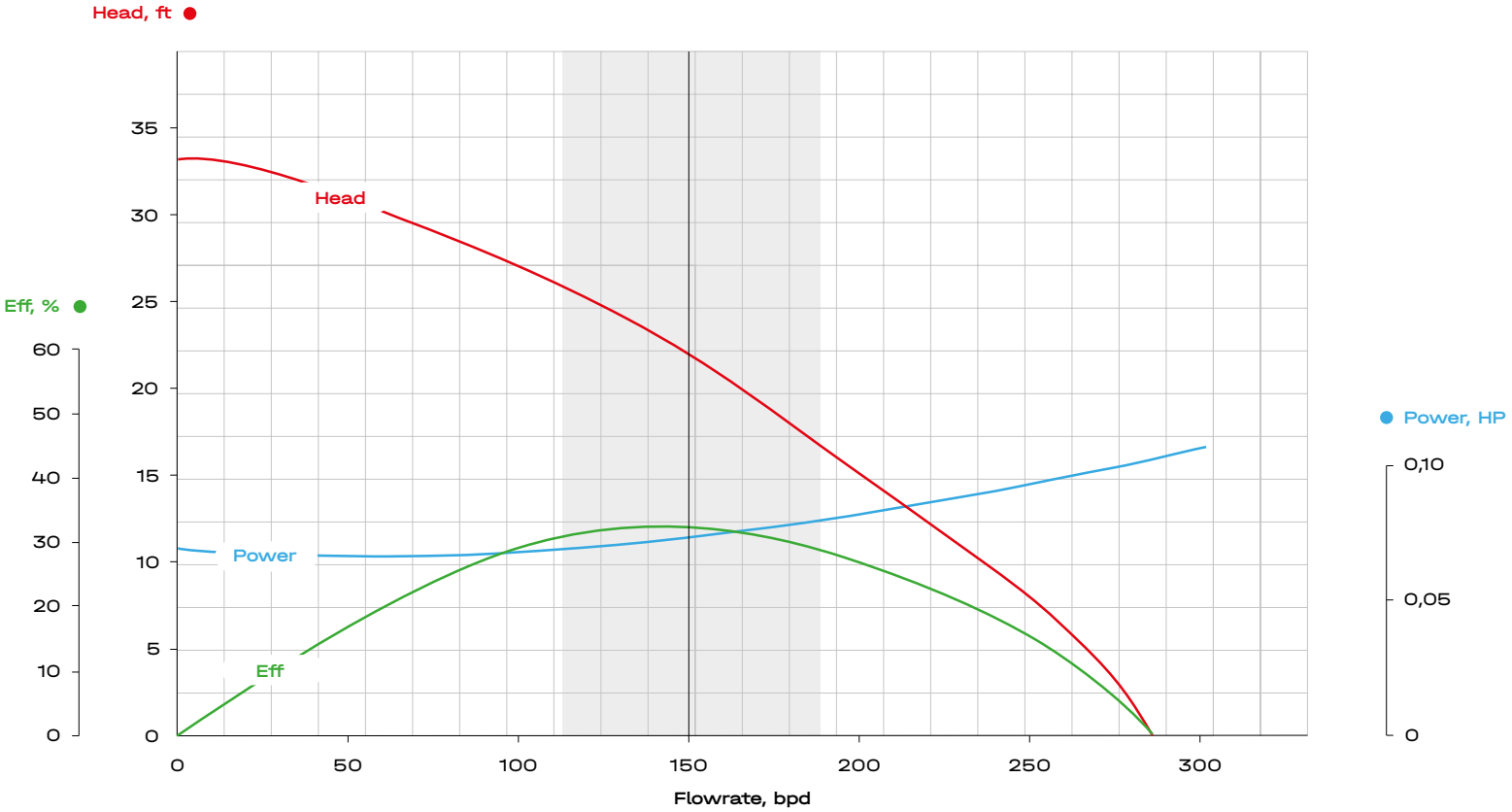
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-150

Pump performance curve

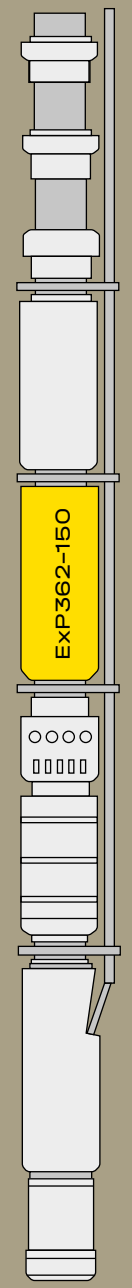
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 362 series (OD 3.62 in)



Technical data

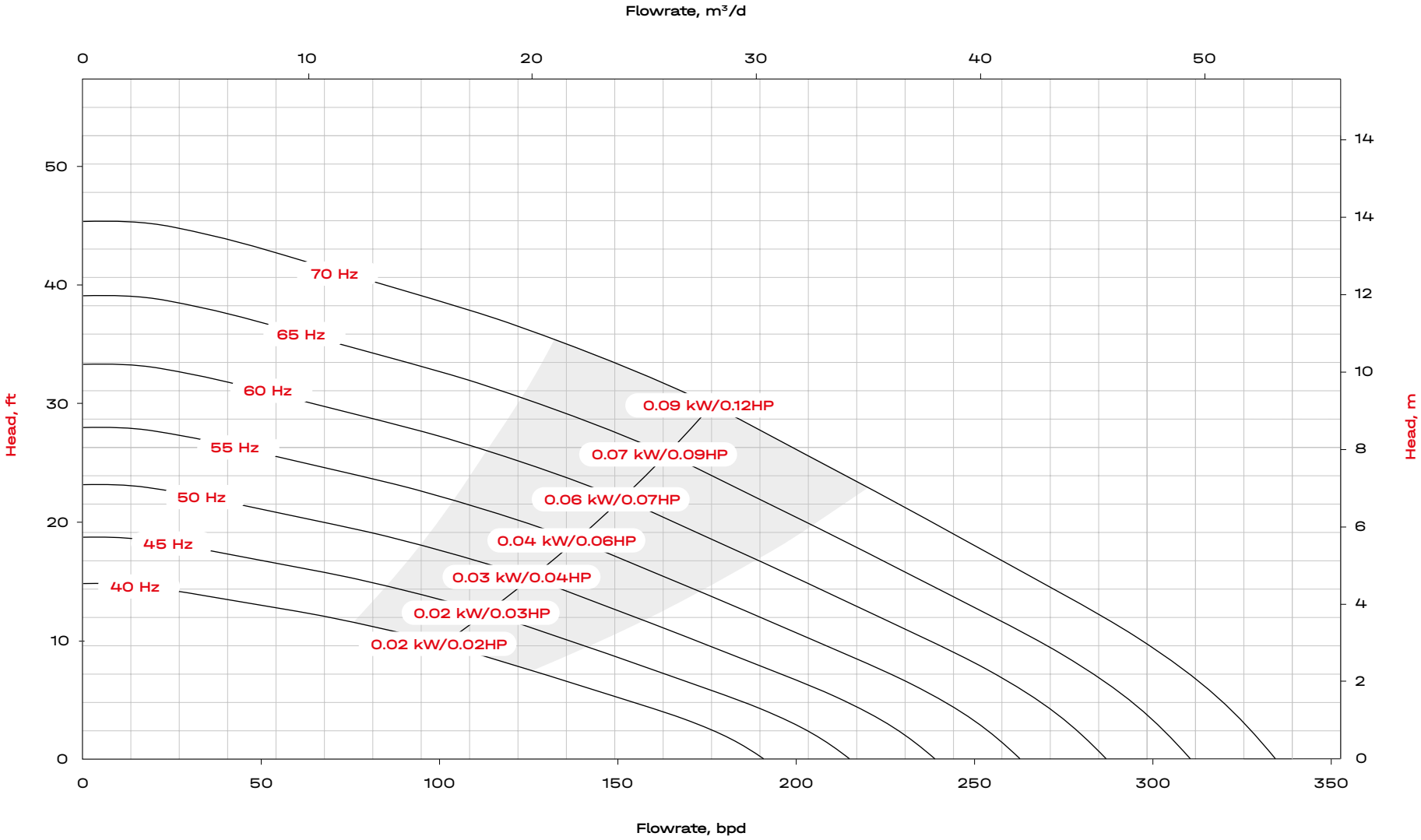
Best Efficiency Point			Limitations		
Efficiency	33%		**Shaft Diameter**	0.55 Inch	14 mm
Capacity	150 BPD	24 m^3/day	**Shaft broken HP - S13**	105 HP	78 KW
Head	22.1 ft	6.74 m	**Shaft broken HP - S14**	121 HP	90 KW
Optimum Operating Range	114-188 BPD	18-30 m^3/day	**Shaft broken HP - S16**	137 HP	102 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.24 $Inch^2$	154 mm^2
Minimus Casing Size	4.7 in	119.3 mm^2	**Housing Burst Pressure Limit**	6000 psi	465 bar

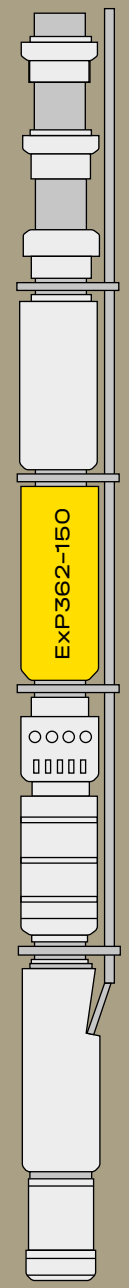
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-150 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 362 series

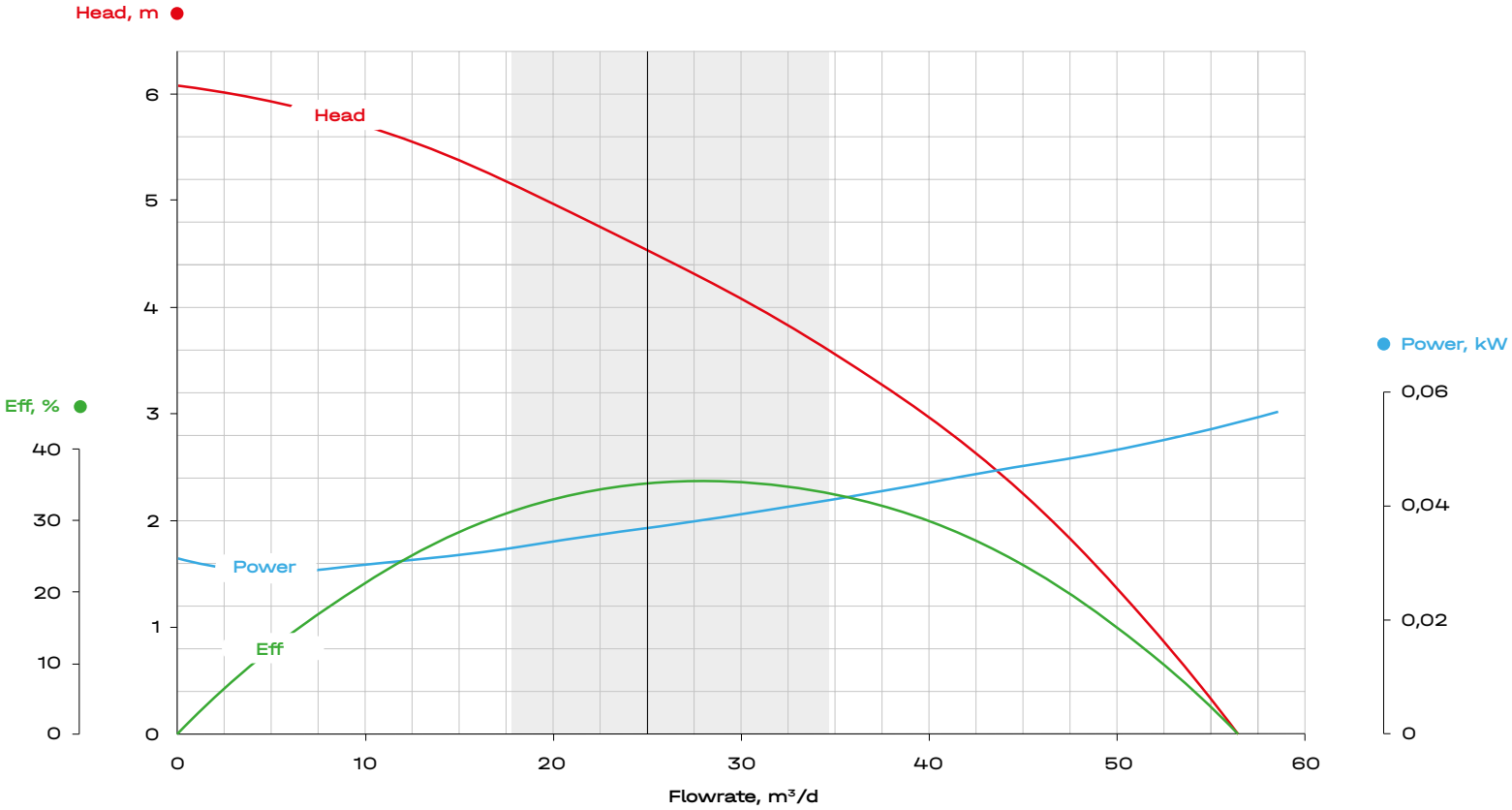




ExP362-200

Pump performance curve

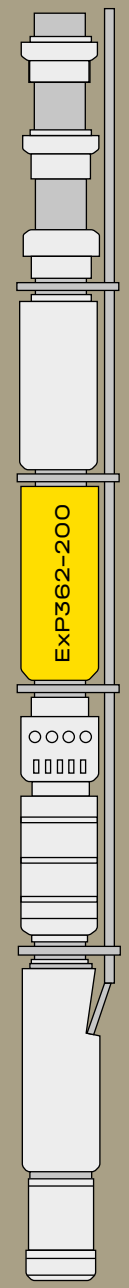
50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 362 series (OD 92 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	35%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	157 BPD	25 m³/day	**Shaft broken HP - S13**	161 HP	120 KW
Head	14.84 ft	4.52 m	**Shaft broken HP - S14**	181 HP	135 KW
Optimum Operating Range	113-220 BPD	18-35 m³/day	**Shaft broken HP - S16**	201HP	150 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 Inch²	226.9 mm²
Minimus Casing Size	4.7 in	119.3 mm²	**Housing Burst Pressure Limit**	5500 psi	380 bar

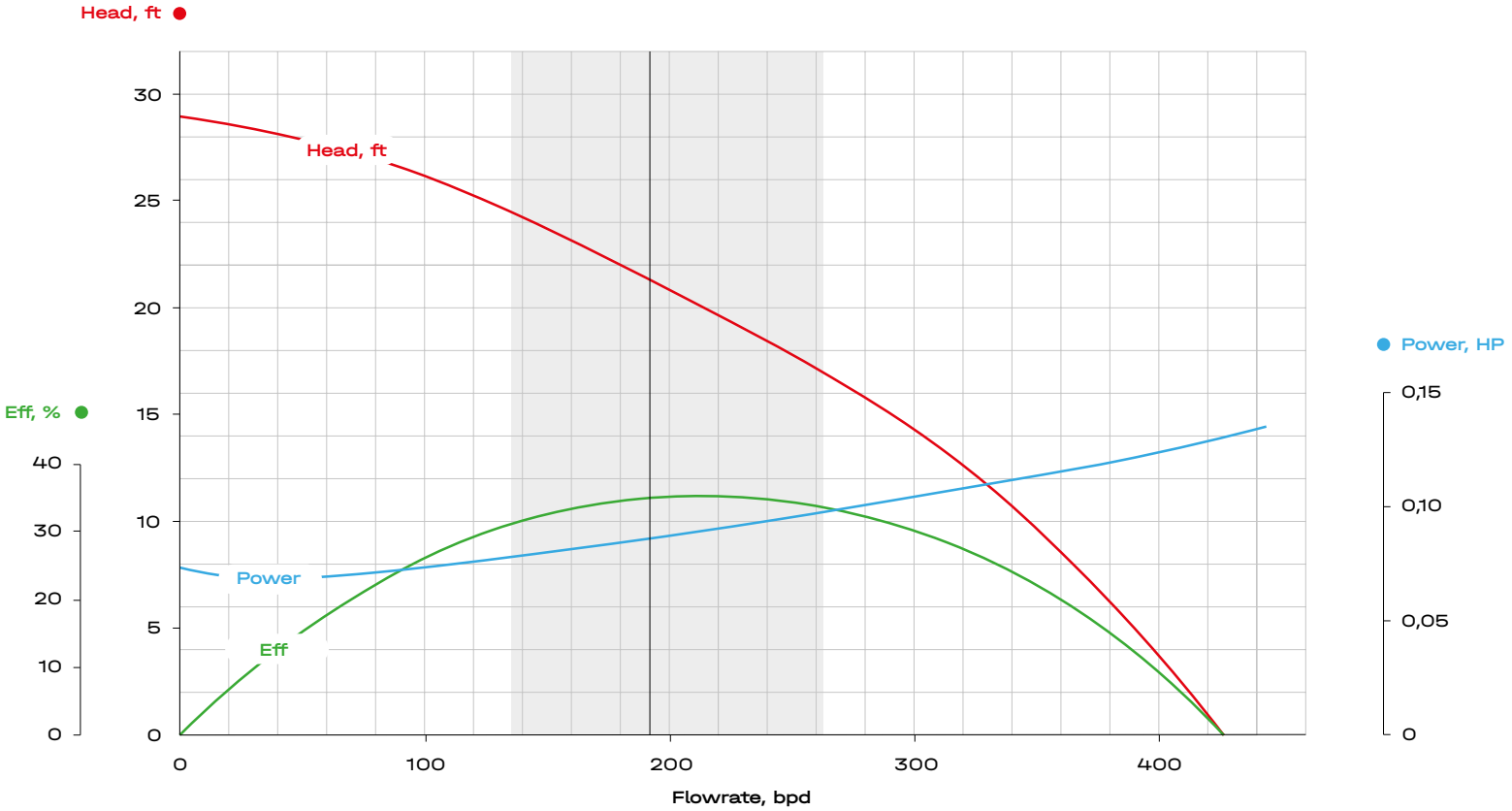
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-200

Pump performance curve

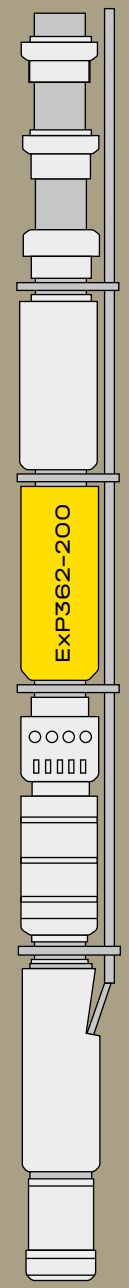
60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 362 series (OD 3.62 in)



Technical data

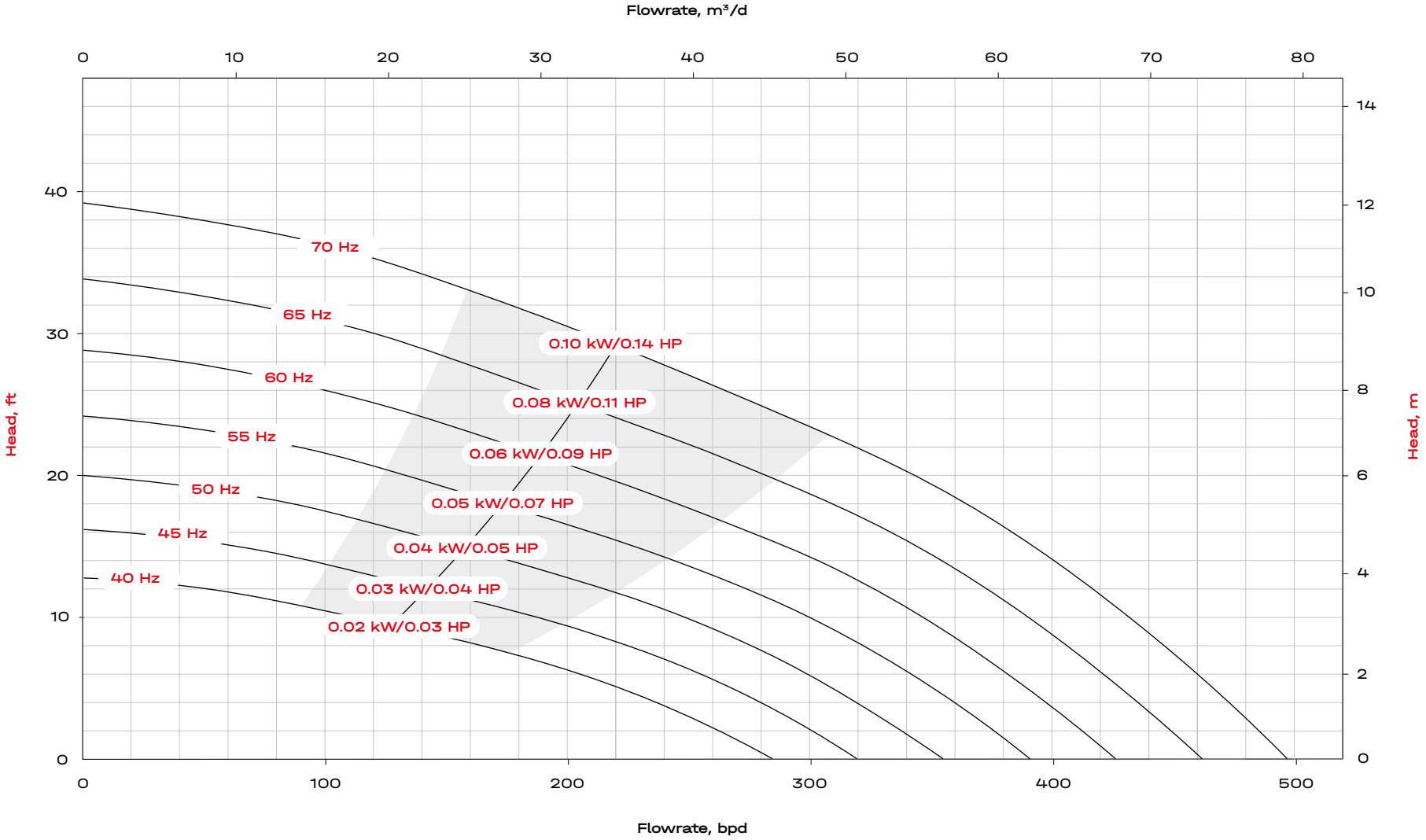
Best Efficiency Point			Limitations		
Efficiency	35%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	189 BPD	30 m^3/day	**Shaft broken HP - S13**	193 HP	144 KW
Head	17.77 ft	6.51 m	**Shaft broken HP - S14**	217 HP	162 KW
Optimum Operating Range	136-264 BPD	22-42 m^3/day	**Shaft broken HP - S16**	241 HP	180 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 $Inch^2$	226.9 mm^2
Minimus Casing Size	4.7 in	119.3 mm^2	**Housing Burst Pressure Limit**	5500 psi	380 bar

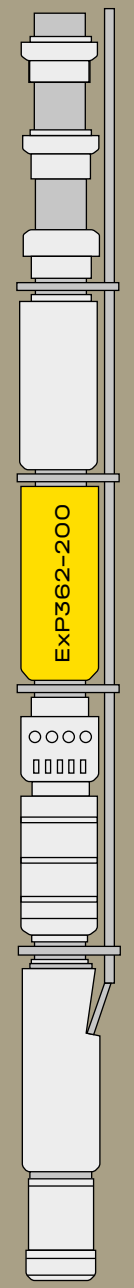
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-200 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 362 series

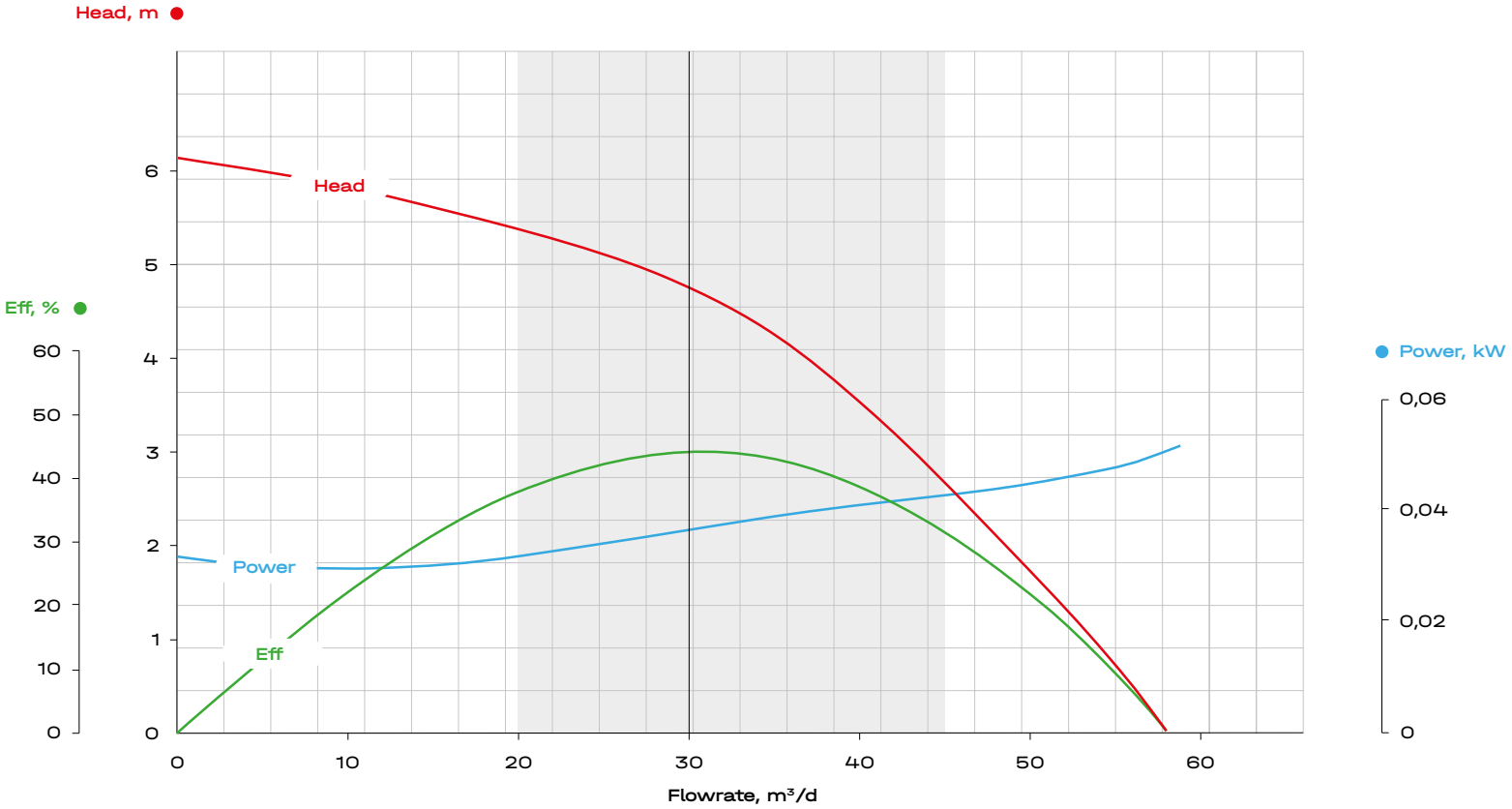




ExP362-230

Pump performance curve

50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 362 series (OD 92 mm)



Technical data

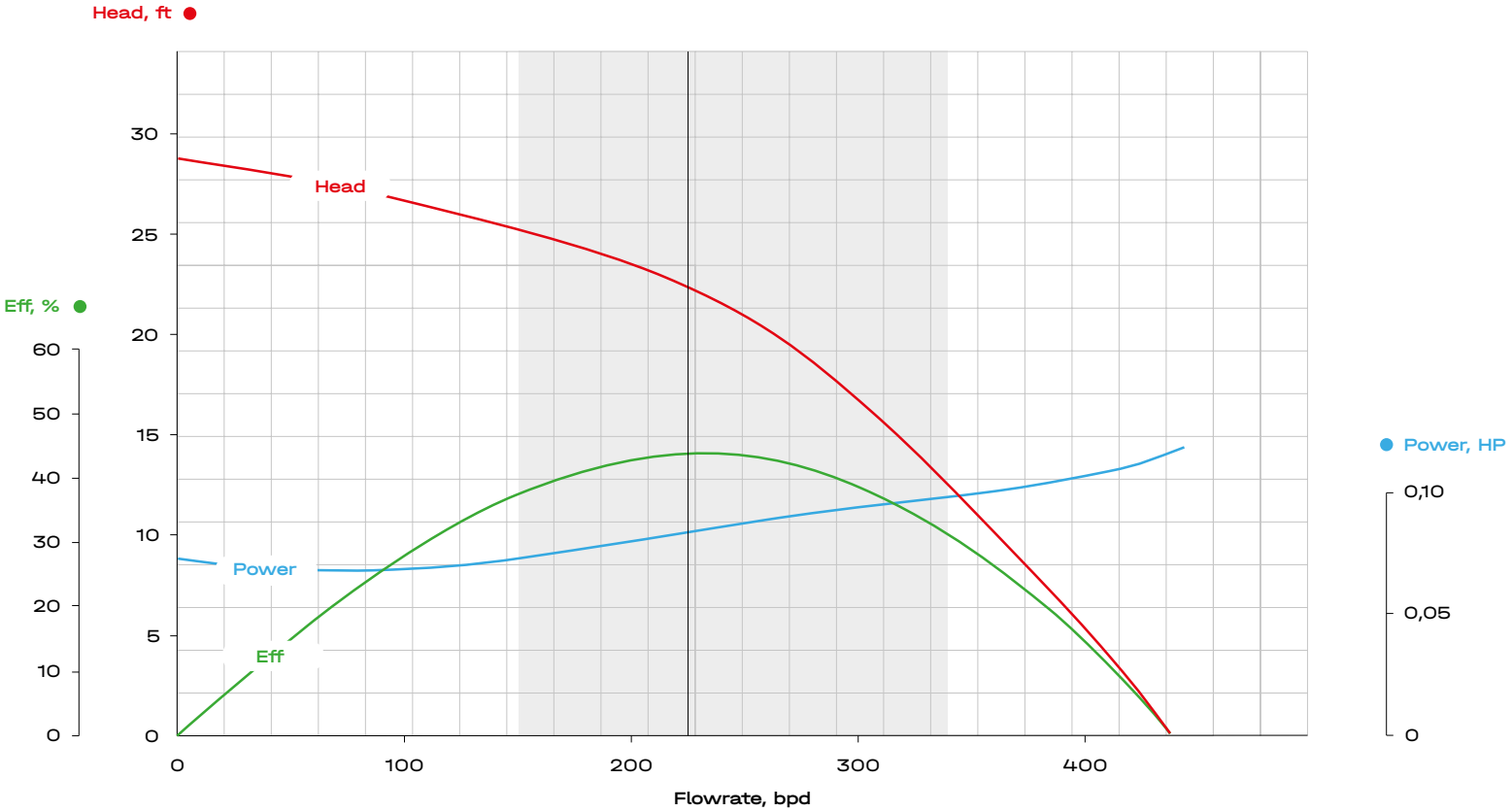
Best Efficiency Point			Limitations		
Efficiency	44%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	189 BPD	30 m³/day	**Shaft broken HP - S13**	161 HP	120 KW
Head	15.67 ft	4.78 m	**Shaft broken HP - S14**	181 HP	135 KW
Optimum Operating Range	126-282 BPD	20-45 m³/day	**Shaft broken HP - S16**	201HP	150 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 Inch²	226.9 mm²
Minimus Casing Size	4.7 in	119.3 mm²	**Housing Burst Pressure Limit**	6000 psi	465 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP362-230

Pump performance curve

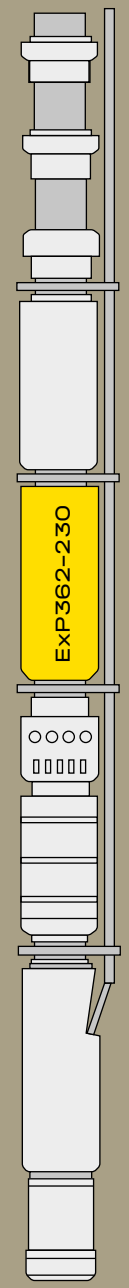
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 362 series (OD 3.62 in)



Technical data

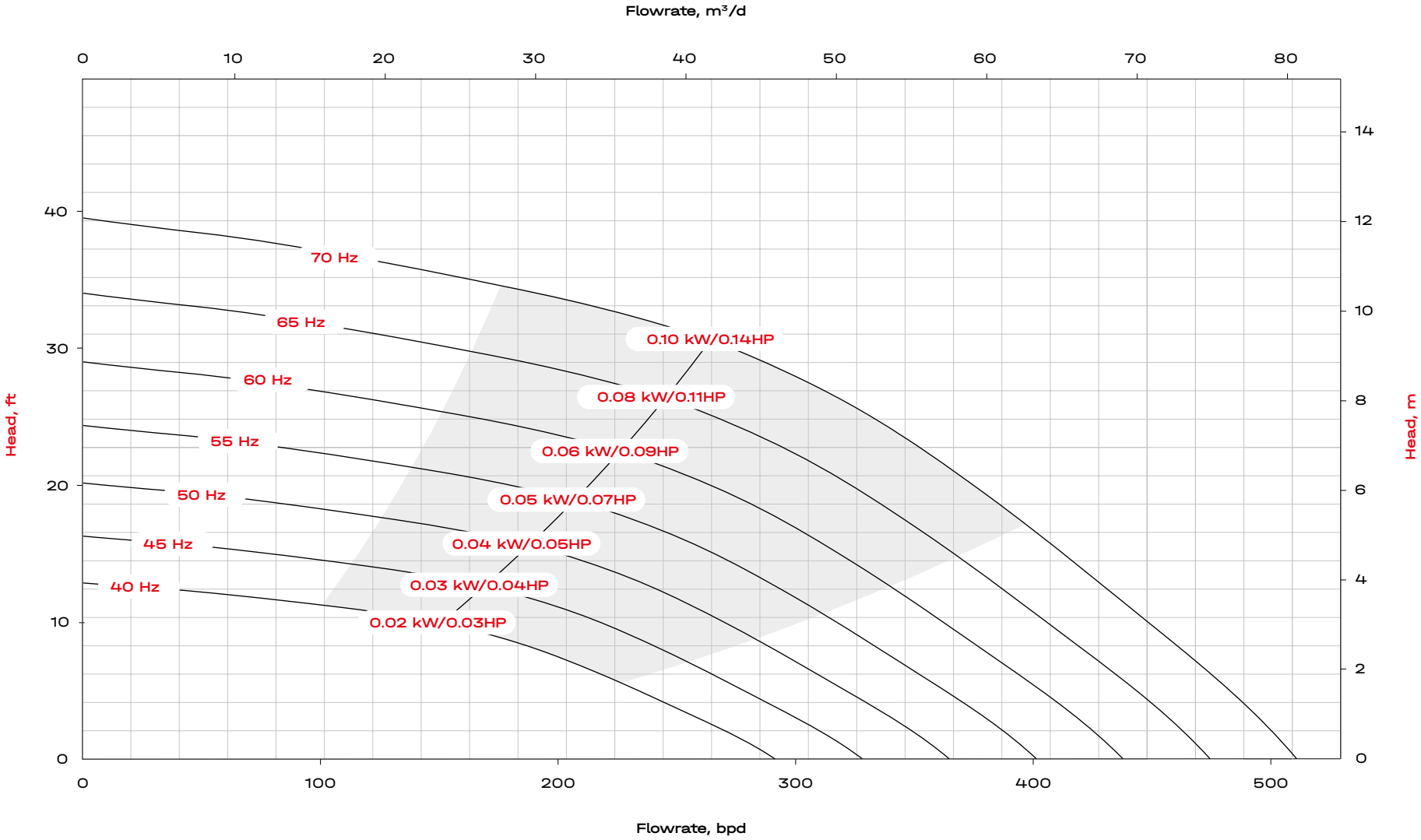
Best Efficiency Point			Limitations		
Efficiency	44%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	226 BPD	36 m^3/day	**Shaft broken HP - S13**	193 HP	144 KW
Head	22.57 ft	6.88 m	**Shaft broken HP - S14**	217 HP	162 KW
Optimum Operating Range	153-340 BPD	25-54 m^3/day	**Shaft broken HP - S16**	241 HP	180 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 $Inch^2$	226.9 mm^2
Minimus Casing Size	4.7 in	119.3 mm^2	**Housing Burst Pressure Limit**	6000 psi	465 bar

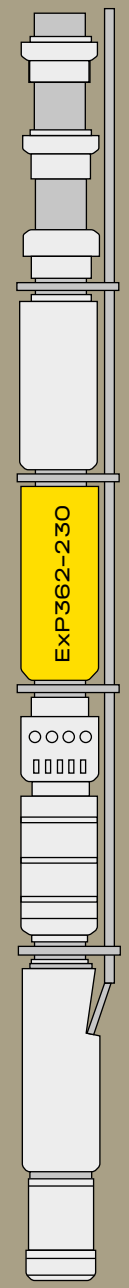
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-230 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 362 series

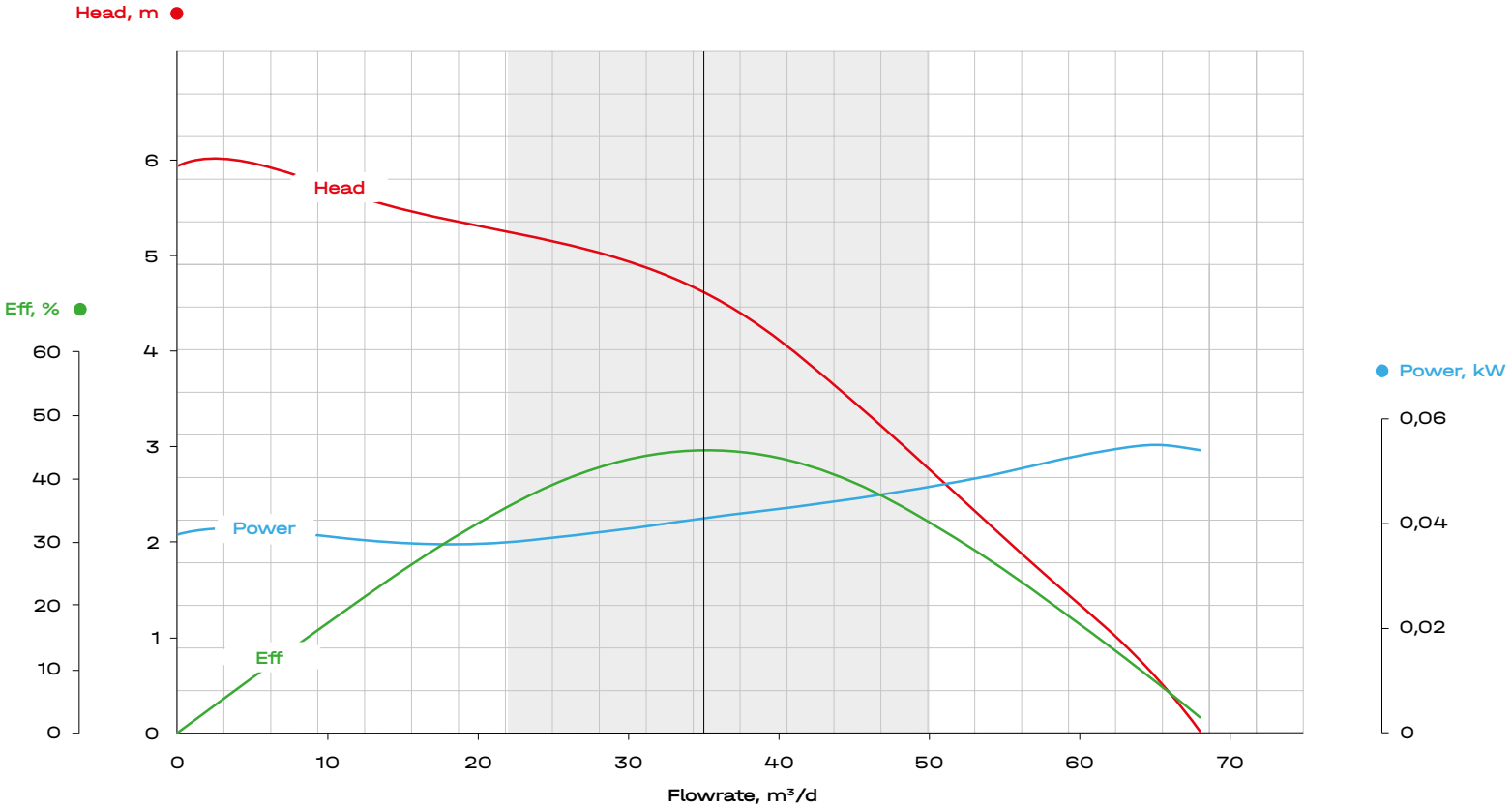




ExP362-260

Pump performance curve

50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 362 series (OD 92 mm)



Technical data

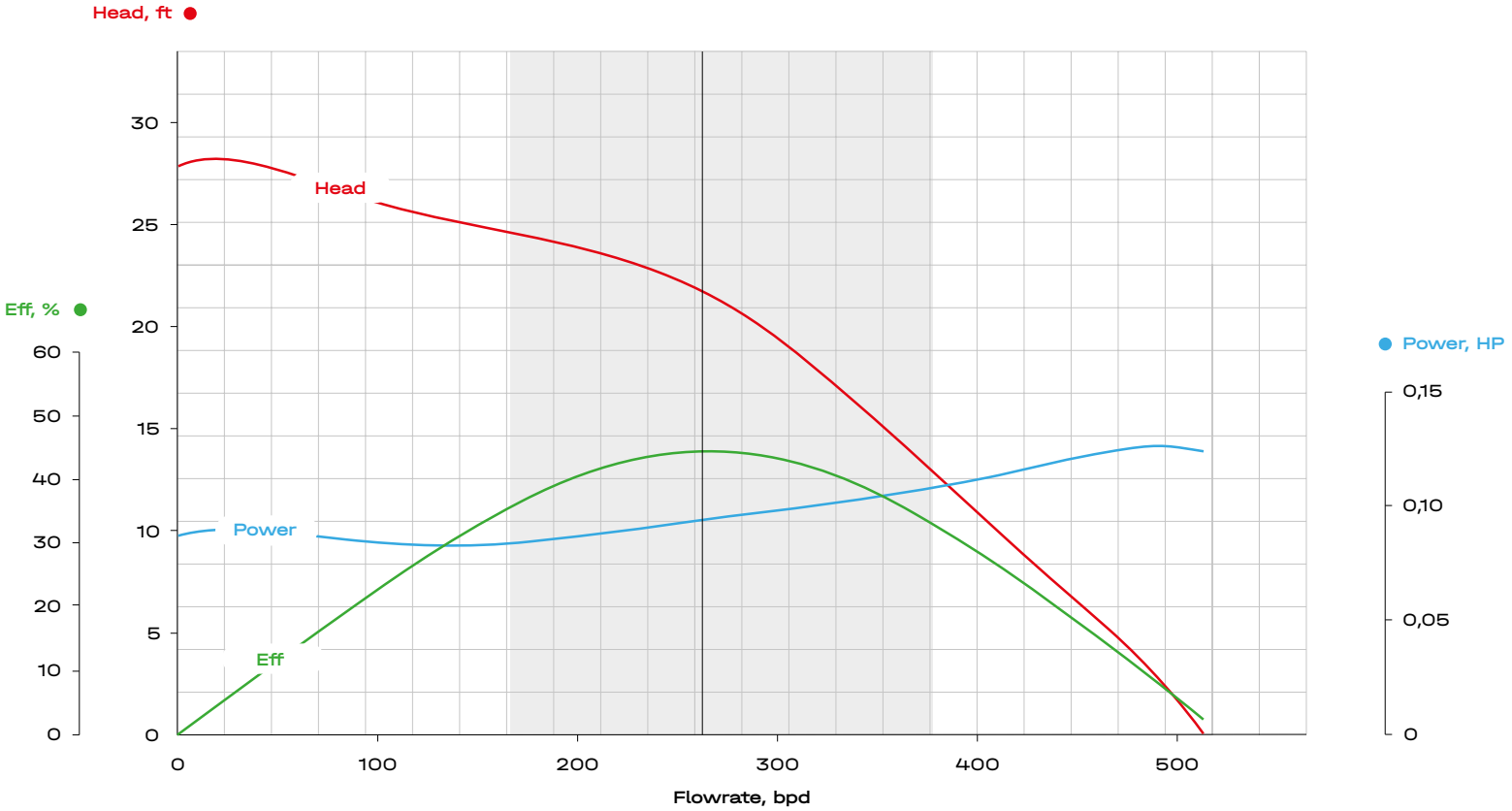
Best Efficiency Point			Limitations		
Efficiency	45%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	218 BPD	35 m³/day	**Shaft broken HP - S13**	161 HP	120 KW
Head	15.2 ft	4.62 m	**Shaft broken HP - S14**	181 HP	135 KW
Optimum Operating Range	126-282 BPD	20-45 m³/day	**Shaft broken HP - S16**	201HP	150 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 Inch²	226.9 mm²
Minimus Casing Size	4.7 in	119.3 mm²	**Housing Burst Pressure Limit**	6000 psi	465 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP362-260

Pump performance curve

60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 362 series (OD 3.62 in)



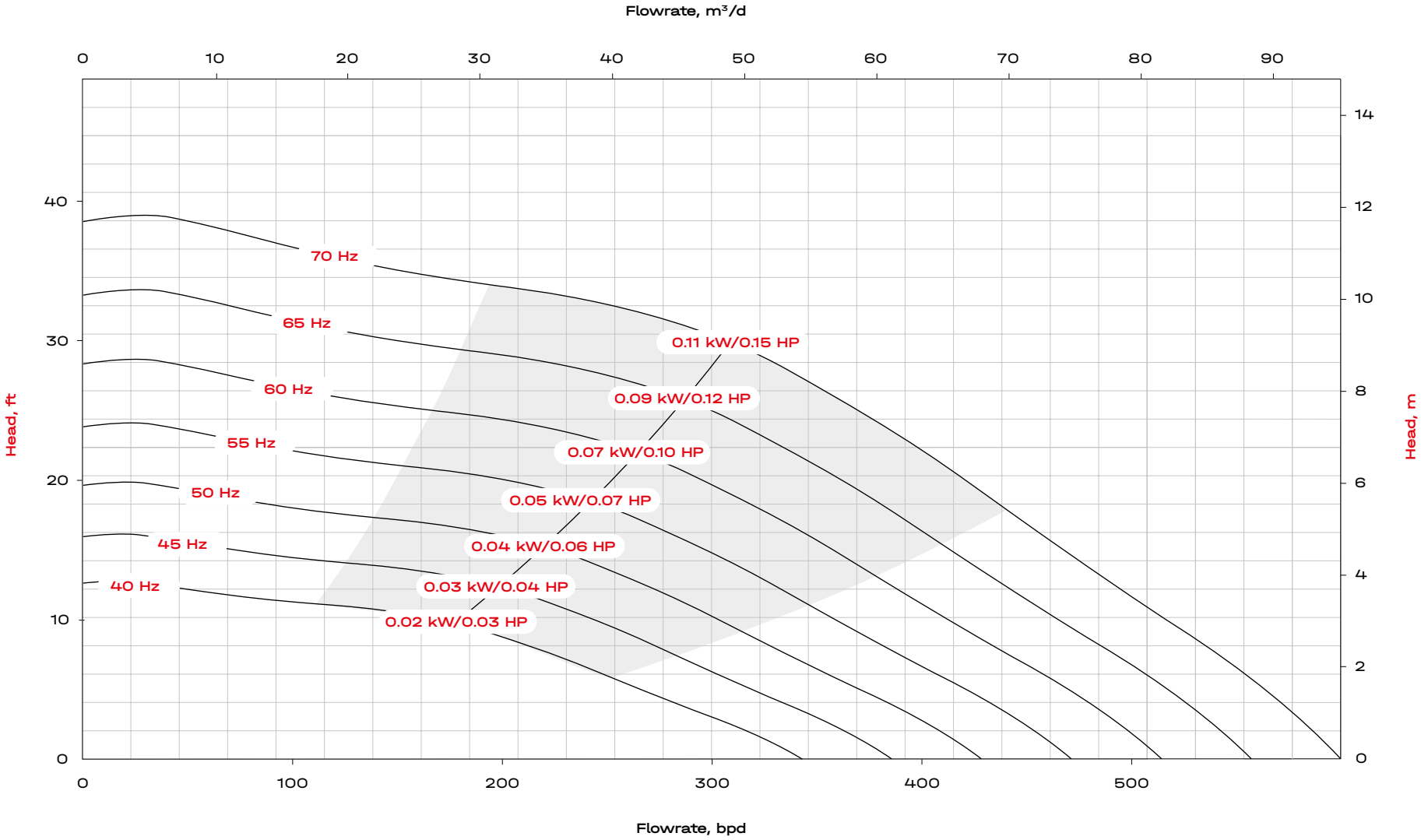
Technical data

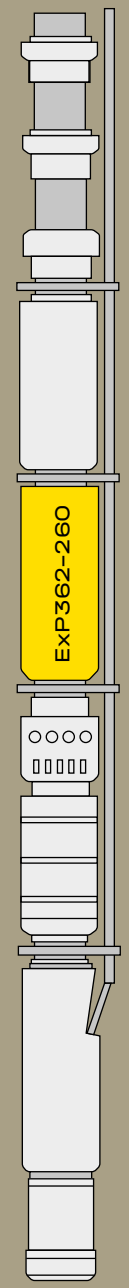
Best Efficiency Point			Limitations		
Efficiency	45%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	260	42	**Shaft broken HP - S13**	193 HP	144 KW
Head	21.8 ft	6.65 m	**Shaft broken HP - S14**	217 HP	162 KW
Optimum Operating Range	168-376 BPD	27-60 m^3/day	**Shaft broken HP - S16**	241 HP	180 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 $Inch^2$	226.9 mm^2
Minimus Casing Size	4.7 in	119.3 mm^2	**Housing Burst Pressure Limit**	6000 psi	465 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP362-260 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 362 series

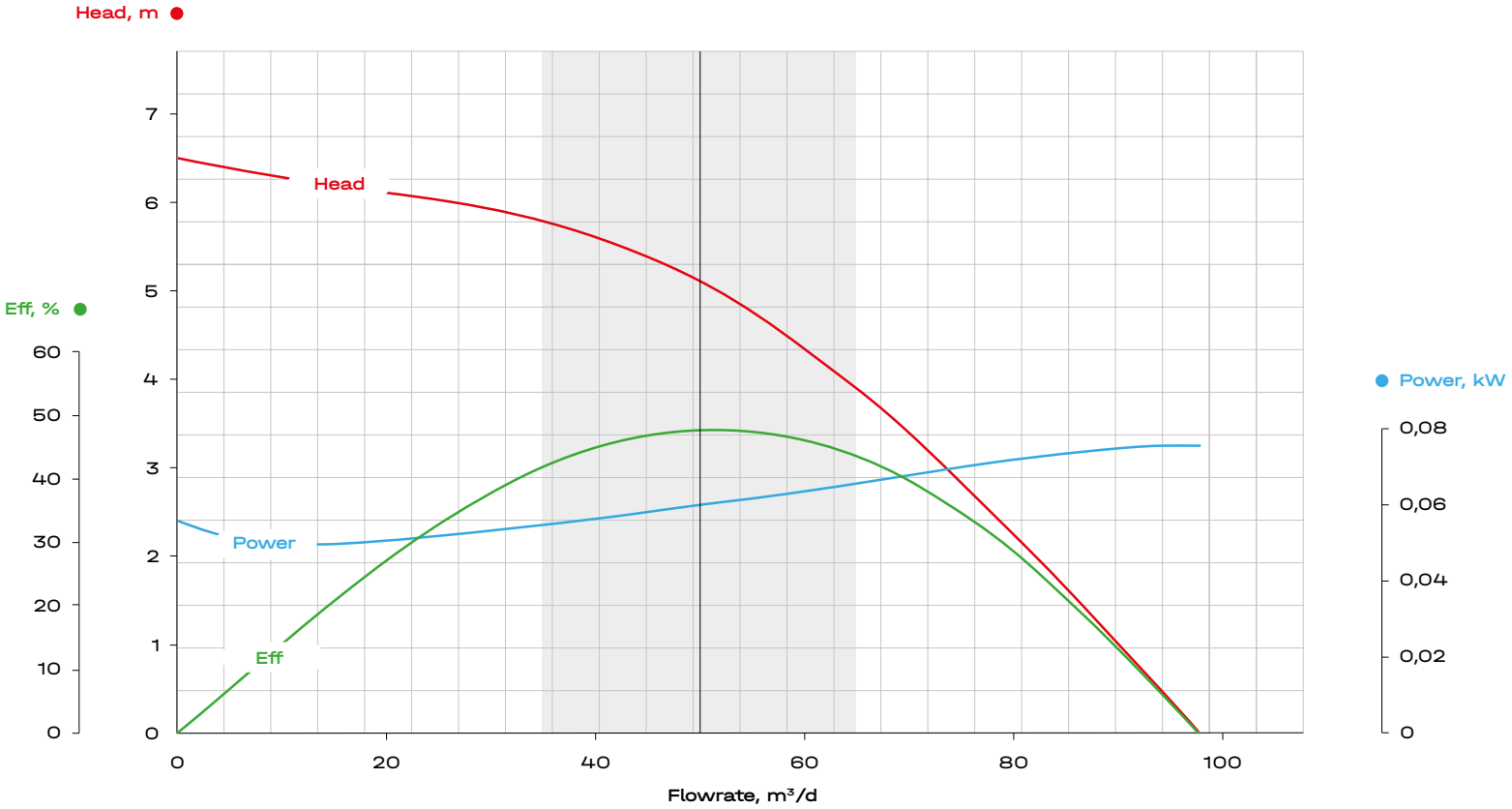


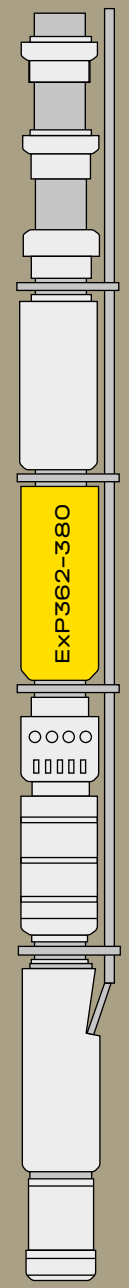


ExP362-380

Pump performance curve

50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 362 series (OD 92 mm)





Technical data

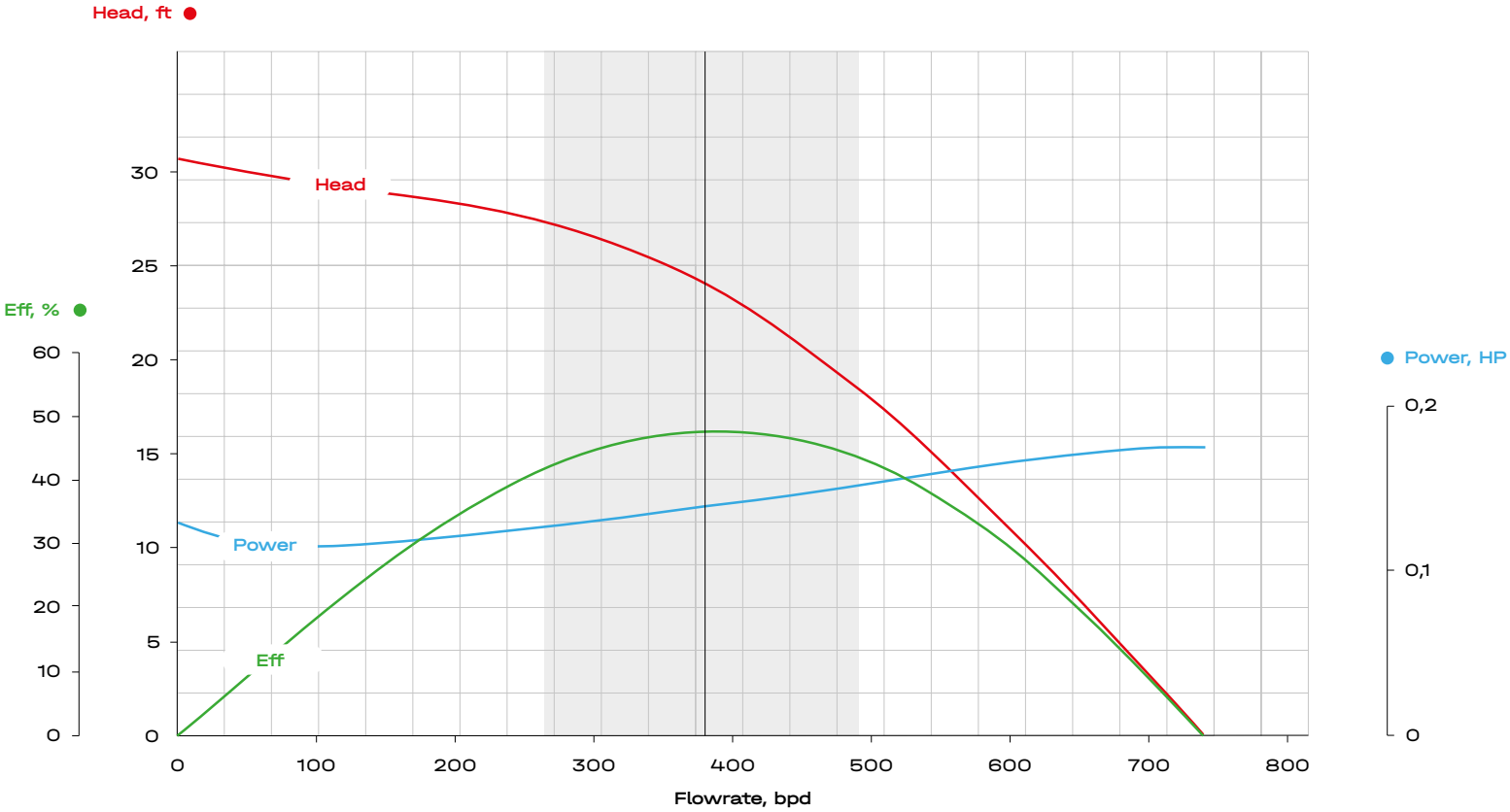
Best Efficiency Point			Limitations		
Efficiency	48%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	312 BPD	50 m³/day	**Shaft broken HP - S13**	161 HP	120 KW
Head	16.8 ft	5.1 m	**Shaft broken HP - S14**	181 HP	135 KW
Optimum Operating Range	223-408 BPD	36-64 m³/day	**Shaft broken HP - S16**	201HP	150 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 Inch²	226.9 mm²
Minimus Casing Size	4.7 in	119.3 mm²	**Housing Burst Pressure Limit**	6000 psi	465 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP362-380

Pump performance curve

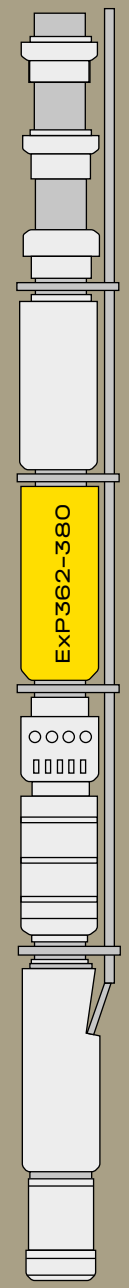
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 362 series (OD 3.62 in)



Technical data

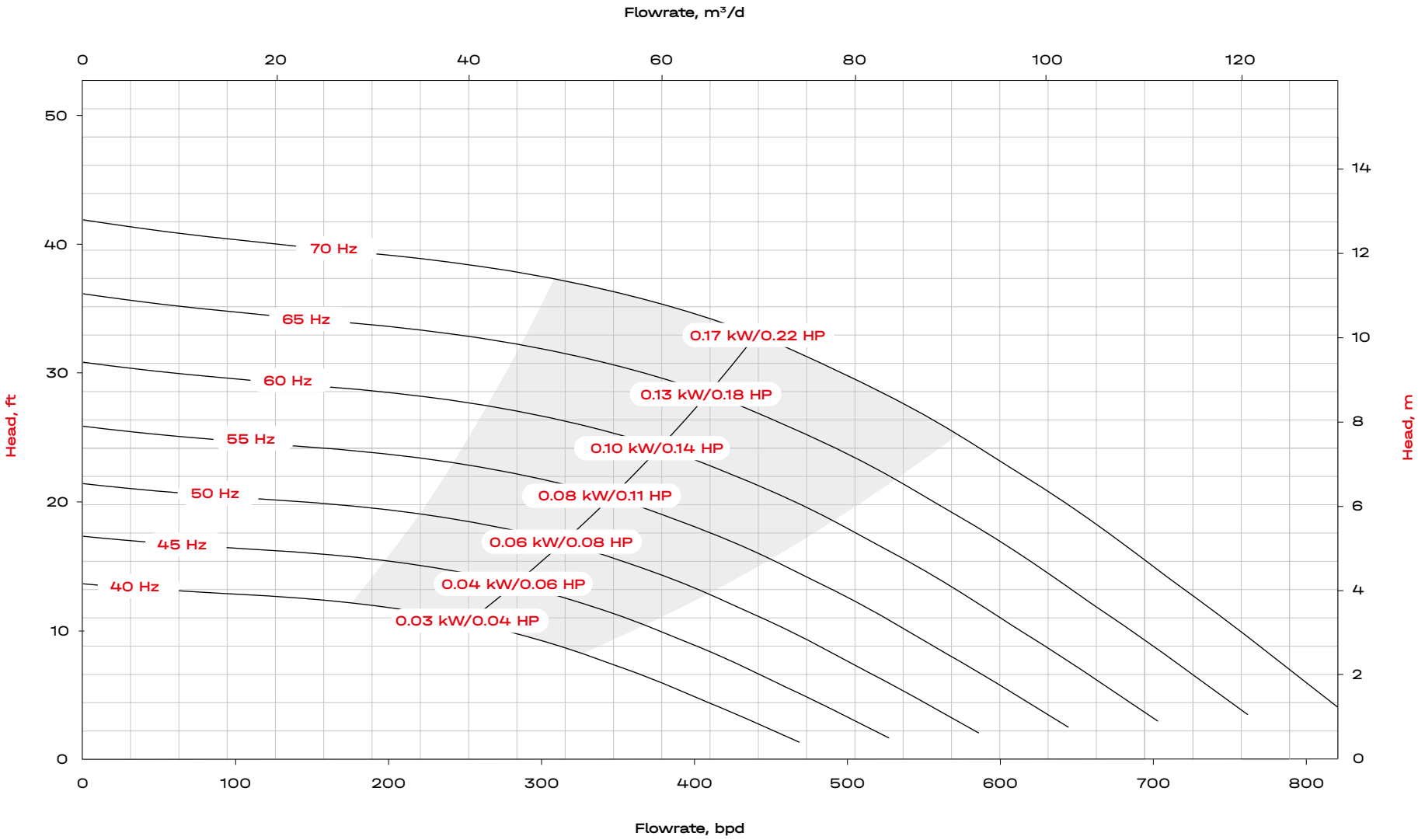
Best Efficiency Point			Limitations		
Efficiency	48%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	375	60	**Shaft broken HP - S13**	193 HP	144 KW
Head	24.2 ft	7.4 m	**Shaft broken HP - S14**	217 HP	162 KW
Optimum Operating Range	268-490 BPD	43-78 m^3/day	**Shaft broken HP - S16**	241 HP	180 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 $Inch^2$	226.9 mm^2
Minimus Casing Size	4.7 in	119.3 mm^2	**Housing Burst Pressure Limit**	6000 psi	465 bar

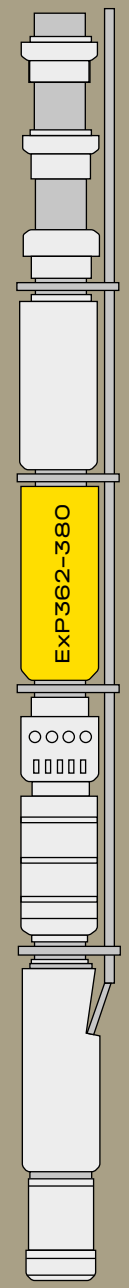
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-380 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 362 series

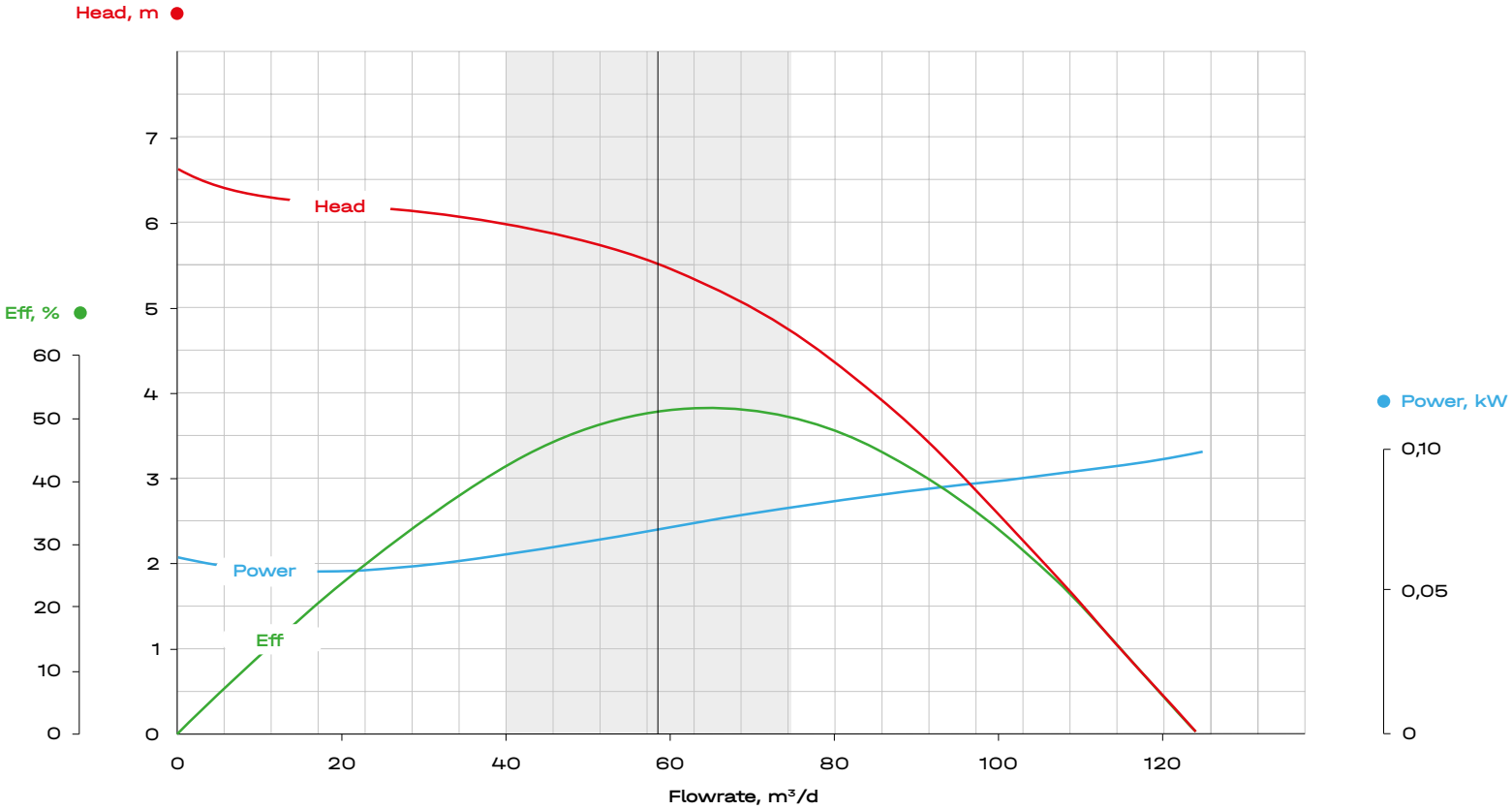




ExP362-450

Pump performance curve

50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 362 series (OD 103 mm)



Technical data

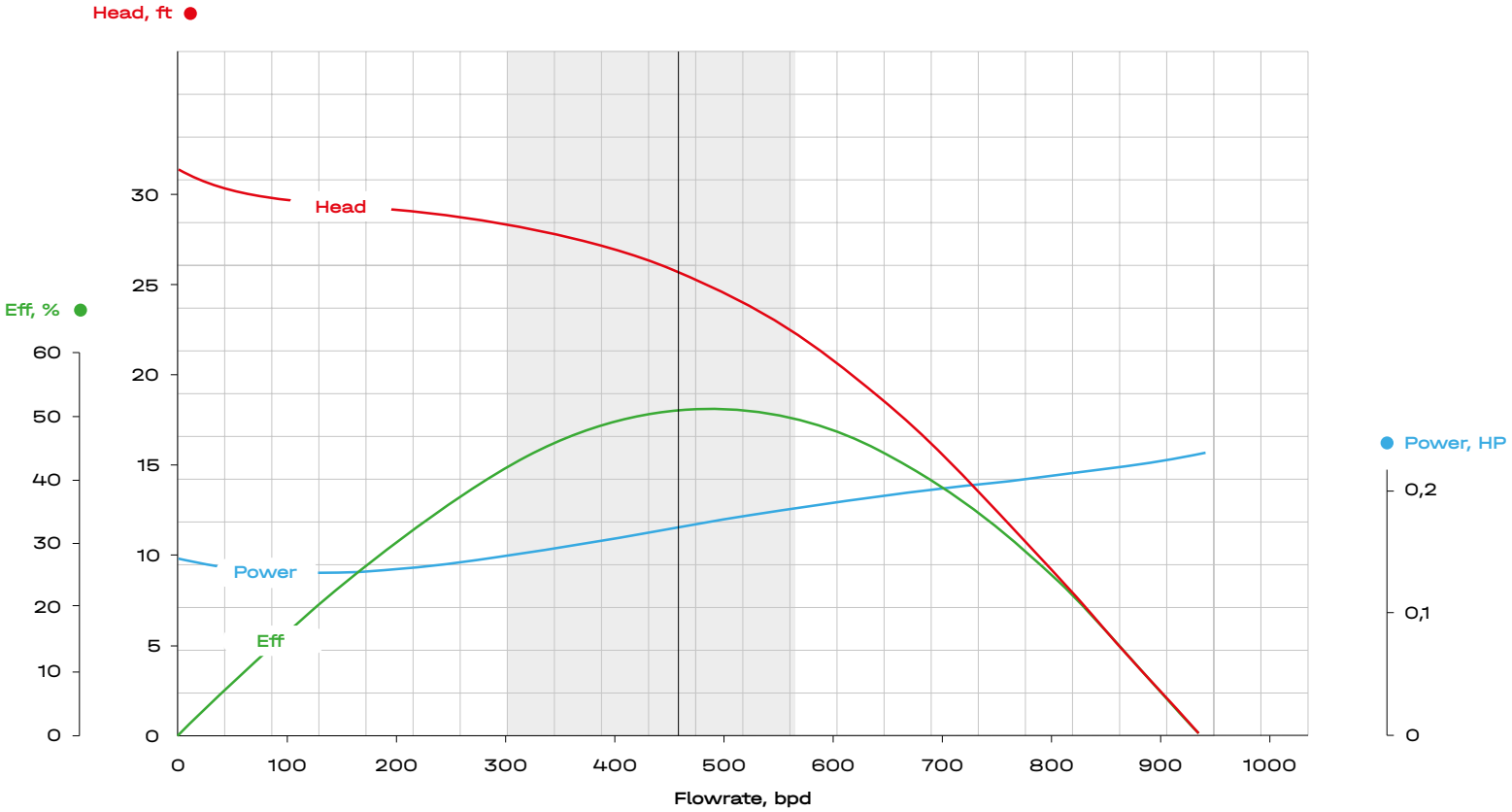
Best Efficiency Point			Limitations		
Efficiency	52%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	370 BPD	59 m³/day	**Shaft broken HP - S13**	161 HP	120 KW
Head	18.21 ft	5.55m	**Shaft broken HP - S14**	181 HP	135 KW
Optimum Operating Range	255-472 BPD	40-75 m³/day	**Shaft broken HP - S16**	201HP	150 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 Inch²	226.9 mm²
Minimus Casing Size	4.7 in	119.3 mm²	**Housing Burst Pressure Limit**	5500 psi	380 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP362-450

Pump performance curve

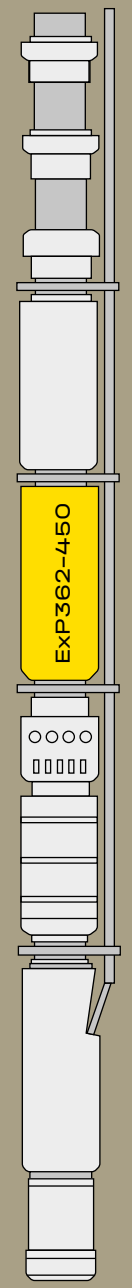
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 362 series (OD 4.06 in)



Technical data

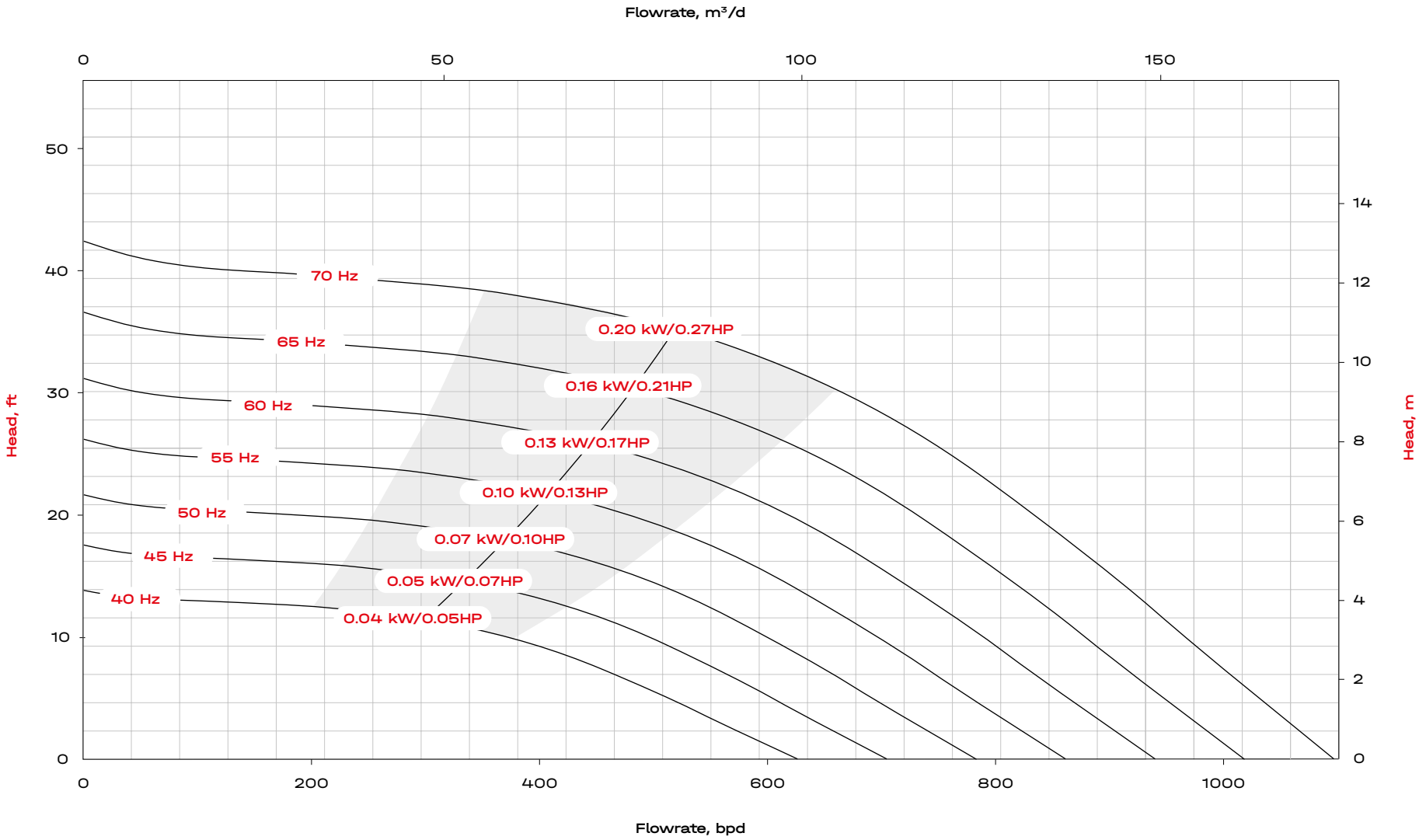
Best Efficiency Point			Limitations		
Efficiency	52%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	447 BPD	71 m^3/day	**Shaft broken HP - S13**	193 HP	144 KW
Head	26.23 ft	7.99 m	**Shaft broken HP - S14**	217 HP	162 KW
Optimum Operating Range	305-565 BPD	49-90 m^3/day	**Shaft broken HP - S16**	241 HP	180 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 $Inch^2$	226.9 mm^2
Minimus Casing Size	4.7 in	119.3 mm^2	**Housing Burst Pressure Limit**	5500 psi	380 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-450 Multi Hz Curve

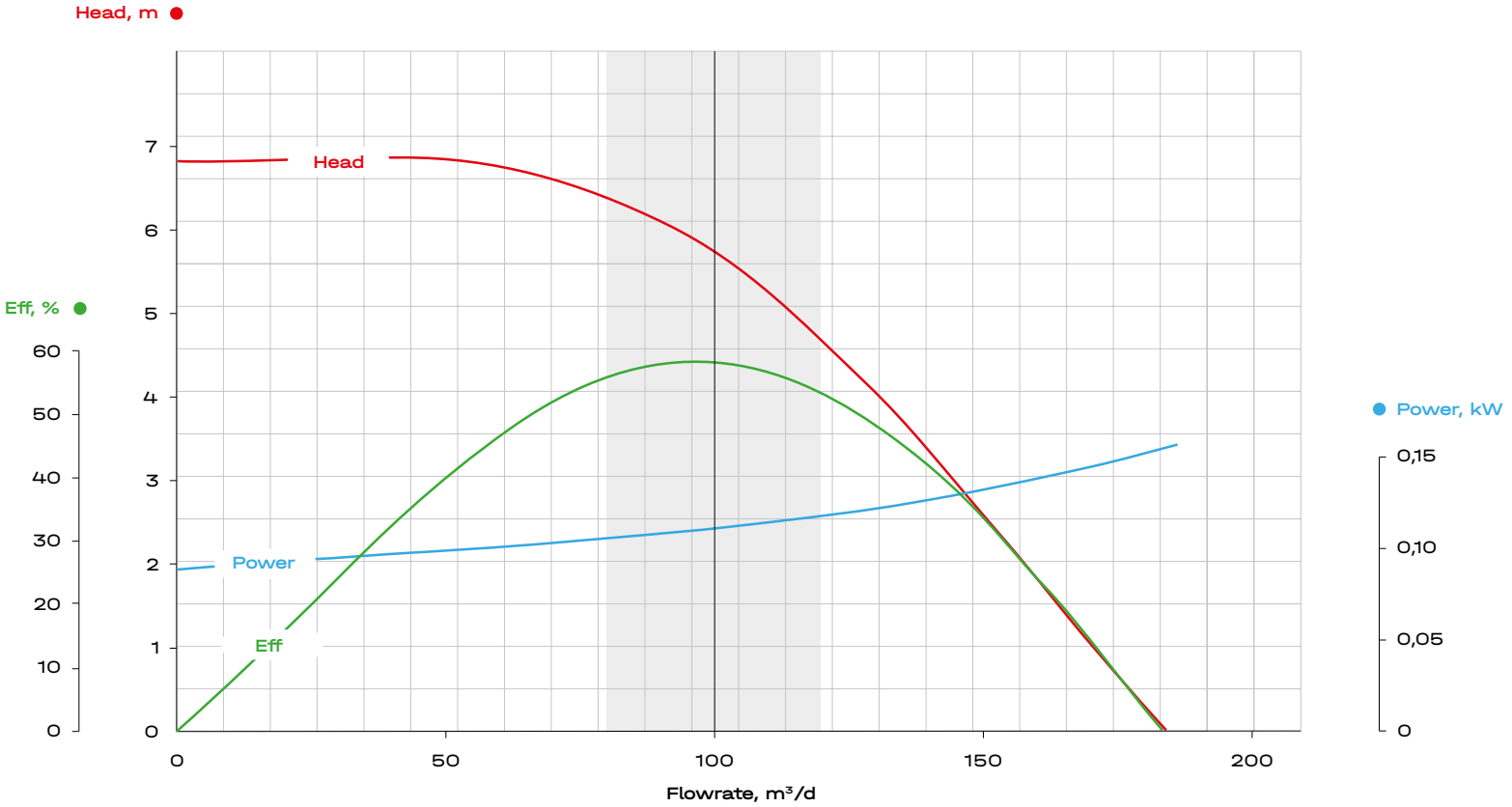
Sp.Gr. 1 | 1 STG | 362 series



ExP362-750

Pump performance curve

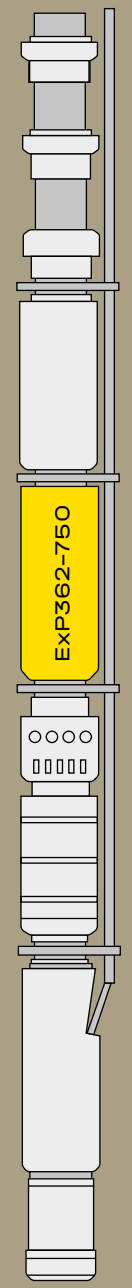
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 362 series (OD 92 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	58%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	624 BPD	100 m³/day	**Shaft broken HP - S13**	161 HP	120 KW
Head	18.8 ft	5.7 m	**Shaft broken HP - S14**	181 HP	135 KW
Optimum Operating Range	505-756 BPD	80-120 m³/day	**Shaft broken HP - S16**	201HP	150 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 Inch²	226.9 mm²
Minimus Casing Size	4.7 in	119.3 mm²	**Housing Burst Pressure Limit**	6000 psi	465 bar

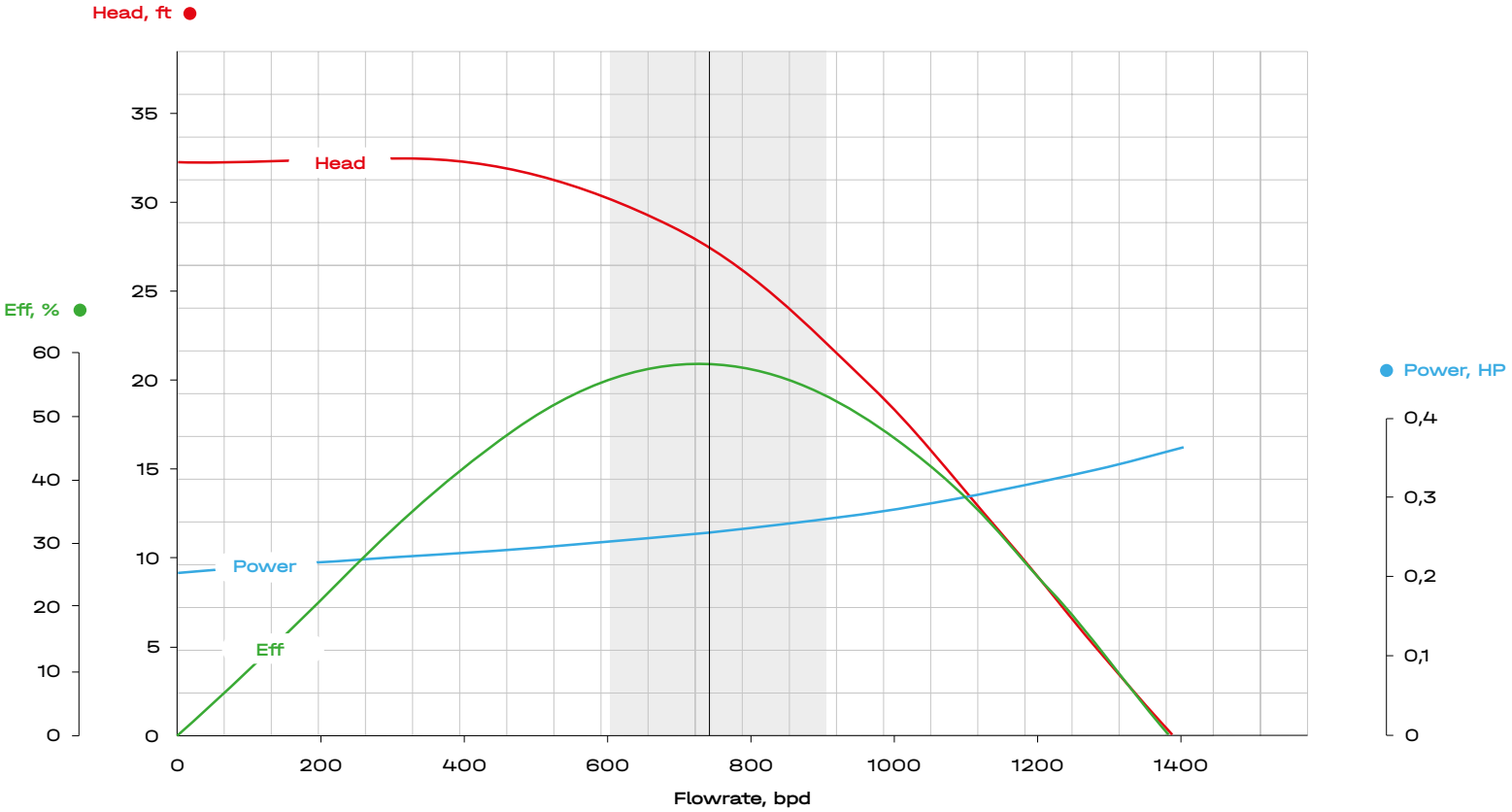
API Recommended Practice 11S2 for Electric Submersible Pump Testing.

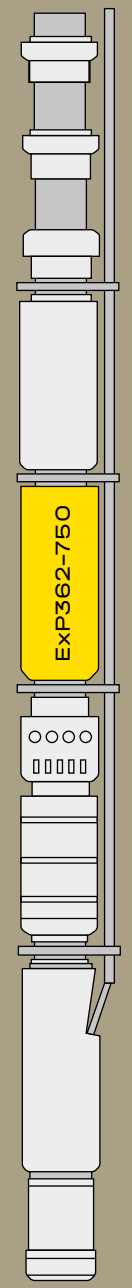


ExP362-750

Pump performance curve

60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 362 series (OD 3.62 in)





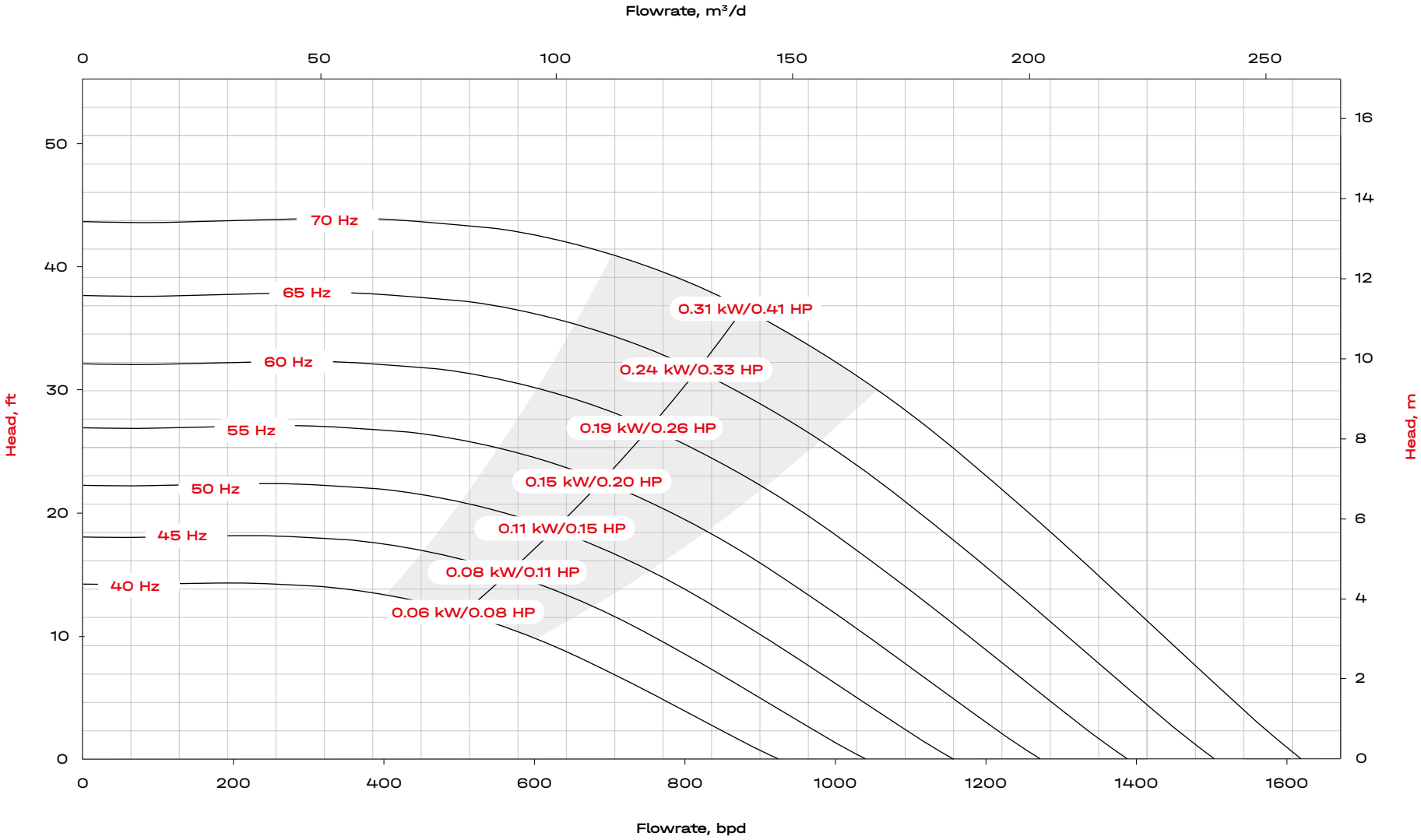
Technical data

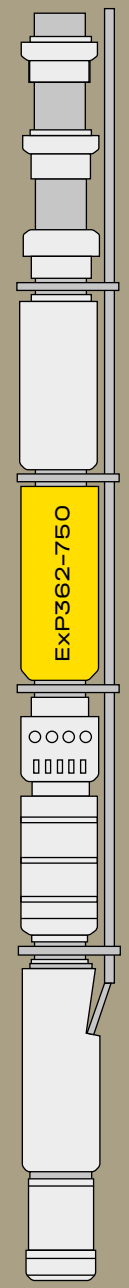
Best Efficiency Point			Limitations		
Efficiency	58%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	750	120	**Shaft broken HP - S13**	193 HP	144 KW
Head	27.1 ft	8.3 m	**Shaft broken HP - S14**	217 HP	162 KW
Optimum Operating Range	610-910 BPD	98-143 m^3/day	**Shaft broken HP - S16**	241 HP	180 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 $Inch^2$	226.9 mm^2
Minimus Casing Size	4.7 in	119.3 mm^2	**Housing Burst Pressure Limit**	6000 psi	465 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP362-750 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 362 series

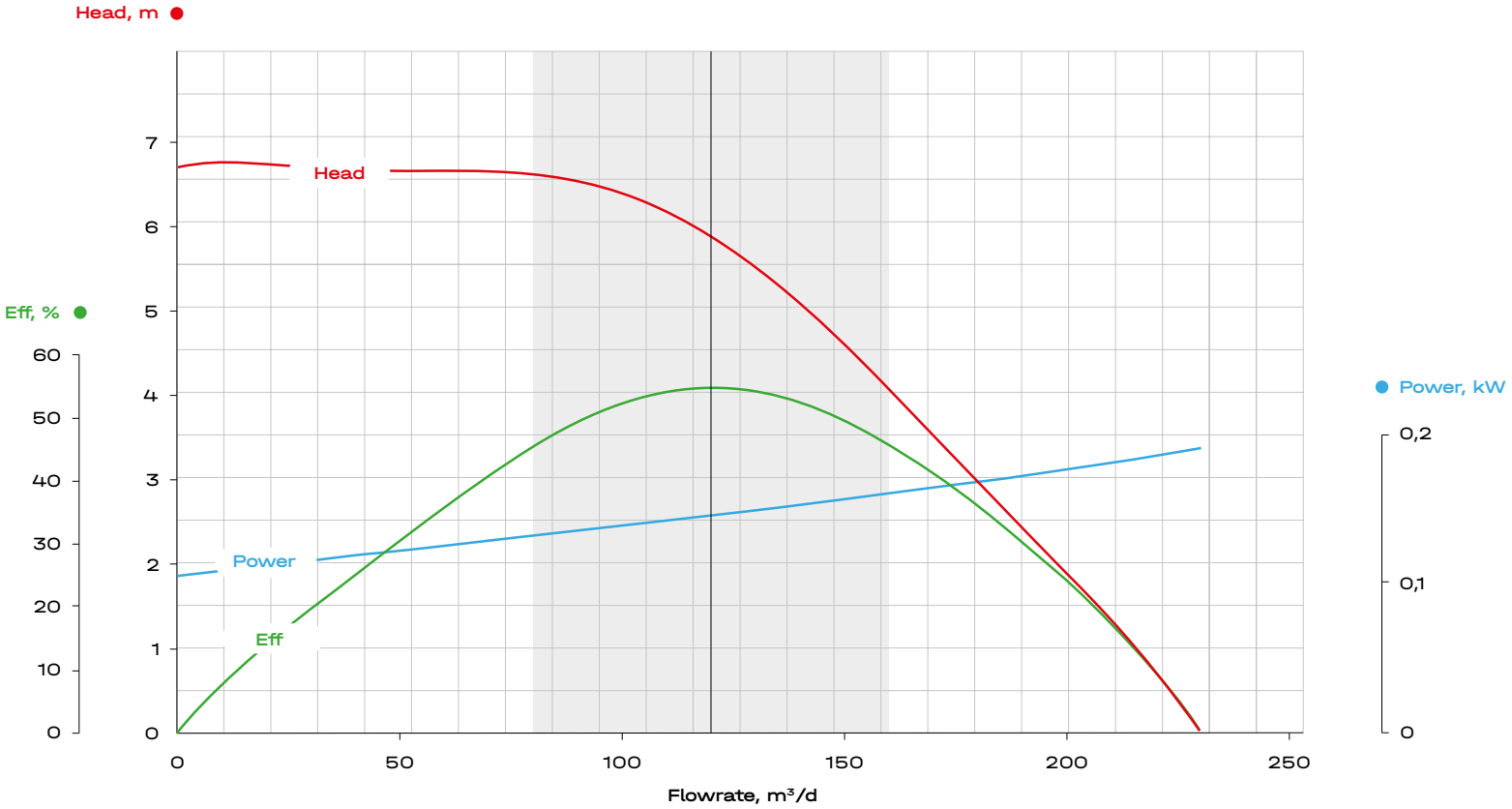




ExP362-940

Pump performance curve

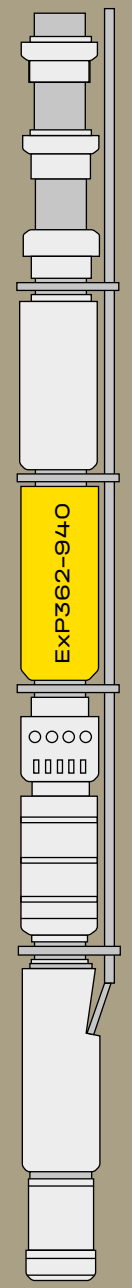
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 362 series (OD 92 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	55%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	780 BPD	120 m³/day	**Shaft broken HP - S13**	161 HP	120 KW
Head	18.8 ft	5.7 m	**Shaft broken HP - S14**	181 HP	135 KW
Optimum Operating Range	505-1000 BPD	80-160 m³/day	**Shaft broken HP - S16**	201HP	150 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 Inch²	226.9 mm²
Minimus Casing Size	4.7 in	119.3 mm²	**Housing Burst Pressure Limit**	6000 psi	465 bar

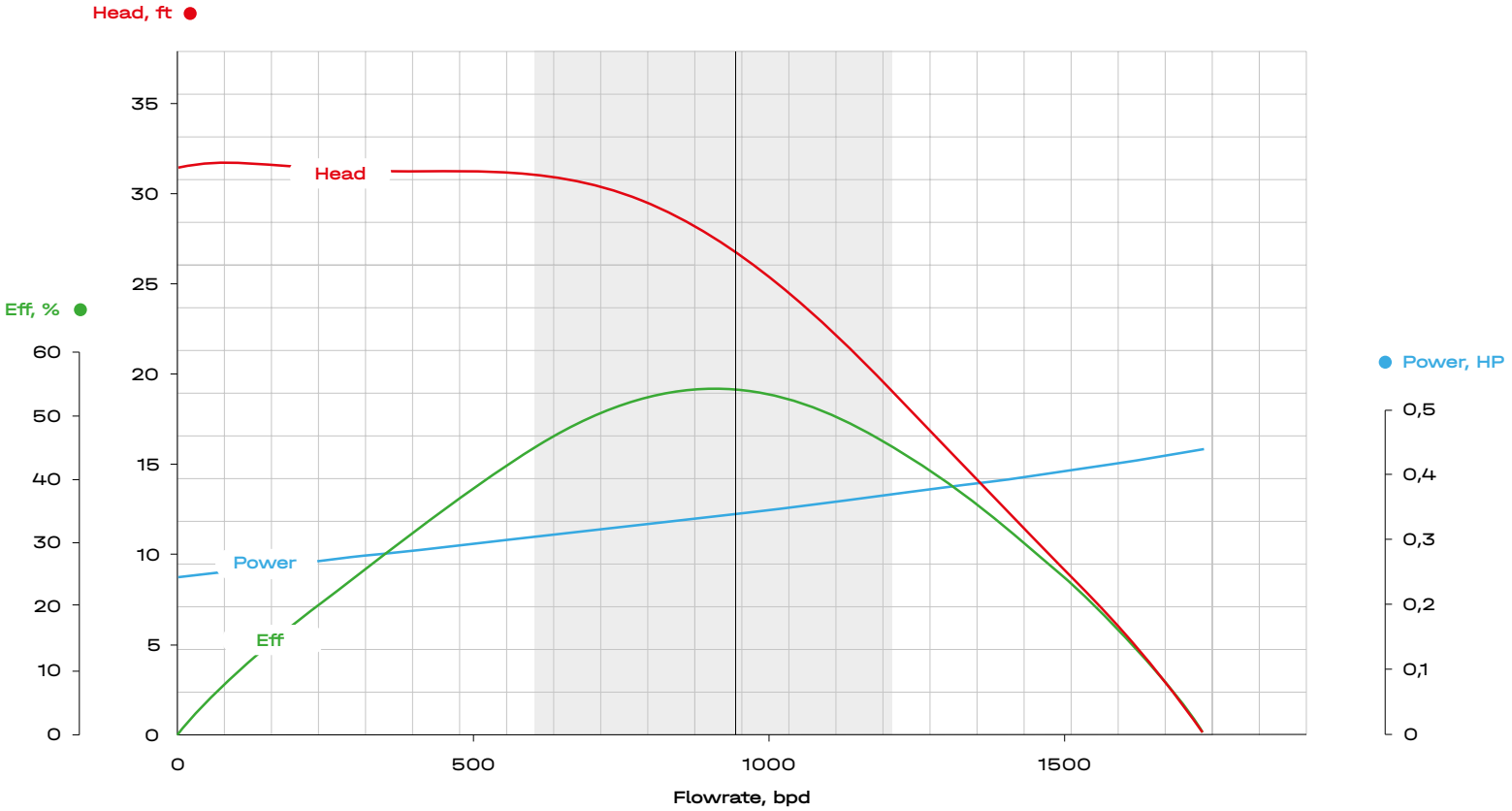
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-940

Pump performance curve

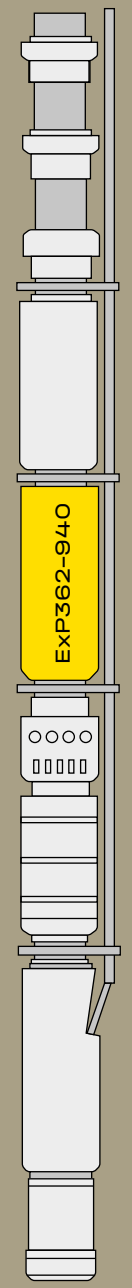
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 362 series (OD 3.62 in)



Technical data

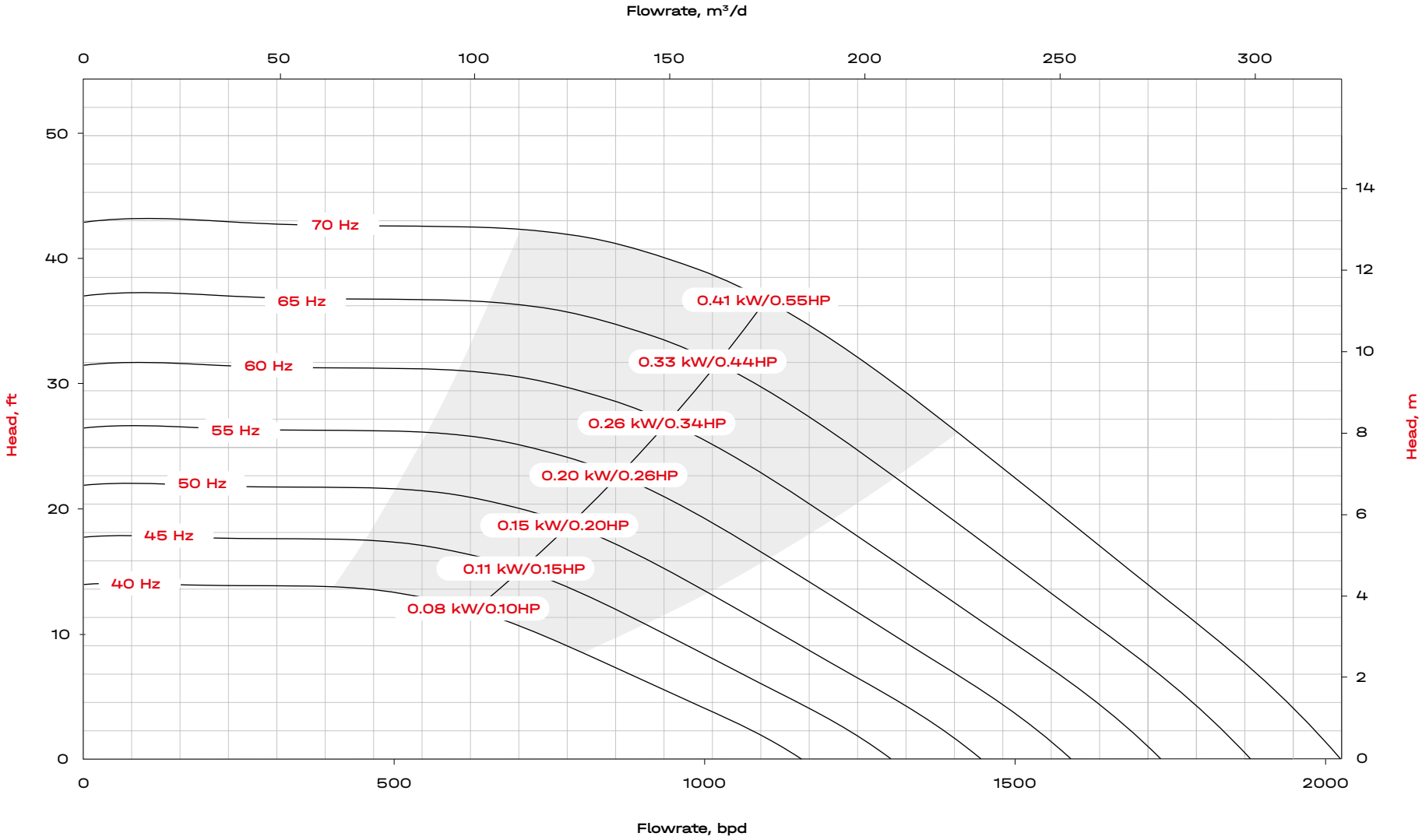
Best Efficiency Point			Limitations		
Efficiency	58%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	940	150	**Shaft broken HP - S13**	193 HP	144 KW
Head	27.1 ft	8.25 m	**Shaft broken HP - S14**	217 HP	162 KW
Optimum Operating Range	610-1200 BPD	98-190 m^3/day	**Shaft broken HP - S16**	241 HP	180 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.35 $Inch^2$	226.9 mm^2
Minimus Casing Size	4.7 in	119.3 mm^2	**Housing Burst Pressure Limit**	6000 psi	465 bar

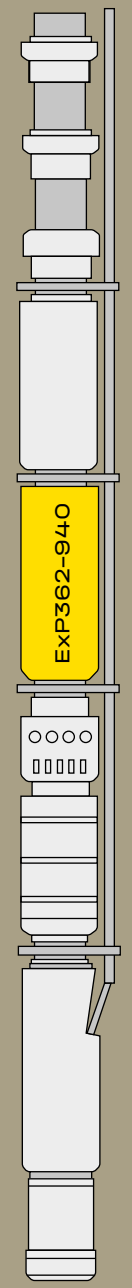
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-940 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 362 series

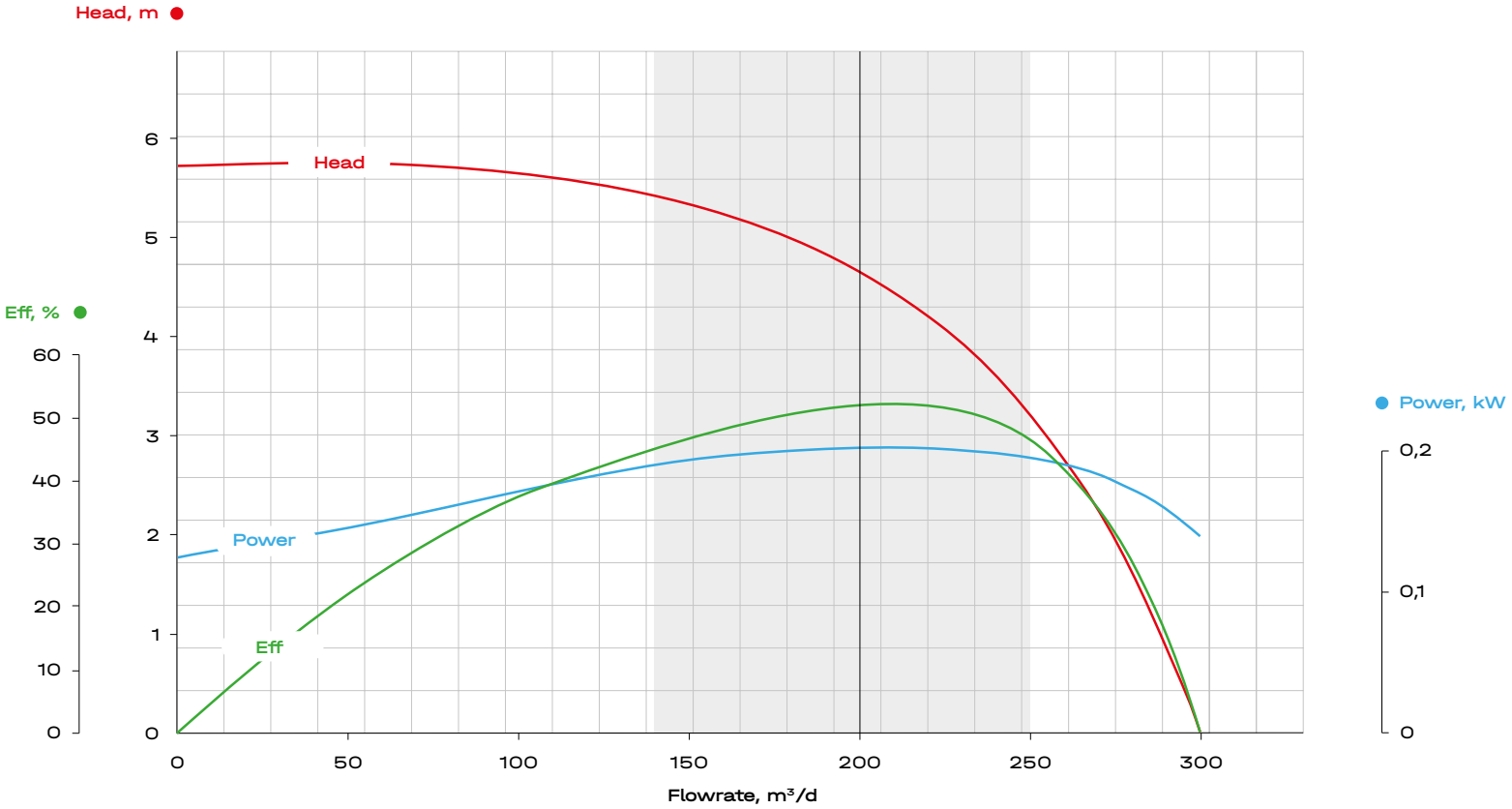




ExP362-1500

Pump performance curve

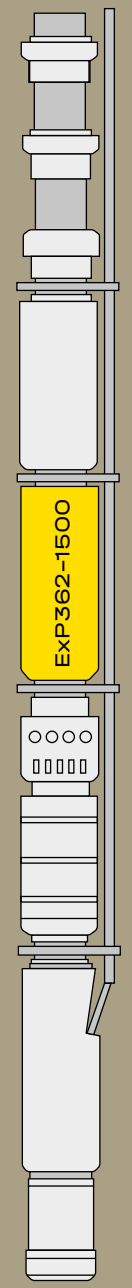
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 362 series (OD 92 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	54%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	1255 BPD	200 m³/day	**Shaft broken HP - S13**	322 HP	240 KW
Head	15.3 ft	4.65 m	**Shaft broken HP - S14**	346 HP	258 KW
Optimum Operating Range	880–1570 BPD	140–250 m³/day	**Shaft broken HP - S16**	402 HP	300 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.49 Inch²	314 mm²
Minimus Casing Size	4.7 In	119.3 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

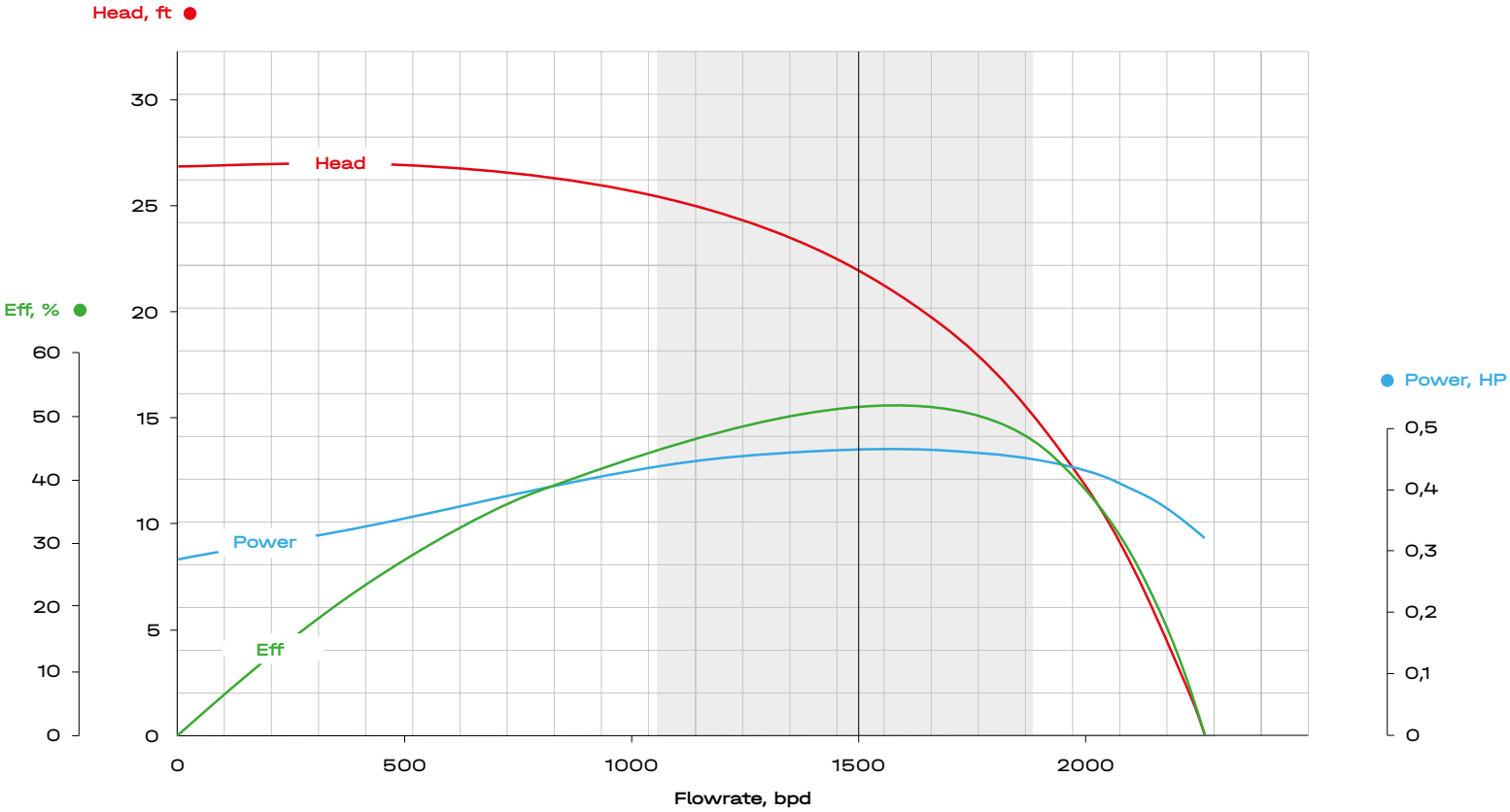
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-1500

Pump performance curve

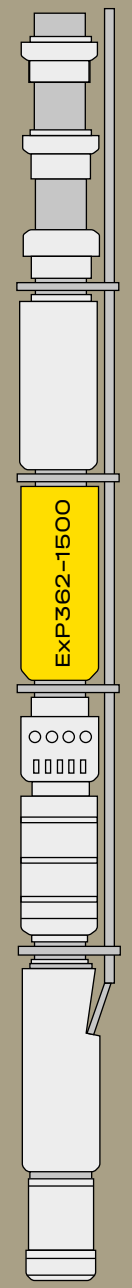
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 362 series (OD 3.62 in)



Technical data

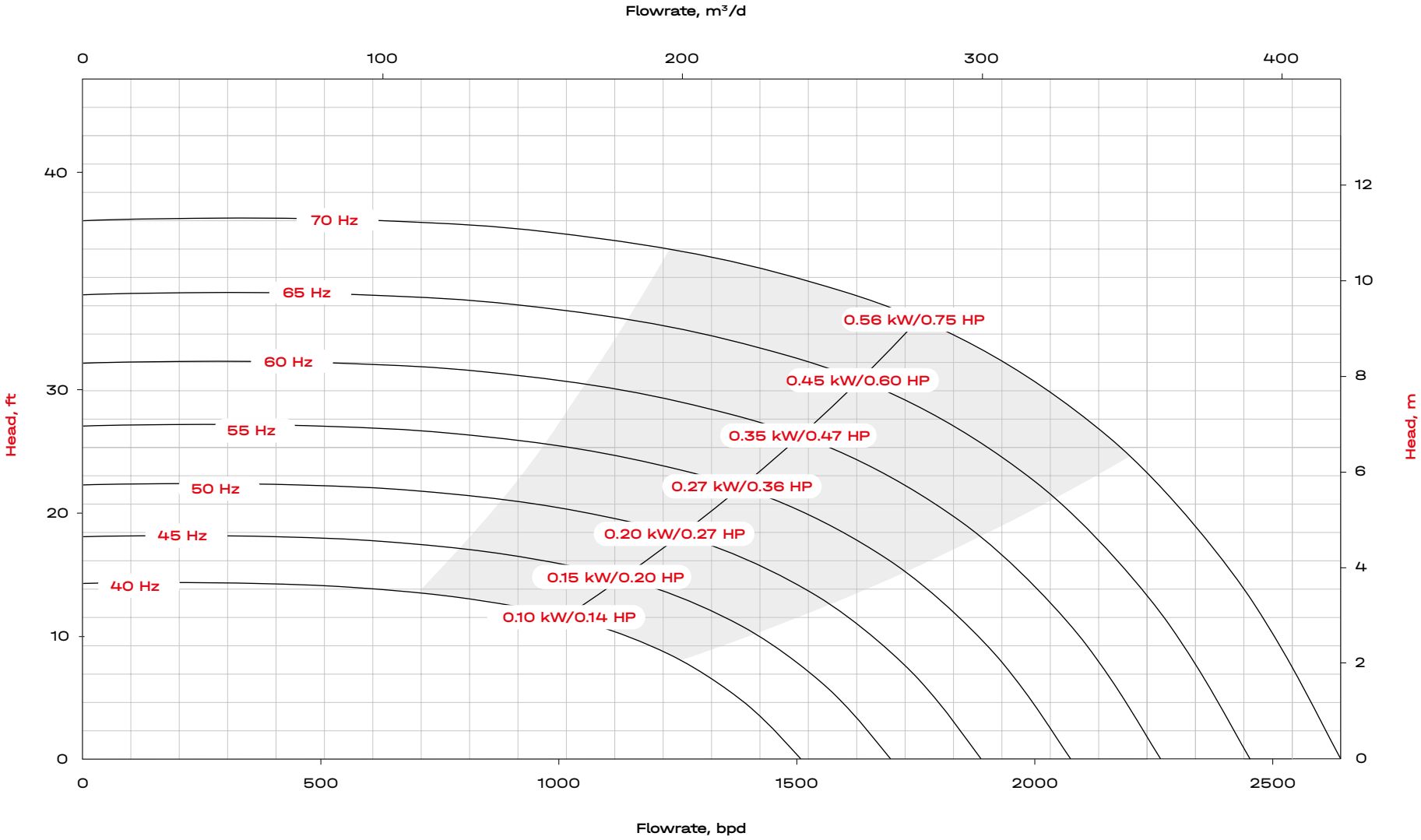
Best Efficiency Point			Limitations		
Efficiency	52%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	1500 BPD	240 m³/day	**Shaft broken HP - S13**	268 HP	200 KW
Head	22.1 ft	6.7 m	**Shaft broken HP - S14**	288 HP	215 KW
Optimum Operating Range	1060-1880 BPD	170-300 m³/day	**Shaft broken HP - S16**	335 HP	250 KW
Pump Housing Diameter	3.62 in	92 mm	**Shaft Cross Sectional Area**	0.49 Inch²	314 mm²
Minimus Casing Size	4.7 In	119.3 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

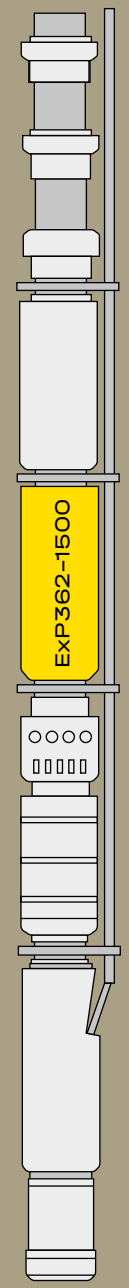
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP362-1500 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 362 series

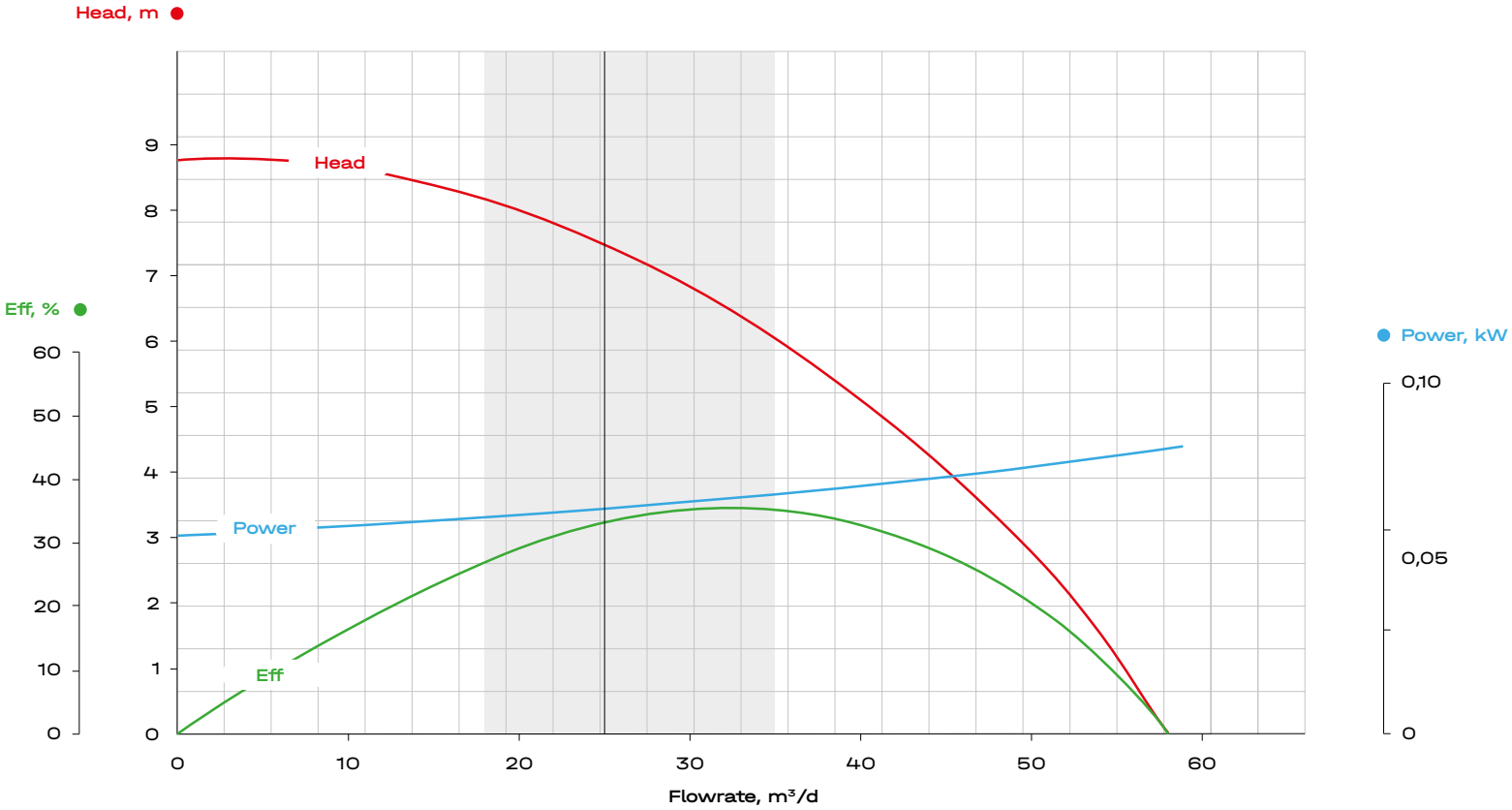




ExP406-200

Pump performance curve

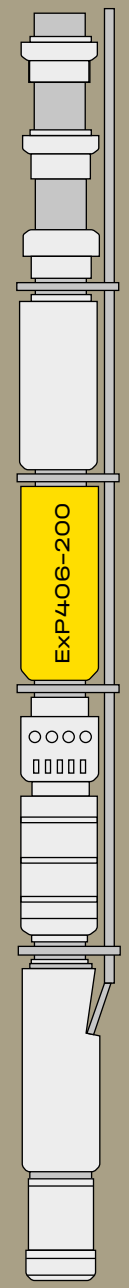
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 406 series (OD 103 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	33%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	157 BPD	25 m³/day	**Shaft broken HP - S13**	161 HP	120 KW
Head	24.7 ft	7.51 m	**Shaft broken HP - S14**	181 HP	135 KW
Optimum Operating Range	113-219 BPD	18-35 m³/day	**Shaft broken HP - S16**	201 HP	150 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.35 Inch²	227 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

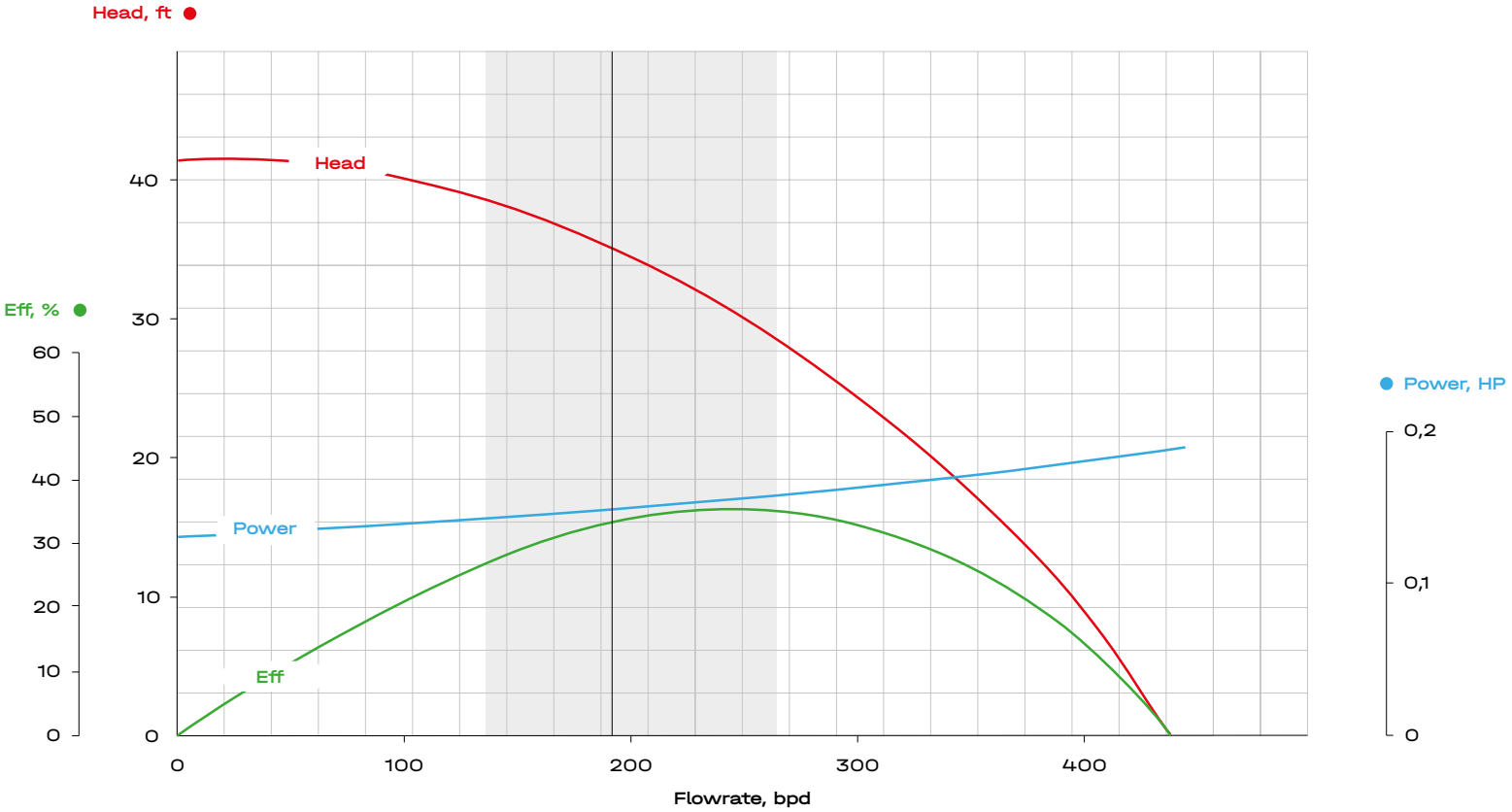
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP406-200

Pump performance curve

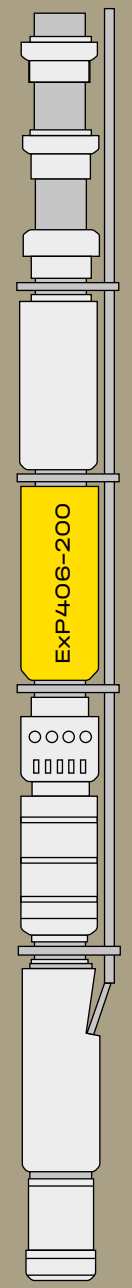
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 406 series (OD 4.06 in)



Technical data

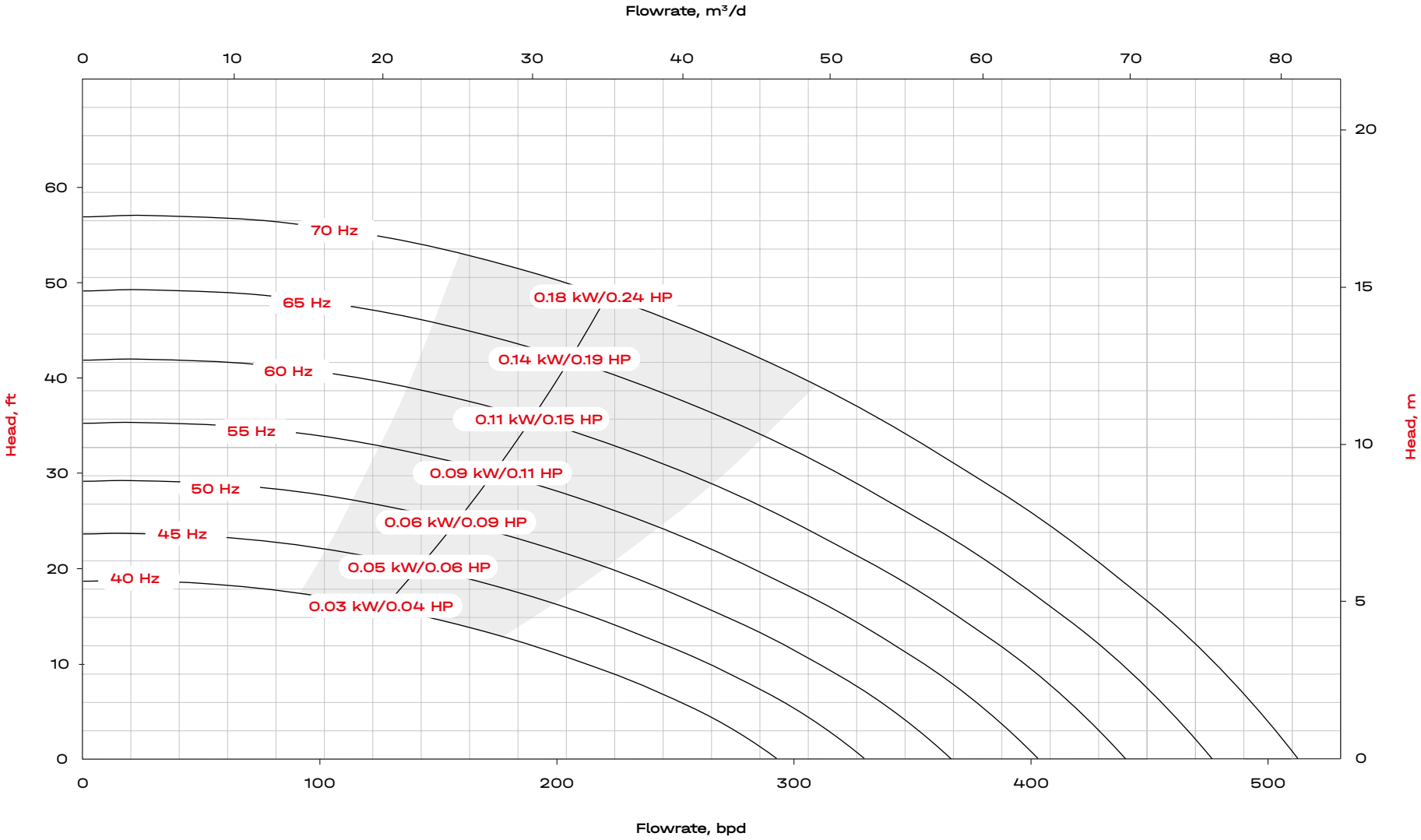
Best Efficiency Point			Limitations		
Efficiency	33%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	189 BPD	30 m^3/day	**Shaft broken HP - S13**	193 HP	144 KW
Head	35.5 ft	10.82 m	**Shaft broken HP - S14**	217 HP	162 KW
Optimum Operating Range	136-264 BPD	22-42 m^3/day	**Shaft broken HP - S16**	241 HP	180 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.35 $Inch^2$	227 mm^2
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

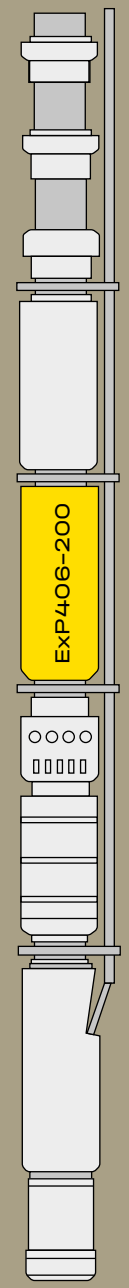
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP406-200 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 406 series

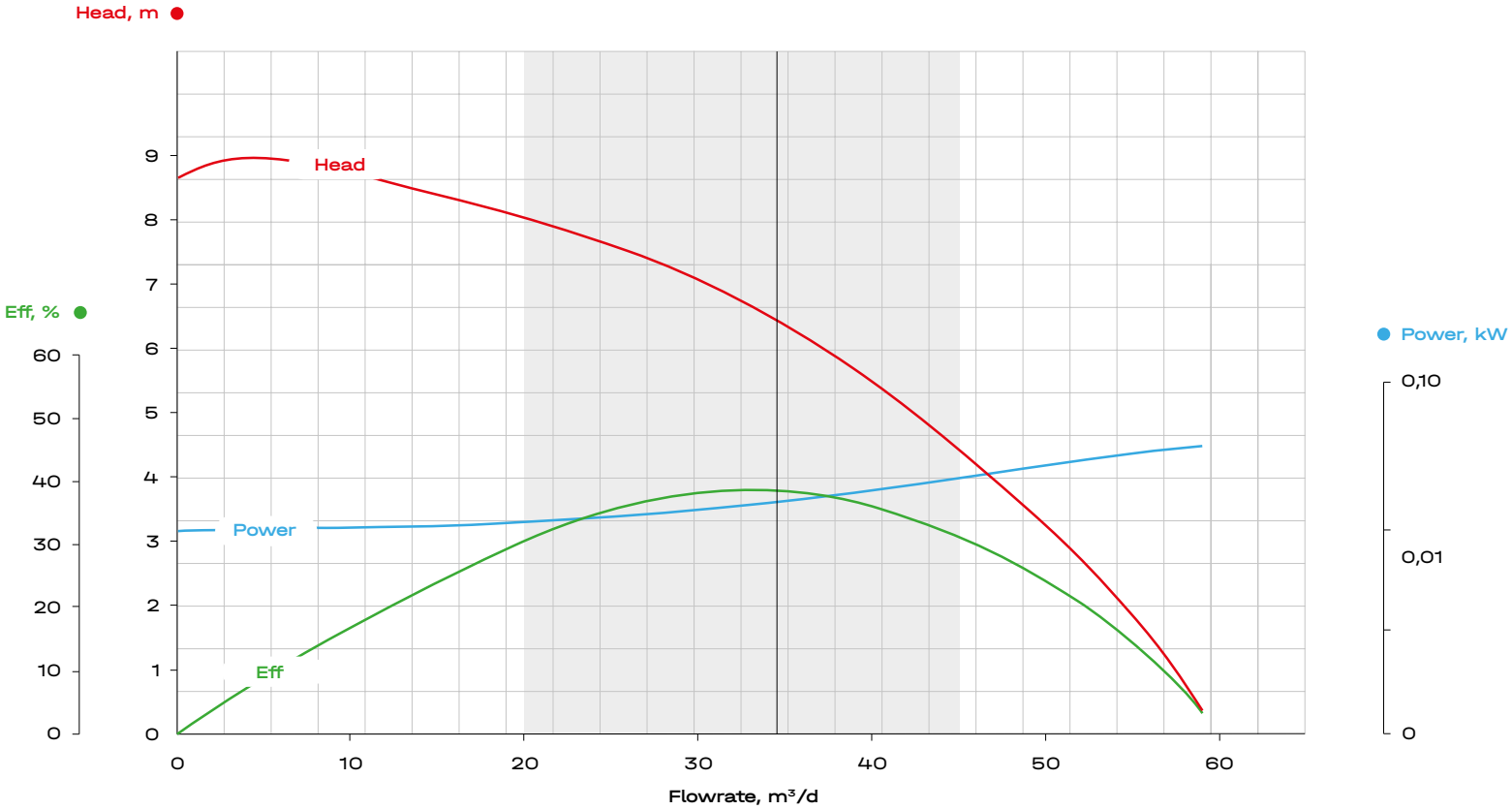




ExP406-260

Pump performance curve

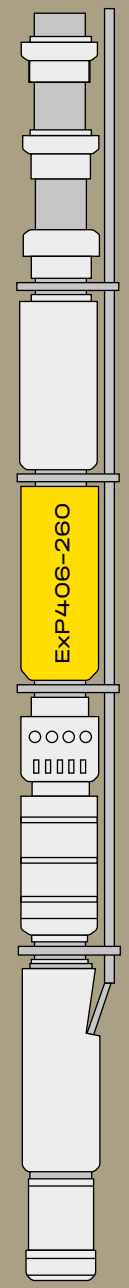
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 406 series (OD 103 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	38%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	211 BPD	34 m³/day	**Shaft broken HP - S13**	161 HP	120 KW
Head	21.4 ft	6.5 m	**Shaft broken HP - S14**	181 HP	135 KW
Optimum Operating Range	127-281 BPD	20-45 m³/day	**Shaft broken HP - S16**	201 HP	150 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.35 Inch²	227 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

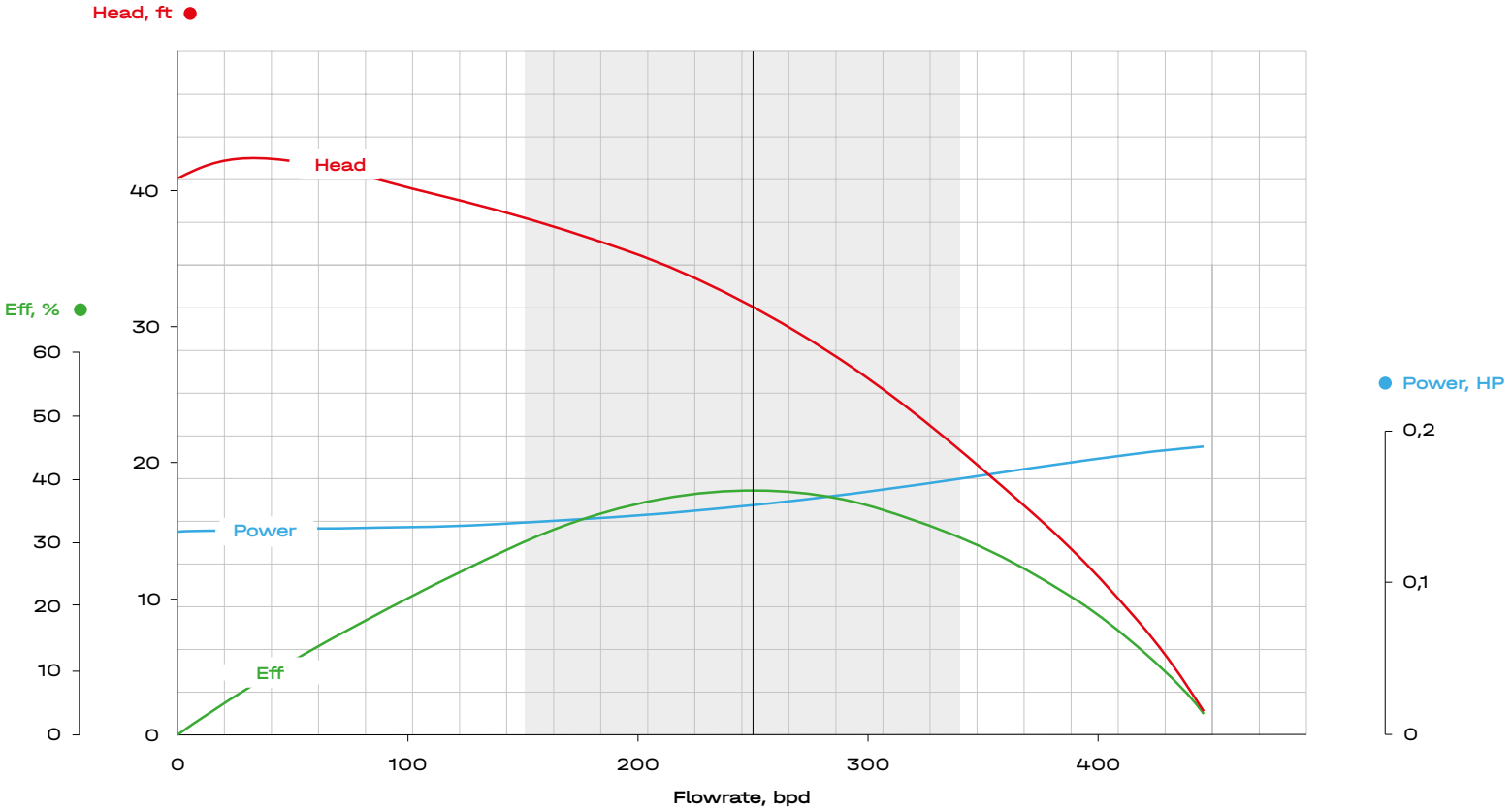
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP406-260

Pump performance curve

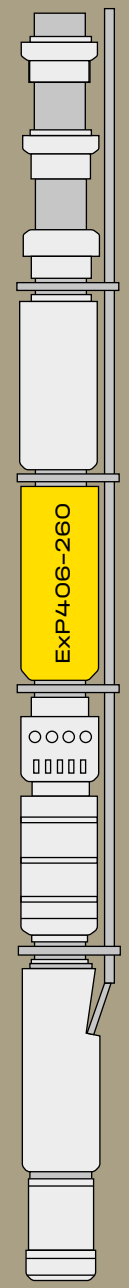
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 406 series (OD 4.06 in)



Technical data

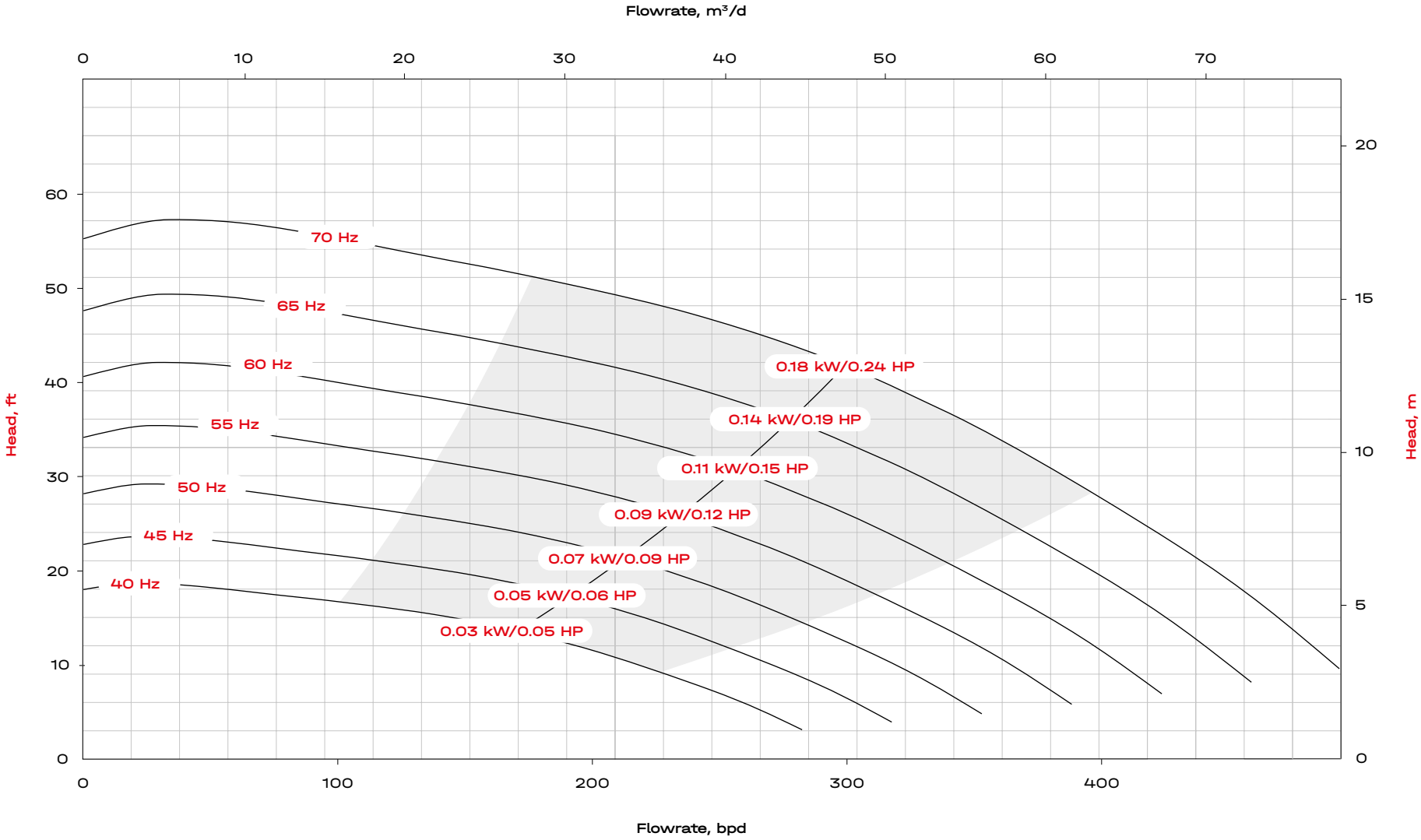
Best Efficiency Point			Limitations		
Efficiency	38%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	252 BPD	40 m³/day	**Shaft broken HP - S13**	193 HP	144 KW
Head	30.9 ft	9.4 m	**Shaft broken HP - S14**	217 HP	162 KW
Optimum Operating Range	154-337 BPD	24-54 m³/day	**Shaft broken HP - S16**	241 HP	180 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.35 Inch²	227 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

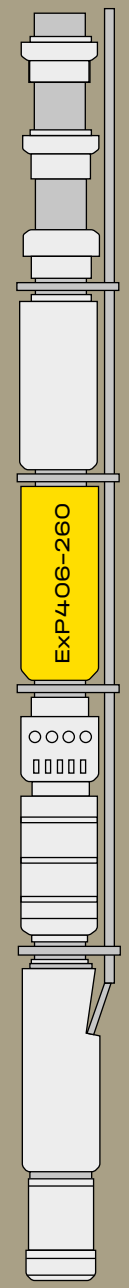
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP406-260 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 406 series

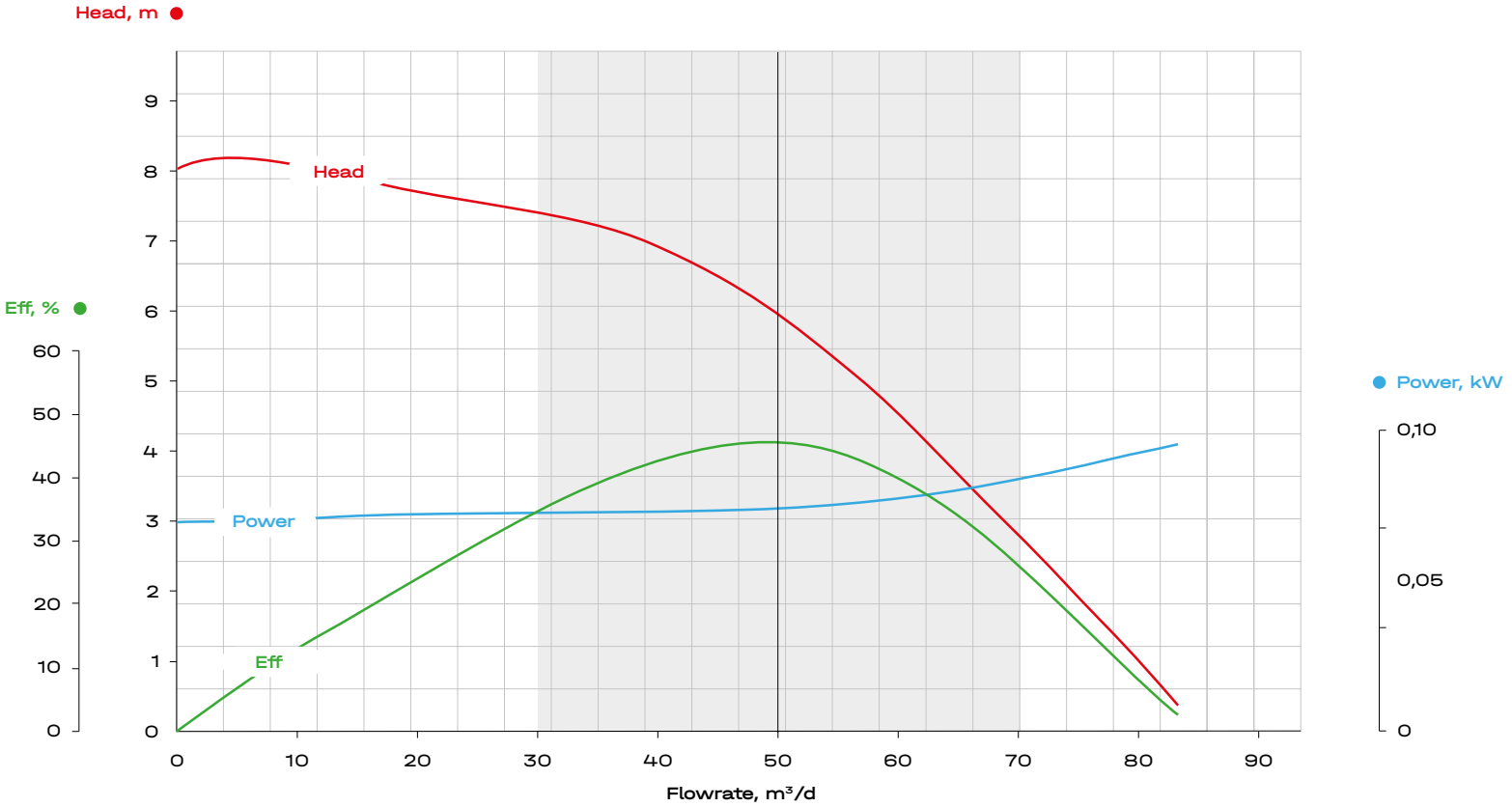




ExP406-380

Pump performance curve

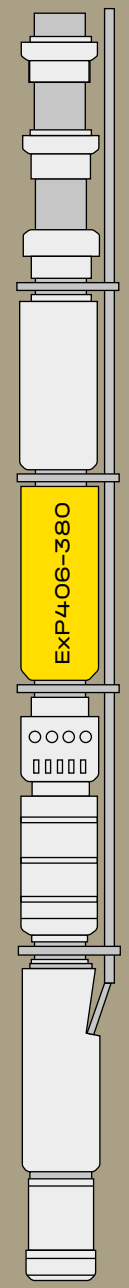
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 406 series (OD 103 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	46%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	311 BPD	50 m³/day	**Shaft broken HP - S13**	161 HP	120 KW
Head	19.7 ft	6 m	**Shaft broken HP - S14**	181 HP	135 KW
Optimum Operating Range	190-440 BPD	30-70 m³/day	**Shaft broken HP - S16**	201 HP	150 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.35 Inch²	227 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

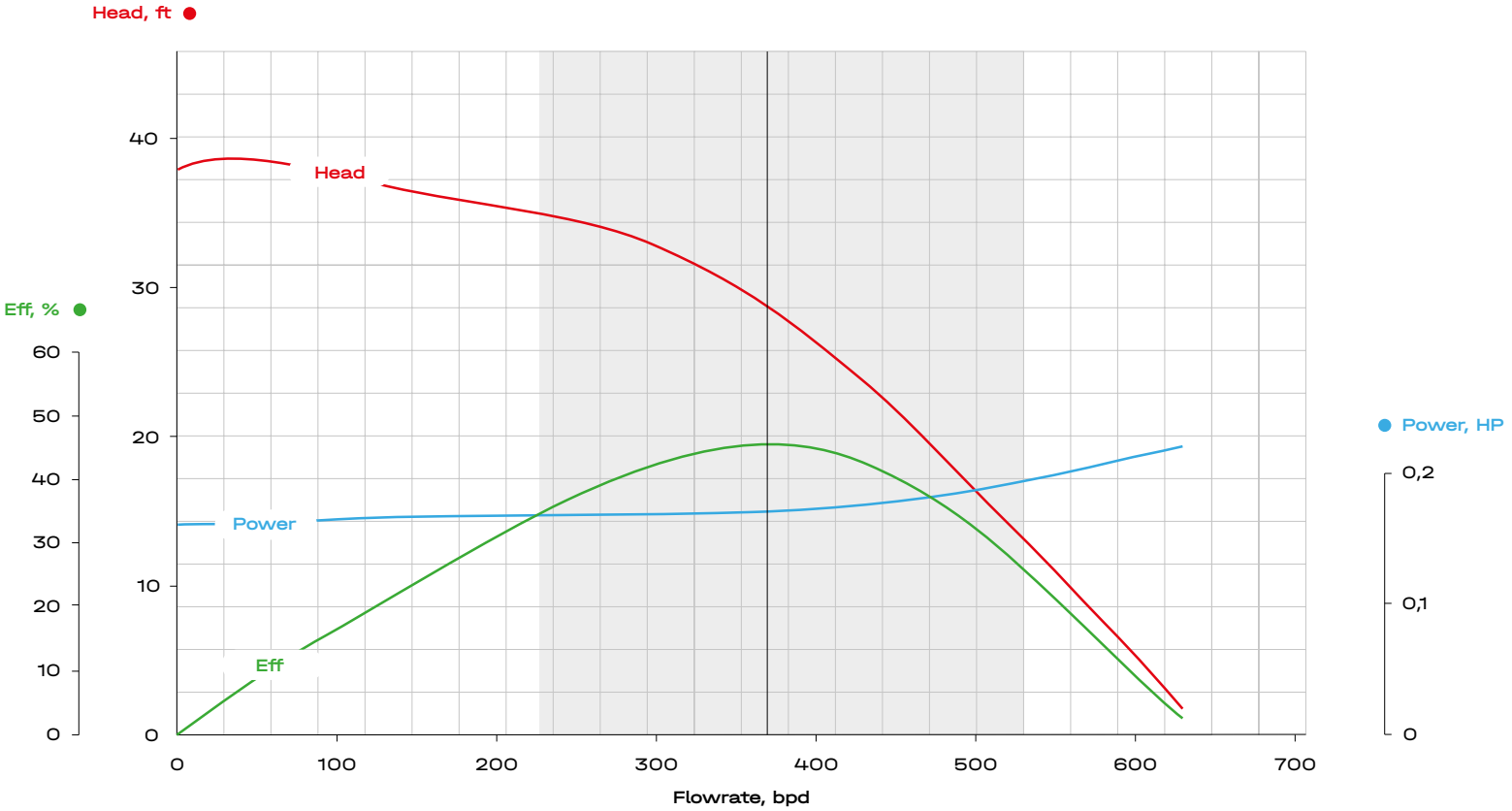
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP406-380

Pump performance curve

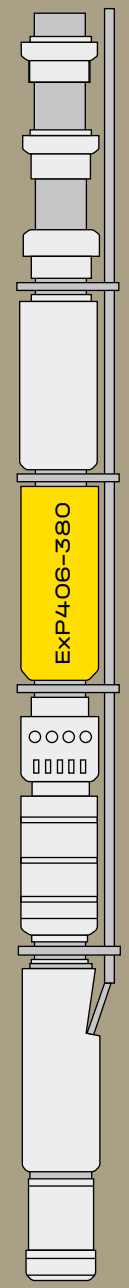
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 406 series (OD 4.06 in)



Technical data

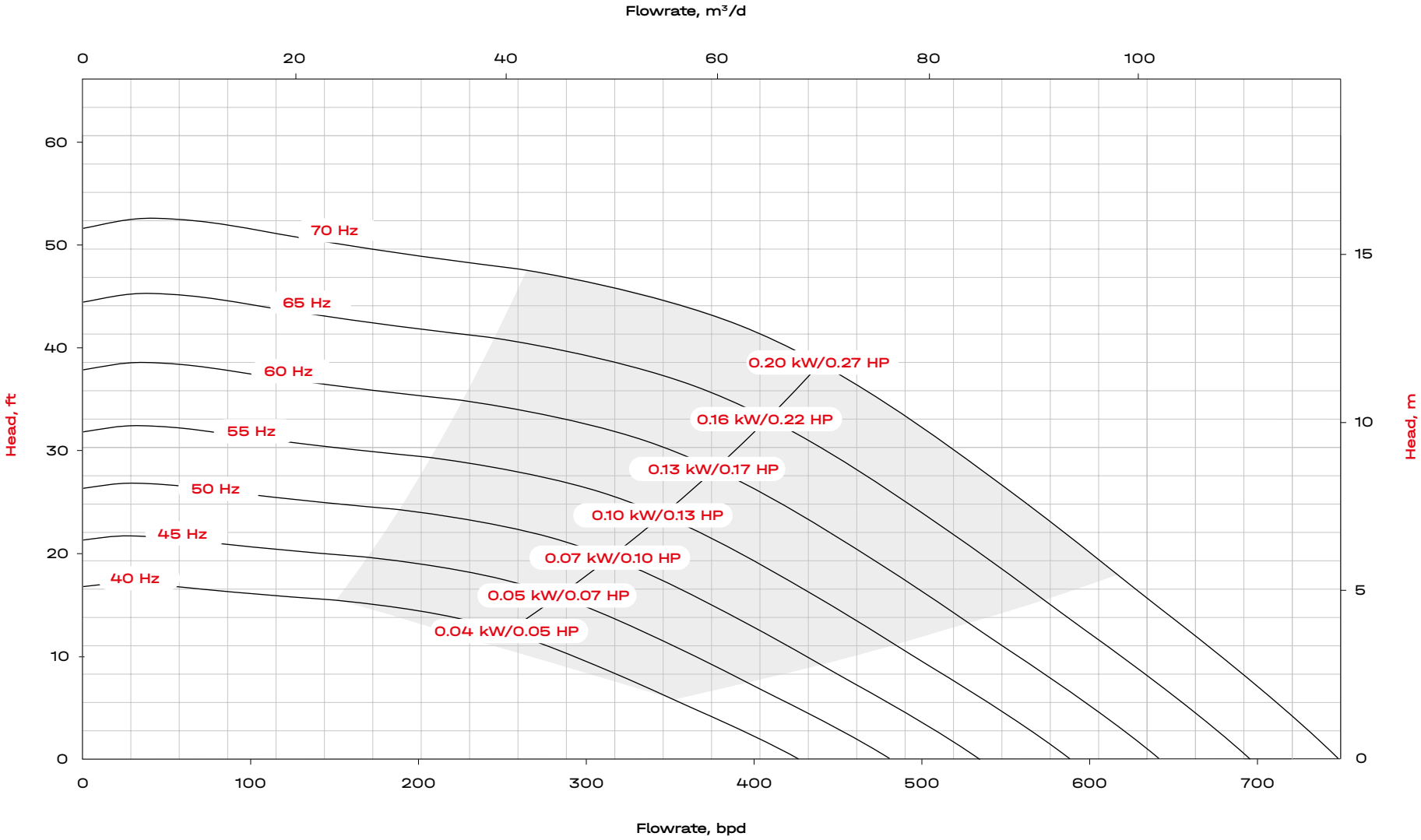
Best Efficiency Point			Limitations		
Efficiency	46%		**Shaft Diameter**	0.67 Inch	17 mm
Capacity	377 BPD	60 m³/day	**Shaft broken HP - S13**	193 HP	144 KW
Head	28.3 ft	8.63 m	**Shaft broken HP - S14**	217 HP	162 KW
Optimum Operating Range	227-528 BPD	36-84 m³/day	**Shaft broken HP - S16**	241 HP	180 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.35 Inch²	227 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

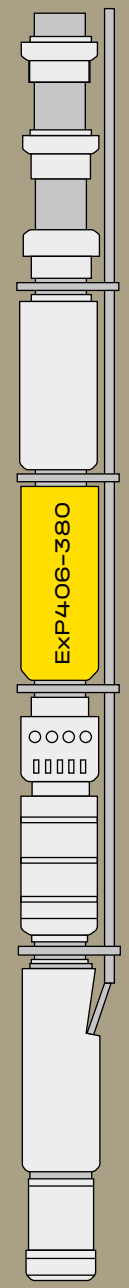
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP406-380 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 406 series

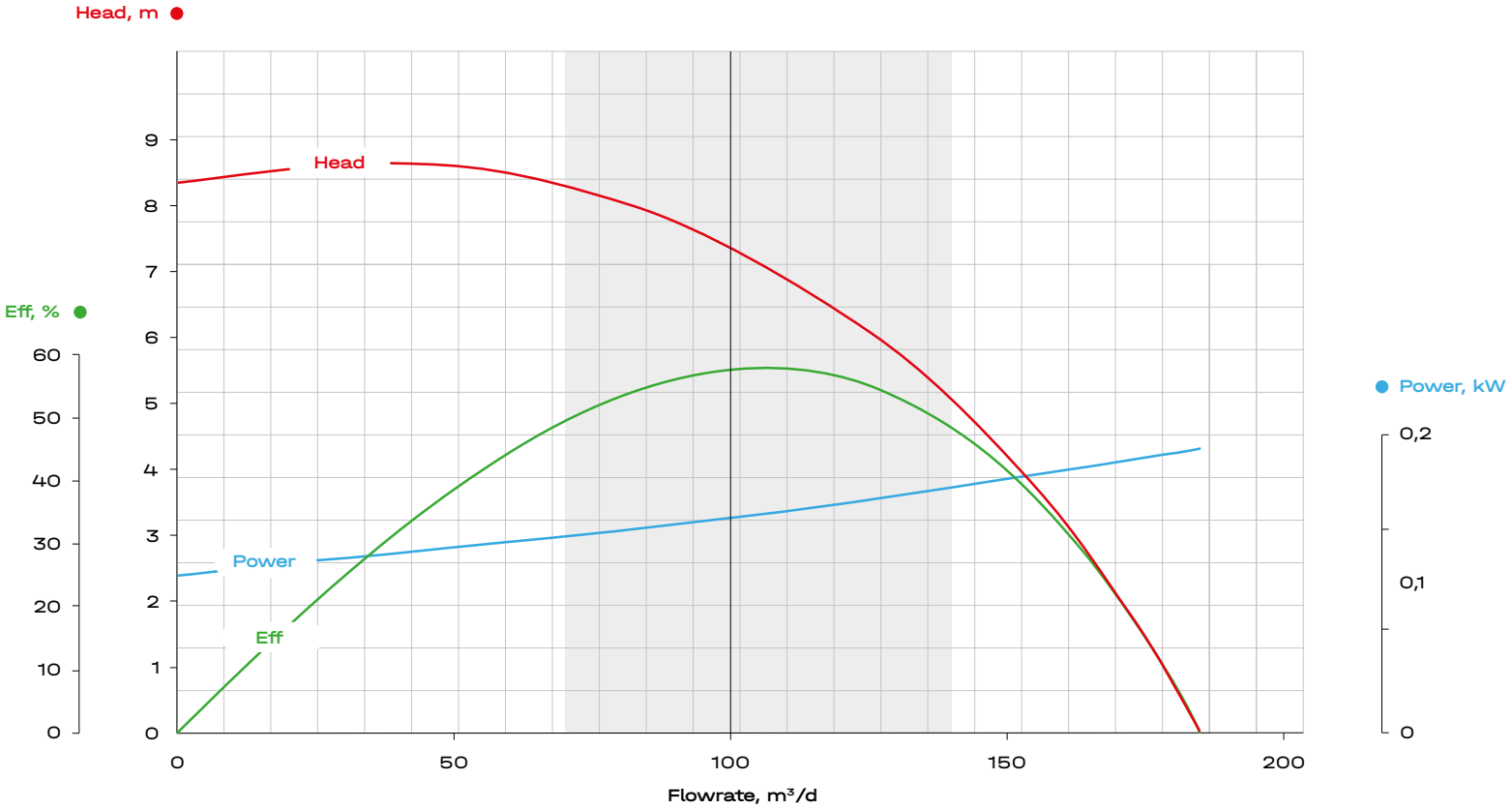




ExP406-750

Pump performance curve

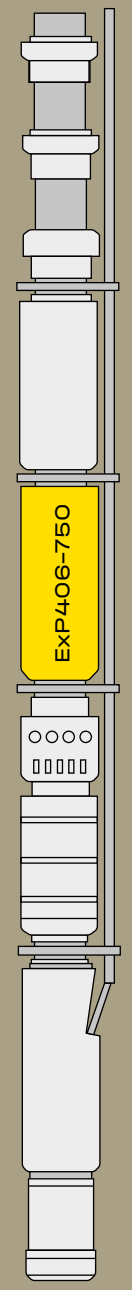
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 406 series (OD 103 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	58%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	629 BPD	100 m³/day	**Shaft broken HP - S13**	268 HP	200 KW
Head	24.3 ft	7.41 m	**Shaft broken HP - S14**	288 HP	215 KW
Optimum Operating Range	440-880 BPD	70-140 m³/day	**Shaft broken HP - S16**	335 HP	250 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 Inch²	314 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

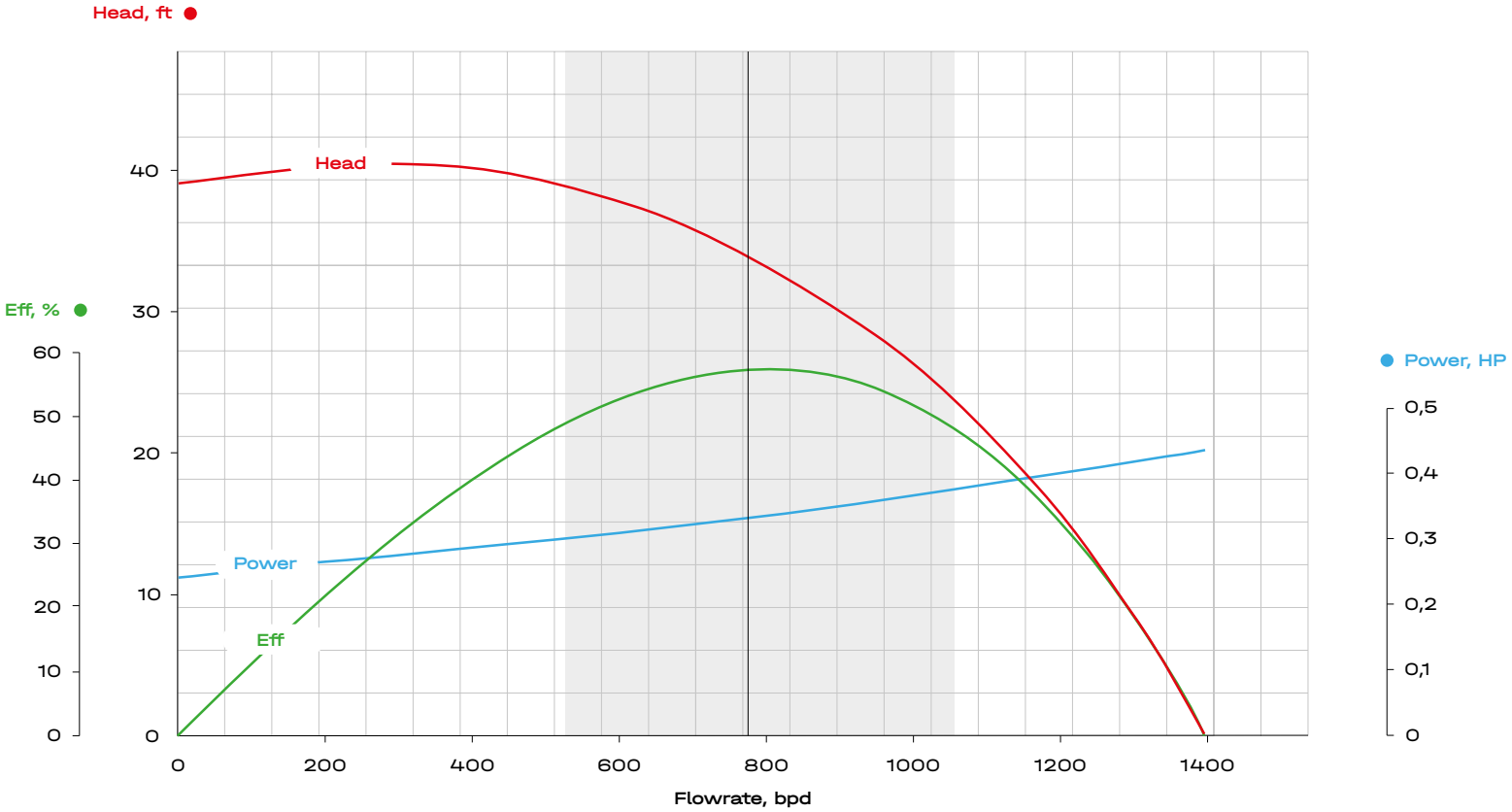
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP406-750

Pump performance curve

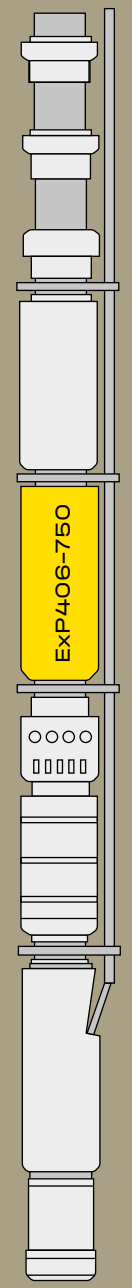
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 406 series (OD 4.06 in)



Technical data

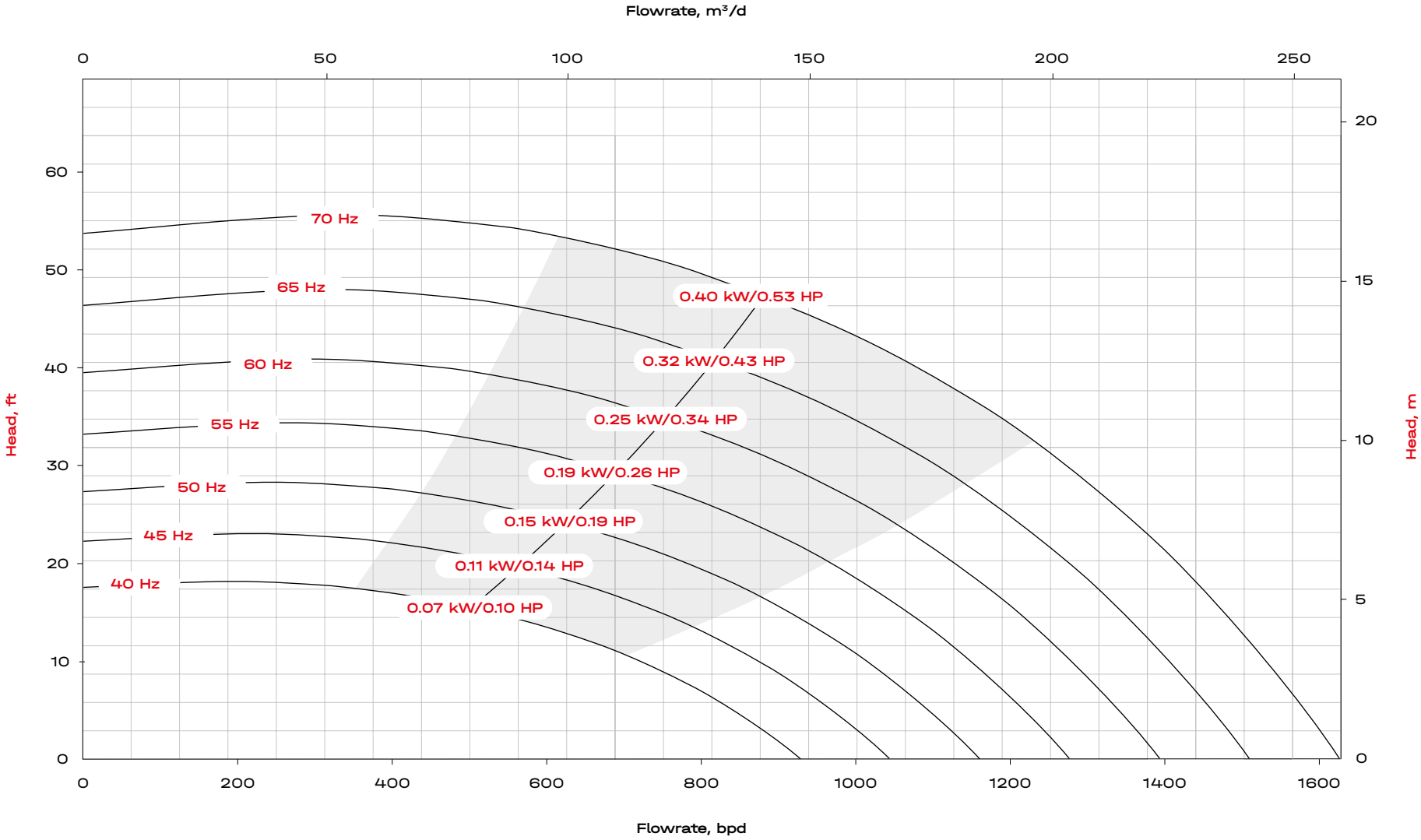
Best Efficiency Point			Limitations		
Efficiency	58%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	755 BPD	120 m³/day	**Shaft broken HP - S13**	322 HP	240 KW
Head	34.98 ft	10.66 m	**Shaft broken HP - S14**	346 HP	258 KW
Optimum Operating Range	530-1055 BPD	85-168 m³/day	**Shaft broken HP - S16**	402 HP	300 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 Inch²	314 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

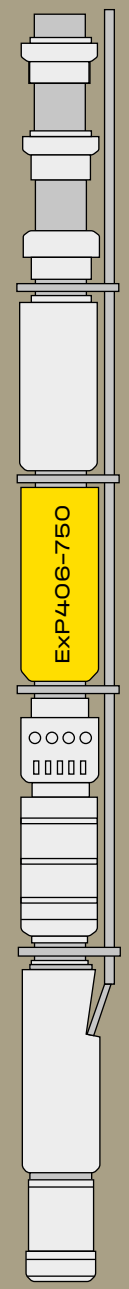
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP406-750 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 406 series

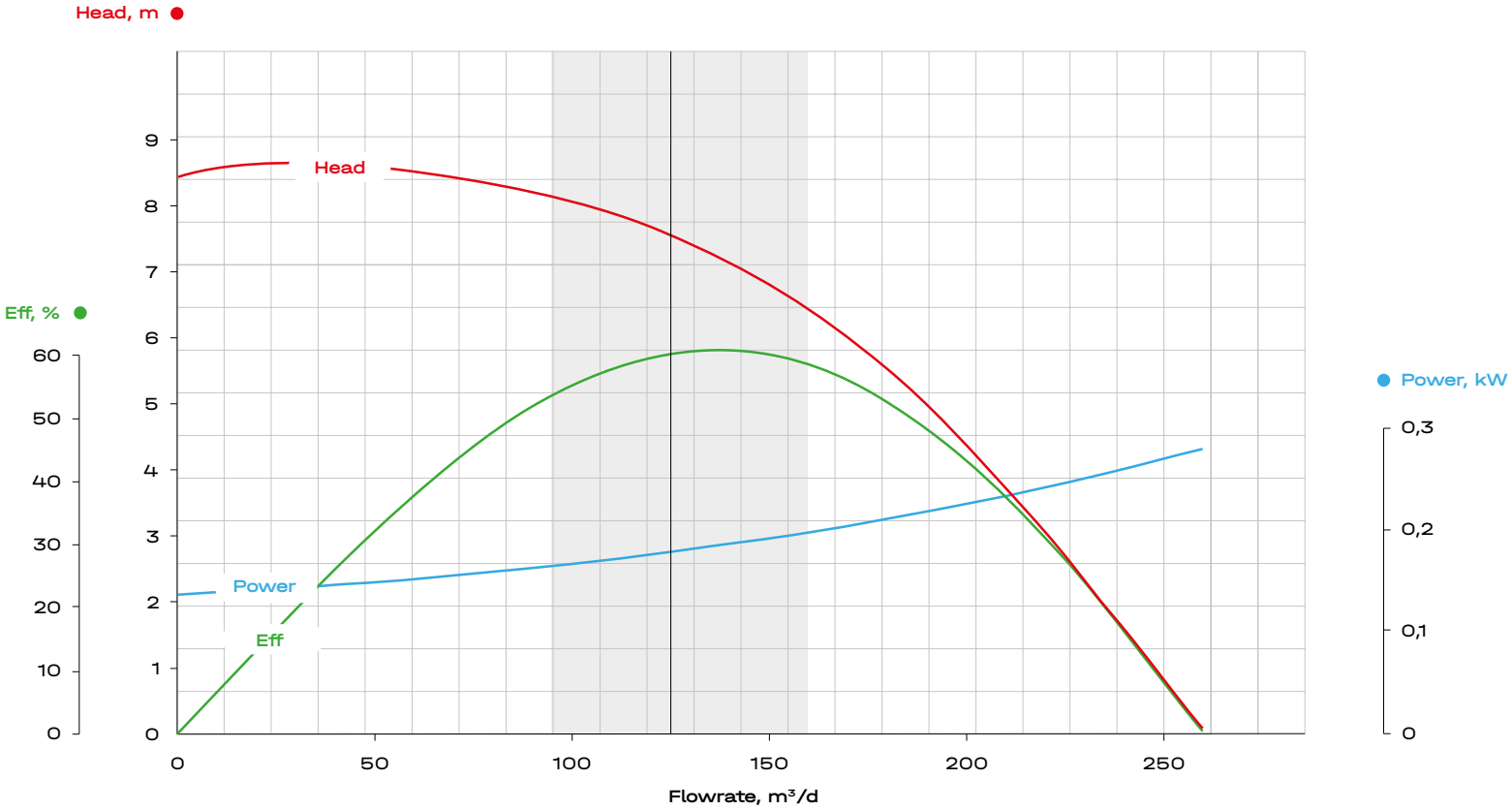




ExP406-940

Pump performance curve

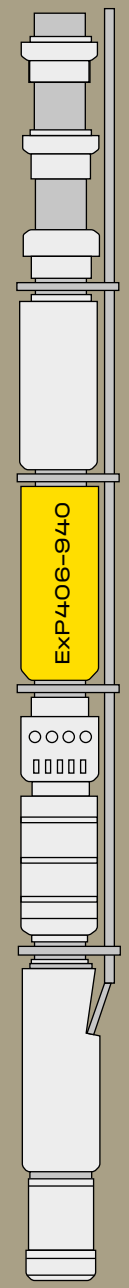
50 Hz/3000 rpm | kg/m³ 1 | 1 STG | 406 series (OD 103 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	58%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	629 BPD	125 m³/day	**Shaft broken HP - S13**	268 HP	200 KW
Head	25 ft	7.62 m	**Shaft broken HP - S14**	288 HP	215 KW
Optimum Operating Range	600-1000 BPD	95-160 m³/day	**Shaft broken HP - S16**	335 HP	250 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 Inch²	314 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

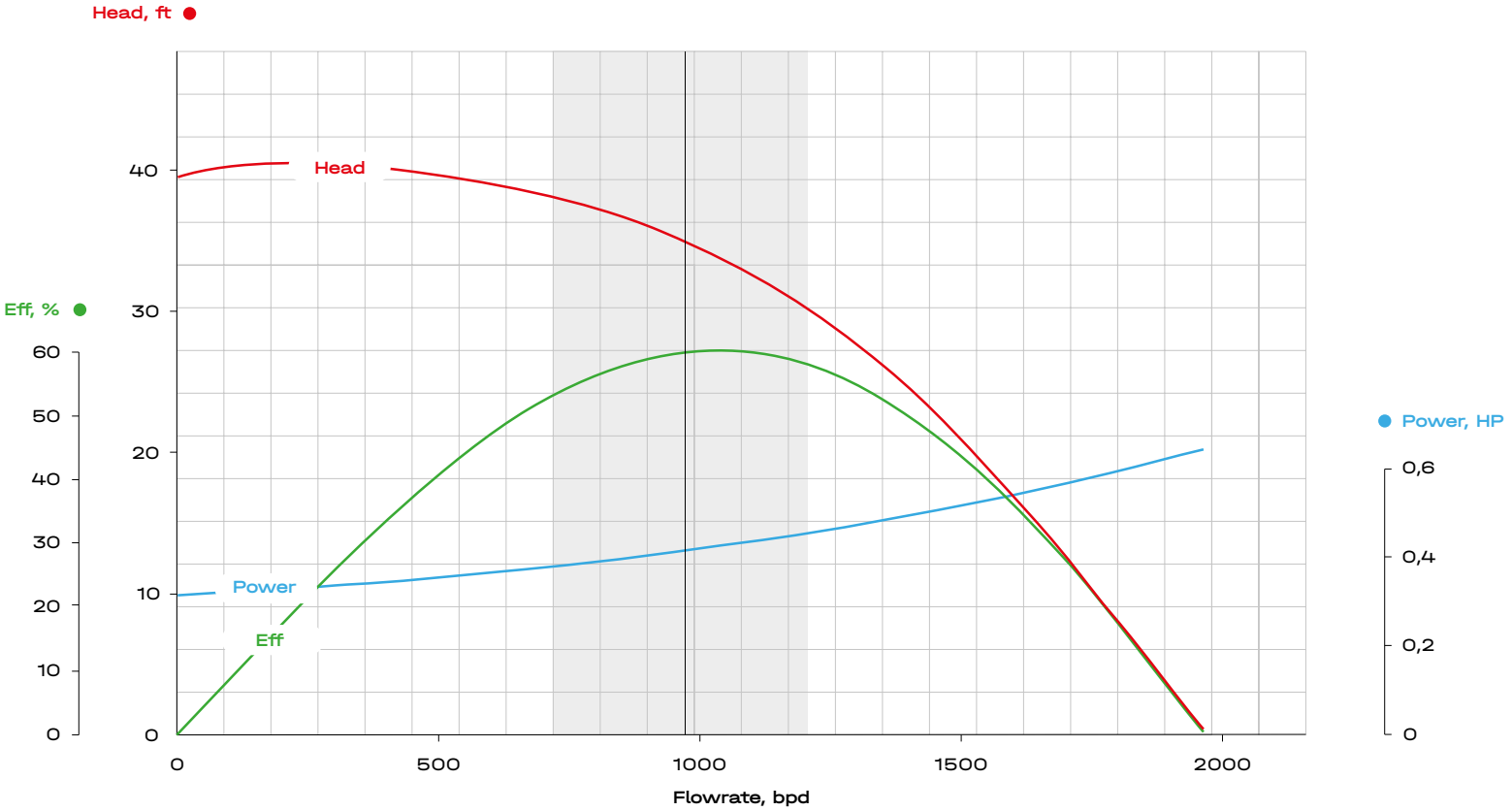
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP406-940

Pump performance curve

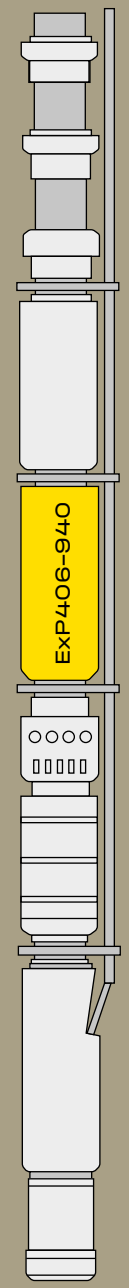
60 Hz/3600 rpm | Sp.Gr. 1 | 1 STG | 406 series (OD 4.06 in)



Technical data

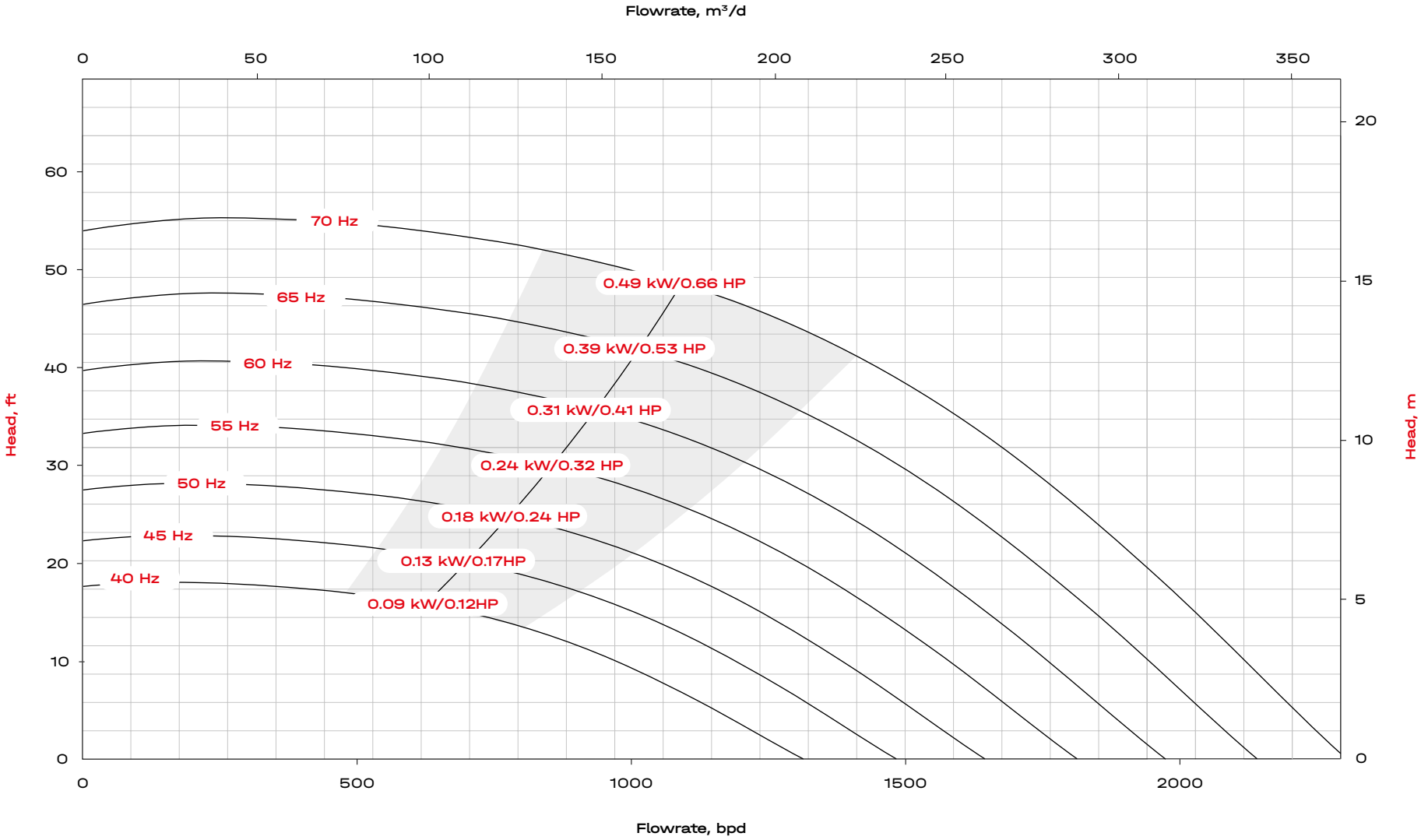
Best Efficiency Point			Limitations		
Efficiency	58%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	937 BPD	149 m^3/day	**Shaft broken HP - S13**	322 HP	240 KW
Head	36 ft	10.98 m	**Shaft broken HP - S14**	346 HP	258 KW
Optimum Operating Range	730–1200 BPD	115–190 m^3/day	**Shaft broken HP - S16**	402 HP	300 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 $Inch^2$	314 mm^2
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

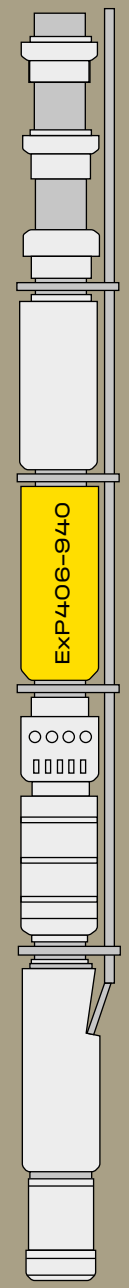
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP406-940 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 406 series

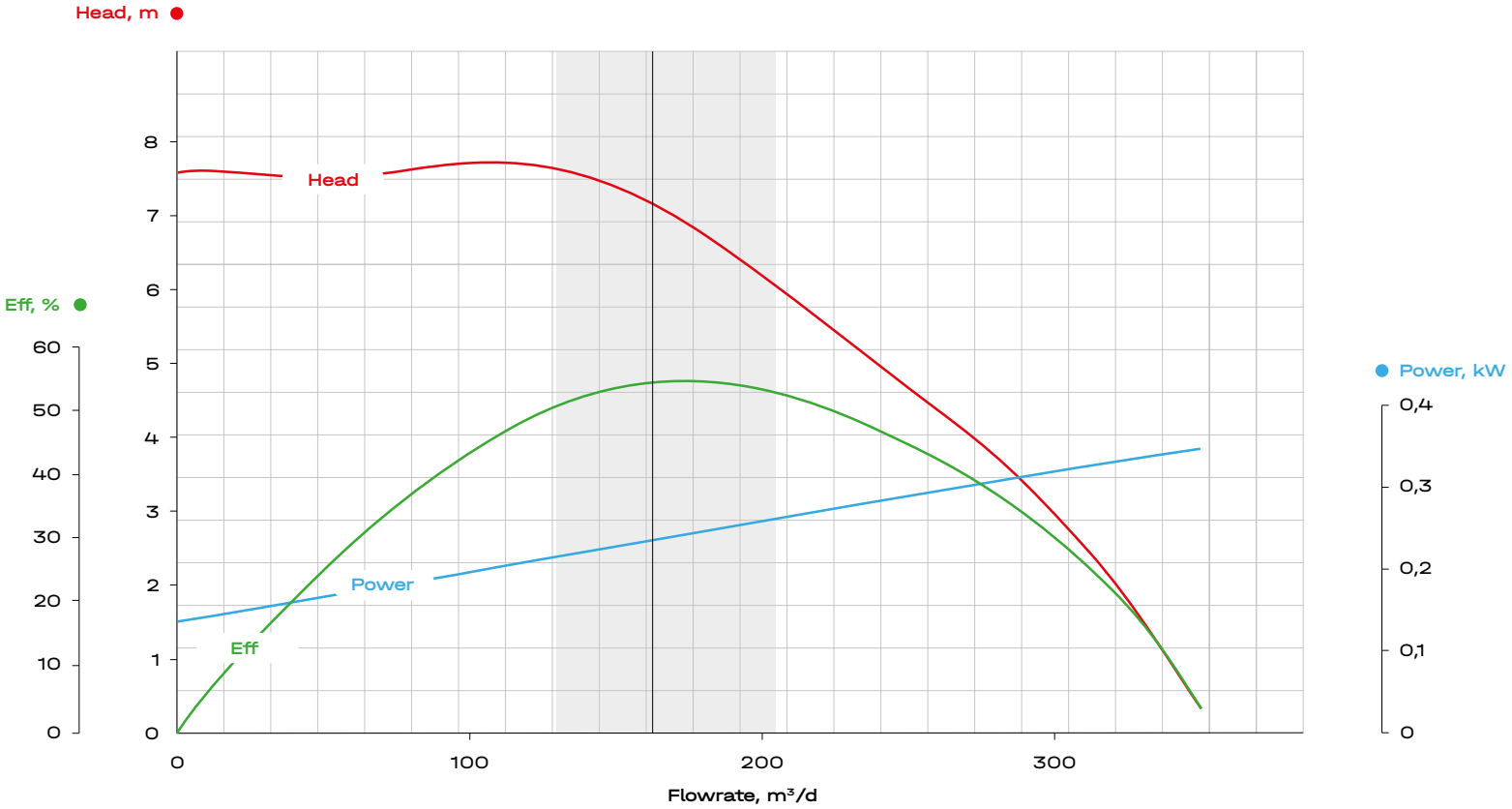


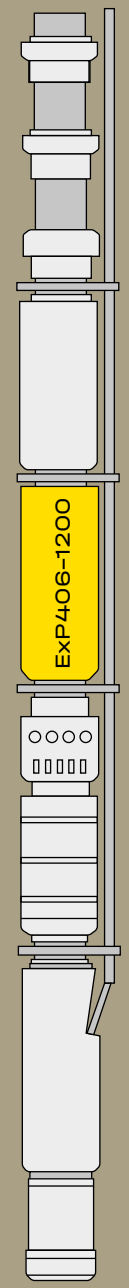


ExP406-1200

Pump performance curve

50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 406 series (OD 103 mm)





Technical data

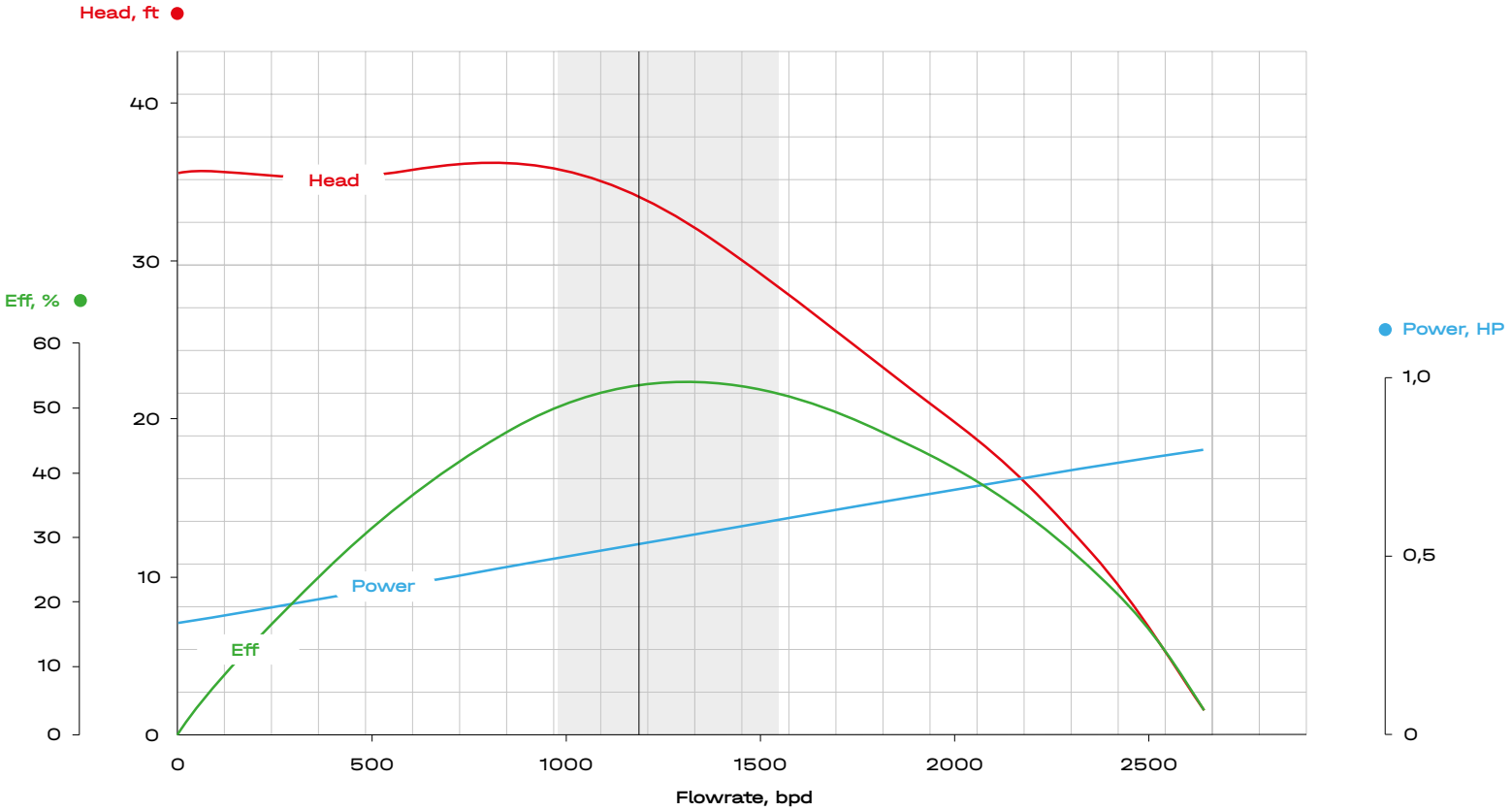
Best Efficiency Point			Limitations		
Efficiency	56%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	1000 BPD	160 m³/day	**Shaft broken HP - S13**	268 HP	200 KW
Head	23.8 ft	7.2 m	**Shaft broken HP - S14**	288 HP	215 KW
Optimum Operating Range	820–1280 BPD	130–200 m³/day	**Shaft broken HP - S16**	335 HP	250 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 Inch²	314 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

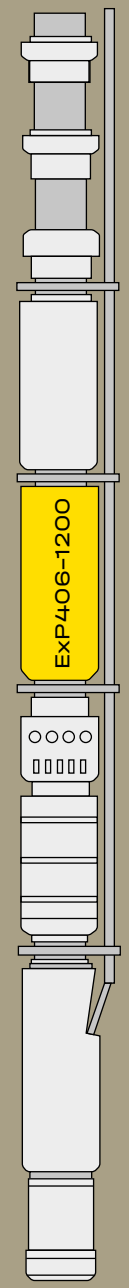
API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP406-1200

Pump performance curve

60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 406 series (OD 4.06 in)





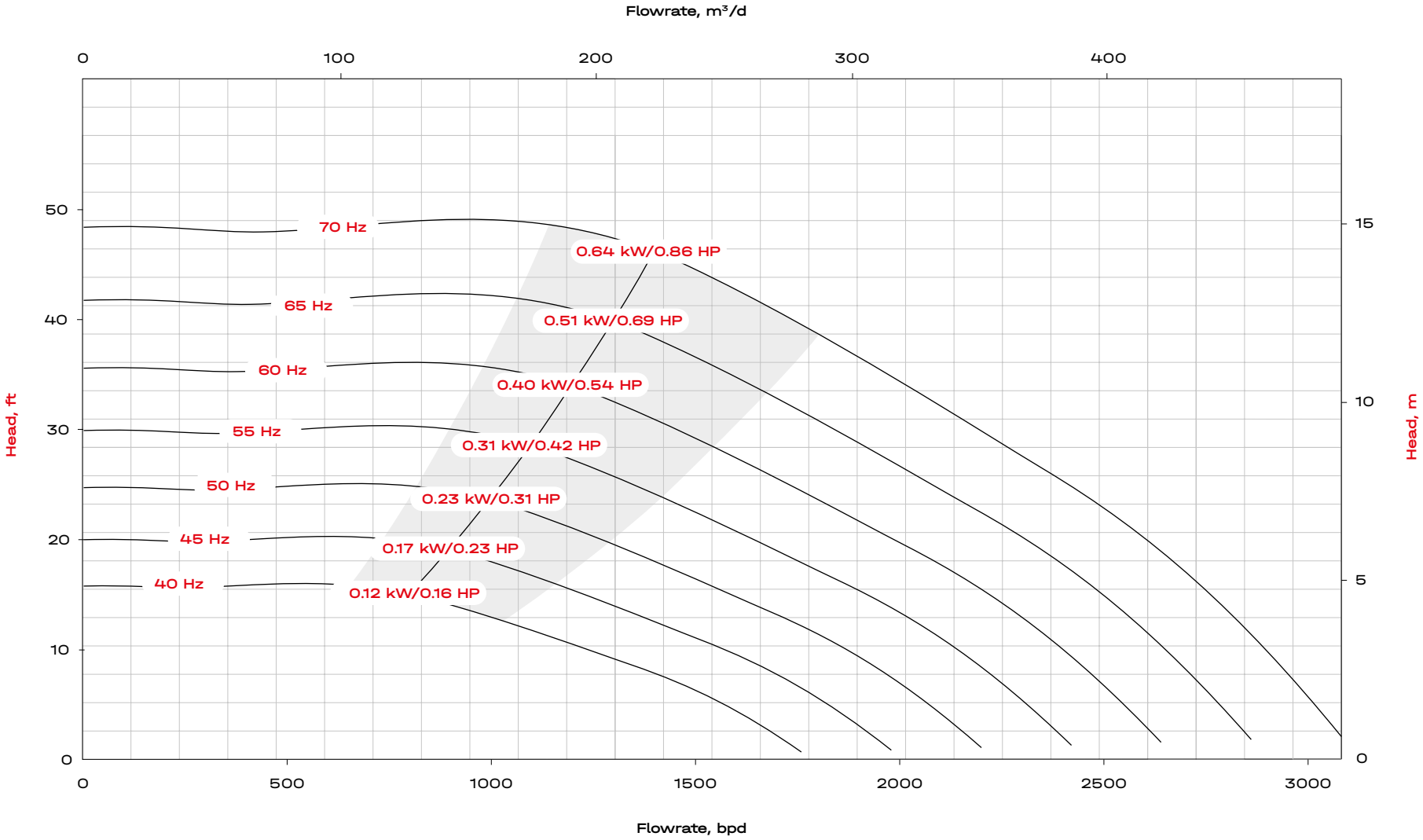
Technical data

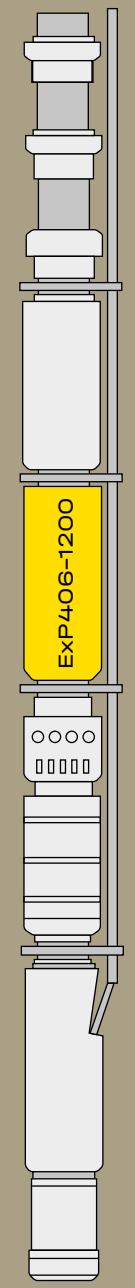
Best Efficiency Point			Limitations		
Efficiency	56%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	1200 BPD	190 m^3/day	**Shaft broken HP - S13**	322 HP	240 KW
Head	34.3 ft	10.4 m	**Shaft broken HP - S14**	346 HP	258 KW
Optimum Operating Range	990-1540 BPD	160-245 m^3/day	**Shaft broken HP - S16**	402 HP	300 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 $Inch^2$	314 mm^2
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP406-1200 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 406 series

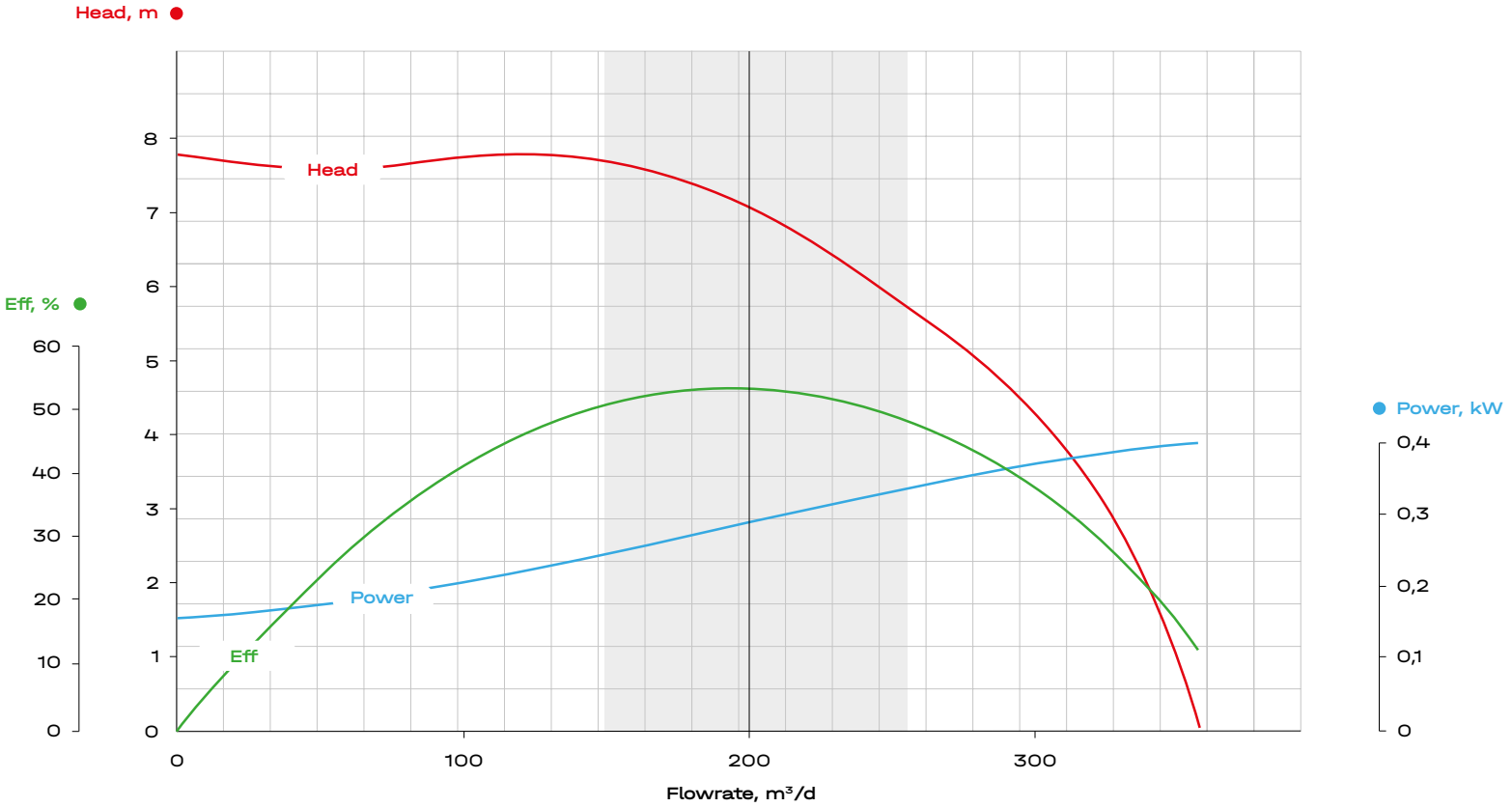




ExP406-1500

Pump performance curve

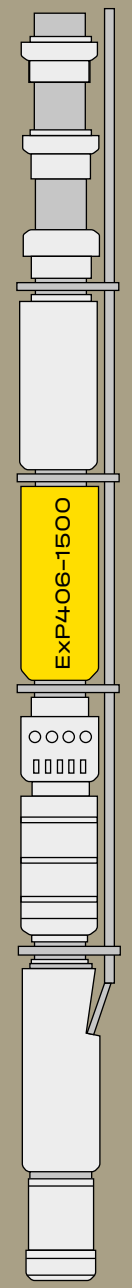
50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 406 series (OD 103 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	54%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	1260 BPD	200 m³/day	**Shaft broken HP - S13**	268 HP	200 KW
Head	23.2 ft	7.07 m	**Shaft broken HP - S14**	288 HP	215 KW
Optimum Operating Range	940-1600 BPD	150-250 m³/day	**Shaft broken HP - S16**	335 HP	250 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 Inch²	314 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

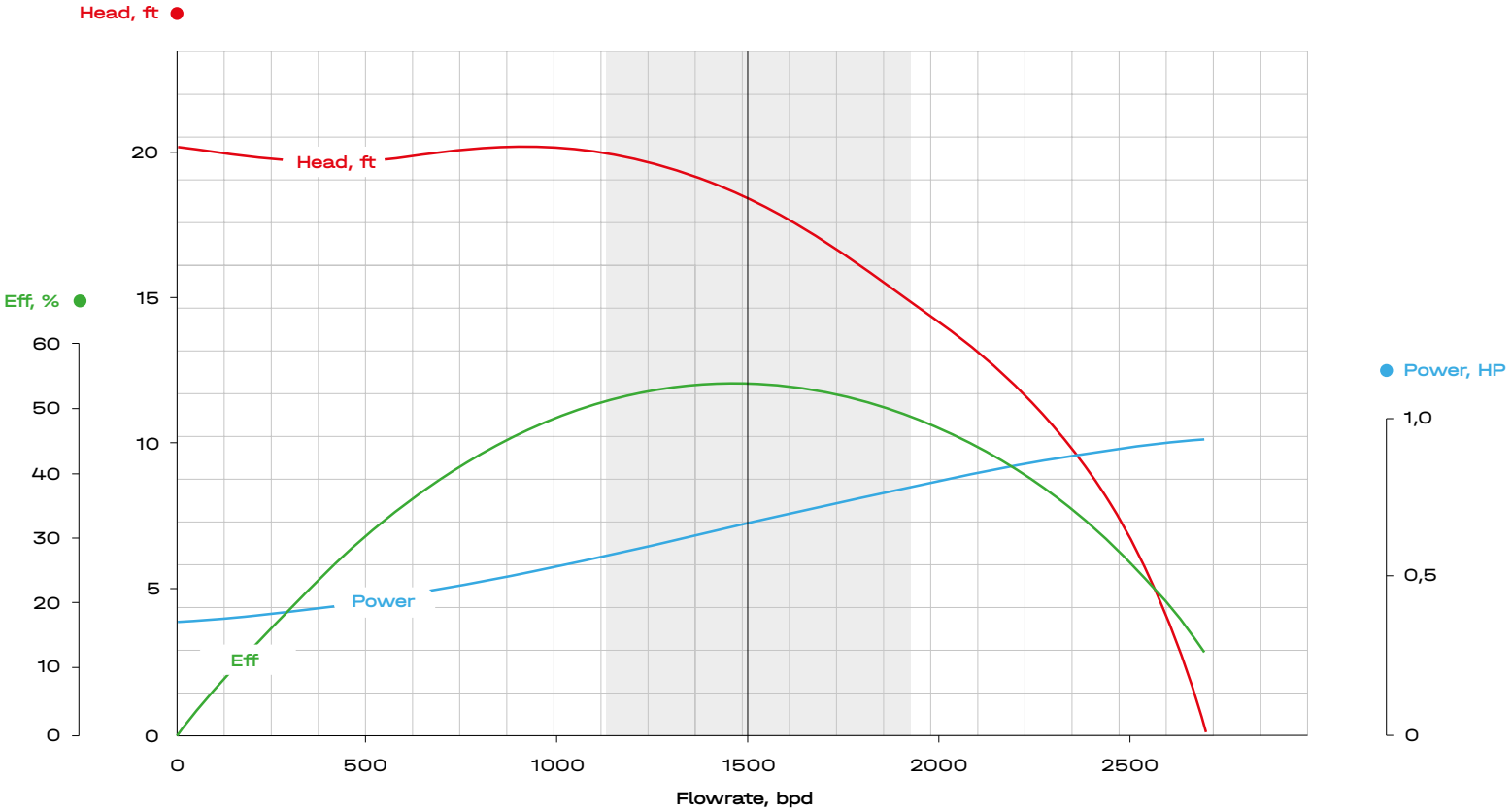
API Recommended Practice 11S2 for Electric Submersible Pump Testing.

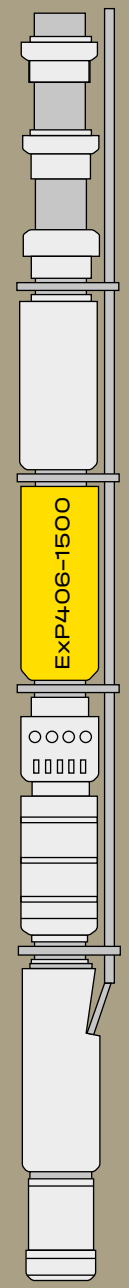


ExP406-1500

Pump performance curve

60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 406 series (OD 4.06 in)





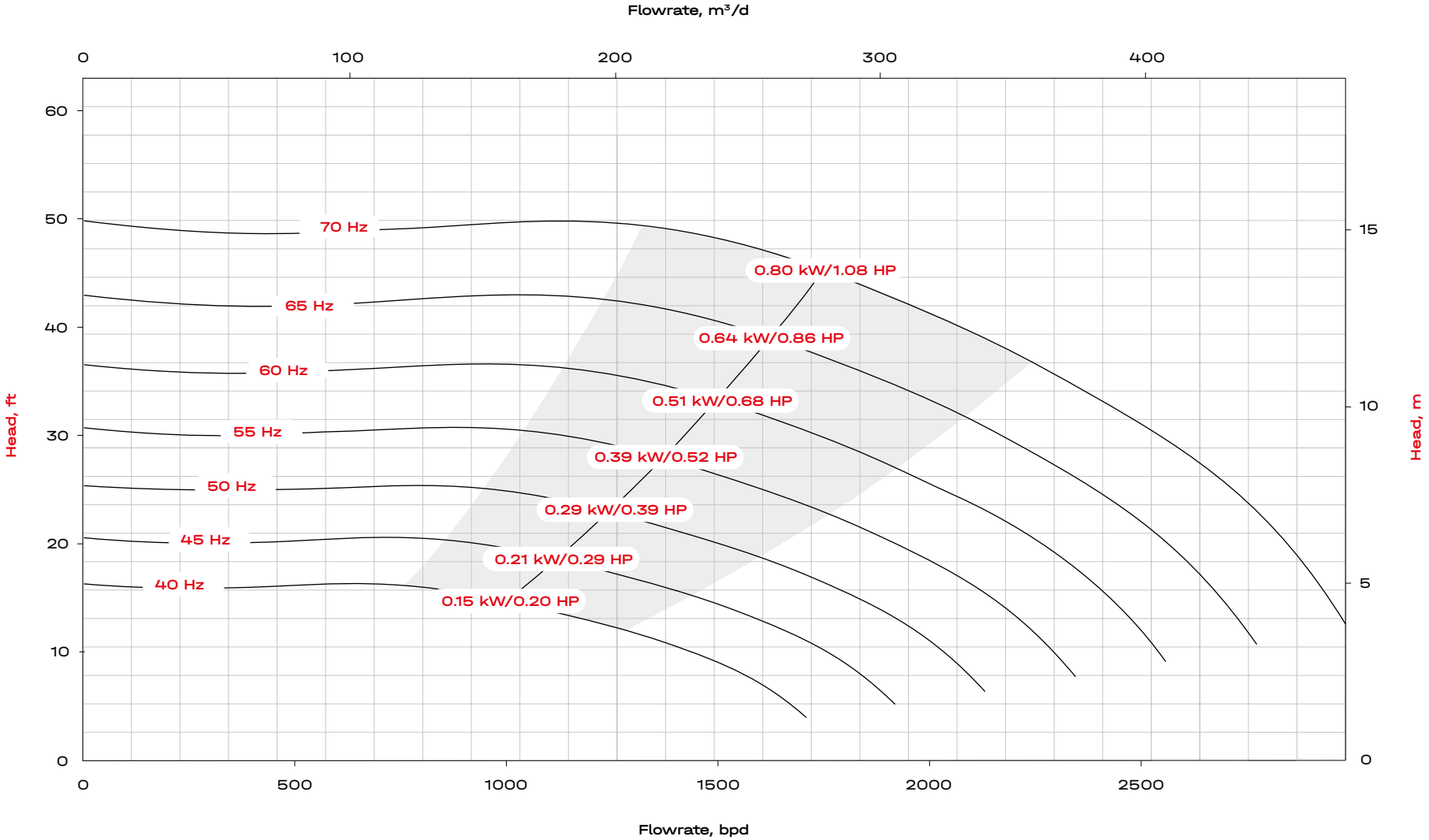
Technical data

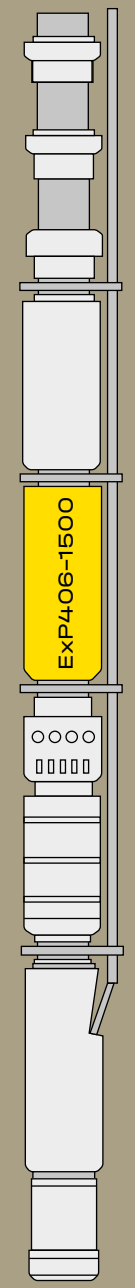
Best Efficiency Point			Limitations		
Efficiency	54%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	1500 BPD	240 m³/day	**Shaft broken HP - S13**	322 HP	240 KW
Head	33.4 ft	10.2 m	**Shaft broken HP - S14**	346 HP	258 KW
Optimum Operating Range	1135-1885 BPD	180-300 m³/day	**Shaft broken HP - S16**	402 HP	300 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 Inch²	314 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP406-1500 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 406 series

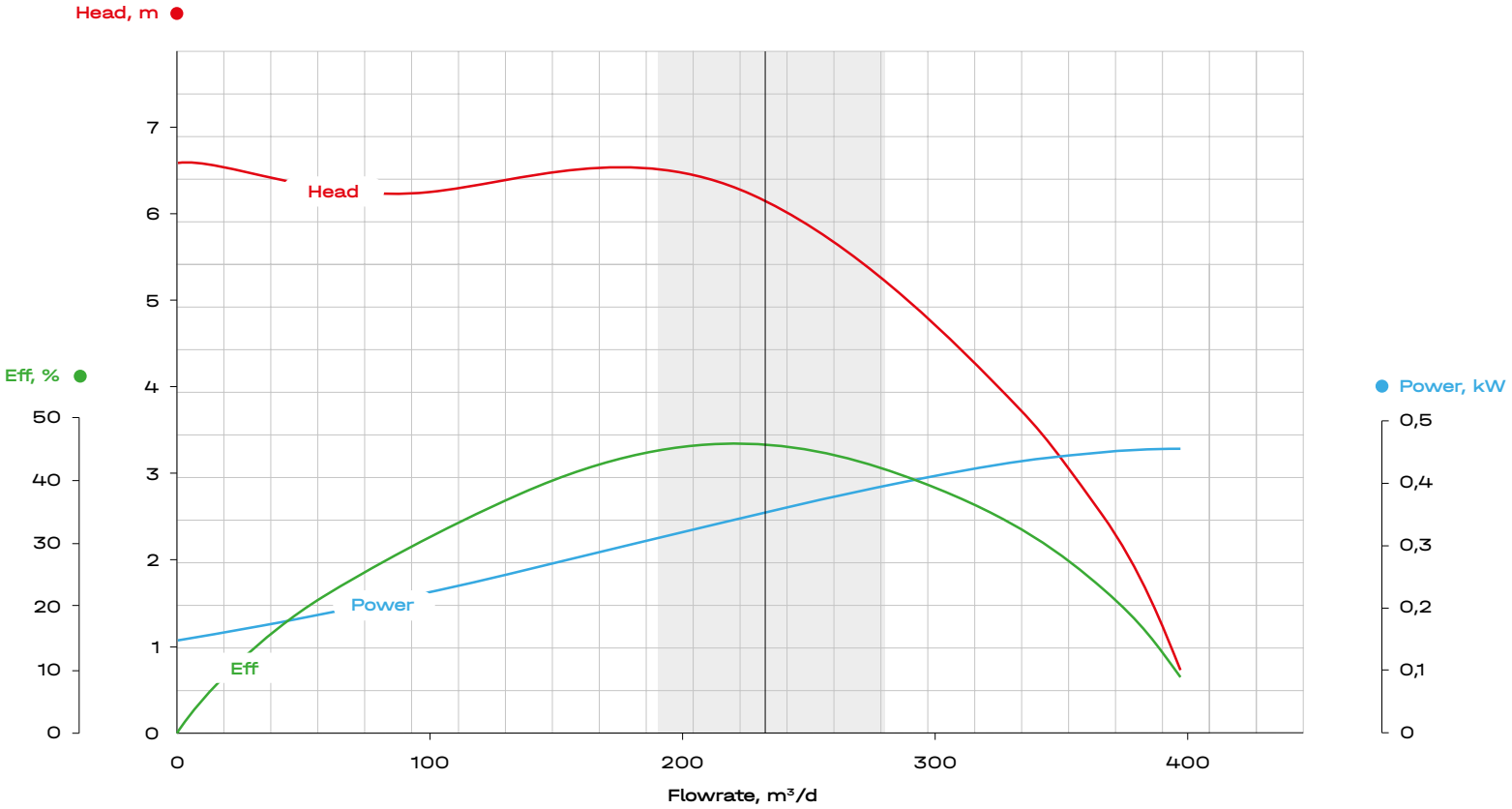


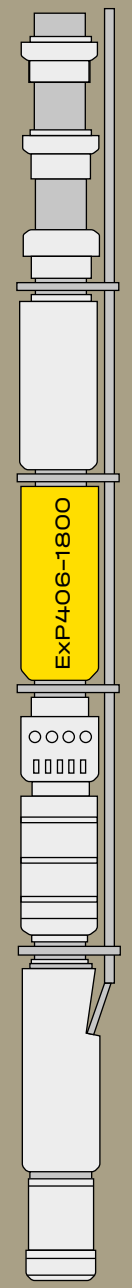


ExP406-1800

Pump performance curve

50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 406 series (OD 103 mm)





Technical data

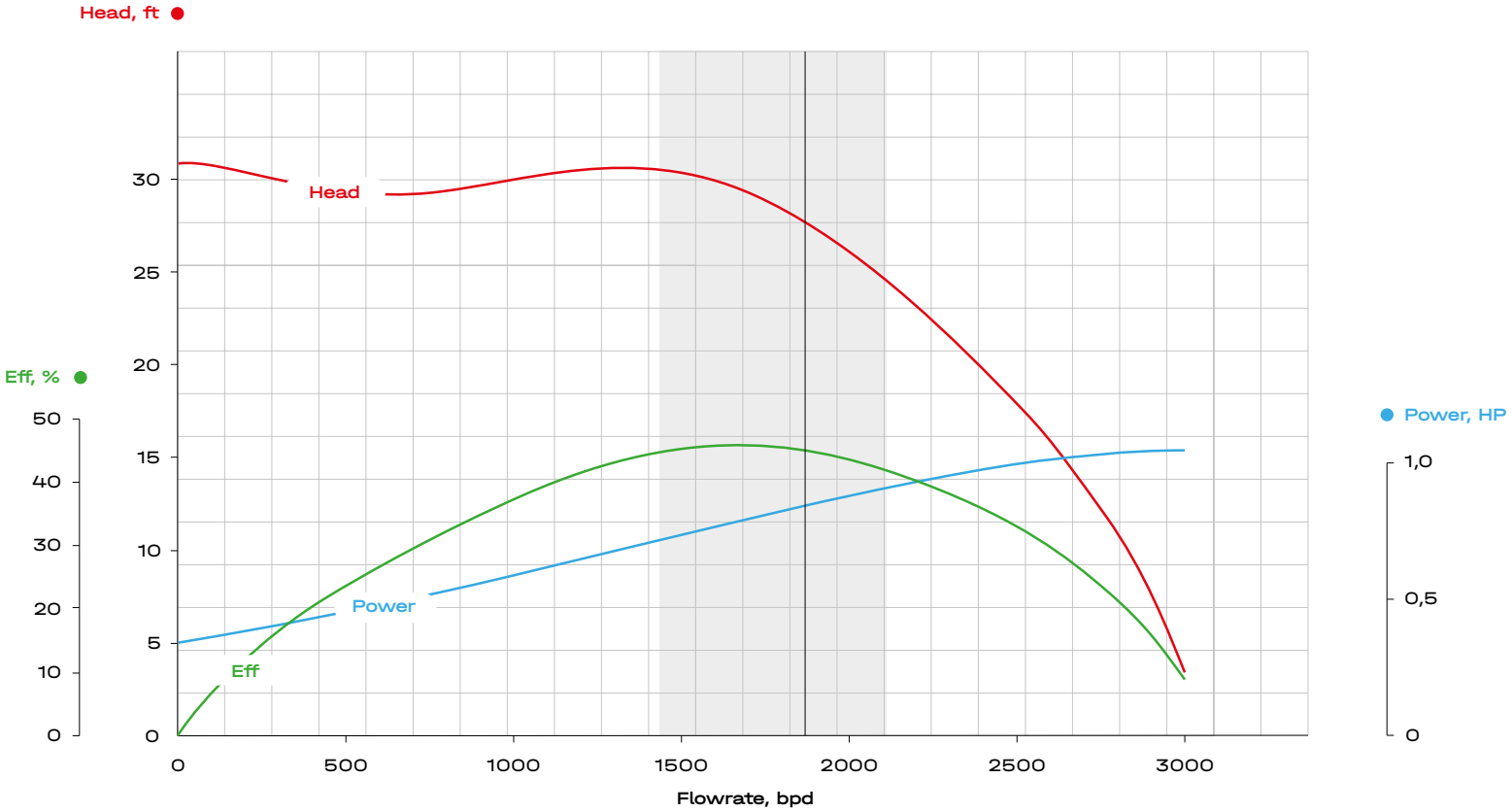
Best Efficiency Point			Limitations		
Efficiency	46%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	1500 BPD	240 m³/day	**Shaft broken HP - S13**	268 HP	200 KW
Head	19.8 ft	6.0 m	**Shaft broken HP - S14**	288 HP	215 KW
Optimum Operating Range	1200-1760 BPD	190-280 m³/day	**Shaft broken HP - S16**	335 HP	250 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 Inch²	314 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP406-1800

Pump performance curve

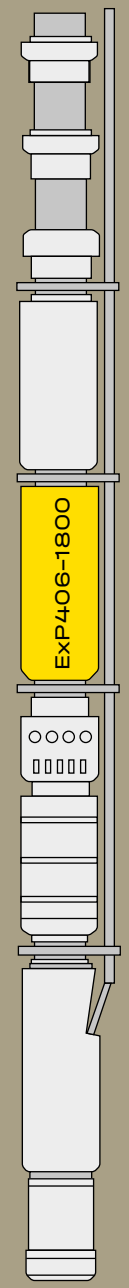
60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 406 series (OD 4.06 in)



Technical data

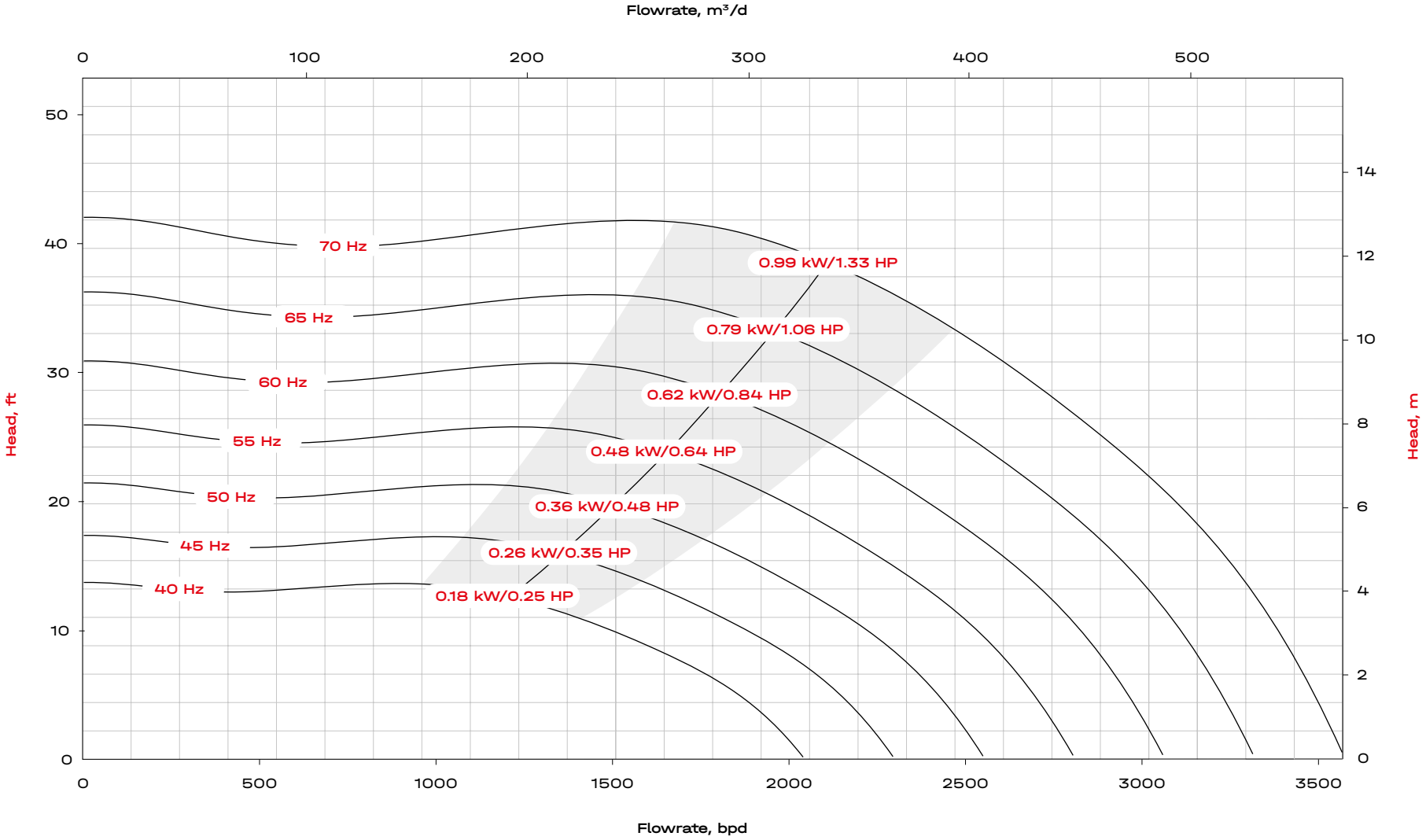
Best Efficiency Point			Limitations		
Efficiency	46%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	1800 BPD	280 m^3/day	**Shaft broken HP - S13**	322 HP	240 KW
Head	28.6 ft	8.7 m	**Shaft broken HP - S14**	346 HP	258 KW
Optimum Operating Range	1440-2110 BPD	180-300 m^3/day	**Shaft broken HP - S16**	402 HP	300 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 $Inch^2$	314 mm^2
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

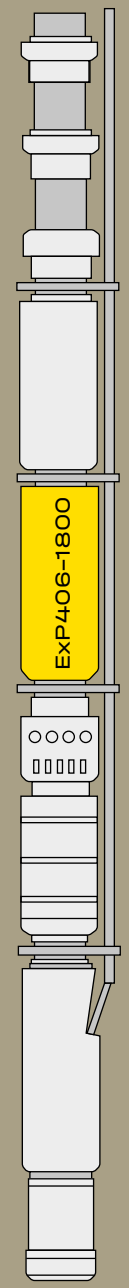
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP406-1800 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 406 series

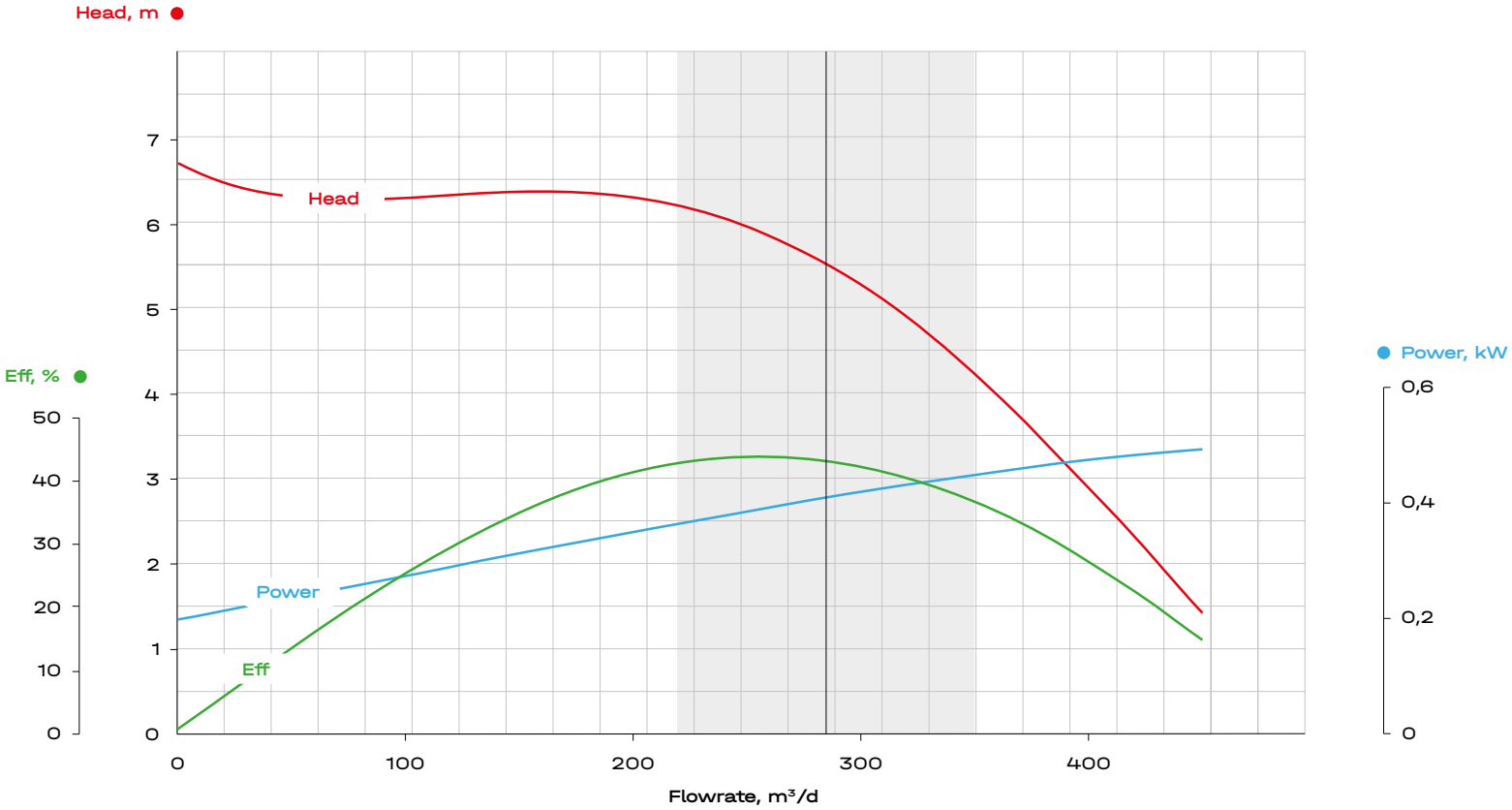




ExP406-2100

Pump performance curve

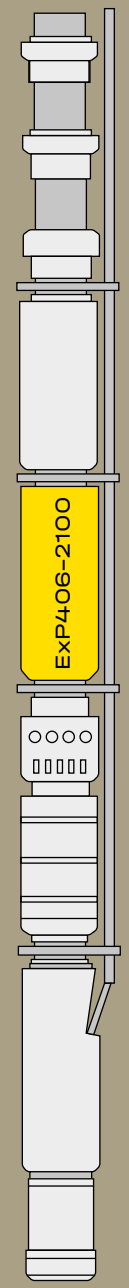
50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 406 series (OD 103 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	44%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	1740 BPD	280 m³/day	**Shaft broken HP - S13**	268 HP	200 KW
Head	18.4 ft	5.63 m	**Shaft broken HP - S14**	288 HP	215 KW
Optimum Operating Range	1390-2200 BPD	220-350 m³/day	**Shaft broken HP - S16**	335 HP	250 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 Inch²	314 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

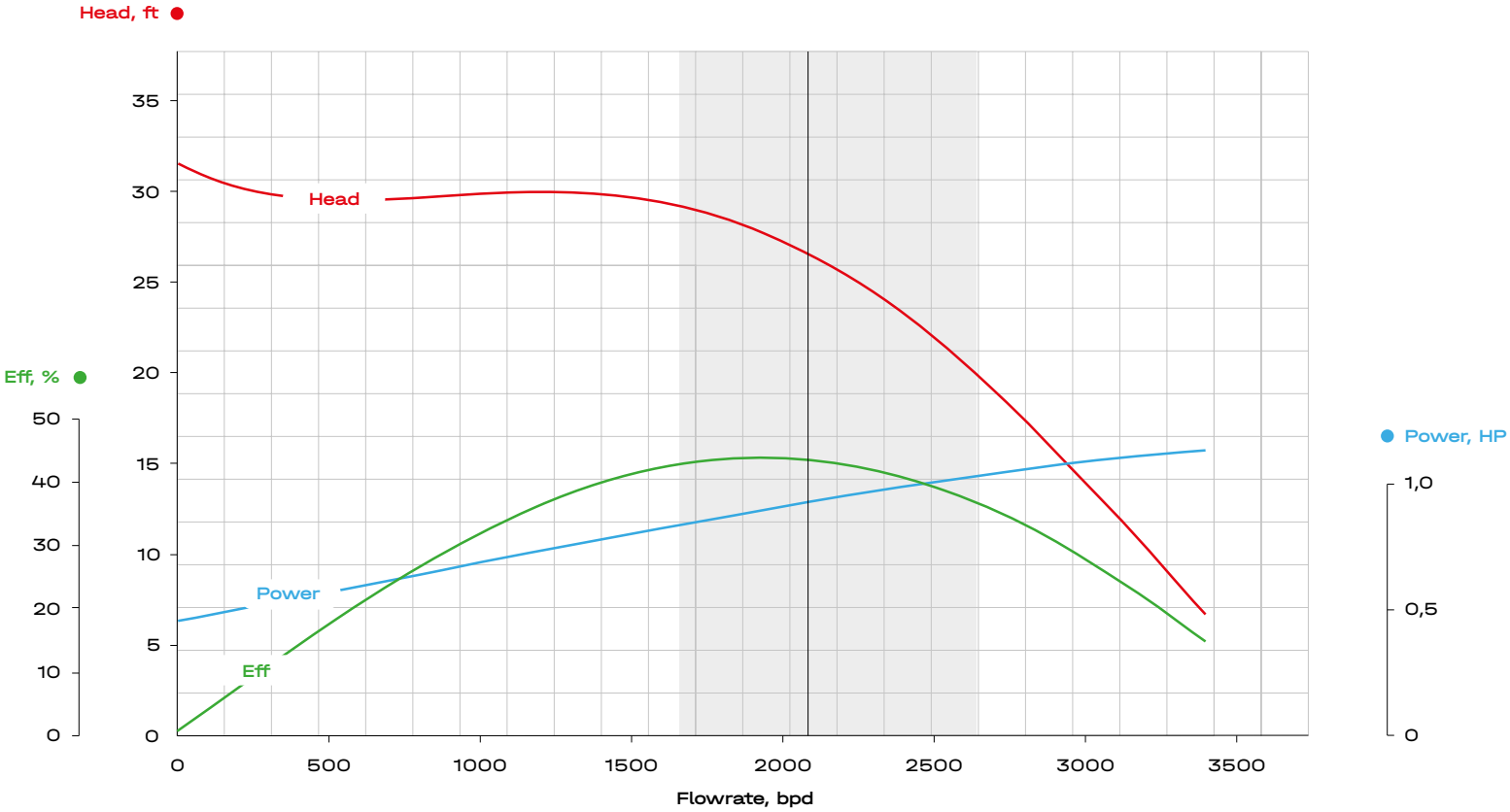
API Recommended Practice 11S2 for Electric Submersible Pump Testing.

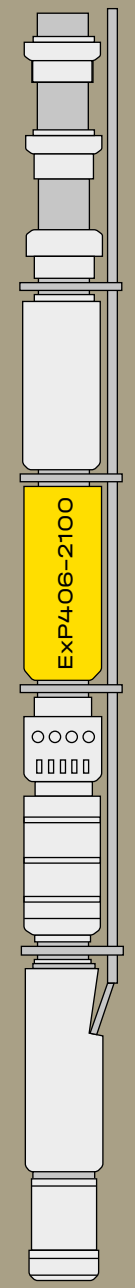


ExP406-2100

Pump performance curve

60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 406 series (OD 4.06 in)





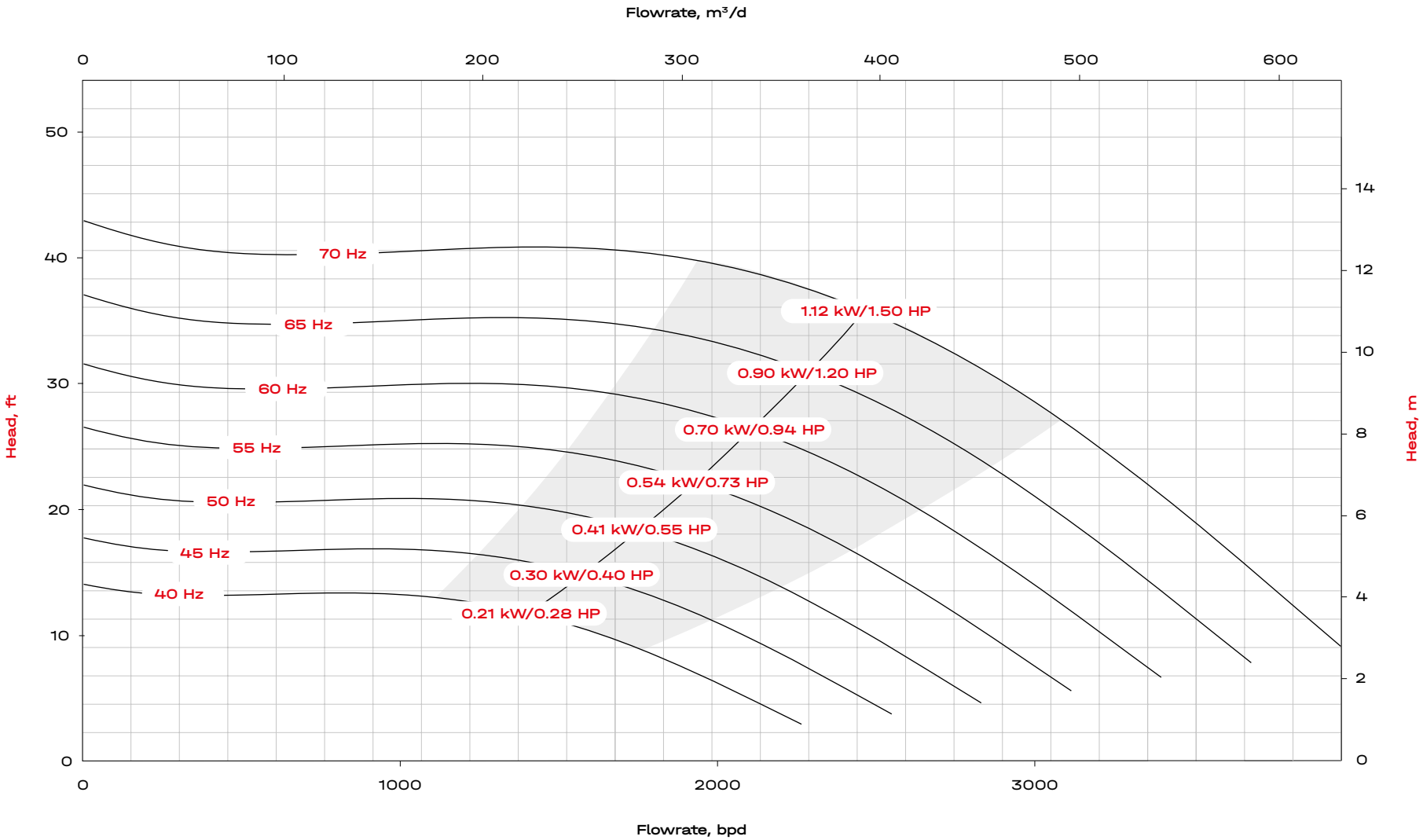
Technical data

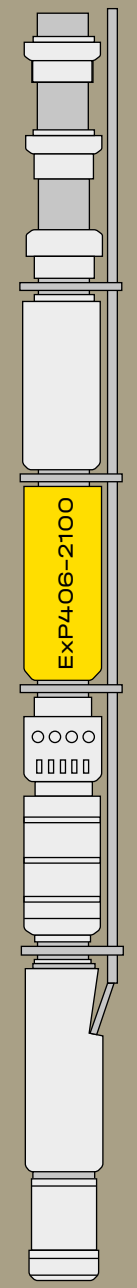
Best Efficiency Point			Limitations		
Efficiency	44%		**Shaft Diameter**	0.79 Inch	20 mm
Capacity	2100 BPD	335 m³/day	**Shaft broken HP - S13**	322 HP	240 KW
Head	26.6 ft	8.1 m	**Shaft broken HP - S14**	346 HP	258 KW
Optimum Operating Range	1660-2640 BPD	265-420 m³/day	**Shaft broken HP - S16**	402 HP	300 KW
Pump Housing Diameter	4.06 in	103 mm	**Shaft Cross Sectional Area**	0.49 Inch²	314 mm²
Minimus Casing Size	4.91 In	124.8 mm	**Housing Burst Pressure Limit**	5500 psi	380 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP406-2100 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 406 series

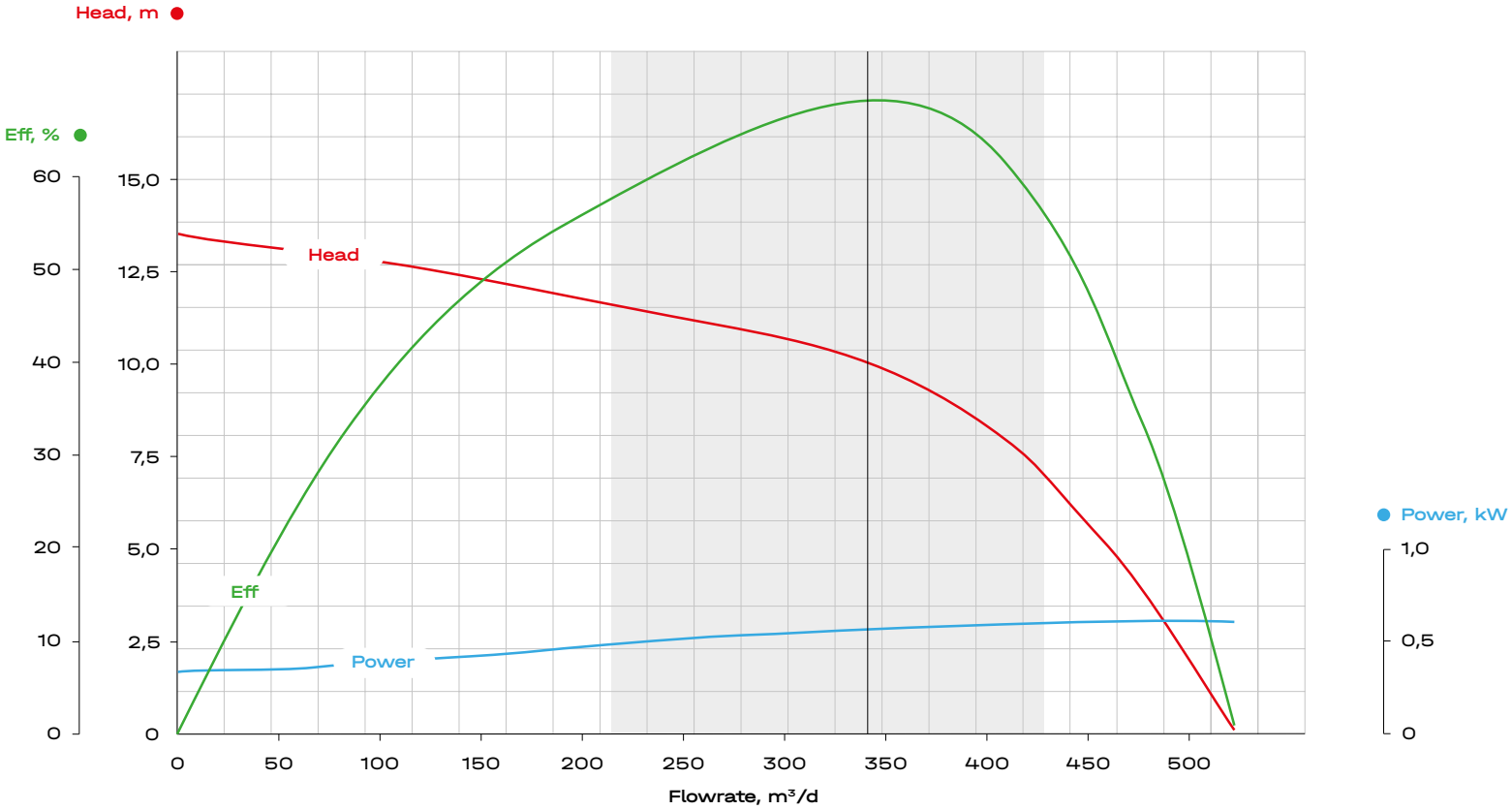


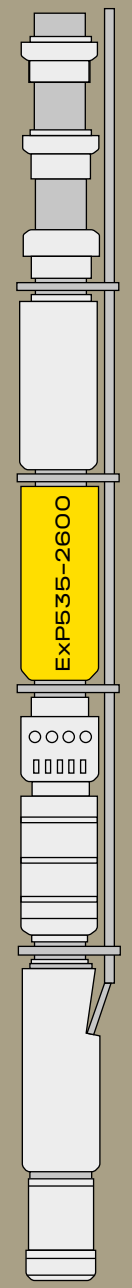


ExP535-2600

Pump performance curve

50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 535 series (OD 136 mm)





Technical data

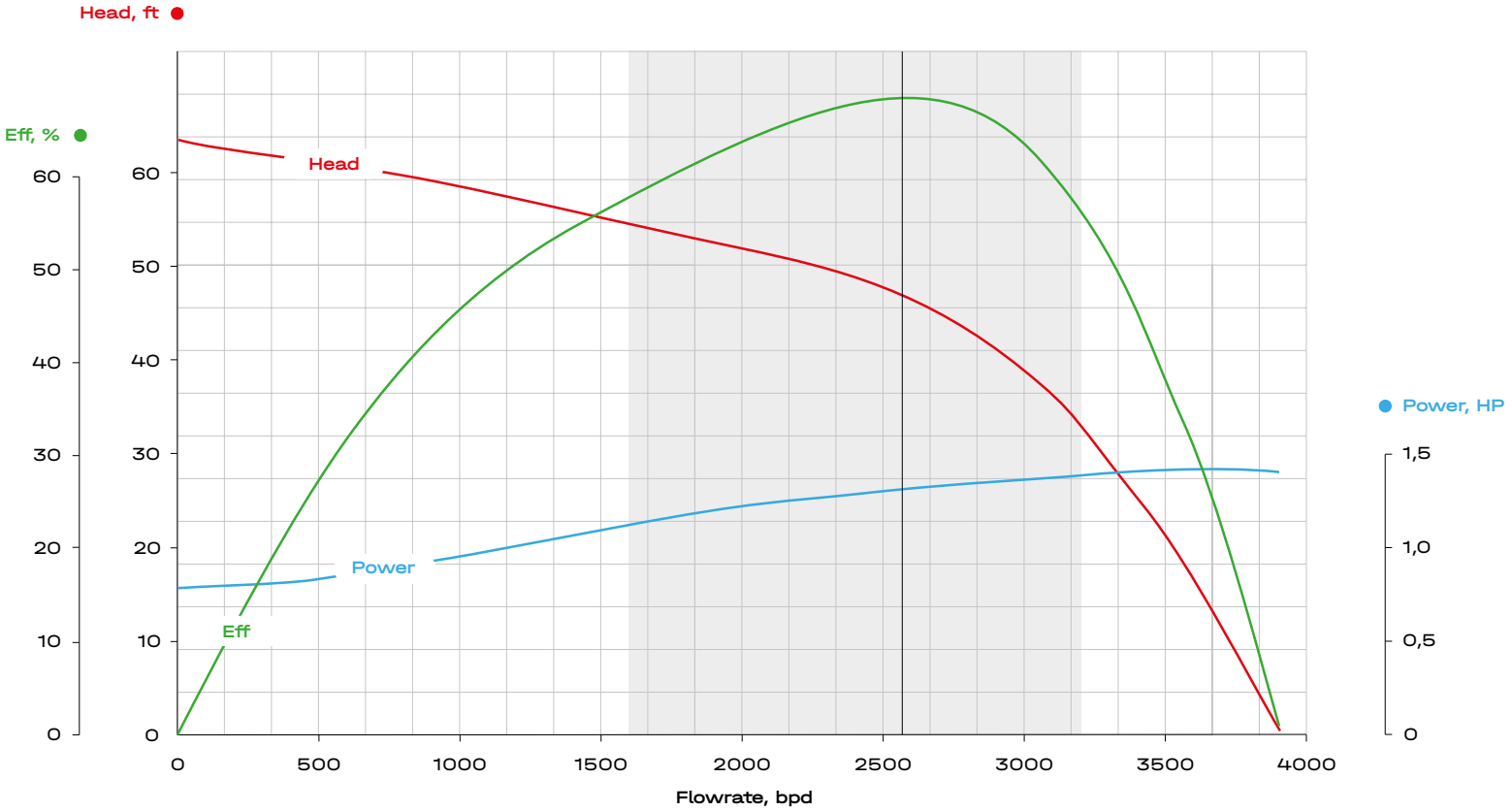
Best Efficiency Point			Limitations		
Efficiency	68%		**Shaft Diameter**	0.87 Inch	22 mm
Capacity	2150 BPD	340 m³/day	**Shaft broken HP - S13**	362 HP	270 kW
Head	32.5 ft	9.9 m	**Shaft broken HP - S14**	389 HP	290 kW
Optimum Operating Range	1300-2700 BPD	210-430 m³/day	**Shaft broken HP - S16**	442 HP	330 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	0.59 Inch²	380 mm²
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP535-2600

Pump performance curve

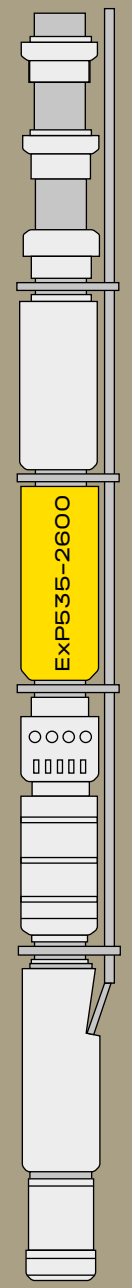
60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 535 series (OD 5.35 in)



Technical data

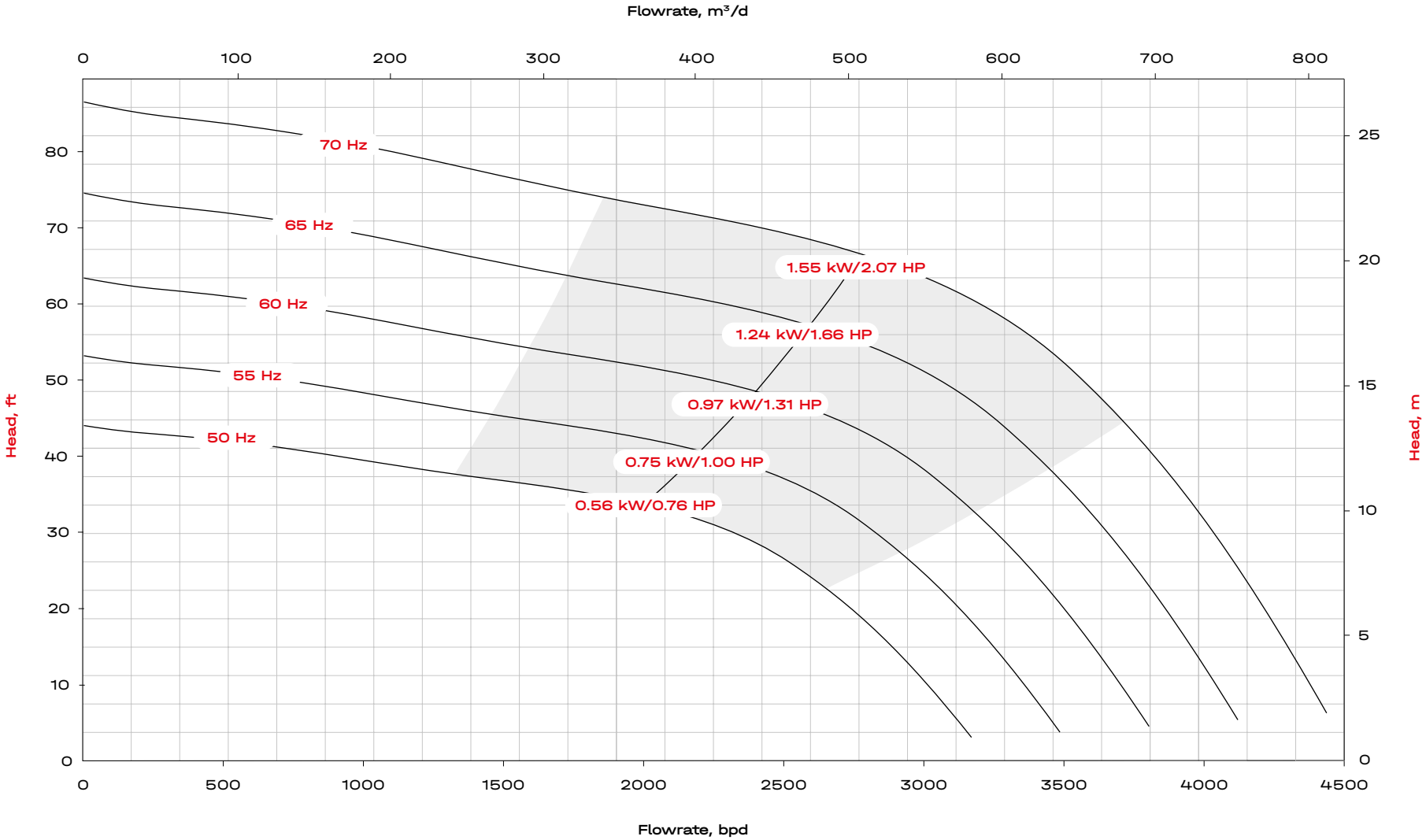
Best Efficiency Point			Limitations		
Efficiency	68%		**Shaft Diameter**	0.87 Inch	22 mm
Capacity	2580 BPD	410 m³/day	**Shaft broken HP - S13**	434 HP	324 KW
Head	46.76 ft	14.25 m	**Shaft broken HP - S14**	466 HP	348 KW
Optimum Operating Range	1600-3200 BPD	380-510 m³/day	**Shaft broken HP - S16**	531 HP	396 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	0.59 Inch²	380 mm²
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

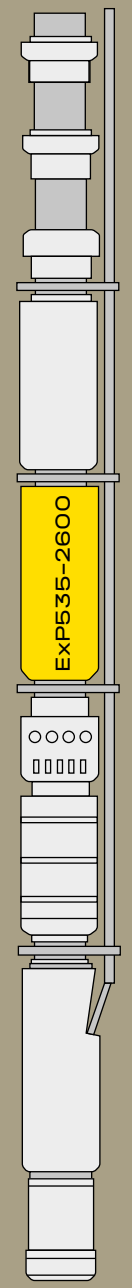
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP535-2600 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 535 series

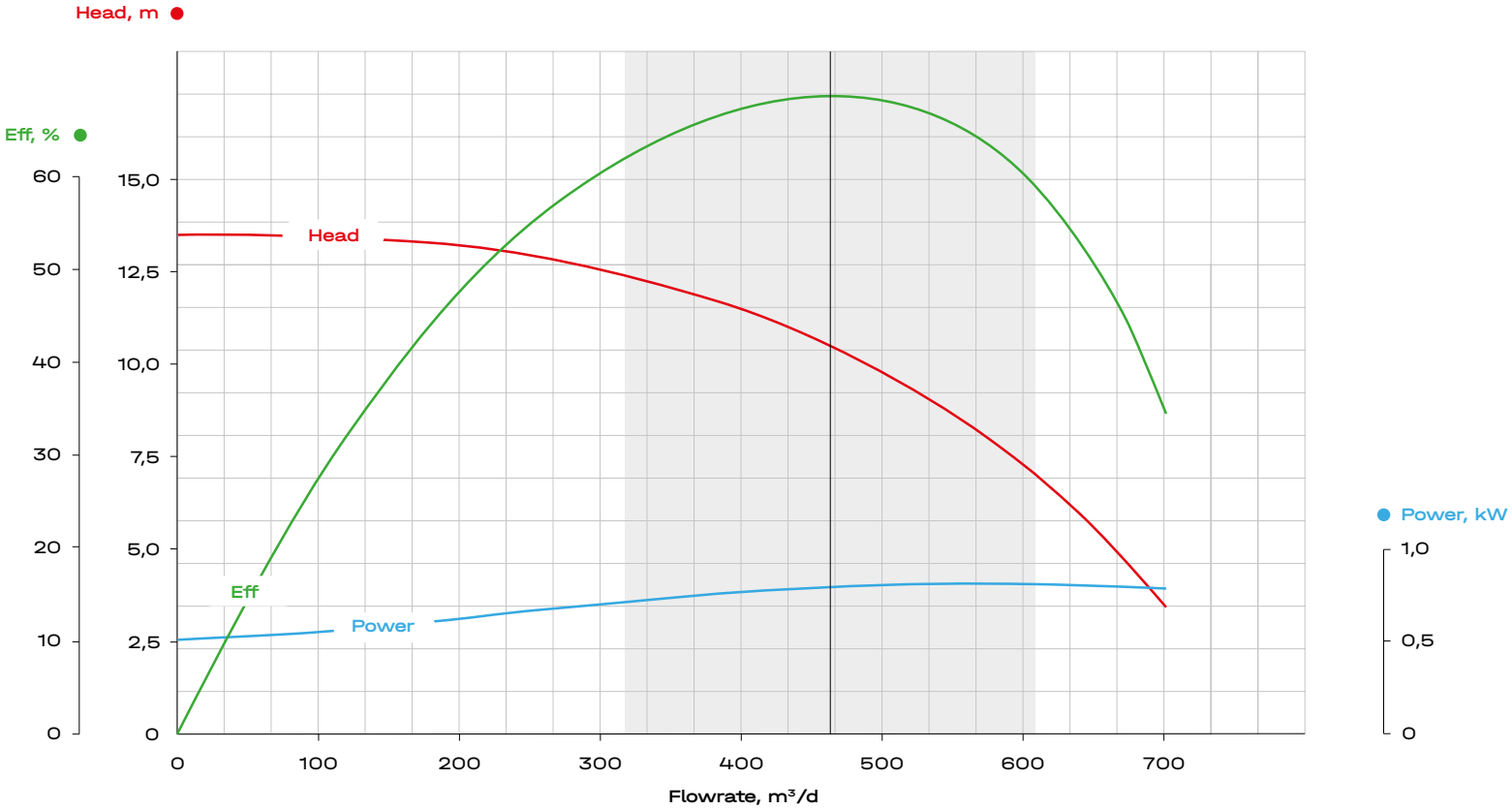


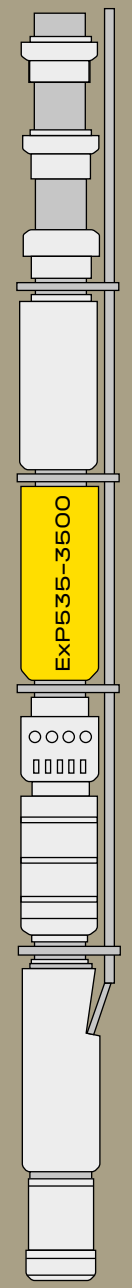


ExP535-3500

Pump performance curve

50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 535 series (OD 136 mm)





Technical data

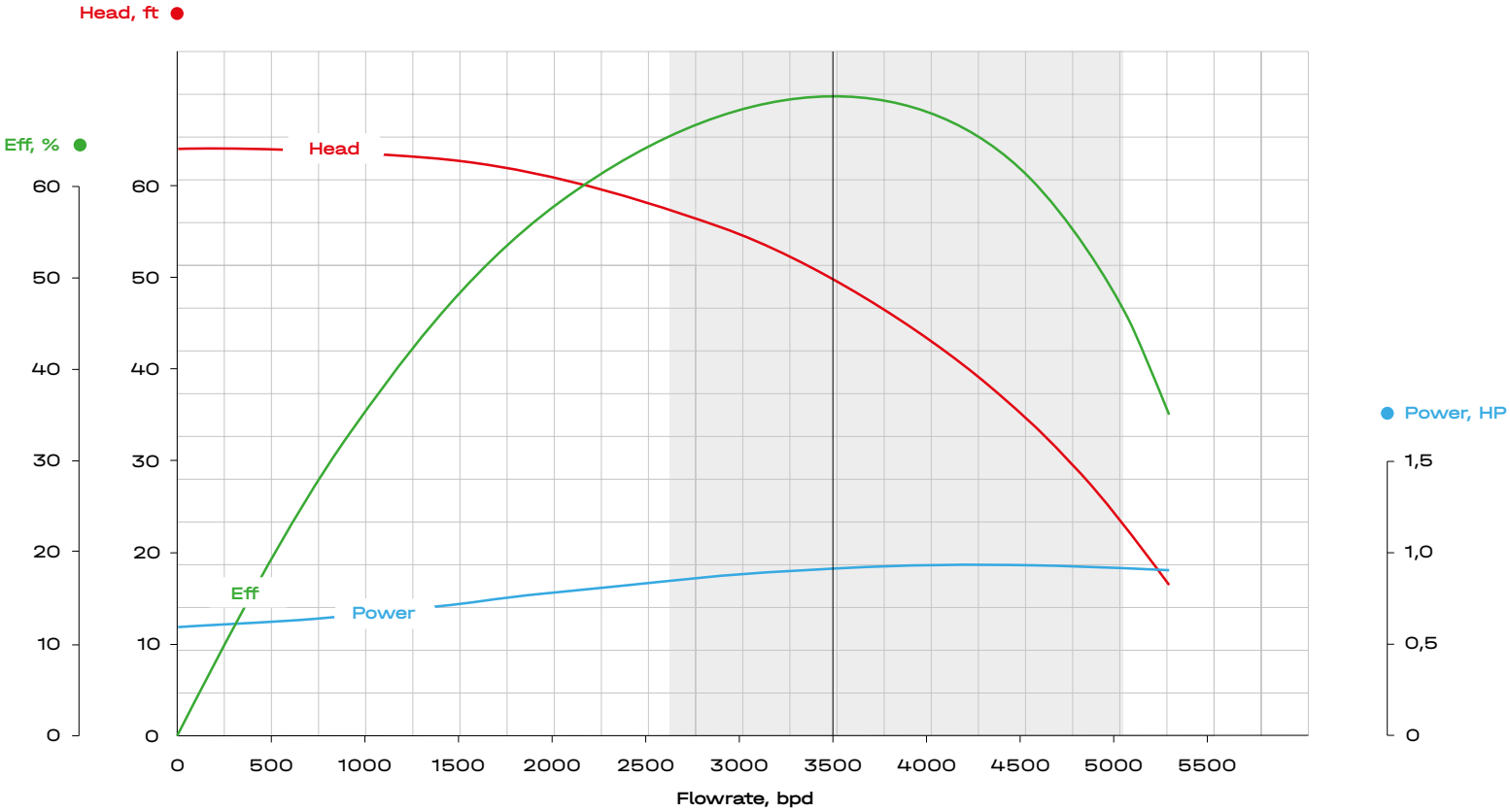
Best Efficiency Point			Limitations		
Efficiency	69%		**Shaft Diameter**	0.87 Inch	22 mm
Capacity	2900 BPD	460 m³/day	**Shaft broken HP - S13**	362 HP	270 kW
Head	34.4 ft	10.6 m	**Shaft broken HP - S14**	389 HP	290 kW
Optimum Operating Range	2000-3800 BPD	320-600 m³/day	**Shaft broken HP - S16**	442 HP	330 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	0.59 Inch²	380 mm²
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP535-3500

Pump performance curve

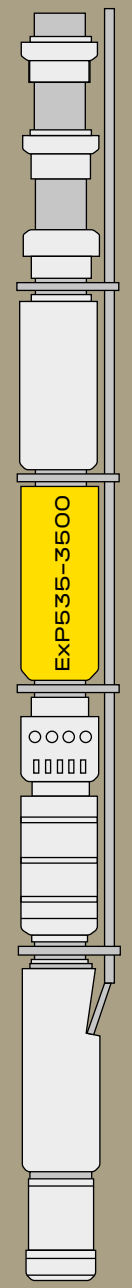
60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 535 series (OD 5.35 in)



Technical data

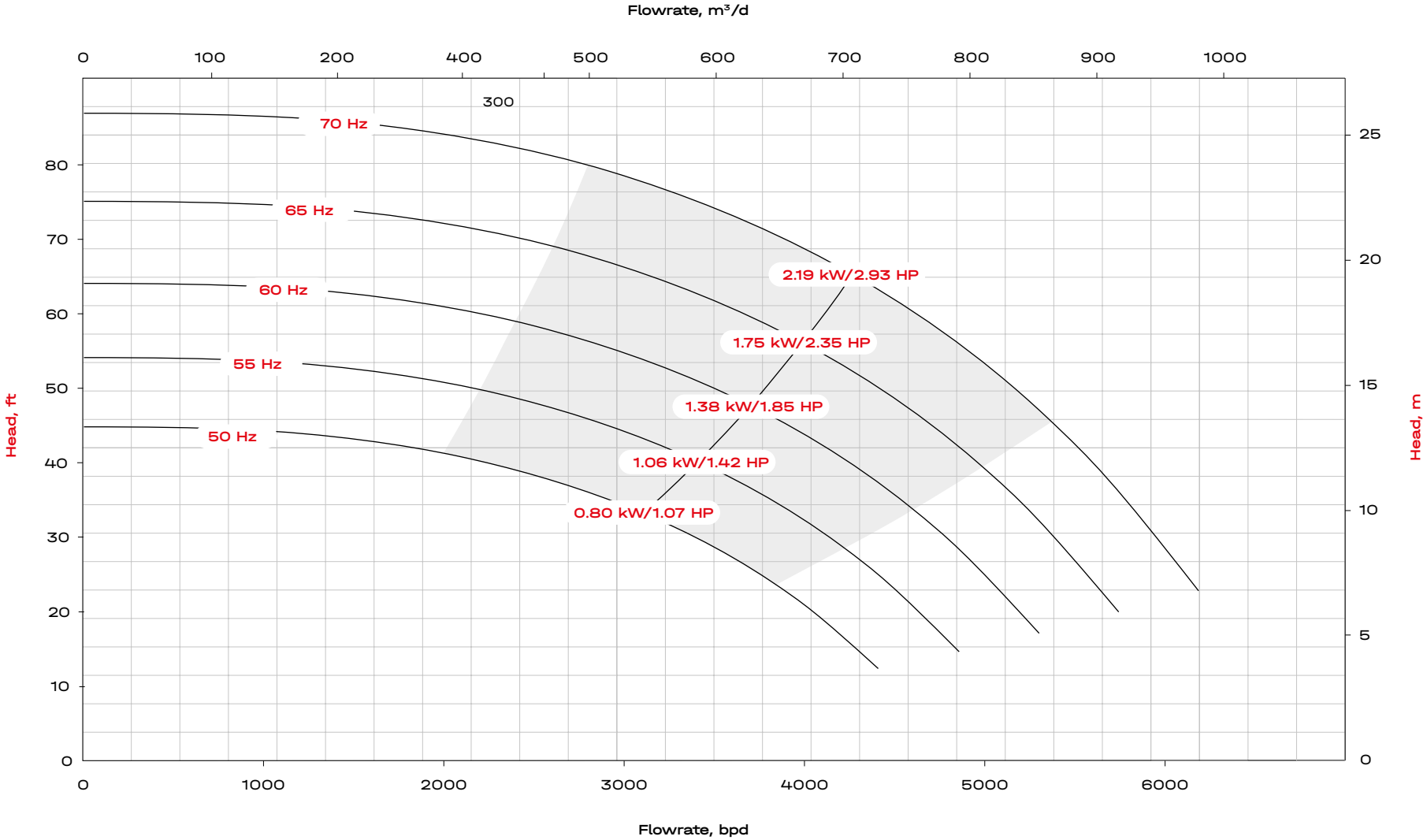
Best Efficiency Point			Limitations		
Efficiency	69%		**Shaft Diameter**	0.87 Inch	22 mm
Capacity	3500 BPD	560 m^3/day	**Shaft broken HP - S13**	434 HP	324 KW
Head	50 ft	15.1 m	**Shaft broken HP - S14**	466 HP	348 KW
Optimum Operating Range	2400-4600 BPD	380-730 m^3/day	**Shaft broken HP - S16**	531 HP	396 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	0.59 $Inch^2$	380 mm^2
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

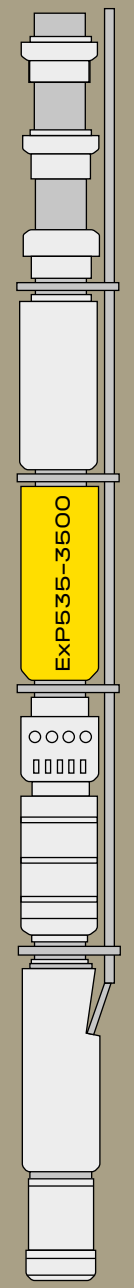
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP535-3500 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 535 series

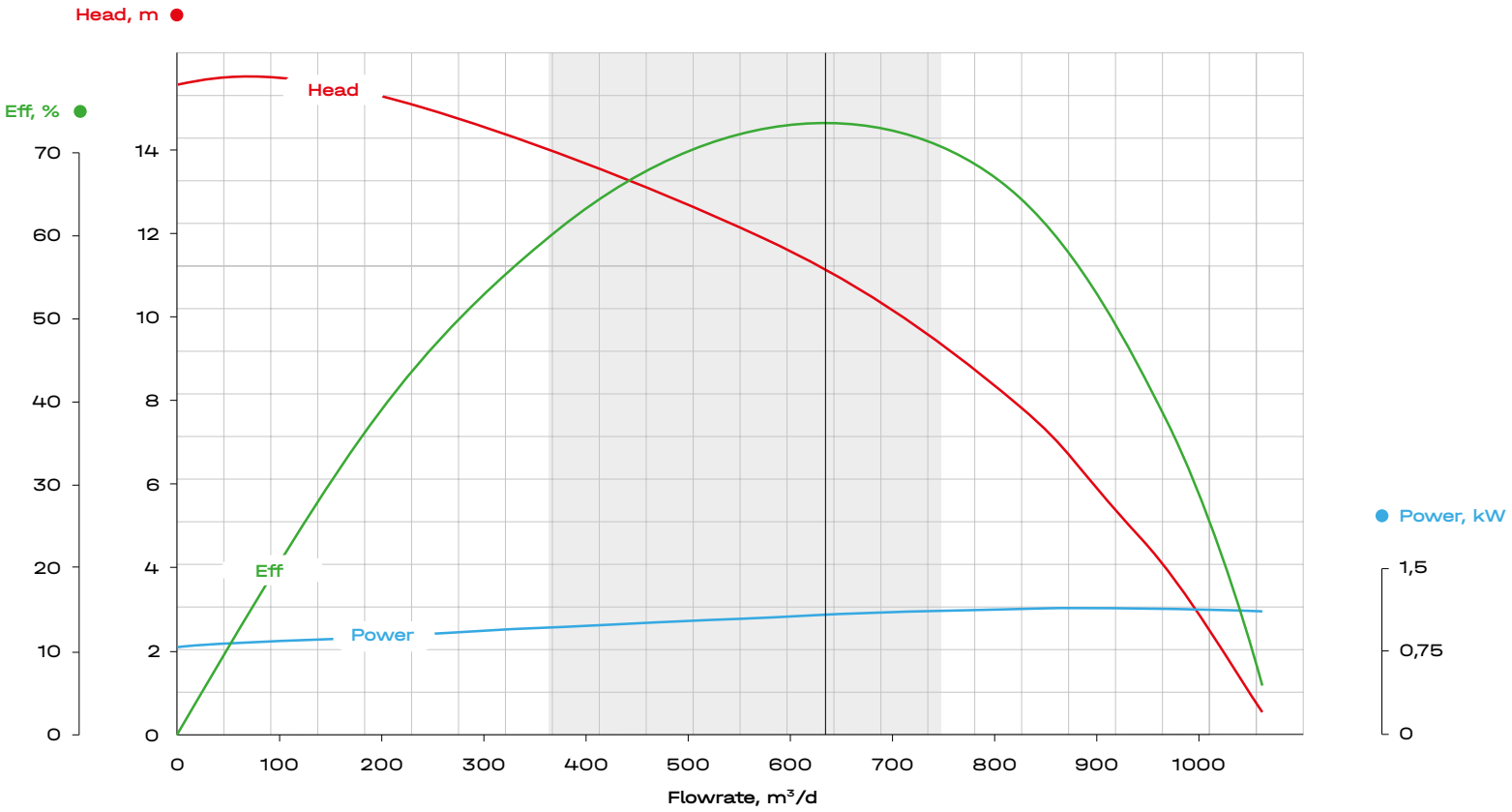




ExP535-4700

Pump performance curve

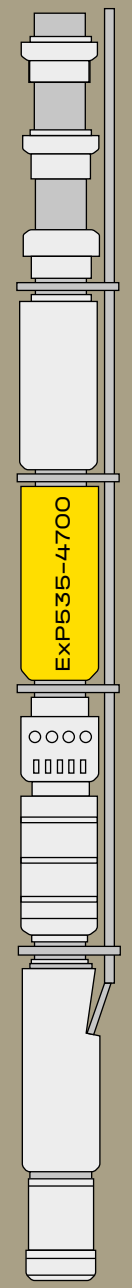
50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 535 series (OD 136 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	73%		**Shaft Diameter**	0.87 Inch	22 mm
Capacity	4000 BPD	630 m³/day	**Shaft broken HP - S13**	362 HP	270 kW
Head	36 ft	11 m	**Shaft broken HP - S14**	389 HP	290 kW
Optimum Operating Range	2330-4710 BPD	370-750 m³/day	**Shaft broken HP - S16**	442 HP	330 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	0.59 Inch²	380 mm²
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

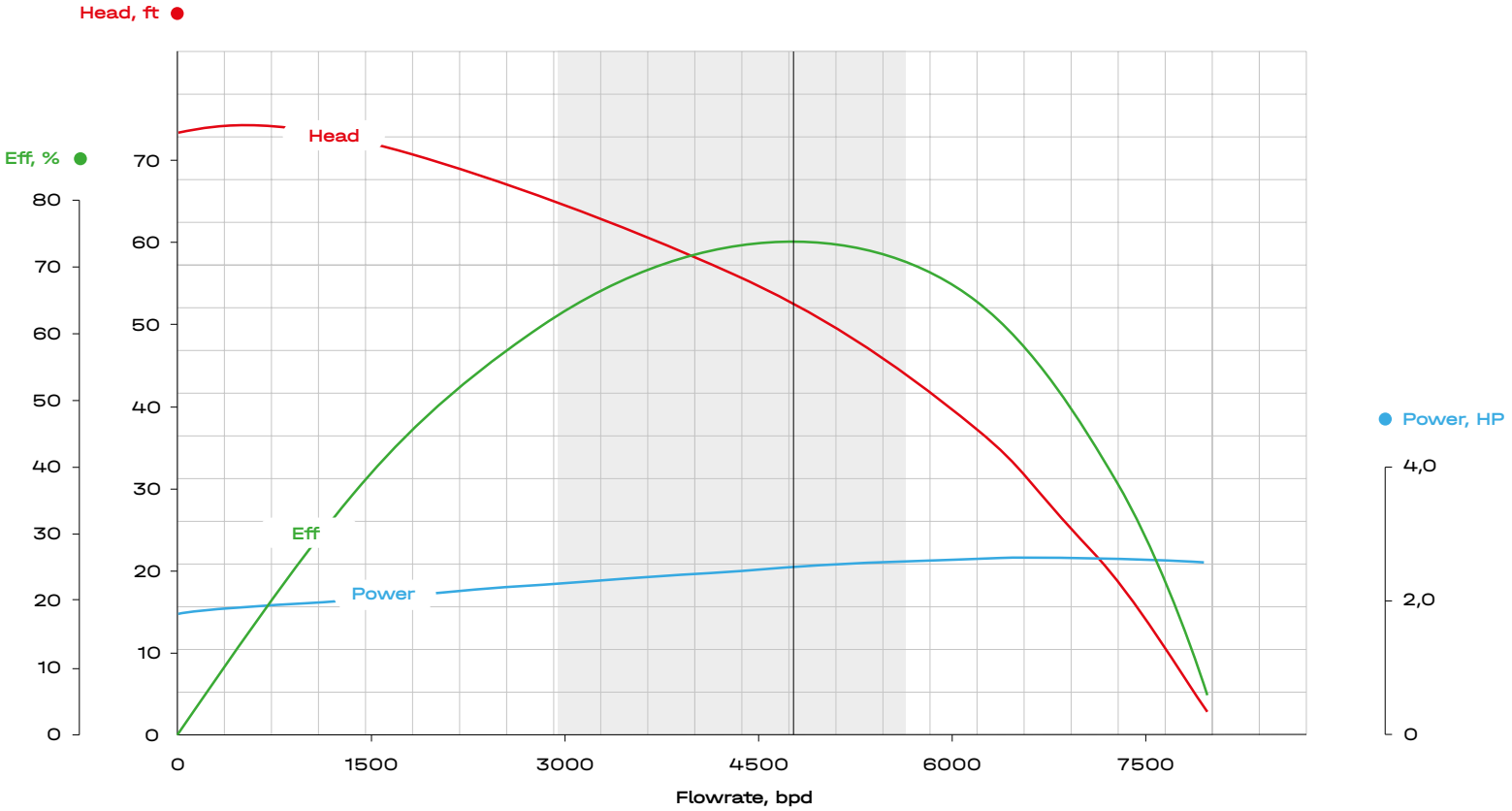
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP535-4700

Pump performance curve

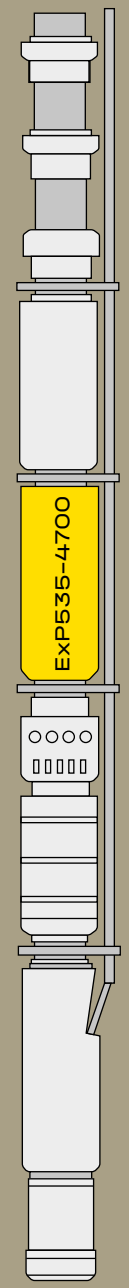
60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 535 series (OD 5.35 in)



Technical data

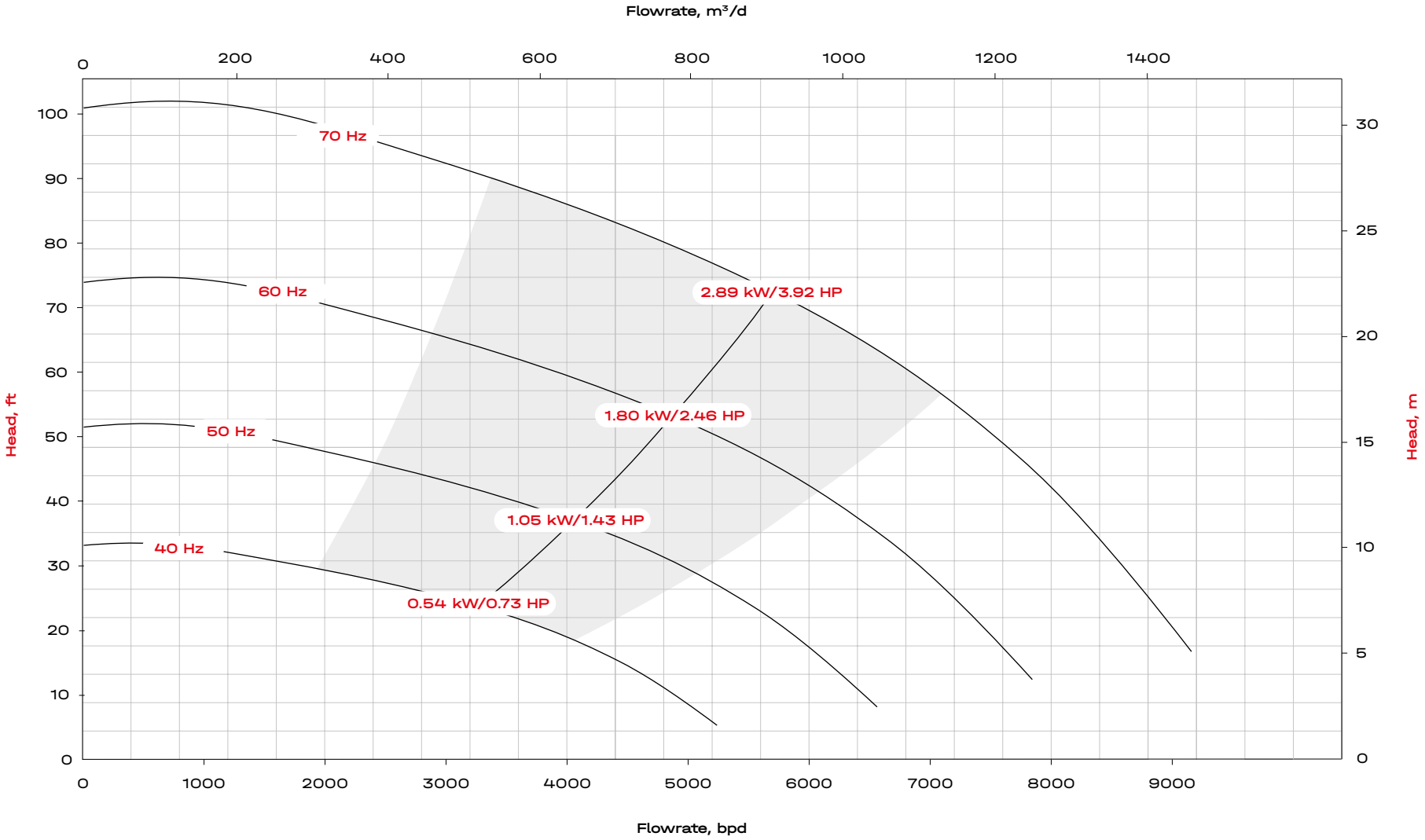
Best Efficiency Point			Limitations		
Efficiency	73%		**Shaft Diameter**	0.87 Inch	22 mm
Capacity	4700 BPD	750 m³/day	**Shaft broken HP - S13**	434 HP	324 KW
Head	53.8 ft	16.4 m	**Shaft broken HP - S14**	466 HP	348 KW
Optimum Operating Range	2830-5660 BPD	450-900m³/day	**Shaft broken HP - S16**	531 HP	396 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	0.59 Inch²	380 mm²
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

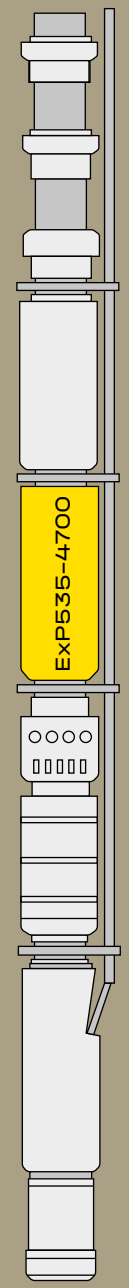
API Recommended Practice 11S2 for Electric Submersible Pump Testing.



ExP535-4700 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 535 series

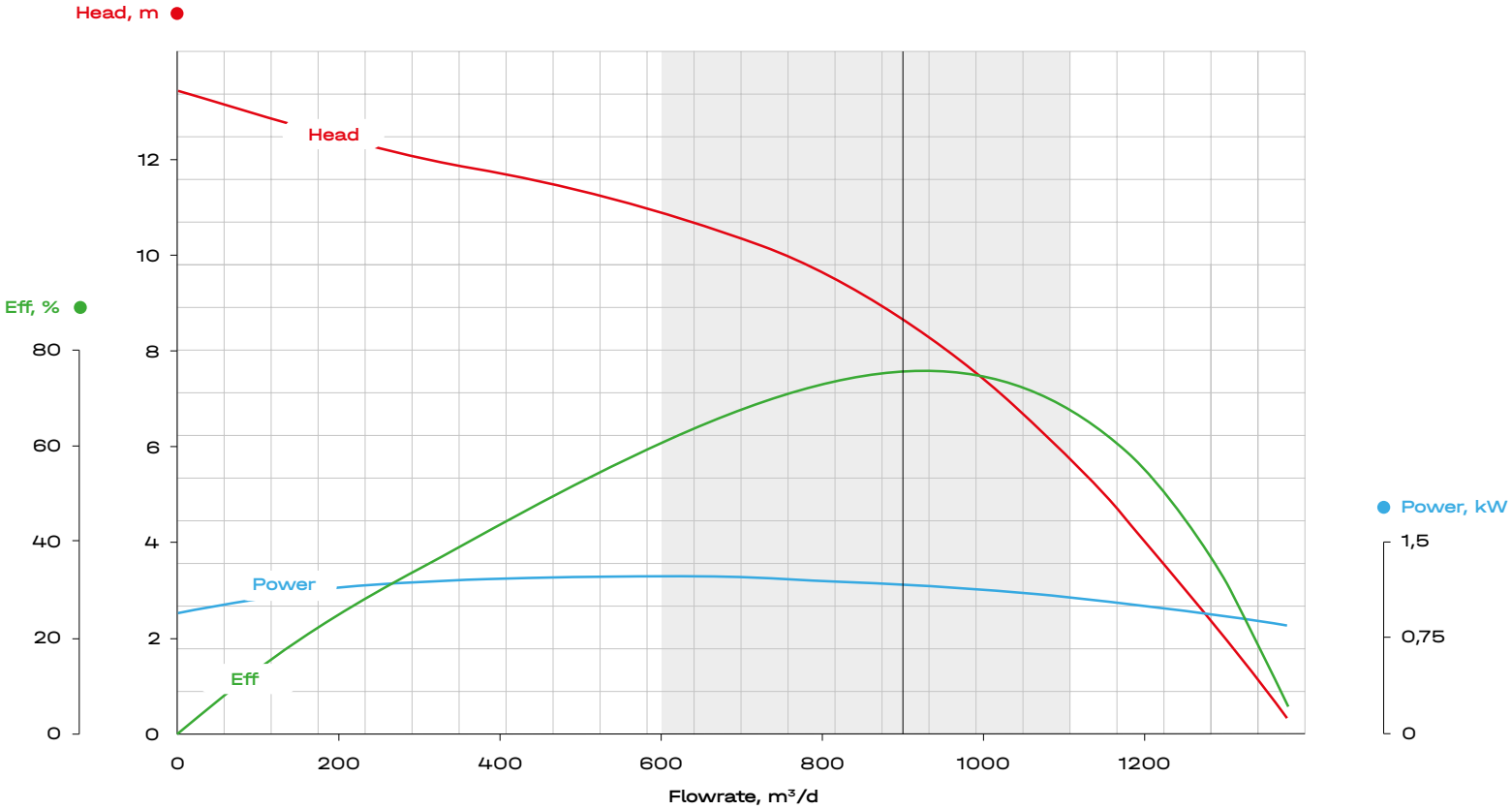


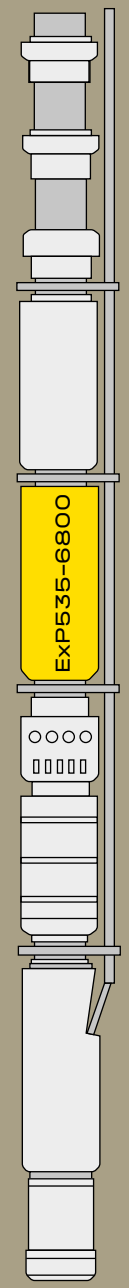


ExP535-6800

Pump performance curve

50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 535 series (OD 136 mm)





Technical data

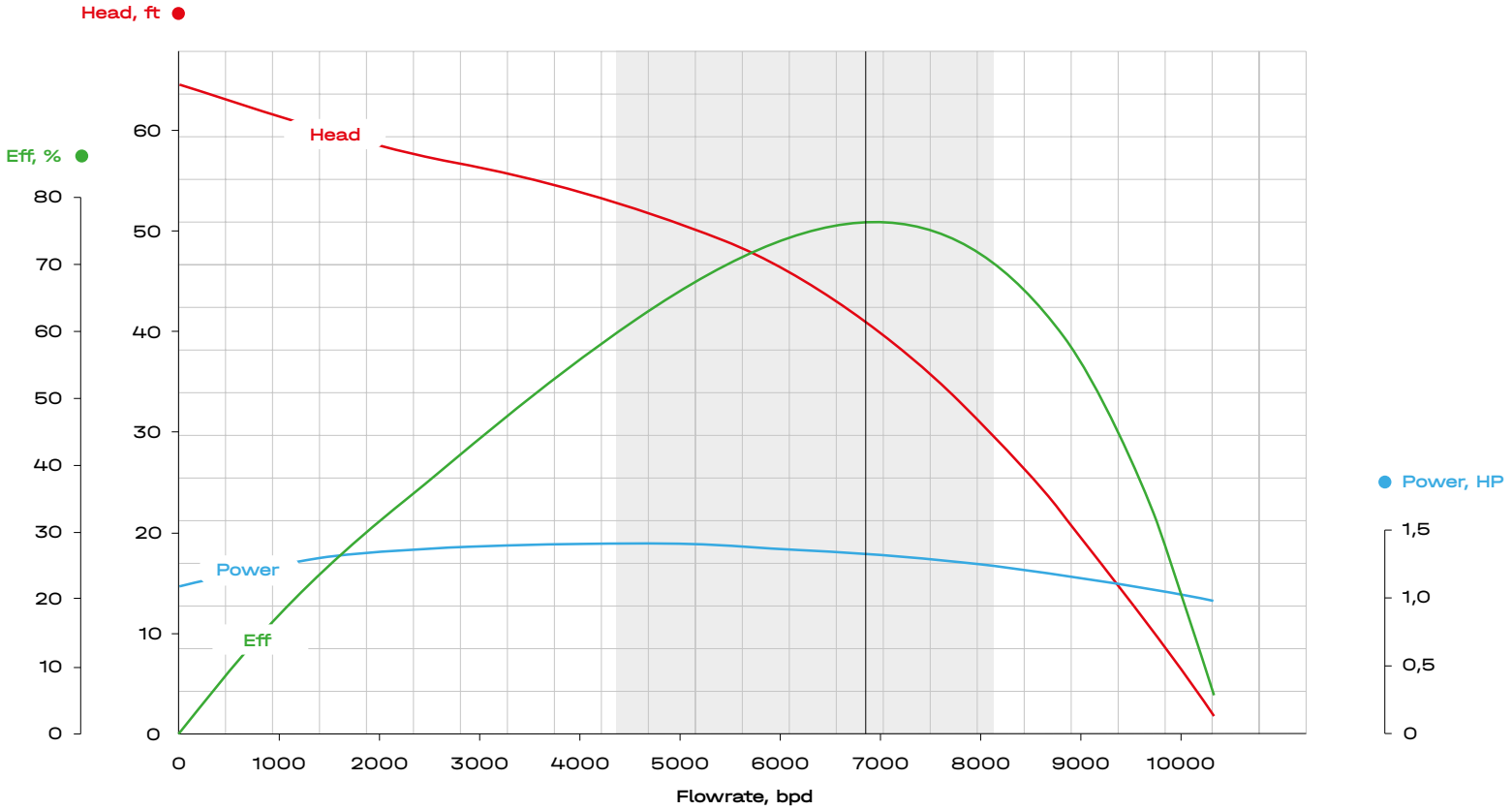
Best Efficiency Point			Limitations		
Efficiency	75%		**Shaft Diameter**	0.87 Inch	22 mm
Capacity	5660 BPD	900 m³/day	**Shaft broken HP - S13**	362 HP	270 kW
Head	28.2 ft	8.6 m	**Shaft broken HP - S14**	389 HP	290 kW
Optimum Operating Range	3780-6920 BPD	600-1100 m³/day	**Shaft broken HP - S16**	442 HP	330 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	0.59 Inch²	380 mm²
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

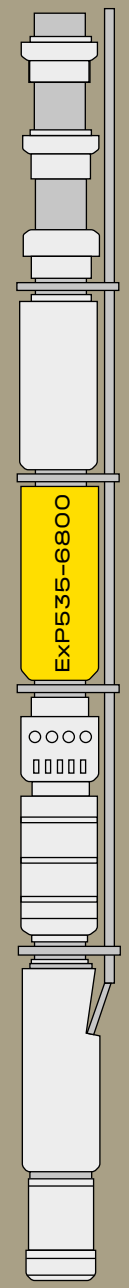
API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP535-6800

Pump performance curve

60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 535 series (OD 5.35 in)





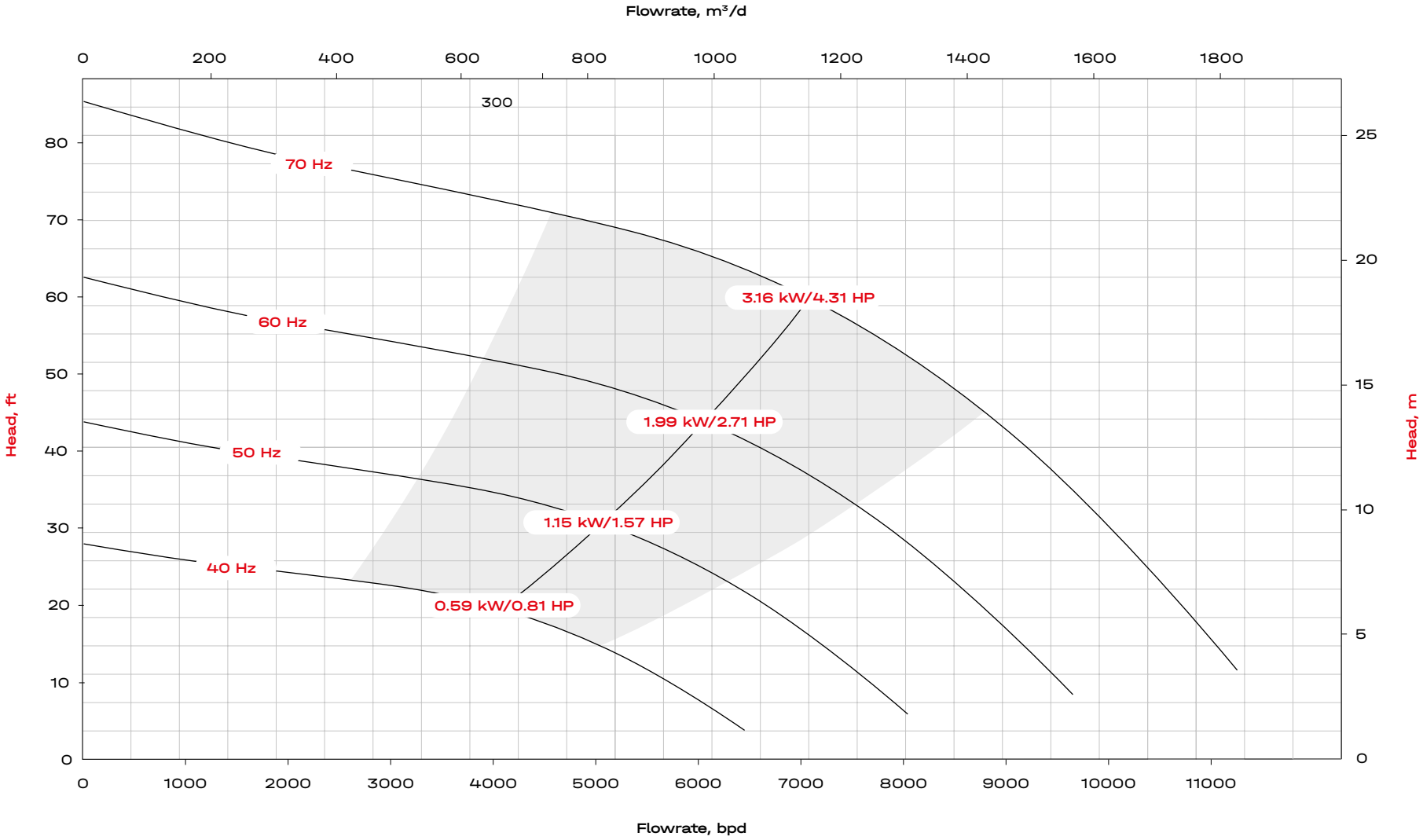
Technical data

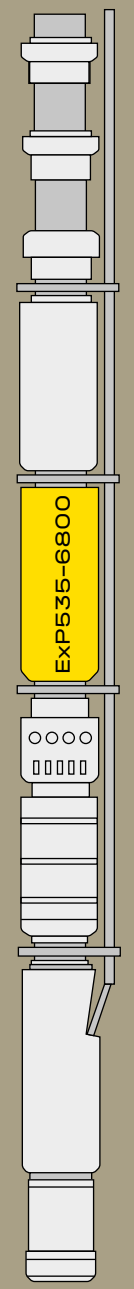
Best Efficiency Point			Limitations		
Efficiency	75%		**Shaft Diameter**	0.87 Inch	22 mm
Capacity	6800 BPD	1080 m³/day	**Shaft broken HP - S13**	434 HP	324 KW
Head	40.6 ft	12.4 m	**Shaft broken HP - S14**	466 HP	348 KW
Optimum Operating Range	4400-8170 BPD	700-1300m³/day	**Shaft broken HP - S16**	531 HP	396 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	0.59 Inch²	380 mm²
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP535-6800 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 535 series

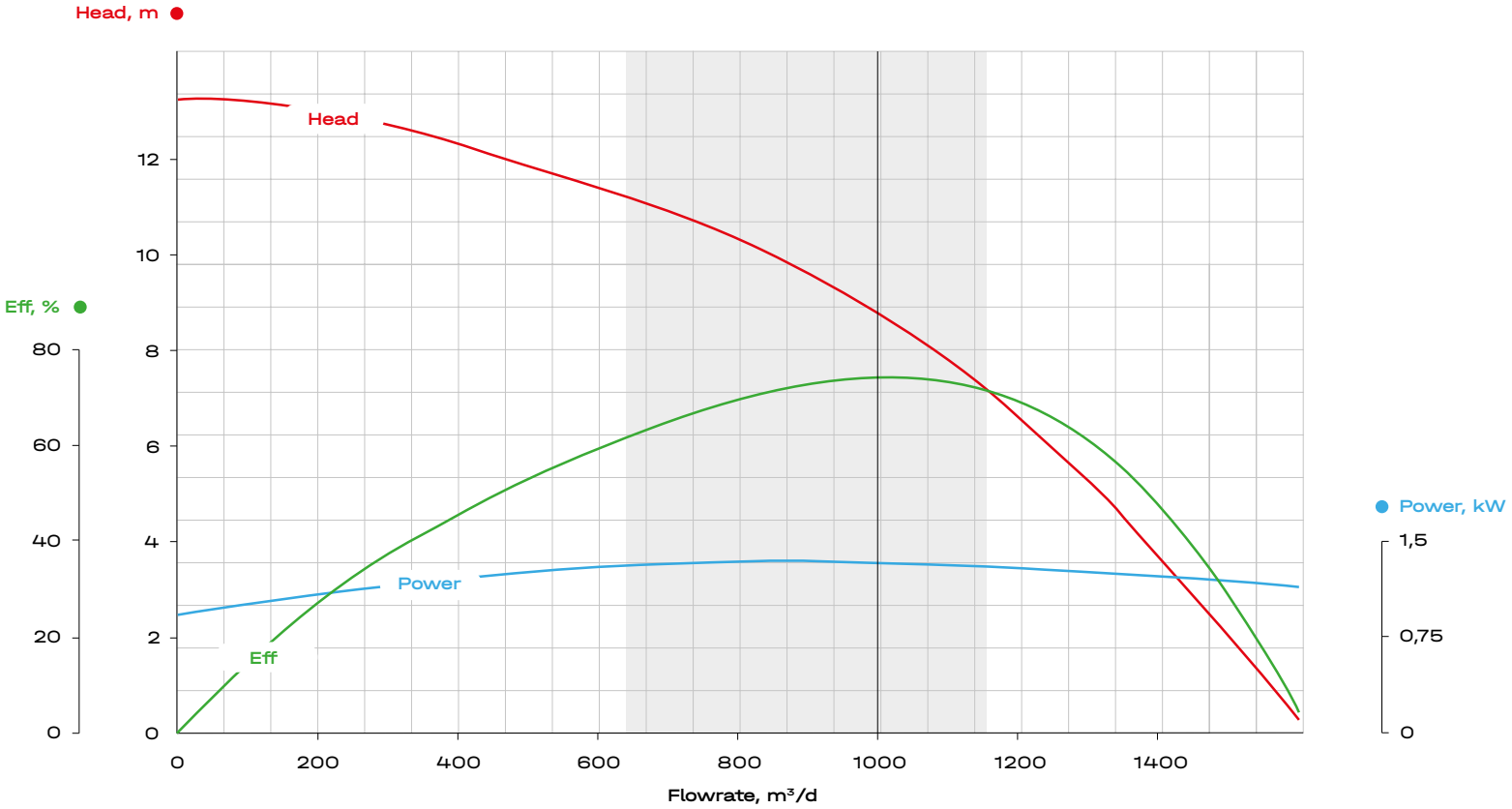




ExP535-7600

Pump performance curve

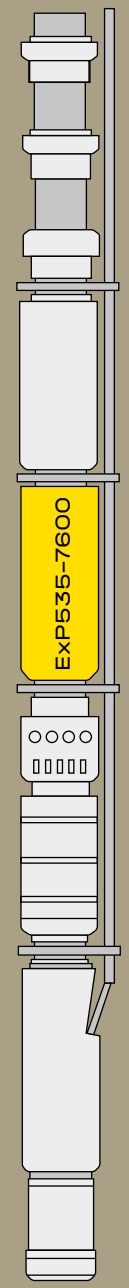
50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 535 series (OD 136 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	75%		**Shaft Diameter**	0.87 Inch	22 mm
Capacity	6290 BPD	1000 m³/day	**Shaft broken HP - S13**	362 HP	270 kW
Head	28.8 ft	8.8 m	**Shaft broken HP - S14**	389 HP	290 kW
Optimum Operating Range	3960-7100 BPD	630-1130 m³/day	**Shaft broken HP - S16**	442 HP	330 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	0.59 Inch²	380 mm²
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

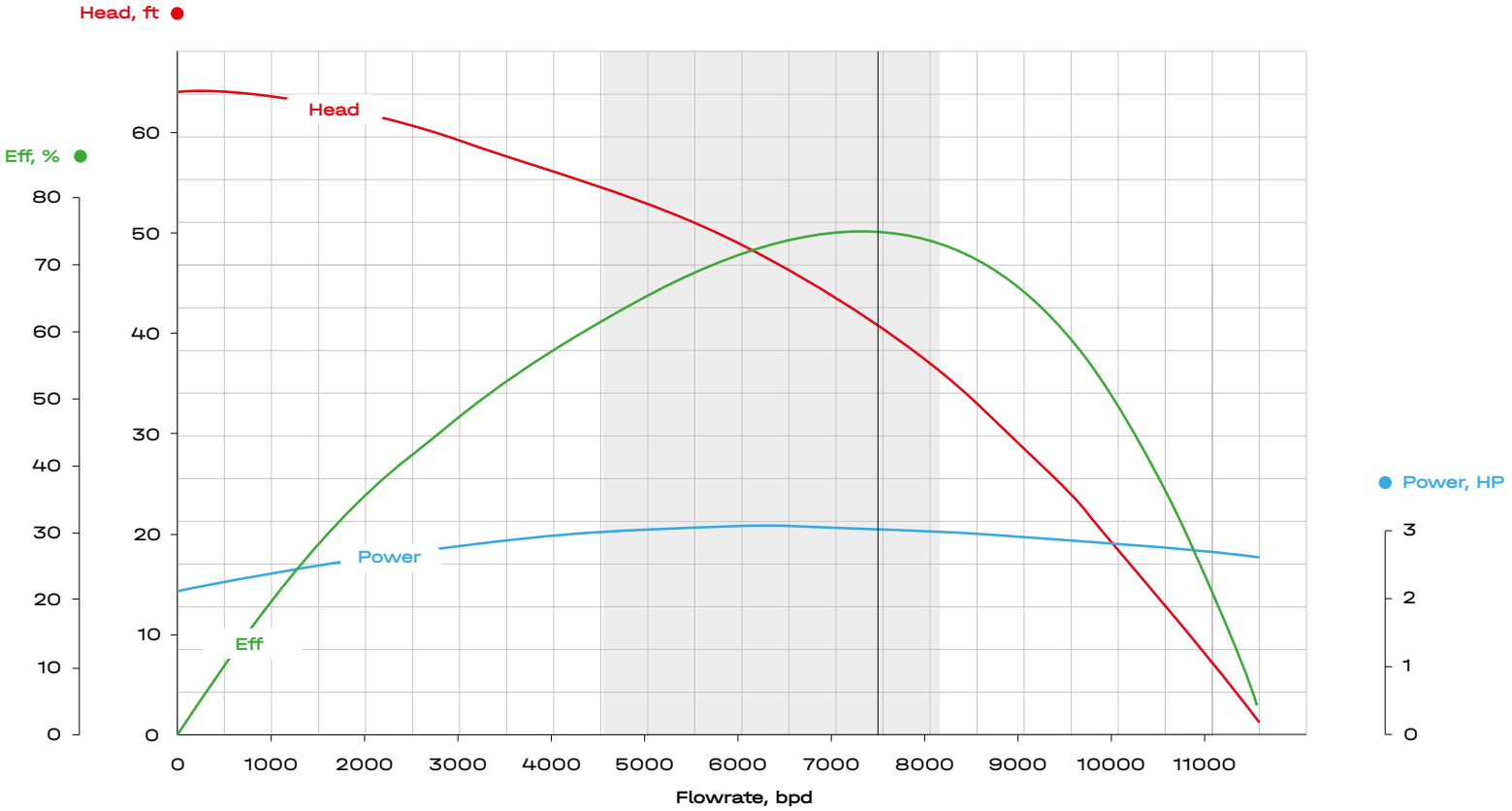
API Recommended Practice 11S2 for Electric Submersible Pump Testing.

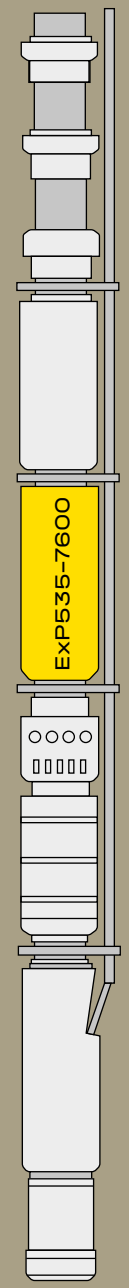


ExP535-7600

Pump performance curve

60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 535 series (OD 5.35 in)





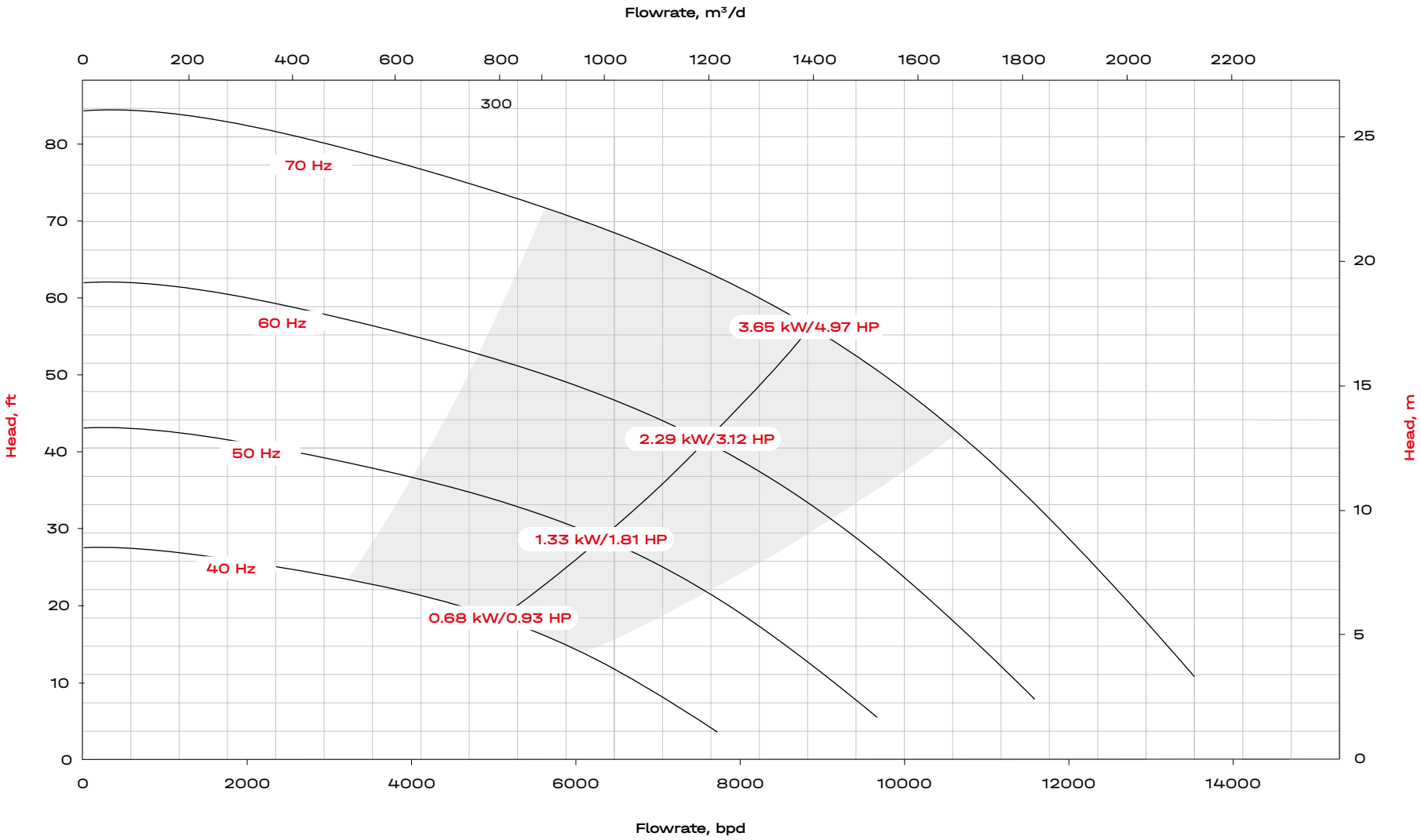
Technical data

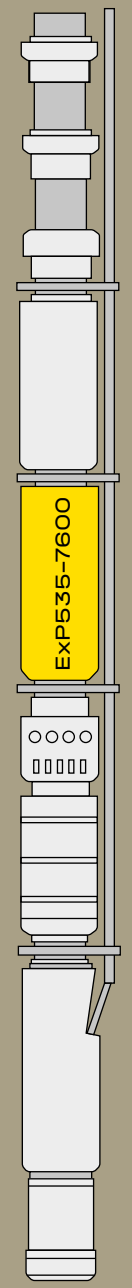
Best Efficiency Point			Limitations		
Efficiency	75%		**Shaft Diameter**	0.87 Inch	22 mm
Capacity	7550 BPD	1200 m^3/day	**Shaft broken HP - S13**	434 HP	324 KW
Head	41.5 ft	12.6 m	**Shaft broken HP - S14**	466 HP	348 KW
Optimum Operating Range	4750-8520 BPD	760-1350m^3/day	**Shaft broken HP - S16**	531 HP	396 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	0.59 $Inch^2$	380 mm^2
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP535-7600 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 535 series

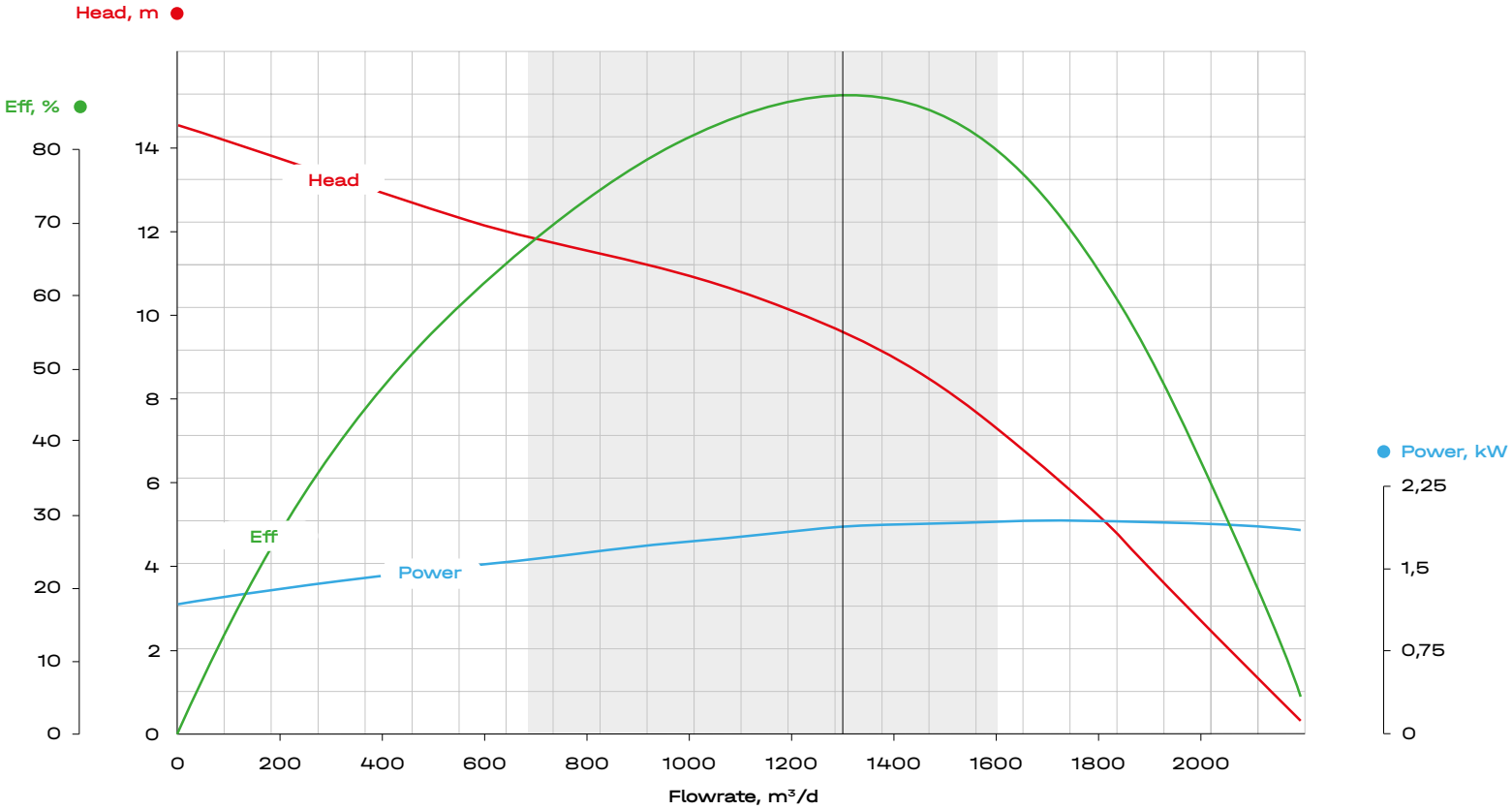




ExP535-9800

Pump performance curve

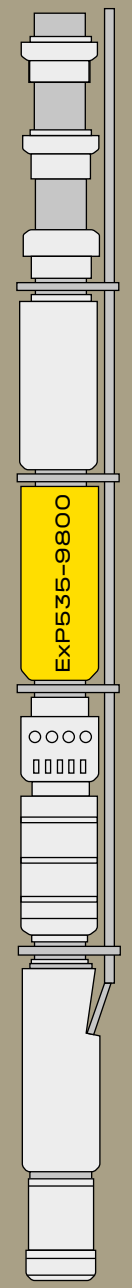
50 Hz/2910 rpm | kg/m³ 1 | 1 STG | 535 series (OD 136 mm)



Technical data

Best Efficiency Point			Limitations		
Efficiency	76%		**Shaft Diameter**	1.18 Inch	30 mm
Capacity	8170 BPD	1300 m³/day	**Shaft broken HP - S13**	925 HP	690 kW
Head	31.8 ft	9.7 m	**Shaft broken HP - S14**	1000 HP	745 kW
Optimum Operating Range	4150–10060 BPD	660–1600 m³/day	**Shaft broken HP - S16**	1050 HP	855 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	1.095 Inch²	707 mm²
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

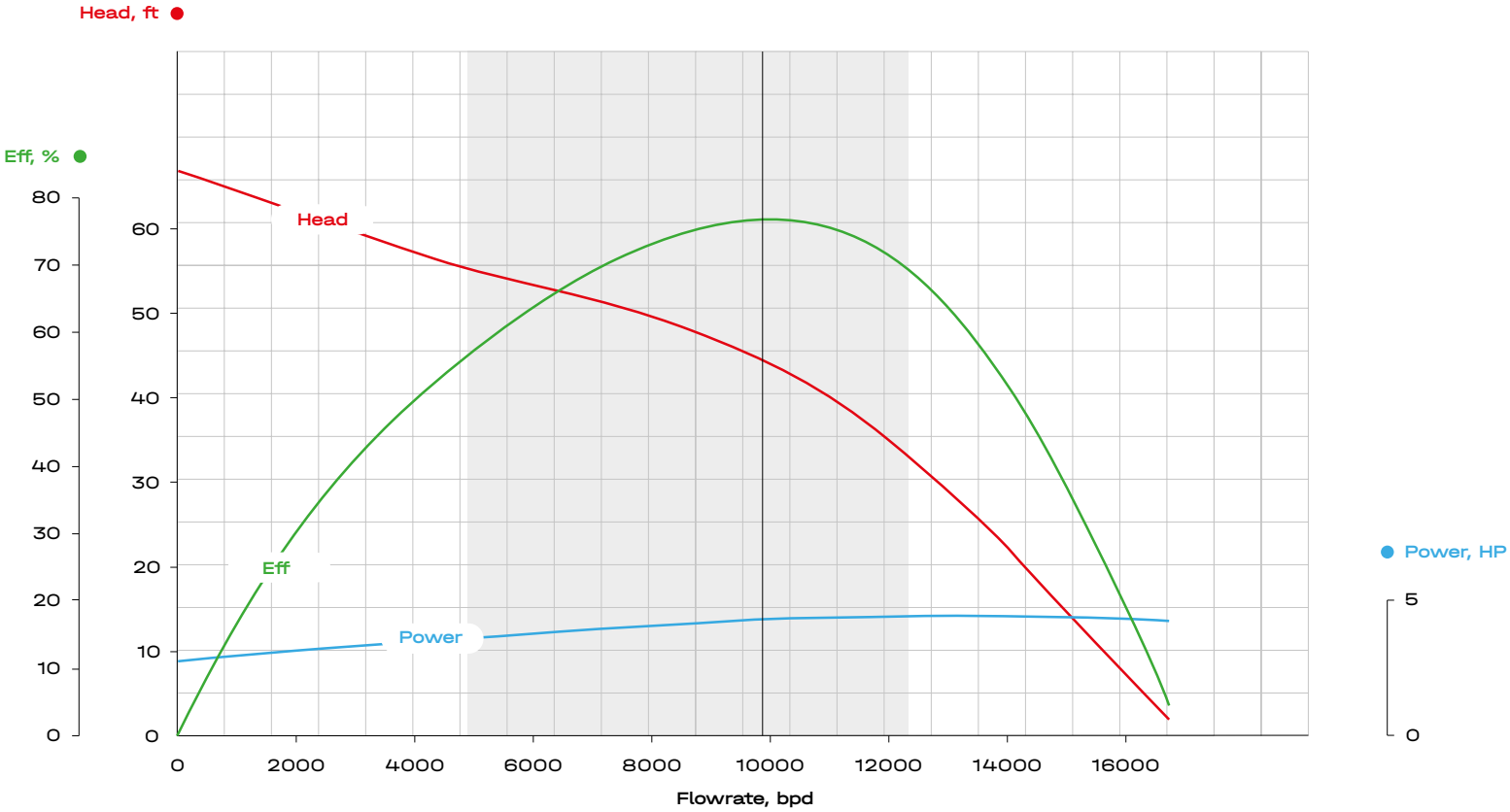
API Recommended Practice 11S2 for Electric Submersible Pump Testing.

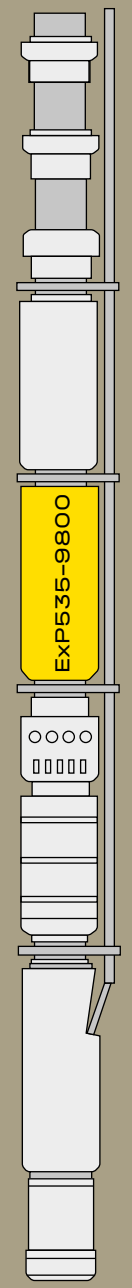


ExP535-9800

Pump performance curve

60 Hz/3492 rpm | Sp.Gr. 1 | 1 STG | 535 series (OD 5.35 in)





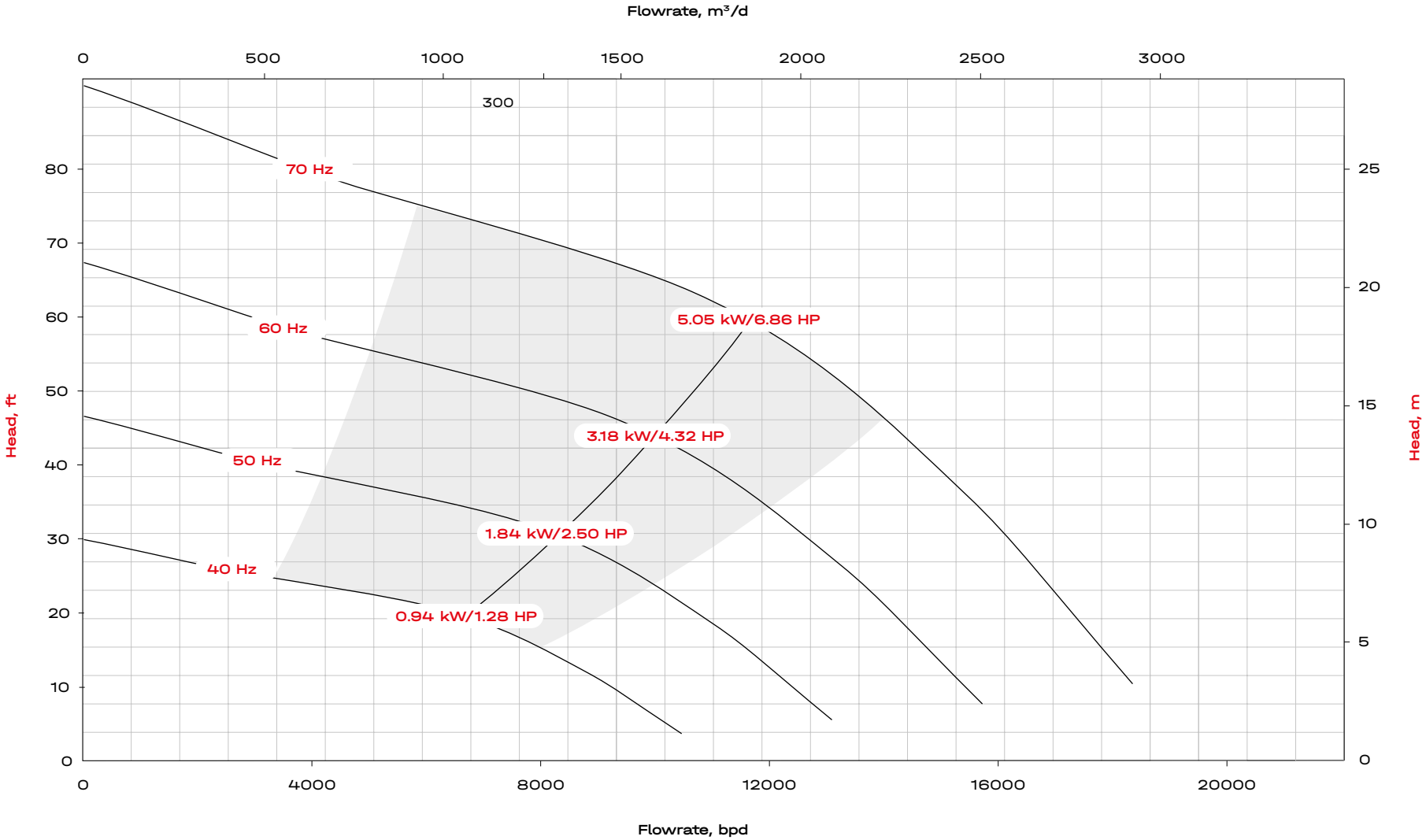
Technical data

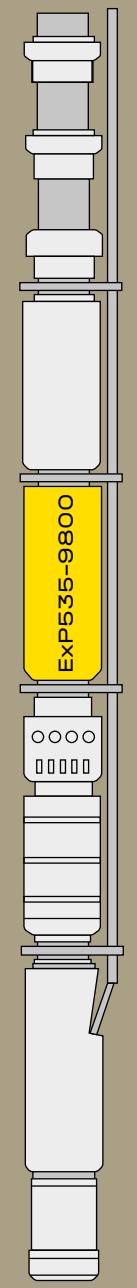
Best Efficiency Point			Limitations		
Efficiency	76%		**Shaft Diameter**	1.18 Inch	30 mm
Capacity	9800 BPD	1560 m^3/day	**Shaft broken HP - S13**	1110 HP	828 kW
Head	45.8 ft	14 m	**Shaft broken HP - S14**	1198 HP	894 kW
Optimum Operating Range	4970–12070 BPD	790–1920 m^3/day	**Shaft broken HP - S16**	1375 HP	1026 KW
Pump Housing Diameter	5.35 in	136 mm	**Shaft Cross Sectional Area**	1.095 $Inch^2$	707 mm^2
Minimus Casing Size	6.04 In	153.5 mm	**Housing Burst Pressure Limit**	6000 psi	414 bar

API Recommended Practice 11S2 for Electric Submersible Pump Testing.

ExP535-9800 Multi Hz Curve

Sp.Gr. 1 | 1 STG | 535 series





Intake systems

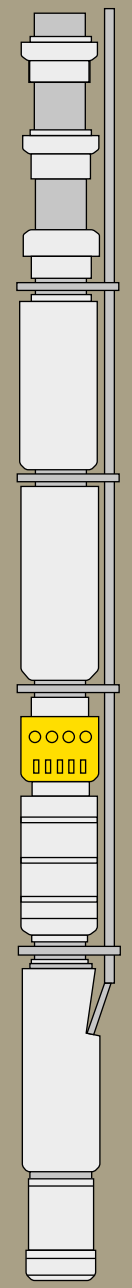
Example of abbreviation
ExG406-1500 0.87 S14 CR1 AR1

Short name:
ExG406-1500

Ex	G	406	1500	S	0.87	S14	CR1	AR1
1	2	3	4	5	6	7	8	9

1	Manufacturer Exceline®
2	Intake type: I – Intake G – Gas separator H – Advanced Gas Handler GH – Gas Separator-Handler
3	Intake series
4	Nominal capacity, bpd at 60 Hz
5	Configuration: S – Single, with intake T – Tandem, without intake
6	Shaft diameter, inch
7	Shaft material and yield strength: S14 Stainless steel (1370 MPa) S16 Stainless steel (1570 MPa) I13 Inconel alloy (1275 MPa) I14 Inconel alloy (1370 MPa)

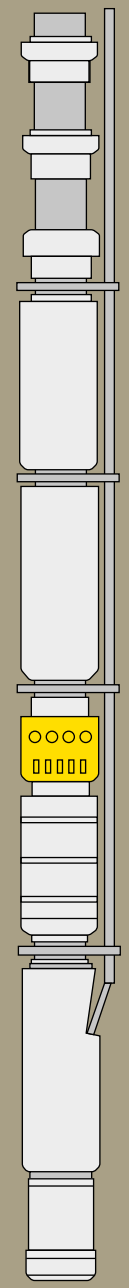
8	Corrosion resistance design: CR0 – carbon steel head, base and housing, carbon steel fasteners CR1 – stainless steel head and base, carbon steel housing with anti-corrosion coating (super stainless flame coating), monel fasteners CR2 – stainless steel head, base and housing, monel fasteners
9	Abrasion resistance AR1 – For fluid containing solids up to 175 ptb (500 mg/l). Applicable for all Floater pumps. AR2 – For fluid containing solids up to 350 ptb (1000 mg/l). Applicable only for Compression and Semi-compression pumps.



Intake systems

Summary

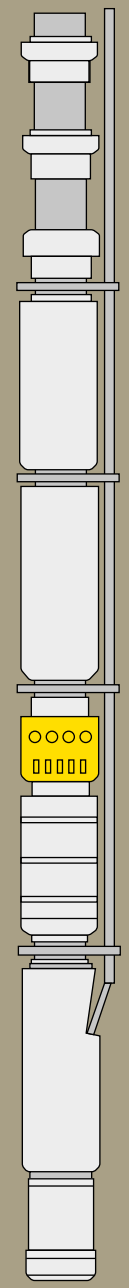
Series	Description	Operation range		Housing diameter		Shaft		Length		Weight	
		BPD @ 60 Hz	m^3/D @ 50 Hz	in.	mm	in.	mm	ft	m	lb	kg
272	ExI272-630	630	80	2.72	69	0.5	12.8	0.78	0.238	11	5
319	ExI319-1900	1900	250	3.19	81	0.55	14	0.78	0.238	13.2	6
319	ExI319-1900	1900	250	3.19	81	0.67	17	0.78	0.238	13.2	6
362	ExI362-5000	5000	660	3.62	92	0.79	20	0.93	0.283	19.8	9
406	ExI406-5000	6300	830	4.06	103	0.87	22	0.93	0.283	24.3	11
406	ExI406-6300	6300	830	4.06	103	0.98	25	0.93	0.283	24.3	11
535	ExI535-9400	9400	1240	5.35	136	1.18	30	1.21	0.37	55.1	25



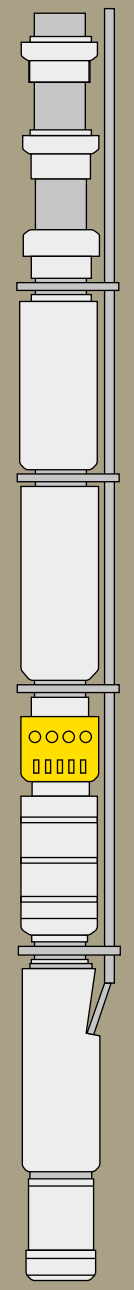
Gas Separator

Summary

Series	Description	Configuration	Operation range		Transmitted power		Power own needs		Housing diameter		Shaft		Length		Weight	
			BPD @ 60 Hz	m³/D @ 50 Hz	Hp @ 60 Hz	kW @ 50 Hz	Hp @ 60 Hz	kW @ 50 Hz	in.	mm	in.	mm	ft	m	lb	kg
272	ExG272-750	S	75-750	10–100	TBA	TBA	TBA	TBA	2.72	69	0.5	12.8	2.4	0.74	44	20
362	ExG362-1900	S	190-1900	25-250	277	170	1.6	1	3.62	92	0.79	20	2.6	0.76	61	28
362	ExG362-1900	T	190-1900	25-250	228	140	1.6	1	3.62	92	0.79	20	2.3	0.71	56	26
406	ExG406-1900	S	190-1900	25-250	374	230	1.6	1	4.06	103	0.87	22	2.6	0.76	66	30
406	ExG406-3800	S	380-3800	50-500	374	230	3.2	2	4.06	103	0.87	22	2.6	0.76	73	33
535	ExG535-9000	S	2000-9000	260-1200	TBA	TBA	6	3.7	4.06	103	0.87	22	2.6	0.76	145	65.8
535	ExG535-15000	S	2000-15000	260-2000	TBA	TBA	14	8.6	4.06	103	0.87	22	2.6	0.76	160	72.6



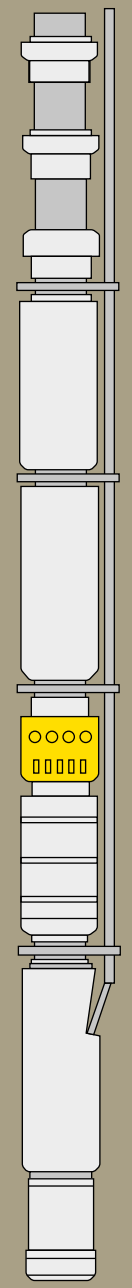
Gas Handler



Summary

Series	Description	Configuration	Operation range		Transmitted power		Power own needs		Housing diameter		Shaft		Length	
			BPD @ 60 Hz	m³/D @ 50 Hz	Hp @ 60 Hz	kW @ 50 Hz	Hp @ 60 Hz	kW @ 50 Hz	in.	mm	in.	mm	ft	m
272	ExH272-600	S	110-600	15–80	100	62	1.6	1	2.72	69	0.98	12.8	4	1.22
319	ExH319-750	S	120-750	16–100	TBA	TBA	1.6	1	3.19	81	0.67	17	4.08	1.24
362	ExH362-1900	S	190-1900	25–250	277	170	1.6	1	3.62	92	0.79	20	2.2	0.68
362	ExH362-1500	T	150-1500	20–200	260	160	3.2	2	3.62	92	0.79	20	2	0.62
406	ExH406-1900	S	190-1900	25–250	374	230	3.9	2.4	4.06	103	0.87	22	2.3	0.71
406	ExH406-1900	T	170-1700	22–225	360	220	3.9	2.4	4.06	103	0.87	22	2.3	0.66

Gas Separator-Handler



Summary

Series	Description	Configuration	Operation range		Transmitted power		Power own needs		Housing diameter		Shaft		Length	
			BPD @ 60 Hz	m³/D @ 50 Hz	Hp @ 60 Hz	kW @ 50 Hz	Hp @ 60 Hz	kW @ 50 Hz	in.	mm	in.	mm	ft	m
362	ExGH362-1900	S	190-1900	25-250	277	170	3.2	2	3.62	92	0.79	20	3.7	1.13
362	ExGH362-1900	T	190-1900	25-250	270	165	3.2	2	3.62	92	0.79	20	3.5	1.07
406	ExGH406-3800	S	380-3800	50-500	374	230	3.9	2.4	4.06	103	0.87	22	3.8	1.17
406	ExGH406-3800	T	380-3800	50-500	310	190	3.9	2.4	4.06	103	0.87	22	3.7	1.12

Motor protectors

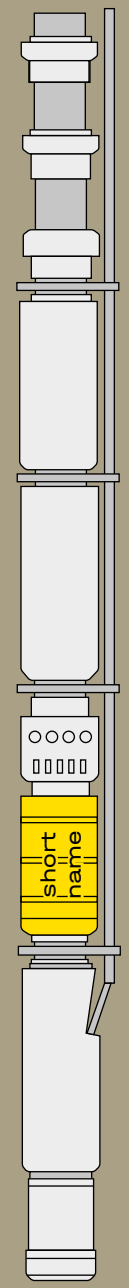
Example of abbreviation
ExS406 LSBPB HL 0.87 S14 CR1 AR1

Short name:
ExS406 LSBPB

Ex	S	406	LSBPB	HL	0.87	S14	CR1	T1
1	2	3	4	5	6	7	8	9

1	Manufacturer Exceline®
2	S – Protector (Seal)
3	Protector series
4	Chambers configuration from head to base: L – labyrinth B – bag S – series connection P – parallel connection
5	Thrust bearing: STB – standard HL – High load thrust bearing
6	Shaft diameter, inch

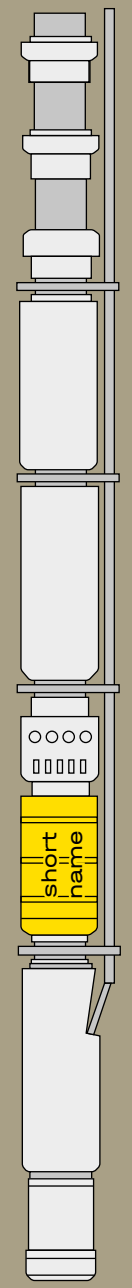
7	Shaft material and yield strength: S8 Stainless steel (785 MPa) S11 Stainless steel (1080 MPa) S13 Stainless steel (1275 MPa) S14 Stainless steel (1370 MPa) S16 Stainless steel (1570 MPa) M8 Monel alloy (785 MPa) I8 Inconel alloy (785 MPa) I11 Inconel alloy (1080 MPa) I13 Inconel alloy (1275 MPa) I14 Inconel alloy (1370 MPa)
8	Corrosion resistance design: CR0 – carbon steel head, base and housing, carbon steel fasteners CR1 – stainless steel head and base, carbon steel housing with anti-corrosion coating (super stainless flame coating), monel fasteners CR2 – stainless steel head, base and housing, monel fasteners
9	Ambient temperature rating T1 – for 248°F (120°C) T2 – for 302°F (150°C) T3 – for 338°F (170°C)



Motor Protector Specification

Short name, Maximum motor power, Control range, Thrust bearing load limit, Max. fluid temperature, Power own needs

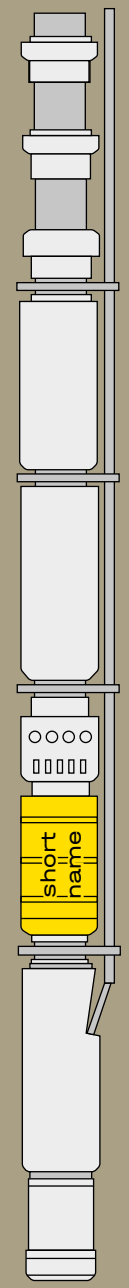
Protector	Short name	Maximum motor power		Control range	Thrust bearing load limit		Max. fluid tempera-ture	Power own needs			
								No load		Max. load	
		Hp @ 60 Hz	kW @ 50 Hz	rpm	lb @ 60 Hz	kg @ 50 Hz	°F (°C)	Hp @ 60 Hz	kW @ 50 Hz	Hp @ 60 Hz	kW @ 50 Hz
272	ExS272 BSB	147	90	2100-6000	1190	450	338 (170)	0.8	0.5	1.6	1
	ExS272 LSBSB										
	ExS272 LSBPB										
319	ExS319 BSB	204	125	2100-6000	3174	1200	338 (170)	0.65	0.4	2.5	1.5
	ExS319 LSBSB										
	ExS319 LSBPB										
362	ExS362 BSB	408	250	2100-4200	2117	800	338 (170)	0.65	0.4	1.47	0.9
	ExS362 LSBSB										
	ExS362 LSBPB										
406	ExS406 BSB	587	360	2100-4200	3174	1200	338 (170)	0.82	0.5	2.5	1.5
	ExS406 LSBSB										
	ExS406 LSBPB										
512	ExS512 BSB	816	500	2100-4200	4409	2000	338 (170)	1.3	0.8	3.3	2
	ExS512 LSBSB										
	ExS512 LSBPB										



Motor Protector Specification

Short name, Housing diameter, Shaft diameter, Length, Weight, Oil Volume

Protector	Short name	Housing diameter		Shaft diameter		Length		Weight		Oil Volume	
		in.	mm	in.	mm	ft	m	lb	kg	gal	ltr
272	ExS272 BSB	2.72	69	0.551	14	6.3	1.91	66	30	0.66	2.5
	ExS272 LSBSB										
	ExS272 LSBPB										
319	ExS319 BSB	3.19	81	0.551	14	9	2.76	132	60	1.72	2.7
	ExS319 LSBSB										
	ExS319 LSBPB										
362	ExS362 BSB	3.62	92	0.98	25	7.9	2.42	143	65	1.72	6.5
	ExS362 LSBSB										
	ExS362 LSBPB										
406	ExS406 BSB	4.06	103	0.98	25	9	2.76	392	78	2.11	8
	ExS406 LSBSB										
	ExS406 LSBPB										
512	ExS512 BSB	5.12	130	1.38	35	9.1	2.77	242	110	3.04	11.5
	ExS512 LSBSB										
	ExS512 LSBPB										



Motors

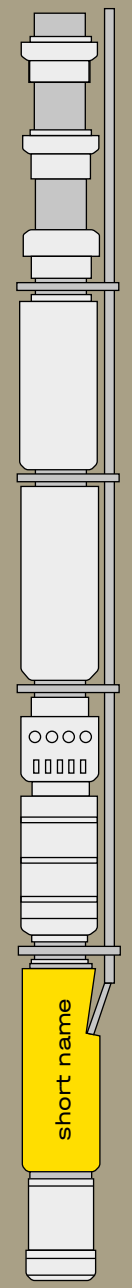
Example of abbreviation
ExMA460-200 3600 1620V 76A S CR1 T2

Short name:
ExMA460-200

Ex	M	A	460	200	3600	1620V	76A	S	CR1	1.1S	T2
1	2	3	4	5	6	7	8	9	10	11	12

1	Manufacturer Exceline®
2	M – Motor
3	Motor type: A – Asynchronous motor P – Permanent magnet
4	Series
5	Motor power @ 60Hz, hp
6	Speed rate: 3600 rpm 6000 rpm
7	Voltage, V
8	Current, A

9	Configuration S – single UT – upper tandem CT – central tandem LT – lower tandem
10	Corrosion resistance design: CR0 – carbon steel head, base and housing, carbon steel fasteners CR1 – stainless steel head and base, carbon steel housing with anti-corrosion coating (super stainless flame coating), monel fasteners CR2 – stainless steel head, base and housing, monel fasteners
11	Shaft diameter and type of spline, inch/mm: I – Involute S – straight
12	Ambient temperature rating T1 – for 248°F (120°C) T2 – for 302°F (150°C) T3 – for 338°F (170°C)

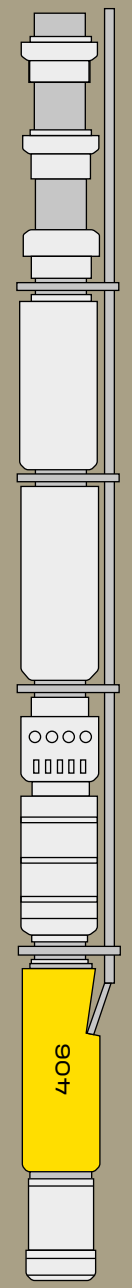


406 Series Induction Motors

Range: 2,100 – 4,200 rpm

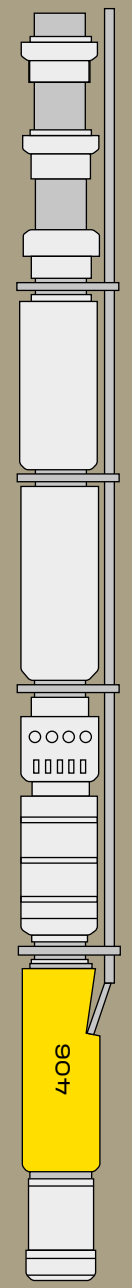
Technical Data

Ambient temperature rating	60 Hz		50 Hz		Amperage	Qty of sections of rotor	Coefficient of efficiency	Cos y	Velocity of cooling liquid	Shaft diameter		Configuration	Length		Weight	
	Power	Voltage	Power	Voltage												
	hp	V	kW	V	A				m/c	inch	mm		ft	m	lb	kg
T1	25	720	16	600	22,1	6	82,7	0,85	0,08	1,1	28	S	10,03	3,04	363	165
		2040		1700	8,5	6	80,6	0,8	0,1	1,1	28	S	10,03	3,04	363	165
T3		816		680	20	7	83,3	0,83	0,1	1,1	28	S	11,19	3,39	407	185
		2160		1800	7,7	7	80,9	0,84	0,1	1,1	28	S	11,19	3,39	407	185
T1	30	900	20	750	23	7	83	0,81	0,1	1,1	28	S	11,19	3,39	407	185
		2100		1750	10,5	6	78,9	0,8	0,1	1,1	28	S	10,03	3,04	363	165
T3		960		800	21	8	83,2	0,83	0,1	1,1	28	S	12,34	3,74	455	207
		2160		1800	9,8	8	81,2	0,83	0,1	1,1	28	S	12,34	3,74	455	207
T1	35	900	22	750	25	7	82,4	0,83	0,1	1,1	28	S	11,19	3,39	407	185
		2220		1850	10,5	8	80,7	0,83	0,1	1,1	28	S	12,34	3,74	455	207
T3		1080		900	21	9	83,4	0,83	0,1	1,1	28	S	13,5	4,09	499	227
		2280		1900	10	9	81,8	0,84	0,1	1,1	28	S	13,5	4,09	499	227
T1	40	1020	24	850	24.0	8	82,7	0,83	0,1	1,1	28	S	12,34	3,74	455	207
		2160		1800	12	7	79,8	0,8	0,1	1,1	28	S	11,19	3,39	407	185
T3		1080		900	22	9	82,9	0,84	0,1	1,1	28	S	13,5	4,09	499	227
		2340		1950	11	9	81,5	0,84	0,1	1,1	28	S	13,5	4,09	499	227



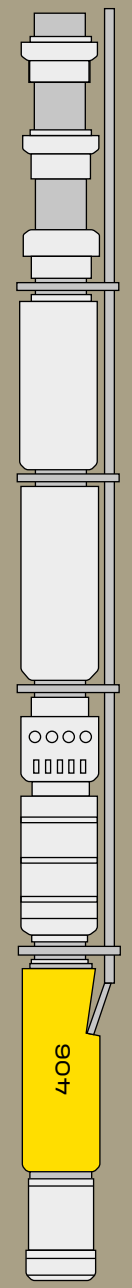
406 Series Induction Motors

Ambient temperature rating	60 Hz		50 Hz		Amperage	Qty of sections of rotor	Coefficient of efficiency	Cos y	Velocity of cooling liquid	Shaft diameter		Configuration	Length		Weight	
	Power	Voltage	Power	Voltage												
	hp	V	kW	V	A				m/c	inch	mm		ft	m	lb	kg
T1	45	1140	28	950	24,7	9	82,5	0,84	0,1	1,1	28	S	13,5	4,09	499	227
		2280		1900	13	8	80,3	0,83	0,1	1,1	28	S	12,34	3,74	499	207
T3		1200		1000	23,2	10	82,6	0,85	0,1	1,1	28	S	14,65	4,44	546	248
		2160		1800	13,5	10	81,6	0,83	0,1	1,1	28	S	14,65	4,44	546	248
T1	55	1320	32	1100	25,2	10	82,7	0,81	0,1	1,1	28	S	14,65	4,44	546	248
		2400		2000	13	11	81,5	0,83	0,1	1,1	28	S	15,81	4,79	590	268
T3		1320		1100	23,8	11	82,3	0,86	0,1	1,1	28	S	15,81	4,79	590	268
		2400		2000	13	11	81,5	0,83	0,1	1,1	28	S	15,81	4,79	590	268
T1	60	1440	36	1200	25,6	11	82,5	0,82	0,1	1,1	28	S	15,81	4,79	590	268
		2520		2100	15	11	81	0,82	0,1	1,1	28	S	15,81	4,79	590	268
T3		1500		1250	24,5	12	82,6	0,84	0,1	1,1	28	S	16,96	5,14	636	289
		2640		2200	14,5	12	81,3	0,83	0,1	1,1	28	S	16,96	5,14	636	289
T1	65	1560	40	1300	26	12	82,3	0,83	0,1	1,1	28	S	16,96	5,14	636	289
		2400		2000	17,5	12	82,2	0,82	0,1	1,1	28	S	16,96	5,14	636	289
T3		1680		1400	24,5	13	82,8	0,83	0,12	1,1	28	S	18,12	5,49	680	309
		2520		2100	16,5	13	82,5	0,83	0,1	1,1	28	S	18,12	5,49	680	309
T1	70	1680	45	1400	27	13	82	0,84	0,12	1,1	28	S	18,12	5,49	680	309
		2580		2150	18	13	81,9	0,84	0,12	1,1	28	S	18,12	5,49	680	309
T3		1680		1400	27	15	82,7	0,84	0,15	1,1	28	S	20,43	6,19	770	350
		2880		2400	16	15	82,6	0,83	0,12	1,1	28	S	20,43	6,19	770	350



406 Series Induction Motors

Ambient temperature rating	60 Hz		50 Hz		Amperage	Qty of sections of rotor	Coefficient of efficiency	Cos y	Velocity of cooling liquid	Shaft diameter		Configuration	Length		Weight	
	Power	Voltage	Power	Voltage												
	hp	V	kW	V	A				m/c	inch	mm		ft	m	lb	kg
T1	80	1680	50	1400	30,5	14	82,2	0,82	0,12	1,1	28	S	19,27	5,84	726	330
		2820		2350	18,5	14	81,8	0,83	0,12	1,1	28	S	19,27	5,84	726	330
T3		1800		1500	27,7	16	82,5	0,84	0,15	1,1	28	S	21,58	6,54	816	371
		2520		2100	20,5	16	82,6	0,82	0,12	1,1	28	S	21,58	6,54	816	371
T1	90	1860	56	1550	30,3	16	82	0,84	0,15	1,1	28	S	21,58	6,54	816	371
		2880		2400	20,5	15	80,9	0,82	0,15	1,1	28	S	20,43	6,19	770	350
T3		1740		1450	33	17	83,2	0,83	0,15	1,1	28	S	22,74	6,89	860	391
		2640		2200	21,5	17	82,1	0,84	0,15	1,1	28	S	22,74	6,89	860	391
T1	105	1800	63	1500	35,5	17	82,7	0,83	0,15	1,1	28	S	22,74	6,89	860	391
		2760		2300	23,5	17	81,7	0,83	0,15	1,1	28	S	22,74	6,89	860	391
T3		1920		1600	33	19	83	0,84	0,25	1,1	28	S	25,05	7,59	950	432
		3000		2500	21,5	19	82,3	0,83	0,15	1,1	28	S	25,05	7,59	950	432
T1	115	2040	70	1700	35,2	19	82,9	0,82	0,25	1,1	28	S	25,05	7,59	950	432
		3120		2600	23,5	19	81,8	0,82	0,25	1,1	28	S	25,05	7,59	950	432
T3		2160		1800	33,5	21	83,2	0,83	0,25	1,1	28	S	27,36	8,29	1038	472
		3240		2700	22	21	82	0,84	0,25	1,1	28	S	27,36	8,29	1038	472
T1	130	2220	80	1850	36.5	21	82,4	0,84	0,25	1,1	28	S	27,03	8,19	1038	472
		2880		2400	29	21	81,8	0,82	0,25	1,1	28	S	27,36	8,29	1038	472
T3		2400		2000	34	23	83	0,83	0,25	1,1	28	S	29,67	8,99	1126	512
		3000		2500	27	23	82,1	0,84	0,25	1,1	28	S	29,67	8,99	1126	512
T1	150	2400	90	2000	38	23	82	0,85	0,25	1,1	28	S	29,67	8,99	1126	512

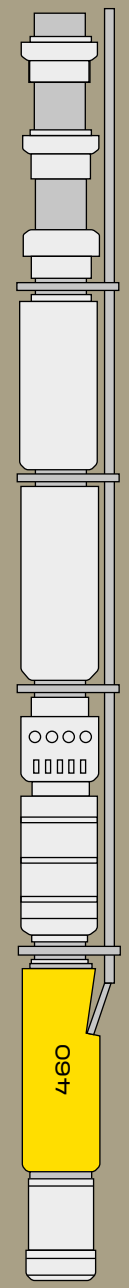


460 Series Induction Motors

Range: 2,100 – 4,200 rpm

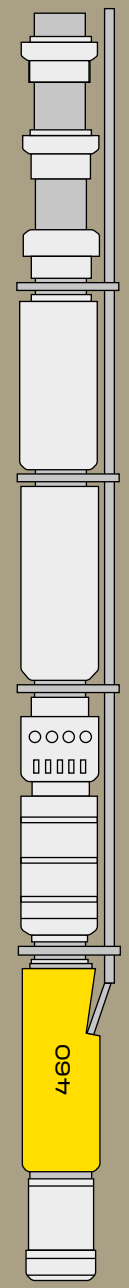
Technical Data

60 Hz		50 Hz		Am-per-age	Qty of sections of rotor	Coefficient of efficiency	Cos y	Velocity of cooling liquid	Shaft diameter		Con-figura-tion	Length		Weight	
Power	Volt-age	Power	Volt-age												
hp	V	kW	V	A				m/c	inch	mm		ft	m	lb	kg
25	600	16	500	25,5	4	84	0,86	0,08	1,1	28	S	8,3	2,52	348	158
	1980		1650	7,9	5	84,5	0,84	0,08	1,1	28	S	9,5	2,9	409	186
30	792	20	660	25	5	83,5	0,84	0,08	1,1	28	S	9,5	2,9	416	189
	2160		1800	9	5	84,5	0,84	0,08	1,1	28	S	9,5	2,9	409	186
35	2520	22	2100	8,6	6	84,5	0,84	0,1	1,1	28	S	10,8	3,28	471	214
40	792	24	660	29,5	5	82	0,87	0,1	1,1	28	S	9,5	2,9	416	189
	2580		2150	9,1	6	84,5	0,84	0,1	1,1	28	S	10,8	3,28	471	214
45	960	28	800	28,5	6	82,5	0,86	0,12	1,1	28	S	10,8	3,28	475	216
	2400		2000	11,4	7	84,5	0.84	0,12	1,1	28	S	12	3,66	532	242
55	1140	32	950	27,8	7	83	0,85	0,12	1,1	28	S	12	3,66	537	244
	2340		1950	13,4	8	84,5	0,84	0,12	1,1	28	S	13,3	4,04	596	271
60	1320	36	1100	27,3	8	83,5	0,83	0,12	1,1	28	S	13,3	4,04	598	272
	2580		2150	13,6	9	84,5	0,84	0,12	1,1	28	S	14,5	4,42	656	298
65	1440	40	1200	27,3	9	83,5	0,85	0,12	1,1	28	S	14,5	4,42	673	306
	2400		2000	16,3	10	84,5	0,84	0,12	1,1	28	S	15,7	4,8	722	328
70	1620	45	1350	27,5	10	83,5	0,84	0,12	1,1	28	S	15,7	4,8	722	328
	2580		2150	17,1	11	84,5	0,84	0,12	1,1	28	S	17	5,18	783	356
80	1800	50	1500	27,6	11	83,5	0,835	0,15	1,1	28	S	17	5,18	783	356
	2880		2400	17	12	84,5	0.84	0,15	1,1	28	S	18,2	5,56	845	384



460 Series Induction Motors

60 Hz		50 Hz		Am-per-age	Qty of sections of rotor	Coefficient of efficiency	Cos y	Velocity of cooling liquid	Shaft diameter		Con-figura-tion	Length		Weight	
Power	Volt-age	Power	Volt-age												
hp	V	kW	V	A				m/c	inch	mm		ft	m	lb	kg
90	1680	56	1400	32,1	12	83	0,87	0,15	1,1	28	S	18,2	5,56	845	384
	3120		2600	17,5	13	84,5	0,84	0,15	1,1	28	S	19,5	5,94	906	412
105	2160	63	1800	29	13	83	0,84	0,17	1,1	28	S	19,5	5,94	906	412
	3600		3000	17,1	15	84,5	0,84	0,17	1,1	28	S	22	6,7	1027	467
115	2400	70	2000	28,5	15	83	0,855	0,17	1,1	28	S	22	6,7	1030	468
	3240		2700	21,1	16	84,5	0,84	0,17	1,1	28	S	23,3	7,08	1089	495
130	2280	80	1900	35,4	17	84,5	0,841	0,2	1,1	28	S	24,5	7,46	1159	527
	3360		2800	23,3	17	84,5	0,84	0,2	1,1	28	S	24,5	7,46	1129	513
150	2400	90	2000	37,3	18	84	0,83	0,3	1,1	28	S	25,7	7,84	1223	556
	3600		3000	24,4	18	84,5	0,84	0,3	1,1	28	S	25,7	7,84	1212	551
160	32400	100	2700	30,2	19	84,5	0,84	0,3	1,1	28	S	27	8,22	1276	580
180	2520	110	2100	43,6	18	83	0,835	0,5	1,1	28	S	25,7	7,84	1223	556
200	2700	125	2250	46,3	19	82,5	0,84	0,6	1,1	28	S	27	8,22	1285	584
225	2820	140	2350	49	20	82	0,855	0.90	1,1	28	S	28,2	8,6	1346	612
	2400		2000	58	30	84	0,83	0,5	1,1	28	T	43	13,1	2031	923
260	2700	160	2250	59	34	84	0,83	0,7	1,1	28	T	48	14,62	2301	1046
290	3000	180	2500	60	36	83,5	0,83	0,8	1,1	28	T	50,5	15,38	2424	1102
325	3000	200	2500	65,5	36	83,5	0,85	0,8	1,1	28	T	50,5	15,38	2424	1102
400	3240	250	2700	77,5	38	82	0,84	0,9	1,1	28	T	53	16,14	2548	1158
500	3600	300	3000	89	38	81,4	0,817	1	1,1	28	T	53	16,14	2548	1158

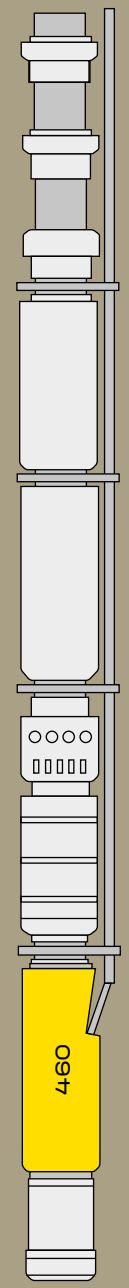


512 Series Induction Motors

Range: 2,100 – 4,200 rpm

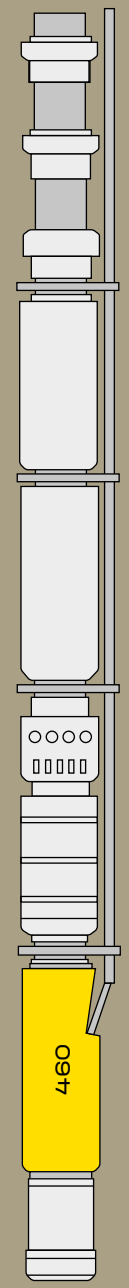
Technical Data

60 Hz		50 Hz		Am-per-age	Qty of sections of rotor	Coefficient of efficiency	Cos y	Velocity of cooling liquid	Shaft diameter		Con-figura-tion	Length		Weight	
Power	Volt-age	Power	Volt-age												
hp	V	kW	V	A				m/c	inch	mm		ft	m	lb	kg
35	792	25	660	27.5	2	85	0.87	0.1	1.5	38	S	6,0	1,83	378	172
	1020		850	20	3	85	0.87	0.1	1.5	38	S	7,6	2,32	471	214
50	1140	32	950	27	3	85	0.87	0.12	1.5	38	S	7,6	2,32	471	214
	1380		1150	22	4	85	0.87	0.12	1.5	38	S	9,2	2,82	565	257
70	1560	45	1300	28	4	85	0.87	0.12	1.5	38	S	9,2	2,82	565	257
	1800		1500	23.5	5	85	0.87	0.12	1.5	38	S	10,9	3,31	660	300
90	1620	56	1350	33.5	5	85	0.87	0.15	1.5	38	S	10,9	3,31	660	300
	1800		1500	29	6	85	0.87	0.15	1.5	38	S	12,5	3,81	752	342
115	1980	70	1650	34.5	6	85	0.87	0.17	1.5	38	S	12,5	3,81	752	342
	2340		1950	28	8	85	0.87	0.17	1.5	38	S	15,7	4,80	942	428
130	2280	80	1900	34	7	85	0.87	0.2	1.5	38	S	14,1	4,30	847	385
	2520		2100	30	9	85	0.87	0.2	1.5	38	S	17,4	5,29	1036	471
145	2040	90	1700	42	8	85	0.87	0.3	1.5	38	S	15,7	4,80	942	428
	2400		2000	35	10	85	0.87	0.3	1.5	38	S	19,0	5,79	1131	514
160	2280	100	1900	41.5	9	85	0.87	0.3	1.5	38	S	17,4	5,29	1036	471
	2640		2200	35.5	11	85	0.87	0.3	1.5	38	S	20,6	6,28	1223	556



512 Series Induction Motors

60 Hz		50 Hz		Am-perage	Qty of sections of rotor	Coefficient of efficiency	Cos y	Velocity of cooling liquid	Shaft diameter		Con-figura-tion	Length		Weight	
Power	Volt-age	Power	Volt-age												
hp	V	kW	V	A				m/c	inch	mm		ft	m	lb	kg
180	2520	110	2100	41.5	10	85	0.87	0.4	1.5	38	S	19,0	5,79	1131	514
	2760		2300	37.5	11	85	0.87	0.4	1.5	38	S	20,6	6,28	1223	556
200	2820	125	2350	42.5	11	85	0.87	0.6	1.5	38	S	20,6	6,28	1223	556
	2880		2400	41	12	85	0.87	0.6	1.5	38	S	22,2	6,78	1327	603
	2280		1900	51.5	12	85	0.87	0.6	1.5	38	S	22,2	6,78	1327	603
225	2340	140	1950	57	12	85	0.87	0.6	1.5	38	S	22,2	6,78	1327	603
	2520		2100	52	14	85	0.87	0.6	1.5	38	S	25,5	7,77	1520	691
240	2520	150	2100	57.5	13	85	0.87	0.65	1.5	38	S	23,9	7,27	1423	647
260	2760	160	2300	57	14	85	0.87	0.65	1.5	38	S	25,5	7,77	1520	691
290	2940	180	2450	60	15	85	0.87	0.7	1.5	38	S	27,1	8,26	1621	737
400	1380	250	1150	88	11	85	0.87	0.8	1.5	38	UT	20,2	6,15	1258	572
	1380		1150	88	11	85	0.87	0.8	1.5	38	LT	20,7	6,31	1217	553
480	1620	300	1350	90	13	85	0.87	0.9	1.5	38	UT	23,4	7,14	1434	652
	1620		1350	90	13	85	0.87	0.9	1.5	38	LT	24,0	7,30	1393	633
580	1560	360	1300	112	14	85	0.87	1	1.5	38	UT	25,1	7,64	1531	696
	1560		1300	112	15	85	0.87	1	1.5	38	LT	27,2	8,29	1571	714
640	1560	400	1300	124	14	85	0.87	1	1.5	38	UT	25,1	7,64	1531	696
	1560		1300	124	15	85	0.87	1	1.5	38	LT	27,2	8,29	1571	714

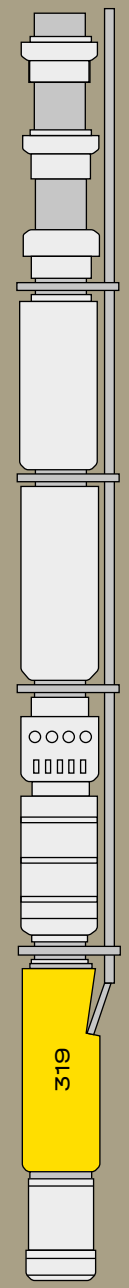


319 Series Permanent Magnet Motors

Range: 500 – 6000 rpm

Technical Data

100 Hz		60 Hz		Am-perage	Qty of sections	Efficiency	Cos y	Velocity of cooling liquid	D Shaft		Length		Weight	
Power	Volt-age	Power	Volt-age											
kW	V	hp	V	A		%		m/c	inch	mm	ft	m	lb	kg
14	550	12	370	19	4	88.8	0.95	0.1	0.79	20	7	2.13	154	70
22	690	20	414	23.4	6	89.6	0.95	0.1	0.79	20	8.9	2.72	198	90
32	900	29	540	25.3	8	90	0.95	0.1	0.79	20	10.8	3.3	247	112
40	1010	37	606	27.8	10	90.2	0.95	0.1	0.79	20	12.8	3.89	298	135
50	1100	45	660	32.1	12	90.6	0.95	0.15	0.79	20	14.7	4.48	346	157
63	1300	57	780	34.4	14	90.8	0.95	0.2	0.79	20	16.6	5.07	395	179
70	1390	64	834	35.5	15	90.8	0.95	0.2	0.79	20	17.6	5.36	419	190
80	1500	72	900	37.9	16	91	0.95	0.25	0.79	20	18.6	5.66	443	201
90	1670	82	1002	37.9	18	91	0.95	0.3	0.79	20	20.5	6.25	494	224

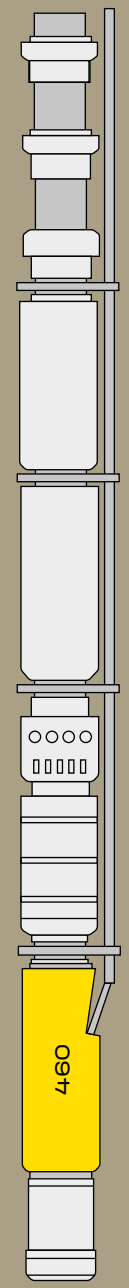


460 Series Permanent Magnet Motors

Range: 2,100 – 4,200 rpm

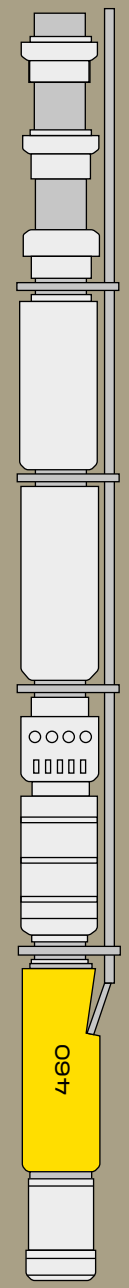
Technical Data

Ambient temperature rating	60 Hz		50 Hz		Amperage	Qty of sections of rotor	Coefficient of efficiency	Cos y	Velocity of cooling liquid	Shaft diameter		Length		Weight	
	Power	Voltage	Power	Voltage											
	hp	V	kW	V	A				m/c	inch	mm	ft	m	lb	kg
T1	30	636	20	530	25	2	91	0.96	0.08	1.1	28	5.4	1.64	234	106
T3					23		91	0.96		1.1	28				
T1	50	960	30	800	25	3	91	0.96	0.1	1.1	28	6.6	2	293	133
T3					23	3	91	0.96		1.1	28				
T1	65	1284	40	1070	25	4	91	0.96	0.12	1.1	28	7.9	2.4	355	161
T3					23	4	91	0.96		1.1	28				
T1	80	1608	50	1340	25	5	91.5	0.96	0.15	1.1	28	9.2	2.8	414	188
T3					23	5		0.96		1.1	28				
T1	100	1920	60	1600	25	6	92	0.96	0.17	1.1	28	10.4	3.18	476	216
T3				1600	23	6		0.96		1.1	28				
T1	115	2244	70	1870	25	7	92	0.96	0.2	1.1	28	11.7	3.57	536	243
T3				1870	23	7	92	0.96		1.1	28				
T1	130	2052	80	1710	31	8	92.5	0.96	0.25	1.1	28	13	3.95	595	270
T3				1710	28	8	92.5	0.96		1.1	28				



460 Series Permanent Magnet Motors

Ambient temperature rating	60 Hz		50 Hz		Amperage	Qty of sections of rotor	Coefficient of efficiency	Cos y	Velocity of cooling liquid	Shaft diameter		Length		Weight	
	Power	Voltage	Power	Voltage											
	hp	V	kW	V	A				m/c	inch	mm	ft	m	lb	kg
T1	150	2400	90	2000	31	9	92.5	0.96	0.3	1.1	28	14.4	4.4	657	298
T3				2000	28	9	92.5	0.96		1.1	28				
T1	170	1920	105	1600	42	10	92.5	0.96	0.4	1.1	28	15.5	4.72	717	325
T3				1600	39	10	92.5	0.96		1.1	28				
T1	185	2148	115	1790	42	11	92.5	0.96	0.48	1.1	28	16.7	5.1	778	353
T3				1790	39	11	92.5	0.96		1.1	28				
T1	200	2304	125	1920	42	12	92.5	0.96	0.5	1.1	28	18	5.5	838	380
T3				1920	39	12	92.5	0.96		1.1	28				
T3	225	2052	140	1710	51	16	93	0.96	0.6	1.1	28	23	7.04	1078	489
T1	245	2688	150	2240	42	14	93	0.96	0.6	1.1	28	20.6	6.27	957	434
T3				2240	39	14	93	0.96		1.1	28				
T3	260	2184	160	1820	56	17	93	0.96	0.6	1.1	28	20.4	7.43	1133	514
T1	275	2052	170	1710	56	16	93	0.96	0.6	1.1	28	23	7.04	1078	489
T3	290	2304	180	1920	56	18	93	0.96	0.6	1.1	28	25.6	7.81	1192	541
T1	310	2184	190	1820	60	17	93	0.96	0.6	1.1	28	24.4	7.43	1133	514
T3	325	2556	200	2130	56	20	93	0.96	0.6	1.1	28	28.2	8.58	1314	596
T1	340	2304	210	1920	71	18	93	0.96	0.7	1.1	28	25.6	7.81	1192	541
T3	400	2760	250	2300	65	20	93	0.96	0.7	1.1	28	28.2	8.58	1314	596



Downhole sensor

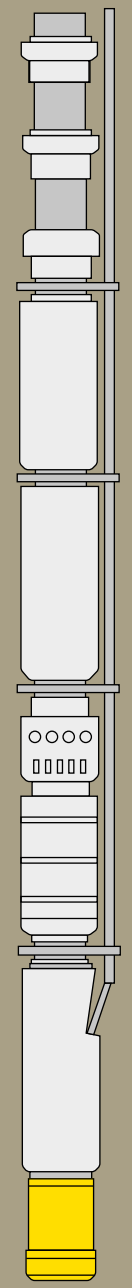
Example of abbreviation
ExD1S362 2.875-Flg CR1 T2

Short name:
ExD1S362

Ex	D	1S	460	2.875-Flg	CR1	T2
1	2	3	4	5	6	7

1	Manufacturer Exceline®
2	D – Downhole monitoring system
3	Type of DHS: 1S – Downhole gage type 1. Intake T & P, motor vibration X & Y, motor oil temperature 2S – Downhole gage type 2. Intake T & P, motor vibration X & Y, motor oil temperature + pump discharge pressure
4	Series: 319 362 406 450

5	Connection type of discharge sub: 1. Tubing side: Thread – 2-3/8", 2-7/8", 3-1/2" Flange with fasteners 2. Pump side: Thread – 2-3/8", 2-7/8", 3-1/2" Flange with fasteners
6	Corrosion resistance design: CR0 – carbon steel head, base and housing, carbon steel fasteners CR1 – stainless steel head and base, carbon steel housing with anti-corrosion coating (super stainless flame coating), monel fasteners CR2 – stainless steel head, base and housing, monel fasteners
7	Ambient temperature rating T1 – for 248°F (120°C) T2 – for 302°F (150°C) T3 – for 338°F (170°C)



Surface panel

Example of abbreviation
ExD1P

Ex	D	1P
1	2	3

1	Manufacturer Exceline®
2	D – Downhole monitoring system

3	Type of Surface panel: 1P – Type 1. VSD Built-in 2P – Type 2. With screen, logs, USB interface.

Miscellaneous equipment

Bolt on Head, check valve, bleeder valve, sand trap.

Example of abbreviation
ExBoH 2.875 8RD EUE CR1

Short name:
ExBoH 2.875

Ex	BoH	2.875	8RD	EUE	CR1
1	2	3	4	5	6

1	Manufacturer Exceline®
2	Sub type: BoH – Bolt on Head CV – Check Valve BV – Bleeder Valve ST – Sand Trap
3	Thread size, inches 2 3/8 in – 60 mm 2 7/8 in – 73 mm 3 1/2 in – 89 mm 4 1/2 in – 114 mm 5 1/2 in – 140 mm
4	Pitch, threads per inch: 8 10 RD – round thread

5	Thread type: EUE – External Upset Ends NUE – Non Upset Ends
6	Corrosion resistance design: CR0 – carbon steel head, base and housing, carbon steel fasteners CR1 – stainless steel head and base, carbon steel housing with anti-corrosion coating (super stainless flame coating), monel fasteners CR2 – stainless steel head, base and housing, monel fasteners

Shroud

Example of abbreviation
ExSh406-362 S CR1

Short name:
ExSh406

Ex	Sh	406	362	S	CR1
1	2	3	4	5	6

1	Manufacturer Exceline®
2	Sh – Motor Shroud
3	Motor series
4	Intake series
5	Configuration: S – Single, with intake T – Tandem, without intake

6	Corrosion resistance design: CR0 – carbon steel head, base and housing, carbon steel fasteners CR1 – stainless steel head and base, carbon steel housing with anti-corrosion coating (super stainless flame coating), monel fasteners CR2 – stainless steel head, base and housing, monel fasteners

Power cable

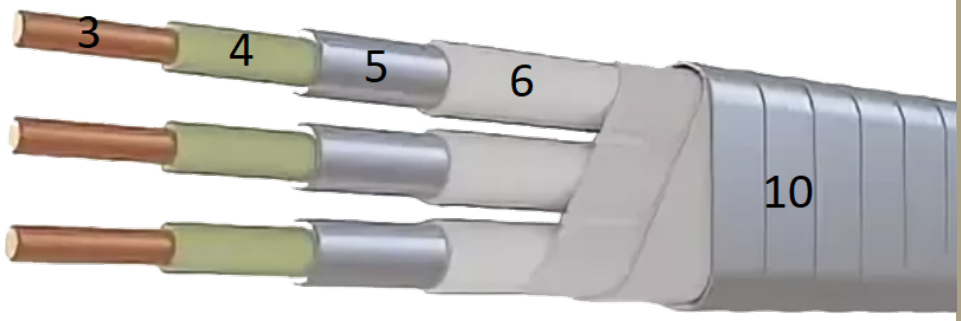
Example of abbreviation
ExDC AWG7 ELP 4F 450 CR0

Short name:
ExDC AWG7

Ex	DC	AWG7	E	L	P	4	F	450	CR0
1	2	3	4	5	6	7	8	9	10

1	Manufacturer Exceline®
2	DC – Downhole cable
3	Cable size: AWG1, AWG2, AWG3, AWG4, AWG5, AWG6, AWG7, AWG8
4	Insulation: E – EPDM (ethylene propylene diene methylene) P – Polypropylene copolymer / Polyethylene K – PEEK
5	Barier: L – Lead N – Nitrile rubber P – Polyimide braid
6	Jacket: C – Cotton tape P – Polyamide tape

7	Rated voltage: 3.3 kV 4 kV 5 kV
8	Shape: F – Flat R – Round
9	Temperature raiting, F
10	Corrosion resistance: CR0 – Galvanized Steel Tape Armor CR1 – Stainless Steel Armor CR2 – Monel armor



Power cable

Technical Data

Type	Rated voltage	Voltage	Weight of 1000m	Dimentions	Maximum current allowed, A												
		AWG	lb	Inch	Ambient temperature, C												
	kV	mm2	kg	mm	100	110	120	130	140	150	160	170	180	190	200	210	220
ExDC AWG* ELP 4 F 450	4,0	AWG7	1664	0.51 x 1.26	100	96	92	88	83	78	73	68	62	55	48	39	28
		10	1664	12,9 x 31,9													
		AWG6	1895	0.53 x 1.31	118	113	108	103	98	92	86	80	73	65	56	46	33
		13.3	1895	13,4 x 33,4													
		AWG5	2032	0,54 x 1,37	132	127	121	116	110	104	97	90	82	73	63	52	37
		16	2032	13,8 x 34,6													
		AWG4	2275	0,57 x 1,44	157	151	145	138	131	123	115	107	98	87	76	62	44
		21	2275	14,5 x 36,7													
		AWG3	2476	0,59 x 1,49	175	168	161	153	145	137	128	119	108	97	84	69	48
		25	2476	14,9 x 37,9													
ExDC AWG* ELP 5 F 450	5,0	AWG7	4015	0,54 x 1,35	101	97	93	93	84	79	74	69	63	56	48	40	28
		10	1821	13,7 x 34,3													
		AWG6	4543	0,56 x 1,41	119	114	109	109	99	93	87	81	74	66	57	46	33
		13.3	2061	14,2 x 35,8													
		AWG5	4859	0,57 x 1,46	133	128	122	122	111	104	98	90	83	74	64	52	37
		16	2204	14,6 x 37,0													
		AWG4	5401	0,6 x 1,54	159	152	146	146	132	124	116	108	98	88	76	62	44
		21	2450	15,3 x 39,1													
		AWG3	5853	0,62 x 1,59	176	169	162	162	146	138	129	120	109	98	85	69	49
		25	2655	15,7 x 40,3													

Motor Lead Extention

Example of abbreviation
ExMLE406 AWG7 4 450 CR0

Short name:
ExMLE406

Ex	MLE	406	AWG7	4	450	CR0
1	2	3	4	5	6	7

1	Manufacturer Exceline®
2	MLE – Motor Lead Extension
3	Motor series
4	Cable size: AWG1, AWG2, AWG3, AWG4, AWG5, AWG6, AWG7, AWG8
5	Rated voltage: 3 kV 4 kV 5 kV

6	Temperature raiting, F
7	Corrosion resistance: CR0 – Galvanized Steel Tape Armor CR1 – Stainless Steel Armor CR2 – Monel armor

Wellhead penetrators

Example of abbreviation
ExWP2 5000 AWG4 CR2

Short name:
ExWP2

Ex	WP	2	5000	AWG4	CR2
1	2	3	4	5	6

1	Manufacturer Exceline®
2	WP – Wellhead Penetrator
3	Number of seals: 1- Single 2- Double
4	Rated pressure: 3000 PSI 5000 PSI 10000 PSI
5	Cable size: AWG1, AWG2, AWG3, AWG4, AWG5, AWG6, AWG7, AWG8
6	Corrosion resistance design: CR0 – carbon steel housing and all components, carbon steel fasteners. CR1 – carbon steel housing with anti-corrosion coating, carbon steel fasteners. CR2 – stainless steel housing and all components, carbon steel fasteners. CR3 – stainless steel housing and all components, stainless steel fasteners.

Technical tables

Break horse power

Shaft diameter		Area		S13				S14				S16			
				60 Hz		50 Hz		60 Hz		50 Hz		60 Hz		50 Hz	
in	mm	in²	mm²	hp	kW	hp	kW	hp	kW	hp	kW	hp	kW	hp	kW
0.50	12.8	0.20	129	87	65	72	54	100	74	83	62	113	84	94	70
0.55	14	0.24	154	103	77	86	64	119	89	99	74	133	100	111	83
0.67	17	0.35	227	193	144	161	120	217	162	181	135	241	180	201	150
0.79	20	0.49	314	322	240	268	200	346	258	288	215	402	300	335	250
0.87	22	0.59	380	434	324	362	270	466	348	389	290	531	396	442	330
0.98	25	0.75	491	627	468	523	390	683	510	570	425	788	588	657	490
1.18	30	1.09	707	1110	828	925	690	1198	894	998	745	1375	1026	1146	855
1.38	35	1.49	962	1914	1428	1595	1190	2061	1538	1718	1282	2356	1758	1963	1465
1.50	38	1.77	1134	2258	1685	1881	1404	2431	1814	2026	1512	2779	2074	2316	1728
1.65	42	2.14	1385	3058	2282	2549	1902	3290	2455	2742	2046	3763	2808	3136	2340

Technical tables

API Casing Chart

CASING SIZE OD IN.	CASING COUPLING OD IN.	NOMINAL WEIGHT LBS/FT	INSIDE DIAMETER ID IN.	API DRIFT ID IN.
4-1/2	5.000	9.50	4.090	3.965
4.500	5.000	10.50	4.052	3.927
	5.000	11.60	4.000	3.875
	5.000	13.50	3.920	3.795
5	5.563	11.50	4.560	4.435
5.000	5.563	13.00	4.494	4.369
	5.563	15.00	4.408	4.283
	5.563	18.00	4.276	4.151
5-1/2	6.050	14.00	5.012	4.887
5.500	6.050	15.50	4.950	4.825
	6.050	17.00	4.892	4.767
	6.050	20.00	4.778	4.653
	6.050	23.00	4.670	4.545
6-5/8	7.390	20.00	6.049	5.924
6.625	7.390	24.00	5.921	5.796
	7.390	28.00	5.791	5.666
	7.390	32.00	5.675	5.550
7	7.656	17.00	6.538	6.413
7.000	7.656	20.00	6.456	6.331
	7.656	23.00	6.366	6.241
	7.656	26.00	6.276	6.151
	7.656	29.00	6.184	6.059
	7.656	32.00	6.094	5.969
	7.656	35.00	6.004	5.879
	7.656	38.00	5.920	5.795

Technical tables

API Casing Chart

CASING SIZE OD IN.	CASING COUPLING OD IN.	NOMINAL WEIGHT LBS/FT	INSIDE DIAMETER ID IN.	API DRIFT ID IN.
7-5/8	8.500	20.00	7.125	7.000
7.625	8.500	24.00	7.025	6.900
	8.500	26.40	6.969	6.844
	8.500	29.70	6.875	6.750
	8.500	33.70	6.765	6.640
	8.500	39.00	6.625	6.500
8-5/8	9.625	24.00	8.097	7.972
8.625	9.625	28.00	8.017	7.892
	9.625	32.00	7.921	7.796
	9.625	36.00	7.825	7.700
	9.625	40.00	7.725	7.600
	9.625	44.00	7.625	7.500
	9.625	49.00	7.511	7.386
9-5/8	10.625	29.30	9.063	8.907
9.625	10.625	32.30	9.001	8.845
	10.625	36.00	8.921	8.765
	10.625	40.00	8.835	8.679
	10.625	43.50	8.755	8.599
	10.625	47.00	8.681	8.525
	10.625	53.50	8.535	8.379

Technical tables

API Casing Chart

CASING SIZE OD IN.	CASING COUPLING OD IN.	NOMINAL WEIGHT LBS/FT	INSIDE DIAMETER ID IN.	API DRIFT ID IN.
10-3/4	11.750	32.75	10.192	10.036
10.750	11.750	40.50	10.050	9.984
	11.750	45.50	9.950	9.794
	11.750	51.00	9.850	9.694
	11.750	55.50	9.760	9.604
	11.750	60.70	9.660	9.504
	11.750	65.70	9.560	9.404
11-3/4	12.750	42.00	11.084	10.928
11.750	12.750	47.00	11.000	10.844
	12.750	54.00	10.880	10.724
	12.750	60.00	10.772	10.616
13-3/8	14.375	48.00	12.715	12.559
13.375	14.375	54.50	12.615	12.459
	14.375	61.00	12.515	12.359
	14.375	68.00	12.415	12.259
	14.375	72.00	12.347	12.191
16	17.000	65.00	15.250	15.062
16.000	17.000	75.00	15.124	14.936
	17.000	84.00	15.010	14.822
18-5/8	20.000	87.50	17.755	17.567
20	21.000	94.00	19.124	18.936
20.000	21.000	106.50	19.000	18.812
	21.000	133.00	18.730	18.542
	21.000	169.00	18.376	18.188

Technical tables

Tubing

Tubina Size		Nominal Weight		Grade	Wall Thick-ness in.	Inside Dia. in.	Threaded Coupling				Col-lapse Resis-tance, psi	Inter-nal Yield Pres-sure, psi	Joint Yield Strenoth		Capacity Table	
							Drift Dia. in.	Couping Outsice Dia.								
Nom. in.	OD in.	T & C Non upset, lb/ft	T & C Upset lb/ft					Non Upset in.	Upset Reg. in.	Upset Spec. in.			T & C Nonupset, lb	T & C upset, lb	Barrels per Linear, ft	Linear ft per barrel
3/4	1.05	1.14		H-40 J-55 C-75 N-80	0.113	0.824	0.730	1.313	1.660		7.200 9.370 12.250 12.710	7.530 10.360 14.120 15.070	6.360 8.740 11.920 12.710	13.300 18.290 24.940 26.610	0.0007	1516.13
1	1.315	1.700		H-40 J-55 C-75 N-80	0.113	1.049	0.955	0.660	1.900		6.820 8.860 11.590 12.270	7.080 9.730 13.270 14.160	10.960 15.060 20.540 21.910	19.760 27.160 37.040 39.510	0.0011	935.49
1 1/4	1.660	2.300		H-40 H-40 J-55 J-55 C-75 N-80	0.125 0.140 0.125 0.140 0.140 0.140	1.410 1.380 1.410 1.380 1.380 1.380	1.286	2.054	2.200		5.220 5.790 6.790 7.530 9.840 10.420	5.270 5.900 7.250 8.120 11.070 11.810	15.530 21.360 29.120 31.060	26.740 36.770 50.140 53.480	0.0019 0.0018 0.0019 0.0018 0.0018 0.0018	517.79 540.55 517.79 540.55 540.55 540.55
1 1/2	1.900	2.750		H-40 H-40 J-55 J-55 C-75 N-80	0.125 0.145 0.125 0.145 0.145 0.145	1.650 1.610 1.650 1.610 1.610 1.610	1.516	2.200	2.500		4.450 5.290 5.790 6.870 8.990 9.520	10.020 10.680	19.090 26.250 35.800 38.180	31.980 43.970 59.960 63.960	0.0026 0.0025 0.0026 0.0025 0.0025 0.0025	378.11 397.14 378.11 397.14 397.14 397.14
2 1/16	2.063	059		H-40 J-55 C-75 N-80	0.156	1.751					5.240 6.820 8.910 9.440	5.290 7.280 9.920 10.590			0.0030	335.75
2 3/8	2.375	4.00 4.60 4.00 4.60 4.00 4.60 5.80 4.00 4.60 5.80 4.60 5.80	4.70 4.70 4.70 5.95 4.70 5.95 4.70 5.95	H-40 H-40 J-55 J-55 C-75 C-75 C-75 N-80 N-80 N-80 P-105 P-105	0.167 0.190 0.167 0.190 0.167 0.190 0.254 0.167 0.190 0.254 0.190 0.254	2.041 1.995 2.041 1.995 2.041 1.995 1.867 2.041 1.995 1.867 1.995 1.867	1.947 1.901 1.947 1.901 1.947 1.901 1.773 1.947 1.901 1.773 1.901 1.773	2.875	3.063		4.880 5.520 6.340 7.180 8.150 9.380 12.180 8.660 9.940 12.890 13.250 17.190	4.920 5.600 6.770 7.700 9.230 10.500 14.040 9.840 11.200 14.970 14.700 19.650	30.130 35.960 41.430 49.450 56.500 67.430 96.560 60.260 71.930 102.990 94.410 135.180	52.170 71.730 97.820 126.940 104.340 135.400 136.940 177.710	0.0040 0.0039 0.0040 0.0039 0.0040 0.0039 0.0034 0.0040 0.0039 0.0034 0.0039 0.0034	247.12 258.65 247.12 258.65 247.12 258.65 295.33 247.12 258.65 295.33 258.65 295.33

Technical tables

Tubing

Tubina Size		Nominal Weight		Grade	Wall Thick-ness in.	Inside Dia. in.	Threaded Coupling				Col-lapse Resis-tance, psi	Inter-nal Yield Pres-sure, psi	Joint Yield Strenoth		Capacity Table	
							Drift Dia. in.	Couping Outsice Dia.								
Nom. in.	OD in.	T & C Non upset, lb/ft	T & C Upset lb/ft					Non Upset in.	Upset Reg. in.	Upset Spec. in.			T & C Nonupset, lb	T & C upset, lb	Barrels per Linear, ft	Linear ft per barrel
2 7/8	2.875	6.40	6.50	H-40	0.217	2.441	2.347	3.500	3.668		5.230	5.280	52.780	72.480	0.0058	172.76
		6.40	6.50	J-55	0.217	2.441	2.347				6.800	7.260	72.580	99.660	0.0058	172.76
		6.40	6.50	C-75	0.217	2.441	2.347				8.900	9.910	98.970	135.900	0.0058	172.76
		8.60	8.70	C-75	0.308	2.259	2.165				12.200	14.060	149.360	185.290	0.0050	201.72
		6.40	6.50	N-80	0.217	2.441	2.347				9.420	10.570	105.570	144.960	0.0058	172.76
		8.60	8.70	N-80	0.308	2.259	2.165				12.920	15.000	159.310	198.710	0.0050	201.72
		6.40	6.50	P-105	0.217	2.441	2.347				12.560	13.870	138.560	190.260	0.0058	172.76
		8.60	8.70	P-105	0.308	2.259	2.165				17.220	19.690	209.100	260.810	0.0050	201.72
3 1/2	3.500	7.70		H-40	0.216	3.068	2.943	4.250	4.500	4.180	4.070	4.320	65.070		0.0091	109.37
		9.20	9.30	H-40	0.254	2.992	2.867				5.050	5.080	79.540	103.610	0.0087	114.99
		10.20		H-40	0.289	2.922	2.797				5.680	5.780	92.550		0.0083	120.57
		7.70		J-55	0.216	3.068	2.943				5.290	5.940	89.470		0.0091	109.37
		9.20	9.30	J-55	0.254	2.992	2.867				6.560	6.980	109.370	142.460	0.0087	114.99
		10.20		J-55	0.289	2.922	2.797				7.390	7.950	127.250		0.0083	120.57
		7.70		C-75	0.216	3.068	2.943				6.690	8.100	122.010		0.0091	109.37
		9.20	9.30	C-75	0.254	2.992	2.867				8.530	9.520	149.140	194.260	0.0087	114.99
		10.20		C-75	0.289	2.922	2.797				9.660	10.840	173.530	276.120	0.0083	120.57
		12.70	12.95	C-75	0.375	2.750	2.625				12.200	14.060	230.990		0.0073	136.12
		7.70		N-80	0.216	3.068	2.943				7.080	8.640	130.140		0.0091	109.37
		9.20	9.30	N-80	0.254	2.992	2.867				9.080	10.160	159.090	207.220	0.0087	114.99
		10.20		N-80	0.289	2.922	2.797				10.230	11.560	185.100		0.0083	120.57
		12.70	12.95	N-80	0.375	2.750	2.625				12.920	15.000	246.390	294.530	0.0073	136.12
		9.20	9.30	P-105	0.254	2.992	2.867				12.110	13.330	208.800	271.970	0.0087	114.99
		12.70	12.95	P-105	0.375	2.750	2.625				17.200	19.690	323.390	386.570	0.0073	136.12
4	4.000	9.500	11.000	H-40	0.226	3.548	3.423	4.750	5.000		3.580	3.960	72.000		0.0122	81.78
				H-40	0.262	3.476	3.351				4.420	4.580		123.070	0.0117	85.20
				J-55	0.226	3.548	3.423				4.650	5.440	99.010		0.0122	81.78
				J-55	0.262	3.476	3.351				5.750	6.300		169.220	0.0117	85.20
				C-75	0.226	3.548	3.423				5.800	7.420	135.010		0.0122	81.78
				C-75	0.262	3.476	3.351				7.330	8.600		230.750	0.0117	85.20
				N-80	0.226	3.548	3.423				6.120	7.910	144.010		0.0122	81.78
				N-80	0.262	3.476	3.351				7.780	9 170		246.140	0.0117	85.20
4 1/2	4.500	12.600	12.750	H-40	0.271	3.958	3.833	5.200	5.563		3.930	4.220	104.360	144.020	0.0152	65.71
				J-55							5.100	5.800	143.500	198.030		
				C-75							6.430	7.900	195.680	270.240		
				N-80							6.810	8.430	208.730	288.040		

ESP Selection recommendations

Selection of the pump is based on the estimated pumping rate, TDH, well conditions, and casing size limitations. The most optimal choice of ESP series with regard to the system reliability and efficiency is the largest series (diameter) that the casing will permit. Pump performance curves define optimum operating limits for various motor and pump sizes. The desired capacity should be within the optimum limits of the pump performance curves and nearest best efficiency point of the pump selected.

The process of pump selection requires the following additional steps:

1. **Selection of design configuration.**
   Exceline® offers floater (FLT), semi compression (SCMP) and compression (CMP) designs for each type of pump. In case the well data is not accurate, it is recommended to opt for compression design as it allows to operate at a wider operating range.

2. **Selection of modification.**
   Please, select appropriate modification based on your well conditions. Exceline® has 3 types of corrosion resistant and 2 types of abrasive resistant versions.

3. **Conventional or Power Save.**
   In case you would like to receive reduced power consumption – absolute best selection is pump with combination of PMM. In order to obtain the maximum effect with regard to power savings, it is recommended to size and operate the ESP system at BEP. The case studies show that this will help to save up to 40% of energy consumption for the overall system.

4. **Shaft strength selection.**
   For each pump, several variants of shaft yield strength are available: Low Strength S8 (785 MPa), Medium Strength S11 (1080 MPa), Standard Strength S13 (1275 MPa), High Strength S14 (1370 MPa) and Ultra High Strength S16 (1570 MPa). Also shafts from Monel alloy Low Strength M8 (785 MPa), Inconel alloys Low Strength I8 (785 MPa), Medium Strength I11 (1080 MPa), Standard Strength I13 (1275 MPa) and High Strength I14 (1370 MPa) are available. In case the power consumed by the pump exceeds the power transmitted by standard strength, please select high strength or ultra high strength shaft. Exceline® has the following choice of shaft materials: alloyed stainless steel, Inconel or K-Monel, M8 – Monel alloy (785 MPa), I8 – Inconel alloy (785 Mpa), I11 – Inconel alloy (1080 MPa), I13 – Inconel alloy (1275 MPa), I14 – Inconel alloy (1370 MPa), please specify your needs. The most preferable and cost effective shaft material is alloyed stainless steel.
   In case the well is significantly contaminated with solids and/or scale it is recommended to select ultra high

ESP Selection recommendations

strength shaft S16. This type of a shaft will help your ESP system to survive in case of frequent stop-start operations.

5. **Intake Devices Selection.**
   In case well has high content of gas and solids, it is preferable to select multi-phase pump instead of gas separator
   Exceline® offers the following intake devices:
   - intake
   - gas separator
   - advanced gas handler
   - separator-gas Handler

   Series shall be equal to pump series. Intake device shaft shall be equal to pump shaft diameter.

6. **Motor Selection.**
   Power of the motor can be calculated manually:
   NMotor=(**n** × **Nmax stg** × **ρ** × **k**) × 1.1
   where:
   NMotor – power required for Motor, hp;
   n – total number of pump stages, pcs;
   Nmax stg – maximum power per stage in operation range, hp (Please, see this parameter in ESP Summary Tables);
   ρ – fluid density, g/cm3 (fresh water has density of 1 g/cm3)
   k – frequency factor or ratio between operation and nominal frequency.
   It is recommended to multiply by safety factor 1.1 (as indicated in the above equation) as an extra 10% of power reserve to avoid shaft sticking during start-up and commissioning.
   To select motor series, please refer to the table in Motor Summary.

7. **Induction motor or Permanent Magnet motor.**
   If preference is Power Save equipment or you would like to rotate the system at higher speeds, than Permanent Magnet motor is your choice.
   When choosing PMM, VSD designed for PMM is required.

8. **Shroud necessity.**
   If motor cooling velocity is not enough or motor is placed below the perforation zone, it is required to use motor shroud. Please select the appropriate type using specifications presented in Shroud section.

ESP Selection recommendations

9. **Protector selection.**
   As protector serves as motor protection device, then considering such parameters as: motor series and motor power and temperature rating, it is possible to easily select an appropriate protector. In case of horizontal or heavily deviated installations you must exclude labyrinth chamber, to choose only bags combinations. Elastomer protector bags are available in different materials. As the durability of the bag material depends on the temperature and the environment to which it is subjected, Exceline® uses as standard bag materials: Aflas or Fluorelastomer, as they are the most robust ones. One common fluorelastomer is Viton by DuPont, it is recommended to be used in cold climates, for mild to hot climates Aflas is the solution. The following chart demonstrates all parameters of these materials:

10. **Cable and MLE selection.**
    To determine precise length of the main power cable, the following formula shall be used: Length of the main power cable =Pump setting depth + 160 ft (reserve) – MLE length. The length of MLE shown in Design report may include additional length of high temperature cable. MLE type is always flat. Main power cable can be either flat or round. The choice depends on the following criteria: customer preference enough clearance between casing drift ID and ESP system. (Please see Engineering table: ESP System Overall Dimensions). There are the following options for cable and MLE armor: galvanized steel, stainless steel or Monel. The choice depends on the well conditions and customer requirements.

11. **CCCP selection.**
    Cross Coupling Cable Protector (CCCP) is intended to hold power cable and capillary tube on tubing and protects them from crushing between tubing joint and casing during RIH/POOH operations. CCCP is used only in deviated wells or upon Customer request. it's used 1 pc per 1 tubing, also as a reserve additional CCCP's should be taken in quantity 5–10% more (round up to 10).

12. **Selection of Check and Drain valve.**
    Drain valve enables fluid drainage from the tubing during the ESP pull out. To select an accurate drain valve design it is required to address the following parameters: tubing OD and thread type. Check valve is designed to keep fluid in the tubing, prevent reverse rotation in case of ESP stops, easier ESP re-start and to protect pump flow paths from the solids settling from the tubing. To select an appropriate check valve, please consider: tubing OD, thread type and pump flow rate.

13. **Selection of Upper Sand Trap**
    Upper Sand Trap is intended for trapping suspended solids from the fluid in tubing and prevention of solids deposition to the impellers and diffusers after ESP system shut-down. When ESP stopping suspended solids are deposit between upper sand trap pipe and tubing.

ESP questionnaire

Selection

Name:	
Company:	
Address:	
Well no. and field name:	

Installation:	new		or redesign				
Primary power supply:		volts		phase		hz	
Producing formation:							
Formation type*:							

*(sandstone, limestone, other)

Well data

1) Present production:		BPD		m^3/D	pumping		swabbing		flowing	
2) Bottom hole static pressure:		PSIG @		ft.			Kg/Sq.Cm@			m
or static fluid level					ft.					m
3) Bottom hole flowing pressure:		PSIG @		BFPD			Kg/Sq.Cm@			m^3/D
or dynamic fluid level		ft @		BPD			m @			m^3/D
4) Productivity index (PI)				BPD/PRIG					$m^3/D/Kgf/Sq.$ Cm.	
5) Producing gor:				S.C.F./S.T.B					$m^3(Gas)/ m^3(Fluid)$	
6) Bubble point pressure				PSIG					Kgf/Sq. Cm.	
7) Gas specific gravity:										
8) Water cut:										%
9) Oil specific gravity:					API					kg/ m^3
10) Water specific gravity:										kg/ m^3
11) Oil viscosity:	(1)			cP or		cS@		°F		°C
	(2)			cP or		cS@		°F		°C
PVT data		solution gor			FVF		PSIG		Kgf/Sq. Cm.	
		solution gor			FVF		PSIG		Kgf/Sq. Cm.	
		solution gor			FVF		PSIG		Kgf/Sq. Cm.	
Bottom hole temperature:					°F					°C
Sand content			ppm			g/l				% (Wt)

Oil chemical analysis

Resin		g/l		% (Wt)
Asphaltenes		g/l		% (Wt)

Paraffin		g/l		% (Wt)

Gas chemical analysis

H2S		% (Volume)
CO2		% (Volume)

N2		% (Volume)

ESP questionnaire

Water chemical analysis

Formation water salinity		ppm		g/l
				pH
Cl-		ppm		mg/l
SO42-		ppm		mg/l
HCO2-		ppm		mg/l

H2S		ppm		mg/l
Ca2+		ppm		mg/l
Mg 2+		ppm		mg/l
Na++ K+		ppm		mg/l

Exceline® specifications

Desired pump capacity:		BFPD or		BOPD;		Fluid m^3/D or		Oil m^3/D
Desired pump setting depth:			Ft				m	
Desired pump intake pressure:			PSIG				Kqf/Sq. Cm.	
Desired well head discharge pressure:			PSIG				Kqf/Sq. Cm.	
Gas through pump:							%	
Casing vented:	to atmosphere			to pipeline			none	
Electric power:			volts				Hz	
Desired pump series:								
Desired pump type								
Casing pressure:			PSIG				Kqf/Sq. Cm.	

Special problems

Sand		Scale		Corrosion		Paraffin		H2S		Power supply	

Remarks

Signed		Title	

Surface equipment

Variable Speed Drives

Example of abbreviation
ExVSD250 380V 50Hz 6P IF SWF N4

Short name:
ExVSD250

Ex	VSD	250	380V	50Hz	6P	IF	SWF	N4
1	2	3	4	5	6	7	8	9

1	Manufacturer Exceline®
2	VSD – Variable Speed Drive
3	Output current, A
4	Rated input voltage, V: 380 V 480 V
5	Rated frequency, Hz: 50 Hz 60 Hz

6	Rectifier pulse number: 6P 12P 18P
7	IF – Input Filter
8	SWF – Output sinewave filter
9	Class of protection: N – NEMA 3, 3R, 4, 4R

Variable Speed Drives

Select the power of the VSD according to the Motor power in the table

VSD Power		Output Current	Fits the motor	
Power at 380 V	Power at 480 V		50 Hz	60 Hz
kVA	kVA	A	kW	Hp
100	120	160	32	24
160	190	250	70	54
260	310	400	125	98
410	490	630	180	141
520	620	800	250	196
650	780	1000	320	252
780	936	1200	400	314
1150	1380	1800	500	1175

Use formulas to check the selection:

VSD Consumption current rating = Motor current rating x transformation ration x 1.3 (safety factor)

Example:

Data:

Motor ExMA460–150 3600 2400V 37.3A S CR1 1.1S T2

Calculated voltage losses in the cable = 200 V (for example)

Step-Up Transformer with primery winding = 380 V

Calculation:

SUT Tap voltage = 2400 V + 200 V = 2600 V

SUT ratio = 2600 V / 380 V = 6.84

VSD must be selested:

VSD current = 37.3 × 6.84 × 1.3 = 332 A

ExVSD400 must be selected with 400 A and 260 kVA at 50Hz according with the table

The SUT must be selected according to the rated voltage and current of the motor:

The secondary winding of the SUT must be at least 2600 V with a current of at least 37.3 A plus 30% of the safety factor.

Remote Monitoring System

Technology	Way to transmit data to the server	Base station	Antenna for the BS	Client Station	Works with SCADA	Works with RCM
LoRaWAN® – consists of a base station, an antenna for a base station, client devices, software for transferring data from the LoRaWAN®-server software to SCADA and software customization work. The LoRaWAN® specification is a Low Power, Wide Area (LPWA) networking protocol designed to wirelessly connect battery operated 'things' to the internet in regional, national or global networks, and targets key Internet of Things (IoT) requirements such as bi-directional communication, end-to-end security, mobility and localization services	3G /4G / LAN	Vega BS	Vertical antenna A10-868	EXCELINE® IIOT-AMS TILT COUNTER Ex	Yes	Yes
				EXCELINE® IIOT-AMS ANALOG		
				EXCELINE® IIOT-AMS Modbus		
				EXCELINE® IIOT-AMS Dry Contact		
				EXCELINE® IIOT-AMS Dry Contact Relay		
				EXCELINE® IIOT-AMS Pulse		

Gateway VEGA BS

Overview

The gateway is powered and communicates with the server via the Ethernet channel, moreover, the gateway may communicate with the server via the 3G channel. Linux operating system.

	BS-1	BS-1.2	BS-2	BS-2.2
Main				
GPS/GLONASS module	no		yes	
3G modem	no		yes	
Server communication link	Ethernet 10/100 Base-T		Ethernet 10/100 Base-T,GSM 3G	
Operating system	Linux			
USB-port	yes			
Operating	-40...+70 °C			
LoRaWAN				
Number of LoRa channels	8			
Frequency band	863–870 MHz			
Power output	up to 500 Mw			
Antenna connector	SMA	N-Type female	SMA	N-Type
Radio coverage in restrained urban conditions	up to 5 km			
Radio coverage within line of sight	up to 15 km			
Power				
Power consumption	3W		4W	
Power supply	Passive POE 4,5(+) 7,8(-) 15 W			
Case				
Housing dimensions	165 × 110 × 40	190 × 183 × 75	165 × 110 × 40	190 × 183 × 75
Ingress protection	IP65	IP67	IP65	IP67
Mounting	mast supports			

Vertical antenna A10-868 for Gateway Vega

This antenna is designed specially for application together with radio modems in systems of data transmission.

Model	A10-868	A10-868-T5
Operating frequency band, MHz	864–876	864–876
Gain,dBi	10	10
VSWR, not more than	1.5	1.5
Polarization		vertical
Max. power input, W	50	50
H-plane beamwidth	360°	360°
E-plane beamwidth	15°	15°
Impedance, Ohm	50	50
Electrical down tilt	1–2°	5°
Length, mm	1570	1570
Weight, kg	0.75	0.75
Rated wind velocity, m/s	40	40
Diameter of radome, mm	30	30
Radome	white fiberglass	white fiberglass
Mounting		On a mast 35–70 mm
Connector	N-female	N-female

Client devices

Autonomous measuring and switching device EXCELINE® IIOT-AMS TILT COUNTER Ex

The switching device is designed for operation with devices and mechanisms, where it is necessary to monitor the presence of movable parts tilts (slope).

Number of sensitive sensors	Up to 6 – option (by default- 2)
Range of operating temperatures	-55...+85°C
Built-in temperature sensor	yes (sends data every time you connect)
Charge measurement of the built-in power supply	yes (sends data every time you connect)
Class of LoRaWAN device	A
Frequency plan	RU868, EU868, IN865, AS923, AU915, KR920, US915, KZ865, any (on the basis of EU868)
Activation method in LoRaWAN network	ABP or OTAA (adjustable), by default- ABP
Communication Period	Adjustable in LoRaWAN network, by default –
1 time/15min	no
LoRa antenna type	internal
Sensitivity	-138 dBm
Radio communication range in dense development	Up to 5 km
Radio communication range in non-urban area	Up to 15 km
Default transmitter power	25 milliwatt (adjustable)

Client devices

Autonomous measuring and switching device EXCELINE® IIOT-AMS ANALOG

The switching device is designed for operation with the following control and measuring devices:

- Pressure sensors;
- Temperature sensors;
- Level sensors;
- Vibration sensors;
- Gas sensors (gas analysis);
- Luminance sensors;
- Humidity sensors;
- Current and voltage/battery sensors.

Analog inputs (current, resistive):	
Single-channel	1
Multichannel	Up to 8 – on-request (default 3)
Connection interface	Current loop 4–20 mA or resistance pt1000, Ni1000, TK5000
Operation temperature range	-55...+85°C
Built-in temperature sensor	Yes (sends data every time you connect)
Built-in power supply charge measuring	Yes (sends data every time you connect)
Class of LoRaWAN device	A
Frequency plan	RU868, EU868, IN865, AS923, AU915, KR920,US915, KZ865, any (on the basis of EU868)
Activation method in LoRaWAN network	ABP or OTAA (adjustable)
Communication Period	Adjustable in LoRaWAN network
LoRa antenna type	internal
Sensitivity	-138 dBm
Radio communication range in dense development	Up to 5 km
Radio communication range in non-urban area	Up to 15 km
Default transmitter power	25 milliwatt (adjustable)
Maximum transmitter power	100 milliwatt

Client devices

Switching device EXCELINE® IIOT-AMS Modbus

The switching device is designed for operation with the following control and measuring devices:

- Controllers of various oil and gas pumping stations: centrifugal pumps, screw pumps, downhole rod pumps, other type of pump station.
- Automatic-frequency control stations;
- Controllers of automated group measure unit for gas measuring in oil, pump stations controllers;
- Controllers of pipeline electrochemical protection;
- Reagent dosing station;
- Units for oil wells purifying;
- Control and measuring instruments with RS-485 interface;
- Any controller with Modbus protocol.

Connection interface	
	RS-485
	1 5V DC output, 3 «dry contact» type inputs optoisolated
Operation temperature range	-40...+85°C
Class of LoRaWAN device	C
Frequency plan	RU868, EU868, IN865, AS923, AU915, KR920, US915, KZ865, any (on the basis of EU868)
Activation method in LoRaWAN network	ABP or OTAA (adjustable)
Communication Period	Adjustable in LoRaWAN network
LoRa antenna type	internal
Sensitivity	-138 dBm
Radio communication range in dense development	Up to 5 km
Radio communication range in non-urban area	Up to 15 km
Default transmitter power	25 milliwatt (adjustable)
Maximum transmitter power	100 milliwatt

Client devices

Autonomous measuring and switching device EXCELINE® IIOT-AMS Dry Contact

- Opening/closing of doors, shutters, valves;
- Control switching on/off of electric installations (electric devices);
- Detection of sensors operation;
- Control of transition processes.

inputs (current, resistive):	
channel	6
connection interface	«dry contact»
Operation temperature range	-55...+85°C
Built-in temperature sensor	Yes (sends data every time you connect)
Built-in power supply charge measuring	Yes (sends data every time you connect)
Class of LoRaWAN device	A
Frequency plan	RU868, EU868, IN865, AS923, AU915, KR920,
US915, KZ865, any (on the basis of EU868)	A
Activation method in LoRaWAN network	ABP or OTAA (adjustable)
Communication Period	Adjustable in LoRaWAN network
LoRa antenna type	internal
Sensitivity	-138 dBm
Radio communication range in dense development	Up to 5 km
Radio communication range in non-urban area	Up to 15 km
Default transmitter power	25 milliwatt (adjustable)
Maximum transmitter power	100 milliwatt

Client devices

Autonomous measuring and switching device EXCELINE® IIOT-AMS Dry Contact Relay

For remote control of power equipment using commands received in LoRaWAN or NB-IoT network and for additional monitoring of 4 discrete inputs status with subsequent transmission of the inputs status in wireless LoRaWAN or NB-IoT network.

Connection interface	
	Power relay (NO, NC)
	1 5V DC output , 4 «dry contact» type inputs 2 are optoisolated
Operation temperature range	-40...+85°C
Class of LoRaWAN device	C
Frequency plan	RU868, EU868, IN865, AS923, AU915, KR920, US915, KZ865, any (on the basis of EU868)
Activation method in LoRaWAN network	ABP or OTAA (adjustable)
Communication Period	Adjustable in LoRaWAN network
LoRa antenna type	internal
Sensitivity	-138 dBm
Radio communication range in dense development	Up to 5 km
Radio communication range in non-urban area	Up to 15 km
Default transmitter power	25 milliwatt (adjustable)
Maximum transmitter power	100 milliwatt

Client devices

Autonomous measuring and switching device EXCELINE® IIOT-AMS Pulse

The switching device is designed for operation with the following control and measuring devices:

- Operation with liquid, gas, steam meters
- Pulse output of electric meter
- Operation with flowmeters and mass meters

Multichannel	Up to 6 – upon request (by default 1)
Connection interface	Pulse (frequency) input
Operation temperature range	-55...+85°C
Built-in temperature sensor	Yes (sends data every time you connect)
Built-in power supply charge measuring	Yes (sends data every time you connect)
Class of LoRaWAN device	A
Frequency plan	RU868, EU868, IN865, AS923, AU915, KR920, US915, KZ865, any (on the basis of EU868)
Activation method in LoRaWAN network	ABP or OTAA (adjustable)
Communication Period	Adjustable in LoRaWAN network
LoRa antenna type	internal
Sensitivity	-138 dBm
Radio communication range in dense development	Up to 5 km
Radio communication range in non-urban area	Up to 15 km
Default transmitter power	25 milliwatt (adjustable)
Maximum transmitter power	100 milliwatt

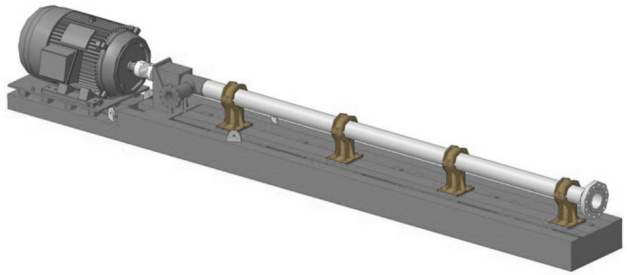
Horizontal Pumping Systems

Example of abbreviation
ExHPS406-680 FLT 0.87 S14 134STG CR1 AR1

Short name:
ExHPS406-680

Ex	HPS	406	680	FLT	0.87	S14	134STG	CR1	AR1
1	2	3	4	5	6	7	8	9	10

1	Manufacturer Exceline®
2	HPS – Horizontal Pumping Systems
3	HPS series
4	HPS flow rate, bpd @ Best Efficiency Point (BEP) at 60 Hz
5	Pump design FLT – floater SCMP – semi-compression CMP – compression
6	Shaft diameter, inch



7	Shaft material and yield strength: S8 – Stainless steel (785 MPa) S11 – Stainless steel (1080 MPa) S13 – Stainless steel (1275 MPa) S14 – Stainless steel (1370 MPa) S16 – Stainless steel (1570 MPa) M8 – Monel alloy (785 MPa) I8 – Inconel alloy (785 MPa) I11 – Inconel alloy (1080 MPa) I13 – Inconel alloy (1275 MPa) I14 – Inconel alloy (1370 MPa)
8	Number of stages
9	Corrosion resistance: CR0 – carbon steel head, base and housing, carbon steel fasteners CR1 – stainless steel head and base, carbon steel housing with anti-corrosion coating (super stainless flame coating), monel fasteners CR2 – stainless steel head, base and housing, monel fasteners
10	Abrasion resistance AR1 – For fluid containing solids up to 175 ptb (500 mg/l). Applicable for all Floater pumps. AR2 – For fluid containing solids up to 350 ptb (1000 mg/l). Applicable only for Compression and Semi-compression pumps.

Horizontal Pumping Systems

Summary

HSPS	Housing Diameter	Stage type	Efficiency	Shaft Diameter	BEP@50 Hz				BEP@60 Hz			
					Capacity	Optimum Operating Range	Head	Power	Capacity	Optimum Operating Range	Head	Power
	inch mm		%	inch mm	BPD m^3	BPD m^3	ft m	HP kW	BPD m^3	BPD m^3	ft m	HP kW
ExHPS406-450	**4.06** 102	Mix	51	**0.87** 22	**377** 60	**170-520** 27-83	**16.4** 5	**0.1** 0.074	**450** 72	**200-625** 32-100	**19.68** 6	**0.17** 0.13
ExHPS406-680	**4.06** 102	Mix	60	**0.87** 22	**598** 95	**290-770** 46-123	**16.4** 5	**0.12** 0.088	**680** 114	**350-925** 55-148	**19.68** 6	**0.21** 0.15
ExHPS406-1100	**4.06** 102	Mix	62	**0.87** 22	**912** 145	**500-1125** 79-179	**15.5** 4.75	**0.18** 0.13	**1100** 174	**600-1350** 95-215	**18.7** 5.7	**0.31** 0.23
ExHPS512-1700	**5.12** 130	Mix	60	**0.87** 22	**1415** 225	**830-1800** 132-285	**28.8** 8.8	**0.6** 0.44	**1700** 270	**1000-2150** 158-340	**34.63** 10.56	**1.04** 0.76
ExHPS535-2600	**5.35** 137	Mix	68	**0.87** 22	**2200** 350	**1350-2670** 212-424	**32.8** 10	**0.69** 0.51	**2600** 420	**1600-3200** 254-509	**39.36** 12	**1.2** 0.88
ExHPS535-3700	**5.35** 137	Mix	70	**0.87** 22	**3145** 500	**2000-3830** 318-609	**32.8** 10	**1.1** 0.81	**3700** 600	**2400-4600** 380-730	**39.36** 12	**1.91** 1.4
ExHPS535-4900	**5.35** 137	Mix	71	**1** 25	**4088** 650	**3330-4500** 530-715	**26.2** 8	**1.1** 0.81	**4900** 780	**4000-5400** 636-858	**31.48** 9.6	**1.91** 1.4
ExHPS562-13000	**5.62** 143	Mix	63	**1** 25	**11000** 1750	**4160-15000** 662-2385	**27.8** 8.5	**3.2** 2.35	**13200** 2100	**5000-18000** 794-2862	**33.45** 10.2	**5.52** 4.06
ExHPS862-19000	**8.62** 219	Mix	77	**1.18** 30	**15725** 2500	**10000-20000** 1590-3180	**73.8** 22.5	**11** 8.1	**18900** 3000	**12000-24000** 1900-3800	**88.56** 27	**19.04** 14
ExHPS862-26000	**8.62** 219	Mix	72	**1.18** 30	**22000** 3500	**15800-27000** 2517-4306	**78.7** 24	**19.1** 14	**26400** 4200	**19000-32000** 3020-5160	**94.46** 28.8	**32.9** 24.2
ExHPS950-36000	**9.50** 242	Mix	71	**1.5** 38	**30190** 4800	**20000-39500** 3180-6300	**111.5** 34	**29.9** 22	**36230** 5760	**24000-47500** 3820-7550	**133.82** 40.8	**51.7** 38.02
ExHPS1000-51000	**10** 254	Mix	77	**1.75** 44.5	**42770** 6800	**29000-53300** 4637-8480	**147.6** 45	**65.3** 48	**51320** 8160	**35000-64000** 5560-10170	**177.12** 54	**112.81** 82.95

EXCELINE

PERFORMANCE MATTERS

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