Pexgol

Dynapumps®

Design instructions for boreholes

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Selecting the right pipe

1. The following information is requiered to select the pipe class:
- Water temperature (°C).
- Minimum dynamic level H (minimum level that the water will arrive during the operation) (m).
- Outlet pressure required (Pout) (bar).
- Pressure at closed valve (bar).
- Δ ƒ - Friction Head Losses (m).

2. Calculate the requiered TDH value of the pump according to the following formula:

TDH= H + (10 x Pout) + Δ ƒ

Note: Initially we assume a value of 1-5% for the friction head losses Δ ƒ. Later we will calculate it exactly according to the chosen pipe.

3. According to the operating temperature choose in the table 1 the class that has a **S max** value equal or greater than the requiered TDH of the pump.

4. Verify that the closed valve pressure with which you wish to work is less than or equal to the permitted pressure of the closed valve shown in Table 2.2.

5. Each table contains pipe information with the same temperature and class between diameters 50-280 mm. Find the table that belongs to the chosen temperature and class.

6. Choose the pipe according to the parameters of the borehole: flow and head losses.
To choose the pipe more accurately, use the graphs on pages 20-23.

7. Calculate the total weight of the chosen pipe with the following formula:

P-total: PB + PC x L + PT x H

P-total: Total weight of the pipe (kg)

PB: Weight of the pump (kg)

PC: Weight in kg per meter of cable

L: Pipe length (m)

PT: Weight of the pipe filled with water (kg/m).
See table 3.1.

H: Minimum dynamic level of the borehole design.
Verify that the result obtained is less than or equal to the value shown in the table in the "Maximum Total Weight" column of the chosen pipe.

Table 2.1: S max Values (m)

Class	20°	25°	30°	35°	40°
15	169	160	151	142	134
19	200	190	180	170	160
24	247	233	220	207	195
30	287	271	256	241	227

Table 2.2: Allowed pressures of closed valve (bar)

Class	20°	25°	30°	35°	40°
15	20	19	17.5	16.5	15.5
19	23	22	21	20	18.5
24	31	29.5	28	26.5	25
30	40	37.5	35	33	31

Note: In case of temperature above 40°C and high pressures, it will be possible to use dedicated cables that will support the pump and prevent the pipe from carrying the total weight of the system

Table 3.1: Weight of the pipe per meter full of water

D (mm)	Weight (kg/m)
50	2.05
63	3.25
75	4.6
90	6.63
110	9.9
125	12.8
140	16
160	20.95
180	26.5
200	32.74
225	41.4
250	51.15
280	64.16

8. The values of maximum total weight were calculated for a pipe which is installed with the value of **S max**.

9. In case the P-total value is greater than the maximum weight of the chosen pipe, there are three options:

- Choose a pipe with higher class (take into account that in this case the head losses will increase).
- Choose a pipe with larger diameter.
- Consult with our engineering team.

10. For elongation calculation please contact Golan team.

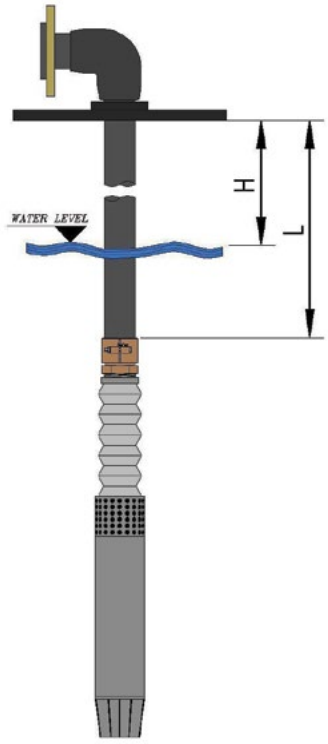
11. If the pipe value of the pump "S" is lower than the value of **S max**, you can increase the pump weight. However do not exceed the value of the total weight.

Pipe data according to the pipe SDR and tem-

References:

- D: External diameter (mm)
- T: Thickness (mm)
- ID: Inside diameter (mm)
- Q: Flow rate (m3 / h)
- Δ ƒ (%): Head Losses in percentage.
- Maximum Weight: Sum of the weight of the pipe filled with water, cables and the weight of the pump (kg).
- EL (%): Elongation of the pipe in percentage.

In case it is required that the head losses exceed 10%, consult with our engineering team.



H: Minimum dynamic level of the borehole
L: Pipe length

Data for pipe class in different working temperatures

Table 4.1: 20°C // Pexgol Class 15

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ f (%)	Maximum Total Weight
50	4.6	40.8	7	5	409
50	4.6	40.8	10	10	409
63	5.8	51.4	13	5	647
63	5.8	51.4	18	10	647
75	6.8	61.4	20	5	918
75	6.8	61.4	29	10	918
90	8.2	73.6	32.5	5	1318
90	8.2	73.6	47.2	10	1318
110	10	90	55	5	1976
110	10	90	80	10	1976
125	11.4	102.2	77	5	2555
125	11.4	102.2	112	10	2555
140	12.7	114.6	104	5	3194
140	12.7	114.6	151	10	3194
160	14.6	130.8	147	5	4182
160	14.6	130.8	214	10	4182
180	16.4	147.2	201	5	5290
180	16.4	147.2	292	10	5290
200	18.1	163.8	266	5	6528
200	18.1	163.8	387	10	6528
225	20.4	184.2	362	5	8264
225	20.4	184.2	527	10	8264
250	22.7	204.6	478	5	10211
250	22.7	204.6	694	10	10211
280	25.4	229.2	644	5	12796

Table 4.2: 25°C // Pexgol Class 15

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ f (%)	Maximum Total Weight
50	4.6	40.8	7	5	390
50	4.6	40.8	10	10	390
63	5.8	51.4	13	5	614
63	5.8	51.4	18	10	614
75	6.8	61.4	20	5	872
75	6.8	61.4	29	10	872
90	8.2	73.6	32.5	5	1250
90	8.2	73.6	47.2	10	1250

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
110	10	90	55	5	1876
110	10	90	80	10	1876
125	11.4	102.2	77	5	2426
125	11.4	102.2	112	10	2426
140	12.7	114.6	104	5	3033
140	12.7	114.6	151	10	3033
160	14.6	130.8	147	5	3970
160	14.6	130.8	214	10	3970
180	16.4	147.2	201	5	5023
180	16.4	147.2	292	10	5023
200	18.1	163.8	266	5	6198
200	18.1	163.8	387	10	6198
225	20.4	184.2	362	5	7847
225	20.4	184.2	527	10	7847
250	22.7	204.6	478	5	9695
250	22.7	204.6	694	10	9695
280	25.4	229.2	644	5	12150
280	25.4	229.2	936	10	12150

Table 5.1: 30°C // Pexgol Class 15

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ(%)	Maximum Total Weight
50	4.6	40.8	7	5	368
50	4.6	40.8	10	10	368
63	5.8	51.4	13	5	580
63	5.8	51.4	18	10	580
75	6.8	61.4	20	5	825
75	6.8	61.4	29	10	825
90	8.2	73.6	32.5	5	1184
90	8.2	73.6	47.2	10	1184
110	10	90	55	5	1776
110	10	90	80	10	1776
125	11.4	102.2	77	5	2297
125	11.4	102.2	112	10	2297
140	12.7	114.6	104	5	2870
140	12.7	114.6	151	10	2870
160	14.6	130.8	147	5	3760
160	14.6	130.8	214	10	3760
180	16.4	147.2	201	5	4755

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ(%)	Maximum Total Weight
180	16.4	147.2	292	10	4755
200	18.1	163.8	266	5	5868
200	18.1	163.8	387	10	5868
225	20.4	184.2	362	5	7430
225	20.4	184.2	527	10	7430
250	22.7	204.6	478	5	9178
250	22.7	204.6	694	10	9178
280	25.4	229.2	644	5	11500
280	25.4	229.2	936	10	11500

Table 6.1: 35°C // Pexgol Class 15

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	4.6	40.8	7	5	345
50	4.6	40.8	10	10	345
63	5.8	51.4	13	5	545
63	5.8	51.4	18	10	545
75	6.8	61.4	20	5	774
75	6.8	61.4	29	10	774
90	8.2	73.6	32.5	5	1110
90	8.2	73.6	47.2	10	1110
110	10	90	55	5	1665
110	10	90	80	10	1665
125	11.4	102.2	77	5	2153
125	11.4	102.2	112	10	2153
140	12.7	114.6	104	5	2692
140	12.7	114.6	151	10	2692
160	14.6	130.8	147	5	3524
160	14.6	130.8	214	10	3524
180	16.4	147.2	201	5	4458
180	16.4	147.2	292	10	4458
200	18.1	163.8	266	5	5500
200	18.1	163.8	387	10	5500
225	20.4	184.2	362	5	6964
225	20.4	184.2	527	10	6964
250	22.7	204.6	478	5	8605
250	22.7	204.6	694	10	8605
280	25.4	229.2	644	5	10783
280	25.4	229.2	936	10	10783

Table 7.1: 40°C // Pexgol Class 15

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	4.6	40.8	7	5	322
50	4.6	40.8	10	10	322
63	5.8	51.4	13	5	510
63	5.8	51.4	18	10	510
75	6.8	61.4	20	5	722
75	6.8	61.4	29	10	722
90	8.2	73.6	32.5	5	1036
90	8.2	73.6	47.2	10	1036
110	10	90	55	5	1554
110	10	90	80	10	1554
125	11.4	102.2	77	5	2010
125	11.4	102.2	112	10	2010
140	12.7	114.6	104	5	2512
140	12.7	114.6	151	10	2512
160	14.6	130.8	147	5	3290
160	14.6	130.8	214	10	3290
180	16.4	147.2	201	5	4160
180	16.4	147.2	292	10	4160
200	18.1	163.8	266	5	5134
200	18.1	163.8	387	10	5134
225	20.4	184.2	362	5	6500
225	20.4	184.2	527	10	6500
250	22.7	204.6	478	5	8030
250	22.7	204.6	694	10	8030
280	25.4	229.2	644	5	10064

Table 7.2: 20°C // Pexgol Class 19

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	5.6	38.8	6	5	490
50	5.6	38.8	9	10	490
63	7.1	48.8	11	5	773
63	7.1	48.8	16	10	773
75	8.4	58.2	17	5	1097
75	8.4	58.2	25	10	1097
90	10.1	69.8	28	5	1575
90	10.1	69.8	41	10	1575
110	12.3	85.4	48	5	2362
110	12.3	85.4	69	10	2362
125	14.1	96.8	66	5	3054
125	14.1	96.8	97	10	3054
140	15.7	108.6	90	5	3817
140	15.7	108.6	131	10	3817
160	17.9	124.2	128	5	4998
160	17.9	124.2	186	10	4998

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ f (%)	Maximum Total Weight
180	20.1	139.8	175	5	6322
180	20.1	139.8	254	10	6322
200	22.4	155.2	230	5	7800
200	22.4	155.2	334	10	7800
225	25.2	174.6	313	5	9877
225	25.2	174.6	455	10	9877
250	27.9	194.2	414	5	12203
250	27.9	194.2	603	10	12203
280	31.3	217.4	558	5	15292
280	31.3	217.4	811	10	15292

Table 8.1: 25°C // Pexgol Class 19

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ f (%)	Maximum Total Weight
50	5.6	38.8	6	5	464
50	5.6	38.8	9	10	464
63	7.1	48.8	11	5	734
63	7.1	48.8	16	10	734
75	8.4	58.2	17	5	1042
75	8.4	58.2	25	10	1042
90	10.1	69.8	28	5	1495
90	10.1	69.8	41	10	1495
110	12.3	85.4	48	5	2242
110	12.3	85.4	69	10	2242
125	14.1	96.8	66	5	2900
125	14.1	96.8	97	10	2900
140	15.7	108.6	90	5	3624
140	15.7	108.6	131	10	3624
160	17.9	124.2	128	5	4745
160	17.9	124.2	186	10	4745
180	20.1	139.8	175	5	6002
180	20.1	139.8	254	10	6002
200	22.4	155.2	230	5	7407
200	22.4	155.2	334	10	7407
225	25.2	174.6	313	5	9377
225	25.2	174.6	455	10	9377
250	27.9	194.2	414	5	11586
250	27.9	194.2	603	10	11586
280	31.3	217.4	558	5	14520
280	31.3	217.4	811	10	14520

Table 9.1: 30°C // Pexgol Class 19

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	5.6	38.8	6	5	440
50	5.6	38.8	9	10	440
63	7.1	48.8	11	5	695
63	7.1	48.8	16	10	695
75	8.4	58.2	17	5	986
75	8.4	58.2	25	10	986
90	10.1	69.8	28	5	1415
90	10.1	69.8	41	10	1415
110	12.3	85.4	48	5	2123
110	12.3	85.4	69	10	2123
125	14.1	96.8	66	5	2745
125	14.1	96.8	97	10	2745
140	15.7	108.6	90	5	3430
140	15.7	108.6	131	10	3430
160	17.9	124.2	128	5	4493
160	17.9	124.2	186	10	4493
180	20.1	139.8	175	5	5683
180	20.1	139.8	254	10	5683
200	22.4	155.2	230	5	7012
200	22.4	155.2	334	10	7012
225	25.2	174.6	313	5	8878
225	25.2	174.6	455	10	8878
250	27.9	194.2	414	5	10970
250	27.9	194.2	603	10	10970
280	31.3	217.4	558	5	13746
280	31.3	217.4	811	10	13746

Table 10.1: 35°C // Pexgol Class 19

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	5.6	38.8	6	5	412
50	5.6	38.8	9	10	412
63	7.1	48.8	11	5	650
63	7.1	48.8	16	10	650
75	8.4	58.2	17	5	925
75	8.4	58.2	25	10	925
90	10.1	69.8	28	5	1327
90	10.1	69.8	41	10	1327
110	12.3	85.4	48	5	1990
110	12.3	85.4	69	10	1990
125	14.1	96.8	66	5	2573
125	14.1	96.8	97	10	2573
140	15.7	108.6	90	5	3217
140	15.7	108.6	131	10	3217
160	17.9	124.2	128	5	4212
160	17.9	124.2	186	10	4212
180	20.1	139.8	175	5	5327
180	20.1	139.8	254	10	5327
200	22.4	155.2	230	5	6574
200	22.4	155.2	334	10	6574
225	25.2	174.6	313	5	8323
225	25.2	174.6	455	10	8323
250	27.9	194.2	414	5	10283
250	27.9	194.2	603	10	10283
280	31.3	217.4	558	5	12886
280	31.3	217.4	811	10	12886

Table 11.1: 40°C // Pexgol Class 19

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	5.6	38.8	6	5	385
50	5.6	38.8	9	10	385
63	7.1	48.8	11	5	608
63	7.1	48.8	16	10	608
75	8.4	58.2	17	5	863
75	8.4	58.2	25	10	863
90	10.1	69.8	28	5	1238
90	10.1	69.8	41	10	1238
110	12.3	85.4	48	5	1858
110	12.3	85.4	69	10	1858
125	14.1	96.8	66	5	2400
125	14.1	96.8	97	10	2400
140	15.7	108.6	90	5	3000
140	15.7	108.6	131	10	3000
160	17.9	124.2	128	5	3930
160	17.9	124.2	186	10	3930
180	20.1	139.8	175	5	4972
180	20.1	139.8	254	10	4972
200	22.4	155.2	230	5	6136
200	22.4	155.2	334	10	6136
225	25.2	174.6	313	5	7768
225	25.2	174.6	455	10	7768
250	27.9	194.2	414	5	9598
250	27.9	194.2	603	10	9598
280	31.3	217.4	558	5	12027
280	31.3	217.4	811	10	12027

Table 12.1: 20°C // Pexgol Class 24

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Maximum Pump Weight at Max S	Maximum Total Weight
50	6.9	38.2	6	112	585
50	6.9	38.2	8	112	585
63	8.6	45.8	9	177	925
63	8.6	45.8	13	177	925
75	10.3	54.4	15	252	1314
75	10.3	54.4	21	252	1314
90	12.3	65.4	24	360	1885
90	12.3	65.4	35	360	1885
110	15.1	79.8	40	542	2827
110	15.1	79.8	58	542	2827
125	17.1	90.8	56	701	3655
125	17.1	90.8	82	701	3655
140	19.2	101.6	76	876	4570
140	19.2	101.6	110	876	4570
160	21.9	116.2	76	1147	5982
160	21.9	116.2	110	1147	5982
180	24.6	130.8	108	1450	7567
180	24.6	130.8	157	1450	7567
200	27.3	145.4	147	1790	9338
200	27.3	145.4	214	1790	9338
225	30.8	163.4	195	2266	11822
225	30.8	163.4	283	2266	11822
250	34.2	181.6	264	2800	14606
250	34.2	181.6	384	2800	14606
280	38.3	203.4	470	3510	18304
280	38.3	203.4	684	3510	18304

Table 12.2: 25°C // Pexgol Class 24

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	6.9	38.2	6	5	556
50	6.9	38.2	8	10	556
63	8.6	45.8	9	5	878
63	8.6	45.8	13	10	878
75	10.3	54.4	15	5	1247
75	10.3	54.4	21	10	1247
90	12.3	65.4	24	5	1790
90	12.3	65.4	35	10	1790
110	15.1	79.8	40	5	2684
110	15.1	79.8	58	10	2684
125	17.1	90.8	56	5	3470
125	17.1	90.8	82	10	3470
140	19.2	101.6	76	5	4338
140	19.2	101.6	110	10	4338
160	21.9	116.2	76	5	5680

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
160	21.9	116.2	110	10	5680
180	24.6	130.8	108	5	7185
180	24.6	130.8	157	10	7185
200	27.3	145.4	147	5	8866
200	27.3	145.4	214	10	8866
225	30.8	163.4	195	5	11224
225	30.8	163.4	283	10	11224
250	34.2	181.6	264	5	13868
250	34.2	181.6	384	10	13868
280	38.3	203.4	470	5	17390
280	38.3	203.4	684	10	17380

Table 13.1: 30°C // Pexgol Class 24

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	6.9	38.2	6	5	526
50	6.9	38.2	8	10	526
63	8.6	45.8	9	5	832
63	8.6	45.8	13	10	832
75	10.3	54.4	15	5	1180
75	10.3	54.4	21	10	1180
90	12.3	65.4	24	5	1694
90	12.3	65.4	35	10	1694
110	15.1	79.8	40	5	2540
110	15.1	79.8	58	10	2540
125	17.1	90.8	56	5	3286
125	17.1	90.8	82	10	3286
140	19.2	101.6	76	5	4107
140	19.2	101.6	110	10	4107
160	21.9	116.2	76	5	5377
160	21.9	116.2	110	10	5377
180	24.6	130.8	108	5	6802
180	24.6	130.8	157	10	6802
200	27.3	145.4	147	5	8393
200	27.3	145.4	214	10	8393
225	30.8	163.4	195	5	10627
225	30.8	163.4	283	10	10627
250	34.2	181.6	264	5	13130
250	34.2	181.6	384	10	13130
280	38.3	203.4	470	5	16453
280	38.3	203.4	684	10	16453

Table 14.1: 35°C // Pexgol Class 24

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	6.9	38.2	6	5	493
50	6.9	38.2	8	10	493
63	8.6	45.8	9	5	780
63	8.6	45.8	13	10	780
75	10.3	54.4	15	5	1107
75	10.3	54.4	21	10	1107
90	12.3	65.4	24	5	1588
90	12.3	65.4	35	10	1588
110	15.1	79.8	40	5	2382
110	15.1	79.8	58	10	2382
125	17.1	90.8	56	5	3080
125	17.1	90.8	82	10	3080
140	19.2	101.6	76	5	3850
140	19.2	101.6	110	10	3850
160	21.9	116.2	76	5	5040
160	21.9	116.2	110	10	6040
180	24.6	130.8	108	5	6377
180	24.6	130.8	157	10	6377
200	27.3	145.4	147	5	7870
200	27.3	145.4	214	10	7870
225	30.8	163.4	195	5	9962
225	30.8	163.4	283	10	9962
250	34.2	181.6	264	5	12310
250	34.2	181.6	384	10	12310
280	38.3	203.4	470	5	15425
280	38.3	203.4	684	10	15425

Table 15.1: 40°C // Pexgol Class 24

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	6.9	38.2	6	5	460
50	6.9	38.2	8	10	460
63	8.6	45.8	9	5	728
63	8.6	45.8	13	10	728
75	10.3	54.4	15	5	1033
75	10.3	54.4	21	10	1033
90	12.3	65.4	24	5	1482
90	12.3	65.4	35	10	1482
110	15.1	79.8	40	5	2224
110	15.1	79.8	58	10	2224
125	17.1	90.8	56	5	2875
125	17.1	90.8	82	10	2875
140	19.2	101.6	76	5	3594
140	19.2	101.6	110	10	3594
160	21.9	116.2	76	5	4705
160	21.9	116.2	110	10	4705
180	24.6	130.8	108	5	5952
180	24.6	130.8	157	10	5952
200	27.3	145.4	147	5	7344
200	27.3	145.4	214	10	7344
225	30.8	163.4	195	5	9298
225	30.8	163.4	283	10	9298
250	34.2	181.6	264	5	11488
250	34.2	181.6	384	10	11488
280	38.3	203.4	470	5	14397
280	38.3	203.4	684	10	14397

Table 15.2: 20°C // Pexgol Class 30

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ(%)	Maximum Total Weight
50	8.3	33.4	4	5	688
50	8.3	33.4	6	10	688
63	10.5	42	7	5	1087
63	10.5	42	11	10	1087
75	12.5	50	12	5	1543
75	12.5	50	17	10	1543
90	15	60	19	5	2214
90	15	60	28	10	2214
110	18.3	73.4	32	5	3320
110	18.3	73.4	47	10	3320
125	20.8	83.4	45	5	4294
125	20.8	83.4	66	10	4294
140	23.3	93.4	61	5	5368
140	23.3	93.4	88	10	5368
160	26.3	107.4	88	5	7028

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ(%)	Maximum Total Weight
160	26.3	107.4	128	10	7028
180	29.8	120.4	118	5	8890
180	29.8	120.4	172	10	8890
200	33.2	133.6	156	5	10970
200	33.2	133.6	226	10	10970
225	37.4	150.2	212	5	13890
225	37.4	150.2	308	10	13890
250	41.5	167	280	5	17160
250	41.5	167	407	10	17160
280	38.3	203.4	470	5	21504
280	38.3	203.4	684	10	21504

Table 16.1: 25°C // Pexgol Class 30

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	8.3	33.4	4	5	653
50	8.3	33.4	6	10	653
63	10.5	42	7	5	1032
63	10.5	42	11	10	1032
75	12.5	50	12	5	1465
75	12.5	50	17	10	1465
90	15	60	19	5	2102
90	15	60	28	10	2102
110	18.3	73.4	32	5	3153
110	18.3	73.4	47	10	3153
125	20.8	83.4	45	5	4077
125	20.8	83.4	66	10	4077
140	23.3	93.4	61	5	5096
140	23.3	93.4	88	10	5096
160	26.3	107.4	88	5	6673
160	26.3	107.4	128	10	6673
180	29.8	120.4	118	5	8440
180	29.8	120.4	172	10	8440
200	33.2	133.6	156	5	10416
200	33.2	133.6	226	10	10416
225	37.4	150.2	212	5	13187
225	37.4	150.2	308	10	13187
250	41.5	167	280	5	16292
250	41.5	167	407	10	16292
280	46.5	187	548	5	20417
280	46.3	203.4	548	10	20417
280	46.3	203.4	548	10	3.3

Table 17.1: 30°C // Pexgol Class 30

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	8.3	33.4	4	5	618
50	8.3	33.4	6	10	618
63	10.5	42	7	5	977
63	10.5	42	11	10	977
75	12.5	50	12	5	1387
75	12.5	50	17	10	1387
90	15	60	19	5	1990
90	15	60	28	10	1990
110	18.3	73.4	32	5	2985
110	18.3	73.4	47	10	2985
125	20.8	83.4	45	5	3860
125	20.8	83.4	66	10	3860
140	23.3	93.4	61	5	4825
140	23.3	93.4	88	10	4825
160	26.3	107.4	88	5	6318
160	26.3	107.4	128	10	6318
180	29.8	120.4	118	5	7990
180	29.8	120.4	172	10	7990
200	33.2	133.6	156	5	9860
200	33.2	133.6	226	10	9860
225	37.4	150.2	212	5	12484
225	37.4	150.2	308	10	12484
250	41.5	167	280	5	15425
250	41.5	167	407	10	15425
280	46.5	187	377	5	19330
280	46.5	187	548	10	19330

Table 18.1: 35°C // Pexgol Class 30

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ f (%)	Maximum Total Weight
50	8.3	33.4	4	5	580
50	8.3	33.4	6	10	580
63	10.5	42	7	5	916
63	10.5	42	11	10	916
75	12.5	50	12	5	1300
75	12.5	50	17	10	1300
90	15	60	19	5	1866
90	15	60	28	10	1866
110	18.3	73.4	32	5	2800
110	18.3	73.4	47	10	2800
125	20.8	83.4	45	5	3620
125	20.8	83.4	66	10	3620
140	23.3	93.4	61	5	4523
140	23.3	93.4	88	10	4523
160	26.3	107.4	88	5	5923
160	26.3	107.4	128	10	5923
180	29.8	120.4	118	5	7492
180	29.8	120.4	172	10	7492
200	33.2	133.6	156	5	9245
200	33.2	133.6	226	10	9245
225	37.4	150.2	212	5	11704
225	37.4	150.2	308	10	11704
250	41.5	167	280	5	14460
250	41.5	167	407	10	14460
280	46.5	187	377	5	18122
280	46.5	187	548	10	18122

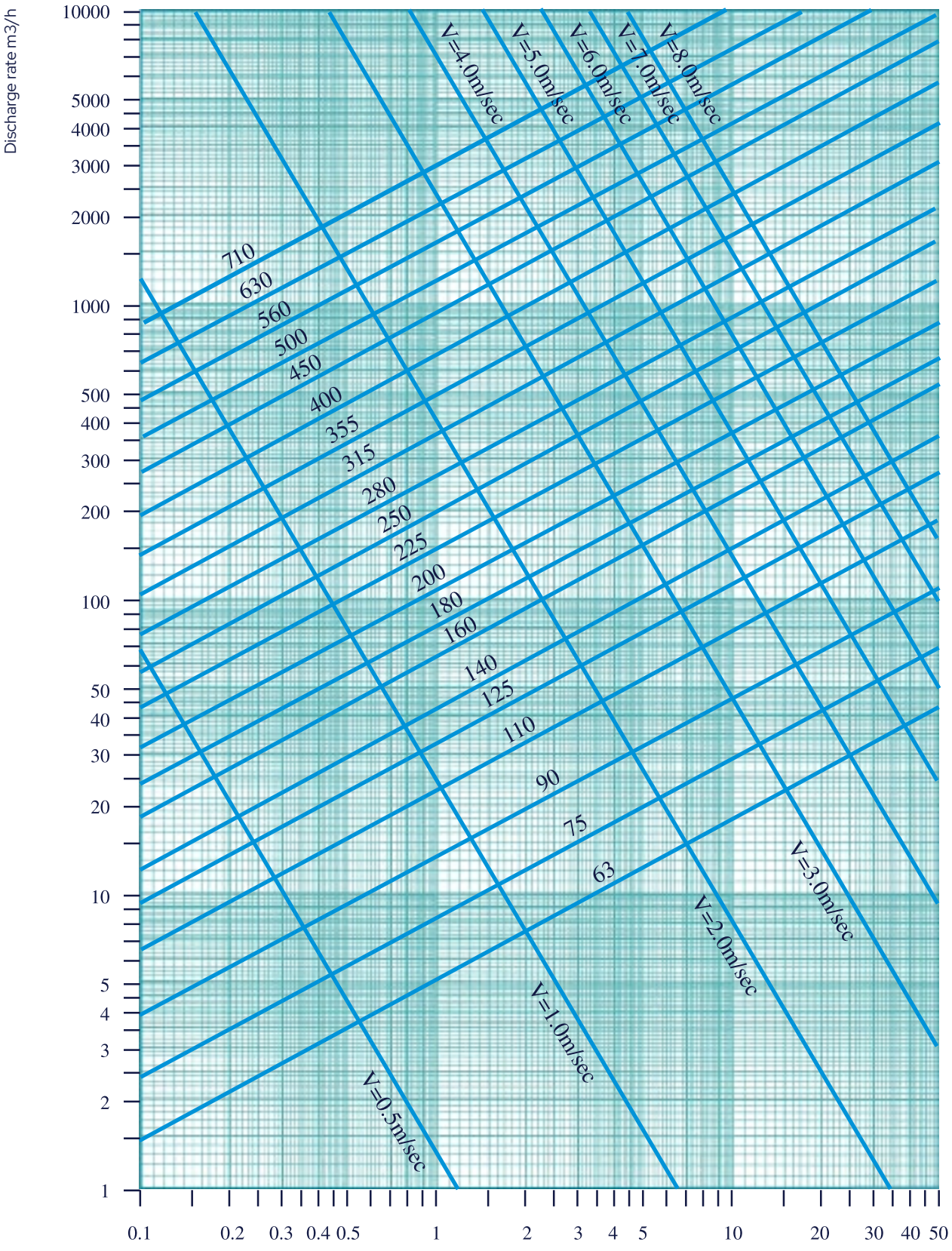
Table 18.2: 40°C // Pexgol Class 30

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ f (%)	Maximum Total Weight
50	8.3	33.4	4	5	650
50	8.3	33.4	6	10	540
63	10.5	42	7	5	855
63	10.5	42	11	10	855
75	12.5	50	12	5	1214
75	12.5	50	17	10	1214
90	15	60	19	5	1740
90	15	60	28	10	1740
110	18.3	73.4	32	5	2612
110	18.3	73.4	47	10	2612
125	20.8	83.4	45	5	3377
125	20.8	83.4	66	10	3377
140	23.3	93.4	61	5	4222
140	23.3	93.4	88	10	4222
160	26.3	107.4	88	5	5528
160	26.3	107.4	128	10	5528

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
180	29.8	120.4	118	5	6992
180	29.8	120.4	172	10	6992
200	33.2	133.6	156	5	8628
200	33.2	133.6	226	10	8628
225	37.4	150.2	212	5	10924
225	37.4	150.2	308	10	10924
250	41.5	167	280	5	13496
250	41.5	167	407	10	13496
280	46.5	187	377	5	16913
280	46.5	187	548	10	16913

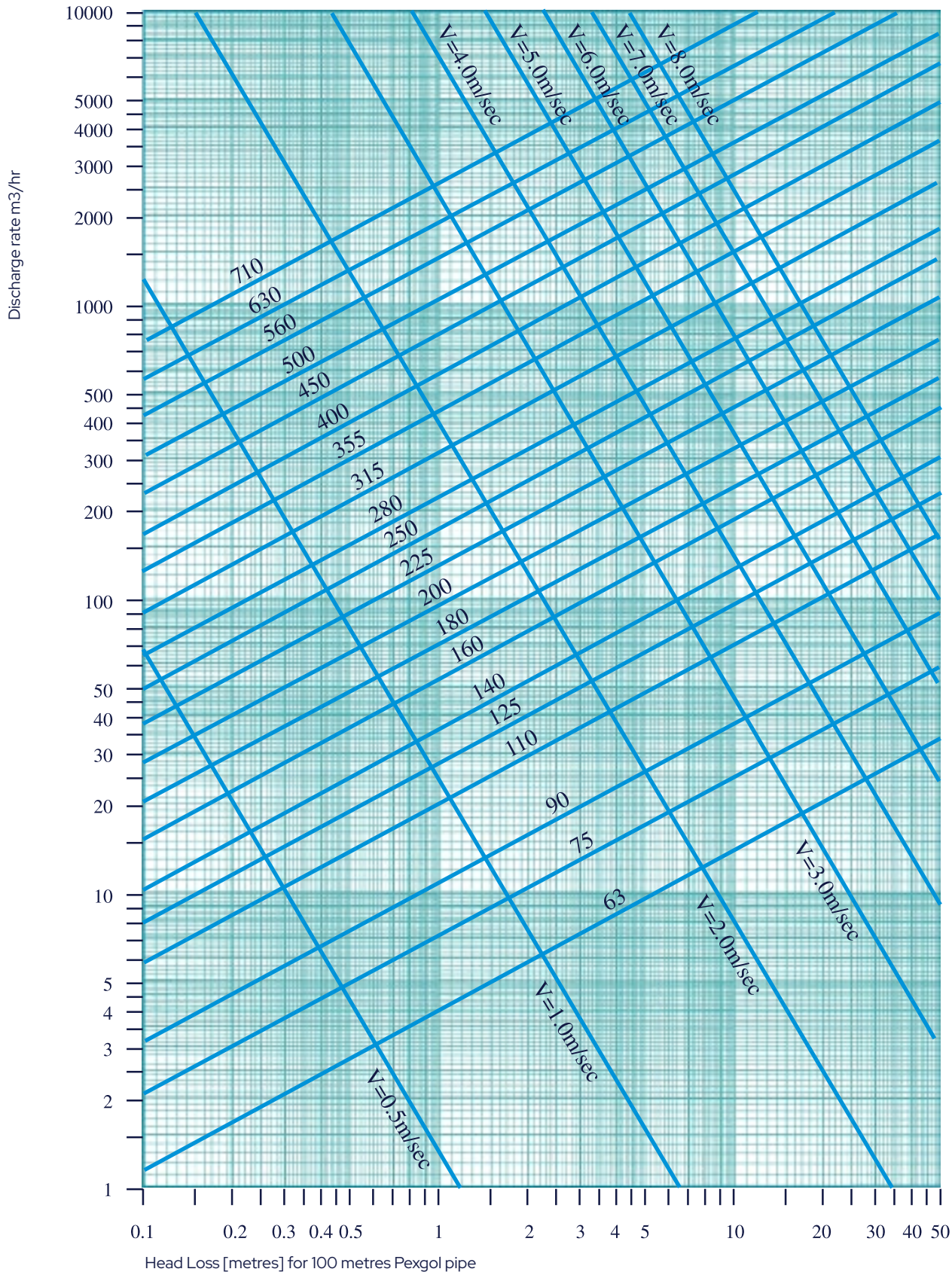
Flow Chart for Full Flow Conditions

Class 15 (SDR 11)

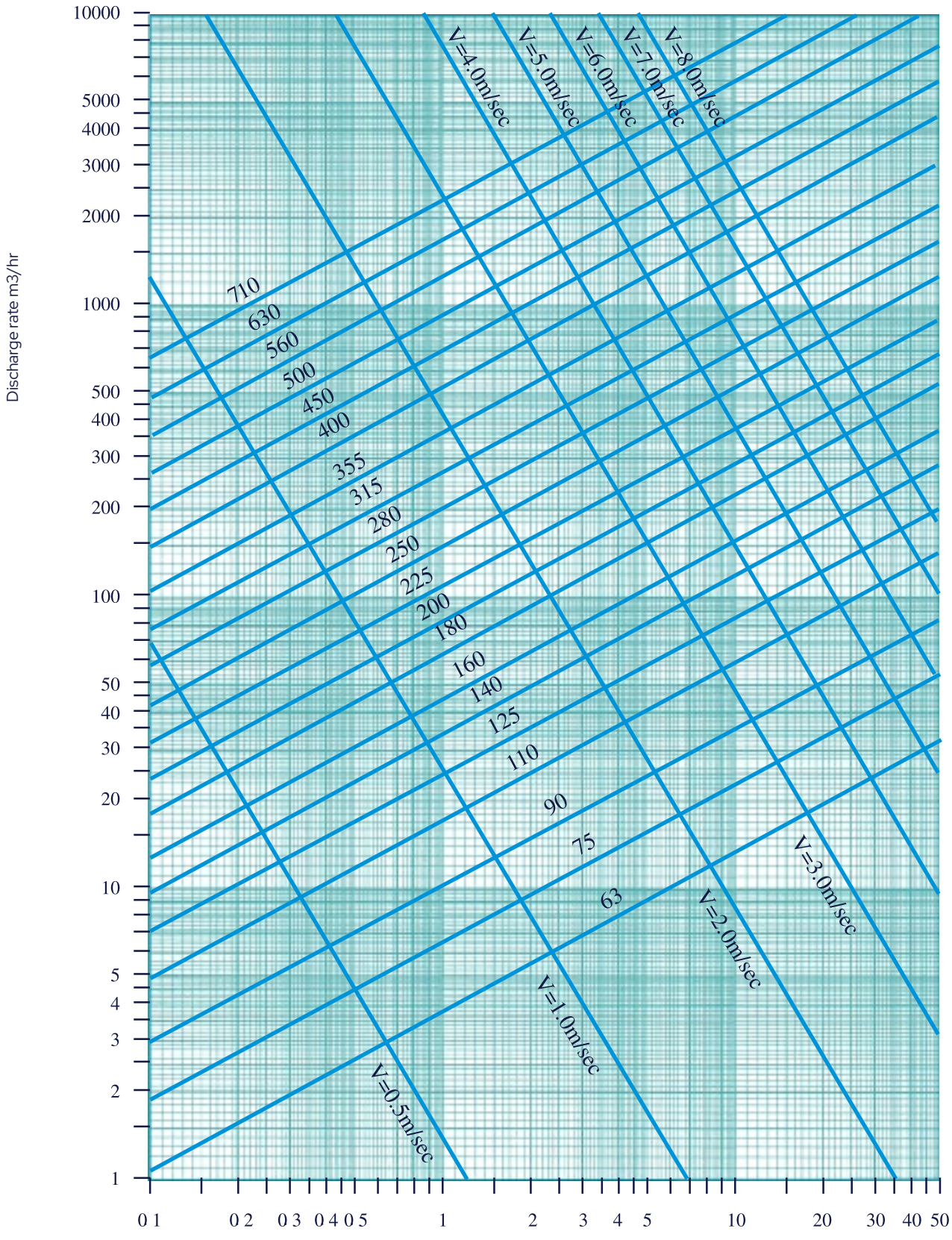


Head Loss [meters] for 100 meters Pexgol pipe

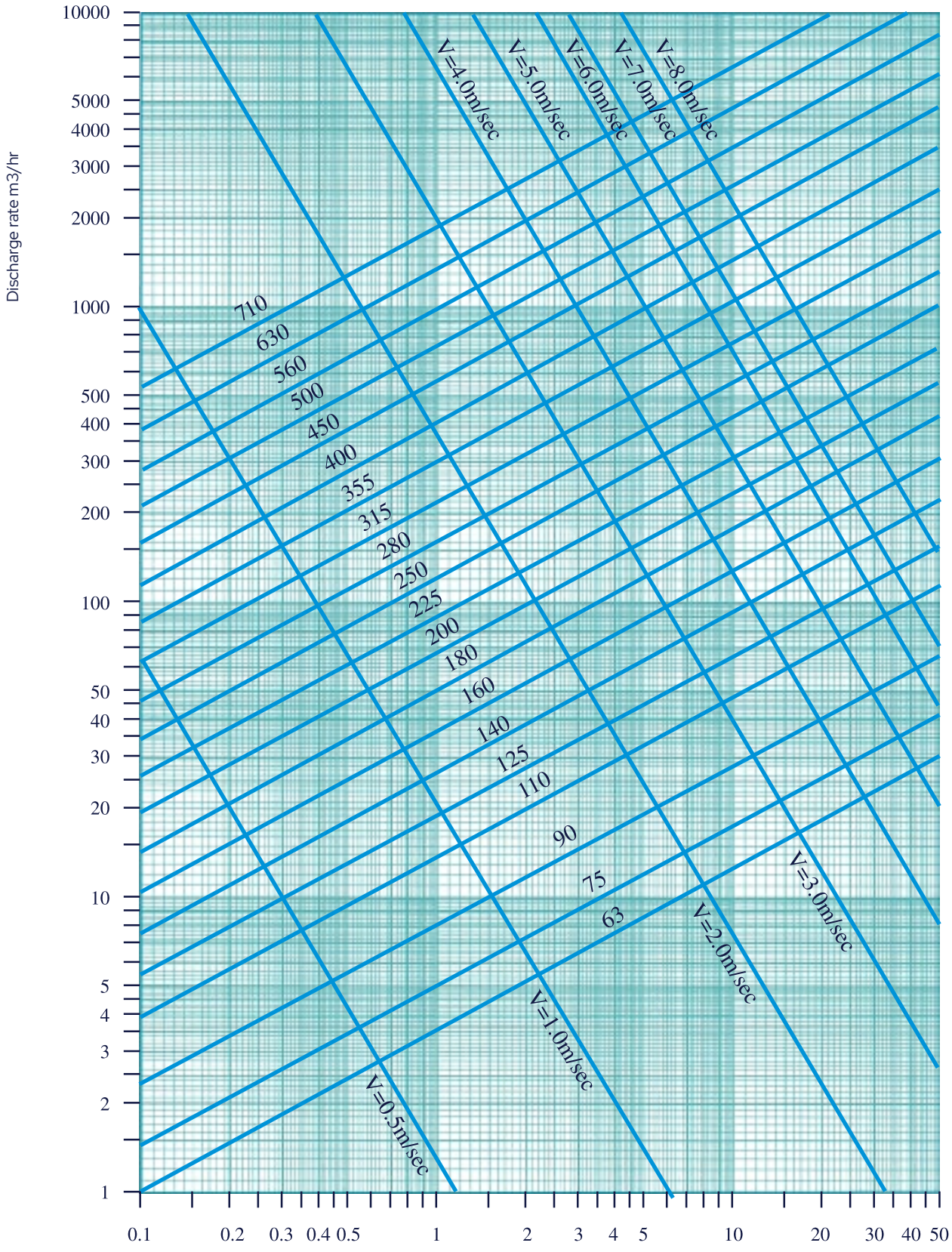
Class 19 (SDR 9)



Class 24 (SDR 7.4)



Class 30 (SDR 6)



Example to select the right pipe

Boreholes & Dewatering Application Questionnarie

Please answer the following questions to the best of your knowledge/Select the proper units	
Minimum dynamic water level (m) ☒ (ft) ☐	150
Depth of installation (pipe length) (m) ☒ (ft) ☐	180
Required flow rate (m^3/h) ☒ (gpm) ☐	100
Discharge pressure(*) (bar) ☒ (psi) ☐	2
Water temperature (°C) ☒ (°F) ☐	30
Pump pressure at closed valve (bar) ☒ (psi) ☐	19
Pump weight (kg) ☒ (lb) ☐	600
Weight of wiring (kg/m) ☒ (lb/ft) ☐	6
Pump connection size Flange ☐ Thread ☒	6"
Pump construction material	SS 316
Interior coating dimension (ID) (mm) ☐ (in) ☒	12"

1. Information required to select class:

- Water temperature.
- Minimum dynamic level H (minimum level at which the water will arrive during the operation).
- Required discharge pressure (maximum P).
- Valve pressure closed.

We asume:

Δ f = 2.5% x 180 m = 4.5m

2. Calculate the requiered TDH value according to the following formula:

TDH= H + (10 x maximum P) + Δ f

Table 24.1: S max Values (m)

Class	20°	25°	30°	35°	40°
15	169	160	151	142	134
19	200	190	180	170	160
24	247	233	220	207	195
30	287	271	256	241	227

The chosen class is 19.

TDH=150 + (10 x 2) + 4.5 = 174.5 m

3. According to the operating temperature choose in the table 16.1 the class that has a **S max** value greater than or equal to the pump TDH.

4. Verify that the closed valve pressure with which you wish to work is less than or equal to the permitted pressure of the closed valve shown in Table 25.1.

Table 25.1: Allowed pressures at closed valve (bar)

Class	20°	25°	30°	35°	40°
15	20	19	17.5	16.5	15.5
19	23	22	21	20	18.5
24	31	29.5	28	26.5	25
30	40	37.5	35	33	31

The closed valve pressure is 19 bar which is lower than the permisible valve pressure at closed valve (21 bar).

5. Choose the pipe according to the parameters of the borehole: flow, head load losses and permissible total weight.

Table 25.1: 30°C // Pexgol Class 19

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	5.6	38.8	6	5	440
50	5.6	38.8	9	10	440
63	7.1	48.8	11	5	695
63	7.1	48.8	16	10	695
75	8.4	58.2	17	5	986
75	8.4	58.2	25	10	986
90	8.2	73.6	28	5	1415
90	8.2	73.6	41	10	1415
110	12.3	85.4	48	5	2123
110	12.3	85.4	69	10	2123
125	14.1	96.8	66	5	2745
125	14.1	96.8	97	10	2745
140	15.7	108.6	90	5	3430
140	15.7	108.6	131	10	3430
160	17.9	124.2	128	5	4493
160	17.9	124.2	186	10	4493
180	29.1	139.8	175	5	5683
180	20.1	139.8	254	10	5683
200	22.4	155.2	230	5	7012
200	22.4	155.2	334	10	7012
225	25.2	174.6	313	5	8878
225	25.2	174.6	455	10	8878
250	27.9	194.2	414	5	10970
250	27.9	194.2	603	10	10970
280	31.3	217.4	558	5	13746
280	31.3	217.4	811	10	13746

The chosen pipe is 180 mm class 19

Note: According to the head loses we could select pipe 140 class 19 and any upper diameter. However, the total weight led us to choose 180 class 19.

6. Asuming pipe 180 class 19 we calculate the total weight of the pipe + pump.

Table 26.1: Weight of the pipe per meter full of water

50	2.05
63	3.25
75	4.6
90	6.63
110	9.9
125	12.8
140	16
160	20.95
180	26.5
200	32.74
225	41.4
250	51.15
280	64.16

7. Calculate the total weight of the chosen pipe with the following formula:

P-total: PB + PC x L + PT x H
P-total: Total weight of the pipe (kg)
PB: Weight of the pump (kg) = 600 kg
PC: Weight in kg per meter of cable = 6 kg/m
Δ ƒ: Pipe length (m) = 180 m
PT: Weight of the pipe filled with water (kg/m). See table 3.1 = 26.5 kg/m
H: Minimum dynamic level of the borehole design (m).
P-total= 600 + (6x180)+(26.5x150)
P-total= 5655 kg

This value is less than the maximum weight allowed (5683 kg), for which the chosen pipe is 180 class 19.
Another alternative is a pipe with lower diameter and a higher class which also fulfill the required head loses and total weight. In this case it is 160 class 24.

Table 26.1: 30°C // Pexgol Class 24

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
50	6.9	38.2	6	5	526
50	6.9	38.2	8	10	526
63	8.6	45.8	9	5	832
63	8.6	45.8	13	10	832
75	10.3	54.4	15	5	1180
75	10.3	54.4	21	10	1180
90	12.3	65.4	24	5	1694
90	12.3	65.4	35	10	1694
110	15.1	79.8	40	5	2540
110	15.1	79.8	58	10	2540
125	17.1	90.8	56	5	3286

D (mm)	Wall thickness T (mm)	ID (mm)	Q (m3/h)	Δ ƒ (%)	Maximum Total Weight
125	17.1	90.8	82	10	3286
140	19.2	101.6	76	5	4107
140	19.2	101.6	110	10	4107
160	21.9	116.2	76	5	5377
160	21.9	116.2	110	10	5377
180	24.6	130.8	108	5	6802
180	24.6	130.8	157	10	6802
200	27.3	145.4	147	5	8393
200	27.3	145.4	214	10	8393
225	30.8	163.4	195	5	10627
225	30.8	163.4	283	10	10627
250	34.2	181.6	264	5	13130
250	34.2	181.6	384	10	13130
280	38.3	203.4	470	5	16453
280	38.3	203.4	684	10	16453

P-total = 600 + 6 x 180 + 20.95 x 150 = 4822.5 kg

Comparing the two solutions:

180 class 19 is more expensive than 160 class 24. We can coil longer sectiosn of 160 class 24 (620 m of 160 class 24 vs 500 m of 180 class 19).

The smaller OD of the 160 pipe can help when the casing diameter is too tight.

On the end, the head losses of the 160 pipe are 8 m per 180 m and in case of the 180 class 19 it is 3 m per 180 m.

Pexgol PE-Xa Pipes

Pexgol PE-Xa cross-linked polyethylene line pipe has many features that make it an excellent, cost-effective alternative to other pipe materials:

- Excellent chemical and corrosion resistance (chemical agents, slurries, toxic materials, radioactive materials).
- Reduced installation costs with long-length coils/spools.
- Improved flow capacity due to smooth interior surface.
- High resistance to abrasion and UV exposure.
- Wide working temperature range.

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