


Werksnorm EW: <i>Works Standard EW:</i>	1810	Blatt / sheet: 1 Seite/page:1/2
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	Max. Anzugsmomente in Nm für Flanschschrauben A -70 mit 450 N/mm ² , ab M24 / 7/8" mit 250 N/mm ² ($\mu=0,12$)
	<i>max. torque for imperial fasteners material SS by 450 N/mm², above M24 / 7/8" by 250 N/mm² (U=0,12)</i>

Schraube / <i>bolt</i>	Schrauben mit Vollschaft	<i>Bolt Size</i>	<i>Stud Bolts with UNC / 8UN thread</i>	
(mm)	(z.B. DIN EN24014 "DIN931")	(Inch)	(Nm)	(ft lbf)
M10	31			
M12	53	1/2"	63	46
M16	127	5/8"	125	92
M20	247	3/4"	216	159
M24	237	7/8"	192	142
M27	346	1"	285	210
M30	473	1.1/8"	412	304
M33	635	1.1/4"	573	423
M36	818	1.3/8"	768	566

Schraube / <i>bolt</i>	Schrauben mit Dehnschaft / <i>reduced shaft</i> <i>Ts (operating temperature) > 300 °C</i>
(mm)	(z.B. DIN 2510)
M10	20
M12	36
M16	94
M20	180
M24	169
M27	246
M30	349
M33	465
M36	380

Das tatsächlich benötigte Anzugsdrehmoment kann, je nach Flanschdichtung, bei Verwendung eines anderen Schraubenwerkstoffes oder Schmiermittels, niedriger ausfallen !

The actually allowable locking torque can be less than the values shown in the table. This can depend on what gasket material, what bolt material or lubricant is used.

Hinweis: Bei Armaturen mit Flanschgewindebohrungen (z.B. "Lug"-Gehäuse) sollte die volle Gewindelänge ausgenutzt werden bzw. folgende min. Einschraublänge vorgesehen werden:


When use of tapped holes in the valve body is necessary (for example Lug-Type), the used thread reach should be at least:

Einschraublänge/thread reach $l_e = 1 \times d_{\text{Schraube/bolt}}$ (Stahl, Stahlguss, Sphäroguß/steel, steel casting, ductile iron)

Einschraublänge/thread reach $l_e = 1.25 \times d_{\text{Schraube/bolt}}$ (Gußeisen, Cu-Legierungen/iron casting, copper alloys)

Einschraublänge/thread reach $l_e = 2 \times d_{\text{Schraube/bolt}}$ (Al-Legierungen/aluminium alloys)

Rev. Revisionsgrund / <i>reason of revision</i>	Datum / date:	Bearbeiter/created by:	Geprüft/inspection date:	Prüfer/inspector
0-Erstellung / <i>compilation</i>	16.12.2008	Mitschke	16.12.2008	G. Kipp
1-Ergänzung / <i>completion</i>	29.01.2009	Mitschke	29.01.2009	G. Kipp

Werksnorm EW: <i>Works Standard EW:</i>		1810		Blatt / sheet: 2 Seite/page :2/2	
		Max. Anzugsmomente in Nm für Flanschschrauben A -70 mit 250 N/mm ² ($\mu=0,12$)			
		<i>max. torque for imperial fasteners material SS by 250 N/mm² (U=0,12)</i>			
Schraube / <i>bolt</i>	Schrauben mit Vollschaft	<i>Bolt Size</i>	<i>Stud Bolts with UNC / 8UN thread</i>		
(mm)	(z.B. DIN EN24014 "DIN931")	(Inch)	(Nm)	(ft lbf)	
M39	1055	1.1/2"	1005	741	
M42	1308	1.5/8"	1293	954	
M45	1620	1.3/4"	1615	1191	
M48	1970	1.7/8"	1998	1473	
M52	2525	2"	2433	1794	
M56	3150	2.1/4"	3500	2581	
		2.1/2"	4813	3549	

Schraube / <i>bolt</i>	Schrauben mit Dehnschaft / reduced shaft <i>Ts (operating temperature) > 300 °C</i>
(mm)	(z.B. DIN 2510)
M39	788
M42	963
M45	1225
M48	1475
M52	1888
M56	2350

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HP112 Flansch-Schrauben / flange bolting

max. Anzugsmomente gem. EW 1810 beachten!
respect max. torque acc. EW 1810!

Bei der Schraubenauswahl ist für den Gegenflansch die angegebene Flanschdicke und eine Flansch-Dichtungshöhe von 2 mm berücksichtigt, die tatsächliche vorhandene Flansch-, und Dichtungsdicke ist kundenseitig zu prüfen und die Schraubenlängen entsprechend anzupassen!
*selection of the bolts by allowance counter flange thickness as denoted and flange gasket thickness 2 mm,
the effectively existing flange-, and flange gasket thickness is to check by the customer and the bolt length proportionately customize*

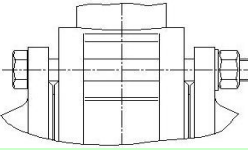
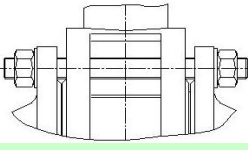
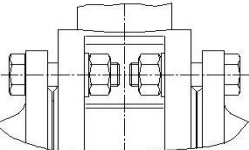
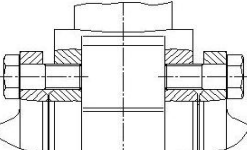
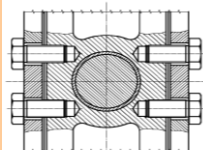
Längenmaße angegeben in mm

length dimensions specified in mm

Bemerkung / comment :

Sonderausführung nach Auftrag!
special type only acc. order!

Zoll-Gewinde nach ASME B1.1-1989 UNC bis Gewinde 1"; Für Gewinde >1" gilt Steigung 8 UN / Inch thread acc. ASME B1.1-1989 UNC up to thread 1"; for thread >1" = 8 UN

DN	Size	Flanschanschluss / Flanged Connection	Einbaumaß Face - to - face	Verbindungsart Connection <small>Verb. 4 = beachte Bemerkung! Conn. 4 = notice comment!</small>	Lochanzahl Number of Bolts	Gegen-Flanschdicke counter flange thickness	 Verbindungsart 1 / Connection 1 Schraube / screw	 Verbindungsart 2 / Connection 2 Gewindestange / threaded both	 Verbindungsart 3 / Connection 3 Schraube / screw	 Verbindungsart 4 / Connection 4 Schraube / screw	 Verbindungsart 5 / Connection 5 Schraube / screw
80	3"	PN 10	114	1 or 2 or 3 or 4	8	20	8 x M16 x 180	8 x M16 x 200	16 x M16 x 70	16 x M16 x 50	not required
80	3"	PN 16	114	1 or 2 or 3 or 4	8	20	8 x M16 x 180	8 x M16 x 200	16 x M16 x 70	16 x M16 x 50	not required
80	3"	PN 25	114	1 or 2 or 3 or 4	8	24	8 x M16 x 190	8 x M16 x 210	16 x M16 x 75	16 x M16 x 50	not required
80	3"	PN 40	114	1 or 2 or 3 or 4	8	24	8 x M16 x 190	8 x M16 x 210	16 x M16 x 75	16 x M16 x 50	not required
80	3"	JIS 10K	114	1 or 2 or 3 or 4	8	18	8 x M16 x 180	8 x M16 x 200	16 x M16 x 65	16 x M16 x 45	not required
80	3"	ASME B16.5 cl. 150	114	1 or 2 or 3 or 4	4	24	4 x 5/8"- 11UNC x 190	4 x 5/8"- 11UNC x 210	8 x 5/8"- 11UNC x 75	8 x 5/8"- 11UNC x 50	not required
100	4"	PN 10	127	1 or 2 or 3 or 4	8	20	8 x M16 x 200	8 x M16 x 220	16 x M16 x 70	16 x M16 x 50	not required
100	4"	PN 16	127	1 or 2 or 3 or 4	8	20	8 x M16 x 200	8 x M16 x 220	16 x M16 x 70	16 x M16 x 50	not required
100	4"	PN 25	127	1 or 2 or 3 or 4	8	24	8 x M20 x 210	8 x M20 x 230	16 x M20 x 80	16 x M20 x 50	not required
100	4"	PN 40	127	1 or 2 or 3 or 4	8	24	8 x M20 x 210	8 x M20 x 230	16 x M20 x 80	16 x M20 x 50	not required
100	4"	JIS 16K	127	1 or 2 or 3 or 4	8	22	8 x M20 x 200	8 x M20 x 230	16 x M20 x 75	16 x M20 x 50	not required
100	4"	JIS 20K	127	1 or 2 or 3 or 4	8	22	8 x M20 x 200	8 x M20 x 230	16 x M20 x 75	16 x M20 x 50	not required
100	4"	JIS 30K	127	1 or 2 or 3 or 4	8	32	8 x M22 x 230	8 x M22 x 250	16 x M22 x 85	16 x M22 x 60	not required
100	4"	ASME B16.5 cl. 150	127	1 or 2 or 3 or 4	8	24	8 x 5/8"- 11UNC x 200	8 x 5/8"- 11UNC x 230	16 x 5/8"- 11UNC x 75	16 x 5/8"- 11UNC x 50	not required
100	4"	ISO 7005-1 - PN20	127	1 or 2 or 3 or 4	8	24	8 x M16 x 200	8 x M16 x 220	16 x M16 x 70	16 x M16 x 50	not required
100	4"	ASME B16.1 cl. 125	127	1 or 2 or 3 or 4	8	24	8 x 5/8"- 11UNC x 200	8 x 5/8"- 11UNC x 230	16 x 5/8"- 11UNC x 75	16 x 5/8"- 11UNC x 50	not required
100	4"	BS 10 - Table F	127	1 or 2 or 3 or 4	8	19	8 x 5/8"- 11UNC x 190	8 x 5/8"- 11UNC x 220	16 x 5/8"- 11UNC x 70	16 x 5/8"- 11UNC x 45	not required
100	4"	BS 10 - Table H	127	1 or 2 or 3 or 4	8	25	8 x 5/8"- 11UNC x 210	8 x 5/8"- 11UNC x 230	16 x 5/8"- 11UNC x 75	16 x 5/8"- 11UNC x 55	not required
100	4"	BS 10 - Table J	127	1 or 2 or 3 or 4	8	35	8 x 3/4"- 10UNC x 230	8 x 3/4"- 10UNC x 250	16 x 3/4"- 10UNC x 90	16 x 3/4"- 10UNC x 65	not required
100	4"	ASME B16.5 cl. 300	127	1 or 2 or 3 or 4	8	32	8 x 3/4"- 10UNC x 220	8 x 3/4"- 10UNC x 250	16 x 3/4"- 10UNC x 85	16 x 3/4"- 10UNC x 60	not required

100	4"	ASME B16.1 cl. 250	127	1 or 2 or 3 or 4	8	22	8 x 3/4"- 10UNC x 200	8 x 3/4"- 10UNC x 230	16 x 3/4"- 10UNC x 75	16 x 3/4"- 10UNC x 50	not required
100	4"	AS 4087 - cl. 35	127	1 or 2 or 3 or 4	8	22	8 x M16 x 200	8 x M16 x 220	16 x M16 x 70	16 x M16 x 50	not required
100	4"	AWWA C 207 cl. B + D	127	1 or 2 or 3 or 4	8	13	8 x 5/8"- 11UNC x 180	8 x 5/8"- 11UNC x 200	16 x 5/8"- 11UNC x 60	16 x 5/8"- 11UNC x 40	not required
100	4"	AWWA C 207 cl. E	127	1 or 2 or 3 or 4	8	24	8 x 5/8"- 11UNC x 200	8 x 5/8"- 11UNC x 230	16 x 5/8"- 11UNC x 75	16 x 5/8"- 11UNC x 50	not required
100	4"	AWWA C 207 cl. F	127	1 or 2 or 3 or 4	8	29	8 x 3/4"- 10UNC x 220	8 x 3/4"- 10UNC x 240	16 x 3/4"- 10UNC x 80	16 x 3/4"- 10UNC x 60	not required
100	4"	AS 2129 - Table D	127	1 or 2 or 3 or 4	4	19	4 x M16 x 190	4 x M16 x 210	8 x M16 x 65	8 x M16 x 45	not required
100	4"	AS 2129 - Table E	127	1 or 2 or 3 or 4	8	22	8 x M16 x 200	8 x M16 x 220	16 x M16 x 70	16 x M16 x 50	not required
100	4"	AS 2129 - Table F	127	1 or 2 or 3 or 4	8	22	8 x M16 x 200	8 x M16 x 220	16 x M16 x 70	16 x M16 x 50	not required
100	4"	AS 2129 - Table H	127	1 or 2 or 3 or 4	8	32	8 x M16 x 220	8 x M16 x 240	16 x M16 x 80	16 x M16 x 60	not required
100	4"	AS 2129 - Table J	127	1 or 2 or 3 or 4	8	35	8 x M22 x 230	8 x M22 x 260	16 x M22 x 90	16 x M22 x 65	not required
150	6"	PN 10	140	1 or 2 or 3 or 4	8	22	8 x M20 x 220	8 x M20 x 240	16 x M20 x 75	16 x M20 x 50	not required
150	6"	PN 16	140	1 or 2 or 3 or 4	8	22	8 x M20 x 220	8 x M20 x 240	16 x M20 x 75	16 x M20 x 50	not required
150	6"	PN 25	140	1 or 2 or 4	8	28	8 x M24 x 240	8 x M24 x 280	not available	16 x M24 x 60	not required
150	6"	PN 40	140	1 or 2 or 4	8	28	8 x M24 x 240	8 x M24 x 280	not available	16 x M24 x 60	not required
150	6"	JIS 10K	140	1 or 2 or 3 or 4	8	22	8 x M20 x 220	8 x M20 x 240	16 x M20 x 75	16 x M20 x 50	not required
150	6"	JIS 16K	140	1 or 2 or 3 or 4 + 5	12	24	8 x M22 x 220	8 x M22 x 250	16 x M22 x 85	16 x M22 x 60	8 x M22 x 55
150	6"	ASME B16.5 cl. 150	140	1 or 2 or 3 or 4	8	25	8 x 3/4"- 10UNC x 220	8 x 3/4"- 10UNC x 250	16 x 3/4"- 10UNC x 80	16 x 3/4"- 10UNC x 55	not required
150	6"	ISO 7005-1 - PN20	140	1 or 2 or 3 or 4	8	26	8 x M20 x 220	8 x M20 x 250	16 x M20 x 80	16 x M20 x 55	not required
150	6"	ASME B16.1 cl. 125	140	1 or 2 or 3 or 4	8	25	8 x 3/4"- 10UNC x 220	8 x 3/4"- 10UNC x 250	16 x 3/4"- 10UNC x 80	16 x 3/4"- 10UNC x 55	not required
150	6"	BS 10 - Table D	140	1 or 2 or 3 or 4	8	13	8 x 5/8"- 11UNC x 190	8 x 5/8"- 11UNC x 220	16 x 5/8"- 11UNC x 65	16 x 5/8"- 11UNC x 40	not required

150	6"	BS 10 - Table E	140	1 or 2 or 3 or 4	8	18	8 x 3/4"- 10UNC x 210	8 x 3/4"- 10UNC x 230	16 x 3/4"- 10UNC x 70	16 x 3/4"- 10UNC x 45	not required
150	6"	BS 10 - Table F	140	1 or 2 or 3 or 4 + 5	12	22	8 x 3/4"- 10UNC x 220	8 x 3/4"- 10UNC x 240	16 x 3/4"- 10UNC x 80	16 x 3/4"- 10UNC x 55	8 x 3/4"- 10UNC x 50
150	6"	BS 10 - Table H	140	1 or 2 or 3 or 4 + 5	12	29	8 x 3/4"- 10UNC x 230	8 x 3/4"- 10UNC x 260	16 x 3/4"- 10UNC x 85	16 x 3/4"- 10UNC x 60	8 x 3/4"- 10UNC x 55
150	6"	BS 10 - Table J	140	1 or 2 or 3 or 4 + 5	12	38	8 x 7/8"- 9UNC x 250	8 x 7/8"- 9UNC x 280	16 x 7/8"- 9UNC x 100	16 x 7/8"- 9UNC x 70	8 x 7/8"- 9UNC x 65
150	6"	BS 10 - Table K	140	1 or 2 or 3 or 4 + 5	12	41	8 x 7/8"- 9UNC x 260	8 x 7/8"- 9UNC x 290	16 x 7/8"- 9UNC x 110	16 x 7/8"- 9UNC x 75	8 x 7/8"- 9UNC x 70
150	6"	BS 10 - Table R	140	1 or 2 or 3 or 4 + 5	12	45	8 x 7/8"- 9UNC x 270	8 x 7/8"- 9UNC x 290	16 x 7/8"- 9UNC x 110	16 x 7/8"- 9UNC x 80	8 x 7/8"- 9UNC x 70
150	6"	ASME B16.5 cl. 300	140	1 or 2 or 3 or 4 + 5	12	37	8 x 3/4"- 10UNC x 250	8 x 3/4"- 10UNC x 270	16 x 3/4"- 10UNC x 95	16 x 3/4"- 10UNC x 70	8 x 3/4"- 10UNC x 65
150	6"	AWWA C 207 cl. B + D	140	1 or 2 or 3 or 4	8	14	8 x 3/4"- 10UNC x 200	8 x 3/4"- 10UNC x 230	16 x 3/4"- 10UNC x 70	16 x 3/4"- 10UNC x 45	not required
150	6"	AWWA C 207 cl. E	140	1 or 2 or 3 or 4	8	25	8 x 3/4"- 10UNC x 220	8 x 3/4"- 10UNC x 250	16 x 3/4"- 10UNC x 80	16 x 3/4"- 10UNC x 55	not required
150	6"	AS 2129 - Table D	140	1 or 2 or 3 or 4	8	21	8 x M16 x 210	8 x M16 x 230	16 x M16 x 70	16 x M16 x 50	not required
150	6"	AS 2129 - Table E	140	1 or 2 or 3 or 4	8	22	8 x M20 x 220	8 x M20 x 240	16 x M20 x 75	16 x M20 x 50	not required
200	8"	PN 10	152	1 or 2 or 3 or 4	8	24	8 x M20 x 230	8 x M20 x 260	16 x M20 x 80	16 x M20 x 55	not required
200	8"	PN 16	152	1 or 2 or 3 or 4	12	24	12 x M20 x 230	12 x M20 x 260	24 x M20 x 80	24 x M20 x 55	not required
200	8"	PN 25	152	1 or 2 or 3 or 4 + 5	12	30	8 x M24 x 250	8 x M24 x 280	16 x M24 x 95	16 x M24 x 65	8 x M24 x 65
200	8"	PN 40	152	1 or 2 or 3 or 4 + 5	12	34	8 x M27 x 260	8 x M27 x 290	16 x M27 x 100	16 x M27 x 70	8 x M27 x 65
200	8"	JIS 16K	152	1 or 2 or 3 or 4 + 5	12	26	8 x M22 x 240	8 x M22 x 260	16 x M22 x 85	16 x M22 x 60	8 x M22 x 60
200	8"	JIS 20K	152	1 or 2 or 3 or 4 + 5	12	30	8 x M22 x 250	8 x M22 x 270	16 x M22 x 90	16 x M22 x 65	8 x M22 x 60
200	8"	JIS 30K	152	1 or 2 or 3 or 4 + 5	12	42	8 x M24 x 270	8 x M24 x 300	16 x M24 x 110	16 x M24 x 75	8 x M24 x 75
200	8"	ASME B16.5 cl. 150	152	1 or 2 or 3 or 4	8	28	8 x 3/4"- 10UNC x 240	8 x 3/4"- 10UNC x 270	16 x 3/4"- 10UNC x 85	16 x 3/4"- 10UNC x 60	not required
200	8"	ISO 7005-1 - PN20	152	1 or 2 or 3 or 4	8	29	8 x M20 x 240	8 x M20 x 270	16 x M20 x 85	16 x M20 x 60	not required

200	8"	ASME B16.1 cl. 125	152	1 or 2 or 3 or 4	8	28	8 x 3/4"- 10UNC x 240	8 x 3/4"- 10UNC x 270	16 x 3/4"- 10UNC x 85	16 x 3/4"- 10UNC x 60	not required
200	8"	BS 10 - Table D	152	1 or 2 or 3 or 4	8	13	8 x 5/8"- 11UNC x 210	8 x 5/8"- 11UNC x 230	16 x 5/8"- 11UNC x 65	16 x 5/8"- 11UNC x 50	not required
200	8"	BS 10 - Table E	152	1 or 2 or 3 or 4	8	19	8 x 3/4"- 10UNC x 220	8 x 3/4"- 10UNC x 250	16 x 3/4"- 10UNC x 75	16 x 3/4"- 10UNC x 50	not required
200	8"	BS 10 - Table F	152	1 or 2 or 3 or 4 + 5	12	25	8 x 3/4"- 10UNC x 240	8 x 3/4"- 10UNC x 260	16 x 3/4"- 10UNC x 85	16 x 3/4"- 10UNC x 60	8 x 3/4"- 10UNC x 55
200	8"	BS 10 - Table H	152	1 or 2 or 3 or 4 + 5	12	32	8 x 3/4"- 10UNC x 250	8 x 3/4"- 10UNC x 270	16 x 3/4"- 10UNC x 90	16 x 3/4"- 10UNC x 65	8 x 3/4"- 10UNC x 65
200	8"	BS 10 - Table J	152	1 or 2 or 3 or 4 + 5	12	41	8 x 7/8"- 9UNC x 270	8 x 7/8"- 9UNC x 300	16 x 7/8"- 9UNC x 110	16 x 7/8"- 9UNC x 75	8 x 7/8"- 9UNC x 75
200	8"	BS 10 - Table K	152	1 or 2 or 3 or 4 + 5	12	48	8 x 1"- 8UNC x 290	8 x 1"- 8UNC x 320	16 x 1"- 8UNC x 120	16 x 1"- 8UNC x 80	8 x 1"- 8UNC x 80
200	8"	BS 10 - Table R	152	1 or 2 or 3 or 4 + 5	12	51	8 x 1"- 8UNC x 290	8 x 1"- 8UNC x 330	16 x 1"- 8UNC x 120	16 x 1"- 8UNC x 85	8 x 1"- 8UNC x 80
200	8"	ASME B16.5 cl. 300	152	1 or 2 or 3 or 4 + 5	12	41	8 x 7/8"- 9UNC x 270	8 x 7/8"- 9UNC x 300	16 x 7/8"- 9UNC x 110	16 x 7/8"- 9UNC x 75	8 x 7/8"- 9UNC x 75
200	8"	AWWA C 207 cl. B + D	152	1 or 2 or 3 or 4	8	14	8 x 3/4"- 10UNC x 210	8 x 3/4"- 10UNC x 240	16 x 3/4"- 10UNC x 70	16 x 3/4"- 10UNC x 45	not required
200	8"	AWWA C 207 cl. E	152	1 or 2 or 3 or 4	8	29	8 x 3/4"- 10UNC x 240	8 x 3/4"- 10UNC x 270	16 x 3/4"- 10UNC x 85	16 x 3/4"- 10UNC x 60	not required
200	8"	AS 2129 - Table D	152	1 or 2 or 3 or 4	8	22	8 x M16 x 220	8 x M16 x 250	16 x M16 x 75	16 x M16 x 55	not required
200	8"	AS 2129 - Table E	152	1 or 2 or 3 or 4	8	25	8 x M20 x 230	8 x M20 x 260	16 x M20 x 80	16 x M20 x 60	not required
200	8"	AS 2129 - Table F	152	1 or 2 or 3 or 4 + 5	12	29	8 x M20 x 240	8 x M20 x 270	16 x M20 x 90	16 x M20 x 65	8 x M20 x 60
200	8"	AS 2129 - Table H	152	1 or 2 or 3 or 4 + 5	12	38	8 x M20 x 260	8 x M20 x 290	16 x M20 x 100	16 x M20 x 75	8 x M20 x 70
200	8"	AS 2129 - Table J	152	1 or 2 or 3 or 4 + 5	12	41	8 x M24 x 270	8 x M24 x 300	16 x M24 x 110	16 x M24 x 75	8 x M24 x 75
200	8"	AS 2129 - Table K	152	1 or 2 or 3 or 4 + 5	12	48	8 x M27 x 290	8 x M27 x 320	16 x M27 x 120	16 x M27 x 85	8 x M27 x 80
200	8"	AS 2129 - Table R	152	1 or 2 or 3 or 4 + 5	12	51	8 x M27 x 290	8 x M27 x 330	16 x M27 x 120	16 x M27 x 85	8 x M27 x 85
250	10"	PN 10	165	1 or 2 or 3 or 4	12	26	12 x M20 x 250	12 x M20 x 270	24 x M20 x 85	24 x M20 x 60	not required
250	10"	PN 16	165	1 or 2 or 3 or 4	12	26	12 x M24 x 260	12 x M24 x 290	24 x M24 x 90	24 x M24 x 60	not required

250	10"	PN 25	165	1 or 2 or 3 or 4 + 5	12	32	8 x M27 x 270	8 x M27 x 300	16 x M27 x 110	16 x M27 x 75	8 x M27 x 70
250	10"	PN 40	165	1 or 2 or 3 or 4 + 5	12	38	8 x M30 x 280	8 x M30 x 320	16 x M30 x 120	16 x M30 x 80	8 x M30 x 75
250	10"	JIS 10K	165	1 or 2 or 3 or 4	12	24	12 x M22 x 250	12 x M22 x 270	24 x M22 x 85	24 x M22 x 60	not required
250	10"	JIS 16K	165	1 or 2 or 3 or 4 + 5	12	28	8 x M24 x 260	8 x M24 x 290	16 x M24 x 100	16 x M24 x 70	8 x M24 x 65
250	10"	JIS 20K	165	1 or 2 or 3 or 4 + 5	12	34	8 x M24 x 270	8 x M24 x 300	16 x M24 x 110	16 x M24 x 75	8 x M24 x 70
250	10"	JIS 30K	165	1 or 2 or 3 or 4 + 5	12	48	8 x M30 x 300	8 x M30 x 340	16 x M30 x 130	16 x M30 x 90	8 x M30 x 85
250	10"	ASME B16.5 cl. 150	165	1 or 2 or 3 or 4	12	30	12 x 7/8"- 9UNC x 260	12 x 7/8"- 9UNC x 290	24 x 7/8"- 9UNC x 90	24 x 7/8"- 9UNC x 65	not required
250	10"	ISO 7005-1 - PN20	165	1 or 2 or 3 or 4	12	31	12 x M24 x 260	12 x M24 x 290	24 x M24 x 95	24 x M24 x 65	not required
250	10"	ISO 7005-1 - PN50	165	1 or 2 or 3 or 4 + 5	16	48	12 x M27 x 300	12 x M27 x 330	24 x M27 x 120	24 x M27 x 90	8 x M27 x 85
250	10"	ASME B16.1 cl. 125	165	1 or 2 or 3 or 4	12	30	12 x 7/8"- 9UNC x 260	12 x 7/8"- 9UNC x 290	24 x 7/8"- 9UNC x 90	24 x 7/8"- 9UNC x 65	not required
250	10"	BS 10 - Table D	165	1 or 2 or 3 or 4	8	16	8 x 3/4"- 10UNC x 230	8 x 3/4"- 10UNC x 250	16 x 3/4"- 10UNC x 75	16 x 3/4"- 10UNC x 50	not required
250	10"	BS 10 - Table E	165	1 or 2 or 3 or 4	12	22	12 x 3/4"- 10UNC x 240	12 x 3/4"- 10UNC x 270	24 x 3/4"- 10UNC x 80	24 x 3/4"- 10UNC x 55	not required
250	10"	BS 10 - Table F	165	1 or 2 or 3 or 4 + 5	12	29	8 x 7/8"- 9UNC x 260	8 x 7/8"- 9UNC x 290	16 x 7/8"- 9UNC x 100	16 x 7/8"- 9UNC x 70	8 x 7/8"- 9UNC x 65
250	10"	BS 10 - Table H	165	1 or 2 or 3 or 4 + 5	12	35	8 x 7/8"- 9UNC x 270	8 x 7/8"- 9UNC x 300	16 x 7/8"- 9UNC x 110	16 x 7/8"- 9UNC x 75	8 x 7/8"- 9UNC x 70
250	10"	BS 10 - Table J	165	1 or 2 or 3 or 4 + 5	12	48	8 x 1"- 8UNC x 300	8 x 1"- 8UNC x 330	16 x 1"- 8UNC x 120	16 x 1"- 8UNC x 90	8 x 1"- 8UNC x 85
250	10"	BS 10 - Table K	165	1 or 2 or 3 or 4 + 5	16	51	12 x 1"- 8UNC x 310	12 x 1"- 8UNC x 340	24 x 1"- 8UNC x 130	24 x 1"- 8UNC x 90	8 x 1"- 8UNC x 85
250	10"	BS 10 - Table R	165	1 or 2 or 3 or 4 + 5	16	60	12 x 1"- 8UNC x 330	12 x 1"- 8UNC x 360	24 x 1"- 8UNC x 140	24 x 1"- 8UNC x 100	8 x 1"- 8UNC x 95
250	10"	ASME B16.1 cl. 250	165	1 or 2 or 3 or 4 + 5	16	48	12 x 1"- 8UNC x 300	12 x 1"- 8UNC x 330	24 x 1"- 8UNC x 120	24 x 1"- 8UNC x 90	8 x 1"- 8UNC x 85
250	10"	ASME B16.5 cl. 300	165	1 or 2 or 3 or 4 + 5	16	48	12 x 1"- 8UNC x 300	12 x 1"- 8UNC x 330	24 x 1"- 8UNC x 120	24 x 1"- 8UNC x 90	8 x 1"- 8UNC x 85
250	10"	AWWA C 207 cl. B + D	165	1 or 2 or 3 or 4	12	17	12 x 7/8"- 9UNC x 240	12 x 7/8"- 9UNC x 260	24 x 7/8"- 9UNC x 80	24 x 7/8"- 9UNC x 50	not required
250	10"	AWWA C 207 cl. E	165	1 or 2 or 3 or 4	12	30	12 x 7/8"- 9UNC x 260	12 x 7/8"- 9UNC x 290	24 x 7/8"- 9UNC x 90	24 x 7/8"- 9UNC x 65	not required
250	10"	AWWA C 207 cl. F	165	1 or 2 or 3 or 4 + 5	16	38	12 x 1"- 8UNC x 280	12 x 1"- 8UNC x 310	24 x 1"- 8UNC x 110	24 x 1"- 8UNC x 80	8 x 1"- 8UNC x 75
250	10"	AS 4087 PN 14/16	165	1 or 2 or 3 or 4	8	30	8 x M20 x 260	8 x M20 x 280	16 x M20 x 90	16 x M20 x 65	not required
250	10"	AS 2129 - Table C	165	1 or 2 or 3 or 4	8	25	8 x M20 x 250	8 x M20 x 270	16 x M20 x 85	16 x M20 x 60	not required
250	10"	AS 2129 - Table D	165	1 or 2 or 3 or 4	8	25	8 x M20 x 250	8 x M20 x 270	16 x M20 x 85	16 x M20 x 60	not required
250	10"	AS 2129 - Table E	165	1 or 2 or 3 or 4	12	25	12 x M20 x 250	12 x M20 x 270	24 x M20 x 85	24 x M20 x 60	not required
250	10"	AS 2129 - Table F	165	1 or 2 or 3 or 4 + 5	12	29	8 x M24 x 260	8 x M24 x 290	16 x M24 x 100	16 x M24 x 70	8 x M24 x 65
250	10"	AS 2129 - Table H	165	1 or 2 or 3 or 4 + 5	12	41	8 x M24 x 290	8 x M24 x 320	16 x M24 x 110	16 x M24 x 80	8 x M24 x 75
250	10"	AS 2129 - Table J	165	1 or 2 or 3 or 4 + 5	12	48	8 x M27 x 300	8 x M27 x 330	16 x M27 x 120	16 x M27 x 90	8 x M27 x 85
250	10"	AS 2129 - Table K	165	1 or 2 or 3 or 4 + 5	16	51	12 x M27 x 310	12 x M27 x 340	24 x M27 x 130	24 x M27 x 90	8 x M27 x 85
250	10"	AS 2129 - Table R	165	1 or 2 or 3 or 4 + 5	16	60	12 x M27 x 330	12 x M27 x 360	24 x M27 x 140	24 x M27 x 100	8 x M27 x 95
300	12"	PN 6	178	1 or 2 or 3 or 4 + 5	12	22	10 x M20 x 250	10 x M20 x 280	20 x M20 x 80	20 x M20 x 60	4 x M20 x 50
300	12"	PN 10	178	1 or 2 or 3 or 4 + 5	12	26	10 x M20 x 260	10 x M20 x 290	20 x M20 x 85	20 x M20 x 60	4 x M20 x 55
300	12"	PN 16	178	1 or 2 or 3 or 4 + 5	12	28	10 x M24 x 270	10 x M24 x 300	20 x M24 x 95	20 x M24 x 65	4 x M24 x 55
300	12"	PN 25	178	1 or 2 or 3 or 4 + 5	16	34	12 x M27 x 290	12 x M27 x 320	24 x M27 x 120	24 x M27 x 90	8 x M27 x 80
300	12"	JIS 5K	178	1 or 2 or 3 or 4 + 5	12	22	10 x M20 x 250	10 x M20 x 280	20 x M20 x 80	20 x M20 x 60	4 x M20 x 50
300	12"	JIS 30K	178	1 or 2 or 3 or 4 + 5	16	52	12 x M30 x 320	12 x M30 x 360	24 x M30 x 140	24 x M30 x 110	8 x M30 x 95
300	12"	ASME B16.5 cl. 150	178	1 or 2 or 3 or 4 + 5	12	32	10 x 7/8"- 9UNC x 280	10 x 7/8"- 9UNC x 310	20 x 7/8"- 9UNC x 95	20 x 7/8"- 9UNC x 65	4 x 7/8"- 9UNC x 60
300	12"	ISO 7005-1 - PN20	178	1 or 2 or 3 or 4 + 5	12	32	10 x M24 x 280	10 x M24 x 310	20 x M24 x 100	20 x M24 x 70	4 x M24 x 60
300	12"	ISO 7005-1 - PN50	178	1 or 2 or 3 or 4 + 5	16	51	12 x M30 x 320	12 x M30 x 360	24 x M30 x 140	24 x M30 x 110	8 x M30 x 95

300	12"	ASME B16.1 cl. 125	178	1 or 2 or 3 or 4 + 5	12	32	10 x 7/8"- 9UNC x 280	10 x 7/8"- 9UNC x 310	20 x 7/8"- 9UNC x 95	20 x 7/8"- 9UNC x 65	4 x 7/8"- 9UNC x 60
300	12"	BS 10 - Table D	178	1 or 2 or 3 or 4 + 5	12	19	10 x 3/4"- 10UNC x 250	10 x 3/4"- 10UNC x 270	20 x 3/4"- 10UNC x 80	20 x 3/4"- 10UNC x 55	4 x 3/4"- 10UNC x 50
300	12"	BS 10 - Table E	178	1 or 2 or 3 or 4 + 5	12	25	10 x 7/8"- 9UNC x 270	10 x 7/8"- 9UNC x 290	20 x 7/8"- 9UNC x 90	20 x 7/8"- 9UNC x 60	4 x 7/8"- 9UNC x 55
300	12"	ASME B16.5 cl. 300	178	1 or 2 or 3 or 4 + 5	16	51	12 x 1 1/8"- 8UN x 320	12 x 1 1/8"- 8UN x 360	24 x 1 1/8"- 8UN x 140	24 x 1 1/8"- 8UN x 110	8 x 1 1/8"- 8UN x 95
300	12"	AWWA C 207 cl. B + D	178	1 or 2 or 3 or 4 + 5	12	17	10 x 7/8"- 9UNC x 250	10 x 7/8"- 9UNC x 280	20 x 7/8"- 9UNC x 80	20 x 7/8"- 9UNC x 55	4 x 7/8"- 9UNC x 45
300	12"	AWWA C 207 cl. E	178	1 or 2 or 3 or 4 + 5	12	32	10 x 7/8"- 9UNC x 280	10 x 7/8"- 9UNC x 310	20 x 7/8"- 9UNC x 95	20 x 7/8"- 9UNC x 65	4 x 7/8"- 9UNC x 60
300	12"	AS 4087 PN 14/16	178	1 or 2 or 3 or 4 + 5	12	30	10 x M20 x 270	10 x M20 x 300	20 x M20 x 90	20 x M20 x 65	4 x M20 x 60
300	12"	AS 2129 - Table A	178	1 or 2 or 3 or 4 + 5	8	24	6 x M20 x 270	6 x M20 x 290	12 x M20 x 85	12 x M20 x 60	4 x M20 x 55
300	12"	AS 2129 - Table D	178	1 or 2 or 3 or 4 + 5	12	25	10 x M20 x 260	10 x M20 x 290	20 x M20 x 85	20 x M20 x 60	4 x M20 x 55
300	12"	AS 2129 - Table E	178	1 or 2 or 3 or 4 + 5	12	29	10 x M24 x 270	10 x M24 x 300	20 x M24 x 95	20 x M24 x 65	4 x M24 x 60
350	14"	PN 16	190	1 or 2 or 3 or 4 + 5	16	30	12 x M24 x 290	12 x M24 x 320	24 x M24 x 100	24 x M24 x 70	8 x M24 x 65
350	14"	PN 25	190	1 or 2 or 3 or 4 + 5	16	38	12 x M30 x 310	12 x M30 x 340	24 x M30 x 130	24 x M30 x 95	8 x M30 x 85
350	14"	PN 40	190	1 or 2 or 3 or 4 + 5	16	46	12 x M33 x 330	12 x M33 x 370	24 x M33 x 140	24 x M33 x 110	8 x M33 x 95
350	14"	JIS 16K	190	1 or 2 or 3 or 4 + 5	16	34	12 x M30 x 300	12 x M30 x 340	24 x M30 x 110	24 x M30 x 75	8 x M30 x 70
350	14"	JIS 20K	190	1 or 2 or 3 or 4 + 5	16	40	12 x M30 x 310	12 x M30 x 350	24 x M30 x 130	24 x M30 x 100	8 x M30 x 90
350	14"	JIS 30K	190	1 or 2 or 3 or 4 + 5	16	54	12 x M30 x 340	12 x M30 x 380	24 x M30 x 150	24 x M30 x 110	8 x M30 x 100
350	14"	ASME B16.5 cl. 150	190	1 or 2 or 3 or 4 + 5	12	35	8 x 1"- 8UNC x 300	8 x 1"- 8UNC x 330	16 x 1"- 8UNC x 110	16 x 1"- 8UNC x 75	8 x 1"- 8UNC x 70
350	14"	ISO 7005-1 - PN20	190	1 or 2 or 3 or 4 + 5	12	35	8 x M27 x 300	8 x M27 x 330	16 x M27 x 100	16 x M27 x 75	8 x M27 x 70
350	14"	ISO 7005-1 - PN50	190	1 or 2 or 3 or 4 + 5	20	54	16 x M30 x 340	16 x M30 x 380	32 x M30 x 150	32 x M30 x 110	8 x M30 x 100
350	14"	ASME B16.1 cl. 125	190	1 or 2 or 3 or 4 + 5	12	35	8 x 1"- 8UNC x 300	8 x 1"- 8UNC x 330	16 x 1"- 8UNC x 110	16 x 1"- 8UNC x 75	8 x 1"- 8UNC x 70
350	14"	BS 10 - Table D	190	1 or 2 or 3 or 4 + 5	12	22	8 x 7/8"- 9UNC x 270	8 x 7/8"- 9UNC x 300	16 x 7/8"- 9UNC x 90	16 x 7/8"- 9UNC x 60	8 x 7/8"- 9UNC x 60
350	14"	BS 10 - Table E	190	1 or 2 or 3 or 4 + 5	12	29	8 x 7/8"- 9UNC x 280	8 x 7/8"- 9UNC x 310	16 x 7/8"- 9UNC x 100	16 x 7/8"- 9UNC x 65	8 x 7/8"- 9UNC x 65
350	14"	ASME B16.5 cl. 300	190	1 or 2 or 3 or 4 + 5	20	54	16 x 1 1/8"- 8UN x 340	16 x 1 1/8"- 8UN x 380	32 x 1 1/8"- 8UN x 150	32 x 1 1/8"- 8UN x 110	8 x 1 1/8"- 8UN x 100
350	14"	AWWA C 207 cl. B + D	190	1 or 2 or 3 or 4 + 5	12	19	8 x 1"- 8UNC x 270	8 x 1"- 8UNC x 300	16 x 1"- 8UNC x 90	16 x 1"- 8UNC x 60	8 x 1"- 8UNC x 55
350	14"	AWWA C 207 cl. E	190	1 or 2 or 3 or 4 + 5	12	35	8 x 1"- 8UNC x 300	8 x 1"- 8UNC x 330	16 x 1"- 8UNC x 110	16 x 1"- 8UNC x 75	8 x 1"- 8UNC x 70
350	14"	AS 4087 PN 14/16	190	1 or 2 or 3 or 4 + 5	12	33	8 x M24 x 290	8 x M24 x 320	16 x M24 x 100	16 x M24 x 70	8 x M24 x 70
350	14"	AS 2129 - Table D	190	1 or 2 or 3 or 4 + 5	12	29	8 x M24 x 290	8 x M24 x 320	16 x M24 x 100	16 x M24 x 70	8 x M24 x 65
350	14"	AS 2129 - Table E	190	1 or 2 or 3 or 4 + 5	12	32	8 x M24 x 290	8 x M24 x 320	16 x M24 x 100	16 x M24 x 70	8 x M24 x 70
350	14"	AS 2129 - Table F	190	1 or 2 or 3 or 4 + 5	16	35	12 x M27 x 300	12 x M27 x 330	24 x M27 x 130	24 x M27 x 95	8 x M27 x 85
350	14"	AS 2129 - Table H	190	1 or 2 or 3 or 4 + 5	16	48	12 x M27 x 330	12 x M27 x 360	24 x M27 x 140	24 x M27 x 110	8 x M27 x 95
350	14"	AS 2129 - Table J	190	1 or 2 or 3 or 4 + 5	16	57	12 x M30 x 350	12 x M30 x 380	24 x M30 x 150	24 x M30 x 120	8 x M30 x 100
350	14"	AS 2129 - Table K	190	1 or 2 or 4 + 5	16	67	12 x M33 x 370	12 x M33 x 410	not available	24 x M33 x 130	8 x M33 x 110
350	14"	AS 2129 - Table R	190	1 or 2 or 4 + 5	16	79	12 x M33 x 400	12 x M33 x 430	not available	24 x M33 x 140	8 x M33 x 130
400	16"	PN 10	216	1 or 2 or 3 or 4 + 5	16	26	12 x M24 x 310	12 x M24 x 340	24 x M24 x 100	24 x M24 x 70	8 x M24 x 65
400	16"	PN 16	216	1 or 2 or 3 or 4 + 5	16	32	12 x M27 x 320	12 x M27 x 350	24 x M27 x 110	24 x M27 x 70	8 x M27 x 70
400	16"	PN 25	216	1 or 2 or 3 or 4 + 5	16	40	12 x M33 x 340	12 x M33 x 380	24 x M33 x 130	24 x M33 x 90	8 x M33 x 80
400	16"	JIS 10K	216	1 or 2 or 3 or 4 + 5	16	28	12 x M24 x 310	12 x M24 x 340	24 x M24 x 100	24 x M24 x 70	8 x M24 x 70
400	16"	ASME B16.1 cl. 125	216	1 or 2 or 3 or 4 + 5	16	37	12 x 1"- 8UNC x 330	12 x 1"- 8UNC x 360	24 x 1"- 8UNC x 110	24 x 1"- 8UNC x 75	8 x 1"- 8UNC x 75
400	16"	ASME B16.5 cl. 150	216	1 or 2 or 3 or 4 + 5	16	37	12 x 1"- 8UNC x 330	12 x 1"- 8UNC x 360	24 x 1"- 8UNC x 110	24 x 1"- 8UNC x 75	8 x 1"- 8UNC x 75
400	16"	ASME B16.1 cl. 250	216	1 or 2 or 3 or 4 + 5	20	57	16 x 1 1/4"- 8UN x 380	16 x 1 1/4"- 8UN x 420	32 x 1 1/4"- 8UN x 150	32 x 1 1/4"- 8UN x 110	8 x 1 1/4"- 8UN x 95

400	16"	ASME B16.5 cl. 300	216	1 or 2 or 3 or 4 + 5	20	57	16 x 1 1/4"- 8UN x 380	16 x 1 1/4"- 8UN x 420	32 x 1 1/4"- 8UN x 150	32 x 1 1/4"- 8UN x 110	8 x 1 1/4"- 8UN x 95
450	18"	PN 10	222	1 or 2 or 3 or 4 + 5	20	28	16 x M24 x 320	16 x M24 x 350	32 x M24 x 100	32 x M24 x 70	8 x M24 x 70
450	18"	PN 16	222	1 or 2 or 3 or 4 + 5	20	40	16 x M27 x 340	16 x M27 x 370	32 x M27 x 120	32 x M27 x 85	8 x M27 x 85
450	18"	PN 25	222	1 or 2 or 3 or 4 + 5	20	46	16 x M33 x 360	16 x M33 x 400	32 x M33 x 140	32 x M33 x 100	8 x M33 x 85
450	18"	PN 40	222	1 or 2 or 3 or 4 + 5	20	57	16 x M36 x 390	16 x M36 x 430	32 x M36 x 160	32 x M36 x 115	8 x M36 x 95
450	18"	JIS 5K	222	1 or 2 or 3 or 4 + 5	16	24	12 x M22 x 300	12 x M22 x 330	24 x M22 x 95	24 x M22 x 70	8 x M22 x 70
450	18"	JIS 10K	222	1 or 2 or 3 or 4 + 5	20	30	16 x M24 x 320	16 x M24 x 350	32 x M24 x 110	32 x M24 x 75	8 x M24 x 75
450	18"	ASME B16.1 cl. 125	222	1 or 2 or 3 or 4 + 5	16	40	12 x 1 1/8"- 8UN x 340	12 x 1 1/8"- 8UN x 380	24 x 1 1/8"- 8UN x 120	24 x 1 1/8"- 8UN x 85	8 x 1 1/8"- 8UN x 85
450	18"	ASME B16.5 cl. 150	222	1 or 2 or 3 or 4 + 5	16	40	12 x 1 1/8"- 8UN x 340	12 x 1 1/8"- 8UN x 380	24 x 1 1/8"- 8UN x 120	24 x 1 1/8"- 8UN x 85	8 x 1 1/8"- 8UN x 85
450	18"	ASME B16.1 cl. 250	222	1 or 2 or 3 or 4 + 5	24	61	20 x 1 1/4"- 8UN x 390	20 x 1 1/4"- 8UN x 430	40 x 1 1/4"- 8UN x 160	40 x 1 1/4"- 8UN x 120	8 x 1 1/4"- 8UN x 100
450	18"	ASME B16.5 cl. 300	222	1 or 2 or 3 or 4 + 5	24	61	20 x 1 1/4"- 8UN x 390	20 x 1 1/4"- 8UN x 430	40 x 1 1/4"- 8UN x 160	40 x 1 1/4"- 8UN x 120	8 x 1 1/4"- 8UN x 100
450	18"	BS 10 - Table E	222	1 or 2 or 3 or 4 + 5	16	35	12 x 7/8"- 9UNC x 330	12 x 7/8"- 9UNC x 360	24 x 7/8"- 9UNC x 110	24 x 7/8"- 9UNC x 80	8 x 7/8"- 9UNC x 80
450	18"	AWWA C 207 cl. B + D	222	1 or 2 or 3 or 4 + 5	16	19	12 x 1 1/8"- 8UN x 300	12 x 1 1/8"- 8UN x 340	24 x 1 1/8"- 8UN x 100	24 x 1 1/8"- 8UN x 65	8 x 1 1/8"- 8UN x 65
450	18"	AWWA C 207 cl. E	222	1 or 2 or 3 or 4 + 5	16	40	12 x 1 1/8"- 8UN x 340	12 x 1 1/8"- 8UN x 380	24 x 1 1/8"- 8UN x 120	24 x 1 1/8"- 8UN x 85	8 x 1 1/8"- 8UN x 85
450	18"	AS 4087 PN 21	222	1 or 2 or 3 or 4 + 5	20	38	16 x M30 x 340	16 x M30 x 380	32 x M30 x 130	32 x M30 x 95	8 x M30 x 75
450	18"	AS 4087 PN 35	222	1 or 2 or 3 or 4 + 5	20	46	16 x M30 x 360	16 x M30 x 390	32 x M30 x 140	32 x M30 x 100	8 x M30 x 85
450	18"	AS 2129 - Table E	222	1 or 2 or 3 or 4 + 5	16	35	12 x M24 x 330	12 x M24 x 360	24 x M24 x 110	24 x M24 x 80	8 x M24 x 80
500	20"	PN 10	229	1 or 2 or 3 or 4 + 5	20	28	16 x M24 x 320	16 x M24 x 350	32 x M24 x 110	32 x M24 x 75	8 x M24 x 70
500	20"	PN 25	229	1 or 2 or 3 or 4 + 5	20	48	12 x M33 x 370	12 x M33 x 410	24 x M33 x 150	24 x M33 x 110	16 x M33 x 95
500	20"	PN 40	229	1 or 2 or 3 or 4 + 5	20	57	12 x M39 x 400	12 x M39 x 440	24 x M39 x 160	24 x M39 x 120	16 x M39 x 100
500	20"	JIS 10K	229	1 or 2 or 3 or 4 + 5	20	30	16 x M24 x 330	16 x M24 x 360	32 x M24 x 110	32 x M24 x 75	8 x M24 x 70
500	20"	ASME B16.1 cl. 125	229	1 or 2 or 3 or 4 + 5	20	43	16 x 1 1/8"- 8UN x 360	16 x 1 1/8"- 8UN x 390	32 x 1 1/8"- 8UN x 130	32 x 1 1/8"- 8UN x 90	8 x 1 1/8"- 8UN x 85
500	20"	ASME B16.5 cl. 150	229	1 or 2 or 3 or 4 + 5	20	43	16 x 1 1/8"- 8UN x 360	16 x 1 1/8"- 8UN x 390	32 x 1 1/8"- 8UN x 130	32 x 1 1/8"- 8UN x 90	8 x 1 1/8"- 8UN x 85
500	20"	ASME B16.1 cl. 250	229	1 or 2 or 3 or 4 + 5	24	64	20 x 1 1/4"- 8UN x 400	20 x 1 1/4"- 8UN x 440	40 x 1 1/4"- 8UN x 160	40 x 1 1/4"- 8UN x 120	8 x 1 1/4"- 8UN x 110
500	20"	ASME B16.5 cl. 300	229	1 or 2 or 3 or 4 + 5	24	64	20 x 1 1/4"- 8UN x 400	20 x 1 1/4"- 8UN x 440	40 x 1 1/4"- 8UN x 160	40 x 1 1/4"- 8UN x 120	8 x 1 1/4"- 8UN x 110
500	20"	AWWA C 207 cl. B + D	229	1 or 2 or 3 or 4 + 5	20	19	16 x 1 1/8"- 8UN x 310	16 x 1 1/8"- 8UN x 350	32 x 1 1/8"- 8UN x 100	32 x 1 1/8"- 8UN x 65	8 x 1 1/8"- 8UN x 60
500	20"	AWWA C 207 cl. E	229	1 or 2 or 3 or 4 + 5	20	43	16 x 1 1/8"- 8UN x 360	16 x 1 1/8"- 8UN x 390	32 x 1 1/8"- 8UN x 130	32 x 1 1/8"- 8UN x 90	8 x 1 1/8"- 8UN x 85
500	20"	AS 4087 PN 21	229	1 or 2 or 3 or 4 + 5	24	41	20 x M30 x 350	20 x M30 x 390	40 x M30 x 140	40 x M30 x 100	8 x M30 x 85
500	20"	AS 4087 PN 35	229	1 or 2 or 3 or 4 + 5	24	49	20 x M30 x 370	20 x M30 x 400	40 x M30 x 140	40 x M30 x 110	8 x M30 x 95
500	20"	AS 2129 - Table F	229	1 or 2 or 3 or 4 + 5	24	41	20 x M30 x 350	20 x M30 x 390	40 x M30 x 140	40 x M30 x 100	8 x M30 x 85
500	20"	AS 2129 - Table H	229	1 or 2 or 3 or 4 + 5	24	57	20 x M30 x 390	20 x M30 x 420	40 x M30 x 150	40 x M30 x 120	8 x M30 x 100
500	20"	AS 2129 - Table J	229	1 or 2 or 3 or 4 + 5	24	79	20 x M33 x 430	20 x M33 x 470	40 x M33 x 180	40 x M33 x 140	8 x M33 x 120
600	24"	PN 10	267	1 or 2 or 3 or 4 + 5	20	28	16 x M27 x 360	16 x M27 x 400	32 x M27 x 110	32 x M27 x 80	8 x M27 x 65
600	24"	PN 25	267	1 or 2 or 3 or 4 + 5	20	58	16 x M36 x 430	16 x M36 x 480	32 x M36 x 170	32 x M36 x 130	8 x M36 x 110
600	24"	PN 40	267	1 or 2 or 3 or 4 + 5	20	72	16 x M45 x 470	16 x M45 x 520	32 x M45 x 190	32 x M45 x 140	8 x M45 x 130
600	24"	JIS 10K	267	1 or 2 or 3 or 4 + 5	24	32	20 x M30 x 370	20 x M30 x 410	40 x M30 x 120	40 x M30 x 85	8 x M30 x 75
600	24"	ASME B16.5 cl. 150	267	1 or 2 or 3 or 4 + 5	20	48	16 x 1 1/4"- 8UN x 410	16 x 1 1/4"- 8UN x 450	32 x 1 1/4"- 8UN x 140	32 x 1 1/4"- 8UN x 100	8 x 1 1/4"- 8UN x 95
600	24"	ASME B16.1 cl. 250	267	1 or 2 or 3 or 4 + 5	24	70	20 x 1 1/2"- 8UN x 460	20 x 1 1/2"- 8UN x 510	40 x 1 1/2"- 8UN x 190	40 x 1 1/2"- 8UN x 140	8 x 1 1/2"- 8UN x 120
600	24"	ASME B16.5 cl. 300	267	1 or 2 or 3 or 4 + 5	24	70	20 x 1 1/2"- 8UN x 460	20 x 1 1/2"- 8UN x 510	40 x 1 1/2"- 8UN x 190	40 x 1 1/2"- 8UN x 140	8 x 1 1/2"- 8UN x 120
600	24"	AWWA C 207 cl. B + D	267	1 or 2 or 3 or 4 + 5	20	25	16 x 1 1/4"- 8UN x 370	16 x 1 1/4"- 8UN x 410	32 x 1 1/4"- 8UN x 120	32 x 1 1/4"- 8UN x 75	8 x 1 1/4"- 8UN x 70

600	24"	AWWA C 207 cl. E	267	1 or 2 or 3 or 4 + 5	20	48	16 x 1 1/4"- 8UN x 410	16 x 1 1/4"- 8UN x 450	32 x 1 1/4"- 8UN x 140	32 x 1 1/4"- 8UN x 100	8 x 1 1/4"- 8UN x 95
600	24"	AS 4087 PN 21	267	1 or 2 or 3 or 4 + 5	24	44	20 x M33 x 400	20 x M33 x 440	40 x M33 x 150	40 x M33 x 110	8 x M33 x 100
600	24"	AS 4087 PN 35	267	1 or 2 or 3 or 4 + 5	24	54	20 x M33 x 420	20 x M33 x 460	40 x M33 x 160	40 x M33 x 120	8 x M33 x 110
600	24"	AS 2129 - Table F	267	1 or 2 or 3 or 4 + 5	24	44	20 x M33 x 400	20 x M33 x 440	40 x M33 x 150	40 x M33 x 110	8 x M33 x 100
600	24"	AS 2129 - Table H	267	1 or 2 or 3 or 4 + 5	24	64	20 x M33 x 440	20 x M33 x 480	40 x M33 x 170	40 x M33 x 130	8 x M33 x 120
600	24"	AS 2129 - Table J	267	1 or 2 or 3 or 4 + 5	24	92	20 x M36 x 500	20 x M36 x 540	40 x M36 x 200	40 x M36 x 160	8 x M36 x 150