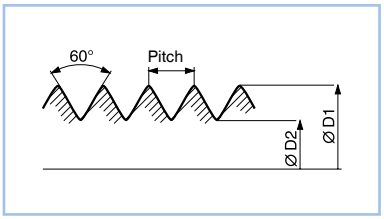
M thread according to EN 60423 / Pg thread / NPT thread / pipe thread

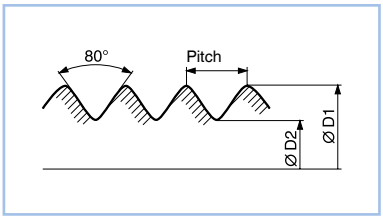
Metric ISO thread to EN 60423



Thread	Pitch [mm]	Outside diameter D1 [mm]	Core diameter, min. D2 [mm]	Clearance hole [mm]
M10x1,0	1,0	10	8,528	10,0 0/+0,2
M12x1,5	1,5	12	9,846	12,0 0/+0,2
M16x1,5	1,5	16	13,846	16,0 0/+0,2
M20x1,5	1,5	20	17,846	20,0 0/+0,2
M25x1,5	1,5	25	22,834	25,0 0/+0,2
M32x1,5	1,5	32	29,834	32,0 0/+0,2
M40x1,5	1,5	40	37,834	40,0 0/+0,2
M50x1,5	1,5	50	47,820	50,0 0/+0,2
M63x1,5	1,5	63	60,820	63,0 0/+0,2
M75x1,5	1,5	75	72,820	75,0 0/+0,3
M90x2,0	2,0	90	87,151	90,0 0/+0,3
M110x2,0	2,0	110	107,151	110,0 0/+0,3

(Source: Jacob GmbH)

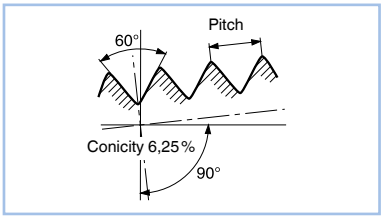
Pg thread to DIN 40430



Thread	Pitch [mm]	Outside diameter D1 [mm]	Core diameter D2 [mm]	Clearance hole [mm]
Pg7	1,270	12,5	11,28	12,7
Pg9	1,410	15,2	13,86	15,4
Pg11	1,410	18,6	17,26	18,8
Pg13	1,410	20,4	19,06	20,6
Pg16	1,410	22,5	21,16	22,7
Pg21	1,588	28,3	26,78	28,5
Pg29	1,588	37,0	35,48	37,2
Pg36	1,588	47,0	45,48	47,2
Pg42	1,588	54,0	52,48	54,2
Pg48	1,588	59,3	57,78	59,5

(Source: Jacob GmbH)

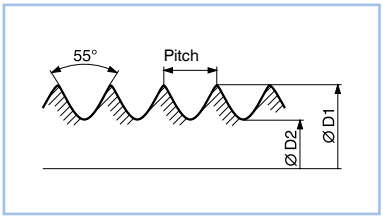
NPT (conical) American pipe thread



Thread	Pitch [mm]	Outside diameter [mm]	Number of threads per unit length [n]
NPT ¼"	1,411	13,616	18
NPT ⅜"	1,411	17,055	18
NPT ½"	1,814	21,223	14
NPT ¾"	1,814	26,568	14
NPT 1"	2,208	33,227	11 ½
NPT 1 ¼"	2,208	41,984	11 ½
NPT 1 ½"	2,208	48,053	11 ½
NPT 2"	2,208	60,091	11 ½
NPT 2 ½"	3,175	72,699	8
NPT 3"	3,175	88,608	8
NPT 3 ½"	3,175	100,013	8

(Source: Jacob GmbH)

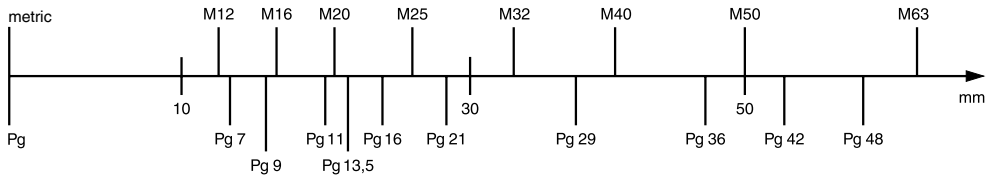
Pipe thread to DIN ISO 228



Thread	Pitch [mm]	Outside diameter D1 [mm]	Core diameter D2 [mm]	Clearance hole [mm]
G ¼"	1,337	13,157	11,145	13,4
G ⅜"	1,337	16,662	14,950	17,0
G ½"	1,814	20,955	18,631	21,3
G ¾"	1,814	26,441	24,117	26,8
G 1"	2,309	33,249	30,291	33,7
G 1 ¼"	2,309	41,910	38,952	42,4
G 1 ½"	2,309	47,803	44,845	48,3
G 2"	2,309	59,614	56,656	60,2
G 2 ½"	2,309	75,184	72,226	75,7
G 3"	2,309	87,884	84,926	88,5
G 3 ½"	2,309	100,330	97,372	101,0
G 4"	2,309	113,030	110,072	114,0

(Source: Jacob GmbH)

Comparison of outer M / Pg thread dimensions



(Source: Jacob GmbH)

Details on UL test standards according UL 514B for cable glands with metric thread

Jacob PERFECT cable gland, brass, metric thread

50.6xxMzzzz xx after 50.6 means metric sizes 12, 16, 20, 25, 32, 40, 50, 63

50.6xxMzzzz zzzz after M may be followed suffixes

Part-No.	Thread	Cable Ø [mm]	Marks	Suffix	Explanation
50.6xxMzzzz 50.6xxM-Lzzzz 50.6xx/xxMzzzz 50.6xxM/EMVDzzzz 50.6xxM/EMVzzzz 50.6xxM/EMV/Lzzzz 50.6xxESzzzz 50.6xxES/EMVzzzz	M12x1,5	5–6	USR/CNR	«L»	for other thread length
	M16x1,5	9	USR/CNR		
	M20x1,5	10–13	USR/CNR	«R»	for reducing sealing ring
	M25x1,5	12–16	USR/CNR		
	M32x1,5	15–21	USR/CNR	«EMV»	for part series EMV
	M40x1,5	19–27	USR/CNR		
	M50x1,5	26–35	USR/CNR	«EMVD»	for part series EMVD
	M63x1,5	39–42	USR/CNR		
50.6xxM1zzzz 50.6xxM1-Lzzzz 50.6xxM1/EMVDzzzz 50.6xxM1/EMVzzzz 50.6xxM1/EMV/Lzzzz	M63x1,5	39,2–48	USR/CNR	«VPA», «V»	for mounted blind plug as dust protection by transport or storage
				«STO»	for mounted insert without bore as dust protection by transport or storage
50.6xxM/Rzzzz	M12x1,5	3,2–5	USR/CNR	«M1»	maximum diameter 48 mm
	M16x1,5	9	USR/CNR		
	M20x1,5	13	USR/CNR		
	M25x1,5	9,3–16	USR/CNR		
	M32x1,5	13–21	USR/CNR		
	M40x1,5	17–27	USR/CNR		
	M50x1,5	22–35	USR/CNR		
	M63x1,5	48	USR/CNR		

(Source: Jacob GmbH)

Jacob PERFECT cable gland, polyamide, metric thread

50.6xxPAzzzz xx after 50.6 means metric sizes 12, 16, 20, 25, 32, 40, 50, 63

50.6xxPAzzzz zzzz after PA may be followed suffixes

Part-No.	Thread	Cable Ø [mm]	Marks	Suffix	Explanation
50.6xxPAzzzz 50.6xxPAzzzzL	M12x1,5	6	USR/CNR	«7035», «7001», «SW»	and other color-index to RAL, polyamide is «all colors» UL listed
	M16x1,5	7–10	USR/CNR		
	M20x1,5	9–13	USR/CNR		
	M25x1,5	13–17	USR/CNR	«BS»	for spiral top
	M32x1,5	21	USR/CNR		
	M40x1,5	21–28	USR/CNR	«FL»	V-0 polyamide is UL listed
	M50x1,5	28–35	USR/CNR		
50.6xxPA/Rzzzz	M12x1,5	3,1–5	USR/CNR	«R»	for reducing sealing ring
	M16x1,5	6–10	USR/CNR		
	M20x1,5	9–13	USR/CNR	«VPA», «V»	for mounted blind plug as dust protection by transport or storage
	M25x1,5	11–17	USR/CNR		
	M32x1,5	14–21	USR/CNR		
	M40x1,5	19–28	USR/CNR	«STO»	for mounted insert without bore as dust protection by transport or storage
	M50x1,5	25–35	USR/CNR		
50.6xxPA/FLzzzz	M12x1,5	6	USR/CNR		
	M16x1,5	5,6–10	USR/CNR		
	M20x1,5	9–13	USR/CNR		
	M25x1,5	13–17	USR/CNR		
	M32x1,5	15–21	USR/CNR		
	M40x1,5	28	USR/CNR		
	M50x1,5	27–35	USR/CNR		

(Source: Jacob GmbH)

Jacob PERFECT cable gland, polyamide, metric thread

500xxMxxPAzzzz xx after 50.6 means metric sizes 12, 16, 20, 25, 32, 40, 50, 63

500xxMxxPAzzzz zzzz after PA may be followed suffixes

Part-No.	Thread	Cable Ø [mm]	Marks	Suffix	Explanation
50007M12PAzzzz	M12x1,5	3–6,5	USR/CNR	The suffix and explanations for series 50.6xxPAzzzz apply to this series alike, see table above.	
50011M16PAzzzz	M16x1,5	5–10	USR/CNR		
50013M20PAzzzz	M20x1,5	9–12	USR/CNR		
50016M20PAzzzz	M20x1,5	11–14	USL/CNL		
50021M25PAzzzz	M25x1,5	13–18	USR/CNR		
50029M32PAzzzz	M32x1,5	19–25	USL/CNL		
50036M40PAzzzz	M40x1,5	22–32	USL/CNL		
50042M50PAzzzz	M50x1,5	32–38	USL/CNL		
50048M63PAzzzz	M63x1,5	34–44	USL/CNL		
50029M32PA/Rzzzz	M32x1,5	13,5–20	USL/CNL		
50036M40PA/Rzzzz	M40x1,5	20–26	USL/CNL		
50042M50PA/Rzzzz	M50x1,5	25–31	USL/CNL		
50048M63PA/Rzzzz	M63x1,5	29–35	USL/CNL		

(Source: Jacob GmbH)

Details on UL test standards according UL 514B for cable glands with Pg thread

Jacob PERFECT cable gland, polyamide, Pg thread

50.0xxPAzzzz xx after 50.0 means Pg sizes 7, 9, 11, 13,5, 16, 21, 29, 36, 42, 48

50.0xxPAzzzz zzzz after PA may be followed suffixes

Part-No.	Thread	Cable Ø [mm]	Marks	Suffix	Explanation
50.0xxPAzzzz 50.0xxPAzzzzL	Pg7	3–6,5	USR/CNR	«7035», «7001», «SW»	and other color-index to RAL, polyamide is «all colors» UL listed
	Pg9	4–8	USR/CNR		
	Pg11	5–10	USR/CNR		
	Pg13,5	9–12	USR/CNR	«BS»	for spiral top
	Pg16	11–14	USL/CNL		
	Pg21	14–18	USR/CNR	«L», «15» / «18»	for other thread length
	Pg29	19–25	USL/CNL		
	Pg36	22–32	USL/CNL		
	Pg42	32–38	USL/CNL	«R»	for reducing sealing ring
	Pg48	34–44	USL/CNL		
50.0xxPA/Rzzzz	Pg7			«VPA», «V»	for mounted blind plug as dust protection by transport or storage
	Pg9				
	Pg11				
	Pg13,5	6–9	USR/CNR	«STO»	for mounted insert without bore as dust protection by transport or storage
	Pg16				
	Pg21				
	Pg29	13,5–20	USL/CNL		
	Pg36	20–26	USL/CNL		
	Pg42	25–31	USL/CNL		
	Pg48	34–44	USL/CNL		

(Source: Jacob GmbH)

Jacob PERFECT cable gland, brass, NPT thread

50.1xxzzzz xx after 50.1 means NPT sizes ⅜", ½", ¾", 1", 1 ¼", 1 ½", 2"

50.1xxzzzz zzzz may be followed suffixes

Part-No.	Thread	Cable Ø [mm]	Marks	Suffix	Explanation
50.1xx/EMVzzzz	NPT ⅜	9	USR/CNR	«L»	for other thread length
	NPT ½	10–13	USR/CNR		
	NPT ¾	12–18	USR/CNR	«R»	for reducing sealing ring
	NPT 1	15–21	USR/CNR		
	NPT 1 ¼	19–27	USR/CNR	«EMV»	for part series EMC
	NPT 1 ½	26–35	USR/CNR		
	NPT 2	39,2–48	USR/CNR	«VPA», «V»	for mounted blind plug as dust protection by transport or storage
50.1xx/EMVRzzzz	NPT ⅜	9	USR/CNR		
	NPT ½	13	USR/CNR		
	NPT ¾	9,3–16	USR/CNR	«STO»	for mounted insert without bore as dust protection by transport or storage
	NPT 1	13–21	USR/CNR		
	NPT 1 ¼	17–27	USR/CNR		
	NPT 1 ½	22–35	USR/CNR		
	NPT 2	48	USR/CNR		

(Source: Jacob GmbH)

Classification of the PERFECT series according to EN 62444

Jacob PERFECT cable gland
Jacob PERFECT EMC cable gland
Brass, metric thread
For all types/series: Temperature range –20 °C/+100 °C (dynamic)
Protection grade IP68 – 5 bar (30 min.)

Thread	Part-Number	Sealing range [mm]	Anchorage range [mm]	Installation torque manufacturer specification [Nm]	Thread length [mm]	Impact category 1 to 8	Cable anchorage category A or B	Clearance hole [mm]
Type/Series PERFECT cable gland 50.6xx M (BN 22000 – BN 22001)								
M12x1,5	50.612 M	3–6	3–6	3,5	5–30	5	A	12,0 0/+0,2
M16x1,5	50.616 M	5–9	5–9	3,5	5–30	5	A	16,0 0/+0,2
M20x1,5	50.620 M	9–13	9–13	3,5	6–30	6	A	20,0 0/+0,2
M25x1,5	50.625 M	11–16	11–16	6,7	7–30	6	A	25,0 0/+0,2
M32x1,5	50.632 M	14–20	14–20	12,0	8–30	6	A	32,0 0/+0,2
M40x1,5	50.640 M	19–27	19–27	13,5	8–30	7	A	40,0 0/+0,2
M50x1,5	50.650 M	24–35	24–35	13,5	9–30	7	A	50,0 0/+0,2
M63x1,5	50.663 M	32–42	32–42	13,5	10–30	7	A	63,0 0/+0,2
M63x1,5	50.663 M1	42–48	42–48	13,5	10–30	7	A	63,0 0/+0,2
Type/Series PERFECT cable gland 50.6xx M/R (BN 22003)								
M12x1,5	50.612 M/R	2–5	2–5	3,5	5–30	5	A	12,0 0/+0,2
M16x1,5	50.616 M/R	3–9	3–9	3,5	5–30	5	A	16,0 0/+0,2
M20x1,5	50.620 M/R	5–13	5–13	3,5	6–30	6	A	20,0 0/+0,2
M25x1,5	50.625 M/R	8–16	8–16	6,7	7–30	6	A	25,0 0/+0,2
M32x1,5	50.632 M/R	12–20	12–20	12,0	8–30	6	A	32,0 0/+0,2
M40x1,5	50.640 M/R	16–27	16–27	13,5	8–30	7	A	40,0 0/+0,2
M50x1,5	50.650 M/R	21–35	21–35	13,5	9–30	7	A	50,0 0/+0,2
M63x1,5	50.663 M/R	27–48	27–48	13,5	10–30	7	A	63,0 0/+0,2
Type/Series PERFECT cable gland 50.6xx M/EMV (BN 22013 – BN 22014)								
M12x1,5	50.612 M/EMV	3–6	3–6	3,5	5–30	5	A	12,0 0/+0,2
M16x1,5	50.616 M/EMV	5–9	5–9	3,5	5–30	5	A	16,0 0/+0,2
M20x1,5	50.620 M/EMV	9–13	9–13	3,5	6–30	6	A	20,0 0/+0,2
M25x1,5	50.625 M/EMV	11–16	11–16	6,7	7–30	6	A	25,0 0/+0,2
M32x1,5	50.632 M/EMV	14–20	14–20	12,0	8–30	6	A	32,0 0/+0,2
M40x1,5	50.640 M/EMV	19–27	19–27	13,5	8–30	7	A	40,0 0/+0,2
M50x1,5	50.650 M/EMV	24–35	24–35	13,5	9–30	7	A	50,0 0/+0,2
M63x1,5	50.663 M/EMV	32–42	32–42	13,5	10–30	7	A	63,0 0/+0,2
M63x1,5	50.663 M1/EMV	42–48	42–48	13,5	10–30	7	A	63,0 0/+0,2

The specified values also apply to PERFECT cable glands of the above types:
– with ready-made connecting thread lengths in the above thread length range
– for installation in a suitable internal thread to EN 60423
– for installation in thread-holes with suitable hex nuts from the Jacob product range
(Source: Jacob GmbH)

Jacob PERFECT cable gland

Polyamide, metric thread

For all types / series: Temperature range –20 °C / +100 °C (dynamic)
Protection grade IP68 – 5 bar (30 min.)

Thread	Part-Number	Sealing range [mm]	Anchorage range [mm]	Installation torque manufacturer specification [Nm]	Thread length [mm]	Impact category 1 to 8	Cable anchorage category A or B	Clearance hole [mm]
Type / Series PERFECT cable gland 50.6xx PAzzzz (BN 22066 – BN 22067, BN 22070)								
M12x1,5	50.612 PA...	3–6	3–6	1,5	8–30	2	A	12,0 0/+0,2
M16x1,5	50.616 PA...	5–9,5	5–9,5	2,5	8–30	2	A	16,0 0/+0,2
M20x1,5	50.620 PA...	8–13	8–13	3,5	8–30	2	A	20,0 0/+0,2
M25x1,5	50.625 PA...	11–17	11–17	5,0	8–30	3	A	25,0 0/+0,2
M32x1,5	50.632 PA...	15–21	15–21	5,0	10–30	3	A	32,0 0/+0,2
M40x1,5	50.640 PA...	19–28	19–28	7,5	10–30	3	A	40,0 0/+0,2
M50x1,5	50.650 PA...	27–35	27–35	7,5	12–30	3	A	50,0 0/+0,2
M63x1,5	50.663 PA...	32–42	32–42	13,0	12–30	3	A	63,0 0/+0,2

The specified values also apply to PERFECT cable glands of the above types:
– with ready-made connecting thread lengths in the above thread length range
– for installation in a suitable internal thread to EN 60423
– for installation in thread-holes with suitable hex nuts from the Jacob product range
(Source: Jacob GmbH)