M/60280 ... M/60284, M/60280/TI ... M/60284/TI
MINI-Rotary vane actuators, double acting

— Torque at 6 bar 0,13 ... 9,50 Nm
— Compact design
— Angle of rotation from 90° ... 270°
— Suitable for torques from 0,059 ... 16,6 Nm

Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Double acting rotary vane with buffer cushioning
Single vane M/60280 ... M/60284
Double vane
M/60281/TI ... M/60284/TI

Operating pressure:
2 ... 7 bar (29 ... 101 psi)
M/60280, M/60281, .../TI, M/60282, .../TI
2 ... 10 bar (29 ... 145 psi)
M/60283, ...TI, M/60284, .../TI

Air connections:
M5 M/60280, .../TI, M/60281, .../TI, M/60282, .../TI, M/60283, .../TI
G 1/8 M/60284, .../TI

Rotation angle:
90°, 180° M/60280
90°, 180°, 270° M/60281 ... M/60284
90° M/60281/TI ... M/60284/TI

Rotation tolerance:
0 ... +4° M/60280 to M/60283,.../TI
0 ... +3° M/60284, M/60284/TI

Other features:
Featherkey supplied as standard for M/60283/IE, M/60284/IE

Operating temperature:
-5° ... 60°C (+23° ... +140°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Body: cast aluminium
Shaft: steel
Shaft bearing: sintered bronze
Seals: NBR

Technical data, standard

Port size	Theoretical torque at 6 bar (Nm)	Permissable forces *1)		Permissable rotation energy *2) (Nm)	Maximum frequency *3) (l/m)	Air consumtion (cm3)			Weight (kg)	Model
		axial (N)	radial (N)			90°	180°	270°		
M5	0,15	3	30	0,6 x 10 -3	180 (at 180°)	1,4	1,4	-	0,04	M/60280
M5	0,38	4	40	1,5 x 10 -3	150 (at 180°)	3,4	3,4	4	0,07	M/60281
M5	0,86	4	40	1,5 x 10 -3	240 (at 90°)	2,8	-	-	0,08	M/60281/TI
M5	1,2	4	50	3,0 x 10 -3	150 (at 180°)	9,8	9,8	12	0,14	M/60282
M5	2,54	4	50	3,0 x 10 -3	240 (at 90°)	8,1	-	-	0,14	M/60282/TI
G 1/8	2,1	25	300	15,0 x 10 -3	120 (at 180°)	17	17	21	0,25	M/60283
G 1/8	4,7	25	300	15,0 x 10 -3	180 (at 90°)	15	-	-	0,26	M/60283/TI
G 1/8	4,1	30	400	25,0 x 10 -3	90 (at 180°)	37	37	43	0,47	M/60284
G 1/8	9,5	30	400	25,0 x 10 -3	180 (at 90°)	34	-	-	0,48	M/60284/TI

*1) Permissable load on rotary vane shaft
*2) Permissible rotational energy in Nm which may be applied to shaft. It can be calculated as follows: Permissible rotational energy ≥1/2 IXX2, I=Angular moment, XX= Mean angular velocity
*3) Maximum frequency at 5 bar pressure, no load

Mini rotary vane actuators models with fixed or adjustable rotation angles

Rotation angle 90°	180°	270°	Double vane	Single vane	Model
•	•			•	M/60280
•	•	•		•	M/60281
•			•		M/60281/TI
•	•	•		•	M/60282
•			•		M/60282/TI
•	•	•		•	M/60283
•			•		M/60283/TI
•	•	•		•	M/60284
•			•		M/60284/TI

Option selector

Size
0, 1, 2, 3, 4

M/6028★/★★/★★★

Rotation	Substitute
Standard only	see table
Variants	**Substitute**
Single vane	None
Double vane, fixed	TI

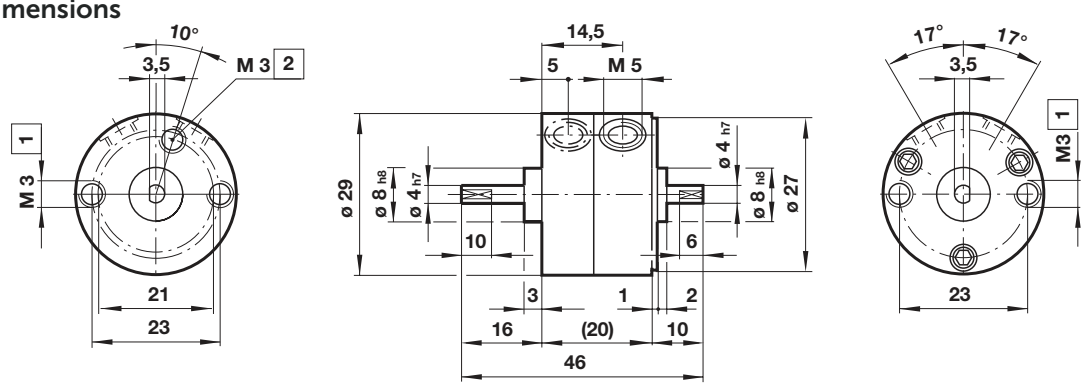
Note: Disregard option positions not used

Mountings

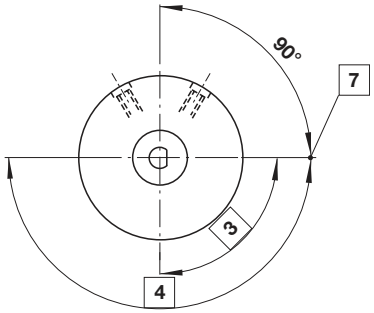
Model	B, G	C
		
	Page 5	Page 5
M/60280	QM/60280/22	QM/60280/21
M/60281, .../TI	QM/60281/22	QM/60281/21
M/60282, .../TI	QM/60282/22	QM/60282/21
M/60283, .../TI	QM/60283/22	QM/60283/21
M/60284, .../TI	QM/60284/22	QM/60284/21

Dimensions

Dimensions in mm
Projection/First angle



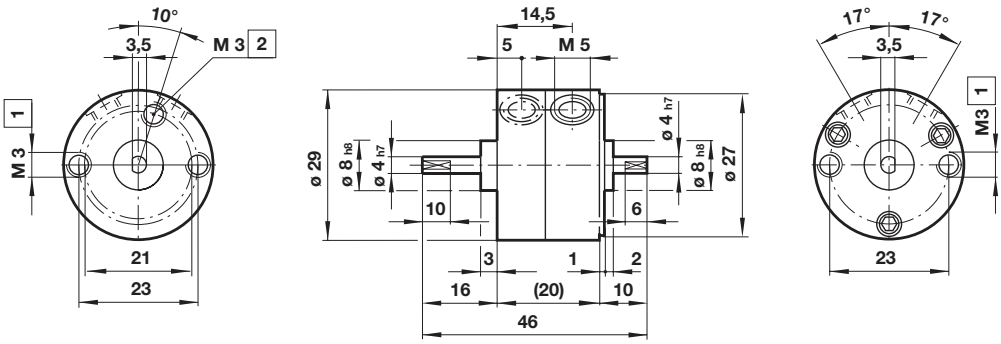
Rotation start point



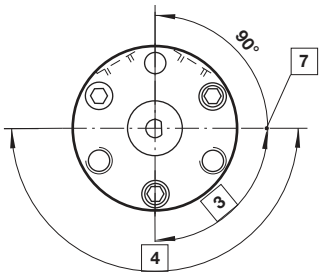
1 6 deep
2 3,5 deep
3 Rotation angle 90° + 4°
4 Rotation angle 180° + 4°
7 Rotation start point

Dimensions
M/60281

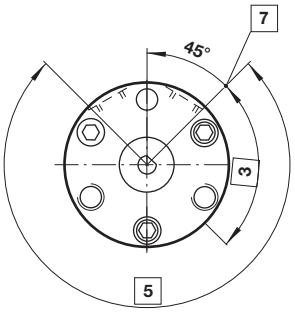
Dimensions in mm
Projection/First angle



Rotation start point
M/60281/90, M/60281/180

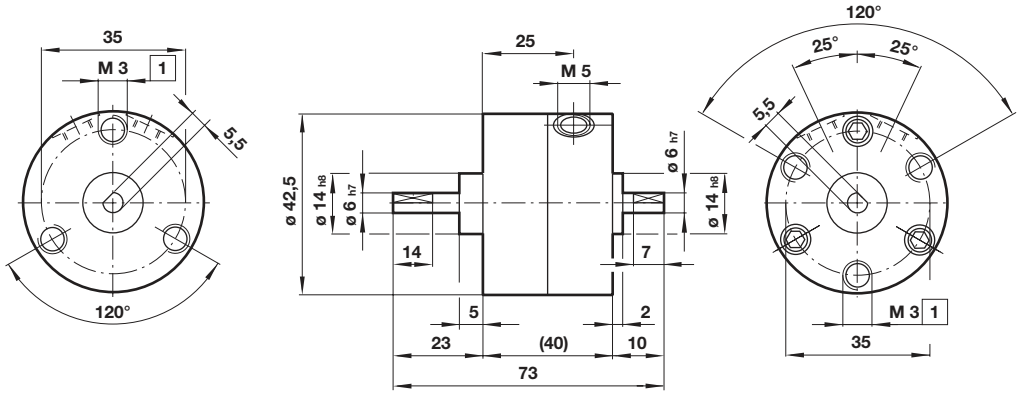


M/60281/270, M/60281/TI

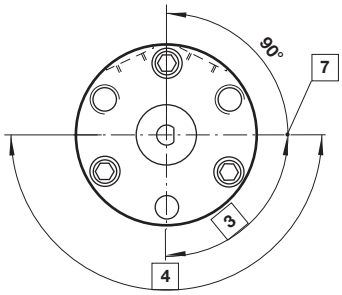


1 6 deep
2 3 deep
3 Rotation angle 90° + 4°
4 Rotation angle 180° + 4°
5 Rotation angle 270° + 4°
7 Rotation start point

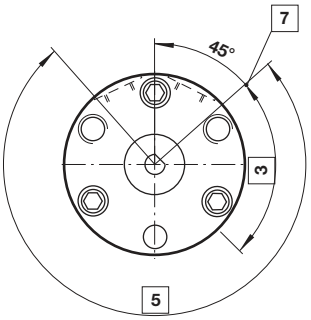
M/60282



Rotation start point
M/60282/90, M/60282/180



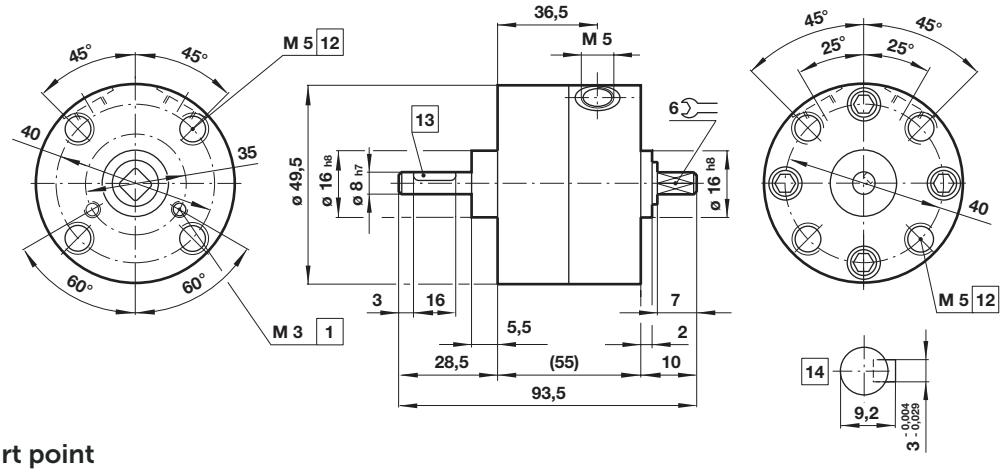
M/60282/270, M/60282/TI



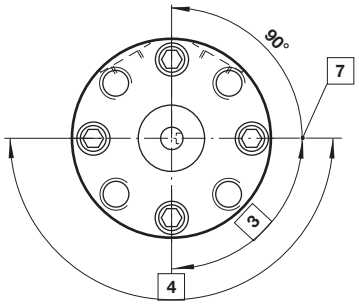
1 6 deep
2 3 deep
3 Rotation angle 90° + 4°
4 Rotation angle 180° + 4°
5 Rotation angle 270° + 4°
7 Rotation start point

Dimensions
M/60283

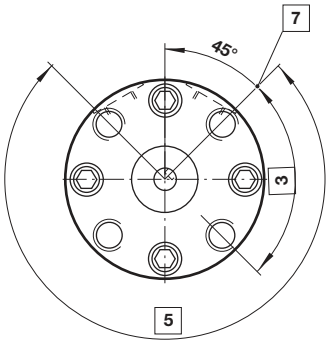
Dimensions in mm
Projection/First angle



Rotation start point
M/60283/90, M/60283/180

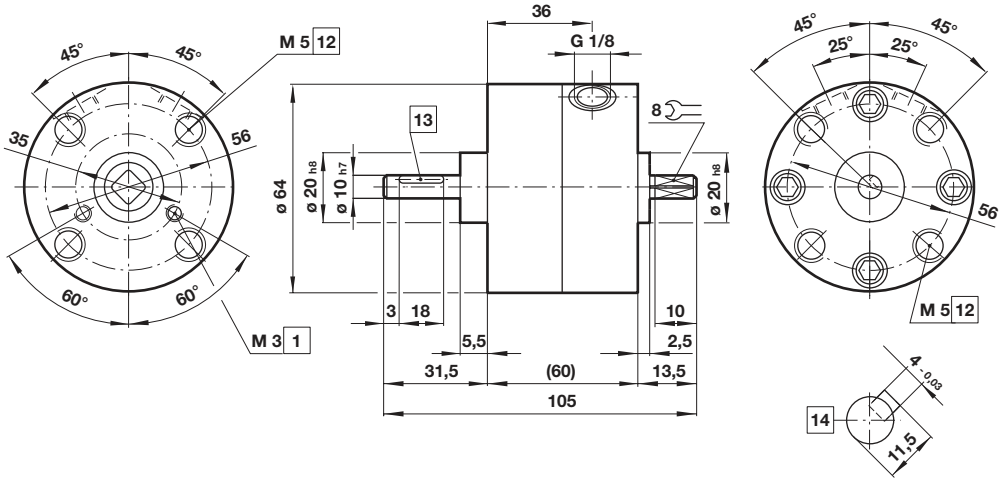


M/60283/270, M/60283/TI

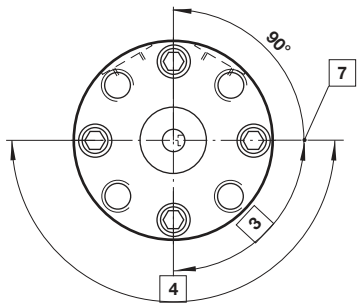


1 6 deep
3 Rotation angle 90° + 4°
4 Rotation angle 180° + 4°
5 Rotation angle 270° + 4°
7 Rotation start point
12 8 deep
13 Featherkey
14 Featherkey situation

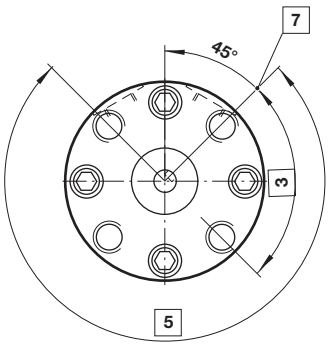
M/60284



Rotation start point
M/60284/90, M/60284/180

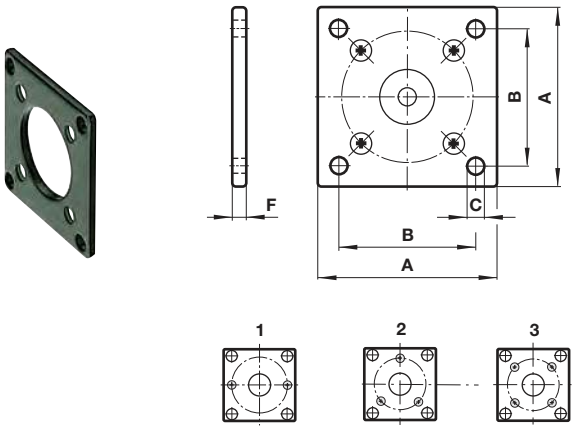


M/60284/270, M/60284/TI



1 6 deep
3 Rotation angle 90° + 4°
4 Rotation angle 180° + 4°
5 Rotation angle 270° + 4°
7 Rotation start point
12 8 deep
13 Featherkey
14 Featherkey situation

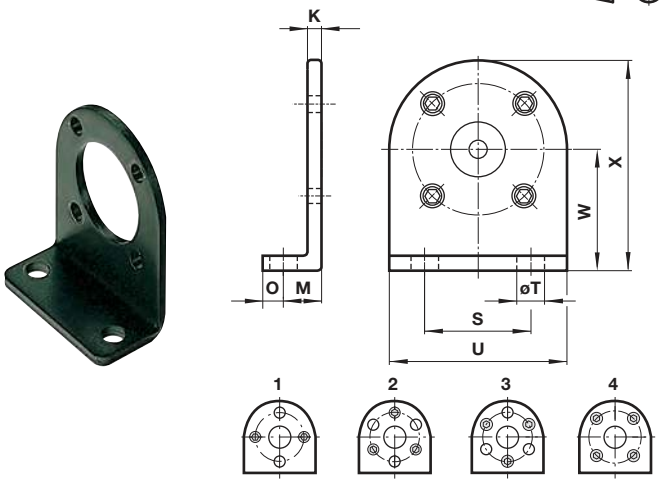
Mountings
Rear flange B, Front flange G



A	B	Ø C	F	Hole pattern	Rotation angle	kg	Model
37	30	3,4	2,5	2	120°	0,07	QM/60281/22
42	34	3,5	3	2	120°	0,14	QM/60282/22
50	41	5,5	3,5	3	90°	0,36	QM/60283/22
64	52	5,5	3,5	3	90°	0,47	QM/60284/22

Foot C

Dimensions in mm
Projection/First angle



K	M	O	S	ØT	U	W	X	Hole pattern	Rotation angle	kg	Model
2,5	11	7	26	4,8	36	25	43	2	60°	0,05	QM/60281/21
3	12	8	30	5,8	42	30	51	3	60°	0,09	QM/60282/21
3,5	15	10	36	7	49	34	58,5	4	90°	0,2	QM/60283/21
4,5	18	12	48	6,5	66	42	75	4	90°	0,2	QM/60284/21

Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under »Technical features/ data«.
Before using these products with fluids other than those specified, for non-industrial applications, life-support systems or other applications not within published specifications,
consult Norgren.
Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.
System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.
System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.