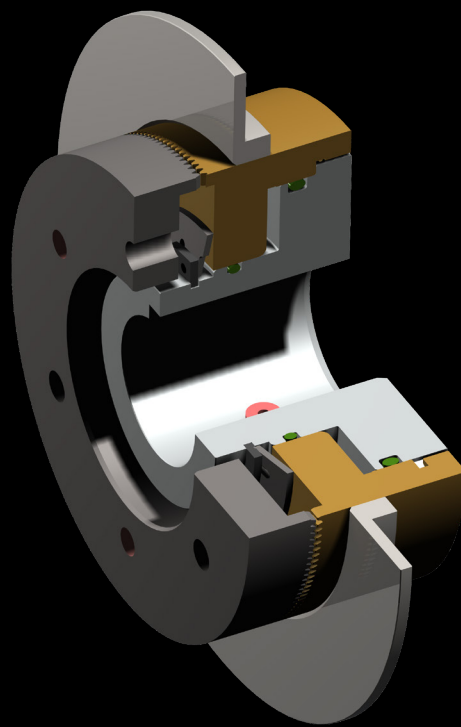


Mönninghoff

Pneumatic tooth clutch

Type 677



CHAIN & DRIVES[®]
COMPLETE BEARINGS
& POWER TRANSMISSION

POWER > SPEED > TORQUE

Pneumatic tooth clutch - Type 677

Characteristics and features

- positive-locking transmission of torque without slip
- designs up to 1000 Nm possible
- no additional energy supply necessary
- oil running or dry running
- compressed-air fed through the machine shaft
- engageable also at low relative speed
- high range of temperatures
- application-related customized tooth geometries
- synchronized switching with fixed engagement positions
- under certain circumstances available as torque limiter
- uncompromizing need for safety and reliability
- integrated, easy-to-assemble system solution
- condition monitoring on demand



Mönninghoff power transmission represents an infinite variant diversity that is applied by all areas of modern mechanical engineering.

Our technologies are mostly designed to operate under extreme conditions. We offer high precision products for medical robotics, fail-proof security for aerospace technology or synchronization solutions for the packaging or printing industry.

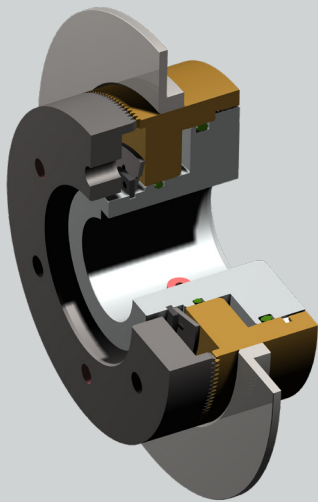
We thus address customers who have the highest standards for their own machines or systems. To them, we can offer highly complex, application-specific solutions.



Pneumatic tooth clutch - Type 677

Match code

Mönninghoff pneumatic tooth clutches are indicated by the following match code:



677 . A . 1 . B

A clutch size

B indicator plate

Other individual characteristics:

- tothing geometries
- bore size with keyway

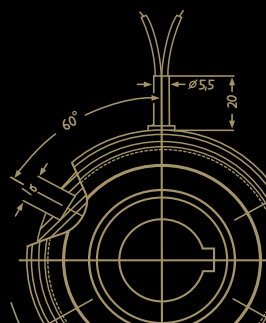
According to these characteristics, we design individual solutions concerning transmitted torque, engaging behavior or rotation speed.

Our engineers can assist with finding an application-specific clutch at any time. Together, we can develop individual and innovative solutions for extreme operating conditions.

Ordering example

Mönninghoff pneumatic tooth clutch
Type 677.15.1.6

Tothing	standard
Bore size d	30 mm H7, keyway acc to. DIN 6885/1



Pneumatic tooth clutch - Type 677

Clutch size

When dimensioning a Mönninghoff pneumatic tooth clutch, several technical preconditions should be considered:

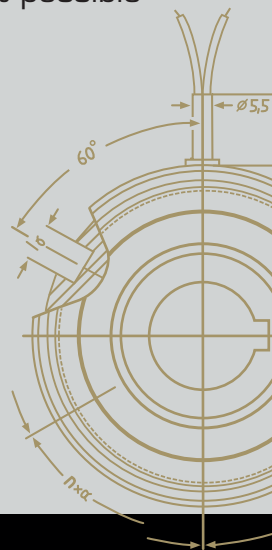
- for the selection of the correct size, not only the peak load but also the dynamic behavior of the drive have to be taken into account
- tooth clutches - contrary to friction clutches - must never be overloaded and safety factors must be considered
- generally, the selection of the correct clutch is based on torque:

$$M = 9550 \frac{P}{n} \cdot K \text{ [Nm]}$$

$$M = (M_L + M_B) \cdot K \text{ [Nm]}$$

- the transmittable torque of the clutch must always be higher than the largest possible occurring torque:

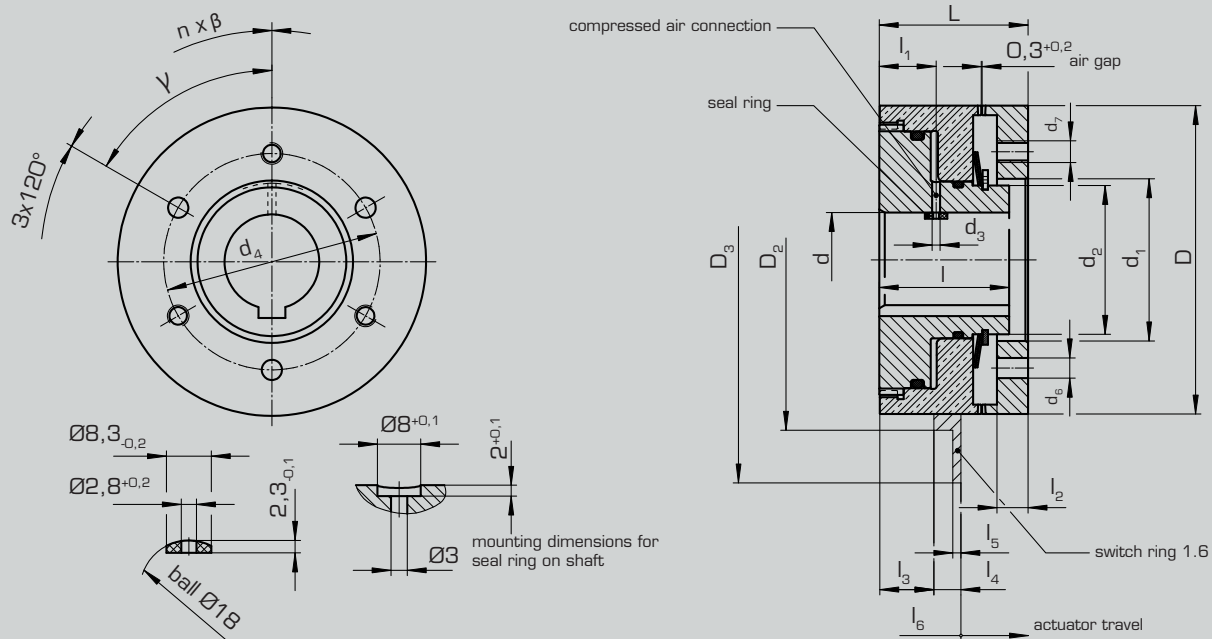
$$\text{Requirement } M_{\ddot{U}} > M$$



- P = power of motor [kW]
 n = rotating speed [min^{-1}]
 K = safety factor 1,5 ... 2,5
 M = required torque
 M_L = load torque
 M_B = acceleration torque
 $M_{\ddot{U}}$ = nominal torque of clutch (see enclosed chart)

Pneumatik tooth clutch - Type 677

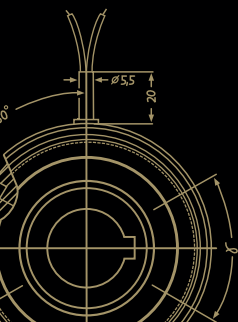
Clutch size



Design 1.4

Technical data

Size		15	21	23	25	31
torque	[Nm]	80	180	300	500	1000
max. speed	[n/min ¹]	5000	4500	4000	4000	3000
operating pressure	min. p [bar]	5	6	4	5	5
axial force	engaged [N]	715	1225	1780	2540	3400
min. bore	keyway acc. to DIN 6885/1 d H7	20	25	30	30	45
max. bore		32	38	44	55	70
dimensions	D [mm]	82	95	114	134	166
	D ₂	90	107	126	146	178
	D ₃	115	130	165	185	218
	d, H7	46	55	60	75	95
	d ₂	40	50	55	70	90
	d ₃	3	3	3	3	3
	d ₄	60	72	80	95	120
for locating pin	d ₅	5,5	7,5	7,5	9,5	9,5
	n x α	3 x 120°	3 x 120°	3 x 120°	3 x 120°	3 x 120°
thread	d ₇	M6	M8	M8	M12	M12
	n x β	3 x 120°	3 x 120°	3 x 120°	3 x 120°	6 x 60°
	γ	60°	60°	60°	60°	30°
	L _{+0,2}	39	46	55	67	80
	L _{-0,1}	34	42	48	59	70
	l ₁	16	20	21	25	35
	l ₂	8,5	9,5	11,5	14	16
	l ₃	15	17	20	24	30
	l ₄	8,5	10	10	11,5	11,5
	l ₅	2,5	3	3	3	3
actuator travel	min.	1,1	1,2	1,3	1,6	1,9
	max.	1,3	1,4	1,5	1,8	2,1



Pneumatic tooth clutch - Type 677

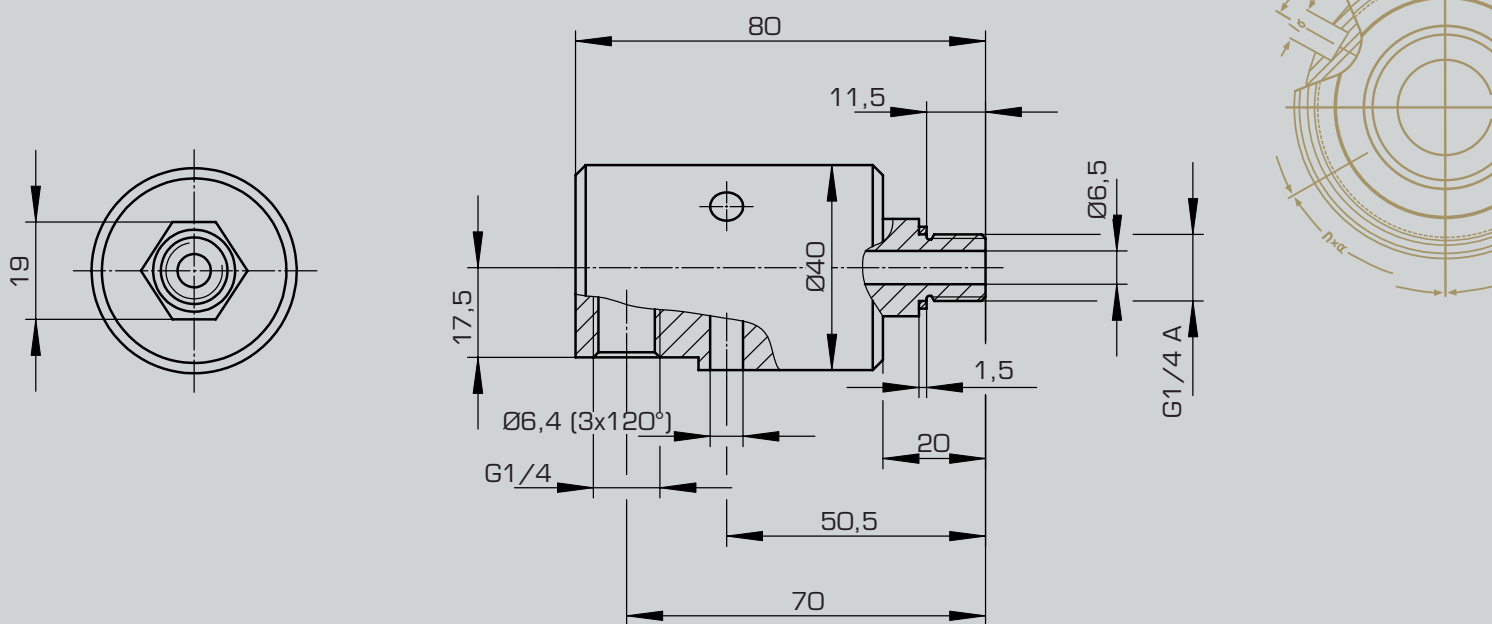
Compressed air connection

The rotating joints from type 598 are armature for connecting pressure lines with rotating pressure systems.

- suitable for high speed
- suitable for compressed air (max. 10 bar)
- low frictional torque
- long life times
- maintenance-friendly
- ball bearing mounted

type 598.01 (right-hand thread)

type 598.02 (left-hand thread)



Rotating joints type 598

Pneumatic tooth clutch - Type 677

Engagement plate

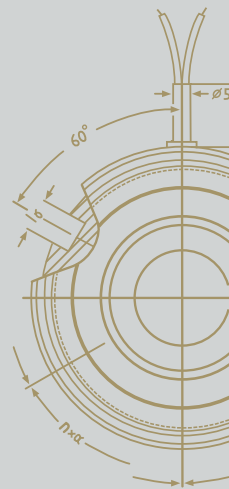
If in the the event of an overload the axial component from the torque is larger than the compressive force (spring force), the engaging ring will slip out of mesh. An engagement plate fitted to the clutch operates a no-contact switch (proximity switch) and switches the clutch off without any residual torque.

Compressed air feed

- nominal pressure between 4 and 5 bar
- compressed air connection is located in the bore of the coupling

Compressed air treatment

- treated compressed air with solid particle size of max. 40 μm
- to the standard ISO 8573-1 Class 5
- water and oil content must meet the same standard

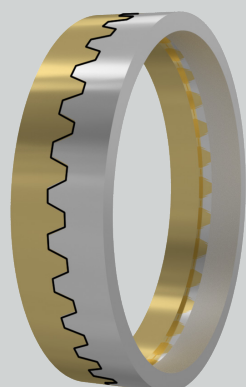


Toothing geometries

Mönninghoff clutches offer a large variety of application-specific designs of toothing.

The amount of possible geometries or fixed points is endless and our engineers can help to design an optimized version at any time.

Standard



- transmits torque in both directions with little backlash
- also available backlash free
- with increased flank angle also available as torque limiter with fixed position engagement

Saw (counter-) clockwise



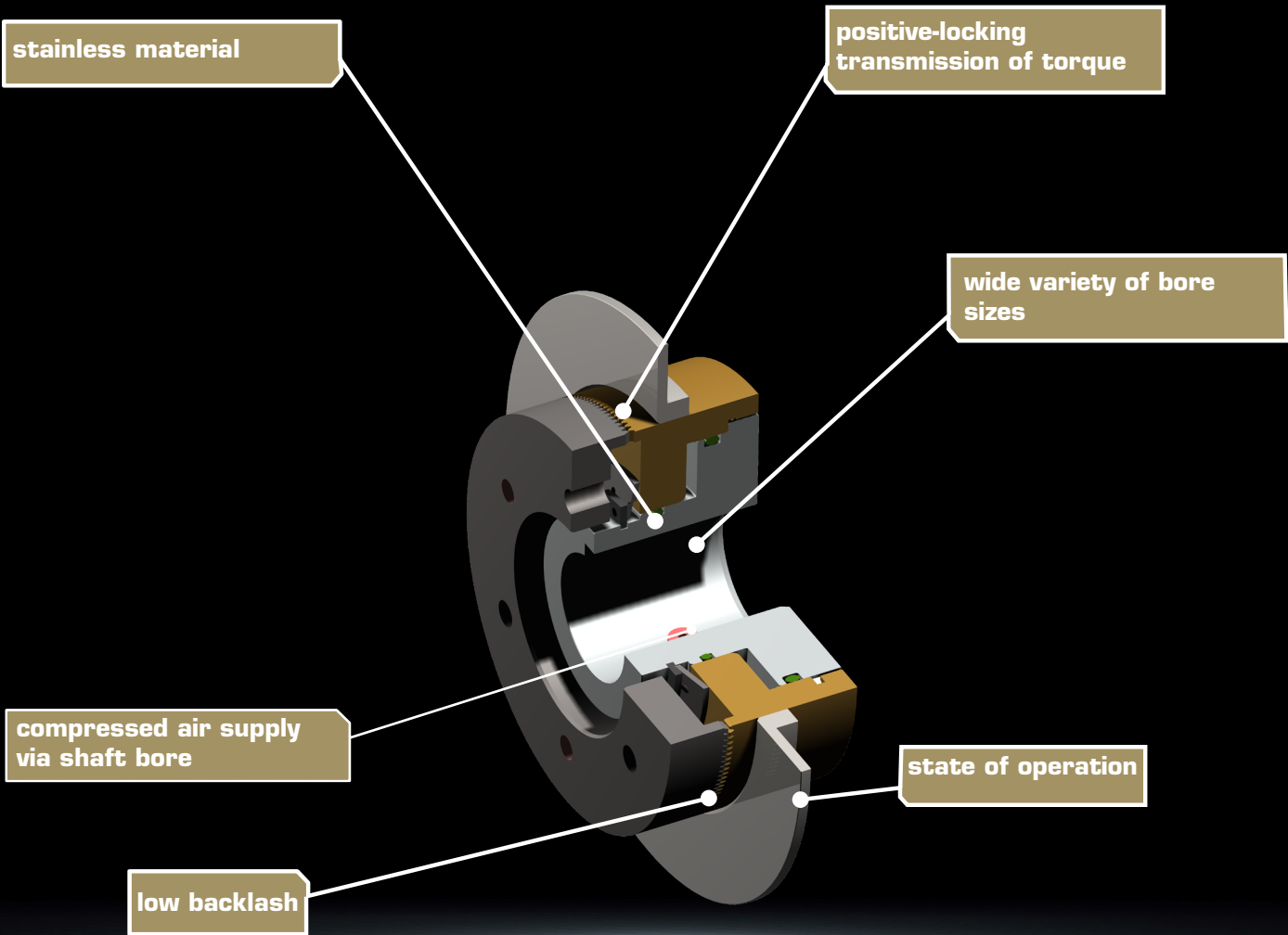
- transmits nominal torque in both directions
- in reverse direction approx. 10% of torque can be transmitted
- can be engaged at higher speeds

Pneumatic tooth clutch - Type 677

Switching characteristics

They can be used in oil or dry operation without any major changes in the engagement properties provided there are oils available with a maximum viscosity of $25 \times 10^{-6} \text{m}^2/\text{s}$ at 50°C .

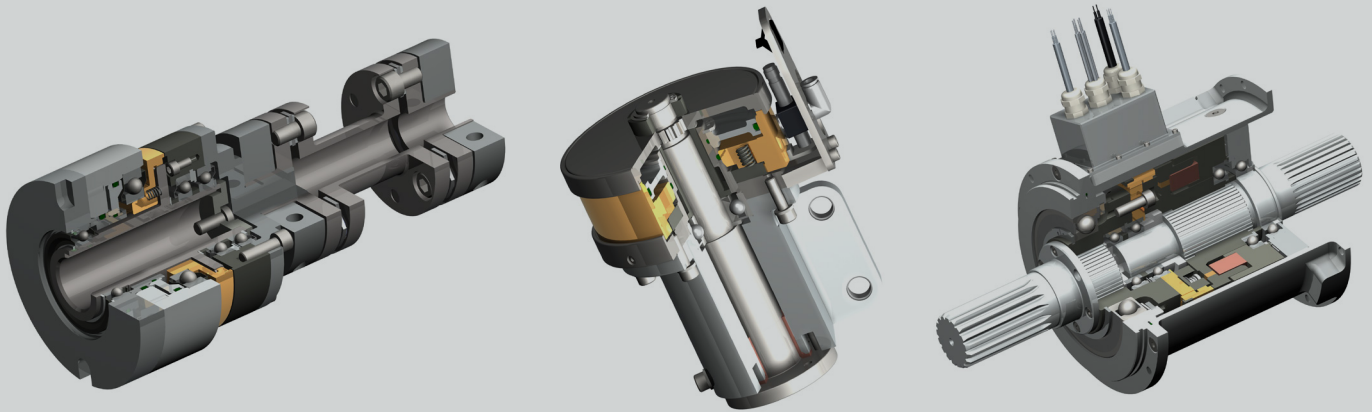
At a glance



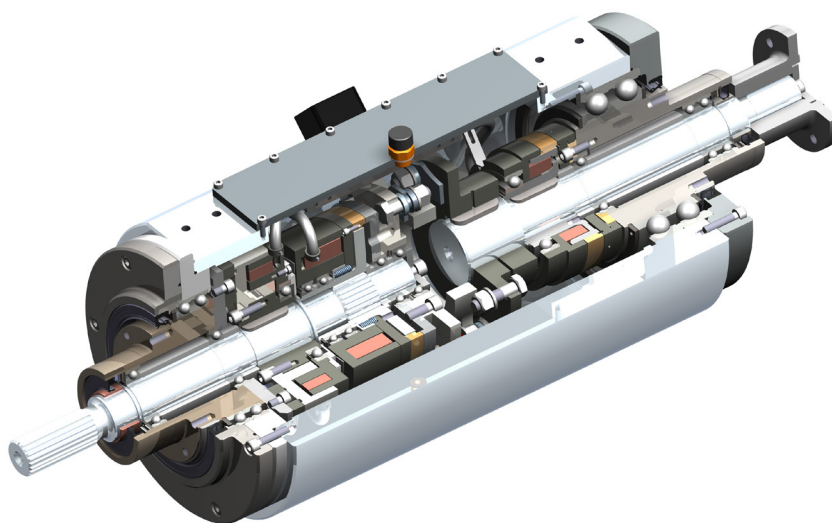
System solutions

You need more?

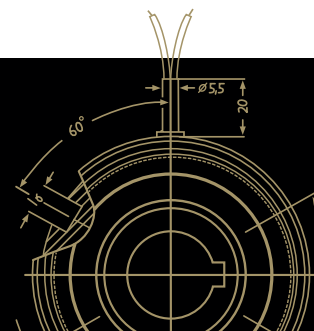
Mönninghoff clutches can be combined with a variety of many other power transmission elements. Such complex high-tech systems can solve any application-specific tasks and can fulfill any customer-specific wishes.



In many cases, a combination of different drive elements is needed to solve the applications particular problems and difficulties. Being not just supplier but technological partner to our customers, our extensive engineering is part of extraordinary and challenging power transmission projects.



**Our product is the know-how,
with hardware as an added bonus.**



Driven by excellence

Why Mönninghoff

- intensive dialog with our customers' engineers
- decades of experience and competence
- deep understanding for all areas of mechanical engineering
- highly modern and flexible machine park
- enthusiasm for quality
- flexibility, inventiveness and communication skills of our employees
- commitment to Germany and Bochum as industrial location



Helps you find a customer-specific power transmission solution for extraordinary circumstances.



For the competent processing and smooth handling of your orders and delivery dates.



Feels committed to protect and preserve the high value of your machine and to secure its availability.



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