Product information

PJ-43.2en

Disk-Type Tool Turret

without tool drive

Series 440.xxx

with tool drive

Series 433./436.xxx

435.xxx

revision 2024/05/23

Attention
High pressure turret exceeding 50bar: For safety purpose, it is required to use high pressure tool holders which match specifications of turret.

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Disk-Type Tool Turret

Series 440.xxx without Tool Drive

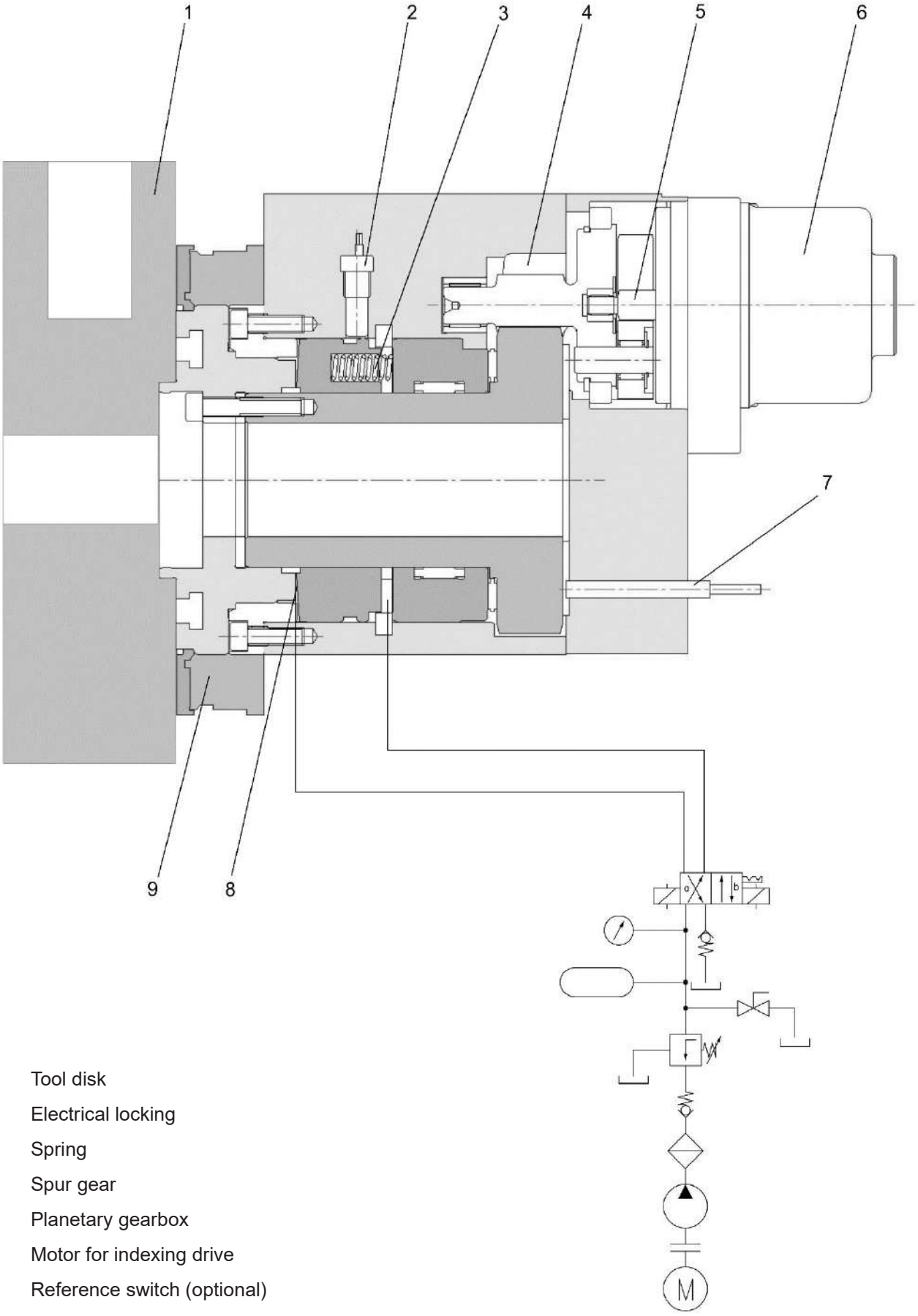
Description

These turrets are suitable for use on turning machines for forward and reverse machining. They are equipped with all of the features and functions of modern high performance tool turrets. They are suitable for series manufacture due to their robust design and short switching times.

Turret range without tool drive	440.xxx
with axial tool drive	433.xxx,436.xxx
with radial tool drive	435.xxx

Features

- ➢ Drive with controllable electric motor for very fast bidirectional swivel use of:
  - GPM drive unit EK 700 with motor and converter
  - GPM drive with rotary encoder activation and customary control
  - or customary servo motors
- ➢ Reduced wiring requirement
- ➢ High degree of stability due to high locking forces
- ➢ Hydraulic locking with special triple generating crown gear (pat.)
- ➢ Not affected by collisions due to:
  - ➪ Low kinetic energy of the drive, and
  - ➪ Fastening snap-ring groove for the tool disk
- ➢ Directly controllable with machine controller (not apply to GPM drive unit EK 700)
- ➢ Connection with centralised lubricating system to ensure extremely high service and usage life (only tool drive)
- ➢ Can be installed in any position
- ➢ Options:
  - Air purge connection for turrets with radial tool drive
  - Block-shaped housing or with flange fitting for especially high degree of rigidity
  - Central rotary feed-through for example for fluid-actuated tools and for a high pressure cooling lubricant device.
  - Installation of transfer elements in the tool disk
  - Attachment of sensors for cutting force monitoring
  - Y-axis
  - and more



1. Tool disk
2. Electrical locking
3. Spring
4. Spur gear
5. Planetary gearbox
6. Motor for indexing drive
7. Reference switch (optional)
8. Hirth-type gearing
9. cooling lubricant valve

Technical Date

Series			
Disk-type tool turret 440.xxx			
Number of switching positions			
Admissible tangential load (turret locked)[1]			kNm
Admissible mass moment of inertia of tools[1)2)] with tool disk and holder	Standard load stage High load stage		kgm^2 kgm^2
Admissible out of balance (load moment) due to tooling			Nm
Gear ratio swivel drive[3]			i
Switching times[4]			s
Rotate tool disk:[5]			
• incl. acceleration and braking	per partial step	Standard load stage High load stage	s s
• without acceleration and braking	per additional partial step		s
Turret unlock/lock-hydraulic			s
Adm. switching frequency[3] (median switching angle φm =90°)			
Operating pressure			
Hydraulic ± 10%			bar
Cooling lubricant			
• Standard			bar
• Medium pressure value			bar
• High-pressure cooling lubricant device			bar
Fluid absorption volume			
Turret unlock/lock			cm^3
Mass			
Turret (incl. drive motor)[6]			kg
Tool disk and tooling (max)			kg
Adm. ambient temperature			°C

1) Higher values on request
2) Switching times on request
3) further gear gradations on request
4) Conditions:
   -Fluid supply sufficiently large
   -Turret up to operating temperature
   -Without controller-related non-productive time
   -Switching times valid for high dynamic motor (e.g. 1FK7043)
5) The swivel times are determined with an average load. Further details on request.
6) At design standard housing
7) Ensure compliance with the required fineness for the tools used. For example drive tool with internal cooling lubricant supply.

Size																		
12			**16**			**20**			**25**			**32**			**40**		
8	12	16	8	12	16	8	12	16	8	12	16	8	12	16	8	12	16
0.8			1.8			3.6			7.2			12.5			25		
0.8			1.8			3.2			8			25			70		
1.2			2.5			5.0			12			40			140		
16			32			63			125			200			320		
45			54			72			90			216			360		
	0.10 0.11			0.13 0.15			0.16 0.19			0.21 0.25			0.27 0.31			0.39 0.45	
	0.06			0.07			0.09			0.11			0.27			0.4	
	0.11			0.12			0.13			0.2			0.5			0.8	
25			20			16			12			10			8		
50			50			50			50			50			50		
5-25(filtering ≤ 100µm)[7)] 5-25(filtering ≤ 50µm)[7)] 150(filtering ≤ 25µm)[7)]																	
15			30			45			65			114			165		
38 40			50 80			70 160			110 250			220 400			on request		
10…40																	

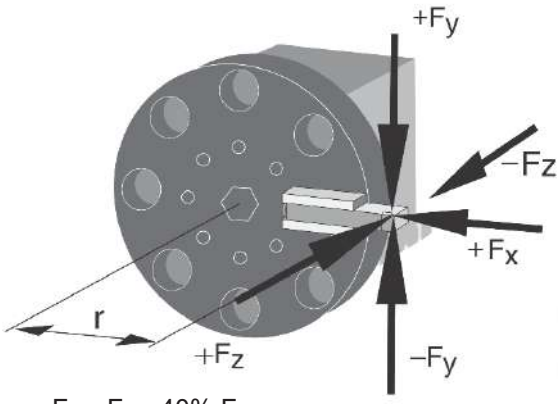
Recommended motors degree of protection to IP 67	J	Adm. driving	swiveling times for 30°-step without acceleration and braking				
	kgm²	min⁻¹	s				
			Size of turret				
			12	16	20	25	32
GPM with encoder[1)]	0.0003	4500	0.05	0.06	0.08	0.10	0.24
Siemens 1FK7043 HD	0.0001	6000	0.04	0.05	0.06	0.08	0.18
Siemens 1FK7042	0.0003	4500	0.05	0.06	0.08	0.10	0.24
Fanuc α2/5000 / β2/5000	0.0003	4500	0.05	0.06	0.08	0.10	0.24
Delta with Delta-control EK700	0.0003	4000	0.06	0.07	0.09	0.11	0.27

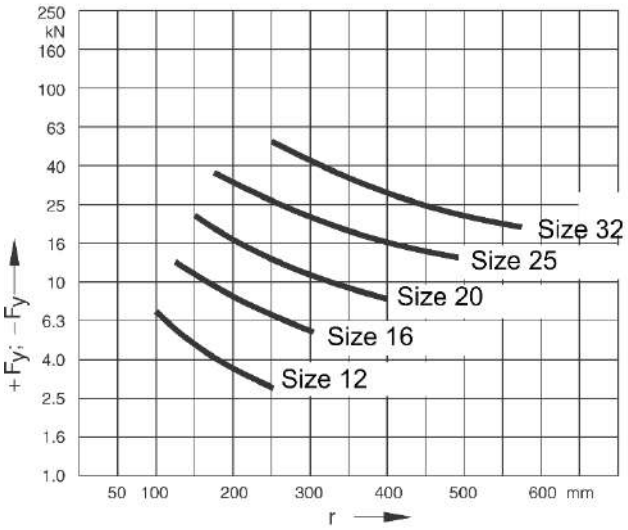
[1)] controlled via machine control system

Admissible Loads

Note

- ➢ The diagrams refer to static loads.
- ➢ In case of impact load (interrupted cutting), significantly lower values must be reckoned with.

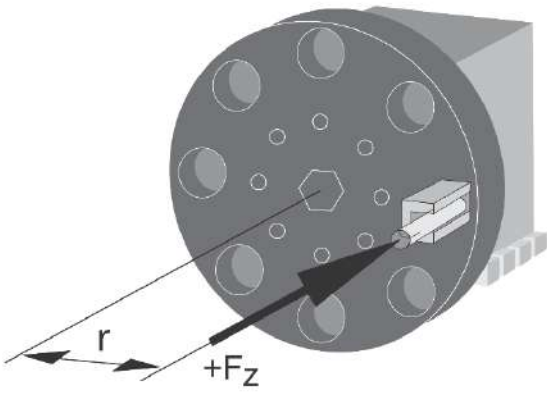


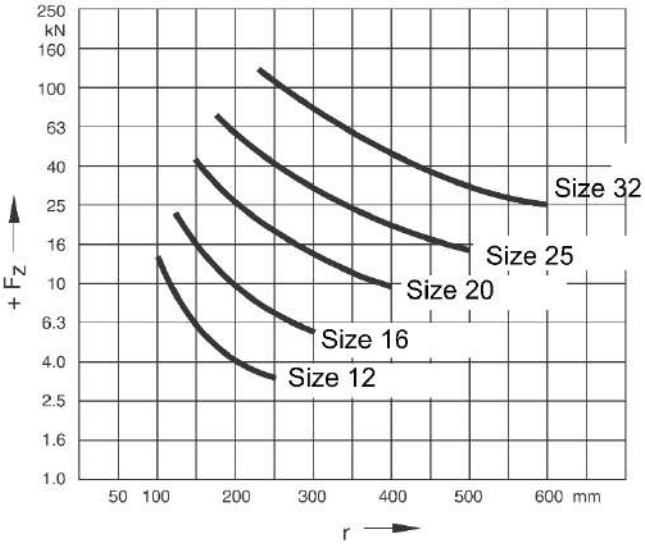


$F_z = F_x = 40\%\ F_y$

Combination force $\pm F_y$ ($+F_x$, F_z)

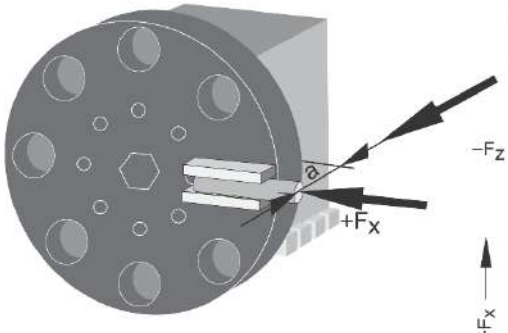
Type Turn-forward-and reverse machining

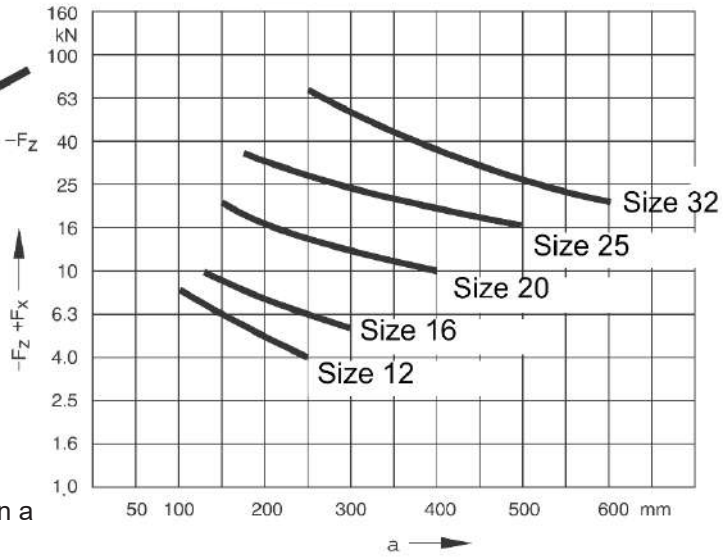




Advance force $+F_z$

(drilling forward and backward)



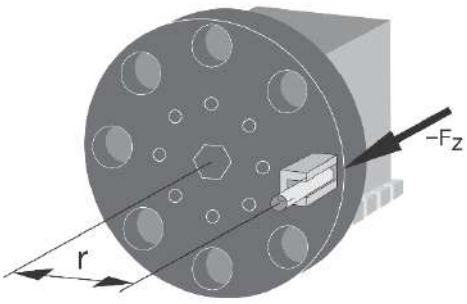


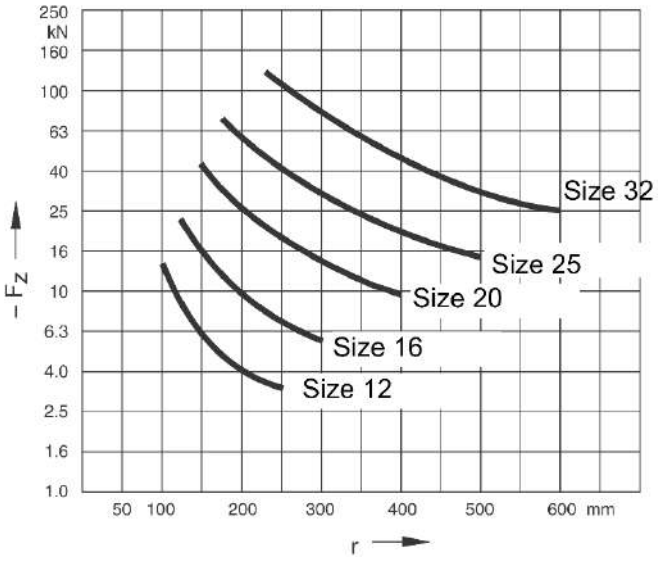
$-F_z = F_x = 40\%\ F_y$

Advance force $-F_z$

(drilling forward and shunt load $+F_x$)

leading edge is the basis for dimension a





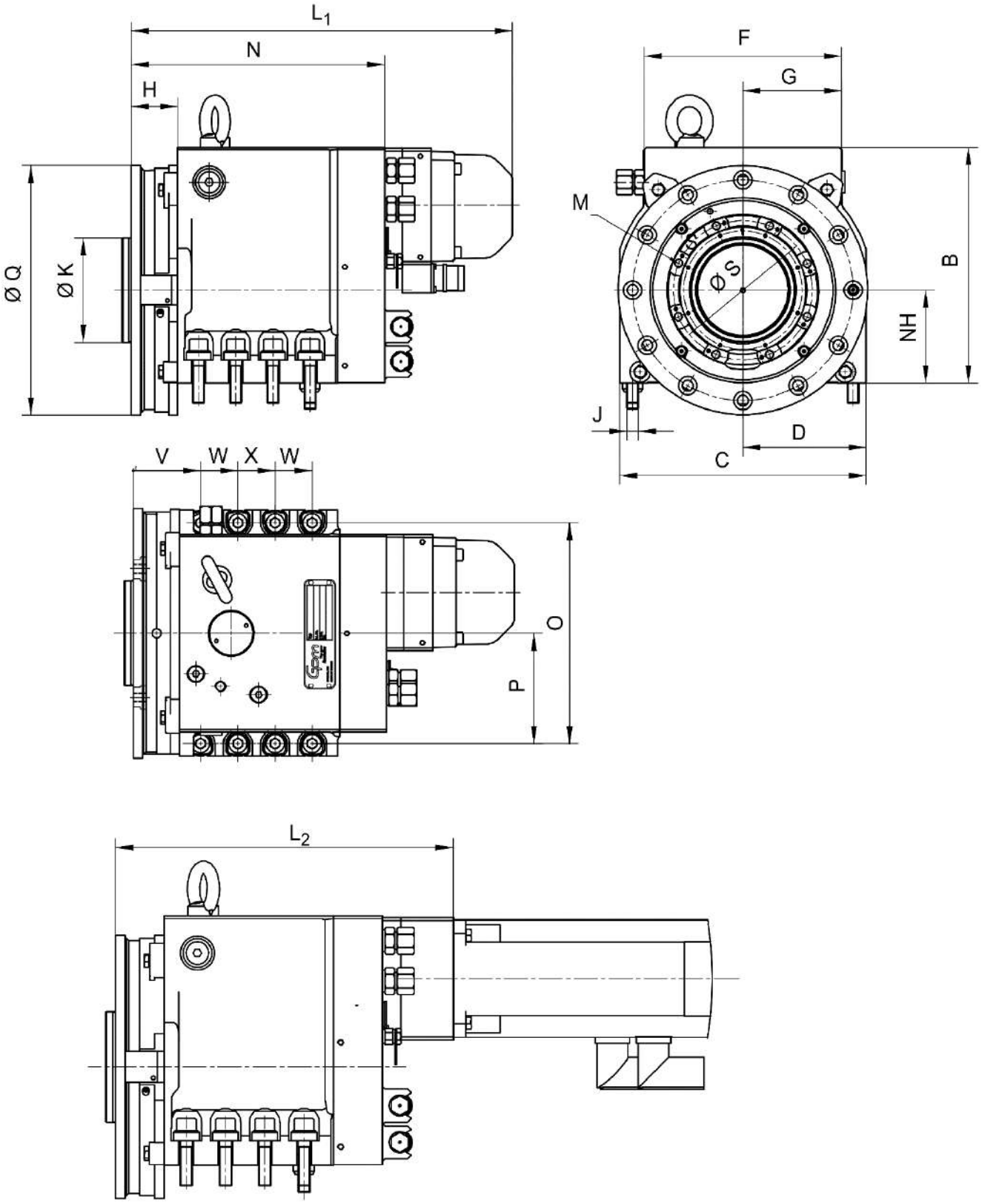
Advance force $-F_z$

(drilling forward)

(Only with L- and block-shape)

Dimension

Foot shape (Standard)

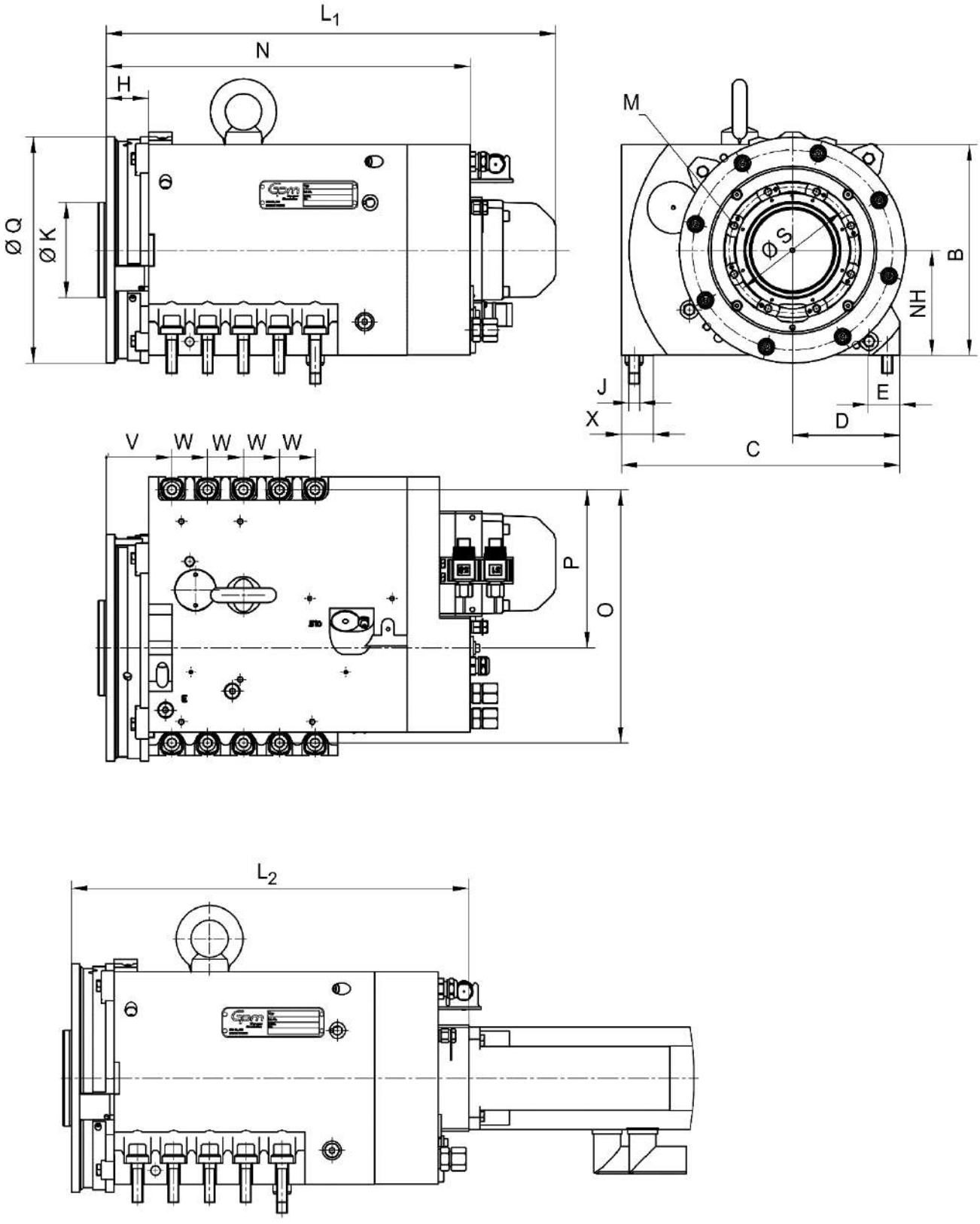


Series		Size				
Disk-type tool turret 440.xxx		**12**	**16**	**20**	**25**	**32**
NH		63	80	100	125	160
B		174	203	236	279	344
C		185	212	250	316	396
D		85	106	125	158	198
F		145	170	200	250	316
G		80	85	100	125	158
H		31	40	41	52	62
J		M8	M10	M12	M16	M20
ØK		70	90	100	120	150
L						
GPM-Motor 1.8.150.573	L_1	338	356	374	420	590
Delta-Motor with control unit EK700	L_1	394	412	430	476	646
Siemens 1 FK7 43/42	L_2	258	276	294	340	510
Fanuc α2 / β2	L_2	243	261	279	325	495
M		8 x M8	8 X M8	11 x M10	11 X M12	15 X M12
N		216	234	252	298	429
O		165	190	220	280	352
P		75	95	110	140	176
ØQ		175	215	255	318	396
ØS		90	120	145	182	220
V		50	58	66	82	96
W		30	32	30	44	48
X		—	—	40	43	56

Block shape (reinforced version / NH standard 1)

Note

➢ with housing compatible with series 450.xxx

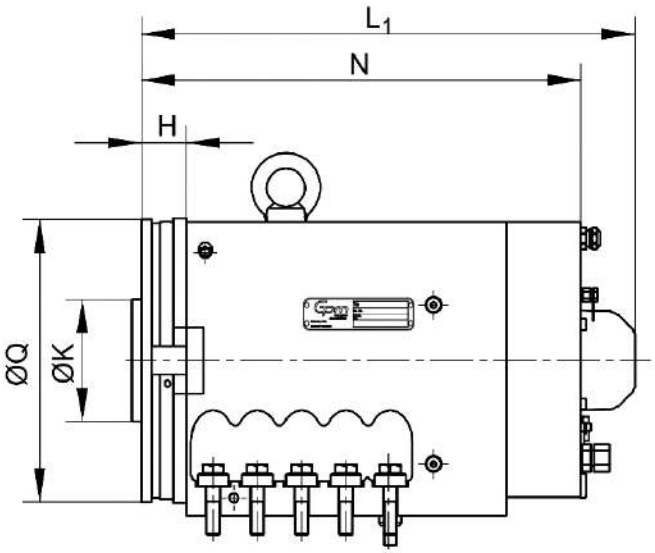


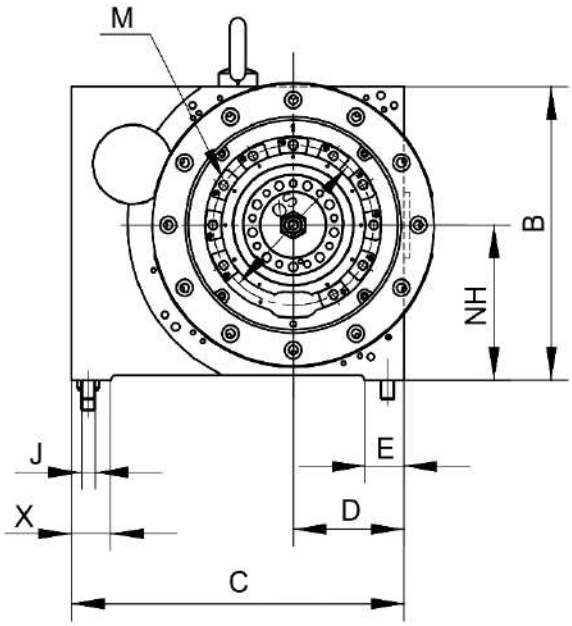
Series		Size				
Disk-type tool turret 440.xxx – block shape (Standard 1)		**12**	**16**	**20**	**25**	**32**
NH			100	125	150	200
B			200	236	300	400
C			264	250	406	520
D			102	125	158	198
E			26	35	45	48
H			40	41	52	62
J			M10	M12	M16	M20
ØK			90	110	120	150
L						
GPM-Motor 1.8.150.573	L_1		454	474	520	666
Delta-Motor with control unit EK700	L_1		510	530	576	722
Siemens 1 FK7 43/42	L_2		347	394	440	586
Fanuc α2 / β2	L_2		359	379	425	571
M			8 x M8	11 x M10	11 x M12	15 x M12
N			234	252	298	
O			240	295	370	476
P			150	185	230	300
ØQ			160	255	318	396
ØS			120	145	182	220
V			62	65	78	96
W			34	40	42	52
X			34	35	45	48

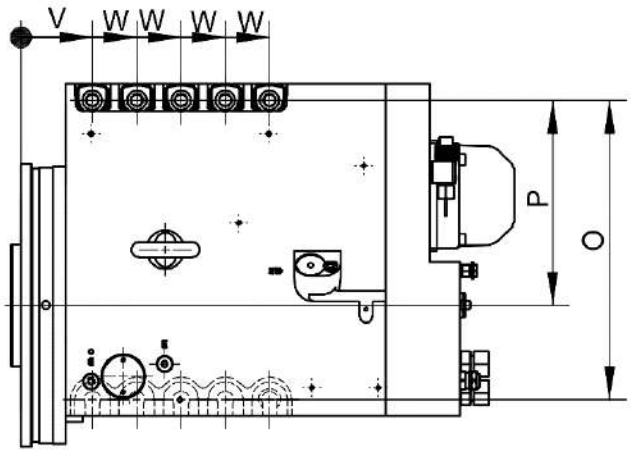
Block shape (reinforced version / NH standard 2)

Hint

➢ with housing compatible with series 450.xxx





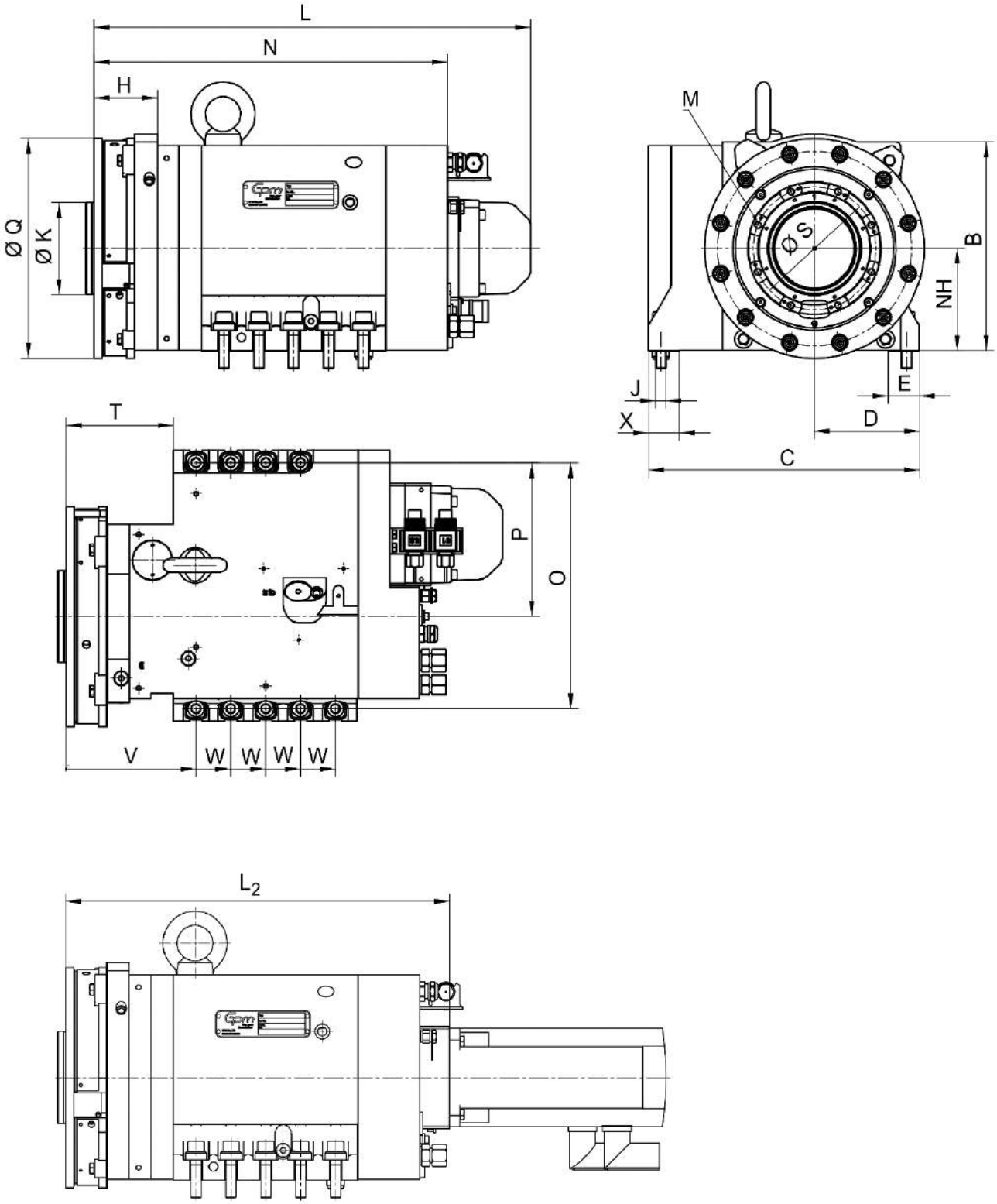


Series		Size			
Disk-type tool turret 440.xxx – block shape (Standard 2)		**12**	**16**	**20**	**25**
NH		90	115	140	150
B		170	219	265	300
C		198	244	300	406
D		68	82	100	158
E		20	26	35	45
H		32	40	41	52
J		M8	M10	M12	M16
ØK		70	90	110	120
L					
GPM-Motor 1.8.150.573	L_1	438	454	474	520
Delta-Motor with control unit EK700	L_1	494	510	530	576
Siemens 1 FK7 43/42	L_2	358	347	394	440
Fanuc α2 / β2	L_2	343	359	379	425
M		8 x M8	8 x M8	11 x M10	11 x M12
N		216	234	252	298
O		178	220	270	370
P		120	150	185	230
ØQ		175	160	255	318
ØS		90	120	145	182
V		50	62	65	78
W		28	34	40	42
X		20	34	35	45

L shape (NH standard 1)

Note

➢ with housing compatible with series 450.xxx

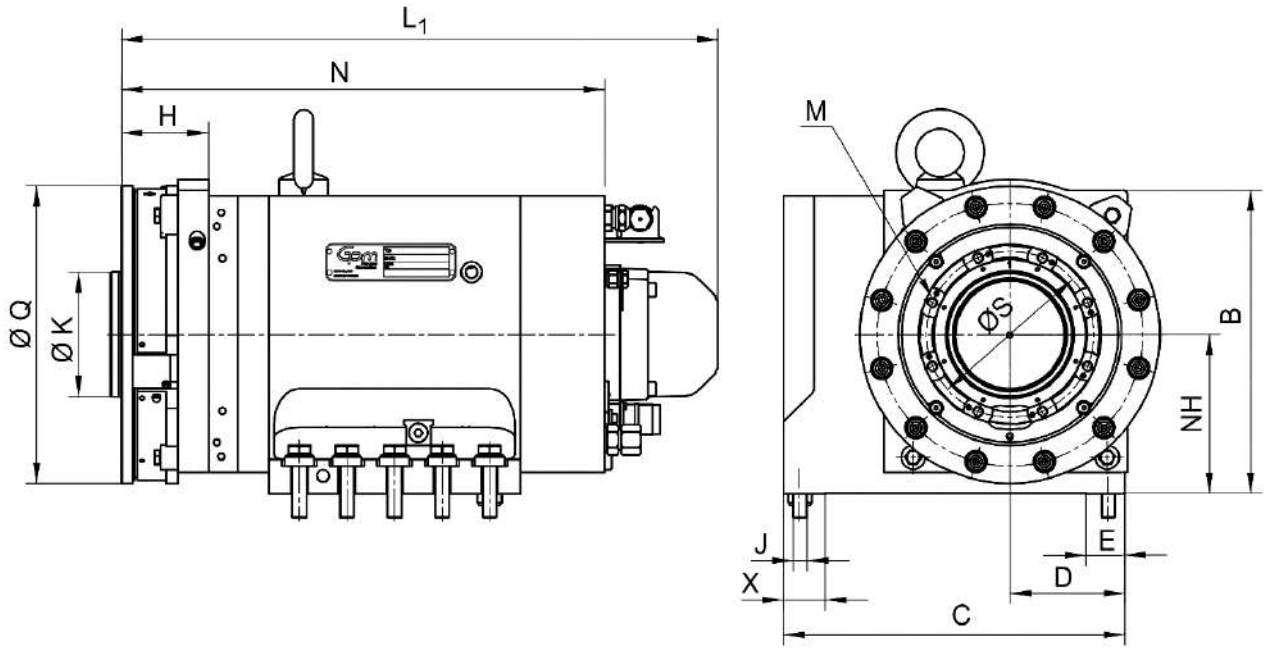


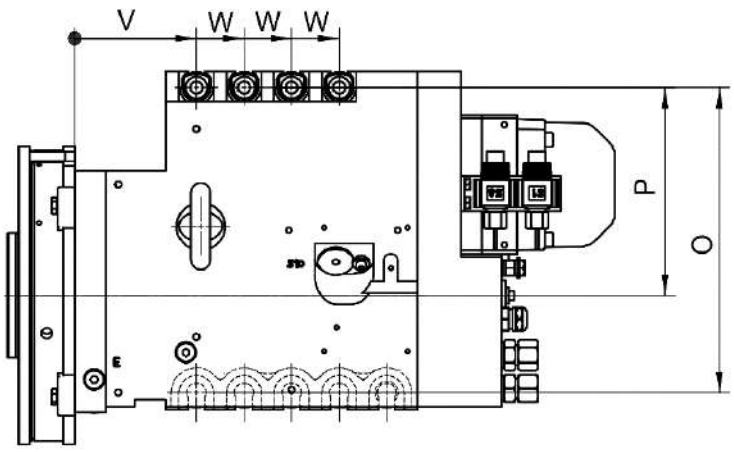
Series		Size				
Disk-type tool turret 440.xxx – L-Form (Standard 1)		**12**	**16**	**20**	**25**	**32**
NH			100	125	150	200
B			200	236	300	400
C			264	250	406	520
D			102	125	158	198
E			26	35	45	48
H			40	41	52	62
J			M10	M12	M16	M20
K			90	110	120	150
L						
GPM-Motor 1.8.150.573	L_1		454	474	520	666
Delta-Motor with control unit EK700	L_1		375	395	441	587
Siemens 1 FK7 43/42	L_2		374	394	440	586
Fanuc α2 / β2	L_2		359	379	425	571
M			8 x M8	11 x M10	11 x M12	15 x M12
N			234	252	298	429
O			240	295	370	476
P			150	185	230	300
ØQ			160	255	318	396
ØS			120	145	182	220
T			90	120	150	200
V			62	144	176	234
W			34	40	42	52
X			34	35	45	48

L shape (NH standard 2)

Note

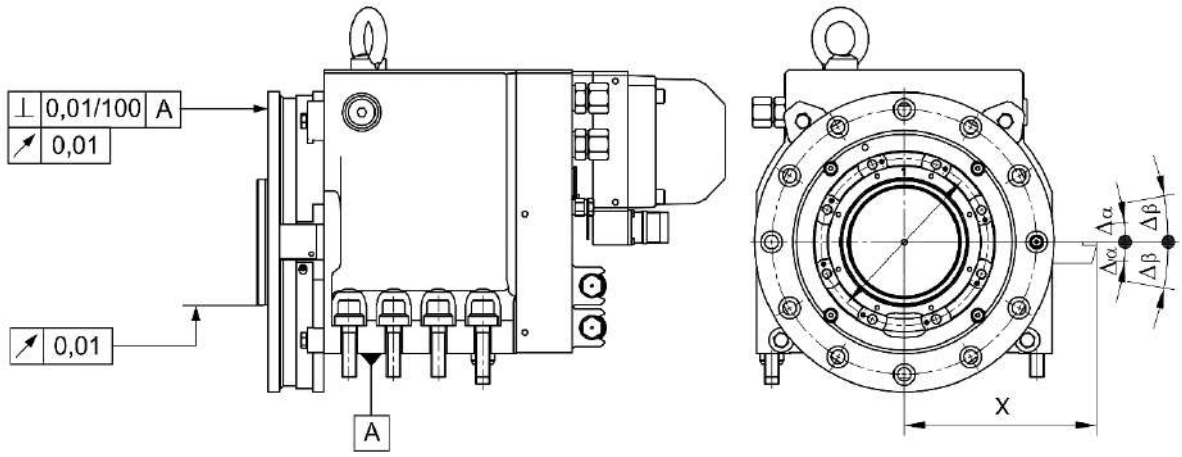
➢ with housing compatible with series 450.xxx





Series		Size			
Disk-type tool turret 440.xxx – L-Form (Standard 2)		**12**	**16**	**20**	**25**
NH		90	115	140	180
B		170	219	265	330
C		198	244	300	373
D		68	82	100	125
E		20	26	35	45
H		32	40	41	52
J		M8	M10	M12	M16
K		70	90	110	120
L					
GPM-Motor 1.8.150.573	L_1	438	454	474	520
Delta-Motor with control unit EK700	L_1	494	375	395	441
Siemens 1 FK7 43/42	L_2	358	347	394	440
Fanuc α2 / β2	L_2	343	359	379	425
M		8 x M8	8 x M8	11 x M10	11 x M12
N		216	234	252	298
O		178	220	270	337
P		120	150	185	230
ØQ		120	150	255	318
ØS		175	160	145	182
T		90	120	120	150
V		50	62	144	176
W		28	34	40	42
X		20	34	35	45

Precision



Repeating accuracy

(Multiple move to a switching position from the same direction)

$$\Lambda\alpha = \pm 1.6\text{“} \equiv \pm 0.8 \text{ x } \frac{X[mm]}{100[mm]}[\mu m]$$

Indexing precision

(Multiple move to a switching position from the same direction)

$$\Lambda\beta = \pm 4\text{“} \equiv \pm 2 \text{ x } \frac{X[mm]}{100[mm]}[\mu m]$$

Fluid Rotary Feed-Through

All turrets are deliverable with central fluid rotary feed-through:

„uncontrolled“ version	- fluid supply in **all** switch positions
	e.g. for sealing air, for gripper actuation, and similar actions
„controlled“ version	- fluid supply in **all** switch positions
	e.g. for KSS, for automatic tool changes, and similar actions

A maximum of three supply lines are routed through the center of the turret.

Operation pressure P_{adm} = 100bar (standard).

Series 433.xxx / 436.xxx

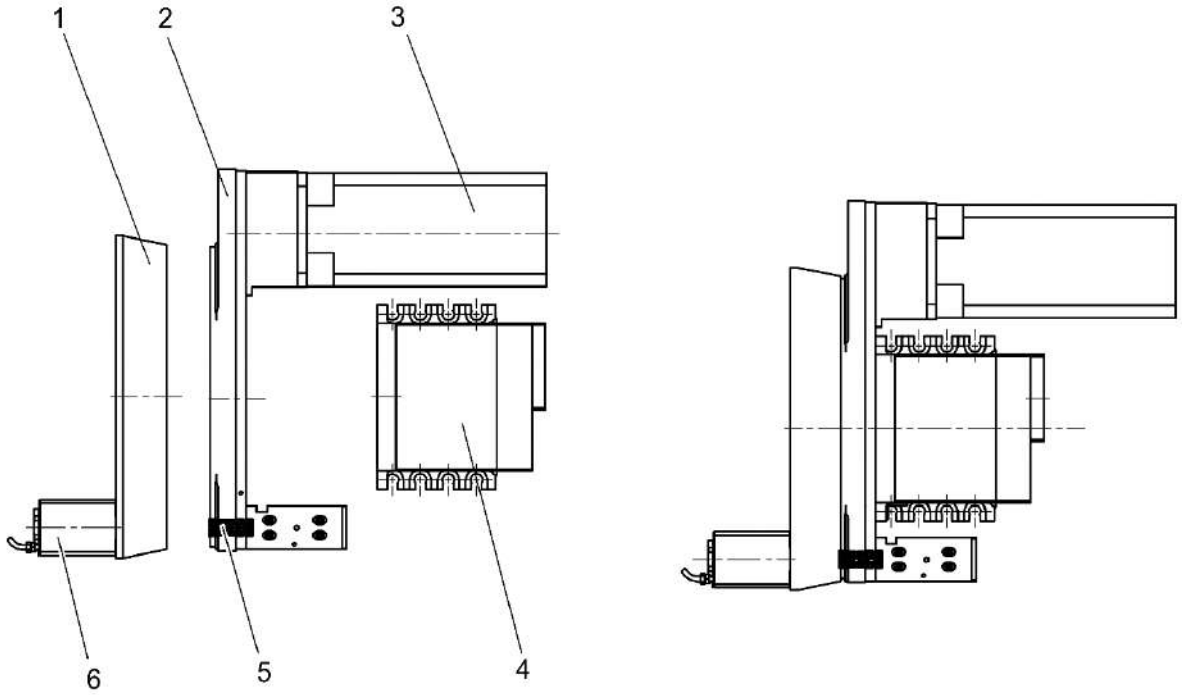
with Axial Tool Drive (only available with foot-shape housing)

Description

These turrets are of modular construction and consist of a basic turret (4) of the 440.xxx series and a decentralised tool drive (2) mounted instead of the cooling lubricant ring. The tool drive has been designed for individually switchable driven tools.

The tool drive motor (3) drives the sliding coupling (5) via the spur gear incorporated in the gearbox casing. The tool in the working position is switched on by means of the sliding coupling.

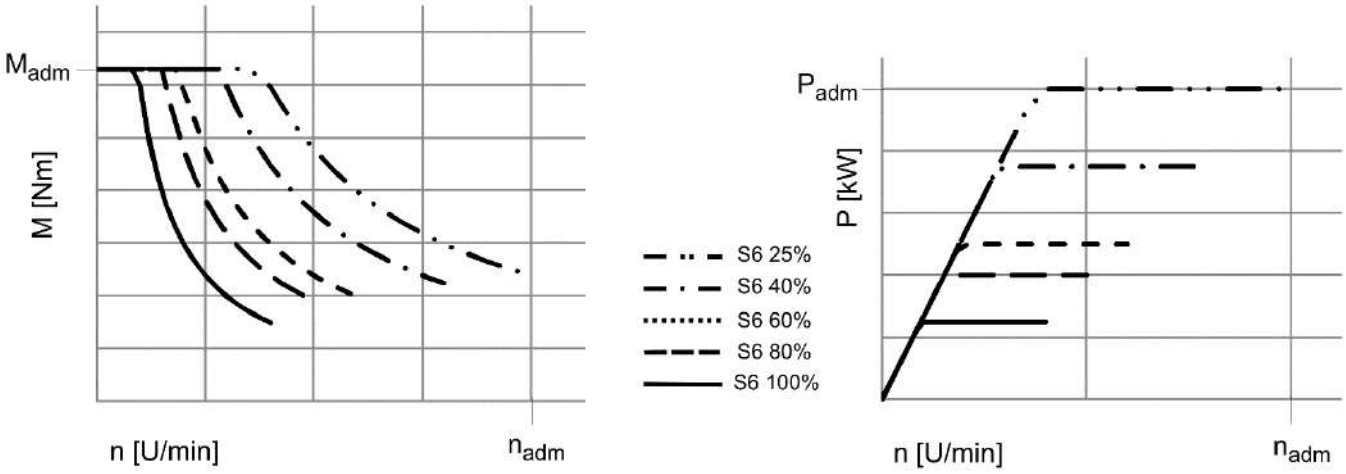
		Suitable driven tools	
Coupling process with	Turret series	Spindle-locking system	GPM-driven tools typ
Searching	**433.xxx**	nein	921.xxx
without searching (with spindle positioning)	**436.xxx**	ja	941.xxx



1 Tool disk
2 Tool drive
3 Tool drive motor
4 Base turret
5 Sliding coupling
6 Driven tool

Admissible duty cycle (DC)
Tool drive

Performance Diagram



Admissible duty cycle of the tool drive short-time operation (reference values)

The actual efficiency (DC) also depends on where the turret is installed and on the operating conditions!

Admissible duty cycle [DC] (10 min)		100%	80%	60%	40%	25%
Admissible drive rating	$[\frac{P_c}{P_{zul}}]$	25%	40%	50%	75%	100%
and admissible relative rpm	$[\frac{n_c}{n_{zul}}]$	40%	50%	60%	80%	100%

P_c = Required cutting performance [kW]

n_c = Required cutting rpm [min^{-1}]

P_{adm} = Admissible drive rating [kW]

n_{adm} = Admissible rpm [min^{-1}]

Example calculation

Witch speed n_c and witch power P_c with 40% DC are supported on a tool drive, size 20

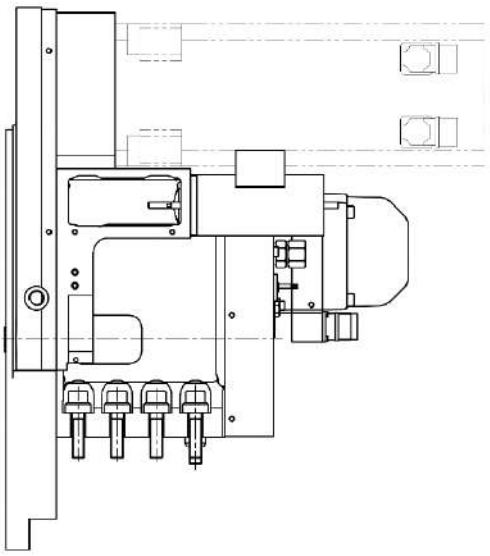
According to the table on pages 26 / 27 / 30 and 33, the following values are valid for disk-type tool turrets, size20: P_{adm} = 8 kW, n_{adm} = 4000 min^{-1}

Values are valid for 40% DC (10min) according to the table on this page:

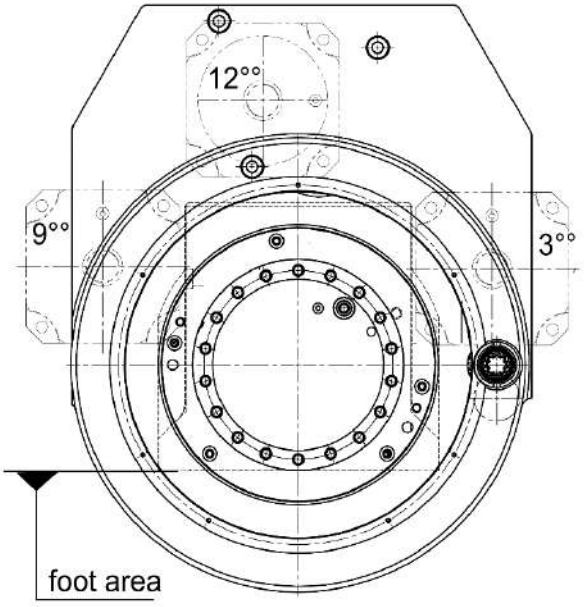
$$\frac{n_c}{n_{adm}} = 75\% \text{ und } \frac{n_c}{n_{adm}} = 75\%$$

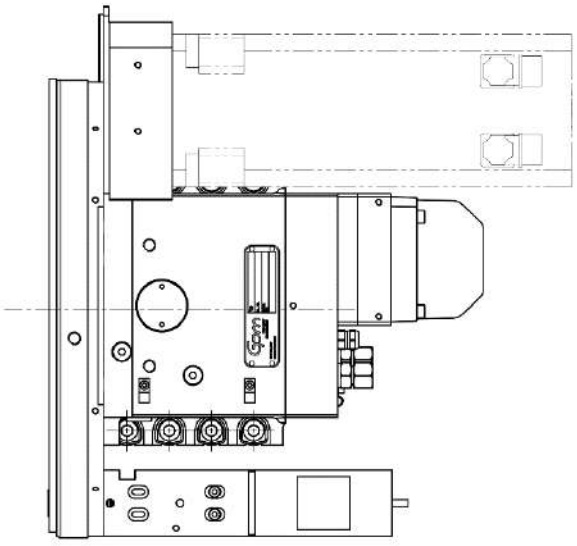
In the example the tool drive can be operated with P_c = 6 kW and n_c = 3200 min^{-1} for 4 minutes and then it must rest for 6 minutes.

Motor Arrangement

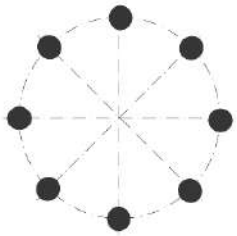


Motor arrangement possible at
3 o´clock, 9 o´clock oder 12 o´clock positions

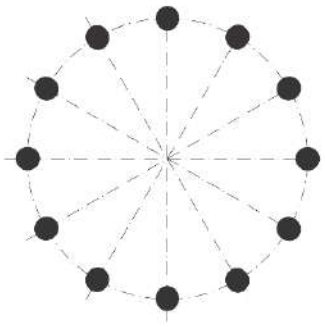




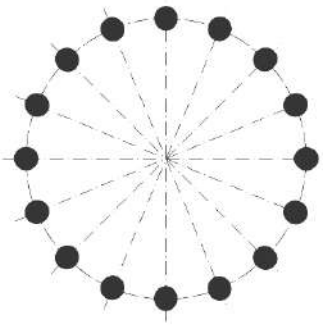
Tool Arrangement



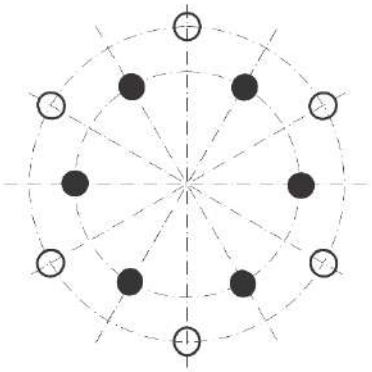
8 Pos. - 1 graduated circle



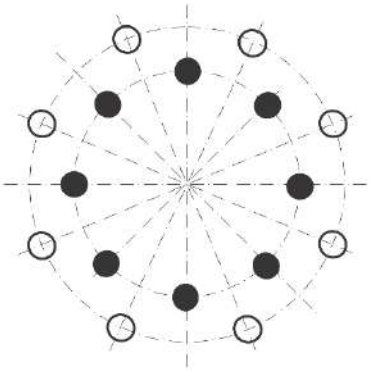
12 Pos. - 1 graduated circle



16 Pos. - 1 graduated circle



12 Pos. - 2 graduated circles



16 Pos. - 2 graduated circles

● Position with toll drive

○ Position w/o tool drive

Configurations

Configurations on **grey** background are preferably deliverable!

Further configurations – e.g. the version "left" – on request.

Turret Size	Working position x	Working position y	Motor-Position	Coupling profile	Tool-holder receptacle ø DIN 69880	8 fold	12 fold
12	**+98.54**	**-17**	**9°°**	**DIN 5480 W10 x 0.8 M_{zul} = 12.5Nm**	**20**		**x**
	+100	0	9°°		20		x
	-100	0	3°°		20		x
	+98.54	**-17**	**9°°**	**DIN 5482 B15 x 12 M_{zul} = 12.5Nm**	**30**	**x**	
16	**+117.4**	**-25**	**12°°**	**DIN 5482 B15 x 12 M_{zul} = 20Nm**	**30**		**x**
	+120	0	12°°		30	x	x
	+120	**0**	**9°°**		**30**	**x**	**x**
	-120	**0**	**12°°**		**30**	**x**	**x**
	+150	0	9°°		30		x
	+150	**0**	**12°°**		**30**		**x**
20	**+155**	**0**	**9°°**	**DIN 5482 B17 x 14 M_{zul} = 32Nm**	**40**	**x**	**x**
	+155	0	12°°		40	x	x
	-155	**0**	**12°°**		**40**	**x**	**x**
	-150	**0**	**12°°**		**40**	**x**	
	+170	**0**	**9°°**		**40**		**x**
	+185	**0**	**9°°**		**40**		**x**
25	**-180**	**0**	**12°°**	**DIN 5482 B20 x 17 M_{zul} = 63Nm**	**50**	**x**	
	+235	-70	9°°		50		x
	+200	**0**	**9°°**		**50**		**x**
	+200	**-20**	**12°°**		**50**		**x**
	+210	**0**	**12°°**		**50**		**x**
32				**DIN 5482**			

Performance Data for the Tool Coupling

The gearbox is designed for the performance data indicated below for the coupling.

The actually available performance data depend on:

- ➢ the drive motor used
- ➢ the rpm on the tool coupling
- ➢ the duty cycle
- ➢ the cutting performance

The values given in the following examples of cutting capacity can be taken as reliable estimates:

Series		
Disk-type tool 433.xxx		
Gearbox performance data		
• Adm. drive rating[1)]	P_{amd}	kW
• Adm. torque[2)]	M_{adm}	Nm
• Adm. rpm[3)]	n_{adm}	rpm
Recommended drive[4)] degree of protection to IP 67		
Siemens servo motor Typ 1 FT 6 Gear ratio[5)] motor rpm / tool coupling		$i = n_{mot} / n_2$
Fanuc – servo motor		
Fanuc – Spindle motor Typ Alpha Gear ratio motor rpm / tool coupling		$I = n_{mot} / n_2$

1) The values apply for short-time operation.
2) Torque limitation on the motor converter required.
The torque values apply to smooth machining (such as drilling, thread cutting).
In case of machining processes subject to shock (e.g. milling),
the Pc cutting performance must be reduced by 50 % or more without reducing the required speed n_c.
3) Higher values on request
4) Spindle motor
5) Further motors on request

Size								
10	12	16	20	25			32	40
				D30	D40	D50		
4	5	6	8	10	10	10	12.5	15
8	12.5	20	32	32	63	63	130	160
6000	6000	5000	4000	4000			3200	2500

..044..AK..	..062..AK..	..064..AK..	..082..AK..	..086..AH..	..108..AF..	..108..AF..
1.0	1.5 1.0	1.5 1.0	1.32 1.0	1.63 1.0	1.24 1.0	1.3 1.0
on request	8/4000 is	12/4000 is	22/4000 is	40/4000 is	on request	on request
α 0.5	α 1	α 1.5	α 2	α 3	α 8	α 8
1.0	1.0	1.0	1.0	2.0	1.53	1.53

Configuration

433.xxx – with reinforced tool drive

Configuration on **grey** background are preferably deliverable!

Further configurations – e.g. the version "left" – on request.

Turret Size	Working position x / y	Motor-position	Coupling profile Coupling process **with search run**	Tool holder receptacle ø DIN 69880	Possible tool arrangement
12	+100 / 0	9°°	**DIN 5480 W10 x 0.8 M_{zul} = 12.5 Nm**	20	12 - 2
	+120 / 0	**9°°**		**20**	**12 - 1**
16	+120 / 0	9°°	**DIN 5482 B15 x 12 M_{zul} = 32 Nm**	30	12 - 2
	+135 / 0	12°°		30	12 - 2
	+150 / 0	**9°°**		**30**	**12 - 1**
20	+155 / 0	9°°	**DIN 5482 B17 x 14 M_{zul} = 63 Nm**	40	12 - 2
	+170 / 0	**9°°**		**40**	**12 - 2**
	+185 / 0	**9°°**		**40**	**12 - 1**
	+195 / 0	12°°		40	12 - 1
25	+198 / -70	9°°	**DIN 5482 B20 x 17 M_{zul} = 100 Nm**	50	12 - 2
	+210 / 0	**9°°**		**50**	**12 - 1**
32					

436.xxx - reinforced tool drive

Turret Size	Working position x / y	Motor-position	Coupling profile Coupling process **with search run**	Tool holder receptacle ø DIN 69880	Possible tool arrangement
12	+100 / 0	9°°	**DIN 5480 W10 x 0.8 M_{zul} = 12.5 Nm**	20	12 - 2
	+120 / 0	**9°°**	**DIN 5480 W16 x 0.8 M_{zul} = 20 Nm**	**20**	**12 - 1**
	+135 / 0	**9°°**		**30**	**12 - 1**
16	+120 / 0	9°°	**DIN 5480 W16 x 0.8 M_{zul} = 32 Nm**	30	12 - 2
	+135 / 0	12°°		30	12 - 2
	+150 / 0	**9°°**		**30**	**12 - 1**
20	+155 / 0	9°°	**DIN 5480 W20 x 0.8 M_{zul} = 63 Nm**	40	12 - 2
	+170 / 0	**9°°**		**40**	**12 - 2**
	+185 / 0	**9°°**		**40**	**12 - 1**
	+195 / 0	12°°		40	12 - 1
25	+198 / -70	9°°	**DIN 5480 W24 x 1.25 M_{zul} = 100 Nm**	50	12 - 2
	+210 / 0	**9°°**		**50**	**12 - 1**
32					

Performance Data for the Tool Coupling with reinforced tool drive

The gearbox is designed for the performance data indicated below for the tool coupling.

The actually available performance data depend on:

- ➢ the drive motor used
- ➢ the rpm on the tool coupling
- ➢ the duty cycle
- ➢ the cutting performance

The values given in the following examples of cutting efficiency can be taken as **reliable estimates:**

Series	**Size**											
Disk-type tool turret 433.xxx / 436.xxx	**12**		**16**	**20**		**25**		**32**		**40**	
Gearbox performance data											
Adm. drive rating[1] P_{adm} kW	6		8	10		12.5		15		16	
Adm. torque[2] M_{adm} Nm	20		32	63		100		160		160	
Adm. rpm[1)3)] n_{adm} min^{-1}	6000		5000	4000		4000		3200		3200	
Gear ratio[4)] $i = n_1 / n_2$	~1.5[4)]	1.0	1.0	~1.5[4)]	1.0	~1.5[4)]	1.0	~1.5[4)]	1.0	~1.5[4)]	1.0
Recommended drive motors degree of protection to IP 67											
Siemens servo motor Typ 1 FT 6..	..062 6AK	..064 6AK	..084-8AK	..086-8AK		..102 8AH	..105 8AF	1PH7 107	..108 8AF	1PH7 107	..108 8AF
Fanuc servo motor	8/4000 is		12/4000 is	22/4000 is		40/4000 is		on request		on request	
Fanuc-Spindle motor Typ Alpha		α 1.5	α 2	α 3		α 6		α 8		α 8	

1) The values are reference values for short-term operation. Higher rpm generate more heat and noise.
2) Torque limitation on the motor converter required! The torque values apply to smooth machining (such as drilling, thread cutting). In the case of machining with severe shock loads (e.g. face milling and similar operation) it is necessary to reduce the motor drive torque by 50% or more
3) Higher rpm on request
4) Option. i = 1.5 only on turret series 433.xxx

Series 435.xxx

with radial tool drive (only available with foot-shape housing)

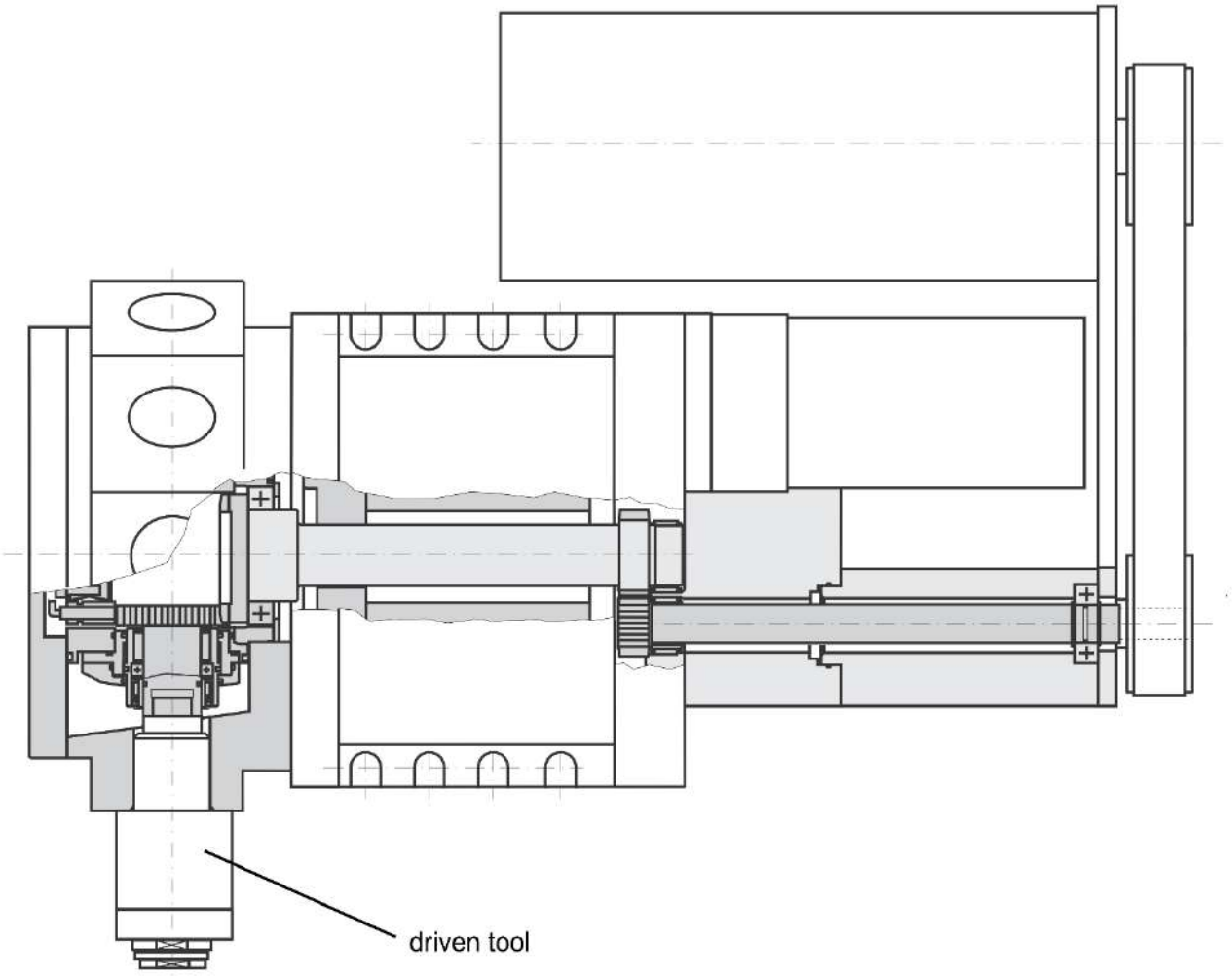
Description

These turret series 440.xxx and

➢ Basic turret series 440.xxx and

➢ Tool drive **central** for individually switchable radial driven tools for **forward** and **reverse** machining.

This requires driven tools with spindle locking system – GPM driven tools series 941.xxx-



The tool drive motor drives – either directly or via a belt drive – the drive shaft, which is located centrally within the turret in a hollow shaft. The tool in the working position is connected inside the gear head via an angular gear and a fluid – switched coupling.

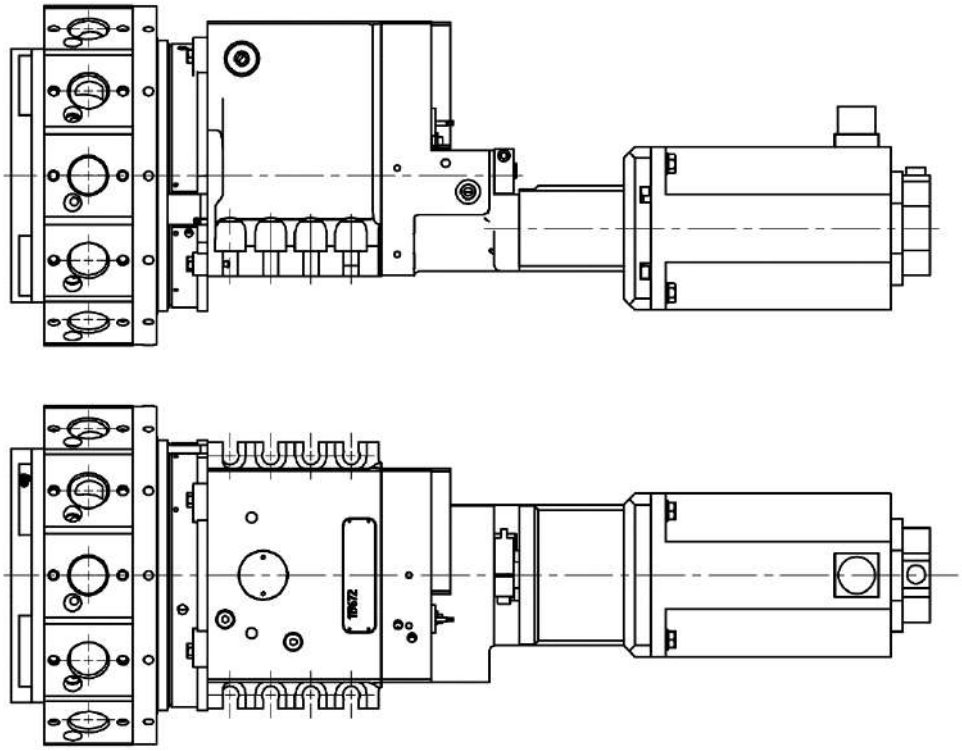
Coupling and decoupling of the driven tool located in the working position is executed after each positioning of the tool drive motor ¨C not tooth on tooth situation, shortest switching time!

In these turret systems, the tool disk is an integrated part of the turret.

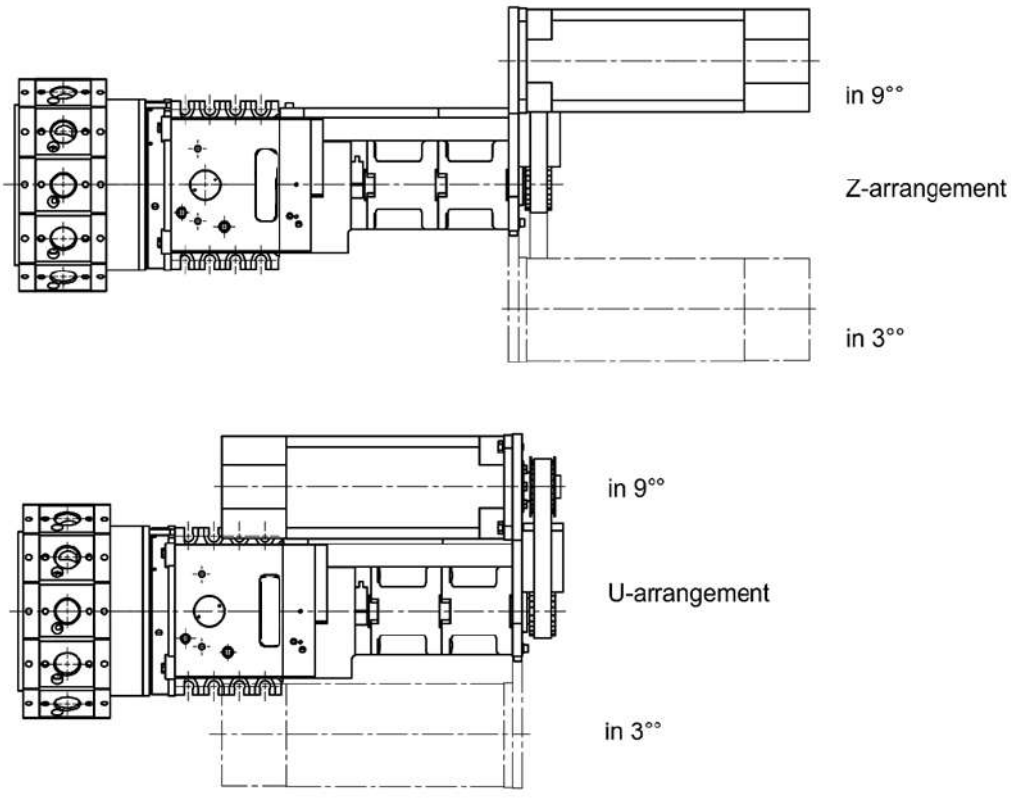
Motor Arrangement

The tool drive motor can be installed directly on the turret or with a belt drive, depending on the application specifications.

Motor – arrangement – direct-



Motor – arrangement with deflection



Performance Data for the Tool Coupling

The gearbox is designed for the performance data indicated below for the tool coupling.

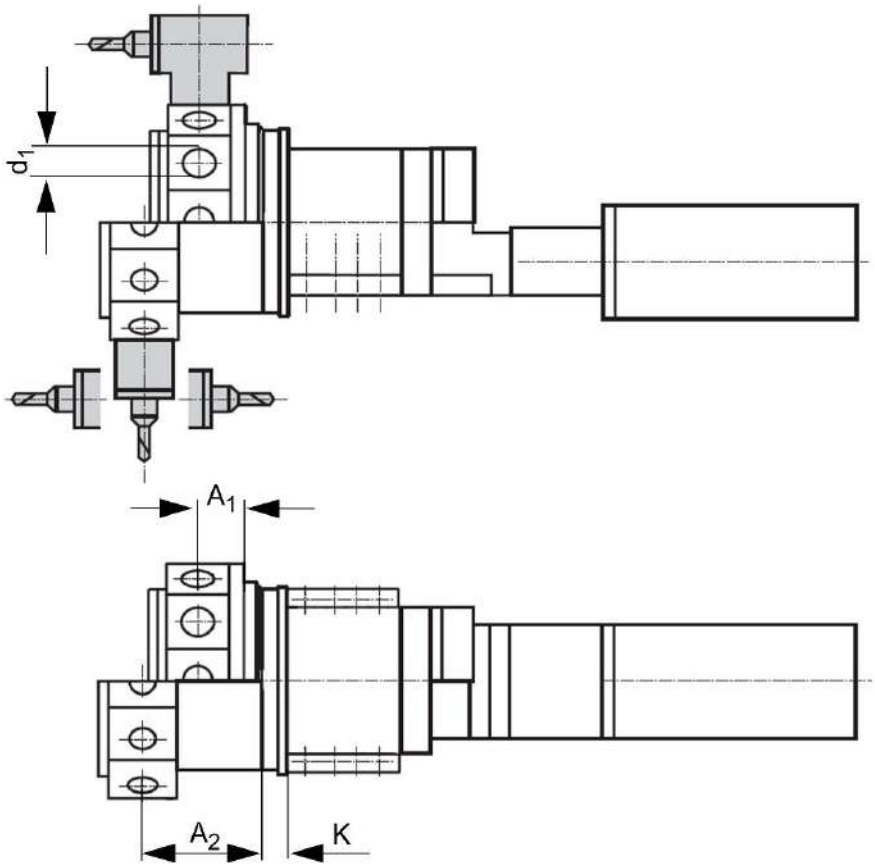
The actually available performance data depend on the drive motor used (see below).

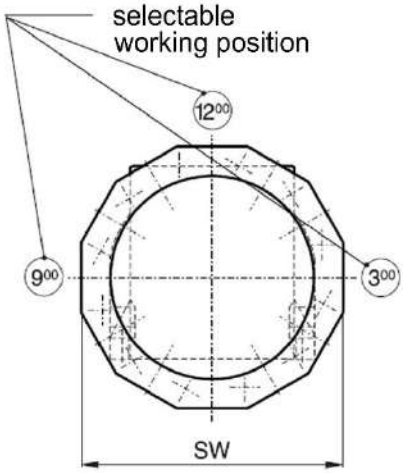
Series	**Size**				
Disk-type tool turret **435.xxx**	12	16	20	25	32
Gearbox performance data					
Adm. drive rating[1)] P_{adm} kW	6	8	10	12.5	15
Adm. torque[2)] M_{adml} Nm	20	32	63	100	160
Adm. rpm[1)3)] n_{adm} min^{-1}	6000	5000	4000	4000	3200
Gear ratio $i = n_1 / n_2$	1.0	1.0	1.0	1.0	1.0
Recommended drive motors degree of protection to IP 67					
Siemens servo motor Typ 1 FT 6..	..064 - 1AK	..084 -1AK	..086 - 1AH	..105 -1AF	..108 - A
Fanuc servo motor	8/4000 is	12/4000 is	22/4000 is	40/4000 is	on request
Typ 1 FT 6..	α 1.5	α 2	α 3	α 6	α 8

1) The values are reference values for short-term operation. Higher rpm generate more heat and noise, especially when the belt drive is used!
2) Torque limitation at motor converter required! The torque values apply to smooth-machining (such as thread drilling). In the case of machining with severe shock loads (e.g. face milling and similar operation) it is necessary to reduce the motor drive torque by 50% or more
3) Higher rpm on request

Note: See page 20 for how to define the duty cycle (DC).

Dimensions





Series			**Size**			
Disk-type tool turret 435.xxx			**12**	**16**	**20**	**25**
Coupling profile DIN 5480			14 x 0.8	16 x 0.8	20 x 0.8	24 x 1.25
Distance	A_1	(standrad)	48	55	80	100
	A_2		80	96	159	198
	K		32	40	41	52
Tool holder receptacle system cylinder shaft DIN 69880						
	d_1		25	30	40	50
	SW_1	-standard	220	270	320	380
	SW_2	(optional)	240	-	360	410
	SW_3	(optional)	300	340	380	-
Tool system Coromant Capto (optional)						
	NG		C3	C4	C5	C5
	SW		280	340	380	420

Type Key

440. 2 20

Series

440
Disk-type tool turret
without tool drive

433
Disk-type tool turret
with axial tool drive
coupling process with search run

435
Disk-type tool turret
with radial tool drive
coupling process with spindle
positioning

436
Disk-type tool turret
with axial tool drive
coupling process with
spindle positioning

Design Series 440, 435

2 Disk-type tool turret
hydraulic

Design Series 433, 436

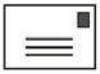
1 Disk-type tool turret
actuated magnetically

2 Disk-type tool turret
actuated hydraulically

Size

12
16
20
25
32
40

Order Details

	Service GPM CO., LTD No. 368, Sec. 4, Huan Zhong Rd., Nan tun District, Taichung City, Taiwan
	+886-4-23805836
	+886-4-23805832
	www.GPMcnc.com
	info@gpmcnc.com

Company:_____

Street:_____

Postal Code:_____
City

Name:_____

Phone:_____

Fax:_____

E-Mail:_____

GPM Disk-type tool turret 440.xxx / 433. / 436.xxx / 435.xxx		
Ordering details	**Possible configurations**	**You selection**
Basis turret		
Size	12 / 16 / 20 / 25 / 32 / 40	
Number of switching positions	8 / 12 / 16	
Turret drive motor	Siemens / Fanuc / …	
Referenzschalter	yes / no	
Installation position		
Axial tool drive		
Working position X / Y	s. page 23	
Motor position	3°° / 9°° / 12°°	
Motor used	s. page 24 / 25	
Gear ratio	1.0 / 1.5	
Coupling profile		
Radial tool drive		
Working position	3°° / 9°° / 12°°	
Tool disk A / F	SW_1 / SW_2 / SW_3 /	
- neck length A	A_1 / A_2	
Tool system	DIN 69880 / Sandvik / Capto	
Motor arrangement	U / Z – right / left	
Motor used	s. page 32	
Gear ratio	1.0 / 1.5	
Special requirements: ✍		