



Product information

PJ-57en

BMT Disk-Type Tool Turret

Series 434.0xx/.4xx

revision 2025/02/18

Attention

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

GPM CO., LTD.

TEL: 886-4-23805836 FAX: 886-4-23805832

WEB: www.GPMcnc.com

E-mail: info@gpmcnc.com

GP INTERNATIONAL CO., LTD

TEL:+86-21-5764-9075 FAX:+86-21-5764-9076

WEB: www.gpi-china.com

E-mail: infocn@gpinternational.com.cn

Table of contents

BMT Disk-Type Tool Turret.....	2
Series 434.0xx.....	2
Description	2
Features	2
Technical Data	5
Admissible Loads	8
Dimension	10
L-shape (NH Standard 1).....	10
L-shape (NH standard 2).....	12
Block shape (reinforced version / NH standard 1)	14
Block shape (reinforced version / NH standard 2)	16
Motor Arrangement	18
Precision	19
Performance Data for the Tool Coupling - Standard	20
Admissible duty cycle (DC)	20
Performance Data for the Tool Coupling – Premier Series (Option)	21
Admissible duty cycle (DC) – Premier Series(Option)	21
Dimensions	22
Type Key	23
Order Details.....	24
Appendix.....	25

BMT Disk-Type Tool Turret

Series 434.0xx

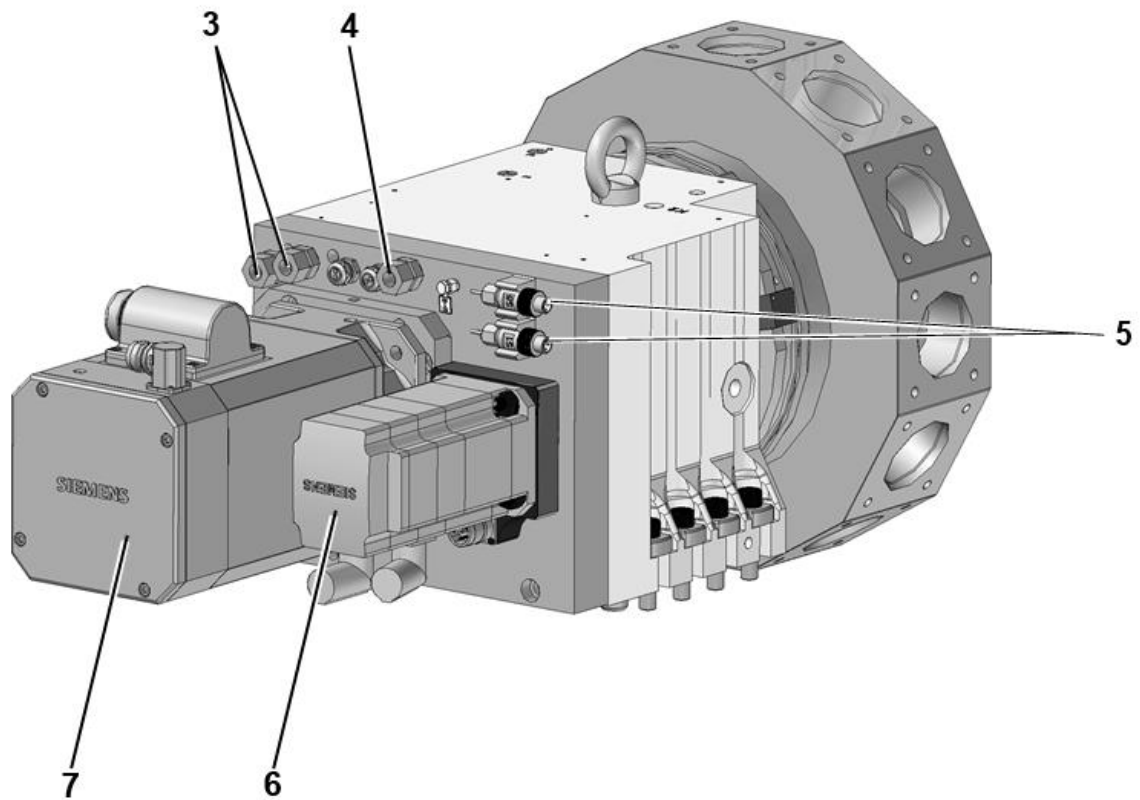
Description

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.

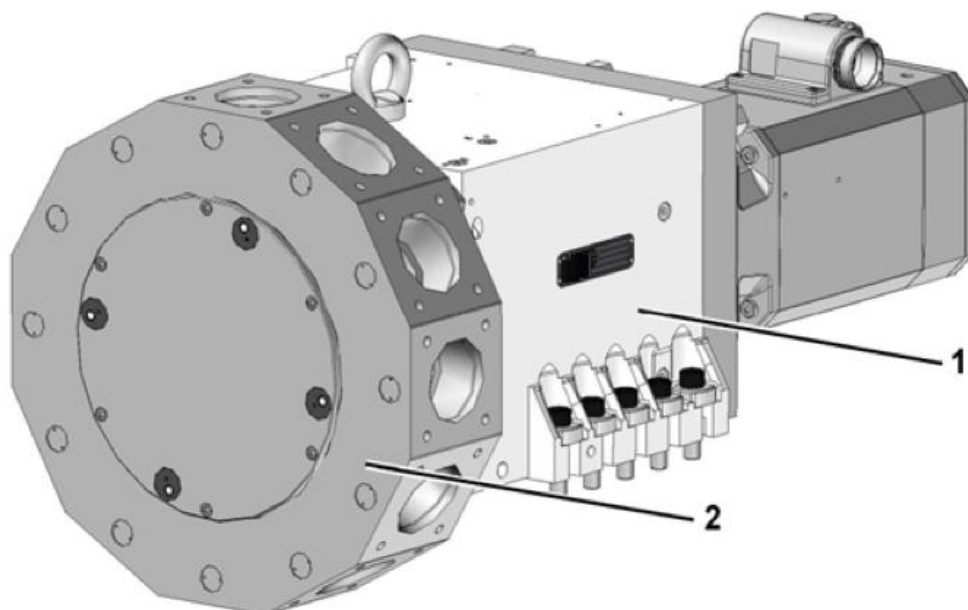
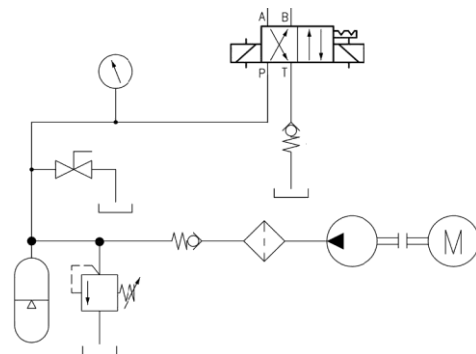
Features

- 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
- Heavy loads 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)
- Can be installed in any position
- For all market BMT - interfaces (BMT45 / 55 / 65 / 75 / 85 a.o.)
- Options:
 - BMT turret Premier Series : Performance upgrade for long term operation
 - High pressure coolant solution
 - Others

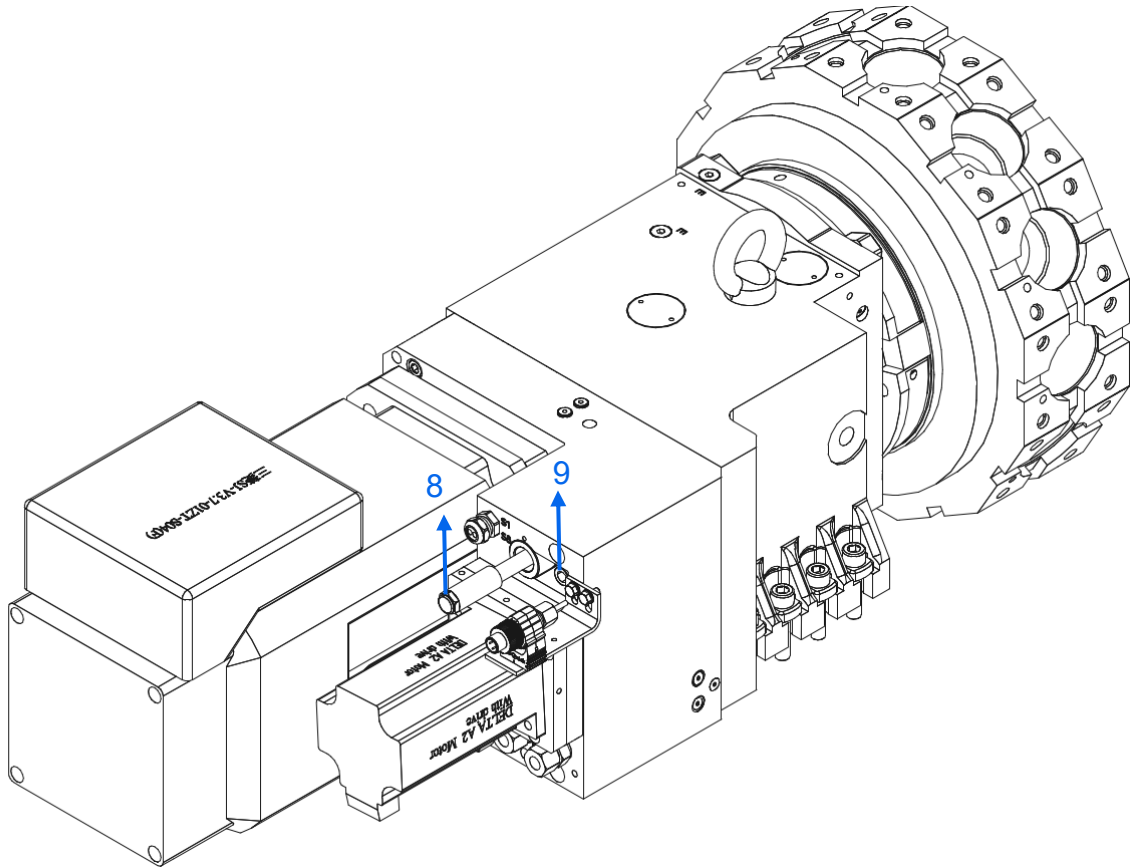
Standard appearance :



- 1 Turret housing
- 2 Tool disk
- 3 Connection – hydraulic locking control
- 4 Connection – cooling coolant
- 5 Connection - Electric
- 6 Indexing motor
- 7 Tool drive motor



Premier Series appearance (Option) :



- 8. Air cooling Out (option)
- 9. Air cooling In (option)

Technical Data

Series	
BMT Disk-type tool turret 434.0xx	
Number of switching positions	
Admissible tangential load (turret locked) ¹⁾	kNm
Admissible mass moment of inertia of tools ¹⁾²⁾ Standard load stage	kgm ²
with tool disk and holder High load stage	kgm ²
Admissible out of balance (load moment) due to tooling	Nm
Gear ratio swivel drive ³⁾	i
Switching times³⁾	s
Rotate tool disk: ⁵⁾	
• incl. acceleration and braking per partial step Standard load stage	s
	High load stage
	s
• without acceleration and braking per additional partial step	s
Turret unlock/lock-hydraulic	s
Adm. switching frequency ³⁾ (median switching angle $\varphi_m = 90^\circ$)	
Operating pressure	
Hydraulic $\pm 10\%$	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)	kg
Tool disk and tooling (max) ⁴⁾	kg
Adm. ambient temperature	°C

Size											
16			20			25			32		
8	12	16	8	12	16	8	12	16	8	12	16
1.8			3.6			7.2			12.5		
1.8			3.2			8			25		
2.5			5.0			12			40		
32			63			125			200		
54			72			90			216		
0.16			0.16			0.21			0.27		
0.15			0.19			0.25			0.31		
0.07			0.09			0.11			0.27		
0.12			0.13			02			0.5		
20			16			12			10		
50			50			50			50		
5-25(Filtering≤100μm) ⁵⁾ 5-70Filtering≤500μm) ⁵⁾ 70-150(Filtering≤25μm) ⁵⁾											
30			45			65			114		
100			155			270			570		
80			160			250			400		
10~40											

1) Higher values on request

2) Switching times

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)

3) The swivel times are determined with an average load. Further details on request.

4) High load for special tools on request

5) Ensure compliance with the required fineness for the tools used. For example drive tool with internal cooling lubricant supply.

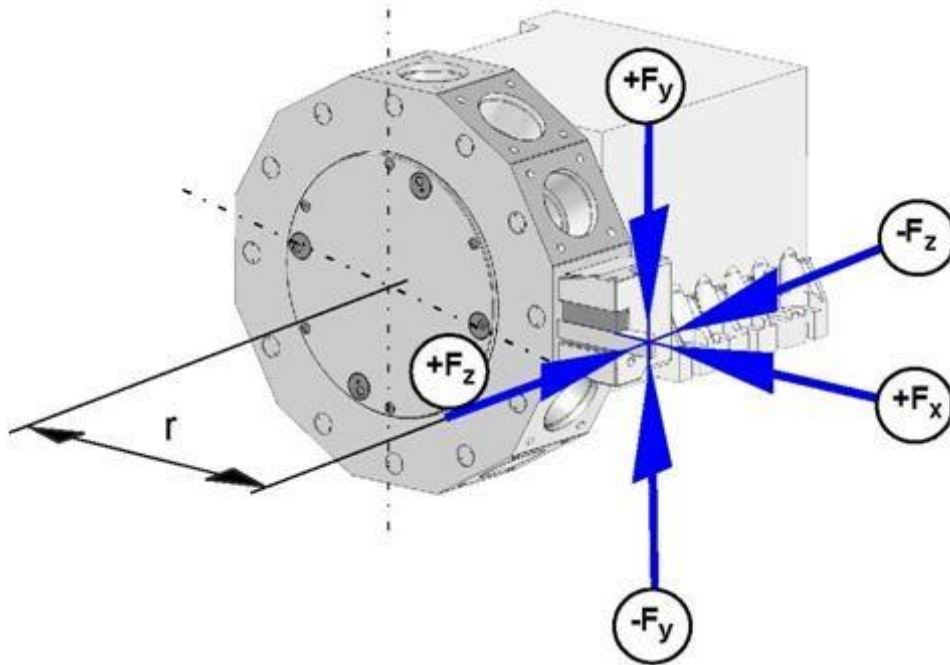
Recommended indexing motors degree of protection to IP 67	J	Adm. driving	swiveling times for 30°-step without acceleration and braking			
	kgm ²	rpm	s			
			Size of turret			
			16	20	25	32
EK600 with encoder ¹⁾	0.0003	4500	0.06	0.08	0.10	0.24
Siemens 1FK7043 HD	0.0001	6000	0.05	0.06	0.08	0.18
Siemens 1FK7042	0.0003	4500	0.06	0.08	0.10	0.24
Fanuc α 2/5000 / β 2/5000	0.0003	4500	0.06	0.08	0.10	0.24
Delta A2 (EK700)	0.0003	4000	0.07	0.09	0.11	0.27

¹⁾ controlled via machine control system

Admissible Loads

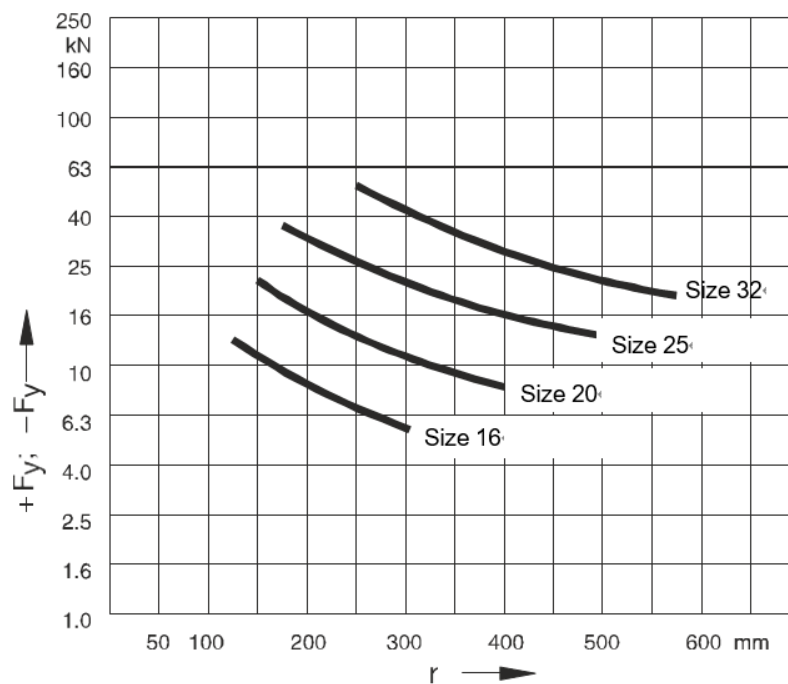
Note

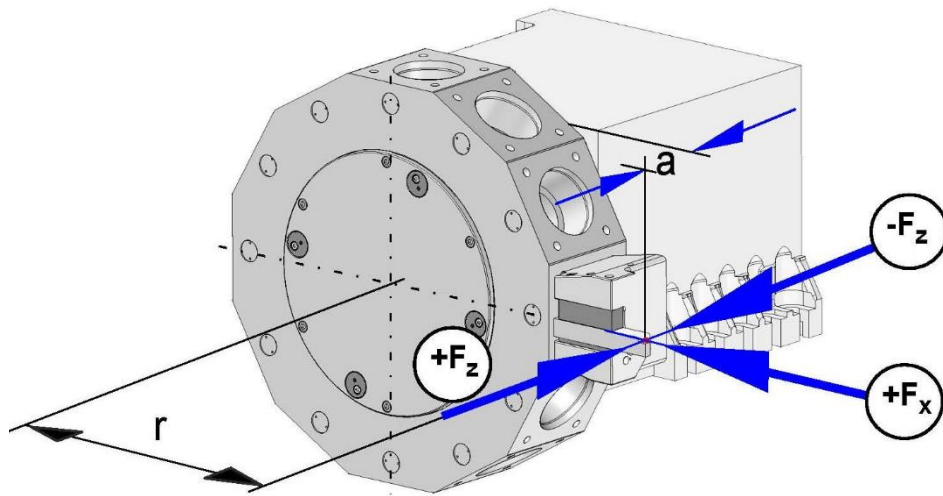
- The diagrams refer to static loads.
- In case of impact load (interrupted cutting), significantly lower values must be reckoned with.



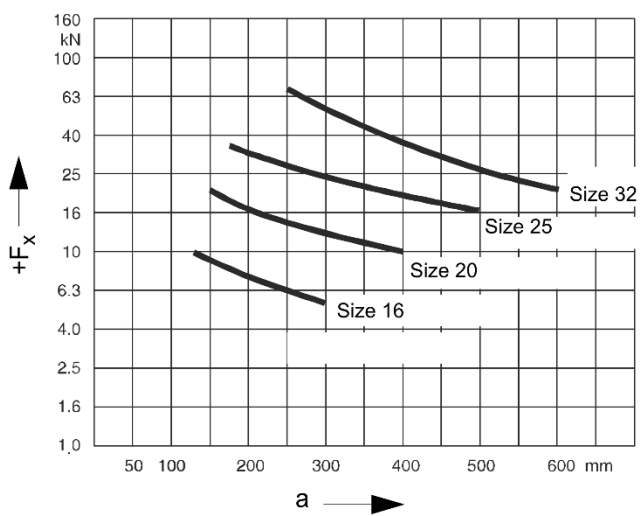
Force $\pm F_y$

Tangential loading

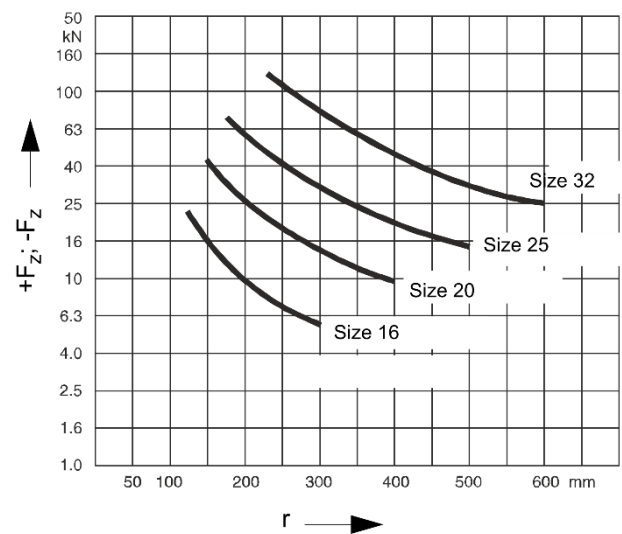




Force $+F_x$
Shunt loading
leading edge is the basis for dimension a

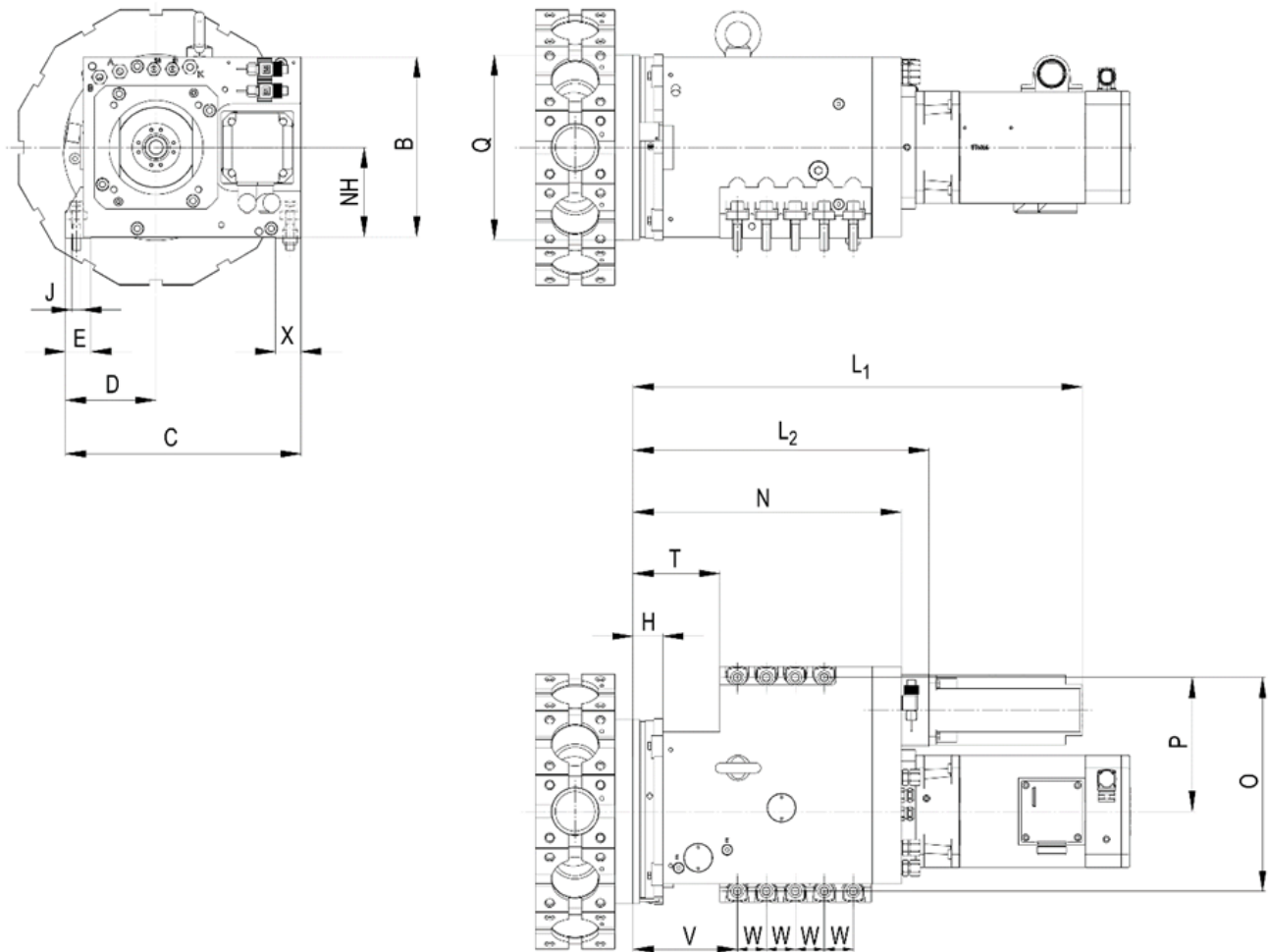


Force $+F_z$
longitudinal loading



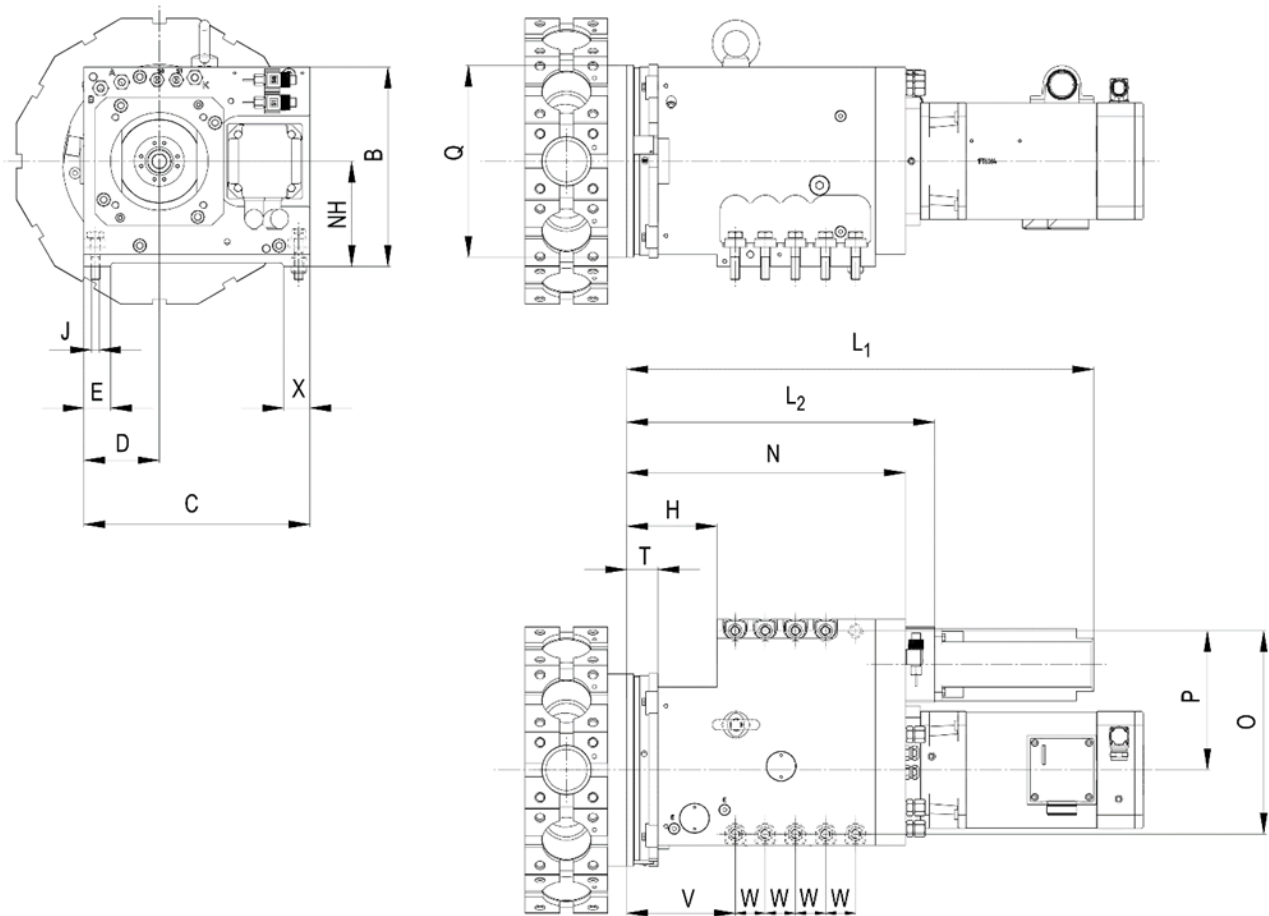
Dimension

L-shape (NH Standard 1)



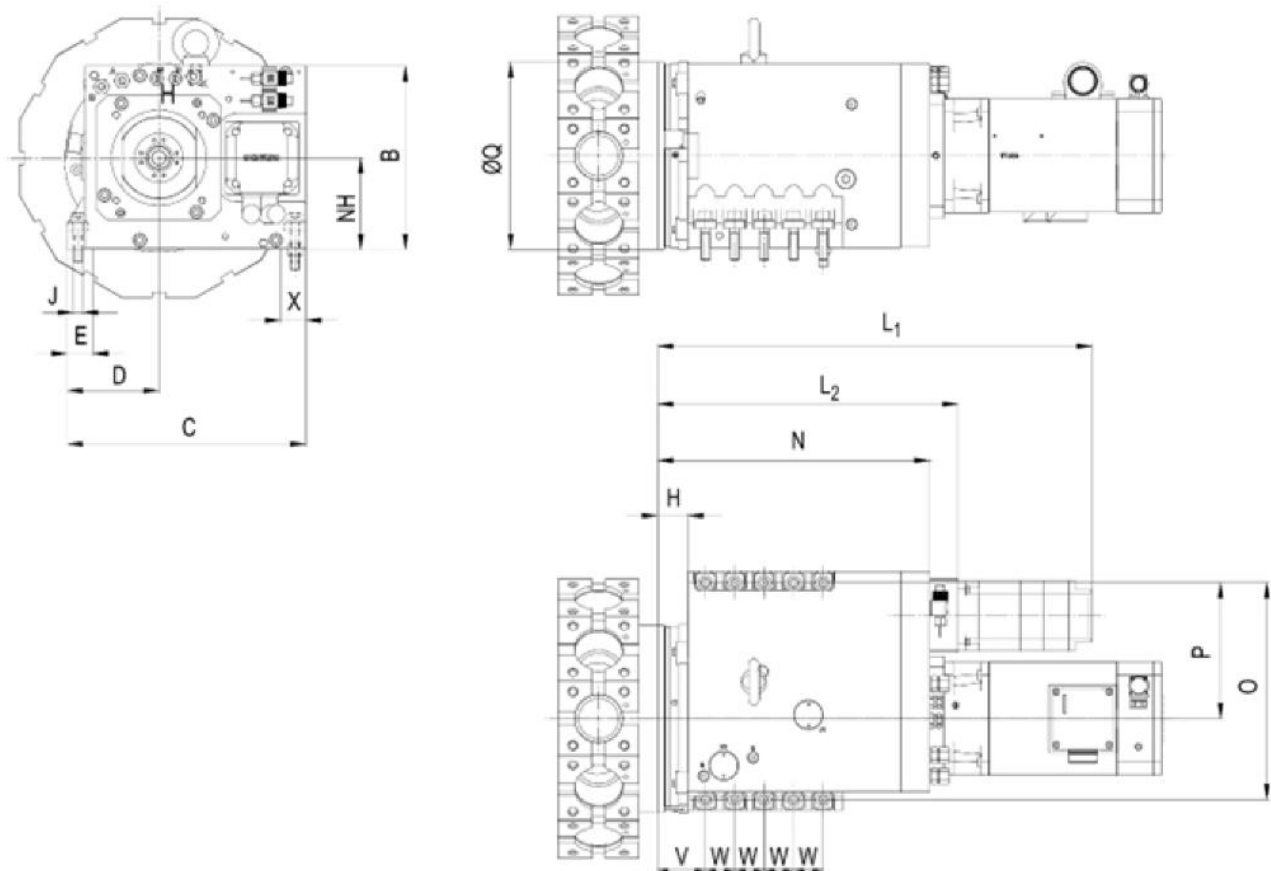
Series		Size			
434.0XX (L shape-NH Standard 1)		16	20	25	32
NH		100	125	150	
B		200	250	300	
C		284	325	406	
D		102	125	158	
E		26	35	45	
H		40	41	52	
J		M10	M12	M16	
L					
GPM drive 1.8.150.573	L ₁	454	474	520	
Delta motor with drive	L ₁	375	395	441	
Siemens 1FK70 43/42	L ₂	374	394	440	
Fanuc $\alpha 2/\beta 2$	L ₂	259	379	425	
N		234	370	412	
O		240	295	370	
P		150	185	230	
øQ		160	255	318	
T		105	120	150	
V		127	144	176	
W		34	40	42	
X		34	35	45	

L-shape (NH standard 2)



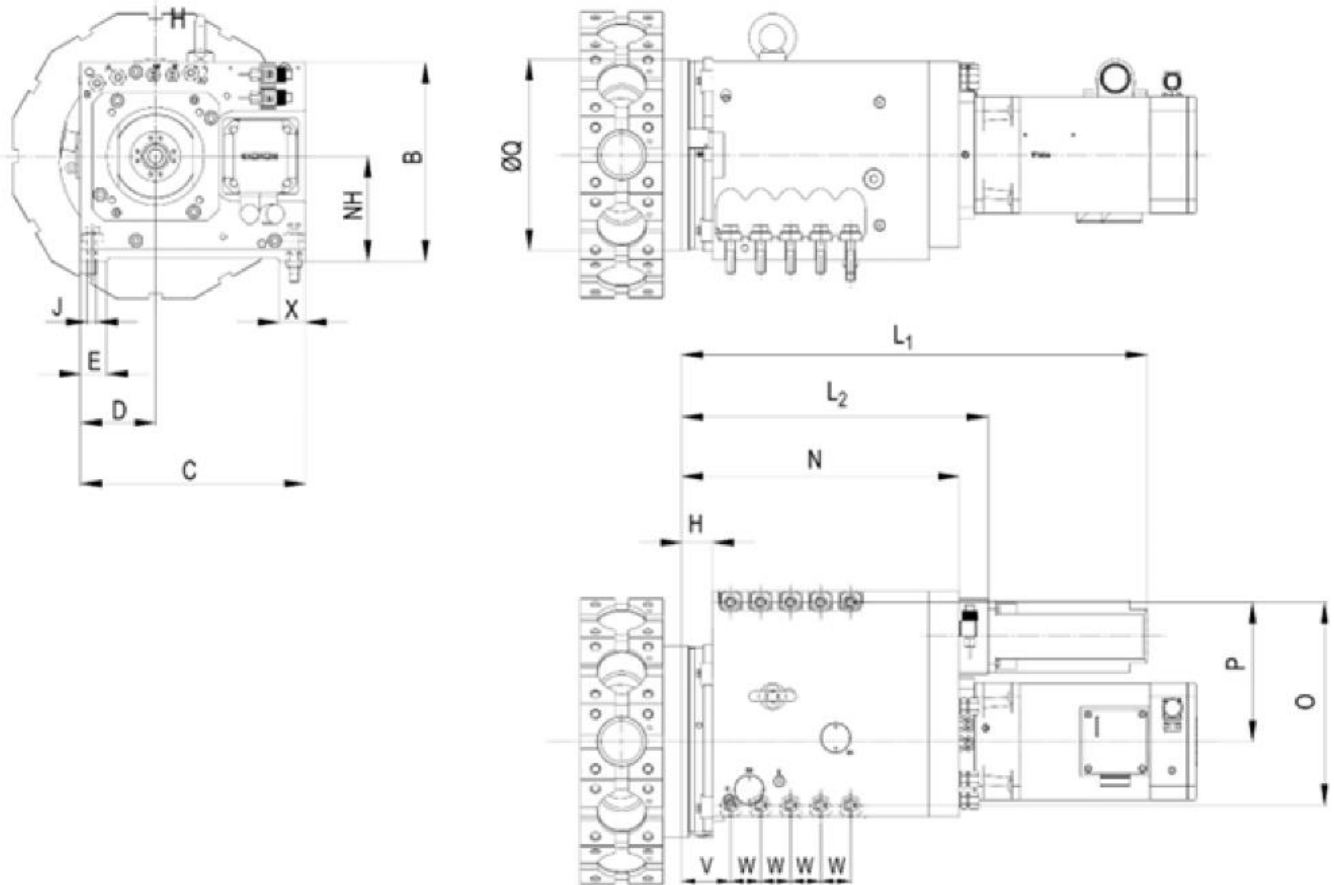
Series		Size			
434.0XX (L shape-NH standard 2)		16	20	25	32
NH			140	180	
B			265	330	
C			300	373	
D			100	125	
E			35	45	
H			41	52	
J			M12	M16	
L					
GPM drive 1.8.150.573	L ₁		474	520	
Delta motor with drive	L ₁		395	441	
Siemens 1FK70 43/42	L ₂		394	425	
Fanuc $\alpha 2/\beta 2$	L ₂		379	425	
N			370	412	
O			270	337	
P			185	230	
øQ			255	318	
T			120	150	
V			144	176	
W			40	42	
X			35	45	

Block shape (reinforced version / NH standard 1)



Series		Size			
434.0XX (reinforced version/ NH standard 1))		16	20	25	32
NH		100	125	150	200
B		200	250	300	400
C		284	325	406	520
D		102	125	158	198
E		30	35	45	48
H		40	41	52	62
J		M10	M12	M16	M20
L					
GPM drive 1.8.150.573	L ₁	454	474	520	666
Delta motor with drive	L ₁	545	516	576	722
Siemens 1FK70 43/42	L ₂	438	409	440	586
Fanuc $\alpha 2/\beta 2$	L ₂	123	395	425	571
N		340	370	412	528
O		240	295	370	476
P		150	185	230	300
øQ		160	255	318	396
V		62	65	78	96
W		34	40	42	52
X		50	35	45	48

Block shape (reinforced version / NH standard 2)

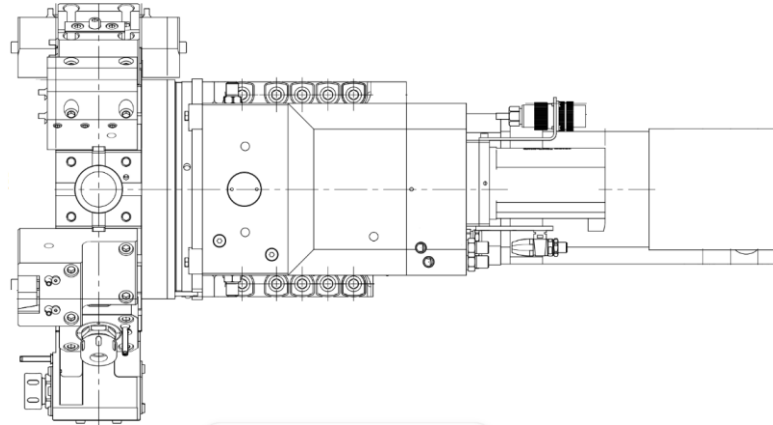


Series		Size			
434.0XX (Block shape reinforced version / NH standard 2)		16	20	25	32
NH			140	180	
B			265	330	
C			300	373	
D			100	125	
E			35	45	
H			41	52	
J			M12	M16	
L					
GPM drive 1.8.150.573	L ₁		474	520	
Delta motor with drive	L ₁		516	576	
Siemens 1FK70 43/42	L ₂		409	440	
Fanuc $\alpha 2/\beta 2$	L ₂		394	425	
N			370	412	
O			295	370	
P			185	230	
øQ			255	318	
V			65	78	
W			40	42	
X			35	45	

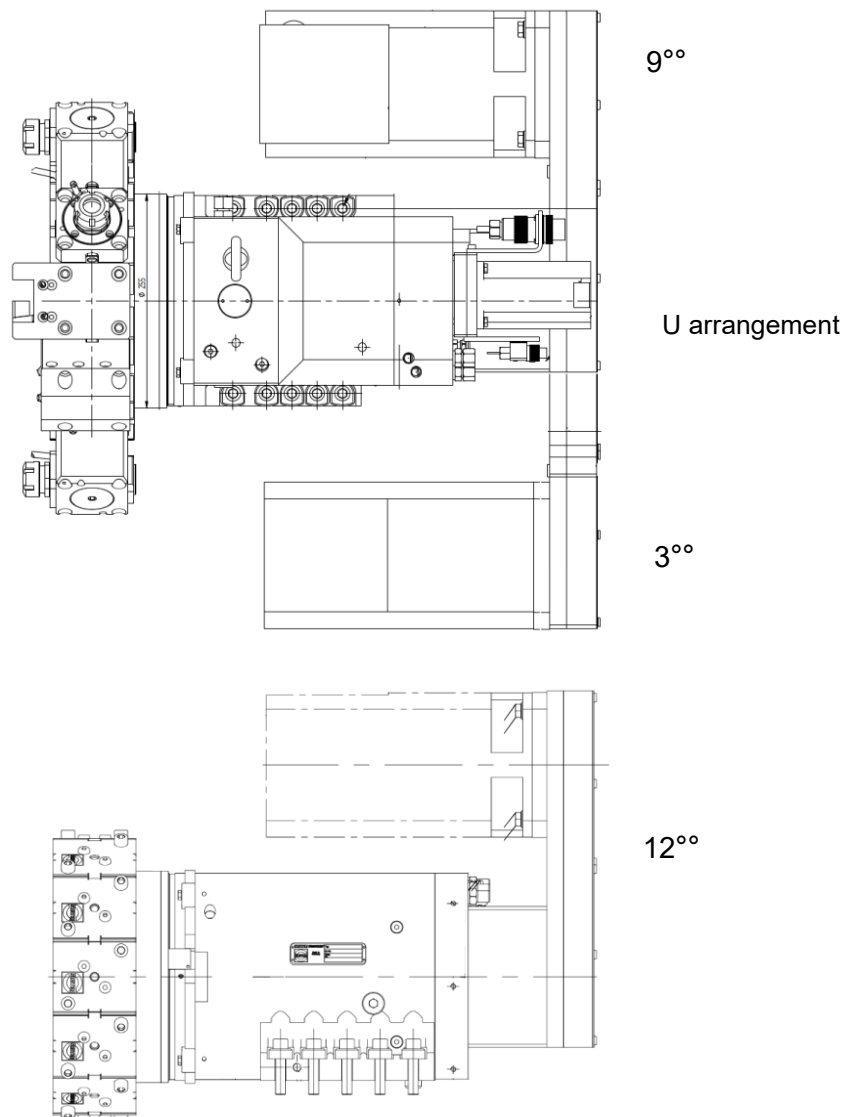
Motor Arrangement

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

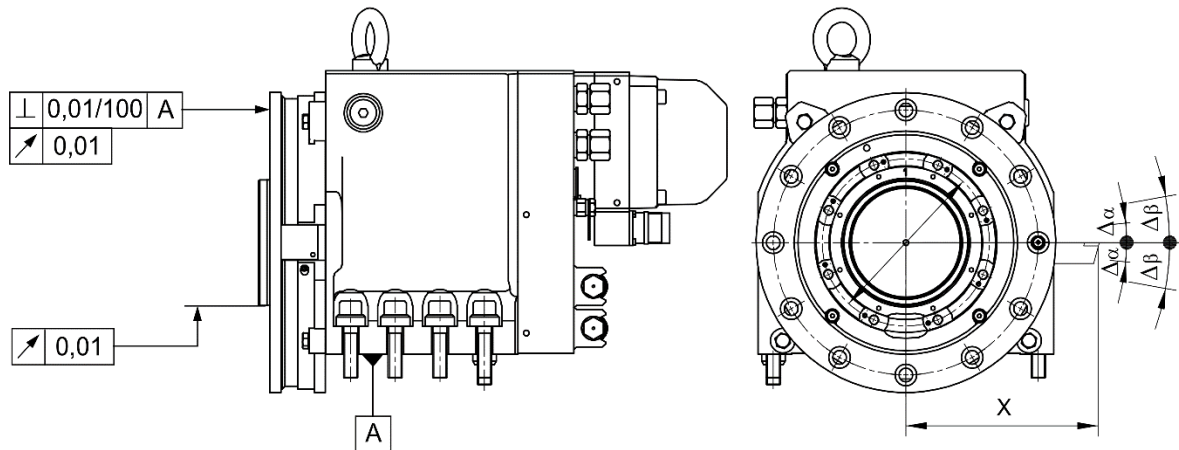
Motor – arrangement – direct-



Motor – arrangement with deflection



Precision



Repeating accuracy

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

$$\Delta\alpha = \pm 1.6'' \equiv \pm 0.8 \times \frac{X[mm]}{100[mm]} [\mu m]$$

Indexing precision

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

$$\Delta\beta = \pm 4'' \equiv \pm 2 \times \frac{X[mm]}{100[mm]} [\mu m]$$

Performance Data for the Tool Coupling - Standard

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

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

Series	Size			
434.0xx	16	20	25	32
Performance data				
Adm. drive rating ¹⁾ P_{adm} kW	8	10	12.5	16
Adm. torque ²⁾ M_{adm} Nm	32	63	100	180
Adm. rpm ^{1) 3)} n_{adm} min ⁻¹	6000	6000	4000	4000
ratio $i=n_1/n_2$	1.0	1.0	1.0	1.0
Recommended motors for tool drive				
Siemens Servo motor Type 1FT6..	..84-1AK	..086-1AH	..105-8AF	..108-8AF
Fanuc servo motor α	12/6000 is	22/4000 is	40/4000 is	50/3000
Fanuc spindle motor α	2	3	6	15 HVi

1) The values are reference values for short-term operation. Higher rpm generate more heat and noise.

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

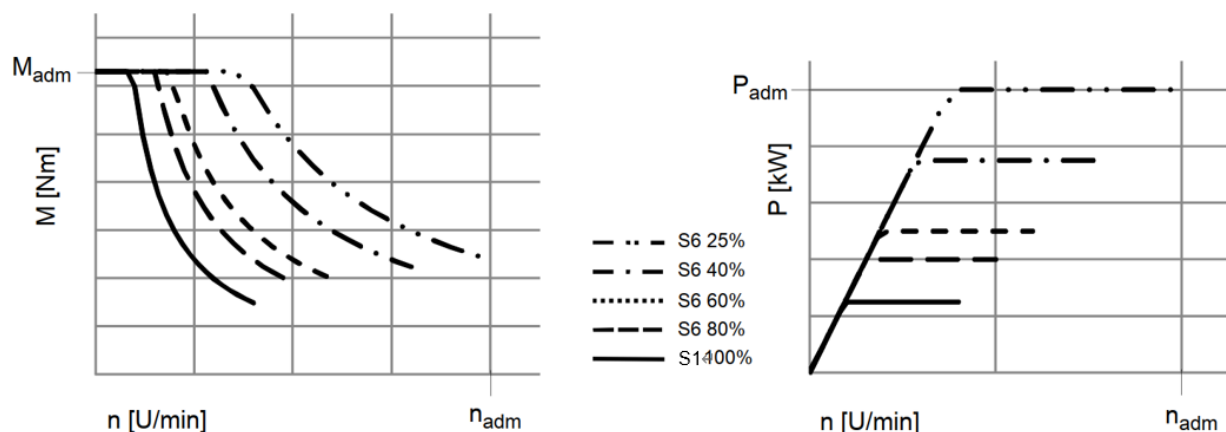
(e.g. face milling and similar operations) it is necessary to reduce the motor drive torque by 50% or more.

3) Higher rpm or long time operation, please go to next page : 434.0xx Premier Series

Admissible duty cycle (DC)

Tool Drive

Performance Diagram



See Appendix Performance data for tool drive

Performance Data for the Tool Coupling – Premier Series (Option)

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

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

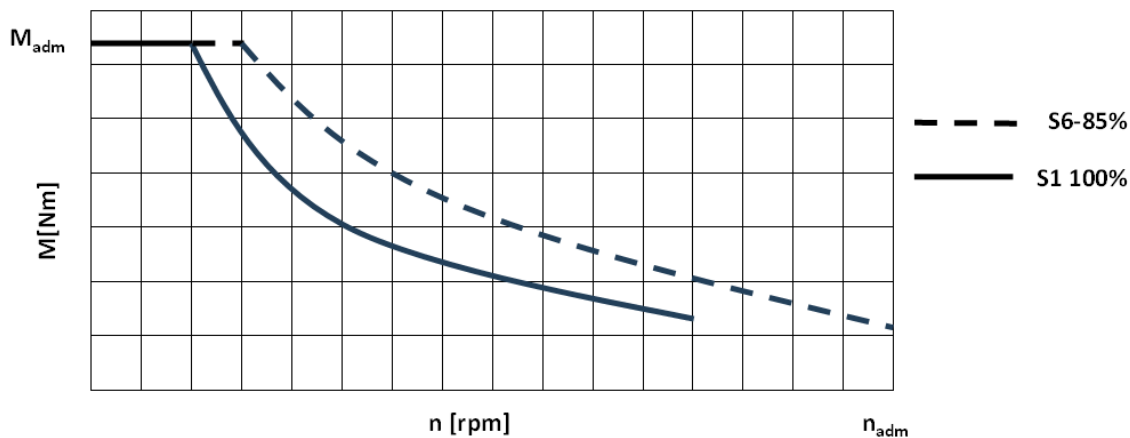
Series	Size		
434.4xx Premier Series	16	20	25
Performance data			
Adm. drive rating ¹⁾ P_{adm} kW	8	10	12.5
Adm. torque M_{adm} Nm	32	63	100
Adm. rpm ¹⁾ n_{adm} min ⁻¹	8000	8000	6000
ratio $i=n_1/n_2$	1.0	1.0	1.0
Recommended motors for tool drive			
Siemens Servo motor 1FT6..	..84-1AK	..086 – 1AH	..105-8AF
Fanuc servo motor α	12/6000 is	22/4000 is	40/4000 is
Fanuc spindle motor α	2	3	6

- 1) 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 operations) it is necessary to reduce the motor drive torque by 50% or more.

Admissible duty cycle (DC) – Premier Series(Option)

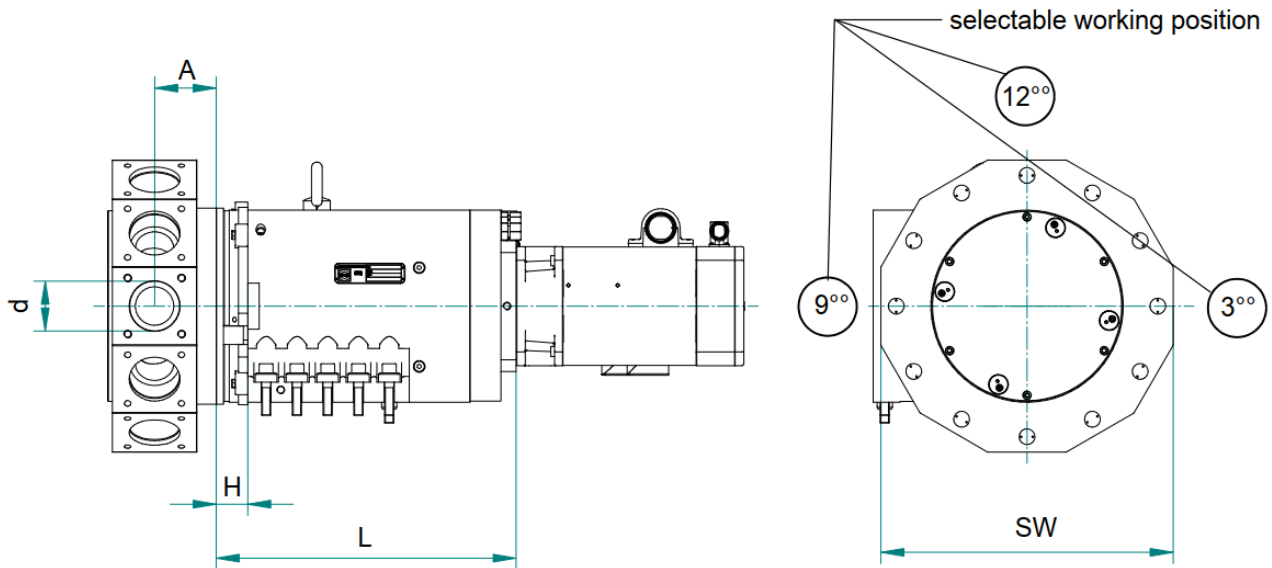
Tool Drive

Performance Diagram



See Appendix Performance data for more detail – page 30

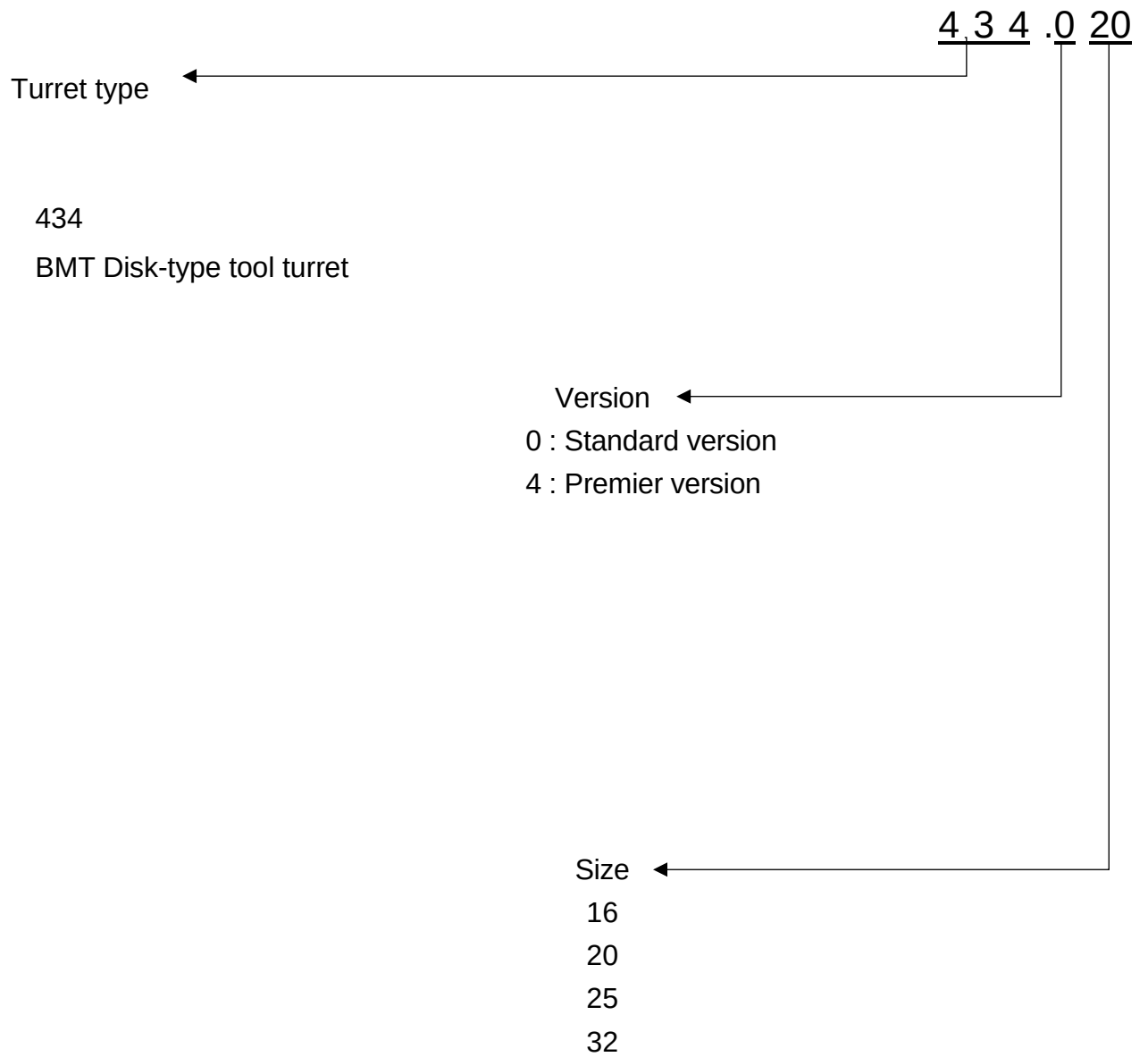
Dimensions



Series		Size			
434.0xx		16	20	25	32
Tool Coupling DIN 1809 ¹⁾		BMT 55	BMT 65	BMT 75	BMT 85
Distance	A	70	80	100	120
	H	40	41	52	62
d		55	65	75	85
SW – standard		330	380	430	530/720
Motors for tool drive					
Siemens Servo motor L		1FT084	..086 - 1AH	..105 - 8AF	..108 - 8AF
		-	390	452	-
Fanuc servo motor α L		12/6000 is	22/4000 is	40/4000 is	50/3000 is
		-	-	-	-
Fanuc spindle motor α L		$\alpha 2$	$\alpha 3$	$\alpha 6$	15 HVi
		-	-	-	-

1) Other interfaces on request

Type Key

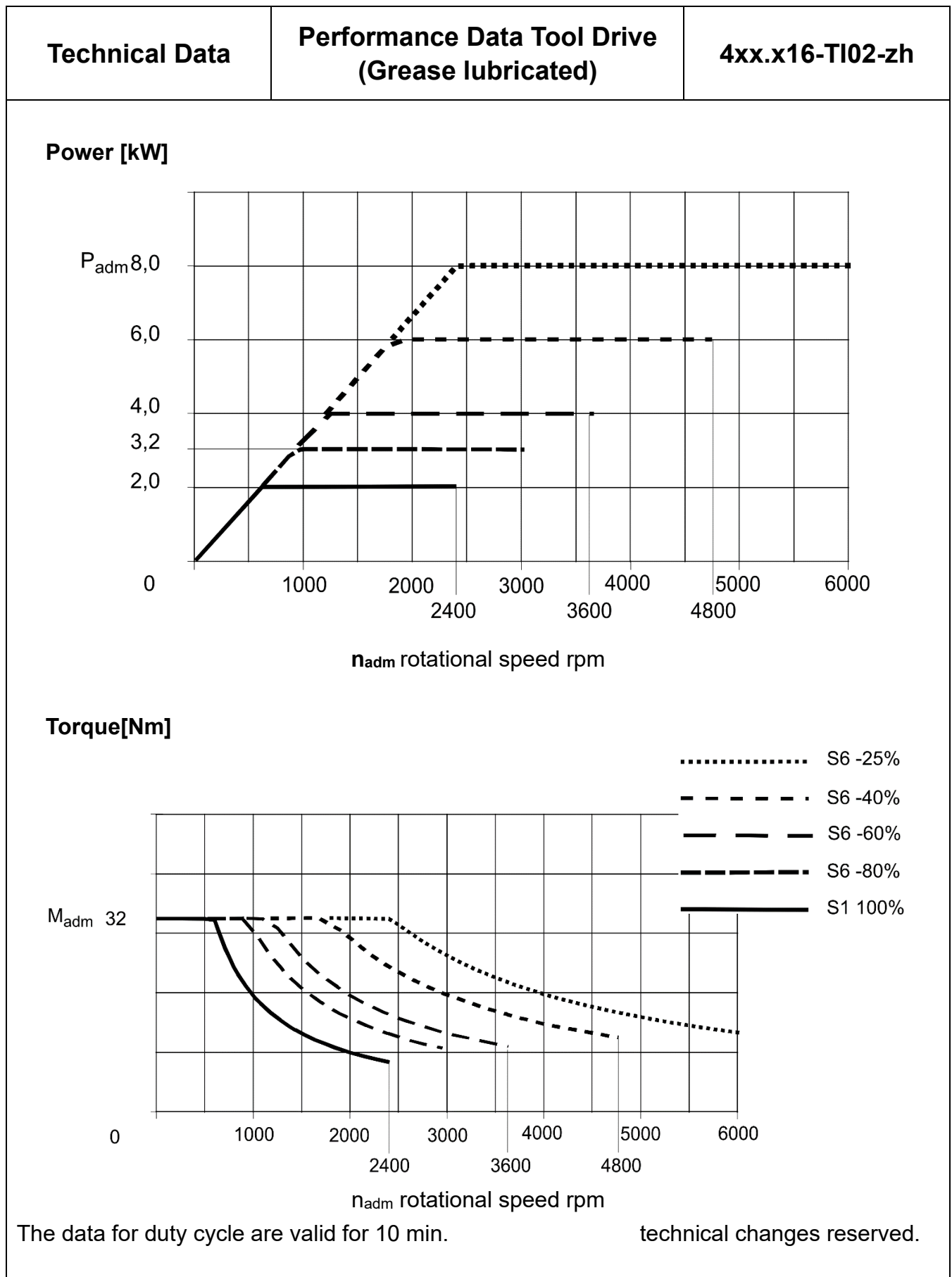


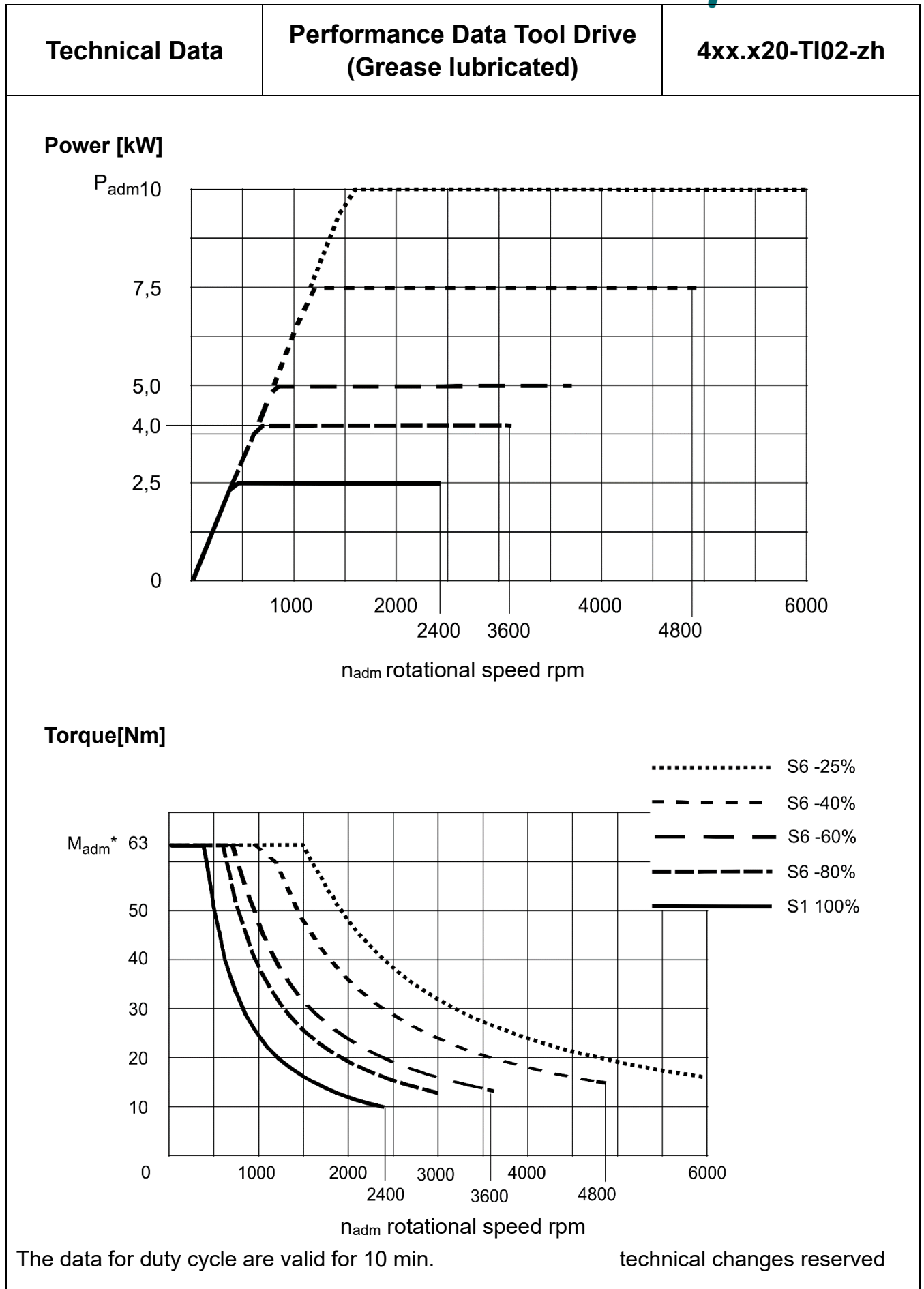
Order Details

 Service GPM CO., LTD No. 368, Sec. 4, Huan Zhong Rd., Nan tun District, Taichung City, Taiwan	Company: _____
 +886-4-23805836	Street: _____
 +886-4-23805832	Postal Code: _____ City: _____
 www.GPMcnc.com	Name: _____
 info@gpmcnc.com	Phone: _____
	Fax: _____
	E-Mail: _____

Disk-type tool turret 434.0xx		
Ordering informations	Possible configurations	Your selection
Basis turret Housing shape Size Number of switching positions Motor for indexing drive Installation position	L / Block (NH 1/2) 20 / 25 8 / 12 / 16 Delta/ Siemens / Fanuc / ...	
Radial tool drive Working position Tool disc Tool system Motor for tool drive	3°° / 9°° / 12°° SW BMT 45 / 55 / 65 / 75 / 85 s. page 20	
Option		
Coolant pressure	25bar/70bar/others	
Premier series function	Long time operation	
Special requirements: 		

Appendix





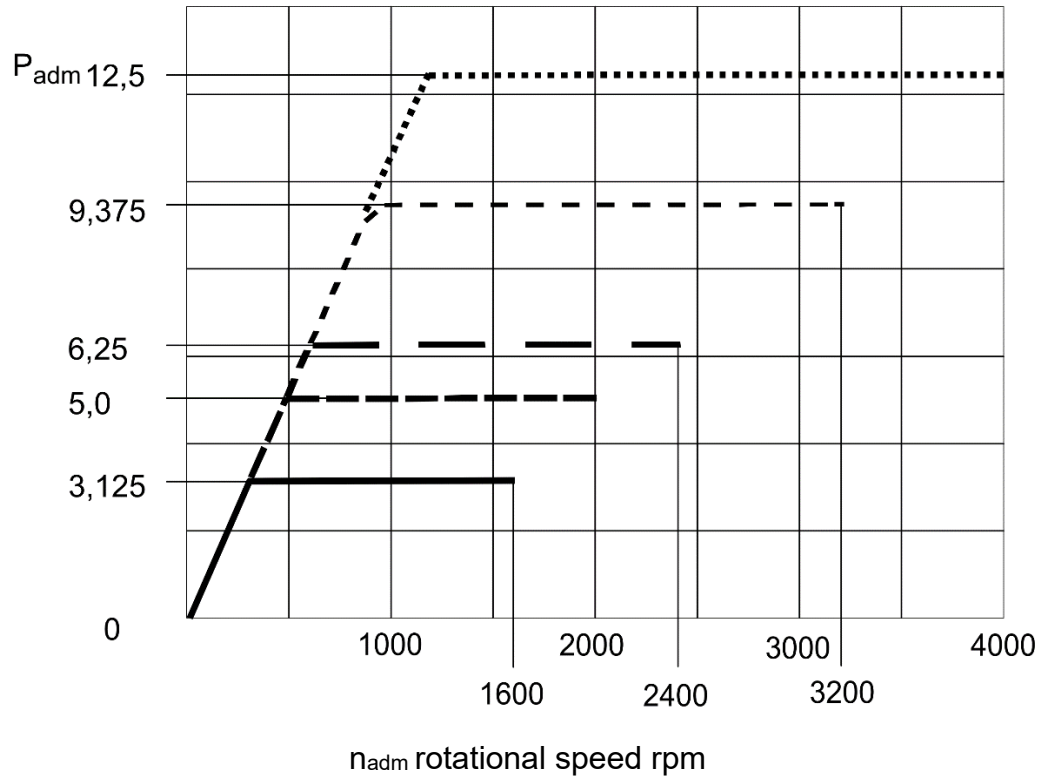
Technical Data	Performance Data Tool Drive (Grease lubricated)	4xx.x20-TI02-zh						
<table><tr><td>Tool Holder</td><td>M_{adm} [Nm]</td></tr><tr><td>BMT45</td><td>20</td></tr><tr><td>BMT55</td><td>32</td></tr></table>			Tool Holder	M _{adm} [Nm]	BMT45	20	BMT55	32
Tool Holder	M _{adm} [Nm]							
BMT45	20							
BMT55	32							

Technical Data

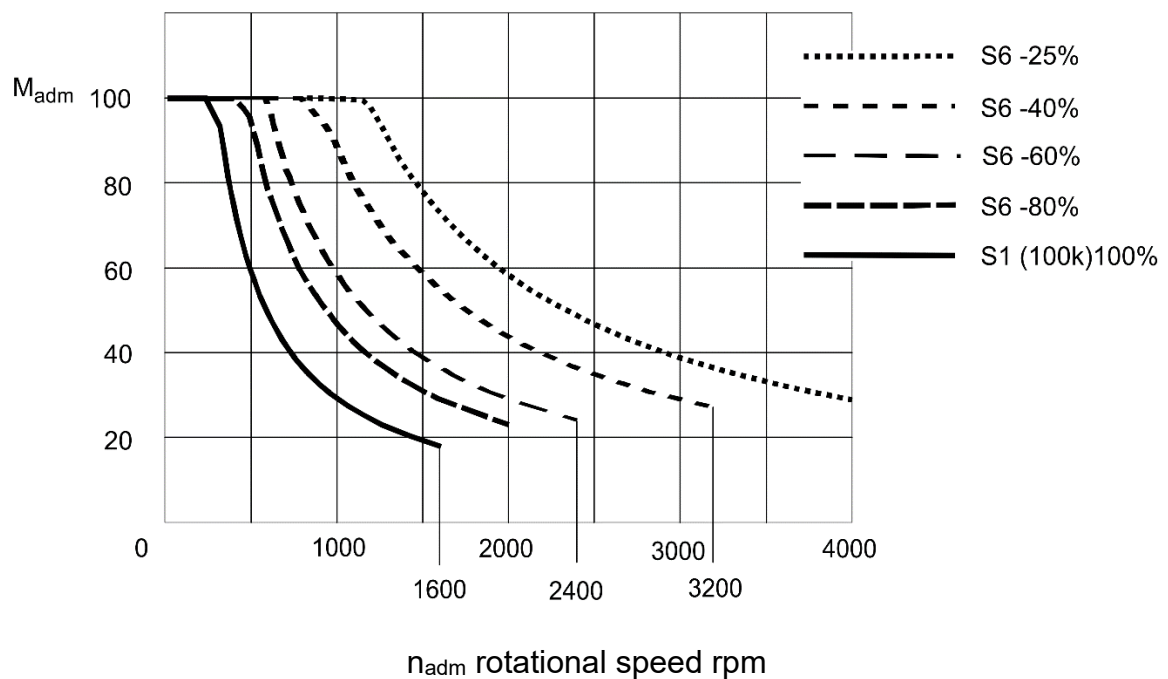
Performance Data Tool Drive (Grease lubricated)

4xx.x25-TI02-zh

Power [kW]



Torque[Nm]



The data for duty cycle are valid for 10 min.

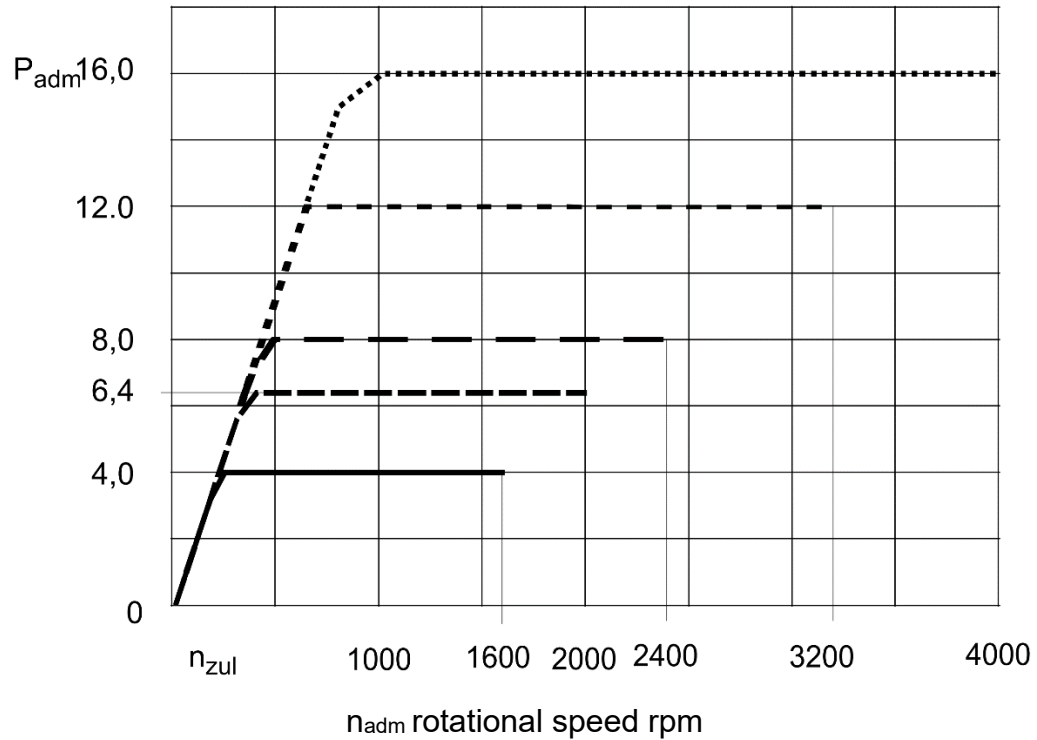
technical changes reserved

Technical Data

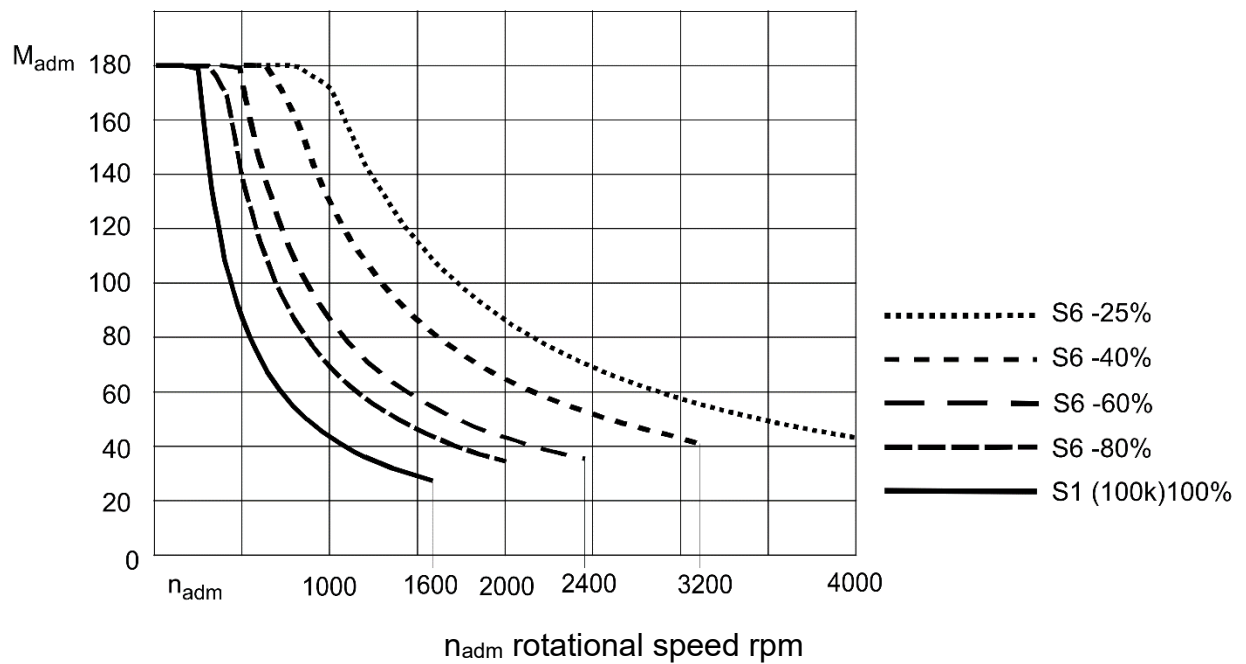
Performance Data Tool Drive (Grease lubricated)

4xx.x32-TI02-zh

Power [kW]



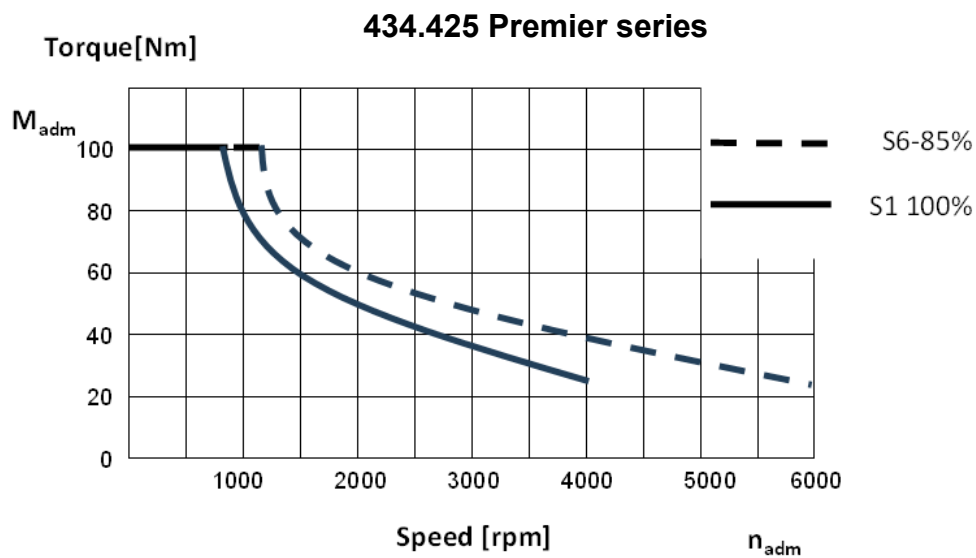
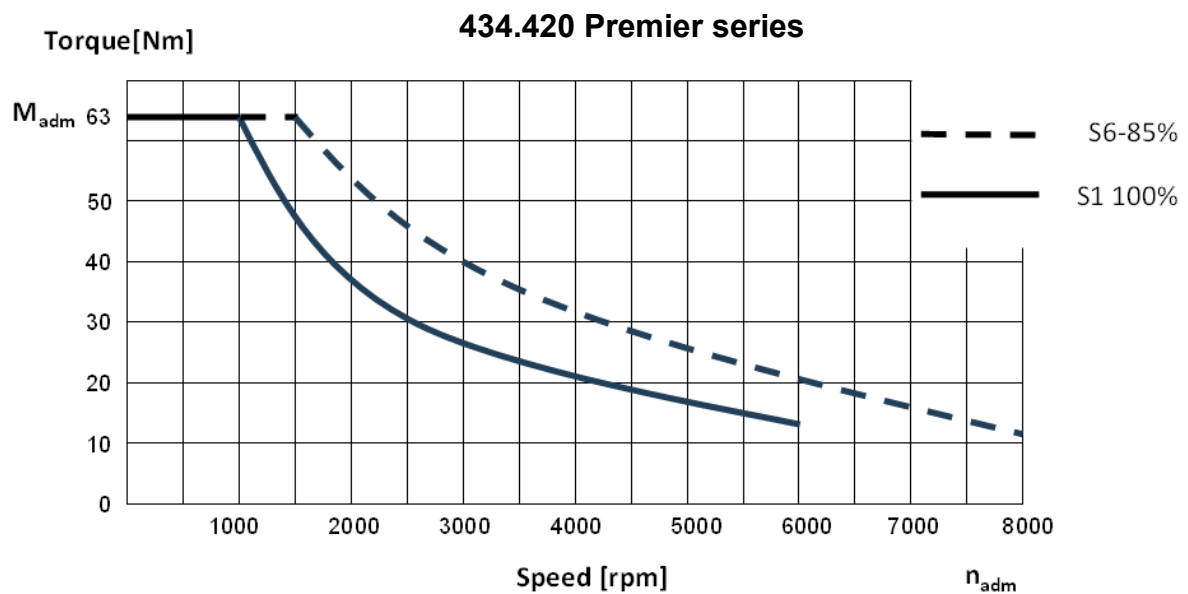
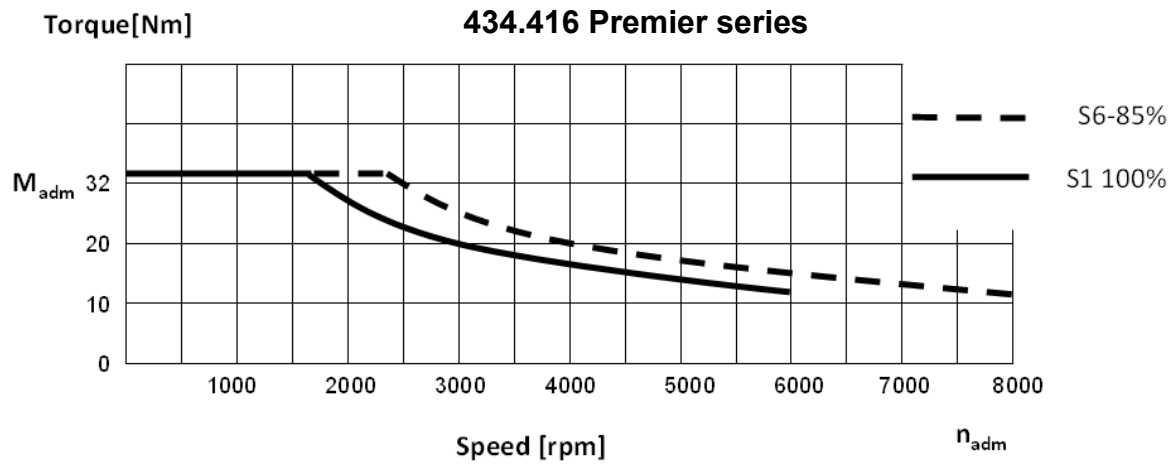
Torque [Nm]



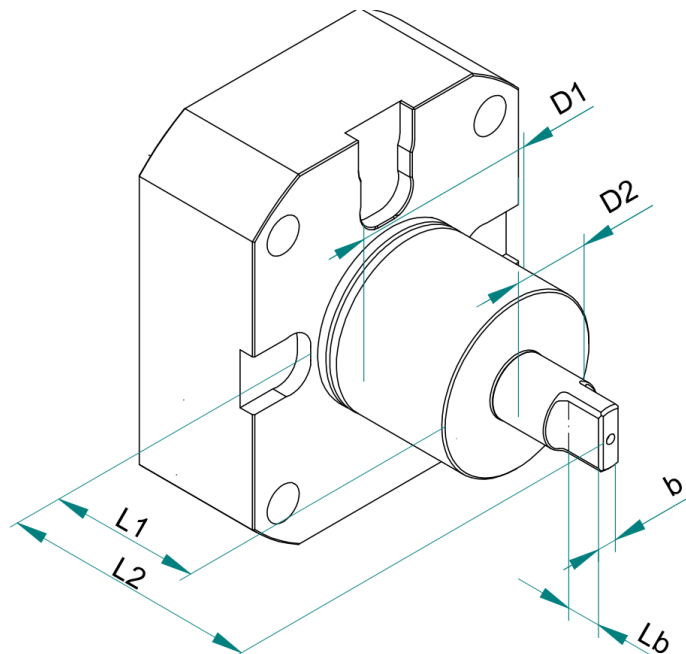
The data for duty cycle are valid for 10 min.

technical changes reserved

Performance data of tool drive for 434.4xx Premier Series



Dimensions for BMT tooling interface :



Tooling for interface	control measures [mm]							
	D1	D2	D3	b	L1	L2	L3	Lb
BMT 45	44,9 _{-0,05}	35	23	6 _{-0,02}	40	60	84 _{-0,3}	8
BMT 55	54,9 _{-0,05}	40	29	8 _{-0,02}	30	75	104 _{-0,3}	10
BMT 55 short	54,9 _{-0,05}	40	29	8 _{-0,02}	30	54	83 _{-0,3}	10
BMT 65	64,9 _{-0,05}	45	29	10 _{-0,02}	32	81	112 _{-0,3}	14
BMT 65 short	64,9 _{-0,05}	45	29	10 _{-0,02}	44	72	91 _{-0,3}	14
BMT 75	74,9 _{-0,05}	55	38	14 _{-0,02}	43	80	110 _{-0,3}	15
BMT 85	84,9 _{-0,05}	65	30	16 _{-0,02}	48	100	140 _{-0,3}	20