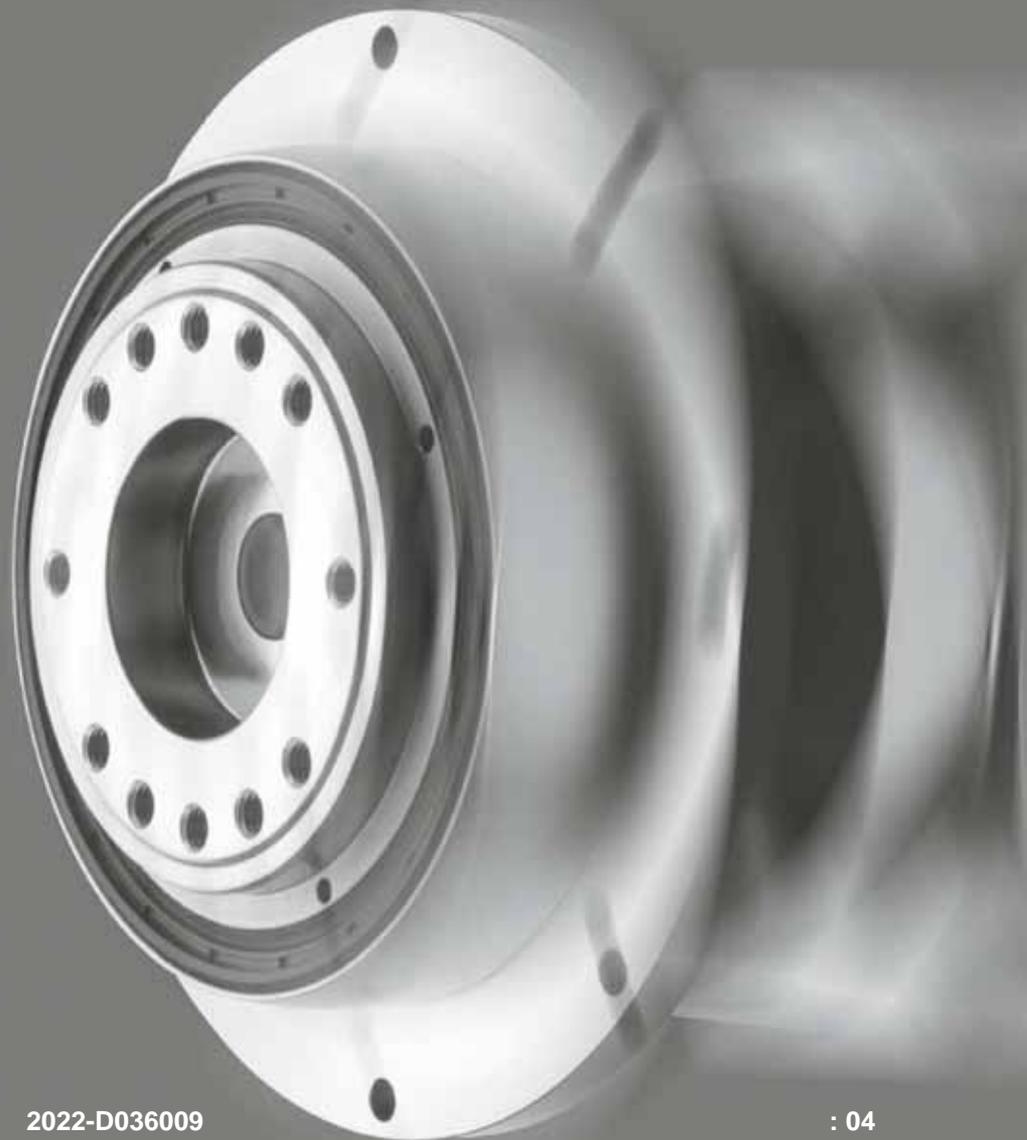




WITTENSTEIN

alpha

TP⁺



Revision history

Revision	Date	Comment	Chapter
01	27.10.10	New version	All
02	18.04.11	Technical Data	2
03	22.10.12	Safety	All
04	14.07.14	Clamping hub	3

Service

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Motor mounting video

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1	2
1.1	2
2	2
2.1	2
2.2	2
2.3	가	2
2.4	2
2.5	3
2.6	4
2.7	4
2.8	4
2.9	4
3	4
3.1 TP+ 050	4
3.2 TP+ 110	5
3.3	5
3.4	5
3.5	7
3.6	7
3.7	7
3.8	7
3.9	8
3.10	9
3.11	10
3.12	10
3.13	11
3.14 가	11

1

가 (:)

가

1.1

가

•

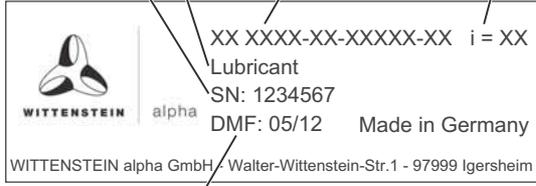
⇒

①

가

2

2.1

	A	(3.14 " 가 ")
	B	
	C	
	D	
	E	

Tbl-1: ()

2.2

가

2.3

가

2.4

-
-
-
-
-
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-

()

/ (: 가)

WITTENSTEIN alpha GmbH

⚠ 경고	
	<ul style="list-style-type: none"> . .
	<ul style="list-style-type: none"> . .) / , (
	<ul style="list-style-type: none"> . 가 . 가 가 .(:)
	<ul style="list-style-type: none"> . (2.3" 가 ") .
	<ul style="list-style-type: none"> 가
⚠ 주의	
	<ul style="list-style-type: none"> . 가
	<ul style="list-style-type: none"> .
참 고	
	<ul style="list-style-type: none"> . 가 가
	<ul style="list-style-type: none">

2.6

가 0°C ~ +40°C

2

2.7

-
-

①

3 "

2.8

		500 3 가	3	
	X	X	X	
	X	X		X

Tbl-2:

2.9

(, ,)

-

가	가	가
가	가	
	가 가	
	가	
가		
	()	
		가

Tbl-3:

3

-

(2.5 " ").

3.1 TP+ 050

3.2 TP+ 110

TP+ 110

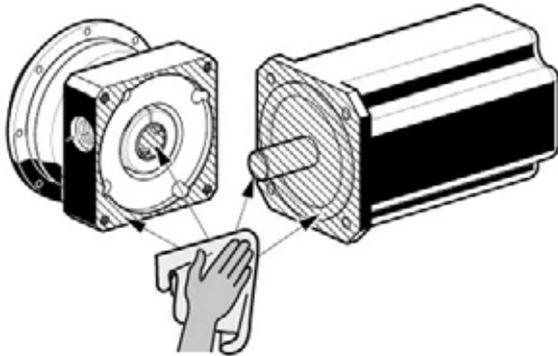
3.3

	참 고
	가

가

	A	()
	B	()
	ⓘ www.wittenstein-alpha.de/download	

Tbl-4:



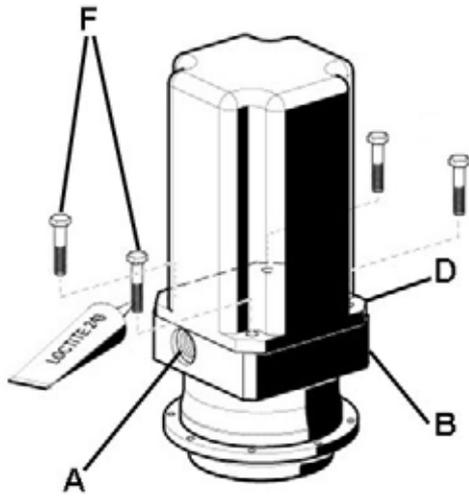
("Tbl-5")

	8.8	10.9
	1,5 x d	1,8 x d
d =		

Tbl-5:

3.4

	<ul style="list-style-type: none"> • •
--	--



- 가
- 가
- ① 가
- (B) (A)
- (H, "Tbl-6")가
- (H)
-

- ①
- ① 가
- ① ("Tbl-6") ()
- ① (D) (B) 가 가

	H	
	I	()
	J	
	K	
	L	

Tbl-6:

- ① 가
- TP+025, 28mm ()
- TP+ 050, > 28mm
- (F) (: Loctite 243)
- (F) (D) (B)
- (H)
- ① 3.9 " " "Tbl-10"
- (B) (A)
- ① "Tbl-7"

[mm]	5	8	10	12
[Nm]	10	35	50	70

Tbl-7:

3.5

	<ul style="list-style-type: none"> • • (: Loctite 243) • <p>①</p> <p>① (: ,)</p>
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3.6

	참 고
	<ul style="list-style-type: none"> • 가 • ! • <p>① "TbI-12". 3.11 " "</p>

3.7

	<ul style="list-style-type: none"> • 가 -15°C +40°C • 가 +90°C • • 3.13 " " • 가
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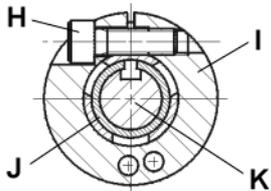
3.8

	<p>() , ISO VG100, ISO VG220</p> <p>() ()</p> <p>가</p>
---	---

	(NSF-H1)
Castrol Industrie GmbH, Mönchengladbach : + 49 2161 909-30 www.castrol.com	Klüber Lubrication München KG, München : + 49 89 7876-0 www.klueber.com

TbI-8:

3.9

	H	
	I	()
	J	
	K	

Tbl-9:

TP+		'x' [mm]	(H)/ DIN ISO 4762	[mm]	[Nm] 12.9	[N]	
004	1	x ≤ 11 11 < x ≤ 14 14 < x ≤ 19	M4 M5 M6	3 4 5	4,1 9,5 14	100	10
	2	x ≤ 11 11 < x ≤ 14	M4 M5	3 4	4,1 9,5	80	—
010	1	x ≤ 14 14 < x ≤ 19 19 < x ≤ 24	M5 M6 M8	4 5 6	9,5 14 35	120	20
	2	x ≤ 11 11 < x ≤ 14 14 < x ≤ 19	M4 M5 M6	3 4 5	4,1 9,5 14	100	10
	3	x ≤ 14	M5	4	9,5	100	10
025	1	x ≤ 19 19 < x ≤ 24 24 < x ≤ 28 28 < x ≤ 38	M6 M8 M6 M10	5 6 5 8	14 35 14 79	150	30
	2	x ≤ 14 14 < x ≤ 19 19 < x ≤ 24 24 < x ≤ 28	M5 M6 M8 M6	4 5 6 5	9,5 14 35 14	120	20
	3	x ≤ 19	M6	5	14	120	20
050	1	x ≤ 24 24 < x ≤ 38 38 < x ≤ 48	M8 M10 M12	6 8 10	35 79 135	200	50
	2	x ≤ 19 19 < x ≤ 24 24 < x ≤ 38	M6 M8 M10	5 6 8	14 35 79	150	30
	3	x ≤ 24	M8	6	35	150	30
110	1	x ≤ 38 38 < x ≤ 48	M10 M12	8 10	79 135	250	200
	2	x ≤ 24 24 < x ≤ 38 38 < x ≤ 48	M8 M10 M12	6 8 10	35 79 135	200	50
	3	x ≤ 38	M10	8	79	200	50

TP+		'x' [mm]	(H)/ DIN ISO 4762	[mm]	[Nm] 12.9	[N]	
300	1	x≤55	M12	10	135	300	—
	2	x≤48	M12	10	135	250	—
	3	x≤38	M10	8	79	250	—
500	1	x≤60	M16	14	330	300	—
	2	x≤48	M12	10	135	250	—
	3	x≤38 38 < x ≤48	M10 M12	8 10	79 135	250	—

Tbl-10:

3.10

TP+ /	PCD Ø [mm]	x [] x [mm]	/	[Nm]
004 MF	79	8 x 4,5	M4 / 12.9	4,55
010 MF	109	8 x 5,5	M5 / 12.9	9
025 MF	135	8 x 5,5	M5 / 12.9	9
050 MF	168	12 x 6,6	M6 / 12.9	15,4
110 MF	233	12 x 9,0	M8 / 12.9	37,3
300 MF	280	16 x 13,5	M12 / 12.9	126
500 MF	310	16 x 13,5	M12 / 12.9	126
MA = (High Torque)				
010 MA	109	16 x 5,5	M5 / 12.9	9
025 MA	135	16 x 5,5	M5 / 12.9	9
050 MA	168	24 x 6,6	M6 / 12.9	15,4
110 MA	233	24 x 9,0	M8 / 12.9	37,3
300 MA	280	32 x 13,5	M12 / 12.9	126
500 MA	285	32 x 13,5	M12 / 12.9	126

Tbl-11:

3.11

TP+ /	PCD Ø [mm]	x x [] x [mm] x [mm]	[Nm] 12.9
004 MF	31,5	8 x M5 x 7	9
010 MF	50	8 x M6 x 10	15,4
025 MF	63	12 x M6 x 12	15,4
050 MF	80	12 x M8 x 15	37,3
110 MF	125	12 x M10 x 20	73,4
300 MF	140	12 x M16 x 31	310
500 MF	160	12 x M20 x 31	604
010 MA	50	12 x M6 x 10	15,4
025 MA	63	12 x M8 x 12	37,3
050 MA	80	12 x M10 x 15	73,4
110 MA	125	12 x M12 x 19	126
300 MA	145	12 x M20 x 31	604
500 MA	166	12 x M24 x 37	1042
MA = (High Torque)			

Tbl-12:

3.12

- VDI 2230(2003 2)
- $\mu = 0,10$
- 90%
- ISO 6789 A D II

•

/	[Nm]												
	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
8.8 / 8	1,15	2,64	5,2	9,0	21,5	42,5	73,5	118	180	258	362	495	625
10.9 / 10	1,68	3,88	7,6	13,2	32,0	62,5	108	173	264	368	520	700	890
12.9 / 12	1,97	4,55	9,0	15,4	37,5	73,5	126	202	310	430	605	820	1040

Tbl-13:

3.13

- ,
- <http://www.wittenstein-alpha.de>,
- (2093-D...)

	가 1
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3.14 가



www.wittenstein-alpha.de/betriebsanleitungen
PDF(1MB)



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