



WITTENSTEIN

alpha

**SP<sup>+</sup>**



## Revision history

Revision	Date	Comment	Chapter
01	27.10.10	New version	All
02	18.04.11	Technical Data	2
03	09.05.12	Safety	All
04	28.11.12	Safety	All

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Motor mounting video

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1

가 ( )

가

1.1

가 :

•

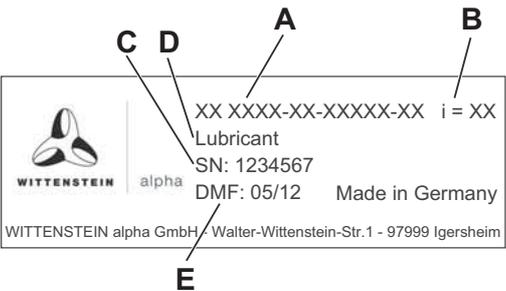
⇒

①

가

2

2.1

	A	( 3.14 " " )
	B	
	C	
	D	
	E	

Tbl-1: ( )

2.2

가

2.3

가

2.4

•

•

( )

•

•

/ ( . 가 )

•

•

•

• WITTENSTEIN alpha GmbH

2.5

	<p><b>⚠ 경고</b></p>
	<p>가 - / , ( )</p>
	<p>가 가 가 가 ( )</p>
	<p>( 2.3 " 가 " )</p>
	<p>가 가</p>
	<p><b>⚠ 주의</b></p>
	<p>가</p>
	<p><b>참 고</b></p> <p>가 ( ) ( )</p>



2.6

0 °C ~ +40 °C

2

"

"

2.7

- 
- 

①

3

"

"

2.8

		500 가 3	3	
	X	X	X	
	X	X		X

Tbl-2:

2.9

( , , )

- 

가	가	
가	가	
	가 가	
가	가	
가		
		가

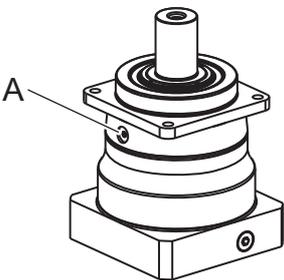
Tbl-3:

3

- ( 2.5 " " ).
- ①
- ① ( . , )  
 alpheno<sup>®</sup>, RP+, TP+, TP+ HIGH TORQUE WITTENSTEIN alpha

3.1 SP+ 140

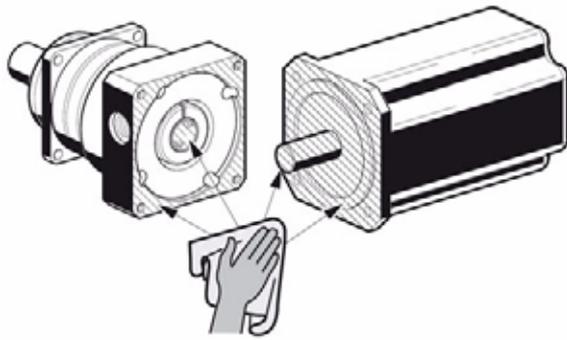
3.2 SP+ 180  
 SP+ 180 (A) ( . DIN 580 )

	SP+	(A) [ Ø ]
	180	M8
	210	M10
	240	M12

Tbl-4:

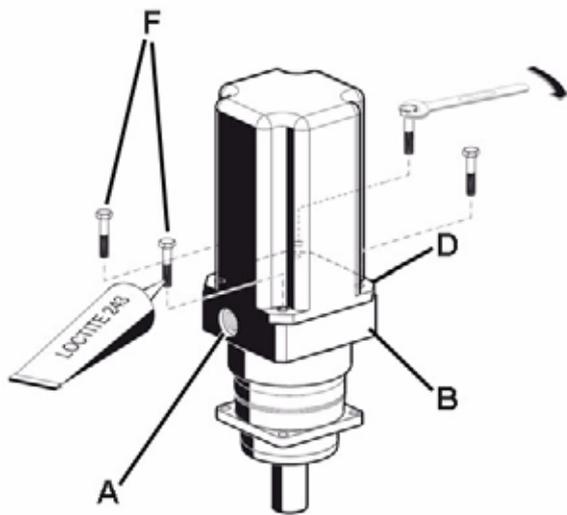
3.3

	참 고	
	가	•
	•	
		( ) ( )
		( )
		( . Loctite <sup>®</sup> 573 574)
	•	



3.4

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



- 가
- 가
- ① 가
- (B) (A)
- (H, " -5" )가
- (H)
- 
- 

①

①

①

①

( ) 가 ( )  
 " -5" )  
 (D) (B) 가

	H	
	I	[ ]
	J	
	K	
	L	

Tbl-5:

- ① 가 :
- SP+100 28mm ( )
- SP+ 140 > 28mm
- (F) ( . Loctite 243)
- (F) (D) (B)
- (I) (H)
- : 12.9
- : 8.8
- ① 3.9 " " " -12"
- (H)
- (B) (A)
- ① " -6"

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

Tbl-6:

3.5

- 
- ( . Loctite 243)
- 
- ①
- ① ( , )
- ① 3.10 " " " -13"

3.6

- 
- 
- 
- 
- 3.6.1 " "

	참 고
	<ul style="list-style-type: none"> <li>• 가</li> <li>• !</li> <li>•</li> <li>•</li> <li>• (" -7" )</li> </ul>

SP+	060	075	100	140	180	210	240
Fa max[N]	9250	10750	18500	31250	49750	83250	97750

Tbl-7: (s0) = 1,8 (Fr) = 0 가

3.6.1

( 385 N/mm<sup>2</sup> ).

h6 (DIN ISO 286)

참 고

가

①

참 고

•

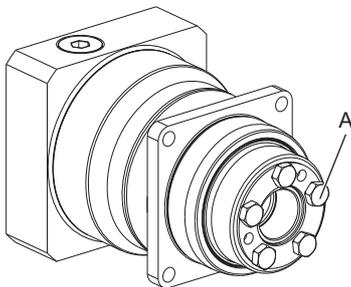
①

3.11 "

" " -14"

참 고

가



•

(A)

•

①

" -8"

SP+		[Nm]	
		10.9	Ax-80 ) <sup>1</sup>
060, 075	M6	12	9
100 180	M8	29	21
		) <sup>1</sup> Ax-80 = ( )	

Tbl-8:

- 
- (A) 가 2 3.6.2 " "
- ①

3.6.2

- ① 가 가

	참 고
	$\mu = 0,04$

- ① :

Molykote 321 R ( )		DOW Corning
Molykote ( )		DOW Corning
Molykote G Rapid		DOW Corning
Aemasol MO 19 P		A. C. Matthes
Molykombin UMFT 1		Klüber Lubrication
Unimoly P 5		Klüber Lubrication

Tbl-9:

- 
- ①
- 3.6.1 " "

3.7

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

3.8

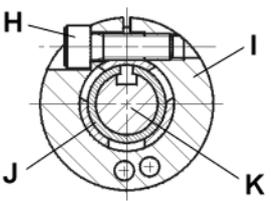
	( ) ( )
---	---------

가 :

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

Tbl-10:

3.9

	H	
	I	( )
	J	
	K	

Tbl-11: ,

SP+		- ∅ "x" [mm]	(H) / DIN ISO 4762	[mm]	[Nm]		[N]	
					12.9 ( )	8.8 ( )		
060	1	x ≤ 11	M4	3	4,1	2,8	100	10
		11 < x ≤ 14	M5	4	9,5	5,6		
		14 < x ≤ 19	M6	5	14	9,5		
	2	x ≤ 11	M4	3	4,1	2,8	80	5
		11 < x ≤ 14	M5	4	9,5	5,6		
075	1	x ≤ 14	M5	4	9,5	5,6	120	20
		14 < x ≤ 19	M6	5	14	9,5		
		19 < x ≤ 24	M8	6	35	23		
	2	x ≤ 11	M4	3	4,1	2,8	100	10
		11 < x ≤ 14	M5	4	9,5	5,6		
		14 < x ≤ 19	M6	5	14	9,5		
100	1	x ≤ 19	M6	5	14	9,5	150	30
		19 < x ≤ 24	M8	6	35	23		
		24 < x ≤ 28	M6	5	14	9,5		
		28 < x ≤ 38	M10	8	79	45		
100	2	x ≤ 14	M5	4	9,5	5,6	120	20
		14 < x ≤ 19	M6	5	14	9,5		
		19 < x ≤ 24	M8	6	35	23		
140	1	x ≤ 24	M8	6	35	23	200	50
		24 < x ≤ 38	M10	8	79	45		
		38 < x ≤ 48	M12	10	135	78		

SP+		Ø "x" [mm]	(H) / DIN ISO 4762	[mm]	[Nm]		[N]	
					12.9 ( )	8.8 ( )		
140	2	x ≤ 19	M6	5	14	9,5	150	30
		19 < x ≤ 24	M8	6	35	23		
		24 < x ≤ 38	M10	8	79	45		
180	1	x ≤ 38	M10	8	79	45	250	200
		38 < x ≤ 48	M12	10	135	78		
	2	x ≤ 24	M8	6	35	23	200	50
		24 < x ≤ 38	M10	8	79	45		
210	1	48 < x ≤ 55	M12	10	135	78	300	—
	2	38 < x ≤ 48	M12	10	135	78	250	200
240	1	48 < x ≤ 60	M16	14	330	195	300	—
	2	38 < x ≤ 48	M12	10	135	78	250	200

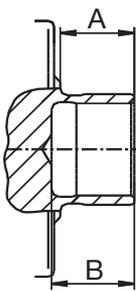
Tbl-12:

## 3.10

SP+	PCD Ø [mm]	Ø [mm]	/	[Nm]
060	68	5,5	M5 / 12.9	9
075	85	6,6	M6 / 12.9	15,4
100	120	9,0	M8 / 12.9	37,3
140	165	11,0	M10 / 12.9	73,4
180	215	13,0	M12 / 12.9	126
210	250	17,0	M16 / 12.9	310
240	290	17,0	M16 / 12.9	310

Tbl-13:

## 3.11

	SP+	(A)	(B)
		[mm]	[mm]
	060	14	19
	075	16	21
	100	20	25
	140	25	30
	180	25	30

Tbl-14:

3.12

- VDI 2230 (2003 2 )
- $\mu = 0,10$
- 90%

	[Nm]												
/	M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
8.8 / 8	1,15	2,64	5,24	8,99	21,7	42,7	73,5	118	180	258	363	493	625
10.9 / 10	1,68	3,88	7,69	13,2	31,9	62,7	108	173	265	368	516	702	890
12.9 / 12	1,97	4,55	9,00	15,4	37,3	73,4	126	203	310	431	604	821	1042

Tbl-15:

3.13

<http://www.wittenstein-alpha.de>



3.14



: [www.wittenstein-alpha.de/en/operating-manuals](http://www.wittenstein-alpha.de/en/operating-manuals)  
 PDF ( 1MB)  
 가 .



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