BOB Bobolowski GmbH

DTL

The new synchronous linear motors

Designer`s dream!
We bring dynamics to linear motion!

High thrust combined with
- Compact design
- Little moving mass
- High efficiency
- No attraction force

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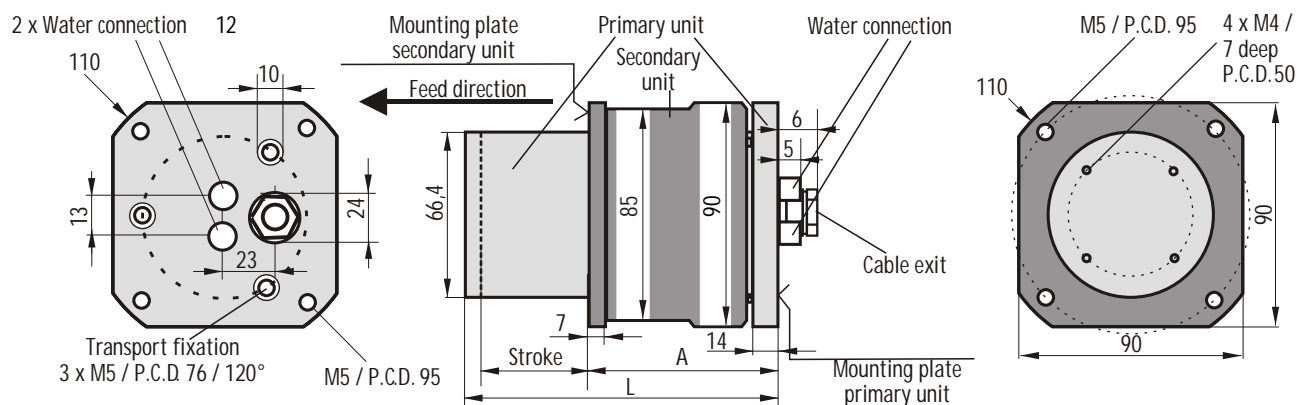Fax : +49 (0)7627-8653
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The new BOB-Motors make it possible

DTL 85

Synchronous linear motors
for standard servo-amplifiers
with 3-phase windings
bearingless design with water-cooling
The motion drive from BOB
for short strokes

Motor	Thrust			Stroke		Mass		Dimensions	
Type	$F_{0\ 20°C}$	$F_{C\ 130°C}$	F_{max}			Primary unit	Second. unit	L	A
	(N)	(N)	(N)	(mm)		(kg)	(kg)	(mm)	(mm)
DTL-85 / 102- 3stw - 1 - S				27,5		1,3		116,0	
DTL-85 / 103- 3stw - 1 - S				55,0		1,8		143,5	
DTL-85 / 104- 3stw - 1 - S	141	118	217	82,5		2,2	0,8	171,0	79,5
DTL-85 / 105- 3stw - 1 - S				110,0		2,6		198,5	
DTL-85 / 106- 3stw - 1 - S				137,5		3,1		226,0	
DTL-85 / 203- 3stw - 1 - S				27,5		1,8		143,5	
DTL-85 / 204- 3stw - 1 - S				55,0		2,2		171,0	
DTL-85 / 205- 3stw - 1 - S	279	235	434	82,5		2,7	1,2	198,5	107
DTL-85 / 206- 3stw - 1 - S				110,0		3,1		226,0	
DTL-85 / 207- 3stw - 1 - S				137,5		3,5		253,5	
DTL-85 / 304- 3stw - 1 - S				27,5		2,2		171,0	
DTL-85 / 305- 3stw - 1 - S				55,0		2,6		198,5	
DTL-85 / 306- 3stw - 1 - S	421	352	651	82,5		3,1	1,6	226,0	134,5
DTL-85 / 307- 3stw - 1 - S				110,0		3,5		253,5	
DTL-85 / 308- 3stw - 1 - S				137,5		4,0		281,0	
DTL-85 / 405- 3stw - 1 - S				27,5		2,6		198,5	
DTL-85 / 406- 3stw - 1 - S				55,0		3,1		226,0	
DTL-85 / 407- 3stw - 1 - S	561	468	868	82,5		3,5	2,0	253,5	162
DTL-85 / 408- 3stw - 1 - S				110,0		4,0		281,0	
DTL-85 / 409- 3stw - 1 - S				137,5		4,4		308,5	
DTL-85 / 506- 3stw - 1 - S				27,5		3,1		226,0	
DTL-85 / 507- 3stw - 1 - S				55,0		3,5		253,5	
DTL-85 / 508- 3stw - 1 - S	700	585	1086	82,5		4,0	2,4	281,0	189,5
DTL-85 / 509- 3stw - 1 - S				110,0		4,4		308,5	
DTL-85 / 510- 3stw - 1 - S				137,5		4,9		336,0	
DTL-85 / 607- 3stw - 1 - S				27,5		3,5		253,5	
DTL-85 / 608- 3stw - 1 - S				55,0		4,0		281,0	
DTL-85 / 609- 3stw - 1 - S	839	701	1303	82,5		4,4	2,8	308,5	217
DTL-85 / 610- 3stw - 1 - S				110,0		4,9		336,0	
DTL-85 / 708- 3stw - 1 - S				27,5		4,0		281,0	
DTL-85 / 709- 3stw - 1 - S	978	817	1520	55,0		4,4	3,2	308,5	244,5
DTL-85 / 710- 3stw - 1 - S				82,5		4,9		336,0	

Maximum permitted intermediate circuit voltage $U_{DC} = 700\ V$ ($U_{eff} = 500\ V$)

We serve a wide range of linear and servo motors. Please ask for additional, detailed information
Own design and production   All products Made in Germany

BOB Bobolowski GmbH

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Bestellschlüssel
DTL
2005-06-09

BOB synchronous linear motor

Type DTL description and order-key-code

Series DTL

compare tubular, three-phase, synchronous linear motors with ironcore windings and integrated water-cooling.

These motors consist of two bearingless, interconnecting cylinders.

The guideance of the motor is guaranteed by the bearing of the load.

Use:

Typical applications are z-axes of drilling- and milling-machines etc. as well as x-y-tables with short strokes.

Advantages:

These motors are remarkable due to their excellent ratio of power to weight.
By means of the bearingless design the overstressing of driving-shaft and bearing is avoided.

The shown data

are valid for water-cooling at a winding-temperature of 130°C and an ambient temperature of 20°C.
(Cooling water temperature 20°C and temperature increase of cooling water 10°K)

Order-key-code   DTL FFF / SPP - 3stw - x - m

Type
Code for motor flange
Code for length of secondary unit
Code for length of primary unit
3-phase
Code for connection
  S = Star-connection

Temperature sensor
  N = NTC 130°C
  P = PTC 130°C
  K = KTY 84-130
Code for winding
  Determines maximum speed
Code for magnet type
  1 = Standard
Modification
  S = Standard
  C = Modification as requested by customer
      (with Id.-No.-data-sheet)

Length of of connection-cable = 0,6 m (Standard)
Other length on request (must be ordered seperately in every order)

BOB Synchronous linear motor

Water-cooling

DTL 85 / 1.. - 3StZ - 1 - S   Max. permitted input voltage: 700 V_{DC} ($\cong$ 500 V_{eff})

	Symbol	Unit	..02 ..	..03 ..	..04 ..	..05 ..	..06 ..
Force (Cu: 20°C)	F_0	N	144	142	141	141	140
Continuous force (Cu:130°C)	F_C	N	120	119	118	118	117
Maximum force	F_{max}	N	217	217	217	217	217
Max. permitted loss cooled	$P_{v\,max}$	W	236	346	455	564	674
Max. permitted loss uncooled	$P_{v\,max\,o.K.}$	W	68,4	93,6	118,9	144,2	169,4
Thermal resistance at V/t$_{min}$	R_{th}	K/W	0,44	0,30	0,23	0,19	0,16
Motor constant	K_m	N/W$^{1/2}$	9,4	7,6	6,6	5,9	5,4
Force constant	K_t	N/A	39,2	39,2	39,2	39,2	39,2
Back EMF constant	K_e	Vs/m	22,6	22,6	22,6	22,6	22,6
elektr. Zeitkonstante	τ_e	ms	0,76	0,53	0,41	0,35	0,30
Currant (Cu: 20°C)	I_0	A	3,67	3,63	3,60	3,59	3,58
Continuous current (Cu: 130°C)	I_C	A	3,07	3,03	3,01	3,00	2,99
Maximum current	I_{max}	A	7,9	7,9	7,9	7,9	7,9
Demagnetising current	I_p	A	20	20	20	20	20
DC-resistance Ph/Ph (Cu: 20°C)	R	Ω	11,68	17,53	23,37	29,21	35,05
Inductance Ph/Ph	L	mH	8,84	9,25	9,67	10,09	10,51
Pole pitch	τ_p	mm	13,75	13,75	13,75	13,75	13,75
Max. permitted pressure	p	MPa	0,3	0,3	0,3	0,3	0,3
Cooling water flow min.	V/t$_{min}$	l/min	0,3	0,4	0,5	0,7	0,8
Cooling water temperature max.	T	°C	20	20	20	20	20
Cooling water temp. increase max.	ΔT	K	10	10	10	10	10
Mass secondary unit	m_L	kg	0,8	0,8	0,8	0,8	0,8
Total mass	m	kg	2,4	2,8	3,3	3,7	4,2
Maximum acceleration *	a_{max}	m/s^2	239	239	239	239	239
Maximum speed *	v_{max}	m/s	2,57	3,63	4,44	5,13	5,74
Responding working voltage *	U_{eff}	V	164	240	311	378	443

Electrical figures apply for sinusoidal commutation and are
r.m.s. values or refer to r.m.s. values respectively.
Data shown with * are theoretical maximum values.

Connection

Cable :
4 G 0,75 +
2 x (2 x 0,34)
StD-CY
(shielded)

MT :
NTC / 130 °C (t = N)
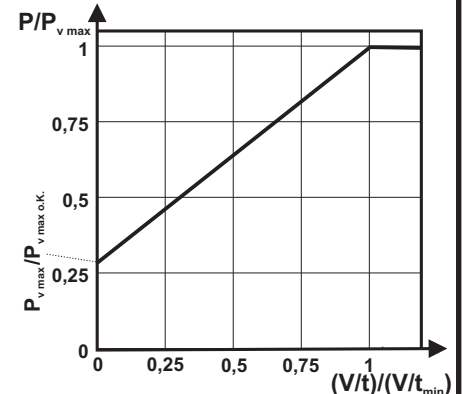PTC / 130 °C (t = P)
KTY 84 - 130 (t = K)

Connection	Code	
Phase U	1 (BK)	BK
Phase V	2 (BK)	BN
Phase W	3 (BK)	BU
PE	GNYE	
MT +	WH	GN
MT -	BN	YE
Shield	WH or "SHIELD"	

Minimum bending radius for
flexing: 20 x cable diameter
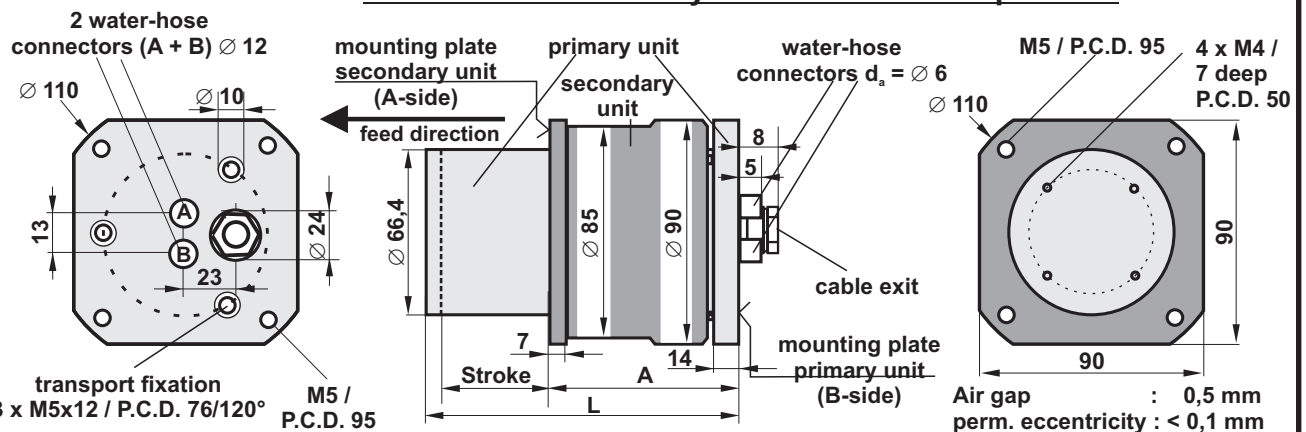static: 6 x cable diameter

$P_v = f (V/t)$

Caution!

Refer to
mounting
instruc-
tions !

Dimensions

shown with secondary unit in B-side end-position

2 water-hose connectors (A + B) ⌀ 12
∅ 110
∅ 10
13
∅ 24
23
transport fixation
3 x M5x12 / P.C.D. 76/120°
M5 / P.C.D. 95

mounting plate secondary unit (A-side)
feed direction
primary unit
secondary unit
∅ 66,4
∅ 85
∅ 90
water-hose connectors d_a = ∅ 6
8
5
7
Stroke
14
A
L
cable exit
mounting plate primary unit (B-side)

M5 / P.C.D. 95
∅ 110
4 x M4 / 7 deep P.C.D. 50
90
90

Air gap : 0,5 mm
perm. eccentricity : < 0,1 mm

Typ	Stroke	L	A	
			Delivery state	Operation state
DTL 85 / 102-...-S	27,5	116	79,5	82
DTL 85 / 103-...-S	55	143,5	79,5	82
DTL 85 / 104-...-S	82,5	171	79,5	82
DTL 85 / 105-...-S	110	198,5	79,5	82
DTL 85 / 106-...-S	137,5	226	79,5	82

Performance data are tolrated +/-10%. Measurements in mm.
The rights are reserved to make modification in the general sense of technical progress without previous notice.

BOB Synchronous linear motor

Water-cooling

DTL 85 / 2.. - 3StY - 1 - S   Max. permitted input voltage: 700 V_{DC} ($\cong$ 500 V_{eff})

	Symbol	Unit	..03 ..	..04 ..	..05 ..	..06 ..	..07 ..
Force (Cu: 20°C)	F_0	N	285	283	282	281	280
Continuous force (Cu:130°C)	F_C	N	238	236	235	235	234
Maximum force	F_{max}	N	434	434	434	434	434
Max. permitted loss cooled	$P_{v\,max}$	W	346	456	565	675	784
Max. permitted loss uncooled	$P_{v\,max\,o.K.}$	W	94,2	119,7	145,1	170,5	196,0
Thermal resistance at V/t$_{min}$	R_{th}	K/W	0,30	0,23	0,19	0,16	0,13
Motor constant	K_m	N/W$^{1/2}$	15,3	13,2	11,8	10,8	10,0
Force constant	K_t	N/A	39,0	39,0	39,0	39,0	39,0
Back EMF constant	K_e	Vs/m	22,5	22,5	22,5	22,5	22,5
elektr. Zeitkonstante	τ_e	ms	1,99	1,53	1,25	1,07	0,94
Currant (Cu: 20°C)	I_0	A	7,30	7,25	7,22	7,21	7,19
Continuous current (Cu: 130°C)	I_C	A	6,10	6,06	6,04	6,02	6,01
Maximum current	I_{max}	A	15,9	15,9	15,9	15,9	15,9
Demagnetising current	I_p	A	40	40	40	40	40
DC-resistance Ph/Ph (Cu: 20°C)	R	Ω	4,33	5,78	7,22	8,67	10,11
Inductance Ph/Ph	L	mH	8,62	8,83	9,04	9,25	9,46
Pole pitch	τ_p	mm	13,75	13,75	13,75	13,75	13,75
Max. permitted pressure	p	MPa	0,3	0,3	0,3	0,3	0,3
Cooling water flow min.	V/t$_{min}$	l/min	0,4	0,5	0,7	0,8	0,9
Cooling water temperature max.	T	°C	20	20	20	20	20
Cooling water temp. increase max.	ΔT	K	10	10	10	10	10
Mass secondary unit	m_L	kg	1,3	1,3	1,3	1,3	1,3
Total mass	m	kg	3,3	3,7	4,1	4,6	5,0
Maximum acceleration *	a_{max}	m/s²	323	323	323	323	323
Maximum speed *	v_{max}	m/s	2,98	4,22	5,17	5,96	6,67
Responding working voltage *	U_{eff}	V	171	239	296	348	397

Electrical figures apply for sinusoidal commutation and are r.m.s. values or refer to r.m.s. values respectively.
Data shown with * are theoretical maximum values.

Connection

Cable :
4 G 0,75 +
2 x (2 x 0,34)
StD-CY
(shielded)

MT :
NTC / 130 °C (t = N)
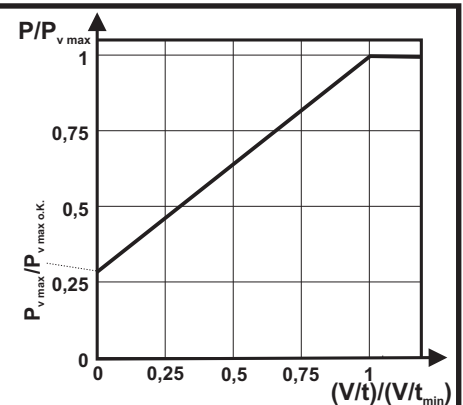PTC / 130 °C (t = P)
KTY 84 - 130 (t = K)

Connection	Code	
Phase U	1 (BK)	BK
Phase V	2 (BK)	BN
Phase W	3 (BK)	BU
PE	GNYE	
MT +	WH	GN
MT -	BN	YE
Shield	WH or "SHIELD"	

Minimum bending radius for
flexing: 20 x cable diameter
static: 6 x cable diameter

$P_v = f (V/t)$

Caution!

Refer to mounting instructions !

Dimensions

shown with secondary unit in B-side end-position

2 water-hose connectors (A + B) ⌀ 12
∅ 110
∅ 10
13
∅ 24
23
transport fixation
3 x M5x12 / P.C.D. 76/120°
M5 / P.C.D. 95

mounting plate secondary unit (A-side)
feed direction
primary unit
secondary unit
⌀ 66,4
⌀ 85
⌀ 90
7
Stroke
A
L
14
mounting plate primary unit (B-side)

water-hose connectors d$_a$ = ⌀ 6
8
5
cable exit

M5 / P.C.D. 95
∅ 110
4 x M4 / 7 deep P.C.D. 50
90
90

Air gap : 0,5 mm
perm. eccentricity : < 0,1 mm

Typ	Stroke	L	Delivery state	A Operation state
DTL 85 / 203-...-S	27,5	143,5	107	109,5
DTL 85 / 204-...-S	55	171	107	109,5
DTL 85 / 205-...-S	82,5	198,5	107	109,5
DTL 85 / 206-...-S	110	226	107	109,5
DTL 85 / 207-...-S	137,5	253,5	107	109,5

Performance data are tolrated +/-10%. Measurements in mm.
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BOB Bobolowski GmbH

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Web : www.bobolowski.com

DTL085-Kat_
(ES05_US01)-
2005-06-14

BOB Synchronous linear motor

Water-cooling

DTL 85 / 3.. - 3StX - 1 - S   Max. permitted input voltage: 700 V_{DC} ($\cong$ 500 V_{eff})

	Symbol	Unit	..04 ..	..05 ..	..06 ..	..07 ..	..08 ..
Force (Cu: 20°C)	F_0	N	424	422	421	421	420
Continuous force (Cu:130°C)	F_C	N	354	353	352	351	351
Maximum force	F_{max}	N	651	651	651	651	651
Max. permitted loss cooled	$P_{v\,max}$	W	455	565	674	784	893
Max. permitted loss uncooled	$P_{v\,max\,o.K.}$	W	119,2	144,5	169,9	195,2	220,5
Thermal resistance at V/t$_{min}$	R_{th}	K/W	0,23	0,19	0,16	0,13	0,12
Motor constant	K_m	N/W$^{1/2}$	19,9	17,8	16,2	15,0	14,1
Force constant	K_t	N/A	40,5	40,5	40,5	40,5	40,5
Back EMF constant	K_e	Vs/m	23,4	23,4	23,4	23,4	23,4
elektr. Zeitkonstante	τ_e	ms	3,10	2,52	2,13	1,86	1,65
Currant (Cu: 20°C)	I_0	A	10,47	10,43	10,40	10,38	10,37
Continuous current (Cu: 130°C)	I_C	A	8,75	8,72	8,69	8,68	8,66
Maximum current	I_{max}	A	23,0	23,0	23,0	23,0	23,0
Demagnetising current	I_p	A	60	60	60	60	60
DC-resistance Ph/Ph (Cu: 20°C)	R	Ω	2,77	3,46	4,15	4,84	5,54
Inductance Ph/Ph	L	mH	8,58	8,72	8,86	9,01	9,15
Pole pitch	τ_p	mm	13,75	13,75	13,75	13,75	13,75
Max. permitted pressure	p	MPa	0,3	0,3	0,3	0,3	0,3
Cooling water flow min.	V/t$_{min}$	l/min	0,5	0,7	0,8	0,9	1,0
Cooling water temperature max.	T	°C	20	20	20	20	20
Cooling water temp. increase max.	ΔT	K	10	10	10	10	10
Mass secondary unit	m_L	kg	1,7	1,7	1,7	1,7	1,7
Total mass	m	kg	4,1	4,5	5,0	5,4	5,9
Maximum acceleration *	a_{max}	m/s^2	366	366	366	366	366
Maximum speed *	v_{max}	m/s	3,17	4,49	5,50	6,35	7,10
Responding working voltage *	U_{eff}	V	203	284	349	407	460

Electrical figures apply for sinusoidal commutation and are
r.m.s. values or refer to r.m.s. values respectively.
Data shown with * are theoretical maximum values.

$P_v = f(V/t)$

Caution!

Refer to mounting instructions !

Connection

Cable :
4 G 0,75 +
2 x (2 x 0,34)
StD-CY
(shielded)

MT :
NTC / 130 °C (t = N)
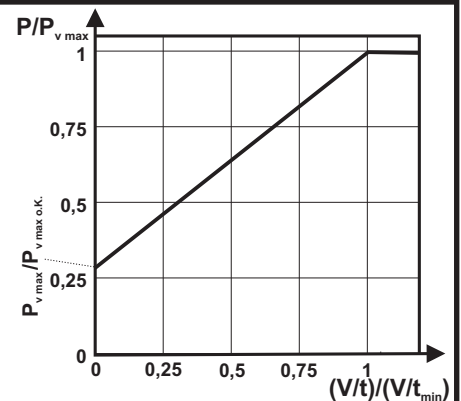PTC / 130 °C (t = P)
KTY 84 - 130 (t = K)

Connection	Code	
Phase U	1 (BK)	BK
Phase V	2 (BK)	BN
Phase W	3 (BK)	BU
PE	GNYE	
MT +	WH	GN
MT -	BN	YE
Shield	WH or "SHIELD"	

**Minimum bending radius for
flexing: 20 x cable diameter
static: 6 x cable diameter**

Dimensions

shown with secondary unit in B-side end-position

2 water-hose
connectors (A + B) ∅ 12

∅ 110

∅ 10

13

∅ 24

23

transport fixation
3 x M5x12 / P.C.D. 76/120°

M5 /
P.C.D. 95

mounting plate
secondary unit
(A-side)

feed direction

primary unit

secondary
unit

∅ 66,4

∅ 85

∅ 90

water-hose
connectors d_a = ∅ 6

8

5

cable exit

7

Stroke

14

A

L

mounting plate
primary unit
(B-side)

M5 / P.C.D. 95

∅ 110

4 x M4 /
7 deep
P.C.D. 50

90

90

Air gap   :   0,5 mm
perm. eccentricity : < 0,1 mm

Typ	Stroke	L	A	
			Delivery state	Operation state
DTL 85 / 304-...-S	27,5	171	134,5	137
DTL 85 / 305-...-S	55	198,5	134,5	137
DTL 85 / 306-...-S	82,5	226	134,5	137
DTL 85 / 307-...-S	110	253,5	134,5	137
DTL 85 / 308-...-S	137,5	281	134,5	137

Performance data are tolrated +/-10%. Measurements in mm.
The rights are reserved to make modification in the general sense of technical progress without previous notice.

BOB Synchronous linear motor

Water-cooling

DTL 85 / 4.. - 3StX - 1 - S Max. permitted input voltage: 700 V_{DC} ($\cong$ 500 V_{eff})

	Symbol	Unit	..05 ..	..06 ..	..07 ..	..08 ..	..09 ..
Force (Cu: 20°C)	F_0	N	563	562	561	560	559
Continuous force (Cu:130°C)	F_C	N	471	469	468	468	467
Maximum force	F_{max}	N	868	868	868	868	868
Max. permitted loss cooled	$P_{v\,max}$	W	565	674	784	893	1002
Max. permitted loss uncooled	$P_{v\,max\,o.K.}$	W	144,5	169,9	195,2	220,5	245,8
Thermal resistance at V/t$_{min}$	R_{th}	K/W	0,19	0,16	0,13	0,12	0,10
Motor constant	K_m	$N/W^{1/2}$	23,7	21,6	20,0	18,7	17,7
Force constant	K_t	N/A	54,0	54,0	54,0	54,0	54,0
Back EMF constant	K_e	Vs/m	31,2	31,2	31,2	31,2	31,2
elektr. Zeitkonstante	τ_e	ms	2,52	2,13	1,86	1,65	1,49
Currant (Cu: 20°C)	I_0	A	10,43	10,40	10,38	10,37	10,36
Continuous current (Cu: 130°C)	I_C	A	8,72	8,69	8,68	8,66	8,65
Maximum current	I_{max}	A	23,0	23,0	23,0	23,0	23,0
Demagnetising current	I_p	A	60	60	60	60	60
DC-resistance Ph/Ph (Cu: 20°C)	R	Ω	3,46	4,15	4,84	5,54	6,23
Inductance Ph/Ph	L	mH	8,72	8,86	9,01	9,15	9,30
Pole pitch	τ_p	mm	13,75	13,75	13,75	13,75	13,75
Max. permitted pressure	p	MPa	0,3	0,3	0,3	0,3	0,3
Cooling water flow min.	V/t$_{min}$	l/min	0,7	0,8	0,9	1,0	1,1
Cooling water temperature max.	T	°C	20	20	20	20	20
Cooling water temp. increase max.	ΔT	K	10	10	10	10	10
Mass secondary unit	m_L	kg	2,1	2,1	2,1	2,1	2,1
Total mass	m	kg	5,0	5,4	5,8	6,3	6,7
Maximum acceleration *	a_{max}	m/s²	392	392	392	392	392
Maximum speed *	v_{max}	m/s	3,28	4,64	5,69	6,57	7,34
Responding working voltage *	U_{eff}	V	246	339	415	482	543

Electrical figures apply for sinusoidal commutation and are
r.m.s. values or refer to r.m.s. values respectively.
Data shown with * are theoretical maximum values.

Connection

Cable :
4 G 0,75 +
2 x (2 x 0,34)
StD-CY
(shielded)

MT :
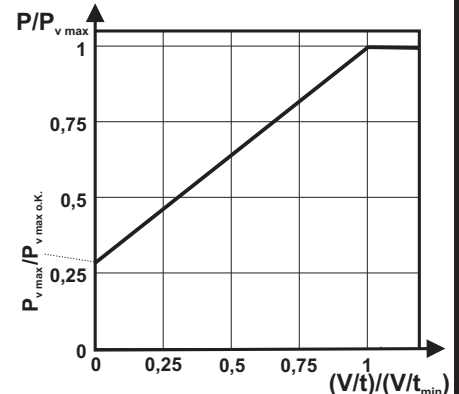NTC / 130 °C (t = N)
PTC / 130 °C (t = P)
KTY 84 - 130 (t = K)

Connection	Code	
Phase U	1 (BK)	BK
Phase V	2 (BK)	BN
Phase W	3 (BK)	BU
PE	GNYE	
MT +	WH	GN
MT -	BN	YE
Shield	WH or "SHIELD"	

Minimum bending radius for
flexing: 20 x cable diameter
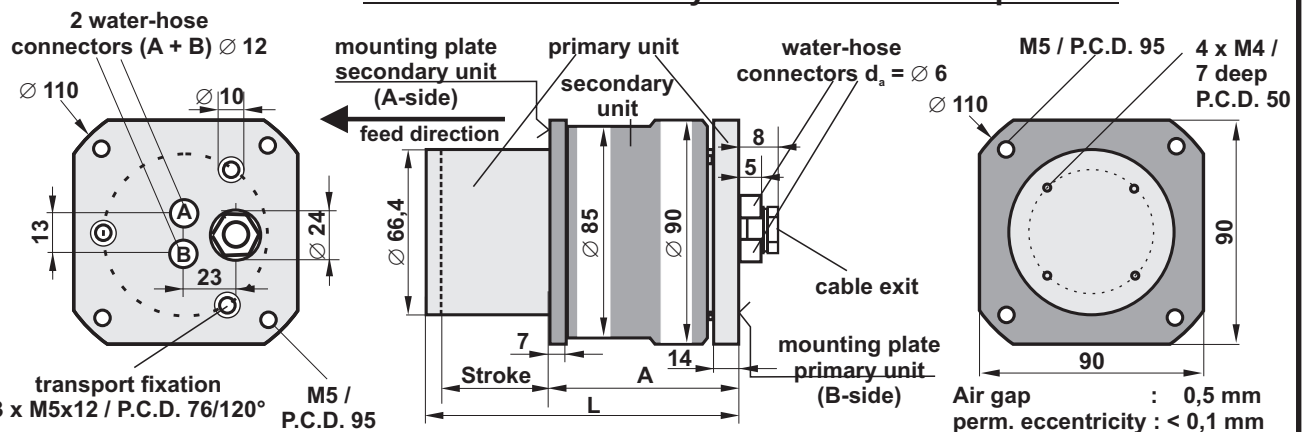static: 6 x cable diameter

$P_v = f(V/t)$

Caution!

Refer to
mounting
instruc-
tions !

Dimensions

shown with secondary unit in B-side end-position

2 water-hose
connectors (A + B) $\varnothing$ 12

$\varnothing$ 110

$\varnothing$ 10

13 — 24

23

transport fixation
3 x M5x12 / P.C.D. 76/120°

M5 /
P.C.D. 95

mounting plate
secondary unit
(A-side)

feed direction

primary unit

secondary
unit

$\varnothing$ 66,4 $\varnothing$ 85 $\varnothing$ 90

7 14

Stroke A

L

water-hose
connectors $d_a = \varnothing$ 6

8

5

cable exit

mounting plate
primary unit
(B-side)

M5 / P.C.D. 95

4 x M4 /
7 deep
P.C.D. 50

$\varnothing$ 110

90

90

Air gap : 0,5 mm
perm. eccentricity : < 0,1 mm

Typ	Stroke	L	Delivery state A	Operation state
DTL 85 / 405-...-S	27,5	198,5	162	164,5
DTL 85 / 406-...-S	55	226	162	164,5
DTL 85 / 407-...-S	82,5	253,5	162	164,5
DTL 85 / 408-...-S	110	281	162	164,5
DTL 85 / 409-...-S	137,5	308,5	162	164,5

Performance data are tolrated +/-10%. Measurements in mm.
The rights are reserved to make modification in the general sense of technical progress without previous notice.

BOB Synchronous linear motor

Water-cooling

DTL 85 / 5.. - 3StX - 1 - S — Max. permitted input voltage: 700 V_{DC} ($\cong$ 500 V_{eff})

	Symbol	Unit	..06 ..	..07 ..	..08 ..	..09 ..	..10 ..
Force (Cu: 20°C)	F_0	N	702	701	700	699	698
Continuous force (Cu:130°C)	F_C	N	587	586	585	584	584
Maximum force	F_{max}	N	1086	1086	1086	1086	1086
Max. permitted loss cooled	$P_{v\,max}$	W	674	784	893	1002	1112
Max. permitted loss uncooled	$P_{v\,max\,o.K.}$	W	169,9	195,2	220,5	245,8	271,2
Thermal resistance at V/t$_{min}$	R_{th}	K/W	0,16	0,13	0,12	0,10	0,09
Motor constant	K_m	$N/W^{1/2}$	27,0	25,0	23,4	22,1	20,9
Force constant	K_t	N/A	67,5	67,5	67,5	67,5	67,5
Back EMF constant	K_e	Vs/m	39,0	39,0	39,0	39,0	39,0
elektr. Zeitkonstante	τ_e	ms	2,13	1,86	1,65	1,49	1,36
Currant (Cu: 20°C)	I_0	A	10,40	10,38	10,37	10,36	10,35
Continuous current (Cu: 130°C)	I_C	A	8,69	8,68	8,66	8,65	8,65
Maximum current	I_{max}	A	23,0	23,0	23,0	23,0	23,0
Demagnetising current	I_p	A	60	60	60	60	60
DC-resistance Ph/Ph (Cu: 20°C)	R	Ω	4,15	4,84	5,54	6,23	6,92
Inductance Ph/Ph	L	mH	8,86	9,01	9,15	9,30	9,44
Pole pitch	τ_p	mm	13,75	13,75	13,75	13,75	13,75
Max. permitted pressure	p	MPa	0,3	0,3	0,3	0,3	0,3
Cooling water flow min.	V/t$_{min}$	l/min	0,8	0,9	1,0	1,1	1,3
Cooling water temperature max.	T	°C	20	20	20	20	20
Cooling water temp. increase max.	ΔT	K	10	10	10	10	10
Mass secondary unit	m_L	kg	2,5	2,5	2,5	2,5	2,5
Total mass	m	kg	5,8	6,3	6,7	7,1	7,6
Maximum acceleration *	a_{max}	m/s²	410	410	410	410	410
Maximum speed *	v_{max}	m/s	3,36	4,75	5,81	6,71	7,50
Responding working voltage *	U_{eff}	V	289	394	480	556	624

Electrical figures apply for sinusoidal commutation and are r.m.s. values or refer to r.m.s. values respectively.
Data shown with * are theoretical maximum values.

Connection

Cable :
4 G 0,75 +
2 x (2 x 0,34)
StD-CY
(shielded)

MT :
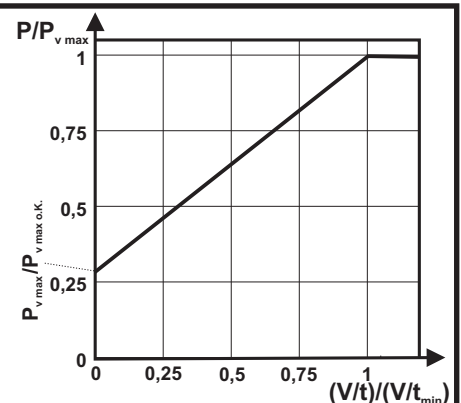NTC / 130 °C (t = N)
PTC / 130 °C (t = P)
KTY 84 - 130 (t = K)

Connection	Code	
Phase U	1 (BK)	BK
Phase V	2 (BK)	BN
Phase W	3 (BK)	BU
PE	GNYE	
MT +	WH	GN
MT -	BN	YE
Shield	WH or "SHIELD"	

Minimum bending radius for
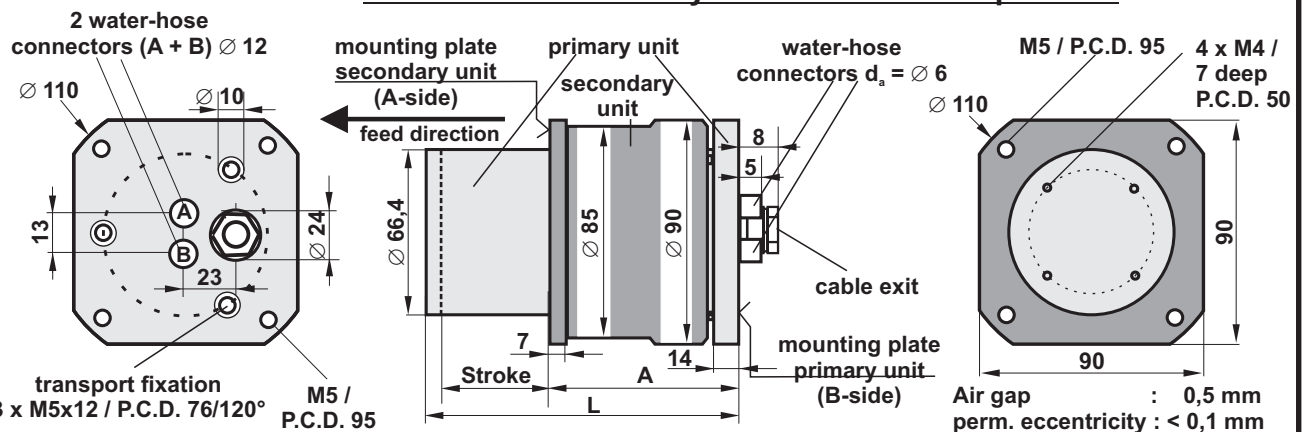flexing: 20 x cable diameter
static: 6 x cable diameter

$P_v = f (V/t)$

Caution!

Refer to mounting instructions !

Dimensions

shown with secondary unit in B-side end-position

2 water-hose connectors (A + B) ∅ 12
∅ 110
∅ 10
13
∅ 24
23
transport fixation
3 x M5x12 / P.C.D. 76/120°
M5 / P.C.D. 95

mounting plate secondary unit (A-side)
feed direction
primary unit
secondary unit
∅ 66,4
∅ 85
∅ 90
water-hose connectors d$_a$ = ∅ 6
8
5
cable exit
7
Stroke
14
A
mounting plate primary unit (B-side)
L

M5 / P.C.D. 95
∅ 110
4 x M4 / 7 deep P.C.D. 50
90
90

Air gap : 0,5 mm
perm. eccentricity : < 0,1 mm

Typ	Stroke	L	A Delivery state	Operation state
DTL 85 / 506-...-S	27,5	226	189,5	192
DTL 85 / 507-...-S	55	253,5	189,5	192
DTL 85 / 508-...-S	82,5	281	189,5	192
DTL 85 / 509-...-S	110	308,5	189,5	192
DTL 85 / 510-...-S	137,5	336	189,5	192

Performance data are tolrated +/-10%. Measurements in mm.
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Robert-Bosch-Str. 3, D-79585 Steinen

BOB Synchronous linear motor

Water-cooling

DTL 85 / 6.. - 3StX - 1 - S		Max. permitted input voltage: 700 V_{DC} ($\cong$ 500 V_{eff})			
	Symbol	Unit	..07 ..	..08 ..	..09 ..	..10 ..

	Symbol	Unit	..07 ..	..08 ..	..09 ..	..10 ..
Force (Cu: 20°C)	F_0	N	841	840	839	838
Continuous force (Cu:130°C)	F_C	N	703	702	701	700
Maximum force	F_{max}	N	1303	1303	1303	1303
Max. permitted loss cooled	$P_{v\,max}$	W	784	893	1002	1112
Max. permitted loss uncooled	$P_{v\,max\,o.K.}$	W	195,2	220,5	245,8	271,2
Thermal resistance at V/t$_{min}$	R_{th}	K/W	0,13	0,12	0,10	0,09
Motor constant	K_m	$N/W^{1/2}$	30,0	28,1	26,5	25,1
Force constant	K_t	N/A	81,0	81,0	81,0	81,0
Back EMF constant	K_e	Vs/m	46,8	46,8	46,8	46,8
elektr. Zeitkonstante	τ_e	ms	1,86	1,65	1,49	1,36
Currant (Cu: 20°C)	I_0	A	10,38	10,37	10,36	10,35
Continuous current (Cu: 130°C)	I_C	A	8,68	8,66	8,65	8,65
Maximum current	I_{max}	A	23,0	23,0	23,0	23,0
Demagnetising current	I_p	A	60	60	60	60
DC-resistance Ph/Ph (Cu: 20°C)	R	Ω	4,84	5,54	6,23	6,92
Inductance Ph/Ph	L	mH	9,01	9,15	9,30	9,44
Pole pitch	τ_p	mm	13,75	13,75	13,75	13,75
Max. permitted pressure	p	MPa	0,3	0,3	0,3	0,3
Cooling water flow min.	V/t$_{min}$	l/min	0,9	1,0	1,1	1,3
Cooling water temperature max.	T	°C	20	20	20	20
Cooling water temp. increase max.	ΔT	K	10	10	10	10
Mass secondary unit	m_L	kg	2,9	2,9	2,9	2,9
Total mass	m	kg	6,7	7,1	7,5	8,0
Maximum acceleration *	a_{max}	m/s²	422	422	422	422
Maximum speed *	v_{max}	m/s	3,41	4,82	5,90	6,81
Responding working voltage *	Ueff	V	332	449	545	629

Electrical figures apply for sinusoidal commutation and are r.m.s. values or refer to r.m.s. values respectively.
Data shown with * are theoretical maximum values.

$P_v = f(V/t)$

Connection

Cable :
4 G 0,75 +
2 x (2 x 0,34)
StD-CY
(shielded)

MT :
NTC / 130 °C (t = N)
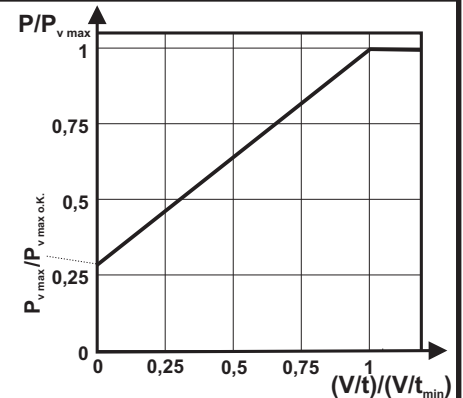PTC / 130 °C (t = P)
KTY 84 - 130 (t = K)

Connection	Code	
Phase U	1 (BK)	BK
Phase V	2 (BK)	BN
Phase W	3 (BK)	BU
PE	GNYE	
MT +	WH	GN
MT -	BN	YE
Shield	WH or "SHIELD"	

Minimum bending radius for flexing: 20 x cable diameter static: 6 x cable diameter

Caution!

Refer to mounting instruc- tions !

$P/P_{v\,max}$ vs $(V/t)/(V/t_{min})$

Dimensions

shown with secondary unit in B-side end-position

2 water-hose connectors (A + B) ∅ 12
∅ 110
∅ 10
13
∅ 24
23
transport fixation
3 x M5x12 / P.C.D. 76/120°
M5 / P.C.D. 95

mounting plate secondary unit (A-side)
feed direction
primary unit
∅ 66,4
secondary unit
Stroke
7
∅ 85
∅ 90
A
L
14
8
5
water-hose connectors d_a = ∅ 6
cable exit
mounting plate primary unit (B-side)

M5 / P.C.D. 95
∅ 110
4 x M4 / 7 deep P.C.D. 50
90
90

Air gap : 0,5 mm
perm. eccentricity : < 0,1 mm

Typ	Stroke	L	Delivery state	Operation state
			A	
DTL 85 / 607-...-S	27,5	253,5	217	219,5
DTL 85 / 608-...-S	55	281	217	219,5
DTL 85 / 609-...-S	82,5	308,5	217	219,5
DTL 85 / 610-...-S	110	336	217	219,5

Performance data are tolrated +/-10%. Measurements in mm.
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Robert-Bosch-Str. 3, D-79585 Steinen

DTL085-Kat_
(ES05_US01)-
2005-06-14

BOB Synchronous linear motor

Water-cooling

DTL 85 / 7.. - 3StX - 1 - S   Max. permitted input voltage: 700 V_{DC} ($\cong$ 500 V_{eff})

	Symbol	Unit	..08 ..	..09 ..	..10 ..
Force (Cu: 20°C)	F_0	N	980	979	978
Continuous force (Cu:130°C)	F_C	N	819	818	817
Maximum force	F_{max}	N	1520	1520	1520
Max. permitted loss cooled	$P_{v\,max}$	W	893	1002	1112
Max. permitted loss uncooled	$P_{v\,max\,o.K.}$	W	220,5	245,8	271,2
Thermal resistance at V/t$_{min}$	R_{th}	K/W	0,12	0,10	0,09
Motor constant	K_m	$N/W^{1/2}$	32,8	30,9	29,3
Force constant	K_t	N/A	94,5	94,5	94,5
Back EMF constant	K_e	Vs/m	54,6	54,6	54,6
elektr. Zeitkonstante	τ_e	ms	1,65	1,49	1,36
Currant (Cu: 20°C)	I_0	A	10,37	10,36	10,35
Continuous current (Cu: 130°C)	I_C	A	8,66	8,65	8,65
Maximum current	I_{max}	A	23,0	23,0	23,0
Demagnetising current	I_p	A	60	60	60
DC-resistance Ph/Ph (Cu: 20°C)	R	Ω	5,54	6,23	6,92
Inductance Ph/Ph	L	mH	9,15	9,30	9,44
Pole pitch	τ_p	mm	13,75	13,75	13,75
Max. permitted pressure	p	MPa	0,3	0,3	0,3
Cooling water flow min.	V/t$_{min}$	l/min	1,0	1,1	1,3
Cooling water temperature max.	T	°C	20	20	20
Cooling water temp. increase max.	ΔT	K	10	10	10
Mass secondary unit	m_L	kg	3,3	3,3	3,3
Total mass	m	kg	7,5	8,0	8,4
Maximum acceleration *	a_{max}	m/s²	431	431	431
Maximum speed *	v_{max}	m/s	3,44	4,87	5,97
Responding working voltage *	Ueff	V	375	505	609

Electrical figures apply for sinusoidal commutation and are r.m.s. values or refer to r.m.s. values respectively.
Data shown with * are theoretical maximum values.

Connection

Cable :
4 G 0,75 +
2 x (2 x 0,34)
StD-CY
(shielded)

MT :
NTC / 130 °C (t = N)
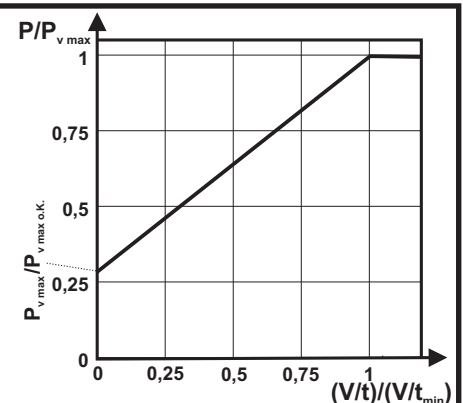PTC / 130 °C (t = P)
KTY 84 - 130 (t = K)

Connection	Code	
Phase U	1 (BK)	BK
Phase V	2 (BK)	BN
Phase W	3 (BK)	BU
PE	GNYE	
MT +	WH	GN
MT -	BN	YE
Shield	WH or "SHIELD"	

Minimum bending radius for flexing: 20 x cable diameter static: 6 x cable diameter

$P_v = f\,(V/t)$

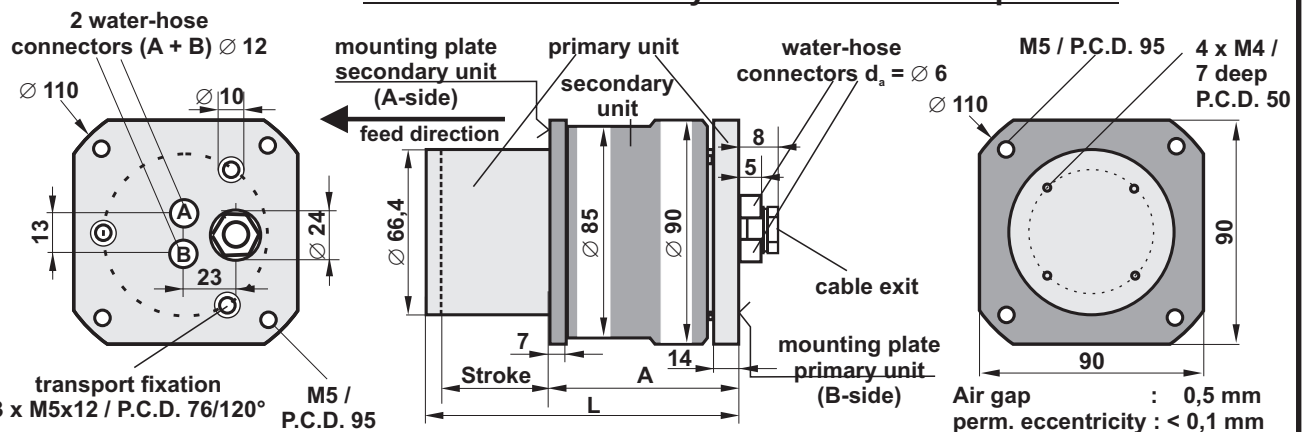**Caution!**

Refer to mounting instruc-tions !

Dimensions

shown with secondary unit in B-side end-position

2 water-hose connectors (A + B) ∅ 12
∅ 110
∅ 10
13
∅ 24
23
transport fixation
3 x M5x12 / P.C.D. 76/120°
M5 / P.C.D. 95

mounting plate secondary unit (A-side)
feed direction
primary unit
secondary unit
∅ 66,4
∅ 85
∅ 90
7
Stroke
14
A
L

water-hose connectors d_a = ∅ 6
8
5
cable exit
mounting plate primary unit (B-side)

M5 / P.C.D. 95
4 x M4 / 7 deep P.C.D. 50
∅ 110
90
90

Air gap : 0,5 mm
perm. eccentricity : < 0,1 mm

Typ	Stroke	L	Delivery state	A Operation state
DTL 85 / 708-...-S	27,5	281	244,5	247
DTL 85 / 709-...-S	55	308,5	244,5	247
DTL 85 / 710-...-S	82,5	336	244,5	247

Performance data are tolrated +/-10%. Measurements in mm.
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