



your reliable partner



EAS[®]-HT

K.4050.V02.EN

www.mayr.com



Always in use

EAS®-HT torque limiters for heavy load applications prolong the availability of your production systems.

They increase your profit, prevent damage caused by overload damages and save costs.

EAS®-HT torque limiters

the reliable, non-destructive overload protection

- **Disengaging**
- **Steplessly adjustable**
- **Precise**
- **Compact**
- **Robust**



Tested safety

For more than 40 years, we have been dimensioning, developing and manufacturing torque limiters for heavy load applications.

You can rely on the tested reliability and safety of our heavy load clutch.

Experts, not experiments

as safety does not allow for compromises

safe – reliable – innovative

 **mayr**[®]
your reliable partner

3

EAS®-HT short bearing-supported hub



Torque:
1.4 bis 42 kNm

Sizes 7 to 10
Type 4050._0400

- Direct attachment of the drive element on the bearing-supported, output-side clutch flange.
- The bearing is able to absorb high additional forces in axial and radial directions.

Page 6

EAS®-HT lastic



Torque:
1.4 bis 42 kNm

Sizes 7 to 10
Type 4053._0400

- Double shaft design with a flexible, positive locking coupling
- Absorbs impact-type loads

Page 8

EAS®-HT flange design



Torque:
7.5 to 440 kNm

Sizes 0 to 6
Type 4060.71400

- Compact, ready-to-install module
- Can easily be integrated into the drive line

Page 10

EAS®-HT Toothed coupling



Torque:
7.5 to 440 kNm

Sizes 0 to 6
Type 4061.71400

- Double shaft design
- Toothed coupling with crowned teeth cutting
- Robust and temperature-resistant
- High misalignment compensation capability

Page 12

EAS®-HT backlash-free



Torque:
7.5 to 140 kNm

Sizes 0 to 4
Type 4062.71400

- Double shaft design with a torsionally rigid, backlash-free disk pack coupling
- High torsional rigidity
- Backlash-free torque transmission
- Maintenance-free

Page 14

EAS®-HT lastic bolt



Torque:
40 to 260 kNm

Sizes 3 to 5
Type 4063.70400

- Double shaft design with a flexible, positive locking coupling
- Absorbs impact-type loads

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EAS®-HT Options

Customer-specific designs
Low temperature design
Alternative shaft connections
ATEX

Page 18

EAS®-elements

- Standard
- Reinforced



- Torque limiting or force limiting elements
- Installation into two flanges located towards one another
- Integration into existing constructions possible

Page 20

Technical Explanations

General
Pre-selection
Misalignment compensation capability

Page 23

Additional branch-optimised EAS® torque limiters

High-speed clutches EAS®-HSE



Torque:
100 to 8.400 Nm

Reliable overload protection
at high speeds

Sizes 02 to 0
Type 404_ . _04_

For more information as well as detailed Technical Data and Dimensions, please see our product catalogue EAS®-HSC/ EAS®-HSE.

Extruder clutches EAS®-dutytorque



Torque:
70 to 17.000 Nm

Protect extruder screws
from expensive damage caused by overload

Sizes 2 to 9
Type 4043_ _1400

For more information as well as detailed Technical Data and Dimensions, please see our product catalogue EAS®-dutytorque.

Rustproof design



Corrosion-protected torque limiters for
environmental and waste water technology

Short bearing-supported hub

Sizes 7 to 10



Optionally available with
switching disk

Order Number

without switching disk	0
with switching disk	1



— / 4 0 5 0 . — 0 4 0 0 / — / — / — / —									
Sizes 7 to 10	Torque range ¹⁾ low medium high very high			4 5 6 7	Bores ¹⁾ Ø d ^{H7}		Bore Ø d ₀	Torque adjustment value [kNm]	
					Keyway acc. DIN 6885/1 - P9				

1) Position of the keyway to the tapped hole "s" in the thrust piece is not defined. Defined position available on request.

EAS®-HT

Technical Data				Sizes			
				7	8	9	10
Limit torques for overload	Type 4050.40400	M _G	[kNm]	1.4 - 2.8	1.7 - 3.4	4 - 8	5.2 - 10.4
	Number of EAS®-elements			2	2	4	2
	Type 4050.50400	M _G	[kNm]	2.1 - 4.2	3.5 - 7	6 - 12	10.5 - 21
	Number of EAS®-elements			3	4	6	4
	Type 4050.60400	M _G	[kNm]	2.8 - 5.6	5.2 - 10.4	8 - 16	15.7 - 31.4
	Number of EAS®-elements			4	6	8	6
	Type 4050.70400	M _G	[kNm]	4.25 - 8.5	7 - 14	14 - 28 ¹⁾	21 - 42
	Number of EAS®-elements			6	8	8	8
Sizes EAS®-elements				0	0	0	1
Maximum speed		n _{max}	[rpm]	3000	2800	2500	2200
Bolt stroke on overload			[mm]	6	6	8	8

1) Equals Type 4050.71400

Max. permitted forces on the flange connection				Sizes			
				7	8	9	10
Radial forces	Type 4050._0400	F_R	[kN]	15	20	30	40
Axial forces		F_A	[kN]	10	15	20	30

Mass moments of inertia and weights (* with switching disk)				Size			
				7	8	9	10
EAS®-hub side	Type 4050._0400	J	[kgm ²]	0.18 / 024*	0.38 / 0,45*	1.05 / 0,90*	2.37 / 3,10*
Flange side	Type 4050._0400	J	[kgm ²]	0.17 / 0,22*	0.38 / 0,45*	1.3 / 1,03*	2.65 / 3,32*
Weight at d_{max}	Type 4050._0400		[kg]	50 / 54*	76 / 81*	126 / 132*	247 / 260*

Bores [mm]			Sizes			
			7	8	9	10
EAS®-hub side		d_{max}	100 ^{H7}	130 ^{H7}	160 ^{H7}	200 ^{H7}
Flange side		$d_{0 max}$	30	38	48	58

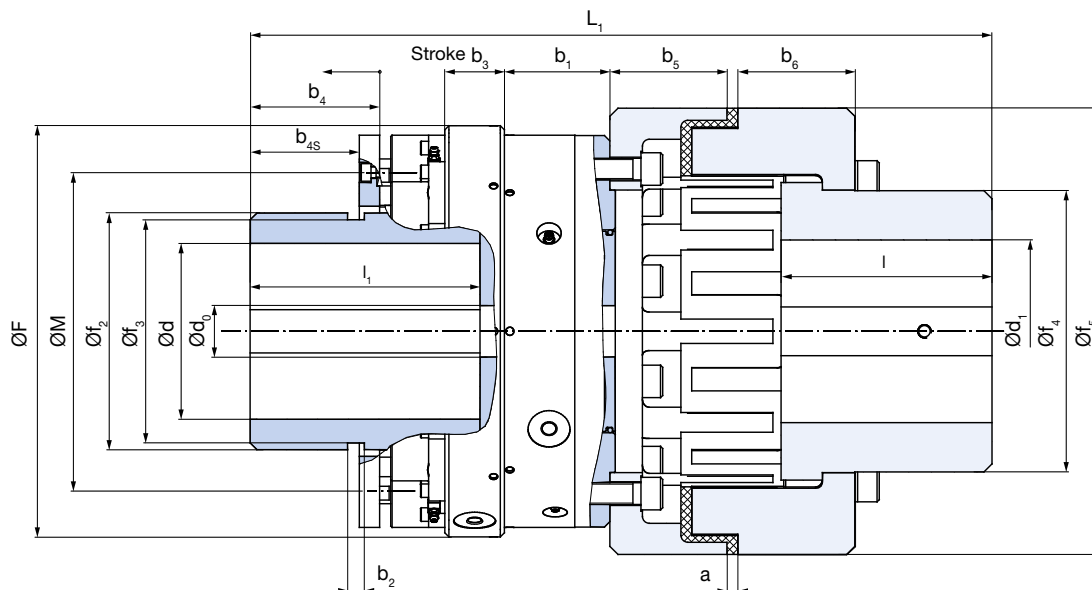
Dimensions [mm]	Sizes			
	7	8	9	10
b	25	30	40	35
b₁	66	78	104	115
b₂	12.5	12.5	15	15
b₃	44	44	46	56
b₄	63.8	93.8	134.8	148.3
b_{4s}	50.8	80.8	121.8	130.3
e_{h7}	147	165	242	276
F	265	304	350	450
f₁	250.5	289.5	334.5	432.5
f₂	135	175	220.5	280
f₃	125	165	210	265
L	228	270	340	392
l	140	170	210	250
M	115	235	280	360
m	190	220	285	325
s	8xM16	8xM20	8xM24	12xM24
S	250	290	335	435
z	4	4	5	6

We reserve the right to make dimensional and constructional alterations.

EAS®-HT

lastic

Type 4053_0400
Sizes 7 to 10



Optionally available with
switching disk
(Dimensioning see page 6)

Order Number

without switching disk **0**
with switching disk **1**



_ / 4 0 5 3 . _ 0 4 0 0 / _ / _ / _ / _ / _																
																
Sizes	Torque range								Bore Ø d ^{H7}	Bore Ø d ₀	Bore Ø d ₁ ^{H7}	Torque adjustment value [kNm]				
7	low	4														
to	medium	5														
10	high	6														
	very high	7														
													Keyway acc. DIN 6885/1 - P9			

Example: Order Number 8 / 4053.60400 / 90 / 35 / 115 / 8 / 0

EAS®-HT

Technical data				Sizes				
				7	8	9	10	
Limit torques for overload	Type 4053.40400	M _G	[kNm]	1.4 - 2.8	1.7 - 3.4	4 - 8	5.2 - 10.4	
	Number of EAS®-elements			2	2	4	2	
	Type 4053.50400	M _G	[kNm]	2.1 - 4.2	3.5 - 7	6 - 12	10.5 - 21	
	Number of EAS®-elements			3	4	6	4	
	Type 4053.60400	M _G	[kNm]	2.8 - 5.6	5.2 - 10.4	8 - 16	15.7 - 31.4	
	Number of EAS®-elements			4	6	8	6	
	Type 4053.70400	M _G	[kNm]	4.25 - 8.5	7 - 14	14 - 28 ²⁾	21 - 42	
	Number of EAS®-elements			6	8	8	8	
Sizes EAS®-elements				0	0	0	1	
Maximum speed		n _{max}	[rpm]	2250	2000	1500	1400	
Bolt stroke on overload			[mm]	6	6	8	8	
Flexible shaft coupling	Permitted misalign- ments ¹⁾	axial	ΔK _a	[mm]	±2.5	±2.5	±2.5	
		radial	ΔK _r	[mm]	0.3	0.3	0.3	
		angular	ΔK _w	[mm]	0.3	0.3	0.3	
		Nominal and maximum torques, flexible coupling			T _{KN}	[kNm]	5.8	9.9
T _{K max}	[kNm]				8.3	14.5	27	66

1) The values refer to 1500 rpm.

2) Entspricht Type 4053.71400

Mass moments of inertia and weights (* with switching disk)				Sizes			
				7	8	9	10
Mass moments of EAS®-hub side			J [kgm ²]	0.18 / 0,24*	0.38 / 0,45*	1.05 / 0,90*	2.37 / 3,10*
inertia Flexible side			J [kgm ²]	0.57 / 0,62*	1.62 / 1,69*	5.0 / 4,8*	10.7 / 11,28*
Weight at d_{max}			[kg]	88 / 92*	154 / 158*	276 / 281*	478 / 491*

Bores [mm]				Sizes			
				7	8	9	10
EAS®-hub side			d_{max}	100 ^{H7}	130 ^{H7}	160 ^{H7}	200 ^{H7}
Flange side			$d_{0 max}$	30	38	48	58
Flexible side			$d_{1 max}$	115 ^{H7}	135 ^{H7}	180 ^{H7}	200 ^{H7}

Dimensions [mm]	Sizes			
	7	8	9	10
a	5.5	8	8	8
b ₁	66	78	104	115
b ₂	12.5	12.5	15	15
b ₃	44	44	46	56
b ₄	63.8	93.8	134.8	148.3
b _{4s}	50.8	80.8	121.8	130.3
b ₅	76	86.5	102	108
b ₆	76	86.5	102	108
F	265	304	350	450
f ₂	135	175	220.5	280
f ₃	125	165	210	265
f ₄	164	208	275	289
f ₅	265	330	415	480
L ₁	469.5	548.5	678	759
I	140	170	210	250
I ₁	137	156	196	220
M	195	235	280	360
S	250	290	335	435

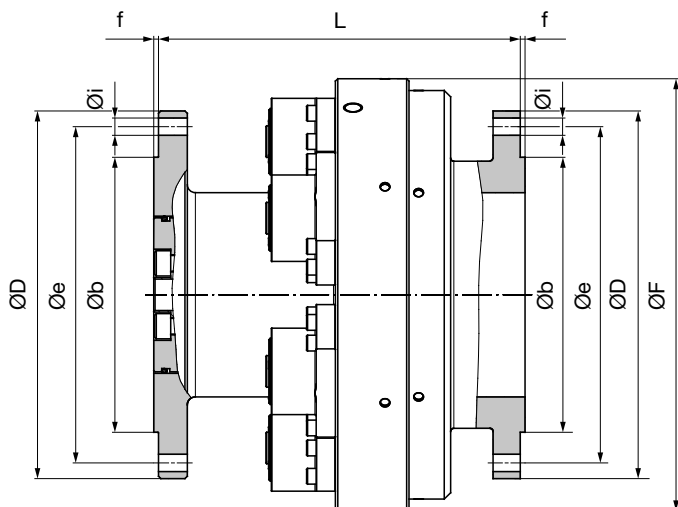
We reserve the right to make dimensional and constructional alterations.

EAS®-HT

flange design

Type 4060.71400

Sizes 0 to 6



Order Number

— / 4 0 6 0 . 7 1 4 0 0 / —



Sizes 0 to 6



Torque adjust-
ment value
[kNm]

Example: Order number 5 / 4060.71400 / 200

EAS®-HT

Technical data			Size						
			0	1	2	3	4	5	6
Limit torques for overload	M_G	[kNm]	7.5 - 15	12.5 - 25	20 - 40	37.5 - 75	70 - 140	125 - 250	220 - 440
Number of EAS®-elements			6	8	6	8	12	10	10
Sizes EAS®-elements			0	0	1	1	1	2	2
Maximum speed	n_{max}	[rpm]	2000	1750	1500	1250	1000	900	750
Bolt stroke on overload		[mm]	6	6	8	8	8	12	12

Mass moments of inertia and weights			Sizes						
			0	1	2	3	4	5	6
EAS®-element-side	J	[kgm²]	0.25	0.5	1.16	2.71	5.51	16.29	27.87
EAS®-pressure flange side	J	[kgm²]	0.19	0.37	0.96	2.05	4.22	10.29	19.3
Weight at d_{max}		[kg]	56	77	142	212	303	627	814

Dimensions [mm]	Sizes						
	0	1	2	3	4	5	6
b_{h7}	175	230	255	310	340	460	540
e	214	269	306	360	400	531	618
D	234	292	330	390	430	567	660
F	275	320	380	455	545	620	720
f	3	3	4	4	5	6	6
i	11	13	13	17	17	21	25
L	226	243	298	312	328	476	485

We reserve the right to make dimensional and constructional alterations.

Toothed coupling

Sizes 0 to 6



_ / 4 0 6 1 . 7 1 4 0 0 / _ / _ / _												
Sizes 0 to 6										Bore $\varnothing d^{H7}$	Bore $\varnothing d_2^{H7}$	Torque adjustment value [kNm]
Keyway acc. DIN 6885/1 - P9												

Example: Order number 4 / 4061.71400 / 180 / 200 / 90

EAS®-HT

Technical Data				Size							
				0	1	2	3	4	5	6	
Limit torques for overload		M _G	[kNm]	7.5 - 15	12.5 - 25	20 - 40	37.5 - 75	70 - 140	125 - 250	220 - 440	
Number of EAS®-elements				6	8	6	8	12	10	10	
Sizes EAS®-elements				0	0	1	1	1	2	2	
Maximum speed		n _{max}	[rpm]	2000	1750	1500	1250	1000	900	750	
Bolt stroke on overload			[mm]	6	6	8	8	8	12	12	
Toothed coupling with crowned teeth cutting	Permitted misalignments ^{1) 2)}	axial	ΔK _a	[mm]	±2	±3	±3	±3	±3	±4	±4
		radial	ΔK _r	[mm]	7.5	8.6	10.2	11.7	12.4	18.4	20.6
		angular	ΔK _w	[mm]	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Nominal and maximum torques, toothed coupling with crowned teeth cutting		T _{KN}	[kNm]	12.5	25	40	63	100	250	400	
		T _{K max}	[kNm]	25	50	80	12.6	200	500	800	

1) The values refer to 1500 rpm.

2) Per joint

Mass moments of inertia and weights			Sizes						
			0	1	2	3	4	5	6
EAS®-pressure flange side	J	[kgm²]	0.27	0.65	1.48	3.33	6.43	19.17	39.74
EAS®-element side	J	[kgm²]	0.34	0.78	1.69	3.99	7.72	25.18	48.3
Weight at d _{max} / d _{2max}		[kg]	83	132	220	345	488	1053	1523

Bores [mm]		Sizes						
		0	1	2	3	4	5	6
EAS®-pressure flange side	d _{max}	95	130	150	185	210	285	340
EAS®-element side	d _{2 max}	95	130	150	185	210	285	340

Dimensions [mm]	Sizes						
	0	1	2	3	4	5	6
d_1	135	185	210	255	290	400	480
d_3	135	185	210	255	290	400	480
D_1	195	251	288	337	375	502	584
D_2	195	251	288	337	375	502	584
F	275	320	380	455	545	620	720
f	234	292	330	390	430	567	660
f_1	234	292	330	390	430	567	660
L	226	242.5	298	312	328	476	485
L_1	434	502.5	588	685	740	1012	1125
L_2	104	130	145	186.5	206	268	320
L_3	104	130	145	186.5	206	268	320
I	100	125	140	180	200	260	310
I_1	100	125	140	180	200	260	310

We reserve the right to make dimensional and constructional alterations.

backlash-free

Sizes 0 to 4



___ / 4 0 6 2 . 7 1 4 0 0 / ___ / ___ / ___											
Sizes 0 to 4				Double-jointed coupling		0		Bore Ø d ^{H7}		Bore Ø d ₂ ^{H7}	
								Keyway acc. DIN 6885/1 - P9		Torque adjustment value [kNm]	

Example: Order number 4 / 4062.71400 / 180 / 200 / 90

EAS®-HT

Technical Data				Size					
				0	1	2	3	4	
Limit torques for overload			M _G	[kNm]	7.5 - 15	12.5 - 25	20 - 40	37.5 - 75	70 - 140
Number of EAS®-elements					6	8	6	8	12
Sizes EAS®-elements					0	0	1	1	1
Maximum speed			n _{max}	[rpm]	2000	1750	1500	1250	1000
Bolt stroke on overload				[mm]	6	6	8	8	8
Torsionally rigid shaft coupling	Permitted misalign-ments ¹⁾	axial	ΔK _a	[mm]	1.6	1.7	2.1	2.3	2.3
		radial	ΔK _r	[mm]	1.0	1.0	1.1	1.3	1.4
		angular	ΔK _w	[°]	0.4	0.4	0.4	0.4	0.4
Nominal and maximum torques, torsionally rigid all-steel coupling			T _{KN}	[kNm]	22	33	50	73	110
			T _{K max}	[kNm]	44	66	100	146	220

1) The values refer to 1500 rpm.

Mass moments of inertia and weights				Sizes				
				0	1	2	3	4
Mass moments of inertia	Hub side	J	[kgm²]	0.35	0.76	1.58	3.68	6.56
	torsionally rigid side	J	[kgm²]	0.86	1.73	3.5	7.1	13.95
Weight at d _{max}			[kg]	132	195	308	468	665

Bores [mm]		Sizes				
		0	1	2	3	4
Hub-side	d_{max}	140	170	180	220	240
Torsionally rigid side	$d_{2 max}$	140	160	180	210	240

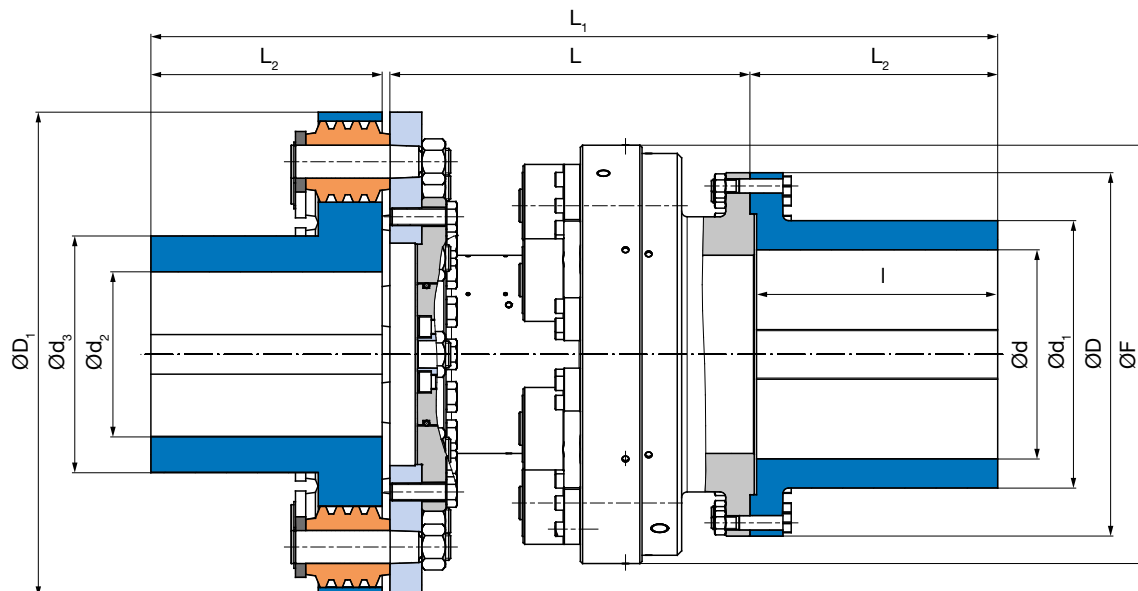
Dimensions [mm]	Sizes				
	0	1	2	3	4
d_1	186	230	243	300	321
d_3	186	215	243	279	321
D	234	292	330	390	430
D₁	290	332	378	431	492
F	275	320	380	455	545
L	229	245.5	302	316	330
L₁	735	811.5	934	1054.5	1173
L₂	175	200	225	265	310
L₃	155.6	166	182	208.4	223
L₄	175	200	225	265	310
I	171	195	219	260	302

We reserve the right to make dimensional and constructional alterations.

EAS®-HT

lastic bolt

Type 4063.70400
Sizes 4 to 6



Order Number

— / 4 0 6 3 . 7 0 4 0 0 / — / — / —



Sizes 4 to 6



Bore
 $\varnothing d^{H7}$



Bore
 $\varnothing d_2^{H7}$



Torque adjust-
ment value
[kNm]

Keyway acc. DIN 6885/1 - P9

Example: Order number 4 / 4063.70400 / 270 / 180 / 90

EAS®-HT

Technical Data				Sizes		
				4	5	6
Limit torques for overload	M_G	[kNm]		40 - 80	72.5 - 145	130 - 260
Number of EAS®-elements				12	10	10
Sizes EAS®-elements				1	2	2
Maximum speed	n_{max}	[rpm]		1000	900	750
Bolt stroke on overload		[mm]		8	12	12
Flexible shaft coupling	Permitted misalignments ¹⁾	axial	ΔK_a	[mm]	±4	±4
		radial	ΔK_r	[mm]	1.5	1.5
		angular	ΔK_w	[mm]	4.6	5.3
Nominal and maximum torques, flexible coupling		T_{KN}	[kNm]	48	100	160
		$T_{K max}$	[kNm]	96	200	320

Mass moments of inertia and weights				Sizes		
				4	5	6
Mass moments of inertia	Hub side	J	[kgm ²]	6.6	20.02	39.63
	Flexible side	J	[kgm ²]	22.35	55.18	110.68
Weight at d_{max}			[kg]	706	1407	1956

Bores [mm]			Size		
			4	5	6
Hub-side		d_{max}	240	300	340
Flexible side		$d_{2 max}$	225	250	320

Dimensions [mm]	Sizes		
	4	5	6
d_1	321	420	500
d_3	320	360	450
D	430	567	660
D_1	660	760	920
F	545	620	720
L	375	533	543
L_1	946	1201	1231
L_2	310	350	370
L_3	250	300	300
I	302	342	362

We reserve the right to make dimensional and constructional alterations.

1) The values refer to 1500 rpm.

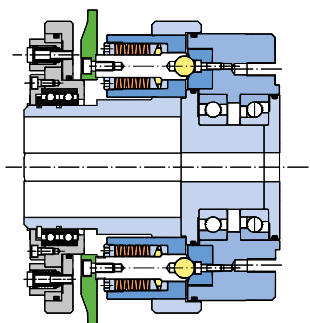
EAS[®]-HT Options

For the EAS[®]-HT clutches, designs specially created according to customer requests and different variants are also available.

EAS[®]-HT clutches can be combined with additional attachment parts.

We are happy to advise you on the dimensioning and configuration of your optimum design.

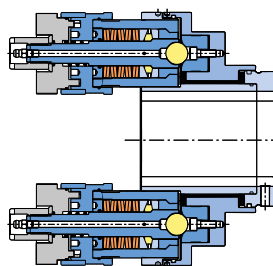
EAS[®]-HT with automatic re-engagement



After overload occurrence, the EAS[®]-HT torque limiter is disengaged. It is possible to engage the EAS[®]-HT torque limiter via remote control by means of automatic re-engagement. Re-engagement can be carried out pneumatically, hydraulically, electromechanically or mechanically.



EAS[®]-HT with mechanical disengagement

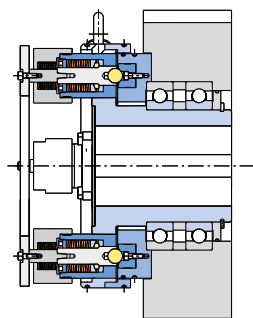


Mechanical disengagement device for the EAS[®]-elements.

The EAS[®]-elements can be disengaged individually mechanically.



EAS[®]-HT with engagement bowl

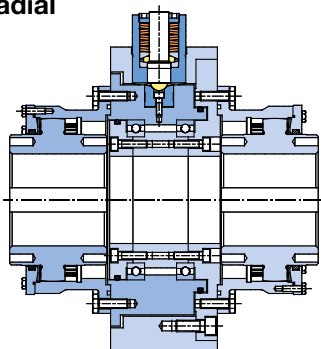


Engagement without aids.

Automatic engagement device for low operating speeds. Direct overload query possible through switching disk.



EAS[®]-HT radial

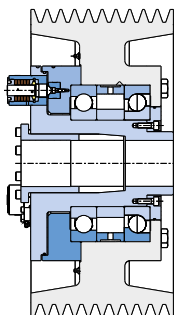


EAS[®]-HT radial for small construction space length values and low to medium operating speed values.



EAS®-HT Options

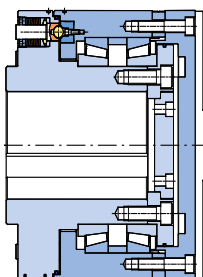
EAS®-HT with integrated drive elements



EAS®-HT, integrated attachment of sprocket and toothed wheels, V-belt disks etc.



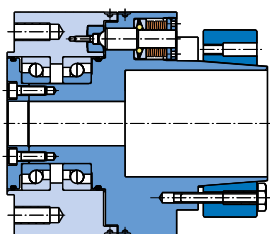
EAS®-HT for roller gears



Highest torques at lowest diameters.
The alternative to hydraulic clamping sets and shear pins in rolling mills.



Frictionally-locking shaft-hub connection



Frictionally-locking shaft-hub connections:

- Shrink disk (see Fig.)
- External shrink disk hub
- Oil press fit

EAS®-HT low temperature design



Reliable overload protection in case of very low temperatures to **-48 °C**.

(Please contact the manufacturer separately for this).



ATEX design



EAS®-HT torque limiters are also available in ATEX design according to the directive 94/9 EC (ATEX 95).
(Please contact the manufacturer separately for this).

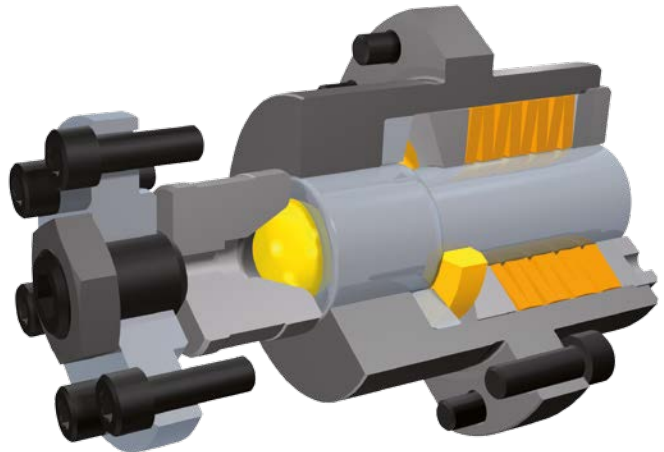
EAS[®]-element

Application

- ☐ EAS[®]-elements for installation in two bearing-supported flanges facing each other or for integration into existing constructions
- ☐ As EAS[®]-HT torque limiter component
- ☐ For customer-specific constructions

Applications

- ☐ Conveyor belts
- ☐ Crushers
- ☐ Rolling mills
- ☐ Underground mining / mining
- ☐ Raw material extraction



Advantages/Benefits

- ☐ Safe overload protection
- ☐ Can be used flexibly and in modular form
- ☐ Maximum performance density
- ☐ Release forces adjustable
- ☐ Easy and quick engagement
- ☐ Large number of disengagement procedures
- ☐ Re-greasing via the cone lubricating nipple



*Rustproof design
available on request*

Function:

Positive locking transmission of circumferential force and axial force. In case of overload, the EAS[®]-elements separate the input and output mechanically, so that the system can slow down freely. Manual re-engagement of the individual elements (automatic re-engagement available on request).

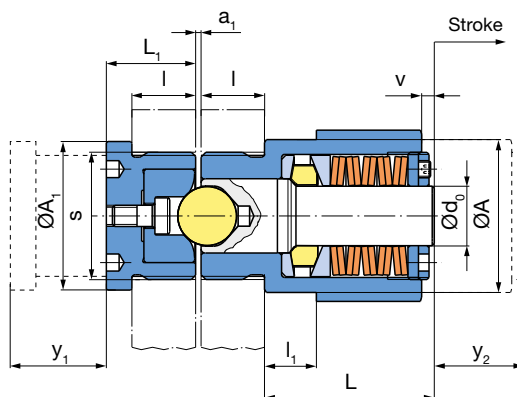
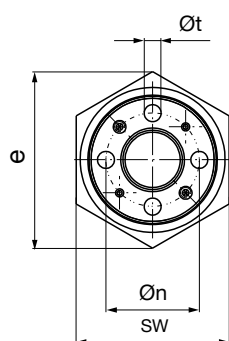


The catalogue contains basic information on pre-selection and dimensioning.

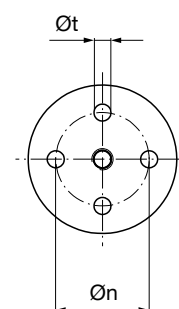
For detailed information on selection, dimensioning, installation, initial operation and maintenance, please see the Installation and Operational Instructions.

EAS®-element

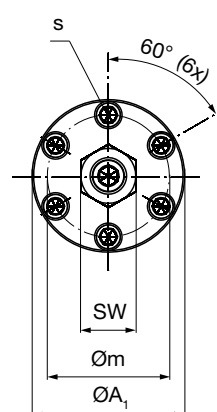
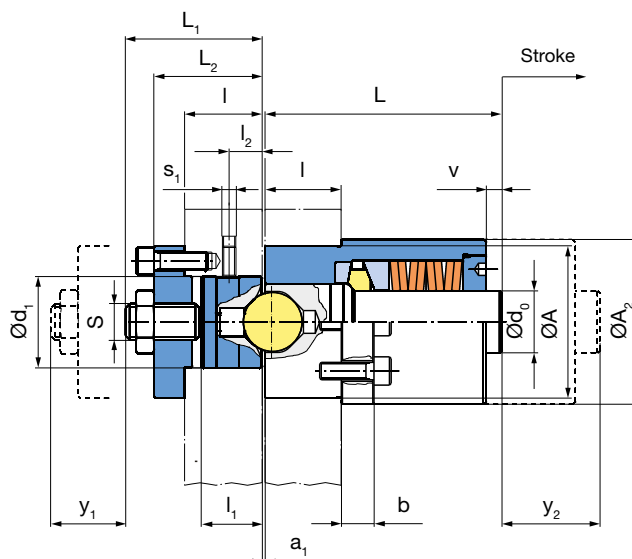
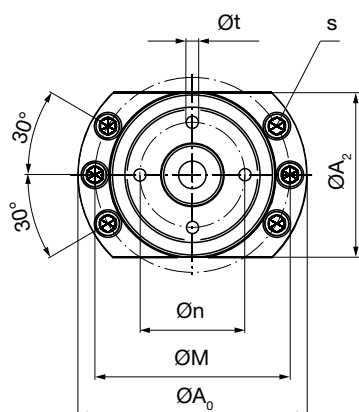
Standard



Type 440..04.0 Sizes 02 to 01

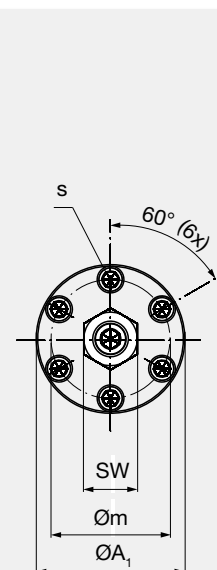
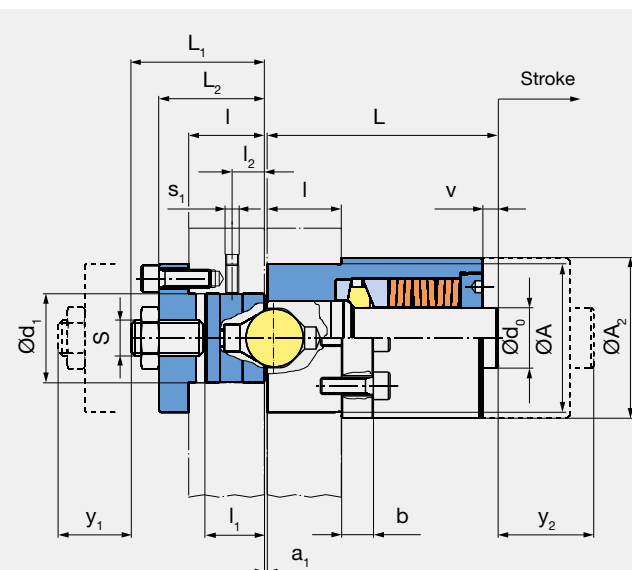
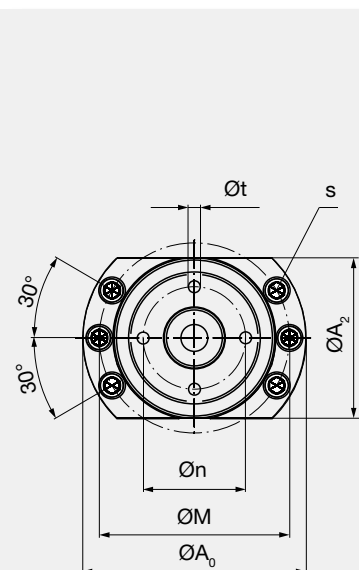


Type 440..04.0 Sizes 0 to 2



Reinforced

Type 441.604.0 Sizes 0 to 2



EAS®-element

Technical Data				Sizes				
				02	01	0	1	2
Circumferential force	Type 440.404.0 (Low torque range)	F _{u min}	[kN]	0.22	1	1.8	5	4
		F _{u max}	[kN]	0.54	2	5	10	11
	Type 440.504.0 (Medium torque range)	F _{u min}	[kN]	0.5	1.25	3.75	7.5	10
		F _{u max}	[kN]	1.4	2.5	7.5	15	30
	Type 440.604.0 (High torque range)	F _{u min}	[kN]	1.2	2.5	7.5	15	30
		F _{u max}	[kN]	2.5	5	15	30	60
	Type 441.604.0 Reinforced design	F _{u min}	[kN]	-	-	19	38	75
		F _{u max}	[kN]	-	-	38	75	150
Axial force	Type 440.404.0 (Low torque range)	F _{ax min}	[kN]	0.2	0.9	1.62	4.5	3.6
		F _{ax max}	[kN]	0.48	1.8	4.5	9	9.9
	Type 440.504.0 (Medium torque range)	F _{ax min}	[kN]	0.45	1.12	3.37	6.75	9
		F _{ax max}	[kN]	1.26	2.25	6.75	13.5	27
	Type 440.604.0 (High torque range)	F _{ax min}	[kN]	1.08	2.25	6.75	13.5	27
		F _{ax max}	[kN]	2.25	4.5	13.5	27	54
	Type 441.604.0 Reinforced design	F _{ax min}	[kN]	-	-	10	20	40
		F _{ax max}	[kN]	-	-	20	40	80
Bolt stroke on overload			[mm]	2.5	4	6	8	12
Weights			[kg]	0.25	0.6	1.75	4.1	11.3

Dimensions [mm]	Sizes				
	02	01	0	1	2
A_{h7}^{H8}	28	38	55	75	100
A_0	-	-	85	110	150
A_1	28	35	55	75	100
A_2	-	-	55	75	108
a_1	1.0	1.5	2	2	3
b	-	-	12	15	20
d_0	10	14	20	30	40.6
d_{h7}^{H8}	-	-	30	40	60
e	31.2	41.6	-	-	-
L	28	40	73	96	160
L_1	15	21	52	65	80
L_2	-	-	42	51	70
l	12	15	30	40	50

Dimensions [mm]	Sizes				
	02	01	0	1	2
l_1	7	10	22	30	40
l_2	-	-	12	17	22
M	-	-	72	95	128
m	-	-	44	60	80
n	17	22	31	48	69
S	-	-	M12	M20	M24
s	M24x1 ¹⁾	M30x1,5 ²⁾	M6 ³⁾	M8 ⁴⁾	M12 ⁵⁾
s_1	-	-	M5	M6	M8
SW	27	36	19	30	36
t	3	4	5	6	8
v	2	3	3	4	15
$y_1^{6)}$	12	15	8	10	10
$y_2^{6)}$	16	21	38	50	65

We reserve the right to make dimensional and constructional alterations.

EAS®-element Standard

Order Number

___ / 4 4 0 . ___ 0 4 . 0

Sizes	Torque range	
02	low	4
01	medium	5
0	high	6
1		
2		

Example: Order number 0 / 440.504.0

EAS®-element Reinforced

Order Number

___ / 4 4 1 . 6 0 4 . 0

Sizes	
0	
1	
2	

Example: Order number 0 / 441.604.0

- 1) Tightening torque $M_A = 40 \text{ Nm}$
 2) Tightening torque $M_A = 60 \text{ Nm}$
 3) Fixing screw DIN EN ISO 4762 10.9 $M_A = 9 \text{ Nm}$

- 4) Fixing screw DIN EN ISO 4762 10.9 $M_A = 19 \text{ Nm}$
 5) Fixing screw DIN EN ISO 4762 10.9 $M_A = 76 \text{ Nm}$
 6) y_1 and y_2 are extension dimensions

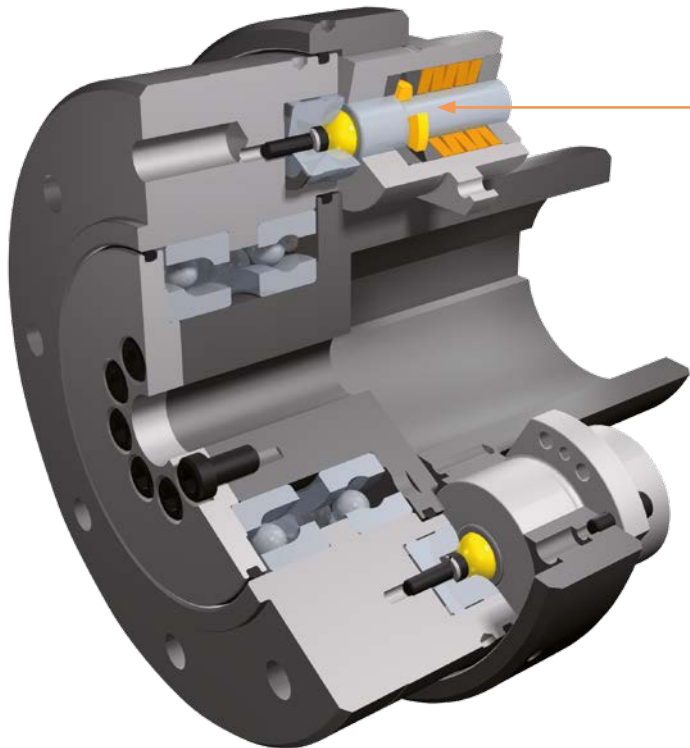
Technical explanations EAS[®]-HT torque limiter

Characteristics

- ☐ Positive locking torque transmission acc. to the ball-detent principle
- ☐ Adjustable torque
- ☐ Separates disengagingly
- ☐ Easy repeat operation start-up
- ☐ Robust
- ☐ Long service lifetime



Rustproof design
available on request



Design

All clutch parts are made of steel. EAS[®]-HT torque limiters basic components have a zinc-phosphated surface which provides a basic corrosion protection for further surface treatments.

Clutch types 4050, 4060 are also suitable for oil running.

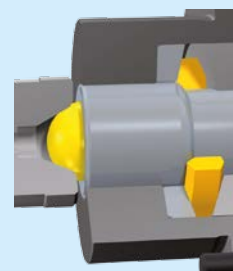
The limit torque for overload on the clutch can be adjusted by changing the cup spring pre-tension of each overload element.

The EAS[®]-HT torque limiters can be set to the required limit torque for overload at the place of manufacture. Subsequent torque changes can be carried out using the Adjustment Diagram included in the delivery (see respective Installation and Operational Instructions).

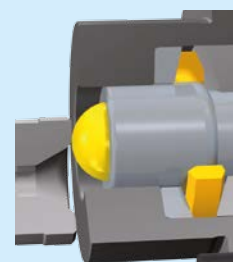
Operating principle of the EAS[®]-HT torque limiter Overload elements

- ☐ If the proportional circumferential force on the individual elements proves too large, the resulting axial force causes an axial movement of the bolt via the ball/calotte system and therefore the disconnection of the torque transmission.
- ☐ The maximum circumferential force is individually determined through the adjusting nut and *mayr*[®]-cup springs. The transmittable torque is determined in this way.
- ☐ Due to the axial stroke of the bolt (ball carrier), the control segments move radially outwards, thereby disconnecting the components axially.
- ☐ Re-engagement of the balls through a bolt stroke in the direction of the calotte takes place either manually or via a *mayr*[®] re-engagement device (pneumatic, hydraulic, electromechanical or mechanical).

Engaged



Disengaged



Technical explanations EAS[®]-HT torque limiter

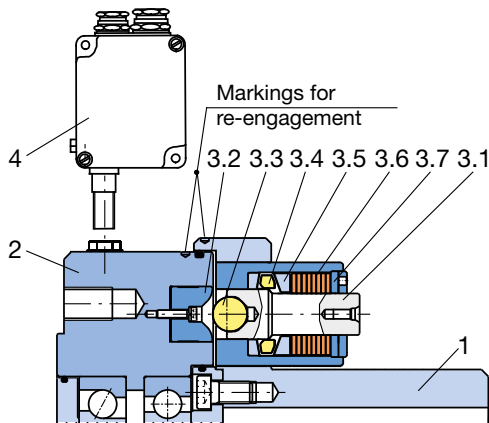


Fig. 2: EAS[®]-HT torque limiter disengaged state

Processes for torque switch-off on overload:

On overload, the hub part 1 and the output flange 2 begin to turn against each other. The bolts 3.1 in the overload elements are pressed via the control segments 3.4 against the force of the cup springs 3.6 from the thrust pieces 3.2. The control segments 3.4 travel radially outwards over the bolt 3.1 switching edge and hold the bolts 3.1 in a disengaged position (see Fig. 2). The positive locking connection of the hub part 1 and the output flange 2 is nullified. The originally coupled masses can slow down freely. The drive is switched off electrically via speed monitoring device 4.

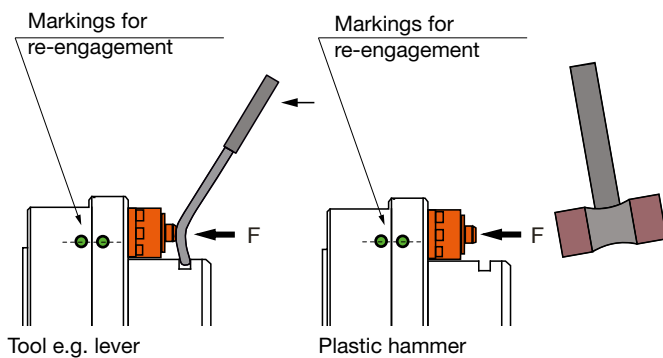


Fig. 3

Re-engagement:

Turn the hub part 1 and the output flange 2 into the correct angular position to one another (re-engagement position can be recognized via the marking bores on the clutch outer diameter, Fig. 3). By applying axial pressure on the bolt end, bolts 3.1 are brought back to their engaged position. The clutch is ready for operation when all clutch overload elements are engaged.

Maintenance

The EAS[®]-HT torque limiters do not require special maintenance work. They are largely protected against dust and humidity, they have an initial grease filling and are therefore mainly maintenance-free.

EAS[®]-elements Please find a detailed description in the respective Installation and Operational Instructions (go to www.mayr.com). Special maintenance work may be necessary, however, if the device is subject to large amounts of dirt or dust or is operating in extreme ambient conditions.

In this case, please contact the manufacturer.

Mounting onto the shaft:

In a standard delivery, the EAS[®]-HT torque limiters are delivered with a finish bore and a keyway acc. DIN 6885/1 P9. The clutch can be secured axially onto the shaft e.g. using a washer and a screw, screwed into the shaft threaded centre hole.

Optionally, we deliver a frictionally-locking shaft-hub connection (see EAS[®]-HT options, page 19).

Technical explanations EAS®-HT torque limiter

Pre-selection of the clutch

Drive lines in heavy engineering are robust and designed for operation in adverse conditions. In contrast to systems with servomotor-driven drives, the torque course and the system behaviour often cannot be determined precisely.

Frequently, only the drive power of the motor and the permitted max. torque of the gear output are known.

Using tried-and-tested operating factors, clutch sizes suitable for the application can be pre-selected.

Pre-selection

$$T_N = \frac{9550 \times P}{n} \quad [\text{Nm}]$$

$$T_G \approx T_N \times K_B \quad [\text{Nm}]$$

Names:		
T_N	[Nm]	Nominal torque of the motor
T_G	[Nm]	Pre-selected release torque on the overload clutch
P	[KW]	Input power motor
n	[rpm]	Speed
K_B	[-]	Service factor

Service factors:		
2.5 - 3	medium impacts	Stirring units / pumps (viscid fluids) / kneading machines / mixing systems / conveyor belts / etc.
3 - 5	high impacts	Shredding machines / centrifuges / crushers / roll trains / construction machines / mining machines / etc.

In normal operation, the EAS®-HT transmits the set overload torque via positive locking. All torques for normal operation, including torque peaks, must be transmitted safely and must not cause the torque limiter to respond.

Often, the actual complex of loads (impacts) during operation (e.g. for shredding machines / mixers) are not known and can only be measured in the system with great effort.

Using software specially developed for the purpose, it is possible to simulate the behaviour in case of collisions of such drive lines.

The prerequisite is that all specifications are known:

- ☐ Mass moments of inertia
- ☐ Rigidities of all overload elements, including the overload clutch
- ☐ Parameters of the motor and the control circuit



Particularly in case of load-side vibration generation (e.g. piston compressors / shredding machines / etc.) or alternating torques **please contact us** to select a reliable, tried and tested overload protection for your production systems.

Here, the overload clutch is combined with suitable couplings, depending on the application:

- ☐ Elastomer coupling
- ☐ Disk pack coupling
- ☐ Toothed coupling

Profit from our many years of market and application experience in different branches.

Technical explanations EAS®-HT torque limiter

Misalignment compensation capability of the different shaft misalignment compensation couplings

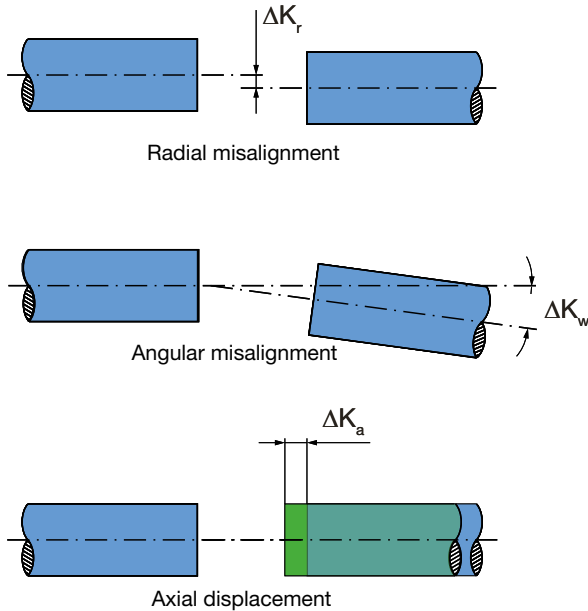


Fig. 4

Shaft Misalignment

Misalignments between shafts occur due to manufacturing and assembly tolerances, bearing backlash and temperature influences.

This can cause axial, radial and angular shaft misalignment.

The shaft misalignment compensation couplings of the EAS®-HT torque limiters can compensate for misalignments.

The misalignment possibilities of the shaft misalignment compensation coupling are general guideline values (see table "Technical Data").

In the application, the aim is to produce as precise a shaft alignment as possible, so that the bearing loads are reduced to a minimum.

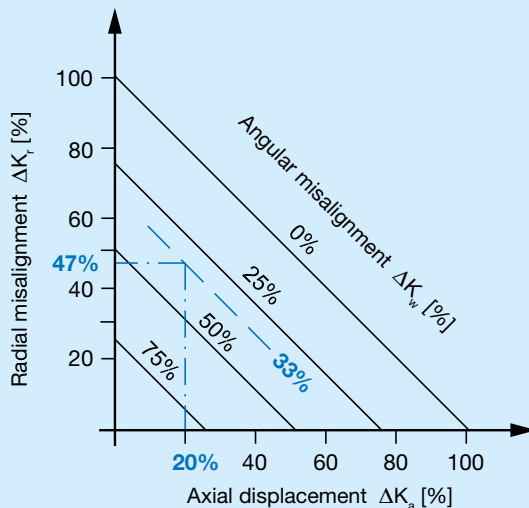


Fig. 5

If more than one kind of misalignment takes place simultaneously, they influence each other. The permitted misalignment values are dependent on one another. The sum total of the actual misalignments – in percent of the maximum value – must not exceed 100 %.

Example:

EAS®-HT lastic, Size 8

Type 4053.00400.0

- ☐ **Axial displacement** occurrence:
 $\Delta K_a = 0.5 \text{ mm}$; equals **20 %** of the permitted maximum value $\Delta K_a = 2.5 \text{ mm}$
- ☐ **Angular misalignment** occurrence:
 $\Delta K_w = 0.1 \text{ mm}$, equals **33 %** of the permitted maximum value $\Delta K_w = 0.3 \text{ mm}$
- ☐ **Radial misalignment** occurrence:
 $\Delta K_r = 0.14 \text{ mm}$, equals **47 %** of the permitted maximum value $\Delta K_r = 0.3 \text{ mm}$

Product Summary

Torque Limiters/Overload Clutches

- **EAS®-Compact®/EAS®-NC/EAS®-smartic®**
Positive locking and completely backlash-free torque limiting clutches
- **EAS®-reverse**
Reversing, re-engaging torque limiter
- **EAS®-element clutch/EAS®-elements**
Load-disconnecting protection against high torques
- **EAS®-axial**
Exact limitation of tensile and compressive forces
- **EAS®-Sp/EAS®-Sm/EAS®-Zr**
Load-disconnecting torque limiting clutches with switching function
- **ROBA®-slip hub**
Load-holding, frictionally locked torque limiting clutches
- **ROBA®-contitorque**
Magnetic continuous slip clutches
- **EAS®-HSC/EAS®-HSE**
High-speed safety clutches for high-speed applications



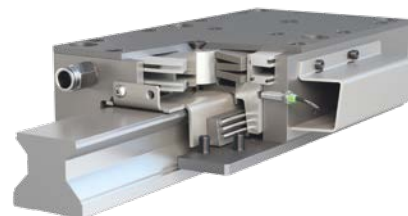
shaft couplings

- **smartflex®/primeflex®**
Perfect precision couplings for servo and stepping motors
- **ROBA®-ES**
Backlash-free and damping for vibration-sensitive drives
- **ROBA®-DS/ROBA®-D**
Backlash-free, torsionally rigid all-steel couplings
- **ROBA®-DSM**
Cost-effective torque-measuring couplings



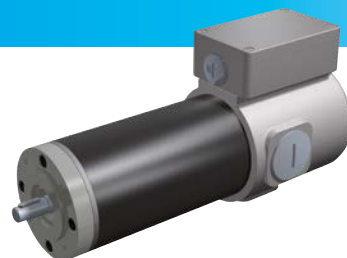
Electromagnetic Brakes/Clutches

- **ROBA-stop® standard**
Multifunctional all-round safety brakes
- **ROBA-stop®-M motor brakes**
Robust, cost-effective motor brakes
- **ROBA-stop®-S**
Water-proof, robust monoblock brakes
- **ROBA®-duplostop®/ROBA®-twinstop®/ROBA-stop®-silenzio®**
Doubly safe elevator brakes
- **ROBA®-diskstop®**
Compact, very quiet disk brakes
- **ROBA®-topstop®**
Brake systems for gravity loaded axes
- **ROBA®-linearstop**
Backlash-free brake systems for linear motor axes
- **ROBA®-guidestop**
Backlash-free holding brake for profile rail guides
- **ROBATIC®/ROBA®-quick/ROBA®-takt**
Electromagnetic clutches and brakes, clutch brake units



DC Drives

- **tendo®-PM**
Permanent magnet-excited DC motors





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You can find the complete address for the representative responsible for your area under www.mayr.com in the internet.

11/03/2019 GF/SC

