mayr®

your reliable partner

EAS®-HT

Reliable High Torque safety clutches for heavy load applications

Always in use

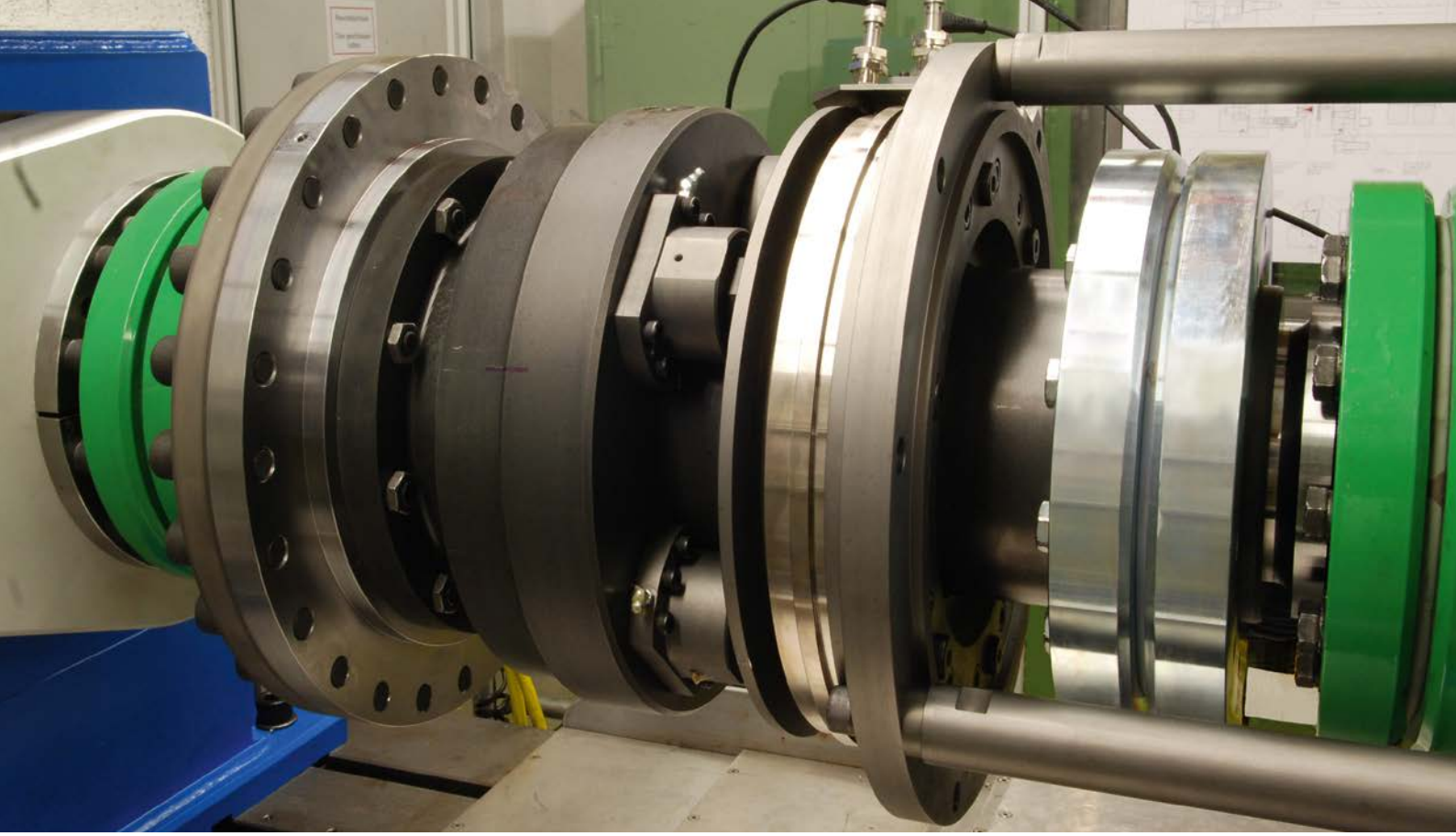
EAS®-HT safety clutches for heavy load applications prolong the availability of your production systems.

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

EAS®-HT safety clutches

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 safety clutches 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

EAS®-HT short bearing-supported hub

Torque:
4 to 40 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:
4 to 40 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 4060.7_400

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

Page 10

EAS®-HT curved-tooth

Torque:
7,5 to 440 kNm

Sizes 0 to 6
Type 4061.7_400

- Double shaft design with curved-tooth coupling
- 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 4062.704_0

- 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 4063.704_0

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

Page 16

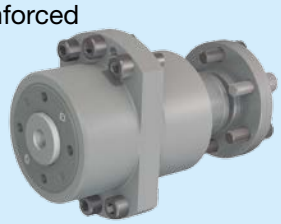
EAS®-HT Options

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® safety clutches

High-speed clutches EAS®-HSE

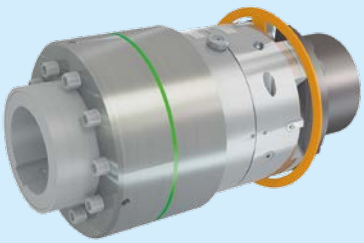
Torque:
100 to 8.400 Nm

Sizes 02 to 0
Type 404_ . _04_ _

Reliable overload protection at high speeds

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

Sizes 2 to 9
Type 4043. _1400

Protect extruder screws from expensive damage caused by overload

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

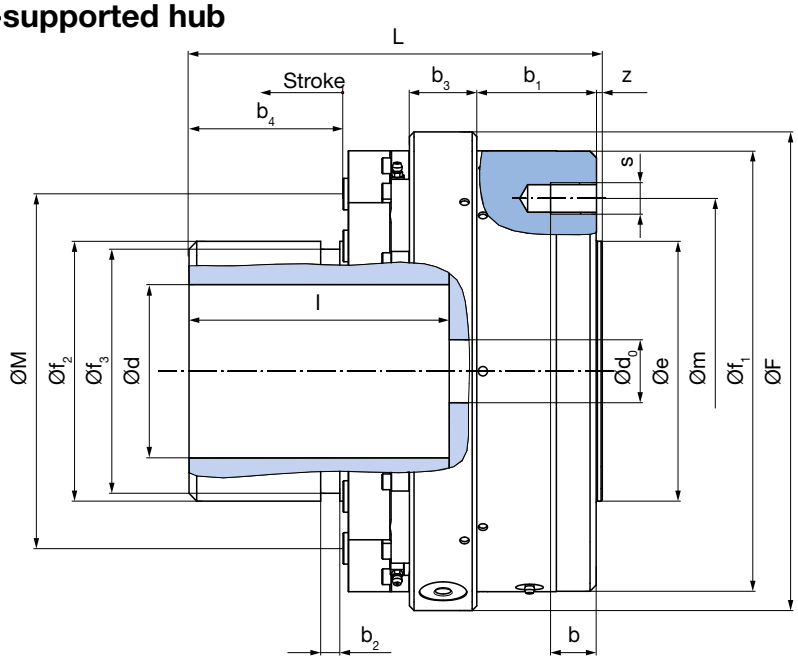
Rustproof design

Corrosion-protected safety clutches for environmental and waste water technology

EAS®-HT

Short bearing-supported hub

Type 4050._0400
Sizes 7 to 10



Order Number

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Sizes	Torque range [1]		Bores [1]	Bore	Torque adjustment value
			Ø d^{H7}	Ø d_0	[kNm]
7 to 10	low	**4**			
	medium	**5**			
	high	**6**			
	very high	**7**			

Example: Order Number 8 / 4050.60400 / 90 / 35 / 84050.60400 / 90 / 35 / 8

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

EAS®-element clutch

Technical Data				Size 7	8	9	10
Limit torques for overload	Type 4050.**4**0400	M_G	[kNm]	1.3 - 2.6	1.6 - 3.2	4 - 8	5 - 10
	Number of EAS®-elements			2	2	2	2
	Type 4050.**5**0400	M_G	[kNm]	2 - 4	3.2 - 6.4	6 - 12	10 - 20
	Number of EAS®-elements			3	4	3	4
	Type 4050.**6**0400	M_G	[kNm]	2.6 - 5.2	4.8 - 9.6	8 - 16	15 - 30
	Number of EAS®-elements			4	6	4	6
	Type 4050.**7**0400	M_G	[kNm]	4 - 8	6.5 - 13	12 - 24	20 - 40
	Number of EAS®-elements			6	8	6	8
Sizes EAS®-elements				0	0	1	1
Maximum speed		n_{max}	[rpm]	3000	2800	2500	2200
Bolt stroke on overload			[mm]	6	6	8	8

Max. permitted forces on the flange connection				Size 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				Size 7	8	9	10
EAS®-hub side	Type 4050._0400	J	[kgm²]	0.18	0.38	1.05	2.37
Flange side	Type 4050._0400	J	[kgm²]	0.17	0.38	1.3	2.65
Weight at d_{max}	Type 4050._0400		[kg]	47	76	145	232

Bores [mm]		Size 7	8	9	10
EAS®-hub side	d_{max}	90^{H7}	110^{H7}	135^{H7}	160^{H7}
Flange side	$d_{0\ max}$	30	40	48	58

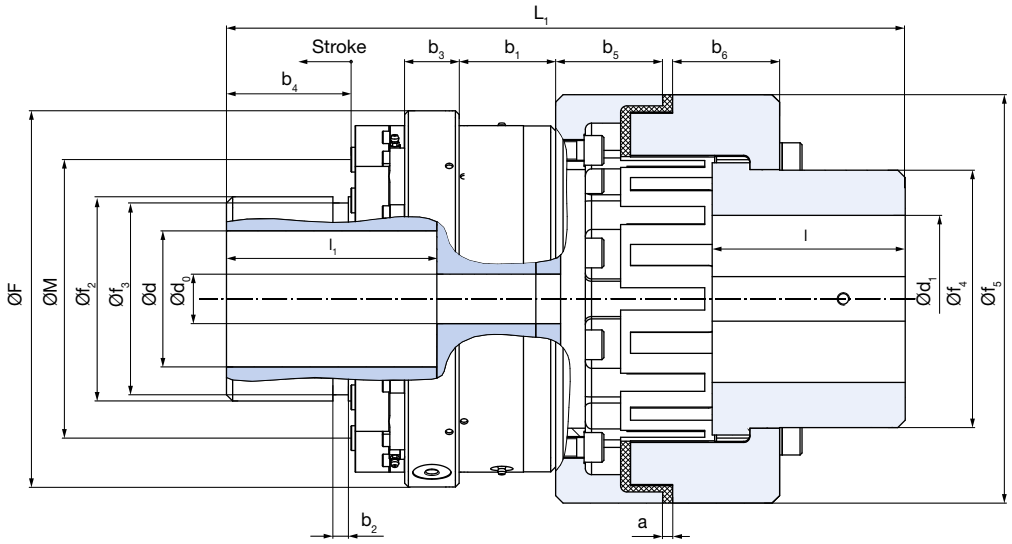
We reserve the right to make dimensional and constructional alterations.

Dimensions [mm]	Size 7	8	9	10
b	25	30	35	35
b_1	66	78	94	110
b_2	12.5	12.5	15	15
b_3	44	44	56	56
b_4	70.5	100.5	119.3	159.3
e_{h7}	147	165	242	276
F	260	304	380	450
f_1	237.5	279.5	359.5	417.5
f_2	120	165	190	245
f_3	110	155	180	230
L	228	270	330	387
l	140	170	210	250
M	180	225	270	340
m	190	220	285	325
s	8xM16	8xM20	8xM24	12xM24
z	4	4	5	6

EAS®-HT

lastic

Type 4053._0400
Sizes 7 to 10



Order Number

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Sizes 7 to 10	Torque range		Bore Ø d^{H7}	Bore Ø d_0^{H7}	Bore Ø d_1	Torque adjustment value [kNm]
	low	4				
	medium	5				
	high	6				
	very high	7				

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

EAS®-element clutch

Technical Data					Size 7	Size 8	Size 9	Size 10
Limit torques for overload	Type 4053.40400	M_G	[kNm]		1.3 - 2.6	1.6 - 3.2	4 - 8	5 - 10
	Number of EAS®-elements				2	2	2	2
	Type 4053.50400	M_G	[kNm]		2 - 4	3.2 - 6.4	6 - 12	10 - 20
	Number of EAS®-elements				3	4	3	4
	Type 4053.60400	M_G	[kNm]		2.6 - 5.2	4.8 - 9.6	8 - 16	15 - 30
	Number of EAS®-elements				4	6	4	6
	Type 4053.70400	M_G	[kNm]		4 - 8	6.5 - 13	12 - 24	20 - 40
	Number of EAS®-elements				6	8	6	8
Sizes EAS®-elements					0	0	1	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	±2.5
	radial	ΔK_r	[mm]		0.3	0.3	0.3	0.3
	angular	ΔK_w	[mm]		0.3	0.3	0.3	0.3
Nominal and maximum torques, flexible coupling		T_{KN}	[kNm]		5.8	9.9	20.5	28
		$T_{K\,max}$	[kNm]		8.3	14.5	27	66

Mass moments of inertia and weights				Size 7	Size 8	Size 9	Size 10
Mass moments of inertia	EAS®-hub side	J	[kgm²]	0.18	0.38	1.05	2.37
	Flexible side	J	[kgm²]	0.57	1.62	5.0	10.7
Weight at d_{max}			[kg]	85	154	282	464

Bores [mm]		Size 7	Size 8	Size 9	Size 10
EAS®-hub side	d_{max}	90^{H7}	110^{H7}	135^{H7}	160^{H7}
Bearing flange	$d_{0\,max}$	30	40	48	58
Flexible side	$d_{1\,max}$	115^{H7}	135^{H7}	180^{H7}	200^{H7}

Dimensions [mm]	Size 7	8	9	10
a	5.5	8	8	8
b_1	66	78	94	110
b_2	12.5	12.5	15	15
b_3	44	44	56	56
b_4	70.5	100.5	119.3	159.3
b_5	76	86.5	102	108
b_6	76	86.5	102	108
F	260	304	380	450
f_2	120	165	190	245
f_3	110	155	180	230
f_4	164	208	275	289
f_5	265	330	415	480
L_1	469.5	548.5	668	754
l	137	156	196	220
l_1	140	170	210	250
M	180	225	270	340

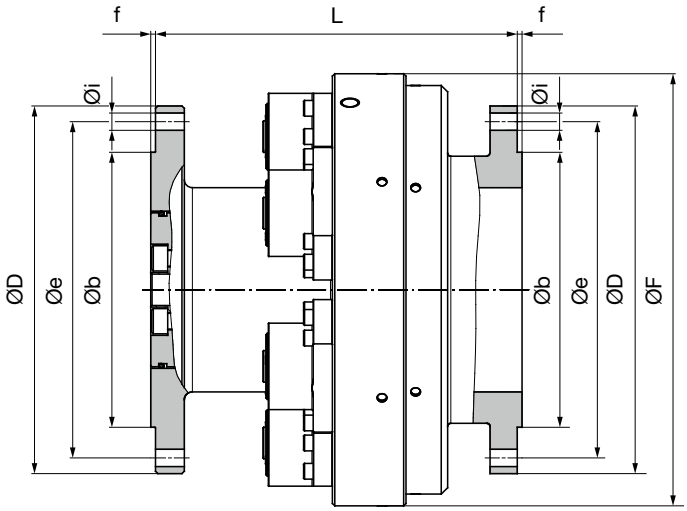
We reserve the right to make dimensional and constructional alterations.

1) The values refer to 1500 rpm.

EAS®-HT

Flange design

Type 4060.00400
Sizes 0 to 6



Order Number

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Sizes 0 to 6	Sizes 0 – 5 **0** Size 6 **1**	**Torque adjustment value** [kNm]

Example: Order number 5/ 4060.00400 / 200

EAS®-element clutch

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 [1)]
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			Size						
			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

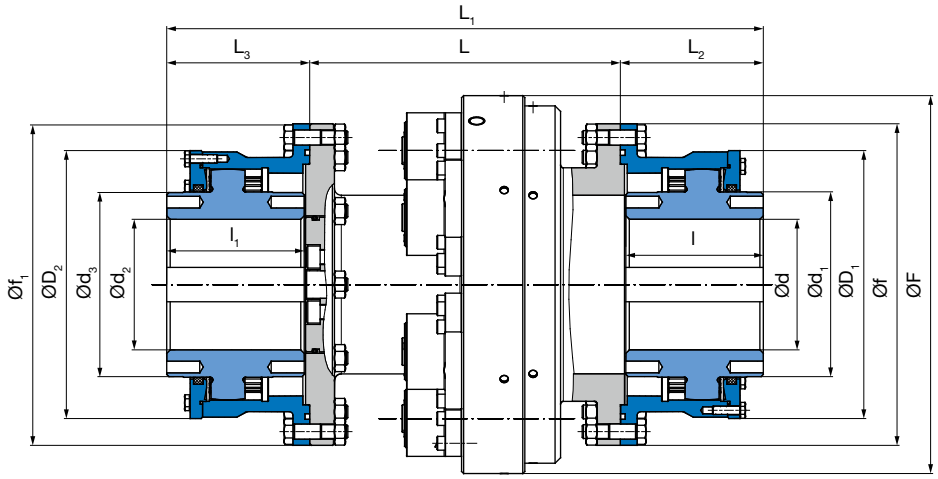
Dimensions [mm]	Size						
	0	1	2	3	4	5	6
b_{h7}	175	230	255	310	340	460	540
e	214	269	306	360	400	531	618
D	234	292	330	390	430	567	660
F	275	320	380	455	545	640	740
f	3	3	4	4	5	6	6
i	11	13	13	17	17	21	25
L	226	243	298	312	328	476	485

We reserve the right to make dimensional and constructional alterations.

EAS®-HT

Curved-tooth

Type 4061.00400
Sizes 0 to 6



Order Number

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Sizes 0 to 6	Sizes 0 – 5 Size 6	**0** **1**	**Bore** Ø d^{H7}	**Bore** Ø d_2^{H7}	**Torque adjustment value** [kNm]

Example: Order number 4 / 4061.00400 / 180 / 200 / 90

EAS®-element clutch

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 [1]
Maximum speed			n_{max}	[rpm]	2000	1750	1500	1250	1000	900	750
Bolt stroke on overload				[mm]	6	6	8	8	8	12	12
Curved-tooth coupling	Permitted misalign-ments [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, curved-tooth coupling			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			Size						
			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]		Size						
		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

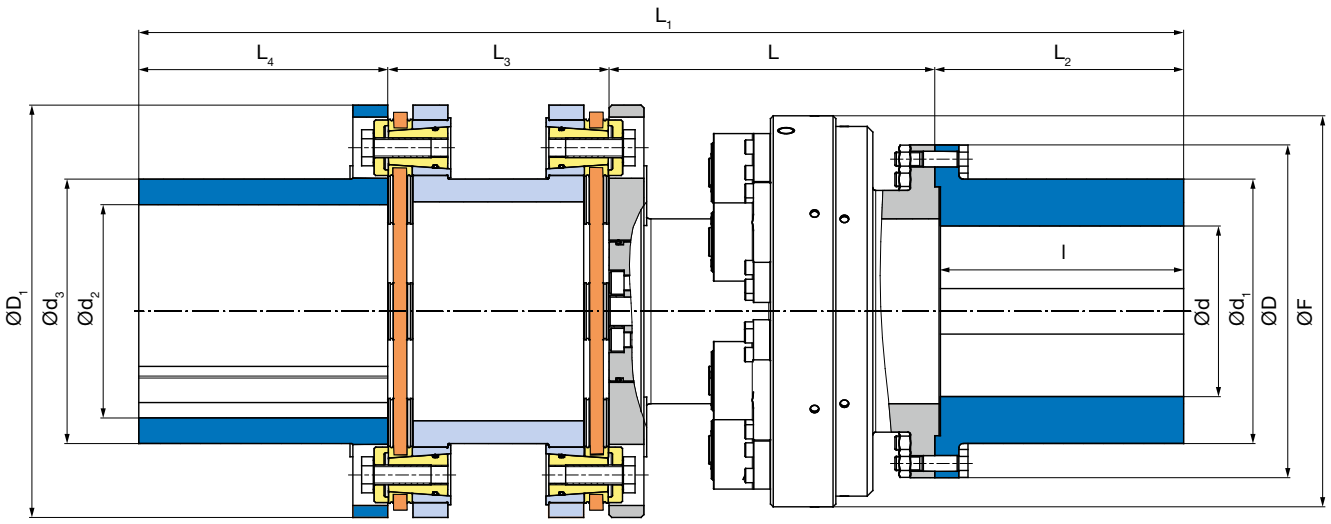
Dimensions [mm]	Size						
	0	1	2	3	4	5	6
d_1	135	185	210	255	290	400	480
d_3	135	185	210	255	290	400	480
D_1	195	251	288	337	375	502	584
D_2	195	251	288	337	375	502	584
F	275	320	380	455	545	640	740
f	234	292	330	390	430	567	660
f_1	234	292	330	390	430	567	660
L	226	242.5	298	312	328	476	485
L_1	434	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
l	100	125	140	180	200	260	310
l_1	100	125	140	180	200	260	310

We reserve the right to make dimensional and constructional alterations.

EAS®-HT

backlash-free

Type 4062.00400
Sizes 0 to 4



Order Number

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Sizes 0 to 4	Double-jointed coupling 0	Bore Ø d^{H7}	Bore Ø d_2^{H7}	Torque adjustment value [kNm]

Example: Order number 4 / 4062.00400 / 180 / 200 / 90

EAS®-element clutch

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				Size				
				0	1	2	3	4
Mass moments of inertia	Hub-side	J	[kgm²]	0.35	0.76	1.58	3.68	6.56
	Flexible 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]		Size				
		0	1	2	3	4
Hub side	d_{max}	120	170	180	220	240
Flexible side	$d_{2\,max}$	140	160	180	210	240

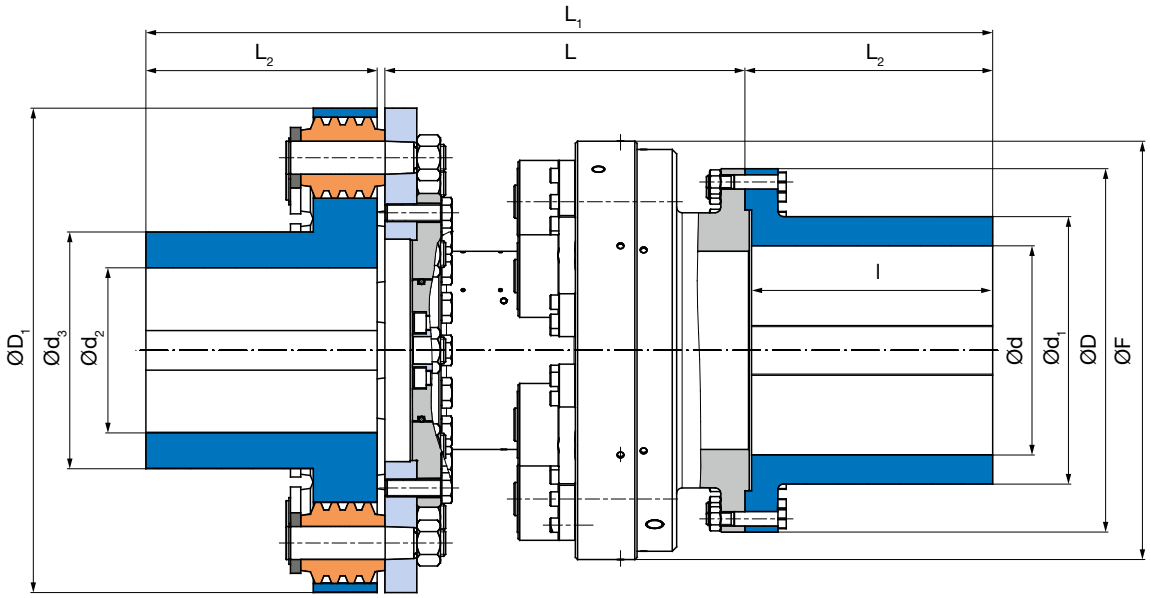
Dimensions [mm]	Size				
	0	1	2	3	4
d_1	186	230	243	300	321
d_3	186	215	243	279	321
D	234	292	330	390	430
D_1	290	332	378	431	492
F	275	320	380	455	545
L	229	245.5	302	316	330
L_1	735	811.5	934	1054.5	1173
L_2	175	200	225	265	310
L_3	155.6	166	182	208.4	223
L_4	175	200	225	265	310
l	171	195	219	260	302

We reserve the right to make dimensional and constructional alterations.

EAS®-HT

lastic bolt

Type 4063.00400
Sizes 4 to 6



Order Number

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Sizes 4 to 6	Bore Ø d^{H7}	Bore Ø d_2^{H7}	Torque adjustment value [kNm]

Example: Order number 4 / 4063.00400 / 270 / 180 / 90

EAS®-element clutch

Technical Data					Size		
					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 misalign-ments [1]	axial	ΔK_a	[mm]	±4	±4	±4
		radial	ΔK_r	[mm]	1.5	1.5	1.5
		angular	ΔK_w	[mm]	4.6	5.3	6.4
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				Size		
				4	5	6
Mass moments of inertia	Hub-side	J	[kgm²]	6.6	20.02	39.63
	Flexible side	J	[kgm²]	22.35	55.18	110.68
Weight at d_{max}			[kg]	706	1407	1956

Bores [mm]		Size		
		3	4	5
Hub side	d_{max}	240	300	340
Flexible side	$d_{2\,max}$	225	225	320

Dimensions [mm]	Size		
	4	5	6
d_1	321	420	500
d_3	320	360	448
D	430	567	660
D_1	660	760	920
F	545	640	740
L	375	533	543
L_1	946	1201	1231
L_2	310	350	370
L_3	250	300	300
l	302	342	362

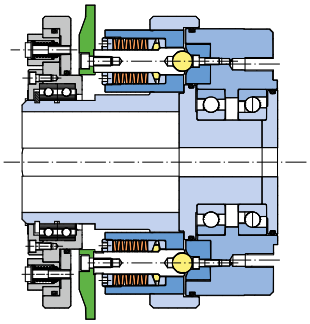
We reserve the right to make dimensional and constructional alterations.

1) The values refer to 1500 rpm.

EAS®-HT Options

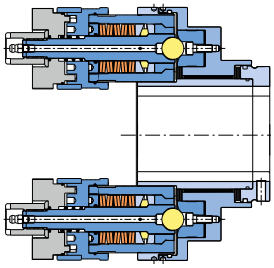
For the EAS®-HT clutches, designs specially created according to customer requests and different variants are also available.
EAS®-HT clutches can be combined with additional attachment parts.
We are happy to advise you on the dimensioning and configuration of your optimum design.

EAS®-HT with automatic re-engagement



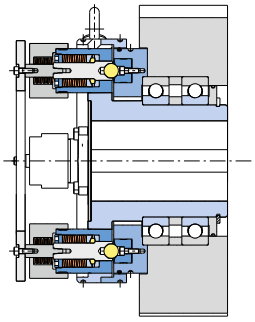
After overload occurrence, the EAS®-HT safety clutch is disengaged. It is possible to engage the EAS®-HT safety clutch via remote control by means of automatic re-engagement. Re-engagement can be carried out pneumatically, hydraulically, electromechanically or mechanically.

EAS®-HT with mechanical disengagement



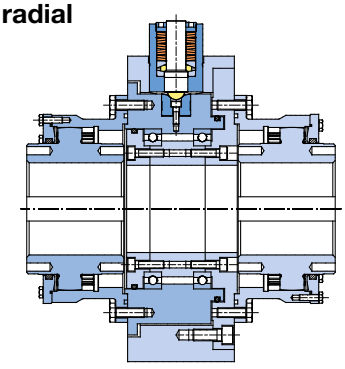
Mechanical disengagement device for the EAS®-elements.
The EAS®-elements can be disengaged individually mechanically.

EAS®-HT with engagement bowl



Engagement without aids.
Automatic engagement device for low operating speeds. Direct overload query possible through switching disk.

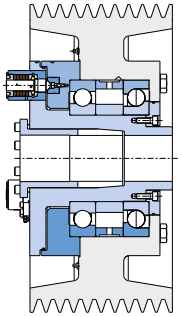
EAS®-HT radial



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

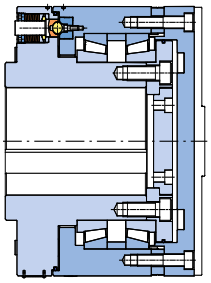
EAS®-HT Options

EAS®-HT with integrated drive elements



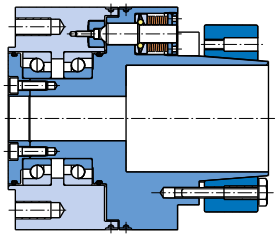
EAS®-HT, integrated attachment of sprocket and toothed wheels, V-belt disks etc.

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
- 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).

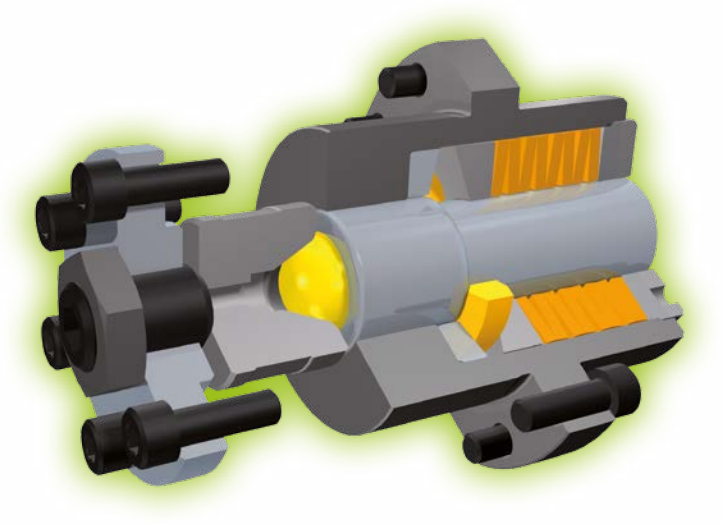
ATEX design

EAS®-HT safety clutches 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 safety clutch 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

EDELSTAHL® Rostfrei

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).

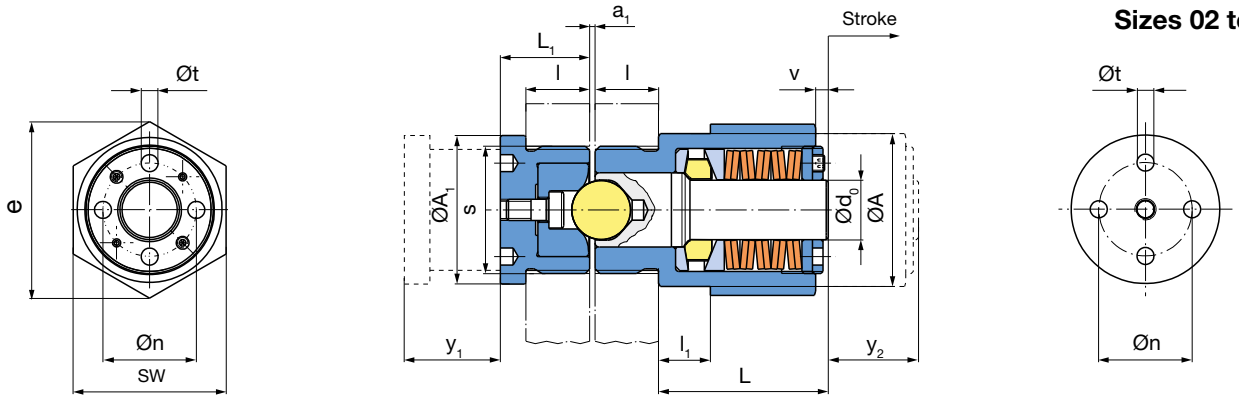
The catalogue contains basic information on pre-selection and dimensioning.

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

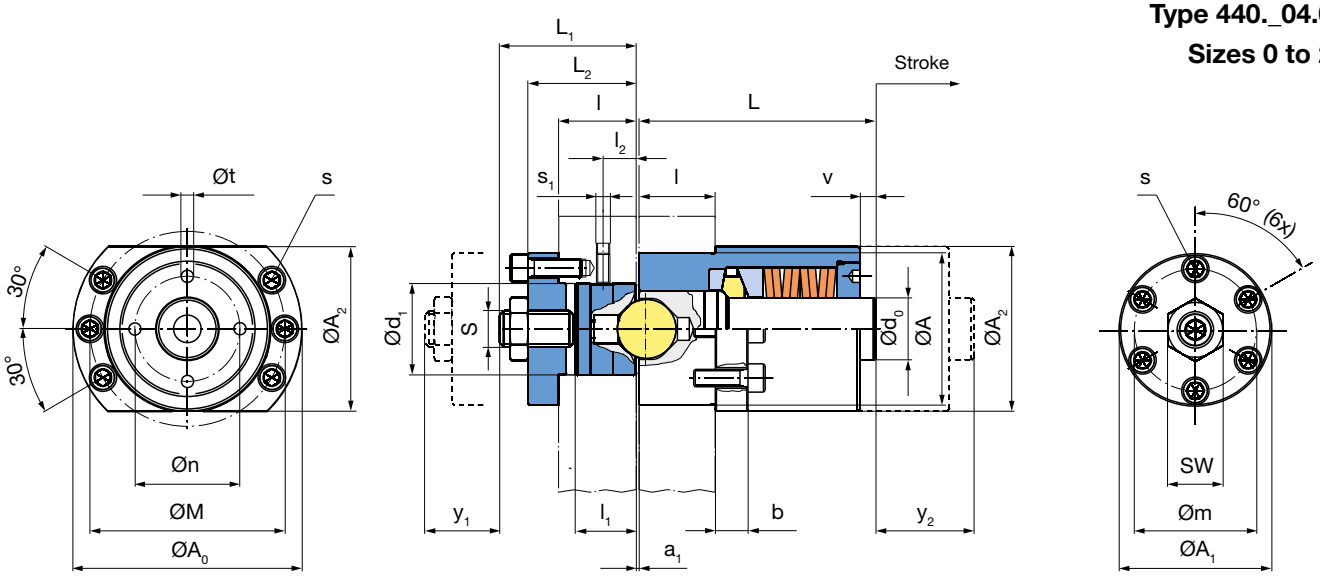
EAS®-element

Standard

Type 440._04.0
Sizes 02 to 01

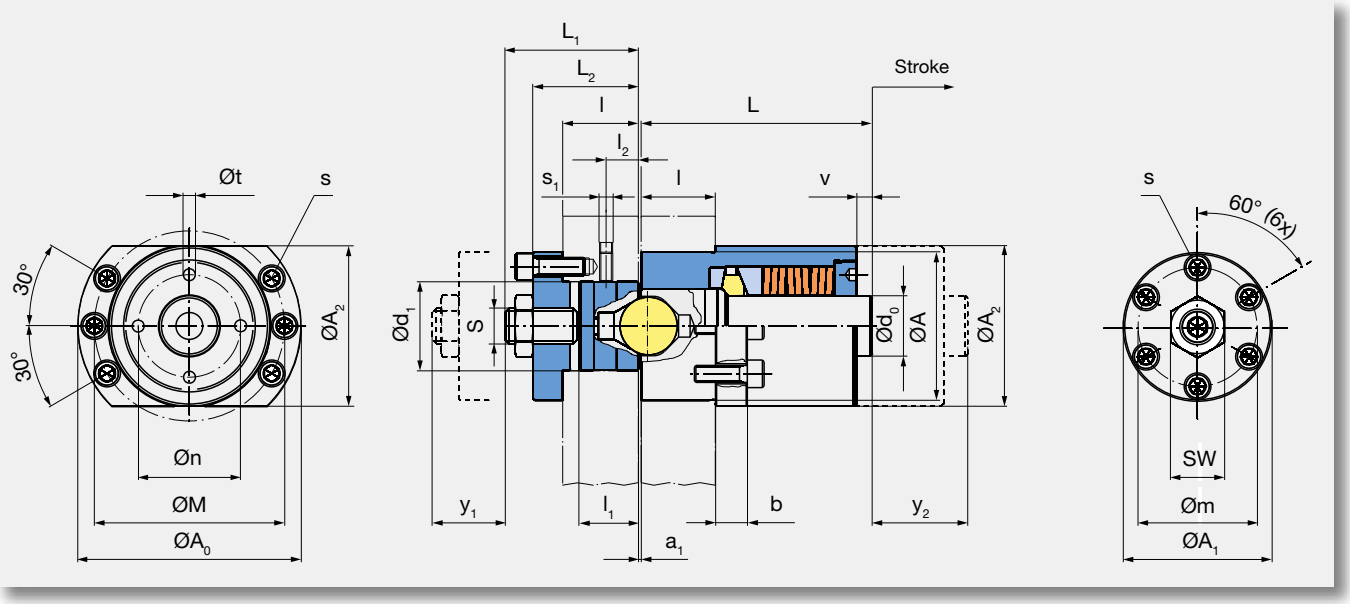


Type 440._04.0
Sizes 0 to 2



Reinforced

Type 441.604.0
Sizes 0 to 2



EAS®-element

Technical Data				Size				
				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]	Size				
	02	01	0	1	2
A^{H8}_{h7}	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
$d_1{}^{H8}_{h7}$	-	-	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]	Size				
	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
02
01
0
1
2

Torque range	
low	4
medium	5
high	6

Example: Order number 0 / 440.504.0

1) Tightening torque M_A = 40 Nm
2) Tightening torque M_A = 60 Nm
3) Fixing screw DIN EN ISO 4762 10.9 M_A = 9 Nm

EAS®-element Reinforced

Order Number

__ / 4 4 1 . 6 0 4 . 0

Sizes
0
1
2

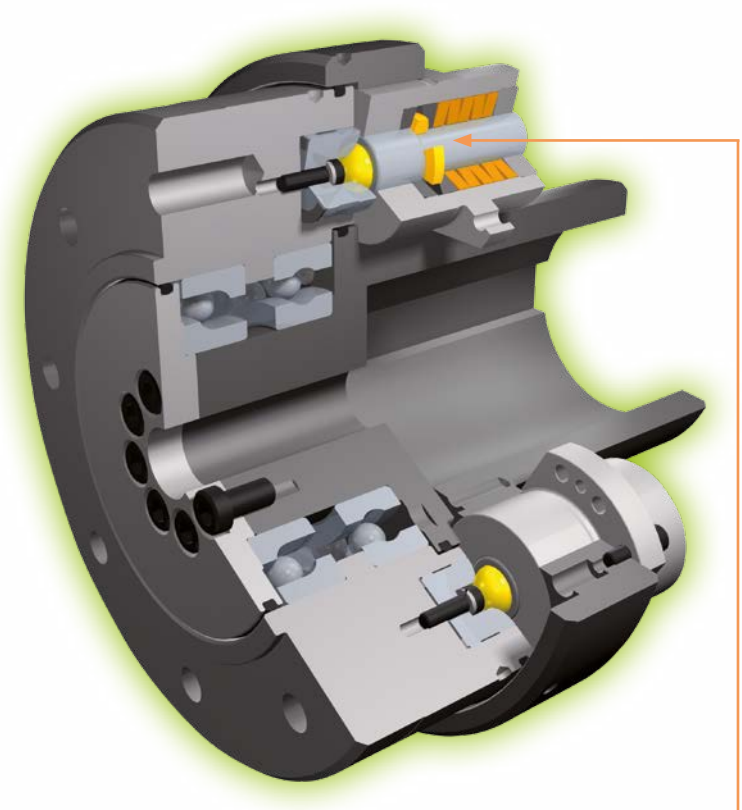
Example: Order number 0 / 441.604.0

4) Fixing screw DIN EN ISO 4762 10.9 M_A = 19 Nm
5) Fixing screw DIN EN ISO 4762 10.9 MM_A = 76 Nm
6) y_1 and y_2 are extension dimensions

Technical explanations EAS®-HT safety clutch

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 safety clutch 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.

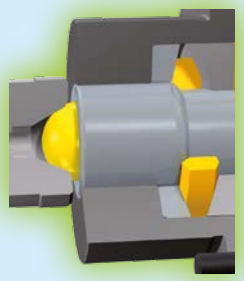
The limit torque for overload on the clutch can be adjusted by changing the cup spring pre-tension of each overload element.

The EAS®-HT safety clutches 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).

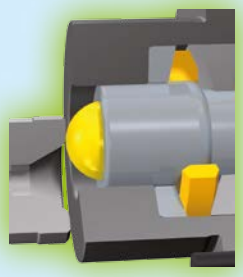
Operating principle of the EAS®-HT safety clutch Overload elements

- ❒ 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 safety clutch

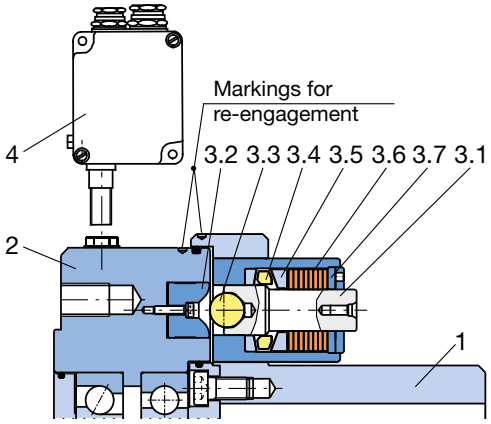


Fig. 2: EAS®-element clutch disengaged

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 washers 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.

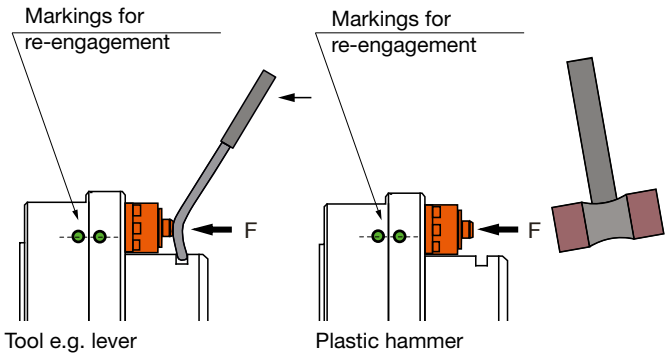


Fig. 3

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 safety clutches 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 safety clutches 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 safety clutch

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

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

$$T_G \approx T_N \times K_B \quad [Nm]$$

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 safety clutch 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 clutches, depending on the application:
- ❒ Elastomer coupling
- ❒ Shaft Couplings
- ❒ Curved-tooth coupling

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

Technical explanations EAS®-HT safety clutch

Misalignment compensation capability of the different shaft misalignment compensation couplings

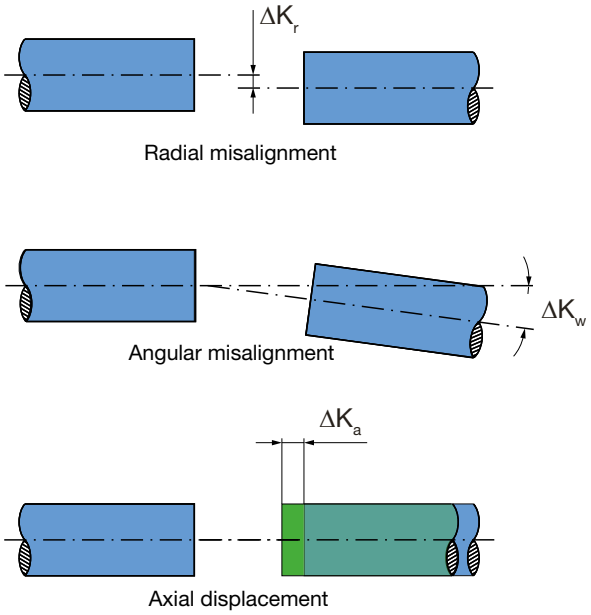


Fig. 4

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 coupling of the EAS®-HT safety clutch 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.

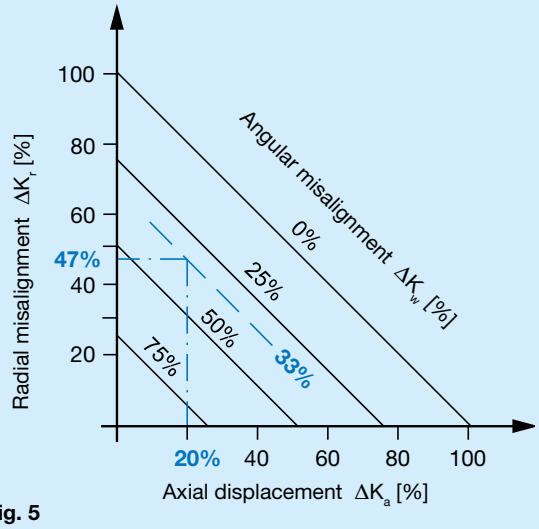


Fig. 5

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 %.

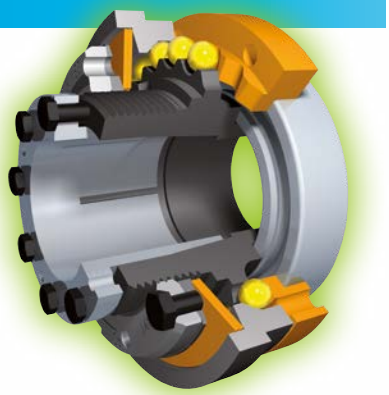
Example:

EAS®-HT lastic, Size 8
Type 4053.00400.0

- **Axial displacement** occurrence:
  ΔK_a = 0,5 mm; equals **20 %** of the permitted maximum valueΔK_a = 2,5 mm
- **Angular misalignment** occurrence:
  ΔK_w = 0,1 mm, equals **33 %** of the permitted maximum value ΔK_w = 0,3 mm
- **Radial displacement** occurrence:
  ΔK_w = 0,14 mm, equals **47 %** of the permitted maximum value ΔK_w = 0,3 mm

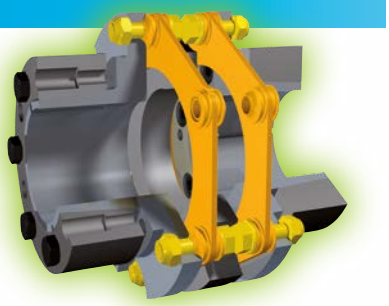
Product Summary

Safety Clutches/Overload Clutches



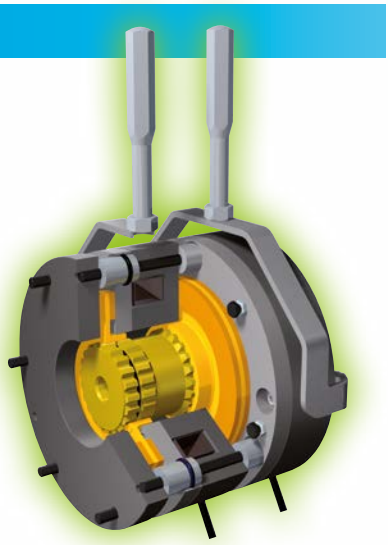
- **EAS®-Compact®/EAS®-NC**
  Positive locking and completely backlash-free torque limiting clutches
- **EAS®-smartic®**
  Cost-effective torque limiting clutches, quick installation
- **EAS®-element clutch/EAS®-elements**
  Load-disconnecting protection against high torques
- **EAS®-axial**
  Exact 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



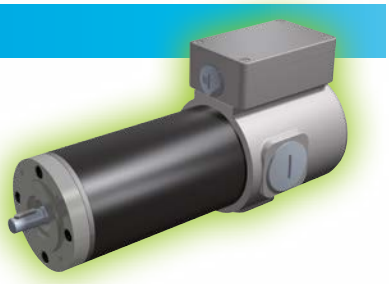
- **smartflex®/primeflex®**
  Perfect precision couplings for servo and stepping motors
- **ROBA®-ES**
  Backlash-free and damping for vibration-sensitive drives
- **ROBA®-DS/ROBA®-D**
  Backlash-free, torsionally rigid all-steel couplings
- **ROBA®-DSM**
  Cost-effective torque-measuring couplings

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-stop®-Z/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 profield 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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