Torque Limiter for high-speed applications

Test equipment
Extruders
Packaging machines
Automated systems
Power transmission

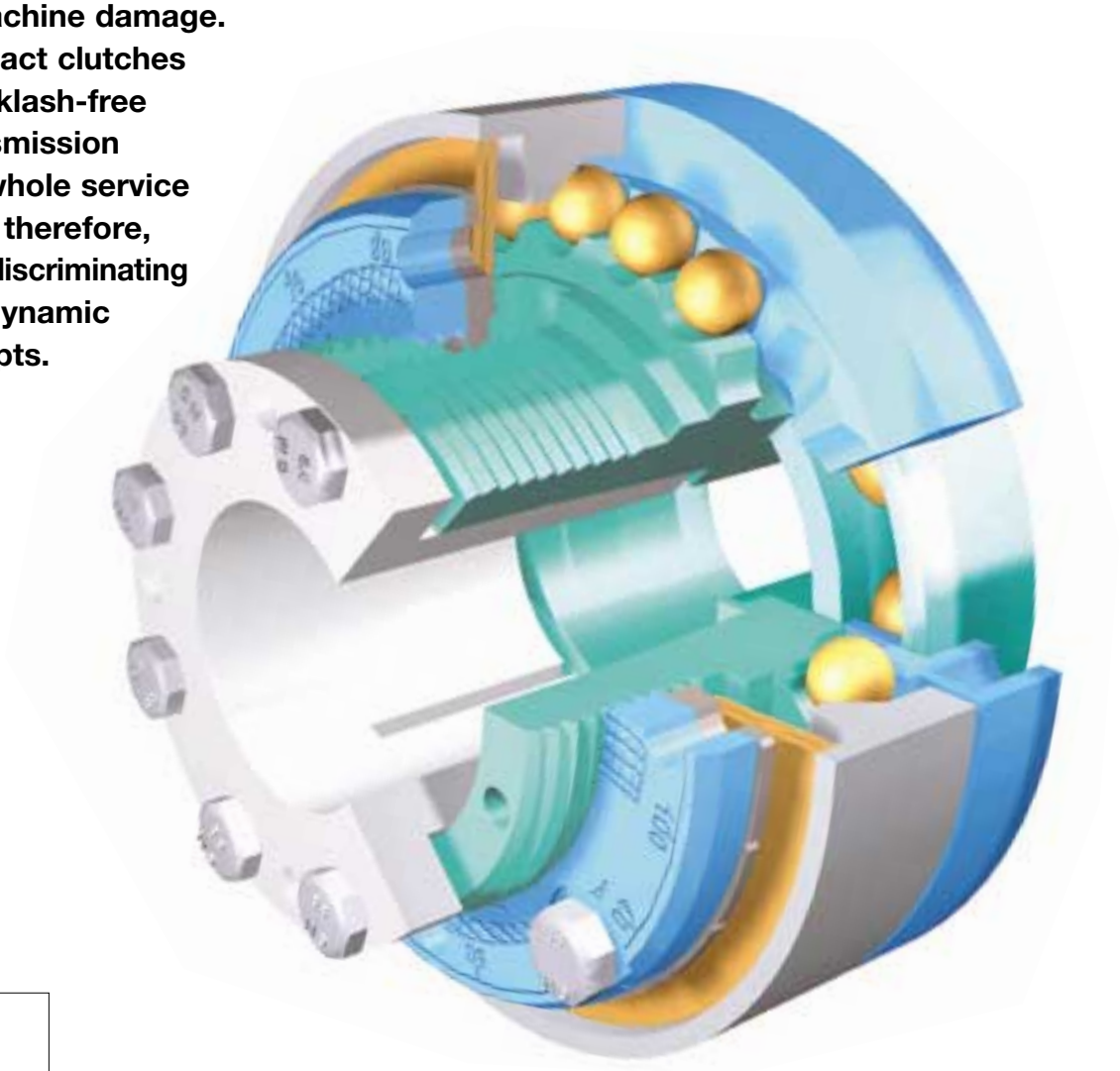
- *Reliable drive disconnection in case of an overload*
- *Backlash-free torque transmission*
- *Disengaged condition free from residual torque*

power-transmission

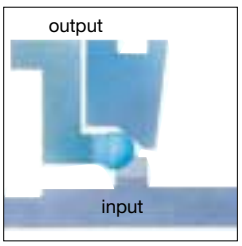
EAS®-Compact,
The effective economic machine protection

The EAS®-Compact underlines once again *mayr*®'s position as market and technological leader in the field of mechanical safety clutches. The new EAS®-Compact stands for economic and high-quality machine protection with its extremely high efficiency. It is the result of continuous development of the proven *mayr*® clutches which are the accepted standard for prevention of costly machine damage.

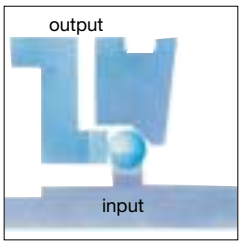
EAS®-Compact clutches provide backlash-free torque transmission during the whole service life and are, therefore, suitable for discriminating and highly dynamic drive concepts.

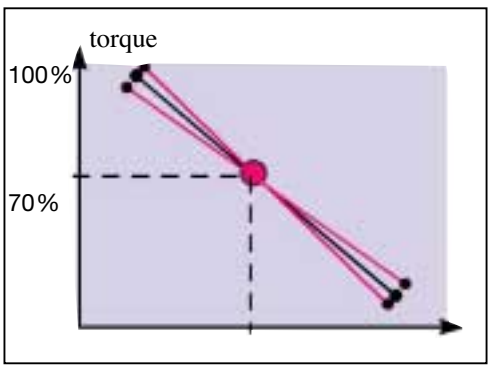


engaged



disengaged



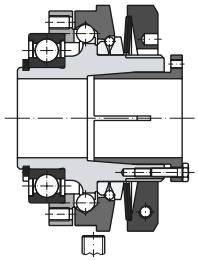
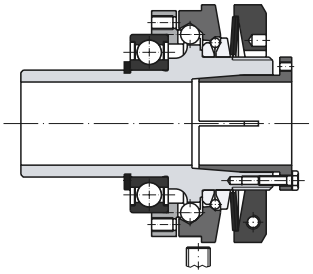
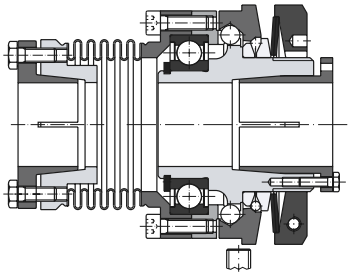
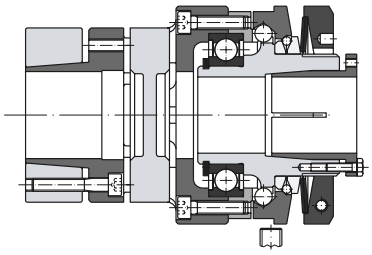
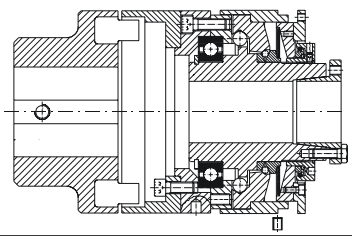


Safe torque adjustment with calibration and percentage scale

EAS®-Compact clutches are calibrated to 70 % of the max. torque at the factory. From this ideal datum it is very easy to accurately set the overload torque to other percentage values of the max. torque via the graduated adjusting nut.

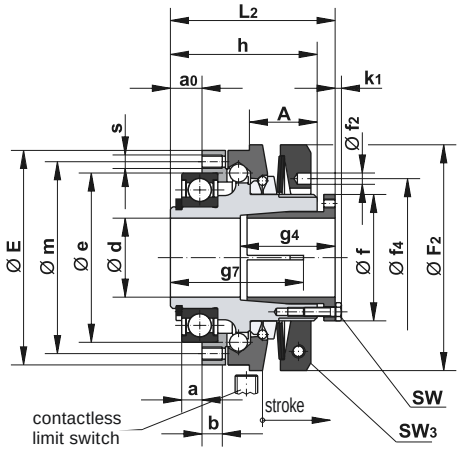
Both adjusting nuts - for axial (standard) and radial (option) adjustments - offer this comfortable, safe and readable torque adjustment.

Summary of types

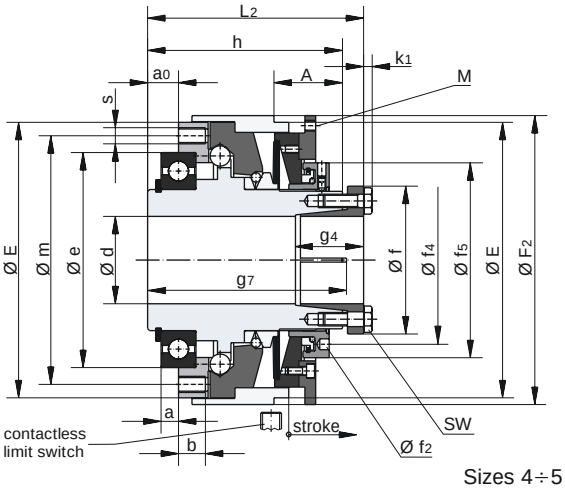
EAS®-Compact overload clutch	Type Size	Torque [Nm]	Application		Page
EAS®-Compact standard	490._ _ 4.0 Sizes 01÷5	5÷2800	Flanged torque limiting clutch for backlash-free torque transmission between shaft and drive element. The torque is transmitted backlash-free until disengagement. Low mass moment of inertia. Long working life. Easy re-engagement.		
			With cone bushing	Type 490._ 14.0	Page 4
			With keyway	Type 490._ 24.0	Page 5
EAS®-Compact With long projecting hub	490._ _ 4.1 Sizes 01÷5	5÷2800	Flanged torque limiting clutch for backlash-free torque transmission between shaft and drive element. The torque is transmitted backlash-free until disengagement. Additional location of wide drive elements on a long hub through roll and slide bearing is possible. Low mass moment of inertia. Long working life. Easy re-engagement.		
			With cone bushing	Type 490._ 14.1	Page 6
			With keyway	Type 490._ 24.1	Page 7
EAS®-Compact With steel bellows coupling	493._ _ 4.0 Sizes 01÷3	5÷350	Torque limiting clutch for backlash-free torque transmission between two coaxial shafts. The torque is transmitted backlash-free until disengagement. Low mass moment of inertia. Compensates axial, radial and angular misalignments. Long working life. Easy re-engagement.		
			With cone bushing	Type 493._ 14.0	Page 8
			With keyway	Type 493._ 24.0	Page 9
			With cone bushing/clamping hub	Type 493._ 34.0	Page 10
EAS®-Compact lastic backlash-free	494._ _ 4._ Sizes 01÷3	5÷700	Torque limiting clutch for backlash-free torque transmission between two coaxial shafts. The torque is transmitted backlash-free until disengagement. Low mass moment of inertia. Compensates axial, radial and angular misalignments. High damping features - Long working life. Easy re-engagement.		
			With cone bushing/clamping hub	Type 494._ 04._	Page 11
			With cone bushing/shrink disc	Type 494._ 14._	Page 12
			With keyway	Type 494._ 24._	Page 13
EAS®-Compact lastic	494._ _ 4.0 Sizes 4÷5	160÷2800	Torque limiting clutch combined with a torsionally flexible shaft coupling for connection of two shafts. The flexible component is designed as simple plug-in assembly allowing an easy assembly and dismantle of the coupling. Long working life. Easy re-engagement.		
			EAS®-side with cone bushing	Type 494._ 34.0	Page 14
			Both sides with keyway	Type 494._ 24.0	Page 14
Technical explanations					
Electrical accessories			Limit switch		Page 16

Standard with cone bushing

Type 490._14.0



Sizes 01÷3
Type 490._14.0



Sizes 4÷5
Type 490._14.0

Technical data

1) Size	Limiting torques for overload M_G 1) Type 490.514.0 Nm	Type 490.614.0 Nm	Type 490.714.0 Nm	Max. speed n_{max} rpm	Stroke of the thrust washer in the event of an overload mm	Mass moments of inertia I Hub side kgm²	Pressure flange side kgm²	Weight kg	Screws and tightening torques for SW mm	SW Nm	SW_3 mm	SW_3 Nm
01	5 – 12,5	10 – 25	20 – 50	8000	2,0	0,000383	0,000093	0,92	6 x M4	4	M4	3
0	10 – 25	20 – 50	40 – 100	7000	2,6	0,000943	0,000234	1,55	6 x M4	4	M4	5
1	20 – 50	40 – 100	80 – 200	6000	3,2	0,002279	0,000643	2,58	8 x M4	4	M5	9
2	40 – 100	80 – 200	160 – 400	5000	3,8	0,004421	0,001306	3,70	8 x M5	8	M5	9
3	80 – 175	160 – 350	320 – 700	4000	4,5	0,002649	0,010396	5,83	8 x M6	12	M6	15
4	160 – 350	320 – 700	640 – 1400	3000	5,5	0,11415	0,0258	23,6	8 x M10	40	–	–
5	320 – 700	640 – 1400	1280 – 2800	2000	7,0	0,1827	0,0407	30,4	8 x M12	60	–	–

Size	Bore d 2) 4) from – to mm	Min. shaft length g_4 mm	g_7 mm	A	a 6)	a_0	b	E	e_{h5} 7)
01	10 – 20	34	36	24	5	8	6	65	47
0	15 – 25	39	43	28	7	11	7	80	62
1	22 – 35	42	54	30	9	14	9	95	75
2	32 – 45	48	57	34	10	16	10	110	90
3	35 – 55	53	69	40	10	18	12	130	100
4	42 – 65	51	148	51	13	23	20	205	160
5	50 – 75	60	158	54	14	25	22	230	180

Size	F_2	f	f_2	f_4	f_5	h	k_1	L_2 3)	M	m	s	SW	SW_3
01	70	38	5	50	–	45	2,8	52	–	56	8 x M4	7	3
0	85	44	5	55	–	55	2,8	63	–	71	8 x M5	7	3
1	100	56	5	70	–	65	2,8	73	–	85	8 x M6	7	4
2	115	70	6	84	–	72	3,5	81	–	100	8 x M6 5)	8	4
3	135	84	7	100	–	82	4	93	–	116	8 x M8 5)	10	5
4	215	110	8	125	145	145	7	161	4 x M8	185	6 x M12	17	–
5	240	124	8	148	165	155	8	175	4 x M10	205	6 x M16	19	–

1) Other sizes for lower and higher torques on request
2) Shaft fits: up to Ø 38 $_{h6}$, above Ø 38 $_{h8}$
3) Dimensions in an un-tightened condition (in a tightened condition shorter)
4) Transmittable torques with smaller bores on request

We reserve the right to make dimensional and design alterations.

5) For clutch operation in the max. torque range, bolts of the quality class 12.9 must be used for the attachment to the drive element.
6) Mounting tolerance +0,1
7) Fit at customer site H7

Order example:

To be included when ordering, please state:	Size	Type	Bore Ø d	With limit switch
Order number:		490._14.0		see pages 16 - 18

01 ÷ 5 → Size
* Medium torque range . . . . . 5 → Type
* High torque range . . . . . 6 → Type
* Max. torque range . . . . . 7 → Type

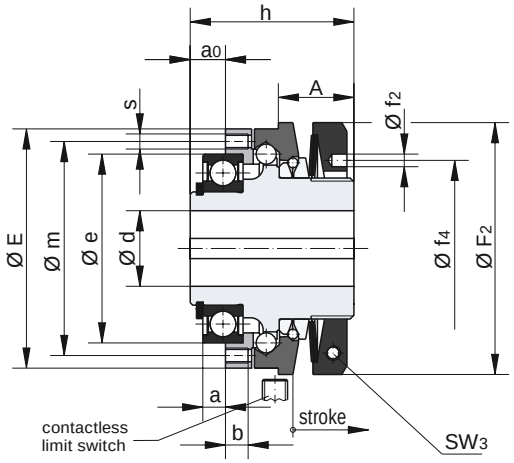
Bore Ø d → According to size

* See technical data, limiting torque for overload M_G

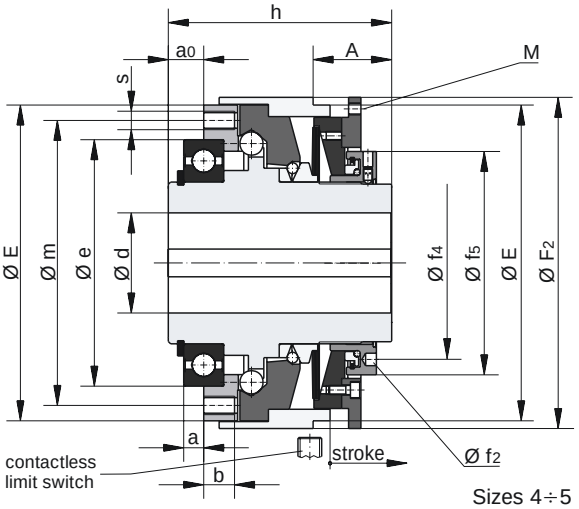
Example: Order number 1 / 490.614.0 / 25 plus limit switch 055.002.5

Standard with keyway

Type 490._24.0



Sizes 01÷3
Type 490._24.0



Sizes 4÷5
Type 490._24.0

Technical data

1) Size	Limiting torques for overload M_G 1) Type 490.524.0 Nm	Type 490.624.0 Nm	Type 490.724.0 Nm	Max. speed n_{max} rpm	Stroke of the thrust washer in the event of an overload mm	Mass moments in inertia I Hub side kgm²	Pressure flange side kgm²	Weight kg	Screws and tightening torques for SW_3 mm	Nm
01	5 – 12,5	10 – 25	20 – 50	8000	2,0	0,000377	0,000093	0,87	M4	3
0	10 – 25	20 – 50	40 – 100	7000	2,6	0,000917	0,000234	1,43	M4	5
1	20 – 50	40 – 100	80 – 200	6000	3,2	0,002193	0,000643	2,35	M5	9
2	40 – 100	80 – 200	160 – 400	5000	3,8	0,004205	0,001306	3,37	M5	9
3	80 – 175	160 – 350	320 – 700	4000	4,5	0,009867	0,002649	5,31	M6	15
4	160 – 350	320 – 700	640 – 1400	3000	5,5	0,1105	0,0258	23,5	–	–
5	320 – 700	640 – 1400	1400 – 2800	2000	7,0	0,1800	0,0407	29,2	–	–

Size	Bore d_{min} 2) mm	d_{max} 3) mm	A	a 5)	a_0	b	E	e_{h5} 6)
01	12	20	24	5	8	6	65	47
0	15	25	28	7	11	7	80	62
1	22	30	30	9	14	9	95	75
2	28	40	34	10	16	10	110	90
3	32	50	40	10	18	12	130	100
4	40	70	51	13	23	20	205	160
5	45	90	54	14	25	22	230	180

Size	F_2	f_2	f_4	f_5	h	M	m	s	SW_3
01	70	5	50	–	45	–	56	8 x M4	3
0	85	5	55	–	55	–	71	8 x M5	3
1	100	5	70	–	65	–	85	8 x M6	4
2	115	6	84	–	72	–	100	8 x M6 4)	4
3	135	7	100	–	82	–	116	8 x M8 4)	5
4	215	8	125	145	145	4 x M8	185	6 x M12	–
5	240	8	148	165	155	4 x M10	205	6 x M16	–

1) Other sizes for lower and higher torques on request
We reserve the right to make dimensional and design alterations.
2) Smaller bores for low torques on request
3) Bigger bores on request
4) For clutch operation in the max. torque range, bolts of the quality class 12.9 must be used for the attachment to the drive element.
5) Mounting tolerance +0,1
6) Fit at customer site H7

Order example:

To be included when ordering, please state:	Size	Type	Bore Ø d H7	With limit switch
Order number:		4 9 0 . _ 24 . 0		see pages 16 - 18

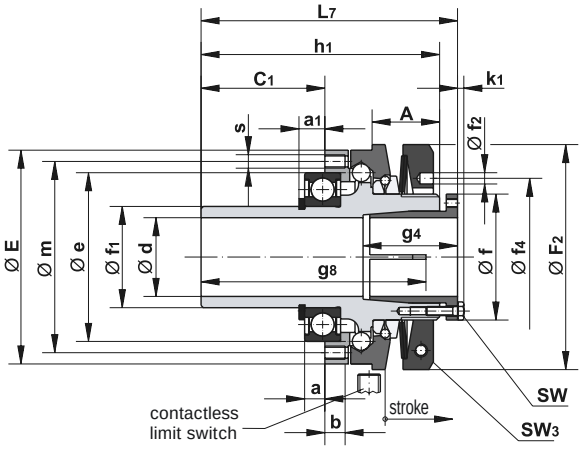
01 ÷ 5 → ← According to size
* Medium torque range . . . . . 5 →
* High torque range . . . . . 6 →
* Max. torque range . . . . . 7 →

* See technical data, limiting torque for overload M_G

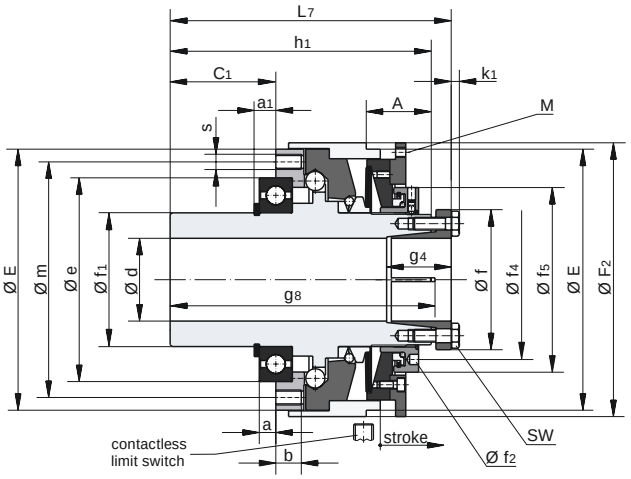
Example: Order number 1 / 490.624.0 / 25 plus limit switch 055.002.5

Long projecting hub with cone bushing

Type 490._14.1



Sizes 01÷3
Type 490._14.1



Sizes 4÷5
Type 490._14.1

Technical data

Size 1)	Limiting torques for overload M_G 1) Type 490.514.1 Nm	Type 490.614.1 Nm	Type 490.714.1 Nm	Max. speed n_{max} rpm	Stroke of the thrust washer in the event of an overload mm	Mass moments of inertia I Hub side kgm²	Pressure flange side kgm²	Weight kg	Screws and tightening torques for SW mm	SW Nm	SW_3 mm	SW_3 Nm
01	5 – 12,5	10 – 25	20 – 50	8000	2,0	0,000397	0,000093	1,02	6 x M4	4	M4	3
0	10 – 25	20 – 50	40 – 100	7000	2,6	0,001000	0,000234	1,77	6 x M4	4	M4	5
1	20 – 50	40 – 100	80 – 200	6000	3,2	0,002382	0,000643	2,86	8 x M4	4	M5	9
2	40 – 100	80 – 200	160 – 400	5000	3,8	0,004680	0,001306	4,16	8 x M5	8	M5	9
3	80 – 175	160 – 350	320 – 700	4000	4,5	0,010888	0,002649	6,42	8 x M6	12	M6	15
4	160 – 350	320 – 700	640 – 1400	3000	5,5	0,11588	0,0258	25,9	8 x M10	40	–	–
5	320 – 700	640 –1400	1400 – 2800	2000	7,0	0,1903	0,0407	33,1	8 x M12	60	–	–

Size	Bore d 2) 4) from – to mm	Min. shaft length g_4 mm	g_8 mm	A	a 6)	a_1	b	C_1	E	e_{h5} 7)
01	10 – 20	34	61	24	5	6,5	6	33	65	47
0	15 – 25	39	75	28	7	8,75	7	43	80	62
1	22 – 35	42	95	30	9	11,5	9	55	95	75
2	32 – 45	48	108	34	10	13	10	67	110	90
3	35 – 55	53	124	40	10	14	12	73	130	100
4	42 – 65	51	208	51	13	17	20	83	205	160
5	50 – 75	60	228	54	14	18	22	95	230	180

Size	F_2	f	$f_{1\,h6}$	f_2	f_4	f_5	h_1	k_1	L_7 3)	M	m	s	SW	SW_3
01	70	38	30	5	50	–	70	2,8	77	–	56	8 x M4	7	3
0	85	44	40	5	55	–	87	2,8	95	–	71	8 x M5	7	3
1	100	56	45	5	70	–	106	2,8	114	–	85	8 x M6	7	4
2	115	70	55	6	84	–	123	3,5	132	–	100	8 x M6 5)	8	4
3	135	84	65	7	100	–	137	4	148	–	116	8 x M8 5)	10	5
4	215	110	105	8	125	125	205	7	221	4 x M8	185	6 x M12	17	–
5	240	124	120	8	148	148	225	8	245	4 x M10	205	6 x M16	19	–

1) Other sizes for lower and higher torques on request
2) Shaft fits: up to Ø 38 $_{h6}$, above Ø 38 $_{h8}$
3) Dimensions in an un-tightened condition (in a tightened condition shorter)
4) Transmittable torques with smaller bores on request

We reserve the right to make dimensional and design alterations.

5) For clutch operation in the max. torque range, bolts of the quality class 12.9 must be used for the attachment to the drive element.
6) Mounting tolerance +0,1
7) Fit at customer site H7

Order example:

To be included when ordering, please state:	Size	Type	Bore Ø d	With limit switch
Order number:		490._14.1		see pages 16 - 18

01 ÷ 5 ← Size

* Medium torque range . . . . . 5 ← Type
* High torque range . . . . . 6 ← Type
* Max. torque range . . . . . 7 ← Type

Bore Ø d ← According to size

* See technical data, limiting torque for overload M_G

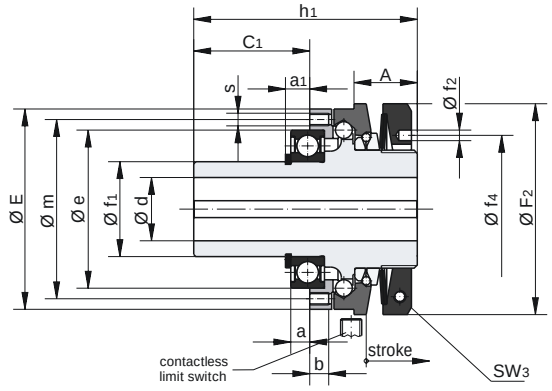
Example: Order number 1 / 490.614.1 / 25 plus limit switch 055.002.5

EAS®-Compact overload clutch

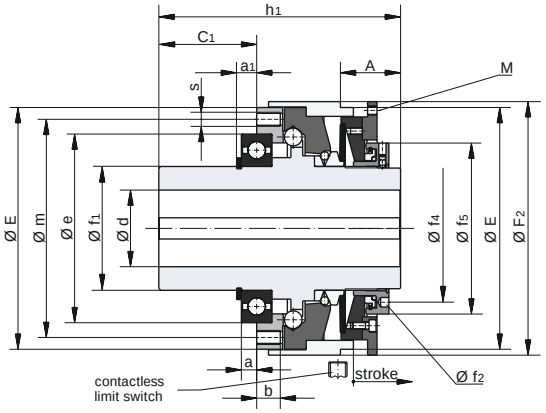
power transmission

Long projecting hub with keyway

Type 490._24.1



Sizes 01÷3
Type 490._24.1



Sizes 4÷5
Type 490._24.1

Technical data

1) Size	Limiting torques for overload M_G 1) Type 490.524.1 Nm	Type 490.624.1 Nm	Type 490.724.1 Nm	Max. speed n_{max} rpm	Stroke of the thrust washer in the event of an overload mm	Mass moments of inertia I Hub side kgm^2	Pressure flange side kgm^2	Weight kg	Screws and tightening torques for SW_3 mm	Nm
01	5 – 12,5	10 – 25	20 – 50	8000	2,0	0,000391	0,000093	0,97	M4	3
0	10 – 25	20 – 50	40 – 100	7000	2,6	0,000974	0,000234	1,65	M4	5
1	20 – 50	40 – 100	80 – 200	6000	3,2	0,002296	0,000643	2,64	M5	9
2	40 – 100	80 – 200	160 – 400	5000	3,8	0,004464	0,001306	3,82	M5	9
3	80 – 175	160 – 350	320 – 700	4000	4,5	0,010389	0,002649	5,90	M6	15
4	160 – 350	320 – 700	640 – 1400	3000	5,5	0,11224	0,0258	25,8	–	–
5	320 – 700	640 – 1400	1400 – 2800	2000	7,5	0,1876	0,0407	31,9	–	–

Size	Bore d_{min} 2) mm	d_{max} 3) mm	A	a 5)	a_1	b	C_1	E	e_{h5} 6)
01	12	20	24	5	6,5	6	33	65	47
0	15	25	28	7	8,75	7	43	80	62
1	22	30	30	9	11,5	9	55	95	75
2	28	40	34	10	13	10	67	110	90
3	32	50	40	10	14	12	73	130	100
4	40	70	51	13	17	20	83	205	160
5	45	90	54	14	18	22	95	230	180

Size	F_2	$f_{1\ h6}$	f_2	f_4	f_5	h_1	M	m	s	SW_3
01	70	30	5	50	–	70	–	56	8 x M4	3
0	85	40	5	55	–	87	–	71	8 x M5	3
1	100	45	5	70	–	106	–	85	8 x M6	4
2	115	55	6	84	–	123	–	100	8 x M6 4)	4
3	135	65	7	100	–	137	–	116	8 x M8 4)	5
4	215	105	8	125	145	205	4 x M8	185	6 x M12	–
5	240	120	8	148	165	225	4 x M10	205	6 x M16	–

1) Other sizes for lower and higher torques on request
2) Smaller bores for low torques on request
3) Bigger bores on request
4) For clutch operation in the max. torque range, bolts of the quality class 12.9 must be used for the attachment to the drive element.
5) Mounting tolerance +0,1
6) Fit at customer site H7

We reserve the right to make dimensional and design alterations.

Order example:

To be included when ordering, please state:	Size	Type	Bore Ø d^{H7}	With limit switch
Order number:		4 9 0 . _ 24 . 1		see pages 16 - 18

01 ÷ 5 → Size
* Medium torque range . . . . . 5 → Type
* High torque range . . . . . 6 → Type
* Max. torque range . . . . . 7 → Type

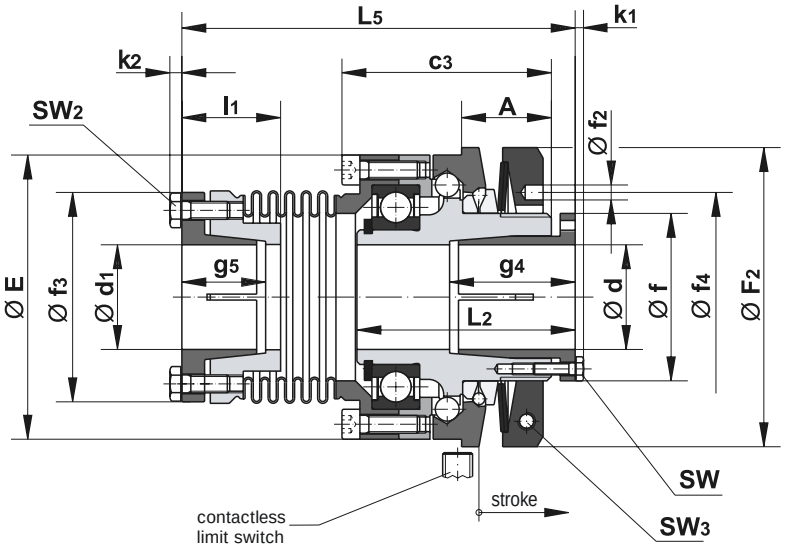
According to size → Bore

* See technical data, limiting torque for overload M_G

Example: Order number 1 / 490.624.1 / 25 plus limit switch 055.002.5

Steel bellows with cone bushing

Type 493._14.0



Sizes 01÷3
Type 493._14.0

Technical data

Size	Limiting torques for overload M_G [1] Type 493.514.0 Nm	Limiting torques for overload M_G [1] Type 493.614.0 Nm	Nominal torque of flexible, torsionally rigid steel bellows coupling T_{KN} Nm	Max. Speed n_{max} rpm	Stroke of the thrust washer in the event of an overload mm	Permissible flexibility axial ΔK_a mm	angular ΔK_w °	radial ΔK_r mm
01	5 – 12,5	10 – 25	50	8000	2,0	0,4	2	0,15
0	10 – 25	20 – 50	100	7000	2,6	0,6	2	0,15
1	20 – 50	40 – 100	200	6000	3,2	0,8	2	0,20
2	40 – 100	80 – 200	350	5000	3,8	1,0	2	0,25
3	80 – 175	160 – 350	600	4000	4,5	1,0	2	0,30

Size	Mass moments of inertia I Hub side kgm²	Mass moments of inertia I Flexible side kgm²	Weight kg	Clamping bolts and tightening torques SW mm	SW Nm	SW_2 mm	SW_2 Nm	SW_3 mm	SW_3 Nm	Bore [2] [4] d from – to mm	Bore [2] [4] d_1 from – to mm	Min. shaft length g_4 mm	Min. shaft length g_5 mm
01	0,000383	0,000233	1,33	6 x M4	4	4 x M4	3	M4	3	10 – 20	9 – 20	34	24
0	0,000943	0,000664	2,29	6 x M4	4	6 x M5	5	M4	5	15 – 25	12 – 25	39	27
1	0,002279	0,001583	3,68	8 x M4	4	6 x M6	9,5	M5	9	22 – 35	15 – 35	42	29
2	0,004421	0,003276	5,42	8 x M5	8	6 x M8	17	M5	9	32 – 45	22 – 42	48	32
3	0,010396	0,007079	8,43	8 x M6	12	8 x M8	17	M6	15	35 – 55	32 – 50	53	35

Size	A	c_3	E	F_2	f	f_2	f_3	f_4	k_1	k_2	L_2 [3]	L_5 [3]	l_1 [3]	SW	SW_2	SW_3
01	24	50	65	70	38	5	47	50	2,8	2,8	52	98	27,5	7	7	3
0	28	60	80	85	44	5	60	55	2,8	3,5	63	116	29	7	7	3
1	30	70	95	100	56	5	70	70	2,8	4,0	73	131,5	33	7	8	4
2	34	78	110	115	70	6	81	84	3,5	5,3	81	147	37	8	10	4
3	40	88	130	135	84	7	98	100	4,0	5,3	93	171	45	10	13	5

1) Other sizes for lower and higher torques on request
2) Shaft fits: up to Ø 38 $_{h6}$, above Ø 38 $_{h8}$
3) Dimensions in an un-tightened condition (in a tightened condition shorter)
4) Transmittable torques with smaller bores on request

We reserve the right to make dimensional and design alterations.

Order example:

To be included when ordering, please state:	Size	Type	Bore Ø d	Bore Ø d_1	With limit switch
Order number:		4 9 3 . _ 14 . 0			see pages 16 - 18

01 ÷ 3
* Medium torque range 5
* High torque range 6

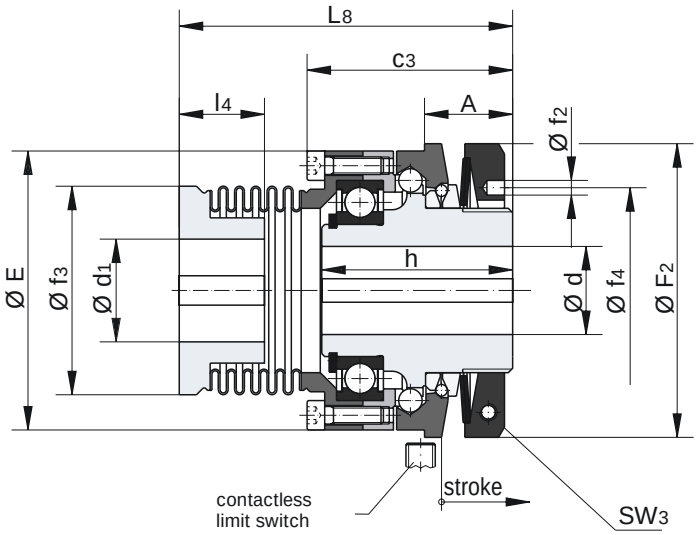
According to size
According to size

* See technical data, limiting torque for overload M_G

Example: Order number 1 / 493.614.0 / 22 / 25 plus limit switch 055.002.5

Steel bellows with keyway

Type 493._24.0



Sizes 01÷3
Type 493._24.0

Technical data

Size	Limiting torques for overload M_G [1] Type 493.524.0 Nm	Limiting torques for overload M_G [1] Type 493.624.0 Nm	Nominal torque of flexible, torsionally rigid steel bellows coupling T_{KN} Nm	Max. Speed n_{max} rpm	Stroke of the thrust washer in the event of an overload mm	Permissible flexibility axial ΔK_a mm	Permissible flexibility angular ΔK_w °	Permissible flexibility radial ΔK_r mm	Screws and tightening torques for SW_3 mm	Screws and tightening torques for SW_3 Nm
01	5 – 12,5	10 – 25	50	8000	2,0	0,4	2	0,15	M4	3
0	10 – 25	20 – 50	100	7000	2,6	0,6	2	0,15	M4	5
1	20 – 50	40 – 100	200	6000	3,2	0,8	2	0,20	M5	9
2	40 – 100	80 – 200	350	5000	3,8	1,0	2	0,25	M5	9
3	80 – 175	160 – 350	600	4000	4,5	1,0	2	0,30	M6	15

Size	Mass moments of inertia I Hub side kgm²	Mass moments of inertia I Flexible side kgm²	Weight kg	Bore d_{min} mm	Bore d_{max} mm	Bore $d_{1\,min}$ mm	Bore $d_{1\,max}$ mm
01	0,000383	0,000233	1,28	9	20	9	20[2]
0	0,000943	0,000664	2,17	12	25	12	25[3]
1	0,002279	0,001583	3,45	15	30	15	35[4]
2	0,004421	0,003276	5,09	22	40	22	42[5]
3	0,010396	0,007079	8,14	32	50	32	50

Size	A	c_3	E	F_2	f_2	f_3	f_4	h	L_8	l_4	SW_3
01	24	50	65	70	5	47	50	45	82,5	25	3
0	28	60	80	85	5	60	55	55	99	27	3
1	30	70	95	100	5	71	70	65	113,5	29	4
2	34	78	110	115	6	81	84	72	126	36	4
3	40	88	130	135	7	98	100	82	147,5	44	5

1) Other sizes for lower and higher torques on request
We reserve the right to make dimensional and design elterations.
2) Up to Ø 18 keyway DIN 6885/1, above Ø 18 keyway DIN 6885/3
3) Up to Ø 22 keyway DIN 6885/1, above Ø 22 keyway DIN 6885/3
4) Up to Ø 33 keyway DIN 6885/1, above Ø 33 keyway DIN 6885/3
5) Up to Ø 38 keyway DIN 6885/1, above Ø 38 keyway DIN 6885/3

Order example:

To be included when ordering, please state:	Size	Type	Bore Ø d	Bore Ø d_1^{H7}	With limit switch
Order number:		4 9 3 . _ 24 . 0			see pages 16 - 18

01 ÷ 3 →
* Medium torque range . . . . . 5 →
* High torque range . . . . . 6 →

← According to size
← According to size

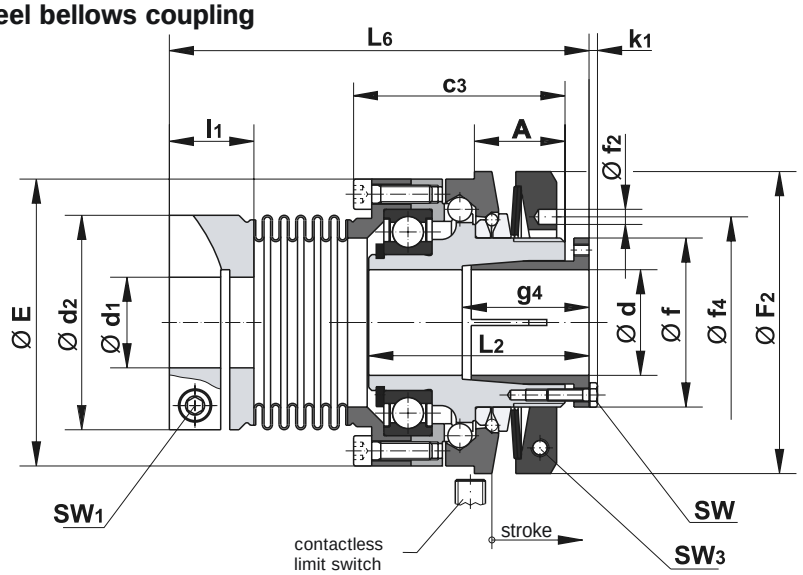
* See technical data, limiting torque for overload M_G

Example: Order number 2 / 493.624.0 / 22 / 25 plus limit switch 055.002.5

EAS®-Compact with steel bellows coupling

EAS®-side cone bushing
Coupling-side clamping hub

Type 493._34.0



Sizes 01÷3
Type 493._34.0

Technical data

Size	Limiting torques for overload M_G [1] Type 493.534.0 Nm	Limiting torques for overload M_G [1] Type 493.634.0 Nm	Nominal torque of flexibile, torsionally rigid steel bellows coupling T_{KN} Nm	Max. speed n_{max} rpm	Stroke of the thrust washer in the event of an overload mm	Permissible flexibility axial ΔK_a mm	angular ΔK_w °	radial ΔK_r mm
01	5 – 12,5	10 – 25	50	8000	2,0	0,4	2	0,15
0	10 – 25	20 – 50	100	7000	2,6	0,6	2	0,15
1	20 – 50	40 – 100	200	6000	3,2	0,8	2	0,20
2	40 – 100	80 – 200	350	5000	3,8	1,0	2	0,25
3	80 – 175	160 – 350	600	4000	4,5	1,0	2	0,30

Size	Mass moments of inertia I Hub side kgm²	Mass moments of inertia I Flexible side kgm²	Weight kg	Clamping bolts and tightening torques SW mm	SW Nm	SW_1 mm	SW_1 Nm	SW_3 mm	SW_3 Nm	Bore [2] [4] d from – to mm	Bore [2] [4] d_1 from – to mm	Min. shaft length g_4 mm	Min. shaft length l_1 mm
01	0,000383	0,000233	1,46	6 x M4	4	M 5	10	M4	3	10 – 20	12 – 25	34	24
0	0,000943	0,000664	2,32	6 x M4	4	M 6	18	M4	5	15 – 25	15 – 32	39	28
1	0,002279	0,001583	3,70	8 x M4	4	M 6	18	M5	9	22 – 35	25 – 42	42	28
2	0,004421	0,003276	5,47	8 x M5	8	M 8	43	M5	9	32 – 45	30 – 45	48	36
3	0,010396	0,007079	8,36	8 x M6	12	M10	87	M6	15	35 – 55	35 – 55	53	40

Size	A	c_3	d_2	E	F_2	f	f_2	f_4	k_1	L_2	L_6 [3]	SW	SW_1	SW_3
01	24	50	50	65	70	38	5	50	2,8	52	107	7	4	3
0	28	60	60	80	85	44	5	55	2,8	63	126	7	5	3
1	30	70	71	95	100	56	5	70	2,8	73	139	7	5	4
2	34	78	82	110	115	70	6	84	3,5	81	159	8	6	4
3	40	88	98	130	135	84	7	100	4,0	93	184	10	8	5

1) Other sizes for lower and higher torques on request.
We reserve the right to make dimensional and design alterations.
2) Shaft fits: up to Ø 38 $_{h6}$, above Ø 38 $_{h8}$
3) Dimensions in an un-tightened condition (in a tightened condition shorter)
4) Transmittable torques with smaller bores on request

Order example:

To be included when ordering, please state:	Size	Type	Bore Ø d	Bore Ø d_1^{H7}	With limit switch
Order number:		4 9 3 . _ 34 . 0			see pages 16 - 18

01 ÷ 3
* Medium torque range 5
* High torque range 6

According to size
According to size

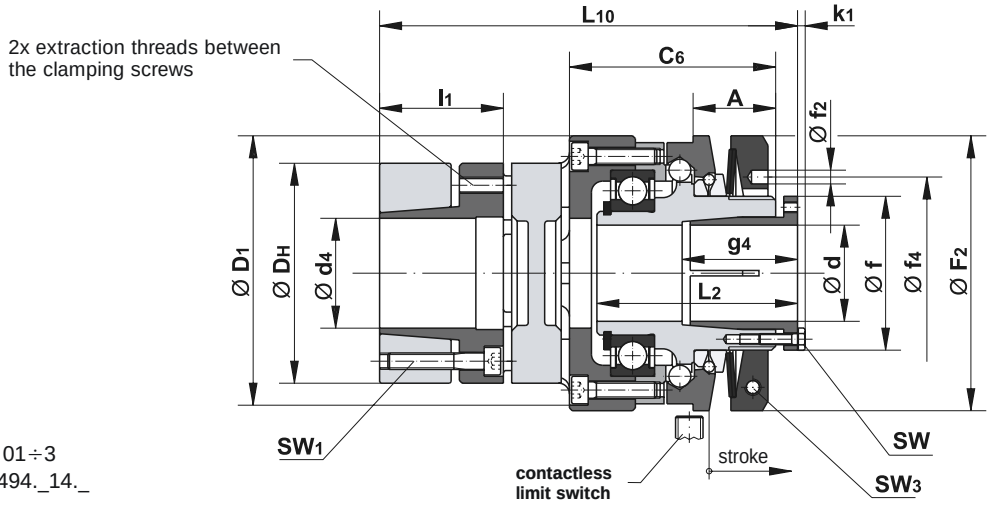
* See technical data, limiting torque for overload M_G

Example: Order number 0 / 493.634.0 / 22 / 25 plus limit switch 055.002.5

EAS®-Compact with flexible, backlash-free shaft coupling

Type 494._14._

EAS®-side cone bushing
Coupling-side shrink disc



Sizes 01÷3
Type 494._14._

Technical data

Size	Limiting torques for overload M_G Type 1) 494.514._ Nm	Type 1) 494.614._ Nm	Type 1) 494.714._ Nm	Nominal torque flexible, backlash-free shaft coupling T_{KN} 1) 92 Shore A T_{KN} Nm	92 Shore A $T_{KN\,max}$ Nm	98 Shore A T_{KN} Nm	98 Shore A $T_{KN\,max}$ Nm	Max. speed n_{max} rpm	Stroke of the thrust washer in the event of an overload mm	Screws and tightening torques for SW mm	SW Nm	SW_1 mm	SW_1 Nm	SW_3 mm	SW_3 Nm	Weight kg
01	5 – 12,5	10 – 25	20 – 50	35	70	60	120	8000	2,0	6 x M4	4	4xM 5	6	M4	3	1,58
0	10 – 25	20 – 50	40 – 100	95	190	160	320	7000	2,6	6 x M4	4	8xM 5	6	M4	5	2,62
1	20 – 50	40 – 100	80 – 200	190	380	325	650	6000	3,2	8 x M4	4	8xM 6	10,5	M5	9	4,45
2	40 – 100	80 – 200	160 – 400	265	530	450	900	5000	3,8	8 x M5	8	4xM 8	25	M5	9	6,86
3	80 – 175	160 – 350	–	310	620	525	1050	4000	4,5	8 x M6	12	4xM 8	30	M6	15	11,22

Size	Shaft misalignments flexible coupling Axial 92/98 Shore A ΔK_a mm	Radial 92 Shore A ΔK_r mm	Radial 98 Shore A ΔK_r mm	Angular misalignments 92 Shore A α °	Angular misalignments 98 Shore A α °	Mass moments of inertia I Hub side kgm²	Mass moments of inertia I Flexible side kgm²	Bores Flexible side Ø d_4 1) mm	Bores EAS®-side Ø d 2) 3) mm	Min. shaft length g_4 mm
01	1,4	0,14	0,10	1,0	0,9	0,000383	0,0004	15 – 28	10 – 20	34
0	1,5	0,15	0,11	1,0	0,9	0,000943	0,0010	18 – 38	15 – 25	39
1	1,8	0,17	0,12	1,0	0,9	0,002279	0,0020	20 – 45	22 – 35	42
2	2,0	0,19	0,14	1,0	0,9	0,004421	0,0050	28 – 50	32 – 45	48
3	2,1	0,21	0,16	1,0	0,9	0,010396	0,0114	35 4) – 60	35 – 55	53

Size	A	C_6	D_1	D_H	F_2	f	f_2	f_4	k_1	L_2 6)	L_{10} 6)	l_1	SW	SW_1	SW_3
01	24	52	70	55	70	38	5	50	2,8	52	107	30	7	4	3
0	28	63,5	85	65	85	44	5	55	2,8	63	126,5	35	7	4	3
1	30	75	100	80	100	56	5	70	2,8	73	152	45	7	5	4
2	34	82	115	95	115	70	6	84	3,5	81	167	50	8	6	4
3	40	94	135	105	135	84	7	100	4,0	93	189	56	8	8	5

1) The transmittable torques of the flex. coupling „TKN“ are dependent on factors as for example temperature factor, torsional rigidity factor etc., see also coupling design ROBA®-ES catalogue K.940 or please contact our sales office. Furthermore the transmittable torques of the flexible coupling depend on the bore diameter d_3, see also table 1 on page 18, cat. 490
2) Shaft fits: up to Ø 38 $_{h6}$, above Ø 38 $_{h8}$
3) Transmittable torques with smaller bores on request
4) Shaft fits: up to Ø 40 $_{j6}$
6) Dimensions in an un-tightened condition (in a tightened condition shorter)

We reserve the right to make dimensional and design alterations.

Order example:

To be included when ordering, please state:	Size	Type	Bore Ø d	Bore Ø d_4	With limit switch
Order number:		4 9 4 . _ 14 . _			see pages 16 - 18

01 ÷ 3
* Medium torque range 5
* High torque range 6
* Max. torque range 7

According to size
According to size
3 Flex. coupling 92 shore A
4 Flex. coupling 98 shore A

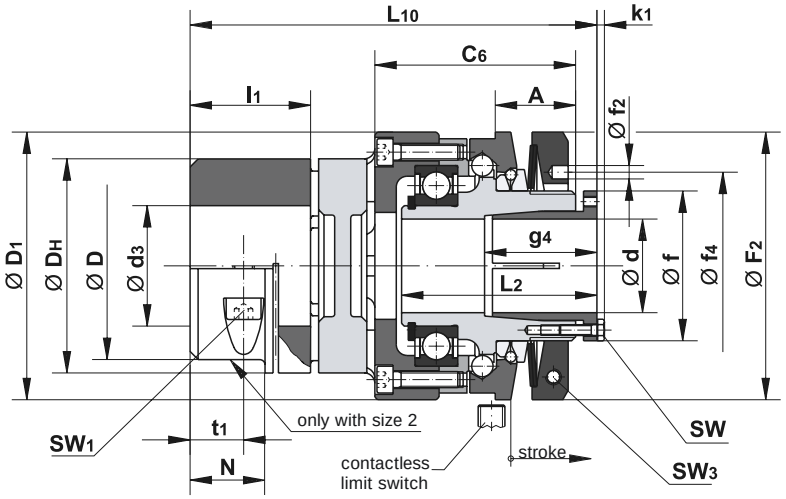
* See technical data, limiting torque for overload M_G

Example: Order number 1 / 494.614.3 / 22 / 25 plus limit switch 055.002.5

EAS®-Compact with flexible, backlash-free shaft coupling

Type 494._04._

EAS®-side cone bushing
lastic - side clamping hub



Sizes 01÷3
Type 494._0_._

Technical data

Size	Limiting torques for overload M_G Type 1) 494.504._ Nm	Type 1) 494.604._ Nm	Type 1) 494.704._ Nm	Nominal torque flexible, backlash-free shaft coupling T_{KN} 1) 92 Shore A T_{KN} Nm	92 Shore A $T_{KN\,max}$ Nm	98 Shore A T_{KN} Nm	98 Shore A $T_{KN\,max}$ Nm	Max. speed n_{max} rpm	Stroke of the thrust washer in the event of an overload mm	Screws and tightening torques for SW mm	SW Nm	SW_1 mm	SW_1 Nm	SW_3 mm	SW_3 Nm	Weight kg
01	5 – 12,5	10 – 25	20 – 50	35	70	60	120	8000	2,0	6 x M4	4	M 6	10	M4	3	1,58
0	10 – 25	20 – 50	40 – 100	95	190	160	320	7000	2,6	6 x M4	4	M 8	25	M4	5	2,62
1	20 – 50	40 – 100	80 – 200	190	380	325	650	6000	3,2	8 x M4	4	M 8	25	M5	9	4,45
2	40 – 100	80 – 200	–	265	530	450	900	5000	3,8	8 x M5	8	M 8	25	M5	9	6,86
3	80 – 175	160 – 350	–	310	620	525	1050	4000	4,5	8 x M6	12	M12	90	M6	15	11,22

Size	Shaft misalignments flexible coupling Axial 92/98 Shore A ΔK_a mm	Radial 92 Shore A ΔK_r mm	Radial 98 Shore A ΔK_r mm	Angular misalignments 92 Shore A α °	Angular misalignments 98 Shore A α °	Mass moments of inertia I Hub side kgm^2	Mass moments of inertia I Flexible side kgm^2	Bores Flexible side Ø d_3 1) mm	Bores EAS®-side Ø d 2) 3) mm	Min. shaft length g_4 mm
01	1,4	0,14	0,10	1,0	0,9	0,000383	0,0004	15 – 28	10 – 20	34
0	1,5	0,15	0,11	1,0	0,9	0,000943	0,0010	19 – 35	15 – 25	39
1	1,8	0,17	0,12	1,0	0,9	0,002279	0,0020	20 – 45	22 – 35	42
2	2,0	0,19	0,14	1,0	0,9	0,004421	0,0050	28 – 45	32 – 45	48
3	2,1	0,21	0,16	1,0	0,9	0,010396	0,0114	35 – 55	35 – 55	53

Size	A	C_6	D	D_1	D_H	F_2	f	f_2	f_4	k_1	L_2 6)	L_{10} 6)	l_1	N	t_1	SW	SW_1	SW_3
01	24	52	–	70	55	70	38	5	50	2,8	52	107	30	–	12	7	5	3
0	28	63,5	–	85	65	85	44	5	55	2,8	63	126,5	35	–	13,5	7	6	3
1	30	75	–	100	80	100	56	5	70	2,8	73	152	45	–	20	7	6	4
2	34	82	75	115	95	115	70	6	84	3,5	81	167	50	28	20	8	6	4
3	40	94	–	135	105	135	84	7	100	4,0	93	189	56	–	21	8	8	5

1) The transmittable torques of the flex. coupling „TKN" are dependent on factors as for example temperature factor, torsional rigidity factor etc., see also coupling design ROBA®-ES catalogue K.940 or please contact our sales office. Furthermore the transmittable torques of the flexible coupling depend on the bore diameter d_3, see also table 1 on page 18, cat. 490
2) Shaft fits: up to Ø 38 $_{h6}$, above Ø 38 $_{h8}$
3) Transmittable torques with smaller bores on request
6) Dimensions in an un-tightened condition (in a tightened condition shorter)

We reserve the right to make dimensional and design alterations.

Order example:

To be included when ordering, please state:	Size	Type	Bore Ø d	Bore Ø $d_{3\,H7}$	With limit switch
Order number:		4 9 4 . _ 04 . _			see pages 16 - 18

01 ÷ 3 → ← According to size
* Medium torque range . . . . . 5 → ← According to size
* High torque range . . . . . 6 → ← 3 Flex. coupling 92 shore A
* Max. torque range . . . . . 7 → ← 4 Flex. coupling 98 shore A

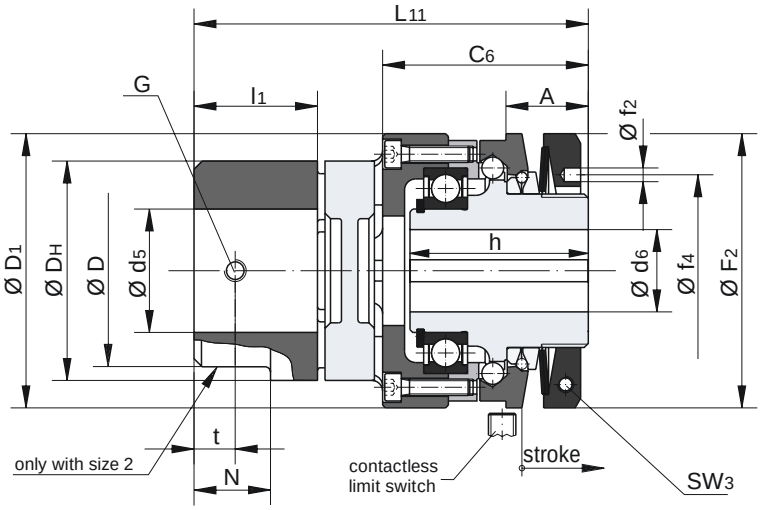
* See technical data, limiting torque for overload M_G

Example: Order number 1 / 494.604.3 / 22 / 25 plus limit switch 055.002.5

EAS®-Compact with flexible, backlash-free shaft coupling

Type 494._24._

EAS®-side keyway
lastic - side keyway



Sizes 01÷3
Type 494._24._

Technical data

Size	Limiting torques for overload M_G			Nominal torque flexible, backlash-free shaft coupling T_{KN} 1)				Max. Speed n_{max}	Stroke of the thrust washer in the event of an overload	Weight	Screws and tightening torques for SW_3	
	Type 1) 494.524._	Type 1) 494.624._	Type 1) 494.724._	92 Shore A T_{KN}	92 Shore A $T_{KN\,max}$	98 Shore A T_{KN}	98 Shore A $T_{KN\,max}$				mm	Nm
	Nm	Nm	Nm	Nm	Nm	Nm	Nm	rpm	mm	kg		
01	5 – 12,5	10 – 25	20 – 50	35	70	60	120	8000	2,0	1,50	M4	3
0	10 – 25	20 – 50	40 – 100	95	190	160	320	7000	2,6	2,50	M4	5
1	20 – 50	40 – 100	80 – 200	190	380	325	650	6000	3,2	4,22	M5	9
2	40 – 100	80 – 200	160 – 400	265	530	450	900	5000	3,8	6,52	M5	9
3	80 – 175	160 – 350	320 – 700	310	620	525	1050	4000	4,5	10,80	M6	15

Size	Shaft misalignments flexible coupling					Mass moments of inertia I		Bores	
	Axial	Radial		Angular misalignments					
	92/98 Shore A ΔK_a mm	92 Shore A ΔK_r mm	98 Shore A ΔK_r mm	92 Shore A α °	98 Shore A α °	Hub side kgm²	Flexible side kgm²	Flexible Side Ø d_5 mm	EAS® side Ø d_6 5) 6) mm
01	1,4	0,14	0,10	1,0	0,9	0,000383	0,0004	8 – 28	12 – 20
0	1,5	0,15	0,11	1,0	0,9	0,000943	0,0010	10 – 38	15 – 25
1	1,8	0,17	0,12	1,0	0,9	0,002279	0,0020	12 – 45	22 – 30
2	2,0	0,19	0,14	1,0	0,9	0,004421	0,0050	14 – 55	28 – 40
3	2,1	0,21	0,16	1,0	0,9	0,010396	0,0114	20 – 60	32 – 50

Size	A	C_6	D	D_1	D_H	F_2	f_2	f_4	G	h	L_{11}	l_1	N	t	SW_3
01	24	52	–	70	55	70	5	50	M5	45	100	30	–	10	3
0	28	63,5	–	85	65	85	5	55	M6	55	118,5	35	–	15	3
1	30	75	–	100	80	100	5	70	M8	65	144	45	–	15	4
2	34	82	75	115	95	115	6	84	M8	72	158	50	28	20	4
3	40	94	–	135	105	135	7	100	M8	82	178	56	–	25	5

1) The transmittable torques of the flex. coupling „TKN“ are dependent on factors as for example temperature factor, torsional rigidity factor etc., see also coupling design ROBA®-ES catalogue K.940 or please contact our sales office.
5) Smaller bores for lower torques on request
6) Larger bores on request

We reserve the right to make dimensional and design alterations.

Order example:

To be included when ordering, please state:	Size	Type	Bore Ø d_6 H7	Bore Ø d_5 H7	With limit switch
Order number:		4 9 4 . _ 24 . _			see pages 16 - 18

01 ÷ 3
* Medium torque range 5
* High torque range 6
* Max. torque range 7

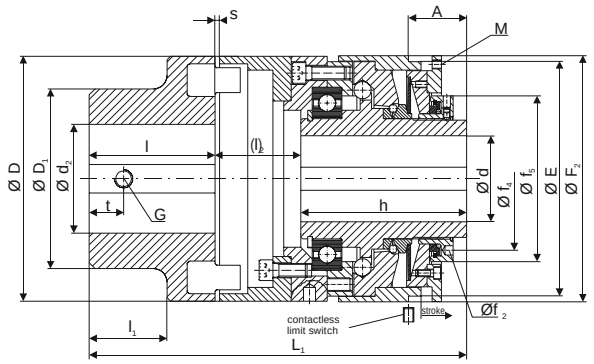
According to size
According to size
3 Flex. coupling 92 shore A
4 Flex. coupling 98 shore A

* See technical data, limiting torque for overload M_G

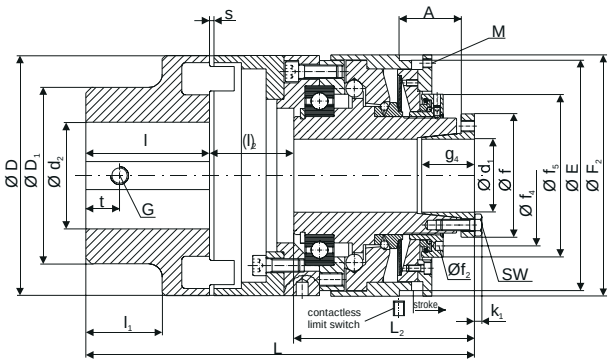
Example: Order number 1 / 494.624.3 / 22 / 25 plus limit switch 055.002.5

EAS®-Compact lastic

Type 494.__4.0



Type 494._24.0
keyway on both sides



Type 494._34.0
EAS®-side cone bushing
lastic-side keyway

Technical data

Size	Limiting torques for overload M_G Type 494.5_4.0 Nm	Type 494.6_4.0 Nm	Type 494.7_4.0 Nm	Nominal torque of flexible torsionally coupling T_{KN} Nm	Max. Speed n_{max} rpm	Stroke of the thrust washer in the event of overload mm	Permissible flexibility axial ΔK_a mm	angular ΔK_w °	radial ΔK_r mm
4	160 – 350	320 – 700	640 – 1400	1500	3000	5,5	± 2	0,8	0,7
5	320 – 400	640 – 1400	1400 – 2800	2400	2000	7,0	± 2	0,8	0,7

Size	Mass moments of inertia I Hub side kgm²	Flexible side kgm²	Weight kg	Bore d_{min} mm	d_{max} mm	$d_{1\,min}$ mm	$d_{1\,max}$ mm	$d_{2\,min}$ mm	$d_{2\,max}$ mm	Bolts and tightening torques for SW mm	Nm
	0,11	0,20	52,6	40	70	42	65	58	95	8 x M 10	40
	0,18	0,32	66,9	45	90	50	75	65	110	8 x M 12	60

Size	A	D	D_1	E	F_2	f	f_2	f_4	f_5	G	g_4	h
4	51	214	157	205	215	110	8	125	145	M 16	51	145
5	54	240	179	230	240	124	8	148	165	M 16	60	155

Size	k_1	L 1)	L_1	L_2 1)	l	l_1	l_2	M	t	s	SW
4	7	346	330	161	110	68	75	4 x M 8	30	4	17
5	8	370	358	175	120	75	75	4 x M 10	35	4	19

We reserve the right to make dimensional and design alterations.

1) Dimensions in an un-tightened condition (in a tightened condition shorter)

Order example:

To be included when ordering, please state:	Size	Type	Bore Ø d	Bore Ø d_1	Bore Ø d_2	With limit switch
Order number:		4 9 4 . _ _ 4 . 0				see pages 16 - 18

4 ÷ 5 → According to size
* Medium torque range . . . . . 5 → According to size
* High torque range . . . . . 6 → According to size
* Max. torque range . . . . . 7 → 2 … keyway on both sides
3 … EAS®-side cone bushing lastic-side keyway

* see technical data, limiting for overload M_G

Example: Order number 4 / 494.624.0 / 50 / 50 plus limit switch 055.002.5

Indicated torque adjustment

The EAS®-Compact torque limiting clutch offers the comfort of the indicated torque adjustment at the adjusting nut. The possibility for indication offers a substantially simplified torque adjustment and a simple monitoring of the set releasing value with an installed clutch.

– The limiting torque can be adjusted sensitively and indicated exactly by the fine pitch threaded graduated adjusting nut.
– The positive locking of the adjusting nut protects against selfacting unintended adjustment of the pre-set limiting torque. The integral blocking protection prevents the clutch from becoming spring bound.

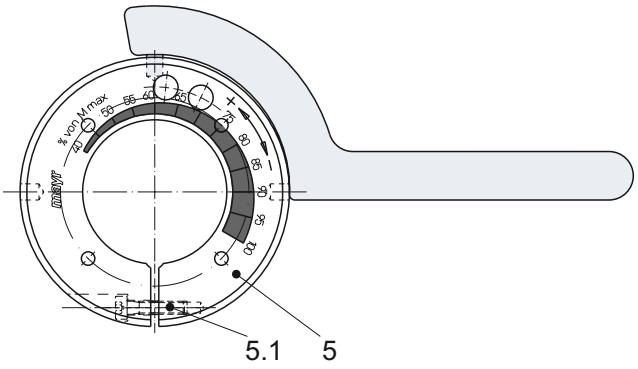


Fig. 1

Torque adjustment

The adjustment is made by turning the adjusting nut. The cup springs operate in the negative area of their characteristics (see fig. 2). A stronger pre-tension of the cup springs effects a decrease of the spring pressure. Turning the adjusting nut in a clockwise direction reduces the torque, and in anti-clockwise direction increases the torque (viewed in the direction of the nut - figure 1).

EAS®-Compact are adjusted **generally** at 70% - 75% of the corresponding max. torque and marked (calibrated) at the factory, if no other torque adjustment is required.

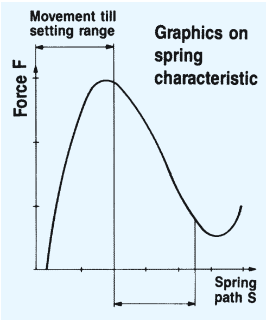


Fig. 2

Torque adjustment by the aid of the adjusting diagram

– Grease thread and contact faces of the adjusting nut, retaining ring and hub.

– Manually screw on adjusting nut (1) until contact is made with the cup springs (7).

– Continue turning until the 4 graduations (5) at the circumference of the adjusting nut (1) and the notches in the retaining ring (6) are in line with each other.

– Using a face wrench, turn the adjusting nut (1) through the number of graduations corresponding to the required torque (Fig. 3) (number of graduations as per setting diagram).

– The graduations at the circumference of the adjusting nut (5) and retaining ring (6) must remain in the same position.

– Put Loctite 242 onto the retaining screw (2) and screw it into the adjusting nut (1).

Attention!!

After dismantling the clutch (e.g. by changing the cup springs or cup spring layers) the clutch must be re-adjusted.

Adjusting the torque

Remove the retaining screw (2) from the adjusting nut.

Turn adjusting nut clockwise or anti-clockwise with the use of a face wrench according to the engraved graduation until the required torque is set. The required torque is achieved when the graduation in the retaining ring and the indication on the percentage in the adjusting nut are overlapped. Afterwards the retaining screw or setscrew, respectively (locking by Loctite 242) are screwed into the adjusting nut again, whereby the 4 graduations in the adjusting nut and retaining ring must remain in the same position.

Example:

Existing adjustment 65% of the max. torque.
The customer requires 90% of the max. torque.

Turn adjusting nut anti-clockwise, as described above, until 90% of the graduation are in line with the notches in the retaining ring. If necessary, the alignment of the notches at the circumference of the adjusting nut must be overlapped with the graduations of the retaining ring.

Table: Relationship of the flexible coupling bore diameter d_3/d_4 to the transmittable torque "T_{KN}" of the EAS®-Compact Types 494._0_._ / 494._1_._

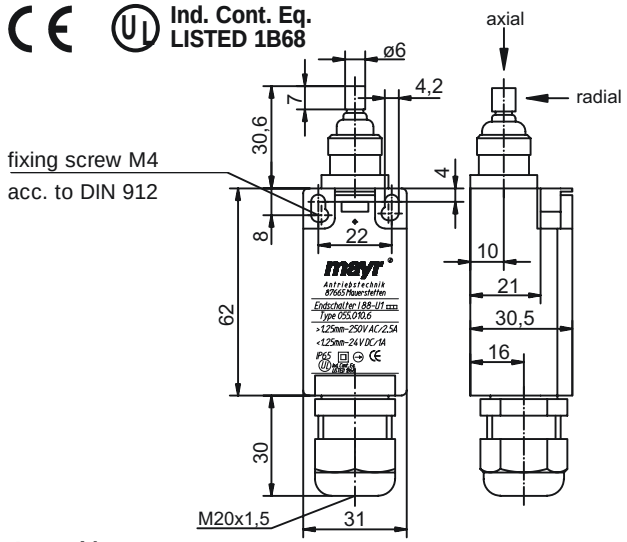
Size	Preferred bores Ø d_3 (clamping hub) / Ø d_4 (shrink disc) and appropriate transmittable torques of the friction tight of the clambing hubs (with Type 494._0_._) / shrink discs (with Type 494._1_._)																			
	Ø 15		Ø 16		Ø 19		Ø 20		Ø 22		Ø 24		Ø 25		Ø 28		Ø 30		Ø 32	
	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4
01	34	66	36	71	43	86	45	92	50	102	54	113	57	118	63	120	–	–	–	–
0	–	–	–	–	79	174	83	184	91	205	100	225	104	235	116	266	124	286	133	307
1	–	–	–	–	–	–	83	255	91	283	100	311	104	326	116	368	124	397	133	426
2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	116	420	124	460	133	500
3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	on request		

Size	Ø 35		Ø 38		Ø 40		Ø 42		Ø 45		Ø 48		Ø 50		Ø 52		Ø 55	
	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4	d_3	d_4
01	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
0	145	320	–	320	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1	145	470	158	515	166	544	174	580	187	650	–	–	–	–	–	–	–	–
2	145	563	158	627	166	670	174	714	187	770	–	820	–	900	–	–	–	–
3	on request																	

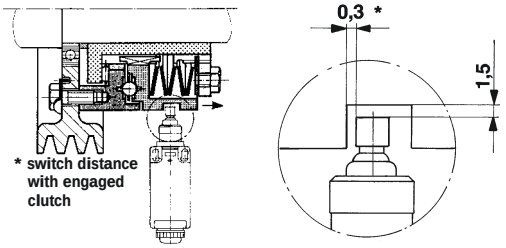
Table 1 The transmittable torque with clamping connection takes into account the max. fit with shaft tolerances k6 / bore tolerances F7 or H7. With larger tolerances and fits the torque will decrease.

Dimensions

Ind. Cont. Eq.
LISTED 1B68

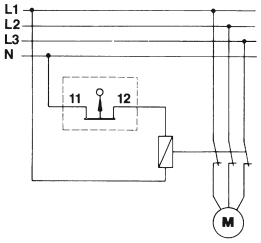


Assembly

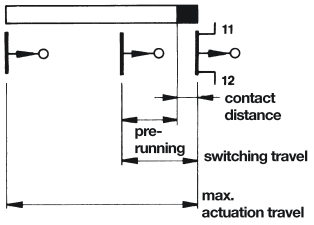


Attention! Do no fit switch in a dragging way and observe max. actuation travel (4 mm).

Wiring diagram



Switching travel diagram



Application and Function

Monitoring of universal, mechanical movements and adjustments.
Suitable for clutches with a minimum stroke of
- 1,1 mm with radial actuation
- 0,9 mm axial actuation

By actuating the metal rod the contacts 11–12 are opened.
Zb: contacts separated by force, electrically disconnected.

Technical data

❑ Contact	1 x opener (Zb) -> automatic separation of the opener contact acc. to EN 60947-5-1
❑ Contact opening	– after 0,2 – 0,4 mm with radial actuation – after 0,1 mm with axial actuation
❑ Load opener-contact	contact-distance > 1,25 mm = 250 VAC/2,5 Amp. contact-distance < 1,25 mm = 24 VDC/1 Amp. (min. contact - distance 0,5 mm with 24 VDC)
❑ Max. current at make	acc. to EN 60947-5-1 AC 15 – control electromagnetic force DC 13 – control of electromagnets
❑ Max. actuating travel of the metal tappet	4 mm, axial or radial
❑ Switching frequency	max 100/min.
❑ Mech. service life	1 x 10^6 hysteresis, unloaded
❑ Cable gland	M20 x 1,5
❑ Max. connection cross section	1,5 mm^2
❑ Ambient temperature	- 30 °C up to + 80 °C
❑ Protection	IP 65
❑ Protection insulation	acc. to protection class II ⧈
❑ Housing	thermosplatic, self extinguishing to UL94-V0
❑ Weight	approx. 120 g

Approbations/Standards

UL
CE

EN 60529	protection
EN 60204	protection of machines - electrical equipment of machines -
EN 60947-1	low voltage switch gears - general definitions -
EN 60947-5-1	low voltage switch gears - control units and control elements -

Order example

To be included when ordering, please state:	Type
Order number:	055.010.6

Manufacturing declaration

The limit switch is a component for installation into a machine according to the machine guide line 98/37/EG.

An operation is prohibited until it has been noticed that the machine in which this unit is fitted, corresponds to the EG-regulations. The limit switch corresponds to the low voltage regulation 73/23/EWG.

There is no interference caused by the limit switch according to the EMV-regulation 89/336/EWG.

Safety regulations!

Hazardous conditions when contacting live leads and components.
Only qualified and well-trained specialists shoud work at the units to avoid any personal and material damages.

The installation and operating instruction has to be read carefully and the safety regulations have to be observed before installation and initial operation.

Limit switch Type 055.000.5 mechanical actuating

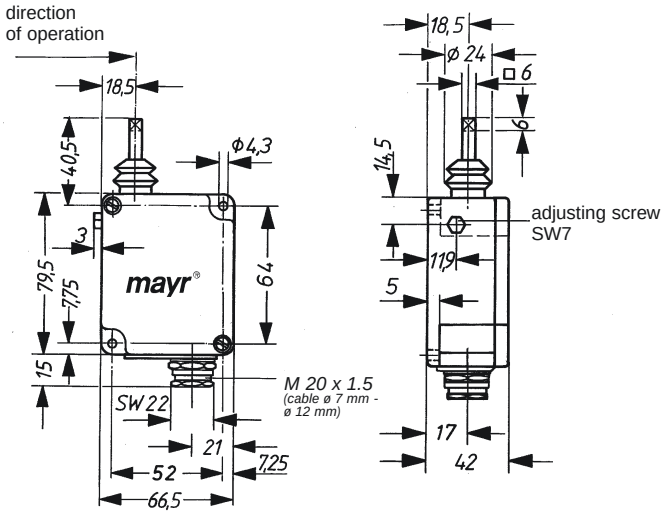
Application

- Monitoring of mechanical movements and final positions.
- Control switch for electronical and mechanical sequences.
- In connection with EAS®-products axial disengaging movements are monitored.

Design

The micro switch fitted into a light metal housing is actuated by a control lever. Operation is only possible in one direction. By actuating the control lever the pretensioned micro switch is unloaded: Opens contacts 11 – 14, closes 11 – 12.
The limit switch is fastened via two screw-on brackets with 4 cap screws attached diagonally.

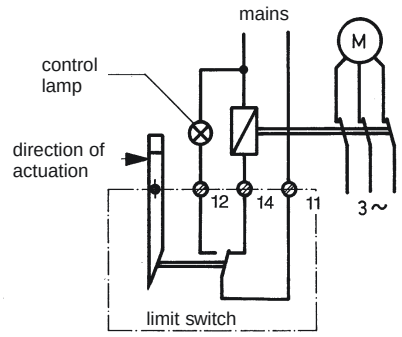
Dimensions



Technical data

❑ **Micro switch: (snap-acting)**	1 x change-over contacts 11-12-14
❑ **Contact load:**	250 VAC/15 Amp. 24 VDC/6 Amp. 60 VDC/1,5 Amp. 250 VDC/0,2 Amp.
❑ **Contact capacity min.:**	12 VDC, 10 mA
❑ **Contact material:**	Ag CdO 90/10
❑ **Switching frequency:**	max. 200 switchings/min.
❑ **Ambient temperature:**	-10 °C up to +85 °C
❑ **Protection:**	IP 54
❑ **Weight:**	275 g
❑ **Switch travel:**	By adjusting screw arranged laterally the zero shift is possible to right and left by max. 5 mm, wrench width SW 7.
Pretravel:	min. 0,5 mm
Overtravel:	max. 10 mm, depending on the zero shift. adjustment the overtravel can be 5 mm to 10 mm.

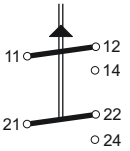
Wiring diagram



(on request)

Special types

- Different switch lever lengths
- Micro switch with 2 change over-contacts



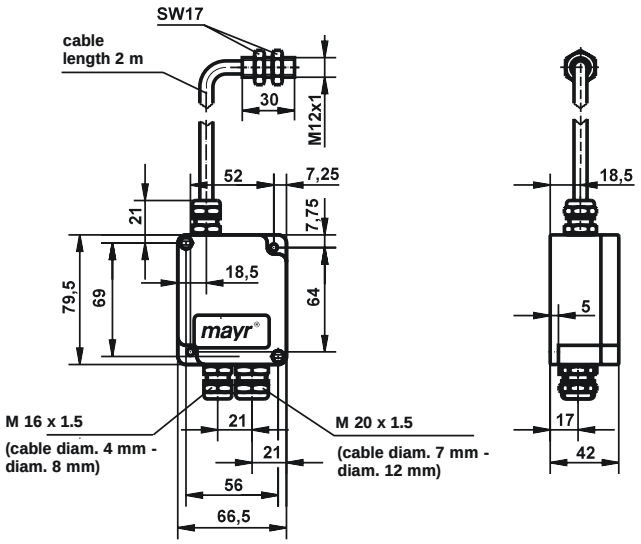
250 VAC/10 Amp.

To be included when ordering, please state:	Type
Order number:	**055.000.5**

Limit switch - proximity sensing

Type 055.001.5

E 189728 (N)



– external NAMUR-sensor to EN 50227

Design

- ❑ **Amplifier:** – in light metal housing
- ❑ **NAMUR-sensor:** – metal housing M 12 x 1
  – switching distance SN 2 mm, flush fitting
  – max. switching frequency 2 kHz
  – cable length 2 m, standard,
  (max. 100 m, special design)
- ❑ **Contact load:** – potential free change over contacts 1-2-3
  max. 230 VAC/5 Amp.
- ❑ Monitoring against breakage of the cable of the NAMUR-sensor

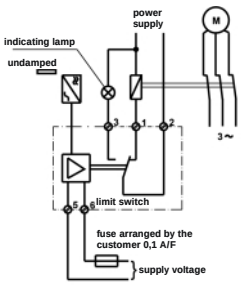
Technical data:

Supply voltage:	230 VAC, +/-10 %, 50-60 Hz 115 VAC, +/-10 %, 50-60 Hz 24 VDC, +/-5 %, independent polarity	
Input:	1,5 VA	
Ambient temperature:	amplifier	-10° C up to +60 °C
	NAMUR-sensor	-25° C up to +60 °C
Protection:	amplifier	IP 54
	NAMUR-sensor	IP 67
Connection cross section:	able to be connected max. 2,5 mm² (AWG 14)	
Weight:	400 g	

Motor runs, if:
the contacts 1 – 2 are closed.

Contacts are closed if:

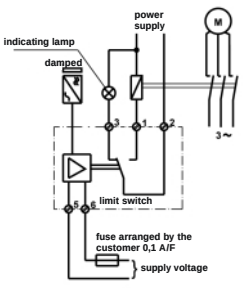
- the supply voltage is switched on and
- the signal relay is energised and
- the NAMUR-sensor is undamped



Motor does not run, if:
the contacts 3 – 2 are closed.

Contacts are closed, if:

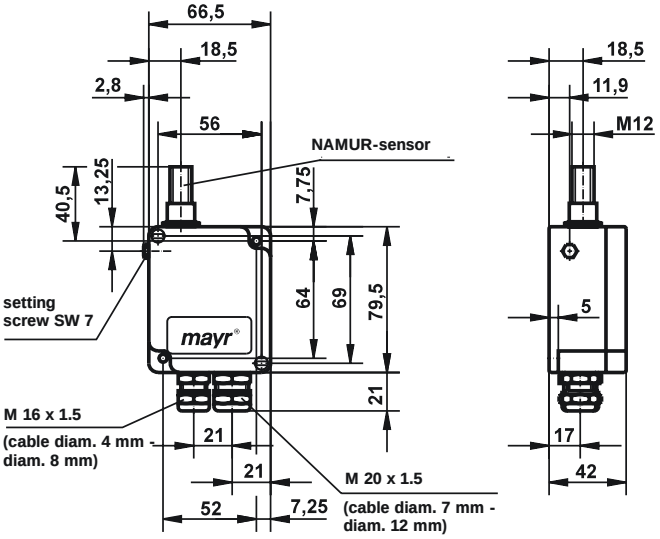
- the supply voltage is switched-off or
- the signal relay is de-engergised or
- the NAMUR-sensor is damped or
- a parting of a cable is in the sensor cable



Acceptances: for Type 055.001.5 and 055.002.5
UL-standard UL 508
CSA standard C22.2 No. 14-M 91

Type 055.002.5

E 189728 (N)



– internal NAMUR-sensor to EN 50227

Design

- ❑ **Amplifier:** – in light metal housing
- ❑ **NAMUR-sensor:** – fitted in light metal housing
  – switching distance SN 2 mm, flush fitting
  – max. switching frequency 2 kHz
- ❑ **Zero shift:** – possible zero shift by 1 mm each via hexagon screw SW 7
- ❑ **Contact load:** – potential free change over contacts 1-2-3
  max. 230 VAC/5 Amp.

Technical data:

Supply voltage:	230 VAC, +/-10 %, 50-60 Hz 115 VAC, +/-10 %, 50-60 Hz 24 VDC, +/-5 %, independent polarity
Input:	1,5 VA
Ambient temperature:	-10 °C up to +60 °C
Protection:	IP 54
Connection cross section:	able to be connected max. 2,5 mm² (AWG 14)
Weight:	400 g

Design

The electronic amplifier is fitted into a light metal housing. The limit switch is fastened via two screw-on brackets attached diagonally with M4 cap screws.

When the sensor surface of the NAMUR-sensor is scanned **-damped-** with a metalic control flag the signal relay is triggered, it gets **de-energised** and drops. Contacts 1 – 2 are open. The damping of the NAMUR-sensor is possible from all around.

Order example

To be included when ordering, please state:	Type	Supply voltage
Order number:	**0 5 5 . 0 0 _ . 5**	**_ _ _**

Internal NAMUR-sensor 2
External NAMUR-sensor 1

230 VAC
115 VAC
24 VDC

Example: limit switch proximity sensing with an external NAMUR-sensor and a supply voltage of 230 VAC.

Order number: 055.001.5/230 VAC