fena ®

COUPLINGS | BRAKES | SLIDE BEARINGS

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DESIGN AND PRODUCTION

Natural rubber WingLock™ element

- Finite-Element optimized flexible design, featuring WingLock technology
- Higher bond strength, improved fatigue resistance, and documented longer life
- Industry leading misalignment capabilities
- Torque range up to 38.438 Nm

Easier installation & reduced maintenance

- Slotted clamp ring holes offer 187% more hardware clearance
- Split element for easy replacement
- Drop-in interchange without any modifications or additional materials
- Maintenance free element

Longer driven equipment life

- Rigorously tested to 10x DIN 741 coupling standards
- Significantly lower torsional and bending stiffness
- Up to 16.7x increase in connected L10 bearing life
- ISO class 10.9 hardware offers a 40% increase in proof strength

Flexible mounting options

- Close-coupled and spacer designs for a wide range of shaft gaps
- Interchangeable hubs for reduced inventory
- Finished bore hubs with setscrew locking for easy installation
- Taper-Lock bushed hubs for clean, compact installation
- Bores up to 220 mm

DOCUMENTED PERFORMANCE

Results based on accelerated life testing at 1.5× catalogued torque, while subject to 4° angular-misalignment and 4.8 mm parallel misalignment.
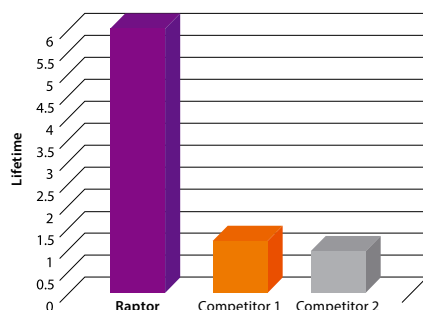
INDUSTRY LEADING MISALIGNMENT CAPABILITIES
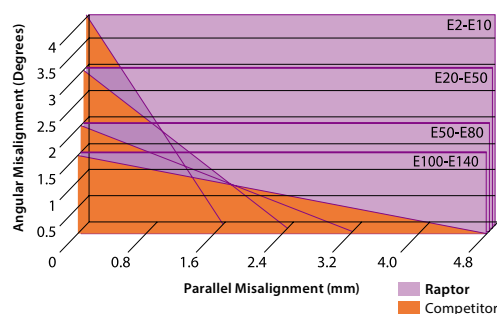
EASY AS 1-2-3

Installing Dodge Raptor couplings is quick and easy. The Raptor's horizontally split element doesn't require locking shafts during installation, meaning a faster installation that requires fewer tools and eliminates shaft damage. Simply fasten the shaft hubs, install the element, and tighten the hardware.

STEP 1 – Install hubs

STEP 2 – Set shaft spacing

STEP 3 – Install element

TABLE OF CONTENTS

Dear Ladies and Gentlemen,

The trust of our customers won during long-term operations of Fabryka Elementów Napędowych FENA is the premium asset for us. This trust is based notably upon the high quality of our products, professional customer service and the offer customised to the users' needs.

The ever growing market demands have forced us to improve our quality continuously. It has also become more and more important to put a strong focus on environmental issues.

While making efforts to achieve these goals, we have implemented the Integrated Quality Management and Environmental Management System acc. to PN-EN ISO 9001: 2015 and PN-EN ISO 14001:2015.

The certificates awarded by a certifying body of RW TÜV prove the efficiency of Fabryka Elementów Napędowych FENA's operations related to quality improvement and environmental protection.

President of Management Board
Aleksandra Krzyżowska

Since its inception Fabryka Elementów Napędowych "FENA" Sp. z o.o. has focused on fully satisfying the needs and requirements of its customers and on providing them with advice and experience in the field of designing and manufacturing machine elements, especially couplings and brakes for a wide range of industrial applications.

The trust and satisfaction of our customers, suppliers, employees and other strategic or commercial partners, gained in the course of our decades-long operation, constitute the highest value for the Management Board and employees of Fabryka Elementów Napędowych "FENA" Sp. z o.o. The foundation of this trust is our commitment to:

- continuous improvement of product quality
- professional customer service
- fulfilment of legal and other requirements applicable to our activity.

Due to the fact that we are a company originating from the highly industrialised region of Upper Silesia, environmental protection issues are particularly close to our heart. We therefore set ourselves the objective of reducing the environmental impact of our activities by continuously improving our technology and production organisation, and we are committed to:

- prevention of environmental pollution
- continuous improvement of the environmental performance of our activities.

Furthermore, we declare:

- continuous improvement of the effectiveness of our integrated quality and environmental management system, in accordance with the requirements of ISO 9001, ISO 14001 and PN-EN 80079-34, for the design, manufacture and sale of Ex products designed for operation in explosion hazard areas
- cooperation with clients based on trust and mutual benefit
- monitoring of customers' needs and potential expectations

- selection of qualified staff and continuous improvement of their qualifications
- shaping the conviction that every employee of the company is responsible for quality and environmental impact
- appropriate selection of suppliers to ensure that the quality and environmental requirements are met
- continuous improvement of the implemented processes and manufactured products in an environmentally friendly manner that makes it possible to achieve increasingly higher levels of customer satisfaction.

The Management Board of Fabryka Elementów Napędowych "FENA" Sp. z o.o. ensures that the obligations contained in the "Quality and Environmental Management Policy" are known, understood and implemented in all cells and areas of activity of our enterprise and communicated to the interested parties.

Świętochłowice, 01.11.2022

President of Management Board
Aleksandra Krzyżowska
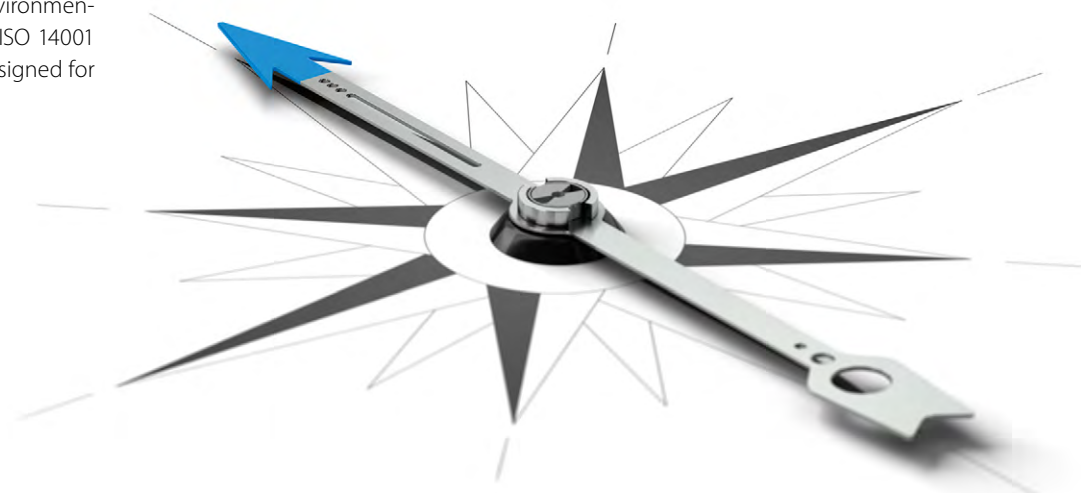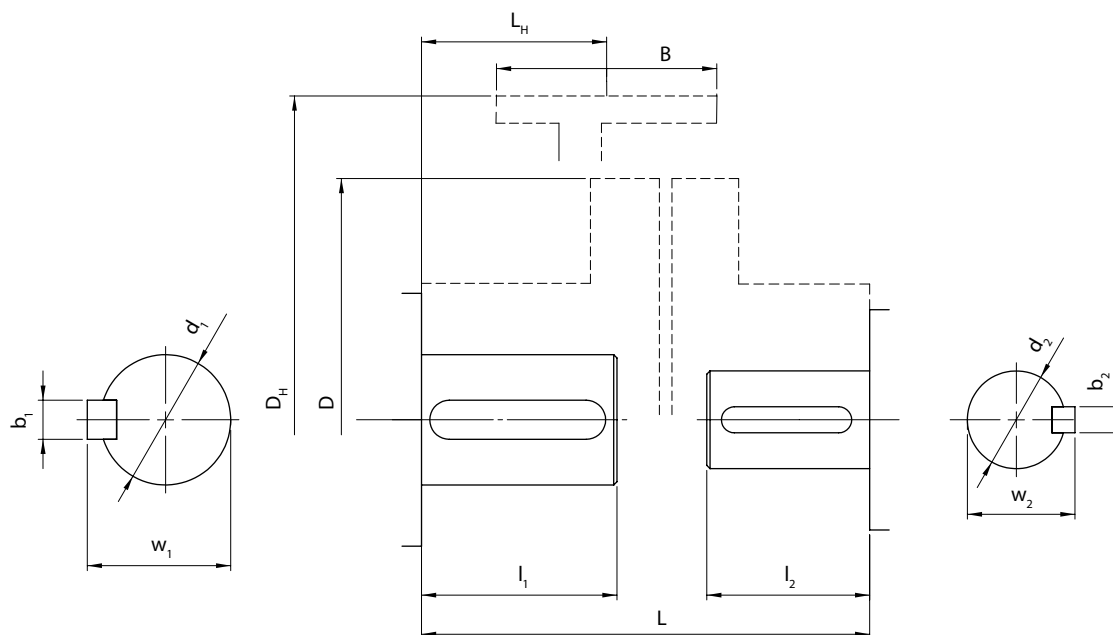
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DIMENSIONS:

d_1 = ... [mm] d_2 = ... [mm]

l_1 = ... [mm] l_2 = ... [mm]

b_1 = ... [mm] b_2 = ... [mm]

w_1 = ... [mm] w_2 = ... [mm]

L = ... [mm]

D = ... [mm] (maximum coupling outer diameter, if limited)

Coupling with brake drum or brake disc:

D_H = ... [mm]

B = ... [mm]

L_H = ... [mm]

Company name and address: ....

Name and surname: ....

Tel: .... **e-mail:** ....

POWER TRANSMISSION PARAMETERS:

- **engine/motor power:** N = ... [kW]

- **revolutions:** n = ... [rev/min]

- **motor** ☐ **engine** ☐ (no. of cylinders ....)

- **working machine typee:** ....

- **transmission ratio:** i = ... (when choosing a coupling for engaging the transmission slow-running shaft with the working machine)

- **ambient temperature of the coupling in operation [°C]:**

  ☐ <20 ☐ 20÷40 ☐ 40÷80 ☐ >80

- **starts per hour:**

  ☐ <80 ☐ 80÷160 ☐ >160

- **working hours per day:**

  ☐ <8 ☐ 8÷16 ☐ >16

To choose the coupling for power transmission, one has to verify whether the value of the transmitted torque including the overload factor is lower than the nominal coupling torque (M_n)

K_t	overload factor according to ambient temperature
K_z	overload factor according to working time
K_n	overload factor according to the number of starts

$M_n \geq M_{zn} \cdot K_p \cdot K_t \cdot K_z \cdot K_n$

M_n	coupling nominal torque [Nm]
M_{zn}	power transmission (engine, motor) nominal torque[Nm]
K_p	overload factor according to working machine type

$M_{zn} = 9550 \cdot N / n$

N	power [kW]
n	rational speed [rev/min]

K_p Overload Factor

Power transmission type Working machine type	electric motor, steam turbine	water turbine, 4–6 cylinder engine	1–3 cylinder engine
Uniform motion without mass acceleration, impeller pumps, generating sets, fans	1,2	1,6	1,8
Uniform motion with low mass accelerations, belt conveyors, fluid stirrers, textile machines, bucket conveyors, blowers, overhead cranes	1,5	1,8	2,0
Uniform motion with average mass accelerations, piston pumps, rotary furnaces, impeller pumps with contaminated fluid, lifts, hook overhead cranes, cutting machines	1,75	2,0	2,3
Uniform motion with average mass accelerations with strokes, concrete mixers, drop weights, mining fans, scraper conveyors, ball mills, light roller tables, grab overhead cranes	2,0	2,3	2,6
Uniform motion with high mass accelerations with strong strokes, excavators, vibrators, forge presses, grab cranes	2,3	2,6	3,0
Uniform motion with particularly high mass accelerations with strong strokes, compressors and piston pumps, heavy roller tables, welders, trolling mills, crushers, frame sawing machines	2,6	3,0	3,5

K_t factor

	temperature [°C]				
Flexible element temperature	−40÷−20	−20÷0	0÷40	40÷60	60÷80
polyurethane	1,1÷1	1	1	1,2÷1,4	1,4÷1,8
rubber	1,1	1,1	1	1,1÷1,2	1,3

K_z factor

Working hours per day	<8	8÷16	>16
K_z	1	1,15	1,3

K_n factor

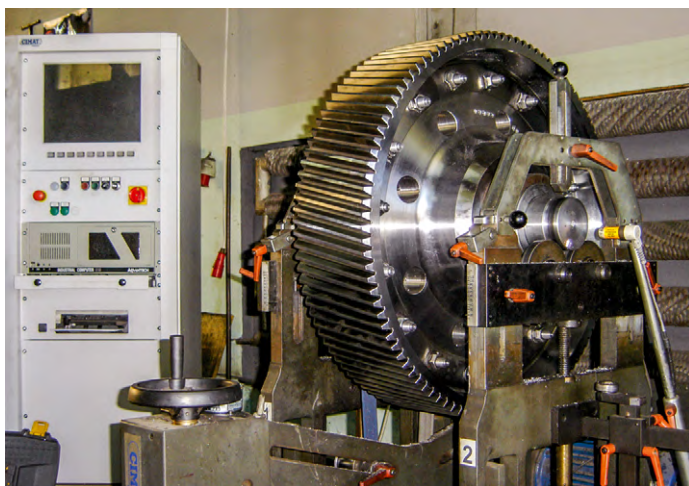| Starts per hour	<80	80÷160	>160
K_n	1	1,2	1,4

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Balancing is a process necessary for the correct operation of the device, in which the element rotating at significant speed and of significant mass can cause a negative influence on the operation of the entire machine assembly. Balancing is a procedure concerning the diagnostics of the grade of rotor mass distribution and its further correlation through decreasing or increasing the mass, so that the element rotates with acceptable final imbalance specified in PN-93/N-01359 standard with indicated G accuracy class. The result of dynamic balancing is confirmed by our certificate that is attached to all balanced elements. The element subjected to the process of balancing can influence the reduction of vibration, noise and life of other elements of the machine, and at the same time increase the comfort and quality of device operation.
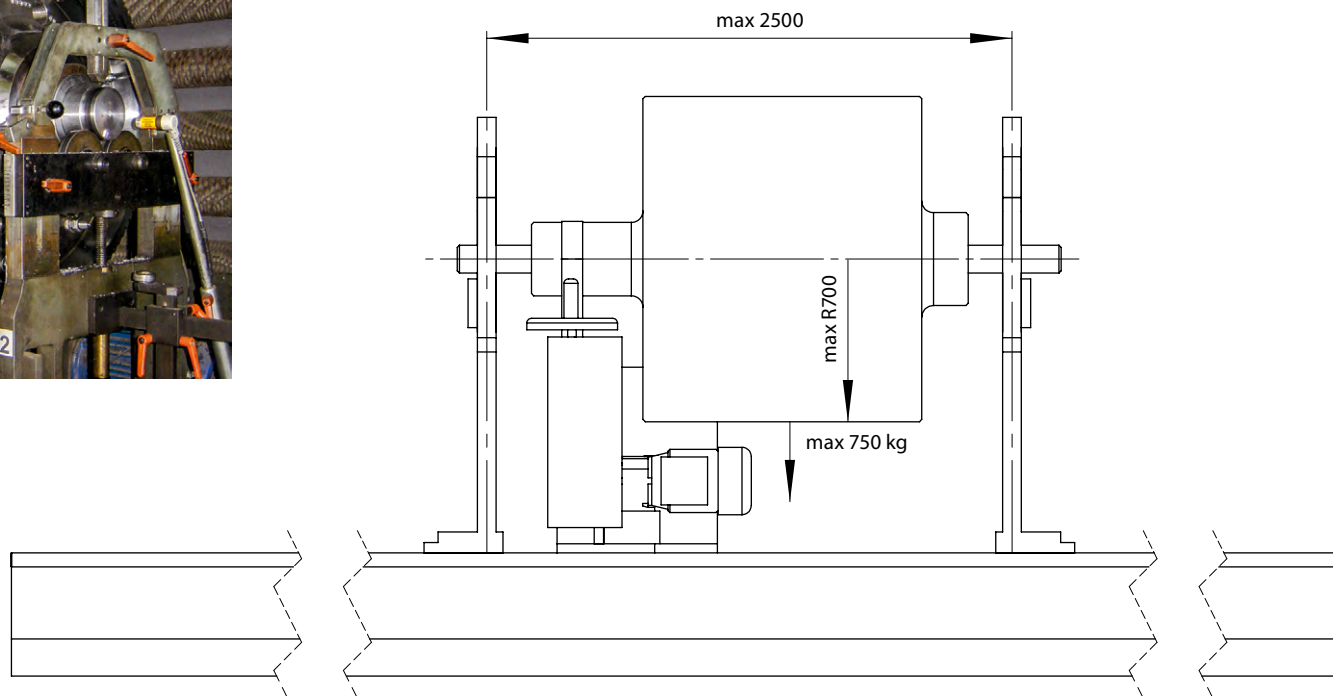
APPLICATIONS: rotors, fans, drums, brake discs, drive assemblies etc.

PARAMETERS OF BALANCING: each request for proposal is considered separately, it is recommended to attach the diagrammic drawing of the element with the specification of parameters of balancing such as:
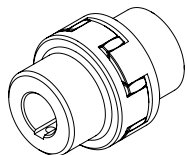
- class of balancing in compliance with PN-93/N-01359 standard or individual specifications
- mass correction plane (+, -)
- working rotation of the device
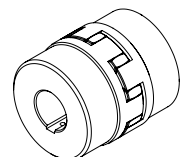- material of balanced element with specification of hardness of surfaces of mass correction planes mass.
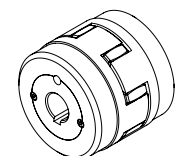

PARAMETERS OF BALANCED ELEMENTS:

max 2500

max R700

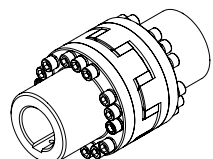max 750 kg

ASR flexible couplings are characterized by:
- simple and compact construction
- torsional susceptibility
- service free
- low moment of inertia
- resistance to oils, greases and fuels
- transfer of high torque with small dimensions
- vibration damping and compensation of deviations of joined shaft ends.

APPLICATIONS: pumps, fans, belt and roller conveyors, cranes, stirrers, other machinery and equipment.

MATERIAL: hubs:steel; jaw discs: steel, spheroidal cast iron; brake discs and drums: steel -usually S355J2; flexible insert: polyurethane.

ELASTIC INSERT WORKING CONDITIONS: work in the environment with pH of 5÷12 at temperature of -30°C to +80°C (temporarily up to +100°C). Resistance to chemicals, including: common solvents, fuels, oils and lubricants, sulphuric and hydrochloric acid, soda lye, salty water and many other chemical substances.

OPERATION IN THE AREAS WITH DANGER OF EXPLOSIONS:
"Ex" couplings (see marking) are intended for operation in the areas with the danger of explosion (groups: I M2, II2D, II2G). Couplings of this construction are made with set screws.

METHOD OF MARKING:

$$[\ \text{name}\ ] - [\ M_n\ ] - [\ D_H{\times}B^*\ ] - [\ L_H{}^*\ ] - [\ d_1\ ]\ /\ [\ l_1\ ] - [\ d_2\ ]\ /\ [\ l_2\ ] - [\ \text{size}\ ][\ \text{type}\ ] - [\ \text{version}^*\ ]$$

* only when it concerns a given type, where:

name	e.g. flexible coupling
M_n	nominal torque [Nm]
$D_H{\times}B$	diameter × width of the brake drum or disc [mm] (only the types ….-SBH, STH; the width of the drum can be omitted in the marking if it equals the catalogue width)
L_H	the distance of symmetry axis of the brake drum or disc from the edge of the hub [mm] (only the types ...-SBH, STH)
d_1, d_2	diameters of the holes [mm] (for the couplings with brake drum or disc d_1– transmission side) in the case of ordering the coupling without holes for shaft ends "0" should be placed; in the case of lead hole according to the catalogue – "ow" marking, and in the case of pilot bores other than in the catalogue the diameter of the hole should be added after the "ow" marking

(e.g. "ow25") (with pilot bores there is no "WD" construction)

l_1, l_2	the length of the holes in the hubs [mm]
size of the coupling	e.g. 001,002
type of the coupling	e.g. ASRY
version	WD – with set screws
	Ex – for operation in the areas with the danger of explosion
	WS… – special (individual arrangements)

ASR FLEXIBLE COUPLINGS

general information

CONNECTIONS: Elements of the couplings of different types of ASR group of one size can be connected in any sets. In the type marking both types markings should be given according to the order of the hubs (e.g. the connection of ASR-SBH brake coupling with the ASRT hub type – brake coupling - …- … - ASR-SBH/ASRT).

BALANCING: couplings are normally balanced statically (some sizes of the couplings with bigger brake drums or discs are normally balanced dynamically-check remarks in the catalogue). After the arrangement there is a possibility of dynamic balancing of each coupling.

MAXIMUM DEVIATIONS: Given values of maximum deviations ("x" – axial, "y" – radial, "Δl_0" – angular) cannot appear at the same time. At the speed above 1500 rpm the angular deviations should not exceed 50% of the deviations values given in the table.

$l_0 max$

$l_0 min$

$\Delta l_0 = l_0 max - l_0 min$

x

y
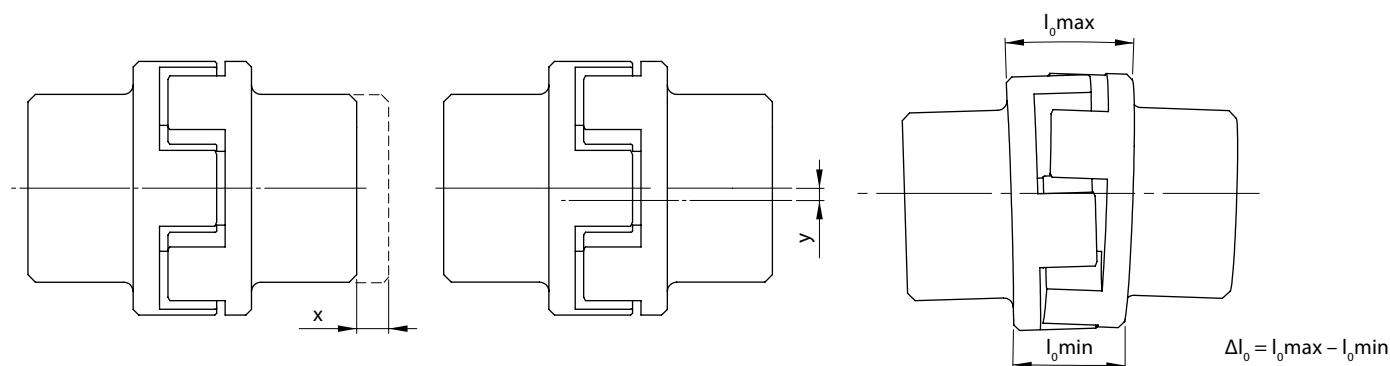
Coupling size	0002	0001	001	002	003	004	005	006	007	008	009	010	011	012	013	014
x	1,2	1,4	1,5	1,8	2,0	2,1	2,2	2,6	3,0	3,4	3,6	3,8	4,2	4,6	5	5,5
y	0,2	0,2	0,25	0,25	0,3	0,35	0,35	0,4	0,4	0,5	0,5	0,5	0,6	0,6	0,65	0,65
Δl_0	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,2	1,4	1,7	1,9	2,2	2,5	2,8	3,2	3,7

Example of designation of the ASR type coupling with the nominal torque of M_n=265 Nm, hub holes diameters of d_1=32 mm, d_2=40mm, hub holes lengths of l_1=50 mm, l_2=80 mm, size of 003 *(marking see page A1-1)*:

265-32/50-40/80-003 ASR Flexible coupling

- the "Ex" version –
  265-32/50-40/80-003 ASR-**Ex** Flexible coupling
- the "WD" version –
  265-32/50-40/80-003 ASR-**WD** Flexible coupling
- with pilot bores –
  265-**ow**/50-**ow**/80-003 ASR Flexible coupling

set screws only in **WD** version

Nominal torque M_n		d_1, d_2		l_1, l_2 [1]		f	D	D_1	d_3	Max rotational speed	Moment of inertia [2]	Weight [2]	Coupling size and type
insert 92° ShA	insert 98° ShA	pilot	max	nomin.	extend.					n_{max}	I	m	
Nm		mm								1/min	kgm²	kg	–
10	17	4	19	25	40	16	40	35	18	11 500	0,00008	0,36	0002 ASR
35	60	6	24	30	50	18	55	40	27	10 000	0,0002	0,60	0001 ASR
95	160	8	28	35	60	20	65	45	30	9000	0,0005	0,91	001 ASR
190	325	10	38	45	80	24	80	60	38	7100	0,001	1,79	002 ASR
265	450	12	42	50	80	26	95	65	46	6000	0,003	2,62	003 ASR
310	525	14	48	56	80	28	105	75	51	5300	0,005	3,68	004 ASR
410	685	16	55	65	90	30	120	85	60	4750	0,010	5,42	005 ASR
625	940	18	65	75	110	35	135	100	68	4250	0,019	8,10	006 ASR
1280	1920	22	75	85	140	40	160	120	80	3550	0,043	13,29	007 ASR
2400	3600	26	100	100	140	45	200	160	100	2800	0,138	26,12	008 ASR
3300	4950	30	115	110	160	50	225	180	113	2500	0,229	34,3	009 ASR
4800	7200	30	125	120	170	55	255	200	127	2200	0,429	49,2	010 ASR
6650	10000	32	145	140	170	60	290	230	147	2100	0,841	70,2	011 ASR
8550	12800	36	160	155	210	65	320	255	165	2000	1,407	102,1	012 ASR
12800	19200	38	185	175	210	75	370	290	190	1800	3,298	140,5	013 ASR
18650	28000	40	200	195	240	85	420	325	220	1600	4,949	205,5	014 ASR

We also offer special designs according to the individual wishes of the customer.
We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

ASRX FLEXIBLE COUPLINGS

with enlarged hubs

Example of designation of the ASRX type coupling with the nominal torque of M_n=265 Nm, hub holes diameters of d_1=32 mm, d_2=40mm, hub holes lengths of l_1=50 mm, l_2=80 mm, size of 003 *(marking see page A1-1)*:

265-32/50-40/80-003 ASRX Flexible coupling

- the "Ex" version –
  265-32/50-40/80-003 ASRX-**Ex** Flexible coupling
- the "WD" version –
  265-32/50-40/80-003 ASRX -**WD** Flexible coupling
- with pilot bores –
  265-**ow**/50-**ow**/80-003 ASRX Flexible coupling

set screws only in **WD** version

Nominal torque M_n		d_1, d_2		l_1, l_2 [1]		f	D	D_1	d_3	Max rotational speed	Moment of inertia [2]	Weight [2]	Coupling size and type
insert 92° ShA	insert 98° ShA	pilot	max	nomin.	extend.					n_{max}	I	m	
Nm				mm						1/min	kgm²	kg	–
10	17	4	22	25	40	16	40	38	18	11 500	0,00009	0,37	0002 ASRX
35	60	6	32	30	50	18	55	53	27	10 000	0,0004	0,75	0001 ASRX
95	160	8	35	35	60	20	65	63	30	9000	0,0009	1,34	001 ASRX
190	325	10	48	45	80	24	80	78	38	7100	0,003	2,35	002 ASRX
265	450	12	55	50	80	26	95	93	46	6000	0,006	3,85	003 ASRX
310	525	14	60	56	80	28	105	103	51	5300	0,010	5,37	004 ASRX
410	685	16	70	65	90	30	120	118	60	4750	0,020	7,91	005 ASRX
625	940	18	75	75	110	35	135	133	68	4250	0,037	12,2	006 ASRX
1280	1920	22	90	85	140	40	160	158	80	3550	0,082	19,2	007 ASRX
2400	3600	26	120	100	140	45	200	198	100	2800	0,231	32,2	008 ASRX
3300	4950	30	135	110	160	50	225	223	113	2500	0,349	42,5	009 ASRX

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.
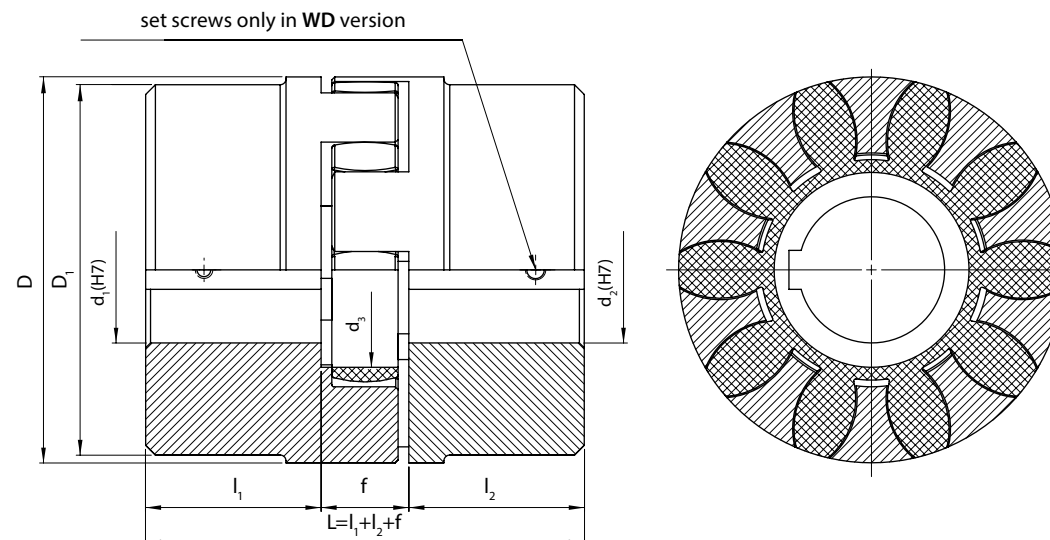
[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

Example of designation of the ASRT type coupling with the nominal torque of M_n=265 Nm, with the TZ outer clamping bush with d_1=38 mm hole and the TW inner bush with d_2=30 mm hole, size 003 *(marking see page A1-1)*:

265-38TZ-30TW-003 ASRT Flexible coupling

▪ The arrangement of inner and outer clamping bushes can be optional

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] The weight and the moment of inertia have been determined for the coupling with the maximum holes.

inner clamping bush **TW**

outer clamping bush **TZ**
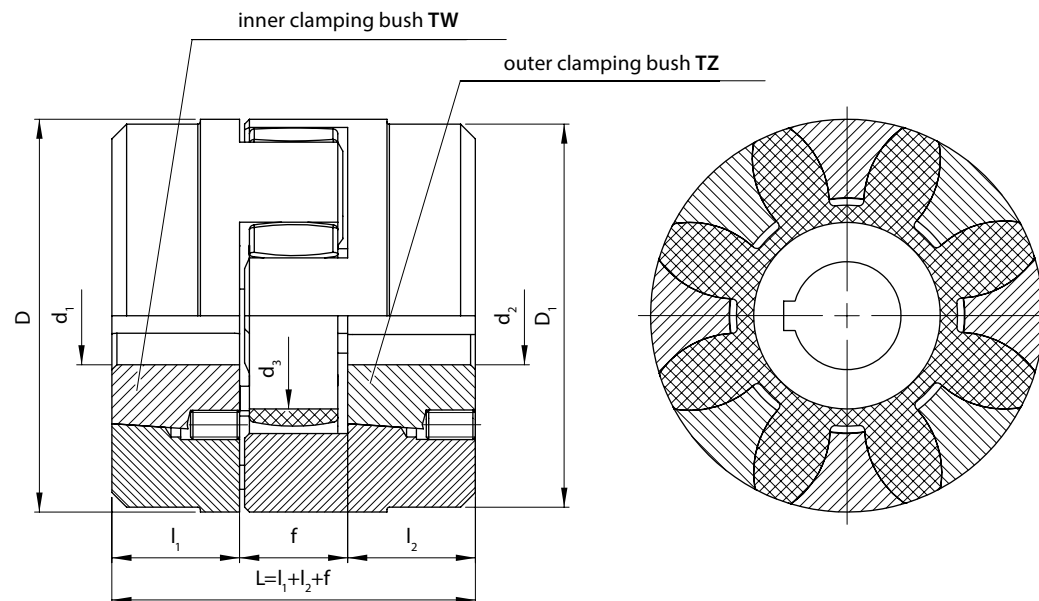
Nominal torque M_n		Hub with TW bush				Hub with TZ bush				f	D	D_1	d_3	Max rotational speed	Moment of inertia [1]	Weight [1]	Coupling size and type
insert 92° ShA	insert 98° ShA	d_1, d_2		l_1, l_2	bush	d_1, d_2		l_1, l_2	bush					n_{max}	I	m	
		max	min			max	min										
Nm		mm												1/min	kgm²	kg	–
35	60	25	10	23	1008	25	10	23	1008	18	55	53	27	10 000	0,0003	0,73	0001 ASRT
95	160	25	14	23	1108	25	14	23	1108	20	65	63	30	9000	0,0007	1,12	001 ASRT
190	325	32	14	26	1210	32	14	26	1210	24	80	78	38	7100	0,0018	1,91	002 ASRT
265	450	42	14	26	1610	42	14	26	1610	26	95	93	46	6000	0,0036	2,65	003 ASRT
310	525	42	14	26	1610	42	14	26	1610	28	105	103	51	5300	0,0057	3,45	004 ASRT
410	685	50	19	33	2012	50	19	33	2012	30	120	118	60	4750	0,0119	5,47	005 ASRT
625	940	50	19	33	2012	65	19	45	2517	35	135	133	68	4250	0,0246	8,65	006 ASRT
1280	1920	65	19	45	2517	75	28	52	3020	40	160	158	80	3550	0,0563	14,1	007 ASRT
2400	3600	75	28	52	3020	100	38	65	3525	45	200	198	100	2800	0,166	28,5	008 ASRT
3300	4950	100	38	65	3525	100	38	65	3525	50	225	198	113	2500	0,331	43,6	009 ASRT

ASRY FLEXIBLE COUPLINGS

with replaceable insert without the necessity of widening the shaft ends

Example of designation of the ASRY type coupling with the nominal torque of M_n=265 Nm, hub holes diameters of d_1=32 mm, d_2=40 mm, hub holes lengths of l_1=50 mm, l_2=80 mm, size of 003 *(marking see page A1-1)*:

265-32/50-40/80-003 ASRY Flexible coupling

▪ the "Ex" version –
265-32/50-40/80-003 ASRY-**Ex** Flexible coupling

▪ the "WD" version –
265-32/50-40/80-003 ASRY-**WD** Flexible coupling

▪ with pilot bores –
265-**ow**/50-**ow**/80-003 ASRY Flexible coup

To replace the insert without the necessity of widening the shaft ends, they cannot inside the coupling stand out the edges of the hub.

set screws only in **WD** version

Nominal torque M_n		d_1, d_2		l_1, l_2 [1]		f	D	D_2	Max rotational speed	Moment of inertia [2]	Weight [2]	Coupling size and type
insert 92° ShA	insert 98° ShA	pilot	max	nomin.	extend.				n_{max}	I	m	
Nm		mm							1/min	kgm²	kg	–
35	60	6	24	30	50	33	55	36	10 000	0,0003	0,71	0001 ASRY
95	160	8	28	35	60	39	65	42	9000	0,0007	1,18	001 ASRY
190	325	10	35	45	80	43	80	52	7100	0,0018	2,09	002 ASRY
265	450	12	42	50	80	48	95	63	6000	0,0040	3,31	003 ASRY
310	525	14	48	56	80	50	105	72	5300	0,0066	4,45	004 ASRY
410	685	16	55	65	90	60	120	82	4750	0,0133	6,89	005 ASRY
625	940	18	65	75	110	65	135	96	4250	0,0239	9,73	006 ASRY
1280	1920	22	75	85	140	75	160	112	3550	0,0531	15,4	007 ASRY
2400	3600	26	100	100	140	82	200	145	2800	0,147	27,6	008 ASRY
3300	4950	30	110	110	160	97	225	165	2500	0,267	39,1	009 ASRY
4800	7200	30	125	120	170	103	255	180	2200	0,479	55,2	010 ASRY
6650	10000	32	145	140	180	116	290	206	2100	0,923	82,08	011 ASRY
8550	12800	36	160	155	200	128	320	235	2000	1,534	112,9	012 ASRY
12800	19200	38	185	175	220	146	370	270	1800	3,095	168,2	013 ASRY
18650	28000	40	200	195	220	159	420	315	1600	5,792	245,3	014 ASRY

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

Example of designation of the ASR-SBH coupling with the nominal torque of M_n=265 Nm, brake drum diameter of D_H=160 mm, distance of the brake drum symmetry axis from the hub origin of L_H=50, hub holes diameters of d_1=32 mm, d_2=42 mm, hub holes lengths of l_1=50 mm, l_2=65 mm, size of 003 *(marking see page A1-1)*:

265-160-50-32/50-42/65-003 ASR-SBH Brake coupling

- the "Ex" version – 265-160-50-32/50-42/65-003 ASR-SBH-**Ex** Brake coupling
- the "WD" version – 265-160-50-32/50-42/65-003 ASR-SBH-**WD** Brake coupling
- with pilot bores – 265-160-50-**ow**/50-**ow**/65-003 ASR-SBH Brake coupling

ASR-SBH BRAKE COUPLINGS

with brake drums

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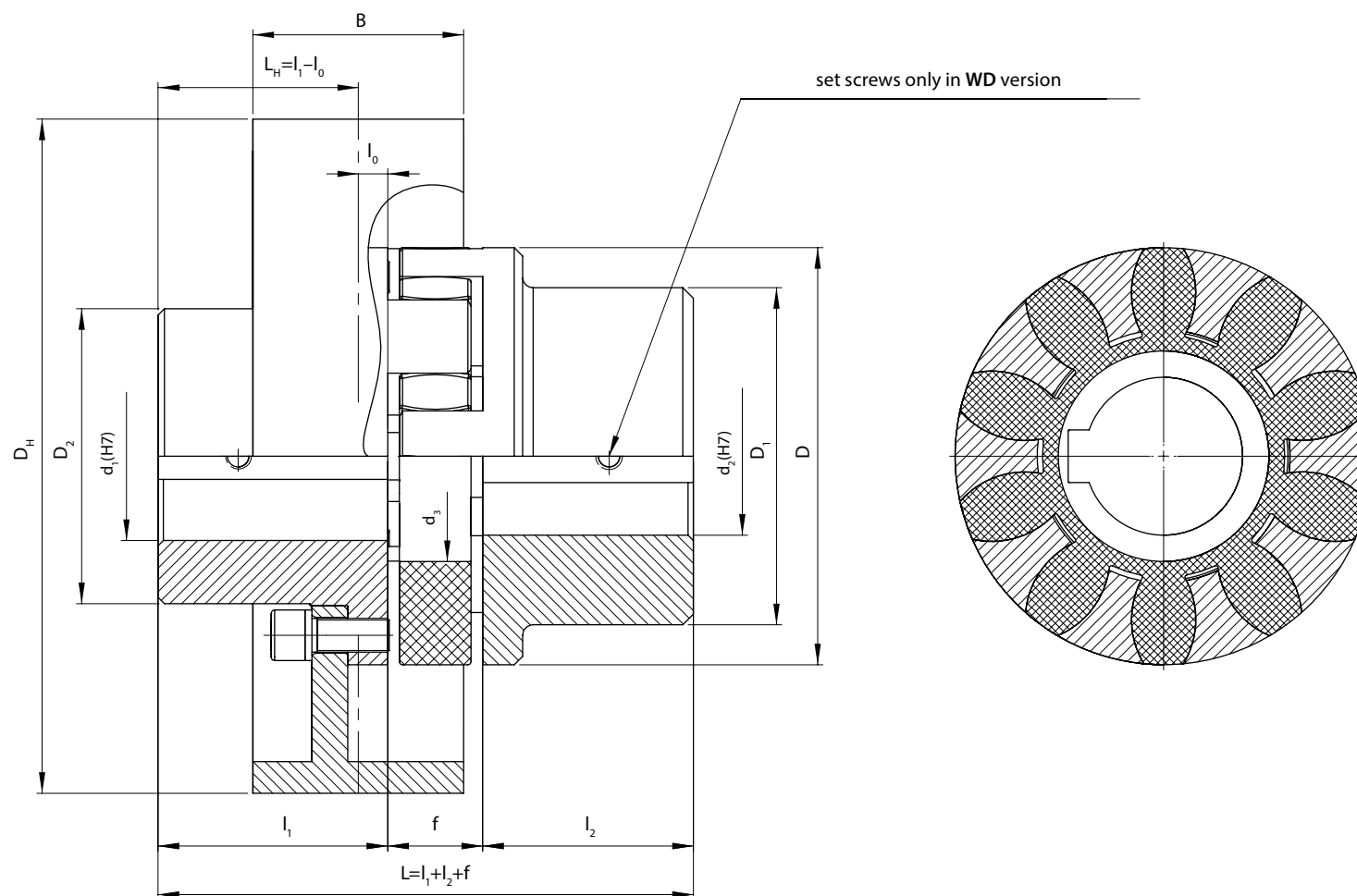
Nominal torque M_n		d_1, d_2		l_1, l_2 [2]		f	D	D_1 [1]	D_2	D_H [4]	B [4]	l_0 [5]	d_3	Max rotational speed [6]	Moment of inertia [3]	Weight [3]	Coupling size and type
insert 92° ShA	insert 98° ShA	pilot	max [1]	nomin.	extend.									n_{max}	I	m	
Nm		mm												1/min	kgm²	kg	–
95	160	8	28 (35)	35	60	20	65	45 (63)	42	120	50	0	30	4000	0,0041	1,97	001 ASR-SBH
190	325	10	35 (48)	45	80	24	80	60 (78)	52	160	60	0	38	4000	0,0144	4,27	002 ASR-SBH
										200	80	0		3000	0,0468	7,70	
265	450	12	42 (55)	50	80	26	95	65 (93)	63	160	60	0	46	4000	0,0156	4,94	003 ASR-SBH
										200	80	0		3000	0,0480	8,34	
310	525	14	48 (60)	56	80	28	105	75 (103)	72	200	80	1	51	3000	0,0498	9,17	004 ASR-SBH
										250	100	1		2500	0,145	15,3	
410	685	16	55 (70)	65	90	30	120	85 (118)	82	250	100	0	60	2500	0,149	16,7	005 ASR-SBH
										320	120	0		2000	0,434	27,4	
625	940	18	65 (75)	75	110	35	135	100 (133)	96	250	100	0	68	2500	0,156	18,7	006 ASR-SBH
										320	120	0		2000	0,441	29,4	
1280	1920	22	75 (90)	85	140	40	160	120 (158)	112	320	120	0	80	2000	0,460	33,4	007 ASR-SBH
										400	150	5		1800	1,278	53,2	
2400	3600	26	100 (120)	100	140	45	200	160 (198)	145	400	150	0	100	1800	1,347	62,4	008 ASR-SBH
										500	190	0		1500	3,470	93,2	
3300	4950	30	110 (135)	110	160	50	225	180 (223)	165	500	190	0	110	1500	3,553	101,1	009 ASR-SBH
										630	235	-12,5		1200	10,34	167,6	
4800	7200	30	125	120	170	55	255	200	180	500	190	0	127	1500	3,692	111,8	010 ASR-SBH
										630	235	-7,5		1200	10,48	178,7	
6650	10000	32	145	140	170	60	290	230	200	710	265	2,5	147	1000	15,741	231,2	011 ASR-SBH
										800	300	-15		800	28,041	272,2	

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] The dimensions in the bracket concern only the d_2 hole and D_1 diameter in the coupling with increased hub (ASRX type).

[2] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[3] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[4] On request, we produce couplings brake drums with dimensions different from those provided in the table.

[5] l_0 ($L_H = l_1 - l_0$) dimension after the agreement can be changed according to the wishes of the customer.

[6] After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).
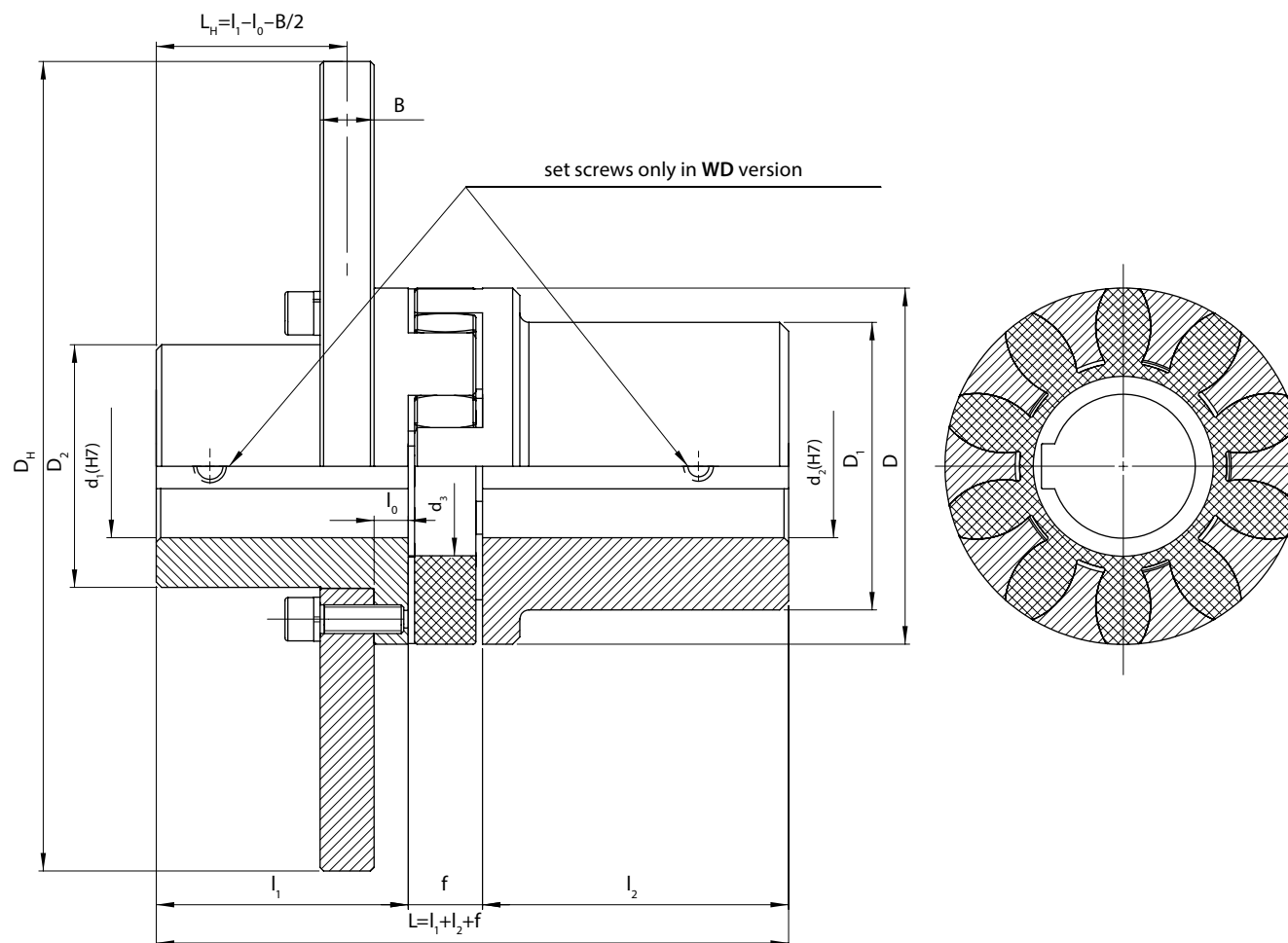
▪ Couplings with brake drum Ø400 and bigger are normally balanced dynamically, other couplings are balanced statically.

▪ After the agreement the couplings can be made with the holes for protective discs in hubs.

A1–9

Example of designation of the ASR-STH coupling with the nominal torque of M_n=265 Nm, brake disc diameter of D_H=320 mm, thickness of B=30 mm, distance of the brake disc symmetry axis from the hub origin of L_H=25 mm, hub hole diameters of d_1=32 mm, d_2=42 mm, hub holes lengths of l_1=50 mm, l_2=65 mm,size of 003 *(marking see page A1-1)*:

265-320×30-25-32/50-42/65-003 ASR-STH Disc coupling
- the "Ex" version – 265-320×30-25-32/50-42/65-003 ASR-STH-**Ex** Disc coupling
- the "WD" version – 265-320×30-25-32/50-42/65-003 ASR-STH-**WD** Disc coupling
- with pilot bores – 265-320×30-25-**ow**/50-**ow**/65-003 ASR-STH Disc coupling

ASR-STH DISC COUPLINGS

with brake disc

Nominal torque M_n		d_1, d_2		l_1, l_2 [2]		f	D	D_1 [1]	D_2	$D_H \times B$ [4]	l_0 [5]	d_3	Max rotational speed [6] n_{max}	Moment of inertia [3] I	Weight [3] m	Coupling size and type
insert 92° ShA	insert 98° ShA	pilot	max [1]	nomin.	extend.											
Nm		mm											1/min	kgm²	kg	–
265	450	12	42 (55)	50	80	26	95	65 (93)	63	320×30	10	46	2000	0,243	20,3	003 ASR-STH
310	525	14	48 (60)	56	80	28	105	75 (103)	72	320×30	11	51	2000	0,244	21,0	004 ASR-STH
										355×30			1800	0,368	25,3	
410	685	16	55 (70)	65	90	30	120	85 (118)	82	355×30	13	60	1800	0,372	26,6	005 ASR-STH
										400×30			1500	0,595	32,8	
625	940	18	65 (75)	75	110	35	135	100 (133)	96	400×30	14	68	1500	0,602	34,8	006 ASR-STH
										450×30			1500	0,955	42,5	
1280	1920	22	75 (90)	85	140	40	160	120 (158)	112	450×30	16	80	1500	0,974	46,2	007 ASR-STH
										500×30			1500	1,468	54,9	
2400	3600	26	100 (120)	100	140	45	200	160 (198)	145	500×30	19	100	1500	1,535	63,7	008 ASR-STH
										630×30			1000	3,718	90,7	
3300	4950	30	110 (135)	110	160	50	225	180 (223)	165	630×30	21	110	1000	3,800	98,4	009 ASR-STH
										710×30			1000	6,019	118,1	
4800	7200	30	125	120	170	55	255	200	180	630×30	25	127	1000	3,942	109,4	010 ASR-STH
										710×30			1000	6,161	129,1	
6650	10000	32	145	140	170	60	290	230	200	710×30	28	147	1000	6,631	150,1	011 ASR-STH
										800×30			900	7,891	167,2	

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] The dimensions in the bracket concern only the d_2 hole and D_1 diameter in the coupling with increased hub (ASRX type).

[2] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[3] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[4] On request, we produce couplings brake drums with dimensions different from those provided in the table.

[5] l_0 ($L_H = l_1 - l_0$) dimension after the agreement can be changed according to the wishes of the customer.

[6] After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).
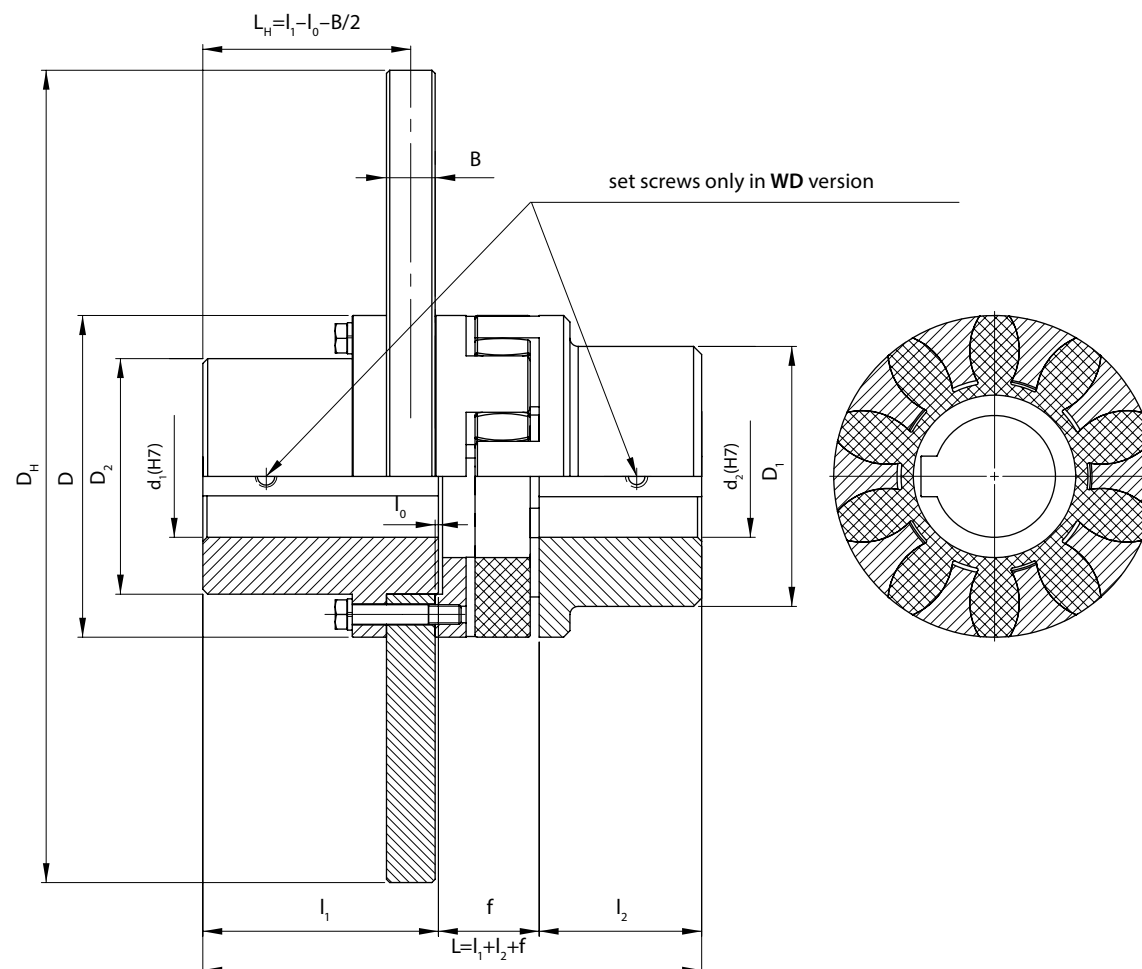
▪ Couplings with brake disc Ø450 and bigger are normally balanced dynamically, other couplings are balanced statically.

▪ After the agreement the couplings can be made with the holes for protective discs in hubs.

Example of designation of the ASRZ-STH coupling with the nominal torque of M_n=265 Nm, brake disc diameter of D_H=320 mm, thickness of B=30 mm, distance of the brake disc symmetry axis from the hub origin of L_H=34 mm, hub hole diameters of d_1=32 mm, d_2=42 mm, hub holes lengths of l_1=50 mm, l_2=65 mm,size of 003 *(marking see page A1-1)*:

265-320×30-34-32/50-42/65-003 ASRZ-STH Disc coupling

- the "Ex" version – 265-320×30-34-32/50-42/65-003 ASRZ-STH-**Ex** Disc coupling
- the "WD" version – 265-320×30-34-32/50-42/65-003 ASRZ-STH-**WD** Disc coupling
- with pilot bores – 265-320×30-34-**ow**/50-**ow**/65-003 ASRZ-STH Disc coupling

ASRZ-STH DISC COUPLINGS

with brake disc and its possibility disassembly without removing the hub from the shaft end

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Nominal torque M_n		d_1, d_2		l_1, l_2 [2]		f	D	D_1 [1]	D_2	$D_H \times B$ [4]	l_0 [5]	d_3	Max rotational speed [6]	Moment of inertia [3]	Weight [3]	Coupling size and type
insert 92° ShA	insert 98° ShA	pilot	max [1]	nomin.	extend.								n_{max}	I	m	
Nm		mm											1/min	kgm²	kg	–
265	450	12	42 (55)	50	80	38	95	65 (93)	63	320×30	1	46	2000	0,244	21,0	003 ASRZ-STH
310	525	14	48 (60)	56	80	40	105	75 (103)	72	320×30	1	51	2000	0,246	21,9	004 ASRZ-STH
										355×30			1800	0,370	26,2	
410	685	16	55 (70)	65	90	46	120	85 (118)	82	355×30	1	60	1800	0,375	28,0	005 ASRZ-STH
										400×30			1500	0,598	34,2	
625	940	18	65 (75)	75	110	51	135	100 (133)	96	400×30	1	68	1500	0,607	36,5	006 ASRZ-STH
										450×30			1500	0,961	44,3	
1280	1920	22	75 (90)	85	140	59	160	120 (158)	112	450×30	1,5	80	1500	0,986	49,1	007 ASRZ-STH
										500×30			1500	1,480	57,8	
2400	3600	26	100 (120)	100	140	65	200	160 (198)	145	500×30	1,5	100	1500	1,565	68,5	008 ASRZ-STH
										630×30			1000	3,748	95,5	
3300	4950	30	110 (135)	110	160	75	225	180 (223)	165	630×30	1,5	110	1000	3,852	104,6	009 ASRZ-STH
										710×30			1000	6,071	124,3	
4800	7200	30	125	120	170	81	255	200	180	630×30	2	127	1000	4,046	119,2	010 ASRZ-STH
										710×30			1000	6,265	138,9	
6650	10000	32	145	140	170	94	290	230	200	710×30	2	147	1000	6,573	161,7	011 ASRZ-STH
										800×30			900	10,241	184,2	

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] The dimensions in the bracket concern only the d_2 hole and D_1 diameter in the coupling with increased hub (ASRX type).

[2] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[3] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[4] On request, we produce couplings brake drums with dimensions different from those provided in the table.

[5] l_0 ($L_H = l_1 - l_0$) dimension after the agreement can be changed according to the wishes of the customer.

[6] After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).

▪ Couplings with brake disc Ø450 and bigger are normally balanced dynamically, other couplings are balanced statically.

▪ After the agreement the couplings can be made with the holes for protective discs in hubs.

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ASRY-STH DISC COUPLINGS
with the possibility of replacement of the insert without the necessity of widening the shaft ends and
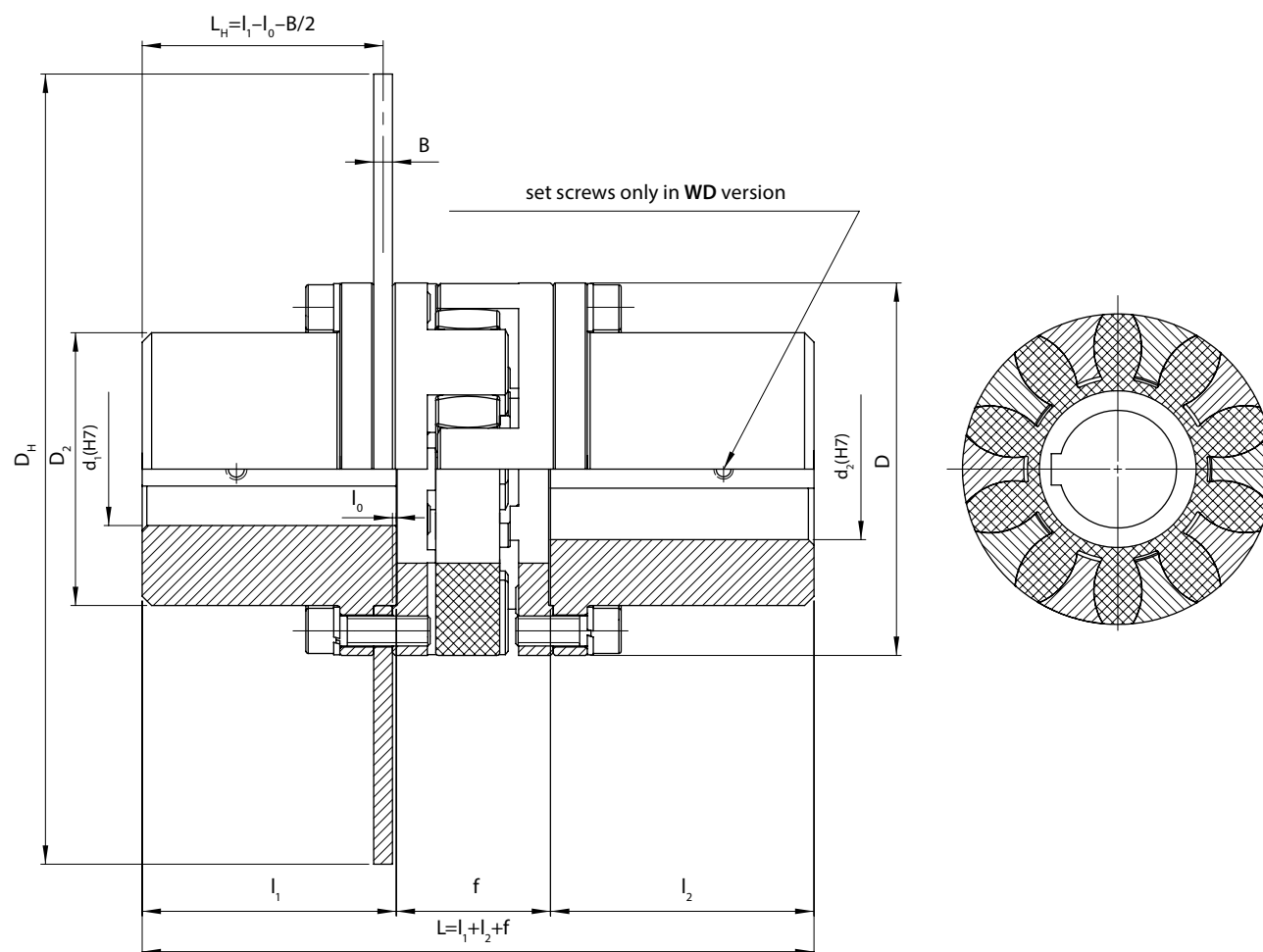with the brake disc with possibility of its disassembly without removing the hub from the shaft end

A1–13

Example of designation of the ASRY-STH coupling with the nominal torque of M_n=265 Nm, brake disc diameter of D_H=320 mm, thickness of B=30 mm, distance of the brake disc symmetry axis from the hub origin of L_H=34 mm, hub hole diameters of d_1=32 mm, d_2=42 mm, hub holes lengths of l_1=50 mm, l_2=65 mm, size of 003 *(marking see page A1-1)*:

265-320×30-34-32/50-42/65-003 ASRY-STH Disc couplings
- the "Ex" version – 265-320×30-34-32/50-42/65-003 ASRY-STH-**Ex** Disc coupling
- the "WD" version – 265-320×30-34-32/50-42/65-003 ASRY-STH-**WD** Disc coupling
- with pilot bores – 265-320×30-34-**ow**/50-**ow**/65-003 ASRY-STH Disc coupling

To replace the insert without the necessity of widening the shaft ends, they cannot inside the coupling stand out the edges of the hub.

ASRY-STH DISC COUPLINGS

with the possibility of replacement of the insert without the necessity of widening the shaft ends and
with the brake disc with possibility of its disassembly without removing the hub from the shaft end

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Nominal torque M_n		d_1, d_2		l_1, l_2 [1]		f	D	D_2	$D_H×B$ [3]	l_0 [4]	Max rotational speed [5]	Moment of inertia [2]	Weight [2]	Coupling size and type
insert 92° ShA	insert 98° ShA	pilot	max [1]	nomin.	extend.						n_{max}	I	m	
Nm		mm									1/min	kgm²	kg	–
265	450	12	42	50	80	48	95	63	320×30	1	2000	0,244	21,4	003 ASRY-STH
310	525	14	48	56	80	50	105	72	320×30	1	2000	0,247	22,3	004 ASRY-STH
									355×30		1800	0,371	26,7	
410	685	16	55	65	90	60	120	82	355×30	1	1800	0,377	28,8	005 ASRY-STH
									400×30		1500	0,605	35,1	
625	940	18	65	75	110	65	135	96	400×30	1	1500	0,610	37,4	006 ASRY-STH
									450×30		1500	0,964	45,2	
1280	1920	22	75	85	140	75	160	112	450×30	1,5	1500	0,992	50,3	007 ASRY-STH
									500×30		1500	1,485	59,1	
2400	3600	26	100	100	140	82	200	145	500×30	1,5	1500	1,573	69,7	008 ASRY-STH
									630×30		1000	3,756	96,7	
3300	4950	30	110	110	160	97	225	165	630×30	1,5	1000	3,869	107,1	009 ASRY-STH
									710×30		1000	6,088	126,8	
4800	7200	30	125	120	170	103	255	180	630×30	2	1000	4,074	122,2	010 ASRY-STH
									710×30		1000	6,293	141,9	
6650	10000	32	145	140	170	116	290	200	710×30	2	1000	6,737	168,8	011 ASRY-STH
									800×30		900	10,367	196,1	

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[3] On request, we produce couplings brake drums with dimensions different from those provided in the table.

[4] l_0 ($L_H = l_1 - l_0$) dimension after the agreement can be changed according to the wishes of the customer.

[5] After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).

▪ Couplings with brake disc Ø450 and bigger are normally balanced dynamically, other couplings are balanced statically.

▪ After the agreement the couplings can be made with the holes for protective discs in hubs.
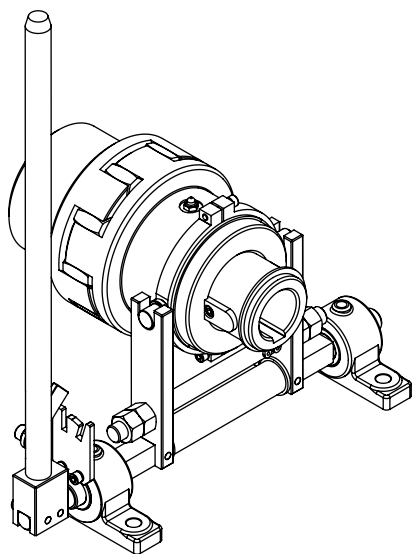
On request we produce special types of couplings taking into account the individual needs and requirements of the customer. The special constructions can have different dimensions in relation to the catalogue dimensions and they can also constitute a new construction adjusted to the needs and the construction of the machine to which the coupling is going to be inbuilt. Below several solutions are presented.
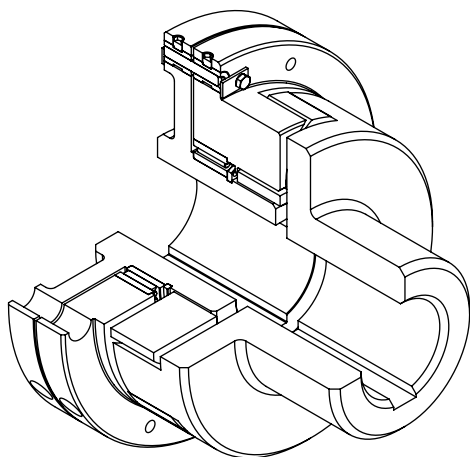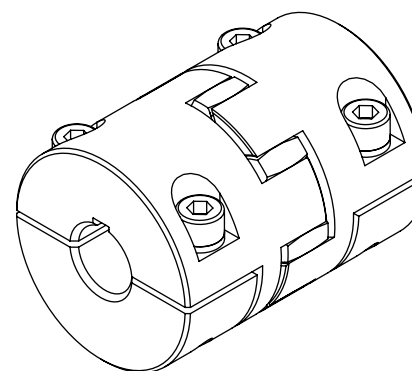
ASR-SK
Coupling with shear pins
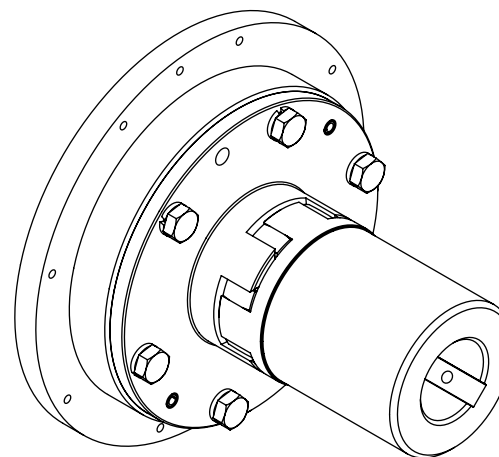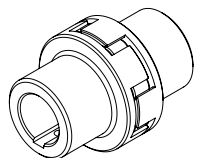
ASR-PK
Coupling with a flange connection

ASR-MR
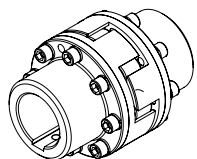Disengageable coupling with mechanism
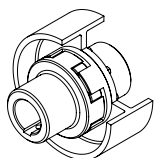
ASR-D
Coupling with divided hubs

ASN flexible couplings are characterized by:
- simple and compact construction
- torsional susceptibility
- service free
- low moment of inertia
- resistance to oils, greases and fuels
- transfer of high torque with small dimensions
- vibration damping and compensation of deviations of joined shaft ends.

APPLICATIONS: pumps, fans, belt and roller conveyors, cranes, stirrers, other machinery and equipment.

MATERIAL: hubs: steel, spheroidal cast iron; jaw discs: steel, aluminium (only couplings ASG series 03) brake discs and drums: steel; flexible insert: polyurethane.

ELASTIC INSERT WORKING CONDITIONS: work in the environment with pH of 5÷12 at temperature of -30°C to +80°C (temporarily up to +100°C).Resistance to chemicals, including: common solvents, fuels, oils and lubricants, sulphuric and hydrochloric acid, soda lye, salty water and many other chemical substances.

OPERATION IN THE AREAS WITH THE DANGER OF EXPLOSIONS:
"Ex" couplings (see marking) are intended for operation in the areas with the danger of explosion (groups: I M2, II2D, II2G). couplings of this construction are made with set screws.

METHOD OF MARKING:

$$[\text{name}] - [M_n] - [D_H \times B^*] - [L_H^*] - [d_1] / [l_1] - [d_2] / [l_2] - [L^*] - [\text{size}][\text{type}] - [\text{version}^*]$$

* only when it concerns a given type, where:

name	e.g. flexible coupling
M_n	nominal torque [Nm]
$D_H \times B$	diameter × width of the brake drum or disc [mm] (only the types ….-SBH, STH, TH; the width of the drum can be omitted in the marking if it equals the catalogue width)
L_H	the distance of symmetry axis of the brake drum or disc from the edge of the hub [mm] (only the types ….-SBH, STH, TH)
d_1, d_2	diameters of the holes [mm] (for the couplings with brake drum or disc d_1 – transmission side) in the case of ordering the coupling without holes for shaft ends "0" should be placed; in the case of lead hole according to the catalogue – "ow" marking, and in the case of pilot bores other than in the catalogue, the diameter of the hole should be added after the "ow" marking

	(e.g. "ow25")
l_1, l_2	the length of the holes in the hubs [mm]
L	total length of the coupling [mm]
size of the coupling	e.g. 001,002
type of the coupling	e.g. ASNY
version	WD – with set screws
	Ex – for operation in the areas with the danger of explosion
	WS… – special (individual arrangements)

BALANCING: couplings are normally balanced statically (some sizes of the couplings with bigger brake drums or discs are normally balanced dynamically-check remarks in the catalogue). After the arrangement there is a possibility of dynamic balancing of each coupling.

MAXIMUM DEVIATIONS: Given values of maximum deviations ("x" – axial, "y" – radial, "Δl_0" – angular) cannot appear at the same time. At the speed above 1500 rpm for the coupling size up to 009 and above 1000 rpm for the couplings size 010 and bigger, the angular deviations should not exceed 50% of the deviations values given in the table.

$$\Delta l_0 = l_0 max - l_0 min$$
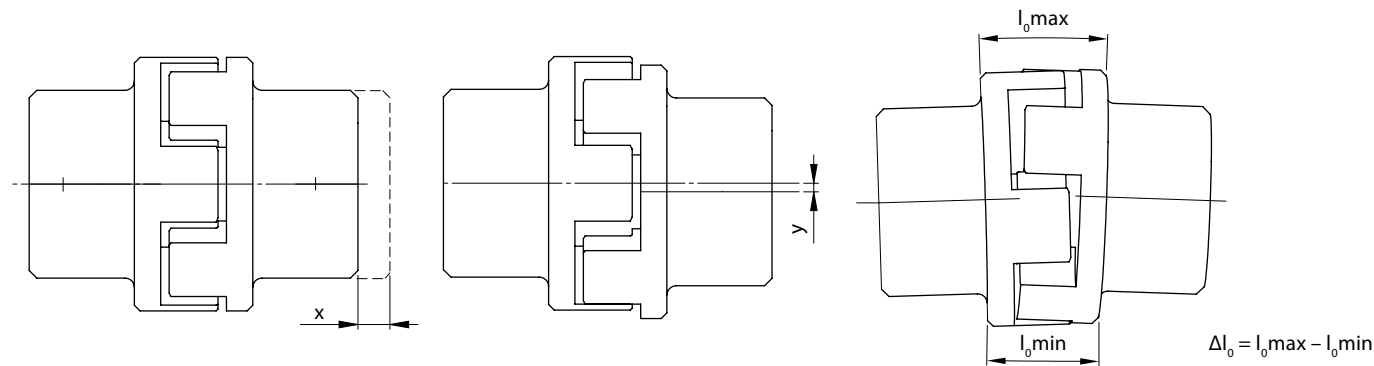
Coupling size	002	003	004	005	006	007	008	009	010	011 021	012 022	013 023	014 024
x	1,2	1,4	1,5	1,8	2	2,1	2,2	2,6	3	3,4	3,6	3,8	4
y	0,3	0,3	0,4	0,4	0,4	0,5	0,5	0,5	0,6	0,7	0,8	0,9	1
Δl_0	0,4	0,45	0,6	0,7	0,8	1	1,1	1,3	1,45	1,65	1,85	2,1	2,5

Deviations mentioned above do not concern the couplings of ASG type.

Example of designation of the ASN coupling with the nominal torque of M_n=100 Nm, hub holes diameters of d_1=32 mm, d_2= 40mm, hub holes lengths of l_1=45 mm, l_2=80 mm, size of 003 *(marking see page A2-1)*:

100-32/45-40/80-003 ASN Flexible coupling

- the "Ex" version –
  100-32/45-40/80-003 ASN-**Ex** Flexible coupling
- the "WD" version –
  100-32/45-40/80-003 ASN-**WD** Flexible coupling
- with pilot bores –
  100-**ow**/45-**ow**/80-003 ASN Flexible coupling

set screws only in **WD** version

Nominal torque M_n	d_1, d_2		l_1, l_2 [1]		f	D	D_1	d_3	Max rotational speed n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type
	pilot	max	nomin.	extend.								
Nm	mm								1/min	kgm²	kg	–
70	8	32	40	60	23	75	50	26	7100	0,0009	1,38	002 ASN
100	10	40	45	80	24	85	60	36	6000	0,0016	1,95	003 ASN
170	10	42	50	80	27	105	65	44	5300	0,0041	3,03	004 ASN
300	12	55	56	80	33	125	85	55	4500	0,0102	5,13	005 ASN
500	16	65	63	90	39	145	95	64	4000	0,0198	7,37	006 ASN
800	20	80	75	110	41	175	120	87	3250	0,0469	12,4	007 ASN
1400	22	90	100	140	48	200	135	100	2750	0,0946	20,0	008 ASN
2100	26	100	110	140	50	230	150	115	2500	0,174	28,1	009 ASN
3400	28	120	120	170	60	260	178	140	2200	0,358	42,3	010 ASN
5000	30	130	130	170	67	300	198	155	2000	0,685	62,5	011 ASN
8300	30	140	165	210	73	360	210	210	1600	1,437	93,5	012 ASN
11400	30	150	175	210	73	400	223	252	1500	2,194	119,6	013 ASN
18000	30	180	240	280	84	480	290	290	1200	5,566	234,5	014 ASN

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

with replaceable insert without the necessity of widening the shaft ends

Example of designation of the ASNY coupling with the nominal torque of M_n=100 Nm, hub holes diameters of d_1=32 mm, d_2=35 mm, hub holes lengths of l_1=45 mm, l_2=80 mm, size of 003 *(marking see page A2-1)*:

100-32/45-35/80-003 ASNY Flexible coupling

- the "Ex" version –
  100-32/45-35/80-003 ASNY-**Ex** Flexible coupling
- the "WD" version –
  100-32/45-35/80-003 ASNY-**WD** Flexible coupling
- with pilot bores –
  100-**ow**/45-**ow**/80-003 ASNY Flexible coupling

To replace the insert without the necessity of widening the shaft ends, they cannot inside the coupling stand out the edges of the hub.

set screws only in **WD** version

Nominal torque M_n	d_1, d_2		l_1, l_2 [1]		f	D	D_2	Max rotational speed	Moment of inertia [2]	Weight [2]	Coupling size and type
	pilot	max	nomin.	extend.				n_{max}	I	m	
Nm	mm							1/min	kgm²	kg	–
70	8	26	40	60	40	75	45	7100	0,0011	1,56	002 ASNY
100	10	36	45	80	42	85	55	6000	0,0021	2,23	003 ASNY
170	10	42	50	80	50	105	65	5300	0,0057	4,01	004 ASNY
300	12	55	56	80	58	125	85	4500	0,0138	6,61	005 ASNY
500	16	65	63	90	64	145	95	4000	0,0283	9,93	006 ASNY
800	20	80	75	110	70	175	120	3250	0,0649	15,9	007 ASNY
1400	22	90	100	140	75	200	135	2750	0,136	24,6	008 ASNY
2100	26	100	110	140	80	230	150	2500	0,227	34,1	009 ASNY
3400	28	120	120	170	95	260	178	2200	0,456	50,2	010 ASNY
5000	30	130	130	170	105	300	198	2000	0,847	72,6	011 ASNY
8300	30	140	165	210	125	360	210	1600	1,909	116,4	012 ASNY
11400	30	150	175	210	125	400	220	1500	2,636	132,7	013 ASNY

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different than the nominal and extended lengths provided in the table.
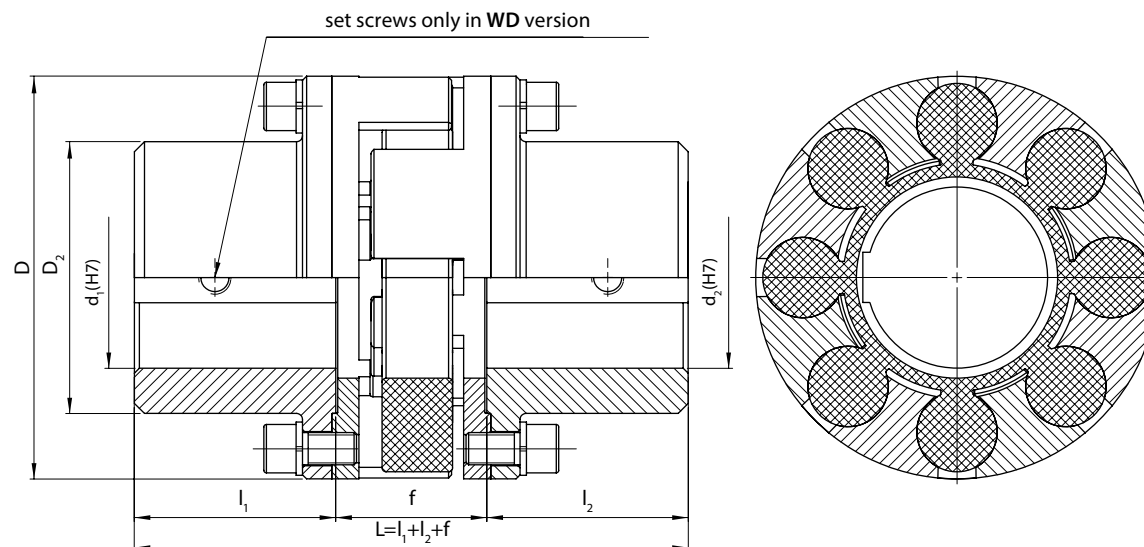
[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

Example of designation of the ASN-SBH coupling with the nominal torque of M_n=300 Nm, brake drum diameter of D_H=200 mm, distance of the brake drum symmetry axis from the hub origin of L_H=55 mm, hub holes diameters of d_1=40 mm, d_2=50 mm, hub holes lengths of l_1=56 mm, l_2=80 mm, size of 005 *(marking see page A2-1)*:

300-200-55-40/56-50/80-005 ASN-SBH Brake coupling

- the "Ex" version – 300-200-55-40/56-50/80-005 ASN-SBH-**Ex** Brake coupling
- the "WD" version – 300-200-55-40/56-50/80-005 ASN-SBH-**WD** Brake coupling
- with pilot bores – 300-200-55-**ow**/56-**ow**/80-005 ASN-SBH Brake coupling

ASN-SBH BRAKE COUPLINGS

with brake drum

Nominal torque M_n	d_1, d_2		l_1, l_2 [1]		f	D	D_1	D_2	D_H [3]	B [3]	l_0 [4]	d_3	Max rotational speed [5] n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type
	pilot	max	nomin.	extend.												
Nm	mm												1/min	kgm²	kg	–
70	8	32	40	60	23	75	50	45	120	50	0	26	4000	0,0041	2,57	002 ASN-SBH
170	10	42	50	80	27	105	65	65	160	60	5	44	4000	0,0173	5,73	004 ASN-SBH
									200	80	0		3000	0,0497	9,12	
300	12	55	56	80	33	125	85	85	200	80	1	55	3000	0,0555	11,0	005 ASN-SBH
500	16	65	63	90	39	145	95	95	200	80	3	64	3000	0,0648	13,1	006 ASN-SBH
									250	100	3		2500	0,159	19,2	
800	20	80	75	110	41	175	120	120	250	100	5	87	2500	0,185	23,6	007 ASN-SBH
									320	120	0		2000	0,470	34,2	
1400	22	90	100	140	48	200	135	135	320	120	5	100	2000	0,516	41,4	008 ASN-SBH
									400	150	0		1800	1,333	61,1	
2100	26	100	110	140	50	230	150	150	400	150	5	115	1800	1,410	68,7	009 ASN-SBH
									500	190	5		1500	3,532	99,5	
3400	28	120	120	170	60	260	178	178	500	190	5	140	1500	3,708	112,4	010 ASN-SBH
5000	30	130	130	170	67	300	198	198	630	235	0	155	1200	10,81	197,6	011 ASN-SBH
									710	265	-10		1000	18,89	254,1	
8300	30	140	165	210	73	360	210	210	630	235	8	210	1200	11,56	227,8	012 ASN-SBH
									710	265	0		1000	19,63	284,3	
11400	30	150	175	210	73	400	223	220	710	265	5	252	1000	20,38	309,5	013 ASN-SBH
18000	30	180	240	280	84	480	290	290	800	290	15	290	1000	36,98	486,2	014 ASN-SBH

We also offer special designs according to the individual wishes of the customer.

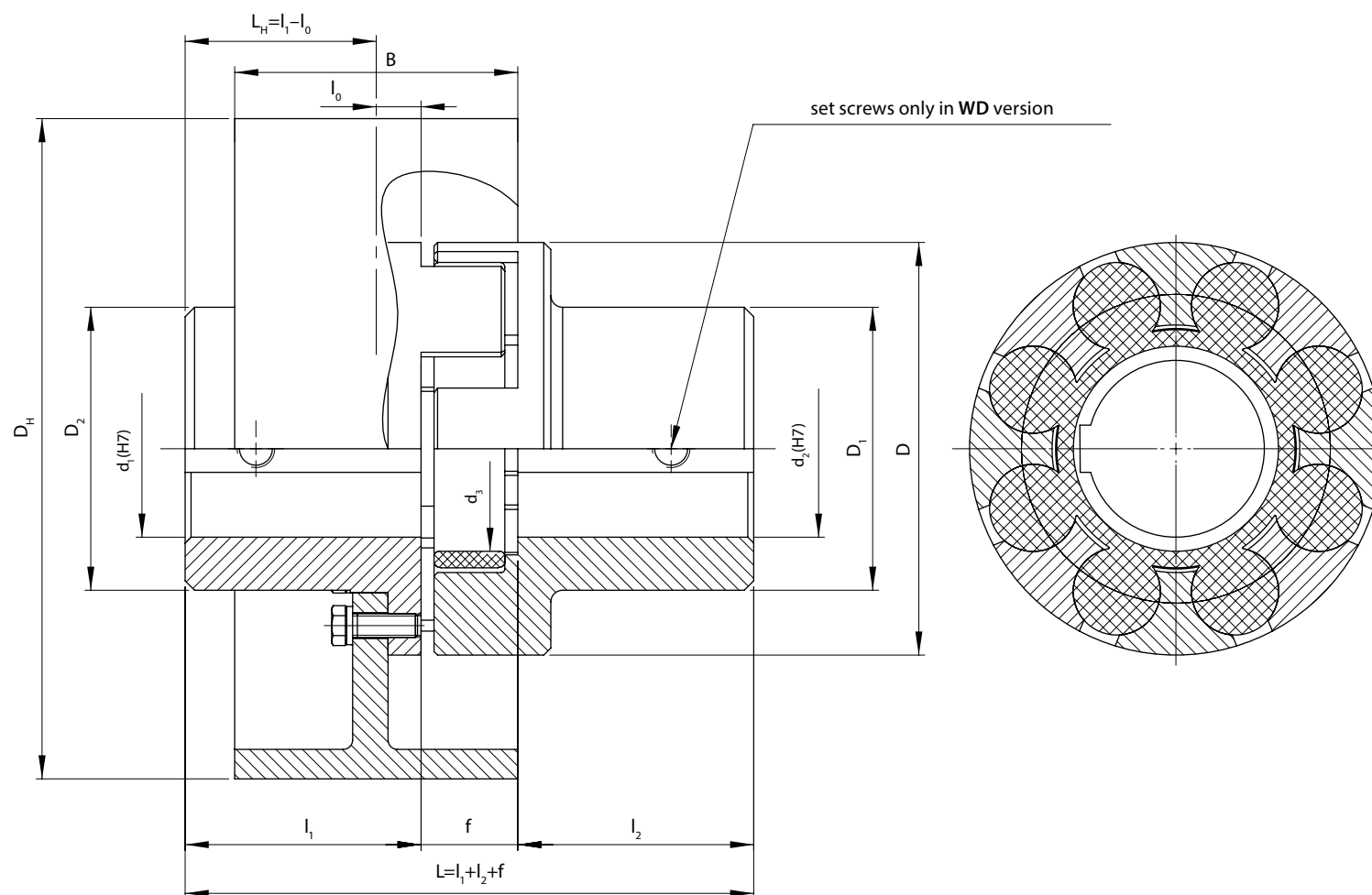We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[3] On request, we produce couplings brake drums with dimensions different from those provided in the table.

[4] l_0 ($L_H = l_1 - l_0$) dimension after the agreement can be changed according to the wishes of the customer.

[5] After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).
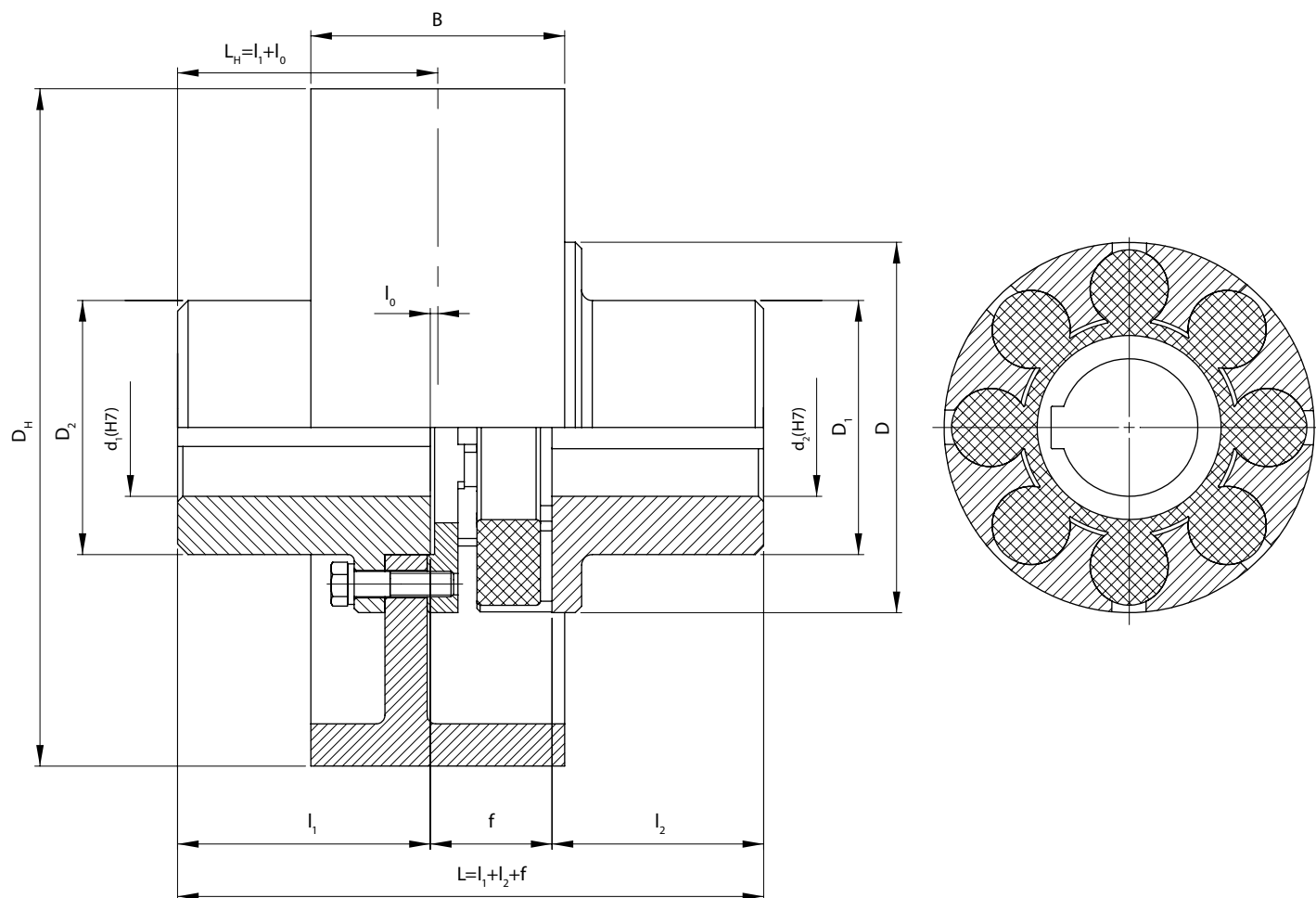
▪ Couplings with brake drum Ø400 and bigger are normally balanced dynamically, other couplings are balanced statically.

▪ After the agreement the couplings can be made with the holes for protective discs in hubs.

Example of designation of the ASNZ-SBH coupling with the nominal torque of M_n=300 Nm, brake drum diameter of D_H=200 mm, distance of the brake drum symmetry axis from the hub origin of L_H=66 mm, hub holes diameters of d_1=40 mm, d_2=50 mm, hub holes lengths of l_1=56 mm, l_2=80 mm, size of 005 *(marking see page A2-1)*:

300-200-66-40/56-50/80-005 ASNZ-SBH Brake coupling

- the "Ex" version – 300-200-55-40/56-50/80-005 ASNZ-SBH-**Ex** Brake coupling
- the "WD" version – 300-200-55-40/56-50/80-005 ASNZ-SBH-**WD** Brake coupling
- with pilot bores – 300-200-55-**ow**/56-**ow**/80-005 ASNZ-SBH Brake coupling

ASNZ-SBH BRAKE COUPLINGS
with brake drum and with the possibility of its disassembly without removing the hub from the shaft end

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Nominal torque M_n	d_1, d_2		l_1, l_2 [1]		f	D	D_1	D_2	D_H [3]	B [3]	l_0 [4]	d_3	Max rotational speed [5] n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type
	pilot	max	nomin.	extend.												
Nm	mm												1/min	kgm²	kg	–
70	8	32	40	60	32	75	50	45	120	50	6	26	4000	0,0042	2,66	002 ASNZ-SBH
170	10	42	50	80	38	105	65	65	160	60	5	44	4000	0,0181	6,22	004 ASNZ-SBH
									200	80	10		3000	0,0505	9,61	
300	12	55	56	80	46	125	85	85	200	80	10	55	3000	0,0573	11,74	005 ASNZ-SBH
500	16	65	63	90	52	145	95	95	200	80	8	64	3000	0,0690	14,39	006 ASNZ-SBH
									250	100	8		2500	0,164	20,45	
800	20	80	75	110	56	175	120	120	250	100	8	87	2500	0,194	25,45	007 ASNZ-SBH
									320	120	12		2000	0,479	36,01	
1400	22	90	100	140	62	200	135	135	320	120	9	100	2000	0,537	43,75	008 ASNZ-SBH
									400	150	14		1800	1,354	63,43	
2100	26	100	110	140	65	230	150	150	400	150	12	115	1800	1,437	71,70	009 ASNZ-SBH
									500	190	12		1500	3,559	102,5	
3400	28	120	120	170	78	260	178	178	500	190	17	140	1500	3,757	116,4	010 ASNZ-SBH
5000	30	130	130	170	86	300	198	198	630	235	23	155	1200	10,89	202,7	011 ASNZ-SBH
									710	265	33		1000	18,97	259,2	
8300	30	140	165	210	99	360	210	210	630	235	21	210	1200	11,79	239,3	012 ASNZ-SBH
									710	265	29		1000	19,87	295,7	
11400	30	150	175	210	98	400	223	220	710	265	27	252	1000	20,60	316,1	013 ASNZ-SBH
18000	30	180	240	280	122	480	290	290	800	290	20	290	1000	37,85	508,6	014 ASNZ-SBH

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[3] On request, we produce couplings brake drums with dimensions different from those provided in the table.

[4] l_0 ($L_H = l_1 - l_0$) dimension after the agreement can be changed according to the wishes of the customer.
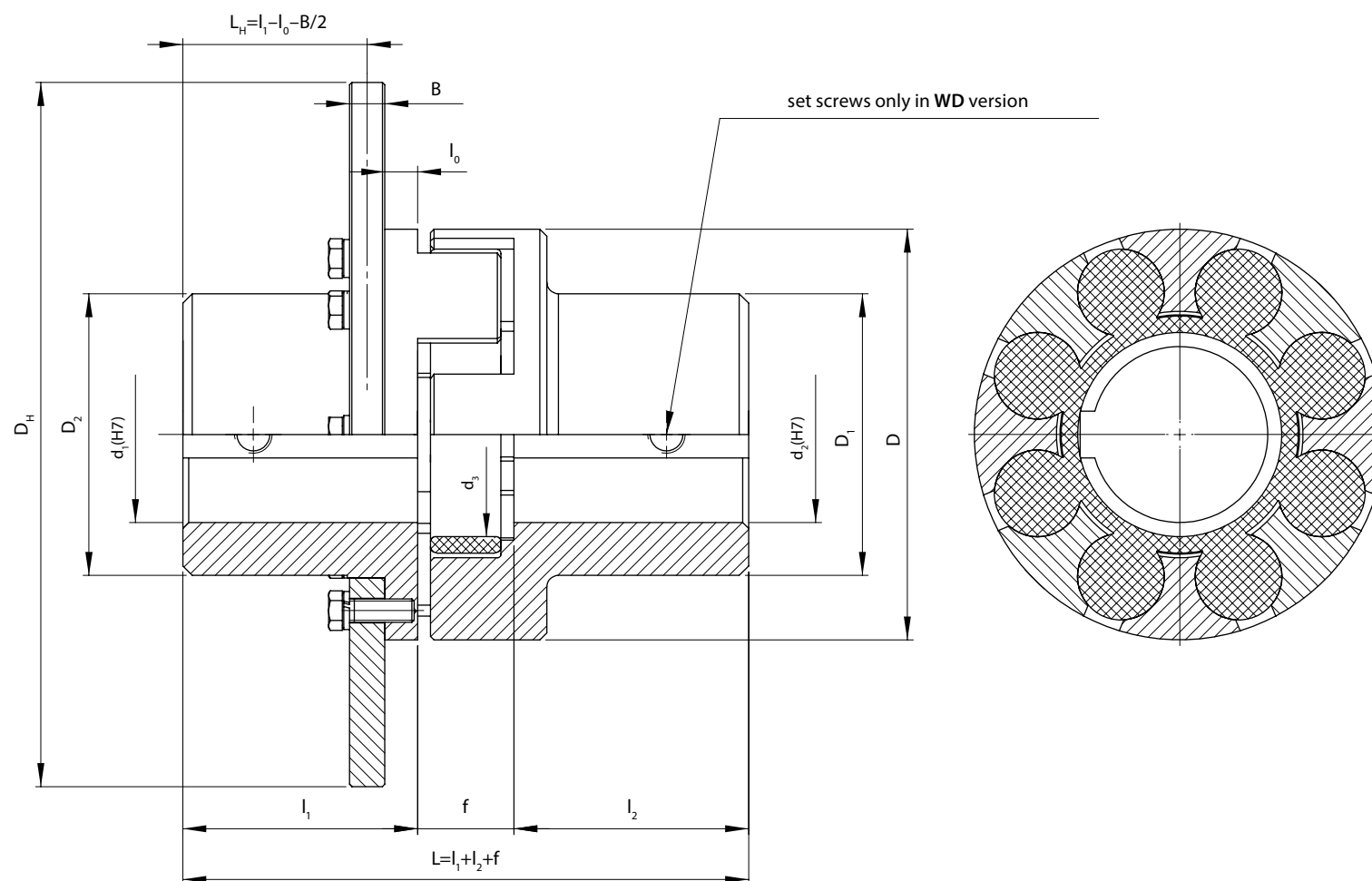
[5] After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).

▪ Couplings with brake drum Ø400 and bigger are normally balanced dynamically, other couplings are balanced statically.

▪ After the agreement the couplings can be made with the holes for protective discs in hubs.

Example of designation of the ASN-STH coupling with the nominal torque of M_n=800 Nm, brake disc diameter of D_H=400 mm, thickness of B=30 mm, distance of the brake disc symmetry axis from the hub origin of L_H=71 mm, hub hole diameters of d_1=60 mm, d_2=80 mm, hub holes lengths of l_1=100 mm, l_2=140 mm,size of 007 *(marking see page A2-1)*:

800-400x30-71-60/100-80/140-007 ASN-STH Disc coupling

- the "Ex" version – 800-400x30-71-60/100-80/140-007 ASN-STH-**Ex** Disc coupling
- the "WD" version – 800-400x30-71-60/100-80/140-007 ASN-STH-**WD** Disc coupling
- with pilot bores – 800-400x30-71-**ow**/100-**ow**/140-007 ASN-STH Disc coupling

Nominal torque M_n	d_1, d_2		l_1, l_2 [1]		f	D	D_1	D_2	$D_H \times B$ [3]	l_0 [4]	d_3	Max rotational speed [5] n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type
	pilot	max [1]	nomin.	extend.											
Nm	mm											1/min	kgm²	kg	–
300	12	55	56	80	33	125	85	85	320 x 30	12	55	2000	0,249	22,6	005 ASN-STH
500	16	65	63	90	39	145	95	95	320 x 30	13	64	2000	0,259	24,5	006 ASN-STH
									355 x 30			1800	0,382	28,9	
800	20	80	75	110	41	175	120	120	400 x 30	14	87	1500	0,630	39,1	007 ASN-STH
									450 x30			1500	0,984	46,9	
1400	22	90	100	140	48	200	135	135	450 x 30	16	100	1500	1,029	53,9	008 ASN-STH
									500 x 30			1500	1,522	62,6	
2100	26	100	110	140	50	230	150	150	500 x 30	19	115	1500	1,598	69,9	009 ASN-STH
									630 x 30			1200	3,781	96,9	
3400	28	120	120	170	60	260	178	178	630 x 30	24	140	1200	3,954	109,5	010 ASN-STH
									710 x 30			1000	6,173	129,2	
5000	30	130	130	170	67	300	198	198	710 x 30	26	155	1000	6,487	147,9	011 ASN-STH
									800 x 30			1000	10,06	172,9	
8300	30	140	165	210	73	360	210	210	800 x 40	32	210	1000	13,92	239,6	012 ASN-STH
11400	30	150	175	210	73	400	223	220	800 x 40	35	252	1000	14,67	264,6	013 ASN-STH
									1000 x 40			1000	32,75	352,8	
18000	30	180	240	280	84	480	290	290	1000 x 40	38	290	1000	35,98	458,9	014 ASN-STH

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[3] On request, we produce couplings brake drums with dimensions different from those provided in the table.

[4] l_0 ($L_H = l_1 - l_0 - B/2$) dimension after the agreement can be changed according to the wishes of the customer.

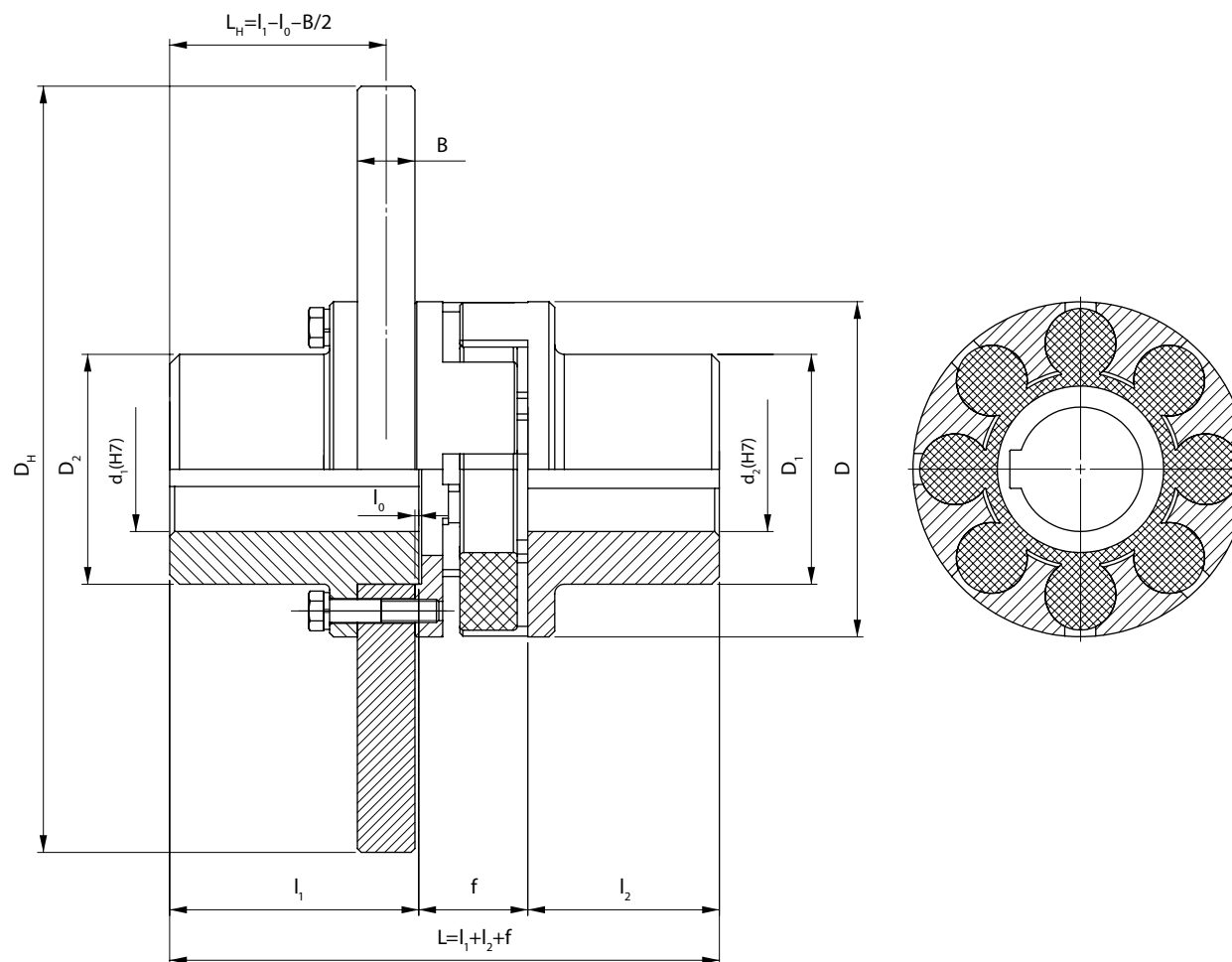[5] After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).

- Couplings with brake disc Ø450 and bigger are normally balanced dynamically, other couplings are balanced statically.
- After the agreement the couplings can be made with the holes for protective discs in hubs.

Example of designation of the ASNZ-STH coupling with the nominal torque of M_n=800 Nm, brake disc diameter of D_H=400 mm, thickness of B=30 mm, distance of the brake disc symmetry axis from the hub origin of L_H=83,5 mm, hub hole diameters of d_1=60 mm, d_2=80 mm, hub holes lengths of l_1=100 mm, l_2=140 mm, size of 007 *(marking see page A2-1)*:

800-400x30-83,5-60/100-80/140-007ASNZ-STH Disc coupling

- the "Ex" version – 800-400x30-83,5-60/100-80/140-007 ASNZ-STH-**Ex** Disc coupling
- the "WD" version – 800-400x30-83,5-60/100-80/140-007 ASNZ-STH-**WD** Disc coupling
- with pilot bores – 800-400x30-83,5-**ow**/100-**ow**/140-007 ASNZ-STH Disc coupling

ASNZ-STH DISC COUPLINGS
with brake disc and the possibility of its disassembly without removing the hub from the shaft end

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Nominal torque M_n	d_1, d_2		l_1, l_2 [1]		f	D	D_1	D_2	$D_H \times B$ [3]	l_0 [4]	d_3	Max rotational speed [5] n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type
	pilot	max	nomin.	extend.											
Nm	mm											1/min	kgm²	kg	–
300	12	55	56	80	46	125	85	85	320 x 30	1,5	55	2000	0,2517	23,3	005 ASNZ-STH
500	16	65	63	90	52	145	95	95	320 x 30	1,5	64	2000	0,2631	25,8	006 ASNZ-STH
									355 x 30			1800	0,387	30,1	
800	20	80	75	110	56	175	120	120	400 x 30	1,5	87	1500	0,639	40,9	007 ASNZ-STH
									450 x30			1500	0,993	48,7	
1400	22	90	100	140	62	200	135	135	450 x 30	2	100	1500	1,049	56,2	008 ASNZ-STH
									500 x 30			1500	1,543	64,9	
2100	26	100	110	140	65	230	150	150	500 x 30	2	115	1500	1,625	72,9	009 ASNZ-STH
									630 x 30			1200	3,808	99,9	
3400	28	120	120	170	78	260	178	178	630 x 30	2	140	1200	4,003	113,4	010 ASNZ-STH
									710 x 30			1000	6,222	133,1	
5000	30	130	130	170	86	300	198	198	710 x 30	2,5	155	1000	6,568	153,1	011 ASNZ-STH
									800 x 30			1000	10,14	178,0	
8300	30	140	165	210	99	360	210	210	800 x 40	2,5	210	1000	14,16	251,0	012 ASNZ-STH
11400	30	150	175	210	98	400	223	220	800 x 40	2,5	252	1000	14,88	271,1	013 ASNZ-STH
									1000 x 40			1000	32,97	359,3	
18000	30	180	240	280	122	480	290	290	1000 x 40	3	290	1000	36,84	481,4	014 ASNZ-STH

We also offer special designs according to the individual wishes of the customer.
We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.
[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.
[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.
[3] On request, we produce couplings brake drums with dimensions different from those provided in the table.
[4] l_0 ($L_H = l_1 - l_0 - B/2$) dimension after the agreement can be changed according to the wishes of the customer.
[5] After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).
▪ Couplings with brake disc Ø450 and bigger are normally balanced dynamically, other couplings are balanced statically.
▪ After the agreement the couplings can be made with the holes for protective discs in hubs.
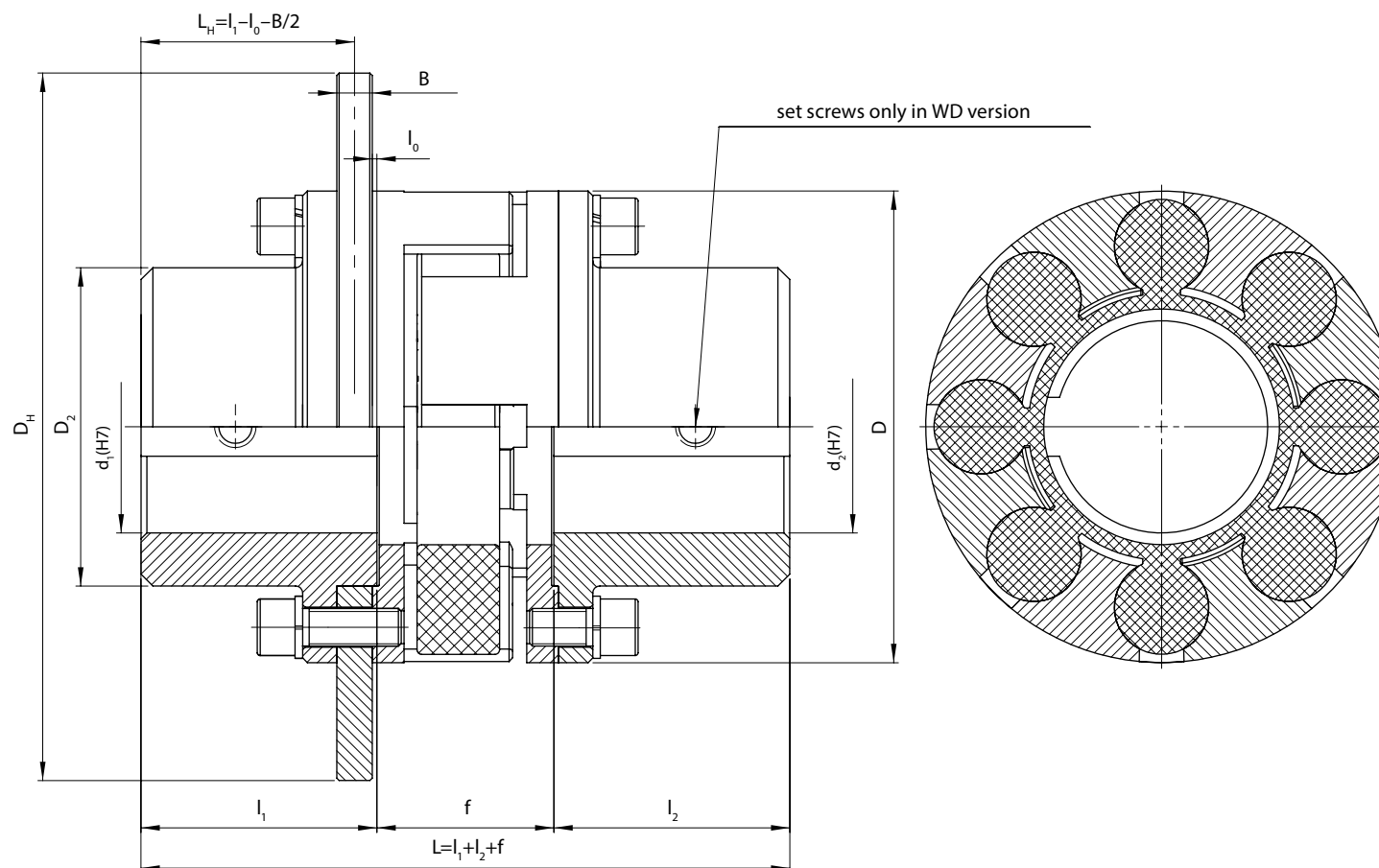
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ASNY-STH DISC COUPLINGS

with the possibility of replacement of the insert without the necessity of widening the shaft ends
and with the brake disc with the possibility of its disassembly without removing the hub from the shaft end

A2–13

Example of designation of the ASNY-STH coupling with the nominal torque of M_n=800 Nm, brake disc diameter of D_H=400 mm, thickness of B=30 mm, distance of the brake disc symmetry axis from the hub origin of L_H=83,5 mm, hub hole diameters of d_1=60 mm, d_2=80 mm, hub holes lengths of l_1=100 mm, l_2=140 mm, size of 007 *(marking see page A2-1)*:

800-400×30-83,5-60/100-80/140-007 ASNY-STH Disc coupling
- the "Ex" version – 800-400×30-83,5-60/100-80/140-007 ASNY-STH-**Ex** Disc coupling
- the "WD" version – 800-400×30-83,5-60/100-80/140-007 ASNY-STH-**WD** Disc coupling
- with pilot bores – 800-400×30-83,5-**ow**/100-**ow**/140-007 ASNY-STH Disc coupling

To replace the insert without the necessity of widening the shaft ends, they cannot inside the coupling stand out the edges of the hub.

ASNY-STH DISC COUPLINGS

with the possibility of replacement of the insert without the necessity of widening the shaft ends
and with the brake disc with the possibility of its disassembly without removing the hub from the shaft end

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Nominal torque M_n	d_1, d_2		l_1, l_2 [1]		f	D	D_2	$D_H \times B$ [3]	I_0 [4]	Max rotational speed [5]	Moment of inertia [2]	Weight [2]	Coupling size and type
	pilot	max [1]	nomin.	extend.						n_{max}	I	m	
Nm	mm									1/min	kgm²	kg	–
300	12	55	56	80	58	125	85	320 x 30	1,5	2000	0,253	24,1	005 ASNY-STH
500	16	65	63	90	64	145	95	320 x 30	1,5	2000	0,267	27,1	006 ASNY-STH
								355 x 30		1800	0,391	31,4	
800	20	80	75	110	70	175	120	400 x 30	1,5	1500	0,648	42,7	007 ASNY-STH
								450 x30		1500	1,002	50,5	
1400	22	90	100	140	75	200	135	450 x 30	2,0	1500	1,070	58,5	008 ASNY-STH
								500 x 30		1500	1,564	67,2	
2100	26	100	110	140	80	230	150	500 x 30	2,0	1500	1,652	75,9	009 ASNY-STH
								630 x 30		1200	3,835	102,9	
3400	28	120	120	170	95	260	178	630 x 30	2,0	1200	4,052	117,4	010 ASNY-STH
								710 x 30		1000	6,271	137,1	
5000	30	130	130	170	105	300	198	710 x 30	2,5	1000	6,649	158,1	011 ASNY-STH
								800 x 30		1000	10,22	183,1	
8300	30	140	165	210	125	360	210	800 x 40	2,5	1000	14,39	262,5	012 ASNY-STH
11400	30	150	175	210	125	400	220	800 x 40	2,5	1000	15,11	277,7	013 ASNY-STH
								1000 x 40		1000	33,19	365,9	

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[3] On request, we produce couplings brake drums with dimensions different from those provided in the table.

[4] I_0 ($L_H = I_1 - I_0 - B/2$) dimension after the agreement can be changed according to the wishes of the customer.

[5] After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).
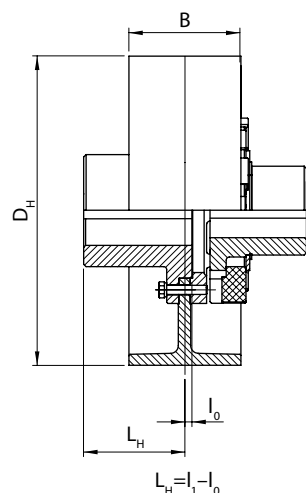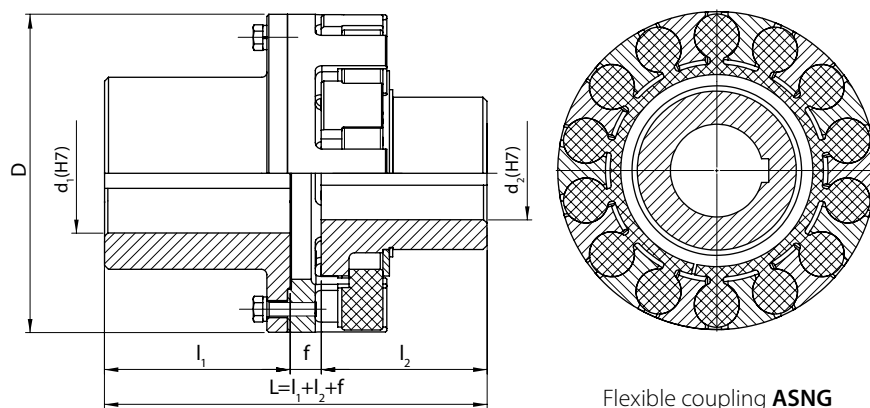
▪ Couplings with brake disc Ø450 and bigger are normally balanced dynamically, other couplings are balanced statically.

▪ After the agreement the couplings can be made with the holes for protective discs in hubs.
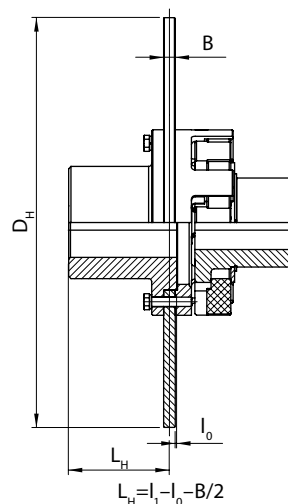
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ASNG FLEXIBLE COUPLINGS

with the possibility of replacement of the insert without the necessity of widening the shaft ends

BRAKE – **ASNG-SBH** with brake drum
DISC – **ASNG-STH** with brake disc

A2–15

D $d_1(H7)$ $d_2(H7)$
l_1 f l_2
$L=l_1+l_2+f$

Flexible coupling **ASNG**

Example of designation of the ASNG couplings with the nominal torque of M_n=8300 Nm, hub holes diameters of d_1=140 mm, d_2=120 mm, hub holes lengths of l_1=250 mm, l2=200 mm, size of 022 *(marking see page A2-1)*:
8300-140/250-120/200-022 ASNG Flexible coupling
▪ the "Ex" version –
   8300-140/250-120/200-022 ASNG-**Ex** Flexible coupling

Brake drum diameter of D_H=710 mm, distance of the brake drum symmetry axis L_H=240 mm
8300-710-240-140/250-120/200-022 ASNG-SBH Brake coupling
▪ the "Ex" version –
   8300-710-240-140/250-120/200-022 ASNG-SBH-**Ex** Brake coupling

Brake disc diameter D_H=710 and thickness of B=30 mm, distance of the brake disc symmetry axis L_H=231 mm
8300-710x30-231-140/250-120/200-022 ASNG-STH Disc coupling
▪ the "Ex" version –
   8300-710x30-231-140/250-120/200-022 ASNG-STH-**Ex** Disc coupling

B
D_H
l_0
L_H
$L_H=l_1-l_0$

Brake coupling **ASNG-SBH**

B
D_H
l_0
L_H
$L_H=l_1-l_0-B/2$

Disc coupling **ASNG-STH**

We also offer special designs according to the individual wishes of the customer.
We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.
[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table (hubs longer than the lengthened after the agreement).
[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.
[3] On request, we produce couplings brake drums and discs with dimensions different from those provided in the table.
[4] l_0 (for SBH $L_H=l_1-l_0$, for STH $L_H=l_1-l_0-B/2$) dimension after the agreement can be changed according to the wishes of the customer.
[5] After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).
▪ Couplings with brake discs and drums are normally balanced dynamically, other couplings are balanced statically.
▪ After the agreement the couplings can be made with the holes for protective discs in hubs.

ASNG FLEXIBLE COUPLINGS

with the possibility of replacement of the insert without the necessity of widening the shaft ends

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Nominal torque M_n	d_1	d_2	l_1, l_2 [1]		f	D	D_H [3]	B [3]	l_0 [4]	Max rotational speed [5] n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type
	max	max	nomin.	extend.									
Nm	mm									1/min	kgm²	kg	–
1400	90	60	100	140	22	200	–	–	–	2750	0,09		018 ASNG
							320	120	10	2000	0,51	39,90	018 ASNG-SBH
							400	150		1800	1,24	56,04	
							450	30	2	1500	1,02	52,17	018 ASNG-STH
							500	30		1500	1,52	60,90	
2100	100	75	110	140	30	230	–	–	–	2500	0,19	28,45	019 ASNG
							400	150	10	1800	1,46	70,40	019 ASNG-SBH
							500	190		1500	3,68	101,5	
							500	30	3	1500	1,61	70,42	019 ASNG-STH
							630	30		1200	3,79	97,42	
3400	120	90	130	170	30	260	–	–	–	2200	0,35	41,30	020 ASNG
							500	190	10	1500	4,02	118,9	020 ASNG-SBH
							630	30	4	1200	3,94	109,0	020 ASNG-STH
							710	30		1000	6,16	128,7	
5000	120	110	165	210	30	300	–	–	–	2000	0,66	64	021 ASNG
							500	190	10	1500	4,34	141	021 ASNG-SBH
							630	235		1200	11,26	207	
							710	265		1000	18,11	250	
							710	30	4	1000	6,52	159	021 ASNG-STH
							800	30		1000	10,09	184	
8300	150	140	200	250	35	360	–	–	–	1600	2,0	129	022 ASNG
							630	235	10	1200	12,50	269	022 ASNG-SBH
							710	265		1000	19,43	312	
							710	30	4	1000	7,84	222	022 ASNG-STH
							800	30		1000	11,38	244	
11400	150	150	200	250	40	400	–	–	–	1500	2,46	142	023 ASNG
							710	265	10	1000	19,87	323	023 ASNG-SBH
							800	290		1000	33,72	396	
							800	30	4	1000	11,81	249	023 ASNG-STH
							1000	30		1000	25,37	315	
18000	180	160	240	280	47	480	–	–	–	1200	6,17	228	024 ASNG
							800	290	15	1000	37,28	473	024 ASNG-SBH
							1000	30	4	1000	28,15	385	024 ASNG-STH

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ASG DOUBLE COUPLINGS

with two inserts and the possibility of their replacement without the necessity of widening the shaft ends (only series 02 and 03)

DISC – ASG-TH with brake disc

A2–17

Example of designation of the ASG 02 series type coupling with the nominal torque of M_n=5000 Nm, hub holes diameters of d_1=90 mm, d_2=85 mm, hub holes lengths of l_1=172 mm, l_2=172 mm, total length L=430 mm size of 021 *(marking see page A2-1)*:

5000-90/172-85/172-430-021 ASG Double coupling

▪ the "Ex" version – 5000-90/172-85/172-430-021 ASG-**Ex** Double coupling

With brake disc of diameter D_H=450 mm and thickness of 15 mm, distance of the brake disc symmetry axis from the hub origin of L_H=110 mm

5000-450x15-110-90/172-85/172-430-021 ASG-TH Disc coupling

▪ the "Ex" version – 5000-450x15-110-90/172-85/172-430-021 ASG-TH-**Ex** Disc coupling

▪ **Because of usage in 03 series material of jaw disc (aluminium), the couplings of this series should not be used in the areas with danger of explosion, unless the user admits them for operation together with the entire device on his own responsibility.**

▪ **The replacement of inserts without drawing the shaft ends aside is possible only in series 02 and 03 (in the series 01 it is not possible).**

Nominal torque M_n	d_1, d_2		l_1, l_2 [1]		f		D (D₁)	$D_H×B$ [3]	l_H [4]	Max rotational speed [5] n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type
	pilot	max	nomin.	extend.	min	max							
Nm	mm									1/min	kgm²	kg	–
Series 01													
5000	30	100	172	212	42	86	300	–	110	1500	0,97	94,74	011 ASG
								450×15			1,38	107,47	011 ASG-TH
8300	30	125	172	212	42	101	360	–	130		2,33	156,56	012 ASG
								630×15 600×15			3,08	180,11	012 ASG-TH
Series 02													
5000	30	90	172	212	42	86	300	–	110	1500	0,78	70,06	021 ASG
								450×15			1,14	79,93	021 ASG-TH
8300	30	125	172	212	42	101	360	–	130		2,05	145,37	022 ASG
								630×15 600×15			3,33	165,93	022 ASG-TH
Series 03													
5000	30	90	172	212	42	86	300 (385)	–	110	1500	0,83	66,36	031 ASG
								450×15			1,20	76,24	031 ASG-TH
8000	30	125	172	212	42	101	360 (455)	–	130		2,21	141,56	032 ASG
								630×15 600×15			3,48	162,11	032 ASG-TH
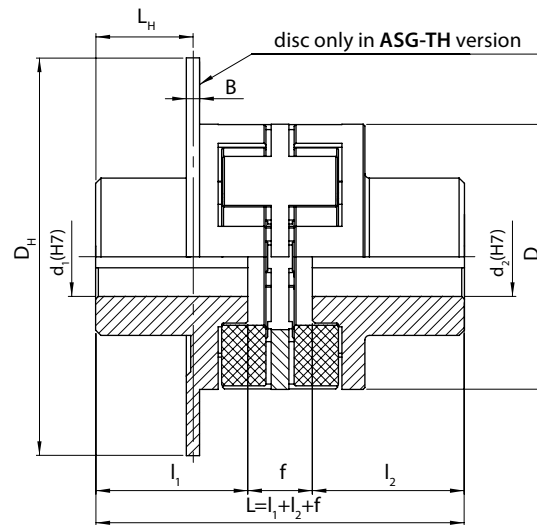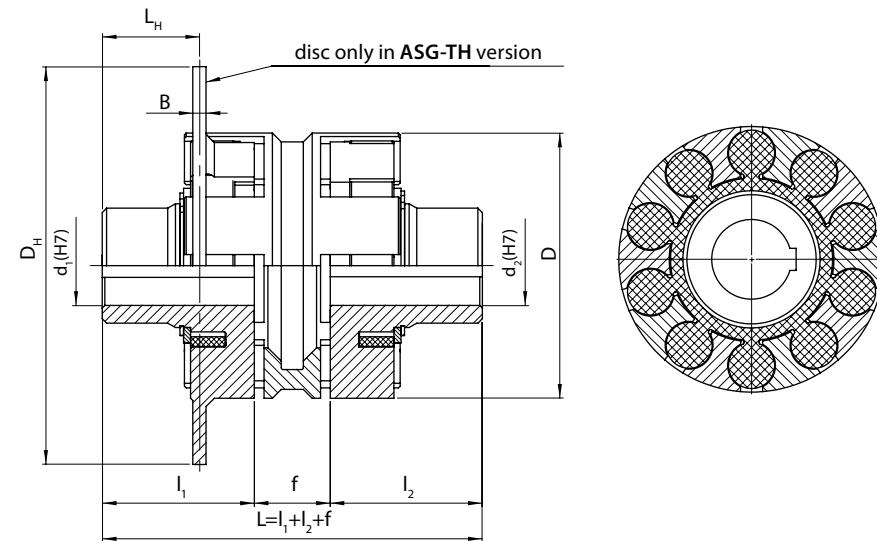
ASG DOUBLE COUPLINGS

with two inserts and the possibility of their replacement without the necessity of widening the shaft ends (only series 02 and 03)

Series 01

disc only in **ASG-TH** version

$L=l_1+l_2+f$

Series 02

disc only in **ASG-TH** version
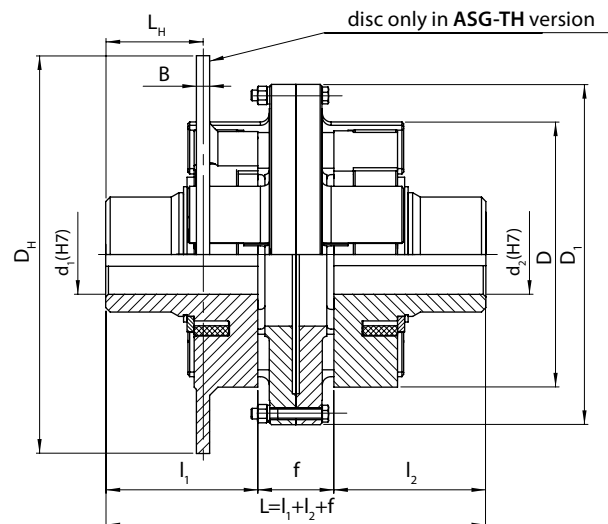
$L=l_1+l_2+f$

Series 03

disc only in **ASG-TH** version

$L=l_1+l_2+f$

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

1) On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table (hubs longer than the lengthened after the agreement).

2) The mass and the moment of inertia has been established for the couplings with holes $d_{1,2}$=Ø90 and $l_{1,2}$=172 (011, 021, 031); $d_{1,2}$=Ø100 and $l_{1,2}$=212 (012, 022, 032); of total length L=430 (011, 021, 031); L=525 (012, 022, 032).

3) On request, we produce couplings brake discs with dimensions different from those provided in the table.

4) L_H dimension after the agreement can be changed according to the wishes of the customer. Given values of LH are the nominal dimensions for the hub of the length of l1=172 (for size 011,021,031) and l1=210 (for size 012, 022, 032).

5) After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).

▪ Couplings with brake disc Ø450 and bigger are normally balanced dynamically, other couplings are balanced statically.

▪ After the agreement the couplings can be made with the holes for protective discs in hubs.

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ASG DOUBLE COUPLINGS

with two inserts and the possibility of their replacement without the necessity of widening the shaft ends (only series 02 and 03)

A2–19

MAXIMUM DEVIATIONS: Given values for maximum deviations ("x" – axial, "y" – radial, „Δl_0" – angular) cannot appear at the same time.

$l_0 max$

$l_0 min$ $\Delta l_0 = l_0 max - l_0 min$
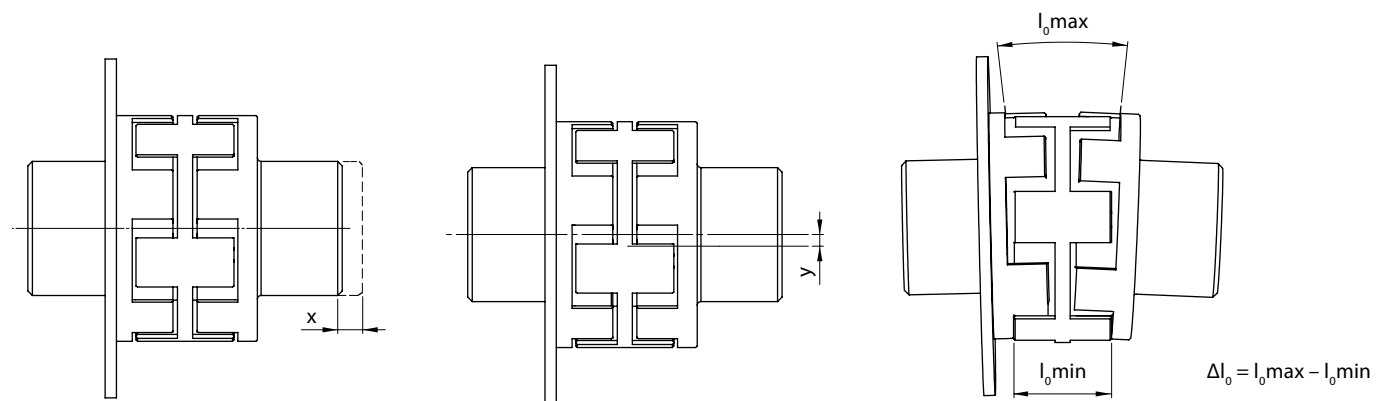
Coupling size	011	021 031	012	022 031
x	−4 +4	−12 +4	−4 +4	−15 +4
y	0,9	0,9	1,0	1,0
Δl_0	0,6	0,6	0,6	0,6

On request we produce special types of couplings taking into account the individual needs and requirements of the customer. The special constructions can have different dimensions in relation to the catalogue dimensions and they can also constitute a new construction adjusted to the needs and the construction of the machine to which the coupling is going to be inbuilt. Below several solutions are presented.
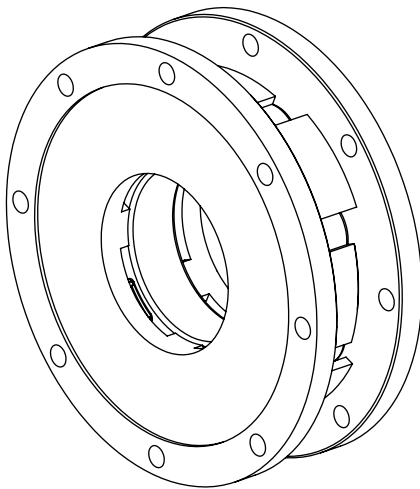
ASN-KK
Coupling with flange connection
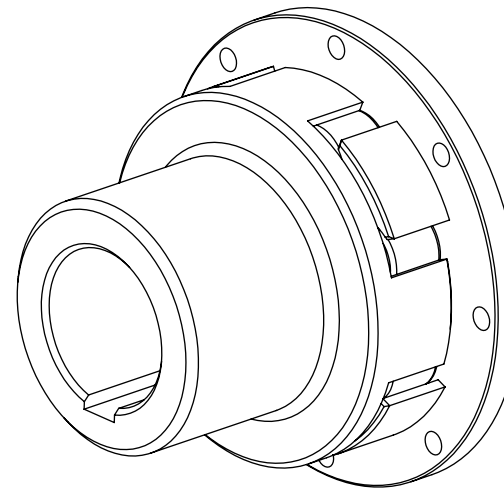
ASN-PK
Coupling with flange connection
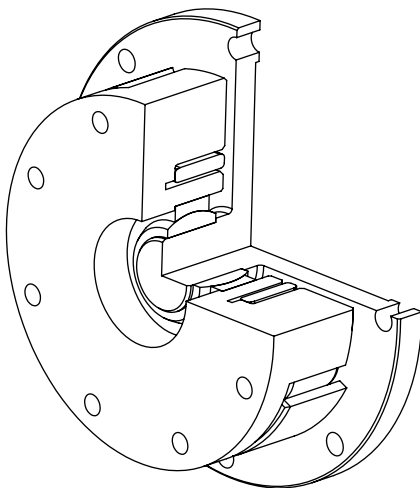
ASN-KKL
Coupling with bearings and flange connection
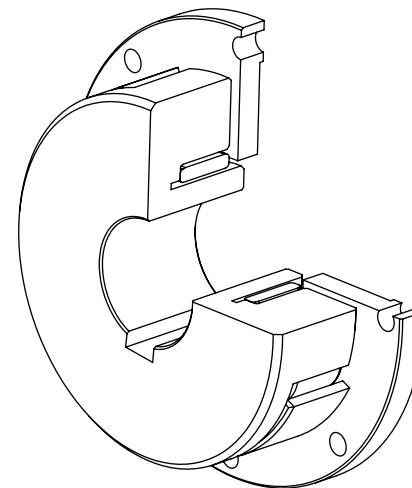
ASN-PWK
Coupling with inner hub and flange connection
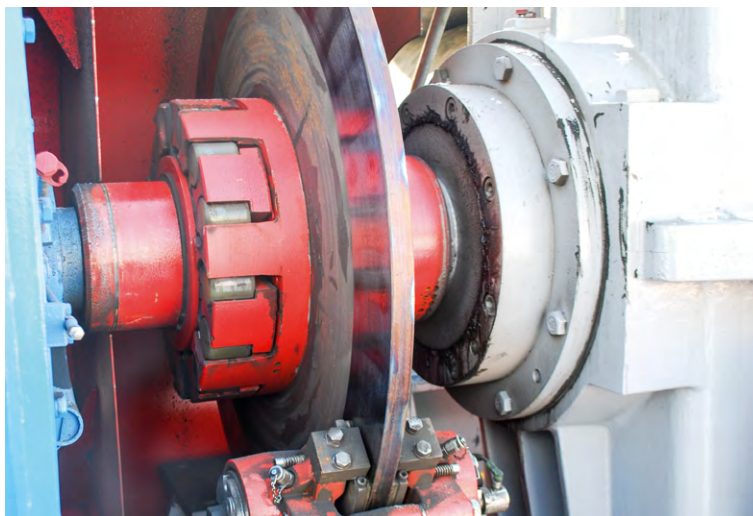
Conveyor – ASNG-STH disc coupling

Crusher – ASO/ASN flexible coupling

Coal harvester – ASN flexible coupling
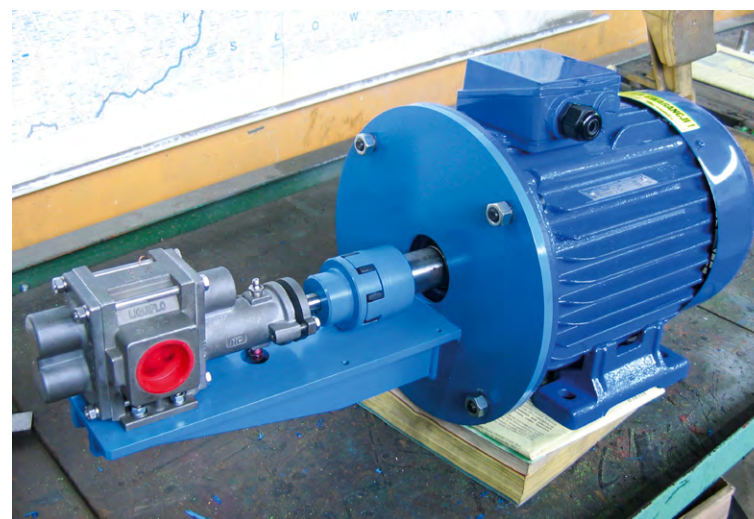
Pump – ASR/ASRX flexible coupling
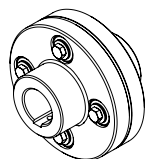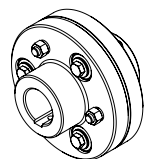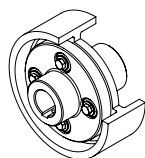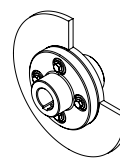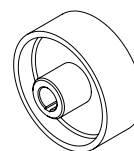
ASP Pin and Bush couplings are characterized by:
- simple and compact construction
- torsional susceptibility
- resistance to oils, greases and fuels
- vibration damping and compensation of deviations of joined shaft ends
- possibility of operation with both electric and combustion motors.
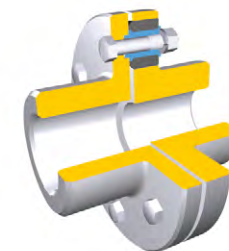
APPLICATIONS: pumps; fans; belt and roller conveyors; cranes; stirrers; other machinery and equipment.

MATERIAL: steel; flexible insert: rubber reinforced with steel mesh and cord fabric (polyurethane on request of the customer) brake discs and drums usually steel S355J2 (different materials after agreement).

ELASTIC INSERT WORKING CONDITIONS: work at temperature of -30°C to +60°C, in the construction HT to +80°C . Resistance to oils, greases and salt water.

OPERATION IN THE AREAS WITH THE DANGER OF EXPLOSIONS:
"Ex" couplings (see marking) are intended for operation in the areas with the danger of explosion (groups: I M2, II2D, II2G). Couplings of this construction are made with set screws.

METHOD OF MARKING:

$$\boxed{\text{name}} - \boxed{M_n} - \boxed{D_H \times B*} - \boxed{L_H*} - \boxed{d_1} / \boxed{l_1} - \boxed{d_2} / \boxed{l_2} - \boxed{\text{size}}\boxed{\text{type}} - \boxed{\text{variant}} - \boxed{\text{version*}}$$

* only when it concerns a given type, where:

name	e.g. pin and bush coupling
M_n	nominal torque [Nm]
$D_H \times B$	diameter × width of the brake drum or disc [mm] (only the types ….-SBH, STH; the width of the drum can be omitted in the marking if it equals the catalogue width)
L_H	the distance of symmetry axis of the brake drum or disc from the edge of the hub [mm] (only the types ATP,ATT)
d_1, d_2	diameters of the holes [mm] (for the couplings with brake drum or disc d1 – transmission side) in the case of ordering the coupling without holes for shaft ends "0" should be placed; in the case of lead hole according to the catalogue – "ow" marking, and in the case of pilot bores other than in the catalogue, the diameter of the hole should be added after the "ow" marking (e.g. "ow25") (with pilot bores there is no "WD" construction)
l_1, l_2	the length of the holes in the hubs [mm]

size of the coupling	e.g. 084
type of the coupling	e.g. ASP
variant of the coupling	e.g. B
version	WD – with set screws
	Ex – for operation in the areas with the danger of explosion
	HT – for operation in higher temperatures
	WS… – special (individual arrangements)

BALANCING: couplings are normally balanced statically (some sizes of the couplings with bigger brake drums or discs are normally balanced dynamically-check remarks in the catalogue). After the arrangement there is a possibility of dynamic balancing of each coupling.

MAXIMUM DEVIATIONS: Given values of maximum deviations ("x" – axial, "y" – radial, „Δl_0" – angular) cannot appear at the same time. At the speed above 1500 rpm for the coupling size up to 084 (054) and above 1000 rpm for the coupling size 085 (055) and bigger, the angular deviations should not exceed 50% of the deviations values given in the table.
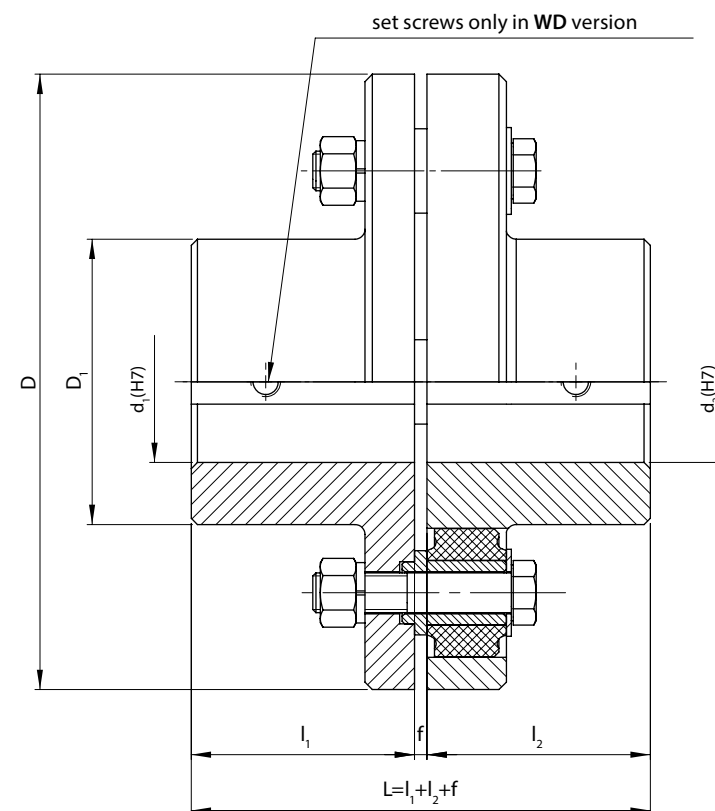

$$\Delta l_0 = l_0 max - l_0 min$$
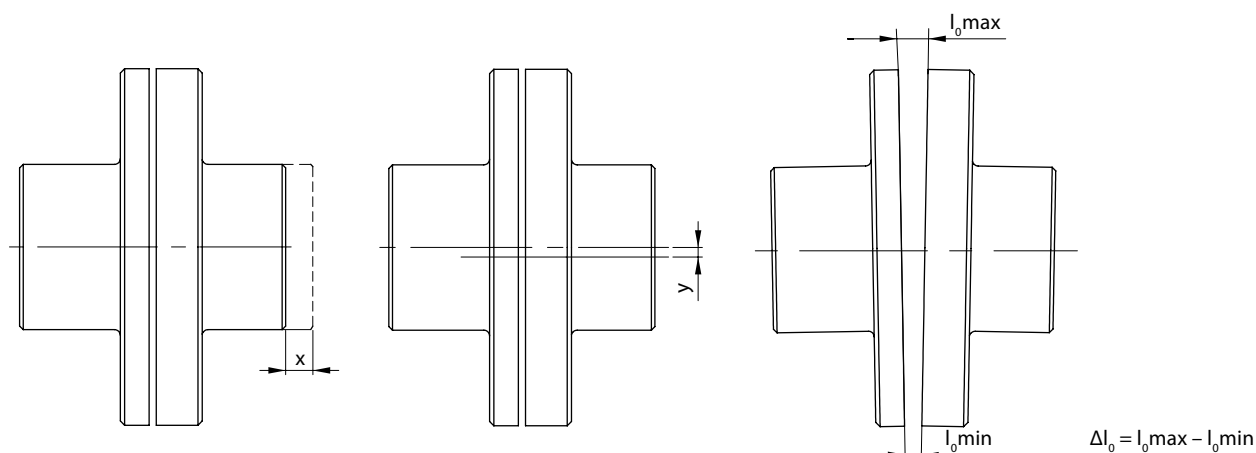
Coupling size	077	078	079 049	080 050	081 051	082 052	083 053	084 054	085 055	086 056	087 057	088 058	089	090	091	092	093
x	0,5	0,5	0,5	0,5	0,5	0,8	0,8	0,8	1,0	1,0	1,2	1,2	1,4	1,4	1,6	1,6	1,8
y	0,2	0,2	0,2	0,2	0,2	0,2	0,25	0,25	0,25	0,3	0,4	0,4	0,4	0,5	0,5	0,6	0,6
Δl_0	0,2	0,2	0,2	0,3	0,3	0,4	0,5	0,5	0,6	0,7	0,9	1	1	1,2	1,4	1,5	1,6

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Example of designation of the ASP type coupling with the nominal torque of M_n=510 Nm, hub hole diameters of d_1=50 mm, d_2=60 mm, hub hole lengths of l_1=75 mm, l_2=90 mm, size of 083 in the A variant *(marking see page A3-1)*:

510-50/75-60/90- 083 ASP-A Pin and Bush coupling

- the "Ex" version – 510-50/75-60/90-083 ASP-A-**Ex** Pin and Bush coupling
- the "WD" version – 510-50/75-60/90-083 ASP-A-**WD** Pin and Bush coupling
- with pilot bores Ø20 – 510-**ow**20/75-**ow**20/90-083 ASP-A Pin and Bush coupling

A3–3

set screws only in **WD** version

$L=l_1+l_2+f$

Nominal torque M_n	Variant	d_1, d_2	l_1, l_2 [1)	f	D	D_1	Max rotational speed n_{max}	Moment of inertia [2) I	Weight [2) m	Coupling size and type
		max	nomin.							
Nm		**mm**					**1/min**	**kgm²**	**kg**	**–**
20	B	18	30	2	78	30	8000	0,0008	1,11	077 ASP
30	C									
35	B	22	35		90	35	6300	0,0014	1,51	078 ASP
50	C									
50	A	25	40		105	40	5000	0,0027	2,11	079 ASP
63	B									
80	C									
80	A	28	45		130	45	4000	0,006	3,26	080 ASP
125	B									
160	C									
300	B	30	55		160	45	3000	0,025	7,90	081 ASP
400	C									
400	B	50	65		198	80	2500	0,059	12,9	082 ASP
540	C									
510	A	65	90	5	248	115	2000	0,15	24,2	083 ASP
680	B									
850	C									
1400	D									
1000	A	80	105		270	135	1800	0,23	31,1	084 ASP
1200	B									
1600	C									
2000	A	100	130		320	170	1500	0,50	51,1	085 ASP
3000	B									

ASP PIN AND BUSH COUPLINGS

Continuation of the table from the previous page

Nominal torque M_n	Variant	d_1, d_2	l_1, l_2 [1]	f	D	D_1	Max rotational speed n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type
		max	nomin.							
Nm		mm					1/min	kgm²	kg	–
4000	A	125	165	8	400	198	1200	1,70	102	086 ASP
6000	B									
7500	A	160	200		530	248	1000	5,30	189	087 ASP
12500	B									
15000	C									
16000	A	200	280		600	305	1000	10,1	310	088 ASP
21000	B									
25000	A	200	280	10	600	305	1000	14,0	375	089 ASP
36000	A	220	280		710	350	950	28,1	544	090 ASP
42000	A	250	330		800	410	850	48,2	784	091 ASP
56000	B									
65000	A	280	380		900	460	750	80,5	1080	092 ASP
74000	A	280	380		1000	460	670	114	1237	093 ASP
83000	B									

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

▪ Couplings of the size 088 ASP and bigger are normally balanced dynamically.

Example of designation of the ASP type coupling with the nominal torque of M_n=1600 Nm, hub hole diameters of d_1=50 mm, d_2=60 mm, hub hole lengths of l_1=90 mm, l_2=110 mm, size of 083 in the Z variant *(marking see page A3-1)*:

1600-50/90-60/110-083 ASP-Z Pin and Bush coupling

- the "Ex" version – 1600-50/90-60/110-083 ASP-Z-**Ex** Pin and Bush coupling
- the "WD" version – 1600-50/90-60/110-083 ASP-Z-**WD** Pin and Bush coupling
- with pilot bores Ø20 – 1600-**ow**20/90-**ow**20/110-083 ASP-Z Pin and Bush coupling

set screws only in **WD** version

Nominal torque M_n	Variant	d_1, d_2	l_1, l_2 [1]	f	D	D_1	Max rotational speed n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type
		max	nomin.							
Nm		mm					1/min	kgm²	kg	–
630	Z	30	55		160	45	3000	0,028	8,65	081 ASP
1000	Z	50	65		198	80	2500	0,067	14,2	082 ASP
1600	Z	65	90	5	248	115	2000	0,18	26,6	083 ASP
2500	Z	80	105		270	135	1800	0,26	33,9	084 ASP
4000	Z	100	130		320	170	1500	0,56	55,3	085 ASP
9000	Z	125	165	8	400	198	1200	1,90	110	086 ASP
16000	Z	160	200		530	248	1000	5,96	207	087 ASP
35000	Z	200	280		600	305	1000	15,8	406	089 ASP
48000	Z	220	280		710	350	950	31,8	590	090 ASP
71000	Z	250	330	10	800	410	850	54,7	898	091 ASP
90000	Z	280	380		900	460	750	91,6	1233	092 ASP
110000	Z	280	380		1000	460	670	131	1423	093 ASP
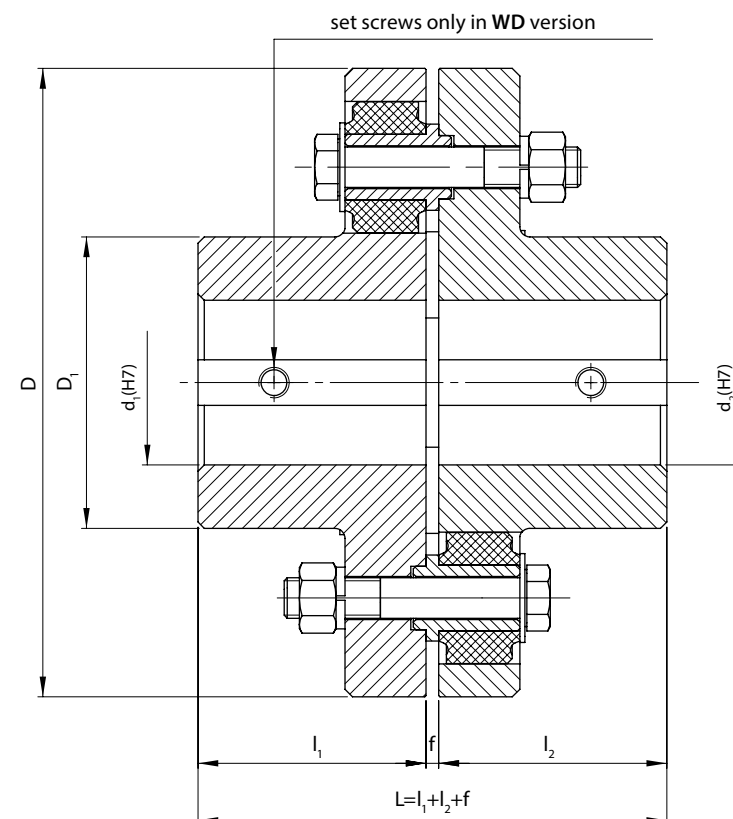
We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs

- Couplings of the size of ASP 089 and bigger are normally balanced dynamically.

Example of designation of the ATP type coupling with the nominal torque of M_n=510 Nm, brake drum diameter of D_H=320mm, distance of the brake drum symmetry axis from the hub origin of L_H=105 mm, hub holes diameters of d_1=50 mm, d_2=60mm, hub holes lengths of l_1=90 mm, l_2= 110 mm, size of 053, in the A variant *(marking see page A3-1)*:

510-320-105-50/90-60/110-053 ATP-A Brake coupling

- the "Ex" version – 510-320-105-50/90-60/110-053 ATP-A-**Ex** Brake coupling
- the "WD" version – 510-320-105-50/90-60/110-053 ATP-A-**WD** Brake coupling
- with pilot bores Ø20 – 510-320-105-**ow**20/90-**ow**20/110-053 ATP-A Brake coupling
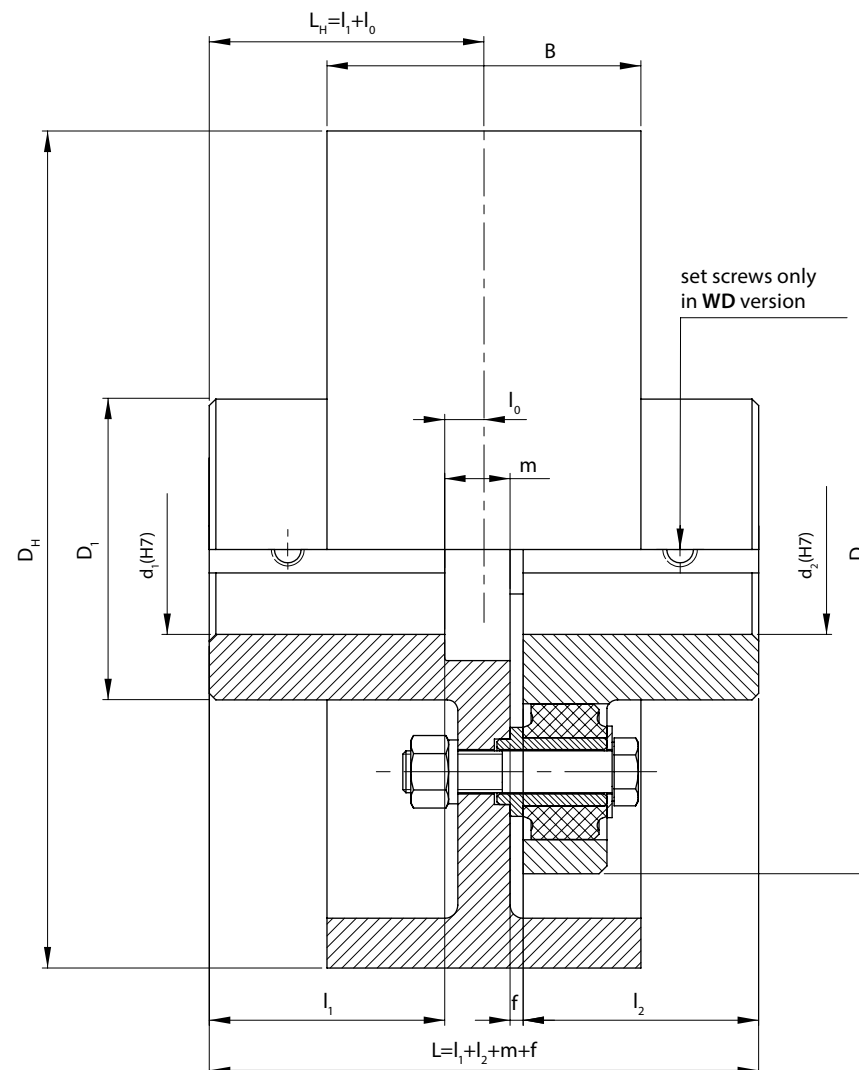
Nominal torque M_n	Variant	d_1, d_2 max	l_1, l_2 [1] nomin.	f	D	D_1	D_H [3]	B [3]	l_0 [4]	m	Max rotational speed [5] n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type
Nm		mm	mm	mm	mm	mm	mm	mm	mm	mm	1/min	kgm²	kg	–
80	C	25	40	2	105	40	120	50	5	12	4000	0,0055	2,98	049 ATP
125	B	28	45	2	130	45	160	60	5	13	4000	0,019	5,52	050 ATP
160	C	28	45	2	130	45	160	60	5	13	4000	0,019	5,52	050 ATP
300	B	30	55	5	160	45	200	80	5	15	3000	0,067	12,3	051 ATP
400	C	30	55	5	160	45	200	80	5	15	3000	0,067	12,3	051 ATP
630	Z [6]	30	55	5	160	45	200	80	5	15	3000	0,070	13,5	051 ATP
400	B	50	65	5	198	80	250	100	10	20	2500	0,18	22,2	052 ATP
540	C	50	65	5	198	80	250	100	10	20	2500	0,18	22,2	052 ATP
1000	Z [6]	50	65	5	198	80	250	100	10	20	2500	0,19	23,5	052 ATP
510	A	65	90	5	248	115	320	120	15	25	2000	0,57	43,2	053 ATP
850	C	65	90	5	248	115	320	120	15	25	2000	0,57	43,2	053 ATP
1600	Z [6]	65	90	5	248	115	320	120	15	25	2000	0,60	45,6	053 ATP
1200	B	80	105	5	270	135	320	120	15	35	2000	0,63	48,7	054 ATP
1600	C	80	105	5	270	135	320	120	15	35	2000	0,63	48,7	054 ATP
2500	Z [6]	80	105	5	270	135	320	120	15	35	2000	0,66	51,5	054 ATP
1200	B	100	130	5	320	170	400	150	25	40	1800	1,38	64,8	055 ATP
1600	C	100	130	5	320	170	400	150	25	40	1800	1,38	64,8	055 ATP
3000	B	100	130	5	320	170	400	150	25	40	1800	1,57	81,2	055 ATP
4000	Z [6]	100	130	5	320	170	400	150	25	40	1800	1,63	85,4	055 ATP
2000	A	100	130	5	320	170	500	190	30	40	1500	3,50	107,2	055 ATP
3000	B	100	130	5	320	170	500	190	30	40	1500	3,50	107,2	055 ATP
6000	B	125	165	5	400	198	500	190	30	52	1500	4,62	154,3	056 ATP
9000	Z [6]	125	165	5	400	198	500	190	30	52	1500	4,82	162,3	056 ATP
4000	A	125	165	5	400	198	630	235	36	52	1200	11,45	218,6	056 ATP
7500	A	160	200	8	530	248	630	235	36	55	1200	13,82	283,3	057 ATP
12500	B	160	200	8	530	248	630	235	36	55	1200	13,82	283,3	057 ATP
7500	A	160	200	8	530	248	710	265	39	55	1000	21,72	336,2	057 ATP
12500	B	160	200	8	530	248	710	265	39	55	1000	21,72	336,2	057 ATP
7500	A	160	200	8	530	248	800	290	44	55	1000	35,06	404,5	057 ATP
12500	B	160	200	8	530	248	800	290	44	55	1000	35,06	404,5	057 ATP
21000	B	200	280	8	600	305	800	290	44	60	1000	38,7	510,99	058 ATP

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[3] On request, we produce couplings brake drums with dimensions different from those provided in the table.

[4] l_0 ($L_H = l_1 + l_0$) dimension after the agreement can be changed according to the wishes of the customer.

[5] After the dynamic balance the maximum rotational speed can be increased (the dynamic balance must be agreed).

[6] In "Z" type the inserts are placed interchangeably in each hub (see ASP coupling "Z" series/type).

▪ Couplings with brake drum Ø400 and bigger are normally balanced dynamically, other couplings are balanced statically.

▪ After the agreement the couplings can be made with the holes for protective discs in hubs.

Example of designation of the ATT type coupling with the nominal torque of M_n=1600 Nm, brake disc diameter of D_H=500 mm, thickness of B=30 mm, distance of the brake disc symmetry axis from the hub origin of L_H=74 mm, hub holes diameters of d_1=50 mm, d_2=60 mm, hub holes lengths of l_1=90 mm, l_2= 110mm, size of 084 in the C variant *(marking see page A3-1)*:

1600-500x30-74-50/90-60/110-084 ATT-C Disc coupling

- the "Ex" version – 1600-500x30-74-50/90-60/110-084 ATT-C-**Ex** Disc coupling
- the "WD" version – 1600-500x30-74-50/90-60/110-084 ATT-C-**WD** Disc coupling
- with pilot bores Ø20 – 1600-500x30-74-**ow**20/90-**ow**20/110-084 ATT-C Disc coupling

set screws only in **WD** version

Nominal torque M_n	Variant	d_1, d_2	l_1, l_2 [1]	f	D	D_1	$D_H \times B$ [3]	Max rotational speed n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type
		max	nomin.								
Nm		mm						1/min	kgm²	kg	–
540	C	50	110		198	80	400×30	1500	0,61	34,9	082 ATT
1000	Z [4]						450×30		0,97	44,1	
1600	C	80	110	5	270	135	500×30	1500	1,57	66,5	084 ATT
2500	Z [4]										
3000	B	100	140		320	170	630×30	1200	3,94	109,4	085 ATT
4000	Z [4]										
6000	B	125	165	8	400	198	710×30	1000	6,95	165,2	086 ATT
9000	Z [4]						800×30		10,12	198,2	

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[3] On request, we produce couplings brake drums with dimensions different from those provided in the table.

[4] In "Z" type the inserts are placed interchangeably in each hub *(see ASP coupling "Z" series/type)*

- Couplings with brake disc Ø450 and bigger are normally balanced dynamically, other couplings are balanced statically.
- After the agreement the couplings can be made with the holes for protective discs in hubs.

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A3–9
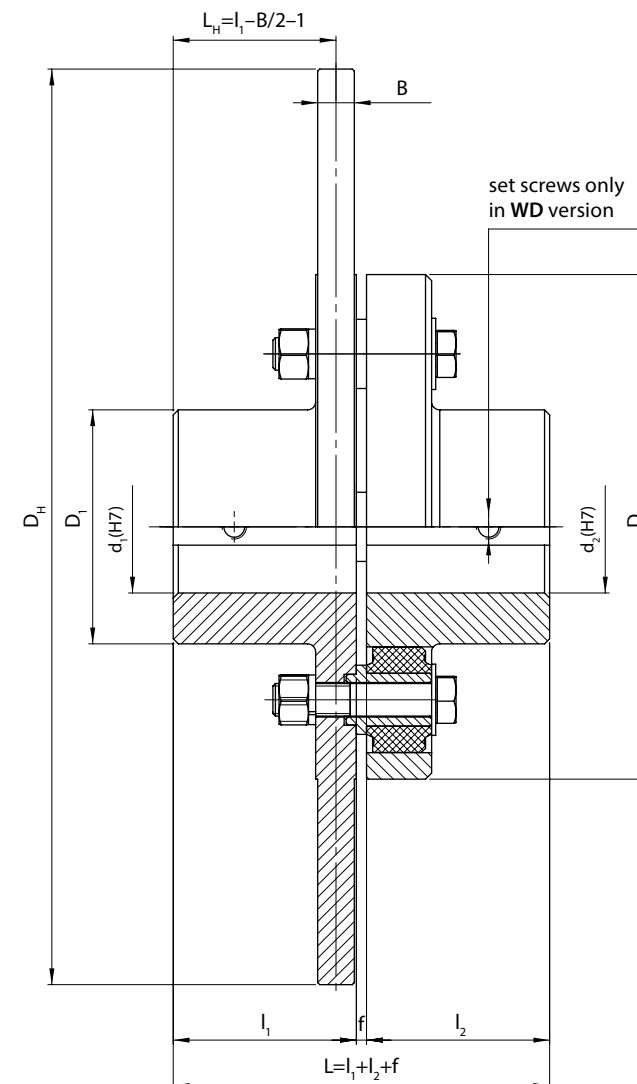
Example of designation of BH type brake drum of the external diameter of the drum D_H=400, the width of the drum jacket B=150, the distance of the brake drum symmetry axis from the hub origin of L_H=130, the diameter of the hole in the hub d=100, the length of the hole in the hub l=105:

400-150-130-100/105-400 BH Brake drum

- with pilot bore Ø20 – 400-150-130-**ow**20/105-400 BH Brake drum

D_H	B	d	$l^{1)}$	$L_H^{1)}$	L	$l_1^{1)}$	Max rotational speed	Moment of inertia $^{2)}$	Weight $^{2)}$	Drum size
		max	nomin.				n_{max}	I	m	
							1/min	kgm²	kg	–
120	50	32	60	60	85	66,5	5500	0,004	2,0	120 BH
160	60	40	84	70	90	90	4100	0,018	5,0	160 BH
200	80	40	84	80	120	90	3300	0,056	11,0	200 BH
250	100	50	84	80	130	90	2600	0,15	15,0	250 BH
320	120	65	107	106	166	122	2100	0,52	34,0	320 BH
400	150	80	132	125	200	141	1600	1,31	55,0	400 BH
500	190	100	157	132	227	157	1300	3,6	105	500 BH
630	235	100	167	160	277,5	185	1000	10,9	170	630 BH

We also offer special designs according to the individual wishes of the customer.
We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.
On request of the customer we produce the brake drums intended for the cooperation with ATP brake couplings type.

[1] On request, we produce couplings with hub lengths different from the nominal lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the brake drums with maximum hole in the hub without the keyway.

- **Applications:** belt and bucket conveyors; cranes; other machinery and equipment.
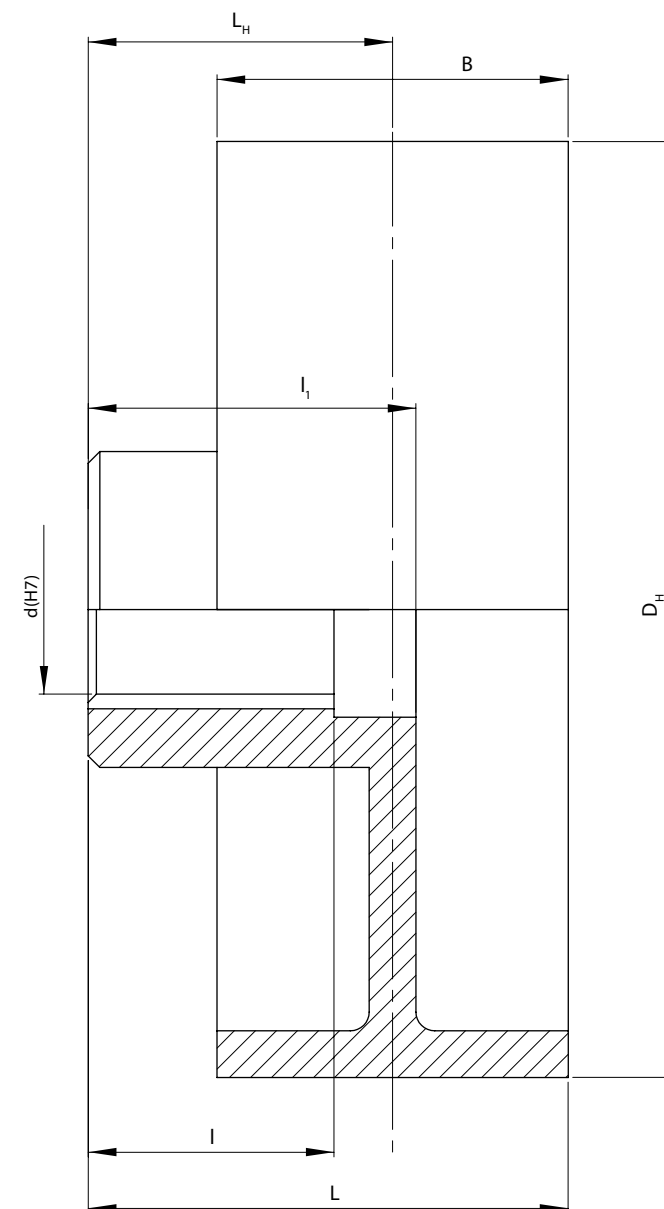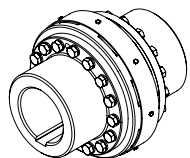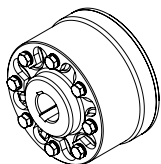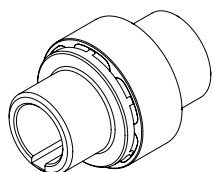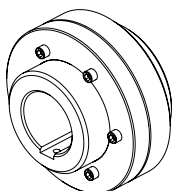
FLEXIBLE COUPLINGS

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Flexible couplings are characterized by:
- the transfer of very large torques with the small dimensions
- torsional susceptibility
- service free
- vibration damping and compensation of deviations of joined shaft ends.

APPLICATIONS: stirrers, crushers, fans, motoreducers (ABF), coal miners (FENEX) and other machinery and equipment.

MATERIAL: hubs:steel; grey cast iron, spheroidal cast iron (bigger sizes of the couplings); jaw discs: spheroidal cast iron, flexible insert: polyurethane

ELASTIC INSERT WORKING CONDITIONS: work in the environment with pH of 5÷12 at temperature of -30°C to +80°C (temporarily up to +100°C).Resistance to chemicals, including: common solvents, fuels, oils and lubricants, sulphuric and hydrochloric acid, soda lye, salty water and many other chemical substances.

OPERATION IN THE AREAS WITH THE DANGER OF EXPLOSIONS:
"Ex" couplings (see marking) are intended for operation in the areas with the danger of explosion (groups: I M2, II2D, II2G).
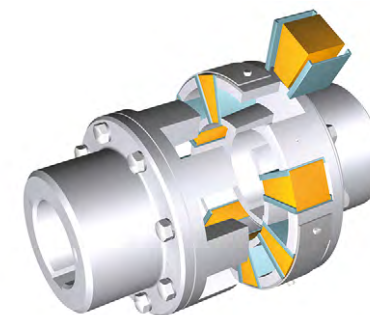
METHOD OF MARKING:

$$\boxed{\text{name}} - \boxed{M_n} - \boxed{d_1} / \boxed{l_1} - \boxed{d_2} / \boxed{l_2} - \boxed{\text{size}}\,\boxed{\text{type}} - \boxed{\text{version*}}$$

* only when it concerns a given type, where:

name	e.g. flexible coupling
M_n	nominal torque [Nm]
d_1, d_2	diameters of the holes [mm] (for the couplings with brake drum or disc d1 – transmission side) in the case of ordering the coupling without holes for shaft ends "0" should be placed; in the case of lead hole according to the catalogue – "ow" marking, and in the case of pilot bores other than in the catalogue, the diameter of the hole should be added after the "ow" marking (e.g. "ow25") (with pilot bores there is no "WD" construction)
l_1, l_2	the length of the holes in the hubs [mm]
size of the coupling	e.g. 101
type of the coupling	e.g. SEK
version	Ex – for operation in the areas with the danger of explosion
	WS… – special (individual arrangements)

BALANCING: couplings are normally balanced statically (some sizes of the couplings with bigger brake drums or discs are normally balanced dynamically-check remarks in the catalogue). After the arrangement there is a possibility of dynamic balancing of each coupling.

MAXIMUM DEVIATIONS: Given values of maximum deviations ("x" – axial, "y" – radial, „Δl_0" – angular) cannot appear at the same time. For the couplings of SEK type at the speed above 500 rpm for the coupling size of 103 and above 250 rmp for the size of 104 and bigger radial and angular deviations should not exceed 50% of the deviations values given in the table.

$l_0 max$

$l_0 min$

$\Delta l_0 = l_0 max - l_0 min$
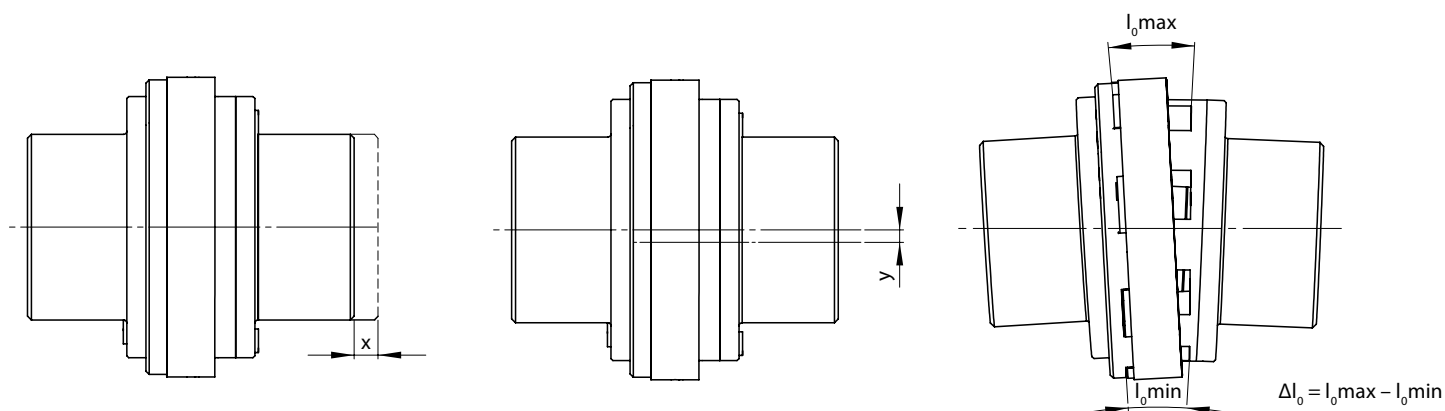
Type	SEK							FENEX		ABF
Coupling size	101	102	103	104	105	106	108	250	360	76
x	1,2	1,5	1,5	2,0	3,0	4,0	5	4	5,5	2
y	0,5	0,5	0,6	0,6	0,7	0,7	0,8	0,5	0,7	0,3
Δl_0	1,2	1,6	1,8	2,2	2,4	2,6	3	0,4	0,5	0,2

Example of designation of the SEK coupling with the nominal torque of M_n=40000 Nm, hub holes diameters of d_1=140 mm, d_2=180 mm, hub holes lengths of l_1=240 mm, l_2=280 mm, size of 103 *(marking see page A4-1)*:
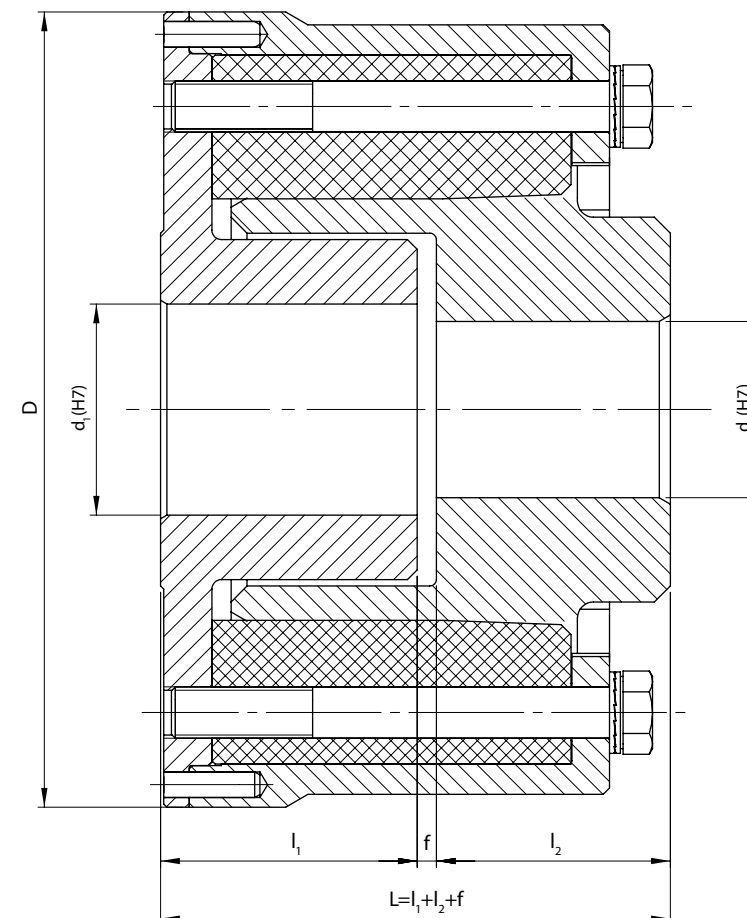**40 000-140/240-180/280-103 SEK Flexible coupling**

We also offer special designs according to the individual wishes of the customer.
We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.
1) On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.
2) The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.
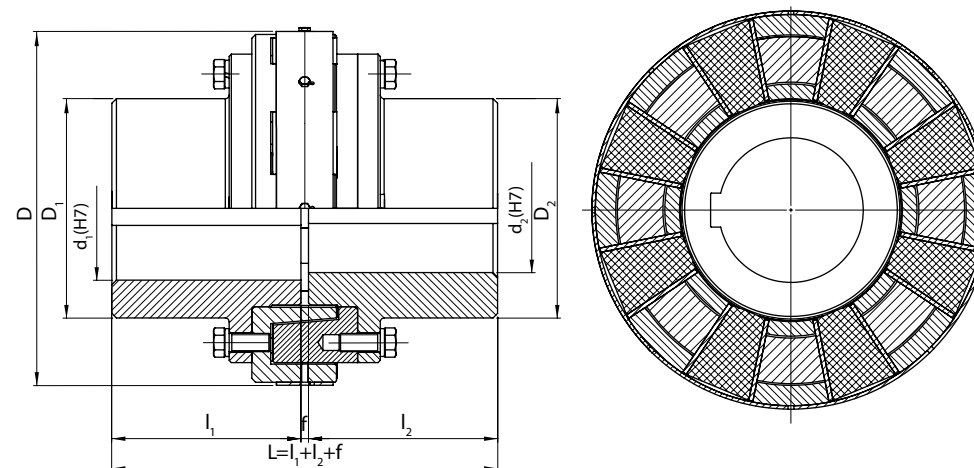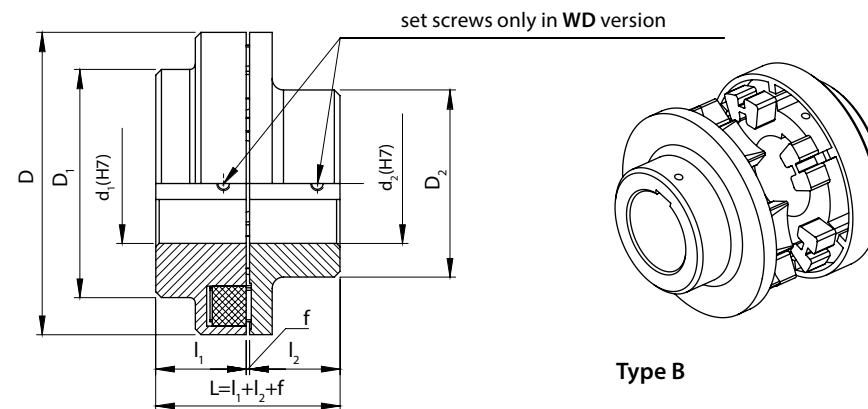

Nominal torque M_n	d_1, d_2		l_1, l_2 1)		f	D	D_1, D_2	Max rotational speed n_{max}	Moment of inertia I	Weight 2) m	Coupling size and type
	min	max	nomin.	max							
Nm	mm							1/min	kgm²	kg	–
14 000	–	110	165	–	10	320	170	1000	0,72	73	101 SEK
		140	200				205		0,88	82	
25 000	–	140	200	–	10	405	210	900	2,13	132	102 SEK
		160	240				240		2,40	149	
40 000	100	180	240	280	10	480	290	750	5,81	243	103 SEK
	100	200	280	280			305		6,35	261	
63 000	120	180	240	280	20	560	320	600	10,43	334	104 SEK
	120	210	280	280			350		11,06	348	
100 000	140	220	280	330	20	610	375	500	17,72	475	105 SEK
	140	250	330	330			395		19,65	515	
160 000	160	250	330	380	20	745	400	450	40,08	746	106 SEK
	160	300	380	380			480		49,20	886	
260 000	160	300	450	550	20	970	480	250	155,7	1730	108 SEK
	160	340	550	550			550		181,6	2070	

Example of designation of the FENEX type coupling with the nominal torque of M_n=5000 Nm, hub holes diameters of d_1=60 mm, d_2=55 mm, hub holes lengths of l_1=85 mm, l_2=75 mm, size of 250 *(marking see page A4-1)*:

5000-60/85-55/75-250 FENEX Flexible coupling

- the "Ex" version – 5000-60/85-55/75-250 FENEX-**Ex** Flexible coupling
- with pilot bores – 5000-**ow**/85-**ow**/75-250 FENEX Flexible coupling

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

1) On request, we produce couplings with hub lengths different from the nominal and extended lengths provided in the table.

2) The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

Nominal torque M_n	d_1	d_2	l_1, l_2 1)	f	D	Max rotational speed	Moment of inertia	Weight 2)	Coupling size and type
	max	max	nomin.			n_{max}	I	m	
Nm	mm					1/min	kgm²	kg	–
5000	65	85	85	6	248	2500	0,23	30,8	250 FENEX
11500	120	130	140	6	358	1500	2,21	145	360 FENEX

Example of designation of the ABF type coupling with the nominal torque of M_n=150 Nm, hub holes diameters of d_1=38 mm, d_2= 32 mm, hub holes lengths of l_1=60 mm, l_2=45 mm, size of 76 *(marking see page A4-1)*:

150-38/60-32/45-76 ABF Flexible coupling

- with pilot bores – 150-**ow**/60-**ow**/45-76 ABF Flexible coupling

set screws only in **WD** version

$L=l_1+l_2+f$

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different than the nominal and extended lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

Nominal torque M_n	d_1, d_2		l_1, l_2 [1]		f	D	Max rotational speed n_{max}	Moment of inertia I	Weight [2] m	Coupling size and type
	pilot	max	nomin.	extend.						
Nm	mm						1/min	kgm²	kg	–
150	8	38	45	75	1,5	76	7100	0,063	1,40	76 ABF

Example of designation of the NPX type A coupling with the nominal torque of M_n=360 Nm, hub holes diameters of d_1=38 mm, d_2= 24 mm, hub holes lengths of l_1=55 mm, l_2=55 mm, size of 140 *(marking see page A4-1):*

360-38/55-24/55-140 NPX-A Flexible coupling

- the "WD" version – 360-38/55-24/55-140 NPX-A-**WD** Flexible coupling
- no bores – 360-0/55-0/55-140 NPX-A Flexible coupling

set screws only in **WD** version

set screws only in **WD** version
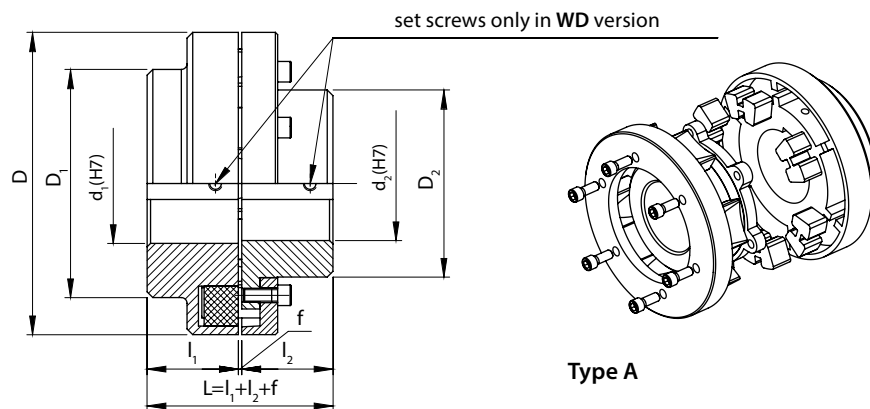
Type A

Type B

Nominal torque M_n	$d_{1\,max}$	$d_{1\,max}$		l_1	l_2	f	D	D_1	D_2		Max rotational speed	Weight m		Coupling size
		Type A	Type B						Type A	Type B	n_{max}	Type A	Type B	
Nm	mm										1/min	kg		–
19	19	–	24	20	20	2-4	58	–	–	40	5000	–	0,52	58
34	24	–	28	20	20	2-4	68	–	–	49	5000	–	0,77	68
60	30	–	38	30	30	2-4	80	–	–	68	5000	–	1,69	80
100	42	–	42	35	36	2-4	95	76	–	76	5000	–	2,85	95
160	48	38	48	40	40	2-4	110	86	62	86	5000	5,3	4,2	110
240	55	45	55	50	50	2-4	125	100	75	100	5000	7,44	6,65	125
360	60	50	60	55	55	2-4	140	100	82	100	4900	9,19	8,15	140
560	65	58	65	60	60	2-6	160	108	95	108	4250	12,73	11	160
880	75	65	75	70	70	2-6	180	125	108	125	3800	18,15	16,3	180
1340	85	75	85	80	80	2-6	200	140	122	140	3400	25,63	23,4	200
2000	90	85	90	90	90	2-6	225	150	138	150	3000	35,99	30,5	225
2800	100	95	100	100	100	3-8	250	165	155	165	2750	48,61	39	250

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

Pump unit – ASM rubber membrane coupling

Pump unit – ASO tyre coupling
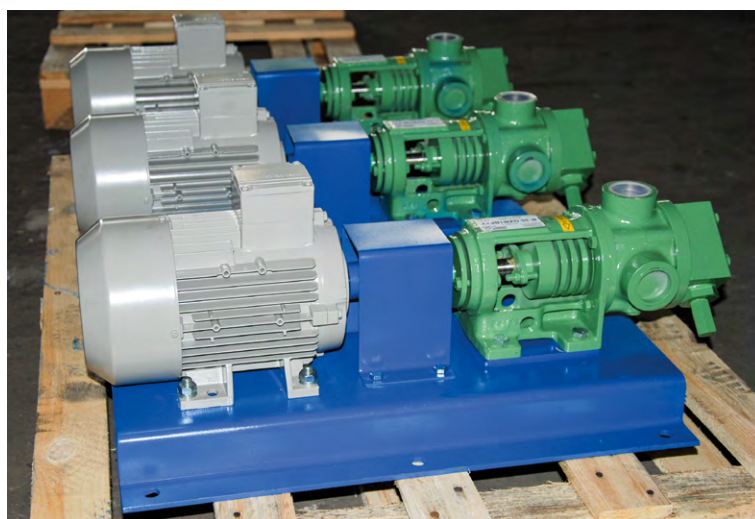
Pump unit

Pump unit – ASR flexible coupling
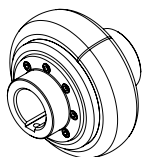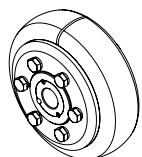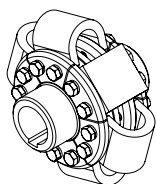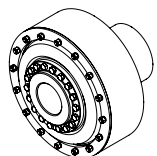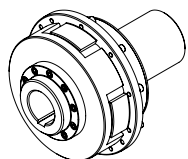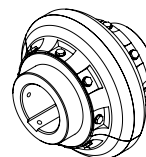
HIGHLY FLEXIBLE COUPLINGS

A5–1

Highly-flexible couplings are characterized by:

- high torsional susceptibility
- moderation of the course of torgue change
- service-free
- vibration damping and compensation of deviations
- possibility of disassembly of flexible element without the necessity of widening the shaft ends (AUK, ASO, ASOT, RAPTOR)
- possibility of producing the couplings with the torsional angle limiter (OKS) prolonging the durability of the flexible element
- possibility of operation with electric and combustion motors,
- very high strenght (ASM),
- easy assembly and disassembly of the hubs from the shaft ends due to the usage of bushes (ASOT, RAPTOR-E...T).

APPLICATIONS: pumps, blowers, compressors, stirrers, conveyors, crushers, fans, and other machinery and equipment.

MATERIAL: steel; flexible insert: rubber, polyurethane, natural rubber (RAPTOR) brake discs and drums usually steel S355J2 (different materials after agreement).

ELASTIC INSERT WORKING CONDITIONS: work at temperature **ASO, ASOT** of-50°C to + 50°C (of -15°C to + 70°C in the construction Ex), **ASM** of - 30°C to + 100°C, **AUK** of - 50°C to + 50°C, **SETT** of -30°C to +80°C (temporarily up to +100°C), **RAPTOR** of -43°C to +105°C.

OPERATION IN THE AREAS WITH THE DANGER OF EXPLOSIONS:
"Ex" couplings (see marking) are intended for operation in the areas with the danger of explosion (groups: I M2, II2D, II2G). RAPTOR couplings – groups: I M2 c, II2G c 100°C (T5).

METHOD OF MARKING (ASO, ASOT, AUK, ASM couplings):

$$[\text{name}] - [M_n] - [D_H{\times}B^*] - [L_H^*] - [d_1] \,/\, [l_1] - [d_2] \,/\, [l_2] - [\text{size}][\text{type}] - [\text{variant}] - [\text{version}^*]$$

METHOD OF MARKING (RAPTOR couplings):

$$[\text{name}] - [M_n] - [d_1] \,/\, [l_1] - [d_2] \,/\, [l_2] - [L] - [\text{RAPTOR}] - [\text{type and size}] - [\text{number of spacer sleeves}^*] - [\text{version}^*]$$

* only if applies

name   e.g. tyre coupling

M_n nominal torque [Nm]

$D_H \times B$ diameter × width of the brake drum or disc [mm] (only the types "C", "D" couplings ASM) the width of the drum can be omitted in the marking if it equals the catalogue width)

L_H the distance of symmetry axis of the brake drum or disc from the edge of the hub [mm] (only the types "C", "D" couplings ASM)

d_1, d_2 diameters of the holes [mm] (for the couplings with brake drum or disc d_1 – transmission side) in the case of ordering the coupling without holes for shaft ends "0" should be placed; in the case of lead hole according to the catalogue – "ow" marking, and in the case of pilot bores other than in the catalogue, the diameter of the hole should be added after the "ow" marking (for example: "ow25")

l_1, l_2 the length of the holes in the hubs [mm]

L   overall length of the coupling – to be specified in case of hubs with other than nominal lengths or if the required overall length "L" is different from that resulting from the nominal dimensions specified in the catalogue

the number of spacer sleeves – only for the ES elongated type. If not specified, a two-piece insert with two spacer sleeves is supplied as standard

size of the coupling   e.g. 070

type of the coupling   e.g. ASO

variant of the coupling   e.g. C

version   Ex – for operation in the areas with the danger of explosion

WS… – special (individual arrangements)

OKS – with the torsional angle limiter

A5–2

BALANCING: couplings are normally balanced statically (some sizes of the couplings with bigger brake drums or discs are normally balanced dynamically-check remarks in the catalogue). After the arrangement there is a possibility of dynamic balancing of each coupling.

MAXIMUM DEVIATIONS: Given values of maximum deviations ("x" – axial, "y" – radial, "a" – angular) cannot appear at the same time.

$$\Delta l_0 = l_0 max - l_0 min$$
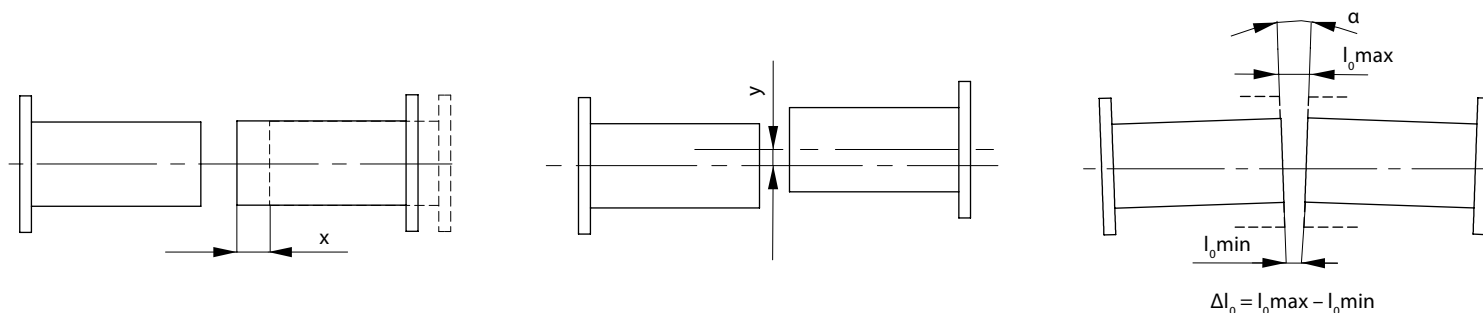
Type	ASO, ASOT														
Coupling size	040	050	060	070	080	090	100	110	120	140	160	180	200	220	250
x	1,3	1,7	2,0	2,3	2,6	3,0	3,3	3,7	4,0	4,6	5,3	6,0	6,6	7,3	8,2
y	1,1	1,3	1,6	1,9	2,1	2,4	2,6	2,9	3,2	3,7	4,2	4,8	5,3	5,8	6,6
α [°]	4														

At the speed above 1500 rpm for the coupling size 100, above 1000 rpm for the coupling size 180 and above 500 rpm for bigger than 180, the angular and radial deviations should not exceed 50% of the deviations values given in the table.

Type	AUK						
Coupling size	001	002	003	004	005	006	007
x	3	3	4	4	5	5	6
y	2,5	2,5	3,0	3,5	3,5	4,5	4,5
α [°]	4						

Type	SETT			
Coupling size	100	132	200	315
x	3	3	3	4
y	1	1	1	1
α [°]	1			

Type	ASM													
Coupling size	001	002	003	004	005	006	007	008	009	010	011	111	012	013
x	2,0	2,5	3,0	3,5	4,0	4,5	5,0	6,0	6,5	6,5	7,0	7,0	8,0	8,5
y	1,0	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	4,5	4,5	4,5	5,0	5,0
α [°]	1,0				1,5									

At the speed above 1000 rpm for the coupling size 006, and above 500 rpm for bigger than 006, the angular and radial deviations should not exceed 50% of the deviations values given in the table.

RAPTOR coupling size	Angular deviation α [°]	Axial deviation x [mm]	Radial deviation y [mm]
E2 ÷ E10	4°		
E20 ÷ E50	3°	7,94	4,76
E60 ÷ E80	2°		
E100 ÷ E140	1,5°		

Example of designation of the ASO coupling with the nominal torque of M_n=250 Nm, hub holes diameters of d_1=38 mm, d_2=42 mm, hub holes lengths of l_1= 55 mm, l_2= 80 mm, size of 070 *(marking see page A5-1)*:

250-38/55-42/80-070 ASO Tyre coupling

- the "Ex" version – 250-38/55-42/80-070 ASO-**Ex** Tyre coupling
- with pilot bores – 250-**ow**/55-**ow**/80-070 ASO Tyre coupling

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[3] The size of loosening the bush set screws to replace the tyre.

size 040-060 ASO

size 070-250 ASO

set screws only in **WD** version
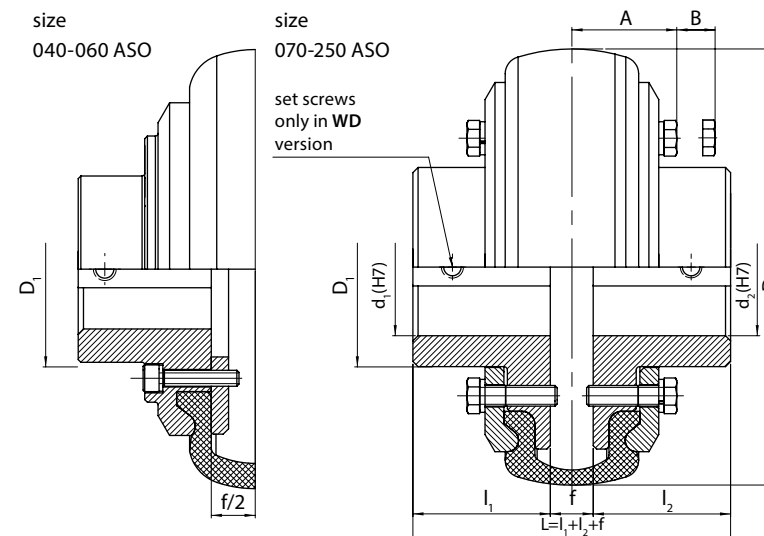
Nominal torque M_n	d_1, d_2		l_1, l_2 [1]	f	D	D_1	A	B [3]	Max rotational speed	Moment of inertia [2]	Weight [2]	Coupling size and type
	pilot	max	nomin.						n_{max}	I	m	
Nm	mm								1/min	kgm²	kg	–
24	8	32	30	22	104	42	–	–	4500	0,0015	1,8	040 ASO
66	8	38	40	25	133	51	–	–	4500	0,0024	2,6	050 ASO
127	10	45	50	33	165	66	–	–	4000	0,011	4,5	060 ASO
250	10	50	55	23	187	70	50	15	3600	0,019	7,0	070 ASO
375	10	60	60	25	211	88	54	18	3100	0,038	11,0	080 ASO
500	20	70	70	25	235	100	60	18	3000	0,067	15,9	090 ASO
675	20	80	80	25	254	116	62	18	2600	0,116	22,4	100 ASO
875	20	90	90	25	279	133	62	18	2300	0,175	29,8	110 ASO
1330	20	100	110	29	314	143	67	18	2050	0,298	41,0	120 ASO
2325	30	130	130	32	359	178	73	19	1800	0,557	53,8	140 ASO
3770	30	140	165	30	402	198	78	21	1600	1,07	91,5	160 ASO
6270	30	150	180	46	470	220	94	21	1500	1,92	122	180 ASO
9325	30	150	200	48	508	240	103	21	1300	2,85	146	200 ASO
11 600	30	160	240	55	562	240	118	22	1100	4,78	210	220 ASO
14 675	30	190	250	59	628	280	125	27	1000	8,03	286	250 ASO

Example of designation of the ASOT type coupling with the nominal torque of M_n=250 Nm, with the TZ outer clamping bush with the diameter of d_1=38 mm and the TW inner clamping bush with the diameter of d_2=45 mm, size of 070 *(marking see page A5-1)*:

250-38TZ-45TW-070 ASOT Tyre coupling

▪ the arrangement of inner and outer clamping bushes can be optional

We also offer special designs according to the individual wishes of the customer.
We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[2] The size of loosening the clamping bush set screws to replace the tyre.

[3] The length of the screws clamping the bushes (given for the bushes in the value appropriate for TZ construction).

size
040-060 ASOT

size
070-220 ASOT

inner clamping bush **TW**

outer clamping bush **TZ**

$L=l_1+l_2+f$
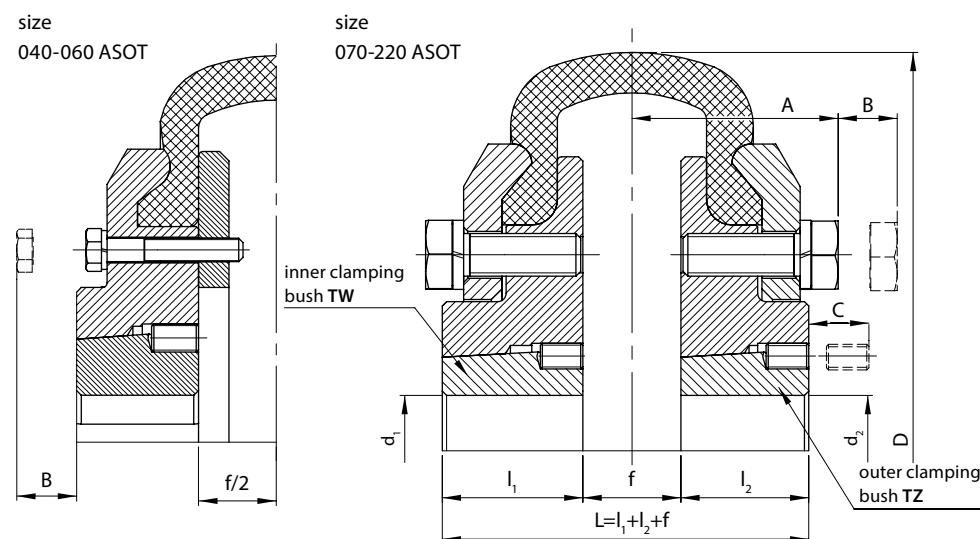
Nominal torque M_n	Hub with TW bush				Hub with TZ bush				f	D	A	B [2]	C [3]	Max rotational speed	Moment of inertia [1]	Weight [1]	Coupling size and type
	d_1, d_2		l_1, l_2	bush	d_1, d_2		l_1, l_2	bush						n_{max}	I	m	
	min	max			min	max											
Nm	mm													1/min	kgm²	kg	–
24	10	25	23	1008	10	25	23	1008	22	104	–	–	13	4500	0,0015	1,8	040 ASOT
66	14	32	26	1210	14	32	26	1210	25	133	–	–	16	4500	0,0024	2,6	050 ASOT
127	14	42	26	1610	14	42	26	1610	33	165	–	–	16	4000	0,011	4,5	060 ASOT
250	19	50	33	2012	14	42	26	1610	23	187	50	15	16	3600	0,019	7,0	070 ASOT
375	19	65	45	2517	19	50	33	2012	25	211	54	18	22	3100	0,038	11,0	080 ASOT
500	19	65	45	2517	19	65	45	2517	25	235	60	18	26	3000	0,067	15,9	090 ASOT
675	28	75	52	3020	19	65	45	2517	25	254	62	18	26	2600	0,116	22,4	100 ASOT
875	28	75	52	3020	28	75	52	3020	25	279	62	18	32	2300	0,175	29,8	110 ASOT
1330	38	100	65	3525	28	75	52	3020	29	314	67	18	32	2050	0,298	41,0	120 ASOT
2325	38	100	65	3525	38	100	65	3525	32	359	73	19	38	1800	0,557	53,8	140 ASOT
3770	40	115	76	4030	40	115	76	4030	30	402	78	21	38	1600	1,07	91,5	160 ASOT
6270	65	125	89	4535	65	125	89	4535	46	470	94	21	52	1500	1,92	122	180 ASOT
9325	65	125	89	4535	65	125	89	4535	48	508	103	21	52	1300	2,85	146	200 ASOT
11 600	70	125	102	5040	70	125	102	5040	55	562	118	22	58	1100	4,78	210	220 ASOT

Example of designation of the AUK type coupling with the nominal torque of M_n=500 Nm, hub holes diameters of d_1=40 mm, d_2=45 mm, hub holes lengths of l_1= 80 mm, l_2= 110 mm, size of 003 *(marking see page A5-1)*:

500-40/80-45/110-003 AUK Bow coupling

- the "Ex" version –
  500-40/80-45/110-003 AUK-**Ex** Bow coupling
- with pilot bores –
  500-**ow**/80-**ow**/110-003 AUK Bow coupling

A5–6
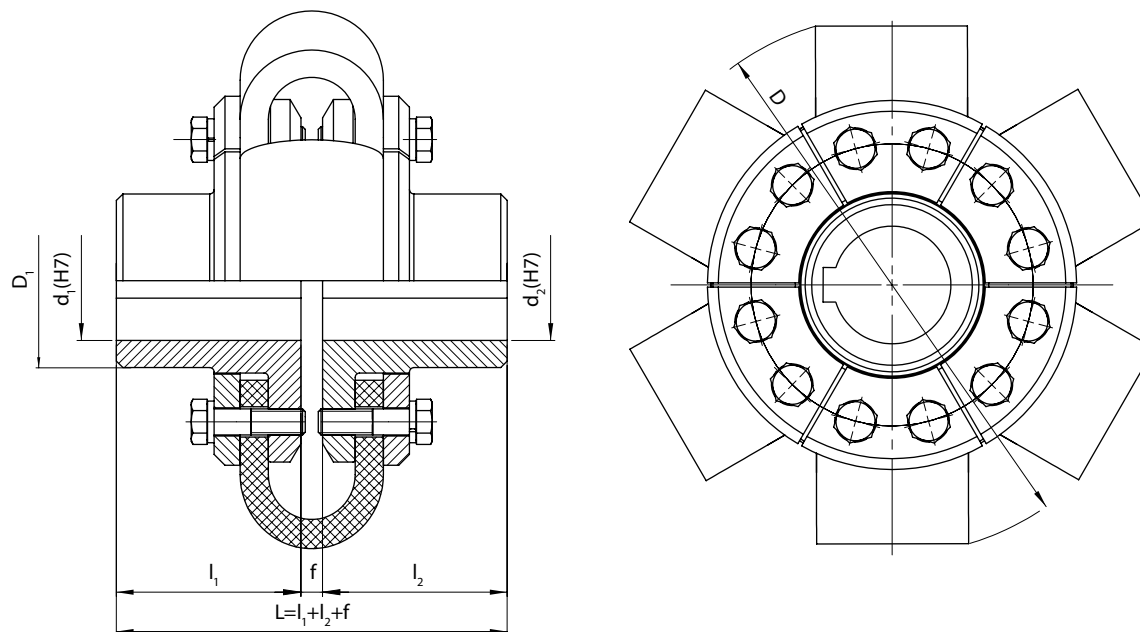
Nominal torque M_n	d_1, d_2	l_1, l_2 [1]	D	D_1	f	Max rotational speed	Moment of inertia [2]	Weight [2]	Coupling size and type
	max	nomin.				n_{max}	I	m	
Nm	mm					1/min	kgm²	kg	–
200	40	60	195	60	5	1500	0,016	6,8	001 AUK
360	48	80	210	70	5	1500	0,028	10,7	002 AUK
500	55	80	260	80	10	1500	0,120	16,2	003 AUK
800	75	110	280	110	10	1500	0,135	25,5	004 AUK
1250	80	140	300	120	10	1250	0,205	37,5	005 AUK
1600	90	140	360	135	15	1000	0,28	47,5	006 AUK
2500	110	170	420	170	20	1000	0,81	85,0	007 AUK
4000	140	210	540	210	20	500	2,20	135	009 AUK

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal lengths provided in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

Example of designation of the ASM type coupling with the nominal torque of M_n=440 Nm, brake drum diameter of D_H=320 mm, distance of the brake drum symmetry axis from the hub origin L_H=100 mm, hub holes diameters of d_1=60 mm, d_2=50 mm, hub holes lengths of l_1=65 mm, l_2=70 mm, size of 003, in the C variant *(marking see page A5-1)*:

440-320-100-60/65-50/70-003 ASM-C Rubber membrane coupling

- the "Ex" version –
  440-320-100-60/65-50/70-003 ASM-C-**Ex** Rubber membrane coupling
- with pilot bores Ø20 –
  440-320-100-**ow20**/65-**ow20**/70-003 ASM-C Rubber membrane coupling

Variant:

- **A** – detachable after dismounting the rubber membranes
- **B** – detachable without dismounting the rubber membranes
- **C** – „A" variant with brake drum
- **D** – „B" variant with brake drum

* The distance of the brake drum symmetry axis from the hub origin
L_H – concerns C and D construction; $L_H=l_1+l_0$ (l_0 – see the table)

variant C

variant A

variant D

variant B

Nominal torque M_n	Variant A, B			Variant C, D			d_1 max	d_2 max	l_1 [2) nomin.	l_2 [2) nomin.	f [4)	D	D_H [3)	B [3)	l_0 [4)	Coupling size and type
	Max rotational speed n_{max}	Moment of inertia [1) I	Weight [1) m	Max rotational speed n_{max}	Moment of inertia [1) I	Weight [1) m										
Nm	1/min	kgm²	kg	1/min	kgm²	kg	mm									–
147	3600	0,015	6,8	1500	0,060	12,5	40	35	50	50	20	160	200	80	25	001 ASM
245	3000	0,035	13,5	1500	0,154	19,8	50	45	60	60	45	192	250	100	30	002 ASM
440	2600	0,102	19,8	1500	0,541	42,5	60	55	70	70	45	220	320	120	30	003 ASM
735	2200	0,210	28,5	1500	0,672	50,3	70	65	80	80	55	260	320	120	20	004 ASM
1320	1900	0,465	51,0	1500	1,64	86,0	80	70	110	110	60	298	400	150	0	005 ASM
2260	1600	1,07	95,5	1500	2,23	128,1	100	95	140	140	50	356	400	150	–30	006 ASM
3920	1400	2,10	123,4	1000	4,68	163,4	120	110	170	210	40	406	500	190	–40	007 ASM

A5–7

ASM RUBBER MEMBRANE COUPLINGS

◀ *Continuation of the table from the previous page*

Nominal torque M_n	Variant A, B			Variant C, D			d_1 max	d_2 max	l_1 [2] nomin.	l_2 [2] nomin.	f [4]	D	D_H [3]	B [3]	l_0 [4]	Coupling size and type
	Max rotational speed n_{max}	Moment of inertia [1] I	Weight [1] m	Max rotational speed n_{max}	Moment of inertia [1] I	Weight [1] m										
Nm	1/min	kgm²	kg	1/min	kgm²	kg	mm									–
6670	1200	5,05	210,0	1000	16,3	285,2	140	125	210	210	65	490	630	235	−60	008 ASM
6670	1000	9,35	285,2	1000	21,3	362,5	165	150	210	250	55	560	630	235	−60	009 ASM
11 500	1000	9,35	285,2	1000	24,6	406,5	165	150	250	250	80	560	710	265	−80	010 ASM
19 800	800	16,50	335,3	–	–	–	200	180	250	250	100	670		–	–	011 ASM
30 000	700	18,25	360,8	–	–	–	240	210	250	250	100	790		–	–	111 ASM
68 600	600	19,85	392,7	–	–	–	260	250	250	250	100	910		–	–	012 ASM
176 500	500	–	–	–	–	–	–	320	300	280	100	1110		–	–	013 ASM

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

[2] On request, we produce couplings with hub lengths different from the nominal lengths provided in the table. Size l_2 is at the same time the minimal dimension.

[3] On request, we produce couplings with other drum brake dimensions different from those provided in the table.

[4] A size different from the one provided in the table can be made when agreed.

Special versions:
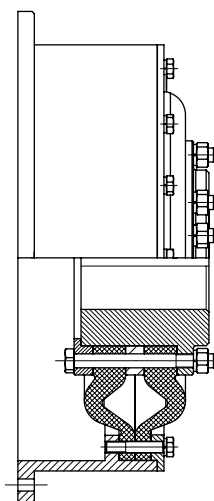
ASM-K with flange connection
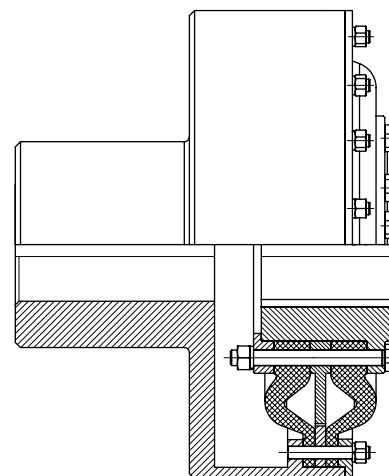
ASM-OKS with the torsional angle limiter
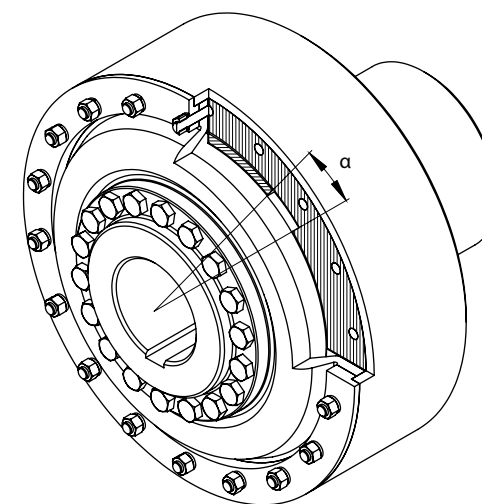
Example of designation of the SETT coupling with the hub holes diameter of d_1=70 mm, d_2=80 mm, hub holes lengths of l_1=140 mm, l_2=140 mm, total length of L=390 mm, size of 100 *(marking see page A5-1)*

70/140-80/140-390-100 SETT Highly-flexible coupling

▪ the coupling is normally produced in "Ex" version

METHOD OF MARKING:

[**name**] – [d_1] / [l_1] – [d_2] / [l_2] – [**L**] – [**size**][**type**] – [**variant***] – [L_H*] – [D_H*] / [D_1*] × [**B***] – [**version***]

* only when it concerns a given type, where:

name	highly-flexible coupling
d_1, d_2	diameters of the holes [mm] (for the couplings with brake drum or disc d_1 – transmission side) in the case of ordering the coupling without holes for shaft ends "0" should be placed; in the case of lead hole according to the catalogue – "ow" marking, and in the case of pilot bores other than in the catalogue, the diameter of the hole should be added after the "ow" marking (e.g. "ow25")
l_1, l_2	the length of the holes in the hubs [mm]
L	total length of the coupling [mm]
D_H×B	diameter × width of the brake drum or disc [mm] (only the types "B", "C", "D") the width of the drum can be omitted in the marking if it equals the catalogue width)
D_1	maximum diameter of the neck on the brake disc [mm]
L_H	the distance of symmetry axis of the brake drum or disc from the edge of the hub [mm] (only the types "B", "C", "D")
size of the coupling	e.g. 200
type of the coupling	e.g. SETT
variant of the coupling	e.g. C
version	WS… – special (individual arrangements)

variant B
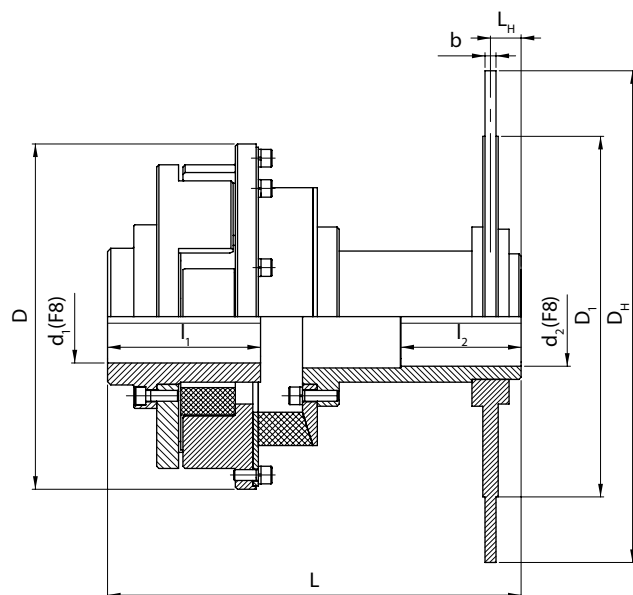
variant C
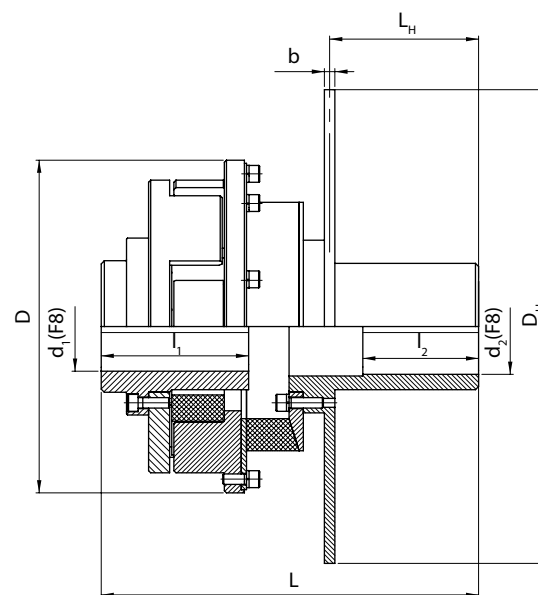
variant D
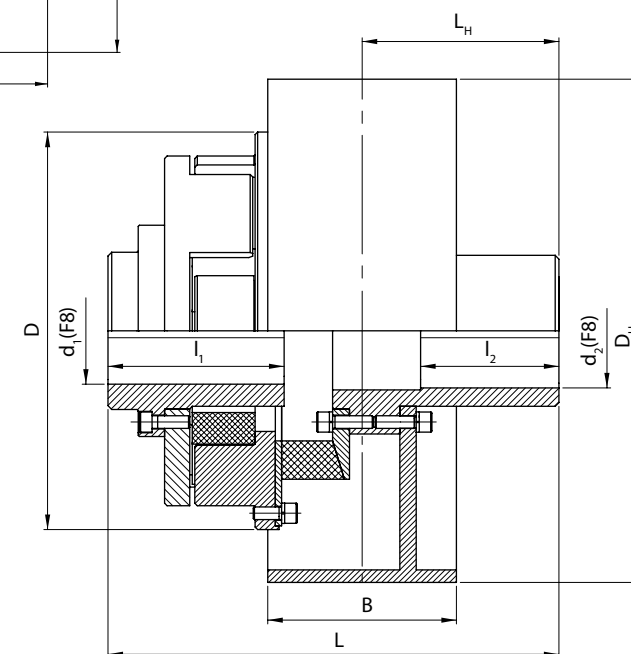
Nominal torque M_n	Max torgue M_{max}	D	d_1, d_2 max	l_1, l_2 [1] nomin.	L [1]	Moment of inertia I	Weight m	Coupling size and type
Nm		mm				kgm²	kg	–
1100	3250	316	80	140	390	0,45	49	100 SETT
1100	3250	316	85	140	390	0,46	52	132 SETT
2300	6900	360	90	140	440	0,68	62	200 SETT
4800	13500	375	100	210	423	2,64	136	315 SETT

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with hub lengths different from the nominal lengths provided in the table. Size l_2 is at the same time the minimal dimension.

Example of designation of the RAPTOR coupling with the nominal torque of M_n=261 Nm, hub holes diameters of d_1=38 mm, d_2=42 mm, hub holes lengths of l_1=l_2=52 mm, size of E20, without spacer sleeves *(marking see page A5-1)*:

261-38/52-42/52 – RAPTOR E20 Flexible coupling
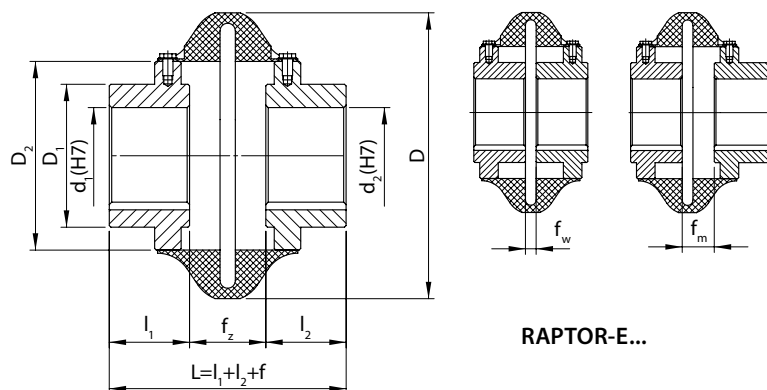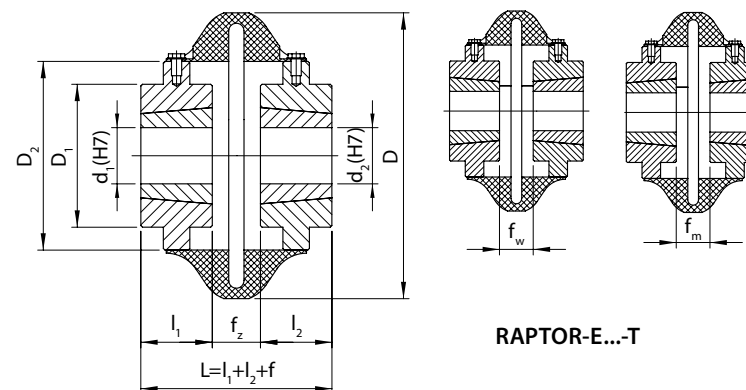
RAPTOR-E...

RAPTOR-E...-T

Coupling size and type	Max torgue M_{max}	Max rotational speed n_{max}	RAPTOR-E...							RAPTOR-E...-T								D_2	D
			d_1, d_2	l_1, l_2	D_1	f			Weight [1] m	Clamp-ing bush	d_1, d_2	l_1, l_2	D_1	f			Weight [1] m		
						nomin.								nomin.					
			max	nomin. [4]		f_z	f_w	f_m			max	nomin.		f_z	f_w	f_m			
–	Nm	1/min	mm							–	mm							mm	
E2	22	7500	28	24	42	48	34	41	0,6	–	–	–	–	–	–	–	–	47	89
E3	42	7500	34	38	51	33	21	27	1,1	1008	25	22	51	43	43	43	1	59	102
E4	63	7500	42	43	60	33	11	22	1,5	1008	25	22	57	43	43	43	1,3	66	116
E5	105	7500	48	44	71	46	21	33	2,5	1210	32	25	71	56	56	56	2,2	80	137
E10	165	7500	55	48	84	46	14	30	3,4	1610	35	25	84	52	52	52	2,9	93	162
E20	261	6600	60	52	102	60	13	37	5,7	1610	42	25	89	64	64	64	4,2	114	184
E30	413	5800	75	59	117	62	14	38	8,9	2012	50	32	102	65	65	65	6,7	138	210
E40	622	5000	85	64	146	68	14	41	15,2	2517	65	44	118	60	60	60	10,8	168	241
E50	865	4200	90	70	156	86	16	51	23,1	2517	65	44	125	76	76	76	15,9	207	279
E60	1413	3800	105	83	165	87	18	52	32,4	3020	75	51	146	84	84	84	24,3	222	318
E70	2501	3600	120	92	178	95	19	57	37,2	3535	95	89	165	60	60	60	35,2	235	356
E80	4463	2000	155	124	241	127	19	73	76,8	4040	105	102	197	95	95	95	58,5	286	406
E100	9610 [2]	1900	171	140	267	95	44	70	114,6	4535	125	89	267	152	89	152	115,2	359	533
E120	19 220 [3]	1800	190	152	299	124	57	91	190,2	5040	127	102	299	181	102	181	194,1	448	635
E140	38 438	1500	229	178	381	127	76	102	269,2	7060	180	152	381	178	76	178	323,4	530	762

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recomended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

We produce the couplings with set screws (in case of finished bore hubs).

[1] Weight for the coupling with the maximum holes and nominal lengths of the hub.

[2] Torque for the version with clamping bushes – 9045 Nm.

[3] Torque for the version with clamping bushes – 14236 Nm.

[4] On request, we produce couplings with hub lengths different from the nominal.

Example of designation of the RAPTOR coupling with the nominal torque of M_n=261 Nm, hub holes diameters of d_1=38 mm, d_2=42 mm, hub holes lengths of l_1=l_2= 52 mm, size of E20, with two spacer sleeves *(marking see page A5-1)*:

261-38/52-42/52 – RAPTOR ES20-2 Flexible coupling
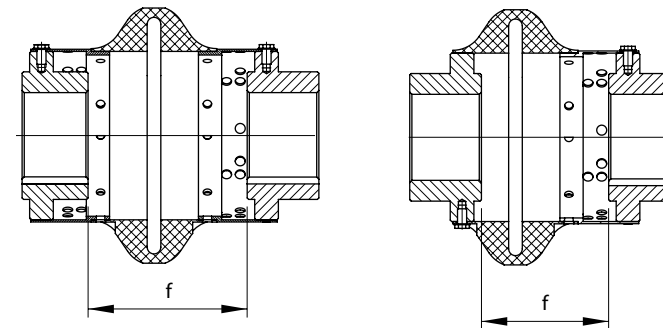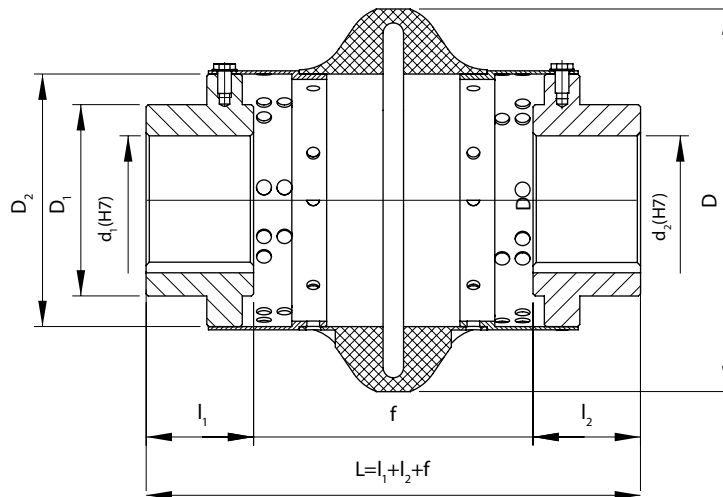
RAPTOR-ES... (with spacer sleeves)

Coupling size and type	Max torgue M_{max}	Max rotational speed n_{max}	RAPTOR-ES...					D_1	D_2	D
			d_1, d_2	l_1, l_2	f		Weight [1] m			
			max	nomin. [2]	min.	max				
–	Nm	1/min	mm					mm		
ES2	22	7500	28	24	89	100	0,8	42	47	89
ES3	42	7500	34	38	89	140	1,7	51	59	102
ES4	63	7500	42	43	89	140	2,3	60	66	116
ES5	105	7500	48	44	89	140	3,5	71	80	137
ES10	165	7500	55	48	89	140	4,7	84	93	162
ES20	261	6600	60	52	89	180	7,9	102	114	184
ES30	413	5800	75	59	89	180	12,2	117	138	210
ES40	622	5000	85	64	100	180	19,8	146	168	241
ES50	865	4200	90	70	100	180	29	156	207	279
ES60	1413	3800	105	83	127	254	43	165	222	318
ES70	2501	3600	120	92	178	254	48,2	178	235	356
ES80	4463	2000	155	124	178	254	94,1	241	286	406

On request, we produce couplings in other configurations than shown.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

We produce the couplings with set screws (in case of finished bore hubs).

[1] Weight for the coupling with the maximum holes and nominal lenghts of the hubs and with 2 spacer sleeves.

[2] On request, we produce couplings with hub lengths different from the nominal.

OTHER VERSIONS

RAPTOR-E…-STH
(with brake disc)
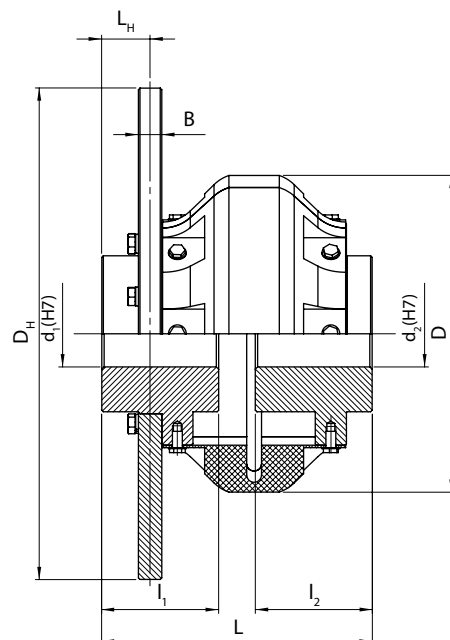
RAPTOR-E…-SBH
(with brake drum)
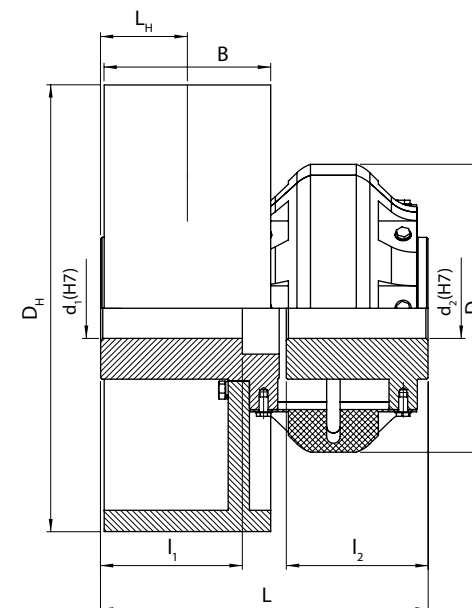
RAPTOR-E…-OKS
(with the torsional
angle limiter)
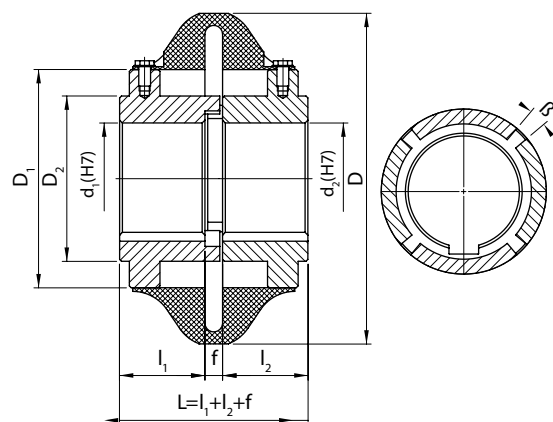
RAPTOR-E…-K
(with flange
connection)
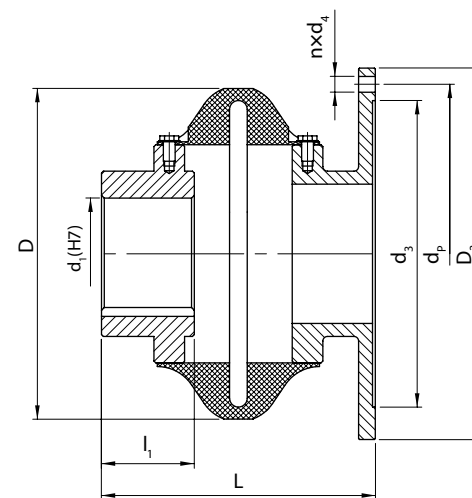
On request we produce special types of couplings taking into account the individual needs and requirements of the customer. The special constructions can have different dimensions in relation to the catalogue dimensions and they can also constitute a new construction adjusted to the needs and the construction of the machine to which the coupling is going to be inbuilt. Below several solutions are presented.
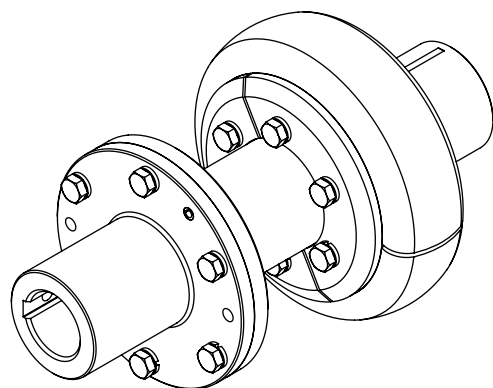
ASO-B
Tyre coupling with spacer sleeve
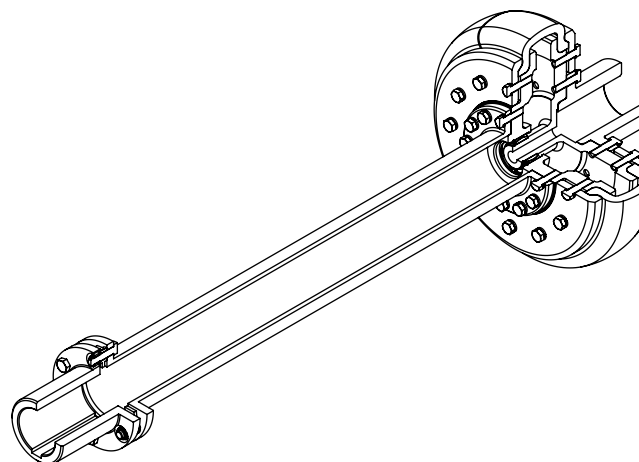
ASO/AMB-WP
Tyre coupling and membrane coupling assembly with an intermediate shaft bearing on one side
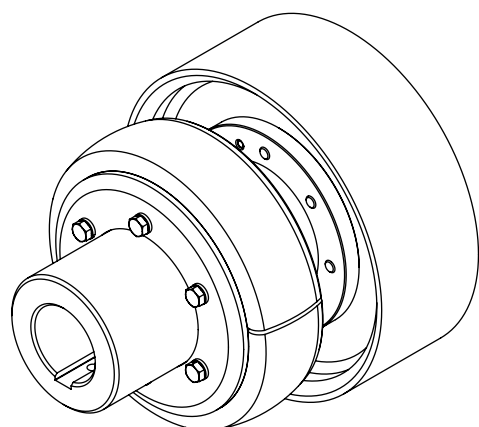
ASO-SBH
Tyre coupling with brake drum
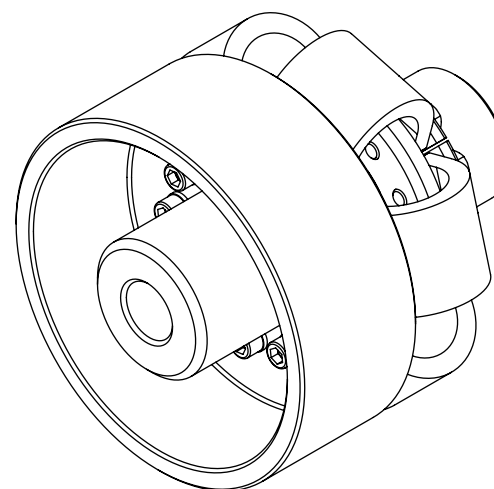
AUK-SBH
Bow coupling with brake drum

A5–15

Compressor – RAPTOR flexible coupling

Belt conveyor – ASNY-STH disc coupling
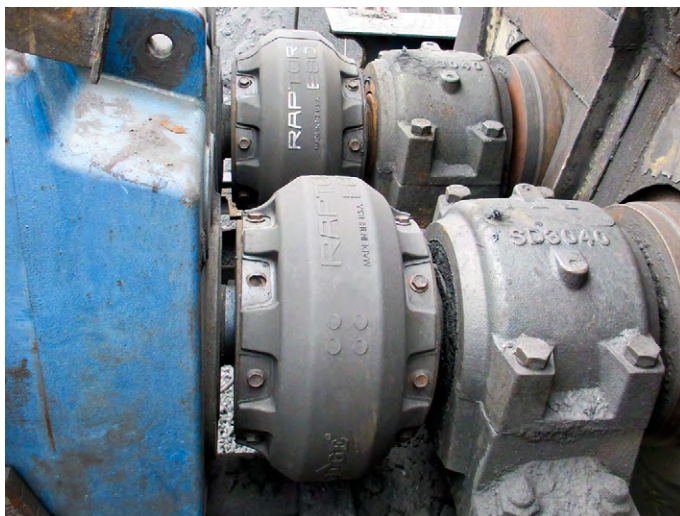
Crusher – RAPTOR flexible coupling

Grate drive – SEK flexible coupling
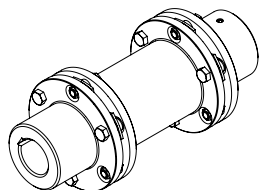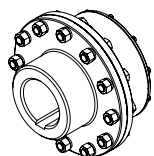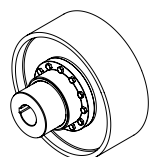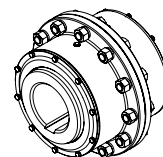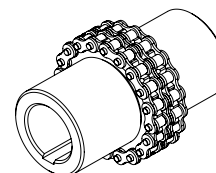
Self-adjusting couplings are characterized by:
- ability to operate in high temperatures and in harmful environment (totally made of metal),
- transferring high torques with small dimensions and high rotational speed,
- compensation of deviations of joined shaft ends position,
- lack of torsional susceptibility (precision of positioning),
- service free (AMB),
- possibility of membrane replacement without the necessity of drawing the joined shaft ends aside (AMB).

APPLICATIONS: machinery for chemical, paper, steel, food and pumps industry, blowers, compressors, stirrers, conveyors, crushers, fans and other machinery and equipment.

MATERIAL: steel.

WORKING CONDITIONS: work at temperature: **AMB** up to 250°C, **SPD, SPJ** of -20°C up to +80°C.

OPERATION IN THE AREAS WITH THE DANGER OF EXPLOSIONS:
"Ex" couplings (see method of marking) are intended for operation in the areas with the danger of explosion (groups: I M2, II2D, II2G). couplings of this construction are made with set screws.

METHOD OF MARKING:

$$\begin{bmatrix} name \end{bmatrix} - \begin{bmatrix} M_n \end{bmatrix} - \begin{bmatrix} d_1 \end{bmatrix} / \begin{bmatrix} l_1 \end{bmatrix} - \begin{bmatrix} d_2 \end{bmatrix} / \begin{bmatrix} l_2 \end{bmatrix} - \begin{bmatrix} size \end{bmatrix}\begin{bmatrix} type \end{bmatrix} - \begin{bmatrix} variant \end{bmatrix} - \begin{bmatrix} version^* \end{bmatrix}$$

* only when it concerns a given type, where:

name	e.g. steel membrane coupling
M_n	nominal torque [Nm]
d_1, d_2 (d_11, d_12)	diameters of the holes [mm] (for the couplings with brake drum or disc d1 – transmission side) in the case of ordering the coupling without holes for shaft ends "0" should be placed; in the case of lead hole according to the catalogue – "ow" marking, and in the case of pilot bores other than in the catalogue, the diameter of the hole should be added after the "ow" marking (e.g. "ow25")
l_1, l_2	the length of the holes in the hubs [mm]
size	e.g. 75
type	e.g. AMB
variant	e.g. A
version	Ex – for operation in the areas with the danger of explosion
	WS… – special (individual arrangements)

A6–1

BALANCING: couplings are normally balanced statically (some sizes of the couplings with bigger brake drums or discs are normally balanced dynamically-check remarks in the catalogue). After the arrangement there is a possibility of dynamic balancing of each coupling.

MAXIMUM DEVIATIONS: Given values of maximum deviations ("x" – axial, "y" – radial, "α" – angular) cannot appear at the same time.

A6–2
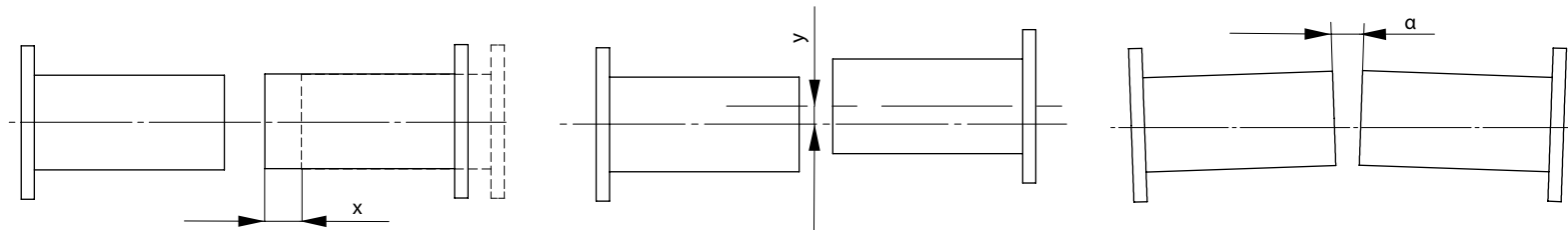
Type	AMB – variant A															
Coupling size	120	125	135	138	142	150	160	170	180	185	190	205	215	235	236	256
x [mm]	0,6	0,8	1	1,2	1,4	1,6	1	1,1	1,3	1,3	1	1,2	1,4	1,75	1,85	2,1
y [mm]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
α [°]	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0,7	0,7

Type	AMB – variant B, C													
Coupling size	120	125	135	138	142	150	160	170	180	185	190	205	215	235
x [mm]	1,2	1,6	2,0	2,4	2,8	3,2	2,0	2,2	2,6	2,6	2,0	2,4	2,8	3,5
y [mm]	0,2	0,2	0,3	0,3	0,4	0,4	0,8	0,4	1,2	1,2	1,1	1,4	1,5	0
α [°]	2	2	2	2	2	2	2	2	2	2	2	2	2	2

AFL			
Coupling size	Angular deviation α [°]	Axial deviation x [mm]	Radial deviation y [mm]
80	0,5	0,5	0,2
105		0,5	0,2
125		0,5	0,2
150		1	0,3
180		1	0,3
210		1	0,3
230		2	0,5
250		2	0,5
300		2	0,5
320		3	0,6
350		3	0,6
370		3	0,6
400		4	0,8
500		4	0,8
600		4	0,8

The recommended deviation values should be up to 50% of the maximum deviation value.

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Type	SPJ								
Coupling size	001	002	003	004	005	006	007	008	009
x [mm]	1	1	1	2	2	2	3	3	3
y [mm]	0	0	0	0	0	0	0	0	0
α [°] revolutions [1/min]									
0–500	0,5								
500–1000	0,3								
1000–2000	0,2								
2000–3000	0,1								

Type	SPD								
Coupling size	001	002	003	004	005	006	007	008	009
x [mm]	2	2	2	4	4	4	6	6	6
y [mm] revolutions [1/min]									
0–500	0,5	0,7	0,9	1,2	1,3	1,5	1,8	2,1	2,4
500–1000	0,3	0,4	0,5	0,7	0,8	0,9	1,1	1,3	1,4
1000–2000	0,2	0,3	0,4	0,5	0,5	0,6	0,7	0,8	1,0
2000–3000	0,1	0,1	0,2	0,2	0,3	–	–	–	–
α [°] revolutions [1/min]									
0–500	1								
500–1000	0,6								
1000–2000	0,4								
2000–3000	0,2								

Recommended deviation values for couplings SPD (series E), SPJ (series E) and SPJ-SBH (series E): up to 30% of the value of the maximum deviation.

Angular deviation α [°]	Coupling size SPJ (series E)
0,75	45
0,75	60
0,75	75
0,75	95
0,75	110
0,75	130
0,75	155
0,75	175
0,75	195
0,75	215
0,75	240
0,75	275
0,75	280
0,75	320
0,75	360N
0,75	400N
0,75	450N
0,75	500
0,75	530
0,75	560
0,75	600
0,75	660
0,75	730
0,75	830
0,75	900
0,75	1000
0,75	1060
0,75	1130

Radial deviation y [mm]	Angular deviation α [°]	Coupling size SPD (series E)
0,35	1,5	45
0,4	1,5	60
0,5	1,5	75
0,6	1,5	95
0,7	1,5	110
0,9	1,5	130
1,0	1,5	155
1,1	1,5	175
1,2	1,5	195
1,4	1,5	215
1,5	1,5	240
1,7	1,5	275
2,0	1,5	280
2,1	1,5	320
2,3	1,5	360N
2,5	1,5	400N
2,7	1,5	450N
2,8	1,5	500
3,0	1,5	530
3,2	1,5	560
3,4	1,5	600
3,6	1,5	660
3,7	1,5	730
4,0	1,5	830
4,4	1,5	900
4,8	1,5	1000
5,2	1,5	1060
5,4	1,5	1130

Example of designation of the AMB type coupling with the nominal torque of M_n=60 Nm, hub hole diameters of d_1=28 mm, d_2=35 mm, hub hole lengths of l_1=30 mm, l_2=40 mm, size of 135 in the A version: *(marking see page A6-1)*:

60-28/30-35/40-135 AMB-A Steel membrane coupling

▪ with pilot bores – 60-**ow**/30-**ow**/40-135 AMB-A Steel membrane coupling
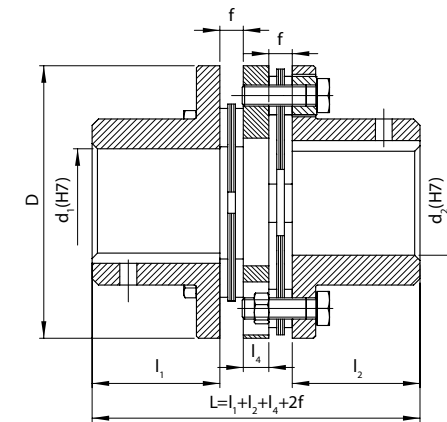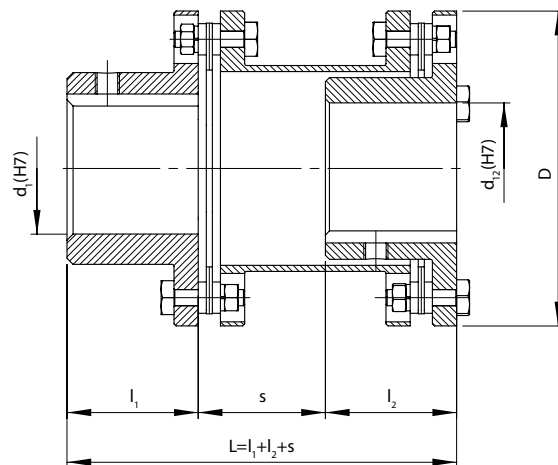
variant A

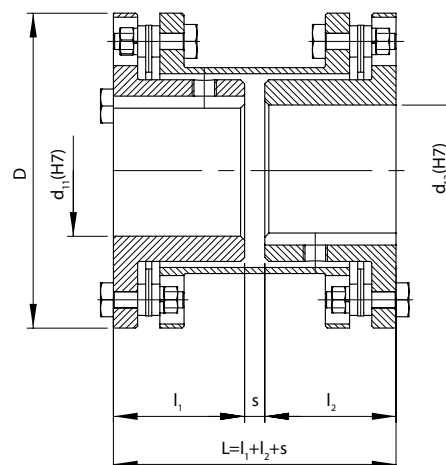$L=l_1+l_2+f$
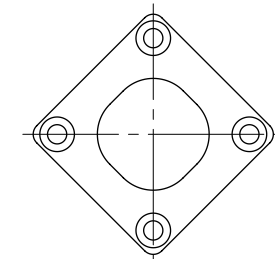
variant B

$L=l_1+l_2+l_3+2f$

variant C

$L=l_1+l_2+l_4+2f$

variant By

$L=l_1+l_2+s$

variant Bz

$L=l_1+l_2+s$
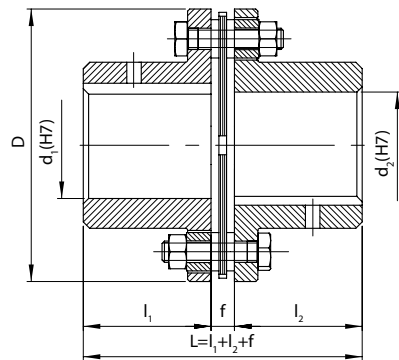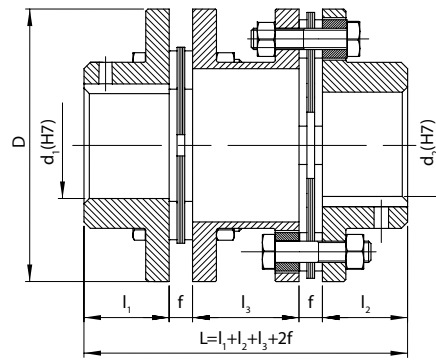
membrane
package
120÷150 AMB

membrane
package
160÷256 AMB

A6–5
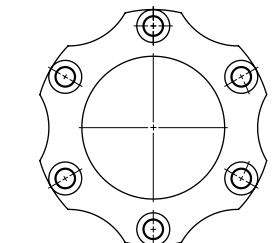
Nominal torque M_n	d_1, d_2 pilot	d_1, d_2 max	d_{11}, d_{12} max	l_1, l_2 [1] nomin.	l_3 [1]	l_4 [1]	f	s	D	Max rotational speed n_{max}	Moment of inertia [2] I	Weight [2] m	Coupling size and type	Variant
Nm	mm									1/min	kgm²	kg	–	–
15	4	20	–	20	–	–	5	–	56	20000	0,00011	0,3	120 AMB	A
			–		50	–		–			0,000204	0,6		B
			–		–	8		–			0,000166	0,4		C
30	4	25	–	25	–	–	6	–	68	16000	0,00028	0,6	125 AMB	A
			–		48	–		–			0,000522	0,9		B
			–		–	8		–			0,000414	1,6		C
60	6	35	–	40	–	–	6	–	82	13000	0,00094	1,2	135 AMB	A
			–		58	–		–			0,00158	1,9		B
			–		–	10		–			0,00129	1,6		C
120	6	38	–	45	–	–	8	–	94	12000	0,0017	1,8	138 AMB	A
			–		64	–		–			0,00303	2,8		B
			–		–	12		–			0,00247	2,4		C
180	6	42	–	45	–	–	10	–	104	10000	0,0029	2,4	142 AMB	A
			–		60	–		–			0,00482	3,6		B
			–		–	14		–			0,00409	3,1		C
330	8	50	–	55	–	–	11	–	126	8000	0,0068	4,0	150 AMB	A
			–		74	–		–			0,0118	6,2		B
			–		–	12		–			0,00932	5,1		C
690	8	60	–	55	–	–	11	–	138	6700	0,0087	4,2	160 AMB	A
			–		74	–		–			0,0141	6,0		B
			–		–	12		–			0,0120	5,3		C
			55		–	–	50				0,0141	6,0		By
					–	–	4							Bz
1100	8	70	–	65	–	–	11	–	156	5900	0,016	6,0	170 AMB	A
			–		94	–		–			0,0253	8,6		B
			–		–	14		–			0,0214	7,5		C
			65		–	–	60				0,0253	8,6		By
					–	–	4							Bz

▶ *The table continues on the next page*

◀ *Continuation of the table from the previous page*

Nominal torque M_n [Nm]	d_1, d_2 pilot [mm]	d_1, d_2 max [mm]	d_{11}, d_{12} max [mm]	l_1, l_2 nomin. [mm] [1]	l_3 [mm] [1]	l_4 [mm] [1]	f [mm]	s [mm]	D [mm]	Max rotational speed n_{max} [1/min]	Moment of inertia I [kgm²] [2]	Weight m [kg] [2]	Coupling size and type [–]	Variant [–]
1500	10	80	–	75	–	–	14	–	179	5100	0,031	9,0	180 AMB	A
			–		108	–		–			0,0476	12,6		B
			75		–	70		–						By
					–	–		4						Bz
2400	10	85	–	80	–	–	15	–	191	4750	0,046	11,2	185 AMB	A
			–		110	–		–			0,0734	16,2		B
			80		–	72		–			0,0734	16,2		By
					–	–		4						Bz
4500	10	90	–	80	–	–	15	–	210	4300	0,073	14,7	190 AMB	A
			–		110	–		–			0,121	22,0		B
			85		–	73		-			0,121	22,0		By
					–	–		6						Bz
5100	12	105	–	90	–	–	20	–	225	4000	0,101	17,4	205 AMB	A
			–		120	–		–			0,165	25,8		B
			90		–	83		–			0,165	25,8		By
					–	–		6						Bz
9000	12	115	–	100	–	–	23	–	265	3400	0,223	27,9	215 AMB	A
			–		124	–		–			0,381	42,8		B
			100		–	88		–			0,381	42,8		By
					–	–		6						Bz
12 000	12	135	–	135	–	–	27	–	305	3000	0,478	45,1	235 AMB	A
			–		196	–		–			0,835	71,3		B
17 500	12	135	–	135	–	–	23	–	300	3800	0,419	41,4	236 AMB	A
25 000	14	150	-	150	-	-	27	-	325	3500	0,634	52,2	256 AMB	A

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with the lengths of hubs or intermediate elements different from the nominal lengths given in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

Example of designation of the SPJ coupling with the nominal torque of M_n=3150 Nm, hub hole diameters of d_1=50 mm, d_2=60 mm, hub hole lengths of l_1=80 mm, l_2=140 mm, size of 003 *(marking see page A6-1)*:

3150-50/80-60/140-003 SPJ Single-sided gear coupling

▪ with pilot bores – 3150-**ow**/80-**ow**/140-003 SPJ Single-sided gear coupling

Single-sided gear couplings are used in pairs with a spacer shaft. In cases where journal misalignment is excluded, a single SPJ coupling may be used.

Screw-tightened covers are used from sizes 005 to 009.
Sizes 004 and smaller are manufactured with non-removable covers.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.
[1] On request, we produce couplings with the lengths of hubs different from the nominal and extended lengths given in the table.
[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

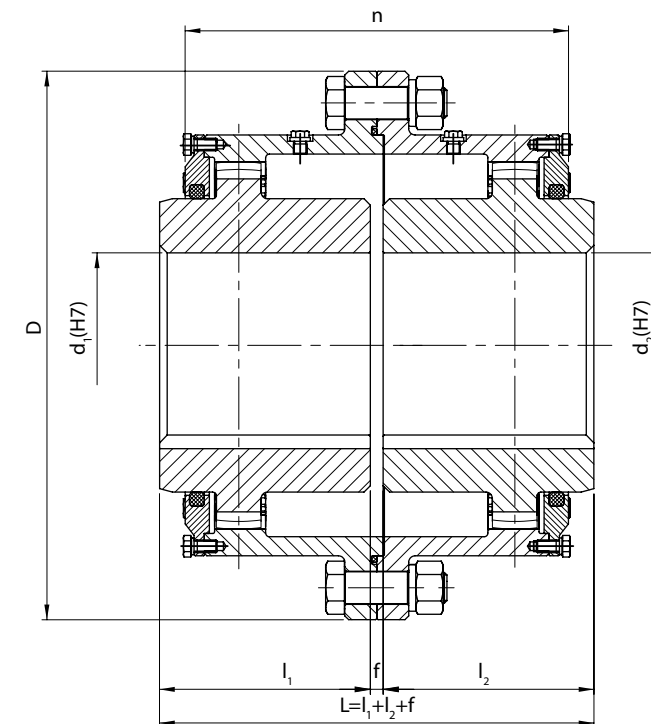| Nominal torque M_n	d_1, d_2		l_1, l_2 [1]		f	D	n	Max rotational speed	Moment of inertia [2]	Weight [2]	Coupling size and type
	pilot	max	nomin.	extend.				n_{max}	I	m	
Nm	mm							1/min	kgm²	kg	–
710	20	40	50	110	5	160	47	3000	0,03	7,2	001 SPJ
1400	30	50	80	110	5	185	62		0,052	13,3	002 SPJ
3150	45	65	80	140	5	220	77		0,105	23,6	003 SPJ
5600	50	80	110	170	5	250	98		0,212	37,6	004 SPJ
11 800	65	100	120	210	10	330	115	2500	0,70	76,0	005 SPJ
19 000	80	125	140	210	10	360	130	1500	1,15	108,3	006 SPJ
30 000	100	160	170	300	10	430	150		3,55	167,7	007 SPJ
50 000	120	190	170	350	10	500	162,5	1600	7,10	250,1	008 SPJ
71 000	140	220	200	350	10	550	182,5	1250	13,7	336,5	009 SPJ

Example of designation of the SPJ coupling with the nominal torque of M_n=22000 Nm, hub hole diameters of d_1=60 mm, d_2=80 mm, hub hole lengths of l_1=105 mm, l_2=105 mm, size of 130 *(marking see page A6-1)*:

22000-60/105-80/105-130 SPJ Single-sided gear coupling

Single-sided gear couplings are used in pairs with a spacer shaft.
In cases where journal misalignment is excluded, a single SPJ coupling may be used.

We also offer special designs according to the individual wishes of the customer.
We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.
1) Dimension which defines the offset of the cage in order to check the position of the hubs and the state of meshing.
2) Higher rotational speeds are possible after consultation.
3) The moment of inertia have been determined for the coupling with no holes.
4) The weight have been determined for the coupling with the pilot bores.
5) On request, we produce couplings with the lengths of hubs different from the nominal (l_2) lengths given in the table.
6) Check whether the journal/hub connection will transfer the required torque.

size 280-320 SPJ

$L=l_1+l_2+f$

size 45-275 SPJ

A6–8
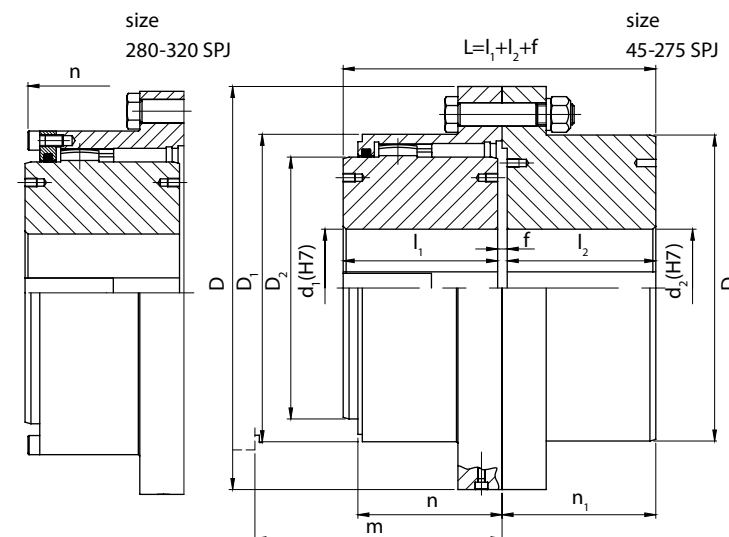
Nominal torque M_n [6]	d_1, d_2	l_1		l_2 [5]	f	D	D_1	D_2	D_3	n	n_1	m [1]		Max rotational speed [2]	Moment of inertia [3]	Weight [4]	Coupling size and type
	max	nomin.	extend.	nomin.								nomin.	extend.	n_{max}	I	m	
Nm								mm						1/min	kgm²	kg	–
1300	45	43	80	40	5	111	80	67	80	41	43,5	73,5	81,5	5000	0,005	4,1	45 SPJ
2800	60	50	114	47	5	141	103,5	87	103,5	47	50,5	83	115,5	4400	0,016	8,2	60 SPJ
5000	75	62	130	58	5	171	129,5	106	126	58,5	61,5	106	131,5	4000	0,04	14,6	75 SPJ
10 000	95	76	146	74	6	210	156	130	152	68,5	77,5	124,5	148,5	3600	0,107	26,5	95 SPJ
16 000	110	90	165	87	6	234	181	151	178	82	90,5	147,5	167,5	3350	0,197	39,6	110 SPJ
22 000	130	105	170	101	6,5	274	209	178	208	98	104,5	175	175	3100	0,446	60,3	130 SPJ
32 000	155	120	190	113	6,5	312	247	213	245	108,5	116,5	196	196	2800	0,868	90,3	155 SPJ
45 000	175	135	200	129	8	337	273	235	270	121	133	220	220	2700	1,362	119	175 SPJ
62 000	195	150	220	150	8	380	307	263	305	132	154	242	242	2550	2,584	174,3	195 SPJ
84 000	215	175	250	175	8	405	338	286	330	151,5	179	281	281	2450	3,9	231,1	215 SPJ
115 000	240	190	280	190	10	444	368	316	362	165	196	308	308	2300	5,65	285,2	240 SPJ
174 000	275	220	350	220	13	506	426	372	416	183,5	228	344	355	2150	11,446	429,3	275 SPJ
244 000	280	280	410	280	13	591	472	394	–	225	288	316	447,5	1900	22,6	648	280 SPJ
290 000	320	292	470	292	14,5	640	518	432	–	234	300	330	467,5	1800	34,5	822	320 SPJ

esco

A6–9

Example of designation of the SPJ-SBH coupling with the nominal torque of M_n=1300 Nm, brake drum diameter of D_H=200 mm, distance of the brake drum symmetry axis from the hub origin of L_H=87, hub holes diameters of d_1=40 mm, d_2=45 mm, hub holes lengths of l_1=62 mm, l_2=82 mm, size of 45 *(marking see page A6-1)*:
1300-200-87-40/62-45/82-45 SPJ-SBH Brake drum gear coupling

Single-sided gear couplings are used in pairs with a spacer shaft.
**In cases where journal misalignment is excluded, a single SPJ (SPJ-SBH) coupling may be used.**
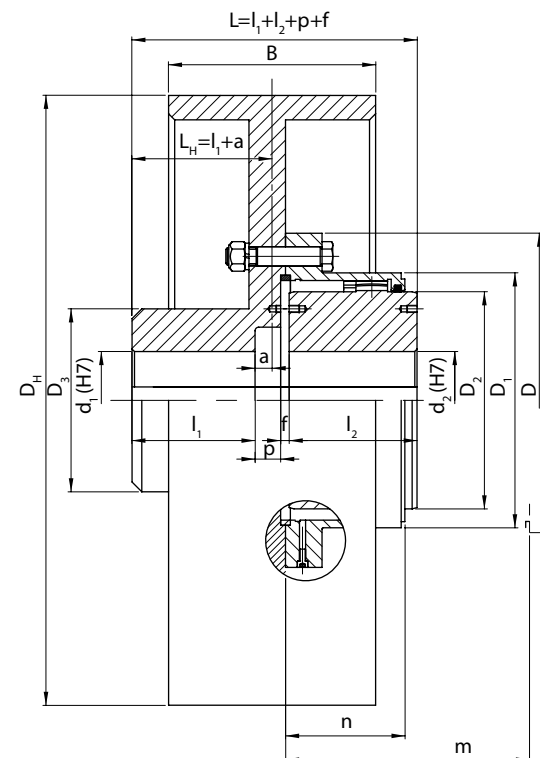
We also offer special designs according to the individual wishes of the customer.
We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.
1) Dimension which defines the offset of the cage in order to check the position of the hubs and the state of meshing.
2) The moment of inertia have been determined for the coupling with no holes.
3) The weight have been determined for the coupling with the pilot bores.
4) On request, we produce couplings with the brake drums size different than in the table.

Nominal torque M_n	d_1, d_2	l_1		l_2		p	f	D	D_1	D_2	D_3	D_H 4)	B 4)	a	n	m 1)		Max rotational speed	Moment of inertia 2)	Weight 3)	Coupling size and type
	max	nomin.	extend.	nomin.	extend.											nomin.	extend.	n_{max}	I	m	
Nm								mm										1/min	kgm²	kg	–
1300	45	62	82	43	80	31	5	111	80	67	80	200	75	25	41	73,5	81,5	3000	0,0585	13,1	45 SPJ-SBH
		82	112			28	5				75	250	90	23					0,1525	17,1	
2800	60	82	112	50	114	31	5	141	103,5	87	90	250	90	25	47	83	115,5		0,1575	19,0	60 SPJ-SBH
		112	142			34	5				90	320	110						0,5275	38,0	
5000	75	112	142	62	130	34	5	171	129,5	106	112	320	110	23	58,5	106	131,5		0,5400	41,3	75 SPJ-SBH
		112	142			34	5				112	400	135						1,3300	62,3	
10000	95	142	172	76	146	33	6	210	156	130	142	400	135		68,5	124,5	148,5		1,3625	68,1	95 SPJ-SBH
		142	174			33	6				142	500	170						3,6525	118,1	

Example of designation of the SPD type coupling with the nominal torque of M_n=3150 Nm, hub hole diameters of d_1=50 mm, d_2=60mm, hub hole lengths of l_1=80 mm, l_2=140 mm, size of 003 *(marking see page A6-1)*:

3150-50/80-60/140-003 SPD Double-sided gear coupling

▪ with pilot bores – 3150-**ow**/80-**ow**/140-003 SPD Double-sided gear coupling

Screw-tightened covers are used from sizes 005 to 009.
Sizes 004 and smaller are manufactured with non-removable covers.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

1) On request, we produce couplings with the lengths of hubs different from the nominal and extended lengths given in the table.

2) The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

Nominal torque M_n	d_1, d_2		l_1, l_2 [1]		f	D	n	Max rotational speed	Moment of inertia [2]	Weight [2]	Coupling size and type
	pilot	max	min	extend.				n_{max}	I	m	
Nm	mm							1/min	kgm²	kg	–
710	20	40	50	110	5	160	94	3000	0,03	7,3	001 SPD
1400	30	50	80	110	5	185	124		0,052	14	002 SPD
3150	45	65	80	140	5	220	154		0,105	23	003 SPD
5600	50	80	110	170	5	250	196		0,212	37,7	004 SPD
11 800	65	100	120	210	10	330	230	2500	0,70	78,8	005 SPD
19 000	80	125	140	210	10	360	260	1500	1,15	102,6	006 SPD
30 000	100	160	170	300	10	430	300		3,55	165,3	007 SPD
50 000	120	190	170	350	10	500	325	1400	7,0	260,5	008 SPD
71 000	140	220	200	350	10	550	365	1250	13,75	360,0	009 SPD

Example of designation of the SPD type coupling with the nominal torque of M_n=22000 Nm, hub hole diameters of d_1=60 mm, d_2=80 mm, hub hole lengths of l_1=105 mm, l_2=105 mm, size of 130 (*marking see page A6-1*):
22000-60/105-80/105-130 SPD Double-sided gear coupling

Nominal torque M_n [5)	d_1, d_2	l_1, l_2		f	D	D_1	D_2	n	m [1)		Max rotational speed [2)	Moment of inertia [3)	Weight [4)	Coupling size and type
	max	nomin.	extend.						nomin.	extend.	n_{max}	I	m	
Nm	mm										1/min	kgm²	kg	–
1300	45	43	80	3	111	80	67	41	73,5	81,5	5000	0,005	4,1	45 SPD
2800	60	50	114	3	141	103,5	87	47	83	115,5	4400	0,015	8,0	60 SPD
5000	75	62	130	3	171	129,5	106	58,5	106	131,5	4000	0,040	14,6	75 SPD
10 000	95	76	146	5	210	156	130	68,5	124,5	148,5	3600	0,105	26,1	95 SPD
16 000	110	90	165	5	234	181	151	82	147,5	167,5	3350	0,191	38,8	110 SPD
22 000	130	105	170	6	274	209	178	98	175	175	3100	0,430	59,2	130 SPD
32 000	155	120	190	6	312	247	213	108,5	196	196	2800	0,842	89,4	155 SPD
45 000	175	135	200	8	337	273	235	121	220	220	2700	1,320	117,5	175 SPD
62 000	195	150	220	8	380	307	263	132	242	242	2550	2,448	167,1	195 SPD
84 000	215	175	250	8	405	338	286	151,5	281	281	2450	3,716	222,4	215 SPD
115 000	240	190	280	8	444	368	316	165	308	308	2300	5,384	275,0	240 SPD
174 000	275	220	350	10	506	426	372	183,5	344	355	2150	10,872	413,6	275 SPD
244 000	280	280	410	10	591	472	394	225	316	447,5	1900	20,1	591	280 SPD
290 000	320	292	470	13	640	518	432	234	330	467,5	1800	31	760	320 SPD
370 000	360	305	–	13	684	562	480	251	352,5	–	1500	45	932	360N SPD
450 000	400	330	–	13	742	620	530	269	372,5	–	1400	68	1180	400N SPD
560 000	450	350	–	13	804	682	594	283	385	–	1300	105	1532	450N SPD
630 000	500	370	–	19	908	733	629	301	412,5	–	1150	164	1950	500 SPD
750 000	530	395	–	19	965	787	673	318	435	–	1050	228	2330	530 SPD
860 000	560	420	–	19	1029	841	724	333	450	–	900	313	2840	560 SPD
1 020 000	600	440	–	25	1092	892	772	361	495	–	800	430	3370	600 SPD
1 290 000	660	460	–	25	1200	997	870	375	510	–	550	685	4370	660 SPD
2 020 000	730	540	–	25	1330	1130	965	408	565	–	450	1161	6110	730 SPD
2 450 000	830	590	–	25	1440	1240	1062	448	605	–	380	1756	7810	830 SPD
3 070 000	900	630	–	25	1545	1345	1156	483	645	–	325	2580	9730	900 SPD
3 610 000	1000	670	–	25	1650	1450	1254	528	700	–	280	3690	11860	1000 SPD
4 390 000	1060	690	–	25	1750	1550	1346	538	710	–	240	5090	14220	1060 SPD
5 040 000	1130	700	–	25	1860	1660	1448	548	720	–	220	6730	16380	1130 SPD

Coupling size		45	60	75	95	110	130	155	175	195	215	240	275	280	320	360N	400N	450N
f	[mm]	3	3	3	5	5	6	6	8	8	8	8	10	10	13	13	13	13
f_1		12	9	17	17	19	23	24	29	32	39	46	43	30	33	48	53	61
f_2		21	15	31	29	33	40	42	50	56	70	84	76	50	53	83	93	109
a		55	59	79	93	109	128	144	164	182	214	236	263	310	325	353	383	411

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] Dimension which defines the offset of the cage in order to check the position of the hubs and the state of meshing.

[2] Higher rotational speeds are possible after consultation.

[3] The moment of inertia have been determined for the coupling with no holes.

[4] The weight have been determined for the coupling with the pilot bores.

[5] Check whether the journal/hub connection will transfer the required torque.
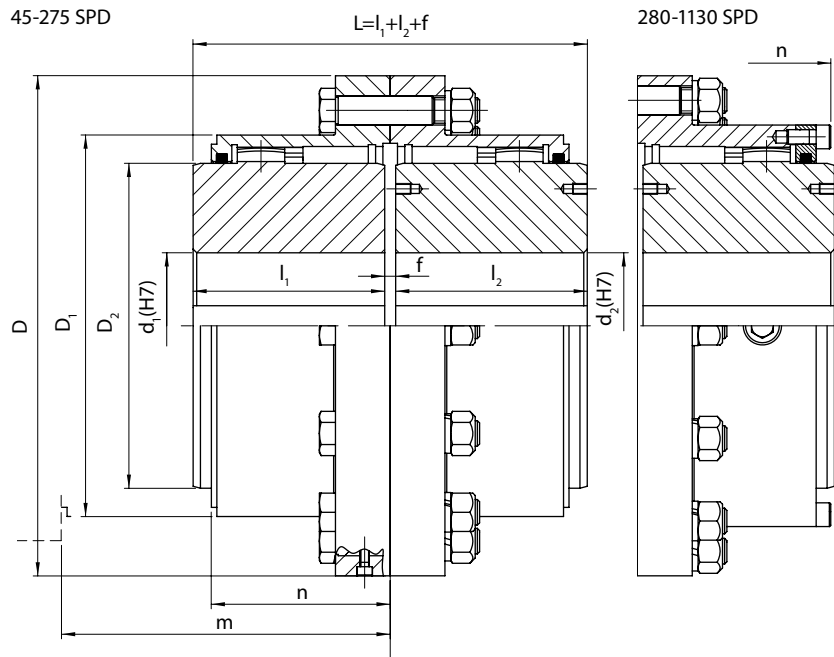
Alignment of hubs with nominal lengths

size
45-275 SPD

size
280-1130 SPD

$L = l_1 + l_2 + f$

$L = l_1 + l_2 + f$

$L = l_1 + l_2 + f_1$

$L = l_1 + l_2 + f_2$
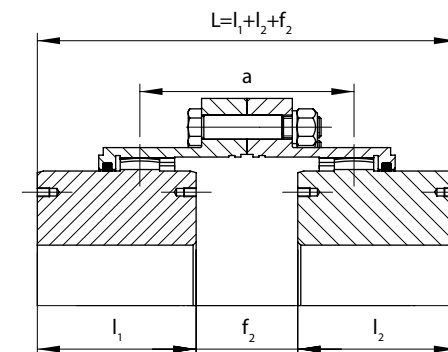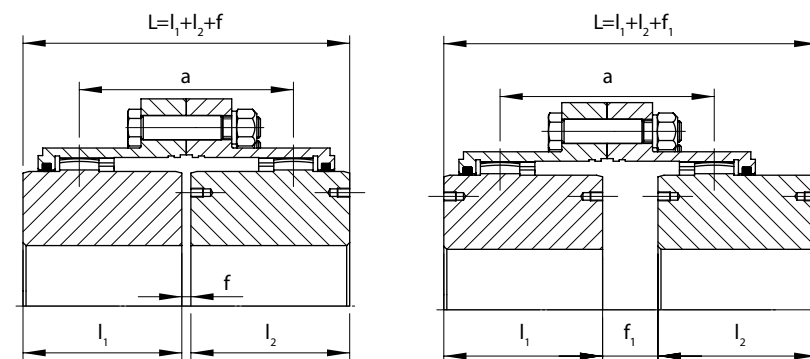
Example of designation of the AFL chain coupling with the nominal torque of M_n=11600 Nm, hub holes diameters of d_1=80 mm, d_2=100 mm, hub holes lengths of l_1=180 mm, l_2=180 mm, size of 250 *(marking see page A6-1)*:

11600-80/180-100/180-250 AFL Chain coupling

- the "WD" version –
  11600-80/180-100/180-250 AFL-**WD** Chain coupling
- with pilot bores –
  11600-**ow**/180-**ow**/180-250 AFL Chain coupling
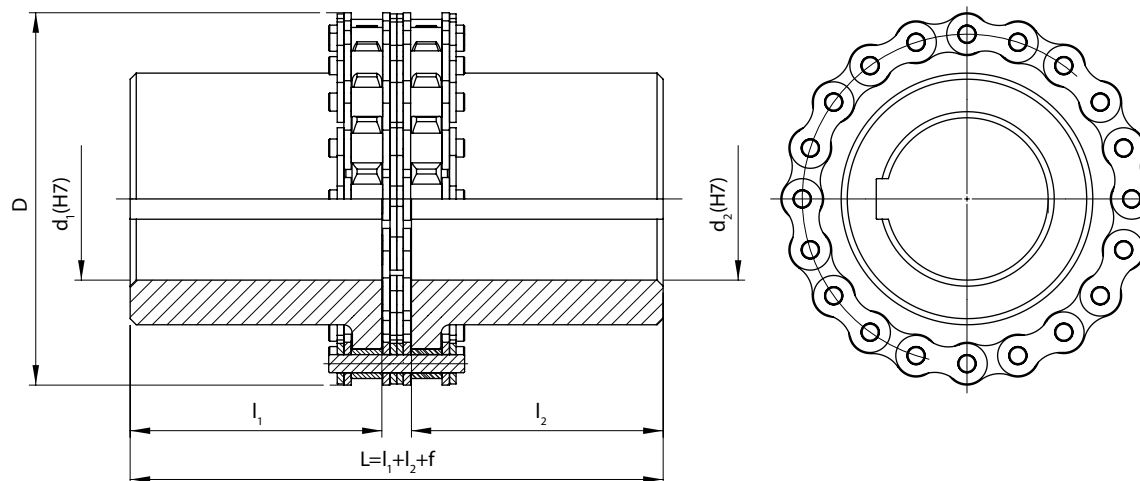
Nominal torque M_n	d_1, d_2		l_1, l_2 [1]	f	D	Max rotational speed n_{max}	Weight [2] m	Coupling size and type
	pilot	max	nomin.					
Nm	mm					1/min	kg	–
390	10	30	60	6,7	77	5000	1,42	80 AFL
680	12	48	75	7,5	107	3600	3,36	105 AFL
1000	14	55	85	8,4	126	3000	5,62	125 AFL
1300	16	70	85	8,4	150	2500	8,60	150 AFL
3200	20	80	110	15,7	184	2000	17,1	180 AFL
5700	20	90	130	18	210	1800	26,1	210 AFL
6400	20	105	130	18	230	1800	32,3	230 AFL
11600	25	110	180	24,3	253	1500	47,0	250 AFL
14100	25	140	180	24,3	302	1200	74,0	300 AFL
18800	30	150	240	30,2	322	1200	103	320 AFL
20600	30	170	240	30,2	350	1000	126	350 AFL
26800	30	170	240	29,2	367	1000	137	370 AFL
29400	30	180	240	29,2	400	900	167	400 AFL
52300	40	220	280	36,1	500	750	288	500 AFL
98900	40	250	300	47,8	600	600	466	600 AFL

We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with the lengths of hubs different from the nominal lengths given in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

A7–0
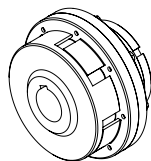
Overload couplings limit the value of transferred torque to the safe value – in the case of exceeding the adjusted slipping moment on the friction linings the slip takes place. The value of slipping moment is adjusted by tightening up or undoing the adjusting nut. In the case of machine overloading, which does not yield automatically, it is recommended to provide a system of automatic turning off the drive or immediate turning off by the service staff. The coupling is not intended for operation on the slip because it causes fast wear of friction linings and the drop of slipping moment together with the change of their thickness.

Overload couplings are also characterized by:
- compensation of the deviations of joined shaft ends position,
- torsional susceptibility.

APPLICATIONS: chain drives, gear drives and belt drives, belt conveyors, stirrers, combined cutter loaders, excavatingdumping conveyors, and other machinery and equipment.

MATERIAL: steel, flexible insert: polyurethane, asbestos-free friction lining.

ELASTIC INSERT WORKING CONDITIONS: operation in the scope of temperatures from –30°C up to +80°C, the friction lining protected against the contact with oils and greases.

OPERATION IN THE AREAS WITH THE DANGER OF EXPLOSIONS:
"Ex" couplings (see marking) are intended for operation in the areas with the danger of explosion (groups: I M2, II 2D, II 2G). With such kind of usage of the couplings the drive must be equipped with the sensor of coupling operation on the slip or temperature sensor, preventing the appearance of too high temperatures with blocking the drive and the coupling operation on the slip. Couplings of this construction are made with set screws.
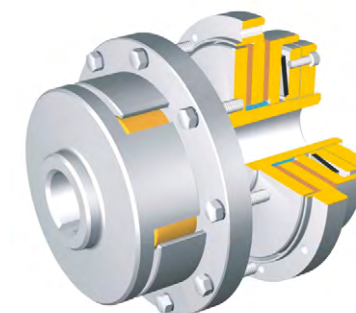
METHOD OF MARKING:

[name] – [M_K] – [d_1] / [l_1] – [d_2] / [l_2] – [size][type] – [version*]

* only when it concerns a given type, where:
name e.g. overload coupling
M_k slipping moment [Nm]
d_1, d_2 diameters of the holes [mm]
l_1, l_2 the length of the holes in the hubs [mm]

size e.g. 003
type e.g. APMX
version WS… – special (individual arrangements)

A7–1

BALANCING: couplings are normally balanced statically (some sizes of the couplings with bigger brake drums or discs are normally balanced dynamically-check remarks in the catalogue). After the arrangement there is a possibility of dynamic balancing of each coupling.

MAXIMUM DEVIATIONS: Given values of maximum deviations ("x" – axial, "y" – radial, "Δl_0" – angular) cannot appear at the same time.

$l_0 max$

x

y

$l_0 min$ $\Delta l_0 = l_0 max - l_0 min$
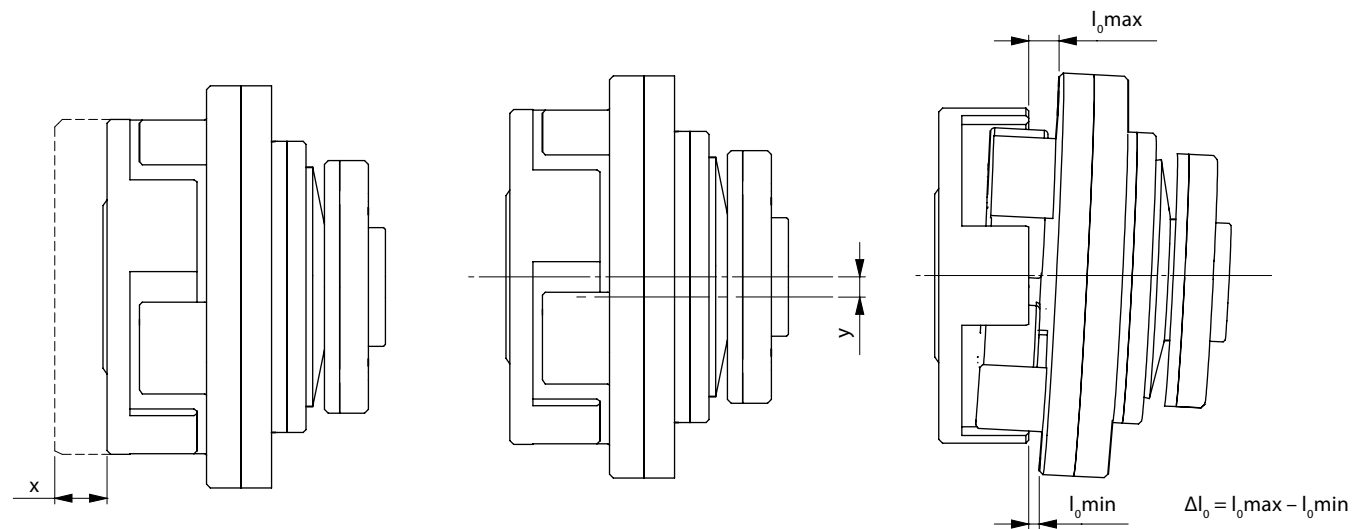
Coupling size	001	002	003	004	005	006	007
x	1,4	1,5	1,8	2	2,1	2,2	2,6
y	0,3	0,4	0,4	0,4	0,5	0,5	0,5
Δl_0	0,45	0,6	0,7	0,8	0,8	0,9	0,9

Example of designation of the APMX coupling with the slipping moment of M_k =250 Nm, hub hole diameters of d_1=35 mm, d_2=30 mm, hub hole lengths of l_1=55 mm, l_2=60 mm, size of 003 *(marking see page A7-1)*:

250-35/55-30/60-003 APMX Overload coupling
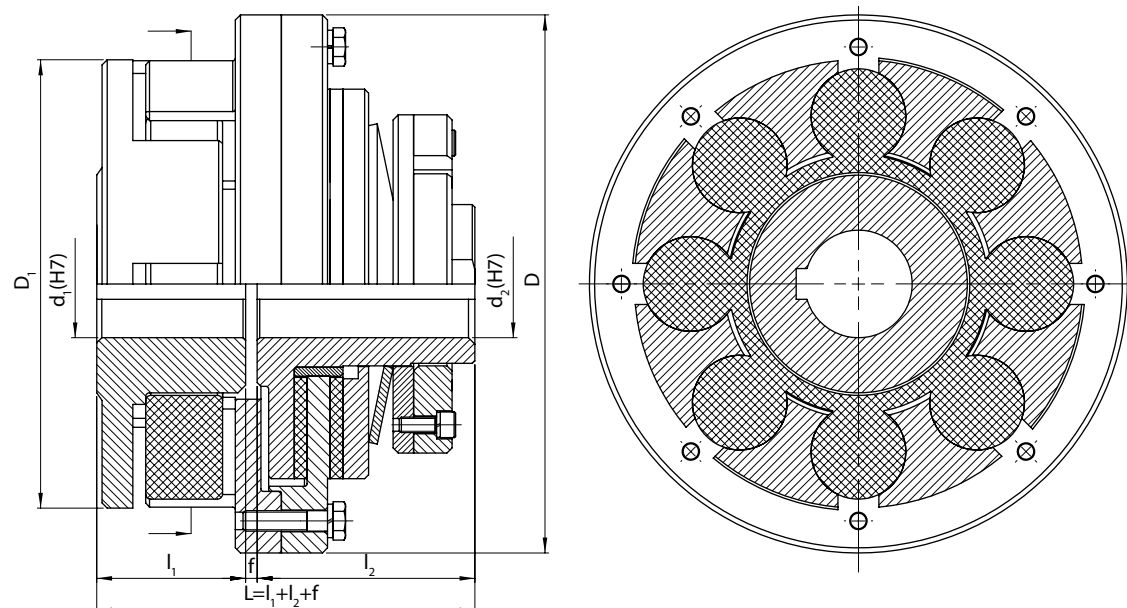
Slipping moment M_k	d_1	d_2	l_1	l_2	f	D	D_1	Max rotational speed n_{max}	Moment of inertia [1] I	Weight [1] m	Coupling size and type
	max	max	min	min							
Nm	mm							1/min	kgm²	kg	–
50÷90	24	25	40	40		120	85	3000	0,005	3,41	001 APMX
90÷200	28	32	50	55	2	150	105	2500	0,017	7,23	002 APMX
120÷300	35	32	50	55		170	125	2000	0,028	9,3	003 APMX
220÷500	40	40	55	80		190	145	1800	0,059	15,2	004 APMX
330÷800	60	45	70	90	5	240	175	1500	0,164	27,2	005 APMX
530÷1400	65	50	80	105		290	200	1200	0,39	45,7	006 APMX
920÷2100	75	65	90	120	7	320	230	1000	0,68	64,4	007 APMX

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

On request we produce special types of couplings taking into account the individual needs and requirements of the customer. The special constructions can have different dimensions in relation to the catalogue dimensions and they can also constitute a new construction adjusted to the needs and the construction of the machine to which the coupling is going to be inbuilt. Below several solutions are presented.
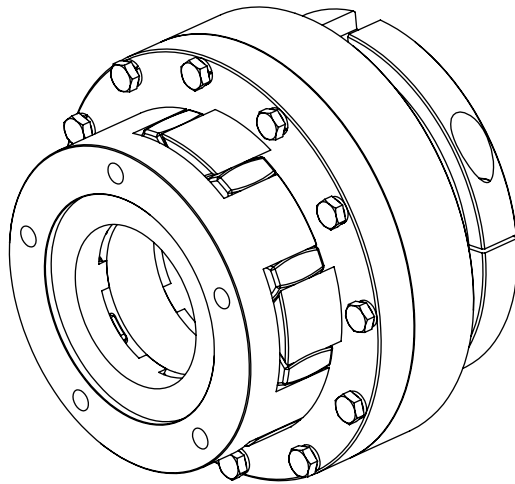
APMX-K
Overload coupling
with flange connection
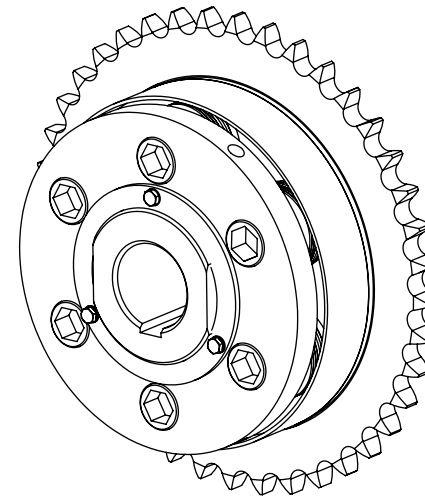
APMX-KZ
Overload coupling
with chain wheel
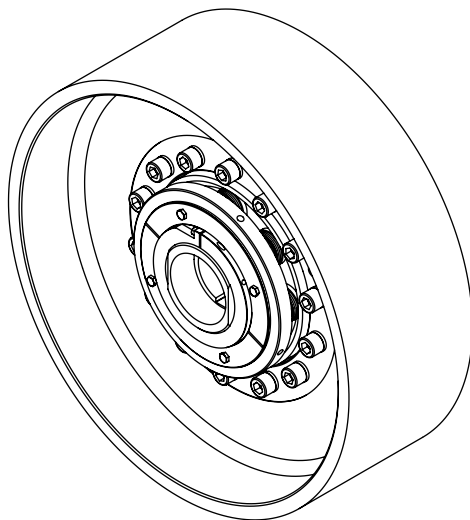
APMX-SBH
Overload coupling
with brake drum

Bolter – APMX overload coupling
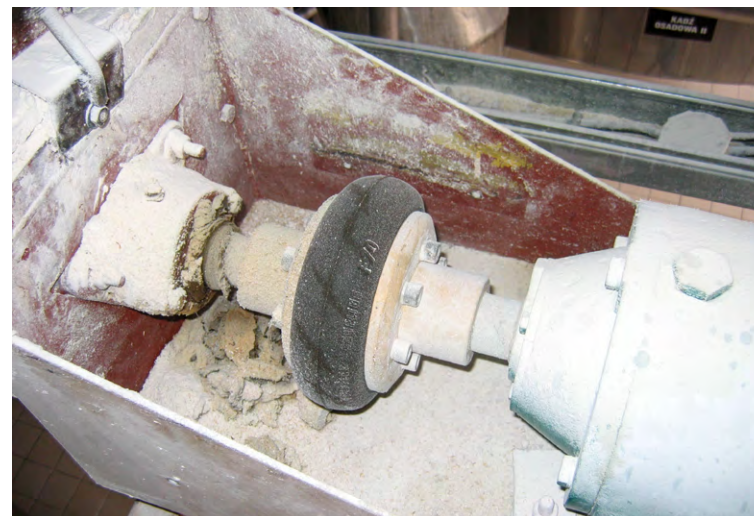
Conveyor – ASO tyre coupling

Conveyor – AHG mining brake and ASN-SBH brake coupling

Crusher – ASO tyre coupling with shear shaft ends

A8–0
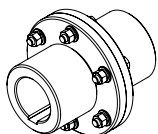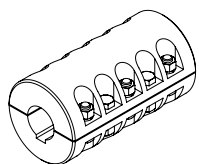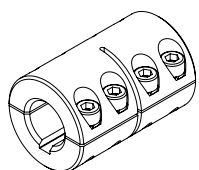
Rigid couplings are characterized by:

- ability to operate in high temperatures and in harmful environment (totally made of metal),
- transferring high torques with small dimensions and high rotational speed,
- lack of torsional susceptibility torsion (precision of positioning),
- service free,
- possibility of disassembly without drawing the shaft ends aside (ASL),
- **can be used only for joining the coaxial shafts.**

APPLICATIONS: machinery for chemical, paper, steel, food, and other machinery and equipment.

MATERIAL: steel (ASK,ASL series 300), cast iron (ASL).

OPERATION IN THE AREAS WITH THE DANGER OF EXPLOSIONS:
Couplings are intended for operation in the areas with the danger of explosion (groups: I M2, II 2D, II 2G).
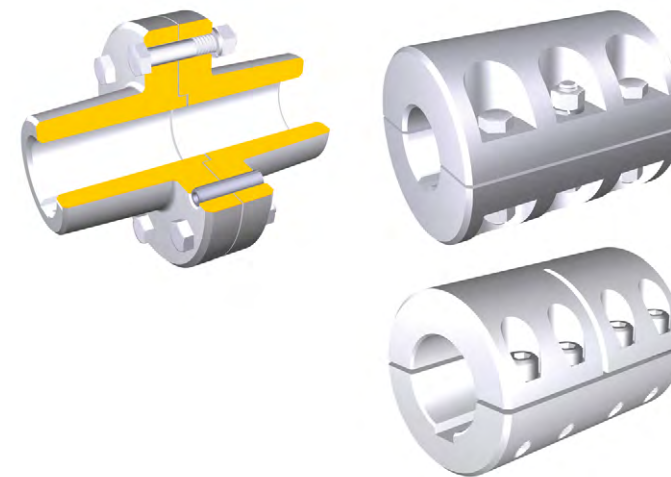
METHOD OF MARKING:

[**name**] – [**d**] – [**size**][**type**] – [**version***]

* only when it concerns a given type, where:

name	e.g. clamp coupling	**size**	e.g. 103
d	diameters of the holes [mm], in the case of ordering the coupling without holes for shaft ends "0" should be placed; in the case of lead hole "ow" marking and the diameter of the hole should be added (e.g. "ow25" – only ASK flange couplings)	**type**	e.g. ASL
		version	WS… – special (individual arrangements)

BALANCING: couplings are normally balanced statically (some sizes of the couplings with bigger brake drums or discs are normally balanced dynamically-check remarks in the catalogue). After the arrangement there is a possibility of dynamic balancing of each coupling.

Example of designation of the ASK coupling, hub hole diameters of d=45 mm, size of 103 *(marking see page A8-1)*:

45-103 ASK Flange coupling

▪ with pilot bores Ø20 – **ow20**-103 ASK Flange coupling

On request of the customer it is possible to produce a coupling with holes for joining the shafts of two different diameters.

Nominal torque M_n	d	D	L [1]	Max rotational speed	Moment of inertia [2]	Weight [2]	Coupling size and type
	max			n_{max}	I	m	
Nm	mm			1/min	kgm²	kg	–
95	25	130	116	1900	0,009	5,0	101 ASK
130	30						
190	35	140	164	1800	0,024	9,0	102 ASK
260	40					8,7	
380	45	190			0,047	12,5	103 ASK
520	50					12,0	
750	55	220	210	1600	0,12	26,6	104 ASK
1050	60					25,6	
1500	65					24,8	
2100	70					24,0	
3000	80	260	260	1400	0,27	43,5	105 ASK
4200	90					40,7	
6000	100	320	330	1200	0,80	85,0	106 ASK
8500	110					80,0	
11 000	125					73,0	
17 000	140	380	400	1120	1,62	117,0	107 ASK
24 000	160	450	480	1000	5,12	262,0	108 ASK
34 000	180					242,0	
48 000	200		560		5,30	248,0	
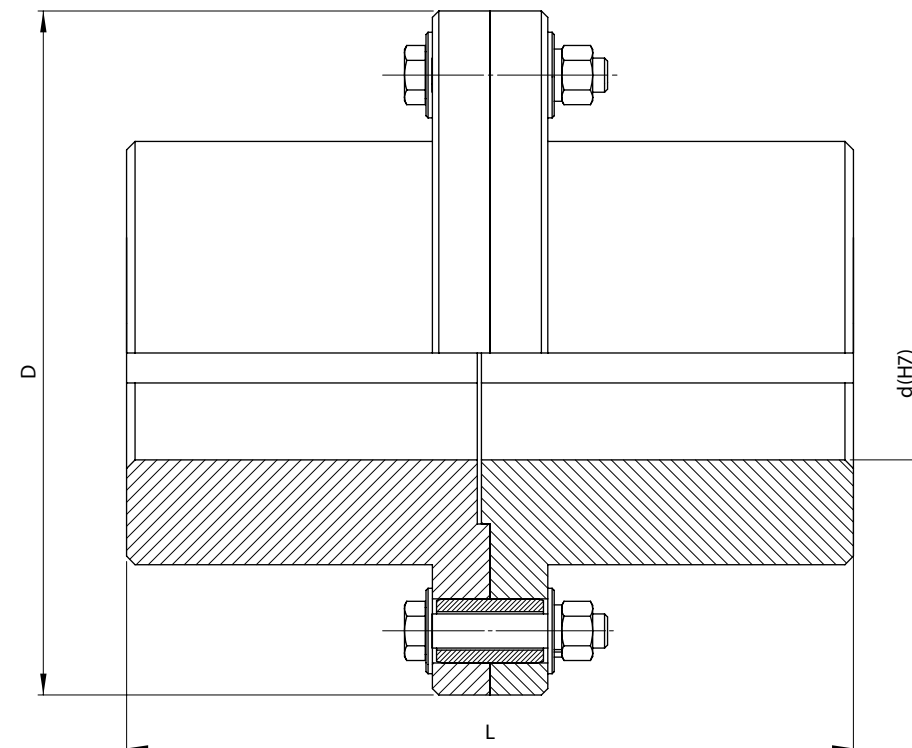
We also offer special designs according to the individual wishes of the customer.

We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] On request, we produce couplings with the lengths of hubs different from the nominal lengths given in the table.

[2] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

Example of designation of the ASL coupling, hub hole diameters of d=45 mm, size of 103 *(marking see page A8-1)*:
45-103 ASL Clamp coupling

On request of the customer it is possible to produce a coupling with holes for joining the shafts of two different diameters.
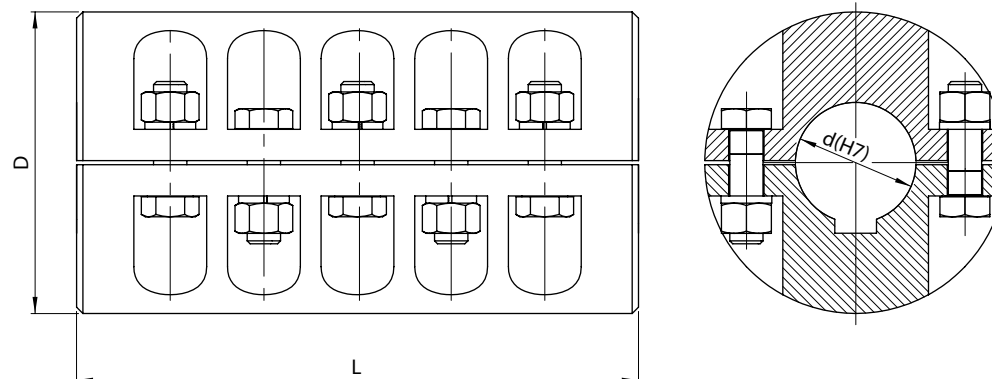
Nominal torque M_n	d	D	L	Max rotational speed	Moment of inertia [1]	Weight [1]	Coupling size and type
	max			n_{max}	I	m	
Nm	mm			1/min	kgm²	kg	–
75	25	90	116	400	0,003	3,9	101 ASL
105	30						
150	35	100	164		0,007	6,5	102 ASL
210	40						
300	45	125	164		0,013	8,2	103 ASL
420	55						
600	60	140	210		0,031	13,9	104 ASL
850	65						
1200	70	150	210		0,057	18,4	105 ASL
1600	75						
2400	80	165	260		0,099	26,2	106 ASL
3400	90	190	260		0,14	31,3	107 ASL
4800	100	210	330	350	0,28	49	108 ASL
6500	110	230	330		0,43	60	109 ASL
9500	125	270	330		0,68	76	110 ASL
13000	140	300	400		1,33	118	111 ASL
19000	160	340	480		2,93	188	112 ASL
26000	180	380	480		4,76	245	113 ASL
38000	200	420	560		9,48	362	114 ASL

We also offer special designs according to the individual wishes of the customer.
We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.

[1] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

Example of designation of the ASL coupling, hub hole diameters of d=40 mm, size of 340 *(marking see page A8-1)*:
40-340 ASL Clamp coupling

On request of the customer it is possible to produce a coupling with holes for joining the shafts of two different diameters.
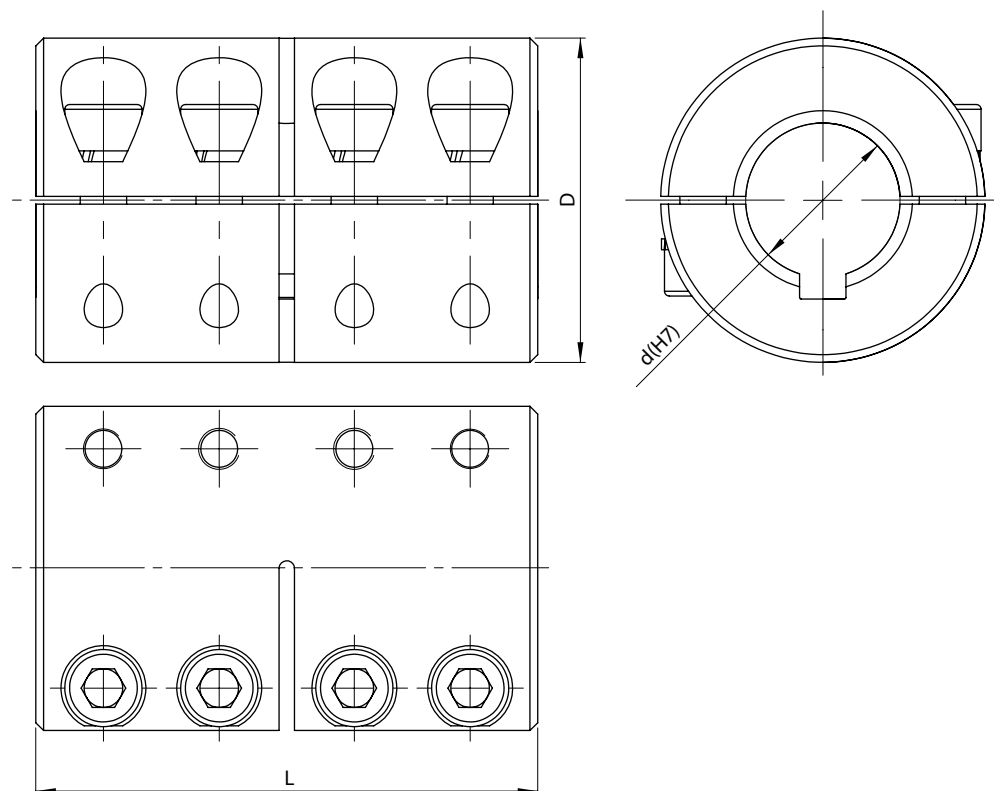
Nominal torque M_n	d	D	L	Max rotational speed n_{max}	Moment of inertia [1] I	Weight [1] m	Coupling size and type
Nm		mm		1/min	kgm²	kg	–
125	20	42	65	2500	0,00013	0,49	320 ASL
220	25	45	75	2500	0,00019	0,59	325 ASL
280	30	53	83	2000	0,0004	0,88	330 ASL
450	35	67	95	2000	0,0012	1,76	335 ASL
630	40	77	108	2000	0,0025	2,69	340 ASL
1000	50	85	124	1500	0,0041	3,41	350 ASL
1600	60	100	140	1500	0,0097	5,56	360 ASL

We also offer special designs according to the individual wishes of the customer.
We produce keyways as recommended, normally acc. to PN-70/M-85005, with the Js9 tolerance.
[1] The weight and the moment of inertia have been determined for the coupling with the maximum holes and nominal lengths of the hubs.

Watercraft drive – ASM rubber membrane coupling
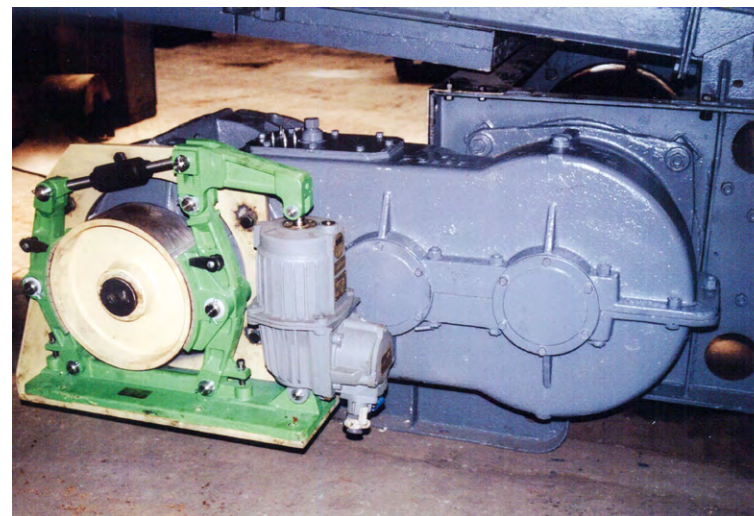
Conveyor – AHG mining brake and BH brake drum

Shaft gate – OEZWS-2 electromagnetic lock

DRUM BRAKES

fena.pl

B1–0

B1–1

Drum brakes with electrohydraulic thrustor of ZE or EB type and with the electromagnetic thrustor of DZEMz type are adjusted to cooperation with brake drums on their external surface. The braking torque is created by the spring inbuilt in the thrustor body (AHH, AHG) or in the compound lever (AHH series 300, AHM), which through the compound lever causes pressing down the brake shoe with friction lining to the friction surface of the brake drum (with the exception of holding brake AHT).

BRAKES WITH ELECTROHYDRAULIC THRUSTOR

Turning the voltage supplying the thrustor on starts the motor and the pump forcing the oil under the piston of the release , which causes that the piston moves up and the brake is thrustord (with the exception of the holding brake). Turning off the power causes that the piston moves down (under the influence of the spring in the thrustor) and the brake is applied.

The value of the braking torque can be adjusted through the change of brake position on appropriate lever.

The speed of falling or raising the piston can be adjusted through the use of the valve delaying falling or raising of the piston.

VARIANTS:

- **AHH** – standard
- **AHH (series 300)** – with outer spring
- **AHH (series 400)** – with increased braking torque
- **AHG** – mining
- **AHT** – holding; the brake of reverse operation, the thrustor spring releases the brake and turning on and maintaining the supply of the thrustor causes applying the brake
- **AHC** – loading: the usage of the thrustor without the braking spring, braking torque is created by additional weights placed on the lever
- **AHR** – with a manual mechanism

BRAKES WITH ELECTROMAGNETIC THRUSTOR – AHM

Turning the voltage supplying the thrustor on starts the electromagnet of the thrustor, which pulls the piston up causing through the compound lever the brake release.

The value of the braking torque can be adjusted through the change of braking spring deflection. Brakes with electromagnetic thrustor can be produced in the type intended for operation in the areas with the danger of explosion.
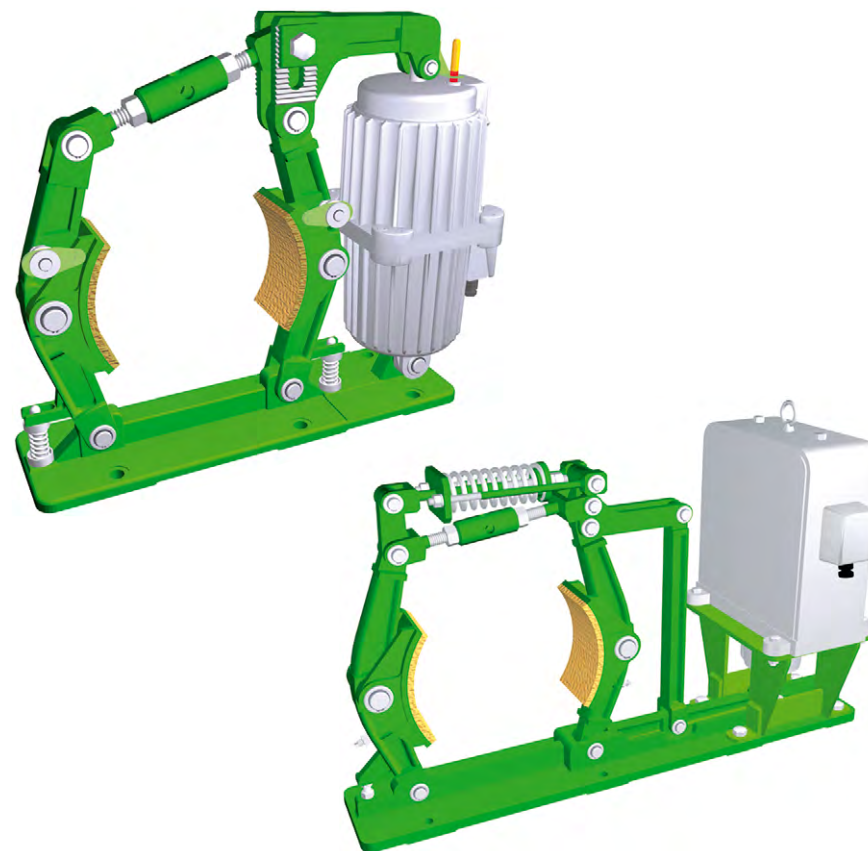
WORKING CONDITIONS

The brake is designed for work in moderate climate, on the ground. When working outdoor, it is recommended to cover the brake against direct precipitation. Basically, the brake is designed for work in the horizontal position (the base is fitted to the horizontal surface). Work in the position deflected from vertical position is possible only after consultation with the manufacturer.

APPLICATIONS: belt conveyors, fans, drives of cranes, devices of continuous transport, machines for iron and steel, building, papermaking and other industries.

MATERIAL: brake construction – spheroidal iron cast, steel; asbestos-free friction lining; ZE thrustor body – aluminium, ExZE – iron cast, DZEMz – steel; bolts from stainless steel).

OPERATION IN THE AREAS WITH THE DANGER OF EXPLOSIONS:
Mining brakes are intended for the operation in the areas with the danger of explosion in the conditions specified for (group: I M2, II 2D, II 2G).

ELECTROHYDRAULIC THRUSTORS (AHH, AHT AND AHC BRAKES)
Version N/1 – for outdoor use in a temperate climate.
The thrustor has an oil-tight housing with a junction box with IP 65 rating according to PN-EN 60529:2003. The thrustor in the standard version is designed for operation in the vertical position and a position deviated from vertical by a 30° angle.

Conditions of operation: ambient temperature: –25°C to +40°C (electroinsulating transformer oil); –40°C to +50°C (silicone oil).

VERSIONS:

- **ZE...** thrustor without brake spring [Type of operation S1, S3 do 100% 2000 c/h]
- **ZE...S...** thrustor with the brake spring, [operating mode S1, S3 to 100% 2000 c/h]
- **ZEW...(S)...** thrustor with the brake spring and connector (allows to signal the upper piston rod position) [operating mode S1, S3 do 100% 2000 c/h]
- **ZEM...(S)...** thrustor with the brake spring and electromagnet (maintains the piston in its upper position without necessity of supplying the thrustor motor) [type of work S1, S3 40% 600 c/h] 38 V DC electromagnet supply voltage, current intensity of 0,4–0,45 A for size thrustor smaller than ZEM 2500 and 38V DC and 0,8 A for size ZEM 2500 and ZEM 3200
- **ZE…(S)…Cm** thrustor equipped with an external mechanical switch (PDM1F12PZ11) with a NO/NC contact system. This switch, depending on the position of the measuring slide, can indicate whether the piston rod is in the upper or lower position. After consultation, indication of a different piston rod position is also possible.

  Technical details of the mechanical switch:
  AC-15 and DC-13 utilisation categories

Rated operational voltage: AC:24/120/240V 50/60Hz,
DC: 24/125/250 V
Rated operational currents: AC:10/6,3/1,8 A, DC: 2,8/0,55/0,27 A
Contact system: NO/NC
IP 66 rating

- **ZE…(S)…Ci-…** A thrustor equipped with an inductive sensor located on the outside. This sensor can indicate the position of the piston rod over its entire extension range. The position of the piston rod can be deter mined at any point using a sliding measuring head.

  Technical details of the inductive sensor:
  Supply voltage: from 12 to 24 VDC
  Current: 10 mA max

Marking	Sensor type	Operation method	Output type
B1	E2A-M18-KS08-M1-B1	NO	PNP
C1	E2A-M18-KS08-M1-C1	NO	NPN
B2	E2A-M18-KS08-M1-B2	NC	PNP
C2	E2A-M18-KS08-M1-C2	NC	NPN

Versions with delay valves:
ZE.. P..... – with a lifting delay valve
ZE.. O..... – with a falling delay valve
ZE.. T..... – with a lifting and falling delay valve

S1 – Operation continuous, S3 – Operation discontinuous)

For the supply of brakes with ZEM thrustor, a suitable UZ power supply system supplied with alternating current, which allows an electromagnet to be connected to it, may be provided.

EXPLOSION-PROOF ELECTROHYDRAULIC THRUSTOR (AHG Brakes)
The thrustor is made as an explosion-proof device in a flameproof casing with intrinsically safe signalling circuits and a connection box with IP 65 rating according to PN-EN 60529:2003.

The thrustor in the standard version is designed for operation in the vertical position and a position deviated from vertical by a 30° angle.
The thrustor is equipped with a limit switch which can be used to indicate the movement of the piston rod to its upper extreme position.

Ambient temperature: from –20°C to +40°C.

VERSIONS:
- **ExZE...S...**   thrustor with the brake spring [Type of operation S1,S3 to 100% 2000c/h]
- **ExZEM...S...**   thrustor with the brake spring and electromagnet (maintains the piston in upper position without necessity of supplying the thrustor motor – supply voltage of the electromagnet 42 VAC) * Type of operation S1, S3 to 40% 600 c/h]

The thrustors are intended for the operation in the areas with the danger of explosion in the conditions specified for group I M2, II 2D, II 2G.
The thrustors can be manufactured with the connector with **"r"** (NC) opening contact or **"z"** (NO) closing contact and thermal Protection in the form of bimetallic switch **"1"** or posistor sensor **"2"**.

ELECTROMAGNETIC THRUSTOR (AHG Brakes)
Electromagnetic thrustors of DZEMz type are produced for continuous operation S1 and discontinuous operation S3–40.
Conditions of operation: grade of protection IP 40; ambient temperature: –15°C to +35°C.

METHOD OF MARKING:

$$[\text{ name }] - [\text{ D}_\text{H}] - [\text{ thrustor marking }] - [\text{ size }][\text{ type }] - [\text{ version* }]$$

* only when it concerns a given type, where:

name	e.g. drum brake	**size**	e.g. 264
D$_\text{H}$	diameter of the brake drum [mm]	**type**	e.g. AHH
thrustor marking	*see on the next page*	**version**	WS… – special (individual arrangements)
			K – lining wear compensation version

METHOD OF THRUSTOR MARKING:

ZE TYPE

[version] – [delay valve*] – [size] / [stroke][spring*] · [oil*] · [voltage][sensor*]

* only when it aplies

version	ZE – basic	**thrustor size**	e.g. 1250
	ZEW – with connector	**thrustor stroke**	e.g. 60
	ZEM – with electromagnet	**spring**	e.g. S 450
delay valve	without the valve – omit the marking	**oil**	normally transformer oil (omit the marking); SIL – silicone oil
	P – lifting	**voltage**	e.g. 500 V AC/50 Hz
	O – falling	**sensor marking** (if required) – e.g. inductive B1 –"Ci-B1", mechanical "Cm"
	T – lifting and falling		

ExZE TYPE

[version] – [size] / [stroke][connection][protection][spring*] · [voltage]

* only when it aplies

version	ExZE – basic	**protection**	bimetallic switch "1", posistor sensor "2"
	ExZEM – with electromagnet	**spring**	e.g. S 450
thrustor size	e.g. 1250	**voltage**	e.g. 500 V AC/50 Hz
thrustor stroke	e.g. 60		
contact	"r" – opening, "z" – closing		

DZEMz TYPE

[version][size] – [operation] – [voltage]

* only when it aplies

version	DZEMz
thrustor size	e.g. 20
type of operation	S1 – continuous, S3–40 – discontinuous
voltage	e.g. 500 V AC/50 Hz

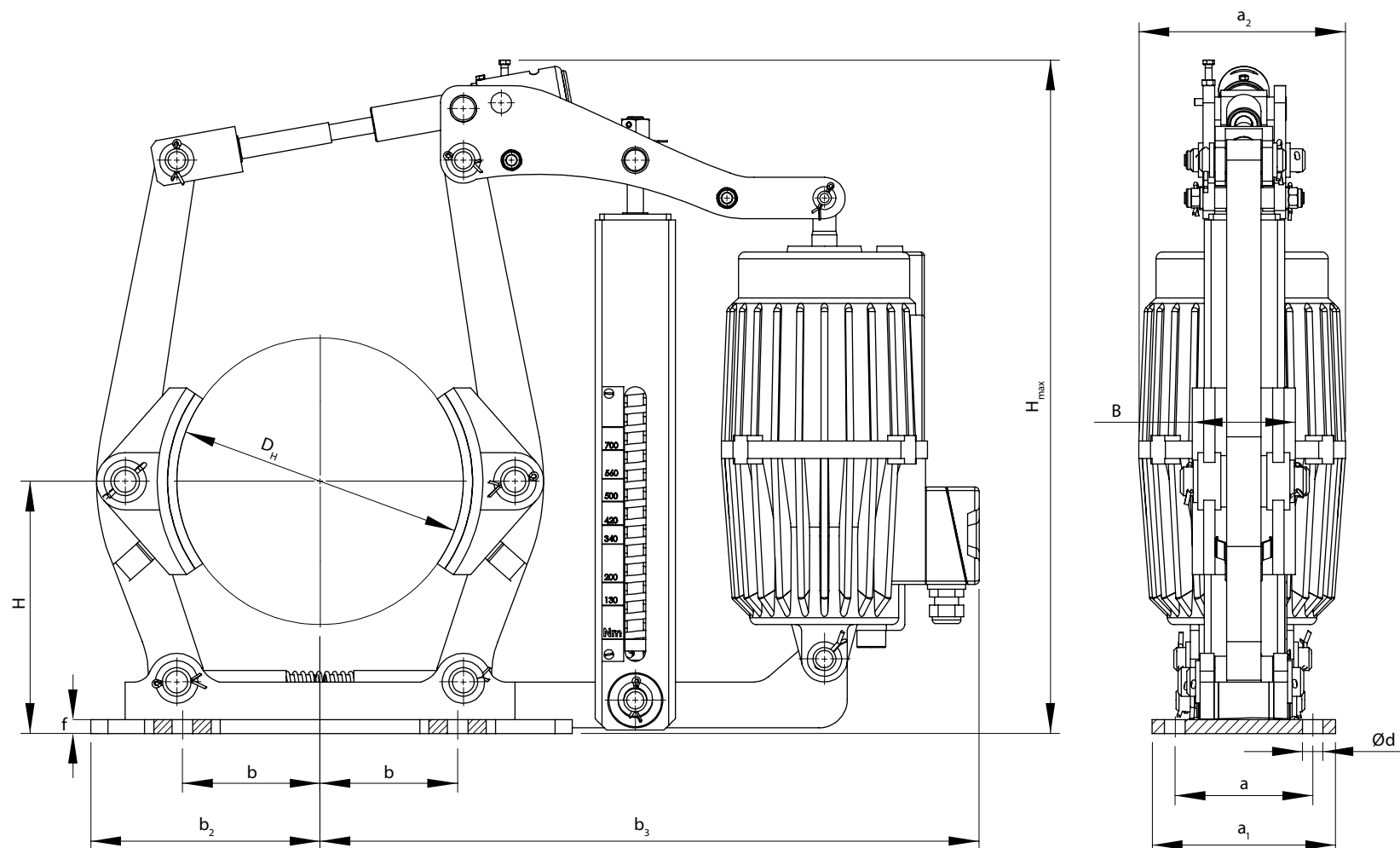**Example of designation** of the AHH brake with the drum diameter of D_H=250 with the ZE 500/50 S500. 400 V AC/50 Hz electrohydraulic thrustor, size of 264 *(marking see page B1-3)*:
250-ZE 500/50 S500.400 V AC/50 Hz-264 AHH Drum brake
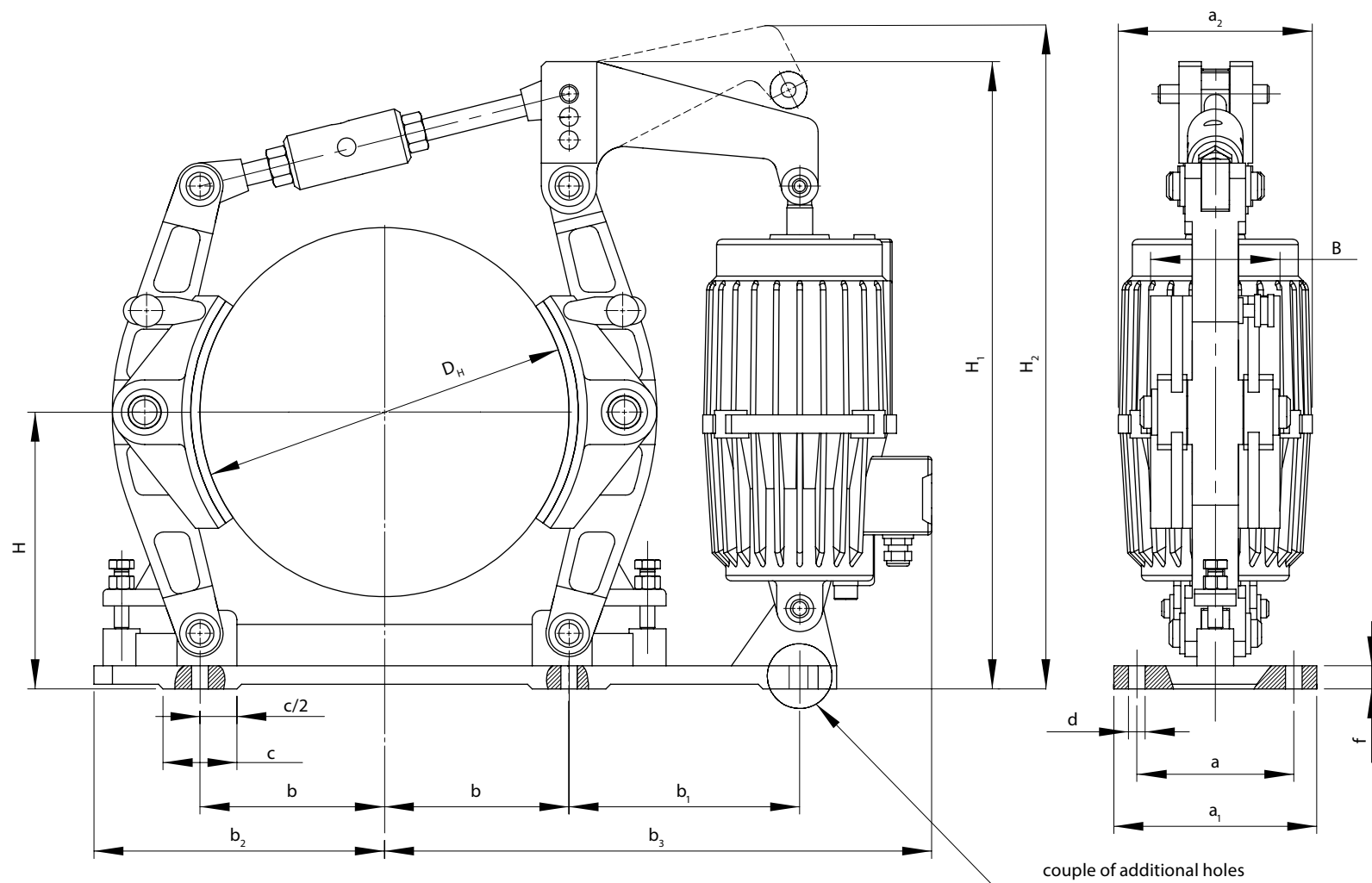
couple of additional holes

TECHNICAL CHARACTERISTICS

Brake drum diameter D_H	Braking torque M_H	Thrustor type	Thrustor supply [2] 50 Hz	Brake weight with thrustor [3]	Brake size and type
mm	Nm	–	V	kg	–
120	20÷50	ZE 120/50-2 S 120		21	261 AHH
160	50÷100	ZE 120/50-2 S 220		26	262 AHH
	80÷160	ZE 500/50 S 320 ZEW 500/50 S 320 ZEM 500/50 S 320 [1]		31	
200	90÷190	ZE 500/50 S 320 ZEW 500/50 S 320 ZEM 500/50 S 320 [1]		44	263 AHH
250	190÷365	ZE 500/50 S 500 ZEW 500/50 S 500 ZEM 500/50 S 500 [1]		52	264 AHH
320	310÷590	ZE 500/50 S 500 ZEW 500/50 S 500 ZEM 500/50 S 500 [1]	3×230 3×400 3×500	85	265 AHH
400	580÷1160	ZE 1250/60 S 800 ZEW 1250/60 S 800 ZEM 1250/60 S 800 [1]		98	266 AHH
500	1000÷1570	ZE 1500/60 S 1250 ZEW 1500/60 S 1250		156	267 AHH
	1600÷2500	ZE 2500/60 S 2000 ZEW 2500/60 S 2000 ZEM 2500/60 S 2000 [1]		168	
630	2300÷4000	ZE 2500/60 S 2000 ZEW 2500/60 S 2000 ZEM 2500/60 S 2000 [1]		255	268 AHH
710	3100÷5000	ZE 2500/60 S 2000 ZEW 2500/60 S 2000 ZEM 2500/60 S 2000 [1]		354	269 AHH
800	4800÷7000	ZE 3200/80 S 2500 ZEW 3200/80 S 2500 ZEM 3200/80 S 2500 [1]		440	270 AHH

B1–6

We are also offering tailor-made special versions.
[1] When utilising the ZEM... type thrustor it is necessary to provide electromagnet supply (38 V DC, current intensity of 0,4 A, for ZEM 500, 0,45 A for ZEM 800 and ZEM 1500; 0,8 A for thrustor ZEM 2500 and ZEM 3200).
[2] Thrustor with different voltage rating and frequency can be made after consultation.
[3] Brake weight with oil thrustor.

DIMENSIONS

Brake shoe width B	H	H_1	H_2	b	b_1	b_2	b_3	a	a_1	a_2	c	d	f	Brake size and type
mm														–
40	110	360	410	55	160	115	395	75	105	162	50	14	12	261 AHH
50	130	420 [1] 457	430 [1] 505	80	190	145	395 [1] 375	75	120	162 [1] 180	60	14	12	262 AHH
70	180	470	505	95	140	190	405	90	130	180	60	18	15	263 AHH
90	220	515	575	120	170	215	440	120	160	180	80	18	15	264 AHH
110	250	585	600	160	220	280	515	140	190	180	80	18	20	265 AHH
140	300	680	690	200	250	315	593	170	220	210	80	18	25	266 AHH
180	360	820	830	250	280	380	673	200	270	210 [2] 254	80	22	25	267 AHH
225	450	1025	1035	325	280	475	762	230	300	254	100	22	30	268 AHH
255	500	1210	1220	370	365	500	892	260	320	254	100	23	30	269 AHH
280	560	1275	1285	400	400	580	960	280	360	254	120	33	40	270 AHH

We are also offering tailor-made special versions.

[1] size 262 AHH: dimensions of the brake with the ZE 120/50-2 S 220 thrustor

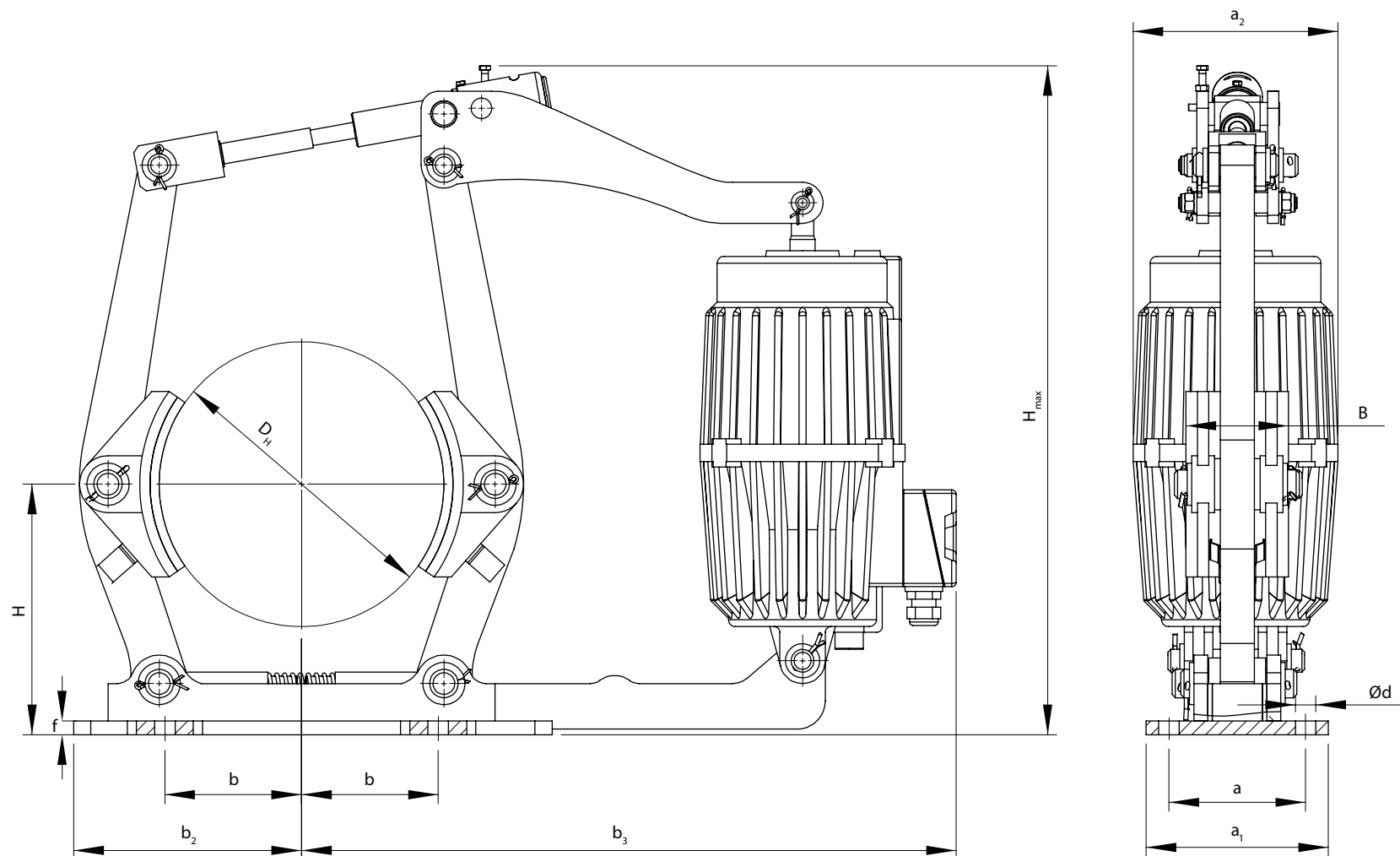[2] size 267 AHH: dimensions of the brake with the ZE 1500/60 S 1250 and ZEW 1500/60 S 1250 thrustors

Example of designation of the AHH brake series 300 with the drum diameter of D_H=250 with the ZE 500/50. 400 V AC/50 Hz electrohydraulic thrustor, size of 364 *(marking see page B1-3)*:
250-ZE 500/50.400 V AC/50 Hz-364 AHH Drum brake

- in a "K" lining wear compensation version –
  250-ZE 500/50.400 V AC/50 Hz-364 AHH-**K** Drum brake

B1–9

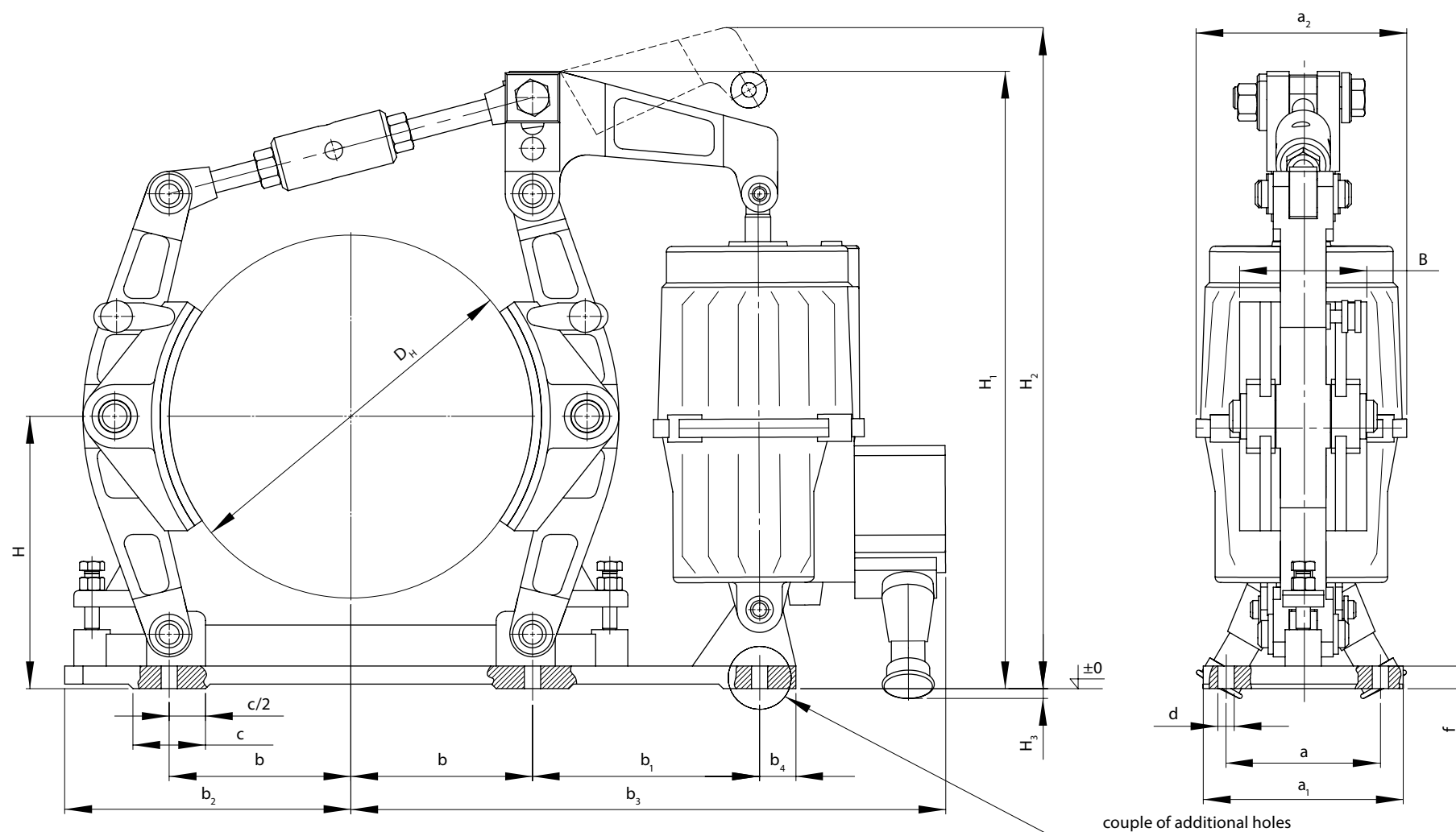| Brake drum diameter D_H	Braking torque M_H	Thrustor type	Thrustor supply [2] 50 Hz	Brake shoe width B	H	H_{max}	b	b_2	b_3	a	a_1	a_2	d	f	Brake weight with thrustor [3]	Brake size and type
mm	Nm	–	V	mm											kg	–
200	100÷430	ZE 500/50 ZEW 500/50 ZEM 500/50 [1]		70	180	500	95	190	480	90	130	180	18	10	41	363 AHH
250	100÷660	ZE 500/50 ZEW 500/50 ZEM 500/50 [1]		90	220	600	120	210	530	120	160	180	18	12	50	364 AHH
320 (315)	200÷1000	ZE 500/50 ZEW 500/50 ZEM 500/50 [1]		110	250	690	160	270	605	140	190	180	18	12	67	365 AHH
400	500÷1800	ZE 1250/60 ZEW 1250/60 ZEM 1250/60 [1]	3×230 3×400 3×500	140	300	790	200	315	700	170	220	210	18	20	110	366 AHH
500	300÷3000	ZE 1500/60 ZEW 1500/60 ZEM 1500/60 [1]		180	360	850	250	407	840	200	270	254	22	20	155	367 AHH
	300÷5100	ZE 2500/60 ZEW 2500/60 ZEM 2500/60 [1]													170	
630	500÷6300	ZE 2500/60 ZEW 2500/60 ZEM 2500/60 [1]		225	450	1035	325	465	925	230	300	254	22	30	248	368 AHH
710	500÷6800	ZE 2500/120 ZEW 2500/120 ZEM 2500/120 [1]		255	500	1280	370	500	1000	260	320	254	23	30	360	369 AHH
800	500÷8500	ZE 3200/100 ZEW 3200/100 ZEM 3200/100 [1]		280	560	1350	400	580	1075	280	360	254	33	35	440	370 AHH

We are also offering tailor-made special versions.

[1] When utilising the ZEM... type thrustor it is necessary to provide electromagnet supply (38 V DC, current intensity of 0,4 A, for ZEM 500, 0,45 A for ZEM 800 and ZEM 1500; 0,8 A for thrustor ZEM 2500 and ZEM 3200).

[2] Thrustors with different voltage rating and frequency can be made after consultation.

[3] Brake weight with oil thrustor.

Example of designation of the AHH brake series 400 with the drum diameter of D_H=250 with the ZE 500/50 S500. 400 V AC/50 Hz electrohydraulic thrustor, size of 463 *(marking see page B1-3)*:

250-ZE 500/50 S500.400 V AC/50 Hz-463 AHH Drum brake

- in a "K" lining wear compensation version –
  250-ZE 500/50 S500.400 V AC/50 Hz-463 AHH-**K** Drum brake

B1–11

Brake drum diameter D_H	Braking torque M_H	Thrustor type	Thrustor supply [2] 50 Hz	Brake shoe width B	H	H_{max}	b	b_2	b_3	a	a_1	a_2	d	f	Brake weight with thrustor [3]	Brake size and type
mm	Nm	–	V	mm											kg	–
200	140÷280	ZE500/50 S320 ZEW 500/50 S320 ZEM500/50 S320 [1]	3×230 3×400 3×500	70	180	500	95	190	480	90	130	180	18	10	36	463 AHH
	225÷430	ZE500/50 S500 ZEW 500/50 S500 ZEM500/50 S500 [1]														
250	300÷660	ZE500/50 S500 ZEW 500/50 S500 ZEM500/50 S500 [1]		90	220	600	120	210	530	120	160	180	18	12	46	464 AHH
320 (315)	500÷1000	ZE500/50 S500 ZEW 500/50 S500 ZEM500/50 S500 [1]		110	250	690	160	270	605	140	190	180	18	12	65	465 AHH
400	1000÷1800	ZE 1250/60 S800 ZEW 1250/60 S800 ZEM 1250/60 S800 [1]		140	300	790	200	315	700	170	220	210	18	20	105	466 AHH
500	1700÷3200	ZE 1500/60 S1250 ZEW 1500/60 S1250 ZEM 1500/60 S1250 [1]		180	360	850	250	407	840	200	270	210	22	20	148	467 AHH
	2300÷5100	ZE 2500/60 S2000 ZEW 2500/60 S2000 ZEM 2500/60 S2000 [1]										254			162	
630	3100÷6300	ZE 2500/60 S2000 ZEW 2500/60 S2000 ZEM 2500/60 S2000 [1]		225	450	1035	325	465	925	230	300	254	22	30	238	468 AHH
710	3500÷6800	ZE 3200/80 S2500 ZEW 3200/80 S2500 ZEM 3200/80 S2500 [1]		255	500	1280	370	500	1000	260	320	254	23	30	352	469 AHH
800	3500÷8500	EB 3200/100 C250		280	560	1350	400	580	1075	280	360	254	33	35	425	470 AHH

We are also offering tailor-made special versions.

[1] When utilising the ZEM... type thrustor it is necessary to provide electromagnet supply (38 V DC, current intensity of 0,4 A, for ZEM 500, 0,45 A for ZEM 800 and ZEM 1500; 0,8 A for thrustor ZEM 2500 and ZEM 3200).

[2] Thrustors with different voltage rating and frequency can be made after consultation.

[3] Brake weight with oil thrustor.

Example of designation of the AHG brake with the drum diameter of D_H=250 with the ExZE 800/60 r1 S450.500 V AC/50 Hz explosion-proof electrohydraulic thrustor (thrustor with opening contact and bimetallic switch), size of 264 *(marking see page B1-3)*:
250-ExZE 800/60 r1 S450.500 V AC/50 Hz-264 AHG Mining brake

couple of additional holes

TECHNICAL CHARACTERISTICS

Brake drum diameter D_H [1]	Braking torque M_H	Thrustor type [2]	Thrustor supply 50 Hz	Brake weight with thrustor [4]	Brake size and type
mm	Nm	–	V	kg	–
200	170÷360	ExZE 800/60... S450 ExZEM 1250/60... S450 [3]	3×230 3×400 3×500 3×660 [5] 3×1000 [5]	81	263 AHG
250	210÷400	ExZE 800/60... S450 ExZEM 1250/60... S450 [3]		95	264 AHG
320	320÷600	ExZE 800/60... S450 ExZEM 1250/60... S450 [3]		107	265 AHG
400	580÷1160	ExZE 1250/60... S800 ExZEM 1250/60... S800 [3]		135	266 AHG
500	640÷960	ExZEM 1250/60... S800 [3]		198	267 AHG
	1000÷1500	ExZE 1500/60... S1250			
	1600÷2500	ExZE 2500/60... S2000		205	
630	2300÷4000	ExZE 2500/60... S2000		292	268 AHG
710	3100÷5000	ExZE 2500/60... S2000		390	269 AHG
800	4800÷7000	ExZE 3200/80... S2500		473	270 AHG

We are also offering tailor-made special versions.

[1] On request we can produce the brake of other diameter of the brake drum.

[2] Dotted place for connector type designation and thermal protection type (see thrustor description).

[3] With the use of thrustor of ExZEM type – it is necessary to provide the supply of the electromagnet 42 VAC.

[4] Brake weight with oil thrustor.

[5] Does not apply for thrustor of ExZEM type

DIMENSIONS

Brake shoe width B	H	H_1	H_2	H_3	b	b_1	b_2	b_3	b_4	a	a_1	a_2	c	d	f	Brake size and type
mm																–
70	180	518	578	-32	95	140	190	530	75	90	130	232	60	18	15	263 AHG
90	220	528	588	-22	120	170	215	550	55	120	160	232	80	18	15	264 AHG
110	250	585	645	-17	160	220	280	615	40	140	190	232	80	18	20	265 AHG
140	300	680	685	15	200	250	315	655	40	170	220	232	80	18	25	266 AHG
180	360	820	825	37	250	280	380	750	50	200	270	270	80	22	25	267 AHG
225	450	1025	≤ H1	126	325	280	475	825	50	230	300	270	100	22	30	268 AHG
255	500	1210	≤ H1	177	370	365	500	954	50	260	320	270	100	23	30	269 AHG
280	560	1275	≤ H1	206	400	400	580	1019	60	280	360	270	120	33	40	270 AHG

Example of designation of the AHM brake with the drum diameter of D_H=200, with DZEMz 10-S3-500V/50Hz electromagnetic thrustor, size of 263 AHM *(marking see page B1-3, B1-4)*:
200-DZEMz 10-S3-500 V AC/50 Hz-263 AHM Drum brake
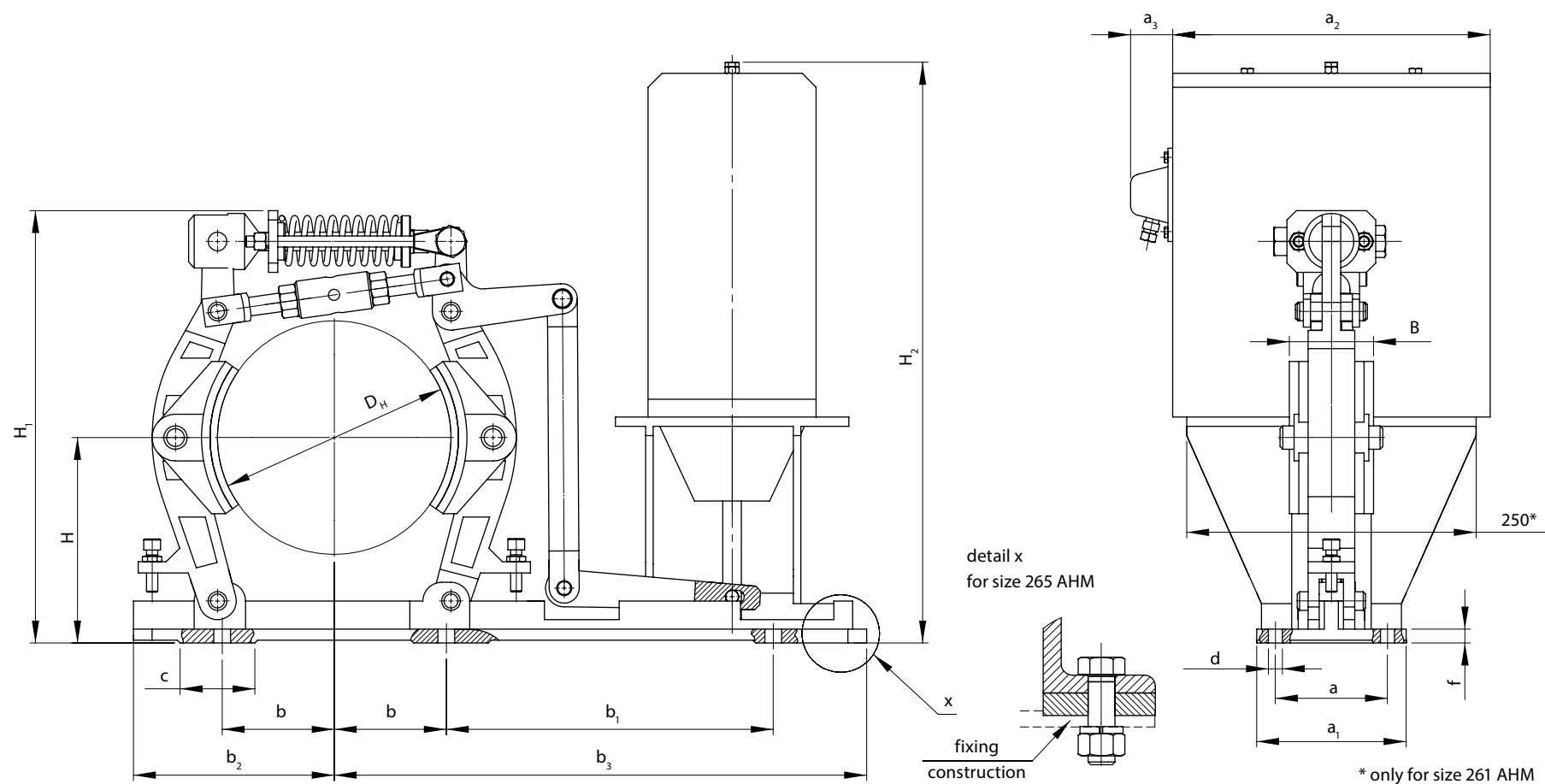
detail x
for size 265 AHM

fixing
construction

x

250*

* only for size 261 AHM

TECHNICAL CHARACTERISTICS

Brake drum diameter D_H	Braking torque M_H	Thrustor type	Thrustor supply [1] 50 Hz	Brake weight with thrustor	Brake size and type
mm	Nm	–	V	kg	–
120	20÷30	DZEMz 0		24,5	261 AHM
160	63÷100	DZEMz 10	3×230	39	262 AHM
200	125÷140	DZEMz 10	3×400	52	263 AHM
250	220÷320	DZEMz 30	3×500	97	264 AHM
320	400÷600	DZEMz 30		117	265 AHM

We are also offering tailor-made special versions.
[1] Thrustor with different voltage rating and frequency can be made after consultation.

DIMENSIONS

Brake shoe width B	H	H_1	H_2	b	b_1	b_2	b_3	a	a_1	a_2	a_3	c	d	f	Brake size and type
							mm								–
40	110	250	300	55	290	155	375	105	145	197	60	50	13	13	261 AHM
50	130	320	411	80	297	160	407	110	150	250	50	50	13	10	262 AHM
70	180	385	411	95	328	205	465	90	130	250	50	60	18	16	263 AHM
90	220	463	652	120	350	260	530	120	160	340	50	80	18	18	264 AHM
110	250	585	650	160	528	270	730	140	180	340	50	80	18	20	265 AHM

Example of designation of the AHT brake with the drum diameter of D_H=250, with ZE 500/50 S 180.400V/50Hz electrohydraulic thrustor, size of 264 AHT *(marking see page B1-3)*:

250-ZE 500/50 S180 400 V AC/50 Hz-264 AHT Holding drum brake
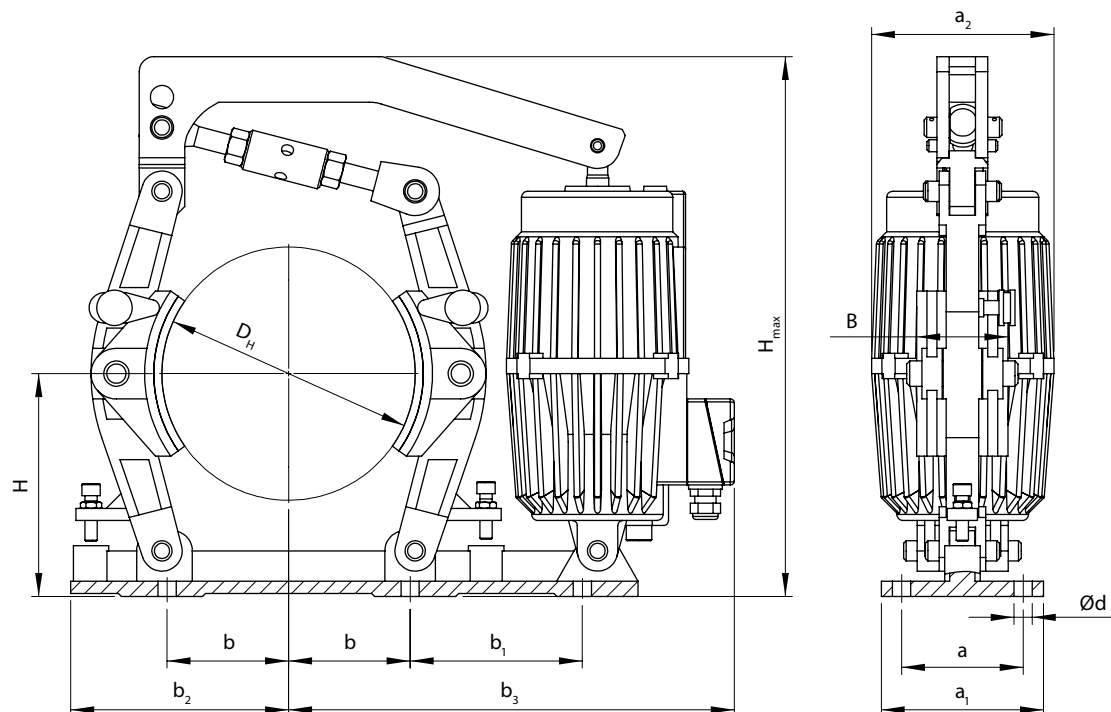
Brake drum diameter D_H	Braking torque M_H	Thrustor type	Thrustor supply 50 Hz	Brake shoe width B	H	H_{max}	b	b_1	b_2	b_3	a	a_1	a_2	d	Brake weight with thrustor	Brake size and type
mm	Nm	–	V	mm											kg	–
250	270÷400	ZE 500/50 S180 ZEW 500/50 S180		90	220	565	120	170	215	440	120	160	180	18	47	264 AHT
420	1060÷1400	ExZE 1250/60 S450 ZE 1250/60 S450 ZEW 1250/60 S450	3×230 3×400 3×500	110	260	670	100	280	315	665	90	160	232	18	122	266 AHT
500	400÷600	ZE 1500/60 S1250 ZEW 1500/60 S1250		180	360	940	250	280	380	675	200	270	210	22	165	267 AHT
	1400÷2450	ZE 1500/60 S450 ZEW 1500/60 S450														

On request we produce special types of brakes taking into account the individual needs and requirements of the customer. The special constructions can have different dimensions in relation to the catalogue dimensions and they can also constitute a new construction adjusted to the needs and the construction of the machine to which the brake is going to be inbuilt. Below several solutions are presented.

B1–17
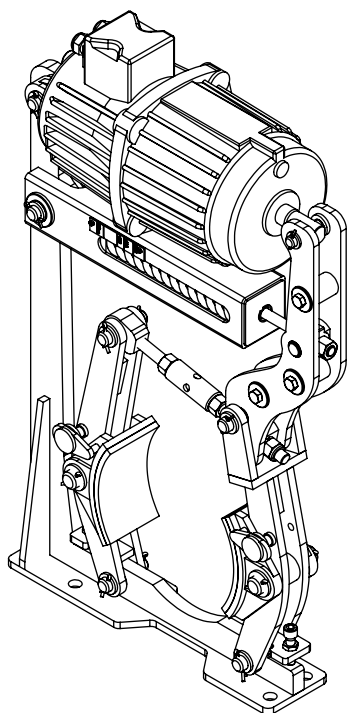
AHH-P drum brake
With the thrustor in horizontal arrangement
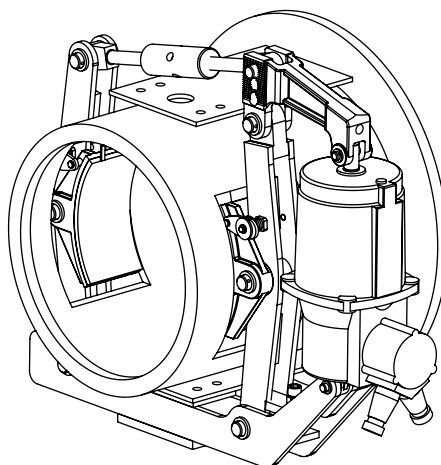
AHG-G mining brake
Adapter for instalation on a flange connector.
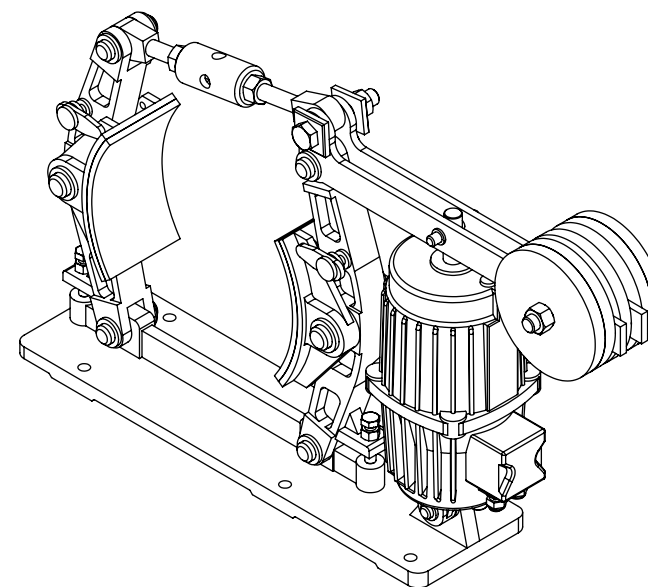
AHC load brake
The braking torque is generated by the weight attached to the brake lever and is independent of the degree of lining wear (within the permissible working range of the friction linning thickness). The brake uses a release without a spring.
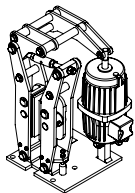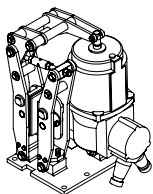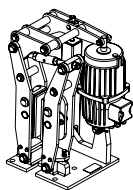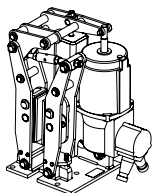
Disc brakes with the electrohydraulic thrustors of ZE type are adjusted to the cooperation with brake discs on their lateral surface. Braking torque is created by the spring inbuilt in the body of the thrustor or by the lever system (series 100), which through the compound lever causes pressing down of the brake shoes with friction linings to the friction surface of the brake disc.

Turning on the supply voltage of the thrustor starts the motor and the pump forcing the oil under the piston of the thrustor which causes that the piston moves up and the brake is released. Turning off the supply causes that the piston moves down (under the influence of the spring inbuilt in the thrustor or outside the thrustor- series 100) and the brake is applied. The speed of raising or falling of the piston can be adjusted through the use of the valve delaying the falling or lifting of the piston.

ZE thrustors can be equipped with inductive sensor of piston rod position mounted outside or with external mechanical switch signaling upper or lower position of the piston rod. Above mentioned sensors and switches require appropriate source of supply.

VARIANTS:
- **ATZ** – standard
- **ATZ (series 100)** – with outer spring
- **ATG** – mining
- **ATG (series 100)** – mining with outer sprig

WORKING CONDITIONS:
The brakes are intended for operation in moderate climate on the land. In the case of operation "in the open air" it is recommended to shield the brake to protect it against the precipitation. The brakes are intended mainly for operation in horizontal position (the basis mounted on the horizontal surface). Operation in other position is possible only after consultation with the manufacturer.

APPLICATIONS: belt conveyors, fans, drives of cranes, devices of continuous transport, machines for iron and steel, building, paper-making and other industries.

MATERIAL: construction of the brake – steel; brake shoes – spheroidal iron cast; asbestos--free friction lining; ZE thrustor body – aluminium, ExZE – iron cast; bolts made of stainless steel, self-lubricating sleeves.

OPERATION IN THE AREAS WITH THE DANGER OF EXPLOSIONS:
Mining brakes are intended for the operation in the areas with the danger of explosion in the conditions specified for group: I M2, II 2D, II 2G.

ELECTROHYDRAULIC THRUSTORS
Version N/1 – for outdoor use in a temperate climate. The thrustor has an oil-tight housing with a junction box with IP 65 rating according to PN-EN 60529:2003. The thrustor in the standard version is designed for operation in the vertical position and a position deviated from vertical by a 30° angle.

Conditions of operation: ambient temperature: –25°C to +40°C (electroinsulating transformer oil); –40°C to +50°C (silicone oil).

VERSIONS
- **ZE...**   thrustor without brake spring [Type of operation S1, S3 do 100% 2000 c/h]
- **ZE...S...**   thrustor with the brake spring, [operating mode S1, S3 to 100% 2000 c/h

- **ZEW...(S)...**   thrustor with the brake spring and connector (allows to signal the upper piston rod position) [operating mode S1, S3 do 100% 2000 c/h]
- **ZEM...(S)...**   thrustor with the brake spring and electromagnet (maintains the piston in its upper position without necessity of supplying the thrustor motor) [type of work S1, S3 40% 600 c/h] 38 V DC electromagnet supply voltage, current intensity of 0,4–0,45 A for size thrustor smaller than ZEM 2500 and 38V DC and 0,8 A for size ZEM 2500... and ZEM 3200
- **ZE…(S)…Cm**   thrustor equipped with an external mechanical switch (PDM1F12PZ11) with a NO/NC contact system. This switch, depending on the position of the measuring slide, can indicate whether the piston rod is in the upper or lower position. After consultation, indication of a different piston rod position is also possible.

Technical details of the mechanical switch:
AC-15 and DC-13 utilisation categories
Rated operational voltage: AC:24/120/240V 50/60Hz
DC: 24/125/250 V
Rated operational currents: AC:10/6,3/1,8 A, DC: 2,8/0,55/0,27 A
Contact system: NO/NC
IP 66 rating

▪ **ZE…(S)…Ci-…**   A thrustor equipped with an inductive sensor located on the outside. This sensor can indicate the position of the piston rod over its entire extension range. The position of the piston rod can be deter mined at any point using a sliding measuring head.

Technical details of the inductive sensor:
Supply voltage: from 12 to 24 VDC
Current: 10 mA max
IP 67 rating

Marking	Sensor type	Operation method	Output type
B1	E2A-M18-KS08-M1-B1	NO	PNP
C1	E2A-M18-KS08-M1-C1	NO	NPN
B2	E2A-M18-KS08-M1-B2	NC	PNP
C2	E2A-M18-KS08-M1-C2	NC	NPN

Versions with delay valves:
ZE.. P..... – with a lifting delay valve
ZE.. O..... – with a falling delay valve
ZE.. T..... – with a lifting and falling delay valve

(S1 – Operation continuous, S3 – Operation discontinuous)

For the supply of brakes with ZEM thrustor, a suitable UZ power supply system supplied with alternating current, which allows an electromagnet to be connected to it, may be provided

EXPLOSION-PROOF ELECTROHYDRAULIC THRUSTOR
The thrustor is made as an explosion-proof device in a flameproof casing with intrinsically safe signalling circuits and a connection box with IP 65 rating according to PN-EN 60529:2003.

The thrustor in the standard version is designed for operation in the vertical position and a position deviated from vertical by a 30° angle.
The thrustor is equipped with a limit switch which can be used to indicate the movement of the piston rod to its upper extreme position.

Ambient temperature: from –20°C to +40°C.

VERSIONS
▪ **ExZE...S...**   thrustor with the brake spring [Type of operation S1,S3 to 100% 2000c/h]
▪ **ExZEM...S...**   thrustor with the brake spring and electromagnet (maintains the piston in upper position without necessity of supplying the thrustor motor – supply voltage of the electromagnet 42 VAC) * Type of operation S1, S3 to 40% 600 c/h]
The thrustors are intended for the operation in the areas with the danger of explosion in the conditions specified for group I M2, II 2D, II 2G.
The thrustors can be manufactured with the connector with **"r"** (NC) opening contact or **"z"** (NO) closing contact and thermal protection in the form of bimetallic switch **"1"** or posistor sensor **"2"**.

METHOD OF MARKING:

[name] – [D$_H$] / [B] – [version] – [mounting] – [thrustor marking] – [size][type] – [version*]

* only when it concerns a given type, where:

name	e.g. disc brake	**thrustor marking**	*see below*
D$_H$	diameter of the disc brake [mm]	**size**	e.g. 001
B	brake disc thickness [mm]	**type**	e.g. ATZ
version	left "L", right "R"	**version**	WS… – special (individual arrangements)
mounting of the thrustor junction box position "A", position "B"			

METHOD OF THRUSTOR MARKING:

TYPE ZE

[version] – [delay valve*] – [size] / [stroke][spring*] · [oil*] · [voltage][sensor*]

* only when it applies, where:

version	ZE – basic	**thrustor size**	e.g. 1250
	ZEW – with connector	**thrustor stroke**	e.g. 50
	ZEM – with electromagnet	**spring**	e.g. S 450
delay valve	without the valve – omit the marking	**oil**	normally transformer oil (omit the marking)
	P – lifting	**voltage**	e.g. 500 V AC/50 Hz
	O – falling	**sensor marking** (if required) – e.g: inductive B1 – "Ci-B1", mechanical "Cm"	
	T – lifting and falling		

TYPE ExZE

[version] – [size] / [stroke][contact][protection][spring*] · [voltage]

* only when it applies, where:

version	ExZE – basic	**contact**	"r" – opening, "z" – closing
	ExZEM – with electromagnet	**protection**	bimetallic switch "1", posistor sensor "2"
thrustor size	e.g. 1250	**spring**	e.g. S 450
thrustor stroke	e.g. 60	**voltage**	e.g. 500 V AC/50 Hz

Example of designation of the ATZ brake working with the brake disc diameter of D_H=400 mm and thickness of B=30 mm, in the left version, with the terminal box in A position, with the ZE 500/50 S500. 400 V AC / 50 Hz electrohydraulic thrustor, size of 001 *(marking see page B2-2, B2-3)*:

400/30-L-A-ZE 500/50 S500.400 V AC/50 Hz-001 ATZ Disc brake

connection box in position "B"

connection box in position "B"

Brake in right version R
connection box in position:

A

B

Brake in left version L
connection box in position:

A

B

Brake disc diameter D_H	Theoretical braking diameter D_1	Maximum hub or coupling diameter D_2	E	Braking torque M_H	Thrustor type	Thrustor supply [2] 50 Hz
mm				Nm	–	V
001 ATZ DISC BRAKES						**Weight: 55 kg [3]**
320	248	145	125	200	ZE 500/50 S 180 ZEW..., ZEM... [1]	3×230 3×400 3×500
				350	ZE 500/50 S 320 ZEW..., ZEM... [1]	
				550	ZE 500/50 S 500 ZEW..., ZEM... [1]	
400	320	205	160	250	ZE 500/50 S 180 ZEW..., ZEM... [1]	
				450	ZE 500/50 S 320 ZEW..., ZEM... [1]	
				750	ZE 500/50 S 500 ZEW..., ZEM... [1]	
500	420	305	210	330	ZE 500/50 S 180 ZEW..., ZEM... [1]	
				600	ZE 500/50 S 320 ZEW..., ZEM... [1]	
				1000	ZE 500/50 S 500 ZEW..., ZEM... [1]	
002 ATZ DISC BRAKES						**Weight: 92 kg [3]**
450	350	200	175	700	ZE 800/60 S 450 ZEW..., ZEM... [1]	3×230 3×400 3×500
				1300	ZE 1250/60 S 800 ZEW..., ZEM... [1]	
				2000	ZE 1500/60 S 1250 ZEW...	
500	400	250	200	850	ZE 800/60 S 450 ZEW..., ZEM... [1]	
				1500	ZE 1250/60 S 800 ZEW..., ZEM... [1]	
				2300	ZE 1500/60 S 1250 ZEW...	
630	530	380	265	1100	ZE 800/60 S 450 ZEW..., ZEM... [1]	
				2000	ZE 1250/60 S 800 ZEW..., ZEM... [1]	
				3000	ZE 1500/60 S 1250 ZEW...	
003 ATZ DISC BRAKES						**Weight: 230 kg [3]**
630	500	320	255	8500	ZE 3200/80 S 2500 ZEW..., ZEM... [1]	3×230 3×400 3×500
710	580	400	395	10000		
800	670	490	340	11500		
1000	990	690	435	15000		

We are also offering tailor-made special versions.

[1] When utilising the ZEM... type thrustor it is necessary to provide electromagnet supply (38 V DC, current intensity of 0,4 A, for ZEM 500, 0,45 A for ZEM 800 and ZEM 1500; 0,8 A for thrustor ZEM 2500 and ZEM 3200).

[2] Thrustor with different voltage rating and frequency can be made after consultation.

[3] Brake weight with oil thrustor.

[4] After agreement the dimension can be changed.

DIMENSIONS

H [4]	H_1	H_2	A	A_1	A_2	A_3	B	B_1	B_2	B_3	C	C_1	C_1	E_1	E_2	E_3	f	d	Brake size and type
mm																			–
225	540	570	120	20	300	150	180	80	20	300	420	155	220	80	240	285	15	18	001 ATZ
280	685	715	140	20	370	215	130	130	20	375	520	200	280	90	320	358	15	22	002 ATZ
300	980	1050	160	30	410	235	180	180	50	460	635	295	314	110	365	387	20	27	003 ATZ

ATG DISC MINING BRAKES
with electrohydraulic explosion-proof thrustor

Example of designation of the ATG brake working with the brake disc diameter of D_H=400 mm and thickness of B=30 mm, in the right version, with the terminal box in A position, with the ExZE 800/60 r1 S450. 500V AC / 50 Hz electrohydraulic thrustor (with opening contact and bimetallic switch), size of 001 ATG *(marking see page B2-2, B2-3)*:

400/30-R-A-Ex ZE 800/60 r1 S450.500 V AC/50 Hz-001 ATG Disc mining brake

connection box in position "B"

connection box in position "B"

Brake in right version R
connection box in position:

A   B

Brake in left version L
connection box in position:

A   B

B2–6

Brake disc diameter D_H	Theoretical braking diameter D_1	Maximum hub or coupling diameter D_2	E	Braking torque M_H	Thrustor type	Thrustor supply [2) 50 Hz
mm				Nm	–	V
001 ATG DISC MINING BRAKES						**Weight: 96 kg [3)**
320	248	145	125	500	ExZE 800/60 ...S 450 ExZEM 1250/60 ...S 450 [1)	3×230 3×400 3×500 3×690 [4) 3×1000 [4)
400	320	205	160	650		
500	420	305	210	850		
002 ATG DISC MINING BRAKES						**Weight: 122 kg [3)**
450	350	200	175	700	ExZE 800/60 ...S 450 ExZEM 1250/60 ...S 450 [1)	3×230 3×400 3×500 3×690 [4) 3×1000 [4)
				1300	ExZE 1250/60 ...S 800 ExZEM 1250/60 ...S 800 [1)	
				2000	ExZE 1500/60 ...S 1250	
500	400	250	200	850	ExZE 800/60 ...S 450 ExZEM 1250/60 ...S 450 [1)	
				1500	ExZE 1250/60 ...S 800 ExZEM 1250/60 ...S 800 [1)	
				2300	ExZE 1500/60 ...S 1250	
630	530	380	265	1100	ExZE 800/60 ...S 450 ExZEM 1250/60 ...S 450 [1)	
				2000	ExZE 1250/60 ...S 800 ExZEM 1250/60 ...S 800 [1)	
				3000	ExZE 1500/60 ...S 1250	
003 ATG DISC MINING BRAKES						**Weight: 274 kg [3)**
630	510	320	255	8500	ExZE 3200/80... S2500	3×230 3×400 3×500 3×690 3×1000
710	590	400	295	10 000		
800	680	490	340	11 500		
1000	870	690	435	15 000		

We are also offering tailor-made special versions.

1) When using ZEM... type thrustors, it is necessary to provide electromagnet supply 42 V AC.
2) Thrustors for other voltage rating and frequency can be made after consultation.
3) Brake weight with oil thrustor.
4) Does not apply for thrustors of ExZEM type.
5) After agreement the dimension can be changed.

DIMENSIONS

H [5)	H_1	H_2	H_3	A	A_1	A_2	A_3	B	B_1	B_2	B_3	C	C_1	C_2	E_1	E_2	E_3	f	d	Brake size and type
mm																				–
225	580	620	–10	120	20	300	175	180	80	20	300	490	155	246	80	291	381	15	18	001 ATG
280	685	715	50	140	20	370	215	130	130	20	375	580	200	291	90	331	421	15	22	002 ATG
300	980	1050	180	160	30	410	250	180	180	50	460	705	295	322	110	385	470	20	27	003 ATG

Example of designation of the ATZ brake (series 100) working with the brake disc diameter of D_H=400 mm and thickness of B=30 mm, in the left version, with the terminal box in A position, with the ZE 500/50 400V AC / 50 Hz electrohydraulic thrustor, size of 101 ATG *(marking see page B2-2, B2-3)*:
400/30-L-A-ZE 500/50.400V AC/50Hz-101 ATZ Disc brake
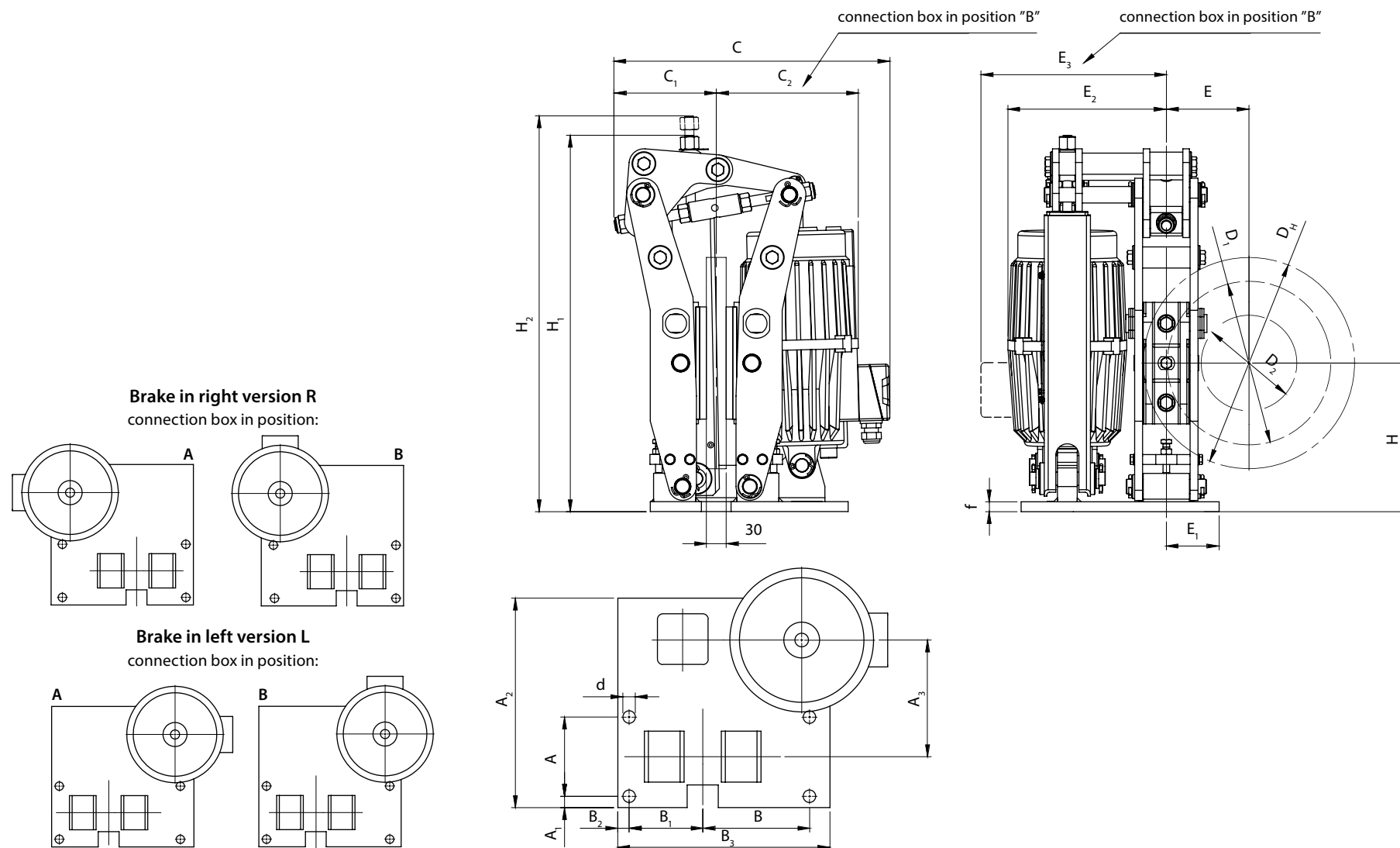
connection box in position "B"   connection box in position "B"

Brake in right version R
connection box in position:

A   B

Brake in left version L
connection box in position:

A   B

Brake disc diameter D_H	Theoretical braking diameter D_1	Maximum hub or coupling diameter D_2	E	Braking torque M_H	Thrustor type	Thrustor supply [2] 50 Hz
mm				Nm	–	V
101 ATZ DISC BRAKES						**Weight: 64 kg [3]**
320	248	145	125	150÷550	ZE 500/50 ZEW 500/50 ZEM 500/50 [1]	3×230
400	320	205	160	190÷750		3×400
500	420	305	210	250÷1000		3×500
102 ATZ DISC BRAKES						**Weight: 114 kg [3]**
450	350	200	175	520÷2000	ZE 1500/60 ZEW 1500/60 ZEM 1500/60 [1]	3×230
500	400	250	200	600÷2300		3×400
630	530	380	265	790÷3000		3×500
102 ATZ-2 DISC BRAKES						**Weight: 147 kg [3]**
630	530	380	265	1500÷4300	ZE 2000/120 ZEW 2000/120 ZEM 2000/120 [1]	3×230
800	700	530	350	2000÷5500		3×400
1120	1020	850	510	3000÷8300		3×500
103 ATZ DISC BRAKES						**Weight: 260 kg [3]**
800	670	490	340	3800÷11500	ZE 3200/80 ZEW 3200/80 ZEM 3200/80 [1]	3×230
1000	870	690	435	5000÷15000		3×400
1120	990	810	495	5600÷17000		3×500

We are also offering tailor-made special versions.

[1] When utilising the ZEM... type thrustor it is necessary to provide electromagnet supply (38 V DC, current intensity of 0,4 A, for ZEM 500, 0,45 A for ZEM 800 and ZEM 1500; 0,8 A for thrustor ZEM 2500 and ZEM 3200).

[2] Thrustor with different voltage rating and frequency can be made after consultation.

[3] Brake weight with oil thrustor.

[4] After agreement the dimension can be change.

DIMENSIONS

H [4]	H_1	H_2	A	A_1	A_2	A_3	B	B_1	B_2	B_3	C	C_1	C_1	E_1	E_2	E_3	f	d	Brake size and type
mm																			–
225	570	585	120	20	300	150	180	80	20	300	420	155	220	80	240	285	15	18	101 ATZ
280	725	735	140	20	370	215	130	130	20	375	520	200	280	90	320	358	15	22	102 ATZ
280	735	800	140	20	370	215	130	130	20	375	520	200	280	90	320	358	15	22	102 ATZ-2
300	1010	1080	160	30	410	235	180	180	50	460	635	295	314	110	365	387	20	27	103 ATZ

Example of designation of the ATG brake (series 100) working with the brake disc diameter of D_H=400 mm and thickness of B=30 mm, in the left version, with the terminal box in A position, with the ExZE 800/60 r1. 400V AC / 50 Hz electrohydraulic thrustor (with opening contact and bimetallic switch), size of 101 ATG *(marking see page B2-2, B2-3)*:

400/30-L-A-ExZE 800/60 r1.400V AC/50Hz-101 ATG Disc mining brake

connection box in position "B"

connection box in position "B"

Brake in right version R
connection box in position:

A

B

Brake in left version L
connection box in position:

A

B

Brake disc diameter D_H	Theoretical braking diameter D_1	Maximum hub or coupling diameter D_2	E	Braking torque M_H	Thrustor type	Thrustor supply [2] 50 Hz
mm				Nm	–	V
101 ATG DISC MINING BRAKES						**Weight: 105 kg [3]**
320	248	145	125	200÷800	ExZE 800/60	3×230 3×400 3×500 3×690 3×1000
400	320	205	160	250÷1000		
500	420	305	210	300÷1300		
102 ATG DISC MINING BRAKES						**Weight: 146 kg [3]**
450	350	200	175	520÷1700	ExZEM 1250/60 [1]	3×230 3×400 3×500 3×690 [4] 3×1000 [4]
500	400	250	200	600÷2000		
630	530	380	265	790÷2600		
450	350	200	175	520÷2000	ExZE 1500/60	
500	400	250	200	600÷2300		
630	530	380	265	790÷3000		
103 ATG DISC MINING BRAKES						**Weight: 304 kg [3]**
800	670	490	340	3800÷11500	ExZE 3200/80	3×230 3×400 3×500 3×690 3×1000
1000	870	690	435	5000÷15000		
1120	990	810	495	5600÷17000		

We are also offering tailor-made special versions.

[1] When using ZEM... type thrustors, it is necessary to provide electromagnet supply 42 V AC.

[2] Thrustors for other voltage rating and frequency can be made after consultation.

[3] Brake weight with oil thrustor.

[4] Does not apply for thrustors of ExZEM type.

[5] After agreement the dimension can be changed.

DIMENSIONS

H [5]	H_1	H_2	H_3	A	A_1	A_2	A_3	B	B_1	B_2	B_3	C	C_1	C_2	E_1	E_2	E_3	f	d	Brake size and type
mm																				–
225	610	655	−10	120	20	300	175	180	80	20	300	516	155	271	80	291	381	15	18	101 ATG
280	725	735	50	140	20	370	215	130	130	20	375	580	200	291	90	331	421	15	22	102 ATG
300	1010	1080	180	160	30	410	250	180	180	50	460	705	295	322	110	385	470	20	27	103 ATG

Rail clamps are designed to work with the side surfaces of the rail heads on which the machine fitted with them runs. They are used to prevent a parked machine from moving due to the influence of external forces (e.g. wind in the case of cranes, or forces coming from the conveyor belt in the case of conveyor throw-off carriages). They block the movement of the machine when it is stopped, independently of the brake installed in the drive system of the running mechanism. They are not designed for braking a moving machine (if this has not been agreed in advance). The drive control system should be made in such a way that the drive motor is activated when the brake shoes are spread apart, i.e. after confirmation of brake release by the brake release sensor fitted on the clamp, and in such a way that braking is effected when the machine comes to a halt.

The clamps are equipped with guide rollers, which adjust their position to prevent the friction lining of the shoe from rubbing against the rail head during running. It is recommended to use the clamps symmetrically on both rails.

The size of the clamp must be selected appropriately to ensure its correct operation. The mechanical connection can be adapted to the user's existing design and, due to the differences between various designs, is determined individually.

ZS.02 AND ZS.03 RAIL CLAMPS WITH AN ELECTROHYDRAULIC THRUSTOR

The braking force (the clamping of the shoes on the running rail) is generated mechanically with a spring mounted in the body of the thrustor. The clamp is released (the shoes spread apart) after the activation of the power supply to the thrustor causing a pump to pump oil into the chamber located under the thrustor's piston. This causes movement of the piston upwards and, via an articulated lever train, the arms and the brake shoes are moved away from the rail head, allowing the machine to move freely. If the supply voltage of the thrustor fails, the spring mounted inside the thrustor automatically and immediately moves the piston downwards and brakes by pressing the brake shoes against the side surfaces of the rail head.

- ZS.02 clamp – braking force: 0.5kN (versions with a different braking force are
- possible)
- ZS.03 clamp – braking force: 10 kN (versions with a different braking force are
- possible)

Specification of electrohydraulic thrustors check B1-2
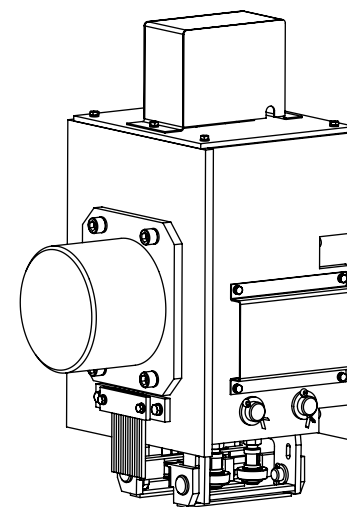
ZS.02 Rail clamp

ZS.03 Rail clamp

B3–1
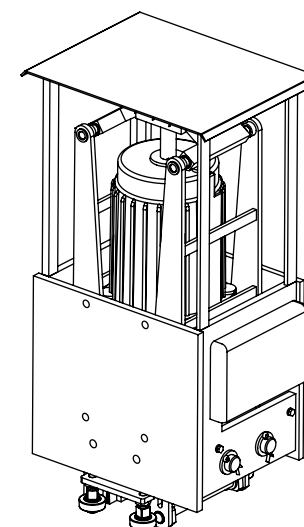
ZS.04 RAIL CLAMPS WITH A HYDRAULIC AGGREGATE

The braking force of the clamp is generated by the force of the springs mounted inside the hydraulic cylinder which, through the arms, causes the brake shoes to press against the side surfaces of the running rail heads. Switching the voltage on activates the electric motor and pump in the hydraulic aggregate as well as the solenoid valve, which increases the oil pressure in the cylinder and causes the piston to move compressing the springs, causing the arms to spread and allowing the machine to move. In the event of a power failure, the aggregate and solenoid valve are switched off and the shoes are smoothly clamped on the rail.

The electric motor operates in a repetitive cycle maintaining the oil pressure value in the system within defined limits – when the maximum value is reached, the motor is switched off, and when it falls to the minimum value, the motor is switched on and the pressure is increased again to the maximum value – keeping the clamp released all the time.

A hydraulic aggregate connected to the hydraulic cylinder and an electrical cabinet controlling the operation of the electric motor are mounted on a bracket. The control cabinet is supplied with 400 V AC and controls the operation of the electric motor and the solenoid valve supplied with 24 V AC (built-in transformer) on the basis of signals from the pressure transducer mounted on the hydraulic aggregate. The aggregate operation status and emergency state are indicated by lights located on the control cabinet.

The aggregate can be additionally equipped with a heater to enable operation at low temperatures.
- braking force: 80 kN (versions with a different braking force are possible)
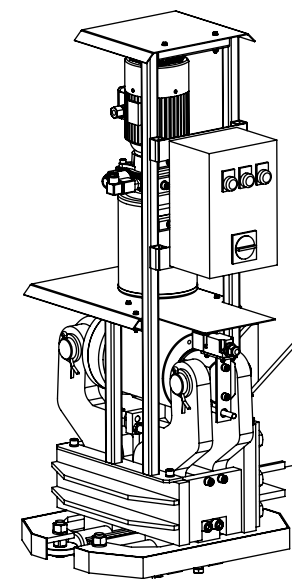
ZS.04 Rail clamp

ZS.05 RAIL CLAMPS WITH AN ELECTRIC DRIVE

The clamp's braking force is generated mechanically by a spring which is pressed by the electric drive piston or directly by this piston. The state of the clamp (braking/release) changes only when the power supply to the electric drive is switched on. It is not necessary to maintain this power supply continuously – in the absence of voltage, no automatic braking takes place.
The clamp is released (the shoes spread apart) after the activation of the power supply and extension of the piston, which, moving upwards through an articulated lever train, causes the arms and brake shoes to move away from the rail head, allowing the machine to move freely. Braking occurs when the drive is switched on again (supply voltage phase change) and the piston moves in the opposite direction. The speed of brake activation and release depends on the speed of the movement of the piston of the electric drive used.
- braking force: 16 kN (versions with a different braking force are possible)
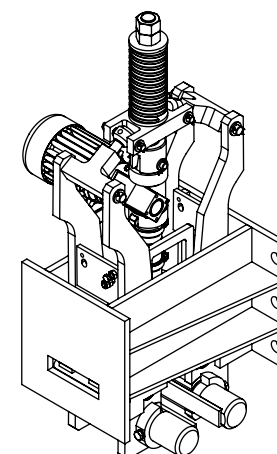
ZS.05 Rail clamp

AHS RAIL CLAMPS WITH AN ELECTROHYDRAULIC THRUSTOR

The braking force (the clamping of the shoes on the running rail) is generated mechanically with a spring mounted in the body of the thrustor. The clamp is released (the shoes spread apart) after the activation of the power supply to the thrustor causing a pump to pump oil into the chamber located under the thrustor's piston. This causes movement of the piston upwards and, via an articulated lever train, the arms and the brake shoes are moved away from the rail head, allowing the machine to move freely. If the supply voltage of the thrustor fails, the spring mounted inside the thrustor automatically and immediately moves the piston downwards and brakes by pressing the brake shoes against the side surfaces of the rail head.

Due to their mechanical design, the AHS clamps are suitable for installation in belt conveyor throw-off carriages.
- braking force: 10 kN (versions with a different braking force are possible)

Specification of electrohydraulic thrustors – check B1-2

AHS Rail clamp

fena.pl
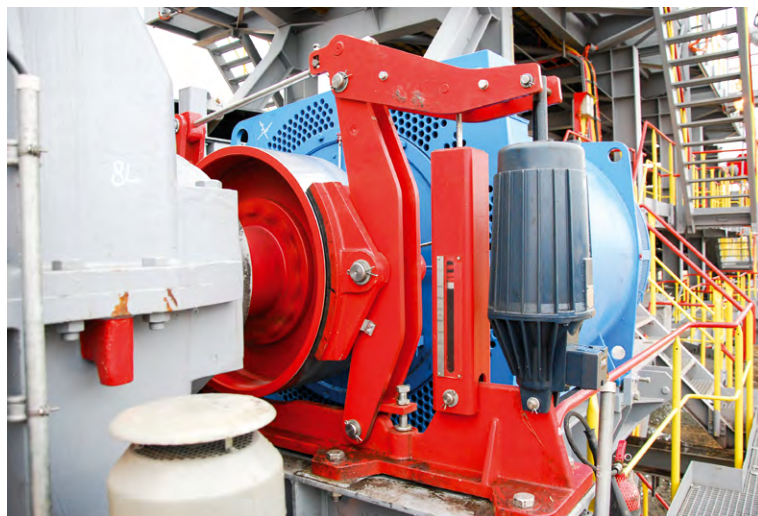
Conveyor – AHH (series 300) drum brake and ASNG-SBH brake coupling
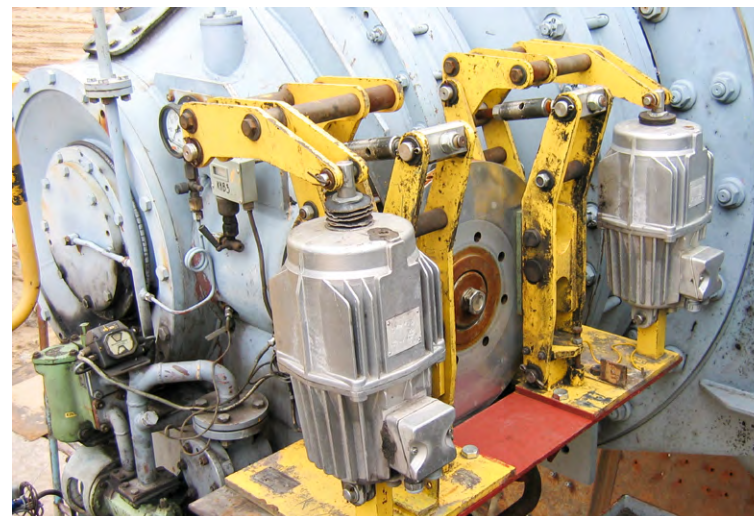
Excavator – ATZ disc brake

Conveyor – AHS rail clamp

Conveyor – AHH drum brake and and ASN-SBH brake coupling

$$F_H = F_s \times \mu \times 2 \times \eta \ [\text{N}] \qquad M_H = i \times \frac{F_H \times D}{2} \ [\text{Nm}] \qquad D = D_H - b \ [\text{m}]$$

F_s spring force [N]
F_H braking force [N]
M_H braking torque [Nm]

μ coefficient of friction –0,39
η system efficiency – 0,85÷0,95
i number of calipers on the brake disc

D theoretical braking diameter [m]
D_H brake disc diameter [m]
b width of the brake shoe [m]

ZH-1 BRAKE CALIPER

The braking force is generated by a set of 2 springs located in the caliper cylinder. If there is no hydraulic oil pressure, the springs apply axial pressure to the brake disc from the brake shoes with a bonded friction lining. The brake is released by compressing these springs by means of oil pressure acting on the piston. The amount of braking force is determined by the deflection of the springs. The braking force, which decreases as the friction linings wear out, is adjusted manually by the operator. The caliper is equipped with a puller that allows manual release of the caliper in the absence of hydraulic oil supply. It can also be equipped with brake release sensors and sensors indicating the need for brake force adjustment due to friction lining wear. The caliper is equipped with clamps which stabilise the position of the brake shoes during arm movement and prevent the linings from rubbing against the rotating brake disc.

The ZH-1 caliper is designed to cooperate with a hydraulic aggregate with a minimum working pressure of 150 bar and maximum working pressure of 190 bar.

Size of caliper	Braking force F_H [N]	Width of the brake shoe b [m]
ZH-1	8900	0,08

ZH-3 BRAKE CALLIPER

The ZH-3 brake caliper is a ZH-1 caliper additionally equipped with an automatic hydraulic brake lining wear compensation system, so that it does not need to be adjusted manually due to lining wear. Instead, the adjustment is done automatically. It is necessary to use a hydraulic aggregate suitable for this system.

Size of caliper	Braking force F_H [N]	Width of the brake shoe b [m]
ZH-3	8900	0,08

ZH-2 AND ZH-2M BRAKE CALIPERS

The braking force is generated by a set of disc springs located in the caliper cylinder. If there is no hydraulic oil pressure, the springs apply axial pressure to the brake disc from the brake shoes with a bonded friction lining. The brake is released by
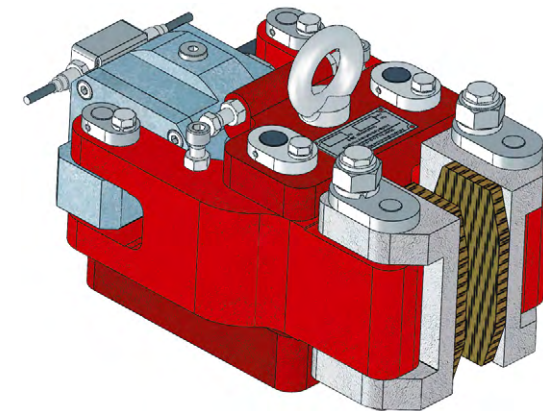
ZH-1 Brake caliper

ZH-2 Brake caliper

B4–1
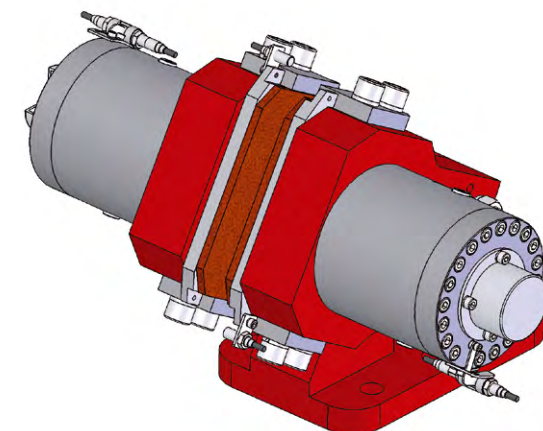
compressing these springs by means of oil pressure acting on the piston cylinder. The caliper can be equipped with brake release sensors, sensors indicating the need for adjustment due to brake lining wear and sensors indicating the need for shoe replacement. In the standard ZH-2 version the caliper consists of two cylinders and a base fixed to the horizontal plane. When pressurised oil is fed into each of the two cylinders, the pistons are moved in them and both brake shoes are moved away from the brake disc. In the ZH-2M version the caliper consisting of one cylinder and a base is fixed to the vertical plane with two screws. The caliper body is slidably mounted on two shaft ends and when pressurized oil is fed, one (movable) shoe is moved and springs move the whole body on the shaft ends so that a gap is created between both shoes and the brake disc.

Size of caliper	Spring force F_S [N]	Width of the brake shoe b [m]
ZH-2-28	2800	0,07
ZH-2-450	45000	0,2
ZH-2-740	74000	0,2
ZH-2-1200	120000	0,2

ZHA ACTIVE CALIPER

The braking force is generated by hydraulic oil fed into the cylinders which are a part of the calipers. Its pressure value can be used to vary the amount of the braking force. When the supply oil pressure decreases, the shoes spread apart under the influence of the return springs built into them, allowing the disc to rotate freely. The calipers may be equipped with release and brake lining wear sensors.

Oil pressure [bar]	60	80	100	120	130
Braking force F_H [N]	18 600	25 300	32 000	38 600	41 950
Width of the brake shoe b [m]	0,105				

The ZHA active caliper can also be designed as a pneumatic caliper (powered by compressed air) ZHA-P.
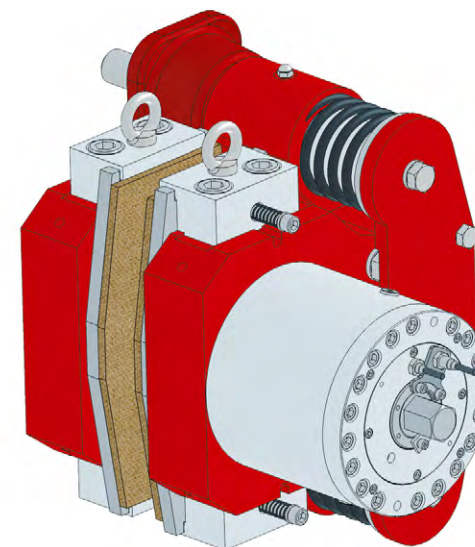
ZH-2M Brake caliper

ZHA Active caliper

ZHT-1 DISC BRAKE SYSTEM

The ZHT-1 disc brake system consists of a hydraulic aggregate and several ZH-1 brake calipers connected to it. It is mainly used in belt conveyor drive systems. The springs mounted in the calipers cause the calipers to clamp on the brake disc and the supply of pressurised oil from the aggregate causes the calipers to spread apart and allow the brake disc to rotate freely. The use of a single hydraulic aggregate supplying several calipers enables their braking process to be controlled simultaneously. Depending on the version of the aggregate, single-stage fast or smooth braking or 2-stage braking with the possibility of setting the threshold between stages and the possibility of setting (by supplying voltage to the relevant solenoid valve) the starting moment of the 2nd braking stage is possible. The calipers may be equipped with a brake release sensor and a lining wear sensor to indicate when the caliper needs to be adjusted or when the minimum thickness of the friction lining is reached, to indicate when it needs to be replaced. The aggregate can also be equipped with a threshold pressure sensor indicating that the pressure value set on the sensor has been reached or exceeded (which can also be used indirectly as information about the release of the calipers).
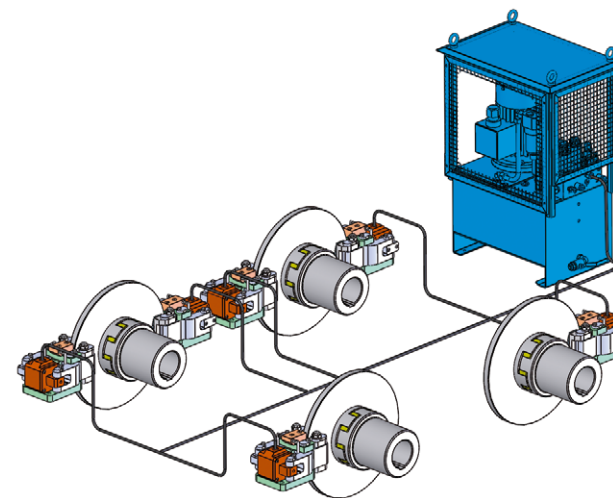
ZHT-1 Disc brake system

ZHT-3 DISC BRAKE SYSTEM

The ZHT-3 disc brake system consists of a hydraulic aggregate, several ZH-3 brake calipers connected to it and the ATHamulec control system.
This set is designed for braking a conveyor in a specified time (set by the operator in the control system), irrespective of its loading.
The correct operation of the ZHT-3 set is controlled by the ATHamulec control system cooperating with the belt conveyor automation system and it enables the implementation of the braking and brake release process and checks whether the system functions correctly.
The control system reads the current speed of the brake disc from a speed sensor placed on one of the calipers at the moment when braking commences (it is also possible to use the reading of the linear speed of the conveyor belt) and on the basis of the set braking time decides on the appropriate braking stage and controls the operation of the hydraulic distributors, and consequently the value of oil pressure in the calipers, in such a way that the actual braking time equals the set one.
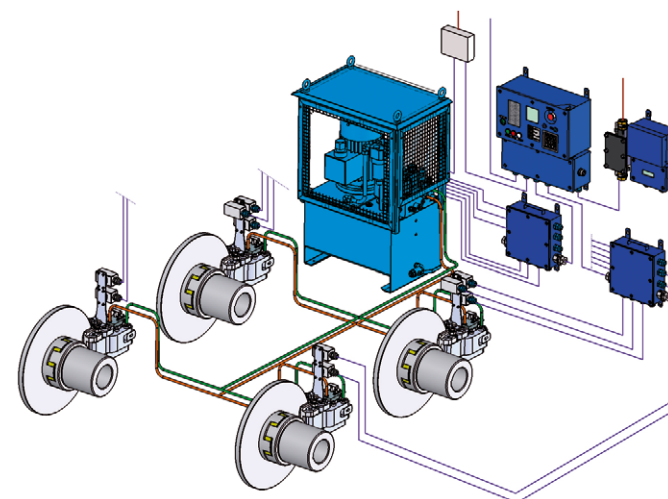
ZHT-3 Disc brake system
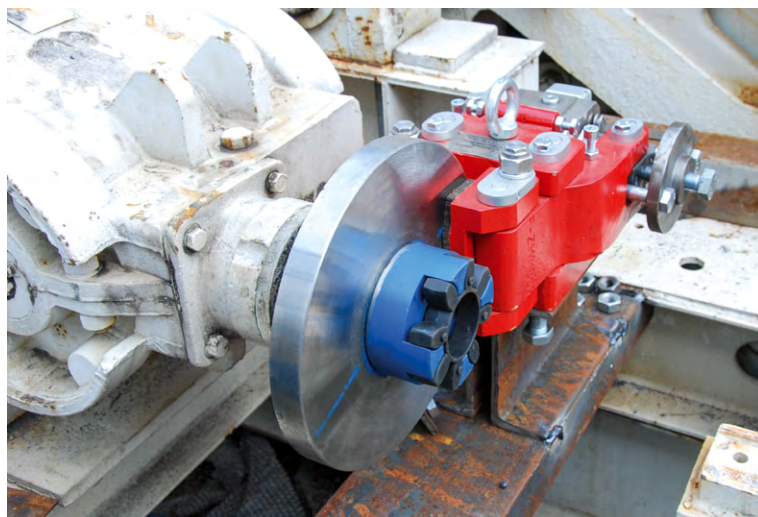
Hoisting winch – ZH-1 brake caliper and ASR-STH disc coupling

Hoisting winch – ZH-2M brake caliper

Fan – AHN drum brake with electric drive

Excavator – AHC load brake
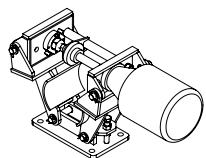
Parking brakes/clamps are designed to immobilise a previously stopped machine or to bring it to a complete stop at a previously reduced rotational speed.

They are mainly used in fan drives, as brakes that block their movement caused by "back draft" or in other similar devices.
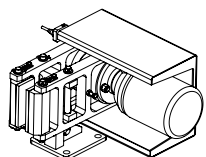
They can be fitted with an electric drive (AHN, ZHE) or use a manual drive (AHR, ATR, ZHR). When using a brake equipped with an electrohydraulic thrustor (AHT holding drum brake – see B1-16), it is necessary to supply power to the thrustor at all times when the machine is stationary.
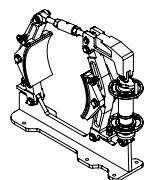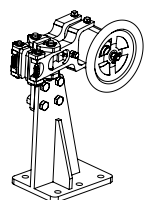
The braking force is generated mechanically by the electric drive piston. The state of the clamp (braking/release) changes only when the power supply to the electric drive is switched on. It is not necessary to maintain this power supply continuously – in the absence of voltage, no automatic braking takes place. The clamp is released (the shoes spread apart) after the activation of the power supply and extension of the piston (depending on the version), which, moving through an articulated lever train, causes the arms and brake shoes to move away from the brake drum/disc or shaft (in the case of such a version), allowing the piston to rotate freely. Braking occurs when the drive power supply is switched on again (supply voltage phase change) and the piston moves in the opposite direction. The speed of brake activation and release depends on the speed of the movement of the piston of the electric drive used.

The drive is equipped with a mechanism enabling manual brake release in the event of a power failure.

The AHN parking shoe brakes are designed for use with brake drums or directly with shafts, and the ZHE parking calipers for use with brake discs.
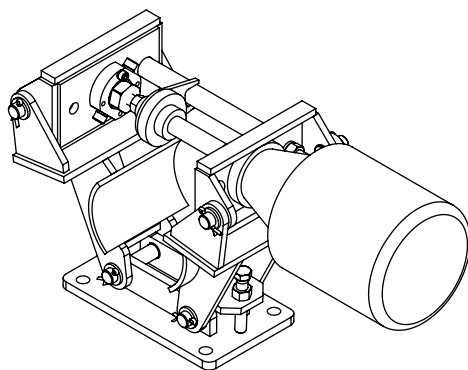
AHN
with the drive in horizontal arrangement for small diameters of the drums or adjustment directly on the shaft
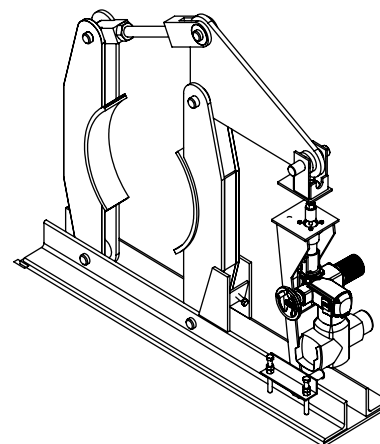
AHN
with the drive in vertical arrangement for big diameters of the drums
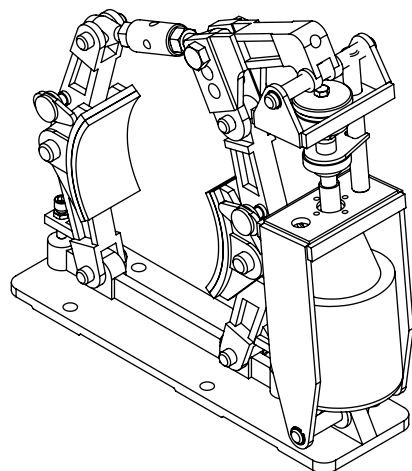
AHN
with the drive in vertical arrangement for medium diameters of the drums
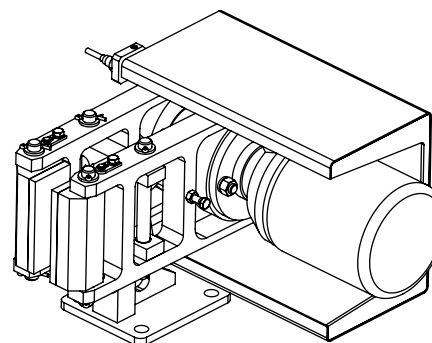
ZHE
with the drive in horizontal arrangement for small and big diameters of brake discs

Example of designation of the AHR parking brake working with the drum diameter of D_H=500mm and manual drive, size 267 AHR *(marking see page B1-3)*:

500-267AHR Parking brake
Version II:
500-267AHR-II Parking brake
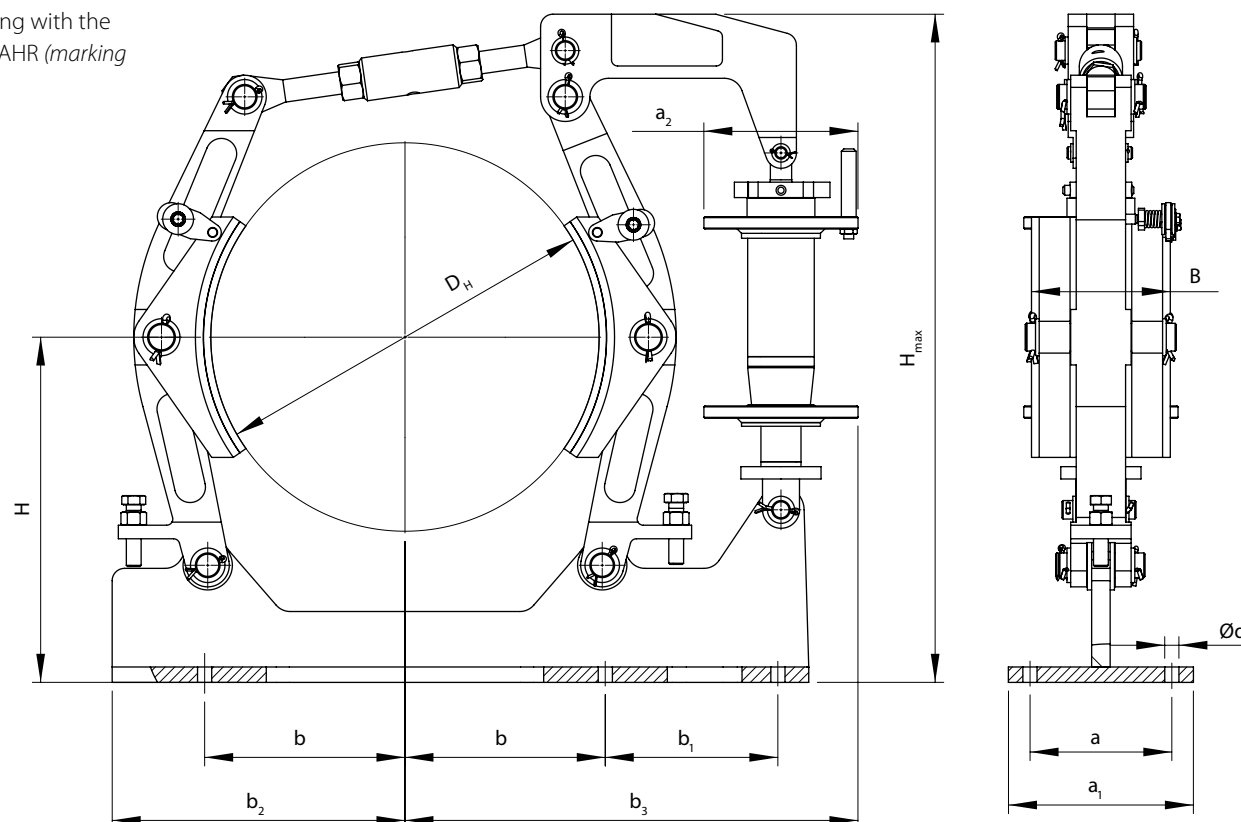
Brake drum diameter D_H	Thrustor type	Brake shoe width B	H	H_{max}	b	b_1	b_2	b_3	a	a_1	a_2	d	Brake weight with thrustor	Brake size and type	Version
mm	–	mm											kg	–	–
400	Manual drive	140	300	700	200	250	315	590	170	220	250	18	98	266 AHR	
500		180	330	800	325	–	370	670	130	220	250	22	106	267 AHR	II
500		180	360	830	250	280	380	670	200	270	250	22	120	267 AHH	
630		225	450	1100	325	280	475	745	230	300	250	23	254	268 AHH	
630		225	560	1120	325	280	475	745	230	300	250	23	260	268 AHH	II
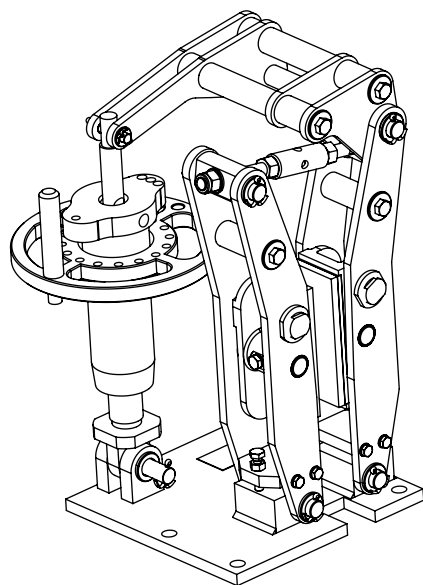
ATR brake disc
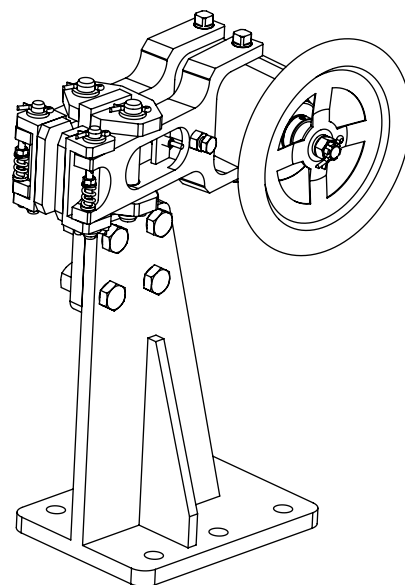
ZHR-1.P parking clamp
built on the base
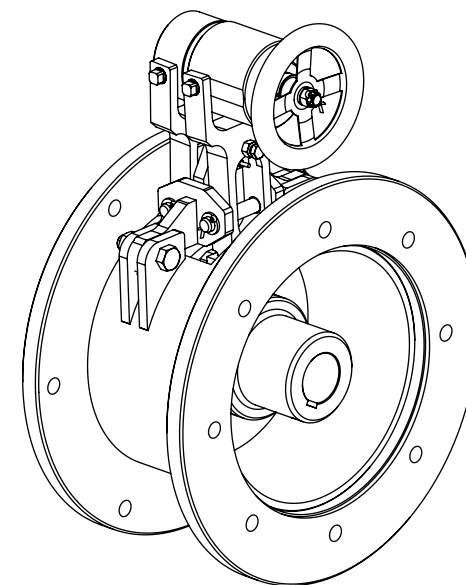
ZHR-1.G parking clamp
built on flange connector
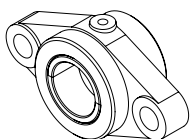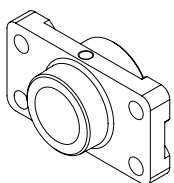
SLIDE BEARINGS

table of contents
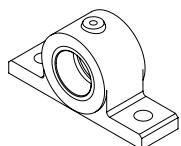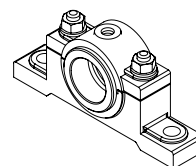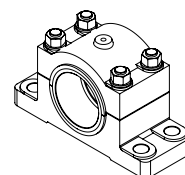
Slide bearings are normally (if it is indicated by the marking) delivered with bushes/split bearings made of bronze B101 of the dimensions being in compliance with PN- 80/ M-87101, PN-81/M-87102. After the agreement it is possible to manufacture the body with bushes/split bearings of other dimensions or of other material.

Bushes/split bearings are manufactured in three types:
- Simple – "A"
- With flange – "B"
- With two flanges – "C".

MATERIAL: cast iron, (steel), bush/split bearing – bronze.
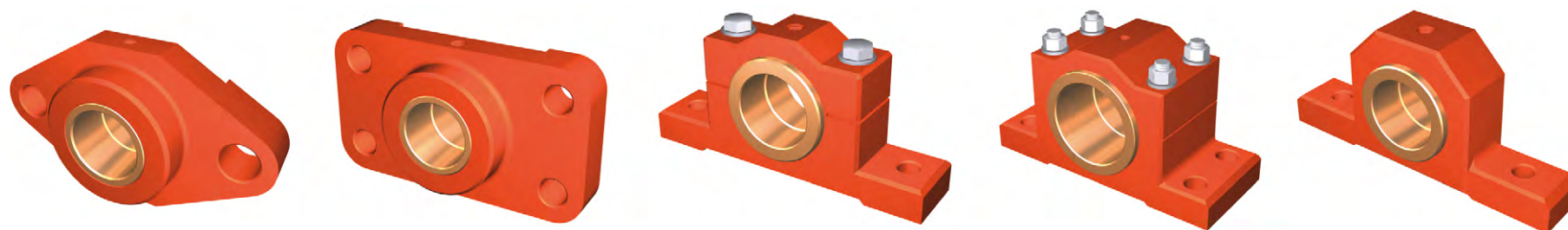
METHOD OF MARKING:

[name] – [D] – [marking of bush/split bearing] – [size][type]

|	
name	e.g. Medium duty plummer block housing (2 bolt)
D	diameter of the hole in the housing [mm]
Bushes/split bearings marking	marking of the bushes/split bearings in compliance with PN-80/M- 87101, PN-81/M-87102; in the case of ordering a plummer block without split bearing, write **"BP"**, in the case of ordering a flange bearing or eye bearing without the bush, write **"BT"** marking
size	e.g. 102
type	e.g. AKD-2

Example of designation of the AKO-2 flange bearing (2 bolt) with the hole diameter
of D=36 mm with A30/36×40-B101 bush, size of 103 *(marking see page C1-1)*:

36-A 30/36×40-B101-103 AKO-2 Flange bearing (2 bolt)

▪ without bush – 36-**BT**-103 AKO-2 Flange bearing (2 bolt)
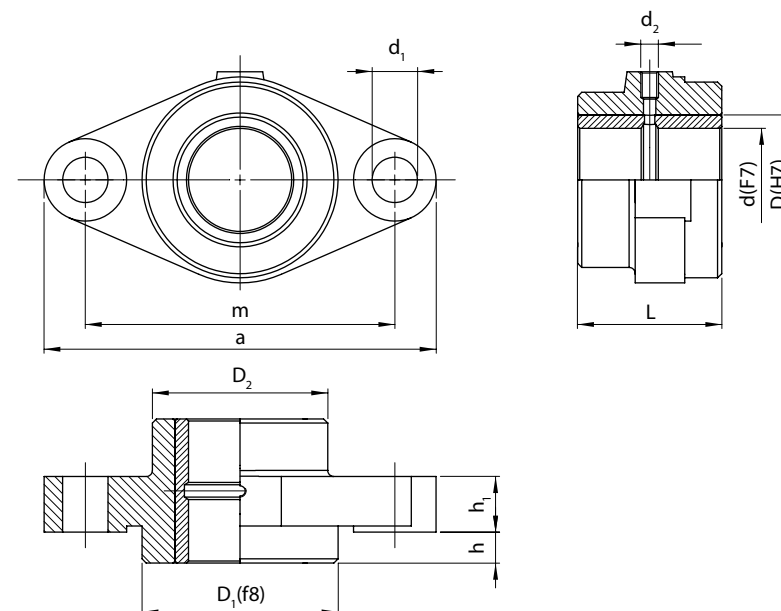
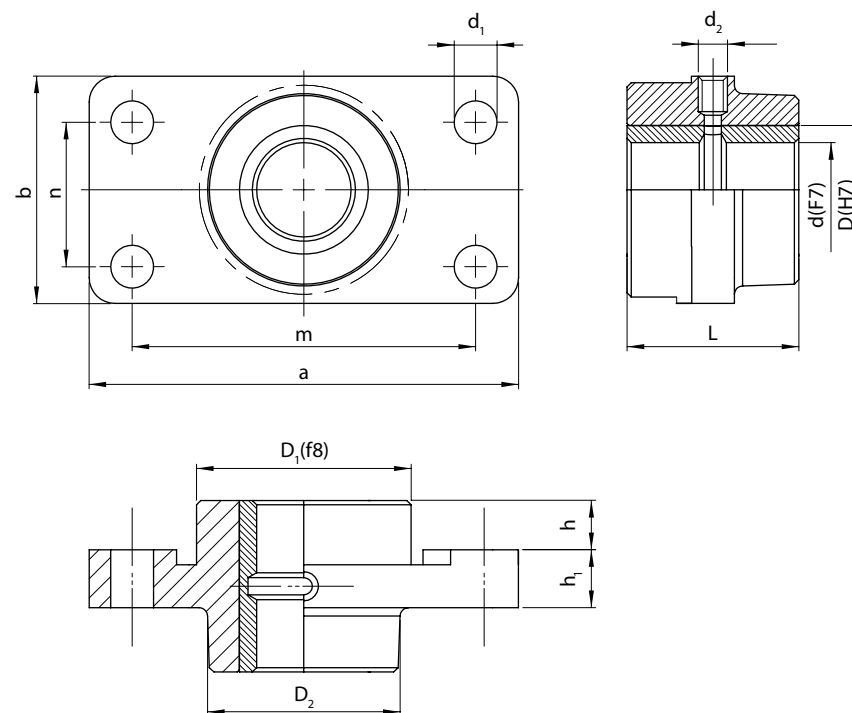**We also offer special designs according to the individual wishes of the customer.**
* Connection and dimensional sizes of the flange bearings (2 bolt) acc. to PN-83/M-87006
(except dimensions marked with *).

D	D_1	D_2	L	h	h_1	a	m	d_1	d_2	Weight	Bush diameter d [PN-80/M-87101]	Size and type of flange bearing
						mm				kg	mm	–
20	38	34	20	3	12	90	70	9		0,22	14; 16	101 AKO-2
22			30	6	14					0,28	18	
26	50	45				110	85	11		0,48	20; 22	102 AKO-2
30					16					0,45	25	
36	60	53	40	8		130	105	14		0,69	28; 30	103 AKO-2
40	68	68*			18*	155	120		18	1,18	32	104 AKO-2
48	80	80*			27*	165	130			1,59	40	105 AKO-2
52	85	85*	60	12		180	140			1,79	42	106 AKO-2
58					24				22	1,72	48; 50	
63	95	85	70	15	28*	190	150			3,30	55	107 AKO-2
70	115	105	80	20	30	225	180			4,85	60	108 AKO-2
80	130	130*	90	25	35	245	200		26	6,84	65	109 AKO-2
										7,32	70	

C1–2

Example of designation of the AKO-4 flange bearing (4 bolt) with the hole diameter of D=115 mm with A100/115×120-B101 bush, size of 103 *(marking see page C1-1)*:

115-A 100/115×120-B101-103 AKO-4 Flange bearing (4 bolt)

▪ without bush – 115-**BT**-103 AKO-4 Flange bearing (4 bolt)

We also offer special designs according to the individual wishes of the customer.

* Connection and dimensional sizes of the flange bearings (4 bolt) acc. to PN-83/M-87007 (except dimensions marked with *).

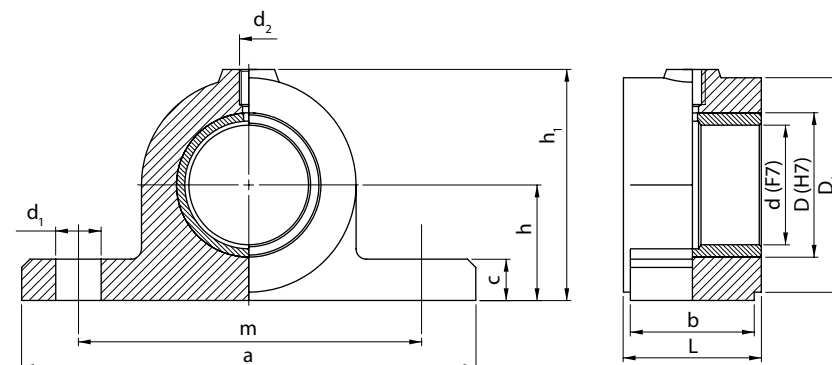| D	D_1	D_2	L	h	h_1	a	b	m	n	d_1	d_2	Weight	Bush diameter d [PN-80/M-87101]	Size and type of flange bearing
mm												kg	mm	–
90	140	150*	90	30	30	230	150	190	110	22	M10×1*	9,81	75	101 AKO-4
95			100	34	32							9,32	80; 85	
105	160	170*	120	40	35	260	170	210	120	26		16,00	90	102 AKO-4
115	180	190*				280	190	230	140			19,32	95; 100	103 AKO-4
125	190	180				290	200	240	150			19,89	105; 110	104 AKO-4
135	210	200	150			330	230	270	170	33		30,30	120	105 AKO-4
155					40							29,11	140	
165	230	220	180			340	240	280	180			35,92	150	106 AKO-4
180	240	230				360	250	300	190			37,34	160	107 AKO-4
200	260	250	250			380	270	320	210			54,74	180	108 AKO-4

Example of designation of the AKN eye bearing with the hole diameter of D=26 mm with A22/26×30-B101 bush, size of 103: (marking see page C1-1) *(marking see page C1-1)*:

26-A 22/26×30-B101-103 AKN Eye bearing

▪ without bush – 26-**BT**-103 AKN Eye bearing

We also offer special designs according to the individual wishes of the customer.

Connection and dimensional sizes of the eye bearings acc. to PN-84/M-87008.

| D	D₁	L	h	h₁	a	b	c	m	d₁	d₂	Weight	Bush diameter d [PN-80/M-87101]	Size and type of flange bearing
					mm						kg	mm	–
18	38	20	22	45	90	16	12	65	9		0,24	12;14	101 AKN
20	38	20	22	45	90	16	12	65	9		0,24	14; 16	101 AKN
22	42	30	25	50	105	20	14	75	11		0,41	16; 18	102 AKN
24	42	30	25	50	105	20	14	75	11		0,41	18; 20	102 AKN
26	50	30	28	58	120	25	14	80	11	M10×1	0,56	20; 22	103 AKN
28	50	30	28	58	120	25	14	80	11	M10×1	0,55	22	103 AKN
32	60	40	34	68	140	32	16	100	13	M10×1	1,08	25	104 AKN
36	60	40	34	68	140	32	16	100	13	M10×1	1,03	28; 30	104 AKN
40	70	40	42	80	165	32	20	120	17	M10×1	1,48	32	105 AKN
45	70	50	42	80	165	32	20	120	17	M10×1	1,65	35; 38	105 AKN
50	80	60	48	95	200	50	25	145	22	M10×1	3,36	40; 42	106 AKN
55	90	60	48	95	200	50	25	145	22	M10×1	3,33	45	107 AKN
60	104	60	56	112	220	63	25	165	22	M10×1	4,84	50	108 AKN
65	104	70	56	112	220	63	25	165	22	M10×1	4,83	55	108 AKN
75	126	80	71	140	270	80	32	200	26	M12×1,5	9,50	60; 65	109 AKN
85	126	90	71	140	270	80	32	200	26	M12×1,5	9,56	70; 75	109 AKN
95	150	100	85	165	315	80	36	235	33	M12×1,5	13,95	80; 85	110 AKN
105	150	100	85	165	315	80	36	235	33	M12×1,5	14,66	90	110 AKN
115	180	120	100	195	345	100	40	265	33	M12×1,5	23,51	95; 100	111 AKN
125	180	120	100	195	345	100	40	265	33	M12×1,5	22,18	105; 110	111 AKN
140	210	150	118	226	410	125	45	310	39	M12×1,5	38,53	120	112 AKN
155	230	180	118	245	430	125	45	330	39	M12×1,5	46,43	140	113 AKN

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Example of designation of the AKD-2 medium duty plummer block housing with the hole diameter of D=50 mm with C42/50×40-B101 split bearing, size of 103 *(marking see page C1-1)*:

**50-C 42/50×40-B101-103 AKD-2 Medium duty plummer block housing (2 bolt)**

▪ without split bearing – 50-**BP**-103 AKD-2 Medium duty plummer block housing (2 bolt)

We also offer special designs according to the individual wishes of the customer. Connection and dimensional sizes of the medium duty plummer block housing (2 bolt) acc. to PN-84/M-87009.
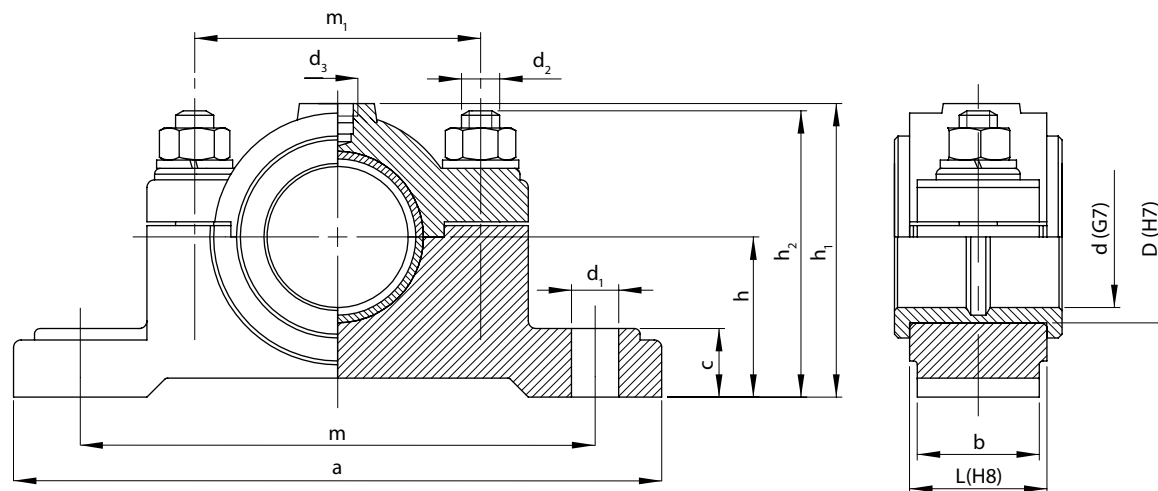

D	L	h	h₁	h₂	a	b	c	m	m₁	d₁	d₂	d₃	Weight	Split bearing diameter d [PN-80/M-87102]	Size and type of plummer block housing
					mm								kg	mm	–
32	30	32	64	60	155	25	15	120	60	11	M8	M10×1	1,03	25	101 AKD-2
36													0,97	28; 30	
40	40	42	77	80	170	32	18	135	70	13	M10		1,62	32; (34)	102 AKD-2
45													1,56	35; 38	
50		45	88	90	185	38	20	150	80				2,30	40; 42	103 AKD-2
55													2,25	45	
60	50	53	105	102	215	48	25	170	95	17	M12	M12×1,5	3,59	(53); 50	104 AKD-2
65													3,44	55	
75	60	70	139	140	280	58	30	220	125	22	M16		7,48	60; 65	105 AKD-2
85	70												7,45	70; 75	
95	80	85	170	170	320	75	35	260	150	26	M20		14,29	80; 85	106 AKD-2
110	80												13,56	95; 90	
120	100	95	185	195	380	95	40	300	170	32	M24		22,97	95; 100	107 AKD-2
130													21,80	110	

Example of designation of the AKD-4 heavy duty plummer block housing with the hole diameter of D=95 mm with A 85/95×100-B101 split bearing, size of 103 *(marking see page C1-1)*:

95-A 85/95×100-B101-103 AKD-4 Heavy duty plummer block housing (4 bolt)

▪ without split bearing – 95-**BP**-103 AKD-4 Heavy duty plummer block housing (4 bolt)
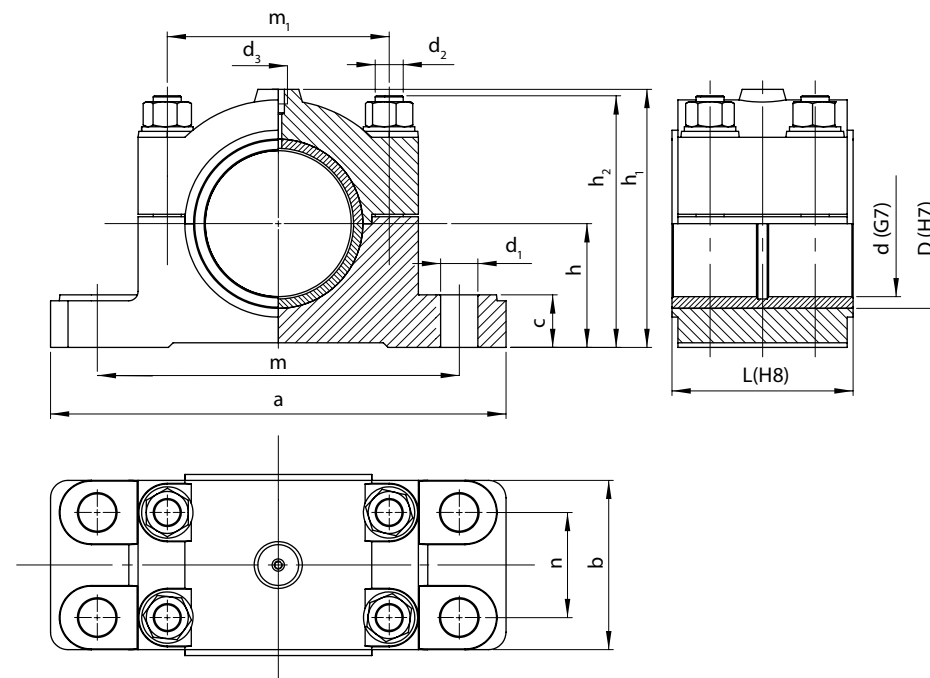
We also offer special designs according to the individual wishes of the customer.
* Connection and dimensional sizes of the heavy duty plummer block housing (4 bolt) acc. to PN-84/M-87010.

D	L	h	h_1	h_2	a	b	c	m	m_1	n	d_1	d_2	d_3	Weight	Split bearing diameter d [PN-80/M-87102]	Size and type of plummer block housing
mm														kg	mm	–
60	60	53	105	102	210	60	25	160	95	30	13	M10		4,95	50; (53)	101 AKD-4
65	70													4,69	55	
75	80	71	140	140	250	80	30	200	125	40	17	M12		11,08	60; 65	102 AKD-4
85	90													10,88	70; 75	
95	100	85	170	170	310	100	35	250	150	56	22	M16	M12×1,5	20,26	80; 85	103 AKD-4
110	120													22,93	90; 95	
120	120	95	185	185	340	130	40	270	170	80				26,03	100; 105	104 AKD-4
130														24,78	110	
145	150	106	211	210	390	155	45	310	190	90	32	M24		40,83	(125); 130	105 AKD-4
160	180	118	230	240	420	170		340	210	100				55,99	140	106 AKD-4
185	180	132	262	260	440	200		360	230	120				71,76	160	107 AKD-4
210	250	140	290	280	480	230		400	270	150				114,00	180; 180	108 AKD-4

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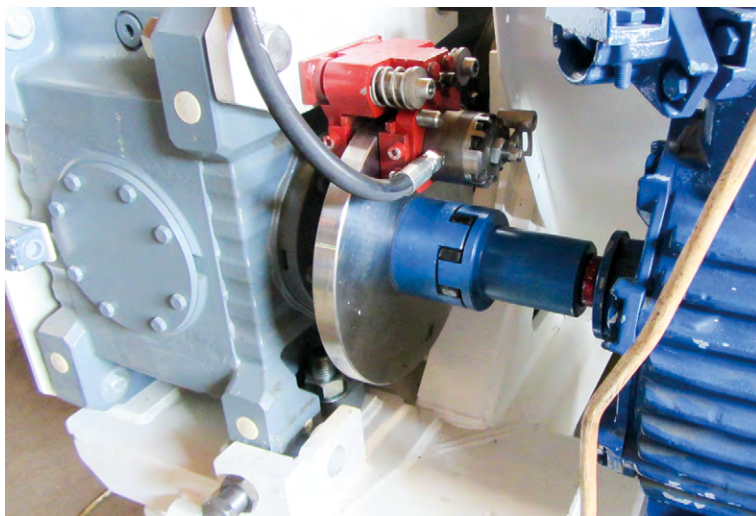
Turnstile – ZH-2M-28 (ZH-125) hydraulic brake caliper and ASR-STH disc coupling

Fan – ATR brake disc with manual drive
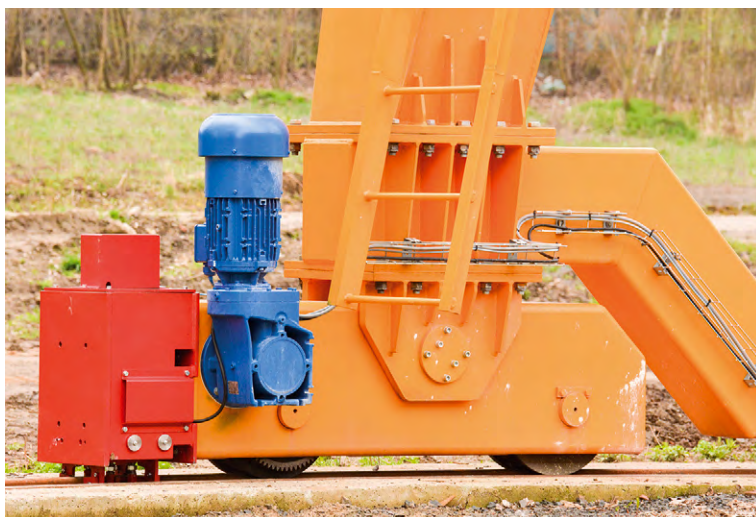
Crane – ZS.02 rail clamp with electrohydraulic thrustor

Crane – ZS.04 rail clamp with hydraulic aggregate

C1–7

Example of designation of the 230 V AC OEZWS-2 electromagnetic lock of shaft gates in the left version, supplied with 20 mm diameter cable:
OEZWS-2 – 230 V AC-L-20 Lock

FUNCTIONAL PARAMETERS: The OEZWS-2 lock is produced in two design versions: "L" left and "P" right (see figure) and three voltage classes: 127 V AC, 230 V AC and 24 VDC.
The lock can be supplied (depending on the size of the installed sealing ring) with the 12÷28 mm diameter cable. If no information is available on the supply cable diameter, the lock is delivered with a sealing ring for 18÷20 mm cable.
The lock is intended for work at the ambient temperature of –5°C to +40°C and relative humidity of 95±2%.

APPLICATIONS: The OEZWS-2 lock is designed for safe use in underground and ground mines exposed to the threat of methane or coal dust explosion and bears the following marking:

⟨Ex⟩ **I M2 Ex db I Mb**
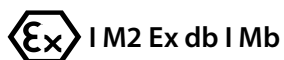
The OEZWS-2 lock conforms to Directive 2014/34/UE and EN 60079-0:2012+A11 2013 and EN 60079-1:2014 as ascertained by the WE type test certificate: FTZÚ 05 ATEX 0010X with supplements.
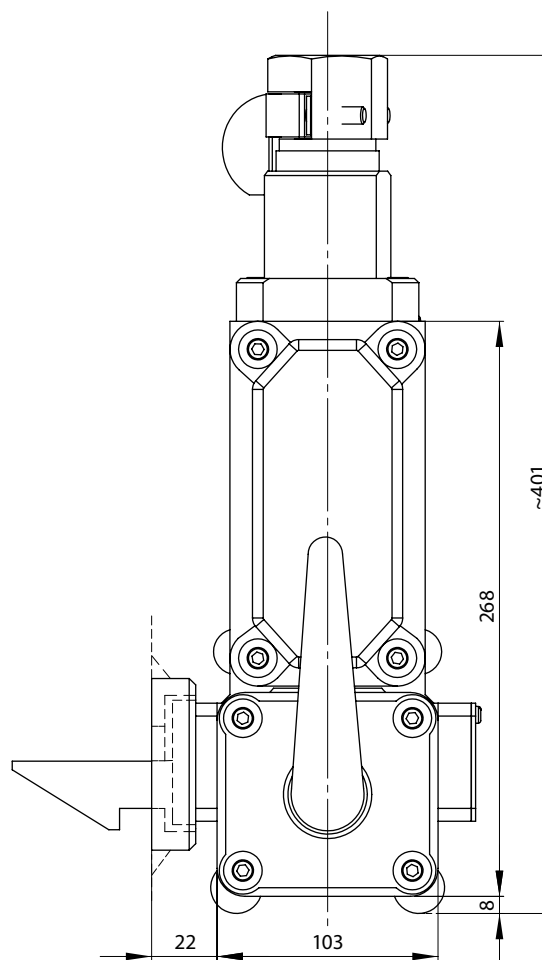
"L" left version
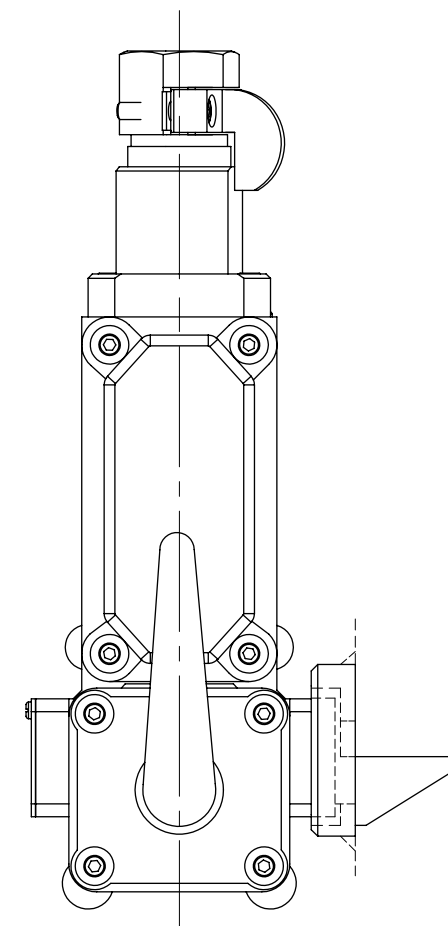
"P" right version

PRINCIPLE: The OEZWS-2 flameproof electromagnetic lock for shaft gates is intended for lifting equipment in shafts. It enables to open the shaft gate only if the shaft gate is present and authorisation for the given level is given. If the cage stops at the inappropriate level and authorisation is given, the suitable electric circuit (not incorporated in the lock and not delivered as bundled) should energise the electromagnet supply circuit integrated within the lock.

An interlock is raised preventing the lock from being open. After releasing the lock, a striker is lifted after deflecting the handle allowing to open the shaft gates. If there is no voltage at electromagnet clamps, the deflection of the handle is blocked and, as a result, it cannot be unlocked. During personal ride or shaft inspection, the shaft gates can be opened from the side of the shaft by lifting the lock striker (accessible only from the side of the shaft).

The lock is also equipped with a hand button (that can be accessed after breaking off the leaden seal) for emergency unlocking from the side of the shaft gates when voltage at electromagnet terminals is off.

CONNECTION DIMENSIONS:
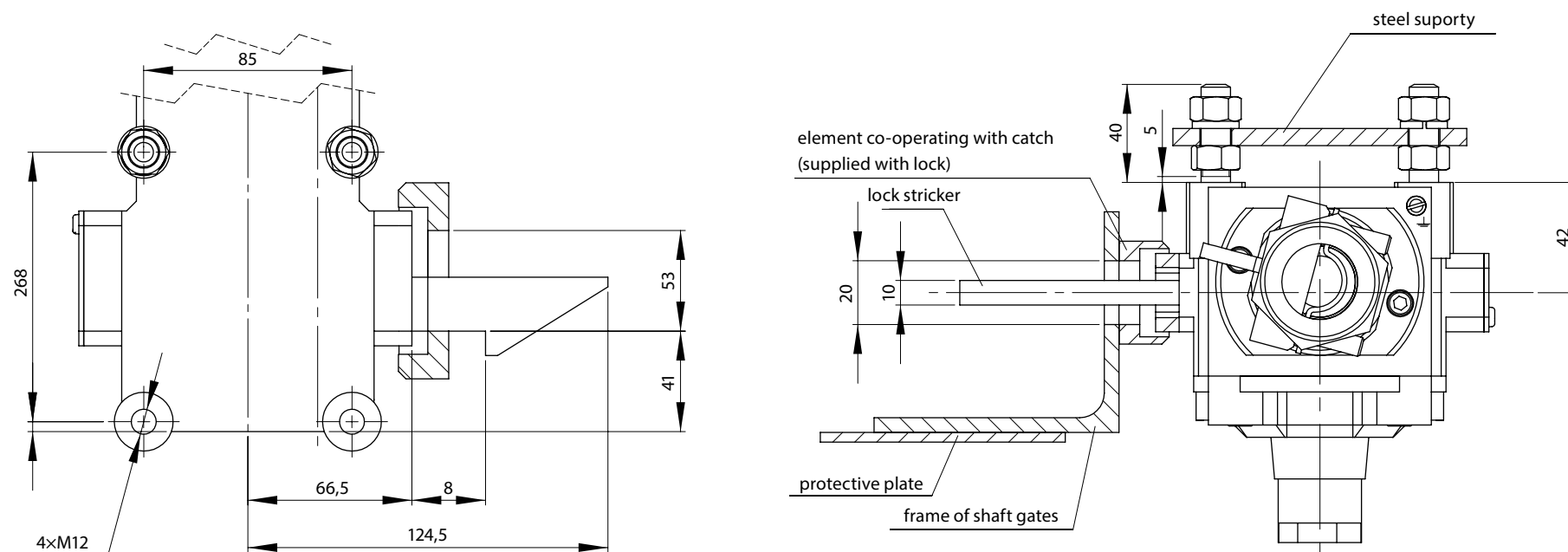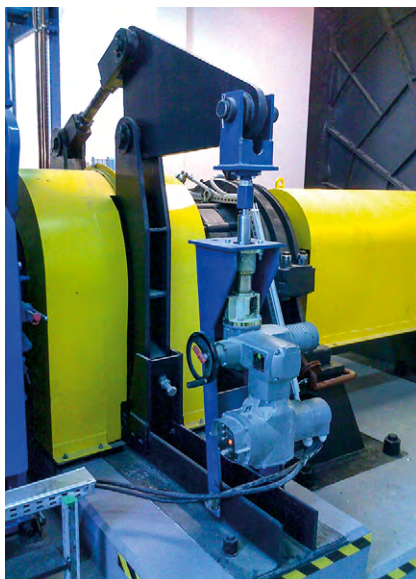
Fan – AHN parking brake with electric drive
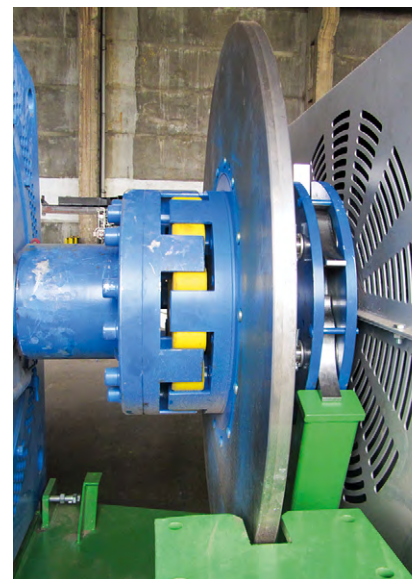
Belt conveyor – ASNY-STH flexible coupling with brake disc and backstop coupling

Turnstile – ZH-2M hydraulic brake caliper and bearing housing

AHT holding drum brake

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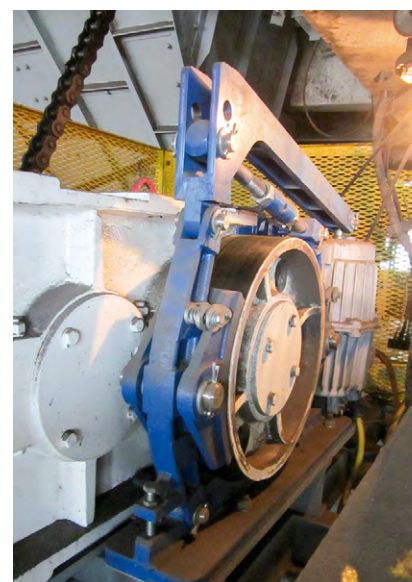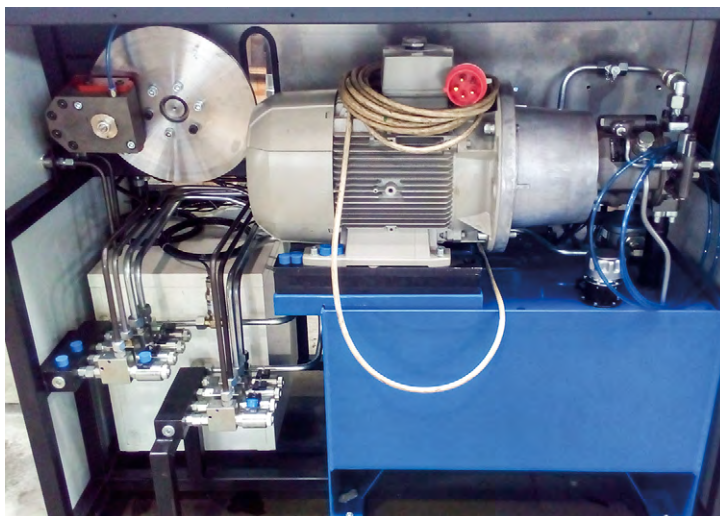
Test bench – ZHA-P pneumatic caliper

Mobile batch – ZS.05 rail clamp with an electric drive

LIST OF ILLUSTRATIONS / APPLICATIONS

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