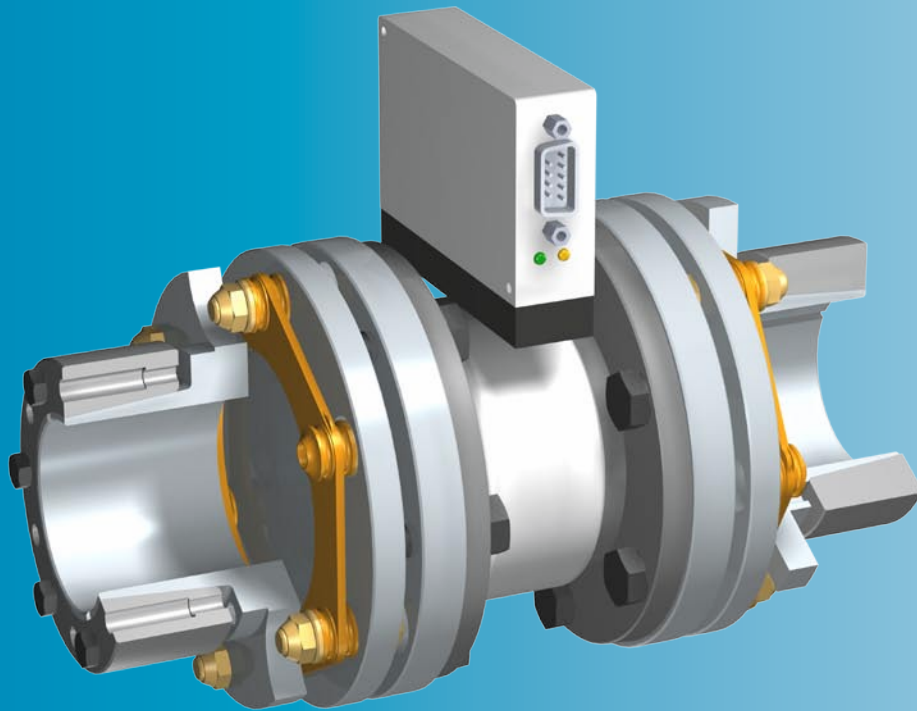


EAS[®]-control-DS

Compact Torque Measurement Coupling



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- *Contactless torque measurement*
- *Integrated into a backlash-free shaft coupling*
- *Simple electrical and mechanical installation*
- *Robust and reliable machine element*
- *Completely maintenance-free*

P.971.V01.GB

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your reliable partner

Compact and Robust Torque Measurement Coupling

- Integrated into a tried-and-tested backlash-free shaft coupling
- Simple electrical and mechanical installation
- Robust and reliable machine element
- Completely maintenance-free

Fields of application

- Process control
- Quality assurance
- Machine monitoring
- Test stands



Fig. 1

ROBA®-DS

- Compensation of shaft misalignments
- High torsional rigidity
- High permitted alternating torques
- High flexibility with reference to shaft/hub connection

Rotary signal transmitter

- Is responsible for energy and signal transmission
- Can be inserted radially
- Completely maintenance and wear-free

Extension sensor

- Torque measurement via strain gauge
- Output signal proportional to torque

Order number

	HUB 1	HUB 2	
Key hub standard (Fig. 3)	0	0	Key hub standard (Fig. 3)
Key hub large (Fig. 4)	1	1	Key hub large (Fig. 4)
Shrink disk hub/external clamping (Fig. 5)	2	2	Shrink disk hub/external clamping (Fig. 5)
Clamping ring hub (Figs. 1 and 2)	4	4	Clamping ring hub (Figs. 1 and 2)
Flange (Fig. 6)	6	6	Flange (Fig. 6)
Shrink disk hub large (Fig. 8)	9	8	Split clamping hub (Fig. 7)
		9	Shrink disk hub large (Fig. 8)

_	/	9	7	1	.	_	_	4	/	_	/	_
▲										▲		▲
Size										Bore*		Bore*
16										Hub 1 ø		Hub 2 ø
40										(see Dimensions		(see Dimensions
160										pages 3 to 5)		pages 3 to 5)

Example: 16 / 971.004 / Hub 1 – ø 25 H7 / Hub 2 – ø 30 H7

*Standard H7, other tolerances possible

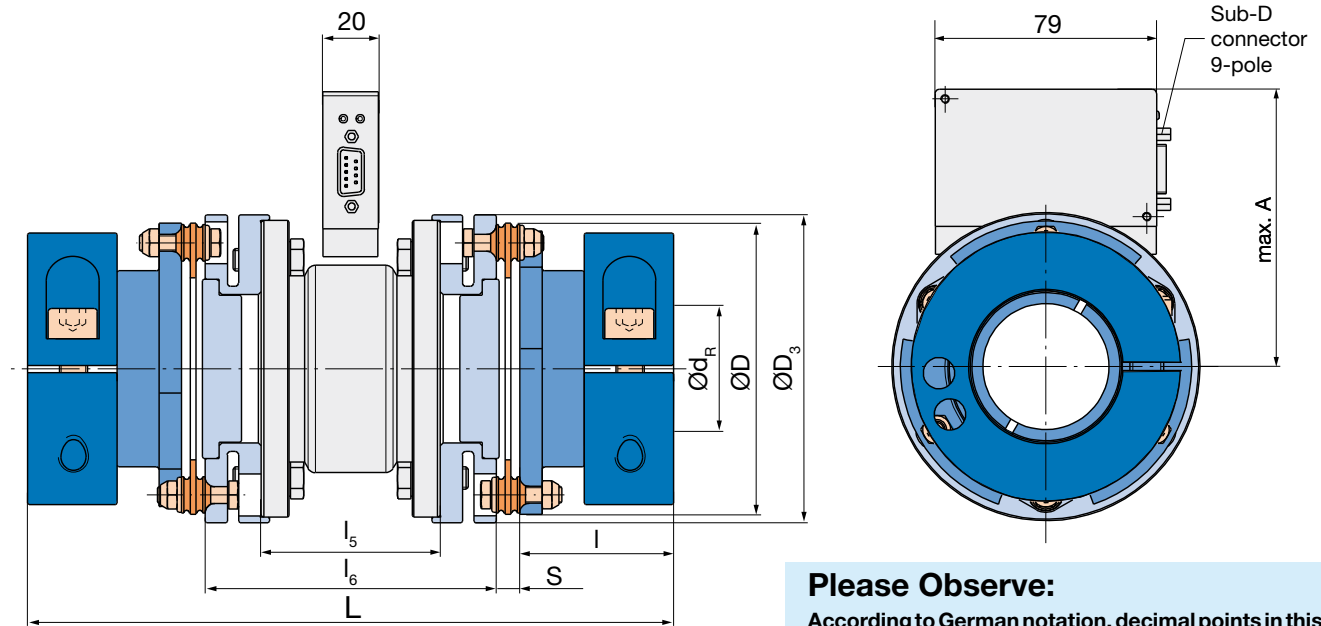


Fig. 2: Type 971.444 (for other mounting variants see pages 4 - 5)

Please Observe:

According to German notation, decimal points in this document are represented with a comma (e.g. 0,5 instead of 0.5).

Technical Data and Main Measurements			Size			
			16	40	160	
Nominal torque ^{1) 2)}	T_{KN}	[Nm]	190	450	1600	
Peak transient torque ³⁾	T_{KS}	[Nm]	285	675	2400	
Minimum hub bore Type 971.444 (Figs. 1 and 2) ^{4) 5)}	$d_{R min}$	[mm]	20	25	40	
Maximum hub bore Type 971.444 (Figs. 1 and 2) ^{4) 5)}	$d_{R max}$	[mm]	35	45	80	
Maximum speed	n_{max}	[rpm]	9500	7000	4300	
Permitted misalignments ⁶⁾	Permitted axial displacement ^{7) 8)}	ΔK_a	[mm]	0,8	1,0	1,7
	Permitted angular misalignment ⁹⁾	ΔK_w	[mm]	0,7	0,7	0,7
	Permitted radial misalignment ⁷⁾	ΔK_r	[mm]	1,1	1,3	1,8
Spring rigidity	Total torsional rigidity	[10 ³ Nm/rad]	36,2	114,3	585	
	Angular spring rigidity ⁹⁾	[Nm/rad]	229	298	1990	

Dimensions [mm]

Size	16	40	160
A	93	101	125
D	77	104	167
D ₃	82	110	175
I ⁵⁾	40	55	85
I ₅	54	64	78
I ₆	84	104	136
L ⁵⁾	178,2	230,8	329,2
S	7,1	8,4	11,6

Mass moments of inertia J [10⁻³kgm²]

	Size	16	40	160
Clamping ring hub ^{5) 10)}		0,63	2,84	28,71
Disk pack		0,08	0,26	3,27
Adapting flange		0,38	1,67	15,36
Extension sensor		0,51	2,21	20,04

Weights [kg]

	Size	16	40	160
Clamping ring hub ^{5) 10)}		0,76	2,00	7,61
Disk pack		0,08	0,15	0,67
Adapting flange		0,43	1,11	3,89
Extension sensor		0,58	1,34	4,27

Measurement System Technical Data

- Supply voltage: 24 VDC (±5 %)
- Max. power consumption: 0,11 A
- Measuring signal-output: 0 ... ±5 V (dependent on rotational direction, 5 V with reference T_{KN})
- Nominal temperature range: 0...+70 °C
- Temperature drift zero point: 0,04 % / K
- Temperature drift measurement value: 0,03 % / K
- Band width: 0...1 kHz (-3 dB)
- Max. data transmission distance: 3 mm
- Protection: IP 54
- Max. dyn. load capability: 100 % of T_{KN}
- Connection: Sub-D plug, 9-pole
- Permitted speed: 0 - n_{max}
- Max. total errors: 1 % of T_{KN}

1) Other torque and installation sizes available on request.
 2) Valid for alternating loads as well as at maximum shaft misalignment.
 3) Valid for one rotational direction, max. load backlash ≤10⁵.
 4) Transmittable torques dependent on bore, see page 6.
 5) Technical Data for alternative securement variants, see pages 4 - 5.
 6) The permitted misalignments may not simultaneously reach their maximum value.

7) The values refer to couplings with 2 disk packs.
 8) Only permitted as a static or virtually static value.
 9) The values refer to one disk pack.
 10) The mass moments of inertia and the weights are valid for maximum bore.

Key hub

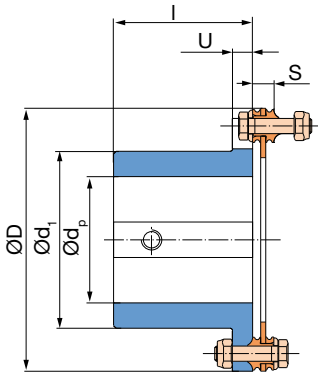


Fig. 3

Dimensions [mm]

Size	16	40	160
$d_{p \min}$	16	25	40
$d_{p \max}$	32	50	80
D	77	104	167
d_1	50	70	115
L	178,2	230,8	329,2
l	40	55	85
S	7,1	8,4	11,6
U	7	8	12

Mass moment of inertia J [10⁻³ kgm²]

Size	16	40	160
Hub ¹⁾	0,27	1,16	12,51

Weight [kg]

Size	16	40	160
Hub ¹⁾	0,46	1,02	4,25

1) Mass moment of inertia and weight are valid for maximum bore.

Key hub large

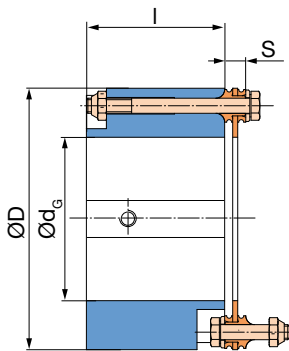


Fig. 4

Dimensions [mm]

Size	16	40	160
$d_{G \min}$	30	45	75
$d_{G \max}$	45	65	110
D	77	104	167
L	178,2	230,8	329,2
l	40	55	85
S	7,1	8,4	11,6

Mass moment of inertia J [10⁻³ kgm²]

Size	16	40	160
Hub ¹⁾	0,86	3,89	36,00

Weight [kg]

Size	16	40	160
Hub ¹⁾	0,87	2,08	7,23

1) Mass moment of inertia and weight are valid for maximum bore.

Shrink disk hub/external clamping

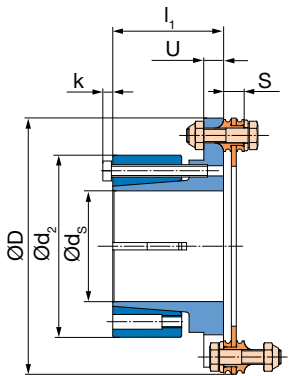


Fig. 5

Dimensions [mm]

Size	16	40	160
$d_{s \min}^{2)}$	14	25	40
$d_{s \max}^{2)}$	26	45	65
D	77	104	167
d_2	53	74	118
k	3,5	3,5	5,5
L	168,2	210,8	279,2
l_1	35	45	60
S	7,1	8,4	11,6
U	7	8	12

Mass moment of inertia J [10⁻³ kgm²]

Size	16	40	160
Hub ¹⁾	0,27	1,15	11,14

Weight [kg]

Size	16	40	160
Hub ¹⁾	0,49	1,03	3,99

1) Mass moment of inertia and weight are valid for maximum bore.

2) Transmittable torques are dependent on bore, see page 6.

Flange

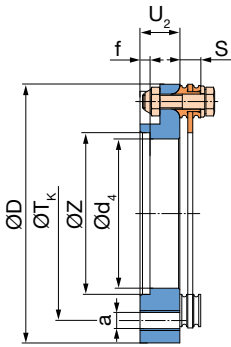


Fig. 6

Dimensions [mm]

Size	16	40	160
Z ^{H7}	45	65	105
a	6 x M8	6 x M10	6 x M14
D	77	104	167
d ₄	40	60	100
f	4	4	5
L	128,2	156,8	215,2
S	7,1	8,4	11,6
T _k	62	86	140
U ₂	15	18	28

Mass moment of inertia J [10⁻³ kgm²]

Size	16	40	160
Flange ¹⁾	0,23	0,89	9,48

Weight [kg]

Size	16	40	160
Flange ¹⁾	0,26	0,52	2,10

1) Mass moment of inertia and weight are valid for maximum bore.

Split clamping hub

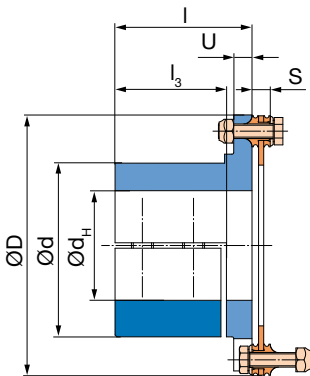


Fig. 7

Dimensions [mm]

Size	16	40	160
d _{H min} ^{2) 3)}	18	25	40
d _{H max} ^{2) 3)}	28	40	75
D	77	104	167
d	50	70	115
L	178,2	230,8	329,2
l	40	55	85
l ₃	31	43	69
S	7,1	8,4	11,6
U	7	8	12

Mass moment of inertia J [10⁻³ kgm²]

Size	16	40	160
Hub ¹⁾	0,25	1,20	12,49

Weight [kg]

Size	16	40	160
Hub ¹⁾	0,47	1,21	4,45

1) Mass moment of inertia and weight are valid for maximum bore.

2) Transmittable torques are dependent on bore, see page 6.

3) Design with optional keyway acc. DIN 6885 possible.

Shrink disk hub, large

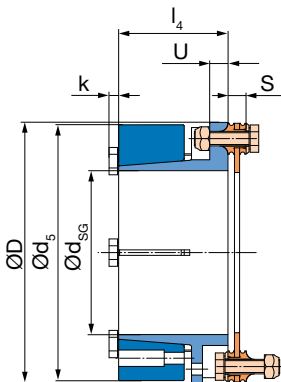


Fig. 8

Dimensions [mm]

Size	16	40	160
d _{SG min} ²⁾	25	40	65
d _{SG max} ²⁾	45	60	100
D	77	104	167
d ₅	77	100	162
k	3,5	3,5	5,5
L	178,2	220,8	299,2
l ₄	40	50	70
S	7,1	8,4	11,6
U	7	8	12

Mass moment of inertia J [10⁻³ kgm²]

Size	16	40	160
Hub ¹⁾	0,78	2,88	27,35

Weight [kg]

Size	16	40	160
Hub ¹⁾	0,79	1,71	6,08

1) Mass moment of inertia and weight are valid for maximum bore.

2) Transmittable torques are dependent on bore, see page 6.

Transmittable torques on clamping ring hubs
– dependent on bore

		Bore	Size		
			16	40	160
Frictionally-locking transmittable torques Clamping ring hubs	T_R [Nm]	Ø20	126	-	-
		Ø22	138	-	-
		Ø25	168	327	-
		Ø28	201	366	-
		Ø30	216	420	-
		Ø32	230	470	-
		Ø35	251	515	-
		Ø38	-	559	-
		Ø40	-	588	1256
		Ø45	-	661	1413
		Ø50	-	-	1680
		Ø55	Observe!		1940
		Ø60	Please observe		2117
		Ø65	permitted		2293
		Ø68	impact torques		2399
		Ø70	on the coupling		2470
		Ø80	sizes used		2822

Valid for H7 / h6

Transmittable torques on shrink disk hubs
– dependent on bore

		Bore	Size		
			16	40	160
Frictionally-locking transmittable torques Shrink disk hubs	T_R [Nm]	Ø14	157	-	-
		Ø16	179	-	-
		Ø20	240	-	-
		Ø22	269	-	-
		Ø25	312	438	-
		Ø28	-	491	-
		Ø30	-	526	-
		Ø32	-	600	-
		Ø35	-	669	-
		Ø38	-	741	-
		Ø40	-	796	1794
		Ø42	Observe!	852	1884
		Ø45	Please	932	2019
		Ø50	observe permitted		2400
		Ø55	impact torques		2680
		Ø60	on the coupling		2967
		Ø65	sizes used		3263

Valid for H7 / g6

Transmittable torques on shrink disk hubs, large
– dependent on bore

		Bore	Size		
			16	40	160
Frictionally-locking transmittable torques Shrink disk hubs large	T_R [Nm]	Ø25	339	-	-
		Ø28	404	-	-
		Ø30	448	-	-
		Ø32	492	-	-
		Ø35	558	-	-
		Ø38	620	-	-
		Ø40	659	873	-
		Ø42	694	937	-
		Ø45	738	1036	-
		Ø48	-	1132	-
		Ø50	-	1195	-
		Ø52	-	1255	-
		Ø55	-	1338	-
		Ø60	-	1454	-
		Ø65	-	-	3246
		Ø70	Observe!		3618
		Ø75	Please observe		3991
Ø80	permitted		4353		
Ø85	impact torques		4695		
Ø90	on the coupling		5007		
Ø100	sizes used		5497		

Valid for H7 / g6

Transmittable torques on split clamping hubs
– dependent on bore

		Bore	Size		
			16	40	160
Frictionally-locking transmittable torques Split clamping hubs	T_R [Nm]	Ø18	130	-	-
		Ø20	144	-	-
		Ø22	158	-	-
		Ø25	180	326	-
		Ø28	202	365	-
		Ø30	-	391	-
		Ø32	-	418	-
		Ø35	-	457	-
		Ø38	-	496	-
		Ø40	-	522	1218
		Ø42	-	-	1279
		Ø45	-	-	1370
		Ø50	-	-	1522
		Ø55	-	-	1675
		Ø60	-	-	1827
		Ø65	-	-	1979
		Ø68	-	-	2071
Ø70	-	-	2131		
Ø75	-	-	2284		

Valid for H7 / g6

Headquarters

Chr. Mayr GmbH + Co. KG
Eichenstrasse 1, D-87665 Mauerstetten
Tel.: 0 83 41/8 04-241, Fax: 0 83 41/80 44 22
www.mayr.de, eMail: info@mayr.de



mayr[®]

Service Germany

Baden-Württemberg

Roland Hanselmann
Jochen Maurer
Mittlere Holdergasse 5
71672 Marbach
Tel.: 0 71 44/1 80 34+35
Fax: 0 71 44/1 53 20

Bavaria

Manfred Schwarz
Eichenstrasse 1
87665 Mauerstetten
Tel.: 0 83 41/80 41 04
Fax: 0 83 41/80 44 23

Chemnitz

Martin Schlabing
Bornauer Strasse 205
09114 Chemnitz
Tel.: 03 71/4 74 18 96
Fax: 03 71/4 74 18 95

Franken

Jochen Held
Unterer Markt 9
91217 Hersbruck
Tel.: 0 91 51/81 48 64
Fax: 0 91 51/81 62 45

Hagen

Detlef Bracht
Im Langenstück 6
58093 Hagen
Tel.: 0 23 31/78 03 0
Fax: 0 23 31/78 03 25

Kamen

Thomas Kant
Lünener Strasse 211
59174 Kamen
Tel.: 0 23 07/23 63 85
Fax: 0 23 07/24 26 74

North

Bernd Massmann
Schiefer Brink 8
32699 Extetal
Tel.: 0 57 54/9 20 77
Fax: 0 57 54/9 20 78

Rhine-Main

Wolfgang Rattay
Jägerstrasse 4
64739 Höchst
Tel.: 0 61 63/48 88
Fax: 0 61 63/46 47

Branch office

China

Mayr Zhangjiagang
Power Transmission Co., Ltd.
Changxing Road No. 16,
215600 Zhangjiagang
Tel.: 05 12/58 91-75 62
Fax: 05 12/58 91-75 66
info@mayr.cn

Great Britain

Mayr Transmissions Ltd.
Valley Road, Business Park
Keighley, BD21 4LZ
West Yorkshire
Tel.: 0 15 35/66 39 00
Fax: 0 15 35/66 32 61
sales@mayr.co.uk

France

Mayr France S.A.
Z.A.L. du Minopole
BP 16
62160 Bully-Les-Mines
Tel.: 03.21.72.91.91
Fax: 03.21.29.71.77
contact@mayr.fr

Italy

Mayr Italia S.r.l.
Viale Veneto, 3
35020 Saonara (PD)
Tel.: 0 49/8 79 10 20
Fax: 0 49/8 79 10 22
info@mayr-italia.it

Singapore

Mayr Transmission (S) PTE Ltd.
No. 8 Boon Lay Way Unit 03-06,
TradeHub 21
Singapore 609964
Tel.: 00 65/65 60 12 30
Fax: 00 65/65 60 10 00
info@mayr.com.sg

Switzerland

Mayr Kupplungen AG
Tobeläckerstrasse 11
8212 Neuhausen am Rheinfall
Tel.: 0 52/6 74 08 70
Fax: 0 52/6 74 08 75
info@mayr.ch

USA

Mayr Corporation
4 North Street
Waldwick
NJ 07463
Tel.: 2 01/4 45-72 10
Fax: 2 01/4 45-80 19
info@mayrcorp.com

Representatives

Australia

Transmission Australia Pty. Ltd.
22 Corporate Ave,
3178 Rowville, Victoria
Australien
Tel.: 0 39/7 55 44 44
Fax: 0 39/7 55 44 11
info@transaus.com.au

China

Mayr Shanghai
Representative Office
Room 506, No. 1007,
Zhongshan South No. 2 Road
200030 Shanghai, VR China
Tel.: 0 21/64 57 39 52
Fax: 0 21/64 57 56 21
sales@mayr.com.cn

India

National Engineering
Company (NENCO)
J-225, M.I.D.C.
Bhosari Pune 411026
Tel.: 02 02/7 47 45 29
Fax: 02 02/7 47 02 29
nenco@vsnl.com

Japan

Sumitomo HI-PTC
Sales Co., Ltd.
Kanda Kihara BLDG. 3-5-8
Kandakaji-Cho, Chiyoda-Ku
Tokyo J101-0045
Tel.: 03/52 56 30 91
Fax: 03/52 56 30 98
Gotou.k@sumiju.co.jp

South Africa

Torque Transfer
Private Bag 9
Elandsfontein 1406
Tel.: 0 11/3 45 80 00
Fax: 0 11/9 74 05 24
torque@bearings.co.za

South Korea

Mayr Korea Co. Ltd.
60-11, Woongnam-Dong
ROK Changwon
Rep. of Korea
Tel.: 0 55/2 62-40 24
Fax: 0 55/2 62-40 25
info@mayrkorea.com

Taiwan

German Tech Auto Co. Ltd.
No. 58, Wu Chuan Road
Wu-Ku Industrial Park
Taipei Hsien, Taiwan
Tel.: 02/22 99 02 37
Fax: 02/22 99 02 39
steve@zfgta.com.tw

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DTC. Co.Ltd.,
Block 5th, No. 1699,
East Zhulu Road,
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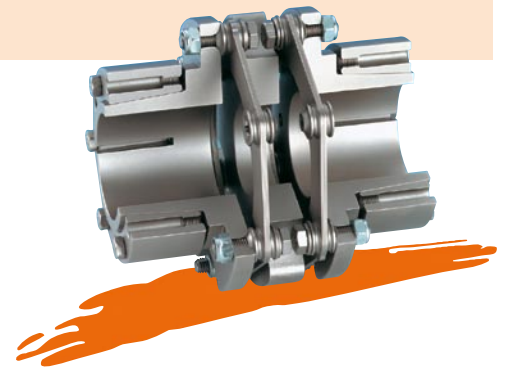
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