

SPRINGFIX® LINKAGES

...our linkages, your solution

Universal Joints



Single Universal Joints

Available with plain bearings or needle roller bearings. Plain bore and keyed bores stocked as standard, hex or square shaped bores on request.

Sizes Bore sizes from 6mm diameter up to 50mm diameter.



Pages 199 - 202

Double Universal Joints

Available with plain bearings or needle roller bearings. Plain bore and keyed bores stocked as standard, hex or square shaped bores on request.

Sizes Bore sizes from 6mm diameter up to 50mm diameter.



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Stainless Steel Universal Joints

Single and double universal joints with plain bearings and plain bores. Keyed, hex, or square shaped bores available on request.

Sizes Bore sizes from 6mm diameter up to 30mm diameter.



Pages 206- 207

Telescopic Universal Joints

Two universal joints connected by a sliding splined shaft with the ability to extend, allowing adjustments in length during installation.

Sizes Bore sizes from 10mm diameter up to 30mm diameter.



Pages 190 - 193

Universal Joint Bellows

Available for both single and double universal joints, bellows are used to cover and protect the joints.

Sizes Available to protect joints up to 58mm outside diameter.



Pages 203 - 204

Quick Release Universal Joints

Quick change mechanism one end of the joint to allow rapid connection and release of the shaft, ideal when time is critical.

Sizes Bore sizes from 8mm diameter up to 30mm diameter.



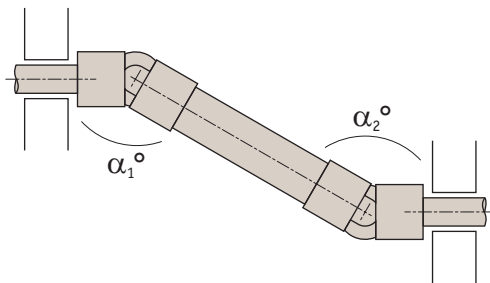
Pages 205

When one single joint is coupled with two shafts (of which the driving one is rotating at a constant speed) forming an angle, a periodic variation of the driven shaft is caused with exactly four fluctuations per revolution.

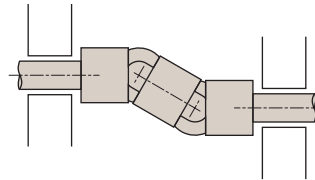
The difference between the maximum and the minimum speed of the driven shaft depends on the angle formed by the two shafts. The difference grows with the increase of the angle α° . To have a smooth transmission, either two opposite single joints (ensuring that the two central yokes lie on the same plane and the angles are equal) or a double joint need to be fitted. The irregularity caused by the articulation of the first unisex joint is cancelled by the second unisex joint. The overall length resulting from the coupling of the two single joints can be reduced by using a double unisex joint. In other words, the double joint is to be considered as the shortest method of achieving smooth transmission.

For low speed applications (max. 1000 rpm), joints with plain bearings are recommended. They are able to support shock loads, motion reversal, irregular running and relatively high torques. The working angles must be restricted when using at speeds between 500 - 1000 rpm. Please consult our technical department if you have such an application.

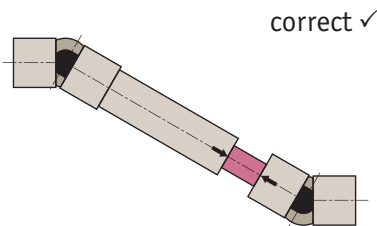
For high rotation speeds, relatively low torques or wide angles, joints with needle roller bearings are preferred. They can reach 4000 rpm dependent on the angle.



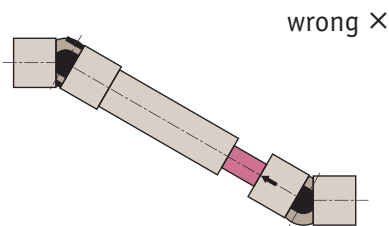
To obtain a uniform rotary motion always use either two opposite single joints or one double joint. $\alpha_1 = \alpha_2$



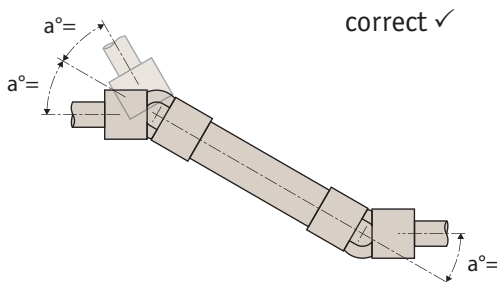
The pillow blocks supports should be positioned as close as possible to the joints



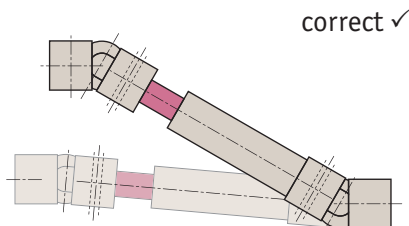
When using two opposite single joints ensure the alignment of the inside yokes



In extendable transmissions make sure that the arrows are perfectly aligned



It is essential that the two bending angles a° are equal



How to read diagrams

The joints capacity to transmit a regular torque at a constant load with no shocks, for a long period, mainly depends on the number of revolutions per minute and the inclination angle a° of the two axes. The diagrams on the following pages are based on this. Each curve corresponds to the joint size (outside diameter "D") and represents the torque that the joint can transmit depending on speed and working angle a° .

The diagrams can be directly read if angle (a°) is 10° . For wider angles, torques are reduced, these should be corrected using the correction vales (F) relating to the angle shown in the table.

IMPORTANT

Graph values are merely indicative and refer to the single joints only. When choosing a double joint, you have to consider that they can transmit a torque about 10% lower than the same sized single joints. Each application has its own particular motion characteristics, such as: shock loads, motion reversals, connected masses, kind of starting, presence of elastic joints, stops and starts, etc., that have to be considered when choosing the joint.

Working angle a°	Correction value F
5°	1,25
10°	1,00
15°	0,80
20°	0,65
25°	0,55
30°	0,45
35°	0,38
40°	0,30
45°	0,25

Torque Calculation for Plain Bearings

Power: 0,65 KW, RPM: 230

With working angle a 10° Value F = 1 we get point P. Torque = 27 Nm corresponding to joint size "D" = 25/26mm. = Types R3688.016 and R3689.012

With working angle a 30° Value F = 0.45 (Kw 0,65: 0,45 = 1,44Kw) we get point P1 Torque = 60 Nm corresponding to joint size "D" = 32mm. = Types R3688.020 and R3689.016

Consider that:

$$\text{Torque in Nm} = 9550 \times \frac{\text{Power (KW)}}{\text{RPM}}$$

$$\text{Torque in Nm} = 7020 \times \frac{\text{Power (HP)}}{\text{RPM}}$$

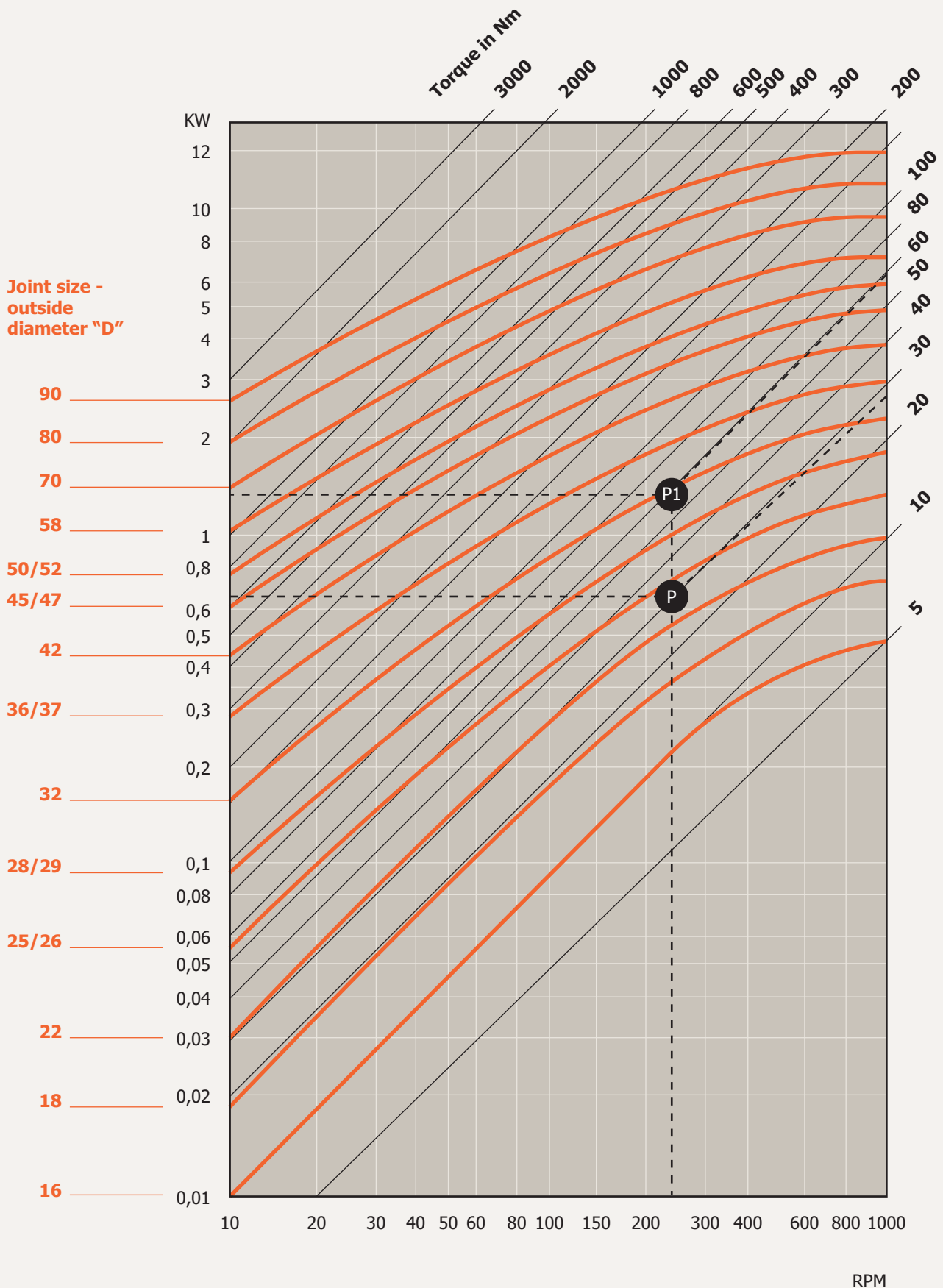
Note: 1 KW = 1,35 HP and HP = 0,736 KW

Note: 1 Kgm = 9,81 Nm and Nm = 0,102 Kgm

Torque Ratings for Plain Bearing Universal Joints

Plain Bearings Single & Double Universal Joints

Not applicable for stainless versions, please contact our Technical Sales Department for further details.



*For double universal joints reduce torque by 15%

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Working angle a°	Correction value F
5°	1,25
10°	1,00
15°	0,90
20°	0,80
25°	0,70
30°	0,50
35°	0,40
40°	0,30
45°	0,25

Torque Calculation

Power: 0,55 KW, RPM: 2300

With working angle a 10° Value F = 1 we get point P. Torque = 23 Nm corresponding to joint size "D" = 28mm. = Type R3686.014

With working angle a 25° Value F = 0.70 (Kw 5,5: 0,70 = 7,85Kw) we get point P1 Torque = 33 Nm corresponding to joint size "D" = 32mm. = Type R3686.016

Consider that:

$$\text{Torque in Nm} = 9550 \times \frac{\text{Power (KW)}}{\text{RPM}}$$

$$\text{Torque in Nm} = 7020 \times \frac{\text{Power (HP)}}{\text{RPM}}$$

Note: 1 KW = 1,35 HP and HP = 0,736 KW

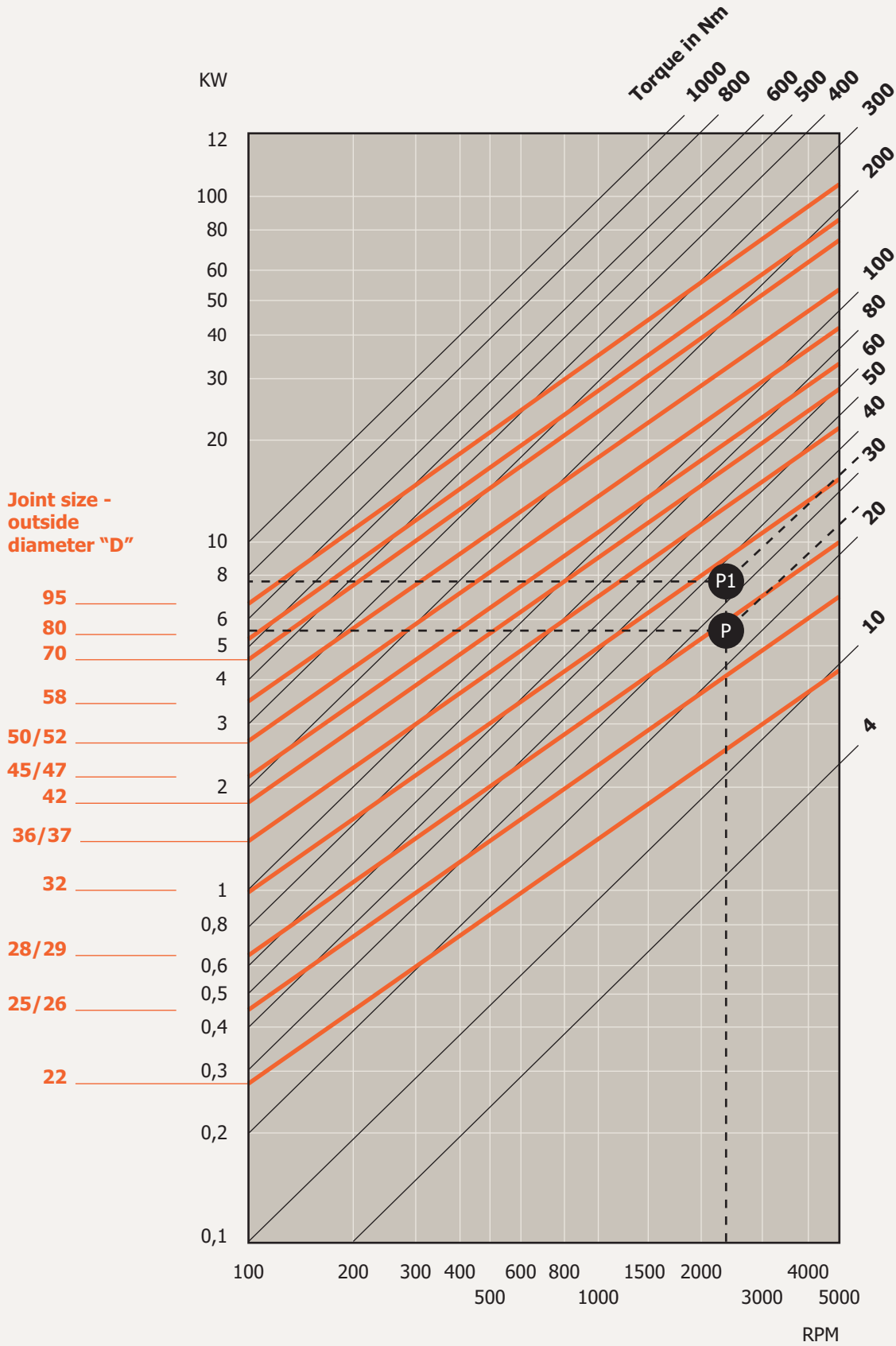
Note: 1 Kgm = 9,81 Nm and 1Nm = 0,102 Kgm

Factor in a safety factor for shock load, reciprocating methods, start-up shocks etc.

Torque Ratings for Needle Roller Bearings Universal Joints

Needle Roller Bearings Single & Double Universal Joints

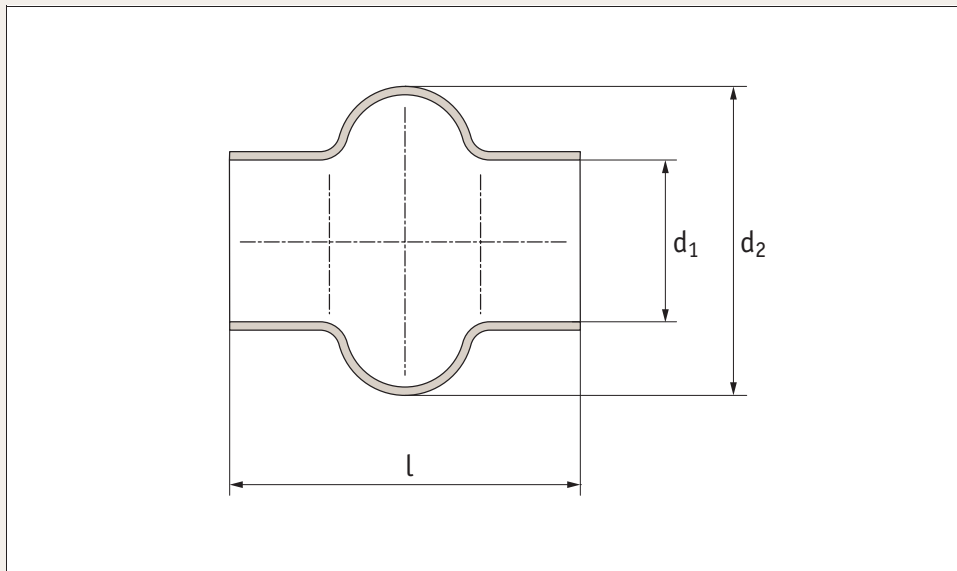
Not applicable for stainless versions, please contact our Technical Sales Department for further details.



***For double universal joints reduce torque by 15%**



R3691



Material
Rubber.

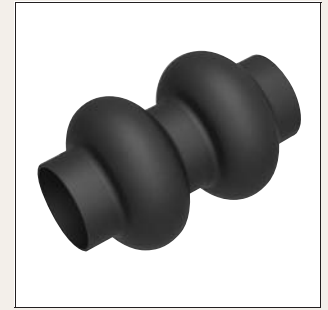
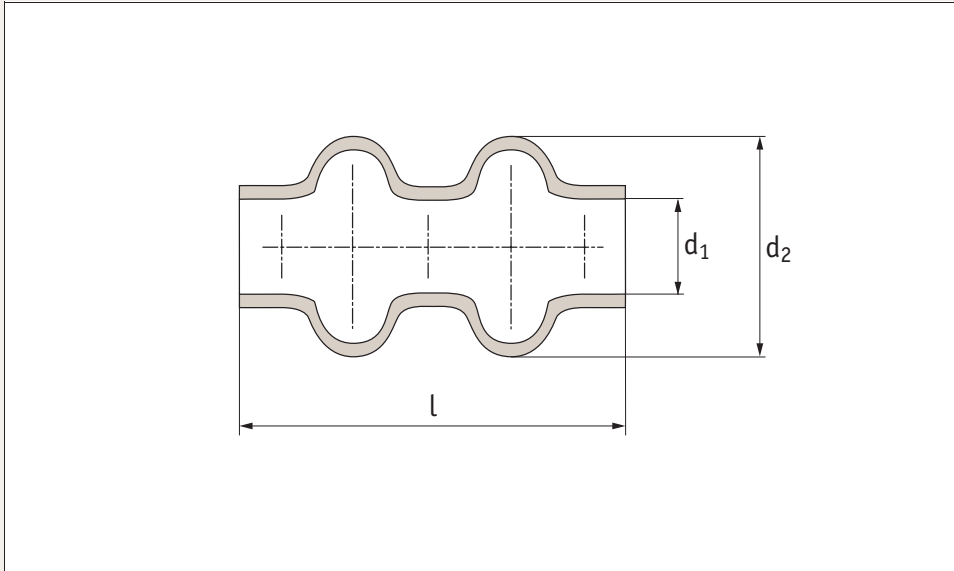
Tips

Bellows give universal joints full protection against ingress of dirt. They can be filled with grease which gives long term lubrication for friction bearings. Bellows should be secured at each end with two cable ties (not supplied).

Order No.	To suit joint of o.d	d ₁	d ₂	l
R3691.016	16	15,0	28	34
R3691.018	18	16,5	32	40
R3691.022	22	20,5	40	45
R3691.025	25/26	24,5	48	50
R3691.028	28/29	27,5	52	56
R3691.032	32	30,5	56	65
R3691.036	36/37	35,5	66	72
R3691.042	42	40,0	75	82
R3691.045	45/47	45,0	84	95
R3691.050	50/52	50,0	92	108
R3691.058	58	56,0	100	122

Bellows

for double universal joints



R3692

Material

Black elastomer plastic (smooth PVC)

Tips

Bellows give universal joints full protection against ingress of dirt. They can be filled with grease which gives long term lubrication for friction bearings. Bellows should be secured at each end with two cable ties (not supplied).

Order No.	To suit joint of o.d	d ₁	d ₂	l
R3692.016	16	16	35	55
R3692.022	22	20	36	65
R3692.025	25	24	44	70
R3692.028	28	28	51	80
R3692.032	32	32	62	90
R3692.042	42	40	73	120
R3692.050	50	50	90	155