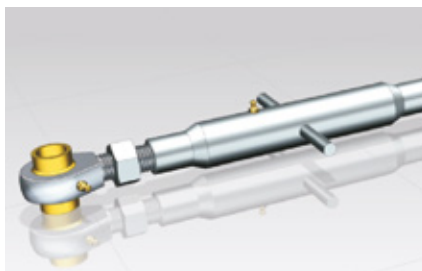


## Accessories



In our permanent search to develop useful products to our present and future customers, we present, under the heading Accessories, a collection of widely used products in Power Transmission applications.

Although at a first glance they may appear as a heterogeneous co-

lection of products, they have in common their usefulness in the day to day Power Transmission activity. Last but not least, we will steadily add new product developments to cover new needs.

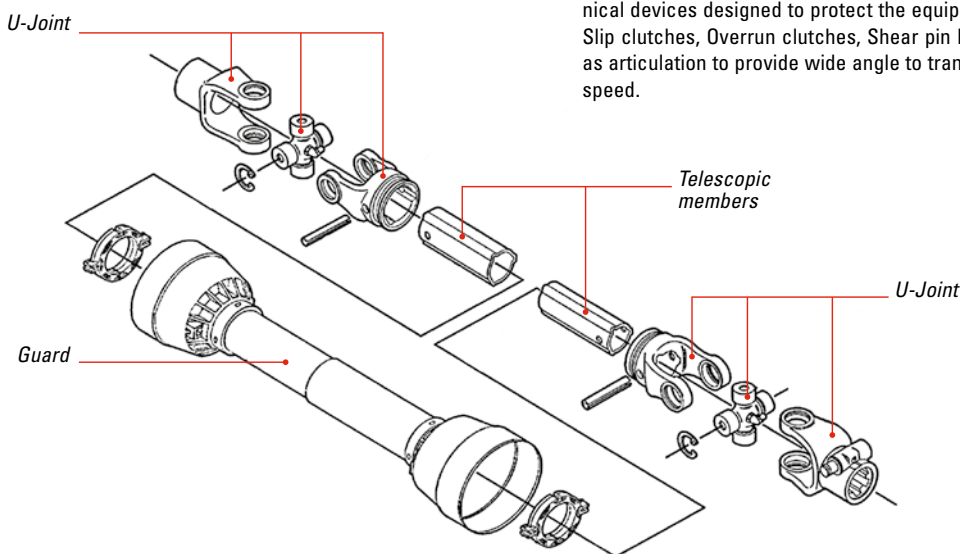
For any special need in Power Transmission application, we suggest to contact our Commercial Department.

## PTO SHAFTS

### Power Take-Off (PTO)

The PTO is a mechanical power transmission device transmitting torque from a mechanical source, a shaft, to a mechanically operated equipment, amongst the most common we find, farming tractors and trucks.

The ISO 5673-1 Standard specifies the PTO drive shafts for Agricultural tractors and machinery and power-input connection.



The basic configuration of a PTO shaft is composed of:

- Universal joint, known as well as U-Joint, which in turn is composed of two yokes and the cross of one end.
- The sliding telescopic members, Male and Female.
- The Universal joint of the other end, and the PTO shaft guard.

At the equipment end, there are available different types of mechanical devices designed to protect the equipment from overloads as, Slip clutches, Overrun clutches, Shear pin bolt clutches and others as articulation to provide wide angle to transmit torque and uniform speed.

In the catalog, we only display the basic configuration out of the many possible. The different configurations are based on:

- The tractor power shaft.

- The U-Joint and yokes to match the power shaft.
- The telescopic members with different profiles.
- The PTO guard.

It is known as well as U-Joint Shaft for Universal Joint Shaft and Cardani<sup>i</sup> Shaft.

### Tractor Power Shaft

Specifies in the Standard ISO 500-1 covering, amongst other topics,

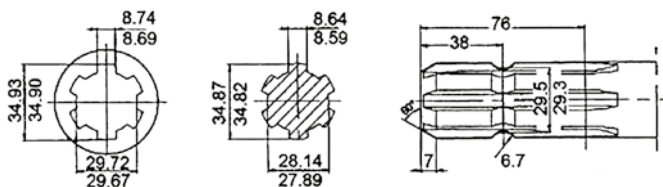
Agricultural tractors – Rear mounted power-off types 1, 2, 3 and 4.

PTO Type	TYPE 1	TYPE 2	TYPE 3	TYPE 4
Nominal diameter	1 3/8" - 35 mm	1 3/8" - 35 mm	1 3/4" - 45 mm	2 1/4" - 57,5 mm
Type of spline	Straight	Involute	Involute	Involute
Number of splines	6	21	20	22
Nominal angular speed*	540 / 1000	1000	1000	1300
Recommended PTO power**	< 65 kW < 110	< 130 kW	< 300 kW	< 500 kW

\* Clockwise viewed from tractor's behind in revs/min.

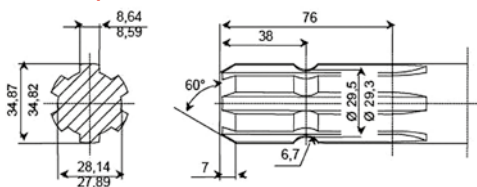
\*\* At rated engine speed.

#### 1 3/8 Z6 splines. 540 RPM

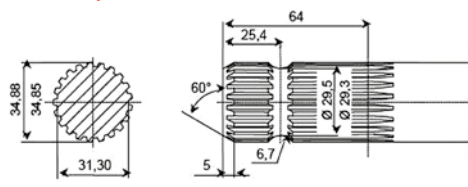


<sup>i</sup> After Gerolamo Cardano, Italian 16th Century mathematician, physicist, chemist and astronomer.

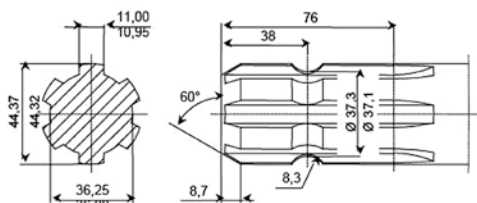
**1 3/8" - 6 spline**



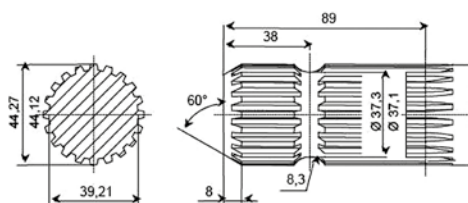
**1 3/8" - 21 spline**



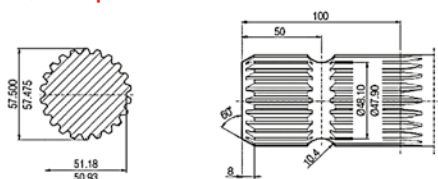
**1 3/4" - 6 spline**



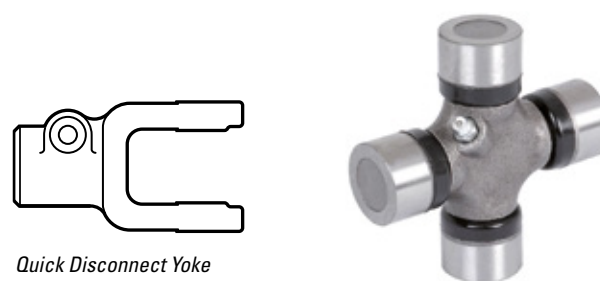
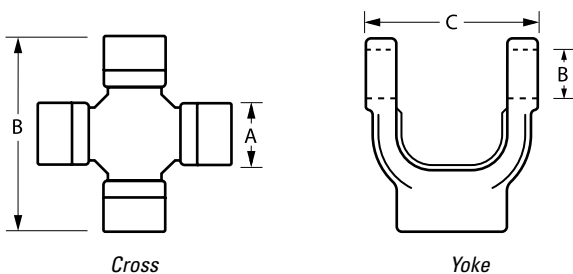
**1 3/4" - 20 spline**



**2 1/4" - 22 spline**



**U-Joints and Yokes**



CROSS TYPE B*		YOKE*	REFERENCE
A	B	C	
22,00	54,00	63,50	TL-UJ-811
23,80	61,30	70,00	TL-UJ-341AG
27,00	70,00	79,50	TL-UJ-813
27,00	74,60	84,00	TL-UJ-344AG
30,20	80,00	91,00	TL-UJ-815
30,20	92,00	103,00	TL-UJ-331AG
34,90	94,00	106,00	TL-UJ-818
34,90	106,50	117,00	TL-UJ-351AG
41,00	108,00	119,00	TL-UJ-819

QUICK DISCONNECT YOKE		REFERENCE
Bore	N° Splines	
1 3/8"	6	TL-UJ-1000
1 3/8"	6	TL-UJ-1002
1 3/8"	6	TL-UJ-1004
1 3/8"	6	TL-UJ-1006
1 3/8"	21	TL-UJ-1007
1 3/8"	6	TL-UJ-1008
1 3/8"	21	TL-UJ-1009
1 3/8"	6	TL-UJ-1010
1 3/8"	21	TL-UJ-1011
1 3/8"	6	TL-UJ-1012
1 3/8"	21	TL-UJ-1013
1 3/8"	6	TL-UJ-1472
1 3/8"	21	TL-UJ-1473
1 3/4"	20	TL-UJ-1470
1 3/8"	6	TL-UJ-1014
1 3/8"	21	TL-UJ-1005
1 3/4"	20	TL-UJ-1001

\* All measures in mm.

CROSS TYPE W*		YOKE*	REFERENCE
A	B	C	
22,00	55,00	62,00	TL-WUJ-812
23,80	61,00	68,00	TL-UJ-341AG
27,00	70,00	77,00	TL-UJ-813
27,00	74,60	84,00	TL-UJ-344AG
32,20	76,00	86,00	TL-WUJ-814
30,20	92,00	101,00	TL-UJ-331AG
36,00	88,80	100,00	TL-WUJ-817
42,00	104,00	116,00	TL-WUJ-821

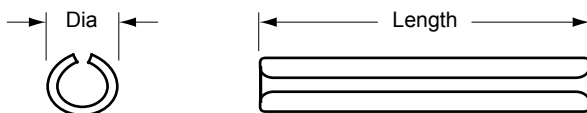
QUICK DISCONNECT YOKE		REFERENCE
Bore	N° Splines	
1 3/8"	6	TL-WUJ1600
1 3/8"	6	TL-UJ-1002
1 3/8"	6	TL-UJ-1004
1 3/8"	6	TL-UJ-1006
1 3/8"	21	TL-UJ-1007
1 3/8"	6	TL-WUJ-1610
1 3/8"	6	TL-UJ-1010
1 3/8"	21	TL-UJ-1011
1 3/8"	6	TL-WUJ-1612
1 3/8"	21	TL-WUJ-1613
1 3/4"	20	TL-WUJ-1614
1 3/8"	6	TL-WUJ-1601
1 3/8"	21	TL-WUJ-1602
1 3/4"	20	TL-WUJ-1603

\* All measures in mm.

### Roll Pin

DIAMETER*	LENGTH*	REFERENCE
0,34	2,00	TL-UJ-81
0,34	2,35	TL-UJ-82
0,34	3,17	TL-UJ-87
0,42	2,36	TL-UJ-83
0,42	2,57	TL-UJ-84
0,42	2,96	TL-UJ-85
0,42	3,16	TL-UJ-86
0,42	3,56	TL-UJ-89
0,50	3,18	TL-UJ-88

\* All measures in inches.



Trilobular Outxer Yoke



1 3/8" Z21 Yoke



1 3/8" Z6 Yoke



PTO Shear Bolt



PTO Slip Clutch

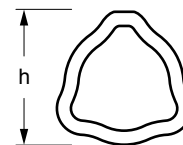


Sprag Clutch. Free Wheel

## Telescopic profiles

### Trilobular Profile

CROSS SIZE B		PTO type	PROFILE HEIGHT h		REFERENCE
mm	in		mm	in	
54,00	2,12	B	26,67	1,05	TL-1061
61,30	2,41	B	29,21	1,15	TL-1062
70,00	2,75	B	32,77	1,29	TL-1071
74,60	2,94	B	36,07	1,42	TL-1072*
80,00	3,15	B	43,43	1,71	TL-1073
92,00	3,62	B	44,70	1,76	TL-1065**
94,00	3,70	B	51,56	2,03	TL-1075
106,50	4,19	B	53,85	2,12	TL-1076***
108,00	4,25	B	55,12	2,17	TL-1078



\* Wall 0,16" TL1064.

\*\* Wall 0,22" TL1067.

\*\*\* Wall 0,20" TL1069.

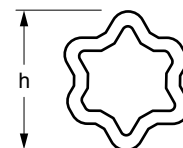
### Lemon Profile

CROSS SIZE B		PTO type	PROFILE HEIGHT h		REFERENCE
mm	in		mm	in	
55,00	2,15	W	29,98	1,18	TL-1671
61,00	2,41	W	34,54	1,36	TL-1662
70,00	2,75	W	39,62	1,56	TL-1666
74,50	2,94	W	41,15	1,62	TL-1672
76,00	2,99	W	48	1,89	TL-1676



### Star Profile

CROSS SIZE B		PTO type	PROFILE HEIGHT h		REFERENCE
mm	in		mm	in	
88,80	3,50	W	50,55	1,99	TL-1667
104,00	4,09	W	60,45	2,38	TL-1677



Trilobular Profile



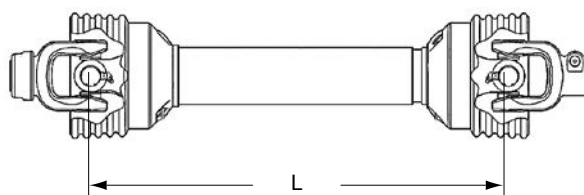
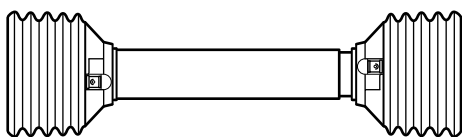
Lemon Profile



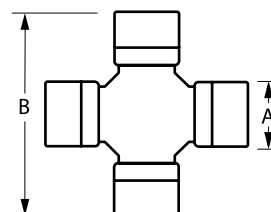
Star Profile

## Guard

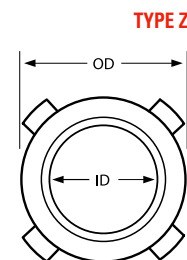
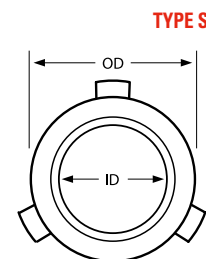
The length of the PTO Shaft is measured from cross center across cross center.



CROSS MEASURES		CROSS TYPE	REFERENCE GUARD
A	B		
22,00	54,00	B	TL-2071
23,80	61,30	B	TL-2071
27,00	70,00	B	TL-2071
27,00	74,60	B	TL-2071
30,20	80,00	B	TL-2072
30,20	92,00	B	TL-2072
34,90	94,00	B	TL-2072
34,90	106,50	B	TL-2073
41,00	108,00	B	TL-2073
22,00	55,00	W	TL-2071
23,80	61,00	W	TL-2071
27,00	70,00	W	TL-2071
27,00	74,60	W	TL-2071
32,00	76,00	W	TL-2072
30,20	92,00	W	TL-2072
36,00	88,80	W	TL-2072
42,00	104,00	W	TL-2073



REFERENCE BEARING KIT	TYPE OF BEARING	INNER / OUTER	ID INCH	OD INCH	MATCHING GUARD
TL-2080	S	Inner Shield	1,35	2,80	TL-2071
		Outer Shield	1,58	2,80	
TL-2081	S	Inner Shield	1,62	2,80	TL-2071
		Outer Shield	1,62	2,80	
TL-2082	S	Inner Shield	1,58	2,80	TL-2071
		Outer Shield	1,86	2,80	
TL-2083	S	Inner Shield	1,86	2,80	TL-2071
		Outer Shield	2,08	2,80	
TL-2084	S	Inner Shield	1,98	2,80	TL-2071
		Outer Shield	1,98	2,80	
TL-2085	Z	Inner Shield	2,10	3,27	TL-2072
		Outer Shield	2,47	3,27	
TL-2086	Z	Inner Shield	2,46	3,27	TL-2072
		Outer Shield	2,46	3,27	
TL-2087	Z	Inner Shield	2,34	3,28	TL-2072
		Outer Shield	2,69	3,28	
TL-2088	Z	Inner Shield	2,68	4,06	TL-2073
		Outer Shield	3,16	4,06	
TL-2089	Z	Inner Shield	3,26	4,06	TL-2073
		Outer Shield	3,26	4,06	







Tractor with a Post-hole digger



Tractor with a Rotary cutter



Tractor with a Flail mower



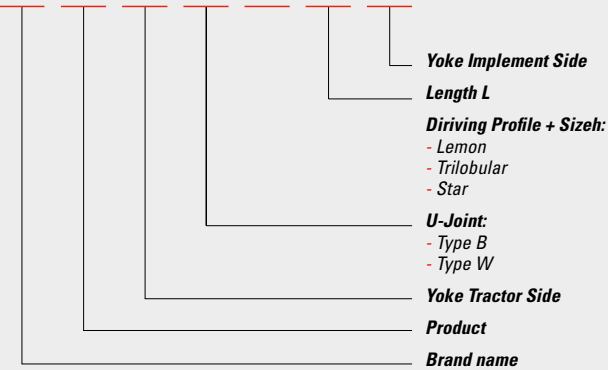
Tractor with a Water pump



Tractor with an AC Generator

## GUIDE TO ORDER

### TL - PTO



## SHAFT COLLARS

The shaft collars use the compression force to generate friction, which locks the collar onto a shaft. Used in virtually any power transmission application either fixing the position of bearings in a shaft inside a speed reducer or a gearbox, on pulleys, on gears or simply as an axial stop.

The shaft collars behave well under constant type of loads while

### Single-split shaft collars

Known as well as One-piece shaft collars, they distribute even the clamping forces and provides a big position holding power without damaging the shaft, due to the clamping bolt position design. Our program offers versions in steel, stainless steel, aluminum and surface treatments of Black Oxide, Zinc Plated and Yellow Plated Zinc and Anodized Aluminum.

### Double-split shaft collars

Has some additional features over the Single-split, its versatility in assembling and disassembling, the more uniform distribution of the clamping force around the shaft due to the two screws and the higher seating torque of the two screws when compared with the seating torque of the Single-split version.

Offered in steel and stainless steel versions as well as aluminum, with a choice of surface treatments as Black Oxide, Plain Zinc Plating, Yellow Zinc Plating, Passivation in the case of Stainless Steel and Anodizing in the case of Aluminum.

they do not absorb as well the shock loads. Our program offers different types of shaft collars, Single-split shaft collars, Double-split shaft collars and Adjusting Rings or Set Screw.

The Single-split and Double-split, both have threaded versions.

### Threaded

Threaded collars while having similar performance than its equivalents of round bore; they have a higher axial holding power. We offer threaded shaft collars in the same versions of materials and treatments than their round bore equivalents.

### Adjusting rings

Known as well as set Screw shaft collars. Used with shafts of mild steel and hard Set Screws for greater torque. Manufactured under the 705 DIN Standard in the three basic forms, A, B and C with Grub Screws type under the Standards DIN 913, DIN 914, DIN 915 and DIN 916.

### Inch-One-piece Shaft Collars. Series 111

BORE SIZE IN INCHES	OD IN INCHES	WITDH IN INCHES	MATERIALS, COATINGS & PLATINGS
Step increases of 1/16"			
1/8 to 4	1/2 ; 5/8 ; 11/16 ; 7/8 ; 15/16		Plain
	1 1/8 ; 1 1/4 ; 1 5/16 ; 1 3/8	1/4 ; 5/16 ; 11/32	Black Oxide
	1 1/2 ; 1 5/8 ; 1 3/4 ; 1 7/8	3/8 ; 13/32 ; 7/16	Zinc Plated
	2 1/16 ; 2 1/8 ; 2 1/4 ; 2 3/8	1/2 ; 9/16 ; 11/16	Stainless 304
	2 5/8 ; 2 3/4		Plain
			Aluminum Anodized



Series 111. Black Oxide

Product Reference: TL-SC111-OD-Material-Treatment.

Bore tolerance in inches.

Up to 3/16: +0,003 to +0,0006.

From 1/4 to 1 1/8: +0,006 to +0,0008.

From 1 3/16 to 2 15/16: +0,008 to +0,0008.

Over 3: +0,008 to +0,0008.

### Metric-One-piece Shaft Collar. Series 106

BORE SIZE IN MM	OD IN INCHES	WITDH IN INCHES	MATERIALS, COATINGS & PLATINGS
Step increases of 1 mm*			
30 to 80	16 - 18 - 24 - 28 - 30 - 34	9 - 11 - 13 - 15 - 19	Plain
	36 - 40 - 45 - 54 - 57 - 60		Black Oxide
	73 - 78 - 82 - 88 - 93 - 98		Zinc Plated
	103 - 108		Stainless 304
			Aluminum Anodized



Series 106. Black Oxide

Product Reference: TL-SC106-OD-Material-Treatment.

Bore tolerance in mm.

From 2 to 5: +0,08 to +0,01.

From 5 to 20: +0,10 to +0,02.

From 20 to 75: +0,15 to +0,02.

Over 75: +0,20 to +0,02.

\* Bores from 3 to 18 mm in steps of 1 mm.

From 20 mm and on, in steps of 5 mm.

### Inch-Double Split Shaft Collars. Series 112

BORE SIZE IN INCHES	OD IN INCHES	WITDH IN INCHES	MATERIALS, COATINGS & PLATINGS
Step increases of 1/16"			
1/8 to 4	1/2 ; 5/8 ; 11/16 ; 7/8 ; 15/16 ; 1 1/8		Plain
	1 1/4 ; 1 5/16 ; 1 3/8 ; 1 1/2 ; 1 5/8 ;	1/4 ; 5/16 ; 11/32	Black Oxide
	1 3/4 ; 1 7/8 ; 2 1/16 ; 2 1/8 ; 2 1/4 ;	3/8 ; 13/32 ; 7/16 ; 1/2	Zinc Plated
	2 3/8 ; 2 5/8 ; 2 3/4 ; 2 7/8 ; 3 ; 3 1/8 ;	9/16 ; 11/16 ; 3/4 ; 7/8	Stainless 304
	3 1/4 ; 3 3/8 ; 3 1/2 ; 3 3/4 ; 3 7/8 ;		Plain
4 ; 4 1/4 ; 4 1/2 ; 4 3/4 ; 5 1/4			Aluminum Anodized



Series 112. Black Oxide

Product Reference: TL-SC112-OD-Material-Treatment

Bore tolerance in inches.

Up to 3/16: +0,003 to 0,0006.

From 1/4 to 1 1/8: +0,006 to +0,0008.

From 1 3/16 to 2 15/16: +0,008 to +0,0008.

Over 3: +0,008 to +0,0008.



### Metric-Double Split Shaft Collars. Series 107

BORE SIZE IN MM	OD IN INCHES	WIDTH IN INCHES	MATERIALS, COATINGS & PLATINGS
Step increases of 1 mm*			
30 to 80	16 - 18 - 24 - 28 - 30 - 34	9 - 11 - 13 - 15 - 19	Steel - Plain
	36 - 40 - 45 - 54 - 57 - 60		Steel - Black Oxide
	73 - 78 - 82 - 88 - 93 - 98		Steel - Zinc Plated
	103 - 108		Steel - Stainless 304
			Aluminum - Plain
			Aluminum - Anodized

Product Reference: TL-SC107-OD-Material-Treatment.  
 Bore tolerance in mm.  
 From 2 to 5: +0,08 to +0,01.  
 From 5 to 20: +0,10 to +0,02.  
 From 20 to 75: +0,15 to +0,02.  
 Over 75: +0,20 to +0,02.

\* Bores from 3 to 18 mm in steps of 1 mm.  
 From 20 mm and on, in steps of 5 mm.



Series 107. Stainless Steel

### Inch-Single-Split Threaded Shaft Collars. Series 113

BORE SIZE IN INCHES	OD UNF THREAD SIZE	WIDTH IN INCHES	MATERIALS, COATINGS & PLATINGS
Step increases of 1/16"			
#10-32 ; 1/4-20(28) ; 5/16-18(24)			Steel - Plain
3/8-16(24) ; 7/16-14(20) ; 1/2-13(20)	5/8 ; 11/16 ; 7/8 ; 15/16 ; 1 1/8	5/16 ; 11/32 ; 3/8 ; 13/32	Steel - Black Oxide
5/8-11(18) ; 3/4-10(16) ; 7/8-9(14)	1 5/16 ; 1 1/2 ; 1 5/8 ; 1 3/4 ; 1 7/8	7/16 ; 1/2 ; 9/16	Steel - Zinc Plated
1-8 ; 1-12 ; 1-14 ; 1 1/8-12	2 1/16 ; 2 3/8 ; 3 ; 3 1/4	11/16 ; 3/4	Steel - Stainless 304
1 1/4-7(12) ; 1 1/2-6(12)			Aluminum - Plain
2 - 12 ; 2 1/4-12			Aluminum - Anodized

Product Reference: TL-SC113-OD-Material-Treatment.



Series 113. Stainless Steel 304

### Inch-DoubleSplit Threaded Shaft Collars. Series 114

BORE SIZE IN INCHES	OD UNF THREAD SIZE	WIDTH IN INCHES	MATERIALS, COATINGS & PLATINGS
Step increases of 1/16"			
#10-32 ; 1/4-20(28) ; 5/16-18(24)			Steel - Plain
3/8-16(24) ; 7/16-14(20) ; 1/2-13(20)	5/8 ; 11/16 ; 7/8 ; 15/16 ; 1 1/8	5/16 ; 11/32 ; 3/8 ; 13/32	Steel - Black Oxide
5/8-11(18) ; 3/4-10(16) ; 7/8-9(14)	1 5/16 ; 1 1/2 ; 1 5/8 ; 1 3/4 ; 1 7/8	7/16 ; 1/2 ; 9/16	Steel - Zinc Plated
1-8 ; 1-12 ; 1-14 ; 1 1/8-12	2 1/16 ; 2 3/8 ; 3 ; 3 1/4	11/16 ; 3/4	Steel - Stainless 304
1 1/4-7(12) ; 1 1/2-6(12)			Aluminum - Plain
2 - 12 ; 2 1/4-12			Aluminum - Anodized

Product Reference: TL-SC114-OD-Material-Treatment.



Double Split Threaded Shaft Collar. Series 114. Aluminum

**Inch-Heavy Duty Single Split Shaft Collars. Series 115**

BORE SIZE IN INCHES	OD UNF THREAD SIZE	WITDH IN INCHES	MATERIALS, COATINGS & PLATINGS
Step increases of 1/16"			
#10-32; 1/4-20(28); 5/16-18(24)			Plain
3/8-16(24); 7/16-14(20); 1/2-13(20)	5/8; 11/16; 7/8; 15/16; 1 1/8	5/16; 11/32; 3/8; 13/32	Steel Black Oxide
5/8-11(18); 3/4-10(16); 7/8-9(14)	1 5/16; 1 1/2; 1 5/8; 1 3/4; 1 7/8	7/16; 1/2; 9/16	Zinc Plated
1-8; 1-12; 1-14; 1 1/8-12	2 1/16; 2 3/8; 3; 3 1/4	11/16; 3/4	Stainless 304
1 1/4-7(12); 1 1/2-6(12)			Aluminum Plain
2 - 12; 2 1/4-12			Anodized



Product Reference: TL-SC114-OD-Material-Treatment.

**Inch-Heavy Duty Double Split Shaft Collars. Series 116**

BORE SIZE IN INCHES	OD IN INCHES	WITDH IN INCHES	MATERIALS, COATINGS & PLATINGS
Step increases of 1/16"			
1 7/8 to 5	3 1/4; 3 1/2; 4; 4 1/4 4 1/2; 4 3/4; 5; 5 3/4 6 1/4; 6 3/4	5/8; 3/4; 1	Steel Plain Black Oxide Zinc Plated Stainless 304
			Aluminum Plain Anodized



Product Reference: TL-SC116-OD-Material-Treatment.

Bore tolerance in inches.

Up to 1 1/8: +0,004 to 0,0008.

From 1 3/16 to 2 15/16: +0,006 to +0,0008.

Over 3: +0,008 to +0,0008.

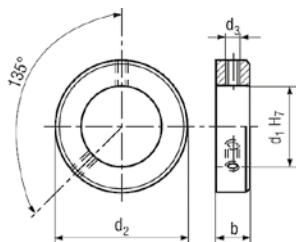
**Adjusting Rings**

The Forms A, B and C start with bores of 2 mm up to 200 mm Inner Diameter, widths from and Grub Screws from M2 x 3 up to M20 x 45.

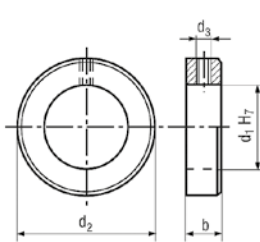
Adjusting Rings material is Mild Steel Plain or treated by Black Oxide\* or Zinc Plated\*\* plain or Yellow Zinc Plated. Stainless Steel AISI 304 plain or Passivated\*\*\*.



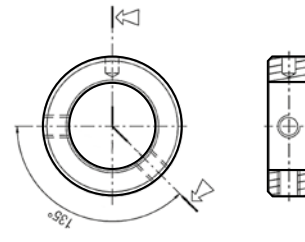
**FORM A**



**FORM B**



**FORM C**



\* See page num. M11

\*\* See page num. M14

\*\*\* See page num. M12



Adjusting Ring Type B



Adjusting Ring Type A



Adjusting Ring Form A, in a Pillow Block



Double-Split Threaded Shaft Collar



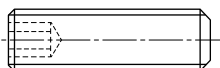
Adjusting Ring Form B, in a Flange Pillow Block

## Hex socket set screws, Grub Screws

We offer a wide assortment of Grub Screws in Metric and Imperial sizes.

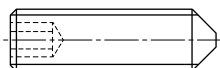
Ask for sizes available to our Commercial Department.

DIN 913 (ISO 4026)



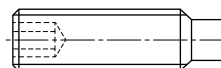
Flat point

DIN 914 (ISO 4027)



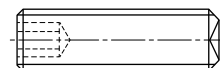
Cone point

DIN 915 (ISO 4028)



Dog point

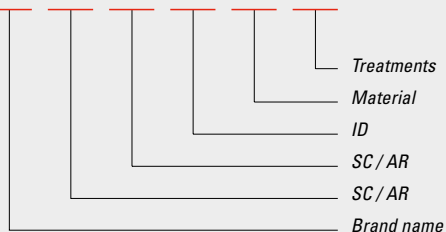
DIN 916 (ISO 4029)



Cup point

## GUIDE TO ORDER

TL -



**Treatments:** Black Oxide B0  
Zinc Plated Plain ZPN  
Zinc Plated Yellow ZPY  
Passivation P, Anodized Aluminum AAI

**Material:** Steel, Stainless Steel SS 304, Aluminum

**ID:** Bore size in inches of mm

**SC:** Series 111, 106, 112, 107, 113, 114, 115, 116,

**AR:** Series A, B, C

**SC:** Shaft Collar

**AR:** Adjusting Ring



# RETAINING RINGS

Retaining Rings are fasteners holding onto a shaft or in hollow, components of Power Transmission. They hold bearings in a Pillow Block, Gears on a Shaft and many others. Designed to fit on the inside of a bore, named Internal Retaining Rings or on the outside of a shaft named External Retaining Rings.

Made of Carbon Spring Steel or Stainless Steel it stands high centrifugal forces while lodged into grooves cut into shafts to stand up to high axial loads.

Known as well as Snap Rings, Circlips and Seeger<sup>†</sup> rings, are manufactured under the Standards DIN 471 and 472.

## DIN 471

### External Retaining Rings for Shafts – Normal Type and Heavy Type

REFERENCE*	d <sub>1</sub>	a	b	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	h	m	n <sub>min</sub>	~ APPROX.	
											Load Kgf	x 1000. Kg
TL-RRE-471-03	3	1,90	0,80	2,80	2,30	7,00	1,00	0,40	0,50	0,30	28	0,030
TL-RRE-471-04	4	2,20	0,90	3,80	3,70	8,60	1,00	0,40	0,50	0,30	30	0,034
TL-RRE-471-05	5	2,50	1,10	4,80	4,70	10,30	1,00	0,60	0,70	0,45	38	0,066
TL-RRE-471-06	6	2,70	1,30	5,70	5,60	11,70	1,15	0,70	0,80	0,45	70	0,084
TL-RRE-471-07	7	3,10	1,40	6,70	6,50	13,50	1,20	0,80	0,90	0,60	80	0,121
TL-RRE-471-08	8	3,20	1,50	7,60	7,40	14,70	1,20	0,80	0,90	0,60	120	0,158
TL-RRE-471-09	9	3,30	1,70	8,60	8,40	16,00	1,20	1,00	1,10	0,60	138	0,300
TL-RRE-471-10	10	3,30	1,80	9,60	9,30	17,00	1,50	1,00	1,10	0,75	153	0,340
TL-RRE-471-11	11	3,30	1,80	10,50	10,20	18,00	1,50	1,00	1,10	0,75	210	0,410
TL-RRE-471-12	12	3,30	1,80	11,50	11,00	19,00	1,70	1,00	1,10	0,90	230	0,500
TL-RRE-471-13	13	3,40	2,00	12,40	11,90	20,20	1,70	1,00	1,10	0,90	300	0,530
TL-RRE-471-14	14	3,50	2,10	13,40	12,90	21,40	1,70	1,00	1,10	1,10	325	0,640
TL-RRE-471-15	15	3,60	2,20	14,30	13,80	22,60	1,70	1,00	1,10	1,20	400	0,670
TL-RRE-471-16	16	3,70	2,20	15,20	14,70	23,80	1,70	1,00	1,10	1,20	490	0,700
TL-RRE-471-17	17	3,80	2,30	16,20	15,70	25,00	1,70	1,00	1,10	1,50	520	0,820
TL-RRE-471-18	18	3,90	2,40	17,00	16,50	26,20	2,00	1,20	1,30	1,50	690	1,110
TL-RRE-471-19	19	3,90	2,50	18,00	17,50	27,20	2,00	1,20	1,30	1,50	725	1,220
TL-RRE-471-20	20	4,00	2,60	19,00	18,50	28,40	2,00	1,20	1,30	1,50	770	1,300
TL-RRE-471-21	21	4,10	2,70	20,00	19,50	29,60	2,00	1,20	1,30	1,50	805	1,420
TL-RRE-471-22	22	4,20	2,80	21,00	20,50	30,80	2,00	1,20	1,30	1,50	845	1,600
TL-RRE-471-23	23	4,30	2,90	22,00	21,50	32,60	2,00	1,20	1,30	1,50	885	1,680
TL-RRE-471-24	24	4,40	3,00	22,90	22,20	33,20	2,00	1,20	1,30	1,70	1010	1,770
TL-RRE-471-25	25	4,40	3,00	23,90	23,20	34,20	2,00	1,20	1,30	1,70	1060	1,900
TL-RRE-471-26	26	4,50	3,10	24,90	24,20	35,50	2,00	1,20	1,30	1,70	1100	1,960
TL-RRE-471-27	27	4,60	3,10	25,60	24,90	37,00	2,00	1,20	1,30	1,70	1200	2,700
TL-RRE-471-28	28	4,70	3,20	26,60	25,90	37,90	2,00	1,50	1,60	2,10	1500	2,920
TL-RRE-471-29	29	4,80	3,40	27,60	26,90	39,10	2,00	1,50	1,60	2,10	1560	3,200
TL-RRE-471-30	30	5,00	3,50	28,60	27,90	40,50	2,00	1,50	1,60	2,10	1620	3,320
TL-RRE-471-31	31	5,00	3,50	29,30	28,60	41,50	2,50	1,50	1,60	2,60	1860	3,301
TL-RRE-471-32	32	5,20	3,60	30,30	29,60	43,00	2,50	1,50	1,60	2,60	2100	3,540
TL-RRE-471-33	33	5,20	3,70	31,30	30,50	44,00	2,50	1,50	1,60	2,60	2160	3,639
TL-RRE-471-34	34	5,40	3,80	32,30	31,50	45,40	2,50	1,50	1,60	2,60	2220	3,800
TL-RRE-471-35	35	5,60	3,90	33,00	32,20	46,80	2,50	1,50	1,60	3,00	2670	4,000
TL-RRE-471-36	36	5,60	4,00	34,00	33,20	47,80	2,50	1,75	1,85	3,00	2760	5,000
TL-RRE-471-37	37	5,70	4,10	35,00	34,20	48,60	2,50	1,75	1,85	3,00	2835	5,260
TL-RRE-471-38	38	5,80	4,20	36,00	35,20	50,20	2,50	1,75	1,85	3,00	2910	5,360
TL-RRE-471-39	39	5,90	4,30	37,00	36,00	51,50	2,50	1,75	1,85	3,80	3360	5,620
TL-RRE-471-40	40	6,00	4,40	37,50	36,50	52,60	2,50	1,75	1,85	3,80	3810	6,030
TL-RRE-471-41	41	6,20	4,50	38,50	37,50	54,00	2,50	1,75	1,85	3,80	3905	6,440
TL-RRE-471-42	42	6,50	4,50	39,50	38,50	55,70	2,50	1,75	1,85	3,80	4000	6,500
TL-RRE-471-44	44	6,60	4,60	41,50	40,50	58,00	2,50	1,75	1,85	3,80	4200	6,910
TL-RRE-471-45	45	6,70	4,70	42,50	41,50	59,10	2,50	1,75	1,85	3,80	4300	7,500
TL-RRE-471-46	46	6,70	4,80	43,50	42,50	60,50	2,50	1,75	1,85	3,80	4400	7,650

\* All measures in mm. † After the invention of Hugo Heierman who developed and patented in 1927 the 'Seegerring', the name from the German company Seeger-Orbis. NEXT >

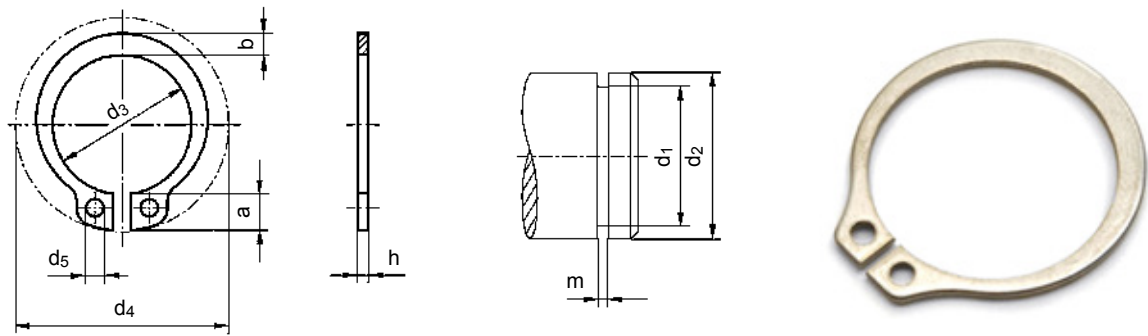
REFERENCE*	d <sub>1</sub>	a	b	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	h	m	n <sub>min</sub>	~ APPROX.	
											Load Kgf	x 1000. Kg
TL-RRE-471-47	47	6,80	4,90	44,50	43,50	61,00	2,50	1,75	1,85	3,80	4500	7,840
TL-RRE-471-48	48	6,90	5,00	45,50	44,50	62,50	2,50	1,75	1,85	3,80	4600	7,900
TL-RRE-471-50	50	6,90	5,10	47,00	45,80	64,50	2,50	2,00	2,15	4,50	5700	10,200
TL-RRE-471-52	52	7,00	5,20	49,00	47,80	66,70	2,50	2,00	2,15	4,50	5950	10,360
TL-RRE-471-54	54	7,10	5,30	51,00	49,80	69,00	2,50	2,00	2,15	4,50	6185	10,990
TL-RRE-471-55	55	7,20	5,40	52,00	50,80	70,20	2,50	2,00	2,15	4,50	6300	11,400
TL-RRE-471-56	56	7,30	5,50	53,00	51,80	71,60	2,50	2,00	2,15	4,50	6400	11,800
TL-RRE-471-57	57	7,30	5,50	54,00	52,80	72,20	2,50	2,00	2,15	4,50	6525	12,060
TL-RRE-471-58	58	7,30	5,60	55,00	53,80	73,60	2,50	2,00	2,15	4,50	6650	12,600
TL-RRE-471-60	60	7,40	5,80	57,00	55,80	75,60	2,50	2,00	2,15	4,50	6900	12,900
TL-RRE-471-62	62	7,50	6,00	59,00	57,80	77,80	2,50	2,00	2,15	4,50	7100	14,300
TL-RRE-471-63	63	7,60	6,20	60,00	58,80	79,00	2,50	2,00	2,15	4,50	7250	15,900
TL-RRE-471-65	65	7,80	6,30	62,00	60,80	81,40	3,00	2,50	2,65	4,50	7500	18,200
TL-RRE-471-67	67	7,90	6,40	64,00	62,50	83,50	3,00	2,50	2,65	4,50	7670	20,520
TL-RRE-471-68	68	8,00	6,50	65,00	63,50	84,80	3,00	2,50	2,65	4,50	7840	21,800
TL-RRE-471-70	70	8,10	6,60	67,00	65,50	87,00	3,00	2,50	2,65	4,50	8050	22,000
TL-RRE-471-72	72	8,20	6,80	69,00	67,50	89,40	3,00	2,50	2,65	4,50	8300	22,500
TL-RRE-471-75	75	8,40	7,00	72,00	70,50	92,80	3,00	2,50	2,65	4,50	8600	24,600
TL-RRE-471-77	77	8,50	7,20	74,00	72,50	94,50	3,00	2,50	2,65	4,50	8800	25,270
TL-RRE-471-78	78	8,60	7,30	75,00	73,50	96,20	3,00	2,50	2,65	4,50	9000	26,200
TL-RRE-471-80	80	8,60	7,40	76,50	74,50	98,20	3,00	2,50	2,65	5,30	10700	27,300
TL-RRE-471-82	82	8,70	7,60	78,50	76,50	100,00	3,00	2,50	2,65	5,30	11000	31,200
TL-RRE-471-85	85	8,70	7,80	81,50	79,50	104,00	3,50	3,00	3,15	5,30	11400	36,400
TL-RRE-471-87	87	8,80	7,90	83,50	81,50	106,00	3,50	3,00	3,15	5,30	11735	38,740
TL-RRE-471-88	88	8,80	8,00	84,50	82,50	107,00	3,50	3,00	3,15	5,30	11900	39,400
TL-RRE-471-90	90	8,80	8,20	86,50	84,50	109,00	3,50	3,00	3,15	5,30	12100	40,250
TL-RRE-471-92	92	9,00	8,40	88,50	86,50	111,00	3,50	3,00	3,15	5,30	12380	43,000
TL-RRE-471-95	95	9,40	8,60	91,50	89,50	115,00	3,50	3,00	3,15	5,30	12800	44,910
TL-RRE-471-97	97	9,40	8,80	93,50	91,50	116,50	3,50	3,00	3,15	5,30	13080	45,700
TL-RRE-471-98	98	9,50	9,00	94,05	92,50	117,50	3,50	3,00	3,15	5,30	13220	47,990
TL-RRE-471-100	100	9,60	9,00	96,50	94,50	121,00	3,50	3,00	3,15	5,30	13500	49,000
TL-RRE-471-102	102	9,70	9,20	98,00	95,00	122,50	3,50	3,00	4,15	6,00	14580	64,500
TL-RRE-471-105	105	9,90	9,30	101,00	98,00	126,00	3,50	3,00	4,15	6,00	16200	70,700
TL-RRE-471-107	107	10,00	9,50	103,00	100,00	128,00	3,50	3,00	4,15	6,00	16520	78,000
TL-RRE-471-108	108	10,00	9,50	104,00	101,00	129,00	3,50	4,00	4,15	6,00	16880	76,600
TL-RRE-471-110	110	10,10	9,60	106,00	103,00	132,00	3,50	4,00	4,15	6,00	17000	82,000
TL-RRE-471-112	112	10,30	9,70	108,00	105,00	134,00	3,50	4,00	4,15	6,00	17320	84,270
TL-RRE-471-115	115	10,60	9,80	111,00	108,00	138,00	3,50	4,00	4,15	6,00	17800	84,700
TL-RRE-471-117	117	10,80	10,00	113,00	110,00	139,50	3,50	4,00	4,15	6,00	18080	86,610
TL-RRE-471-118	118	10,90	10,10	114,00	111,00	141,00	3,50	4,00	4,15	6,00	18220	89,680
TL-RRE-471-120	120	11,00	10,20	116,00	113,00	143,00	3,50	4,00	4,15	6,00	18500	91,550
TL-RRE-471-122	122	11,20	10,30	118,00	115,00	146,00	4,00	4,00	4,15	6,00	18820	93,260
TL-RRE-471-125	125	11,40	10,40	121,00	118,00	149,00	4,00	4,00	4,15	6,00	19300	98,060
TL-RRE-471-127	127	11,40	10,50	123,00	120,00	151,00	4,00	4,00	4,15	6,00	19620	101,080
TL-RRE-471-128	128	11,50	10,60	124,00	121,00	152,00	4,00	4,00	4,15	6,00	19780	103,080
TL-RRE-471-130	130	11,60	10,70	126,00	123,00	155,00	4,00	4,00	4,15	6,00	20100	107,000
TL-RRE-471-132	132	11,70	10,80	128,00	125,00	157,00	4,00	4,00	4,15	6,00	20420	110,400
TL-RRE-471-135	135	11,80	11,00	131,00	128,00	160,00	4,00	4,00	4,15	6,00	20900	112,000
TL-RRE-471-137	137	11,90	11,00	133,00	130,00	162,00	4,00	4,00	4,15	6,00	21220	113,000
TL-RRE-471-138	138	11,90	11,10	134,00	131,00	163,00	4,00	4,00	4,15	6,00	21380	113,500
TL-RRE-471-140	140	12,00	11,20	136,00	133,00	165,00	4,00	4,00	4,15	6,00	21700	114,000
TL-RRE-471-142	142	12,10	11,30	138,00	135,00	167,00	4,00	4,00	4,15	6,00	22100	114,500
TL-RRE-471-145	145	12,20	11,50	141,00	138,00	171,00	4,00	4,00	4,15	6,00	22500	115,000
TL-RRE-471-147	147	12,30	11,60	143,00	140,00	173,00	4,00	4,00	4,15	7,00	25060	116,000
TL-RRE-471-148	148	12,40	11,70	144,00	141,00	174,00	4,00	4,00	4,15	7,00	26340	118,000
TL-RRE-471-150	150	13,00	11,80	145,00	142,00	177,00	4,00	4,00	4,15	7,50	28900	120,000
TL-RRE-471-155	155	13,00	12,00	150,00	146,00	182,00	4,00	4,00	4,15	7,50	30000	135,000
TL-RRE-471-160	160	13,30	12,20	155,00	151,00	188,00	4,00	4,00	4,15	7,50	31000	150,000

\* All measures in mm.

NEXT >



REFERENCE*	d <sub>1</sub>	a	b	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	h	m	n <sub>min</sub>	~ APPROX.	
											Load Kgf	x 1000. Kg
TL-RRE-471-165	165	13,50	12,50	160,00	155,50	193,00	4,00	4,00	4,15	7,50	32000	160,000
TL-RRE-471-170	170	13,50	12,90	165,00	160,50	198,00	4,00	4,00	4,15	7,50	32900	170,000
TL-RRE-471-175	175	13,50	12,90	170,00	165,50	203,00	4,00	4,00	4,15	7,50	33800	180,000
TL-RRE-471-180	180	14,20	13,50	175,00	170,50	210,00	4,00	4,00	4,15	7,50	34500	190,000
TL-RRE-471-185	185	14,20	13,50	180,00	175,50	215,00	4,00	4,00	4,15	7,50	33800	200,000
TL-RRE-471-190	190	14,20	14,00	185,00	180,50	220,00	4,00	4,00	4,15	7,50	33500	210,000
TL-RRE-471-195	195	14,20	14,00	190,00	185,50	225,00	4,00	4,00	4,15	7,50	32700	220,000
TL-RRE-471-200	200	14,20	14,00	195,00	190,50	230,00	4,00	4,00	4,15	7,50	31900	230,000



## DIN 472

### Internal Retaining Rings for Shafts – Normal Type and Heavy Type

REFERENCE*	d <sub>1</sub>	a	b	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	h	m	n <sub>min</sub>	~ APPROX.	
											Load Kgf	x 1000. Kg
TL-RRI-472-08	8	2,40	1,10	8,40	8,70	3,00	1,00	0,80	0,90	0,60	170	0,123
TL-RRI-472-09	9	2,50	1,30	9,40	9,80	3,70	1,00	0,80	0,90	0,60	170	0,150
TL-RRI-472-10	10	3,20	1,40	10,40	10,80	3,30	1,20	1,00	1,10	0,60	310	0,267
TL-RRI-472-11	11	3,30	1,50	11,40	11,80	4,10	1,20	1,00	1,10	0,60	310	0,310
TL-RRI-472-12	12	3,40	1,70	12,50	13,00	4,90	1,50	1,00	1,10	0,75	337	0,370
TL-RRI-472-13	13	3,60	1,80	13,60	14,10	5,30	1,50	1,00	1,10	0,90	354	0,420
TL-RRI-472-14	14	3,70	1,90	14,60	15,10	6,20	1,70	1,00	1,10	0,90	379	0,520
TL-RRI-472-15	15	3,70	2,00	15,70	16,20	7,20	1,70	1,00	1,10	1,10	422	0,560
TL-RRI-472-16	16	3,80	2,00	16,80	17,30	8,00	1,70	1,00	1,10	1,20	515	0,600
TL-RRI-472-17	17	3,90	2,10	17,80	18,30	8,80	1,70	1,00	1,10	1,20	547	0,650
TL-RRI-472-18	18	4,10	2,20	19,00	19,50	9,40	2,00	1,00	1,10	1,50	725	0,740
TL-RRI-472-19	19	4,10	2,20	20,00	20,50	10,40	2,00	1,00	1,10	1,50	764	0,830
TL-RRI-472-20	20	4,20	2,30	21,00	21,50	11,20	2,00	1,00	1,10	1,50	805	0,900
TL-RRI-472-21	21	4,20	2,40	22,00	22,50	12,20	2,00	1,00	1,10	1,50	845	1,000
TL-RRI-472-22	22	4,20	2,50	23,00	23,50	13,20	2,00	1,00	1,10	1,50	882	1,100
TL-RRI-472-23	23	4,20	2,50	24,10	24,60	13,60	2,00	1,20	1,30	1,50	1020	1,340
TL-RRI-472-24	24	4,40	2,60	25,20	25,90	14,80	2,00	1,20	1,30	1,80	1160	1,420
TL-RRI-472-25	25	4,50	2,70	26,20	26,90	15,50	2,00	1,20	1,30	1,80	1200	1,500
TL-RRI-472-26	26	4,70	2,80	27,20	27,90	16,10	2,00	1,20	1,30	1,80	1250	1,540
TL-RRI-472-27	27	4,70	2,90	28,40	29,10	16,50	2,00	1,20	1,30	2,10	1415	1,590
TL-RRI-472-28	28	4,80	2,90	29,40	30,10	17,90	2,00	1,20	1,30	2,10	1580	1,610
TL-RRI-472-29	29	4,80	3,00	30,40	31,10	18,50	2,00	1,20	1,30	2,10	1635	1,729
TL-RRI-472-30	30	4,80	3,00	31,40	32,10	19,90	2,00	1,20	1,30	2,60	1690	2,060
TL-RRI-472-31	31	5,20	3,20	32,70	33,40	20,00	2,50	1,20	1,30	2,60	2100	2,100
TL-RRI-472-32	32	5,40	3,20	33,70	34,40	20,60	2,50	1,20	1,30	2,60	2200	2,210
TL-RRI-472-33	33	5,40	3,30	34,70	35,50	20,80	2,50	1,20	1,30	2,60	2260	2,200
TL-RRI-472-34	34	5,40	3,30	35,70	36,50	22,60	2,50	1,50	1,60	2,60	2320	3,200

\* All measures in mm.



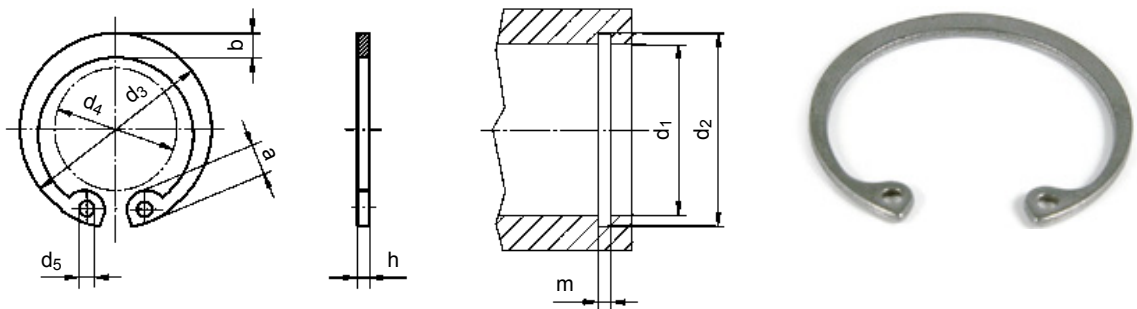
REFERENCE*	d <sub>1</sub>	a	b	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	h	m	n <sub>min</sub>	~ APPROX.	
											Load Kgf	x 1000. Kg
TL-RR1-472-35	35	5,40	3,40	37,00	37,80	23,60	2,50	1,50	1,60	3,00	2820	3,540
TL-RR1-472-36	36	5,40	3,50	38,00	38,80	24,60	2,50	1,50	1,60	3,00	2900	3,700
TL-RR1-472-37	37	5,60	3,60	39,00	39,80	25,40	2,50	1,50	1,60	3,00	2980	3,740
TL-RR1-472-38	38	5,60	3,70	40,00	40,80	26,40	2,50	1,50	1,60	3,00	3070	3,900
TL-RR1-472-39	39	5,60	3,80	41,00	42,00	26,50	2,50	1,50	1,60	3,00	3560	3,920
TL-RR1-472-40	40	5,80	3,90	42,50	43,50	27,80	2,50	1,75	1,85	3,00	4050	4,700
TL-RR1-472-41	41	5,90	4,00	43,50	44,50	28,00	2,50	1,75	1,85	3,00	4150	4,980
TL-RR1-472-42	42	5,90	4,10	44,50	45,50	29,60	2,50	1,75	1,85	3,00	4250	5,400
TL-RR1-472-43	43	5,90	4,20	45,50	46,50	29,70	2,50	1,75	1,85	3,00	4340	5,470
TL-RR1-472-44	44	6,00	4,20	46,50	47,50	31,00	2,50	1,75	1,85	3,00	4430	5,720
TL-RR1-472-45	45	6,20	4,30	47,50	48,50	32,00	2,50	1,75	1,85	3,00	4520	6,000
TL-RR1-472-46	46	6,30	4,40	48,50	49,50	32,20	2,50	1,75	1,85	3,00	4620	6,200
TL-RR1-472-47	47	6,40	4,40	49,50	50,50	33,50	2,50	1,75	1,85	3,00	4720	6,400
TL-RR1-472-48	48	6,40	4,50	50,35	51,50	34,60	2,50	1,75	1,85	3,00	4820	6,700
TL-RR1-472-50	50	6,50	4,60	53,00	54,20	36,30	2,50	2,00	2,15	4,50	6070	7,300
TL-RR1-472-51	51	6,50	4,70	54,00	55,20	36,50	2,50	2,00	2,15	4,50	6185	8,510
TL-RR1-472-52	52	6,70	4,70	55,00	56,20	37,90	2,50	2,00	2,15	4,50	6300	8,200
TL-RR1-472-53	53	6,70	4,90	56,00	57,20	38,50	2,50	2,00	2,15	4,50	6415	9,210
TL-RR1-472-54	54	6,70	5,00	57,00	58,20	39,00	2,50	2,00	2,15	4,50	6535	9,710
TL-RR1-472-55	55	6,80	5,00	58,00	59,20	40,70	2,50	2,00	2,15	4,50	6650	8,300
TL-RR1-472-56	56	6,80	5,10	59,00	60,20	41,70	2,50	2,00	2,15	4,50	6750	8,700
TL-RR1-472-57	57	6,80	5,10	60,00	61,20	42,20	2,50	2,00	2,15	4,50	8055	9,970
TL-RR1-472-58	58	6,90	5,20	61,00	62,20	43,50	2,50	2,00	2,15	4,50	7000	10,500
TL-RR1-472-60	60	7,30	5,40	63,00	64,10	44,70	2,50	2,00	2,15	4,50	7250	11,100
TL-RR1-472-62	62	7,30	5,50	65,00	66,20	46,70	2,50	2,00	2,15	4,50	7480	11,200
TL-RR1-472-63	63	7,30	5,60	66,00	67,20	47,70	2,50	2,00	2,15	4,50	7580	11,700
TL-RR1-472-65	65	7,60	5,80	68,00	69,20	49,00	3,00	2,50	2,65	4,50	7820	14,300
TL-RR1-472-67	67	7,70	6,00	70,00	71,50	50,00	3,00	2,50	2,65	4,50	8055	17,500
TL-RR1-472-68	68	7,80	6,10	71,00	72,50	51,60	3,00	2,50	2,65	4,50	8170	16,000
TL-RR1-472-70	70	7,80	6,20	73,00	74,50	53,60	3,00	2,50	2,65	4,50	8420	16,500
TL-RR1-472-72	72	7,80	6,40	75,00	76,50	55,60	3,00	2,50	2,65	4,50	8650	18,100
TL-RR1-472-75	75	7,80	6,60	78,00	789,50	58,60	3,00	2,50	2,65	4,50	9000	18,800
TL-RR1-472-77	77	7,90	6,70	80,00	81,50	59,00	3,00	2,50	2,65	4,50	9235	22,300
TL-RR1-472-78	78	8,50	6,80	81,00	82,50	60,10	3,00	2,50	2,65	4,50	9350	20,400
TL-RR1-472-80	80	8,50	7,00	83,50	85,50	62,10	3,00	2,50	2,65	5,30	11200	22,000
TL-RR1-472-82	82	8,50	7,00	85,50	87,50	64,10	3,00	2,50	2,65	5,30	11500	24,000
TL-RR1-472-85	85	8,60	7,20	88,50	90,50	66,90	3,50	3,00	3,15	5,30	11900	25,300
TL-RR1-472-87	87	8,60	7,30	90,50	92,50	68,38	3,50	3,00	3,15	5,30	12035	32,120
TL-RR1-472-88	88	8,60	7,40	91,50	93,50	69,90	3,50	3,00	3,15	5,30	12300	34,600
TL-RR1-472-90	90	8,60	7,60	93,50	95,50	71,90	3,50	3,00	3,15	5,30	12600	35,000
TL-RR1-472-92	92	8,70	7,80	95,50	97,50	73,70	3,50	3,00	3,15	5,30	12900	35,900
TL-RR1-472-95	95	8,80	8,10	98,50	100,5	76,50	3,50	3,00	3,15	5,30	13300	38,000
TL-RR1-472-97	97	8,80	8,20	100,50	102,50	78,00	3,50	3,00	3,15	5,30	13565	39,530
TL-RR1-472-98	98	9,00	8,32	101,50	103,50	79,00	3,50	3,00	3,15	5,30	13700	40,500
TL-RR1-472-100	100	9,20	8,40	103,50	105,50	80,60	3,50	3,00	3,15	5,30	14000	42,000
TL-RR1-472-102	102	9,50	8,50	106,00	108,00	82,00	3,50	4,00	4,15	6,00	16300	55,000
TL-RR1-472-105	105	9,50	8,37	109,00	112,00	85,00	3,50	4,00	4,15	6,00	16800	56,000
TL-RR1-472-107	107	9,50	8,80	111,00	114,00	87,00	3,50	4,00	4,15	6,00	17135	58,700
TL-RR1-472-108	108	9,50	8,90	112,00	115,00	88,00	3,50	4,00	4,15	6,00	17300	60,000
TL-RR1-472-110	110	10,40	9,00	114,00	117,00	88,20	3,50	4,00	4,15	6,00	17600	64,500
TL-RR1-472-112	112	10,50	9,10	116,00	119,00	90,00	3,50	4,00	4,15	6,00	17900	72,000
TL-RR1-472-115	115	10,50	9,30	119,00	122,00	93,00	3,50	4,00	4,15	6,00	18400	74,500
TL-RR1-472-117	117	10,60	9,50	121,00	124,00	95,00	3,50	4,00	4,15	6,00	18720	74,030
TL-RR1-472-118	118	10,70	9,60	122,00	125,00	96,00	3,50	4,00	4,15	6,00	18880	79,250
TL-RR1-472-120	120	11,00	9,70	124,00	127,00	96,90	3,50	4,00	4,15	6,00	19200	80,000
TL-RR1-472-122	122	11,00	9,80	126,00	129,00	99,00	4,00	4,00	4,15	6,00	19480	83,960
TL-RR1-472-125	125	11,00	10,00	129,00	132,00	101,90	4,00	4,00	4,15	6,00	19900	85,800
TL-RR1-472-127	127	11,00	10,00	131,00	134,00	104,50	4,00	4,00	4,15	6,00	20220	86,500

\* All measures in mm.

NEXT >



REFERENCE*	d <sub>1</sub>	a	b	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub>	h	m	n <sub>min</sub>	~ APPROX.	WEIGHT
											Load Kgf	x 1000. Kg
TL-RRI-472-128	128	11,00	10,20	132,00	135,00	105,50	4,00	4,00	4,15	6,00	20380	89,730
TL-RRI-472-130	130	11,00	10,20	134,00	137,00	106,90	4,00	4,00	4,15	6,00	20700	92,000
TL-RRI-472-132	132	11,00	10,30	136,00	139,00	109,00	4,00	4,00	4,15	6,00	21020	92,500
TL-RRI-472-135	135	11,20	10,50	139,00	142,00	111,50	4,00	4,00	4,15	6,00	21500	96,000
TL-RRI-472-137	137	11,20	10,50	141,00	144,00	114,00	4,00	4,00	4,15	6,00	21820	97,300
TL-RRI-472-138	138	11,20	10,60	142,00	145,00	115,00	4,00	4,00	4,15	6,00	21980	99,200
TL-RRI-472-140	140	11,20	10,70	144,00	147,00	116,50	4,00	4,00	4,15	6,00	22300	100,500
TL-RRI-472-142	142	11,30	10,80	146,00	149,00	119,00	4,00	4,00	4,15	6,00	22600	103,100
TL-RRI-472-145	145	11,40	10,90	149,00	152,00	121,00	4,00	4,00	4,15	6,00	23100	106,000
TL-RRI-472-147	147	11,60	11,00	151,00	154,00	123,50	4,00	4,00	4,15	7,00	25860	109,300
TL-RRI-472-148	148	11,80	11,10	152,00	155,00	124,00	4,00	4,00	4,15	7,00	27240	112,100
TL-RRI-472-150	150	12,00	11,20	155,00	158,00	127,80	4,00	4,00	4,15	7,50	30000	115,000
TL-RRI-472-155	155	12,00	11,40	160,00	164,00	129,80	4,00	4,00	4,15	7,50	30900	125,000
TL-RRI-472-160	160	13,00	11,60	165,00	169,00	132,70	4,00	4,00	4,15	7,50	31900	132,000
TL-RRI-472-165	165	13,00	11,80	170,00	174,50	137,70	4,00	4,00	4,15	7,50	31960	147,000
TL-RRI-472-170	170	13,50	12,20	175,00	179,50	141,60	4,00	4,00	4,15	7,50	33900	150,000
TL-RRI-472-175	175	13,50	12,70	180,00	184,50	146,60	4,00	4,00	4,15	7,50	34800	160,000
TL-RRI-472-180	180	14,20	13,20	185,00	189,50	150,20	4,00	4,00	4,15	7,50	34500	165,000
TL-RRI-472-185	185	14,20	13,70	190,00	194,50	155,20	4,00	4,00	4,15	7,50	34930	170,000
TL-RRI-472-190	190	14,20	13,80	195,00	199,50	160,20	4,00	4,00	4,15	7,50	34000	175,000
TL-RRI-472-195	195	14,20	13,80	200,00	204,50	165,20	4,00	4,00	4,15	7,50	33000	183,000
TL-RRI-472-200	200	14,20	14,00	205,00	209,50	170,20	4,00	4,00	4,15	7,50	33500	195,000



Assortment boxes and pliers available.

# FARM EQUIPMENT ACCESSORIES

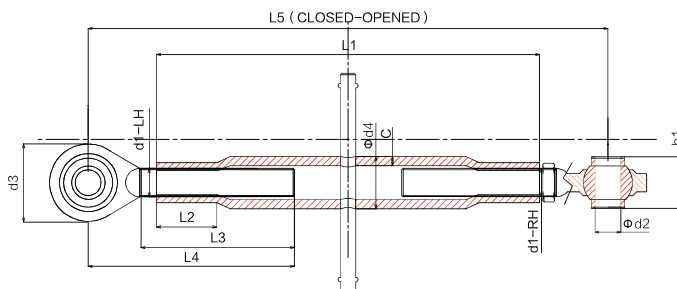
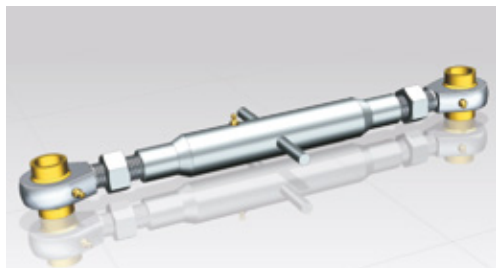
Miscellaneous accessories:

## Three-Point-Hitch Top links

### Three-Point-Hitch Top Link. Ball end

Turnbuckle pipe according DIN 1478.  
Forged ball ends with RH and LH thread.

Ball Hardness HRC 40-45.  
Yellow or White Zinc plated.



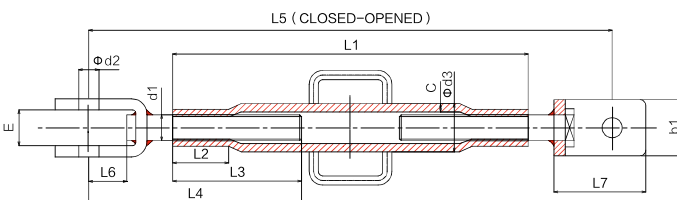
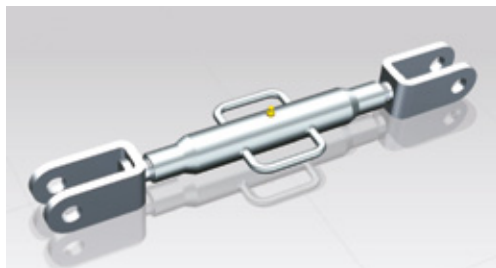
REFERENCE*	$\Phi D_2$	$\Phi D_3$	$\Phi D_4$	C	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	b <sub>1</sub>	THREAD
TL-TPH-BE2000	16,00	48	34	5,00	190	30	90	126	280-415	26	M20 x 2.5
TL-TPH-BE2010	20,00	62	34	5,00	365	30	100	132	455-580	38	M20 x 2
TL-TPH-BE2400	19,30	62	42	5,60	200	35	130	185	320-490	44	M24 x 3
TL-TPH-BE2410	25,00	60	42	5,60	200	35	100	137	300-410	31	M24 x 2
TL-TPH-BE2420	25,00	75	42	5,60	435	35	165	220	555-780	51	M24 x 3
TL-TPH-BE2700	25,70	64	42	5,60	422	40	155	210	550-760	44	M27 x 3
TL-TPH-BE2710	25,70	75	42	5,60	450	40	165	220	580-800	51	M27 x 3
TL-TPH-BE3000	19,30	62	51	6,30	450	45	175	230	580-930	44	M30 x 3.5
TL-TPH-BE3010	25,70	75	51	6,30	500	45	165	220	630-960	51	M30 x 3.5
TL-TPH-BE3600	25,70	87	63	8,00	600	50	185	245	750-1100	51	M36 x 3
TL-TPH-BE3610	32,00	98	63	8,00	700	50	200	270	880-1300	51	M38 x 4

\* All measures in mm unless otherwise indicated.

### Three-Point-Hitch Top Link. Clevis end

Turnbuckle pipe according DIN 1478.  
Welded U-Clevis with RH and LH thread.

Yellow or White Zinc plated.



REFERENCE*	$\Phi D_2$	$\Phi D_3$	C	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	L <sub>6</sub>	L <sub>7</sub>	E	b <sub>1</sub>	THREAD
TL-TPH-CE2000	16,00	34	5,00	190	30	125	212	370-550	60	94	32	50	M20 x 2.5
TL-TPH-CE2010	16,00	34	5,00	365	30	125	212	545-725	60	94	32	50	M20 x 2
TL-TPH-CE2400	18,00	42	5,60	200	35	125	212	390-570	60	94	32	50	M24 x 3
TL-TPH-CE2410	20,50	42	5,60	200	35	125	212	390-570	60	94	32	50	M24 x 2
TL-TPH-CE2420	18,00	42	5,60	435	35	125	212	615-795	60	94	32	50	M24 x 3
TL-TPH-CE2700	20,50	42	5,60	422	40	125	212	600-780	60	94	32	50	M27 x 3
TL-TPH-CE2710	20,50	42	5,60	450	40	125	212	630-810	60	94	32	50	M27 x 3
TL-TPH-CE3000	22,00	51	6,30	450	45	125	212	630-810	60	94	32	50	M30 x 3.5
TL-TPH-CE3010	22,00	51	6,30	500	45	125	212	680-860	60	94	32	50	M30 x 3.5

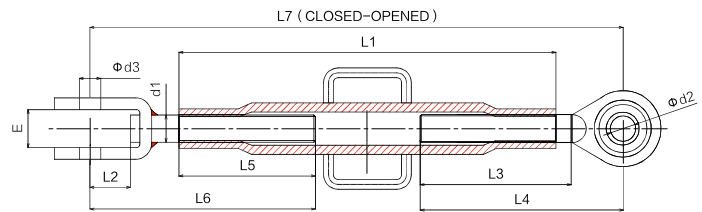
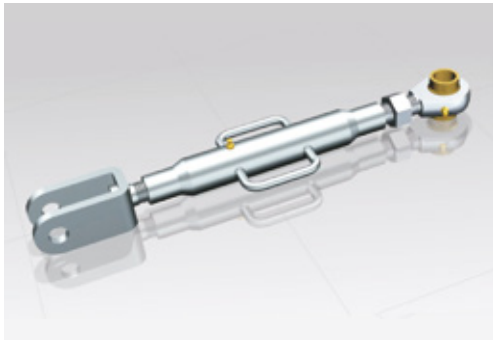
\* All measures in mm unless otherwise indicated.

## Three-Point-Hitch Top Link. Ball end - Clevis end

Turnbuckle pipe according DIN 1478.

Welded U-Clevis – Forged ball end with RH and LH thread.

Yellow or White Zinc plated.



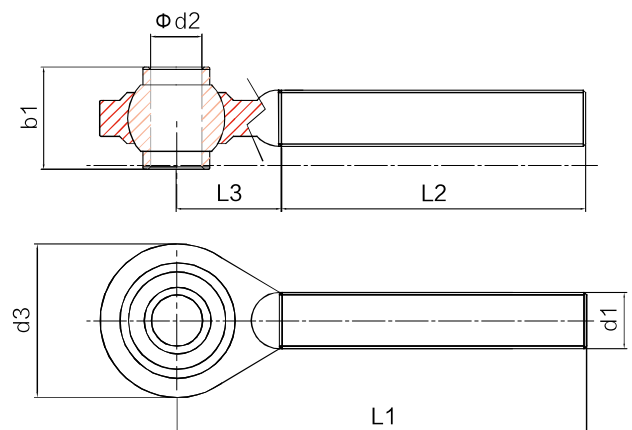
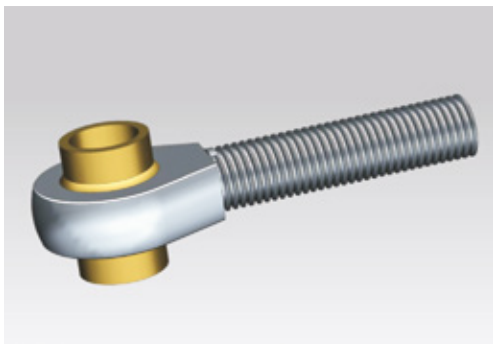
REFERENCE*	$\Phi D_2$	$\Phi D_3$	C	$L_1$	$L_2$	$L_3$	$L_4$	$L_5$	$L_6$	$L_7$	E	THREAD
TL-TPH-BC2000	16,00	16	5,00	190	60	90	212	125	212	325-480	32	M20 x 2.5
TL-TPH-BC2010	20,00	16	5,00	365	60	100	212	125	212	505-570	32	M20 x 2
TL-TPH-BC2400	19,30	18	5,60	200	60	130	212	125	212	360-545	32	M24 x 3
TL-TPH-BC2410	25,00	18	5,60	200	60	100	212	125	212	340-495	32	M24 x 2
TL-TPH-BC2420	25,70	18	5,60	435	60	165	212	125	212	595-815	32	M24 x 3
TL-TPH-BC2700	19,30	20,5	5,60	422	60	155	212	125	212	582-782	32	M27 x 3
TL-TPH-BC2710	25,70	20,5	5,60	450	60	165	212	125	212	610-820	32	M27 x 3
TL-TPH-BC3000	19,30	20	6,30	450	60	175	212	125	212	610-820	32	M30 x 3.5
TL-TPH-BC3010	25,70	22	6,30	500	60	165	212	125	212	660-860	32	M30 x 3.5

\* All measures in mm unless otherwise indicated.

## Forged ball ends

Forged ball end. Angle liberty of 15°.

Made out of C45 Steel, 40 – 45 HRC Hardness.

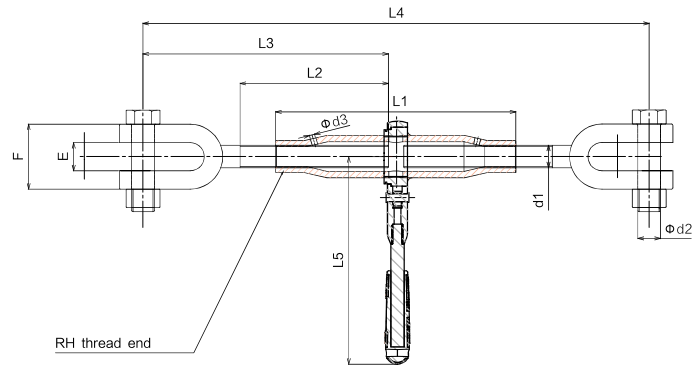
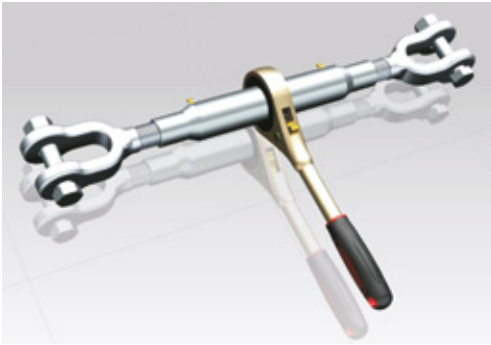


REFERENCE*	$\Phi D_2$	$\Phi D_3$	$L_1$	$L_2$	$L_3$	$b_1$	THREAD
TL-THP-BE2000	16	48	126	90	36	26	M20 x 2.5
TL-THP-BE2010	20	62	132	100	32	38	M20 x 2
TL-THP-BE2400	19,3	62	185	130	55	44	M24 x 3
TL-THP-BE2410	25,7	75	137	100	37	51	M24 x 3
TL-THP-BE2420	19,3	62	220	165	55	44	M27 x 3
TL-THP-BE2700	25,7	67	210	155	55	51	M27 x 3
TL-THP-BE2710	19,3	62	220	165	55	44	M30 x 3.5
TL-THP-BE3000	25,7	75	230	175	55	51	M30 x 3.5
TL-THP-BE3010	25,7	80	220	165	55	51	M36 x 3
TL-THP-BE3600	32	98	245	185	55	51	M36 x 4
TL-THP-BE3610	32	98	270	200	70	51	M42 x 3

\* All measures in mm unless otherwise indicated.

## Ratchet Turnbuckle

Ratchet Turnbuckle with forged clevis.  
Right/Left Hand Ratchet action.



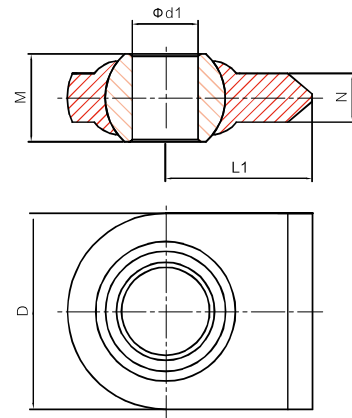
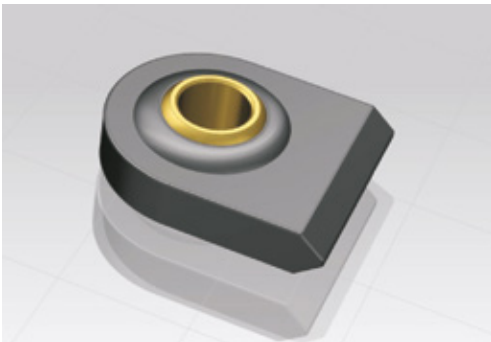
REFERENCE*	THREAD $d_1$	$\Phi d_2$	$\Phi d_3$	$\Phi d_4$	$L_1$	$L_2$ min	$L_3$	$L_4$	$L_5$	E	F	MBL** TON	WEIGHT KG
TL-RT-J160	M16	12,5	4	10	170	100	175	350 - 470	150	18	46	10	2,12
TL-RT-J200	M20	16,5	4	12	200	120	205	410 - 550	200	20	50	18	2,82

\* All measures in mm unless otherwise indicated.

\*\* Maximum Bearing Load.

## Weld-on Lower Lift Arm Ball ends

Forged ball end. Angle liberty of 15°.  
Made out of C45 Steel, 40 – 45 HRC Hardness.



REFERENCE*	$\Phi d_1$	$L_1$	M	N	D
RL-BE100	16,5	37,5	36	14	50
RL-BE200	27	60	36	20	80

\* All measures in mm unless otherwise indicated.

## Blades and discs for Agriculture

### Rotavator Blades



*LD Models 500 & 500 C  
HD Models 501 & 501 C*



*Bolt with SL Nut*

### Rotary Cutter Blades. Different sizes



### Reaper Blades



### Flail Hammer Blades & Cutting Blades



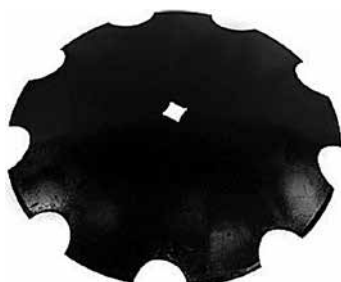
*Hammer Blades*



*Knives Blades*

### Harrow Discs Plain & Notched

Different sizes available. Consult our Comercial Department.





# SPRING-LOAD TENSION CHECKER

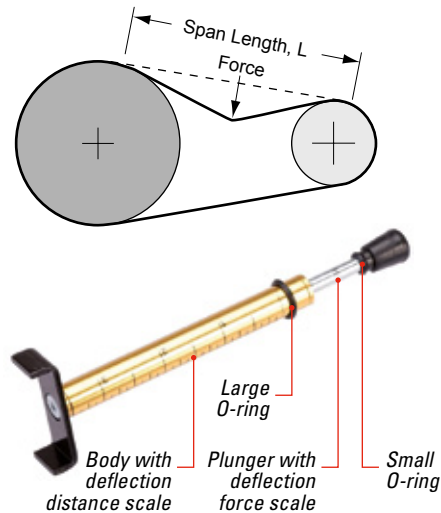
The tension in belt is key factor in the proper work of a belt drive and on the life of the belt and bearings, whereas undertension can cause the belt to slip and in consequence leading to premature belt failure and conversely, persistent overtension can cause bearing and belt failure.

The belt optimal tension is the lowest at which it does not slip nor ratchet under continuous load.

The spring-load tension checker permits to determine the tension by first calculating the deflection.

The allowed deflection in a belt drive is a linear function of its span. The industry consensus establishes an span of 1/64" per inch of span, or 0.16 mm per cm of span approximately.

The procedure starts by checking the span which determines the deflection at the center of the span. The reading of the deflection is set to the large O-ring. By pushing the plunger down until the bottom of the large O-ring pairs with the top of the belt if there are more than one or by pairing with a ruler, the reading of the plunger in the smaller O-ring represents the force applied to deflect the belt. By entering this force into the tables supplied, it gives the tension.



We have in our program as well:

- Sets of gauges of V-Belts and Pulleys
- Device to measure the length of V-Belts

# PIN FASTENERS

This range of products fall into the category of must have items, within reach in Power Transmission related activity.

## Spring Pins

Known as well as slotted pins and C pins amongst others. Consists of a pin of hollow cylindrical shape beveled at both ends. Used to fasten a transmission element as, a gear, a pulley, a sprocket to a shaft, fasten mating parts, journal bearing and many others.

Available in a choice of materials and finishings for different purposes, Carbon Steel, Alloy Steel and Stainless Steel. As finishings or treatments, Clear Zinc, Yellow Zinc, Blue, Black Oxide, Phosphate and Passivated amongst the most common.

## Split Pins

Known as well as a Cotter Pin or a Cotter Key are a kind of fasteners composed of two tines which once inserted are bent locking the element in place or fixing an element in place as in castle nuts, or in the case of side plates in roller chains.

Made of soft steel, they are available in different sizes. It has different versions as the R-clip or hairpin.

We offer an ample choice:

## Dowel Pins

Used for precise locating and alignment of parts. Consist of a slightly oversized steel cylinder or taper which once introduced into a reamed hole of parts keep them aligned. The oversize allow the dowel pins be press fit into the holes.

Available in Steel, Stainless Steel, Brass and others with hardening treatments and coatings as black oxide as materials and in metric and imperial sizes.

## Linch Pins

Known as well as quick pins are self-locking pins, which inserted through a clevis or a shaft, prevent elements to slide-off. Used mainly in agricultural equipment, in the tractor's three-point-hitch and in the implement's fixing clevises. Constructed under DIN 11023.

Made out of steel with a choice of treatment finishes as, Clear Zinc, Yellow Zinc and Black Phosphate.

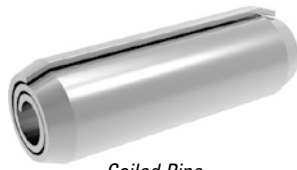
## Coiled or Rolled Pins

Similar to a slotted pin, where the difference is that, the sheet material is coiled by more than one complete turn forms the pin. It has the same function but is higher duty than the equivalent slotted pin.

Ask for details to our Commercial Department.



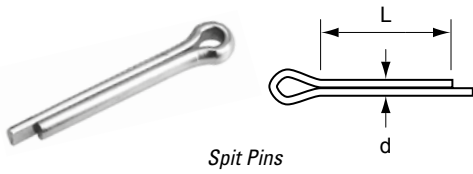
Spring Pins



Coiled Pins

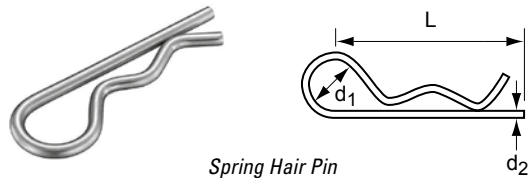


Dowel Pins



Spit Pins

**Lengths L:** from 20 to 100 mm  
**Diameter d:** from 1,6 to 10 mm



Spring Hair Pin

**Lengths L:** from 50 to 110 mm  
**Diameter d<sub>1</sub>:** from 10 to 28 mm  
**d<sub>2</sub>:** from 2 to 8 mm



Lynch Pins



Lift Arm Pin

**Lengths:** available from 130 to 150 mm  
**Diameter:** available from 18 to 28 mm



Hitch Pins / Towing Pins

**Lengths and Diameter:** available in Metric and Imperial.