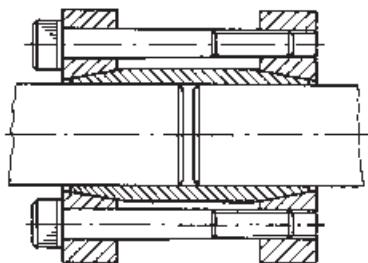


Clamping Elements Type RCK 95



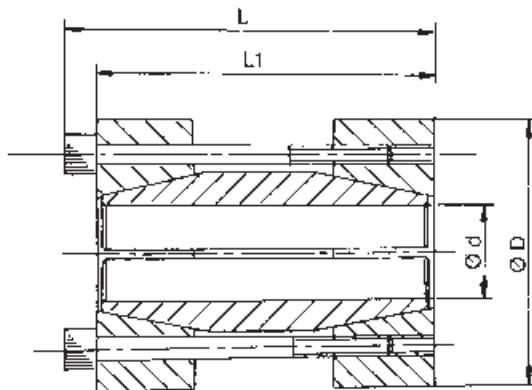
Similar in design to the Clamping Discs, type RCK 19, but with the discs spaced further apart to enable connection to more than one shaft, enabling use as a rigid shaft coupling. These units can be used to connect two identical diameter shafts which are perfectly aligned, or to produce a longer shaft which is only mounted in two bearings. Torque capacities are suitable for standard shafting. These units provide zero backlash shaft connection with advantage of fast assembly and disassembly. The design makes the unit equally suitable for horizontal and vertical shafts, capable of withstanding high axial loads.

Recommended tolerances for full torque transmission shafts should be to h8 tolerance with surface finish $Rz \leq 15 \mu m$.



Warning

The units are not flexible couplings, and must never be used as such. Any radial loads on shafts must be adequately supported by bearing assemblies.



Dimensions

Part No.	Dimensions mm				Torque Cap. M Nm	Axial Force F kN	Shaft Surface Pressure Ps N/mm ²	Clamping Screws		Approx Weight gms
	d	D	L	L ₁				Size	Torque Nm	
RCK95-17x50	17	50	56	50	200	21	110	M6	17	0.46
RCK95-18x50	18	50	56	50	220	22	110	M6	17	0.45
RCK95-19x50	19	50	56	50	230	22	110	M6	17	0.44
RCK95-20x50	20	50	56	50	240	22	105	M6	17	0.44
RCK95-24x55	24	55	66	60	290	22	120	M6	17	0.63
RCK95-25x55	25	55	66	60	450	32	110	M6	17	0.65
RCK95-28x60	28	60	66	60	510	33	110	M6	17	0.75
RCK95-30x60	30	60	66	60	550	33	105	M6	17	0.71
RCK95-32x63	32	63	66	60	580	33	90	M6	17	0.73
RCK95-35x75	35	75	83	75	760	39	105	M8	41	1.33
RCK95-38x75	38	75	83	75	850	40	100	M8	41	1.20
RCK95-40x75	40	75	83	75	900	41	95	M8	41	1.19
RCK95-42x78	42	78	83	75	930	40	90	M8	41	1.28
RCK95-45x85	45	85	93	85	1520	61	110	M8	41	1.72
RCK95-48x90	48	90	93	85	1600	60	100	M8	41	1.90
RCK95-50x90	50	90	93	85	1690	61	95	M8	41	1.88
RCK95-55x94	55	94	93	85	2430	80	110	M8	41	2.00
RCK95-60x100	60	100	93	85	2680	80	95	M8	41	2.17
RCK95-65x105	65	105	93	85	2900	80	90	M8	41	3.95
RCK95-70x115	70	115	110	100	3720	96	90	M10	83	5.25
RCK95-75x125	75	125	110	100	3970	95	80	M10	83	5.46
RCK95-80x125	80	125	110	100	4280	96	70	M10	83	5.30
RCK95-90x135	90	135	110	100	5400	108	70	M10	83	5.60
RCK95-100x155	100	155	132	120	8700	157	100	M12	143	7.00

For assembly and disassembly instructions refer to page 24.

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Cross Shaft Clamping Elements



In order to make the best selection of a Cross Shaft Clamping Element for your application a number of factors must be taken into consideration. These include the shaft diameter; the outside diameter of the hub of connecting component; the drive torque to be transmitted, and axial thrust loads, and tilting or bending loads, maximum shaft speeds, operating temperature, and general design parameters and space restrictions.

Shaft Diameter:-

The shaft diameter will determine the particular size of clamping element in any series, and by reference to the catalogue details the suitability of that to meet the other parameters can be checked. Also hollow shafts must be checked for any load carrying strength, see below.

Hub Outside Diameter:-

The Hub Diameter has to be sufficient to support the stresses imposed by the shaft clamping element. The catalogue gives maximum hub diameters for medium carbon steel, but for other materials and method of determining refer below. Generally if hub diameter is over 2.5 times shaft diameter all series are suitable, but for smaller ratios consider types RCK 80, ACE 81, CCE 54 and CCE 55, and for very thin walled hubs use types RCK 19, RCK 20 and RCK 25.

Determination of Minimum Hub Diameter and

Max. Hollow Shaft Bore:-

The following calculations are for static conditions only, considering only stresses imposed by the clamping element. The hub diameter is controlled by the pressure applied by the outer cone of the clamping element; the shape of the hub bore and total length of hub; and yield stress for permanent elongation of 0.2%.

$$\text{Minimum Hub Dia. } D_m = D \sqrt{\frac{\sigma + PhC}{\sigma - PhC}}$$

Where D = Clamping element outside diameter mm
 σ = Yield strength of material N/mm²
 Ph = Surface pressure on hub N/mm²
 C = Constant for Hub shape - see drawings

The tables in the catalogue give minimum hub diameters for hubs manufactured in medium carbon steel (080M40 or C45) or other material where $\sigma = 320$ N/mm². Values for σ on other commonly used hub materials are:-

220 Grade Cast Iron	$\sigma = 150$ N/mm ²
260 Grade Cast Iron	$\sigma = 180$ N/mm ²
Mild Steels	$\sigma = 220$ N/mm ²
070M55 (En9)	$\sigma = 350$ N/mm ²
Stainless Steel	$\sigma = 200$ N/mm ²
Aluminium	$\sigma = 100$ N/mm ²

For hollow bored Shafting:-

$$\text{Max. Bore in Shaft } D_m = d \sqrt{\frac{\sigma - 1.6 Ps}{\sigma}}$$

Where d = Clamping element bore mm
 Ps = Surface pressure on Shaft N/mm²

For solid shafting yield strength of material σ must be higher than surface pressure Ps .

Maximum Shaft Speed:-

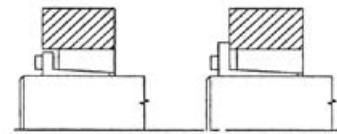
The centrifugal forces generated by high shaft speeds can reduce torque capacity and increase stress loads on hubs. Consult Cross & Morse if speed of shaft results in outer clamping diameter D running above 25M/sec.

Operating Temperature:-

Maximum temperatures should not exceed 100°C. At temperatures above 70°C the locking screws should be rechecked after 1 hour operation, whilst assembly is still warm.

Hub Assembly Type A

$C=1.0$



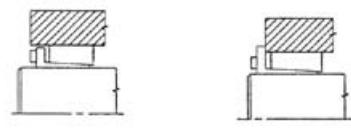
$L_1 \leq H_w < 2L_1 \quad L_2 \leq H_w < 2L_2$

Where H_w = Hub Width

For Dimensions L_1 & L_2 ref. Product Pages

Hub Assembly Type B

$C=0.8$

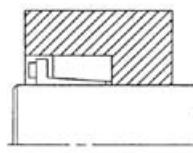


$H_w \geq 2L_1$

$H_w \geq 2L_2$

Hub Assembly Type C

$C=0.6$



$H_w \geq 2L_1$ (All Types)

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Installation Instructions

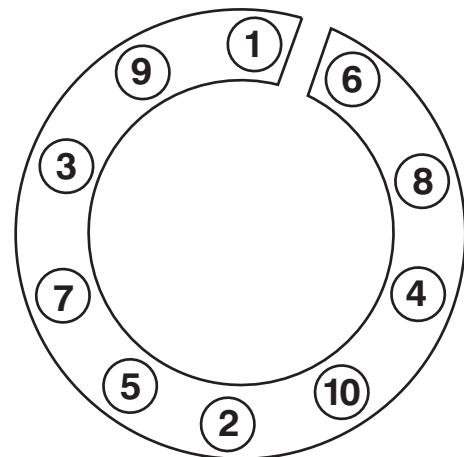


Installation and Removal of Cross Shaft Clamping Elements

Types RCK 10, 11, 12, 13, 15, 16, 61, 70, 71, 80 and ACE81

Installation:-

1. Slacken all screws in element by approx. two turns.
2. Remove two or three screws completely, and fit into equally spaced empty release thread holes. Tighten these screws lightly so as to ensure inner and outer cones are kept apart.
3. Clean all contact surfaces including screw threads, and lightly oil with clean thin unmodified oil.*
4. Insert clamping element into hub and push onto shaft and locate.
5. Remove screws from release holes and replace in original holes.
6. Tighten all screws finger tight and align hub.
7. Tighten all screws evenly in a diametrically opposite sequence (see typical progression in sketch) using a torque wrench, initially at half screw catalogue torque, then 3/4 value, and finally full torque. Check all screws at full torque until no further rotation of screws occurs.



Disassembly:-

1. Slacken all clamping screws by couple of turns, completely removing as many as release holes in element.
2. Fit screws in release holes and tighten in sequence as clamping to force inner and outer cones apart.
3. Carefully remove hub and clamping element from shaft, and take element from hub.

Types RCK 40 and 45

Installation:-

1. Clean all contact surfaces, and lightly oil with clean thin unmodified mineral oil.*
2. Fit hub to shaft and insert clamping element.
3. Tighten all screws finger tight and align hub.
4. Tighten all screws evenly in a diametrically opposite sequence (see typical progression in sketch) using a torque wrench, initially at half catalogue torque for screw, then at 3/4 value, and finally at full torque. Check all screws are at full torque until no further rotation of screws can be achieved.

Disassembly:-

1. Release clamping screws in same sequence as for clamping. Element should now self release. If required lightly tap clamping screws to aid release. If still not released remove light coloured screws completely and replace with next larger metric size and tighten these screws to jack the cones apart.

Type RCK 50

Installation procedure depends detailed design, but following is typical:-

1. Clean all contact surfaces, and lightly oil with clean thin unmodified mineral oil.*
2. Push hub onto shaft and insert spacer sleeves and clamping ring sets according to application drawing.
3. Insert distance ring if fitted and attach clamping flange lightly tightening screws. Align hub.
4. Tighten all screws in a diametrically opposite sequence, in several stages up to max. torque for screw size.

Disassembly:-

The taper of the individual rings is such that the assembly should automatically release when the locking screws are slackened. If not light tapping on the hub circumference should release them.

Types CCE 54 and 55

Installation:-

1. Clean all contact surfaces, and lightly oil with clean unmodified mineral oil.*
2. Turn locking nut anticlockwise until outer sleeve loose on inner cone.
3. Position hub on shaft and insert clamping element.
4. Align hub and tighten locking nut to catalogue torque value, and bend suitable tab on lock washer to prevent further rotation.

Disassembly:-

1. Release bent washertab and undo nut until sleeve loose.
2. Remove clamping element, If tight give end of tab gentle tap to release.

Types RCK 19/20 and 95

Installation:-

1. Clean all contact surfaces, and lightly oil with clean thin unmodified mineral oil.*
2. Slacken all clamping bolts by a couple of turns.
3. (RCK 19/20 only) Fit clamping element on outer diameter of hub, and slide assembly onto shaft and position. (RCK 95 only) Fit shaft ends equally into clamping element ensuring small clearance between shafts.
4. Tighten all bolts in a diametrically opposite sequence, in several stages up to max. specified torque.

Disassembly:-

Slacken all bolts and gently tap on bolts to release clamping element.

*WARNING: Never use, lubricant containing Molydenum or E.P. additives, synthetic lubricant, or grease.