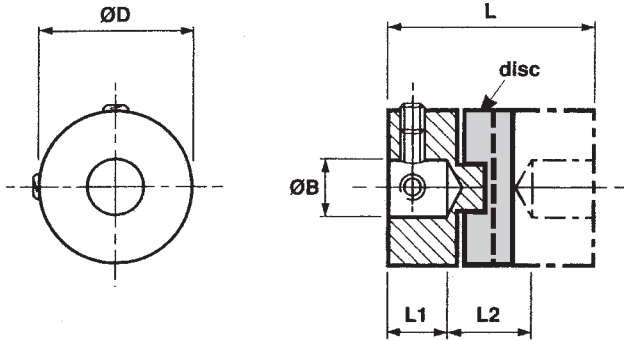


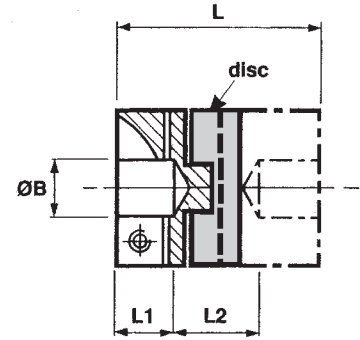
# Oldham Lateral Displacement Couplers

blind hubs & standard discs  
specify 2 hubs + 1 disc per coupler

## set screw style



## clamp style



## dimensions

style	size	catalogue reference (hubs only)	ØD	L	<sup>1</sup> L1	<sup>2</sup> L2	ØB max bores	screw size	key size	<sup>3</sup> moment of inertia kgm <sup>2</sup> × 10 <sup>-8</sup>	<sup>3</sup> mass kg × 10 <sup>-3</sup>	<sup>4</sup> order codes (discs only)	
												acetal (black)	Nylon 11 (natural)
set screw style	09	232.09.xx	9.5	12.7	3.8	5.1	5	M3	1.5	18	4	236.09	238.09
	13	232.13.xx	12.7	15.9	4.3	7.3	6.35	M3	1.5	26	11	236.13	238.13
	19	232.19.xx	19.1	22.0	6.3	9.4	8	M3	1.5	67	12	236.19	238.19
	25	232.25.xx	25.4	28.4	8.6	11.2	10	M4	2.0	252	31	236.25	238.25
	33	243.33.xx	33.3	48.0	13.0	22.0	14.29	M4	2.0	1278	86	236.33	238.33
	41	232.41.xx	41.3	50.8	16.7	17.4	16	M5	2.5	3327	148	236.41	238.41
clamp style	19	235.19.xx	19.1	22.0	6.3	9.4	8	4-40	2.0	67	12	236.19	238.19
	25	234.25.xx	25.4	28.4	8.6	11.2	10	M3	2.5	252	31	236.25	238.25
	33	245.33.xx	33.3	48.0	13.0	22.0	14.29	M3	2.5	1278	86	236.33	238.33
	41	234.41.xx	41.3	50.8	16.7	17.4	16	M4	3.0	3327	148	236.41	238.41

- 1 Length of parallel bore. Bores normally terminate in 118° incl. angle.  
2 Distance between unchamfered shafts bottomed-out to L1.

3 Values apply to complete couplers with max bores.

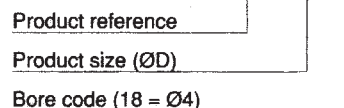
## stock bores ØB

size	bore tolerance +0.03/-0 mm																	
	(.125")		(.1875")		(.25")		(.3125")		(.375")		(.5")		(.625")					
	3	3.18	4	4.76	5	6	6.35	7.94	8	9.53	10	11	12	12.70	14	15.88	16	
bore codes	09	14	16	18	19	20												
	13	14	16	18	19	20	22	24										
	19			18	19	20	22	24	27	28								
	25						22	24	27	28	31	32						
	33								27	28	31	32	33	35	36	38		
	41										31	32	33	35	36	38	41	42

Identify your hub size in the stock bores table. Select a bore diameter. Enter the corresponding bore code in place of 'xx'. Only specify bores that are coded for your hub size. Please enquire for non-stock bores. Specify 2 hubs + 1 disc per coupler.

## hub order code example

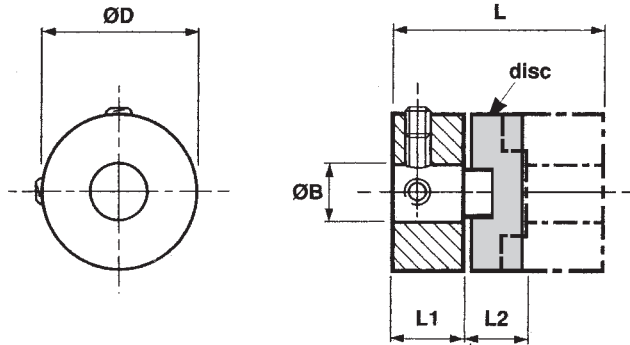
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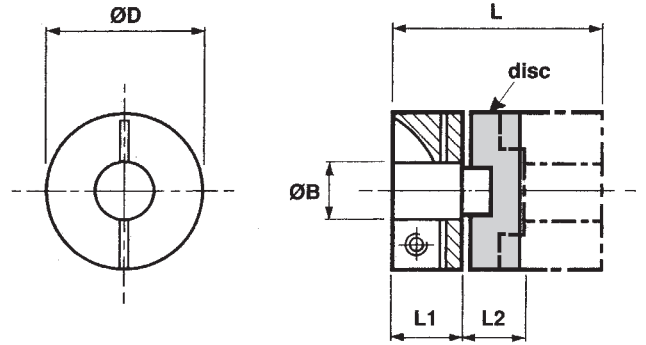
# Oldham Lateral Displacement Couplers

thro' hubs (X-Y series) & standard discs  
specify 2 hubs + 1 disc per coupler

## set screw style



## clamp style



## dimensions

style	size	catalogue reference (hubs only)	ØD	L	<sup>1</sup> L1	<sup>2</sup> L2	ØB max bores	screw size	key size	<sup>3</sup> moment of inertia kgm <sup>2</sup> × 10 <sup>-8</sup>	<sup>3</sup> mass kg × 10 <sup>-3</sup>	<sup>4</sup> order codes (discs only)	
												acetal (black)	Nylon 11 (natural)
set screw style	19	450H19.xx	19.1	26.0	9.4	7.2	8	M4	2	59	13	236.19	238.19
	25	450H25.xx	25.4	32.4	11.6	9.2	10	M5	2.5	252	31	236.25	238.25
	33	454H33.xx	33.3	48.0	15.0	18.0	14.29	M6	3	1133	74	236.33	238.33
	41	450H41.xx	41.3	50.8	17.8	15.3	16	M6	3	3177	142	236.41	238.41
	50	450H50.xx	50.0	59.6	20.6	18.4	25.4	M8	4	7550	208	236.50	-
57	450H57.xx	57.1	78.0	28.4	21.2	30	M8	4	12410	361	236.57	-	
clamp style	19	453H19.xx	19.1	26.0	9.4	7.2	8	4-40	2	59	13	236.19	238.19
	25	452H25.xx	25.4	32.4	11.6	9.2	10	M3	2.5	252	31	236.25	238.25
	33	456H33.xx	33.3	48.0	15.0	18.0	14.29	M3	2.5	1133	74	236.33	238.33
	41	452H41.xx	41.3	50.8	17.8	15.3	16	M4	3	3177	142	236.41	238.41
	50	452H50.xx	50.0	59.6	20.6	18.4	25.4	M5	4	7550	208	236.50	-
57	452H57.xx	57.1	78.0	28.4	21.2	30	M6	5	12410	361	236.57	-	

1 Max permissible shaft penetration with standard disc.  
2 Min distance between shafts with standard disc.

3 Values apply to complete couplers with max bores.

## stock bores ØB

size	bore tolerance +0.03/-0 mm																	
	(.1875")				(.25")		(.3125")		(.375")		(.4375")		(.5")					
	4	4.76	5	6	6.35	7.94	8	9.53	10	11	11.11	12	12.70	14				
bore codes	19	18	19	20	22	24	27	28										
	25				22	24	27	28	31	32								
	33						27	28	31	32	33	34	35	36	38			
bore codes	(.375")		(.4375")		(.5")		(.625")		(.75")		(.875")		(1") (1.125")					
	9.53	10	11	11.11	12	12.70	14	15.88	16	18	19	19.05	20	22.23	24	25.40	28.58	30
	41	31	32	33	34	35	36	38	41	42								
50	31	32	33	34	35	36	38	41	42	45	46	47	48	50	51	53		
57					35	36	38	41	42	45	46	47	48	50	51	53	55	56

Identify your hub size in the stock bores table. Select a bore diameter. Enter the corresponding bore code in place of 'xx'. Only specify bores that are coded for your hub size. Please enquire for non-stock bores & 'D' bores.

Keyways are specified by prefixing the bore code with 'P' or 'R'. Contact T.E.A. for further details.

Specify 2 hubs + 1 disc per coupler.

## hub order code example

**450H25.28**

Product reference

Product size (ØD)

Bore code (28 = ØB)

# Oldham Lateral Displacement Couplers

blank hubs



Blank hubs offer the opportunity to adapt these components to your specific needs. For example, you may want to fit the hub within a tube or modify the outline to suit a specific application.

Blank hubs are centred and have no provision for fastening. When assembled, dimension L is identical with couplers assembled with blind hubs.

## dimensions & order codes

order code	Ø D	L
231.09.00	9.5	12.7
231.13.00	12.7	15.9
231.19.00	19.1	22.0
231.25.00	25.4	28.4
230.33.00	33.3	48.0
231.41.00	41.3	50.8

## materials

hub sizes 9 & 13 – brass, BS 2874 CZ 121.

hub sizes 19 to 57 – al. alloy, 2011 T3 and 2011 T8 to BS 4300/5 FCI.

## finishes

brass hubs – chromate & passivate corrosion protection.

al. alloy hubs:

blind bored – alocrom corrosion protection.

thro' hubs – clear anodised.

blank hubs:

brass – as above.

al. alloy – as blind bored

## performance

with standard (black) acetal discs

The Oldham is a versatile coupler with a unique combination of properties.

The 3-piece construction allows you to pre-assemble hubs to shafts. When bringing these together to connect the drive, avoid end-loading the coupler as this will damage the disc and generate friction unnecessarily. You may find thro' hubs easier to use than blind hubs. *Page 244 takes you through the installation procedure.*

Accommodating large offsets is not a problem so long as you remember that wear is related to disc travel. The larger the radial offset, the higher the rate of wear. Permissible offsets vary inversely with speed, use the offset graph as a guide.

Constant velocity ratio between input and output is maintained no matter how large the radial offset. Angular offsets however, do affect the CV ratio and should not exceed 1°.

After prolonged use at elevated torque levels, the disc may evidence temporary, creep-related backlash. This reverses after the coupler comes off-load, recovery taking between 1–2 times as long as the period of continuous use. For example, 0.5° of backlash may be measurable in a coupler after several days of continuous 24 hour torque reversals, typical of an accelerated life test. After the appropriate off-load period, the coupler should revert to its backlash-free condition. As a starting point for selection, apply the torque/duty relationships defined in the torsional deflection graph.

Thro' bored hubs are recommended when backlash-free life is a primary consideration. The protective coating applied to these hubs has a lower abrasion factor giving between 2–3 times more backlash-free life than blind hubs. Subject to manufacturing lead times and a modest on-cost, blind hubs can be furnished with low abrasion coatings.

The torque carrying capacity and torsional stiffness of Nylon 11 discs are approximately 25% of the corresponding values for the acetal discs which are tabled below.

The following data are provided as a guide to performance. We recommend testing under actual working conditions as the basis for selection.

## max torque & offsets

size	static break torque Nm	† peak torque Nm	max offsets			max recomm'd speed rpm
			angular	radial mm	axial mm	
09	2	0.3	1°	1.0	0.10	3000
13	4	0.8	1°	1.5	0.10	3000
19	10	1.6	1°	2.0	0.20	3000
25	13	3.4	1°	2.8	0.20	3000
33	53	9.0	1°	3.6	0.25	3000
41	57	18	1°	4.5	0.25	3000
50	95	26	1°	5.5	0.30	3000
57	150	45	1°	6.3	0.30	3000

Values are mutually exclusive.

† Couplers can sustain 10<sup>6</sup> minimum torque reversal cycles at these values.

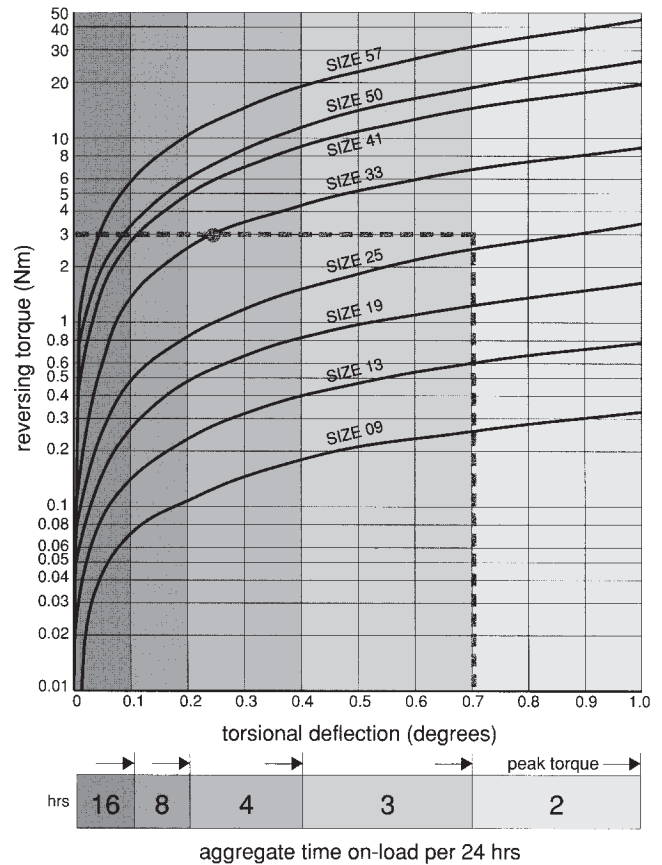
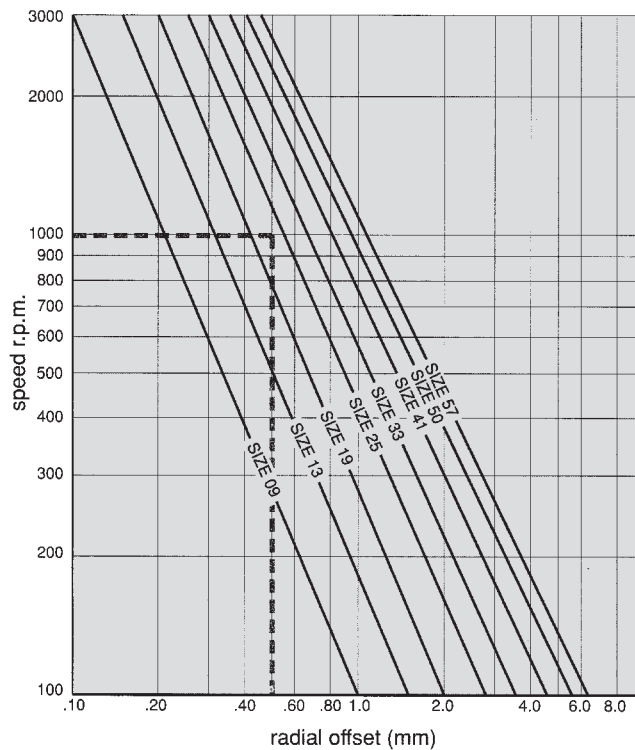
## temperature factors

0° – 60°C  
60° – 85°C

factor 1  
factor 1.5

# Oldham Lateral Displacement Couplers

performance  
with standard (black) acetal discs



## selection procedure

Determine:	Example:
1. a. max torque	2 Nm
b. max speed	1000 rpm
c. max radial offset	0.5 mm
d. operating temperature	65°C
e. duty*	3 hrs

\* duty = aggregate time on-load per 24 hrs

- Apply temperature factor and adjust torque.  
i.e.,  $2 \cdot 1.5 = 3 \text{ Nm}$
- Find the intersection of 1000 rpm and 0.5 mm in the offset graph. Identify the coupler size with a performance curve immediately to the right of the intersection.  
i.e., size 25
- Locate the colour-coded zone in the torsional deflection graph that approximates to the duty hrs. Find the intersection of 3 Nm with the vertical to the right [arrowed]. Identify the coupler size with a performance curve immediately above the intersection.  
i.e., size 33. (A coupler that is on-load for 20 seconds in every minute over an 8 hr shift, has an aggregate duty of 2.67 hrs per 24 hrs).
- Select the larger of the 2 sizes.

(dotted lines on graphs relate to the example)

## torsional stiffness

To determine torsional stiffness:

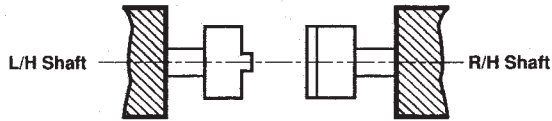
- Find the intersection of the coupler's performance curve and the required torque.  
i.e., size 33 at 3 Nm
- Read off the corresponding deflection.  
i.e., 0.23 degrees
- Apply the equation:  

$$\begin{aligned} \text{Torsional stiffness} &= (360 / 2\pi) \cdot (\text{load} / \text{deflection}) \\ &= (360 / 2\pi) \cdot (3 / 0.23) \\ &= 57.3 \cdot 13 \\ &= 747 \text{ Nm / rad} \end{aligned}$$

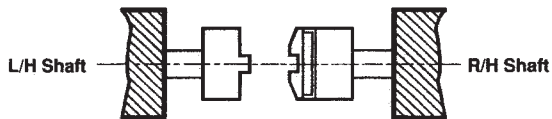
# Oldham Lateral Displacement Couplers

installation & servicing

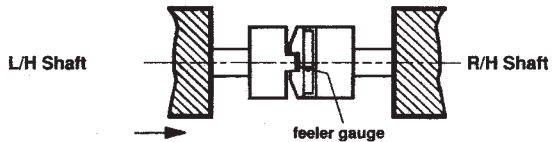
## blind hub couplers



- Slide hubs on to both shafts until fully seated and tighten screws.
- Position and secure R/H shaft.



- Seat disc fully on R/H hub.



- Place a \*feeler gauge flat against the bottom of the exposed slot in the disc and push the L/H hub into full engagement by manipulating the L/H shaft.
- Align shafts within the permissible offsets and secure L/H shaft.
- Check alignment and correct if necessary.
- Remove feeler gauge.

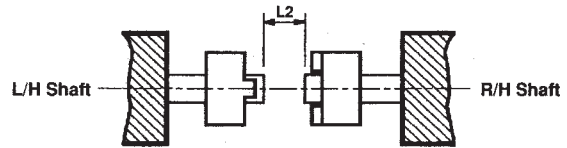
To fit a new disc, withdraw L/H shaft complete with hub and remove old disc. Repeat steps c) to g).

\*Feeler gauge sizes (also for thro' hub series).

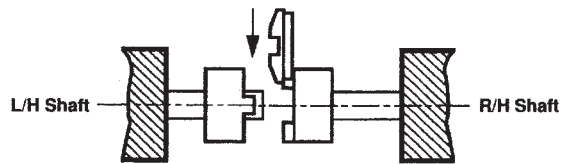
Coupler sizes	Gauge size
09 & 13	0.05
19 & 25	0.10
33 & 41	0.15
50 & 57	0.20

These are approximate and may be increased marginally to accommodate shaft end-float.

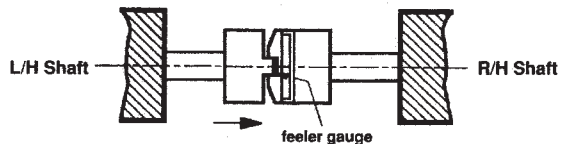
## thro' hub couplers (X-Y series)



- Slide hubs on to both shafts.
- Align shafts to within the permissible offsets and position to leave *minimum* gap L2 between terminations. Secure both shafts, check alignment and correct if necessary.



- Position R/H hub with inboard face flush with shaft termination and tighten screws.
- Slide disc radially on to the tenons of the R/H hub. Ensure that it is fully seated.



- Place a \*feeler gauge flat against the bottom of the exposed slot in the disc and push the L/H hub into full engagement.
- Tighten fastening screws and remove feeler gauge.

To fit a new disc, slacken the fastening screws on one hub and retract it along the shaft. Slide the old disc out radially and replace with the new. Repeat steps d) to f).

To retain shaft phasing, withdraw L/H shaft and repeat steps c) to g) as for blind hub series.

Hubs are thro' bored. Over-penetration of shafts can impair function of coupler with solid disc. Min shaft gap L2 must be observed. Specify thro' bored disc for near-butted shafts.



**Thank you! For viewing product information on the T.E.A.  
range of engineering components.**

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