CLASSICAL TIMING DRIVES

Components for the original Timing Drive system are still available.

Belts and pulleys for L(Light or 3/8" pitch) and H (Heavy or 1/2" pitch) drives are available from stock as listed on pages 93 to 95 whilst the table below includes XL (eXtra Light) and XH (eXtra Heavy) belts which are readily available but not always from stock.

H pitch belts of 3" width are available but not from stock.

Order by catalogue codes shown on the following tables.

Fenner Timing Belt drive components conform to ISO 5296 and to BS 4548.

Drive powers of up to 50 kW can be accommodated and most of the pulleys use Taper Lock bushes for shaft fixing.

It is anticipated that the great majority of new drive requirements can best be satisfied with one of the more modern synchronomous drive systems. Should drive design details be required – consult FPT.

(XL) EXTRA LIGHT*

1/4" (6,5mm) WIDE BELT				3/8" (9,5mm) WIDE BELT			
Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation
275S0006	60XL025	275S0017	170XL025	275S2006	60XL037	275S2017	170XL037
007	70	018	180	007	70	018	180
008	80	019	190	008	80	019	190
009	90	020	200	009	90	020	200
010	100	021	210	010	100	021	210
011	110	022	220	011	110	022	220
012	120	023	230	012	120	023	230
013	130	024	240	013	130	024	240
014	140	025	250	014	140	025	250
015	150	026	260	015	150	026	260
016	160			016	160		

(L) LIGHT

1/2" (13mm) WIDE BELT				3/4" (19mm) WIDE BELT				1" (25mm) WIDE BELT			
Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation
275L3012	124L050	275L3034	345L050	275L4012	124L075	275L4034	345L075	275L5012	124L100	275L5034	345L100
015	150	037	367	015	150	037	367	015	150	037	367
019	187	039	390	019	187	039	390	019	187	039	390
021	210	042	420	021	210	042	420	021	210	042	420
022	225	045	450	022	225	045	450	022	225	045	450
024	240	048	480	024	240	048	480	024	240	048	480
025	255	051	510	025	255	051	510	025	255	051	510
027	270	054	540	027	270	054	540	027	270	054	540
028	285	060	600	028	285	060	600	028	285	060	600
030	300			030	300			030	300		
032	322			032	322			032	322		

(H) HEAVY

3/4" (19mm) WIDE BELT		1" (25mm) WIDE BELT		1 1/2" (38mm) WIDE BELT		2" (51mm) WIDE BELT		3" (76mm) WIDE BELT	
Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation
275H4024	240H075	275H5024	240H100	275H6024	240H150	275H7024	240H200	275H8024	240H300
027	270	027	270	027	270	027	270	027	270
030	300	030	300	030	300	030	300	030	300
033	330	033	330	033	330	033	330	033	330
036	360	036	360	036	360	036	360	036	360
039	390	039	390	039	390	039	390	039	390
042	420	042	420	042	420	042	420	042	420
045	450	045	450	045	450	045	450	045	450
048	480	048	480	048	480	048	480	048	480
051	510	051	510	051	510	051	510	051	510
054	540	054	540	054	540	054	540	054	540
057	570	057	570	057	570	057	570	057	570
060	600	060	600	060	600	060	600	060	600
063	630	063	630	063	630	063	630	063	630
066	660	066	660	066	660	066	660	066	660
070	700	070	700	070	700	070	700	070	700
075	750	075	750	075	750	075	750	075	750
080	800	080	800	080	800	080	800	080	800
085	850	085	850	085	850	085	850	085	850
090	900	090	900	090	900	090	900	090	900
100	1000	100	1000	100	1000	100	1000	100	1000
110	1100	110	1100	110	1100	110	1100	110	1100
125	1250	125	1250	125	1250	125	1250	125	1250
140	1400	140	1400	140	1400	140	1400	140	1400
170	1700	170	1700	170	1700	170	1700	170	1700

(XH) EXTRA HEAVY*

2" (51mm) WIDE BELT				3" (76mm) WIDE BELT				4" (102mm) WIDE BELT			
Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation	Catalogue Code	Belt Designation
275X050	507XH200	275X7098	980XH200	275X8050	507XH300	275X8098	908XH300	275X9050	507XH400	275X9098	980XH400
056	560	112	1120	056	560	112	1120	056	560	112	1120
063	630	126	1260	063	630	126	1260	063	630	126	1260
070	700	140	1400	070	700	140	1400	070	700	140	1400
077	770	154	1540	077	770	154	1540	077	770	154	1540
084	840	175	1750	084	840	175	1750	084	840	175	1750

* XL and XH Belts available for replacement only – pulleys are not available from stock.

Installation Instructions – All Drives

INSTALLATION TENSION

Synchronous belt drives operate by positive meshing and do not require high initial belt tensions.

For optimum belt performance, however, belts should be installed with a pre-tension suitable for the envisaged drive duty.

The appropriate level of pre-tension will lie between the maximum and minimum values derived from the formulae below.

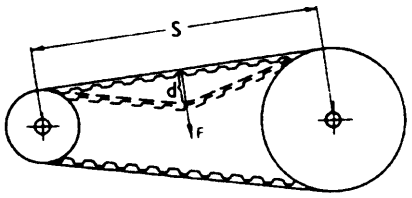
As a general guide, the lower level will be suitable for lightly loaded, smooth running drives whereas drives subject to high shock loads and /or frequent starts should be tensioned at the higher level.

In practice, belts should be installed at a tension sufficient to prevent tooth jumping under the most severe load conditions that the drive is likely to endure.

NOTE Excessive belt tension will reduce belt and bearing lives and may increase drive noise levels.

Pre-tension is usually achieved by drive centre distance extension, but for fixed shaft applications, idler pulleys can be used (see opposite).

Belt pre-tension is set by applying a force F(N) at mid-span sufficient to deflect the belt a distance d(mm) related to the length of the belt span S (metres) – see below. It is necessary to ensure that the force is applied at right angles to the belt span, and evenly across the belt width.



TORQUE DRIVE PLUS & HTD DRIVES

(Deflection – d 20mm/metre span length)
Calculate the force F from the formulae below.

$$F = \frac{kW \times 955{,}000}{dn} \text{ max} \quad \frac{kW \times 477{,}500}{dn} \text{ min} \quad (N)$$

where kW = Motor power or absorbed power if known
d = Pitch diameter of either pulley mm.
n = Rev/min of same pulley.

POLY CHAIN GT DRIVES

(Deflection – d 10mm/metre span length)
Calculate force F from the formula below.

$$F = \frac{T + \left(\frac{S}{L}\right) Y}{25} \quad (N)$$

where T = Static tension (N) from table below.
L = Belt pitch length **(mm).**
S = Span length **(mm).** Y = Constant from table below.

Pitch	Belt Width (mm)	T Values (N)	Y
8mm	12	146	80
	21	254	140
	36	440	240
	62	759	410
14mm	20	616	245
	37	1140	455
	68	2090	835
	90	2730	1103
	125	3850	1530

TIMING DRIVES

(Deflection – d 20mm/metre span length)
Use force F from the table below.

Belt	F(N)
L050	2.7
L075	4.3
L100	6.1
H075	11.0
H100	15.6
H150	24.3
H200	33.4

BELT INSTALLATION

Provisions should be made for adjustment of the drive centre distance to allow for installation of the belt around the pulleys without damage, and subsequent tensioning. A belt should never be forced over pulley flanges as internal belt damage will result.

The following tables offer guidance as to the necessary adjustments for installation and also for applying appropriate pre-tension.

Centre Distance Allowance For Installation (Flanged Pulleys Removed) and Tensioning (mm)			Additional Centre Distance Allowance For Installation Over Flanged Pulleys		
Belt	Installation	Tensioning Allowance (Any Drive)	Belt Pitch	One Pulley Flanged (mm)	Both Pulleys Flanged (mm)
1000mm and under	1,8	0,8	5mm	14	19
			8mm	22	33
			14mm	36	58
1001mm to to 1780mm	2,8	0,8	L	25	35
			H	32	48
1781mm to 2540mm	3,3	1,0			
2541mm to 3300mm	4,1	1,0			
>3300mm	5,3	1,3			

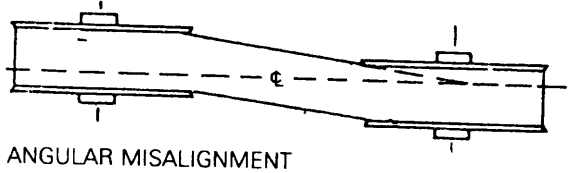
PULLEY ALIGNMENT

Misalignment of drive pulleys results in unequal tension across the belt width and extreme edge wear. Consequently, pulley alignment should be proved using a straight-edge, and shafts checked for parallelism.

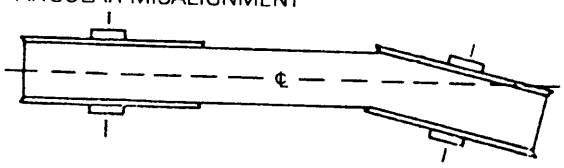
Misalignment on any synchronous drive should not exceed 1/4° angular of 5mm/metre centre distance parallel.

It is important that the drive support framework be rigid. A flexible frame allows small variations in centre distance which affect belt tension. This can result in tooth jumping during high torque starts, particularly if misalignment is present.

PARALLEL MISALIGNMENT



ANGULAR MISALIGNMENT



IDLER PULLEYS

Grooved idler pulleys can be used on the inside of all synchronous belts, and flat (not crowned) idlers can be used on the outer surface of all belts.

Whenever possible, idlers should operate on the slack span of a belt and arc of contact should be kept to a minimum.

Idler pulleys should be of equal or greater diameter than the smaller of the drive pulleys. For Poly Chain, a back side idler should be at least twice the diameter of the smallest standard pulley.

Spring loaded idlers are not normally recommended.

TAPER LOCK

Most of the synchronous pulleys/sprockets featured in this section use Taper Lock shaft fixing.

For detailed instructions on the fitting and dismounting of Taper Lock products see Shaft Fixings page 121.