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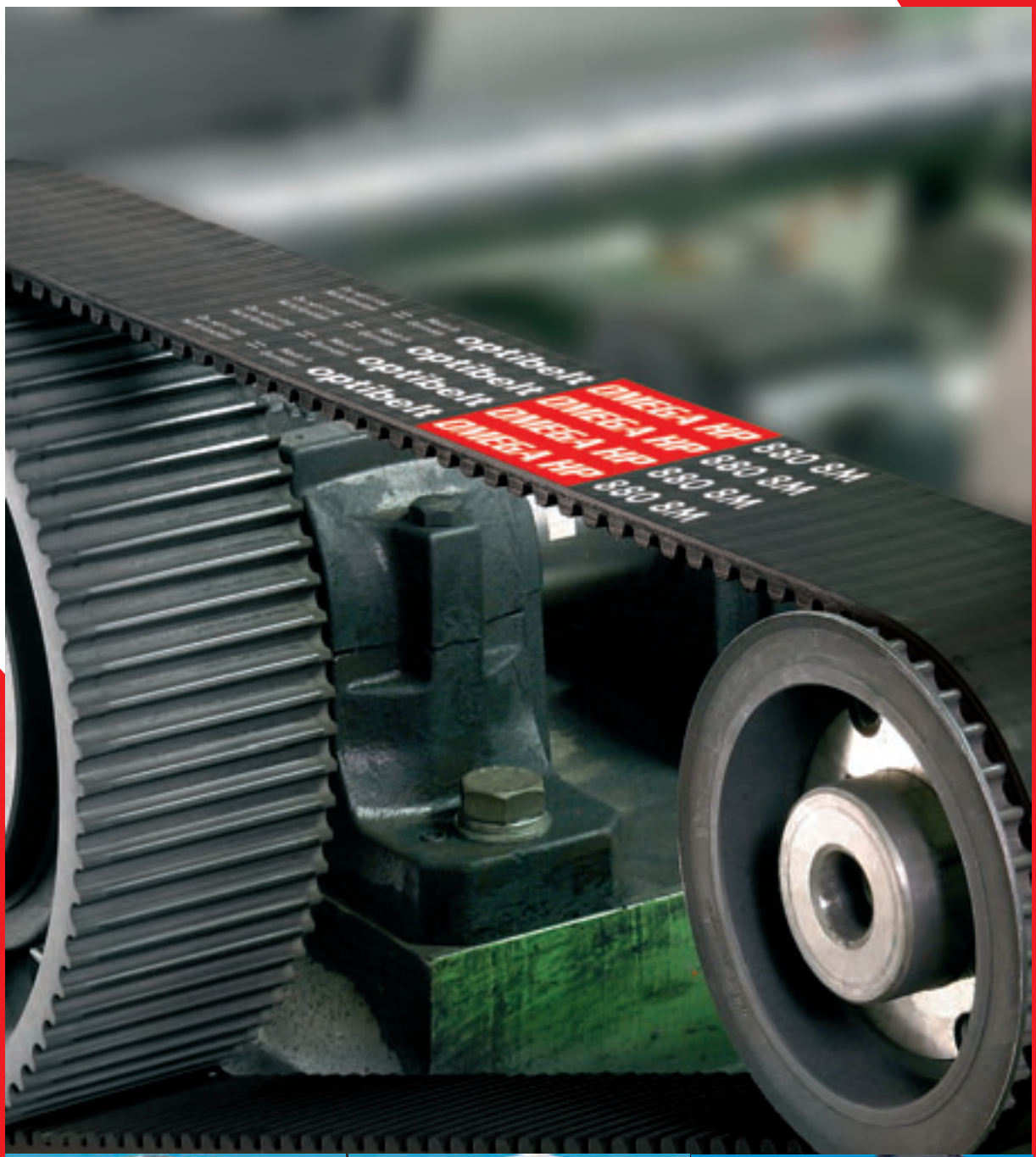
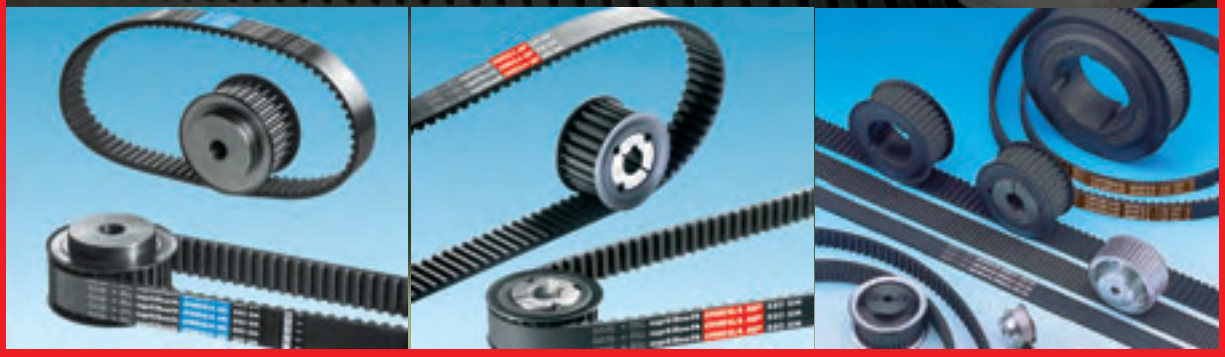
Power Transmission

NEW
incl.
OMEGA HL
OMEGA 5M HP





TECHNICAL MANUAL

FOR DRIVES WITH OPTIBELT OMEGA HL / OMEGA HP AND OPTIBELT OMEGA TIMING BELTS

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Technical manual for optibelt *OMEGA*, *OMEGA HP* and *OMEGA HL* timing belts

Optibelt OMEGA timing belts have been developed for use in high performance drives. Drive speed is transmitted synchronously, i.e. without speed loss, and with a constant transmission ratio.

The Optibelt OMEGA tooth profile makes possible significantly reduced running noise levels. The teeth are formed to ensure that they mesh perfectly and with minimal friction, into the pulley teeth.

Optibelt OMEGA timing belts will run in HTD® and RPP® pulleys. All important information for use of the belts and the methods for calculating drives with OMEGA HP, OMEGA HL and OMEGA timing belts are contained in this technical manual.

The belt characteristics described may change due to various influences. Thus, the drives must be designed based on their future use (or in a way that comes close to their future use). If you have any further questions, please make use of the free service offered by our Applications Engineering Department.

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Content

Properties
of optibelt *OMEGA* timing belts

Optibelt OMEGA section

The OMEGA section is a further development of the Optibelt HTD® section. Its advantages compared to the HTD® section are: quieter running with the use of standard HTD® pulleys.

optibelt *OMEGA HL*

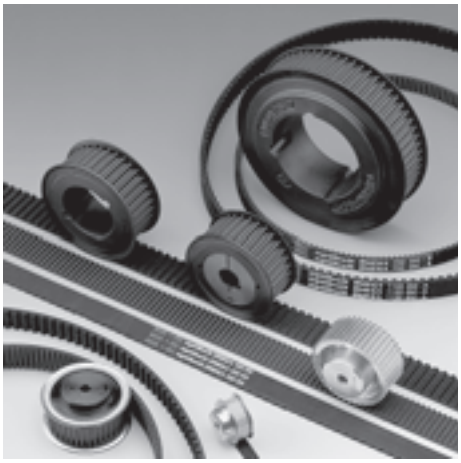
On high and low speed drives, the Optibelt OMEGA HL timing belt exceeds the performance of the OMEGA HP by up to 25 %. It was also specially designed for shock loaded drives.

The OMEGA HL achieves supreme operational reliability combined with optimum economic efficiency when newly designed for these types of application.

optibelt *OMEGA HP*

The Optibelt OMEGA HP timing belt reaches a performance level, up to 100 % higher than that of Optibelt OMEGA and is especially suited to cost efficient new designs.

The Optibelt OMEGA HP is suitable for both low speed and high speed drives with high power and steady loads.



optibelt *OMEGA*

The Optibelt OMEGA timing belt has the performance level of the established Optibelt HTD® timing belt and is its replacement. The belt is best for medium performance drives in all speed ranges having no heavy shock loading.

optibelt *ZRS*

Optibelt OMEGA, OMEGA HP and OMEGA HL timing belts are used in Optibelt ZRS-HTD® timing pulleys or in RPP® timing pulleys. For applications in other pulleys, please contact the Optibelt Applications Engineering Department.

Product description
optibelt *OMEGA HL/HP* and optibelt *OMEGA* timing belts
Standard properties

All Optibelt OMEGA HP timing belts have inherent resistance to oil, heat, cold, ozone and tropical conditions. No special labelling is required

Oil resistance

The moderate oil resistance prevents the damaging effects of mineral oils and greases, as long as these materials are not in permanent contact with the timing belt and/or are not present in large quantities. With increased demands for resistance, e.g. to mineral or vegetable oils, the performance of the Optibelt OMEGA timing belts can be improved by the use of special constructions. Please contact the Optibelt Applications Engineering Department.

Temperature resistance

The timing belt can withstand ambient temperatures from ≈ –30 °C to +100 °C. Temperatures outside this range lead to premature ageing and embrittlement of the timing belts and thus to their premature failure. The temperature resistance of Optibelt OMEGA timing belts can be extended by the use of special constructions, e.g. to +140 °C. Please contact the Optibelt Applications Engineering Department.

Electrical conductivity (anti static properties)

Electrical conductivity enables the safe discharge of electrostatic charges. This charging can have such a strong impact on timing belts with insufficient electrical conductivity that there is the danger of ignition due to sparking. The use of electrically conductive timing belts requires that the properties be checked according to ISO 9563. The electrical conductivity is confirmed by the issue of an inspection certificate.

Noise emission

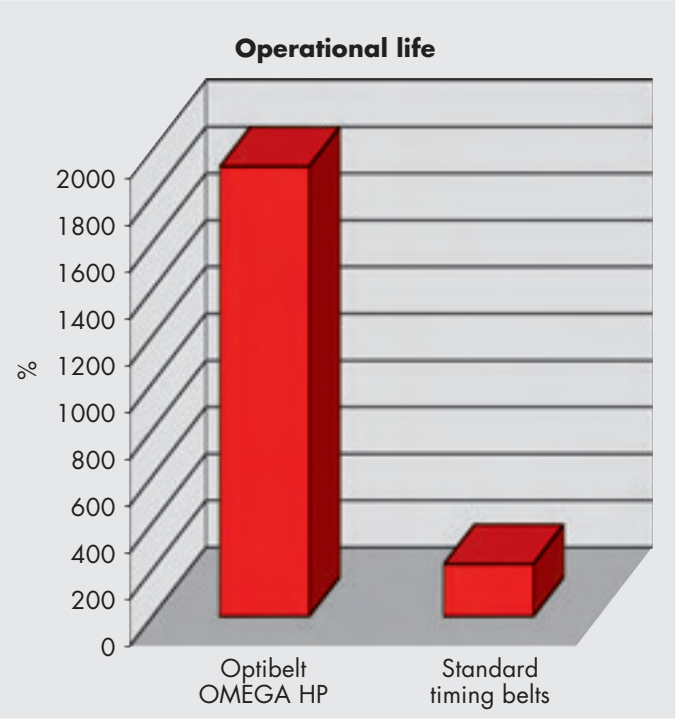
The optimised tooth shape and the indent in the tooth tip on the Optibelt OMEGA HP promotes a significantly lower noise level. In combination with the newly developed materials, the noise level is further reduced, even at high speeds and with high belt tensions.

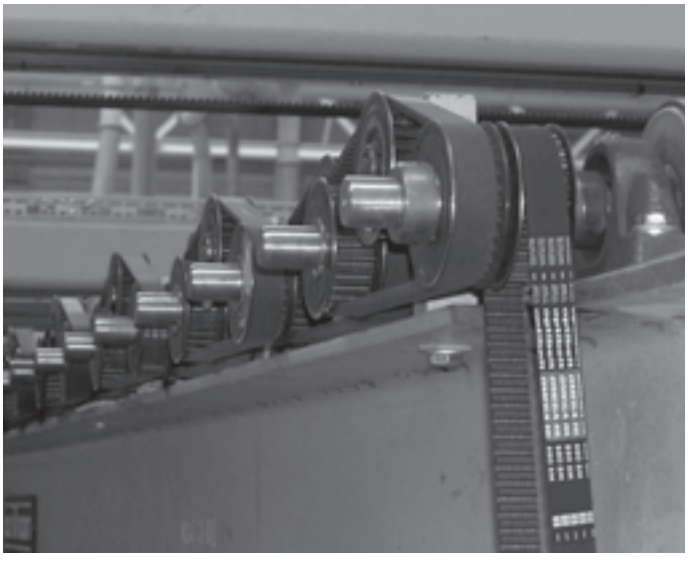
Operational life

Dynamic tests with Optibelt OMEGA HP show that the running times, compared to standard timing belts, are up to 18 times higher.This results in a considerably higher operational safety of the drive.

Efficiency

The specially developed tooth fabric and the flexible belt design make possible a virtually frictionless drive with an efficiency of up to 98 %.





Example of application: roller path

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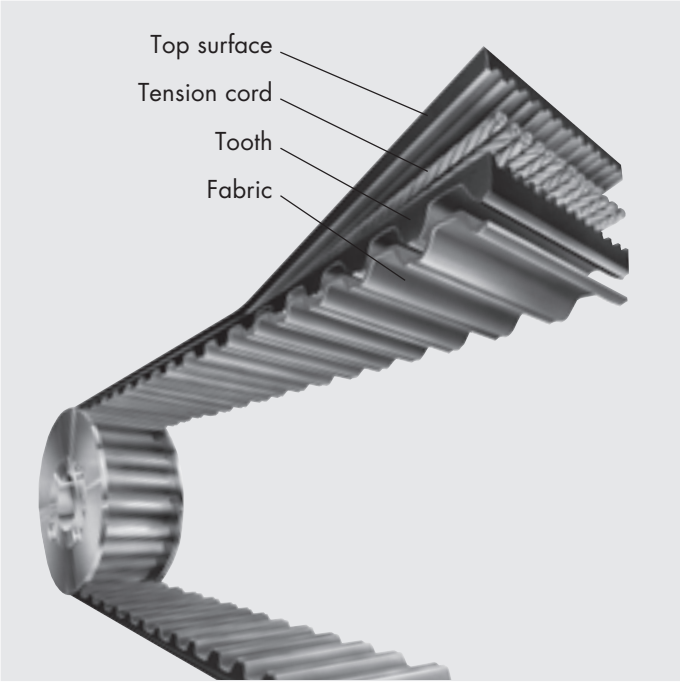
Product description
optibelt *OMEGA HL* timing belts

Construction



Top surface

The top surface of the OMEGA HL as well as the material of the teeth consists of polychloroprene reinforced with aramid fibre. Thus, an even more abrasion resistant surface is in contact with a reverse bend idler. This surface protects the tension cord from environmental influences.

Tension cord

In contrast to the OMEGA HP with glass cord, the OMEGA HL uses a considerably stronger, reinforced glass cord. Thus, the power can be further increased by up to 25 %; shock resistance also increases considerably.

Teeth

Below the tension cord and forming the teeth is a polychloroprene compound reinforced with aramid fibre. This ensures a secure power transfer from the pulley to the tension cord. The considerably increased tooth strength (compared to OMEGA) is made possible by the inclusion use of aramid fibres in the compound. This material enables a very good tooth shape maintenance as well as an increased shear strength for every single tooth of the OMEGA HL.

Fabric

The shear strength of the teeth is supported by a solid, extremely tough fabric. The shape of the OMEGA teeth and the minimal friction fabric enable a smooth meshing of the belt tooth into the pulley tooth. In addition, the special polyamide fabric is very wear resistant.

The new high performance timing belt for extremely high loads across the whole speed spectrum

Optibelt has developed this belt in the sections 8M HL and 14M HL especially for drives with high torques and severe shock loads. These types of drives can often be found in general engineering.

For this use, the construction and the material of the timing belt have been optimised in such a way that highest operational reliability paired with optimal economic efficiency is reached when newly designing a drive. Initially the belt will be available in the 8M HL section.

Optibelt OMEGA, OMEGA HP and OMEGA HL timing belts are used in Optibelt ZRS-HTD® pulleys or in RPP® timing pulleys. For applications in other pulleys, please contact the Optibelt Applications Engineering Department.

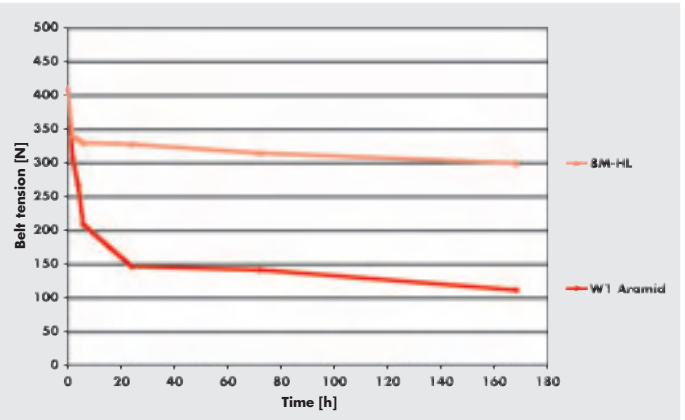
A reinforced glass tension cord is used. This innovative glass cord distinguishes itself by the combination of the following, important characteristics:

- good resistance to shock loading
- very high dynamic resistance
- very low residual and elastic stretch

Therefore, the belt performance can be increased by an additional 25 %, compared to OMEGA HP. In contrast to an aramid cord, which also has a very high resistance to shock loading, the reinforced glass cord has a considerably lower residual stretch during the running time. Aramid cord has a high residual stretch (see diagram) during running. The minimal tension loss of the reinforced glass cord leads to the maintenance of the section and thus to a load which is distributed more evenly on the teeth during running.

In addition, the reinforced glass cord can also be used at medium and high speeds while the use of the aramid cord is limited to low and medium speeds. In contrast to the aramid cord, the glass cord enables a considerable extension to the range of applications.

Belt tension loss



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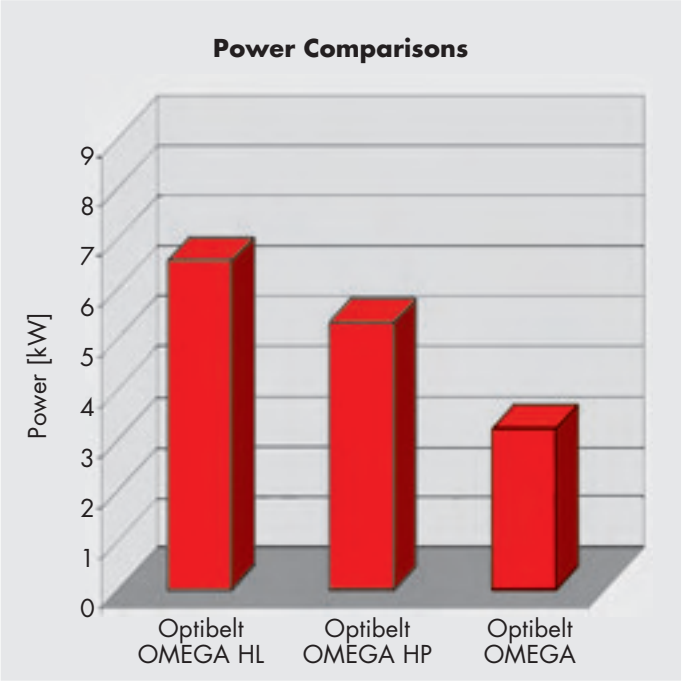
Product description
optibelt *OMEGA HL* timing belts
Properties, advantages and application examples



Comparing power ratings

Section	8M HL	8M HP	8M
Section [mm]	8	8	8
Width [mm]	20	20	20
Pulley diameter [mm]	96.77	96.77	96.77
Speed [min^{-1}]	600	600	600
Nominal power [kW]	**6.20**	**4.96**	**2.82**

Applications

- Textile machines
- Machine tools
- Compressors
- Printing machines
- Wood working machines
- Paper machines

Overview of the advantages and properties of optibelt OMEGA HL:

- dimensionally stable construction with high flexibility
- very low residual and elastic stretch of the cord
- low friction, highly abrasion resistant with high shear strength, therefore,
- up to 2.5 times higher power transmission (an increase of up to 150%) compared to standard OMEGA timing belts.
- approx. 25% increase of the power transmission compared to the established high performance construction OMEGA HP
- suitable for low and high speed, high powered drives
- good resistance to medium and high shock loading
- further extended, very large range of applications

Advantages and properties of a drive with Optibelt OMEGA HL timing belts in these applications

- reduced drive volume compared to OMEGA HP and in particular to standard OMEGA timing belts, therefore,
- reduced costs for belts and pulleys
- greater options for drive design
- reduced shaft diameters and smaller bearings
- reduced running noise levels
- improved efficiency

Significant cost reduction for the system and high operational reliability for further improvements in the economic efficiency of the new drives.

For additional advantages and characteristics, see Optibelt OMEGA on page 16.

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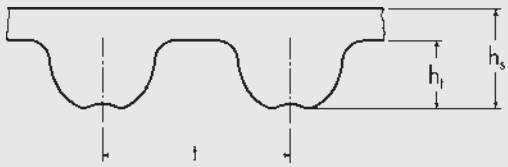
Standard range
optibelt *OMEGA HL* sections and dimensions



Section	8M HL
t [mm]	8.0
h_s [mm]	5.4
h_t [mm]	3.2

Optibelt OMEGA 8M HL

Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
352 8M HL	352	44	1424 8M HL	1400	178
480 8M HL	480	60	1440 8M HL	1440	180
560 8M HL	560	70	1552 8M HL	1552	194
600 8M HL	600	75	1600 8M HL	1600	200
640 8M HL	640	80	1760 8M HL	1760	220
656 8M HL	656	82	1800 8M HL	1800	225
680 8M HL	680	85	2000 8M HL	2000	250
720 8M HL	720	90	2240 8M HL	2240	280
800 8M HL	800	100	2400 8M HL	2400	300
880 8M HL	880	110	2600 8M HL	2600	325
920 8M HL	920	115	2800 8M HL	2800	350
960 8M HL	960	120			
1000 8M HL	1000	125			
1040 8M HL	1040	130			
1080 8M HL	1080	135			
1120 8M HL	1120	140			
1200 8M HL	1200	150			
1280 8M HL	1280	160			
1304 8M HL	1304	163			
1360 8M HL	1360	170			

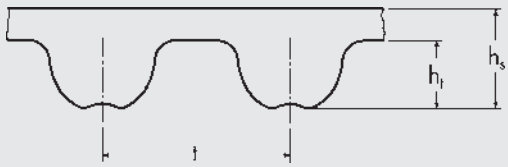
Standard widths: 20 mm, 30 mm, 50 mm, 85 mm
(additional lengths and special widths on request)

Order example:

Timing belts: Optibelt OMEGA HL 1200 8M HL 20

1200 = 1200 mm pitch length
8M HL = section and construction
20 = 20 mm belt width

Standard range
optibelt *OMEGA HL* sections and dimensions



Section	14M HL
t [mm]	14.0
h_s [mm]	9.5
h_t [mm]	5.6

Optibelt OMEGA 14M HL

Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
On request					

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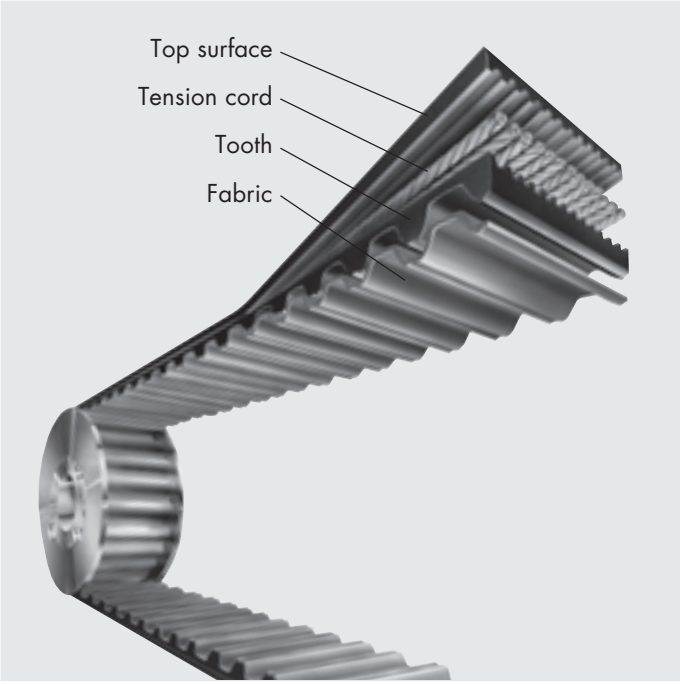
Product description
optibelt *OMEGA HP* timing belts

Construction



Top surface

A durable and flexible top surface protects the tension cord from external influences. In addition, the polychloroprene compound is reinforced with aramid fibres and moderately resistant to mineral oils and humidity and protects from wear due to friction.

Tension cord

The tension cords are reinforced glass fibre counter twisted and laid in pairs. These tension cords have very high tensile strength, very high flexibility and minimal stretch.

Teeth

The teeth consist of a new polychloroprene compound reinforced with aramid fibres, which guarantee high shear strength. They are shaped in such a way and exactly spaced so that they mesh perfectly with the pulley teeth with minimal friction. The indent in the tooth tip promotes quiet running.

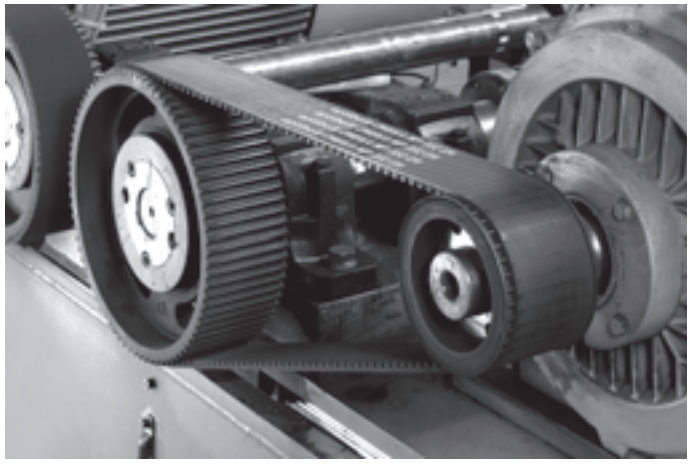
Fabric

The specially designed polyamide fabric distinguishes itself by its extraordinarily low friction coefficient and its low noise characteristics. This fabric also protects the teeth from premature wear and cracking

The high performance timing belt for high load, high speed machine drives

Compact synchronous drives are used in the whole field of mechanical drive engineering. High power transmission capability, good running characteristics and high operational safety are only some of the demands made on timing belts. Modern manufacturing techniques and quality inspections during all processing stages ensure products of the highest reliability. Optibelt OMEGA HP high performance timing belts have been especially developed for high load, low and high speed drives that are evenly loaded without heavy shock. Improved materials and optimised production form the basis for this very high performance spectrum.

Optibelt OMEGA, OMEGA HP and OMEGA HL timing belts are used in Optibelt ZRS-HTD® pulleys or in RPP® pulleys. For the applications using other pulleys, please contact the Optibelt Applications Engineering Department.



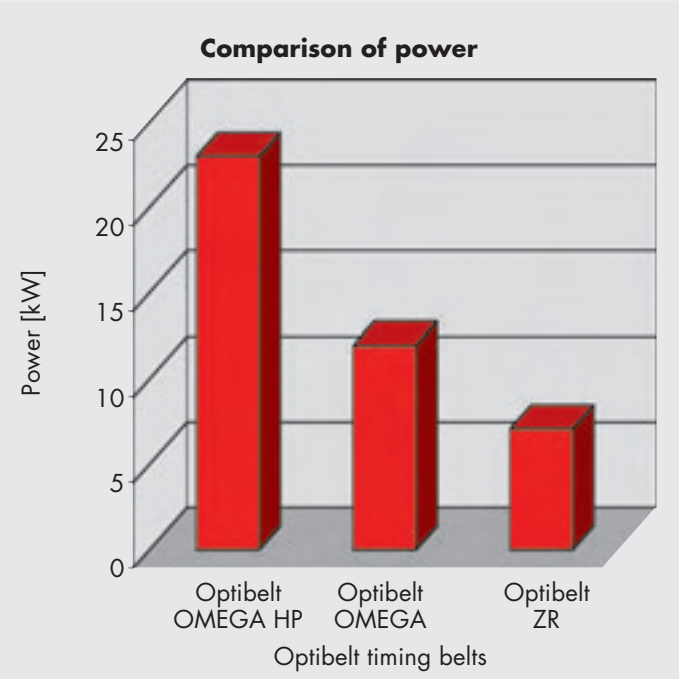
Example of application: test bench

The new high performance timing belt Optibelt OMEGA 5M HP

In the field of high performance timing belts the Optibelt OMEGA 5M HP has been newly developed for small pulley diameters, short centre distances and high speeds.

The Optibelt OMEGA 5M HP transmits up to 3 times the power of an Optibelt OMEGA 5M (an increase in power of up to 200%). The performance level of the Optibelt OMEGA 5M HP corresponds – with the same pulley diameters – roughly to the level of the considerably larger section Optibelt OMEGA 8M.

Product description
optibelt *OMEGA HP,* advantages and examples of application



Comparing power ratings

Section	8M HP	8M	H
Section [mm]	8	8	12.7
Width [mm]	20	20	19.05
Pulley diameter [mm]	96.77	96.77	97.02
Speed [min^{-1}]	2850	2850	2850
Nominal power [kW]	**21.9**	**10.8**	**6.0**

Preferred areas of application

- Textile machines
- Machine tools
- Compressors
- Printing machines
- Wood working machines
- Paper machines

Overview of the advantages and characteristics of the Optibelt OMEGA HP

- dimensionally stable construction with high flexibility
- low residual and elastic stretch of the cord
- friction and abrasion resistant fabric with high shear strength, thus,
- approximately double the power transmission capability, (section 5M HP approximately treble the power transmission capacity) compared to OMEGA timing belts in their standard construction
- suitable for low and high speed, high load drives
- good resistance to medium and high shock loading
- large range of applications

Advantages and characteristics of a drive with an Optibelt OMEGA HP timing belt in these areas of application

- considerably reduced drive volume when compared to OMEGA timing belts in standard construction, thus,
- reduced costs for belts and pulleys
- greater freedom when designing drives
- reduced shaft diameters and smaller bearings
- reduced running noise levels
- improved efficiency

Significant cost reduction for the system and high operational reliability for optimum efficiency for new drives.

For additional advantages and characteristics, see Optibelt OMEGA on page 16.

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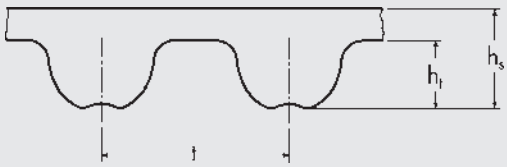
Standard range
optibelt *OMEGA HP*, sections and dimensions



Section	3M HP
t [mm]	3.0
h_s [mm]	2.3
h_t [mm]	1.1

Optibelt OMEGA 3M HP

Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
111 3M HP•	111	37	390 3M HP•	390	130
129 3M HP•	129	43	420 3M HP•	420	140
141 3M HP•	141	47	426 3M HP•	426	142
144 3M HP•	144	48	447 3M HP•	447	149
150 3M HP•	150	50	462 3M HP•	462	154
165 3M HP•	165	50	474 3M HP•	474	158
168 3M HP•	168	56	480 3M HP•	480	160
171 3M HP•	171	57	486 3M HP•	486	162
174 3M HP•	174	58	495 3M HP•	495	165
177 3M HP•	177	59	501 3M HP•	501	167
180 3M HP•	180	60	513 3M HP•	513	171
183 3M HP•	183	61	519 3M HP•	519	173
186 3M HP•	186	62	522 3M HP•	522	174
192 3M HP•	192	64	525 3M HP•	525	175
195 3M HP•	195	65	531 3M HP•	531	177
201 3M HP•	201	67	537 3M HP•	537	179
204 3M HP•	204	68	558 3M HP•	558	186
207 3M HP•	207	69	564 3M HP•	564	188
210 3M HP•	210	70	570 3M HP•	570	190
213 3M HP•	213	71	597 3M HP•	597	199
225 3M HP•	225	75	600 3M HP•	600	200
240 3M HP•	240	80	606 3M HP•	606	202
252 3M HP•	252	84	615 3M HP•	615	205
255 3M HP•	255	85	633 3M HP•	633	211
267 3M HP•	267	89	669 3M HP•	669	223
285 3M HP•	285	95	675 3M HP•	675	225
288 3M HP•	288	96	711 3M HP•	711	237
291 3M HP•	291	97	738 3M HP•	738	246
294 3M HP•	294	98	804 3M HP•	804	268
300 3M HP•	300	100	816 3M HP•	816	272
312 3M HP•	312	104	843 3M HP•	843	281
315 3M HP•	315	105	882 3M HP•	882	294
318 3M HP•	318	106	888 3M HP•	888	296
330 3M HP•	330	110	1062 3M HP•	1062	354
339 3M HP•	339	113	1569 3M HP•	1569	523
345 3M HP•	345	115			
357 3M HP•	357	119			
363 3M HP•	363	121			
366 3M HP•	366	122			
384 3M HP•	384	128			

Standard widths: 6 mm, 9 mm, 15 mm
(additional lengths and special widths on request) • Non stock items

Order example:

Timing belts: Optibelt OMEGA HP 225 3M HP 9

225 = 225 mm pitch length
3M HP = section and construction
9 = 9 mm belt width

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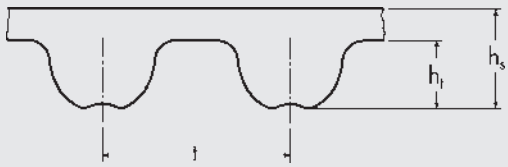
Power Transmission

Standard range
optibelt *OMEGA HP*, sections and dimensions



Section	5M HP
t [mm]	5.0
h_s [mm]	3.4
h_t [mm]	1.9

Optibelt OMEGA 5M HP

Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
265 5M HP	265	53	890 5M HP	890	178
305 5M HP	305	61	900 5M HP	900	180
330 5M HP	330	66	925 5M HP	925	185
350 5M HP	350	70	950 5M HP	950	190
375 5M HP	375	75	1000 5M HP	1000	200
400 5M HP	400	80	1050 5M HP	1050	210
425 5M HP	425	85	1125 5M HP	1125	225
450 5M HP	450	90	1135 5M HP	1135	227
475 5M HP	475	95	1200 5M HP	1200	240
500 5M HP	500	100	1270 5M HP	1270	254
525 5M HP	525	105	1400 5M HP	1400	280
535 5M HP	535	107	1420 5M HP	1420	284
550 5M HP	550	110	1425 5M HP	1425	285
565 5M HP	565	113	1500 5M HP	1500	300
600 5M HP	600	120	1595 5M HP	1595	319
630 5M HP	630	126	1690 5M HP	1690	338
635 5M HP	635	127	1790 5M HP	1790	358
665 5M HP	665	133	1870 5M HP	1870	374
700 5M HP	700	140	1895 5M HP	1895	379
710 5M HP	710	142	2000 5M HP	2000	400
740 5M HP	740	148	2110 5M HP	2110	422
755 5M HP	755	151	2350 5M HP	2350	470
790 5M HP	790	158	2525 5M HP	2525	505
800 5M HP	800	160			
835 5M HP	835	167			

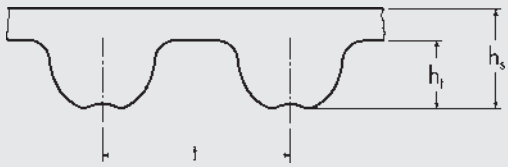
Standard widths: 9 mm, 15 mm, 25 mm
(additional lengths and special widths on request)

Order example:

Timing belts: Optibelt OMEGA HP 1000 5M HP 25

1000 = 1000 mm pitch length
5M HP = section and construction
25 = 25 mm belt width

Standard range
optibelt *OMEGA HP*, sections and dimensions



Section	8M HP
t [mm]	8.0
h_s [mm]	5.4
h_t [mm]	3.2

Optibelt OMEGA 8M HP

Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
352 8M HP	352	44	1040 8M HP	1040	130
424 8M HP	424	53	1064 8M HP	1064	133
480 8M HP	480	60	1080 8M HP	1080	135
512 8M HP	512	64	1120 8M HP	1120	140
520 8M HP	520	65	1160 8M HP	1160	145
560 8M HP	560	70	1200 8M HP	1200	150
576 8M HP	576	72	1280 8M HP	1280	160
600 8M HP	600	75	1304 8M HP	1304	163
608 8M HP	608	76	1360 8M HP	1360	170
632 8M HP	632	79	1400 8M HP	1400	175
640 8M HP	640	80	1424 8M HP	1424	178
656 8M HP	656	82	1440 8M HP	1440	180
680 8M HP	680	85	1520 8M HP	1520	190
712 8M HP	712	89	1600 8M HP	1600	200
720 8M HP	720	90	1760 8M HP	1760	220
760 8M HP	760	95	1800 8M HP	1800	225
776 8M HP	776	97	2000 8M HP	2000	250
784 8M HP	784	98	2240 8M HP	2240	280
800 8M HP	800	100	2400 8M HP	2400	300
824 8M HP	824	103	2600 8M HP	2600	325
840 8M HP	840	105	2800 8M HP	2800	350
848 8M HP	848	106			
856 8M HP	856	107			
880 8M HP	880	110			
896 8M HP	896	112			
912 8M HP	912	114			
920 8M HP	920	115			
960 8M HP	960	120			
976 8M HP	976	122			
1000 8M HP	1000	125			

Standard widths: 20 mm, 30 mm, 50 mm, 85 mm
(additional lengths and special widths on request)

Order example:

Timing belts: Optibelt OMEGA HP 1200 8M HP 20

1200 = 1200 mm pitch length
8M HP = section and construction
20 = 20 mm belt width

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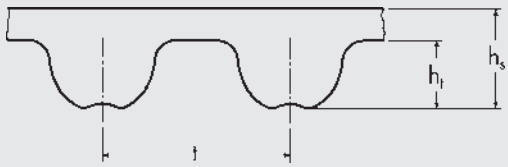
Power Transmission

Standard range
optibelt *OMEGA HP*, sections and dimensions



Section	14M HP
t [mm]	14.0
h_s [mm]	9.5
h_t [mm]	5.6

Optibelt OMEGA 14M HP

Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
966 14M HP	966	69	2100 14M HP	2100	150
1092 14M HP	1092	78	2310 14M HP	2310	165
1190 14M HP	1190	85	2450 14M HP	2450	175
1400 14M HP	1400	100	2590 14M HP	2590	185
1610 14M HP	1610	115	2800 14M HP	2800	200
1778 14M HP	1778	127			
1890 14M HP	1890	135			

Standard widths: 40 mm, 55 mm, 85 mm, 115 mm, 170 mm
(additional lengths and special widths on request)

Order example:

Timing belts: Optibelt OMEGA HP 1400 14M HP *55*

1400 = 1400 mm pitch length
14M HP = section and construction
55 = 55 mm belt width

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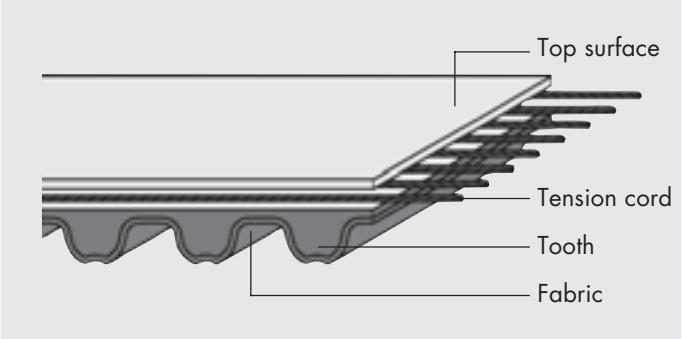
Product description
optibelt *OMEGA* timing belts

Construction



High performance Optibelt OMEGA timing belts are the result of a continuing development process. Operational experience with Optibelt ZR and Optibelt HTD® has been applied to this belt generation. Optibelt OMEGA timing belts set the standard for synchronous performance and for positioning drives.

The geometry of the Optibelt OMEGA tooth profile has been adjusted to the established, curvilinear timing pulleys. You can use, for example, Optibelt OMEGA timing belts in HTD® timing pulleys in the pulley sections 3M, 5M, 8M and 14M. Optibelt ZRS HTD® timing pulleys are standard items in our range with pilot bores or bored for Optibelt TB taper bushes. In addition, all OMEGA timing belts can also be used in RPP® timing pulleys. Special timing pulleys for Optibelt OMEGA timing belts are not required.

Top surface

The belt top surface consists of a flexible polychloroprene compound which protects the tension cord from external influences. In addition, it is moderately resistant to mineral oils, humidity and protects from frictional wear.

Tension cord

The tension member is composed of glass fibre tension cords counter twisted and laid in pairs. These tension cords have high tensile strength, very high flexibility and very low stretch.

Teeth

Just like the belt top surface, the teeth consist of a polychloroprene compound guaranteeing high shear strength. The indent in the tooth tip promotes quiet running.

Fabric

The polyamide fabric protects the tooth from premature wear and prevents cracking. At the same time, the low coefficient of friction lowers operating temperature and helps to reduce running noise levels.

Example of application: lawn mowers

Overview of the advantages and characteristics

- synchronous speed
- highest precision
- perceptibly low noise level due to the OMEGA tooth profile
- may be used in standard HTD® and RPP® timing pulleys
- maintenance free
- temperature resistant from –30 °C to +100 °C
- efficiency of up to 98 %
- electrical conductivity can be checked to ISO 9563 on request

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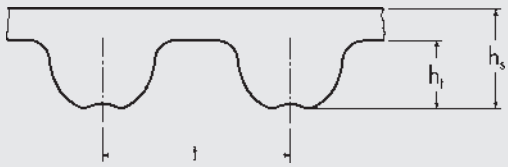
Power Transmission

Standard range
optibelt *OMEGA*, sections and dimensions



Section	2M
t [mm]	2.0
h_s [mm]	1.5
h_t [mm]	0.7

Optibelt OMEGA 2M

Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
90 2M	90	45	216 2M	216	108	448 2M	448	224
100 2M	100	50	232 2M	232	116	558 2M	558	279
104 2M	104	52	250 2M	250	125	560 2M	560	280
112 2M	112	56	256 2M	256	128	710 2M	710	355
118 2M	118	59	266 2M	266	133	984 2M	984	492
120 2M	120	60	274 2M	274	137	1066 2M	1066	533
124 2M	124	62	280 2M	280	140	1224 2M	1224	612
130 2M	130	65	308 2M	308	154			
140 2M	140	70	310 2M	310	155			
148 2M	148	74	328 2M	328	164			
180 2M	180	90	330 2M	330	165			
184 2M	184	92	340 2M	340	170			
188 2M	188	94	368 2M	338	184			
200 2M	200	100	370 2M	370	185			
208 2M	208	104	426 2M	426	213			

Standard widths: 3 mm, 6 mm, 9 mm

Order example:

Timing belts: Optibelt OMEGA 180 2M 6

180 = 180 mm pitch length
2M = section
6 = 6 mm belt width

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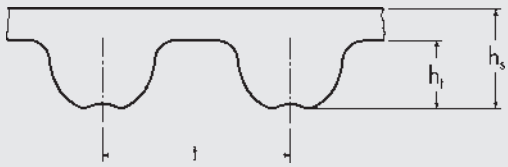
Power Transmission

Standard range
optibelt *OMEGA*, sections and dimensions



Section	3M
t [mm]	3.0
h_s [mm]	2.3
h_t [mm]	1.1

Optibelt OMEGA 3M

Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
111 3M	111	37	285 3M	285	85	513 3M	513	171
129 3M	129	43	288 3M	288	96	519 3M	519	173
141 3M	141	47	291 3M	291	97	522 3M	522	174
144 3M	144	48	294 3M	294	98	525 3M	525	175
150 3M	150	50	300 3M	300	100	531 3M	531	177
165 3M	165	55	312 3M	312	104	537 3M	537	179
168 3M	168	56	315 3M	315	105	558 3M	558	186
171 3M	171	57	318 3M	318	106	564 3M	564	188
174 3M	174	58	330 3M	330	110	570 3M	570	190
177 3M	177	59	339 3M	339	113	597 3M	597	193
180 3M	180	60	345 3M	345	115	600 3M	600	200
183 3M	183	61	357 3M	357	119	606 3M	606	202
186 3M	186	62	363 3M	363	121	615 3M	615	205
192 3M	192	64	366 3M	366	122	633 3M	633	211
195 3M	195	65	384 3M	384	128	669 3M	669	223
201 3M	201	67	390 3M	390	130	675 3M	675	225
204 3M	204	68	420 3M	420	140	711 3M	711	237
207 3M	207	69	426 3M	426	142	738 3M	738	246
210 3M	210	70	447 3M	447	149	804 3M	804	268
213 3M	213	71	462 3M	462	154	816 3M	816	272
225 3M	225	75	474 3M	474	158	843 3M	843	281
240 3M	240	80	480 3M	480	160	882 3M	882	294
252 3M	252	84	486 3M	486	162	888 3M	888	296
255 3M	255	85	495 3M	495	165	1062 3M	1062	354
267 3M	267	89	501 3M	501	167	1569 3M	1569	523

Standard widths: 6 mm, 9 mm, 15 mm

Order example:

Timing belts: Optibelt OMEGA 150 3M 15

150 = 150 mm pitch length
3M = section
15 = 15 mm belt width

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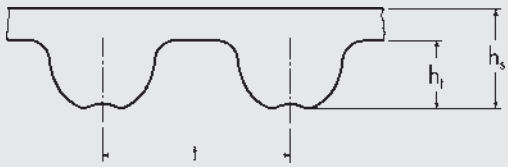
Power Transmission

Standard range
optibelt *OMEGA*, sections and dimensions



Section	5M
t [mm]	5.0
h_s [mm]	3.4
h_t [mm]	1.9

Optibelt OMEGA 5M

Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
180 5M	180	36	575 5M	575	115	980 5M	980	196
225 5M	225	45	580 5M	580	116	1000 5M	1000	200
255 5M	255	51	600 5M	600	120	1035 5M	1035	207
265 5M	265	53	610 5M	610	122	1050 5M	1050	210
270 5M	270	54	615 5M	615	123	1100 5M	1100	220
280 5M	280	56	630 5M	630	126	1125 5M	1125	225
295 5M	295	59	635 5M	635	127	1135 5M	1135	227
305 5M	305	61	640 5M	640	128	1200 5M	1200	240
325 5M	325	65	645 5M	645	129	1270 5M	1270	254
330 5M	330	66	665 5M	665	133	1400 5M	1400	280
340 5M	340	68	670 5M	670	134	1420 5M	1420	284
350 5M	350	70	700 5M	700	140	1425 5M	1425	285
360 5M	360	72	710 5M	710	142	1500 5M	1500	300
365 5M	365	73	720 5M	720	144	1595 5M	1595	319
370 5M	370	74	740 5M	740	148	1690 5M	1690	338
375 5M	375	75	750 5M	750	150	1790 5M	1790	358
385 5M	385	77	755 5M	755	151	1870 5M	1870	374
400 5M	400	80	775 5M	775	155	1895 5M	1895	379
415 5M	415	83	790 5M	790	158	2000 5M	2000	400
425 5M	425	85	800 5M	800	160	2110 5M	2110	422
450 5M	450	90	825 5M	825	165	2350 5M	2350	470
475 5M	475	95	835 5M	835	167	2525 5M	2525	505
490 5M	490	98	850 5M	850	170			
500 5M	500	100	860 5M	860	172			
520 5M	520	104	890 5M	890	178			
525 5M	525	105	900 5M	900	180			
535 5M	535	107	925 5M	925	185			
550 5M	550	110	935 5M	935	187			
560 5M	560	112	950 5M	950	190			
565 5M	565	113	965 5M	965	193			

Standard widths: 9 mm, 15 mm, 25 mm

Order example:

Timing belts: Optibelt OMEGA 1200 5M 15

1200 = 1200 mm pitch length
5M = section
15 = 15 mm belt width

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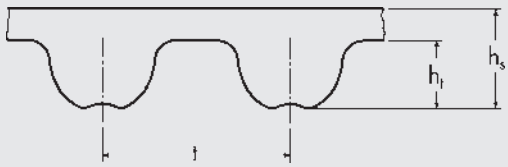
Standard range
optibelt *OMEGA*, sections and dimensions



Section	8M
t [mm]	8.0
h_s [mm]	5.4
h_t [mm]	3.2

Optibelt OMEGA 8M

Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
352 8M	352	44	912 8M	912	114	1424 8M	1424	178
424 8M	424	53	920 8M	920	115	1440 8M	1440	180
480 8M	480	60	960 8M	960	120	1520 8M	1520	190
512 8M	512	64	976 8M	976	122	1552 8M	1552	194
520 8M	520	65	1000 8M	1000	125	1600 8M	1600	200
560 8M	560	70	1040 8M	1040	130	1680 8M	1680	210
576 8M	576	72	1056 8M	1056	132	1696 8M	1696	212
600 8M	600	75	1064 8M	1064	133	1728 8M	1728	216
608 8M	608	76	1080 8M	1080	135	1760 8M	1760	220
632 8M	632	79	1096 8M	1096	137	1800 8M	1800	225
640 8M	640	80	1120 8M	1120	140	1904 8M	1904	238
656 8M	656	82	1128 8M	1128	141	1936 8M	1936	242
680 8M	680	85	1160 8M	1160	145	2000 8M	2000	250
712 8M	712	89	1184 8M	1184	148	2080 8M	2080	260
720 8M	720	90	1200 8M	1200	150	2104 8M	2104	263
760 8M	760	95	1216 8M	1216	152	2240 8M	2240	280
776 8M	776	97	1224 8M	1224	153	2248 8M	2248	281
784 8M	784	98	1248 8M	1248	156	2272 8M	2272	284
800 8M	800	100	1256 8M	1256	157	2400 8M	2400	300
824 8M	824	103	1280 8M	1280	160	2504 8M	2504	313
840 8M	840	105	1304 8M	1304	163	2600 8M	2600	325
848 8M	848	106	1328 8M	1328	166	2800 8M	2800	350
856 8M	856	107	1344 8M	1344	168			
880 8M	880	110	1360 8M	1360	170			
896 8M	896	112	1400 8M	1400	175			

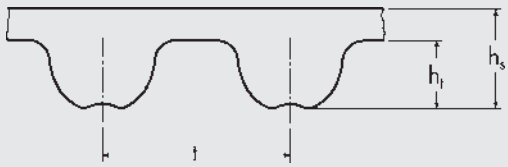
Standard widths: 20 mm, 30 mm, 50 mm, 85 mm

Order example:

Timing belts: Optibelt OMEGA 1200 8M 50

1200 = 1200 mm pitch length
8M = section
50 = 50 mm belt width

Standard range
optibelt *OMEGA*, sections and dimensions



Section	14M
t [mm]	14.0
h_s [mm]	9.5
h_t [mm]	5.6

Optibelt OMEGA 14M

Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth	Belt designation	Pitch length [mm]	Number of teeth
966 14M	966	69	1610 14M	1610	115	2310 14M	2310	165
1092 14M	1092	78	1778 14M	1778	127	2450 14M	2450	175
1190 14M	1190	85	1890 14M	1890	135	2590 14M	2590	185
1400 14M	1400	100	2100 14M	2100	150	2800 14M	2800	200

Standard widths: 40 mm, 55 mm, 85 mm, 115 mm, 170 mm

Order example:

Timing belts: Optibelt OMEGA 1400 14M 55

1400 = 1400 mm pitch length
14M = section
55 = 55 mm belt width

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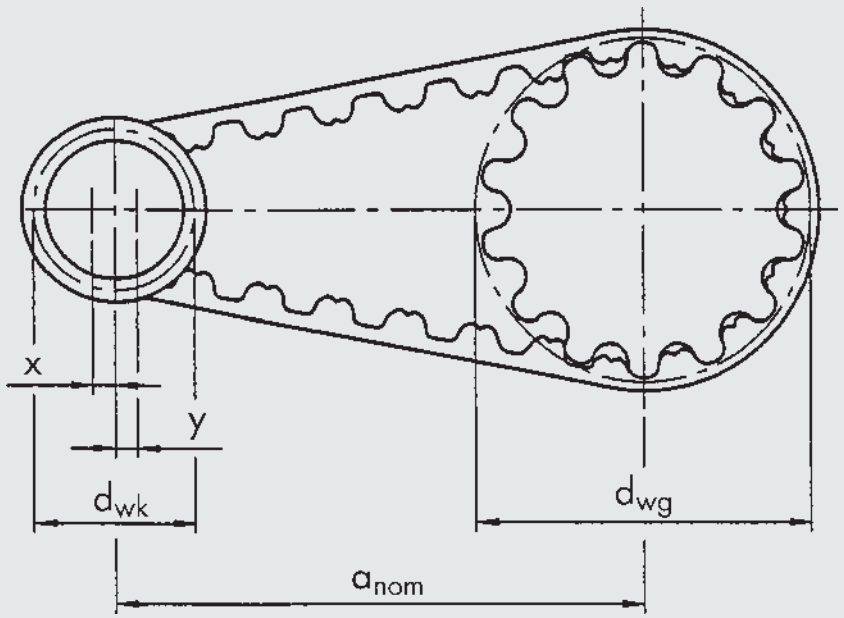
Calculation

optibelt *OMEGA HL/HP* and optibelt *OMEGA*

Explanation of the symbols

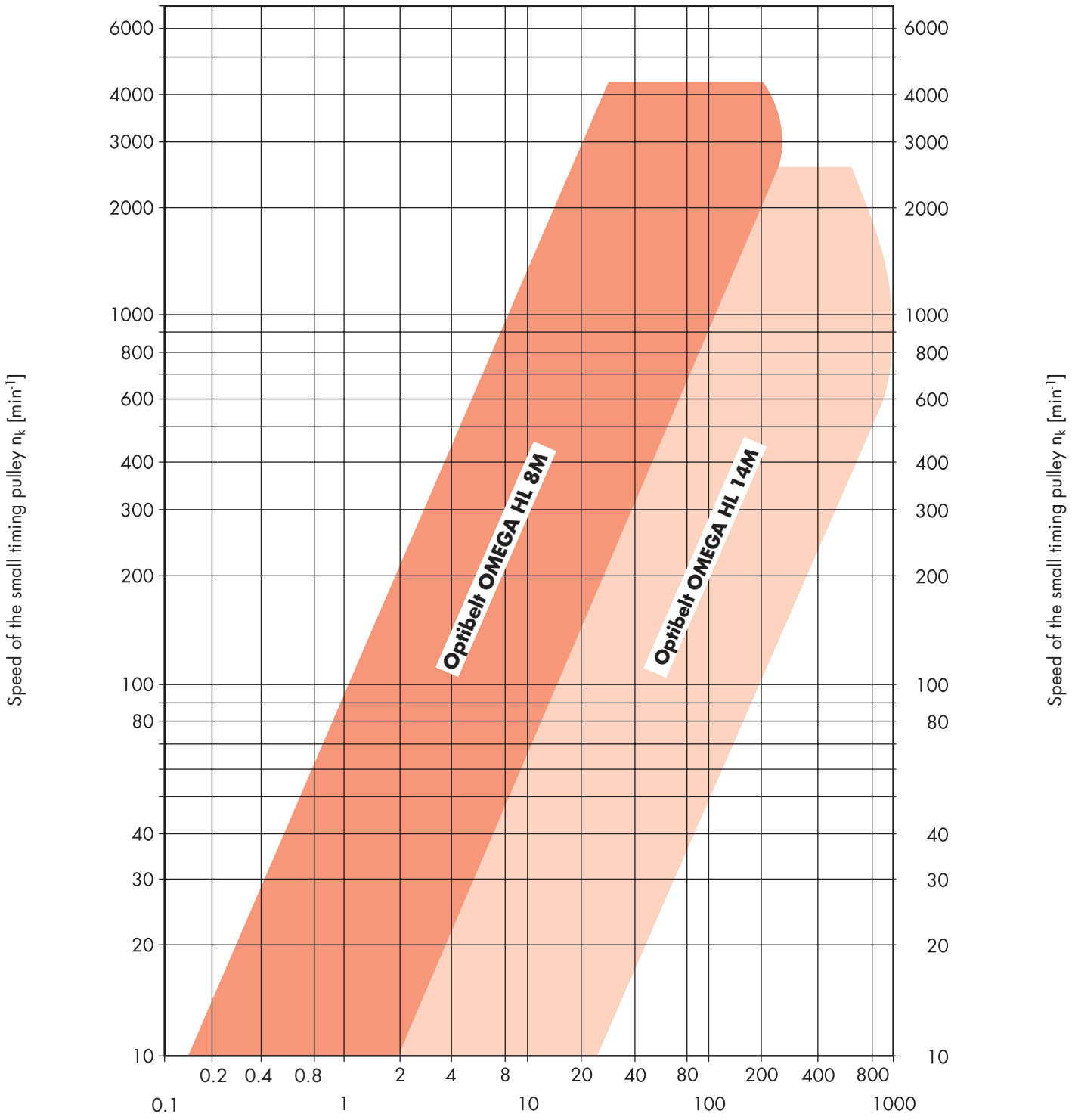
a	=	centre distance	[mm]
a_{nom}	=	centre distance, calculated using a standard belt length	[mm]
c_0	=	basic service factor	
c_1	=	tooth in mesh factor	
c_2	=	total service factor	
c_3	=	speed ratio correction factor	
c_6	=	fatigue correction factor	
c_7	=	belt length correction factor	
d_a	=	outside diameter of the timing pulley	[mm]
d_w	=	pitch diameter of the timing pulley	[mm]
d_{wg}	=	pitch diameter of the large timing pulley	[mm]
d_{wk}	=	pitch diameter of the small timing pulley	[mm]
d_{w1}	=	pitch diameter of the driving timing pulley	[mm]
d_{w2}	=	pitch diameter of the driven timing pulley	[mm]
E_a	=	belt deflection for given span length	[mm]
F	=	load to create deflection	[N]
f	=	frequency for measurement using Optibelt TT	[Hz]
i	=	speed ratio	
L	=	drive span length	[mm]
L_{wSt}	=	standard pitch length of the timing belt	[mm]
L_{wth}	=	calculated pitch length of the timing belt	[mm]
n_1	=	speed frequency of the driving timing pulley	[min^{-1}]
n_2	=	speed frequency of the driven timing pulley	[min^{-1}]
P	=	power to be transmitted by timing belt drive	[kW]
P_B	=	design power	[kW]
P_N	=	rated power	[kW]
$P_Ü$	=	actual transmitted power for standard belt width [$P_N \cdot c_1 \cdot c_7$]	[kW]
S_a	=	minimum static shaft load when stationary	[N]
$S_{n\ zul}$	=	maximum permissible circumferential load	[N]
S_{n3}	=	circumferential load to be effectively transmitted	[N]
S_n	=	effective circumferential load to be transmitted incl. actual centrifugal force	[N]
t	=	tooth pitch	[mm]
v	=	belt speed	[m/s]
x	=	minimum adjustment of the drive centre distance a_{nom} for tensioning the timing belt	[mm]
y	=	minimum adjustment of the drive centre distance a_{nom} for installation of the timing belt	[mm]
z_e	=	number of teeth in mesh on the small timing pulley	
z_g	=	number of teeth on the large timing pulley	
z_k	=	number of teeth on the small timing pulley	
z_r	=	number of teeth on the timing belt	
z_1	=	number of teeth on the driving pulley	
z_2	=	number of teeth on the driven pulley	



Guidelines for the selection of the timing belt
optibelt *OMEGA HL*

Diagram 1

see also
Optibelt CAP drive calculation
software at www.optibelt.com



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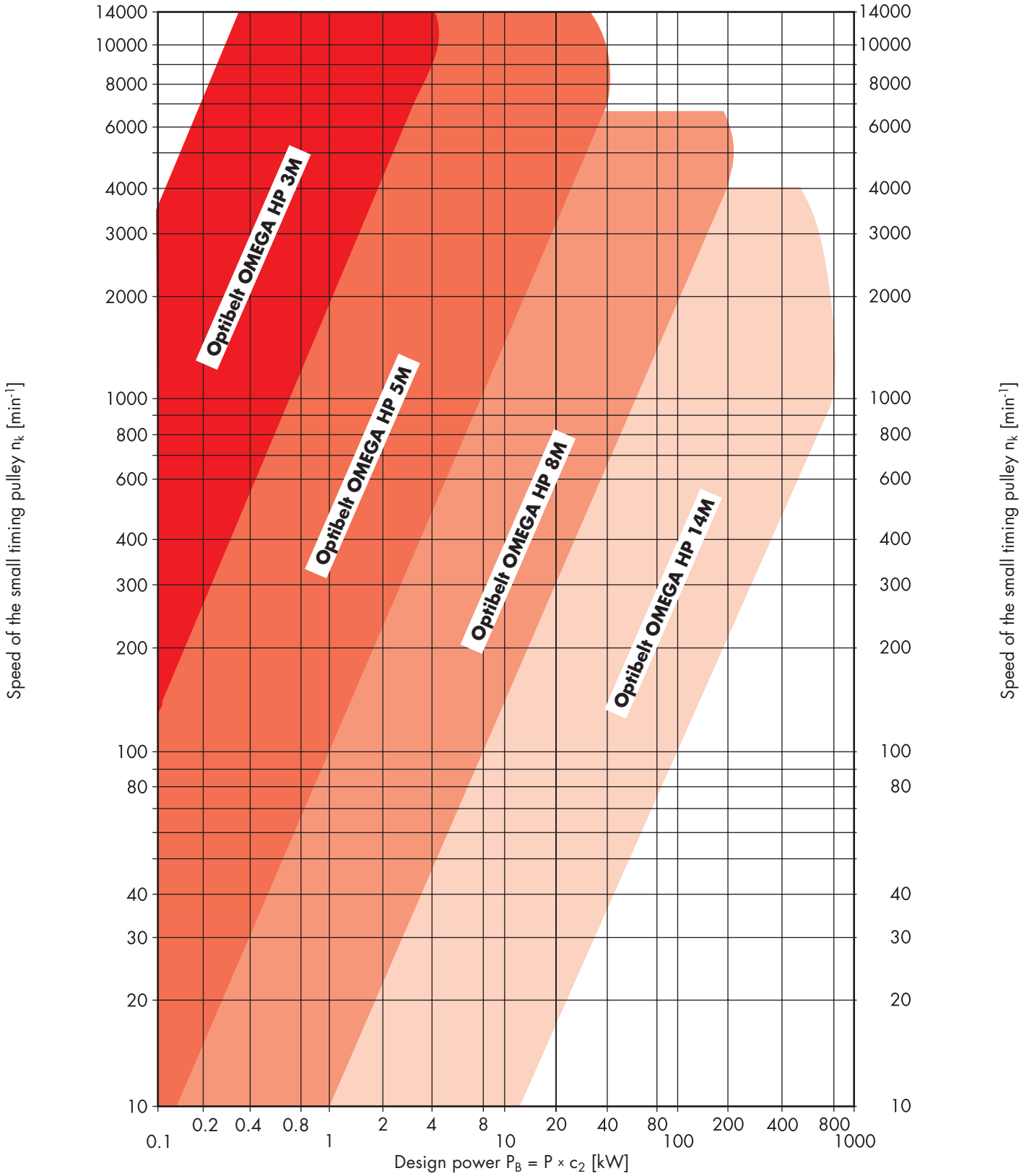
Guidelines for the selection of the timing belt
optibelt *OMEGA HP*

Diagram 2

see also
Optibelt CAP drive calculation
software at www.optibelt.com



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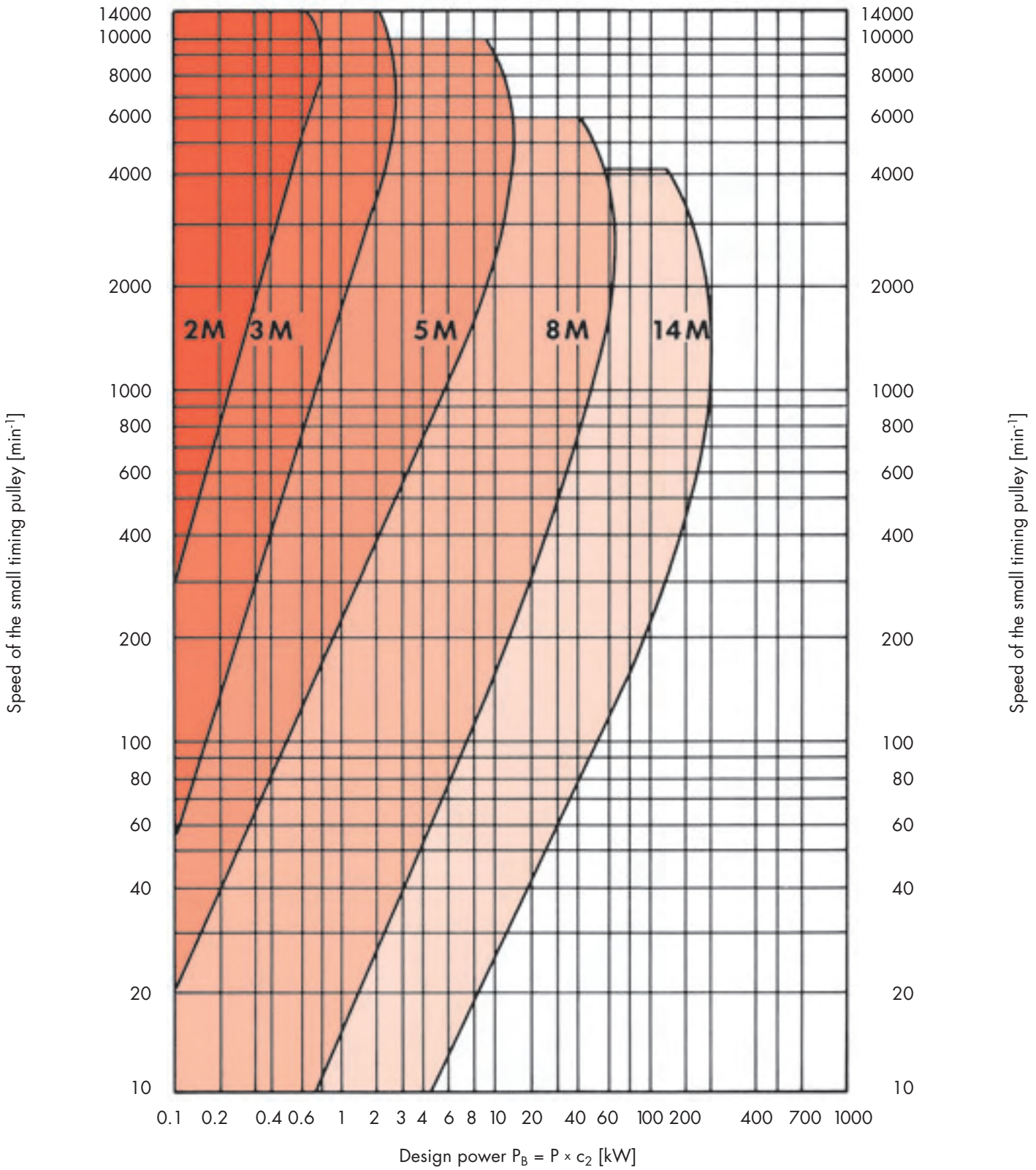
Power Transmission

Guidelines for the selection of the timing belt
optibelt *OMEGA*

Diagram 3

see also
Optibelt CAP drive calculation
software at www.optibelt.com



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Power Transmission

Calculation
optibelt *OMEGA HL/HP* and optibelt *OMEGA*
Service factors

Total service faktor c_2

The total service factor c_2 consists of the basic service factor c_0 and two additional factors c_3 and c_6.

$c_2 = c_0 + c_3 + c_6$

$c_2 \geq M_A/M_N$ Recommendation for drives with frequent starts and stops

Basic service factor c_0

The basic service factor c_0 takes account of the daily operating time and the type of prime mover and driven machine. Since it is not possible to combine every type of prime mover, driven machine and operating conditions into a single table, the basic service factors should be considered as **guide values**. The assessment of the driven machine depends on the type of loading on that machine.

Table 1
Basic service factor c_0

Type of loading and examples of prime movers	Type of basic load and examples of driven machines: Steady operation Electric motor High speed turbine Piston engine with a large number of cylinders		Intermittent operation Hydraulic motor Low speed turbine Piston engine with a small number of cylinders	
	Basic service factor c_0 during daily operating period			
	until 16 h	more than 16 h	until 16 h	more than 16 h
Light drives, shock free and steady running Measuring devices Film cameras Office machines Belt conveyors (light-weight materials)	1.3	1.4	1.4	1.5
Medium duty drives, intermittent operation with low to medium shock loading Mixers Kitchen appliances Printing machines Textile machines Packaging machines Belt conveyors (medium to heavy materials)	1.6	1.7	1.8	1.9
Heavy duty drives, intermittent operation with medium to high shock loading Machine tools Woodworking machines Eccentric drives Conveyor systems (heavy materials)	1.8	1.9	2.0	2.1
Very heavy duty drives, continuous operation with severe shock loading Mills Calenders Extruders Piston pumps and piston compressors Lifting devices	2.0	2.1	2.2	2.3

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Power Transmission

Calculation
optibelt *OMEGA HL / HP* and optibelt *OMEGA*
Supplementary factors

Speed correction factor c_3

For speed increasing drives, a factor corresponding to the speed ratio is added to the basic service factor c_0.

Table 2

Speed ratio i	Speed ratio correction factor c_3
1.00–0.80	0.0
0.79–0.57	0.1
0.56–0.40	0.2
0.39–0.28	0.3
0.27 and less	0.4

Table 3
Fatigue correction factor c_6

Operating conditions	Fatigue correction factor c_6
Use of tension or guide idlers	0.2
Operating time 16 to 24 hours	0.2
Only rare/occasional operation	– 0.2

With frequent starts and stops or continual reversing operation, the total service factor c_2 chosen should be higher than the ratio between starting torque and nominal torque. If there is a brake on the prime mover the same procedure should apply for the braking torque, if the brake is used frequently. For further questions, please contact the Optibelt Application Engineering Department.

Minimum adjustment of centre distance 'x' for tensioning of timing belts

$$x = 0.004 \cdot a_{nom}$$

Table 4
Minimum adjustment of centre distance 'y' for installation of timing belt on timing pulleys without flanges

Centre distances [mm]	Adjustment for fitting of the timing belt [mm]
until 1000	1.8
from 1000 to 1780	2.8
from 1780 to 2540	3.3
from 2540 to 3300	4.1
from 3300 to 4600	5.3

Table 5
Minimum adjustment of centre distance 'y' for installation of timing belt on timing pulleys with flanges

Pitch [mm]	Flange on one timing pulley [mm]	Flange on both timing pulleys [mm]
2	6	12
3	8	14
5	14	19
8	22	33
14	36	58

Table 6
Belt length factor c_7

Section 2M

Pitch length [mm]	c_7
≤ 190	0.8
> 190 ≤ 260	0.9
> 260 ≤ 400	1.0
> 400 ≤ 600	1.1
> 600	1.2

Section 3M / 3M HP

Pitch length [mm]	c_7
≤ 190	0.8
> 190 ≤ 260	0.9
> 260 ≤ 400	1.0
> 400 ≤ 600	1.1
> 600	1.2

Section 5M / 5M HP

Pitch length [mm]	c_7
≤ 440	0.8
> 440 ≤ 555	0.9
> 555 ≤ 800	1.0
> 800 ≤ 1100	1.1
> 1100	1.2

Section 8M / 8M HP/HL

Pitch length [mm]	c_7
≤ 600	0.8
> 600 ≤ 880	0.9
> 880 ≤ 1200	1.0
> 1200 ≤ 1760	1.1
> 1760	1.2

Section 14M / 14M HP/HL

Pitch length [mm]	c_7
≤ 1190	0.80
> 1190 ≤ 1610	0.90
> 1610 ≤ 1890	0.95
> 1890 ≤ 2450	1.00
> 2450 ≤ 3150	1.05
> 3150	1.10

Table 7
Teeth in mesh factor c_1

Number of teeth in mesh	Teeth in mesh factor c_1
≥ 6	1.0
5	0.8
4	0.6
3	0.4
2	0.2

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Power Transmission

Calculation
optibelt *OMEGA HL/HP* and optibelt *OMEGA*
Formulae and calculation example

Prime mover

Electric motor 50 Hz
Star/delta start
P = 18.5 kW
n_1 = 2850 min^{-1}

Operating conditions

Daily operating time: 12 hours
Number of starts/stops: 2 per day
Environmental influences: ambient room temperature,
no influence from oil, water or dust
Centre distance: 400 mm to 450 mm
Max. pulley diameter: 200 mm

Driven machine

Textile machine
P = 15 kW
n_2 = 1830 min^{-1} ± 1%
Type of load: constant

see also Optibelt CAP drive calculation programme software at www.optibelt.com

Formulae	Calculation example
Total service factor $c_2 = c_0 + c_3 + c_6$ c_0 from Table 1 page 26 c_3 from Table 2 page 27 c_6 from Table 3 page 27	$c_2 = 1.6 + 0 + 0 =$ **1.6** $c_0 = 1.6$ $c_3 = 0$ $c_6 = 0$
Design power $P_B = P \cdot c_2$	$P_B = 18.5 \cdot 1.6 =$ **29.6 kW**
Timing belt section selection from diagrams 1-3, pages 23 -25	**Optibelt OMEGA HP** Type 8M
Speed ratio $i = \frac{n_1}{n_2} = \frac{z_2}{z_1} = \frac{d_{w2}}{d_{w1}}$	$i = \frac{2850}{1830} =$ **1,557**
Number of teeth on the timing pulleys z_1, d_{w1} selected from standard range of timing pulleys page 51 $z_2 = z_1 \cdot i$ Observe the minimum diameter requirement!	$z_1 =$ **36** $d_{w1} = 91.67$ mm $z_2 = 36 \cdot 1.56 = 56.16$ $z_2 =$ **56** $d_{w2} = 142.60$ mm z_2 selected from standard range pulleys page 51 Requirement $z_1 \geq 22$ (minimum number of teeth for section 8M) and max. pulley diameter met
Check the driven speed $i = \frac{z_2}{z_1}$ $n_2 = \frac{n_1}{i}$	$i = \frac{56}{36} = 1.556$ $n_2 = \frac{2850}{1.556} =$ **1832 min^{-1}** **Requirement: 1830 min^{-1}** ± 1% fulfilled
Recommended centre distance Recommendation: $a > 0.5 (d_{w1} + d_{w2}) + 15$ mm $a < 2.0 (d_{w1} + d_{w2})$	$a > 0.5 (91.67 + 142.60) + 15$ mm $= 132.14$ mm $a < 2.0 (91.67 + 142.60) = 468.54$ mm $a =$ **425 mm** provisionally selected

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Power Transmission

Calculation
optibelt *OMEGA HL/HP* and optibelt *OMEGA*
Formulae and calculation example

Formulae	Calculation example
Pitch length of the timing belt $L_{wth} \approx 2a + \frac{\pi}{2}(d_{wg} + d_{wk}) + \frac{(d_{wg} - d_{wk})^2}{4\,a}$ L_{wSt} see standard lengths, see pages 8-9, 12-15 and 17-21	$L_{wth} \approx 2 \cdot 425 + \frac{\pi}{2}(142.60 + 91.67) + \frac{(142.60 - 91.67)^2}{4 \cdot 425}$ $L_{wth} \approx$ **1219.33 mm** next standard belt length selected from page 12 L_{wSt} = **1200 mm**
Centre distance from L_{wSt} $a_{nom} = K + \sqrt{K^2 - \frac{(d_{wg} - d_{wk})^2}{8}}$ $K = \frac{(L_{wSt})}{4} - \frac{\pi}{8}(d_{wg} + d_{wk})$	$a_{nom} = 208 + \sqrt{208^2 - \frac{(142.60 - 91.67)^2}{8}}$ a_{nom} = **415.22 mm** $K = \frac{1200}{4} - \frac{\pi}{8}(142.60 + 91.67) = 208$ mm
Minimum adjustment of centre distance for tensioning $x = 0.004 \cdot a_{nom}$	$x \geq$ **1.66 mm**
Minimum adjustment for fitting belts y = from Table 5, page 27	y = **22 mm** (with flanged pulley)
Number of teeth in mesh on the small pulley $z_e = \frac{z_k}{6}\left(3 - \frac{d_{wg} - d_{wk}}{a_{nom}}\right)$	$z_e = \frac{36}{6}\left(3 - \frac{142.60 - 91.67}{415}\right) = 17.26$ z_e = **17**
Belt length factor c_7 from Table 6, page 27	c_7 = **1.0**
Teeth in mesh factor c_1 from Table 7, page 27	c_1 = **1.0**
Belt width above nominal power rating Requirement: $P_{Ü} \geq P_B$ $P_{Ü}$ = transmissible nominal power of a standard belt width $P_{Ü} = P_N \cdot c_1 \cdot c_7$ P_N value and, if required, width correction factor (which is to be multiplied by the P_N value) see pages 32 to 42	**31.09 kW > 29.60 kW Requirement met!** $P_{Ü} = 31.09 \cdot 1.0 \cdot 1.0$ = **31.09 kW** P_N for width of 30 mm = 19.68 · 1.58 = **31.09 kW**

Drive to be fitted with:		
1 Optibelt OMEGA HP timing belt	**1200 8M HP**	**30**
1 Optibelt ZRS timing pulley	**36 8M**	**30**
1 Optibelt ZRS timing pulley	**56 8M**	**30**

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Power Transmission

Calculation
optibelt *OMEGA HL / HP* and optibelt *OMEGA*
Belt tension

Belt tension for Optibelt OMEGA HP/Optibelt OMEGA HL and Optibelt OMEGA timing belts

For faultless power transmission and for the achievement of acceptable belt service life, the correct belt tension is of the utmost importance. Too low or too high a belt tension will lead to the premature failure of the timing belts. Over tensioning often leads to bearing failure on the prime mover or the driven machine.

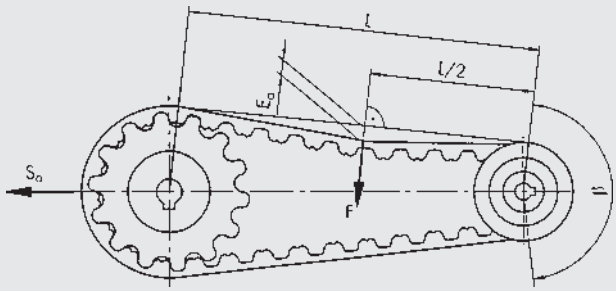
Experience showed that unscientific belt tensioning methods, such as the "thumb pressure method", are not suitable for applying the optimum tension to the drive for maximum efficiency and drive/bearing life. It is therefore recommended that the correct static belt tension should be calculated for each drive.

By virtue of their extremely low stretch characteristics Optibelt timing belts do not require any further tensioning after correct installation if properly used.

Symbol

F	= test force	[N]
S_a	= static shaft loading	[N]
S_{n3}	= circumferential force to be effectively transmitted	[N]
E_a	= belt deflection for given span length	[mm]
L	= span length	[mm]

Apply test force F in the centre of the span perpendicular to the belt top surface as shown in the illustration below; measure the deflection E_a, correct the tension if necessary and re-check.



1. Calculation of the test force F

$$F = \frac{S_{n3}}{20}$$

$$S_{n3} = \frac{P \cdot 1000}{v} \qquad v = \frac{d_{wk} \cdot n_k}{19100}$$

$$F = \frac{1352}{20} = \mathbf{67.60\ N}$$

$$S_{n3} = \frac{18.5 \cdot 1000}{13.68} \qquad v = \frac{91.67 \cdot 2850}{19100}$$

S_{n3} = 1352 N v = 13.68 m/s

2. Calculation of the belt deflection E_a for the existing span length L

$$E_a = \frac{L}{50}$$

$$L = \sqrt{a_{nom}^2 - \left(\frac{d_{wg} - d_{wk}}{2}\right)^2}$$

$$E_a = \frac{414.44}{50} = \mathbf{8.3\ mm}$$

$$L = \sqrt{415.22^2 - \left(\frac{142.60 - 91.67}{2}\right)^2} = 414.44\ \text{mm}$$

3. Calculation of the minimum static shaft loading

$$S_a = S_{n3} \cdot 1.1$$

$$S_a = 1352\ \text{N} \cdot 1.1 = \mathbf{1487.2\ N}$$

4. Calculation of the frequency for measuring the belt tension using the Optibelt frequency tension tester

$$f = \sqrt{\frac{T}{4 \cdot k \cdot L^2}}$$

T = 0.5 · S_a
k belt weight in kg/m from Table 8, page 43
L span length in mm

$$f = \sqrt{\frac{743.6}{4 \cdot 0.174 \cdot 0.414^2}} = \mathbf{78.9\ Hz}$$

T = 0.5 · 1487.2 N = 743.6 N
k = 0.174 kg/m
L = 0.414 m

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Calculation with optibelt CAP drive calculation programme
optibelt *OMEGA HL/HP* and optibelt *OMEGA*

The drive is to be equipped with:

– Optibelt OMEGA HP timing belt 1200 8M HP 30

– Optibelt ZRS timing pulley 36-8M-30 (cylindrical bore)
– Optibelt ZRS timing pulley 56-8M-30 (cylindrical bore)

see also
Optibelt CAP drive calculation
software at www.optibelt.com

Prime mover	**Electric motor P = 18.5 kW**				
Driven machine	**Textile machine**				
Timing belt data				Variations/Information	
Pitch	t:	8.000	mm		
Width	b:	30.00	mm		
Calculated pitch length	L_{wth}:	1200.00	mm		
Standard pitch length	L_w:	1200.00	mm		
Number of teeth	z_r:	150			
Belt speed	v:	13.68	m/s		
Timing pulley data		**Pulley 1 (driving)**		**pulley 2 (driven)**	
Number of teeth	**z:**	**36**		**56**	
Pitch diameter	d_w:	91.67	mm	142.60	mm
Pulley face width	b_1:	38.00	mm	38.00	mm
Speed	**n:**	**2850.0**	**1/min**	**1832.1**	**1/min**
Number of teeth in mesh	z_e:	17		29	
Torque	M:	104	Nm	162	Nm
Standard construction		6F		6WF	
Number of flanged pulleys		2		2	
Material		St		GG	
Nominal drive data				Variations/Information	
Design power	**P_B:**	**29.60**	**kW**		
Nominal power rating	$P_{Ü}$:	31.09	kW		
Effective service factor	**c_2:**	**1.68**			
Actual drive ratio	i:	1.56		0.0	%
Actual centre distance	**a:**	**415.22**	**mm**	**-9.78**	**mm**
Minimum adjustment of centre distance for belt installation	y:	≥ 22.00	mm		
Minimum adjustment of centre distance for belt installation	x:	≥ 1.66	mm		
Actual circumferential load	S_{n3}:	1353	N		
Static shaft load	S_a:	1488	N		
Static span tension	T:	744	N		
Span length	L:	414.50	mm		

Methods for setting belt tension			
Belt deflection per span length	E_a:	8.29	mm with a load F 67.60 N
Optibelt TT 3 frequency tension tester	f:	78.88	1/s

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Power Transmission

Power ratings
optibelt *OMEGA HL* timing belt section 8M

Nominal power P_N [kW] for section and construction 8M HL and timing belt width of 20 mm

Speed of the small timing pulley n_k [min^{-1}]	Number of teeth on the small timing pulley z_k																
	22	24	26	28	30	32	34	36	38	40	44	48	52	56	64	72	80
	Pitch diameter of the small timing pulley d_{wk} [mm]																
	56.02	61.12	66.21	71.30	76.39	81.49	86.58	91.67	96.77	101.86	112.05	122.23	132.42	142.60	162.97	183.35	203.72
700	3.26	3.75	4.25	4.74	5.24	5.73	6.21	6.70	7.19	7.68	8.64	9.60	10.56	11.53	13.43	15.30	17.16
950	4.35	5.01	5.68	6.34	7.00	7.65	8.31	8.96	9.61	10.26	11.55	12.84	14.11	15.39	17.90	20.38	22.83
1450	6.48	7.48	8.46	9.45	10.44	11.41	12.39	13.35	14.33	15.28	17.19	19.06	20.94	22.78	26.39	29.90	33.30
2850	12.06	13.93	15.76	17.58	19.36	21.14	22.88	24.60	26.30	27.96	31.21	34.34	37.33	40.18	45.41	49.98	53.78
10	0.06	0.06	0.08	0.08	0.09	0.10	0.10	0.11	0.13	0.13	0.14	0.16	0.18	0.19	0.23	0.25	0.29
20	0.11	0.13	0.14	0.16	0.18	0.19	0.20	0.23	0.24	0.25	0.28	0.31	0.34	0.38	0.44	0.50	0.55
50	0.26	0.30	0.34	0.38	0.41	0.45	0.49	0.53	0.56	0.60	0.68	0.75	0.83	0.90	1.05	1.20	1.35
100	0.51	0.59	0.66	0.74	0.81	0.89	0.96	1.04	1.11	1.19	1.33	1.48	1.63	1.78	2.06	2.35	2.65
200	0.99	1.14	1.29	1.43	1.58	1.73	1.88	2.01	2.16	2.30	2.60	2.89	3.18	3.46	4.03	4.60	5.16
300	1.45	1.68	1.89	2.11	2.33	2.54	2.76	2.98	3.19	3.40	3.84	4.26	4.69	5.11	5.96	6.80	7.64
400	1.91	2.20	2.49	2.78	3.06	3.35	3.64	3.93	4.20	4.49	5.05	5.63	6.19	6.74	7.86	8.98	10.08
500	2.36	2.73	3.09	3.44	3.80	4.15	4.50	4.85	5.21	5.56	6.26	6.96	7.66	8.35	9.74	11.11	12.48
600	2.81	3.24	3.66	4.09	4.51	4.94	5.36	5.79	6.20	6.63	7.46	8.29	9.13	9.95	11.59	13.21	14.84
800	3.70	4.26	4.83	5.39	5.94	6.50	7.05	7.61	8.16	8.71	9.81	10.91	12.00	13.08	15.23	17.35	19.46
1000	4.56	5.26	5.96	6.65	7.35	8.04	8.73	9.41	10.09	10.78	12.13	13.48	14.81	16.15	18.78	21.38	23.93
1200	5.43	6.25	7.09	7.91	8.73	9.55	10.36	11.18	11.99	12.80	14.40	16.00	17.58	19.14	22.23	25.25	28.21
1600	7.10	8.19	9.28	10.36	11.44	12.51	13.58	14.64	15.69	16.74	18.81	20.86	22.90	24.89	28.79	32.56	36.18
1800	7.93	9.14	10.36	11.56	12.76	13.96	15.14	16.33	17.49	18.65	20.95	23.21	25.44	27.63	31.88	35.94	39.81
2000	8.74	10.09	11.43	12.75	14.06	15.38	16.68	17.98	19.25	20.53	23.04	25.50	27.91	30.26	34.83	39.13	43.16
2200	9.54	11.01	12.46	13.91	16.60	16.78	18.19	19.59	20.98	22.35	25.06	27.70	30.29	32.80	37.61	42.09	46.23
2500	10.71	12.38	14.01	15.63	17.24	18.83	20.40	21.95	23.49	25.01	27.99	30.88	33.68	36.38	41.46	46.09	50.19
3000	12.64	14.58	16.50	18.39	20.25	22.10	23.91	25.70	27.45	29.18	32.53	35.73	38.79	41.68	46.91	51.38	54.94
3500	14.48	16.69	18.86	21.01	23.11	25.18	27.19	29.16	31.10	32.98	36.59	39.98	43.13	46.01	50.96		
4000	16.24	18.70	21.11	23.48	25.78	28.03	30.21	32.34	34.39	36.38	40.11	43.53	46.59	49.26			
4500	17.91	20.60	23.23	25.78	28.24	30.64	32.94	35.15	37.28	39.29	43.01	46.28	49.04				
5000	19.49	22.39	25.19	27.89	30.48	32.98	35.35	37.59	39.71	41.70	45.24	48.15					
5500	20.96	24.04	26.98	29.79	32.48	35.01	37.39	39.61	41.66	43.54	46.70						

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor

Section and construction 8M HL

Standard belt width [mm]	20	30	50	85
Factor	1.00	1.58	2.73	4.76

Power ratings
optibelt *OMEGA HL* timing belt section 14M

Nominal power P_N [kW] for section and construction 14M HL and timing belt width of 40 mm

Speed of the small timing pulley n_k [min^{-1}]	Number of teeth on the small timing pulley z_k																
	28	29	30	32	34	36	38	40	42	44	46	48	52	56	64	72	80
	Pitch diameter of the small timing pulley d_{wk} [mm]																
	124.78	129.23	133.69	142.60	151.52	160.43	169.34	178.25	187.17	196.08	204.99	213.90	231.73	249.55	285.21	320.86	356.51
700																	
950																	
1450																	
2850																	
10																	
20																	
40																	
60																	
100																	
200																	
300																	
400																	
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2400																	
2600																	
2850																	
3000																	
3500																	
4000																	
4500																	

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor					
Section and construction 14M HL					
Standard belt width [mm]	40	55	85	115	170
Factor	1.00	1.44	2.50	3.50	5.32

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Power Transmission

Power ratings
optibelt *OMEGA HP* timing belt section 3M

Nominal power P_N [W] for section and construction 3M HP and timing belt width of 9 mm

Speed of the small timing pulley n_k [min^{-1}]	Number of teeth on the small timing pulley z_k														
	10	12	14	16	18	20	24	28	32	40	48	56	64	72	80
	Pitch diameter of the small timing pulley d_{wk} (mm)														
	9.55	11.46	13.37	15.28	17.19	19.10	22.92	26.74	30.56	38.20	45.84	53.48	61.12	68.75	76.39
20	2.7	3.4	4.1	4.8	5.6	6.4	8.0	9.8	11.5	14.9	18.4	21.6	24.5	27.3	30.0
40	5.2	6.5	7.8	9.2	10.7	12.1	15.2	18.6	21.8	28.5	35.0	41.2	46.7	52.0	57.3
60	7.6	9.5	11.4	13.4	15.5	17.7	22.2	27.0	31.8	41.4	51.0	60.1	68.0	75.8	83.5
100	12.3	15.3	18.4	21.7	25.1	28.7	36.0	43.5	50.9	66.1	81.6	96.3	109.3	122.2	134.7
200	23.3	28.9	34.8	40.9	47.4	54.1	67.7	81.9	95.5	125.0	154.7	183.0	207.1	231.6	255.9
300	31.6	39.4	47.7	56.3	65.6	74.7	93.8	113.6	133.0	173.9	215.1	253.9	287.6	321.9	354.5
400	39.6	49.4	59.7	70.6	82.0	93.3	116.7	141.0	165.6	216.0	268.0	315.6	358.2	400.2	441.5
500	46.3	58.1	70.6	83.6	97.3	111.3	138.6	167.6	197.0	255.8	317.1	372.8	423.0	473.3	521.3
600	52.3	65.6	80.1	95.3	112.1	128.1	160.0	192.4	226.5	294.0	363.6	426.9	485.0	541.8	597.5
700	58.6	73.9	90.0	106.9	125.6	143.7	180.5	217.4	254.7	330.1	407.7	478.8	544.0	607.6	669.7
800	66.1	82.8	100.2	118.6	138.5	158.5	199.2	240.6	281.3	365.0	451.0	529.0	601.0	671.0	739.0
900	71.5	89.0	109.3	129.7	152.0	173.5	217.4	262.8	307.9	399.0	491.0	577.0	655.0	731.0	807.0
950	74.0	92.7	113.3	135.0	157.8	180.8	226.5	273.4	320.6	415.0	512.0	600.0	682.0	761.0	839.0
1000	76.5	96.3	117.4	140.3	164.5	188.1	235.7	284.1	333.2	432.0	531.0	624.0	708.0	791.0	871.0
1200	86.3	109.3	133.7	160.0	187.7	214.8	270.7	326.5	382.2	496.0	609.0	713.0	809.0	902.0	994.0
1400	96.0	122.0	149.7	179.1	211.0	241.7	303.4	366.0	428.2	554.0	680.0	797.0	903.0	1009.0	1110.0
1450	98.5	124.8	153.7	183.6	216.8	247.8	311.9	375.0	439.1	569.0	698.0	818.0	927.0	1034.0	1139.0
1600	106.4	135.2	164.9	197.4	232.5	266.6	335.1	404.3	473.1	611.0	749.0	877.0	995.0	1110.0	1221.0
1800	117.0	148.0	180.0	215.0	253.0	290.0	365.0	440.0	515.0	667.0	816.0	955.0	1082.0	1207.0	1326.0
2000	125.0	158.0	193.0	231.0	272.0	312.0	395.0	475.0	557.0	718.0	879.0	1029.0	1165.0	1298.0	1427.0
2400	141.0	178.0	219.0	263.0	309.0	356.0	450.0	543.0	635.0	819.0	1000.0	1168.0	1322.0	1471.0	1613.0
2850	155.0	198.0	245.0	296.0	350.0	403.0	509.0	614.0	718.0	923.0	1125.0	1313.0	1484.0	1648.0	1792.0
3200	170.0	216.0	266.0	320.0	379.0	436.0	552.0	665.0	779.0	1001.0	1218.0	1419.0	1601.0	1775.0	1940.0
3600	182.0	233.0	287.0	347.0	411.0	473.0	599.0	722.0	845.0	1084.0	1317.0	1531.0	1724.0	1907.0	2079.0
4000	194.0	248.0	308.0	372.0	441.0	508.0	644.0	776.0	907.0	1163.0	1409.0	1635.0	1837.0	2028.0	2203.0
5000	221.0	284.0	352.0	427.0	507.0	587.0	743.0	896.0	1047.0	1335.0	1608.0	1853.0	2065.0	2257.0	2425.0
6000	246.0	317.0	395.0	479.0	571.0	661.0	838.0	1011.0	1178.0	1495.0	1788.0	2045.0	2257.0	2440.0	2587.0
7000	265.0	344.0	429.0	523.0	625.0	724.0	919.0	1105.0	1286.0	1621.0	1919.0	2169.0	2359.0	2506.0	2598.0
8000	284.0	368.0	462.0	564.0	676.0	784.0	994.0	1194.0	1385.0	1733.0	2030.0	2264.0	2420.0	2517.0	2537.0
10000	320.0	418.0	515.0	632.0	759.0	880.0	1114.0	1334.0	1534.0	1877.0	2128.0	2277.0	2393.0		
12000	349.0	452.0	566.0	690.0	822.0	954.0	1204.0	1428.0	1624.0	1920.0	2064.0				
14000	347.0	458.0	583.0	721.0	869.0	1006.0	1260.0	1476.0	1651.0	1856.0					

New power ratings

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor

Section and construction 3M

Belt width (mm)	3	Standard 6	Standard 9	12	Standard 15	20	25
Factor	0.28	0.61	1.00	1.44	1.87	2.63	3.40

optibelt
Power Transmission

Power ratings
optibelt *OMEGA HP* timing belt section 5M

Nominal power P_N [kW] for section and construction 5M HP and timing belt width of 9 mm

Speed of the small timing pulley n_k [min^{-1}]	Number of teeth on the small timing pulley z_k														
	14	16	18	20	24	28	32	36	40	44	48	56	64	72	80
	Pitch diameter of the small timing pulley d_{wk} [mm]														
	22.28	25.46	28.65	31.83	38.20	44.56	50.93	57.30	63.66	70.03	76.39	89.13	101.86	114.59	127.32
700	0.36	0.44	0.53	0.61	0.77	0.93	1.09	1.25	1.43	1.59	1.76	2.09	2.43	2.76	3.09
950	0.45	0.56	0.68	0.78	0.99	1.20	1.40	1.62	1.83	2.05	2.25	2.68	3.09	3.52	3.92
1450	0.62	0.79	0.94	1.09	1.39	1.68	1.98	2.27	2.56	2.85	3.14	3.70	4.26	4.80	5.32
2850	1.04	1.32	1.58	1.83	2.32	2.79	3.27	3.71	4.15	4.59	5.00	5.77	6.49	7.12	7.68
20	0.01	0.02	0.02	0.02	0.03	0.03	0.05	0.06	0.06	0.07	0.07	0.09	0.10	0.12	0.14
40	0.03	0.03	0.05	0.05	0.06	0.08	0.09	0.10	0.12	0.13	0.14	0.17	0.20	0.22	0.25
60	0.05	0.06	0.06	0.07	0.09	0.10	0.13	0.15	0.16	0.18	0.21	0.24	0.28	0.32	0.37
100	0.07	0.08	0.10	0.12	0.14	0.17	0.20	0.23	0.26	0.29	0.32	0.38	0.45	0.51	0.58
200	0.13	0.15	0.18	0.21	0.26	0.31	0.37	0.43	0.48	0.54	0.60	0.71	0.83	0.94	1.07
300	0.17	0.22	0.25	0.30	0.37	0.45	0.53	0.61	0.69	0.77	0.85	1.01	1.18	1.36	1.52
400	0.22	0.28	0.32	0.38	0.47	0.58	0.68	0.78	0.89	0.99	1.09	1.30	1.52	1.74	1.94
500	0.26	0.33	0.39	0.46	0.58	0.70	0.82	0.94	1.07	1.20	1.32	1.58	1.83	2.09	2.35
600	0.31	0.39	0.46	0.53	0.68	0.82	0.95	1.10	1.25	1.39	1.54	1.84	2.14	2.44	2.73
800	0.39	0.49	0.59	0.68	0.86	1.04	1.22	1.40	1.59	1.77	1.96	2.33	2.70	3.07	3.44
900	0.44	0.54	0.64	0.75	0.94	1.15	1.35	1.55	1.75	1.96	2.16	2.56	2.97	3.37	3.77
1000	0.47	0.59	0.70	0.82	1.04	1.25	1.47	1.69	1.91	2.13	2.35	2.78	3.22	3.66	4.08
1200	0.54	0.68	0.82	0.94	1.20	1.45	1.70	1.96	2.21	2.46	2.71	3.21	3.70	4.20	4.67
1400	0.61	0.77	0.92	1.07	1.36	1.63	1.92	2.21	2.50	2.77	3.06	3.61	4.15	4.68	5.20
1600	0.68	0.85	1.02	1.18	1.51	1.82	2.14	2.45	2.76	3.07	3.38	3.98	4.57	5.13	5.68
1800	0.74	0.93	1.12	1.30	1.64	1.99	2.33	2.68	3.01	3.35	3.68	4.32	4.95	5.54	6.12
2000	0.79	1.01	1.22	1.40	1.78	2.16	2.53	2.90	3.25	3.61	3.97	4.65	5.30	5.92	6.51
2400	0.91	1.16	1.39	1.61	2.05	2.47	2.89	3.30	3.70	4.11	4.49	5.22	5.92	6.57	7.15
3200	1.12	1.44	1.71	1.99	2.52	3.02	3.53	4.00	4.47	4.92	5.35	6.14	6.84	7.44	7.95
3600	1.21	1.55	1.86	2.16	2.73	3.28	3.81	4.31	4.80	5.26	5.69	6.47	7.15	7.69	8.12
4000	1.30	1.67	2.00	2.32	2.92	3.51	4.06	4.59	5.08	5.55	5.98	6.75	7.37	7.83	8.14
5000	1.50	1.93	2.31	2.68	3.36	4.00	4.60	5.15	5.65	6.10	6.50	7.13	7.53	7.68	7.58
6000	1.67	2.16	2.59	2.99	3.73	4.39	5.00	5.54	6.01	6.41	6.73	7.12	7.16	6.85	6.19
7000	1.82	2.36	2.82	3.24	4.03	4.70	5.30	5.80	6.20	6.49	6.68	6.73	6.30	5.39	
8000	1.94	2.52	3.01	3.46	4.26	4.93	5.47	5.90	6.20	6.36	6.38	5.98			
10000	2.15	2.79	3.32	3.78	4.57	5.14	5.54	5.73	5.72	5.50	5.05				
12000	2.30	2.98	3.52	3.97	4.66	5.08	5.22	5.07	4.62	3.88					
14000	2.39	3.09	3.62	4.04	4.58	4.75	4.55	3.96	2.97						

New power ratings

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor

Section and construction 5M

Belt width [mm]	6	Standard 9	12	Standard 15	20	Standard 25	30
Factor	0.61	1.00	1.44	1.87	2.63	3.40	4.15

optibelt
Power Transmission

Power ratings
optibelt *OMEGA HP* timing belt section 8M

Nominal power P_N [kW] for section and construction 8M HP and timing belt width of 20 mm

Speed of the small timing pulley n_k [min^{-1}]	Number of teeth on the small timing pulley z_k																
	22	24	26	28	30	32	34	36	38	40	44	48	52	56	64	72	80
	Pitch diameter of the small timing pulley d_{wk} [mm]																
	56.02	61.12	66.21	71.30	76.39	81.49	86.58	91.67	96.77	101.86	112.05	122.23	132.43	142.60	162.97	183.35	203.72
700	2.61	3.00	3.40	3.79	4.19	4.58	4.97	5.36	5.75	6.14	6.91	7.68	8.45	9.22	10.74	12.24	13.73
950	3.48	4.01	4.54	5.07	5.60	6.12	6.65	7.17	7.69	8.21	9.24	10.27	11.29	12.31	14.32	16.30	18.26
1450	5.18	5.98	6.77	7.56	8.35	9.13	9.91	10.68	11.46	12.22	13.75	15.25	16.75	18.22	21.11	23.92	26.64
2850	9.65	11.14	12.61	14.06	15.49	16.91	18.30	19.68	21.04	22.37	24.97	27.47	29.86	32.14	36.33	39.98	43.02
10	0.05	0.05	0.06	0.06	0.07	0.08	0.08	0.09	0.10	0.10	0.11	0.13	0.14	0.15	0.18	0.20	0.23
20	0.09	0.10	0.11	0.13	0.14	0.15	0.16	0.18	0.19	0.20	0.22	0.25	0.27	0.30	0.35	0.40	0.44
50	0.21	0.24	0.27	0.30	0.33	0.36	0.39	0.42	0.45	0.48	0.54	0.60	0.66	0.72	0.84	0.96	1.08
100	0.41	0.47	0.53	0.59	0.65	0.71	0.77	0.83	0.89	0.95	1.06	1.18	1.30	1.42	1.65	1.88	2.12
200	0.79	0.91	1.03	1.14	1.26	1.38	1.50	1.61	1.73	1.84	2.08	2.31	2.54	2.77	3.22	3.68	4.13
300	1.16	1.34	1.51	1.69	1.86	2.03	2.21	2.38	2.55	2.72	3.07	3.41	3.75	4.09	4.77	5.44	6.11
400	1.53	1.76	1.99	2.22	2.45	2.68	2.91	3.14	3.36	3.59	4.04	4.50	4.95	5.39	6.29	7.18	8.06
500	1.89	2.18	2.47	2.75	3.04	3.32	3.60	3.88	4.17	4.45	5.01	5.57	6.13	6.68	7.79	8.89	9.98
600	2.25	2.59	2.93	3.27	3.61	3.95	4.29	4.63	4.96	5.30	5.97	6.63	7.30	7.96	9.27	10.57	11.87
700	2.61	3.00	3.40	3.79	4.19	4.58	4.97	5.36	5.75	6.14	6.91	7.68	8.45	9.22	10.74	12.24	13.73
800	2.96	3.41	3.86	4.31	4.75	5.20	5.64	6.09	6.53	6.97	7.85	8.73	9.60	10.46	12.18	13.88	15.57
950	3.48	4.01	4.54	5.07	5.60	6.12	6.65	7.17	7.69	8.21	9.24	10.27	11.29	12.31	14.32	16.30	18.26
1000	3.65	4.21	4.77	5.32	5.88	6.43	6.98	7.53	8.07	8.62	9.70	10.78	11.85	12.92	15.02	17.10	19.14
1200	4.34	5.00	5.67	6.33	6.98	7.64	8.29	8.94	9.59	10.24	11.52	12.80	14.06	15.31	17.78	20.20	22.57
1450	5.18	5.98	6.77	7.56	8.35	9.13	9.91	10.68	11.46	12.22	13.75	15.25	16.75	18.22	21.11	23.92	26.64
1600	5.68	6.55	7.42	8.29	9.15	10.01	10.86	11.71	12.55	13.39	15.05	16.69	18.32	19.91	23.03	26.05	28.94
1800	6.34	7.31	8.29	9.25	10.21	11.17	12.11	13.06	13.99	14.92	16.76	18.57	20.35	22.10	25.50	28.75	31.85
2000	6.99	8.07	9.14	10.20	11.25	12.30	13.34	14.38	15.40	16.42	18.43	20.40	22.33	24.21	27.86	31.30	34.53
2200	7.63	8.81	9.97	11.13	12.28	13.42	14.55	15.67	16.78	17.88	20.05	22.16	24.23	26.24	30.09	33.67	36.98
2500	8.57	9.90	11.21	12.50	13.79	15.06	16.32	17.56	18.79	20.01	22.39	24.70	26.94	29.10	33.17	36.87	40.15
2850	9.65	11.14	12.61	14.06	15.49	16.91	18.30	19.68	21.04	22.37	24.97	27.47	29.86	32.14	36.33	39.98	43.02
3000	10.11	11.66	13.20	14.71	16.20	17.68	19.13	20.56	21.96	23.34	26.02	28.58	31.03	33.34	37.53	41.10	43.95
3500	11.58	13.35	15.09	16.81	18.49	20.14	21.75	23.33	24.88	26.38	29.27	31.98	34.50	36.81	40.77		
4000	12.99	14.96	16.89	18.78	20.62	22.42	24.17	25.87	27.51	29.10	32.09	34.82	37.27	39.41			
4500	14.33	16.48	18.58	20.62	22.59	24.51	26.35	28.12	29.82	31.43	34.41	37.02	39.23				
5000	15.59	17.91	20.15	22.31	24.38	26.38	28.28	30.07	31.77	33.36	36.19	38.52					
5500	16.77	19.23	21.58	23.83	25.98	28.01	29.91	31.69	33.33	34.83	37.36						

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor

Section and construction 8M HP

Standard belt width [mm]	20	30	50	85
Factor	1.00	1.58	2.73	4.76

optibelt
Power Transmission

Power ratings
optibelt *OMEGA HP* timing belt section 14M

Nominal power P_N [kW] for section and construction 14M HP and timing belt width of 40 mm

Speed of the small timing pulley n_k [min^{-1}]	Number of teeth on the small timing pulley z_k																
	28	29	30	32	34	36	38	40	42	44	46	48	52	56	64	72	80
	Pitch diameter of the small timing pulley d_{wk} [mm]																
	124.78	129.23	133.69	142.60	151.52	160.43	169.34	178.25	187.17	196.08	204.99	213.90	231.73	249.55	285.21	320.86	356.51
700	17.80	18.62	19.43	21.04	22.65	24.24	25.82	27.39	28.96	30.51	32.05	33.59	36.63	39.64	45.58	51.39	57.10
950	23.12	24.19	25.25	27.36	29.46	31.54	33.60	35.65	37.69	39.71	41.72	43.71	47.66	51.56	59.21	66.68	73.97
1450	33.03	34.56	36.10	39.14	42.15	45.13	48.08	51.00	53.90	56.77	59.62	62.43	67.99	73.44	84.03	94.20	103.94
2850	56.99	59.64	62.27	67.45	72.53	77.51	82.38	87.15	91.81	96.36	100.81	105.14					
10	0.40	0.42	0.44	0.47	0.50	0.54	0.57	0.60	0.64	0.67	0.70	0.74	0.80	0.87	0.99	1.12	1.25
20	0.76	0.79	0.82	0.89	0.95	1.01	1.08	1.14	1.20	1.26	1.33	1.39	1.51	1.63	1.88	2.12	2.36
40	1.42	1.48	1.54	1.66	1.78	1.90	2.02	2.14	2.26	2.38	2.49	2.61	2.84	3.08	3.53	3.99	4.44
60	2.04	2.13	2.22	2.39	2.57	2.74	2.92	3.09	3.26	3.43	3.60	3.77	4.11	4.44	5.11	5.76	6.41
100	3.23	3.37	3.51	3.79	4.07	4.34	4.62	4.89	5.17	5.44	5.71	5.98	6.52	7.05	8.10	9.15	10.18
200	5.97	6.23	6.50	7.02	7.54	8.06	8.58	9.09	9.61	10.12	10.62	11.13	12.13	13.13	15.10	17.04	18.96
300	8.52	8.91	9.29	10.05	10.80	11.55	12.29	13.03	13.77	14.50	15.23	15.96	17.40	18.83	21.66	24.45	27.20
400	10.96	11.46	11.95	12.93	13.91	14.88	15.84	16.80	17.75	18.70	19.64	20.58	22.44	24.29	27.94	31.53	35.08
500	13.31	13.91	14.52	15.71	16.91	18.09	19.26	20.43	21.59	22.75	23.90	25.04	27.31	29.56	34.00	38.36	42.66
600	15.59	16.30	17.01	18.41	19.82	21.20	22.59	23.96	25.32	26.68	28.03	29.37	32.03	34.67	39.87	44.98	50.00
700	17.80	18.62	19.43	21.04	22.65	24.24	25.82	27.39	28.96	30.51	32.05	33.59	36.63	39.64	45.58	51.39	57.10
800	19.96	20.88	21.79	23.61	25.42	27.21	28.98	30.75	32.51	34.25	35.98	37.70	41.12	44.49	51.14	57.64	64.00
950	23.12	24.19	25.25	27.36	29.46	31.54	33.60	35.65	37.69	39.71	41.72	43.71	47.66	51.56	59.21	66.68	73.97
1000	24.15	25.27	26.38	28.59	30.78	32.95	35.11	37.25	39.38	41.49	43.59	45.67	49.79	53.86	61.84	69.61	77.19
1200	28.18	29.49	30.79	33.38	35.94	38.48	41.00	43.50	45.99	48.45	50.89	53.31	58.09	62.81	72.02	80.94	89.58
1450	33.03	34.56	36.10	39.14	42.15	45.13	48.08	51.00	53.90	56.77	59.62	62.43	67.99	73.44	84.03	94.20	103.94
1600	35.84	37.51	39.18	42.48	45.75	48.98	52.18	55.35	58.48	61.58	64.65	67.69	73.67	79.53	90.86	101.66	111.93
1800	39.50	41.34	43.18	46.82	50.42	53.97	57.48	60.96	64.39	67.79	71.14	74.45	80.96	87.30	99.50	111.01	
2000	43.04	45.05	47.06	51.02	54.93	58.80	62.61	66.37	70.09	73.75	77.36	80.93	87.91	94.68	107.60		
2200	46.48	48.66	50.82	55.09	59.31	63.46	67.55	71.58	75.56	79.47	83.32	87.11	94.51	101.65			
2400	49.83	52.15	54.47	59.03	63.54	67.96	72.32	76.60	80.81	84.95	89.01	93.00	100.76	108.20			
2600	53.07	55.55	58.00	62.85	67.62	72.31	76.90	81.41	85.84	90.18	94.43	98.59					
2850	56.99	59.64	62.27	67.45	72.53	77.51	82.38	87.15	91.81	96.36	100.81	105.14					
3000	59.27	62.02	64.74	70.11	75.37	80.50	85.52	90.43	95.22	99.88							
3500	66.47	69.52	72.54	78.45	84.21	89.81	95.23	100.49									
4000	73.05	76.35	79.61	85.96	92.10												
4500	78.99	82.49	85.93														

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor

Section and construction 14M HP

Standard belt width [mm]	40	55	85	115	170
Factor	1.00	1.44	2.50	3.50	5.32

optibelt
Power Transmission

Power ratings
optibelt *OMEGA* timing belt section 2M

Nominal power P_N [W] for section and construction 2M and timing belt width of 9 mm

Speed of the small timing pulley n_k [min^{-1}]	Number of teeth on the small timing pulley z_k															
	10	12	14	16	18	20	24	28	32	36	40	48	56	64	72	80
	Pitch diameter of the small timing pulley d_{wk} [mm]															
	6.37	7.64	8.91	10.19	11.46	12.73	15.28	17.83	20.37	22.92	25.46	30.56	35.65	40.74	45.84	50.93
20	0.39	0.48	0.57	0.66	0.75	0.85	1.03	1.23	1.42	1.62	1.82	2.21	2.62	3.02	3.43	3.84
40	0.79	0.96	1.14	1.33	1.52	1.71	2.08	2.46	2.85	3.24	3.63	4.42	5.22	6.02	6.82	7.64
60	1.18	1.44	1.72	1.99	2.27	2.55	3.10	3.67	4.25	4.82	5.41	6.58	7.76	8.96	10.16	11.37
100	1.97	2.41	2.85	3.30	3.75	4.21	5.13	6.07	7.02	7.97	8.93	10.88	12.86	14.80	16.77	18.72
200	3.90	4.75	5.63	6.52	7.41	8.31	10.11	11.96	13.83	15.70	17.57	21.36	25.22	29.07	32.94	36.94
300	5.78	7.07	8.37	9.68	11.02	12.38	15.09	17.79	20.55	23.35	26.13	31.75	37.47	43.23	48.99	54.83
400	7.67	9.36	11.12	12.79	14.56	16.34	19.93	23.57	27.20	30.83	34.51	42.03	49.60	57.17	64.82	72.61
500	9.53	11.64	13.72	15.91	18.10	20.29	24.71	29.24	33.80	38.37	42.96	52.26	61.62	71.10	80.63	90.16
600	11.42	13.93	16.43	19.04	21.64	24.24	29.55	34.95	40.35	45.79	51.30	62.42	73.63	84.92	96.34	107.70
700	13.24	16.16	19.08	22.10	25.12	28.16	34.32	40.58	46.86	53.45	59.93	72.50	85.53	98.65	111.87	125.12
800	15.10	18.40	21.70	25.20	28.60	32.10	39.10	46.20	53.40	61.10	68.60	82.60	97.40	112.40	127.40	142.50
900	16.90	20.60	24.40	28.20	32.10	36.00	43.80	51.80	59.80	68.20	76.40	92.60	109.20	126.00	142.90	159.80
950	17.80	21.70	25.70	29.70	33.80	37.90	46.20	54.60	63.00	71.70	80.30	97.60	115.10	132.80	150.60	168.50
1000	18.70	22.90	27.00	31.20	35.60	39.90	48.50	57.40	66.30	75.20	84.30	102.60	121.00	139.60	158.30	177.10
1200	22.30	27.20	32.20	37.30	42.40	47.50	57.90	68.40	79.00	89.80	100.60	122.40	144.40	166.60	189.00	211.50
1400	25.90	31.60	37.40	43.30	49.20	55.20	67.30	79.50	91.80	104.30	116.80	142.20	167.80	193.60	219.50	245.60
1450	26.80	32.70	38.70	44.80	50.90	57.10	69.60	82.20	95.00	107.90	120.80	147.10	173.60	200.30	227.10	254.10
1600	29.40	36.00	42.50	49.20	55.90	62.80	76.60	90.50	104.50	118.70	133.00	161.90	190.90	220.40	249.90	279.60
1800	32.90	40.30	47.70	55.20	62.80	70.40	85.70	101.40	117.10	133.00	149.10	181.40	214.00	247.00	280.10	313.50
2000	36.50	44.60	52.80	61.00	69.40	77.90	95.00	112.30	129.70	147.30	165.10	200.90	237.00	273.50	310.20	347.20
2400	43.50	53.20	62.90	72.80	82.80	92.90	113.20	133.80	154.60	175.70	196.80	239.60	282.70	326.30	370.10	414.20
2850	51.30	62.70	74.20	85.90	98.00	109.80	133.60	158.00	182.50	207.40	232.40	282.90	333.80	385.20	436.90	489.00
3200	57.40	70.10	82.90	96.10	112.10	124.00	149.40	176.60	204.10	231.90	259.80	316.30	373.30	430.80	488.70	546.90
3600	64.20	78.50	92.90	107.50	122.20	137.20	167.30	197.80	228.60	259.60	291.00	354.30	418.10	482.60	547.40	612.60
4000	71.00	86.80	102.80	118.90	135.20	151.80	185.10	218.80	252.90	287.30	322.00	392.10	462.70	534.00	605.80	678.10
5000	87.90	107.40	127.20	147.10	167.50	187.90	229.10	270.70	313.00	355.80	398.80	485.70	573.10	661.70	750.50	840.20
6000	104.50	127.70	151.30	175.00	199.20	223.50	272.60	322.40	372.70	423.40	474.60	578.10	682.30	787.70	893.60	1000.40
7000	120.80	147.60	174.90	202.40	230.30	258.50	315.40	373.00	431.20	489.90	549.20	669.00	789.60	911.70	1034.40	1158.10
8000	137.10	167.50	198.50	229.80	261.40	293.50	358.10	423.50	489.70	556.40	623.80	759.90	897.00	1035.70	1175.20	1315.70
10000	169.00	206.00	245.00	283.00	322.00	362.00	442.00	522.00	604.00	687.00	770.00	938.00	1107.00	1279.00	1451.00	1625.00
12000	200.00	245.00	290.00	336.00	382.00	429.00	524.00	619.00	716.00	814.00	913.00	1113.00	1314.00	1517.00	1722.00	1928.00
14000	230.00	282.00	334.00	387.00	440.00	494.00	604.00	714.00	826.00	939.00	1053.00	1284.00	1516.00	1692.00	1751.00	1988.00

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor

Section and construction 2M

Belt width [mm]	Standard 3	Standard 6	Standard 9	12
Factor	0.28	0.61	1.00	1.44

optibelt
Power Transmission

Power ratings
optibelt *OMEGA* timing belt section 3M

Nominal power P_N [W] for section and construction 3M and timing belt width of 9 mm

Speed of the small timing pulley n_k [min^{-1}]	Number of teeth on the small timing pulley z_k														
	10	12	14	16	18	20	24	28	32	40	48	56	64	72	80
	Pitch diameter of the small timing pulley d_{wk} [mm]														
	9.55	11.46	13.37	15.28	17.19	19.10	22.92	26.74	30.56	38.20	45.84	53.48	61.12	68.75	76.39
20	1.6	1.6	1.6	1.6	3.2	3.2	3.2	4.8	4.8	6.4	9.6	11.2	12.8	12.8	14.4
40	3.2	3.2	3.2	4.8	4.8	4.8	6.4	8.0	9.6	14.4	17.6	20.9	24.1	27.3	31.0
60	3.2	4.8	4.8	6.4	8.0	8.0	11.2	12.8	16.0	20.9	27.3	32.6	37.4	40.6	45.5
100	6.4	8.0	9.6	11.2	12.8	14.4	17.6	20.9	25.7	34.2	45.5	53.5	62.0	68.4	76.5
200	12.8	16.0	17.6	20.9	24.1	27.3	35.8	43.9	51.9	70.1	89.8	107.5	122.5	136.9	153.5
300	17.6	20.9	25.7	29.4	34.2	39.0	48.7	58.8	70.1	94.7	120.9	142.2	163.1	182.9	204.3
400	20.9	25.7	31.0	37.4	42.2	48.7	60.4	73.3	86.6	116.0	147.1	174.9	199.5	225.7	249.7
500	25.7	31.0	37.4	43.9	50.3	57.2	71.7	86.6	101.1	135.3	173.3	204.3	233.7	263.1	292.5
600	29.4	35.8	43.9	50.3	57.2	65.2	81.3	97.9	116.0	155.1	196.3	232.1	266.3	298.9	331.6
700	32.6	40.6	48.7	57.2	65.2	73.3	91.4	110.7	130.5	173.3	218.7	259.9	295.7	333.2	371.1
800	37.4	45.5	53.5	63.6	71.7	81.3	101.1	122.5	143.9	190.9	241.7	284.5	325.1	366.3	407.0
900	40.6	48.7	58.8	68.4	78.1	89.8	110.7	133.7	156.7	207.5	261.5	309.1	352.9	397.3	441.2
950	42.2	51.9	62.0	71.7	81.3	93.0	116.0	138.5	163.1	215.5	272.7	321.9	367.9	413.4	459.4
1000	43.9	53.5	63.6	74.9	85.0	96.3	119.3	143.9	170.1	223.5	282.9	333.2	380.7	428.3	475.4
1200	50.3	62.0	73.3	85.0	97.9	110.7	136.9	164.7	194.1	255.1	321.9	379.1	433.2	487.2	539.6
1400	57.2	70.1	82.9	96.3	110.7	124.1	153.5	184.5	217.1	286.1	357.8	421.9	482.4	541.2	601.6
1450	58.8	71.7	85.0	99.5	112.8	127.3	158.3	189.3	223.5	292.5	367.9	431.6	493.6	554.0	616.0
1600	63.6	76.5	91.4	105.9	122.5	136.9	170.1	204.3	240.1	313.9	394.1	462.6	527.8	593.6	658.8
1800	68.4	85.0	101.1	117.6	133.7	150.3	186.1	221.9	261.5	341.7	426.7	501.6	573.8	643.9	714.4
2000	74.9	91.4	109.1	125.7	145.5	163.1	201.1	241.7	282.9	369.5	459.4	541.2	616.0	691.4	766.8
2400	86.0	106.0	126.0	145.0	167.0	188.0	231.0	277.0	323.0	421.0	523.0	614.0	700.0	785.0	869.0
2850	98.0	119.0	141.0	163.0	186.0	211.0	259.0	309.0	362.0	470.0	582.0	682.0	777.0	869.0	961.0
3200	108.0	132.0	157.0	182.0	206.0	232.0	286.0	342.0	398.0	516.0	637.0	746.0	847.0	947.0	1046.0
3600	119.0	144.0	172.0	198.0	226.0	254.0	313.0	372.0	434.0	560.0	690.0	806.0	915.0	1020.0	1123.0
4000	129.0	157.0	185.0	214.0	245.0	275.0	337.0	401.0	467.0	603.0	739.0	862.0	977.0	1087.0	1192.0
5000	154.0	186.0	219.0	254.0	290.0	324.0	398.0	472.0	547.0	700.0	854.0	988.0	1111.0	1228.0	1334.0
6000	177.0	214.0	252.0	291.0	331.0	372.0	454.0	536.0	619.0	788.0	952.0	1093.0	1218.0	1331.0	1428.0
7000	198.0	241.0	283.0	327.0	372.0	416.0	506.0	596.0	687.0	865.0	1034.0	1177.0	1295.0	1393.0	1469.0
8000	219.0	267.0	313.0	362.0	409.0	457.0	555.0	652.0	747.0	933.0	1103.0	1236.0	1338.0	1411.0	1451.0
10000	260.0	314.0	370.0	424.0	480.0	534.0	644.0	749.0	851.0	1034.0	1187.0	1280.0	1318.0	1298.0	1211.0
12000	298.0	360.0	421.0	483.0	544.0	603.0	718.0	828.0	928.0	1092.0	1195.0	1211.0	1133.0		
14000	334.0	401.0	469.0	536.0	600.0	662.0	780.0	887.0	977.0	1098.0	1120.0	1010.0			

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor

Section and design 3M

Belt width [mm]	3	Standard 6	Standard 9	12	Standard 15	20	25
Factor	0.28	0.61	1.00	1.44	1.87	2.63	3.40

optibelt
Power Transmission

Power ratings
optibelt *OMEGA* timing belt section 5M

Nominal power P_N [W] for section and construction 5M and timing belt width of 9 mm

Speed of the small timing pulley n_k [min^{-1}]	Number of teeth on the small timing pulley z_k														
	14	16	18	20	24	28	32	36	40	44	48	56	64	72	80
	Pitch diameter of the small timing pulley d_{wk} [mm]														
	22.28	25.46	28.65	31.83	38.20	44.56	50.93	57.30	63.66	70.03	76.39	89.13	101.86	114.59	127.32
20	3.7	4.9	5.8	6.9	8.9	11.0	13.0	15.0	17.0	19.9	22.8	26.8	30.8	34.0	38.0
40	8.9	11.0	11.8	13.8	17.9	21.0	25.9	30.0	34.9	40.1	45.0	53.9	61.1	68.9	76.9
60	13.0	15.9	17.9	21.0	25.9	32.0	38.0	45.0	51.9	59.9	68.0	80.1	91.9	103.2	115.0
100	21.9	25.9	30.0	34.9	44.1	53.9	64.0	74.9	87.0	100.0	113.0	134.3	153.3	172.3	192.2
200	45.0	53.0	61.1	68.9	88.2	107.2	128.2	150.1	174.4	199.4	226.2	268.6	306.6	345.5	383.9
300	61.0	72.0	83.0	94.0	119.0	145.0	172.0	202.0	233.0	266.0	300.0	356.0	407.0	458.0	509.0
400	76.0	90.0	103.0	117.0	147.0	179.0	213.0	249.0	286.0	326.0	368.0	436.0	498.0	561.0	623.0
500	91.0	106.0	122.0	139.0	174.0	211.0	251.0	292.0	336.0	382.0	430.0	510.0	583.0	656.0	728.0
600	104.0	122.0	140.0	159.0	199.0	241.0	286.0	334.0	383.0	435.0	489.0	580.0	662.0	745.0	827.0
700	117.0	137.0	158.0	179.0	223.0	271.0	321.0	373.0	428.0	485.0	545.0	646.0	738.0	829.0	921.0
800	130.0	152.0	174.0	198.0	247.0	299.0	353.0	411.0	471.0	533.0	598.0	709.0	809.0	910.0	1010.0
900	142.0	166.0	191.0	216.0	269.0	326.0	385.0	447.0	512.0	580.0	650.0	769.0	879.0	987.0	1096.0
950	148.0	173.0	199.0	225.0	280.0	339.0	401.0	465.0	532.0	603.0	675.0	799.0	912.0	1025.0	1137.0
1000	154.0	180.0	206.0	234.0	291.0	352.0	416.0	483.0	552.0	625.0	699.0	828.0	945.0	1062.0	1178.0
1200	177.0	207.0	237.0	268.0	334.0	403.0	475.0	551.0	629.0	710.0	794.0	939.0	1072.0	1204.0	1334.0
1400	199.0	232.0	266.0	301.0	375.0	451.0	532.0	615.0	702.0	791.0	884.0	1044.0	1191.0	1336.0	1480.0
1450	205.0	239.0	274.0	309.0	384.0	463.0	545.0	631.0	720.0	811.0	905.0	1070.0	1220.0	1368.0	1515.0
1600	221.0	257.0	295.0	333.0	414.0	498.0	586.0	677.0	771.0	869.0	969.0	1144.0	1303.0	1461.0	1617.0
1800	242.0	281.0	322.0	364.0	451.0	543.0	638.0	736.0	838.0	943.0	1050.0	1239.0	1410.0	1578.0	1745.0
2000	262.0	305.0	349.0	394.0	488.0	586.0	688.0	794.0	902.0	1014.0	1128.0	1329.0	1511.0	1689.0	1864.0
2400	301.0	350.0	400.0	451.0	558.0	669.0	784.0	902.0	1024.0	1148.0	1274.0	1497.0	1697.0	1891.0	2079.0
2850	338.0	393.0	449.0	506.0	625.0	748.0	874.0	1004.0	1137.0	1272.0	1408.0	1649.0	1863.0	2067.0	2262.0
3200	374.0	434.0	496.0	559.0	688.0	822.0	960.0	1100.0	1242.0	1386.0	1531.0	1786.0	2008.0	2217.0	2411.0
3600	409.0	474.0	541.0	609.0	749.0	893.0	1040.0	1190.0	1340.0	1492.0	1644.0	1908.0	2134.0	2340.0	2526.0
4000	443.0	513.0	585.0	658.0	808.0	961.0	1116.0	1274.0	1431.0	1589.0	1745.0	2015.0	2238.0	2436.0	2604.0
5000	523.0	605.0	688.0	772.0	943.0	1115.0	1288.0	1459.0	1628.0	1792.0	1951.0	2212.0	2402.0	2541.0	2623.0
6000	598.0	690.0	783.0	877.0	1064.0	1250.0	1433.0	1610.0	1778.0	1937.0	2084.0	2301.0	2411.0	2434.0	2358.0
7000	669.0	769.0	870.0	971.0	1171.0	1365.0	1550.0	1722.0	1880.0	2019.0	2137.0	2268.0	2245.0		
8000	735.0	843.0	950.0	1057.0	1264.0	1459.0	1637.0	1794.0	1927.0	2031.0	2101.0	2100.0			
10000	854.0	972.0	1088.0	1199.0	1403.0	1577.0	1714.0	1804.0	1842.0	1819.0	1729.0				
12000	956.0	1078.0	1193.0	1299.0	1476.0	1594.0	1643.0	1609.0							
14000	1039.0	1158.0	1264.0	1354.0	1473.0	1495.0	1403.0								

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor

Section and construction 5M

Belt width [mm]	6	Standard 9	12	Standard 15	20	Standard 25	30
Factor	0.61	1.00	1.44	1.87	2.63	3.40	4.15

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Power Transmission

Power ratings
optibelt *OMEGA* timing belt section 8M

Nominal power P_N [kW] for section and construction 8M and timing belt width of 20 mm

Speed of the small timing pulley n_k [min^{-1}]	Number of teeth on the small timing pulley z_k																
	22	24	26	28	30	32	34	36	38	40	44	48	52	56	64	72	80
	Pitch diameter of the small timing pulley d_{wk} [mm]																
	56.02	61.12	66.21	71.30	76.39	81.49	86.58	91.67	96.77	101.86	112.05	122.23	132.42	142.60	162.97	183.35	203.72
10	0.015	0.018	0.022	0.026	0.029	0.036	0.042	0.046	0.053	0.057	0.061	0.068	0.072	0.078	0.087	0.097	0.106
20	0.033	0.037	0.044	0.051	0.062	0.072	0.082	0.093	0.106	0.114	0.125	0.135	0.144	0.154	0.173	0.194	0.213
50	0.081	0.092	0.110	0.132	0.154	0.179	0.207	0.234	0.262	0.283	0.310	0.336	0.361	0.386	0.435	0.483	0.532
100	0.165	0.183	0.223	0.264	0.311	0.359	0.412	0.466	0.526	0.566	0.621	0.671	0.722	0.770	0.870	0.967	1.064
200	0.326	0.370	0.447	0.531	0.623	0.720	0.823	0.933	1.051	1.131	1.239	1.340	1.442	1.541	1.739	1.933	2.125
300	0.491	0.535	0.645	0.766	0.897	1.040	1.190	1.340	1.510	1.640	1.780	1.930	2.070	2.220	2.500	2.770	3.050
400	0.652	0.711	0.839	0.993	1.165	1.340	1.540	1.740	1.960	2.120	2.310	2.500	2.680	2.870	3.230	3.590	3.940
500	0.810	0.890	1.020	1.220	1.420	1.640	1.880	2.130	2.390	2.590	2.820	3.050	3.270	3.500	3.940	4.370	4.800
600	0.980	1.070	1.210	1.430	1.670	1.930	2.210	2.510	2.820	3.050	3.320	3.590	3.850	4.110	4.630	5.130	5.630
700	1.140	1.240	1.380	1.640	1.920	2.220	2.540	2.880	3.230	3.500	3.810	4.110	4.410	4.710	5.300	5.870	6.440
800	1.300	1.420	1.560	1.850	2.170	2.500	2.860	3.240	3.640	3.940	4.280	4.630	4.970	5.300	5.960	6.600	7.230
950	1.550	1.690	1.830	2.160	2.520	2.910	3.330	3.770	4.240	4.580	4.990	5.380	5.770	6.160	6.910	7.650	8.370
1000	1.630	1.770	1.930	2.260	2.640	3.050	3.480	3.950	4.440	4.800	5.220	5.630	6.040	6.440	7.230	7.990	8.740
1200	1.950	2.130	2.310	2.650	3.100	3.580	4.090	4.630	5.210	5.630	6.120	6.600	7.070	7.540	8.440	9.320	10.170
1450	2.350	2.570	2.790	3.130	3.660	4.230	4.830	5.470	6.140	6.640	7.210	7.770	8.310	8.850	9.890	10.900	11.850
1600	2.590	2.830	3.070	3.420	3.990	4.610	5.260	5.960	6.690	7.230	7.840	8.440	9.030	9.610	10.730	11.790	12.800
1800	2.920	3.180	3.450	3.780	4.420	5.100	5.820	6.590	7.400	7.990	8.670	9.320	9.960	10.590	11.790	12.920	13.990
2000	3.230	3.520	3.820	4.180	4.840	5.580	6.370	7.210	8.090	8.740	9.470	10.170	10.860	11.530	12.800	13.990	15.090
2200	3.550	3.870	4.190	4.590	5.250	6.050	6.910	7.820	8.770	9.470	10.240	11.000	11.730	12.430	13.760	14.980	16.090
2500	4.020	4.380	4.750	5.190	5.840	6.740	7.690	8.690	9.750	10.520	11.360	12.180	12.950	13.700	15.090	16.320	17.400
2850	4.570	4.970	5.380	5.880	6.510	7.510	8.560	9.670	10.850	11.690	12.600	13.470	14.290	15.060	16.460	17.650	18.620
3000	4.800	5.220	5.650	6.170	6.790	7.820	8.920	10.080	11.300	12.180	13.110	13.990	14.820	15.600	16.990	18.140	19.040
3500					7.720	8.840	10.070	11.370	12.730	13.700	14.680	15.600	16.440	17.200	18.470	19.380	19.890
4000						9.780	11.130	12.550	14.040	15.090	16.090	16.990	17.790	18.470			
4500							12.090	13.620	15.230	16.320	17.300	18.140	18.840				
5000								14.580	16.270	17.400	18.310	19.040	19.570				
5500									17.170	18.310	19.100						
6000									17.910	19.040	19.650						

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor

Section and construction 8M

Standard belt width [mm]	20	30	50	85
Factor	1.00	1.58	2.73	4.74

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Power Transmission

Power ratings
optibelt *OMEGA* timing belt section 14M

Nominal power P_N [kW] for section and construction 14M and timing belt width of 40 mm

Speed of the small timing pulley n_k [min^{-1}]	Number of teeth on the small timing pulley z_k																
	28	29	30	32	34	36	38	40	42	44	46	48	52	56	64	72	80
	Pitch diameter of the small timing pulley d_{wk} [mm]																
	124.78	129.23	133.69	142.60	151.52	160.43	169.34	178.25	187.17	196.08	204.99	213.90	231.73	249.55	285.21	320.86	356.51
10	0.17	0.20	0.20	0.23	0.29	0.30	0.34	0.36	0.38	0.40	0.42	0.44	0.49	0.53	0.61	0.68	0.74
20	0.35	0.37	0.43	0.49	0.55	0.63	0.68	0.72	0.76	0.80	0.83	0.89	0.97	1.04	1.19	1.34	1.50
40	0.72	0.78	0.84	0.98	1.10	1.25	1.34	1.42	1.52	1.59	1.69	1.76	1.93	2.10	2.39	2.69	2.99
60	1.07	1.15	1.27	1.44	1.64	1.88	2.03	2.14	2.27	2.39	2.52	2.65	2.90	3.14	3.58	4.03	4.49
100	1.79	1.93	2.10	2.42	2.77	3.11	3.37	3.58	3.79	4.00	4.20	4.41	4.85	5.23	5.98	6.72	7.48
200	3.60	3.90	4.20	4.80	5.50	6.20	6.80	7.20	7.60	8.00	8.40	8.90	9.70	10.50	12.00	13.50	15.00
300	4.90	5.30	5.70	6.60	7.50	8.50	9.20	9.70	10.30	10.80	11.40	12.00	13.10	14.20	16.50	18.90	21.30
400	6.10	6.60	7.10	8.20	9.30	10.50	11.40	12.00	12.70	13.30	14.00	14.70	16.10	17.40	20.10	22.90	25.80
500	7.20	7.80	8.40	9.60	11.00	12.30	13.30	14.10	14.80	15.60	16.40	17.20	18.70	20.20	23.30	26.40	29.60
600	8.20	8.90	9.50	11.00	12.50	14.00	15.10	15.90	16.80	17.70	18.50	19.40	21.10	22.70	26.10	29.50	32.90
700	9.10	9.90	10.60	12.20	13.90	15.60	16.80	17.70	18.60	19.50	20.50	21.40	23.20	25.00	28.60	32.20	35.80
800	10.00	10.80	11.60	13.40	15.10	17.00	18.30	19.30	20.30	21.30	22.20	23.20	25.20	27.00	30.80	34.50	38.20
950	11.30	12.10	13.10	14.90	16.90	19.00	20.40	21.40	22.50	23.60	24.60	25.70	27.70	29.70	33.60	37.40	41.10
1000	11.60	12.60	13.50	15.40	17.50	19.60	21.00	22.10	23.20	24.30	25.40	26.50	28.50	30.50	34.40	38.20	41.90
1200	13.10	14.10	15.10	17.30	19.50	21.80	23.40	24.50	25.70	26.80	28.00	29.10	31.20	33.20	37.10	40.70	44.10
1450	14.60	15.70	16.90	19.20	21.70	24.20	25.90	27.10	28.30	29.40	30.60	31.70	33.80	35.70	39.20	42.30	44.80
1600	15.40	16.60	17.80	20.30	22.80	25.50	27.10	28.30	29.50	30.70	31.80	32.90	34.90	36.60	39.80	42.30	44.10
1800	16.40	17.70	18.90	21.50	24.10	26.80	28.50	29.70	30.90	32.00	33.00	34.00	35.80	37.30	39.80	41.30	43.00
2000	17.30	18.60	19.80	22.50	25.20	28.00	29.70	30.80	31.90	32.90	33.80	34.70	36.20	37.40	38.90		
2200	18.60	19.30	20.60	23.30	26.10	28.90	30.50	31.50	32.50	33.40	34.20	35.00	36.10	36.70			
2400	20.10	20.70	21.30	24.00	26.70	29.50	31.10	32.00	32.80	33.50	34.20	34.70	35.30	35.40			
2600	21.50	22.10	22.70	24.40	27.20	29.90	31.40	32.10	32.70	33.20	33.70	33.90	34.00				
2850	23.10	23.80	24.40	25.60	27.40	30.00	31.30	31.80	32.10	32.30	32.40	32.30	31.70				
3000	24.10	24.70	25.30	26.50	27.50	30.10	31.00	31.60	31.50	31.50	31.40	31.60					
3500			28.00	29.10	30.00	30.70	31.20	31.50	31.70								
4000				30.80	31.40												

Power ratings for other belt widths can be calculated by multiplying by the width correction factors.

Width correction factor

Section and construction 14M

Standard belt width [mm]	40	55	85	115	170
Factor	1.00	1.50	2.50	3.47	5.28

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Power Transmission

Dimensions and tolerances
optibelt *OMEGA HL / HP* and optibelt *OMEGA*

Optibelt OMEGA HP, Optibelt OMEGA HL and Optibelt OMEGA timing belts are produced in a wide range of lengths and widths. Many special lengths, widths and constructions are available. Please consult with our Applications Engineering Department.

Optibelt OMEGA HP, Optibelt OMEGA HL and Optibelt OMEGA timing belts are produced to ground category G2 with a thickness tolerance of ± 0,25 mm as standard. If required, the belts can be ground to category G1, with a thickness tolerance of ± 0,13 mm.

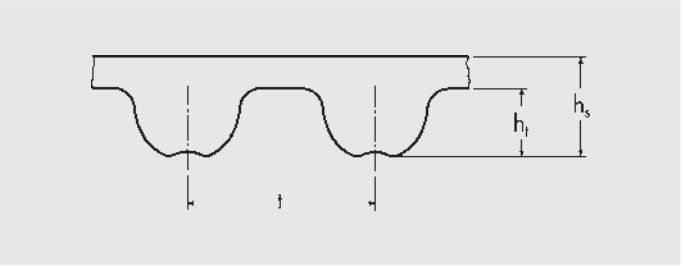

Table 8
Nominal dimensions and weights

Section	2M	3M/3M HP	5M/5M HP	8M/8M HP/HL	14M/14M HP/HL
Tooth height h_t [mm]	0.70	1.10	1.90	3.20	5.60
Total belt thickness h_s [mm]	1.50	2.30	3.40	5.40	9.50
Tooth pitch t [mm]	2.00	3.00	5.00	8.00	14.00
Weight [kg/m] for 10 mm belt width	0.013	0.024	0.035	0.058	0.100

Length tolerances

Pitch length (mm)	≤ 250	> 250 ≤ 500	> 500 ≤ 750	> 750 ≤ 1000	> 1000 ≤ 1250	> 1250 ≤ 1500	> 1500 ≤ 1750	> 1750 ≤ 2000	> 2000 ≤ 2250	> 2250 ≤ 2500	> 2500 ≤ 2750	> 2750 ≤ 3000	> 3000
Length tolerances given as centre distance deviation	± 0.20	± 0.23	± 0.27	± 0.30	± 0.33	± 0.36	± 0.39	± 0.42	± 0.46	± 0.49	± 0.52	± 0.55	± 0.55 ± 0.03*

Width tolerance

Standard belt width	Permissible tolerance [mm] of the timing belt width for Optibelt OMEGA/HP/HL		
Nominal width [mm]	Pitch length up to 838.2 mm	Pitch length 838.3 up to 1676.4 mm	Pitch length over 1676.4 mm
3.0 to 11.0	+ 0.4 – 0.8	+ 0.4 – 0.8	—
11.1 to 38.1	+ 0.8 – 0.8	+ 0.8 – 0.8	+ 0.8 – 1.2
38.2 to 50.8	+ 0.8 – 1.2	+ 1.2 – 1.2	+ 1.2 – 1.6
50.9 to 63.5	+ 1.2 – 1.2	+ 1.2 – 1.6	+ 1.6 – 1.6
63.6 to 76.2	+ 1.2 – 1.6	+ 1.6 – 1.6	+ 1.6 – 2.0
76.3 to 101.6	+ 1.6 – 1.6	+ 1.6 – 2.0	+ 2.0 – 2.0
101.7 to 177.8	+ 2.4 – 2.4	+ 1.6 – 2.0	+ 2.0 – 2.0
177.9 to max.	—	—	+ 4.8 – 6.4

* For longer lengths an additional 0.03 mm should be added in length steps of 250 mm.

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Power Transmission

Standard timing pulleys

optibelt *OMEGA* timing belt sections 3M and 3M HP

Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]
10	9.55	8.79	**50**	47.75	46.99	**90**	85.94	85.18	**130**	124.14	123.38
11	10.50	9.74	**51**	48.70	47.94	**91**	86.90	86.14	**131**	125.10	124.33
12	11.46	10.70	**52**	49.66	48.90	**92**	87.85	87.09	**132**	126.05	125.29
13	12.41	11.65	**53**	50.61	49.85	**93**	88.81	88.05	**133**	127.01	126.24
14	13.37	12.61	**54**	51.57	50.81	**94**	89.76	89.00	**134**	127.96	127.20
15	14.32	13.56	**55**	52.52	51.76	**95**	90.72	89.96	**135**	128.92	128.15
16	15.28	14.52	**56**	53.48	52.72	**96**	91.67	90.91	**136**	129.87	129.11
17	16.23	15.47	**57**	54.43	53.67	**97**	92.63	91.87	**137**	130.83	130.06
18	17.19	16.43	**58**	55.39	54.63	**98**	93.58	92.82	**138**	131.78	131.02
19	18.14	17.38	**59**	56.34	55.58	**99**	94.54	93.78	**139**	132.74	131.97
20	19.10	18.34	**60**	57.30	56.54	**100**	95.49	94.73	**140**	133.69	132.93
21	20.05	19.29	**61**	58.25	57.49	**101**	96.45	95.69	**141**	134.65	133.88
22	21.01	20.25	**62**	59.21	58.45	**102**	97.40	96.64	**142**	135.60	134.84
23	21.96	21.20	**63**	60.16	59.40	**103**	98.36	97.60	**143**	136.55	135.79
24	22.92	22.16	**64**	61.12	60.36	**104**	99.31	98.55	**144**	137.51	136.75
25	23.87	23.11	**65**	62.07	61.31	**105**	100.27	99.51	**145**	138.46	137.70
26	24.83	24.07	**66**	63.03	62.27	**106**	101.22	100.46	**146**	139.42	138.66
27	25.78	25.02	**67**	63.98	63.22	**107**	102.18	101.42	**147**	140.37	139.61
28	26.74	25.98	**68**	64.94	64.18	**108**	103.13	102.37	**148**	141.33	140.57
29	27.69	26.93	**69**	65.89	65.13	**109**	104.09	103.33	**149**	142.28	141.52
30	28.65	27.89	**70**	66.85	66.09	**110**	105.04	104.28	**150**	143.24	142.48
31	29.60	28.84	**71**	67.80	67.04	**111**	106.00	105.24			
32	30.56	29.80	**72**	68.75	67.99	**112**	106.95	106.19			
33	31.51	30.75	**73**	69.71	68.95	**113**	107.91	107.15			
34	32.47	31.71	**74**	70.66	69.90	**114**	108.86	108.10			
35	33.42	32.66	**75**	71.62	70.86	**115**	109.82	109.06			
36	34.38	33.62	**76**	72.57	71.81	**116**	110.77	110.01			
37	35.33	34.57	**77**	73.53	72.77	**117**	111.73	110.97			
38	36.29	35.53	**78**	74.48	73.72	**118**	112.68	111.92			
39	37.24	36.48	**79**	75.44	74.68	**119**	113.64	112.88			
40	38.20	37.44	**80**	76.39	75.63	**120**	114.59	113.83			
41	39.15	38.39	**81**	77.35	76.59	**121**	115.55	114.79			
42	40.11	39.35	**82**	78.30	77.54	**122**	116.50	115.74			
43	41.06	40.30	**83**	79.26	78.50	**123**	117.46	116.70			
44	42.02	41.26	**84**	80.21	79.45	**124**	118.41	117.65			
45	42.97	42.21	**85**	81.17	80.41	**125**	119.37	118.61			
46	43.93	43.17	**86**	82.12	81.36	**126**	120.32	119.56			
47	44.88	44.12	**87**	83.08	82.32	**127**	121.28	120.52			
48	45.84	45.08	**88**	84.03	83.27	**128**	122.23	121.47			
49	46.79	46.03	**89**	84.99	84.23	**129**	123.19	122.43			

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Power Transmission

Standard timing pulleys

optibelt *OMEGA* timing belt sections 5M and 5M HP

Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]
12	19.10	17.96	**52**	82.76	81.62	**92**	146.42	145.28	**132**	210.08	208.94
13	20.69	19.55	**53**	84.35	83.21	**93**	148.01	146.87	**133**	211.68	210.54
14	22.28	21.14	**54**	85.94	84.80	**94**	149.61	148.47	**134**	213.27	212.13
15	23.87	22.73	**55**	87.54	86.40	**95**	151.20	150.06	**135**	214.86	213.72
16	25.46	24.32	**56**	89.13	87.98	**96**	152.79	151.65	**136**	216.45	215.31
17	27.06	25.92	**57**	90.72	89.58	**97**	154.38	153.24	**137**	218.04	216.90
18	28.65	27.51	**58**	92.31	91.17	**98**	155.97	154.83	**138**	219.63	218.49
19	30.24	29.10	**59**	93.90	92.76	**99**	157.56	156.42	**139**	221.23	220.09
20	31.83	30.69	**60**	95.49	94.35	**100**	159.15	158.01	**140**	222.82	221.68
21	33.42	32.28	**61**	97.08	95.94	**101**	160.75	159.61	**141**	224.41	223.27
22	35.01	33.87	**62**	98.68	97.54	**102**	162.34	161.20	**142**	226.00	224.86
23	36.61	35.47	**63**	100.27	99.13	**103**	163.93	162.79	**143**	227.59	226.45
24	38.20	37.05	**64**	101.86	100.72	**104**	165.52	164.38	**144**	229.18	228.04
25	39.79	38.65	**65**	103.45	102.31	**105**	167.11	165.97	**145**	230.77	229.63
26	41.38	40.24	**66**	105.04	103.90	**106**	168.70	167.56	**146**	232.37	231.23
27	42.97	41.83	**67**	106.63	105.49	**107**	170.30	169.16	**147**	233.96	232.82
28	44.56	43.42	**68**	108.23	107.09	**108**	171.89	170.75	**148**	235.55	234.41
29	46.15	45.01	**69**	109.82	108.68	**109**	173.48	172.34	**149**	237.14	236.00
30	47.75	46.60	**70**	111.41	110.27	**110**	175.07	173.93	**150**	238.73	237.59
31	49.34	48.20	**71**	113.00	111.86	**111**	176.66	175.52			
32	50.93	49.79	**72**	114.59	113.45	**112**	178.25	177.11			
33	52.52	51.38	**73**	116.18	115.04	**113**	179.85	178.71			
34	54.11	52.97	**74**	117.77	116.63	**114**	181.44	180.30			
35	55.70	54.56	**75**	119.37	118.23	**115**	183.03	181.89			
36	57.30	56.16	**76**	120.96	119.82	**116**	184.62	183.48			
37	58.89	57.75	**77**	122.55	121.41	**117**	186.21	185.07			
38	60.48	59.34	**78**	124.14	123.00	**118**	187.80	186.66			
39	62.07	60.93	**79**	125.73	124.59	**119**	189.39	188.25			
40	63.66	62.52	**80**	127.32	126.18	**120**	190.99	189.85			
41	65.25	64.11	**81**	128.92	127.78	**121**	192.58	191.44			
42	66.85	65.71	**82**	130.51	129.37	**122**	194.17	193.03			
43	68.44	67.30	**83**	132.10	130.96	**123**	195.76	194.62			
44	70.03	68.89	**84**	133.69	132.55	**124**	197.35	196.21			
45	71.62	70.48	**85**	135.28	134.14	**125**	198.94	197.80			
46	73.21	72.07	**86**	136.87	135.73	**126**	200.54	199.40			
47	74.80	73.66	**87**	138.46	137.32	**127**	202.13	200.99			
48	76.39	75.25	**88**	140.06	138.92	**128**	203.72	202.58			
49	77.99	76.85	**89**	141.65	140.51	**129**	205.31	204.17			
50	79.58	78.43	**90**	143.24	142.10	**130**	206.90	205.76			
51	81.17	80.03	**91**	144.83	143.69	**131**	208.49	207.35			

optibelt
Power Transmission

Standard timing pulleys

optibelt *OMEGA* timing belts sections 8M, 8M HP and 8M HL

Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]
22	56.02	54.65	**67**	170.61	169.24	**112**	285.21	283.83	**157**	399.80	398.43
23	58.57	57.20	**68**	173.16	171.79	**113**	287.75	286.38	**158**	402.34	400.97
24	61.12	59.75	**69**	175.71	174.34	**114**	290.30	288.93	**159**	404.89	403.52
25	63.66	62.29	**70**	178.25	176.88	**115**	292.85	291.47	**160**	407.44	406.07
26	66.21	64.84	**71**	180.80	179.43	**116**	295.39	294.02	**161**	409.98	408.61
27	68.75	67.38	**72**	183.35	181.97	**117**	297.94	296.57	**162**	412.53	411.16
28	71.30	69.93	**73**	185.89	184.52	**118**	300.48	299.11	**163**	415.08	413.70
29	73.85	72.48	**74**	188.44	187.07	**119**	303.03	301.66	**164**	417.62	416.25
30	76.39	75.13	**75**	190.99	189.61	**120**	305.58	304.21	**165**	420.17	418.80
31	78.94	77.65	**76**	193.53	192.16	**121**	308.12	306.75	**166**	422.72	421.34
32	81.49	80.16	**77**	196.08	194.71	**122**	310.67	309.30	**167**	425.26	423.89
33	84.03	82.68	**78**	198.62	197.25	**123**	313.22	311.85	**168**	427.81	426.44
34	86.58	85.22	**79**	201.17	199.81	**124**	315.76	314.39	**169**	430.35	428.98
35	89.13	87.76	**80**	203.72	202.35	**125**	318.31	316.94	**170**	432.90	431.53
36	91.67	90.30	**81**	206.26	204.89	**126**	320.86	319.48	**171**	435.45	434.08
37	94.22	92.85	**82**	208.81	207.44	**127**	323.41	322.03	**172**	437.99	436.62
38	96.77	95.39	**83**	211.36	209.99	**128**	325.95	324.58	**173**	440.54	439.17
39	99.31	97.94	**84**	213.90	212.53	**129**	328.50	327.12	**174**	443.09	441.72
40	101.86	100.49	**85**	216.45	215.08	**130**	331.04	329.67	**175**	445.63	444.26
41	104.41	103.03	**86**	219.00	217.63	**131**	333.59	332.22	**176**	448.18	446.81
42	106.95	105.58	**87**	221.54	220.17	**132**	336.14	334.76	**177**	450.73	449.36
43	109.50	108.13	**88**	224.09	222.72	**133**	338.68	337.31	**178**	453.27	451.90
44	112.05	110.67	**89**	226.54	225.27	**134**	341.23	339.86	**179**	455.82	454.45
45	114.59	113.22	**90**	229.18	227.81	**135**	343.77	342.40	**180**	458.37	456.99
46	117.14	115.77	**91**	231.73	230.36	**136**	346.32	344.95	**181**	460.91	459.54
47	119.68	118.31	**92**	234.28	232.90	**137**	348.87	347.50	**182**	463.46	462.09
48	122.23	120.86	**93**	236.82	235.45	**138**	351.41	350.04	**183**	466.01	464.63
49	124.78	123.41	**94**	239.37	238.00	**139**	353.96	352.59	**184**	468.55	467.18
50	127.32	125.95	**95**	241.92	240.54	**140**	356.51	355.14	**185**	471.10	469.73
51	129.87	128.50	**96**	244.46	243.09	**141**	359.05	357.68	**186**	473.65	472.27
52	132.42	131.05	**97**	247.01	245.64	**142**	361.60	360.23	**187**	476.19	474.82
53	134.96	133.59	**98**	249.55	248.18	**143**	364.15	362.77	**188**	478.74	477.37
54	137.51	136.14	**99**	252.10	250.73	**144**	366.69	365.32	**189**	481.28	479.91
55	140.06	138.68	**100**	254.65	253.28	**145**	369.24	367.87	**190**	483.83	482.46
56	142.60	141.23	**101**	257.19	255.82	**146**	371.79	370.41	**191**	486.38	485.01
57	145.15	143.78	**102**	259.74	258.37	**147**	374.33	372.96	**192**	488.92	487.55
58	147.70	146.32	**103**	262.29	260.92	**148**	376.88	375.51			
59	150.24	148.87	**104**	264.83	263.46	**149**	379.43	378.05			
60	152.79	151.42	**105**	267.38	266.01	**150**	381.97	380.60			
61	155.34	153.96	**106**	269.93	268.56	**151**	384.52	383.15			
62	157.88	156.51	**107**	272.47	271.10	**152**	387.06	385.70			
63	160.43	159.06	**108**	275.02	273.65	**153**	389.61	388.24			
64	162.97	161.60	**109**	277.57	276.19	**154**	392.16	390.79			
65	165.52	164.15	**110**	280.11	278.74	**155**	394.70	393.33			
66	168.07	166.70	**111**	282.66	281.29	**156**	397.25	395.88			

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Power Transmission

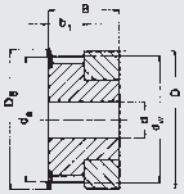
Standard timing pulleys

optibelt *OMEGA* timing belts sections 14M, 14M HP and 14M HL

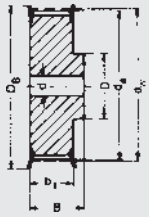
Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]	Number of teeth	Pitch diameter [mm]	Outside diameter [mm]
28	124.78	122.12	**73**	325.31	322.52	**118**	525.85	523.05	**163**	726.38	723.59
29	129.23	126.57	**74**	329.77	326.97	**119**	530.30	527.51	**164**	730.84	728.05
30	133.69	130.99	**75**	334.22	331.43	**120**	534.76	531.97	**165**	735.30	732.50
31	138.15	135.46	**76**	338.68	335.89	**121**	539.22	536.42	**166**	739.75	736.96
32	142.60	139.88	**77**	343.14	340.34	**122**	543.67	540.88	**167**	744.21	741.41
33	147.06	144.35	**78**	347.59	344.80	**123**	548.13	545.34	**168**	748.66	745.87
34	151.51	148.79	**79**	352.05	349.26	**124**	552.59	549.79	**169**	753.12	750.33
35	155.97	153.24	**80**	356.51	353.71	**125**	557.04	554.25	**170**	757.58	754.78
36	160.43	157.68	**81**	360.96	358.17	**126**	561.50	558.70	**171**	762.03	759.24
37	164.88	162.13	**82**	365.42	362.63	**127**	565.95	563.16	**172**	766.49	763.70
38	169.34	166.60	**83**	369.88	367.08	**128**	570.41	567.62	**173**	770.95	768.15
39	173.80	171.02	**84**	374.33	371.54	**129**	574.87	572.07	**174**	775.40	772.61
40	178.25	175.49	**85**	378.79	375.99	**130**	579.32	576.53	**175**	779.86	777.06
41	182.71	179.92	**86**	383.24	380.45	**131**	583.78	580.99	**176**	784.32	781.52
42	187.17	184.37	**87**	387.70	384.91	**132**	588.24	585.44	**177**	788.77	785.98
43	191.62	188.83	**88**	392.16	389.36	**133**	592.69	589.90	**178**	793.23	790.43
44	196.08	193.28	**89**	396.61	393.82	**134**	597.15	594.35	**179**	797.68	794.89
45	200.53	197.74	**90**	401.07	398.28	**135**	601.61	598.81	**180**	802.14	799.35
46	204.99	202.30	**91**	405.53	402.73	**136**	606.06	603.27	**181**	806.60	803.80
47	209.45	206.65	**92**	409.98	407.19	**137**	610.52	607.72	**182**	811.05	808.26
48	213.90	211.11	**93**	414.44	411.64	**138**	614.97	612.18	**183**	815.51	812.72
49	218.36	215.57	**94**	418.90	416.10	**139**	619.43	616.64	**184**	819.97	817.17
50	222.82	220.02	**95**	423.35	420.56	**140**	623.89	621.09	**185**	824.42	821.63
51	227.27	224.48	**96**	427.81	425.01	**141**	628.34	625.55	**186**	828.88	826.08
52	231.73	228.94	**97**	432.26	429.47	**142**	632.80	630.01	**187**	833.33	830.54
53	236.19	233.39	**98**	436.72	433.93	**143**	637.26	634.46	**188**	837.79	835.00
54	240.64	237.85	**99**	441.18	438.38	**144**	641.71	638.92	**189**	842.25	839.45
55	245.10	242.30	**100**	445.63	442.84	**145**	646.17	643.37	**190**	846.70	843.91
56	249.55	246.76	**101**	450.09	447.30	**146**	650.63	647.83	**191**	851.16	848.37
57	254.01	251.22	**102**	454.55	451.75	**147**	655.08	652.29	**192**	855.62	852.82
58	258.47	255.67	**103**	459.00	456.21	**148**	659.54	656.74	**216**	962.57	959.77
59	262.92	260.13	**104**	463.46	460.66	**149**	663.99	661.20			
60	267.38	264.59	**105**	467.92	465.12	**150**	668.45	665.66			
61	271.84	269.04	**106**	472.37	469.58	**151**	672.91	670.11			
62	276.29	273.50	**107**	476.83	474.03	**152**	677.36	674.57			
63	280.75	277.95	**108**	481.28	478.49	**153**	681.82	679.03			
64	285.21	282.41	**109**	485.74	482.95	**154**	686.28	683.48			
65	289.66	286.87	**110**	490.20	487.40	**155**	690.73	687.94			
66	294.12	291.32	**111**	494.65	491.86	**156**	695.19	692.39			
67	298.57	295.78	**112**	499.11	496.32	**157**	699.64	696.85			
68	303.03	300.24	**113**	503.57	500.77	**158**	704.10	701.31			
69	307.49	304.69	**114**	508.02	505.23	**159**	708.56	705.76			
70	311.94	309.15	**115**	512.48	509.68	**160**	713.01	710.22			
71	316.40	313.61	**116**	516.93	514.14	**161**	717.47	714.68			
72	320.86	318.06	**117**	521.39	518.60	**162**	721.93	719.13			

optibelt
Power Transmission

optibelt *ZRS HTD*® timing pulleys for cylindrical bore
optibelt *OMEGA* timing belts sections 3M and 3M HP



Type 1F



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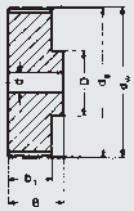


Type 6

Sections 3M and 3M HP – pitch 3 mm for belt width of 6 mm (Non stock items)

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	D [mm]	Pilot bore d [mm]	Finish bore d_{max} [mm]	Weight ≈ [kg]
10-3M-6	10	1F	Al	9.55	8.79	13.0	7.2	14.5	13.0	—	3	
12-3M-6	12	1F	Al	11.46	10.70	15.0	7.2	14.5	15.0	—	5	
14-3M-6	14	1F	Al	13.37	12.61	16.0	7.2	14.5	16.0	—	6	
15-3M-6	15	1F	Al	14.32	13.56	17.5	7.2	14.5	17.5	—	6	
16-3M-6	16	6F	Al	15.28	14.52	18.0	9.8	17.5	10.0	4	7	
18-3M-6	18	6F	Al	17.19	16.43	19.5	9.8	17.5	11.0	6	8	
20-3M-6	20	6F	Al	19.10	18.34	23.0	9.8	17.5	13.0	6	9	
21-3M-6	21	6F	Al	20.05	19.29	25.0	9.8	17.5	14.0	6	9	
22-3M-6	22	6F	Al	21.01	20.25	25.0	9.8	17.5	14.0	6	9	
24-3M-6	24	6F	Al	22.92	22.16	25.0	9.8	17.5	14.0	6	9	
26-3M-6	26	6F	Al	24.83	24.07	28.0	9.8	17.5	16.0	6	11	
28-3M-6	28	6F	Al	26.74	25.98	32.0	9.8	17.5	18.0	6	12	
30-3M-6	30	6F	Al	28.65	27.89	32.0	9.8	17.5	20.0	6	14	
32-3M-6	32	6F	Al	30.56	29.80	36.0	9.8	17.5	22.0	6	15	
36-3M-6	36	6F	Al	34.38	33.62	38.0	10.3	18.0	26.0	6	16	
40-3M-6	40	6F	Al	38.20	37.44	42.0	10.3	18.0	28.0	6	18	
44-3M-6	44	6F	Al	42.02	41.26	48.0	10.3	18.0	33.0	6	20	
48-3M-6	48	6	Al	45.84	45.08	—	10.3	18.6	33.0	8	20	
60-3M-6	60	6	Al	57.30	56.54	—	10.3	18.6	33.0	8	20	
72-3M-6	72	6	Al	68.75	67.99	—	10.3	18.6	33.0	8	20	

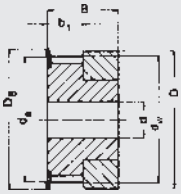
Sections 3M and 3M HP – pitch 3 mm for belt width of 9 mm

10-3M-9	10	1F	Al	9.55	8.79	13.0	10.2	17.5	13.0	—	3	0.004
12-3M-9	12	1F	Al	11.46	10.70	15.0	10.2	17.5	15.0	—	5	0.006
14-3M-9	14	1F	Al	13.37	12.61	16.0	10.2	17.5	16.0	—	6	0.007
15-3M-9	15	1F	Al	14.32	13.56	17.5	10.2	17.5	17.5	—	6	0.008
16-3M-9	16	6F	Al	15.28	14.52	18.0	12.8	20.6	10.0	4	7	0.007
18-3M-9	18	6F	Al	17.19	16.43	19.5	12.8	20.6	11.0	6	8	0.008
20-3M-9	20	6F	Al	19.10	18.34	23.0	12.8	20.6	13.0	6	9	0.010
21-3M-9	21	6F	Al	20.05	19.29	25.0	12.8	20.6	14.0	6	9	0.013
22-3M-9	22	6F	Al	21.01	20.25	25.0	12.8	20.6	14.0	6	9	0.014
24-3M-9	24	6F	Al	22.92	22.16	25.0	12.8	20.6	14.0	6	9	0.016
26-3M-9	26	6F	Al	24.83	24.07	28.0	12.8	20.6	16.0	6	11	0.018
28-3M-9	28	6F	Al	26.74	25.98	32.0	12.8	20.6	18.0	6	12	0.024
30-3M-9	30	6F	Al	28.65	27.89	32.0	12.8	20.6	20.0	6	14	0.028
32-3M-9	32	6F	Al	30.56	29.80	36.0	12.8	20.6	22.0	6	15	0.032
36-3M-9	36	6F	Al	34.38	33.62	38.0	13.4	22.2	26.0	6	16	0.045
40-3M-9	40	6F	Al	38.20	37.44	42.0	13.4	22.2	28.0	6	18	0.055
44-3M-9	44	6F	Al	42.02	41.26	48.0	13.4	22.2	33.0	6	20	0.074
48-3M-9	48	6	Al	45.84	45.08	—	13.4	22.2	33.0	8	20	0.074
60-3M-9	60	6	Al	57.30	56.54	—	13.4	22.2	33.0	8	20	0.106
72-3M-9	72	6	Al	68.75	67.99	—	13.4	22.2	33.0	8	20	0.145

Al = Aluminium Subject to production changes.

optibelt
Power Transmission

optibelt *ZRS HTD*® timing pulleys for cylindrical bore
optibelt *OMEGA* timing belts sections 3M and 3M HP, 5M and 5M HP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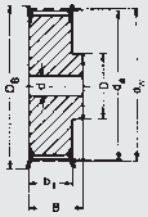
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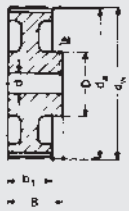
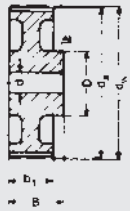

Type 6


Type 6W

Sections 3M and 3M HP – pitch 3 mm for belt width of 15 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	D [mm]	Pilot bore d [mm]	Finish bore d_{max} [mm]	Weight ≈ [kg]
10-3M-15	10	1F	Al	9.55	8.79	13.0	17.0	26	13.0	—	3	0.006
12-3M-15	12	1F	Al	11.46	10.70	15.0	17.0	26	15.0	—	5	0.008
14-3M-15	14	1F	Al	13.37	12.61	16.0	17.0	26	16.0	—	6	0.010
15-3M-15	15	1F	Al	14.32	13.56	17.5	17.0	26	17.5	—	6	0.012
16-3M-15	16	6F	Al	15.28	14.52	18.0	19.5	26	10.0	4	7	0.010
18-3M-15	18	6F	Al	17.19	16.43	19.5	19.5	26	11.0	6	8	0.012
20-3M-15	20	6F	Al	19.10	18.34	23.0	19.5	26	13.0	6	9	0.014
21-3M-15	21	6F	Al	20.05	19.29	25.0	19.5	26	14.0	6	9	0.016
22-3M-15	22	6F	Al	21.01	20.25	25.0	19.5	26	14.0	6	9	0.018
24-3M-15	24	6F	Al	22.92	22.16	25.0	19.5	26	14.0	6	9	0.020
26-3M-15	26	6F	Al	24.83	24.07	28.0	19.5	26	16.0	6	11	0.027
28-3M-15	28	6F	Al	26.74	25.98	32.0	19.5	26	18.0	6	12	0.030
30-3M-15	30	6F	Al	28.65	27.89	32.0	19.5	26	20.0	6	14	0.035
32-3M-15	32	6F	Al	30.56	29.80	36.0	19.5	26	22.0	6	15	0.042
36-3M-15	36	6F	Al	34.38	33.62	38.0	20.0	30	26.0	6	16	0.060
40-3M-15	40	6F	Al	38.20	37.44	42.0	20.0	30	28.0	6	18	0.075
44-3M-15	44	6F	Al	42.02	41.26	48.0	20.0	30	33.0	6	20	0.100
48-3M-15	48	6	Al	45.84	45.08	—	20.0	30	33.0	8	20	0.103
60-3M-15	60	6	Al	57.30	56.54	—	20.0	30	33.0	8	20	0.150
72-3M-15	72	6	Al	68.75	67.99	—	20.0	30	33.0	8	20	0.212

Sections 5M and 5M HP – pitch 5 mm for belt width of 9 mm

12-5M-9	12	6F	St	19.10	17.96	23	14.5	20.0	13.0	4	7	0.028
14-5M-9	14	6F	St	22.28	21.14	25	14.5	20.0	14.0	6	8	0.034
15-5M-9	15	6F	St	23.87	22.73	28	14.5	20.0	16.0	6	10	0.042
16-5M-9	16	6F	St	25.46	24.32	28	14.5	20.0	16.5	6	10	0.050
18-5M-9	18	6F	St	28.65	27.51	32	14.5	20.0	20.0	6	12	0.070
20-5M-9	20	6F	St	31.83	30.69	36	14.5	22.5	23.0	6	14	0.094
21-5M-9	21	6F	St	33.42	32.28	38	14.5	22.5	24.0	6	14	0.110
22-5M-9	22	6F	St	35.01	33.87	38	14.5	22.5	25.5	6	14	0.118
24-5M-9	24	6F	St	38.20	37.06	42	14.5	22.5	27.0	6	16	0.145
26-5M-9	26	6F	St	41.38	40.24	44	14.5	22.5	30.0	6	18	0.170
28-5M-9	28	6F	St	44.56	43.42	48	14.5	22.5	30.5	6	18	0.200
30-5M-9	30	6F	St	47.75	46.61	51	14.5	22.5	35.0	6	20	0.236
32-5M-9	32	6F	St	50.93	49.79	54	14.5	22.5	38.0	8	22	0.270
36-5M-9	36	6F	St	57.30	56.16	60	14.5	22.5	38.0	8	22	0.324
40-5M-9	40	6F	St	63.66	62.52	71	14.5	22.5	38.0	8	22	0.400
44-5M-9	44	6W	Al	70.03	68.89	—	14.5	25.5	38.0	8	22	0.170
48-5M-9	48	6W	Al	76.39	75.25	—	14.5	25.5	45.0	8	25	0.182
60-5M-9	60	6W	Al	95.49	94.35	—	14.5	25.5	45.0	8	25	0.230
72-5M-9	72	6W	Al	114.59	113.45	—	14.5	25.5	45.0	8	25	0.270

Al = Aluminium St = Steel Subject to production changes.

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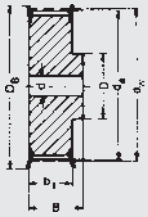
optibelt *ZRS HTD*® timing pulleys for cylindrical bore
optibelt *OMEGA* timing belts sections 5M and 5M HP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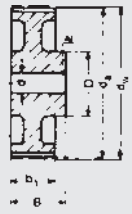
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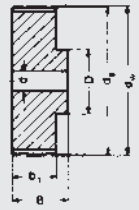
Type 6

Sections 5M and 5M HP – pitch 5 mm for belt width of 15 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	D [mm]	Pilot bore d [mm]	Finish bore d_{max} [mm]	Weight ≈ [kg]
12-5M-15	12	6F	St	19.10	17.96	25	20.5	26	13.0	4	7	0.034
14-5M-15	14	6F	St	22.28	21.14	25	20.5	26	14.0	6	8	0.046
15-5M-15	15	6F	St	23.87	22.73	28	20.5	26	16.0	6	10	0.056
16-5M-15	16	6F	St	25.46	24.32	28	20.5	26	16.5	6	10	0.064
18-5M-15	18	6F	St	28.65	27.51	32	20.5	26	20.0	6	12	0.086
20-5M-15	20	6F	St	31.83	30.69	36	20.5	26	23.0	6	14	0.112
21-5M-15	21	6F	St	33.42	32.28	38	20.5	26	24.0	6	14	0.130
22-5M-15	22	6F	St	35.01	33.87	38	20.5	26	25.5	6	14	0.140
24-5M-15	24	6F	St	38.20	37.06	42	20.5	28	27.0	6	16	0.180
26-5M-15	26	6F	St	41.38	40.24	44	20.5	28	30.0	6	18	0.220
28-5M-15	28	6F	St	44.56	43.42	48	20.5	28	30.5	6	18	0.250
30-5M-15	30	6F	St	47.75	46.61	51	20.5	28	35.0	6	20	0.300
32-5M-15	32	6F	St	50.93	49.79	54	20.5	28	38.0	8	22	0.350
36-5M-15	36	6F	St	57.30	56.16	60	20.5	28	38.0	8	22	0.426
40-5M-15	40	6F	St	63.66	62.52	71	20.5	28	38.0	8	22	0.520
44-5M-15	44	6W	Al	70.03	68.89	—	20.5	30	38.0	8	22	0.225
48-5M-15	48	6W	Al	76.39	75.25	—	20.5	30	38.0	8	25	0.187
60-5M-15	60	6W	Al	95.49	94.35	—	20.5	30	50.0	8	25	0.305
72-5M-15	72	6W	Al	114.59	113.45	—	20.5	30	50.0	8	25	0.375

Sections 5M and 5M HP – pitch 5 mm for belt width of 25 mm

12-5M-25	12	6F	St	19.10	17.96	25	30	36	13.0	4	7	0.050
14-5M-25	14	6F	St	22.28	21.14	25	30	36	14.0	6	8	0.070
15-5M-25	15	6F	St	23.87	22.73	28	30	36	16.0	6	10	0.080
16-5M-25	16	6F	St	25.46	24.32	28	30	36	16.5	6	10	0.100
18-5M-25	18	6F	St	28.65	27.51	32	30	36	20.0	6	12	0.120
20-5M-25	20	6F	St	31.83	30.69	36	30	36	23.0	6	14	0.160
21-5M-25	21	6F	St	33.42	32.28	38	30	38	24.0	6	14	0.190
22-5M-25	22	6F	St	35.01	33.87	38	30	38	25.5	6	14	0.210
24-5M-25	24	6F	St	38.20	37.06	42	30	38	27.0	6	16	0.250
26-5M-25	26	6F	St	41.38	40.24	44	30	38	30.0	6	18	0.300
28-5M-25	28	6F	St	44.56	43.42	48	30	38	30.5	6	18	0.350
30-5M-25	30	6F	St	47.75	46.61	51	30	38	35.0	6	20	0.420
32-5M-25	32	6F	St	50.93	49.79	54	30	38	38.0	8	22	0.480
36-5M-25	36	6F	St	57.30	56.16	60	30	38	38.0	8	22	0.590
40-5M-25	40	6F	St	63.66	62.52	71	30	38	38.0	8	22	0.740
44-5M-25	44	6W	Al	70.03	68.89	—	30	40	38.0	8	22	0.320
48-5M-25	48	6W	Al	76.39	75.25	—	30	40	38.0	8	25	0.275
60-5M-25	60	6W	Al	95.49	94.35	—	30	40	50.0	8	25	0.435
72-5M-25	72	6W	Al	114.59	113.45	—	30	40	50.0	8	25	0.525

Al = Aluminium St = Steel Subject to production changes.

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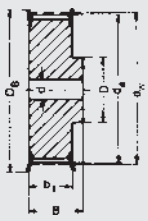
optibelt *ZRS HTD*® timing pulleys for cylindrical bore
optibelt *OMEGA* timing belts sections 8M, 8M HP and 8M HL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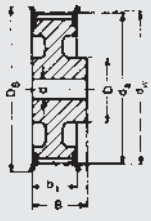
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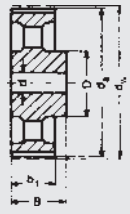
Type 6A

Sections 8M, 8M HP and 8M HL – pitch 8 mm for belt width of 20 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	D [mm]	D_i [mm]	Pilot bore d [mm]	Finish bore d_{max} [mm]	Weight ≈ [kg]
22-8M-20	22	6F	St	56.02	54.65	60.0	28	38	43	—	12	30	0.54
24-8M-20	24	6F	St	61.12	59.75	66.0	28	38	45	—	12	30	0.65
26-8M-20	26	6F	St	66.21	64.84	71.0	28	38	50	—	12	35	0.80
28-8M-20	28	6F	St	71.30	70.08	75.0	28	38	50	—	15	35	0.87
30-8M-20	30	6F	St	76.39	75.13	83.0	28	38	55	—	15	35	1.02
32-8M-20	32	6F	St	81.49	80.16	87.0	28	38	60	—	15	40	1.20
34-8M-20	34	6F	St	86.58	85.22	91.0	28	38	70	—	15	45	1.40
36-8M-20	36	6F	St	91.67	90.30	98.5	28	38	70	—	15	45	1.55
38-8M-20	38	6F	St	96.77	95.39	103.0	28	38	75	—	15	45	1.65
40-8M-20	40	6F	GG	101.86	100.49	106.0	28	38	75	—	15	45	1.80
44-8M-20	44	6F	GG	112.05	110.67	119.0	28	38	75	—	15	45	2.10
48-8M-20	48	6F	GG	122.23	120.86	127.0	28	38	75	—	15	45	2.44
56-8M-20	56	6WF	GG	142.60	141.23	148.0	28	38	80	117	15	45	2.60
64-8M-20	64	6WF	GG	162.97	161.60	168.0	28	38	80	137	15	45	2.90
72-8M-20	72	6WF	GG	183.35	181.97	192.0	28	38	80	158	15	45	3.10
80-8M-20	80	6A	GG	203.72	202.35	—	28	38	90	180	15	50	3.80
90-8M-20	90	6A	GG	229.18	227.81	—	28	38	90	204	15	50	4.20
112-8M-20	112	6A	GG	285.21	283.83	—	28	38	90	260	18	50	5.20
144-8M-20	144	6A	GG	366.69	365.32	—	28	38	90	341	20	50	7.50
168-8M-20	168	6A	GG	427.81	426.44	—	28	38	100	402	20	55	10.00
192-8M-20	192	6A	GG	488.92	487.55	—	28	38	100	463	20	55	14.40

Sections 8M, 8M HP and 8M HL – pitch 8 mm for belt width of 30 mm

22-8M-30	22	6F	St	56.02	54.65	60.0	38	48	43	—	12	30	0.69
24-8M-30	24	6F	St	61.12	59.75	66.0	38	48	45	—	12	30	0.84
26-8M-30	26	6F	St	66.21	64.84	71.0	38	48	50	—	12	35	1.00
28-8M-30	28	6F	St	71.30	70.08	75.0	38	48	50	—	15	35	1.12
30-8M-30	30	6F	St	76.39	75.13	83.0	38	48	55	—	15	35	1.32
32-8M-30	32	6F	St	81.49	80.16	87.0	38	48	60	—	15	40	1.50
34-8M-30	34	6F	St	86.58	85.22	91.0	38	48	70	—	15	45	1.80
36-8M-30	36	6F	St	91.67	90.30	98.5	38	48	70	—	15	45	1.99
38-8M-30	38	6F	St	96.77	95.39	103.0	38	48	75	—	15	45	2.27
40-8M-30	40	6F	GG	101.86	100.49	106.0	38	48	75	—	15	45	2.40
44-8M-30	44	6F	GG	112.05	110.67	119.0	38	48	75	—	15	45	2.80
48-8M-30	48	6F	GG	122.23	120.86	127.0	38	48	75	—	15	45	3.20
56-8M-30	56	6WF	GG	142.60	141.23	148.0	38	48	90	117	15	50	3.60
64-8M-30	64	6WF	GG	162.97	161.60	168.0	38	48	90	137	15	50	4.30
72-8M-30	72	6WF	GG	183.35	181.97	192.0	38	48	95	158	15	50	4.80
80-8M-30	80	6A	GG	203.72	202.35	—	38	48	100	180	15	55	5.10
90-8M-30	90	6A	GG	229.18	227.81	—	38	48	100	204	15	55	5.70
112-8M-30	112	6A	GG	285.21	283.83	—	38	48	100	260	18	55	6.80
144-8M-30	144	6A	GG	366.69	365.32	—	38	48	100	341	20	55	9.30
168-8M-30	168	6A	GG	427.81	426.44	—	38	48	100	402	20	55	11.40
192-8M-30	192	6A	GG	488.92	487.55	—	38	48	100	463	20	55	16.00

St = Steel GG = Grey cast iron Subject to production changes.

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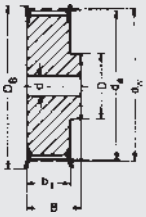
optibelt *ZRS HTD*® timing pulleys for cylindrical bore
optibelt *OMEGA* timing belts sections 8M, 8M HP and 8M HL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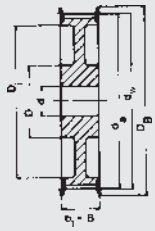
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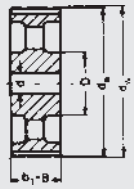
Type 10A

Sections 8M, 8M HP and 8M HL – pitch 8 mm for belt width of 50 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	D [mm]	D_i [mm]	Pilot bore d [mm]	Finish bore d_{max} [mm]	Weight ≈ [kg]
22-8M-50	22	6F	St	56.02	54.65	60.0	60	70	43	—	12	30	1.00
24-8M-50	24	6F	St	61.12	59.75	66.0	60	70	45	—	12	30	1.20
26-8M-50	26	6F	St	66.21	64.84	71.0	60	70	50	—	12	35	1.50
28-8M-50	28	6F	St	71.30	70.08	75.0	60	70	50	—	15	35	1.67
30-8M-50	30	6F	St	76.39	75.13	83.0	60	70	55	—	15	35	1.97
32-8M-50	32	6F	St	81.49	80.16	87.0	60	70	60	—	15	40	2.27
34-8M-50	34	6F	St	86.58	85.22	91.0	60	70	70	—	15	45	2.69
36-8M-50	36	6F	St	91.67	90.30	98.5	60	70	70	—	15	45	2.97
38-8M-50	38	6F	St	96.77	95.39	103.0	60	70	75	—	15	45	3.23
40-8M-50	40	6F	GG	101.86	100.49	106.0	60	70	75	—	18	45	3.50
44-8M-50	44	6F	GG	112.05	110.67	119.0	60	70	75	—	18	45	3.90
48-8M-50	48	6F	GG	122.23	120.86	127.0	60	70	80	—	18	45	4.30
56-8M-50	56	10WF	GG	142.60	141.23	148.0	60	60	90	117	18	50	5.00
64-8M-50	64	10WF	GG	162.97	161.60	168.0	60	60	100	137	18	55	5.60
72-8M-50	72	10WF	GG	183.35	181.97	192.0	60	60	100	158	18	55	6.80
80-8M-50	80	10A	GG	203.72	202.35	—	60	60	110	180	18	60	6.90
90-8M-50	90	10A	GG	229.18	227.81	—	60	60	110	204	18	60	8.60
112-8M-50	112	10A	GG	285.21	283.83	—	60	60	110	260	18	60	9.60
144-8M-50	144	10A	GG	366.69	365.32	—	60	60	110	341	20	60	13.80
168-8M-50	168	10A	GG	427.81	426.44	—	60	60	120	402	20	65	16.00
192-8M-50	192	10A	GG	488.92	487.55	—	60	60	130	463	20	70	22.40

Sections 8M, 8M HP and 8M HL – pitch 8 mm for belt width of 85 mm

22-8M-85	22	6F	St	56.02	54.65	60.0	95	105	43	—	12	30	1.55
24-8M-85	24	6F	St	61.12	59.75	66.0	95	105	45	—	12	30	1.90
26-8M-85	26	6F	St	66.21	64.84	71.0	95	105	50	—	12	35	2.25
28-8M-85	28	6F	St	71.30	70.08	75.0	95	105	50	—	15	35	2.55
30-8M-85	30	6F	St	76.39	75.13	83.0	95	105	55	—	15	35	3.00
32-8M-85	32	6F	St	81.49	80.16	87.0	95	105	60	—	15	40	3.57
34-8M-85	34	6F	St	86.58	85.22	91.0	95	105	70	—	15	45	4.00
36-8M-85	36	6F	St	91.67	90.30	98.5	95	105	70	—	15	45	4.50
38-8M-85	38	6F	St	96.77	95.39	103.0	95	105	75	—	15	45	4.90
40-8M-85	40	6F	GG	101.86	100.49	106.0	95	105	75	—	18	45	5.20
44-8M-85	44	6F	GG	112.05	110.67	119.0	95	105	75	—	18	45	6.60
48-8M-85	48	6F	GG	122.23	120.86	127.0	95	105	80	—	18	45	7.60
56-8M-85	56	6F	GG	142.60	141.23	148.0	95	105	80	—	20	50	9.80
64-8M-85	64	10WF	GG	162.97	161.60	168.0	95	95	100	137	20	55	10.40
72-8M-85	72	10WF	GG	183.35	181.97	192.0	95	95	110	158	20	60	11.40
80-8M-85	80	10A	GG	203.72	202.35	—	95	95	110	180	20	60	11.10
90-8M-85	90	10A	GG	229.18	227.81	—	95	95	110	204	20	60	13.20
112-8M-85	112	10A	GG	285.21	283.83	—	95	95	110	260	24	60	16.30
144-8M-85*	144	10A	GG	366.69	365.32	—	95	95	120	341	24	65	21.50
168-8M-85*	168	10A	GG	427.81	426.44	—	95	95	120	402	24	65	26.10
192-8M-85*	192	10A	GG	488.92	487.55	—	95	95	130	463	24	70	30.60

St = Steel GG = Grey cast iron * Non stock items Subject to production changes.

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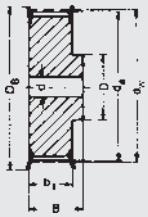
optibelt *ZRS HTD*® timing pulleys for cylindrical bore
optibelt *OMEGA* timing belts sections 14M, 14M HP and 14M HL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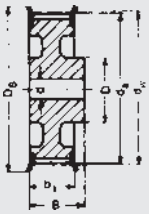
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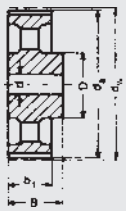
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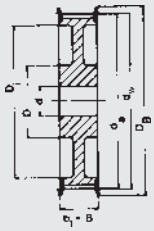
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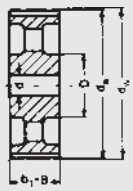
Type 10A

Sections 14M, 14M HP and 14M HL – pitch 14 mm for belt width of 40 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	D [mm]	D_i [mm]	Pilot bore d [mm]	Finish bore d_{max} [mm]	Weight ≈ [kg]
28-14M-40	28	6F	GG	124.78	122.12	127	54	69	100	—	24	60	4.73
29-14M-40	29	6F	GG	129.23	126.57	138	54	69	100	—	24	60	5.09
30-14M-40	30	6F	GG	133.69	130.99	138	54	69	100	—	24	60	5.45
32-14M-40	32	6F	GG	142.60	139.88	154	54	69	100	—	24	70	6.17
34-14M-40	34	6F	GG	151.52	148.79	160	54	69	100	—	24	70	6.88
36-14M-40	36	6F	GG	160.43	157.68	168	54	69	100	—	24	70	7.60
38-14M-40	38	6F	GG	169.34	166.60	183	54	69	120	—	24	70	8.28
40-14M-40	40	6F	GG	178.25	175.49	188	54	69	120	—	24	70	9.26
44-14M-40	44	6F	GG	196.08	193.28	211	54	69	120	—	24	70	10.32
48-14M-40	48	6WF	GG	213.90	211.11	226	54	69	135	172	24	70	11.50
56-14M-40	56	6WF	GG	249.55	246.76	256	54	69	135	207	28	70	13.05
64-14M-40	64	6WF	GG	285.21	282.41	296	54	69	135	242	28	70	14.40
72-14M-40	72	6A	GG	320.86	318.06	—	54	69	135	278	28	70	16.90
80-14M-40	80	6A	GG	356.51	353.71	—	54	69	135	314	28	70	18.50
90-14M-40	90	6A	GG	401.07	398.28	—	54	69	135	358	28	70	20.00
112-14M-40*	112	6A	GG	499.11	496.32	—	54	69	135	456	28	70	26.70
144-14M-40*	144	6A	GG	641.71	638.92	—	54	69	135	600	28	70	35.00
168-14M-40*	168	6A	GG	748.66	745.87	—	54	69	135	706	28	70	44.20
192-14M-40*	192	6A	GG	855.62	852.82	—	54	69	135	813	28	70	52.20
216-14M-40*	216	6A	GG	962.57	959.77	—	54	69	150	920	28	80	60.00

Sections 14M, 14M HP and 14M HL – pitch 14 mm for belt width of 55 mm

28-14M-55	28	6F	GG	124.78	122.12	127	70	85	100	—	24	60	5.60
29-14M-55	29	6F	GG	129.23	126.57	138	70	85	100	—	24	60	6.10
30-14M-55	30	6F	GG	133.69	130.99	138	70	85	100	—	24	60	6.60
32-14M-55	32	6F	GG	142.60	139.88	154	70	85	100	—	24	70	7.60
34-14M-55	34	6F	GG	151.52	148.79	160	70	85	100	—	24	70	8.60
36-14M-55	36	6F	GG	160.43	157.68	168	70	85	100	—	24	70	9.60
38-14M-55	38	6F	GG	169.34	166.60	183	70	85	120	—	24	70	10.80
40-14M-55	40	6F	GG	178.25	175.49	188	70	85	120	—	24	70	11.20
44-14M-55	44	6F	GG	196.08	193.28	211	70	85	120	—	24	70	12.50
48-14M-55	48	10WF	GG	213.90	211.11	226	70	70	135	172	24	70	13.70
56-14M-55	56	10WF	GG	249.55	246.76	256	70	70	135	207	28	70	14.50
64-14M-55	64	10WF	GG	285.21	282.41	296	70	70	135	242	28	70	15.60
72-14M-55	72	10A	GG	320.86	318.06	—	70	70	135	278	28	70	18.50
80-14M-55	80	10A	GG	356.51	353.71	—	70	70	135	314	28	70	20.00
90-14M-55	90	10A	GG	401.07	398.28	—	70	70	135	358	28	70	22.60
112-14M-55*	112	10A	GG	499.11	496.32	—	70	70	135	456	28	70	29.50
144-14M-55*	144	10A	GG	641.71	638.92	—	70	70	135	600	28	70	39.00
168-14M-55*	168	10A	GG	748.66	745.87	—	70	70	135	706	28	70	48.50
192-14M-55*	192	10A	GG	855.62	852.82	—	70	70	135	813	28	70	57.80
216-14M-55*	216	10A	GG	962.57	959.77	—	70	70	150	920	28	80	67.00

GG = Grey cast iron * Non stock items Subject to production changes.

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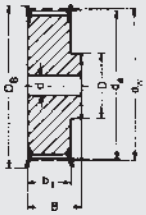
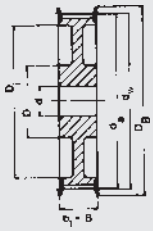
optibelt *OMEGA* timing belts sections 14M, 14M HP and 14M HL


Type 6F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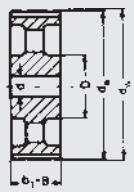
Type 10A

Sections 14M, 14M HP and 14M HL – pitch 14 mm for belt width of 85 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	D [mm]	D_i [mm]	Pilot bore d [mm]	Finish bore d_{max} [mm]	Weight ≈ [kg]
28-14M-85	28	6F	GG	124.78	122.12	127	102	117	100	—	24	60	7.70
29-14M-85	29	6F	GG	129.23	126.57	138	102	117	100	—	24	60	8.40
30-14M-85	30	6F	GG	133.69	130.99	138	102	117	100	—	24	60	9.10
32-14M-85	32	6F	GG	142.60	139.88	154	102	117	100	—	24	60	10.50
34-14M-85	34	6F	GG	151.52	148.79	160	102	117	100	—	24	70	11.90
36-14M-85	36	6F	GG	160.43	157.68	168	102	117	100	—	32	70	13.20
38-14M-85	38	6F	GG	169.34	166.60	183	102	117	120	—	32	70	15.15
40-14M-85	40	6F	GG	178.25	175.49	188	102	117	135	—	32	70	17.10
44-14M-85	44	6F	GG	196.08	193.28	211	102	117	135	—	32	70	23.30
48-14M-85	48	6F	GG	213.90	211.11	226	102	117	150	—	32	80	25.00
56-14M-85	56	10WF	GG	249.55	246.76	256	102	102	150	207	32	80	25.00
64-14M-85	64	10WF	GG	285.21	282.41	296	102	102	150	242	32	80	28.20
72-14M-85	72	10A	GG	320.86	318.06	—	102	102	150	278	32	80	28.80
80-14M-85	80	10A	GG	356.51	353.71	—	102	102	150	314	32	80	30.10
90-14M-85	90	10A	GG	401.07	398.28	—	102	102	150	358	32	80	33.00
112-14M-85*	112	10A	GG	499.11	496.32	—	102	102	150	456	32	80	41.80
144-14M-85*	144	10A	GG	641.71	638.92	—	102	102	150	600	32	80	52.40
168-14M-85*	168	10A	GG	748.66	745.87	—	102	102	150	706	32	80	60.30
192-14M-85*	192	10A	GG	855.62	852.82	—	102	102	165	813	32	90	70.20
216-14M-85*	216	10A	GG	962.57	959.77	—	102	102	165	920	32	90	81.00

Sections 14M, 14M HP and 14M HL – pitch 14 mm for belt width of 115 mm

28-14M-115	28	6F	GG	124.78	122.12	127	133	148	100	—	32	60	9.20
29-14M-115	29	6F	GG	129.23	126.57	138	133	148	100	—	32	60	10.20
30-14M-115	30	6F	GG	133.69	130.99	138	133	148	100	—	32	60	11.20
32-14M-115	32	6F	GG	142.60	139.88	154	133	148	100	—	32	60	13.20
34-14M-115	34	6F	GG	151.52	148.79	160	133	148	100	—	32	70	14.80
36-14M-115	36	6F	GG	160.43	157.68	168	133	148	120	—	32	70	16.60
38-14M-115	38	6F	GG	169.34	166.60	183	133	148	120	—	32	70	19.20
40-14M-115	40	6F	GG	178.25	175.49	188	133	148	135	—	32	70	22.10
44-14M-115	44	6F	GG	196.08	193.28	211	133	148	140	—	32	80	28.00
48-14M-115	48	6F	GG	213.90	211.11	226	133	148	150	—	32	80	35.00
56-14M-115	56	6F	GG	249.55	246.76	256	133	148	150	—	32	80	44.20
64-14M-115	64	10WF	GG	285.21	282.41	296	133	133	150	242	32	80	36.80
72-14M-115	72	10A	GG	320.86	318.06	—	133	133	150	278	32	80	36.10
80-14M-115	80	10A	GG	356.51	353.71	—	133	133	150	314	32	80	38.60
90-14M-115	90	10A	GG	401.07	398.28	—	133	133	150	358	32	80	41.00
112-14M-115*	112	10A	GG	499.11	496.32	—	133	133	150	456	32	80	54.40
144-14M-115*	144	10A	GG	641.71	638.92	—	133	133	165	600	32	90	67.80
168-14M-115*	168	10A	GG	748.66	745.87	—	133	133	165	706	32	90	75.80
192-14M-115*	192	10A	GG	855.62	852.82	—	133	133	165	813	32	90	88.30
216-14M-115*	216	10A	GG	962.57	959.77	—	133	133	165	920	32	90	98.00

GG = Grey cast iron * Non stock items Subject to production changes.

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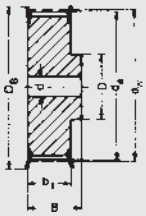
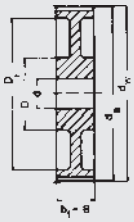
Power Transmission

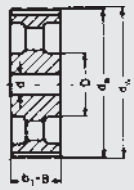
optibelt *ZRS HTD*® timing pulleys for cylindrical bore
optibelt *OMEGA* timing belts sections 14M, 14M HP and 14M HL



Type 6F



Type 10W



Type 10A

Sections 14M, 14M HP and 14M HL – pitch 14 mm for belt width of 170 mm

Designation	Number of teeth	Type	Material	d_w [mm]		D_B [mm]	b_1 [mm]	B [mm]	D [mm]	D_i [mm]	Pilot bore d [mm]	Finished bore d_{max} [mm]	Weight ≈ [kg]
28-14M-170*	28	6F	GG	124.78	122.12	127	187	202	100	—	32	60	13.80
29-14M-170*	29	6F	GG	129.23	126.57	138	187	202	100	—	32	60	14.20
30-14M-170*	30	6F	GG	133.69	130.99	138	187	202	100	—	32	60	15.60
32-14M-170*	32	6F	GG	142.60	139.88	154	187	202	100	—	32	60	18.10
34-14M-170*	34	6F	GG	151.52	148.79	160	187	202	100	—	32	60	20.40
36-14M-170*	36	6F	GG	160.43	157.68	168	187	202	120	—	32	70	23.50
38-14M-170*	38	6F	GG	169.34	166.60	183	187	202	135	—	32	70	26.50
40-14M-170*	40	6F	GG	178.25	175.49	188	187	202	140	—	32	85	30.10
44-14M-170*	44	6F	GG	196.08	193.28	211	187	202	160	—	32	85	37.80
48-14M-170*	48	6F	GG	213.90	211.11	226	187	202	160	—	32	85	44.50
56-14M-170*	56	6F	GG	249.55	246.76	256	187	202	160	—	32	85	61.00
64-14M-170*	64	6F	GG	285.21	282.41	296	187	202	180	—	32	100	81.00
72-14M-170*	72	10W	GG	320.86	318.06	—	187	187	180	278	32	100	61.40
80-14M-170*	80	10W	GG	356.51	353.71	—	187	187	180	314	32	100	65.00
90-14M-170*	90	10A	GG	401.07	398.28	—	187	187	180	358	38	100	68.00
112-14M-170*	112	10A	GG	499.11	496.32	—	187	187	200	456	38	110	87.50
144-14M-170*	144	10A	GG	641.71	638.92	—	187	187	220	600	38	120	114.80
168-14M-170*	168	10A	GG	748.66	745.87	—	187	187	220	706	38	120	125.00
192-14M-170*	192	10A	GG	855.62	852.82	—	187	187	220	813	38	120	136.40
216-14M-170*	216	10A	GG	962.57	959.77	—	187	187	220	920	38	120	147.00

GG = Grey cast iron * Non stock items Subject to production changes.

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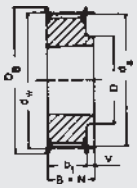
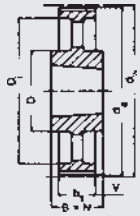
Power Transmission

optibelt *ZRS HTD*® timing pulleys for taper bushes
optibelt *OMEGA* timing belts sections 5M and 5M HP



Type 8F



Type 7a

Sections 5M and 5M HP – pitch 5 mm for belt width of 15 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	N [mm]	V [mm]	Z [mm]	D [mm]	D_i [mm]	Taper bush	Weight without bush ≈ [kg]
TB 34-5M-15	34	8F	St	54.11	52.97	57.0	20.5	22	22	1.5	—	43	—	1008	0.190
TB 36-5M-15	36	8F	St	57.30	56.16	60.0	20.5	22	22	1.5	—	44	—	1108	0.200
TB 38-5M-15	38	8F	St	69.48	59.34	66.0	20.5	22	22	1.5	—	48	—	1108	0.250
TB 40-5M-15	40	8F	St	63.66	62.52	71.0	20.5	22	22	1.5	—	52	—	1108	0.310
TB 44-5M-15	44	8F	St	70.03	68.89	75.0	20.5	22	22	1.5	—	54	—	1108	0.400
TB 48-5M-15	48	8F	St	76.39	75.25	83.0	20.5	25	25	4.5	—	64	—	1210	0.450
TB 56-5M-15	56	8F	GG	89.13	87.99	93.0	20.5	25	25	4.5	—	70	—	1210	0.670
TB 64-5M-15	64	8F	GG	101.86	100.72	106.0	20.5	25	25	4.5	—	78	—	1210	0.960
TB 72-5M-15	72	8F	GG	114.59	113.45	119.0	20.5	25	25	4.5	—	90	—	1610	1.190
TB 80-5M-15	80	8F	GG	127.32	126.18	135.0	20.5	25	25	4.5	—	92	—	1610	1.570
TB 90-5M-15	90	7A	GG	143.24	142.10	—	20.5	25	25	2.3	—	92	—	1610	1.147
TB 112-5M-15	112	7A	GG	178.25	177.11	—	20.5	25	25	2.3	—	92	—	1610	1.940
TB 136-5M-15	136	7A	GG	216.45	215.31	—	20.5	32	32	5.8	—	106	—	2012	3.060
TB 150-5M-15	150	7A	GG	238.73	237.59	—	20.5	32	32	5.8	—	106	—	2012	3.900

Taper bush	1008	1108	1210	1610	2012
Bore d_2 [mm] from ... to ...	10-25	10-28	11-32	14-42	14-50

GG = Grey cast iron
St = Steel

Subject to production changes.

Bore diameter d_2 see page 62.

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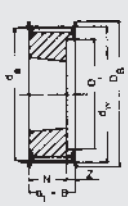
Power Transmission

optibelt *ZRS HTD*® timing pulleys for taper bushes
optibelt *OMEGA* timing belts sections 8M, 8M HP and 8M HL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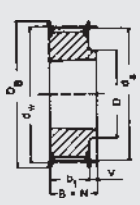
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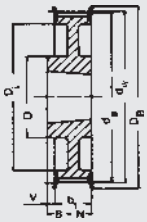
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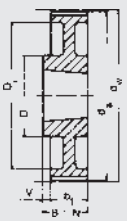
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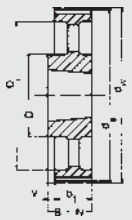
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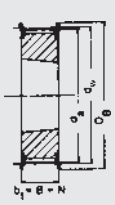
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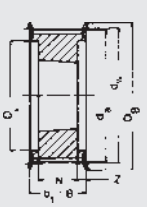

Type 4F

Sections 8M, 8M HP and 8M HL – pitch 8 mm for belt width of 20 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	N [mm]	V [mm]	Z [mm]	D [mm]	D_i [mm]	Taper bush	Weight without bush ≈ [kg]
TB 22-8M-20	22	5F	GG	56.02	54.65	60.0	28	28	22	—	6	—	41	1008	0.24
TB 24-8M-20	24	5F	GG	61.12	59.75	66.0	28	28	22	—	6	—	42	1108	0.30
TB 26-8M-20	26	5F	GG	66.21	64.84	71.0	28	28	22	—	6	—	46	1108	0.36
TB 28-8M-20	28	5F	GG	71.30	70.08	75.0	28	28	22	—	6	—	50	1108	0.44
TB 30-8M-20	30	5F	GG	76.39	75.13	83.0	28	28	22	—	6	—	58	1108	0.53
TB 32-8M-20	32	5F	GG	81.49	80.16	87.0	28	28	25	—	3	—	62	1610	0.42
TB 34-8M-20	34	5F	GG	86.58	85.22	91.0	28	28	25	—	3	—	65	1610	0.55
TB 36-8M-20	36	5F	GG	91.67	90.30	98.5	28	28	25	—	3	—	68	1610	0.68
TB 38-8M-20	38	5F	GG	96.77	95.39	103.0	28	28	25	—	3	—	72	1610	0.80
TB 40-8M-20	40	5F	GG	101.86	100.49	106.0	28	28	25	—	3	—	76	1610	1.00
TB 44-8M-20	44	8F	GG	112.05	110.67	119.0	28	32	32	4	—	93	—	2012	1.20
TB 48-8M-20	48	8F	GG	122.23	120.86	127.0	28	32	32	4	—	96	—	2012	1.60
TB 56-8M-20	56	8F	GG	142.60	141.23	148.0	28	32	32	4	—	110	—	2012	2.40
TB 64-8M-20	64	8WF	GG	162.97	161.60	168.0	28	32	32	4	—	110	137	2012	2.70
TB 72-8M-20	72	8WF	GG	183.35	181.97	192.0	28	32	32	4	—	110	158	2012	3.30
TB 80-8M-20	80	8W	GG	203.72	202.35	—	28	32	32	4	—	110	180	2012	3.50
TB 90-8M-20	90	8A	GG	229.18	227.81	—	28	32	32	4	—	110	204	2012	3.65

Sections 8M, 8M HP and 8M HL – pitch 8 mm for belt width of 30 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	N [mm]	V [mm]	Z [mm]	D [mm]	D_i [mm]	Taper bush	Weight without bush ≈ [kg]
TB 22-8M-30	22	5F	GG	56.02	54.65	60.0	38	38	22	—	16	—	41	1008	0.29
TB 24-8M-30	24	5F	GG	61.12	59.75	66.0	38	38	22	—	16	—	42	1108	0.38
TB 26-8M-30	26	5F	GG	66.21	64.84	71.0	38	38	22	—	16	—	46	1108	0.45
TB 28-8M-30	28	5F	GG	71.30	70.08	75.0	38	38	25	—	13	—	50	1210	0.50
TB 30-8M-30	30	3F	GG	76.39	75.13	83.0	38	38	38	—	—	—	—	1615	0.45
TB 32-8M-30	32	3F	GG	81.49	80.16	87.0	38	38	38	—	—	—	—	1615	0.59
TB 34-8M-30	34	3F	GG	86.58	85.22	91.0	38	38	38	—	—	—	—	1615	0.77
TB 36-8M-30	36	3F	GG	91.67	90.30	98.5	38	38	38	—	—	—	—	1615	0.96
TB 38-8M-30	38	3F	GG	96.77	95.39	103.0	38	38	38	—	—	—	—	1615	1.15
TB 40-8M-30	40	3F	GG	101.86	100.49	106.0	38	38	38	—	—	—	—	1615	1.34
TB 44-8M-30	44	4F	GG	112.05	110.67	119.0	38	38	32	—	3	—	91	2012	1.33
TB 48-8M-30	48	4F	GG	122.23	120.86	127.0	38	38	32	—	3	—	95	2012	1.78
TB 56-8M-30	56	4F	GG	142.60	141.23	148.0	38	38	32	—	3	—	117	2012	3.76
TB 64-8M-30	64	8F	GG	162.97	161.60	168.0	38	45	45	7	—	125	—	2517	4.20
TB 72-8M-30	72	8WF	GG	183.35	181.97	192.0	38	45	45	7	—	125	158	2517	4.30
TB 80-8M-30	80	8W	GG	203.72	202.35	—	38	45	45	7	—	125	180	2517	4.60
TB 90-8M-30	90	8A	GG	229.18	227.81	—	38	45	45	7	—	125	204	2517	5.00
TB 112-8M-30	112	8A	GG	285.21	283.83	—	38	45	45	7	—	125	260	2517	6.20
TB 144-8M-30	144	8A	GG	366.69	365.32	—	38	45	45	7	—	125	341	2517	9.00

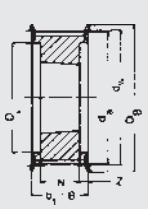
Taper bush	1008	1108	1210	1610	1615	2012	2517
Bore d_2 [mm] from ... to ...	10-25	10-28	11-32	14-42	14-42	14-50	16-60

GG = Grey cast iron
Subject to production changes.

Bore diameter d_2 see page 62.

optibelt
Power Transmission

optibelt *ZRS HTD*® timing pulleys for taper bushes
optibelt *OMEGA* timing belts sections 8M, 8M HP and 8M HL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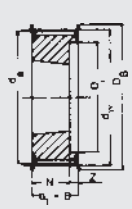
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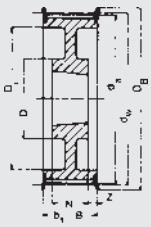
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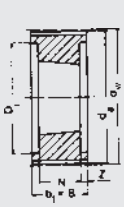
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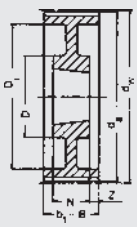
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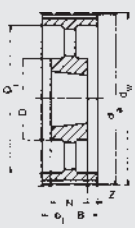
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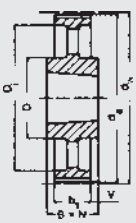

Type 7A

Sections 8M, 8M HP and 8M HL – pitch 8 mm for belt width of 50 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	N [mm]	V [mm]	Z [mm]	D [mm]	D_i [mm]	Taper bush	Weight without bush ≈ [kg]
TB 28-8M-50	28	5F	GG	71.30	70.08	75.0	60	60	25	—	35.0	—	50	1210	0.60
TB 30-8M-50	30	5F	GG	76.39	75.13	83.0	60	60	38	—	22.0	—	58	1615	0.65
TB 32-8M-50	32	5F	GG	81.49	80.16	87.0	60	60	38	—	22.0	—	62	1615	0.82
TB 34-8M-50	34	5F	GG	86.58	85.22	91.0	60	60	38	—	22.0	—	65	1615	1.06
TB 36-8M-50	36	5F	GG	91.67	90.30	98.5	60	60	38	—	22.0	—	68	1615	1.30
TB 38-8M-50	38	5F	GG	96.77	95.39	103.0	60	60	38	—	22.0	—	72	1615	1.60
TB 40-8M-50	40	4F	GG	101.86	100.49	106.0	60	60	32	—	14.0	—	82	2012	1.71
TB 44-8M-50	44	4F	GG	112.05	110.67	119.0	60	60	32	—	14.0	—	91	2012	1.78
TB 48-8M-50	48	4F	GG	122.23	120.86	127.0	60	60	32	—	14.0	—	95	2012	2.30
TB 56-8M-50	56	4F	GG	142.60	141.23	148.0	60	60	45	—	7.5	—	116	2517	3.40
TB 64-8M-50	64	4F	GG	162.97	161.60	168.0	60	60	45	—	7.5	—	137	2517	5.00
TB 72-8M-50	72	9WF	GG	183.35	181.97	192.0	60	60	45	—	7.5	125	158	2517	6.70
TB 80-8M-50	80	4	GG	203.72	202.35	—	60	60	51	—	4.5	—	180	3020	8.80
TB 90-8M-50	90	9W	GG	229.18	227.81	—	60	60	51	—	4.5	170	204	3020	10.00
TB 112-8M-50	112	9W	GG	285.21	283.83	—	60	60	51	—	4.5	170	260	3020	12.00
TB 144-8M-50	144	9A	GG	366.69	365.32	—	60	60	51	—	4.5	170	341	3020	15.20
TB 168-8M-50	168	7A	GG	427.81	426.44	—	60	65	65	—	2.5	170	402	3525	16.40
TB 192-8M-50	192	7A	GG	488.92	487.55	—	60	65	65	—	2.5	170	460	3525	21.80

Sections 8M, 8M HP and 8M HL – pitch 8 mm for belt width of 85 mm

TB 34-8M-85	34	4F	GG	86.58	85.22	91.0	95	95	38	—	28.5	—	65	1615	1.43
TB 36-8M-85	36	4F	GG	91.67	90.30	98.5	95	95	38	—	28.5	—	68	1615	1.87
TB 38-8M-85	38	4F	GG	96.77	95.39	103.0	95	95	38	—	28.5	—	72	1615	2.20
TB 40-8M-85	40	4F	GG	101.86	100.49	106.0	95	95	32	—	31.5	—	82	2012	1.78
TB 44-8M-85	44	4F	GG	112.05	110.67	119.0	95	95	32	—	31.5	—	91	2012	2.30
TB 48-8M-85	48	4F	GG	122.23	120.86	127.0	95	95	45	—	25.0	—	100	2517	2.66
TB 56-8M-85	56	4F	GG	142.60	141.23	148.0	95	95	45	—	25.0	—	117	2517	4.45
TB 64-8M-85	64	4F	GG	162.97	161.60	168.0	95	95	45	—	25.0	—	137	2517	6.20
TB 72-8M-85	72	4F	GG	183.35	181.97	192.0	95	95	51	—	22.0	—	158	3020	8.00
TB 80-8M-85	80	4	GG	203.72	202.35	—	95	95	51	—	22.0	—	180	3020	10.00
TB 90-8M-85	90	9W	GG	229.18	227.81	—	95	95	51	—	22.0	170	204	3020	10.80
TB 112-8M-85	112	9W	GG	285.21	283.83	—	95	95	51	—	22.0	170	260	3020	15.00
TB 144-8M-85	144	9A	GG	366.69	365.32	—	95	95	76	—	15.0	170	341	3525	20.00
TB 168-8M-85	168	9A	GG	427.81	426.44	—	95	95	76	—	15.0	170	402	3525	23.00
TB 192-8M-85	192	9A	GG	488.92	487.55	—	95	95	76	—	15.0	170	460	3525	28.50

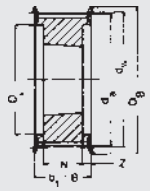
Taper bush	1210	1615	2012	2517	3020	3525
Bore d_2 [mm] from ... to ...	11-32	14-42	14-50	16-60	25-75	35-90

GG = Grey cast iron
Subject to production changes.

Bore diameter d_2 see page 62.

optibelt
Power Transmission

optibelt *ZRS HTD*® timing pulleys for taper bushes
optibelt *OMEGA* timing belts sections 14M, 14M HP and 14M HL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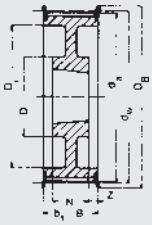
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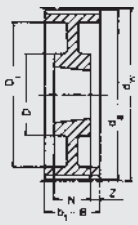
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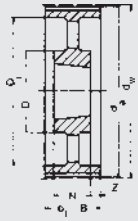
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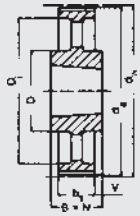

Type 7A

Sections 14M, 14M HP and 14M HL – pitch 14 mm for belt width of 40 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	N [mm]	V [mm]	Z [mm]	D [mm]	D_i [mm]	Taper bush	Weight without bush ≈ [kg]
TB 28-14M-40	28	4F	GG	124.78	122.12	127	54	54	32	—	11.0	—	98	2012	2.00
TB 29-14M-40	29	4F	GG	129.23	126.57	138	54	54	32	—	11.0	—	100	2012	2.38
TB 30-14M-40	30	4F	GG	133.69	130.99	138	54	54	32	—	11.0	—	100	2012	2.65
TB 32-14M-40	32	4F	GG	142.60	139.88	154	54	54	32	—	11.0	—	104	2012	3.40
TB 34-14M-40	34	4F	GG	151.52	148.79	160	54	54	45	—	4.5	—	110	2517	3.87
TB 36-14M-40	36	4F	GG	160.43	157.68	168	54	54	45	—	4.5	—	120	2517	4.80
TB 38-14M-40	38	4F	GG	169.34	166.60	183	54	54	45	—	4.5	—	130	2517	5.40
TB 40-14M-40	40	4F	GG	178.25	175.49	188	54	54	45	—	4.5	—	138	2517	6.00
TB 44-14M-40	44	4F	GG	196.08	193.28	211	54	54	51	—	1.5	—	155	3020	7.80
TB 48-14M-40	48	4F	GG	213.90	211.11	226	54	54	51	—	1.5	—	170	3020	9.40
TB 56-14M-40	56	9WF	GG	249.55	246.76	256	54	54	51	—	1.5	170	208	3020	10.80
TB 64-14M-40	64	9WF	GG	285.21	282.41	296	54	54	51	—	1.5	170	242	3020	13.40
TB 72-14M-40	72	9W	GG	320.86	318.06	—	54	54	51	—	1.5	170	280	3020	15.20
TB 80-14M-40	80	9A	GG	356.51	353.71	—	54	54	51	—	1.5	170	315	3020	16.00
TB 90-14M-40	90	9A	GG	401.07	398.28	—	54	54	51	—	1.5	170	360	3020	17.80
TB 112-14M-40	112	9A	GG	499.11	496.32	—	54	54	51	—	1.5	170	457	3020	25.60
TB 144-14M-40	144	9A	GG	641.71	638.92	—	54	54	51	—	1.5	170	600	3020	32.00
TB 168-14M-40	168	9A	GG	748.66	745.87	—	54	54	51	—	1.5	170	706	3020	44.00
TB 192-14M-40	192	9A	GG	855.62	852.82	—	54	54	51	—	1.5	170	813	3020	49.00
TB 216-14M-40	216	9A	GG	962.57	959.77	—	54	54	51	—	1.5	170	920	3020	55.00

Sections 14M, 14M HP and 14M HL – pitch 14 mm for belt width of 55 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	N [mm]	V [mm]	Z [mm]	D [mm]	D_i [mm]	Taper bush	Weight without bush ≈ [kg]
TB 28-14M-55	28	4F	GG	124.78	122.12	127	70	70	32	—	19.0	—	98	2012	2.20
TB 29-14M-55	29	4F	GG	129.23	126.57	138	70	70	32	—	19.0	—	100	2012	2.74
TB 30-14M-55	30	4F	GG	133.69	130.99	138	70	70	45	—	12.5	—	100	2517	2.70
TB 32-14M-55	32	4F	GG	142.60	139.88	154	70	70	45	—	12.5	—	108	2517	3.66
TB 34-14M-55	34	4F	GG	151.52	148.79	160	70	70	45	—	12.5	—	110	2517	4.55
TB 36-14M-55	36	4F	GG	160.43	157.68	168	70	70	45	—	12.5	—	120	2517	5.20
TB 38-14M-55	38	4F	GG	169.34	166.60	183	70	70	45	—	12.5	—	130	2517	6.20
TB 40-14M-55	40	4F	GG	178.25	175.49	188	70	70	45	—	12.5	—	138	2517	7.00
TB 44-14M-55	44	4F	GG	196.08	193.28	211	70	70	51	—	9.5	—	155	3020	8.60
TB 48-14M-55	48	4F	GG	213.90	211.11	226	70	70	51	—	9.5	—	170	3020	10.40
TB 56-14M-55	56	9WF	GG	249.55	246.76	256	70	70	51	—	9.5	170	208	3020	12.00
TB 64-14M-55	64	9WF	GG	285.21	282.41	296	70	70	51	—	9.5	170	242	3020	14.50
TB 72-14M-55	72	9W	GG	320.86	318.06	—	70	70	51	—	9.5	170	280	3020	16.20
TB 80-14M-55	80	9A	GG	356.51	353.71	—	70	70	51	—	9.5	170	315	3020	17.50
TB 90-14M-55	90	9A	GG	401.07	398.28	—	70	70	51	—	9.5	170	360	3020	20.10
TB 112-14M-55	112	9A	GG	499.11	496.32	—	70	70	51	—	9.5	170	457	3020	28.40
TB 144-14M-55	144	9A	GG	641.71	638.92	—	70	70	51	—	9.5	170	600	3020	36.20
TB 168-14M-55	168	9A	GG	748.66	745.87	—	70	70	51	—	9.5	170	706	3020	49.00
TB 192-14M-55	192	9A	GG	855.62	852.82	—	70	70	51	—	9.5	170	813	3020	53.00
TB 216-14M-55	216	7A	GG	962.57	959.77	—	70	89	89	9.5	—	190	920	3535	65.80

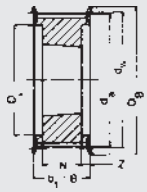
Taper bush	2012	2517	3020	3535
Bore d_2 [mm] from ... to ...	14-50	16-60	25-75	35-90

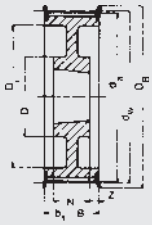
GG = Grey cast iron
Subject to production changes.

Bore diameter d_2 see page 62.

optibelt
Power Transmission

optibelt *ZRS HTD*® timing pulleys for taper bushes
optibelt *OMEGA* timing belts sections 14M, 14M HP and 14M HL


Type 4F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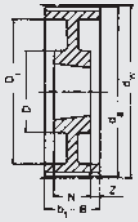
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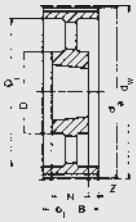
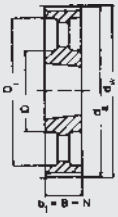

Type 9A


Type 3A

Sections 14M, 14M HP and 14M HL – pitch 14 mm for belt width of 85 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	N [mm]	V [mm]	Z [mm]	D [mm]	D_i [mm]	Taper bush	Weight without bush ≈ [kg]
TB 28-14M-85	28	4F	GG	124.78	122.12	127	102	102	45	—	28.5	—	98	2517	2.70
TB 29-14M-85	29	4F	GG	129.23	126.57	138	102	102	45	—	28.5	—	100	2517	3.40
TB 30-14M-85	30	4F	GG	133.69	130.99	138	102	102	45	—	28.5	—	100	2517	3.75
TB 32-14M-85	32	4F	GG	142.60	139.88	154	102	102	45	—	28.5	—	108	2517	4.80
TB 34-14M-85	34	4F	GG	151.52	148.79	160	102	102	45	—	28.5	—	110	2517	6.00
TB 36-14M-85	36	4F	GG	160.43	157.68	168	102	102	51	—	25.5	—	120	3020	5.80
TB 38-14M-85	38	4F	GG	169.34	166.60	183	102	102	51	—	25.5	—	130	3020	6.80
TB 40-14M-85	40	4F	GG	178.25	175.49	188	102	102	51	—	25.5	—	138	3020	8.00
TB 44-14M-85	44	4F	GG	196.08	193.28	211	102	102	76	—	13.0	—	155	3030	11.80
TB 48-14M-85	48	4F	GG	213.90	211.11	226	102	102	76	—	13.0	—	170	3030	15.10
TB 56-14M-85	56	4F	GG	249.55	246.76	256	102	102	65	—	18.5	190	210	3525	19.00
TB 64-14M-85	64	9WF	GG	285.21	282.41	296	102	102	65	—	18.5	190	242	3525	23.00
TB 72-14M-85	72	9W	GG	320.86	318.06	—	102	102	65	—	18.5	190	280	3525	25.00
TB 80-14M-85	80	9A	GG	356.51	353.71	—	102	102	65	—	18.5	190	315	3525	26.00
TB 90-14M-85	90	9A	GG	401.07	398.28	—	102	102	65	—	18.5	190	360	3525	27.80
TB 112-14M-85	112	9A	GG	499.11	496.32	—	102	102	65	—	18.5	190	457	3525	36.50
TB 144-14M-85	144	9A	GG	641.71	638.92	—	102	102	65	—	18.5	190	600	3525	48.00
TB 168-14M-85	168	9A	GG	748.66	745.87	—	102	102	65	—	18.5	190	706	3525	60.00
TB 192-14M-85	192	3A	GG	855.62	852.82	—	102	102	102	—	—	230	813	4040	86.00
TB 216-14M-85	216	3A	GG	962.57	959.77	—	102	102	102	—	—	230	920	4040	91.50

Sections 14M, 14M HP and 14M HL – pitch 14 mm for belt width of 115 mm

TB 28-14M-115	28	4F	GG	124.78	122.12	127	133	133	45	—	44.0	—	98	2517	3.77
TB 29-14M-115	29	4F	GG	129.23	126.57	138	133	133	45	—	44.0	—	100	2517	4.00
TB 30-14M-115	30	4F	GG	133.69	130.99	138	133	133	45	—	44.0	—	100	2517	5.00
TB 32-14M-115	32	4F	GG	142.60	139.88	154	133	133	45	—	44.0	—	108	2517	6.80
TB 34-14M-115	34	4F	GG	151.52	148.79	160	133	133	45	—	44.0	—	110	2517	6.80
TB 36-14M-115	36	4F	GG	160.43	157.68	168	133	133	51	—	41.0	—	120	3020	7.00
TB 38-14M-115	38	4F	GG	169.34	166.60	183	133	133	51	—	41.0	—	130	3020	8.40
TB 40-14M-115	40	4F	GG	178.25	175.49	188	133	133	51	—	41.0	—	140	3020	9.20
TB 44-14M-115	44	4F	GG	196.08	193.28	211	133	133	76	—	28.5	—	155	3030	14.00
TB 48-14M-115	48	4F	GG	213.90	211.11	226	133	133	76	—	28.5	—	170	3030	17.10
TB 56-14M-115	56	4F	GG	249.55	246.76	256	133	133	89	—	22.0	—	210	3535	24.80
TB 64-14M-115	64	9WF	GG	285.21	282.41	296	133	133	89	—	22.0	190	242	3535	27.00
TB 72-14M-115	72	9W	GG	320.86	318.06	—	133	133	89	—	22.0	190	280	3535	29.00
TB 80-14M-115	80	9A	GG	356.51	353.71	—	133	133	89	—	22.0	190	315	3535	32.00
TB 90-14M-115	90	9A	GG	401.07	398.28	—	133	133	89	—	22.0	190	360	3535	36.50
TB 112-14M-115	112	9A	GG	499.11	496.32	—	133	133	89	—	22.0	190	457	3535	46.00
TB 144-14M-115	144	9A	GG	641.71	638.92	—	133	133	102	—	15.5	230	600	4040	68.00
TB 168-14M-115	168	9A	GG	748.66	745.87	—	133	133	102	—	15.5	230	706	4040	82.60
TB 192-14M-115	192	9A	GG	855.62	852.82	—	133	133	102	—	15.5	230	813	4040	96.00
TB 216-14M-115	216	9A	GG	962.57	959.77	—	133	133	102	—	15.5	230	920	4040	107.00

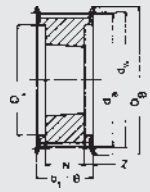
Taper bush	2517	3020	3030	3525	3535	4040
Bore d_2 [mm] from ... to ...	16-60	25-75	35-75	35-90	35-90	40-100

GG = Grey cast iron
Subject to production changes.

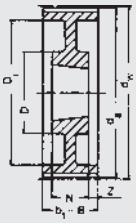
Bore diameter d_2 see page 62.

optibelt
Power Transmission

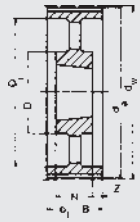
optibelt *ZRS HTD*® timing pulleys for taper bushes
optibelt *OMEGA* timing belts sections 14M, 14M HP and 14M HL



Type 4F



Type 9W



Type 9A

Sections 14M, 14M HP and 14M HL – pitch 14 mm for belt width of 170 mm

Designation	Number of teeth	Type	Material	d_w [mm]	d_a [mm]	D_B [mm]	b_1 [mm]	B [mm]	N [mm]	V [mm]	Z [mm]	D [mm]	D_i [mm]	Taper bush	Weight without bush ≈ [kg]
TB 38-14M-170*	38	4F	GG	169.34	166.60	183	187	187	76	—	55.5	—	130	3030	11.70
TB 40-14M-170*	40	4F	GG	178.25	175.49	188	187	187	76	—	55.5	—	140	3030	13.00
TB 44-14M-170*	44	4F	GG	196.08	193.28	211	187	187	89	—	49.0	—	155	3535	15.00
TB 48-14M-170*	48	4F	GG	213.90	211.11	226	187	187	89	—	49.0	—	175	3535	19.00
TB 56-14M-170*	56	4F	GG	249.55	246.76	256	187	187	89	—	49.0	—	210	3535	28.50
TB 64-14M-170*	64	4F	GG	285.21	282.41	296	187	187	102	—	42.5	—	240	4040	41.00
TB 72-14M-170*	72	9W	GG	320.86	318.06	—	187	187	102	—	42.5	230	280	4040	46.90
TB 80-14M-170*	80	9W	GG	356.51	353.71	—	187	187	102	—	42.5	230	315	4040	48.00
TB 90-14M-170*	90	9A	GG	401.07	398.28	—	187	187	102	—	42.5	230	360	4040	52.50
TB 112-14M-170*	112	9A	GG	499.11	496.32	—	187	187	127	—	30.0	265	457	5050	74.50
TB 144-14M-170*	144	9A	GG	641.71	638.92	—	187	187	127	—	30.0	265	600	5050	91.00
TB 168-14M-170*	168	9A	GG	748.66	745.87	—	187	187	127	—	30.0	265	706	5050	116.00
TB 192-14M-170*	192	9A	GG	855.62	852.82	—	187	187	127	—	30.0	265	813	5050	134.00
TB 216-14M-170*	216	9A	GG	962.57	959.77	—	187	187	127	—	30.0	265	920	5050	146.50

Taper bush	3030	3535	4040	5050
Bore d_2 [mm] from ... to ...	35-75	35-90	40-100	70-125

GG = Grey cast iron
Subject to production changes.
* Non stock items.
Bore diameter d_2 see page 62.

optibelt
Power Transmission

Timing pulleys
optibelt *TB* taper bushes

Taper bushes with metric bore, keyway to DIN 6885 part 1

	Taper bush															
	Material: EN-GJL 200 – DIN EN 1561															
	1008	1108	1210	1215	1310	1610	1615	2012	2517	3020	3030	3525	3535	4040	4545	5050
Bore diameter d_2 **(mm)**	10 11 12 14 16 18 19 20 22 24▲ 25▲	10 11 12 14 16 18 19 20 22 24 25 28▲	11 12 14 16 18 19 20 22 24 25 28 30 32	11 12 14 16 18 19 20 22 24 25 28 30 32	14 16 18 19 20 22 24 25 28 30 32 35	14 16 18 19 20 22 24 25 28 30 32 35 38 40 42▲	14 16 18 19 20 22 24 25 28 30 32 35 38 40 42▲	14 16 18 19 20 22 24 25 28 30 32 35 38 40 42 45 48 50	16 18 19 20 22 24 25 28 30 32 35 38 40 42 45 48 50 55 60	25 28 30 32 35 38 40 42 45 48 50 55 60 65 70 75	35 38 40 42 45 48 50 55 60 65 70 75	35 38 40 42 45 48 50 55 60 65 70 75 80 85 90	35 38 40 42 45 48 50 55 60 65 70 75 80 85 90	40 42 45 48 50 55 60 65 70 75 80 85 90 95 100	55 60 65 70 75 80 85 90 95 100 105 110	70 75 80 85 90 95 100 105 110 115 120 125
Tightening torque (Nm)	5.7	5.7	20	20	20	20	20	31	49	92	92	115	115	172	195	275
Bush length (mm)	22.3	22.3	25.4	38.1	25.4	25.4	38.1	31.8	44.5	50.8	76.2	63.5	88.9	101.6	114.3	127.0
Weight at $d_{2\,min}$ ≈ (kg)	0.12	0.16	0.28	0.39	0.32	0.41	0.60	0.75	1.06	2.50	3.75	3.90	5.13	7.68	12.70	15.17

▲ These bores have shallow keyways.

Shallow keyways for taper bushes

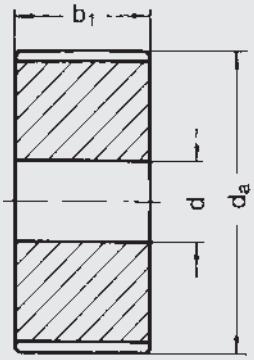
Bore diameter d_2 (mm)	Keyway width b (mm)	Keyway depth t_2 (mm)	Bore diameter d_2 (mm)	Keyway width b (mm)	Keyway depth t_2 (mm)
24 25	8 8	2,0 1,3	28 42	8 12	2,0 2,2

Taper bushes with inch bore, keyway to British Standard BS 46 part 1

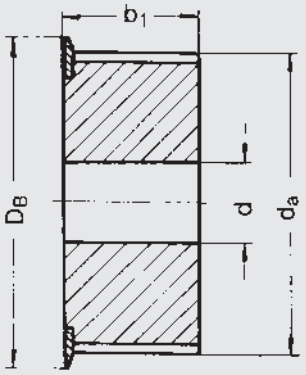
	Taper bush															
	Material: EN-GJL 200 – DIN EN 1561															
	1008	1108	1210	1215	1310	1610	1615	2012	2517	3020	3030	3525	3535	4040	4545	5050
Bore diameter d_2 **(inch)**	3/8* 1/2 5/8 3/4 7/8* 1▲	3/8* 1/2 5/8 3/4 7/8 1 1 1/8▲*	1/2 5/8 3/4 7/8 1 1 1/8 1 1/4	5/8* 3/4 7/8 1 1 1/8 1 1/4	1/2* 5/8* 3/4* 7/8* 1* 1 1/8 1 1/4 1 3/8	1/2 5/8 3/4 7/8 1 1 1/8 1 1/4 1 3/8 1 1/2 1 5/8	1/2 5/8 3/4 7/8* 1 1 1/8 1 1/4 1 3/8 1 1/2 1 5/8▲*	5/8* 3/4 7/8 1 1 1/8 1 1/4 1 3/8 1 1/2 1 5/8 1 3/4 1 7/8 2	3/4 7/8 1 1 1/8 1 1/4 1 3/8 1 1/2 1 5/8 1 3/4 1 7/8 2 2 1/8 2 1/4 2 3/8 2 1/2	1 1/4 1 3/8 1 1/2 1 5/8 1 3/4* 1 7/8 2 2 1/8* 2 1/4 2 3/8 2 1/2 2 5/8 2 3/4 2 7/8 3	1 1/4 1 3/8 1 1/2 1 5/8 1 3/4* 1 7/8 2 2 1/8* 2 1/4 2 3/8 2 1/2 2 5/8* 2 3/4* 2 7/8 3	1 1/2* 1 5/8* 1 3/4* 1 7/8* 2* 2 1/8* 2 1/4* 2 3/8* 2 1/2* 2 5/8* 2 3/4* 2 7/8* 3* 3 1/8* 3 1/4* 3 3/8* 3 1/2▲* 3 3/4*▲	1 1/2 1 5/8 1 3/4 1 7/8 2 2 1/8 2 1/4 2 3/8 2 1/2 2 5/8 2 3/4 2 7/8 3 3 1/8 3 1/4 3 3/8 3 1/2▲ 4*▲	1 3/4* 1 7/8* 2* 2 1/8* 2 1/4* 2 3/8* 2 1/2* 2 5/8* 2 3/4* 2 7/8* 3* 3 1/4* 3 3/8* 3 1/2* 3 3/4* 4* 4 1/4*▲ 4 1/2*▲	2 1/4* 2 3/8* 2 1/2* 2 3/4* 2 7/8* 3* 3 1/4* 3 3/8* 3 1/2* 3 3/4* 4* 4 1/4* 4 1/2* 4 3/4* 5*▲	3* 3 1/4* 3 1/2* 3 3/4* 4* 4 1/4* 4 1/2* 4 3/4* 5*▲
Tightening torque (Nm)	5.7	5.7	20	20	20	20	20	31	49	92	92	115	115	172	195	275
Bush length (mm)	22.3	22.3	25.4	38.1	25.4	25.4	38.1	31.8	44.5	50.8	76.2	63.5	88.9	101.6	114.3	127.0
Weight at $d_{2\,min}$ ≈ (kg)	0.12	0.16	0.28	0.39	0.32	0.41	0.60	0.75	1.06	2.50	3.75	3.90	5.13	7.68	12.70	15.17

* Non stock items ▲ These bores have shallow keyways.

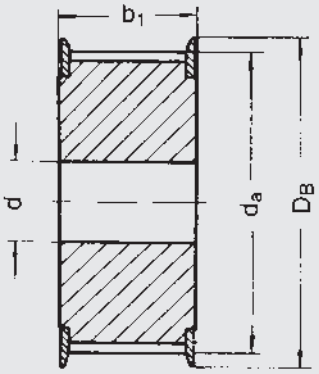
Timing pulleys
Recommended special constructions



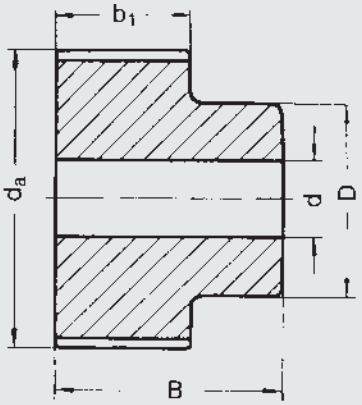
Construction OB



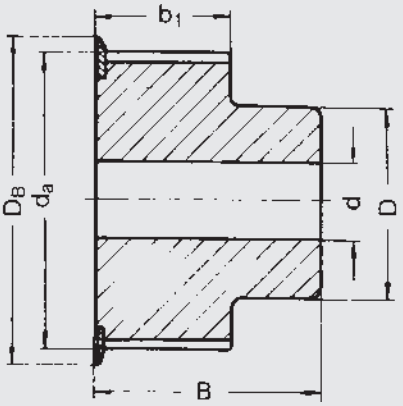
Construction EB



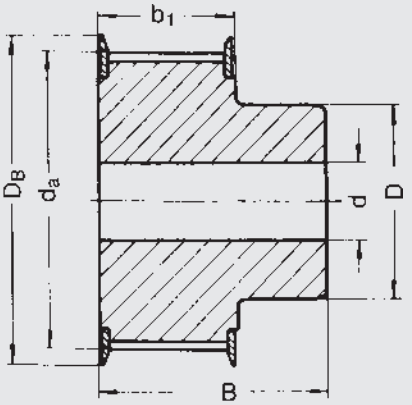
Construction ZB



Construction OBN



Construction EBN



Construction ZBN

Materials

Steel, grey cast iron, aluminium;
other materials available on request
Do NOT use cast iron for speeds > 30 m/s anymore!

Bores

All timing pulleys are pilot bored. On request they can be finish bored to DIN H7 tolerance.

Explanation of the abbreviations

OB = without flanges
EB = one flange
ZB = two flanges
OBN = without flanges, with hub
EBN = one flange, with hub
ZBN = two flanges, with hub

Timing pulleys
Dimensions and tolerances

Permissible variation in tooth pitch

The permissible variations in tooth pitch between two consecutive teeth and for the sum of the variations within a 90° arc of a pulley are shown in the following table. These tolerances indicate the distance between the corresponding points on the right or the left flank of consecutive teeth.

Outside diameter d_a [mm]	Permissible variation in tooth pitch [mm]	
	between two consecutive teeth	sum within a 90° arc
≤ 25	0.03	0.06
> 25 ≤ 50	0.03	0.09
> 50 ≤ 100	0.03	0.10
> 100 ≤ 175	0.03	0.13
> 175 ≤ 300	0.03	0.15
> 300 ≤ 500	0.03	0.18
> 500	0.03	0.20

Permissible variation of the outside diameter

Outside diameter d_a [mm]	Permissible variation [mm]
≤ 25	+ 0.05 0
> 25 ≤ 50	+ 0.07 0
> 50 ≤ 100	+ 0.10 0
> 100 ≤ 175	+ 0.13 0
> 175 ≤ 300	+ 0.15 0
> 300 ≤ 500	+ 0.18 0
> 500	+ 0.20 0

Pulley width

Type	Pulley width designation [mm]	Nominal pulley width [mm]	Smallest pulley width with flanges b_f* [mm]	Smallest pulley width without flanges [mm]
3 M	6 9 15	6 9 15	7 10 17	9 12 19
5 M	9 15 25	9 15 25	10 17 27	12 19 29
8 M	20 30 50 85	20 30 50 85	22 34 54 90	26 38 58 94
14 M	40 55 85 115 170	40 55 85 115 170	47 63 95 126 180	54 70 102 133 187

*b_f = Pulley width between the flanges

Note

The minimum width b for pulleys without flanges can be reduced, if there is no side wobble or run out; however, it may not fall below the minimum width b_f for pulleys with flanges.

Axial run out tolerance

Outside diameter range [mm]	Maximum overall fluctuation [mm]
≤ 100	0.10
> 100 ≤ 250	0.01 mm per 10 mm outside diameter
> 250	0.25 mm + 0.0005 mm per mm outside diameter over 250.00 mm

Tolerance of eccentricity

Outside diameter range [mm]	Maximum overall fluctuation [mm]
≤ 200	0.10
> 200	0.0005 mm per 10 mm outside diameter, but not exceeding the tolerance for the outside diameter

Timing pulleys
Dimensions and tolerances

Balancing

Steel pulleys that have been machined on all sides do not need to be balanced if the circumferential speed is below 30 m/s. Grey cast iron pulleys for medium speeds should be statically balanced as follows:

Section	Number of teeth	Static balance [N]
3M	all	0.04
5M	all	0.08
8M	≤ 130 > 130	0.08 0.16
14M	≤ 72 > 72	0.08 0.16

Timing pulleys which are used for circumferential speeds in excess of 30 m/s, must be balanced dynamically to $1.8 \cdot 10^{-5}$ Nm.

Parallelism

The teeth are to be aligned in parallel to the axis of the bore, with a variation of no more than 0.001 mm per millimetre width.

Taper

The taper across the pulley face may not exceed 0.001 mm per millimetre of the face width and at the same time may not exceed the permissible outside diameter tolerance indicated on page 64.

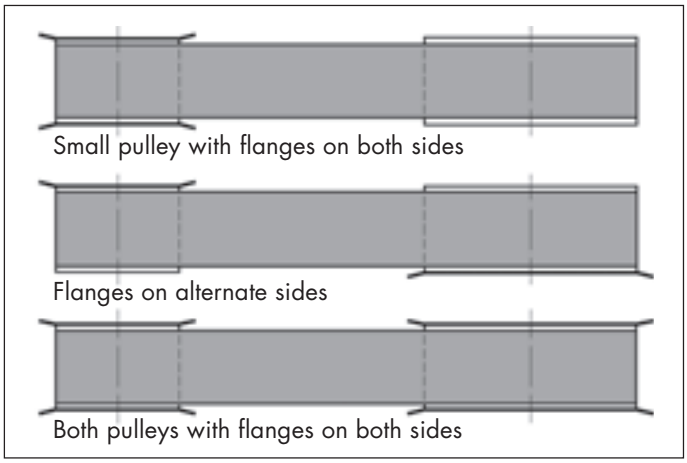
Design hints
Flanged pulleys/tension idlers

Flanged pulleys

For the guidance of Optibelt OMEGA HL, Optibelt OMEGA HP and Optibelt OMEGA timing belts, one or both of the timing pulleys should be equipped with flanges on one or both sides.

With centre distances of ≥ 8 d_{wk} the timing pulleys should have flanges on both sides.

We recommend the use of standard timing pulleys. If this is not possible due to the machine construction, timing pulleys specially designed for the machine may be used.



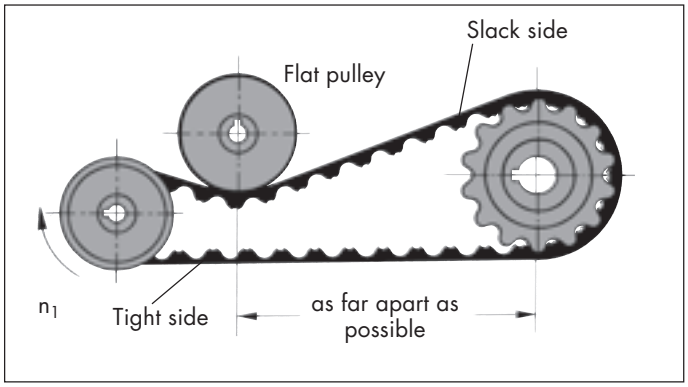
Maximum OMEGA timing belt width

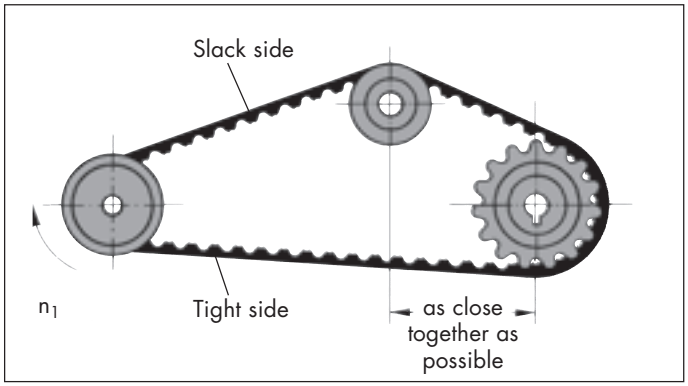
The maximum timing belt width should not exceed the diameter of the smallest timing pulley in the drive.

Tension idlers

Idlers are timing or flat pulleys, that play no part in power transmission within a drive system. Because they generate additional bending stresses in the belt, they should be used in accordance with the following guidelines:

- Diameter of the tension idlers ≥ the smallest recommended pulley diameter for the belt section
- Width of the tension idlers ≥ width of the timing pulleys in the drive
- Always position the tension idlers in the slack side of the drive
- Internal tension pulleys:
  ≤ 40 teeth always use a timing pulley
  > 40 teeth, a flat faced idler is permissible
- In general, outside idlers should always be flat faced as they run on the top surface of the belt
- Crowned idlers should never be used
- Fit the tension idlers in such a way as to enable as many teeth as possible to mesh with the small pulley
- Keep the arc of contact on the tension idler as small as possible





optibelt
Power Transmission

Design hints
Installation and maintenance

Safety information

Correctly designed drives (with regard to geometry and power) with Optibelt OMEGA HL, Optibelt OMEGA HP and Optibelt OMEGA timing belts ensure a high level of operational safety and optimum service life.

Experience shows that unsatisfactory service life is often attributable to errors in installation and maintenance. In order to avoid this, we suggest that you observe the following recommendations.

- **Timing pulleys**

  The teeth must be conform to the appropriate standards and should be clean.

- **Alignment**

  Shafts and pulleys should be aligned prior to the assembly.

  Maximum deviations of the shaft parallelism:

Belt widths [mm]	Shaft misalignment
≤ 25	± 1°
> 25 ≤ 50	± 0.5°
> 50 ≤ 100	± 0.25°
> 100	± 0.15°

- **Timing belt sets**

  Timing belts which run on a drive in pairs or in sets of several belts must be ordered in sets in all cases. This is to ensure that all belts come from the same manufacturing sleeve and have an identical length.

- **Assembly**

  Prior to the assembly, the centre distance is to be reduced in such a way that the timing belt may be fitted without force. If this is not possible, the timing belt must be installed together with one or both timing pulleys. Installation with the use of force is NOT permissible at any time as this can damage the high quality, low stretch tension cord and other components. This damage is often not visible.

  When using taper bushes, the socket screws should be checked again after 0.5-1 hour running time using a torque wrench. Starting torques see page 62.

- **Belt tension**

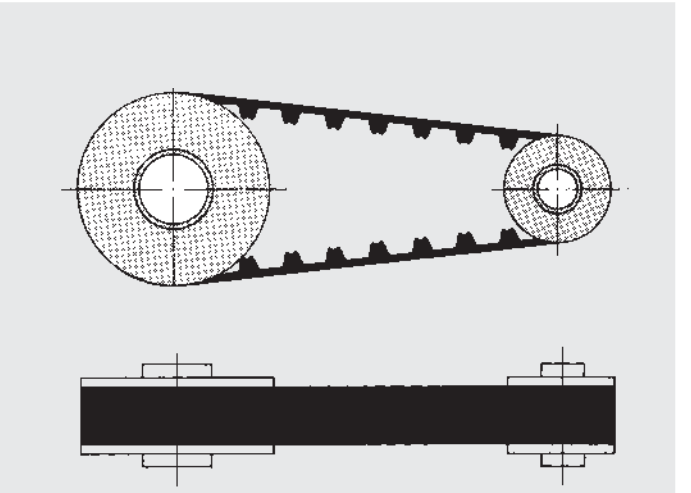
  The belt tension is to be applied in accordance with the guidelines on page 30. Further checks after installation are not necessary.

- **Tension idlers**

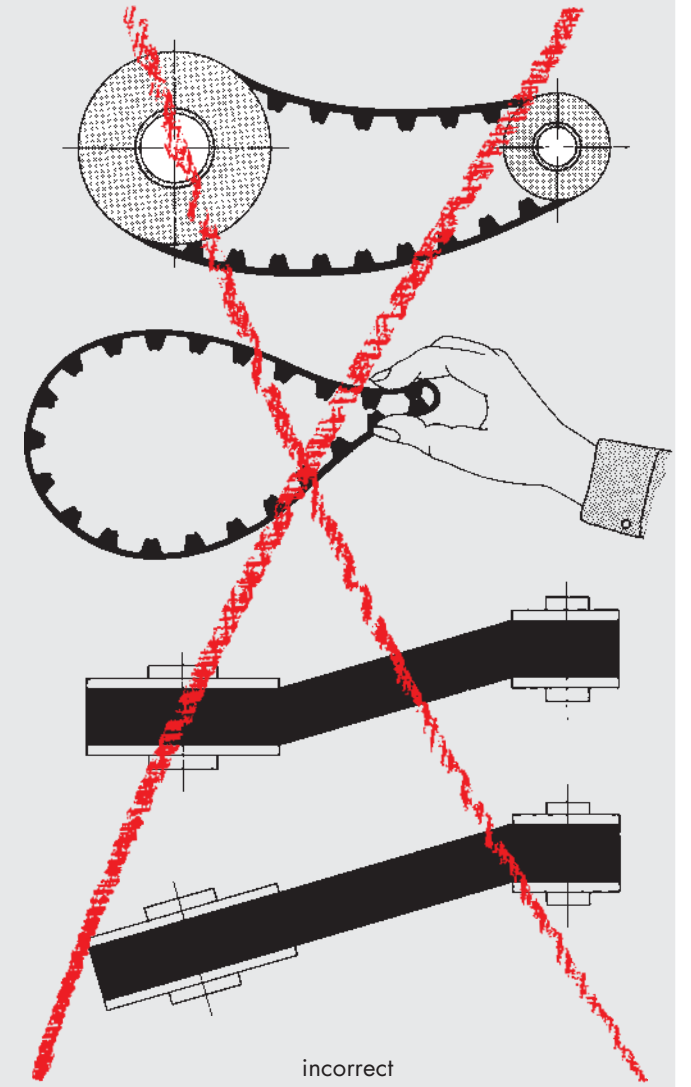
  Avoid tension idlers. If this is not possible, follow our recommendations on page 66 of this manual.

- **Maintenance**

  Optibelt OMEGA HL, Optibelt OMEGA HP and Optibelt OMEGA timing belts are maintenance free, when used under normal operationing conditions.



correct



incorrect

Design hints
Problems – Causes – Remedies

Problems	Causes	Remedies
Excessive wear on the loaded face of the belt tooth	Faulty belt tension Pitch error, belt to pulley tooth Overload	Correct the tension Check the belt section, replace, if necessary Use wider belts with higher power transmission capacity
Excessive wear on the land between the belt teeth	Excessive belt tension Drive is under designed Defective timing pulleys	Reduce the tension Increase the width of the timing belt or increase the diameter of the timing pulleys Replace timing pulleys
Exceptional wear on the belt sides	Faulty axial parallelism Defective flanged pulleys Centre distance fluctuation	Realign shafts Replace flanged pulleys Reinforce bearings and/or housing
Belt teeth shear off	Number of teeth in mesh too small Overload	Increase diameter of the small pulley or choose a wider belt Use a wider belt or larger pulleys
Excessive lateral runout	Faulty axial parallelism Timing pulleys not aligned Shock loading with excessive belt tension	Realign shafts Realign the pulleys Reduce the belt tension
Pulley flanges becoming detached	Timing pulleys not aligned Very high lateral pressure from the timing belt Faulty installation of the flanged pulleys	Realign the pulleys Realign shafts Install flanged pulleys correctly
Apparent belt stretch	Recovery of length after storage Bearings flexing	Correct the belt tension Reinforce and secure bearing mountings
Excessive running noise	Faulty shaft alignment Excessive belt tension Pulley diameter too small Overload on the timing belt Excessive belt width coupled with high speed	Realign shafts Reduce the tension Enlarge pulley diameter Increase belt width and/or teeth in mesh Reduce belt width by redesigning using heavier belt section
Abnormal wear and tear on the timing pulleys	Unsuitable pulley material Faulty meshing Insufficient surface hardness	Use a stronger material Replace timing pulleys Use harder material or harden the surface
Embrittlement of the belt top surface	Ambient temperatures above +100 °C Excessive radiated heat	Choose an extra heat resistant belt quality Shield or use a suitable belt quality
Cracks in the belt top surface	Ambient temperatures below –30 °C	Use an extra cold resistant belt quality
Softening of the belt top surface	Contamination by incompatible media	Shield belt or use suitable belt quality

optibelt
Power Transmission

Data sheet

for the calculation/checking of the drives with optibelt *OMEGA HL*, optibelt *OMEGA HP* and optibelt *OMEGA* timing belts

Company:

Street address/P.O. Box number:

Town or city/Post code:

Contact person:

Department: Date:

Phone: Fax:

E-mail:

For test ☐ New drive ☐
For pilot production ☐ Existing drive ☐
For series production ☐ Requirement ____ Pieces/Year

Currently fitted with

Pitch length	Section	Width	Manufacturer

Prime mover

Type (e.g. electric motor, diesel engine 3 cylinders) _____

Size of the starting torque (e.g. M_A = 1,8 M_N) _____

Type of start (e.g. star delta) _____

Daily operating time _____ hours

Number of starts _____ per hour ☐ per day ☐

Change in the direction of rotation per minute ☐ per hour ☐

Power: P normal _____ kW

P maximum _____ kW

or max. torque _____ Nm at n_1 _____ min^{-1}

Speed n_1 _____ min^{-1}

Shaft layout: Horizontal ☐ Vertical ☐

Inclined ☐ ∢ _____ °

Maximum permissible shaft loading $S_{a\ max}$ _____ N

Pitch diameter or number of teeth on the pulley:

d_{d1} _____ mm z_1 _____ mm

$d_{d1\ min}$ _____ mm $z_{1\ min}$ _____ mm

$d_{d1\ max}$ _____ mm $z_{1\ max}$ _____ mm

Maximum pulley face width _____ mm

Drive ratio i _____

Centre distance a _____ mm

Tensioning/idler pulley: inside idler ☐

outside idler ☐

d_w _____ mm timing pulley ☐

d_a _____ mm flat pulley ☐

Operating conditions: Ambient temperature

Influence of oil ☐

water ☐

acid ☐

dust ☐

Driven machine

Type (e.g. lathe, compressor) _____

Start: under load ☐ no load ☐

Type of load: steady ☐ pulsating ☐

shock ☐

Required power transmission: P normal _____ kW

P maximum _____ kW

or max. torque _____ Nm at n_2 _____ min^{-1}

Driven speed n_2 _____ min^{-1}

$n_{2\ min}$ _____ min^{-1}

$n_{2\ max}$ _____ min^{-1}

Maximum permissible shaft loading $S_{a\ max}$ _____ N

Pitch diameter or number of teeth on the pulley:

d_2 _____ mm z_2 _____ mm

$d_{2\ min}$ _____ mm $z_{2\ min}$ _____ mm

$d_{2\ max}$ _____ mm $z_{2\ max}$ _____ mm

Maximum pulley face width _____ mm

i_{min} _____ i_{max} _____

a_{min} _____ mm a_{max} _____ mm

in tight side ☐

in slack side ☐

moveable ☐ (e.g. spring loaded) _____

fixed ☐

_____ °C minimum

_____ °C maximum

(e.g. oil mist, drops) _____

(e.g. spray water) _____

(type, concentration, temperature) _____

(type) _____

Special drives: e.g. for drives with tensioning/idler pulleys, three or multi-pulley drives or for drives with contra rotating pulleys drawings are necessary to indicate shaft co-ordinates and the load conditions for each pulley and/or idler. Please use the other side of this page for this drawing.

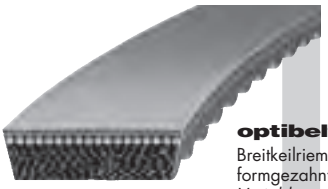
Details of the drive:

Notes

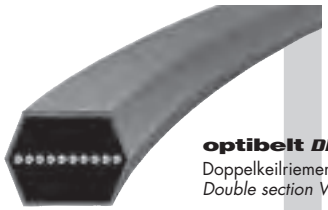
optibelt

optibelt
PowerTransmission

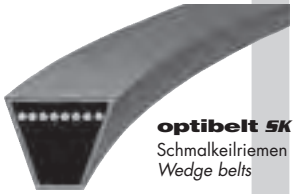
optibelt *VB*
Klassische Keilriemen
Classical V-belts



optibelt *SUPER VX*
Breitkeilriemen, flankenoffen, formgezahnt
Variable speed belts, raw edge, moulded cogged

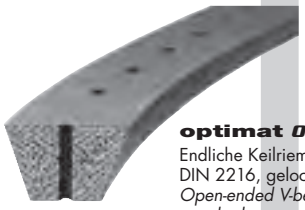


optibelt *DK*
Doppelkeilriemen
Double section V-belts



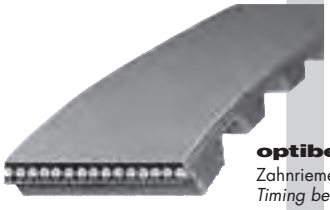
optibelt *SK*
Schmalkeilriemen
Wedge belts

optibelt *SUPER DVX*
Doppel-Breitkeilriemen, flankenoffen, formgezahnt
Double section variable speed belts, raw edge, moulded cogged



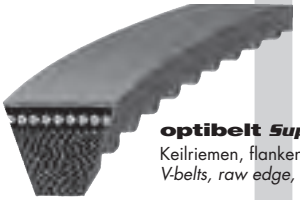
optimat *DE*
Endliche Keilriemen
DIN 2216, gelocht
Open-ended V-belting, punched

optibelt *RED POWER II*
Hochleistungs-Schmalkeilriemen, wartungsfrei
High performance wedge belts, service-free

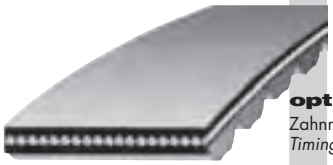


optibelt *ZR*
Zahnriemen
Timing belts

optibelt *RR*
Kunststoffrundriemen
Plastic round section belting



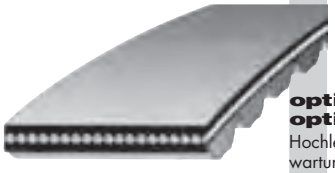
optibelt *Super X-POWER M=S*
Keilriemen, flankenoffen, formgezahnt
V-belts, raw edge, moulded cogged



optibelt *OMEGA*
Zahnriemen, wartungsfrei
Timing belts, service-free

optibelt *RB*
Rippenbänder
Ribbed belts

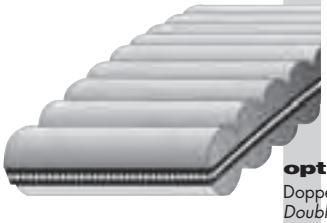
optibelt *KB*
Kraftbänder
Kraftbands



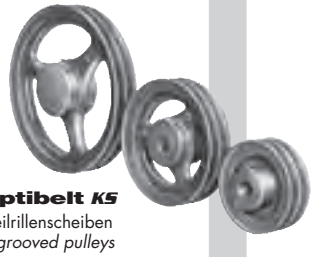
optibelt *OMEGA HL*
optibelt *OMEGA HP*
Hochleistungs-Zahnriemen, wartungsfrei
High performance timing belts, service-free

optibelt *KK*
Kunststoffkeilriemen
Plastic V-belting

optibelt *KB*
optibelt *RED POWER II*
Hochleistungs-Kraftbänder
High performance kraftbands

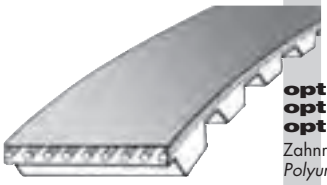


optibelt *HTD® D*
Doppel-Zahnriemen
Double section timing belts



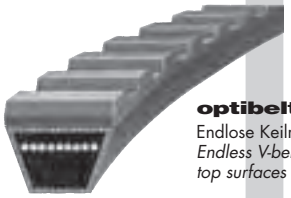
optibelt *KS*
Keilrillenscheiben
V-grooved pulleys

optibelt *KBX*
Kraftbänder, flankenoffen
Kraftbands, raw edge

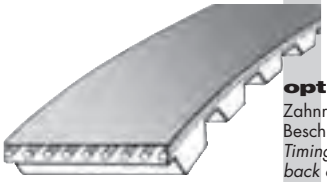


optibelt *ALPHA*
optibelt *ALPHA linear/V*
optibelt *ALPHAflex*
Zahnriemen aus Polyurethan
Polyurethane timing belts

optibelt *ZRS*
Zahnriemenscheiben
Timing belt pulleys



optibelt *PKR*
Endlose Keilriemen mit Auflage
Endless V-belts with special top surfaces



optibelt *ALPHA Spezial*
Zahnriemen mit Nocken und Beschichtungen
Timing belts with cleats and back coverings

optibelt *RBS*
Rippenbandscheiben
Ribbed belt pulleys