

# PRODUCT DESCRIPTION

## TIMING BELTS IN optibelt OMEGA PROFILE

### STANDARD PROPERTIES



All optibelt OMEGA timing belts have inherent resistance to oil, heat, cold, ozone and tropical conditions. Special labelling is not required.

#### Oil resistance

The limited oil resistance prevents the damaging effects of mineral oils and greases, as long as these substances 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 oils, the performance of the optibelt OMEGA timing belts can be improved by using special belt constructions. Please contact the optibelt Application Engineering Department.

#### Temperature resistance

The timing belt can withstand ambient temperatures from  $\approx -30\text{ }^{\circ}\text{C}$  to  $+100\text{ }^{\circ}\text{C}$ . 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 using special belt constructions, e.g. up to  $+140\text{ }^{\circ}\text{C}$ . Please contact the OPTIBELT Application Engineering Department.

#### Antistatic properties

Antistatic properties enable 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 sparks. The use of antistatic timing belts requires that the properties be checked in accordance with ISO 9563, and is confirmed by the issue of an inspection certificate. OMEGA HP and OMEGA HL timing belts in profiles 8M and 14M as well as OMEGA FAN POWER are antistatic according to ISO 9563 by standard and are thus labelled accordingly.

#### Noise emission

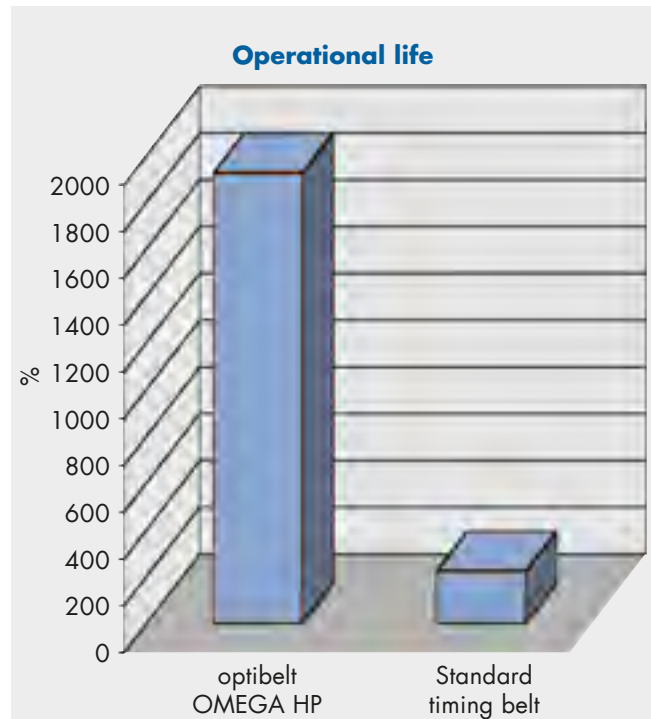
The optimized tooth shape and the indent in the tooth tip of the optibelt OMEGA promote a significantly lower noise level. In combination with the newly developed materials, the noise level is further reduced, even at high speeds and with high belt tensions.

#### Operational life

Belt designs with increased capacity can exceed the potential operational life of standard designs many times over, particularly for highly loaded or overloaded drives. Example: Dynamic tests with optibelt OMEGA HP show that the running times, compared to standard timing belts, are up to 18 times higher.

#### Efficiency

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



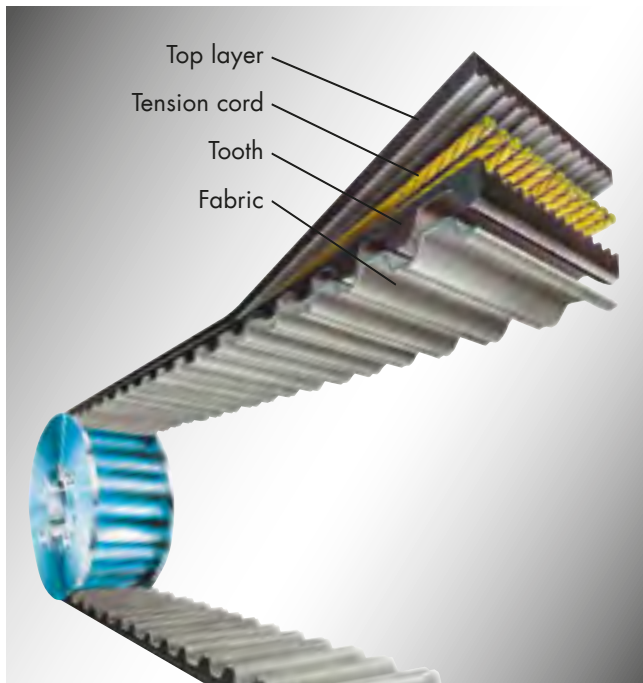
Application example: roller path

# PRODUCT DESCRIPTION

## optibelt OMEGA HP TIMING BELTS



### Structure



### Top layer

A durable and flexible top layer protects the tension cord from external influences. In addition, the polychloroprene compound is reinforced with aramid fibres and has a degree of resistance to mineral oils and humidity as well as protection from wear and tear due to friction.

### Tension cord

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

### Teeth

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

### Fabric

The specially developed polyamide fabric stands out due to its extraordinarily low frictional coefficient and its low noise characteristics. It also protects the teeth from early wear and tear and prevents tooth shear.

### 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 with 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 range.

optibelt OMEGA, OMEGA HP and OMEGA HL timing belts are used in optibelt ZRS HTD® timing belt pulleys or in optibelt ZRS RPP® timing belt pulleys. For applications using other pulleys, please contact the OPTIBELT Application Engineering Department.



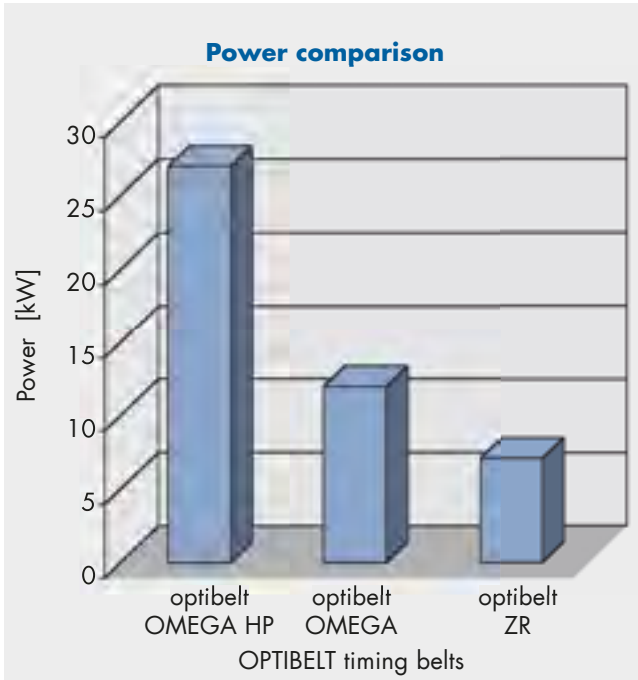
Application example: test bench

### The new high performance timing belt optibelt OMEGA 5M HP

In the field of the high performance timing belts the optibelt OMEGA 5M HP has been 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 roughly corresponds with the level of the considerably larger section optibelt OMEGA 8M – with the same pulley diameters.

# PRODUCT DESCRIPTION

## optibelt OMEGA HP TIMING BELTS



### Power ratings overview

Profile and design	8M HP	8M	H
Pitch [mm]	8	8	12.7
Width [mm]	20	20	19.05
Pulley diameter [mm]	96.77	96.77	97.02
Speed [min <sup>-1</sup> ]	2850	2850	2850
Nominal power [kW]	<b>24.4</b>	<b>10.8</b>	<b>6.0</b>

### Preferred application areas

- 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 structure with high flexibility
- low permanent and elastic stretch of the cord
- friction and abrasion resistant fabric with high shear strength
- approximately double power transmission capability (profile 5M HP approximately trebles the power transmission capacity) compared to OMEGA timing belts in their standard design
- suitable for low and high speed, high load drives
- good resistance and smooth operation, low and medium shock load
- large range of applications
- electrical antistatic according to ISO 9563 confirmed on request

### Advantages and characteristics of a drive with optibelt OMEGA HP timing belts in these application areas

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

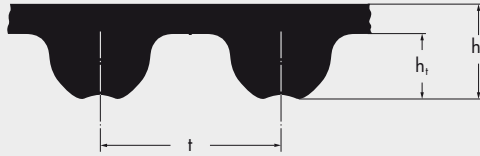
**Significant system cost reduction and high operational reliability for even greater economic efficiency in new drives**

For additional advantages and characteristics, see optibelt OMEGA on page 20.

# PRODUCT DESCRIPTION

## optibelt **OMEGA HP** TIMING BELTS

### STANDARD PRODUCT RANGE



Profile	3M HP
t [mm]	3.0
h <sub>s</sub> [mm]	2.3
h <sub>t</sub> [mm]	1.1

optibelt OMEGA 3M HP								
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 3MHP•	111.00	37	294 3MHP•	294.00	98	600 3MHP•	600.00	200
129 3MHP•	129.00	43	300 3MHP	300.00	100	606 3MHP•	606.00	202
141 3MHP•	141.00	47	312 3MHP	312.00	104	615 3MHP•	615.00	205
144 3MHP	144.00	48	315 3MHP•	315.00	105	633 3MHP•	633.00	211
150 3MHP•	150.00	50	318 3MHP	318.00	106	669 3MHP	669.00	223
159 3MHP•	159.00	53	330 3MHP	330.00	110	675 3MHP•	675.00	225
165 3MHP•	165.00	55	333 3MHP•	333.00	111	711 3MHP•	711.00	237
168 3MHP•	168.00	56	339 3MHP•	339.00	113	738 3MHP•	738.00	246
171 3MHP•	171.00	57	345 3MHP•	345.00	115	804 3MHP•	804.00	268
174 3MHP	174.00	58	357 3MHP	357.00	119	816 3MHP•	816.00	272
177 3MHP	177.00	59	363 3MHP	363.00	121	843 3MHP•	843.00	281
180 3MHP•	180.00	60	366 3MHP•	366.00	122	882 3MHP•	882.00	294
183 3MHP•	183.00	61	384 3MHP	384.00	128	888 3MHP•	888.00	296
186 3MHP•	186.00	62	390 3MHP•	390.00	130	1062 3MHP•	1062.00	354
192 3MHP•	192.00	64	420 3MHP	420.00	140	1569 3MHP•	1569.00	523
195 3MHP•	195.00	65	426 3MHP•	426.00	142	1587 3MHP•	1587.00	529
201 3MHP	201.00	67	435 3MHP•	435.00	145	1692 3MHP•	1692.00	564
204 3MHP•	204.00	68	447 3MHP	447.00	149			
207 3MHP	207.00	69	462 3MHP•	462.00	154			
210 3MHP	210.00	70	474 3MHP	474.00	158			
213 3MHP•	213.00	71	480 3MHP•	480.00	160			
219 3MHP•	219.00	73	486 3MHP•	486.00	162			
225 3MHP	225.00	75	495 3MHP•	495.00	165			
237 3MHP	237.00	79	501 3MHP	501.00	167			
240 3MHP	240.00	80	513 3MHP	513.00	171			
246 3MHP•	246.00	82	519 3MHP•	519.00	173			
249 3MHP•	249.00	83	522 3MHP•	522.00	174			
252 3MHP•	252.00	84	525 3MHP•	525.00	175			
255 3MHP	255.00	85	531 3MHP•	531.00	177			
267 3MHP•	267.00	89	537 3MHP•	537.00	179			
276 3MHP	276.00	92	558 3MHP•	558.00	186			
282 3MHP•	282.00	94	564 3MHP•	564.00	188			
285 3MHP	285.00	95	570 3MHP•	570.00	190			
288 3MHP•	288.00	96	582 3MHP•	582.00	194			
291 3MHP•	291.00	97	597 3MHP	597.00	199			

**Standard width:** 6 mm, 9 mm, 15 mm  
(Further sizes and special width ranges on request) • Not available ex stock

**Order example:** 225 = 225 mm pitch length  
 3M HP = profile and design  
 9 = 9 mm belt width

TIMING BELTS: optibelt OMEGA HP 225 3M HP 9

# POWER RATINGS

## optibelt **OMEGA HP** TIMING BELTS

### PROFILE AND DESIGN 3M HP



Table 16

Nominal power $P_N$ [W] for profile and design 3M HP and a timing belt width of 9 mm															
Speed of the small pulley $n_k$ [min <sup>-1</sup> ]	Number of teeth on the small pulley $z_k$														
	10	12	14	16	18	20	24	28	32	40	48	56	64	72	80
	Pitch diameter of the small 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					

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

Width correction factor							
Profile and design 3M HP							
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