



ITEM NO. 105462

EDITION 2023

BELT/SPROCKET INTERCHANGE GUIDE

NOT ALL BELTS FIT THE SAME SPROCKET





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- HTD™
- Poly Chain®
- PowerGrip™
- PowerGrip HTD™

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WARNING, BE SAFE!

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FOREWORD

This brochure can assist you in determining the proper belt/sprocket combinations for original drive designs as well as replacement for existing drive components. Knowing which synchronous belt is compatible with which synchronous sprocket is critical for optimum drive performance.

When system compatibility recommendations are followed, both the life of the belt and sprockets are maximized. In addition, safety issues may arise when high performance synchronous belt ratings are used to design new drives and sprockets are used that are not compatible or recommended.

- A PowerGrip GT3/GT4 belt should only be used in an HTD sprocket as a replacement for an existing HTD belt. For new drive designs, PowerGrip GT3/GT4 belts should only be used with PowerGrip GT sprockets.
- A Poly Chain GT Carbon belt should only be used in a Poly Chain GT sprocket for all new drive designs.

EXPLANATION OF RECOMMENDATIONS

RECOMMENDED ORIGINAL DESIGN: This combination is designed to be used together.

REPLACEMENT ONLY: This combination is recommended only for replacement and widths should be adjusted as indicated. Replacement combinations should not be used in new designs (see warnings).

NOT RECOMMENDED: This combination is not recommended due to potentially reduced service life of either the belt, the sprockets, or both. Also, a combination may not be recommended if another product line from the same manufacturer is more appropriate.

NO COMPATIBILITY: This combination is not compatible, either because the belt does not wrap the sprockets well or because the belt tooth is too large to fit the sprocket grooves.

NOTES

1. For new drive designs, belts should only be used with the intended sprockets (see warnings). Published belt ratings apply only to belts used with the sprockets they were intended for.
2. Sprocket groove drawings are all based upon 38-40 grooves. Ideal form with no variation from manufacturing tolerance was assumed.
3. Belt tooth drawings represent ideal form with no manufacturing variation.

HTD SPROCKETS

5M/8M/14M HTD BELTS

RECOMMENDED ORIGINAL DESIGN



- Large robust belt tooth design
- Significant backlash

5M POWERGRIP GT3 BELTS

NOT RECOMMENDED



- Reduced performance
- The sprocket/bushing capacity may be too low for new designs

8M POWERGRIP GT4 BELTS

REPLACEMENT ONLY



- Quieter operation/increased backlash
- The sprocket/bushing capacity may be too low for new designs
- When replacing HTD belts – the belt width may be reduced one size

14M POWERGRIP GT4 BELTS

REPLACEMENT ONLY



- Quieter operation/increased backlash
- The sprocket/bushing capacity may be too low for new designs
- When replacing HTD belts – the belt width may be reduced one size

5M POLY CHAIN GT CARBON BELTS

NOT RECOMMENDED



- Reduced performance
- The sprocket/bushing capacity may be too low for new designs

8M POLY CHAIN GT CARBON BELTS

NO COMPATIBILITY



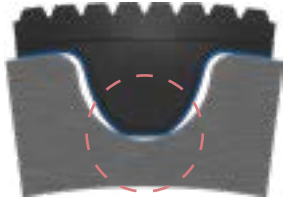
- The belt will not fully wrap the sprocket
- The belt tooth is deeper than the sprocket groove

WARNING WHEN DESIGNING BELT DRIVES FOR NEW APPLICATIONS WITH POWERGRIP GT3/GT4 POWER RATINGS: DO NOT USE HTD SPROCKET SYSTEMS. HTD SPROCKETS/BUSHINGS MAY NOT HANDLE THE INCREASED TORQUE LOADS AND DAMAGE TO THE SPROCKET AND/OR BUSHING MAY OCCUR. ONLY USE POWERGRIP GT SPROCKETS FOR NEW DESIGNS.

HTD SPROCKETS (CONT.)

14M POLY CHAIN GT CARBON BELTS

NOT RECOMMENDED



- Increased noise and belt wear
- The belt tooth is deeper than the sprocket groove
- The sprocket/bushing capacity may be too low for new designs

5M RPP+PLUS BELTS

NOT RECOMMENDED



- The sprocket/bushing capacity may be too low for new designs
- Increased backlash

POWERGRIP GT SPROCKETS

5M POWERGRIP GT3 BELTS

RECOMMENDED ORIGINAL DESIGN



- Excellent pitch fit
- Very low backlash

8M POWERGRIP GT4 BELTS

RECOMMENDED ORIGINAL DESIGN



- Excellent pitch fit
- Very low backlash

14M POWERGRIP GT4 BELTS

RECOMMENDED ORIGINAL DESIGN



- Excellent pitch fit
- Very low backlash

5M/8M HTD BELTS

NO COMPATIBILITY



- The belt tooth is too large to fully seat in the sprocket groove

14M HTD BELTS

NO COMPATIBILITY



- The belt tooth is too large to fully seat in the sprocket groove

5M POLY CHAIN GT CARBON BELTS

RECOMMENDED ORIGINAL DESIGN



- Excellent pitch fit
- Very low backlash

POWERGRIP GT SPROCKETS (CONT.)

8M POLY CHAIN GT CARBON BELTS

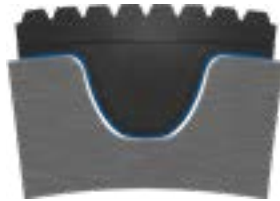
NO COMPATIBILITY



- The belt will not fully wrap the sprocket

14M POLY CHAIN GT CARBON BELTS

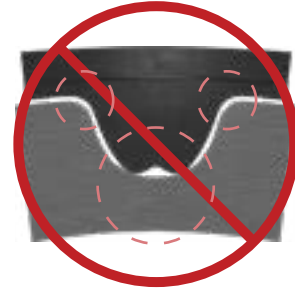
NOT RECOMMENDED



- The sprocket/bushing capacity may be too low for new designs
- Belt widths do not match sprocket widths

5M RPP+PLUS BELTS

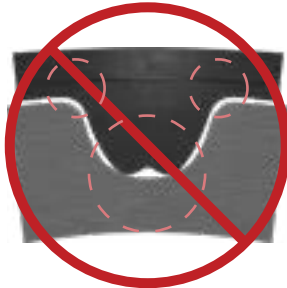
NO COMPATIBILITY



- Stress concentrations are present
- The belt tooth is too large to fully seat in the sprocket groove

8M RPP / HAWK / OMEGA BELTS

NO COMPATIBILITY



- Stress concentrations are present
- The belt tooth is too large to fully seat in the sprocket groove

14M RPP / HAWK / OMEGA BELTS

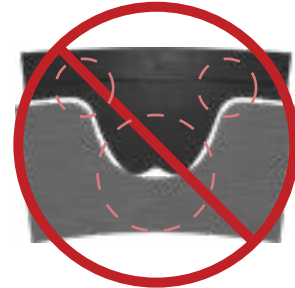
NO COMPATIBILITY



- Stress concentrations are present
- The belt tooth is too large to fully seat in the sprocket groove

8M PANTHER / QT POWER CHAIN / BLACKHAWK BELTS

NO COMPATIBILITY



- Stress concentrations are present
- The belt tooth is too large to fully seat in the sprocket groove
- Belt widths do not match sprocket widths
- The sprocket capacity may be too low for new designs

POWERGRIP GT SPROCKETS (CONT.)

14M PANTHER / QT POWER CHAIN / BLACKHAWK BELTS

NO COMPATIBILITY



- Stress concentrations are present
- The belt tooth is too large to fully seat in the sprocket groove
- Belt widths do not match sprocket widths
- The sprocket capacity may be too low for new designs

POLY CHAIN GT SPROCKETS

8M/14M POLY CHAIN GT2 BELTS

RECOMMENDED ORIGINAL DESIGN



- Thirty percent increase in belt capacity over Poly Chain GT Carbon belts

8M HTD BELTS

NO COMPATIBILITY



- The belt will not fully wrap the sprocket
- The belt tooth is too large to fully seat in the sprocket groove

14M HTD BELTS

NO COMPATIBILITY



- The belt tooth is too large to fully seat in the sprocket groove

8M POWERGRIP GT4 BELTS

NO COMPATIBILITY



- The belt will not fully wrap the sprocket
- The belt tooth is too large to fully seat in the sprocket groove

14M POWERGRIP GT4 BELTS

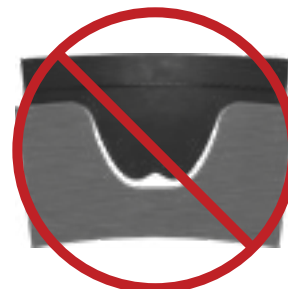
NOT RECOMMENDED



- Greatly reduced performance (if drive originally designed with Poly Chain GT Carbon)
- Belt widths do not match sprocket widths
- Excellent pitch fit

8M RPP / HAWK / OMEGA BELTS

NO COMPATIBILITY



- The belt will not fully wrap the sprocket
- Belt widths do not match sprocket widths

POLY CHAIN GT SPROCKETS (CONT.)

14M RPP / HAWK / OMEGA BELTS

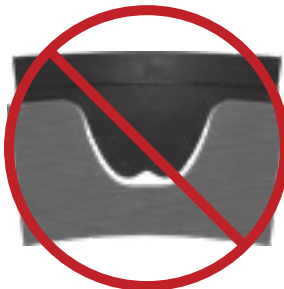
NO COMPATIBILITY



- The belt tooth is too wide to fully seat in the sprocket groove
- Greatly reduced performance
- Belt widths do not match sprocket widths

8M PANTHER / QT POWER CHAIN / BLACKHAWK BELTS

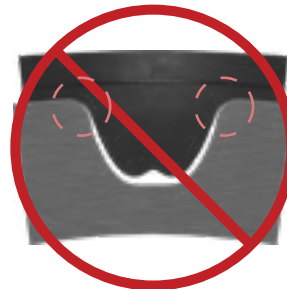
NO COMPATIBILITY



- The belt will not fully wrap the sprocket
- Belt widths do not match sprocket widths

14M PANTHER / QT POWER CHAIN / BLACKHAWK BELTS

NO COMPATIBILITY

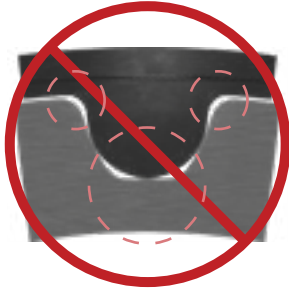


- The belt tooth is too wide to fully seat in the sprocket groove
- Greatly reduced performance
- Belt widths do not match sprocket widths

RPP SPROCKETS

5M HTD BELTS

NO COMPATIBILITY



- The belt tooth is too large to fully seat in the sprocket groove

5M POWERGRIP GT3 BELTS

REPLACEMENT ONLY



- The sprocket/bushing capacity may be too low for new designs

8M POWERGRIP GT4 BELTS

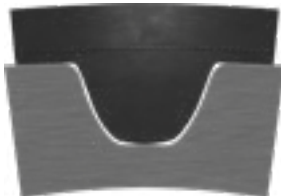
REPLACEMENT ONLY



- The sprocket/bushing capacity may be too low for new designs

14M POWERGRIP GT4 BELTS

REPLACEMENT ONLY



- The sprocket/bushing capacity may be too low for new designs
- Fairly good pitch fit

5M POLY CHAIN GT CARBON BELTS

REPLACEMENT ONLY



- The sprocket/bushing capacity may be too low for new designs

8M POLY CHAIN GT CARBON BELTS

NO COMPATIBILITY



- The belt will not fully wrap the sprocket
- Belt widths do not match sprocket widths

RPP SPROCKETS (CONTINUED)

14M POLY CARBON GT CARBON BELTS

NOT RECOMMENDED



-
- Belt widths do not match sprocket widths
 - Fairly good pitch fit
 - The sprocket/bushing capacity may be too low for new designs

TIMING BELTS / PULLEYS

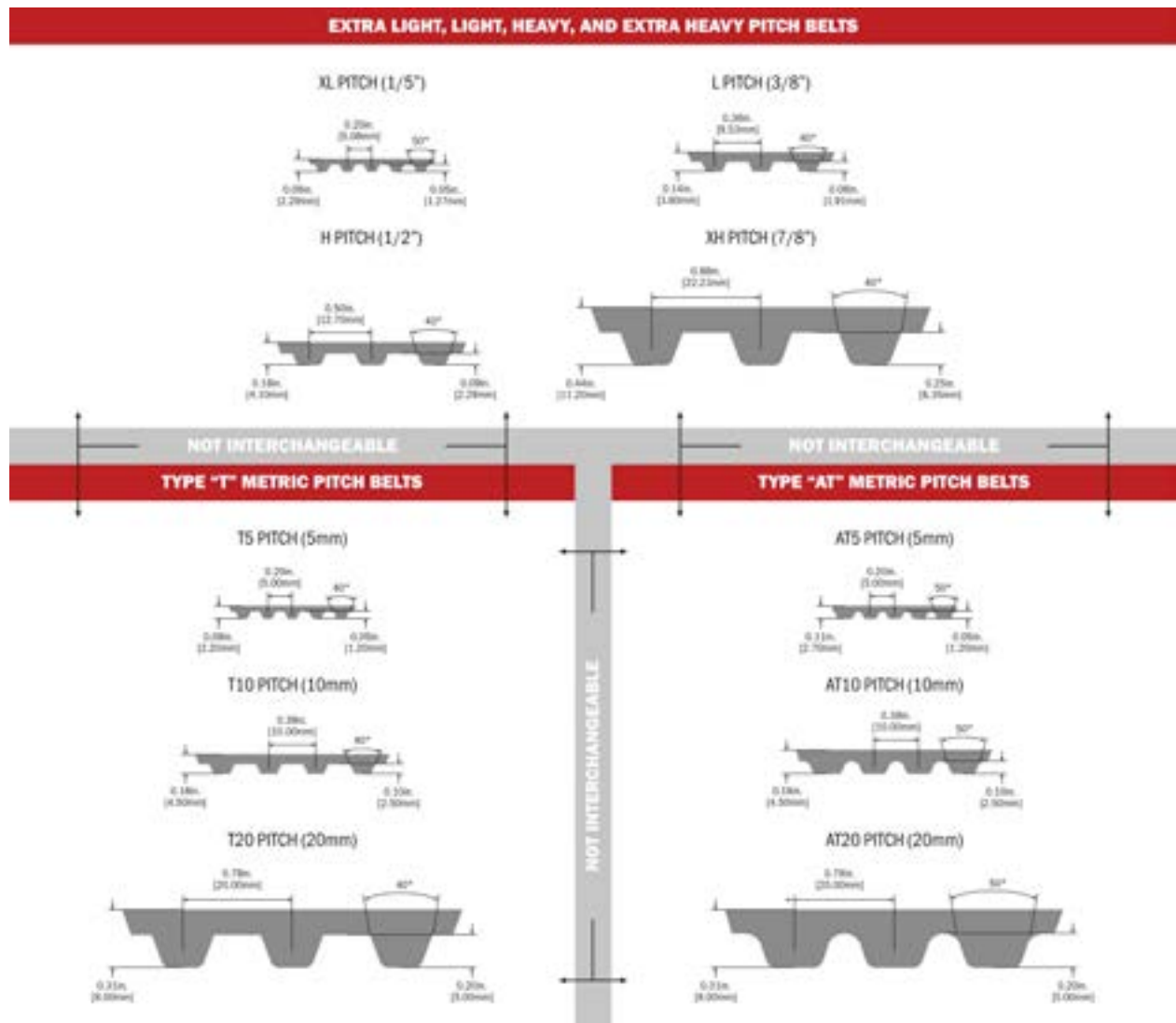
Today's belt market contains a variety of similar, yet distinct Timing belt/pulley profiles. Even though some of the profiles appear visually similar, they cannot be interchanged.

For example, the belt pitch measurements for XL, T5, and AT5 are similar. However, a closer look at additional tooth dimensions reveals that the belts cannot be interchanged due to variations in belt tooth/pulley groove shape, depth, and angle.

Care should be taken to distinguish between various Timing profiles and to ensure that a particular type of Timing belt is only used with its intended mating pulley.

Please reference the chart below for nominal Timing belt dimensions.

TIMING BELTS - NOMINAL DIMENSIONS



[illegible]



10. *Journal of the American Medical Association*, 2000; 284: 1039-1044.

10. *Journal of the American Medical Association*, 2000; 284: 1039-1044.



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