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## Rolling Doors Operated By Roller Chains

### Introduction

The service life of a roller chain used to operate a rolling door depends on installation, care and usage. The following information is presented to increase service life and is intended for door installers and for managers of facilities in which rolling doors are installed. **Note: The roller chain assembly and the door spring counterbalance should be evaluated by a trained door systems technician annually for chain and sprocket wear and for spring counterbalance performance.**

### Installation of Sprockets

**\*IMPORTANT\***: Sprocket misalignment will cause excessive wear and may cause the roller chain to jump off of a sprocket during door operation or lead to premature failure of the roller chain assembly.

The drive and driven sprockets must be installed in the same plane and remain aligned during operation. Wear on the side of the sprocket teeth or on the inside of the roller chain plates are indications that the sprockets are not properly aligned.

Sprocket misalignment may occur:

1. When the driven sprocket and counterbalance assembly move laterally. The counterbalance assembly must be locked between the headplate brackets. Check tightness of setscrews in sprockets, set collars and bearings. Also make certain that bearing mounting fasteners are secure. Key in sprocket hub should be in place and be visible at each side of sprocket.
2. When the drive sprocket moves laterally. When an electric operator is mounted on the headplate bracket, the operator and/or the headplate bracket should not sway or move laterally during operation. Bracing should be used as necessary. When an operator is wall mounted, the headplate bracket may require bracing to the wall in order to prevent swaying.

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**Note: Technical Data Sheets are information tools only and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific recommendations for their products and check the applicable local regulations.**

This Technical Data Sheet was prepared by the members of DASMA's Rolling Door Division Technical Committee. DASMA is a trade association comprising manufacturers of rolling doors, fire doors, grilles, counter shutters, sheet doors, and related products; upward-acting residential and commercial garage doors; operating devices for garage doors and gates, sensing devices, and electronic remote controls for garage doors and gate operators; as well as companies that manufacture or supply either raw materials or significant components used in the manufacture and installation of the Active Members' products.

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### **Chain Standard**

ANSI B29.100 regulates the following sizes of steel roller chain used for power transmission: 25, 35, 40, 41, 50, 60, 65, 80, 100, 140, 160, 180, 200, and 240. The chain number indicates the chain pitch in eighths of an inch by the left number or numbers. Chains with a "5" on the right hand digit are bushing chains, and do not have rollers. Number 41 chain is a narrow version of Number 40.

### **Chain Application**

The door manufacturer will select a roller chain and motor operator combination suitable for operation of the rolling door. When the motor operator and roller chain assembly are selected by someone other than the door manufacturer, the tension load on the roller chain should not exceed the chain manufacturer's maximum allowable load for the roller chain. An "offset link" (also known as a "half link") should be used only with the recommendation of the door manufacturer because the maximum allowable load for the roller chain assembly is reduced due to the lower fatigue strength of the "offset link."

### **Chain Maintenance**

Lubricate by applying oil where chain tension is minimal. Use SAE 20 for service temperatures between 32 deg F (0 deg C) and 104 deg F (40 deg C), and use SAE 10 for service temperatures below 32 deg F (0 deg C).

### **Chain Slack**

When the sprockets are horizontal, the slack that can be moved by hand should be about 4% of the distance between the shafts. See Figure 1.

### **Shaft Center Distance**

Rexnord, a manufacturer of roller chain drives, has published information on recommended shaft center distance provisions. Minimum center distance must allow clearance between the teeth of the two sprockets. The arc of chain engagement should not be less than 120 degrees (see Figure 2)

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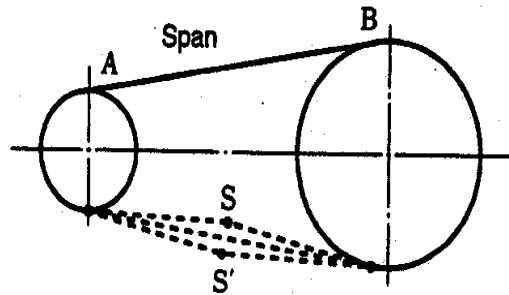


Figure 1

Source: Figure 7.4, "The Complete Guide to Chain, U.S. Tsubaki, 1997

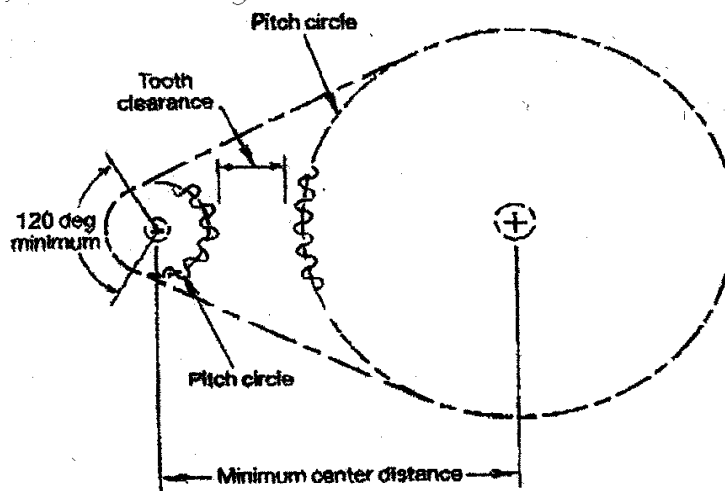


Figure 2

Source: Page A93, Motion System Design, 2001

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