BULLETIN NO. 2000 F1
Date 9/2020

Dings CO. magnetic group

PERMA PULLEY INSTRUCTIONS

DESCRIPTION

The Dings Perma Pulley is a permanent (nonelectric) magnetic separator. It's used on belt conveyors in place of a regular head pulley. It provides automatic and continuous separation of tramp iron on either troughed or flat bed conveyors.

Magnetism is produced around the outside of the pulley by an inside assembly of ceramic magnet material called Ceramox.

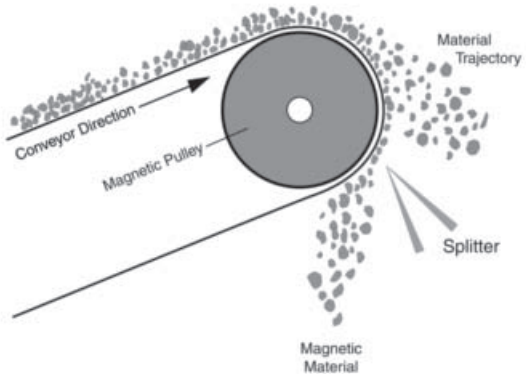
Perma Pulleys are furnished in many diameters and belt widths. Large diameters are magnetically more powerful than small diameters because they contain more Ceramox.

Face width of a Perma Pulley is normally 2" greater than belt width. The aluminum pulley heads are tapered and the stainless steel shell is flat This combination provides a crowned surface for proper belt tracking.

OPERATION

Conveyed nonmagnetic materials such as coal, glass, aluminum, and sand are not affected by magnetism. Such materials follow a normal trajectory when they fall from a magnetic head pulley. Ferrous materials such as iron and steel objects are affected. When they enter the magnetic field, they are attracted downward towards the belt. Tramp iron is magnetically held against the belt as the belt travels around the pulley.

Tramp iron is discharged on the underside of a Perma Pulley where the belt loses contact with the pulley. In some applications a nonmagnetic metal divider is useful. Install it about halfway between the front face of the pulley and the vertical centerline, and about 3" or 4" below the pulley. A divider can provide a more positive split between the nonmagnetic discharge and the magnetic discharge.



INSTALLATION

A Perma Pulley is shipped complete from Dings ready to install as a unit, including shaft. Do not disassemble any parts.

Install support bearings on both ends of shaft. The magnetism will not alter performance of bearings.

Install conveyor belt around pulley. If the belt is spliced together, cover splice with tape or rubber to prevent small particles of ferrous material (fuzz iron) from seeping through the splice. An accumulation of fuzz iron on surface of magnetic pulley can cause wear on the shell and belt.

If conveyor has a flat bed, use side boards to contain burden of conveyed material several inches in from sides of belt. This will prevent conveyed material from falling off edge of belt and directly against surface of pulley.

Install your conveyor drive. For best separation efficiency, keep speed of pulley under 40 RPM on diameters from 15" to 30". Speed of a 12" diameter should not exceed 50 RPM. Higher speeds will shorten the time that tramp iron will be in the magnetic field and consequently reduce efficiency. Some tramp iron may not be separated.

MAINTENANCE

- Keep support bearings greased to prevent wear on pulley shaft.
- Keep belt splices dust tight.
- Keep set screws in pulley heads locked tightly against shaft.
- Periodically brush off face of pulley. If metal objects and fuzz iron are allowed to accumulate on face of pulley (underneath belt), the belt and pulley shell will wear rapidly.
- Do not heat pulley to temperature above 400° F or cool it below -20° F.

If disassembly is required and the pulley cannot be returned to Dings, please contact the factory for complete instructions.

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Bushing Removal & Installation Instructions

Determine the type and size of bushing to be removed. Refer to the certified print for your magnetic head pulley or the information on the bushing face for the bushing size. Refer to **Figure 1** & **Table 1** for information.

Removal

1) Loosen and remove all screws from the bushings.

2) Install the removed screws into the threaded jack screw holes. Alternating between the screws, use small, equal turns to remove the bushing from the hub.

3) Remove the bushings from the shaft. Note: A wedge, such as a flathead screwdriver, may be used to slightly open up the sawcut to aid in removal of the bushings. DO NOT USE EXCESSIVE WEDGING FORCE, as this may damage the bushing.

Installation

1) Clean the shaft, bushings, and hubs. Verify that all mating surfaces are free of dirt, paint, grease and oil. DO NOT USE LUBRICANTS ON ANY SURFACE DURING BUSHING INSTALLATION.

2) Insert the shaft through the pulley hubs.

3) Place the keys in the keyseats, if applicable, and slide the bushings into position in the hub on each end of the shaft. Note: A wedge, such as a flathead screwdriver, may be used to slightly open up the sawcut and aid in positioning the bushing on the shaft. DO NOT USE EXCESSIVE WEDGING FORCE, as this may damage the bushing.

4) Insert the screws per the following. Refer to **Figure 1**.

   For Taper-lock bushings – Align the partial holes in the bushing and hub. There will be only 1 orientation where the holes match up.

   For QD & XT bushings – Align the through holes in the bushing with the threaded holes in the hub. Hand tighten the screws.

5) Verify the axial position of the pulley on the shaft. Adjust as needed.

6) Starting with one bushing, tighten the screws evenly in the sequence shown in **Figure 1**. Use a torque wrench set according to **Table 1**.

   For Taper-lock bushings – After reaching the specified torque on each of the screws, hammer against the face of the bushing. Start by hammering on either side of the screw farthest from the sawcut and continue around, while alternating sides, towards the sawcut. End by hammering on either side of the sawcut. Then, retighten the screws to the specified torque.

   Continue this procedure of hammering and retightening until the screws no longer turn at the specified torque.

   For QD & XT bushings – Continue to tighten the screws with the torque wrench for 2 additional cycles to ensure that the bushing is properly seated in the hub.

7) Recheck the axial position of the pulley on the shaft. Fully tightening one bushing may cause the shaft position to shift. If the shaft has moved, loosen the bushing following the removal procedure and reinstall per **Step 6**.

8) Visually inspect the bushing for proper installation.

   For Taper-lock bushings – Verify that the bushing face on either side sawcut are flush with each other.

   For QD & XT bushings – Verify that there is a gap between the bushing flange and the hub face. There should also be a gap remaining at the saw cut.

9) Tighten the second bushing following the procedure in **Step 6** and **Step 8**.

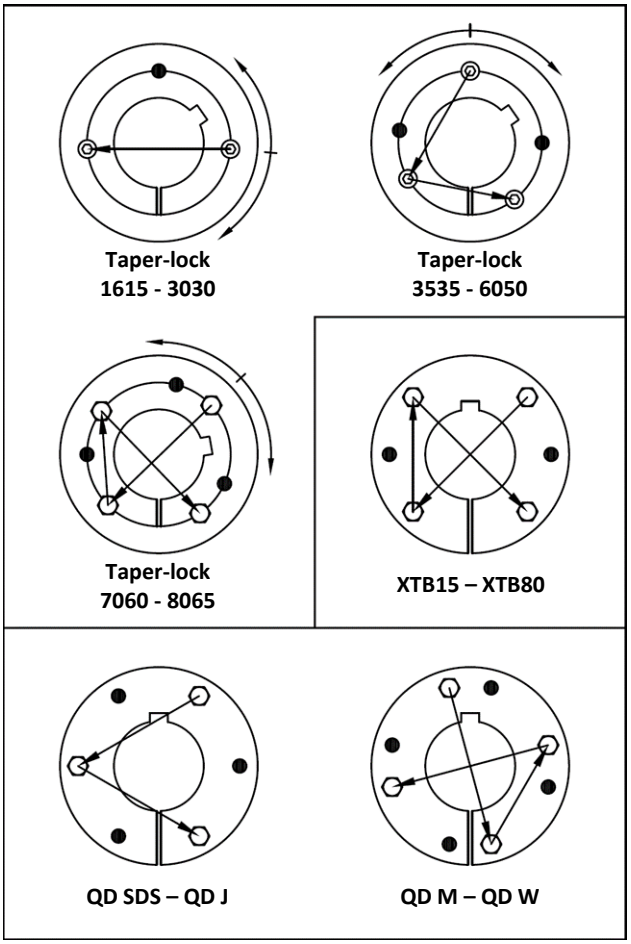

Figure 1: Bushing Screw Tightening Sequence

Table 1: Bushing Installation Torques

	Bushing Size	Installation Screws			Installation Torque		
		Size	Qty	Drive Style	lb-in	lb-ft	N-m
Taper-Lock®	1615	3/8 - 16	2	3/16” Int. Hex	175	14.6	19.8
	2517	1/2 - 13	2	1/4" Int. Hex	430	35.8	48.6
	3020, 3030	5/8 - 11	2	5/16” Int. Hex	800	66.7	90.4
	3535	1/2 - 13	3	3/8” Int. Hex	1000	83.3	113
	4040	5/8 - 11	3	1/2” Int. Hex	1700	141.7	192.1
	4545	3/4 - 10	3	5/8” Int. Hex	2450	204.2	276.8
	5050	7/8 - 9	3	3/4" Int. Hex	3100	258.3	350.3
	6050	1-1/4 - 7	3	1-7/8” Ext. Hex	7820	651.7	883.5
	7060	1-1/4 - 7	4	1-7/8” Ext. Hex	7820	651.7	883.5
	8065	1-1/4 - 7	4	1-7/8” Ext. Hex	7820	651.7	883.5
QD®	SDS	1/4 - 20	3	7/16” Ext. Hex	108	9	12.2
	SF	3/8 - 16	3	9/16” Ext. Hex	360	30	40.7
	E	1/2 - 13	3	3/4” Ext. Hex	720	60	81.3
	F	9/16 - 12	3	13/16” Ext. Hex	900	75	101.7
	J	5/8 - 11	3	15/16” Ext. Hex	1620	135	183
	M	3/4 - 10	4	1-1/8” Ext. Hex	2700	225	305.1
	N	7/8 - 9	4	1-5/16” Ext. Hex	3600	300	406.7
	P	1 - 8	4	1-1/2” Ext. Hex	5400	450	610.1
	W	1-1/8 - 7	4	1-11/16” Ext. Hex	7200	600	813.5
XT®	XTB15	1/4 - 20	4	7/16” Ext. Hex	95	7.9	10.7
	XTB20	5/16 - 18	4	1/2” Ext. Hex	200	16.7	22.6
	XTB25	3/8 - 16	4	9/16” Ext. Hex	350	29.2	39.5
	XTB30	7/16 - 14	4	5/8” Ext. Hex	550	45.8	62.1
	XTB35	1/2 - 13	4	3/4” Ext. Hex	840	70	94.9
	XTB40	9/16 - 12	4	13/16” Ext. Hex	1200	100	135.6
	XTB45	5/8 - 11	4	15/16” Ext. Hex	1680	140	189.8
	XTB50	3/4 - 10	4	1-1/8” Ext. Hex	3000	250	339
	XTB60	7/8 - 9	4	1-5/16” Ext. Hex	4800	400	542.3
	XTB70	1 - 8	4	1-1/2” Ext. Hex	7200	600	813.5
	XTB80	1-1/8 - 7	4	1-11/16” Ext. Hex	9000	750	1016.9

Contact factory for sizes not listed in this table