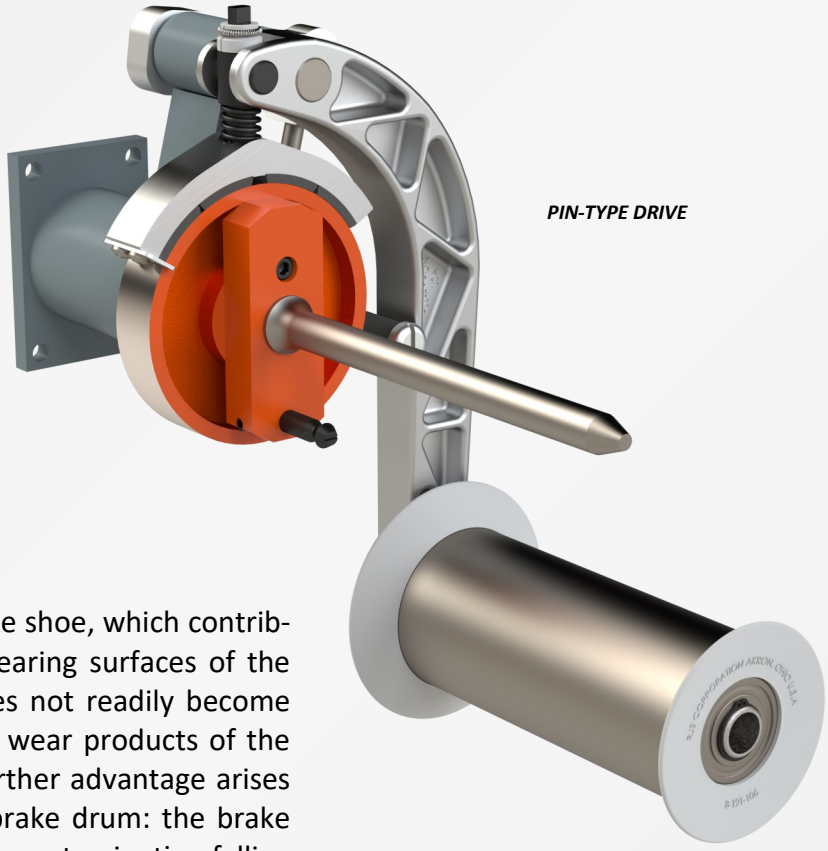
Model 305 Tension Controllers

General Description

The Model 305 Tension Controller has been developed to offer improved operation of a steel cord creel at low tension. The same proven principles found in the successful Model 121 have been retained in the 305, with careful emphasis given to the design of those components which would affect low-tension operation.



PIN-TYPE DRIVE

The Model 305 is designed with the control-arm roller positioned below the spool (as distinct from the Model 121, which has its control-arm roller above the spool). The space occupied by the two controllers is nominally the same.

The 305 has been equipped with a light-weight brake shoe, which contributes to superior operation at low tensions. The wearing surfaces of the shoe employ a self- lubricating material which does not readily become contaminated by its own wear residue, nor by the wear products of the brake drum upon which the brake shoe rides. A further advantage arises from the brake shoe being positioned above the brake drum: the brake shoe tends to shield the drum from fine atmospheric contamination falling upon the mechanism.

Spool Type

The Model 305 is made to accept spools of type B-40 and/or B-80/17, or B-60 and/or B-80/33, as selected by the customer. Operation with special spools will be considered. The customer should verify the dimensions of their spool when ordering. If B-80/17 spools are used, the spools should be filled to a weight no greater than 82 lb (37 kg) to minimize the possibility of fatigue failure of the spindle. The dimensions of these spools are as follows:

SPOOL TYPE	OUTSIDE DIAMETER	WIDTH	SPINLE DIAMETER	PREFERRED DRIVE PIN DIAMETER	OFFSET DISTANCE SPINDLE TO DRIVE PIN
B-40	10 in. (255mm)	6-1/2 in. (165mm)	5/8 in. (16mm)	7/16 in. or 10mm	1-1/2 in. (38mm)
B-80/17	10 in. (255mm)	13 in. (330mm)	5/8 in. (16mm)	7/16 in. or 10mm	1-1/2 in. (38mm)
B-60	10 in. (255mm)	6-1/2 in. (165mm)	1-1/4 in. (32mm)	7/16 in. or 10mm	1-11/16 in. (43mm)
B-80/33	10 in. (255mm)	13 in. (330mm)	1-1/4 in. (32mm)	7/16 in. or 10mm	1-11/16 in. (43mm)

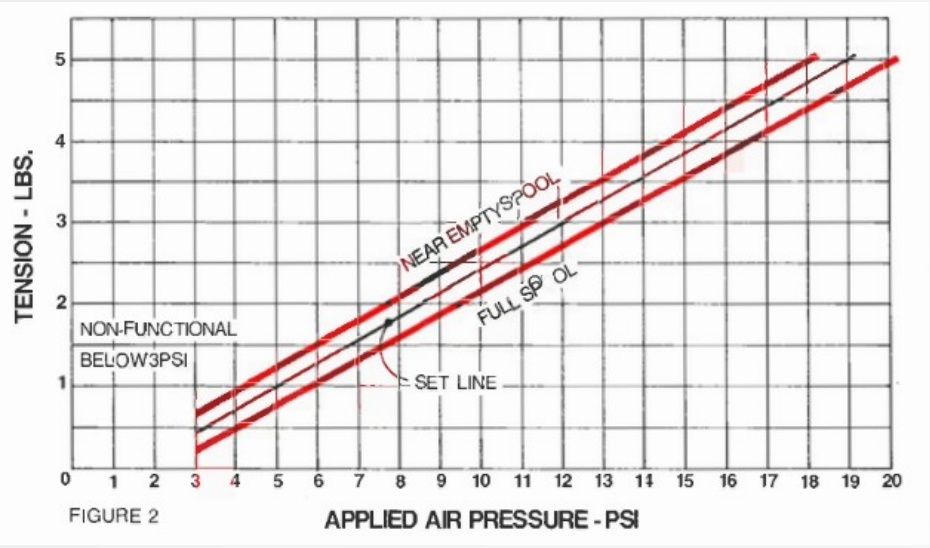


FIGURE 2

Operating Tension

The tension range of the Model 305 is from 0.6 lb (0.27 kg) to 5 lb (2.27 kg). Corresponding range of applied air pressure is from 3 psi (0.23 kg/cm²) to (18 psi 1.27 kg/cm²).

The operating characteristics of tension vs. air pressure are shown to the left. Operation at a tension less than that created by the bearing friction in the spindle and control-arm roller is not possible.

Operation

The steel cord tension arises from the friction of the brake shoe riding upon the brake drum, and is regulated by the control-arm as the steel cord passes over the arm's idler roller.

When in operation, a state of balance between the loading of the control-arm and the friction of the shoe on the brake drum results in the same tension among all controllers in accordance with the characteristics shown above.

When pulling of the steel cord slacks or stops, the braking force automatically increases and tends to prevent overrunning of the spool. However, the effectiveness of the braking force is dependent upon the air pressure setting of the creel, and upon the weight of the remaining steel cord on the spool at the time of braking. The Model 305 has about 75% of the braking effectiveness for the same operating conditions as the Model 121.

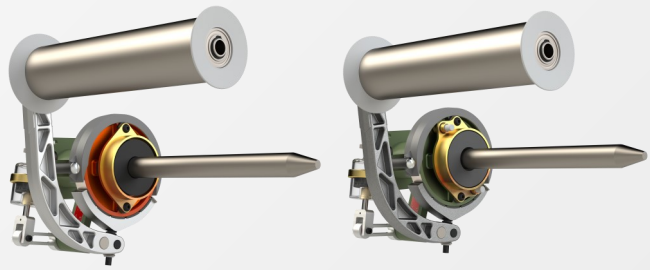
Operation

The Model 305 is very simple, but precise in design. The brake drum is turned and finish-ground to a close tolerance and smooth finish. The brake shoe is bonded to its back-up plate and machined to a precise size to result in an exact fit to the brake drum. The control arm is light so it can better follow variations in payout caused by eccentricity of the spool and is of an aluminum-magnesium alloy for good strength and ductility.

Magnetic Spool Drives

Magnetic spool drives are available in lieu of the standard drive pin. This option removes the need to locate the drive pin hole of the spool during loading.

RJS offers two designs: The standard Magnet Drive and the PFEF Magnet Drive. The PFEF (Positive Flange Engagement Feature) with spring-loaded pins provides additional insurance from spool slippage.



MAGNET DRIVE PFEF MAGNET DRIVE

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