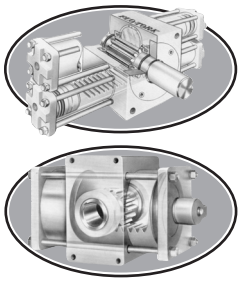
MOOG
FLO-TORK



Application Bulletin

AP 305
March 2010

TRANSFER DRIVE APPLICATION

Given: (a) Weight to be moved...200 lbs. (b) Distance...6ft. (72 in.) (c) Smooth travel req'd (d) Transfer time...2 sec. (e) Load is on roller bearings (f) Hydraulic 1000 PSI available

I The common approach: Use a cylinder to push and pull the load and plan on using valving, cushions and/or shock absorbers to prevent a slam-bang type operation. I will make two assumptions to keep this article short 1) A 2" bore cylinder is the smallest practical size for 6 ft. travel and will provide the force required. 2) The flow requirement will be calculated for an average speed of 6 ft. in 2 sec.

A. The oil required to extend the cylinder is (3.14 sq. in. x 72 in.)/231 cu. in. = .98 gal.

B. Cycle rate 60/2 = 30 cycles/min.

C. Flow rate .98 gpm x 30 cycles/min. = 29.4 gpm

II. **The Moog Flo-Tork APPROACH:** Use a Moog Flo-Tork Actuator and link as shown in catalog ACT-125 pages 36 & 37.

A. Consulting the Low Friction Application Chart, with R = 3" and T = 2 sec. we find CM = 10 lbs. in. per lb. of load. The torque required = 10 x 200 lbs. = 2,000 lbs. in.

B. Using the charts on pages 16 - 18 of our Catalog ACT-125 we select the Model 7500 which-has a torque output of 2500 lbs. in. at 1000 PSI.

C. The displacement of the 7500 x 180^0 is 8.92 cu. inches.

D. Flow rate = (8.92 x 30) / 231 = 1.16 gpm.

III. Which is the BETTER approach?

A system that requires a 30 gpm pump and valving to control acceleration and deceleration, or the Moog Flo-Tork drive, which automatically provides smooth acceleration and requires less than 1-1/2 gpm. **The Moog Flo-Tork drive of course.**

Advantages:

1. A 20:1 reduction in flow requirements.

2. On die cast, injection molding, and similar machinery, an automatic gate operator or transfer drive can be added without increasing the existing pump capacity.

3. Smooth acceleration without the use of valves. This reduces the cost and also the probability of a malfunction.

4. Repeat accuracy - the travel is controlled by the length of the arm.

IV. The next transfer type you have, **Think Moog Flo-Tork**...NOT cylinders.

REFER TO CATALOG ACT-125 PAGES 36 AND 37 "LINEAR DRIVE WITH FLO-TORK ROTARY ACTUATORS AND HARMONIC MOTION" FOR ADDITIONAL INFORMATION.

Moog Flo-Tork 1701 N. Main St. P.O. Box 68, Orrville, Ohio 44667-0068
PHONE: 330-682-0010 FAX: 330-683-6857