

TECHTORQUE NEWS

Welcome to the forth issue of Techtorque for 2008. Your feedback about our newsletters as well as your suggestions for any particular products or applications that you would like to read about is always welcome. With your input, we will do our best to provide you with informative and relevant reading matter. Please email your comments and requests to our Sales and Marketing Manager, Chris Hoare, at choare@acrodyne.com.au.

Mastergear "M" series worm gear actuators

The cast iron construction and rugged design of the Mastergear 'M' series manual valve actuators has been engineered to meet the arduous requirements demanded of industrial environments. Through corrosion resistant treatment of bare metal surfaces, a grey epoxy paint finish and the use of lip seals with multiple sealing surfaces, the 'M' range is sealed to IP 67 and achieves exceptional durability.

Models M07 to M 16 use high performance axial needle roller bearings, which combined with a one piece input wormshaft, maximises the available mechanical advantage and overall unit efficiency. Mastergear now have an "M" series for virtually all applications, the all new M60 is rated to a maximum torque capacity of 113,000Nm.

Amalga Composites

Amalga Composites is a leader in the design, engineering and manufacturing of filament wound composite pneumatic and hydraulic cylinder tubing, pressure vessels, food grade tubing, booms and masts, tubular cores, rollers and shafts, electrical tubing and fuse components, torque shafts, magnetic coil forms, launch tubes and other engineered composite components built to specification. Doctoral-level engineering provides the design expertise to meet the toughest requirements and also to offer immediate technical customer support from prototype through production.

Acrodyne carries large stocks of Amalga tubing ranging from 63mm to 300mm and 1" to 20" and has full capabilities to cut and dress the tube ready for you to assemble. Our expert staff and custom built machines are able to meet any length requirement up to 3 metres long.


Call today for an information pack or pricing

71st Annual
Victorian Water Industry Engineers
and Operators Conference


Bendigo Exhibition Centre
Holmes Rd, Bendigo
(Prince of Wales Showgrounds)
2nd to 4th September 2008



"Acrodyne will be there
come and say hello"



The operating torques for all sizes are extremely low
Offers extremely high performance characteristics in terms of duration and reliability



CHARACTER FIRST DEPENDABILITY

Fulfilling what I agreed to do

- ... Earn trust
- ... Carry the load.
- ... Set high standards.



5 Keys to Building Dependability:

- "Be Careful what you Promise" – make realistic commitments.
- "Clarify Expectations" – ask questions, clarify assumptions.
- "Get it Done!" – think through the process, gather resources, get started.
- "Correct Mistakes" – dependability requires courage to fix mistakes.
- "Have a Good Attitude" – keep positive with unexpected demands.

Why is Dependability important?

Dependability allows others to trust us – our judgments, decisions, advice and contributions.

For more information regarding Character First contact Philip Greenwood at People and Culture on (03) 9018 7971 or 0411 131 449
www.peopleandculture.com.au

Employee Profile - George Kamfonas

George Kamfonas joined us in July as our new Internal Production Technician. George is 44 years of age is married to Vicky, has 3 sons and resides in Mount Waverley. George's background is as a mechanic, signage and driving trucks. In between spending time with his family, George likes fishing and riding his motor bike.



Valve Positioner Basics

TECHTORQUE
ARTICLE

Positioners

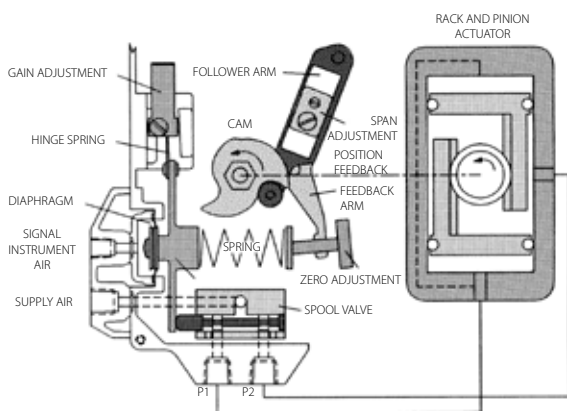
When a valve positioner is fitted to a pneumatic actuator, for a given signal the positioner will always attempt to maintain the same actuator position regardless of changes in line pressure, friction or wear.

Electronic positioners

A pneumatic positioner receiving a pneumatic signal (eg 0.2 to 1 bar, 3-15 psi) uses a "force balance" mechanism to compare an instrument signal with valve stem or shaft position. When the control signal differs from the actuator's position, the positioner supplies or vents air from the actuator until the desired position is reached. The positioner supplies air to the actuator at a higher pressure than that available from the instrument signal.

The profile of a cam can be changed to alter the characteristic of the valve. Eg "Linear" where a given percentage change in signal results in the same percentage change in valve movement or "Equal Percentage" where a given change in valve position results in the same percentage change to the resultant flow.

Principle of Operation:



Electro-pneumatic positioners

As most control loops are now electronic, the 0.2 to 1 bar, 3-15 psi signal usually comes via an "I to P" converter (also known as a Current to Pneumatic or Electro-Pneumatic converter) which accepts either a 4-20 mA or 0-10 v DC signal.

An "I to P" converter usually operates via a force balance principle. A coil is suspended in a magnetic field and mounted using a technique that will reduce the effects of vibration. At the lower end of the coil is a flapper valve that operates against a nozzle to create a back pressure on the servo diaphragm of a booster relay. When input current flows in the coil it produces a force between the coil and the flapper valve, which controls the servo pressure and the output pressure.

Electronic positioners

Electronic Positioners eliminate the mechanical "force balance" equipment described above and replace it with a precision potentiometer or alternatively by a non-contact optical transducer. These devices produce an electronic signal proportional to valve position that can be compared with the incoming control signal. The electronic circuitry that does this will then send a signal to a pneumatic system that is sometimes similar to that found in an "I to P" converter.

The device that regulates the flow of air to and from the actuator will usually be driven by a coil, low powered solenoid or piezo valves that will use the limited power available directly from the control signal.

Smart positioners - an electro-pneumatic positioner with micro-processor that has a self-calibration capability and an ability to adjust on board pre-programmed control algorithms in service in order to optimise control. There may also be some level of fieldbus related communication ability eg Hart, Profibus, Foundation Fieldbus etc.



TERMINOLOGY

Direct acting: positioner increases the output signal as the input signal increases.

Reverse acting: positioner decreases the output signal as the input signal increases.

(Some positioners allow the action to be changed in the field)

Split ranging: In order to use two valves installed in parallel in a control system the smaller valve will close at 3 psi and be fully open at 9 psi. The larger valve will be closed at 9 psi but fully open at 15psi.

Sensitivity: This defines the reaction of the device to a change of signal.

Linearity: As the signal is increased, the trace of changing valve position should be a straight line.

Hysteresis: This is the maximum difference in valve position for a given input signal during a full range of movement in each direction.

Repeatability: If the same signal is selected on two consecutive occasions this is the difference between the two positions that are reached.

Deadband: The range through which a signal can be varied without initiating an observable response.

Linear Characteristic: where a given percentage change in signal results in the same percentage change in valve movement

Equal Percentage Characteristic: where a given change in valve position results in the same percentage change to the resultant flow