



## HS - MX High-Speed Gear Increaser

Flowserve Limitorque has developed a mechanical alternative for the metering industry, especially when used with meter prover applications. These applications require an electric actuator to quickly move a diverter valve from A to B in a few seconds and then to “lock” into position to prevent back driving of the valve.

The high-speed locking worm sets or other mechanical methods used in competing solutions can be troublesome and are subject to extensive wear. However, helical gear increasers have been used for many years to provide safe, reliable, and trouble-free operation. The HS device effectively uses this helical gear method in conjunction with Limitorque’s proven actuators.

The MX electronic actuator is a non-intrusive multi-turn actuator product with the first three rpm sets locking. When coupled to the HS gear device, a range of output speeds can be produced to meet differing requirements for meter provers.

- The Limitorque HS device uses a simple mechanical approach – a helical gear set that increases the output speed of the electric actuator and prevents gear backdrive while maintaining a “lock in last” position due to the use of a worm gear set in the actuator.

- The HS can also be coupled to a non-intrusive QXM or, if the customer desires, a SMB or L120 electric actuator.
- Because the HS is mechanical, it can meet or exceed many users’ vibration and seismic specifications without fear of position disruption.
- Further, when the electric actuator is handwheel operated, the locking worm set mechanisms are not compromised, ensuring that a secure defined position is maintained.

Limitorque products are designed to meet user safety and performance metrics, and the HS exemplifies the Flowserve commitment to engineering excellence. Our commitment to safety has been verified by adding an ATEX rating to the HS (*Sira 03ATEX1212X, Issue 10*).





### HS Speed and Torque Table

Description	60Hz RPM at Valve	Seat Torque Rating (ft-lb)	Hub City P/N	Base at Valve	Max Bore & Key Square (in.)	Max Bore & Key Rectanular (in.)	Max Bore & Key (mm)
MX-10_HS	132	36	HI4042G	14	2.00" dia 1/2" square key	2.0" dia 1/2" x 3/8" key	52 mm dia 16x10 mm key
	168	28					
	245	19					
MX-20_HS	123	69	HI4062G	14	2.875" dia 3/4" square key	2.875" dia 3/4" x 1/2" key	73 mm dia 20x12 mm key
	181	47					
	239	36					
MXH-40_HS	129	130	HI4082G	16	2.875" dia 3/4" square key	2.875" dia 3/4" x 1/2" key	73 mm dia 20x12 mm key
	170	98					
	240	70					
MXH-85_HS	126	323	HI4092G	25	2.875" dia 3/4" square key	2.875" dia 3/4" x 1/2" key	73 mm dia 20x12 mm key
	188	217					
	234	174					

MX unit	Ratio 1	Ratio 2	Ratio 3	RPM out 1	RPM out 2	RPM out 3	Torque 1 (ft-lb)	Torque 2 (ft-lb)	Torque 3 (ft-lb)	MX (ft-lb)
MX-10	3.31	4.21	6.13	132	168	245	36	28	19	125
MX-20	3.08	4.52	5.98	123	181	239	69	47	36	225
MX-40	3.22	4.26	6.01	129	170	240	130	98	70	440
MX-85	3.60	5.36	6.69	126	188	234	323	217	174	1225

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