



**Heavy Duty
Hydraulic Cylinders
with External Linear
Positioner**

Royal Cylinders
225 Edworthy Way
New Westminster, BC V3L 5G4
www.RoyalCylinders.com

Heavy Duty Hydraulic Cylinders with External Linear Positioner

Linear position sensor on a Royal heavy duty hydraulic cylinder was required but there was limited length for the cylinder to fit in the application.

Linear position sensors are typically designed to mount internally in the cylinder. Royal has a lot of cylinder lines that are standard and capable of doing this like the Royal:

TH Series - Hydraulic Positioners Cylinder

TR series - Pneumatic Positioners Cylinder

TD Series – Following Positioners Cylinder

However, sometimes these type of standard solutions (internal probes) will not work and an application requires an external follower cylinder that is still connected to the working cylinder. Whether it is for easier access to the probe or to meet a strict mounting dimension the same rigorous design principles have applied.

Over the years we have had a few different application come up where an externally mounted linear positioning probe was required for a custom cylinder application. Below are some examples:

EXAMPLE 1

Customer required a Royal heavy duty hydraulic cylinder with linear positioner probe. Cylinder needed to fit into an extremely small pin to pin length application and have an explosion proof probe installed to read the piston location.

Mounting it externally allowed for the probe to follow the piston rod movement and the kidney shaped bracket that attached to the linear probe cylinder allowed the heavy duty hydraulic piston rod to have some degree of angular movement.

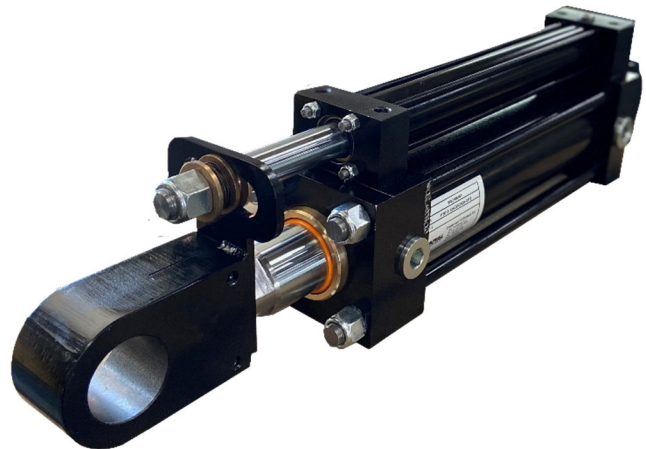


Figure 1. 3" Bore Hydraulic with linear positioning

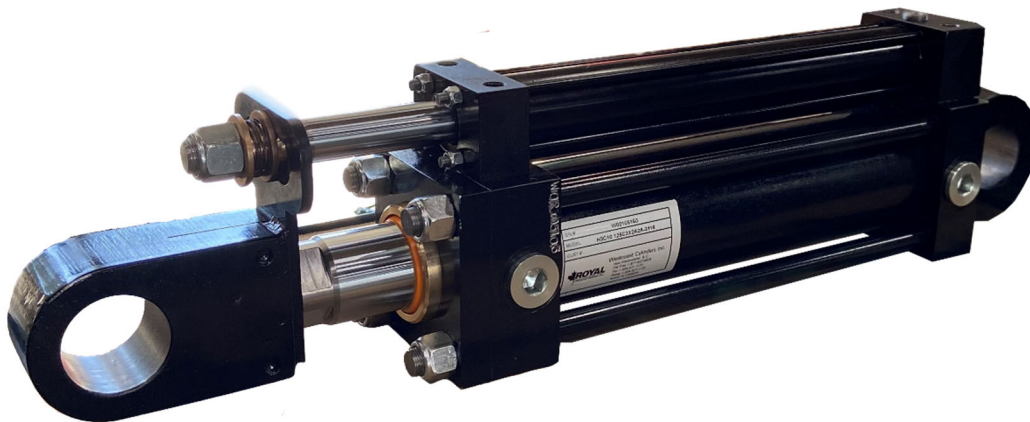


Figure 2. 3" Bore Hydraulic with linear positioning

EXAMPLE 2

External probes were required for custom hydraulic cylinders designed to go on space industry test equipment. These Royal heavy duty hydraulic cylinders were designed for 5000 psi with 3:1 safety factor on all components. External probes were specified so calibration/testing of

cylinders and probes could be performed separately and then together to ensure no errors existed anywhere in the system. It also allowed for replacement of probe logic in the event of an error without the need to take apart the Royal custom hydraulic cylinder.

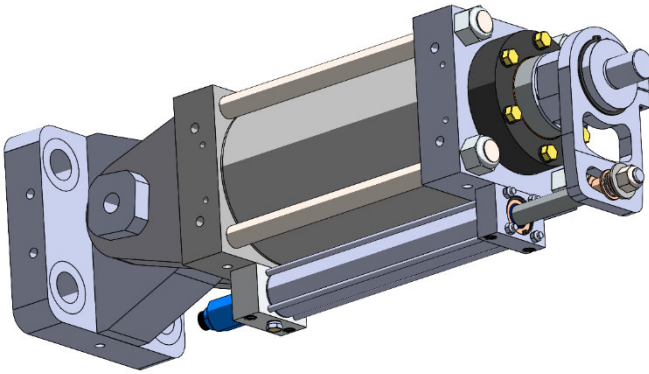


Figure 4. Custom Heavy duty hydraulic with linear positioning

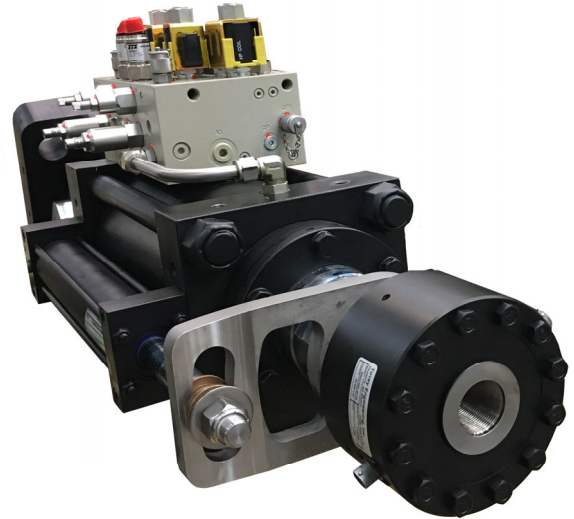


Figure 5. Custom Heavy duty hydraulic with linear positioning

EXAMPLE 3

High pressure hydraulic cylinder that would be moving at an extremely high frequency. The double rod cylinder was required for earthquake simulation testing. The double rod enabled higher frequency since equal pressure on either side of the cylinder created equal forces as well as reduced the amount of hydraulic fluid needed to move the cylinder. This Royal custom heavy duty hydraulic cylinder was designed with special sealing technology for high frequency and pressure. The linear positioning cylinder was rigidly attached to the outside of the cylinder since it was unable to be installed internally or elsewhere on the equipment.

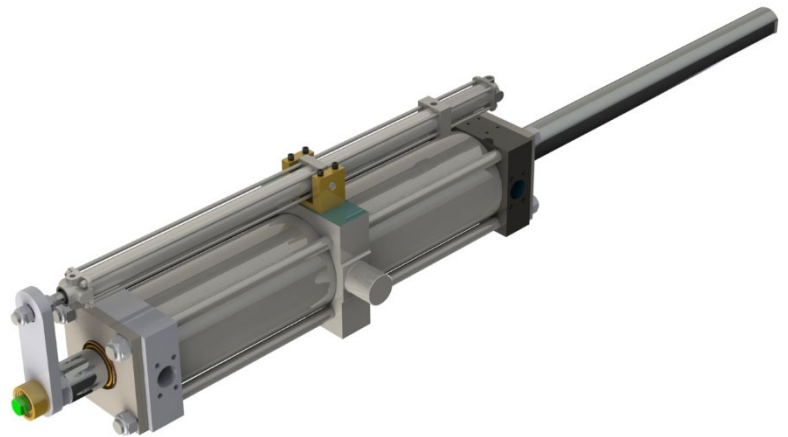


Figure 6. 8" bore hydraulic earth quake test cylinder

CONCLUSION

When heavy duty hydraulic cylinders requires a linear position sensing probe for piston position it is important to figure out how and where the probe will be installed. There are certain

Applications where an externally mounted linear positioner cylinder that is attached to the main Royal hydraulic cylinder is the right solution and has its advantages.

Need help determining the right cylinder for your application. Royal Engineers and Technicians are here to answer any and all cylinder application questions. Get a quote quick!

AUTHOR

Chris McGregor

Technical Sales

Chris is currently a Technical Sales Specialist and responsible for providing engineering and sales support for custom cylinders and applications. He holds a Mechanical Engineering Technologist Diploma, from British Columbia Institute of Technology along with extensive experience in hydraulic and pneumatic systems.

DATE Oct 22-2021
CATEGORY Royal Custom Solution
TAGS Envelope
SERIES H Series, TH Series



Royal Cylinders
225 Edworthy Way
New Westminster, BC V3L 5G4
www.RoyalCylinders.com