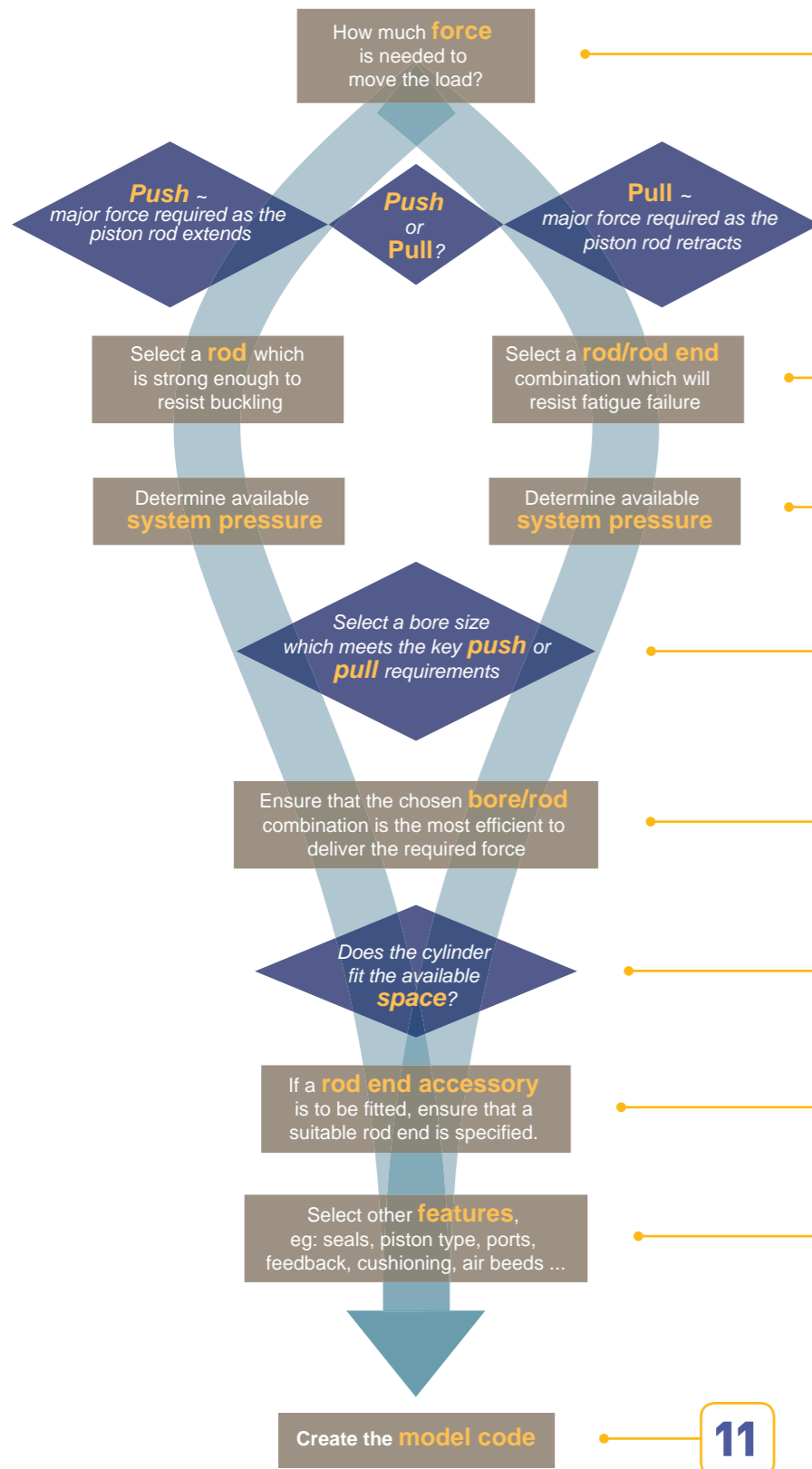


Selecting an HMI Cylinder

The piston in a cylinder moves when pressure is applied to it. With fluid pressure applied to one side, the piston rod extends, moving the load in a linear path. When fluid pressure is applied to the other side of the piston, the piston rod retracts, to complete the cycle.



1 Establish the force required for the application.

2 The key component in selecting a hydraulic cylinder is the piston rod. It transmits the full force required to move the load.

1 If pushing the load, the piston rod must have the column strength not to bend or buckle. In pull applications, security of attachment is vital – rod threads are subject to full load variations if the attachment is loose or unsecured against the rod shoulder.

3 The system pressure and the surface area of the piston together determine the force available to move the load. For a given force, if the system pressure is increased, the diameter of the piston can be reduced, and vice versa.

1 In push applications, fluid pressure is applied to the full area of the piston (the 'full bore' side of the piston). The force exerted by the cylinder is maximised. In pull applications, the area of the piston exposed to fluid pressure is reduced by the presence of the piston rod (the 'annular' side of the piston). The force exerted by the cylinder on retraction is correspondingly reduced.

1 The same force can be achieved with different combinations of system pressure and bore diameter. Additionally, in pull applications, an over-specified rod reduces annular area and thus force available. Optimise the bore/rod combination for greatest efficiency.

1-4 Parker's wide range of bore and rod sizes, mounting styles and port arrangements make it easy to obtain the force required from the space available.

5-6 Correct selection of the rod end thread and accessories is critical to the safety and long working life of the cylinder. Click [here](#) for guidance.

7-10 Complete the specification by reviewing fluid type, operating environment, cycling speed, feedback requirements and machine attachment.

11 Full information for specifying a Parker HMI or HMD hydraulic cylinder is available from your nearest Parker Sales office – click [here](#) for contact details. Comprehensive guidance can be found in catalogue HY07-1150/UK – click [here](#) to view, order or download a copy.

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HMI/HMD Metric tie rod

