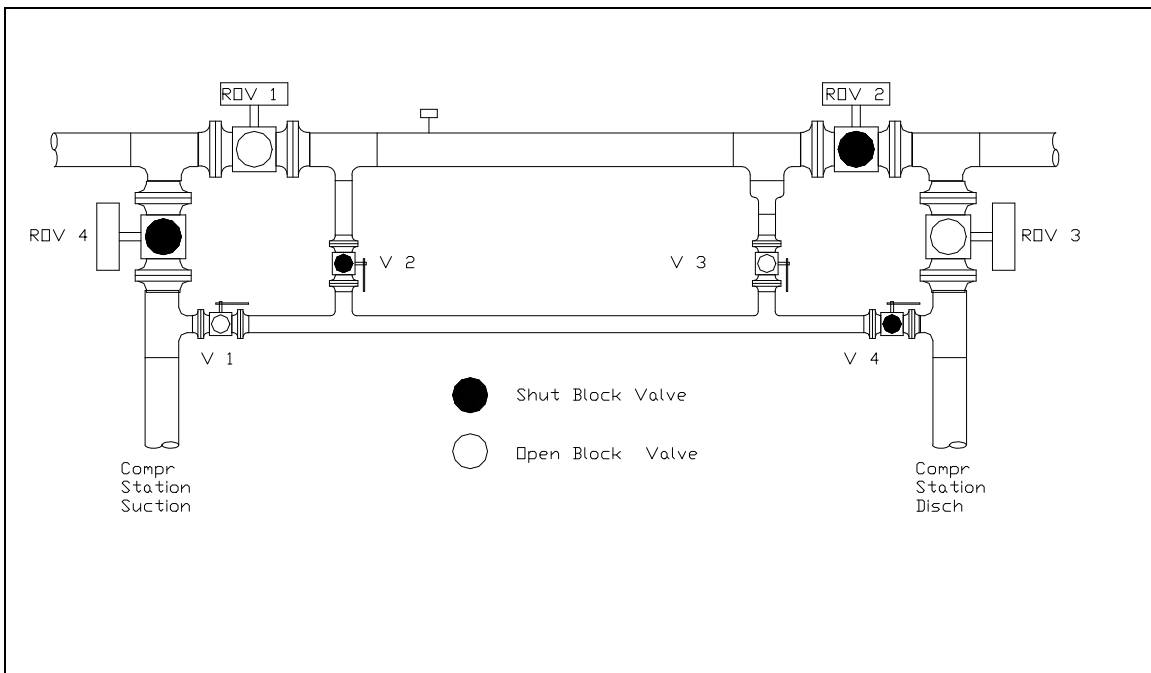


Piggable Bypass Normal Position

A *piggable bypass* allows pigs to be run past a major compressor station without either having to receive the pig at the station inlet and launch it again at the outlet or to take the compressor station out of service while the pig runs. This design allows for automatic operation when all the block valves and the pig signal are automated and a programmable logic controller (PLC) is available to operate the valves in the proper sequence. The bypass piping needs to be of adequate size to allow the compressor station to stay in service without excessive losses. This design has been implemented in 12-inch main line with 6-inch bypass, and in 10-inch main line with 4-inch bypass. Adequate slug-catchers are required upstream of the bypass piping and/or on the suction piping.

Basically the bypass looks like:



Notice that the tee above *V2* is a reducing tee and the one above *V3* is a straight tee. This design component is intended to make it difficult for a pig to seal the bypass line and starve the compressor—until this feature is verified at a particular station, the compressor station must be manned while running pigs.

The valves in the illustration are:

Valve	Description	Normal Position
ROV1	First full-stream Bypass	Open
ROV2	Second full-stream Bypass	Shut
ROV3	Site Discharge	Open

Piggable Bypass
Normal Position

ROV4	Site Inlet	Open
V1	Bypass return to suction	Open
V2	Kicker Valve	Shut
V3	Pig Bypass	Shut
V4	Bypass return from discharge	Shut

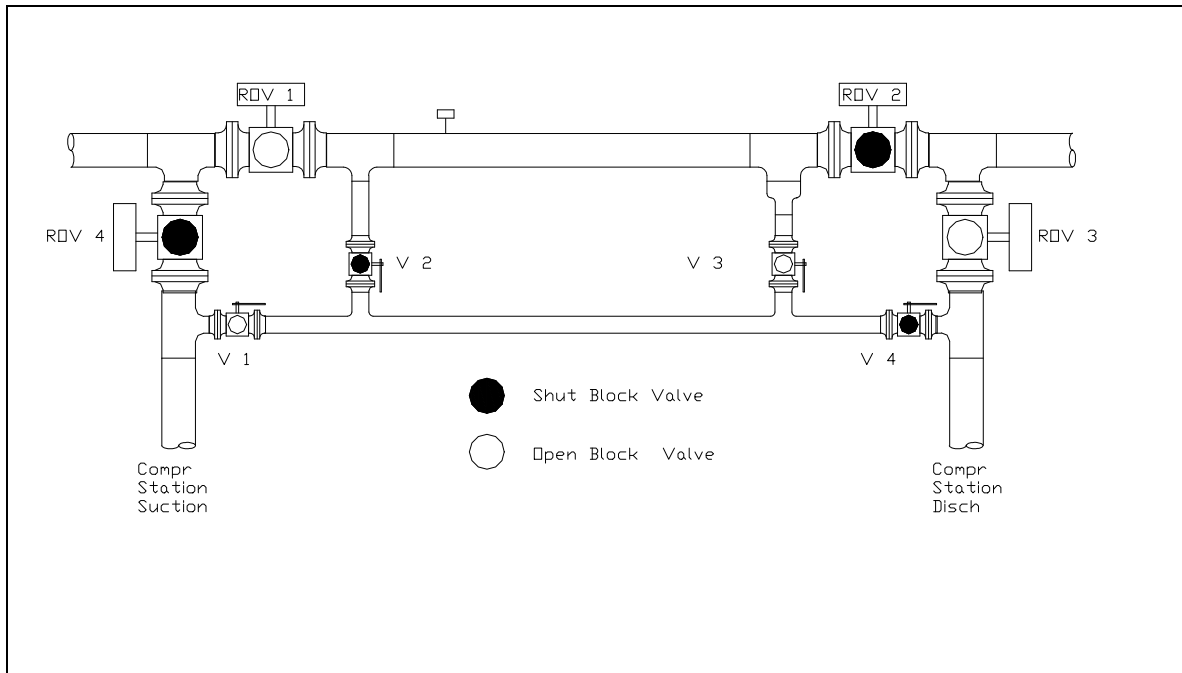
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Piggable Bypass Receive-Pig Position

To set up to receive pigs, (re)position/verify the following valves in sequence (violating the sequence will usually result in either starving the compressor or forcing a high discharge pressure – either situation can take the station down):

Seq	Valve	Normal Position	New Position
1	V1	Open	Open
2	V2	Shut	Shut
4	V4	Shut	Shut
3	V3	Shut	Open
5	ROV1	Open	Open
6	ROV2	Shut	Shut
7	ROV3	Open	Open
8	ROV4	Open	Shut

Now the manifold looks like:

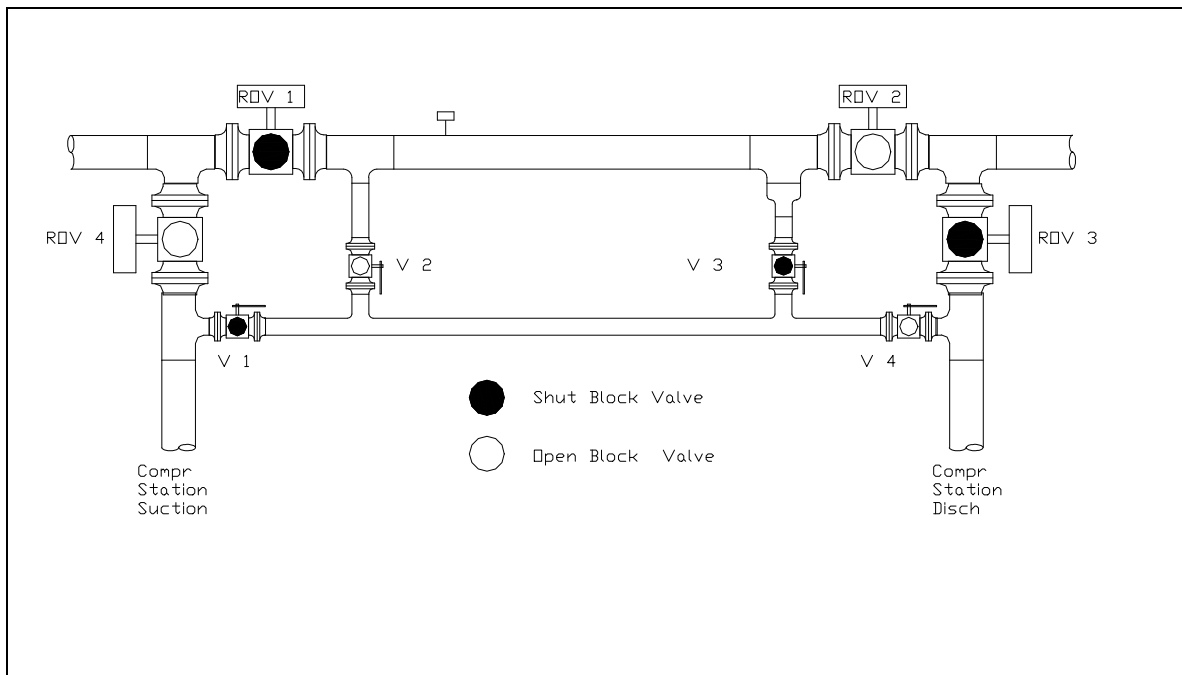


Piggable Bypass Return to Normal Operation

Assuming that you have just received a pig, to send it on you need to:

Seq	Valve	Normal Position	Receive Position	Launch Position
1	ROV4	Open	Shut	Open
2	ROV1	Open	Open	Shut
3	ROV2	Shut	Shut	Open
4	V1	Open	Open	Shut
5	V2	Shut	Shut	Open
6	V3	Shut	Open	Shut
7	V4	Shut	Shut	Open
8	ROV3	Open	Open	Shut

This sets up the manifold like:



Piggable Bypass
Return to Normal Operation

To return from the *Launch Pig* position to the normal position:

Seq	Valve	Receive Position	Launch Position	Normal Position
1	ROV3	Open	Shut	Open
2	V4	Shut	Open	Shut
3	ROV2	Shut	Open	Shut
4	ROV1	Open	Shut	Open
5	V2	Shut	Open	Shut
6	V3	Open	Shut	Shut
7	V1	Open	Shut	Open
8	ROV4	Shut	Open	Open