

PIG TRAPS-LAUNCHER-RECEIVER

Pipeline Inspection Gauges or Pigs are tools used in the pipeline industry to perform pipeline internal cleaning, inspection, coating or separating batches of different fluids. Pigs are inserted into pipeline and moved through it, by the pressure of the product flow in the pipeline itself.

The term Pigging refers to the use Pigs in the pipeline to perform maintenance operation. Pig Launchers and Receivers are used to facilitate the pigging of the pipeline.

The Pig Traps are designed for the use of mechanical and intelligent Pig and/or cleansing or impulse spheres.



The Pig Launcher is located upstream end of the pipeline and it is used to launch the pig into the pipeline, then a Pig Receiver is located downstream end of the pipeline to receive and remove the pig from the pipeline.

1 PIG TRAP DESIGN

The Pig Trap design will depend on the field conditions; location; pipeline design codes, material, diameter, length; as well as fluid conditions and the specific pigging system requirements.

All Pig Trap Launchers and Receivers have quick opening-closures, which guarantee fast opening and closing operation time even in wide diameters, allowing to be operated by one person without using special tools.

PIG TRAPS LAUNCHER-RECEIVER BULLETIN CONTENTS

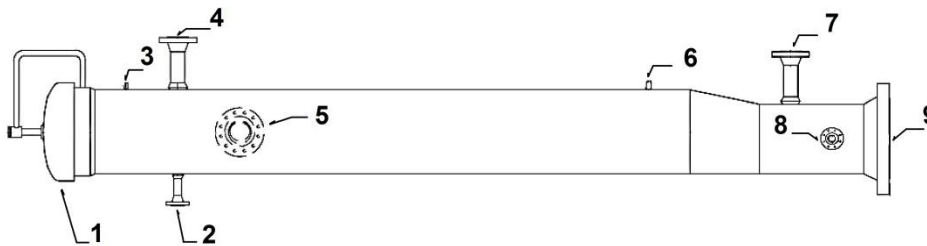
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Controval has the capability to custom design pig launcher/receiver to work with most fluid conditions and field requirements.

2 PIG TRAP COMPONENTS

The pig traps main components are:

- Barrel Closure (1)
- Local drain (2)
- Gas vent (3)
- Pressure relief (4)
- Kicker line (5)
- Pressure gauge connection (6)
- Pig launcher-Receiver Balancing Line (7)
- Pig-sig (8)
- Pig launcher-Receiver discharge (9)



3 PIG TRAP CONSIDERATIONS

The design of a Pig Launcher / Receiver unit must consider the specific application to handle. To perform a suitable selection and arrangement of the devices involved it is required to identify the following parameters:

3.1 Pipeline Design Characteristics:

Design codes, rating, diameter, material of construction, length

3.2 Fluid:

Fluid name, flow rate, properties

3.3 Process Data:

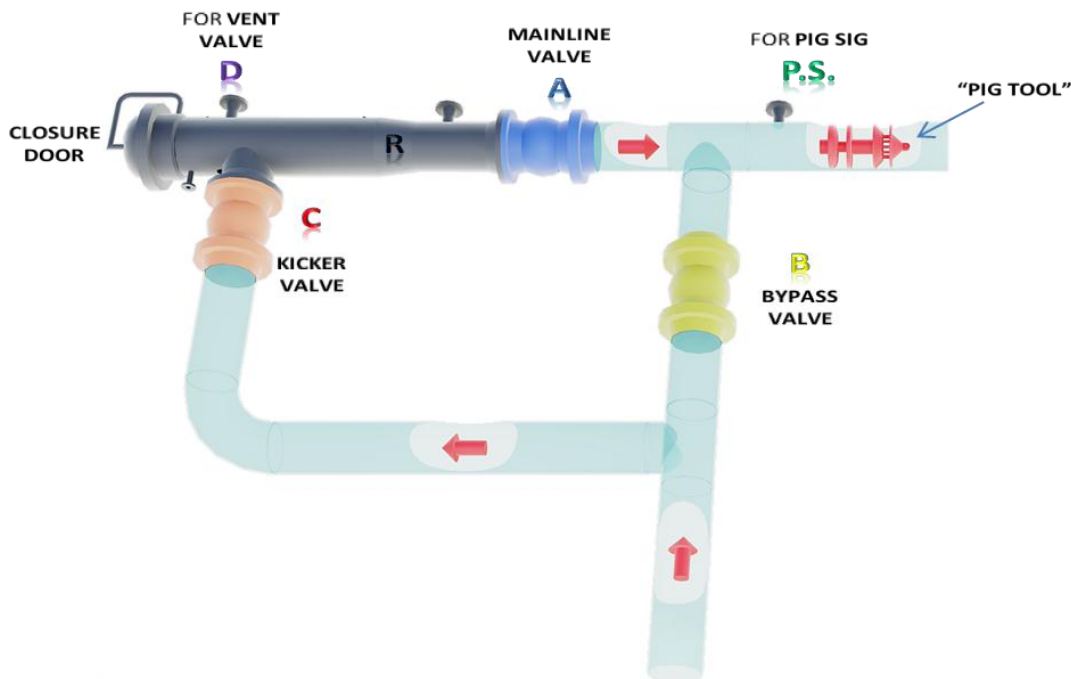
Pressure and Temperature ranges of the fluid.

4 OPERATION SEQUENCE

4.1 For Launchers

Initial condition:

The trap is pressurized and completely loaded of gas. Mainline valve **A**, bypass valve **B** and kicker valve **C** are open. Vent valve **D** is closed.



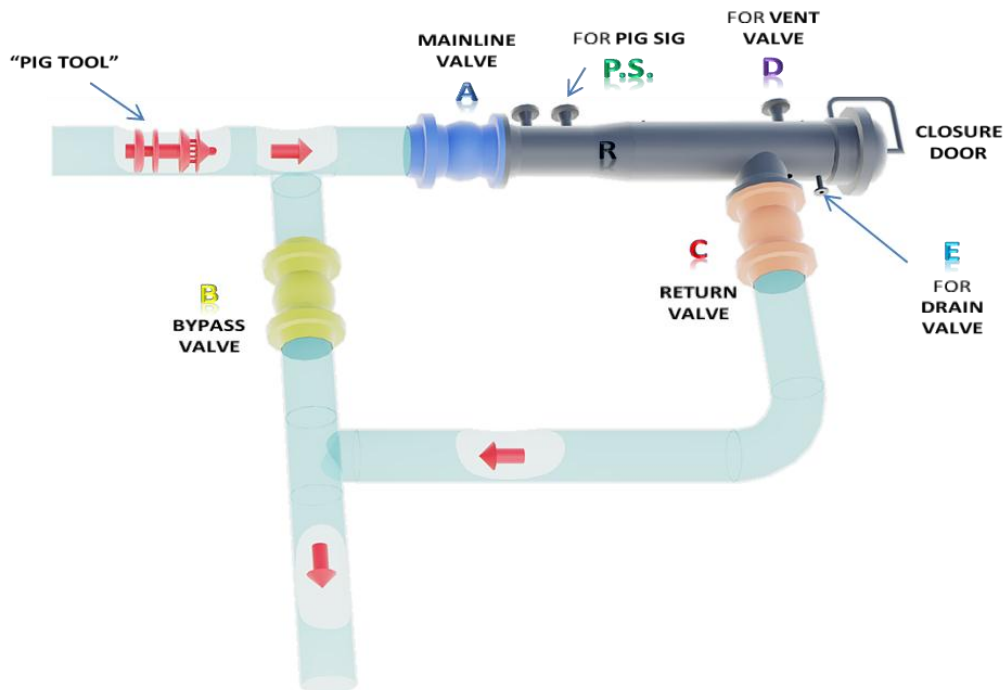
SCHEMATIC VIEW - LAUNCHING EXPLANATION

- I. Close mainline trap valve **A** and kicker valve **C**.
- II. Open vent valve **D** to vent the launch trap to atmospheric pressure.
- III. When the trap is completely vented (zero manometric) with vent valve **D** still opened, open the closure door and insert the "PIG tool", adjusting itself into reduction (**R**) previous to **A** valve with the first cup of the tool.
- IV. Close and secure the closure door. Purge the air from the trap through vent valve **D** by slowly opening kicker valve **C**. When the purge is done, close vent valve **D** to allow pressure equalization between trap and pipeline, then close kicker valve **C**.
- V. Open mainline valve **A**, then kicker valve **C**. The "PIG tool" is ready to be launched.
- VI. Close partially bypass valve **B**. This will increase the gas flowrate through kicker valve **C** and behind the "PIG tool". Continue closing **B** valve until the tool goes out of the trap inserting itself into the pipe current indicated by the "**PIG-SIG**" passage indicator.
- VII. When the "PIG tool" is launched from the trap and comes into the mainline, open bypass valve **B** completely.

4.2 For Receivers

Initial condition:

The trap is empty at atmospheric pressure. Bypass valve **B**, vent valve **D** and drain valve **E** are open; Mainline valve **A** and return valve **C** are closed. The closure door is closed and secured.



SCHEMATIC VIEW - RECEIVING EXPLANATION

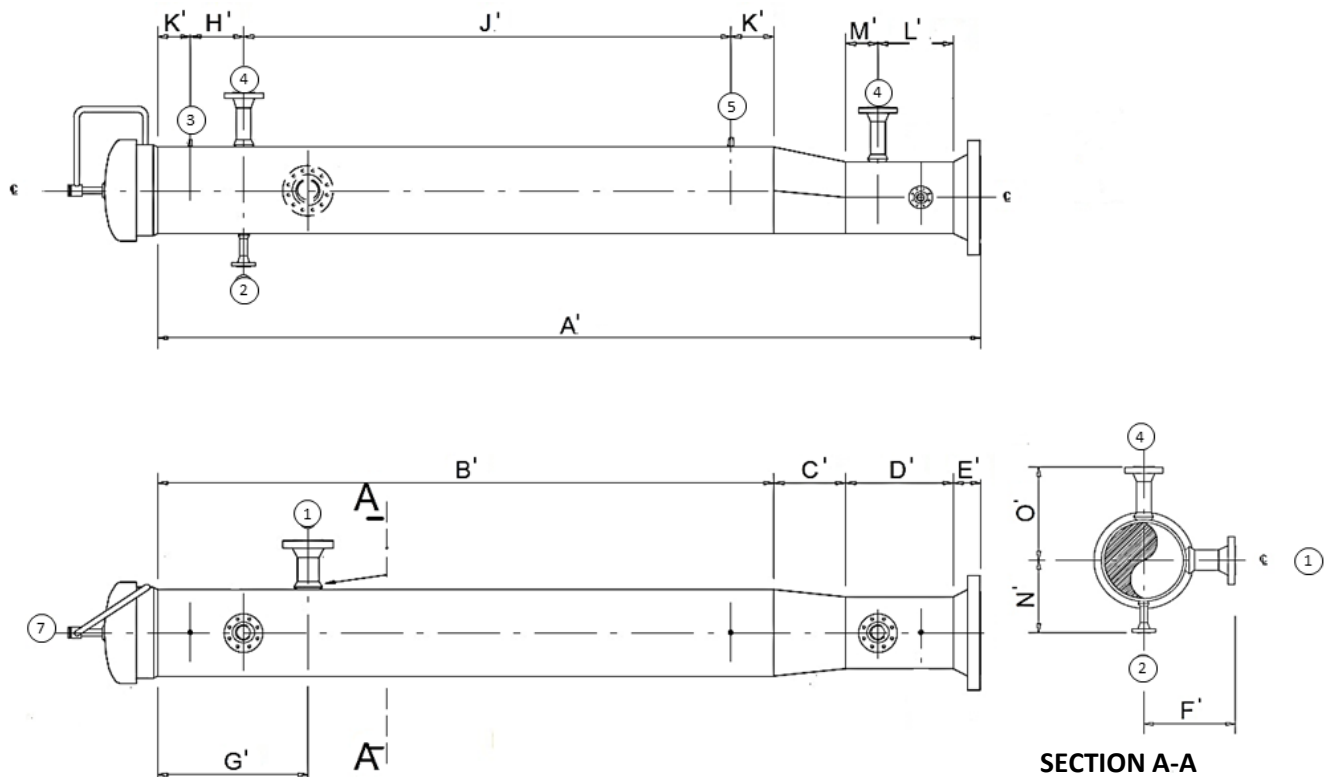
- I. Drain the trap, close drain valve **E** and open slowly return valve **C**.
- II. Once it is drained, start equalizing the pressure in the trap closing vent valve **D** with the kicker valve **C** opened.
- III. With return valve **C** still opened, open mainline valve **A**. The trap is now ready to receive the "PIG tool".
- IV. When the "PIG tool" arrives, this will stop between mainline valve **A** and the entrance tee piece (**R**) of the trap.
- V. Close partially bypass valve **B**. This will force the "PIG tool" to introduce itself into the trap increasing the gas flow through return valve **C**.
- VI. After the "PIG tool" is in the trap, shown by the "PIG-SIG" passage indicator, open bypass valve **B** and close **A** and **C** valves.
- VII. Open vent valve **D** and drain valve **E** to vent the trap to atmospheric pressure.
- VIII. After the trap is vented and drained with **D** and **E** valves opened, open the closure door and remove the "PIG tool".
- IX. Close and secure the closure door.

5 PIG TRAP DIMENSIONAL DATA

5.1 Pig Trap Connections Size

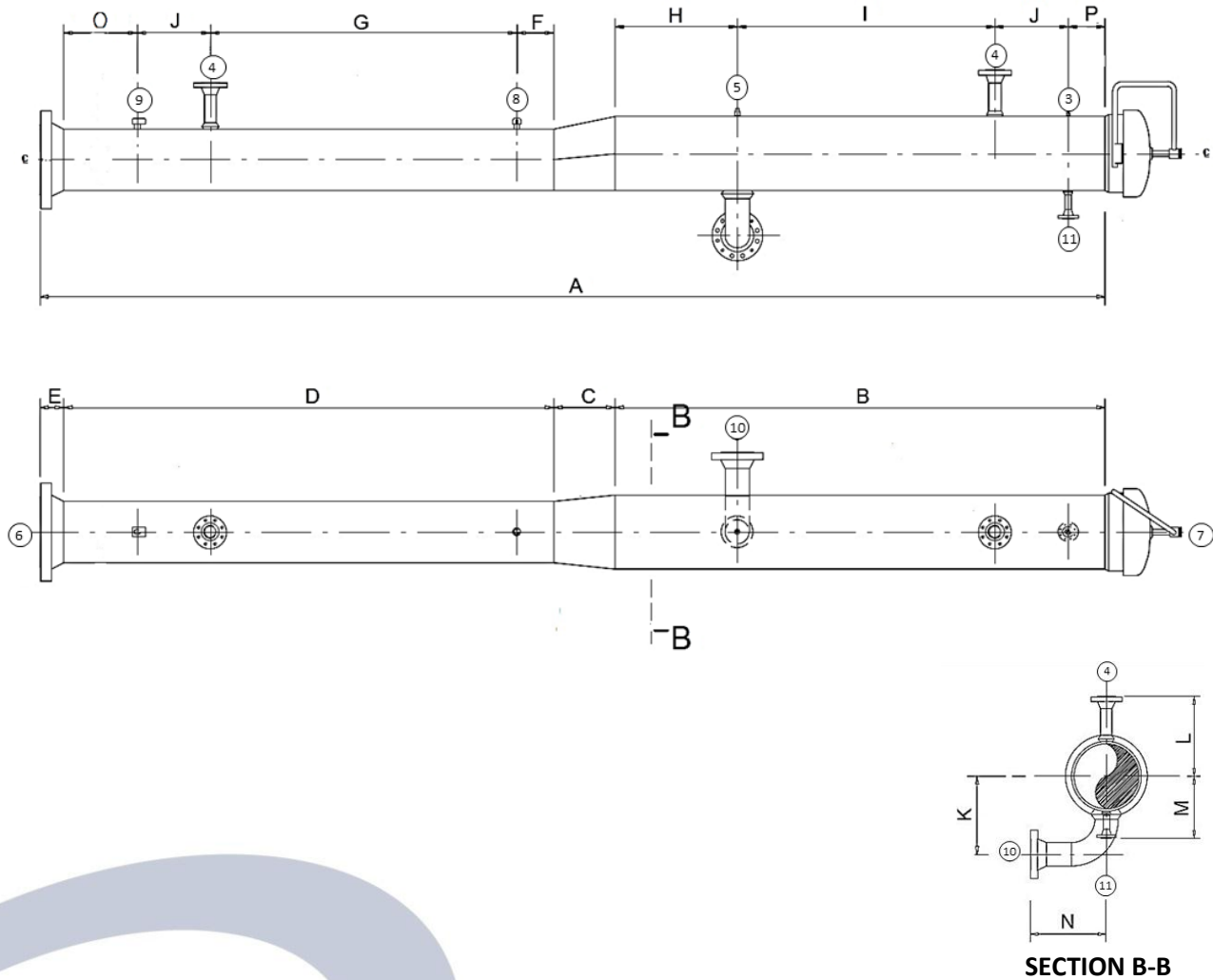
ITEM	SERVICE	DESCRIPTION	NOZZLES								
			PIPE DIAMETER (in)								
			6"	8"	10"	12"	16"	20"	26"	30"	36"
1	KICKER LINE	WELDOLET, COUPLING & FLANGE	4"	4"	6"	6"	6"	6"	8"	8"	8"
2	LOCAL DRAIN	WELDOLET, COUPLING & FLANGE	2"	2"	2"	2"	2"	2"	2"	2"	2"
3	PRESSURE GAUGE CONNECTION	THREDOLET	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
4	GAS VENT	WELDOLET, COUPLING & FLANGE	2"	2"	4"	4"	4"	4"	4"	4"	4"
5	PRESSURE RELIEF	THREDOLET	1"	1"	1"	1"	1"	1"	1"	1"	1"
6	PIG LAUNCHER BODY	FLANGE	6"	8"	10"	12"	16"	20"	26"	30"	36"
7	BARREL CLOSURE	BARREL QUICK ACTION CLOSURE	8"	10"	12"	16"	20"	24"	30"	34"	42"
8	PIG-SIG (OPTIONAL)	COUPLING WELD TO PIPE	2"	2"	2"	2"	2"	2"	2"	2"	2"
9	PIG LAUNCHER BODY SWITCH	COUPLING WELD TO PIPE	2"	2"	2"	2"	2"	2"	2"	2"	2"
10	LIQUID DISCHARGE	WELDOLET, 90° ELBOW, COUPLING & FLANGE	4"	4"	6"	6"	6"	8"	8"	10"	10"
11	LOCAL DRAIN	WELDOLET, COUPLING & FLANGE	2"	2"	2"	2"	2"	2"	3"	3"	3"

5.2 Pig Trap Launcher Dimensional Data



Pipe Dia. (in)	Barrel Dia. (in)	Contrival Prefix	DIMENSIONS (mm)														
			WT. (Kg)	LAUNCHER													
			A'	B'	C'	D'	E'	F'	G'	H'	J'	K'	L'	M'	N'	O'	
6"	8"	CPL-6	319	3880	2780	152	820	124	380	730	380	1800	300	600	220	290	290
8"	10"	CPL-8	598	5520	4380	178	820	140	410	780	380	3400	300	600	220	320	314
10"	12"	CPL-10	851	5730	4550	203	820	159	520	980	380	3570	300	600	220	340	440
12"	16"	CPL-12	1053	5830	4380	330	960	162	530	1100	380	3400	300	670	290	360	450
16"	20"	CPL-16	1942	6220	4570	508	960	184	610	1300	380	3590	300	670	290	430	530
20"	24"	CPL-20	2600	6100	4430	508	960	197	660	1320	380	3450	300	670	290	480	580
26"	30"	CPL-26	3896	6410	4370	610	1200	229	810	1500	380	3390	300	790	410	560	660
30"	34"	CPL-30	5576	7320	5250	610	1200	254	860	1500	420	3910	460	790	410	610	710
36"	42"	CPL-36	9146	7900	5761	610	1240	289	960	1500	500	4340	460	830	410	710	810

5.3 Pig Trap Receiver Dimensional Data



DIMENSIONS (mm)																		
Pipe Dia. (in)	Barrel Dia. (in)	Controval Prefix	WT. (Kg)	RECEIVER														
				A	B = D	C	E	F	G	H	I	J	K	L	M	N	O	P
6"	8"	CPR-6	388	5100	2410	152	124	150	1200	600	900	610	313	290	290	380	450	300
8"	10"	CPR-8	800	8340	4010	178	140	150	2800	1000	2100	610	340	320	320	380	450	300
10"	12"	CPR-10	1170	8720	4180	203	159	230	2800	1050	2220	610	451	440	340	520	540	300
12"	16"	CPR-12	1433	8560	4010	330	162	230	2650	1000	2100	610	492	450	360	520	540	300
16"	20"	CPR-16	2477	9050	4180	508	184	230	2800	1050	2230	610	543	530	430	520	540	300
20"	24"	CPR-20	3410	8830	4060	508	197	300	2540	1020	2130	610	680	580	480	670	610	300
26"	30"	CPR-26	4882	8840	4000	610	229	300	2480	1000	1900	610	756	660	560	670	610	490
30"	34"	CPR-30	7292	10200	4670	610	254	320	3080	1170	2400	610	891	710	610	820	650	490
36"	42"	CPR-36	11960	11100	5100	610	289	380	3280	1280	2730	610	992	810	710	820	790	490

6 HOW TO SPECIFY PIG TRAP

