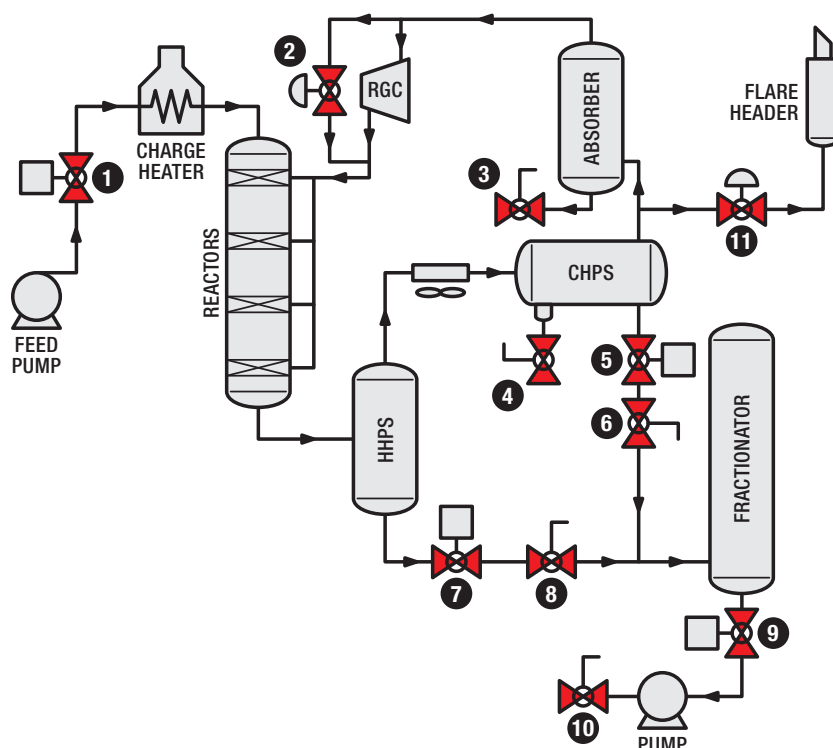


Fixed Bed Hydrocracking

Valve Number	Valve Description	Design Temperature Range		Design Pressure Range		Pipe Size		Recommended Valve ¹						
		deg F	deg C	psig	bar g	in	dn	C-Series	T-Series	G-Series	ISOLATOR 2.0	IRSVP	Watson Series	FlexStream®
1	Chopper Valve	400 – 600	204 – 316	500 – 3500	34 – 241	8 – 12	200 – 300	•			•			
2	Recycle Gas Compressor Surge	150 – 200	66 – 93	500 – 3500	34 – 241	4 – 8	100 – 200							•
3	Rich Amine	100 – 200	38 – 93	500 – 3500	34 – 241	4 – 10	100 – 250	•			•			
4	Sour Water	100 – 200	38 – 93	500 – 3500	34 – 241	2 – 6	50 – 150	•			•			
5	Cold High Pressure Separator Automated Level Control Valve	100 – 200	38 – 93	500 – 3500	34 – 241	6 – 10	150 – 250	•			•			
6	Cold High Pressure Separator Manual Level Control Valve Separation	100 – 200	38 – 93	500 – 3500	34 – 241	6 – 10	150 – 250	•			•			
7	Hot High Pressure Separator Automated Level Control Valve	800 – 900	427 – 482	500 – 3500	34 – 241	8 – 12	200 – 300	•			•			
8	Hot High Pressure Separator Manual Level Control Valve Separation	800 – 900	427 – 482	500 – 3500	34 – 241	8 – 12	200 – 300	•			•			
9	Frac Bottoms Emergency Block Valve	500 – 850	260 – 454	150	10	8 – 16	200 – 400				•			
10	Frac Bottoms Pump	500 – 850	260 – 454	150	10	6 – 10	150 – 250				•			
11	Unit Depressurization	100 – 200	38 – 93	500 – 3500	34 – 241	6 – 10	150 – 250							•
	Heat Exchanger	300 – 1500	150 – 815	200 – 900	13.8 – 62.0	1/2 – 2	13 – 50					•		
	General Ball Valves	25 – 900	-4 – 482	25 – 600	1.7 – 41.4	1 – 3	25 – 75			•				

¹ Recommend ISOLATOR 2.0 or T-Series if size, pressure and temperature conditions are met.



Typical operating conditions are:

- High temperature
100 – 900° F (38 – 482° C)
- High pressure
150 – 3500 psig (10 – 241 bar g)
- High pressure / temperature hydrogen
- Coking service
- Asphaltene formation
- Ammonium bisulfide corrosion
- Viscous sludge
- Hydrogen sulfide corrosion