

AUXILIARY EQUIPMENT

BOLT-ON DISCHARGE HEAD

The BODH is attached to the head of the pump section and is designed to connect the ESP to the tubing.

EXAMPLE

BODH-A 362 2.875 8RD EUE SS

BODH-	A	362	2.875	8RD EUE	SS
1	2	3	4	5	6
1	Bolt-on discharge head				
2	Alnas design				
3	For pump series				
4	For tubing size				
5	Thread type 10RD NUE – 10 threads per inch, non-ups 8RD EUE – 8 threads per inch, external u				
6	BODH metallurgy material CS – carbon steel SS – stainless steel				

BOLT-ON DISCHARGE HEAD BLEEDER VALVE

Pump Series	Thread	Housing diameter		Length		Weight	
		In.	mm	ft	m	lb	kg
BODH-A 272	1.875 10RD NUE	2.72	69	0.39	0.120	5.1	2.3
BODH-A 319	BODH integrated in UT pump section						
BODH-A 338	2.375 10RD NUE	3.39	86	0.77	0.235	14.3	6.5
BODH-A 362	2.375 8RD EUE	3.62	92	0.48	0.146	9.7	4.4
	2.875 10RD NUE	3.62	92	0.48	0.146	8.8	4.0
	2.875 8RD EUE	3.62	92	0.48	0.146	8.2	3.7
BODH-A 406	2.375 8RD EUE	3.62	92	0.48	0.146	9.7	4.4
	2.875 10RD NUE	3.62	92	0.48	0.146	8.8	4.0
	2.875 8RD EUE	3.62	92	0.48	0.146	8.2	3.7
	3.500 10RD NUE	4.29	109	0.48	0.146	9.9	4.5
	3.500 8RD EUE	4.29	109	0.48	0.146	9.9	4.5
BODH-A 449	3.500 10RD NUE	4.49	114	0.85	0.258	29.1	13.2
	3.500 8RD EUE	4.49	114	0.85	0.258	29.1	13.2
BODH-A 535	3.500 10RD NUE	5.35	136	0.85	0.258	29.1	13.2
	3.500 8RD EUE	5.35	136	0.85	0.258	29.1	13.2
	4.500 10RD NUE	5.35	136	0.85	0.258	29.1	15.2
	4.500 8RD EUE	5.35	136	0.85	0.258	29.1	15.2

VALVES

EXAMPLE

CVB-A 3.500 8RD EUE SS

CVB-	A	3.500	8RD EUE	SS
1	2	3	4	5
1	Valve type BV – bleeder valve CVB – check valve ball type CVP – check valve plate type CVBS – check valve ball type spring-loaded			
2	Alnas design			
3	Tubing and thread size			
4	Thread type 10RD NUE – 10 threads per inch, non-upset end 8RD EUE – 8 threads per inch, external upset end			
5	Valve metallurgy material CS – carbon steel SS – stainless steel			

BLEEDER VALVE

The bleeder valve is designed to drain formation fluid from the tubing when lifting the ESP from the well. The valve is mounted above the sludge trap/check valve.



Pump Series	Recommended Operating Range		Housing diameter		Length		Weight	
	bpd @ 60 Hz	m3/d @ 50 Hz	in.	mm	ft	m	lb	kg
BV-A 1.875 10RD NUE	0 – 1,887	0 – 300	2.36	60	0.49	0.15	3.75	1.70
BV-A 2.375 10RD NUE	0 – 2,792	0 – 370	2.99	76	0.52	0.16	5.51	2.50
BV-A 2.875 10RD NUE	0 – 9,811	0 – 1,300	3.50	89	0.59	0.18	7.92	3.59
BV-A 2.875 8RD EUE	0 – 9,811	0 – 1,300	3.70	94	0.59	0.18	9.68	4.39
BV-A 3.500 10RD NUE	0 – 13,585	0 – 1,800	4.25	108	0.59	0.18	8.80	3.99
BV-A 3.500 8RD EUE	0 – 13,585	0 – 1,800	4.50	114.3	0.59	0.18	12.55	5.69

CHECK VALVE

The check valve is designed to prevent back spin of the pump under the influence of a fluid column in the tubing (when the pump is shut down) and to make easier the subsequent start-up of the pump. The valve is used for hydraulic testing of the tubing string integrity after the esp is run in hole. The check valve also protects the ESP upper section from a small amount of solids precipitating in the tubing string when the pump is shut down. In case of a significant amount of solids, it is recommended to complete the pump unit with a sludge trap. The valve is installed between the upper module section of the pump and the bleeder valve.



BALL TYPE, BALL TYPE SPRING LOADED

Pump Series	Recommended Operating Range		Housing diameter		Length		Weight	
	bpd @ 60 Hz	m3/d @ 50 Hz	in.	mm	ft	m	lb	kg
CVB-A 1.875 10RD NUE	0 – 1,887	0 – 300	2.68	68.00	0.49	0.15	5.51	2.50
CVB-A 2.375 10RD NUE	0 – 2,792	0 – 370	2.87	73.00	0.62	0.19	8.16	3.70
CVB-A 2.875 10RD NUE	0 – 9,811	0 – 1,300	3.50	89.00	0.66	0.20	11.91	5.40
CVB-A 2.875 8RD EUE	0 – 9,811	0 – 1,300	3.67	93.20	0.66	0.20	12.13	5.50
CVB-A 3.500 10RD NUE	0 – 9,811	0 – 1,300	4.25	108.00	0.66	0.20	17.64	8.00
CVB-A 3.500 10RD NUE	0 – 13,585	0 – 1,800	4.25	108.00	0.66	0.20	17.64	8.00
CVB-A 3.500 8RD EUE	0 – 13,585	0 – 1,800	4.50	114.30	0.66	0.20	17.86	8.10
CVBS-A 2.875 10RD NUE	0 – 9,811	0 – 1,300	3.50	89.00	0.72	0.22	14.33	6.50
CVBS-A 3.500 10RD NUE	0 – 9,811	0 – 1,300	4.25	108.00	0.75	0.23	19.85	9.00

PLATE TYPE

Pump Series	Recommended Operating Range		Housing diameter		Length		Weight	
	bpd @ 60 Hz	m3/d @ 50 Hz	in.	mm	ft	m	lb	kg
CVP-A 2.875 10RD NUE	0 – 6,038	0 – 800	3.50	89.00	1.09	0.33	10.80	4.90
CVP-A 2.875 8RD EUE	0 – 6,038	0 – 800	3.70	94.00	0.67	0.20	13.41	6.08

SHROUDS FOR A SUBMERSIBLE ELECTRIC MOTOR

Shroud is a cylinder fitted around the motor, protector and intake. It is designed to reduce the annular area between the ESP and the casing, which allows to increase the velocity of fluid by the motor.

APPLICATION

- ☒ Wells with a large inner diameter of the casing string;
- ☒ Wells operated below or in the casing perforation area;
- ☒ Wells with high temperature of formation fluid;
- ☒ Wells with low or unstable inflow.

The shroud consists of a hanger, pipe or pipes with threaded couplings installed between the pipes, and a tip. The shroud is equipped with a centralizer installed in the base of the electric motor during assembly to ensure uniform cooling of the motor during operation. At the bottom of the shroud, there is a tip with the 2 7/8" thread for attaching load (research instruments) weighing no more than 551 lbs (250 kg).

The shroud for Series 406 electric motor is mounted on a special ESP intake module using special threaded screws.

The shroud for Series 461 or 512 electric motor is attached to the base of the gas separator without intake holes or to the base of the Series 362, 406 or 449 ESP lower section, using a special hanger.

The length of the shroud is selected depending on the total length of the ESP components: protector, motor, downhole gauge, and centralizer. The useful length of the shroud shall be greater than the total length of the ESP components inside the shroud.

The length of the shroud is determined by the amount of the installed lengths of all shroud components.

SHROUDS

Pump Series	Motor series	Minimum casing ID		Recommended shroud				
				Shroud	Shroud OD		Shroud ID	
		in.	mm	kW	in.	mm	in.	mm
362	406	5.12	130	Shroud, A406 124	4.88	124	4.53	115
362, 406	461	5.83	148	Shroud, A461 140	5.51	140	4.96	126
406, 449	512	6.30	160	Shroud, A512 159	6.26	159	5.87	149

FEATURES OF SHROUD COMPONENTS

Shroud type	Shroud component	Useful length *		Installed length		Weight	
		ft	m	ft	m	lb	kg
Shroud, A406 124	Special purpose intake module	-	-	0.92	0.279	29	13.2
	shroud pipe	9.84	3.0	9.84	3.0	88	40
		13.12	4.0	13.12	4.0	117	53
		16.41	5.0	16.41	5.0	148	67
		19.69	6.0	19.69	6.0	176	80
		22.97	7.0	22.97	7.0	205	93
	threaded sleeve	0.23	0.07	0.23	0.07	9	4.0
	tip	-	-	0.54	0.164	16	7.4
Shroud, A461 140	hanger: 362 series pump 406 series pump	-	-	0.36	0.110	21 20	9.3 9.2
	shroud pipe	13.12	4.0	13.12	4.0	185	83.8
		16.41	5.0	16.41	5.0	222	100.5
		19.69	6.0	19.69	6.0	259	117.5
		22.97	7.0	22.97	7.0	295	134.0
	threaded sleeve	0.23	0.07	0.23	0.07	3	1.3
	tip	-	-	0.44	0.135	20	9
Shroud, A512 159	hanger: 406 series pump 449 series pump	-	-	0.38 0.38	0.115 0.115	31 24	13.9 11.1
	shroud pipe	13.12	4.0	13.12	4.0	166	75.2
		16.41	5.0	16.41	5.0	208	94.2
		19.69	6.0	19.69	6.0	250	113.2
		22.97	7.0	22.97	7.0	292	132.2
	threaded sleeve	0.26	0.08	0.26	0.08	12	5.5
	tip	-	-	0.58	0.177	24	10.9



SLUDGE TRAP

The sludge trap is designed to protect ESP from the solids in the tubing string when the pump is shut down. The sludge trap is installed above the check valve (under the bleeder valve).

EXAMPLE

ST-A 3.500 8RD EUE 6M SS

ST-	A	3.500	8RD EUE	6M	SS
1	2	3	4	5	6
1	Sludge trap				
2	Alnas design				
3	For tubing size				
4	Thread type 10RD NUE – 10 threads per inch, non-upset end 8RD EUE – 8 threads per inch, external upset end				
5	Length, m (from 1 up to 13 m)				
6	SC metallurgy material CS – carbon steel SS – stainless steel				

SLUDGE TRAPS

Pump Series	Recommended Operating Range		Housing diameter		Le	ngth	We	ight
	bpd @ 60 Hz	m3/d @ 50 Hz	in.	mm	ft	m	lb	kg
ST-A 1.875 10RD NUE	0 – 1,887	0 – 300	2.4	60	19.8	6.035	41	18.5
ST-A 2.375 10RD NUE	0 – 2,792	0 – 370	3.0	76	5.1	1.549	15	6.75
ST-A 2.875 10RD NUE	0 – 6,038	0 – 800	3.5	89	16.5	5.042	49	22.19
ST-A 2.875 8RD EUE	0 – 6,038	0 – 800	3.6	92	2.7	0.831	13	6.0
ST-A 3.500 10RD NUE	0 – 13,585	0 – 1,800	4.3	108	5.1	1.550	18	8.2
ST-A 3.500 8RD EUE	0 – 13,585	0 – 1,800	4.5	114.3	5.1	1.540	18	8.2

The length of the ST is defined by request.