

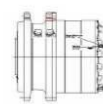


Figure 8. Hydraulic Power Unit (HPU)

The performance data sheet for the natural speed of the winch with a flow of 30 liters per minute coupled with the maximum pulling force that can be attained at a relief valve setting of 250 bar is given below in Table 1:

Wale Marine

Client : PetroSA
Project: 10 Te Winch



Drum & Wire		Hydraulic Drives		Gearbox Data		Spur Gear Data	
Rope diameter	20,0 mm	Motor Type :	SAI GM1	Gearbox Type	Boufig 305	Spur gear ratio	6,00 :1
Bare drum diameter	457 mm	Motor displacement	250 cc/rev	Gearbox ratio	4,25 :1		
Drum width	500 mm	Operating pressure	250 bar				
Cheek plate diameter	920 mm	Input flow per motor	15 l/min				
Actual distance to fairlead	15 m	Number of drives	2				
Drum / Rope Ratio	23 OK	Mechanical efficiency	75%				
Full Drum Rope Clearance	2 rope dia	Volumetric efficiency	95%	Each Gearbox torque	3171 Nm	Drum torque	38,05 kNm
Maximum fleeting angle	2 deg	Single Motor torque	746,0 Nm	Gearbox output speed	13,4 rpm	Drum speed	2,2 rpm
Spooling Pitch (+ 9%)	21,8 mm	Motor input speed	57,0 rpm				
Turns per wrap	22,9	Total Flow required	30 l/min				
Min dist. to sheave [no spooling]	7,2 m						
Potential side load on spool	5 568 N	Hydraulic input power	12,5 kW	Gearbox Power [Ea]	5,9 kW		
Winch Performance Characteristics							
Wire Layer #	Line pull (kN)	Line speed m/min	Line Speed m/s	Total Wire Capacity [m]	length/ layer (m)	Mean dia. of layer (mm)	Time to heave
1	159,5	3,3	0,06	34	34,4	477	10,3
2	147,2	3,6	0,06	72	37,3	517	20,5
3	136,6	3,9	0,07	112	40,1	557	30,8
4	127,5	4,2	0,07	155	43,0	597	41,0
5	119,5	4,5	0,07	201	45,9	637	51,3
6	112,4	4,8	0,08	249	48,8	677	61,6
7	106,1	5,0	0,08	301	51,7	717	71,8
8	100,5	5,3	0,09	356	54,5	757	82,1
9	95,5	5,6	0,09	413	57,4	797	92,3

Table 1: Hydraulic Pull-in Winch Performance Data Sheet at 250 Bar and 30 L/min

What is significant on the HPU is that there is a large tank which has the ability to dissipate a fair amount of heat energy but there is not an oil cooler. The significance of this is that the winch can be engaged to pull effectively at a set speed with a certain maximum pull (which is dictated by the relief valve setting) – if the tensioner on the vessel is paying out at a lesser speed then heat will be built up and the catenary will be dictated by the relief valve setting on the HPU.