

WÄRTSILÄ ENGINES CONNECTED TO LIPS COMPACT THRUSTERS

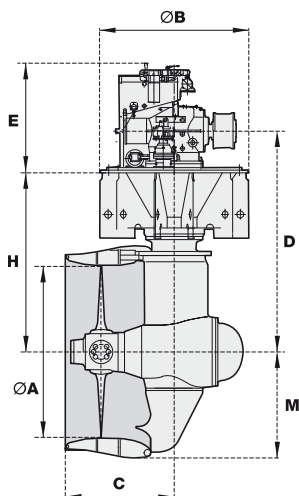
Engine type		6L20				8L20				9L20	
MCR engine power	kW	1080		1200		1440		1600		1620	
	bhp	1470		1630		1960		2176		2200	
MCR engine speed	rpm	1000		1000		1000		1000		1000	
Thruster type		175		200		225		225		225	
Reduction ratio		2.770		3.448		3.650		3.650		3.650	
Propeller speed	rpm	361		290		274		274		274	
Propeller diameter	mm	1600	1800	1900	2100	2100	2300	2100	2300	2100	2300
Bollard pull with twin thrusters											
in 19A nozzle	tonnes	32	34	38	41	46	49	50	53	50	53
in HR nozzle	tonnes	34	36	41	43	49	52	53	55	53	56
Modulating clutch type for fpp											
LD type		3000-3	3000-3	3000-3	3000-3	3000-4	3000-4	3000-4	3000-4	3000-4	3000-4
HD type		3000-3	3000-3	3000-4	3000-4	3000-6	3000-6	3000-7	3000-7	3000-7	3000-7

Variations per type

- Two different propeller diameters.
- Controllable pitch propeller (CS) or fixed pitch propeller (FS).
- 19A nozzle, HR nozzle or open propeller.
- Reduction ratios optimised for application.
- Weld-in stembox or can-mounted.
- Soft on/off clutch or modulating clutch.

Remarks

- The propellers are designed for bollard pull condition in tug boat application.
- Bollard pull calculations are based on two installations, 100% MCR power and 2% thrust deduction.
- Selections are valid for classification without ice class; final selection is subjected to rules of classification societies.
- Thrusters with controllable pitch propellers improve manoeuvrability and efficiency over the complete speed range, and protect the engine against overload.
- Thrusters with controllable pitch propellers are very suitable for constant speed operation.
- The weld-in stembox provides easy installation and maximum stiffness of the construction in the vessel.
- The can-mounted thruster provides the possibility to install or remove the thruster while the ship is afloat.
- Modulating clutches (MCD) improve manoeuvrability for thrusters with fixed pitch propellers at low speeds.
- Low duty (LD) modulates between 0 and idle engine speed. Heavy duty (HD) modulates between 0 and maximum engine speed.



		6L26				8L26			9L26			
1800		1950		2040		2600	2720		2925		3060	
2450		2650		2775		3535	3700		3975		4160	
1000		1000		1000		1000	1000		1000		1000	
250		250		250		275	300		300		300	
3.895		3.895		3.895		4.084	4.592		4.592		4.592	
257		257		257		245	218		218		218	
2400	2600	2400	2600	2400	2600	2600	2800	3000	2800	3000	2800	3000
59	61	62	64	64	67	80	86	89	91	94	94	97
62	64	66	68	68	70	84	91	94	96	99	99	103
3000-5	3000-5	3000-5	3000-5	3000-5	3000-5	not available -->						
3000-7	3000-7	3000-7	3000-7	3000-7	3000-7	not available -->						

LIPS COMPACT THRUSTER DIMENSIONS

Thruster type fs/cs	A mm	B mm	C mm	D mm	E mm	H mm	M mm
175	1600	1600	1200	2100	910	1743	985
	1800		1230	2200		1843	1110
200	1900	1900	1300	2500	1200	2048	1180
	2100		1350	2600		2148	1305
225	2100	2100	1400	2630	1210	2168	1305
	2300		1450	2830		2368	1425
250	2400	2100	1525	3100	1435	2512	1485
	2600		1575	3200		2612	1615
275	2600	2850	1665	3500	1465	2890	1615
	2800		1765	3620		3010	1735
300	2800	2850	1770	3700	1465	3090	1735
	3000		1870	3850		3090	1860