

## Tunnel Thruster

### Application

Marine tunnel thrusters play an important role in improving the manoeuvrability of a ship, normally including prime mover, hydraulic system, remote control system and thruster itself. The thruster design is suitable for various kinds of vessel such as transportation vessel, tugboat, ro-ro ship.



### Structure

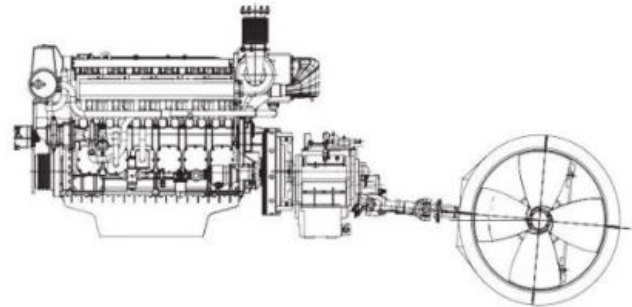
1. Driving type: electric motor, hydraulic motor or diesel engine



Elec. Type



Hydraulic type



Diesel type

2. Propeller type: FPP or CPP



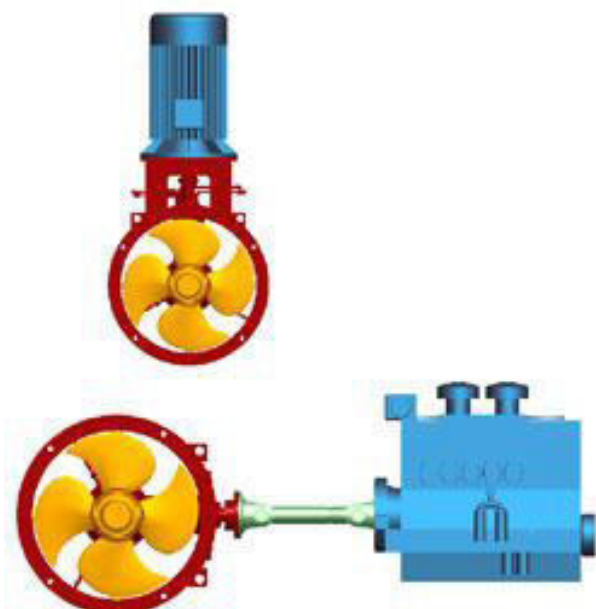
FPP



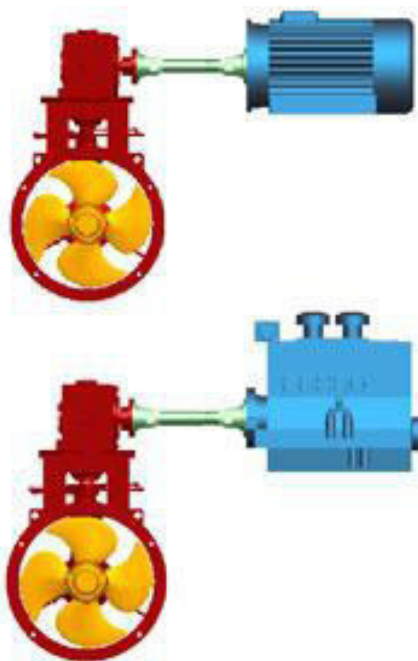
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3. Installation type: bow or stern

4. Drive mode: L-Drive or Z-Drive



L-drive

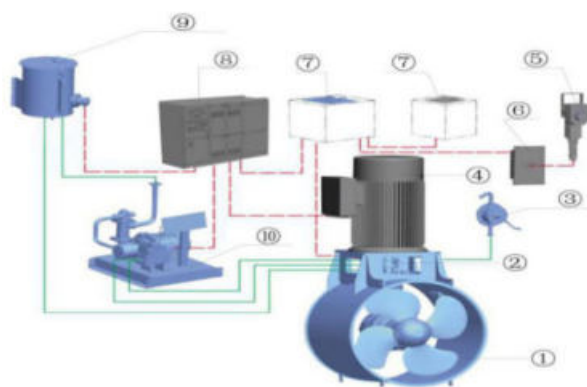


Z-drive

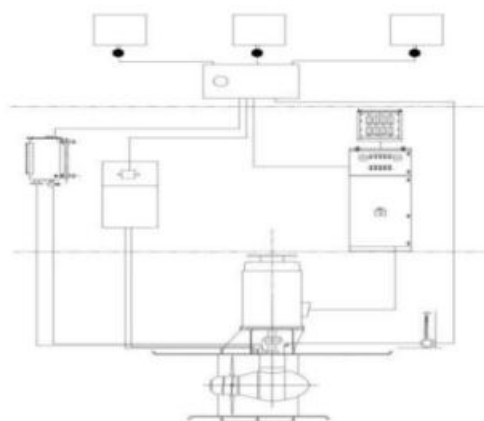
### Advantages

1. Low noise and vibration
2. High reliability and durability
3. Easy installation and maintenance
4. For extreme load conditions, e.g. in the offshore sector
5. Approved by CCS, BV, LR, ABS...





- ① Tunnel Thruster Unit
- ② Flexible Coupling
- ③ Hand Pump
- ④ Electric Motor (or Hydraulic Motor)
- ⑤ Portable Control Stick



- ⑥ Junction Box
- ⑦ Control Panel
- ⑧ Electric Motor Starter
- ⑨ Gravity Oil Tank
- ⑩ Hydraulic Unit

#### Controllable Pitch Tunnel Thruster Technical Data

Propeller Dia.	Max. Input power		Input speed	Frequency	Tunnel inner Dia.	Tunnel length	Max. thrust	Propeller speed
	Kw	Hp						
900	235	320	1450	50	918	820	37.6	543.3
	250	340	1750	60			40	650.4
1000	290	394	1450	50	1020	900	46.4	516.5
	310	422	1750	60			49.6	618.4
1100	350	476	1470	50	1120	1000	56	475.6
	380	517	1780	60			60.8	569.4
1200	420	571	1450	50	1220	1050	67.2	430.2
	450	612	1750	60			72	515.1
1300	490	666	1450	50	1328	1160	78.4	389.1
	530	721	1750	60			84.4	465.9
1500	550	748	1450	50	1510	1260	88	360
	580	789	1750	60			92.5	431
1650	680	925	1450	50	1680	1400	108	323.4
	820	1115	1750	60			130	387.2
1800	1020	1387	1450	50	1830	1550	163.2	344
	930	1265	1160	60			148.8	273.83
2000	1250	1700	1450	50	2030	1700	200	311
	1150	1564	1160	60			184	247.5
	960	1306	980	50			153.6	207.3
2200	1400	1904	980	50	2230	1880	224	224.6
	1530	2081	1160	60			244.8	268.1
2400	1660	2258	980	50	2430	2040	265.6	207.3

	1800	2448	1160	60			288	247.5
2600	2100	2856	980	50	2632	2210	336	211.7
	1950	2652	880	60			312	189.8
2800	2450	3332	980	50	2836	2380	392	199.3
	2250	3060	880	60			360	179
3000	2600	3536	730	50	3040	2550	416	159.2
	2800	3808	880	60			448	192
3300	2900	3944	730	50	3340	2800	464	140.2
	3150	4284	880	60			504	169

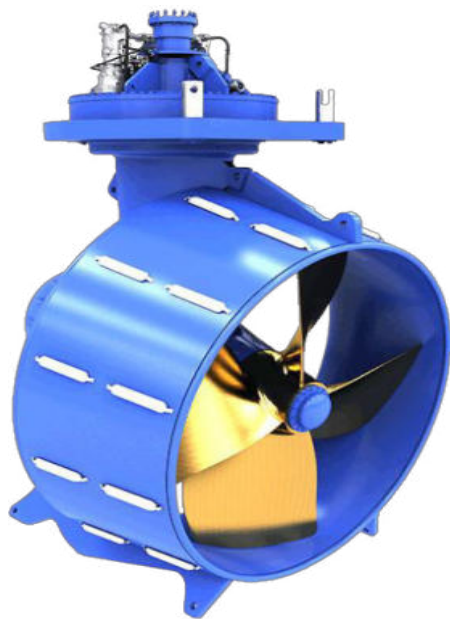
**Fixed Pitch Tunnel Thruster Technical Data**

Propeller Dia.	Max.Input power		Input speed	Frequency	Tunnel inner Dia.	Tunnel length	Max. thrust
	Kw	Hp					
250	20	27	1470	50	260	250	3.5
	25	34	1750	60			4
350	36	49	1470	50	360	320	6
	39	53	1750	60			6.5
400	36	49	1470	50	412	350	6
	48	65		7.6			
	52	71	1750	60			8.2
450	48	65	1470	50	462	400	7.9
	60	82		9.5			
	65	88	1750	60			10.4
500	60	82	1470	50	515	450	9.9
	75	102		12			
	80	109	1750	60			12.6
600	75	102	1470	50	615	540	12.3
	105	143		16.8			
	115	156	1750	60			18.4
700	140	190	1750	60	818	720	22.4
	150	204		24			
	145	197	1450	50			23.9
800	185	252	1750	60	918	820	29.6
	200	272		32			
	190	258	1470	50			31.3
900	235	320	1750	60	1020	900	37.6
	250	340		40			
	250	340	1470	50			41.2
1000	290	394	1750	60	1120	1000	46.4
	310	422		49.6			
	300	408	1450	50			49.5

1100	350	476	1750	60	1220	1050	56		
	380	517					60.8		
	350	476	1470	50			57.7		
1200	420	571	1750	60	1328	1160	67.2		
	450	612					72		
	420	571	1450	50			69.3		
1300	490	666	1750	60	1510	1260	78.4		
	530	721					84.8		
	490	666	1450	50			80.5		
1500	550	748	1750	60	1680	1400	88		
	580	789					92.8		
	550	748	1450	50			90.8		
1650	680	925	1750	60	1830	1550	108.8		
	820	1115					131		
	700	952	1450	50			115.5		
1800	1020	1387	1160	60	2030	1700	163.2		
	930	1265					148.8		
	930	1265	1450	50			153.4		
2000	1250	1700			1160	60	2230	1880	200
	1150	1564	184						
	960	1306	980	50					153.6
	1150	1564	1160	60					189.7
2200	1400	1904	980	50	2430	2040	224		
	1530	2081	1160	60			244.8		
	1400	1904	980	50			231		
2400	1660	2258	1160	60	2632	2210	265.6		
	1800	2448					288		
	1660	2258	980	50			273.9		
2600	2100	2856	880	60	2836	2380	336		
	1950	2652					312		
	1950	2652	980	50			321.7		
2800	2450	3332			880	60	3040	2550	392
	2250	3060	360						
	2250	3060	730	50					371.2
3000	2600	3536	880	60	3340	2800	416		
	2800	3808					448		
	2800	3808	730	50			462		

WE CAN SUPPLY MARINE AZIMUTH THRUSTER ACCORDING TO USER'S SPECIFICATIONS.

## Marine Azimuth Thruster



### Application

Marine azimuth thrusters are for main propulsion and steering of displacement vessels. They are available from 15kW to 4500kW to replace conventional propulsion and rudder steering systems to perform both the propulsion and steering functions.

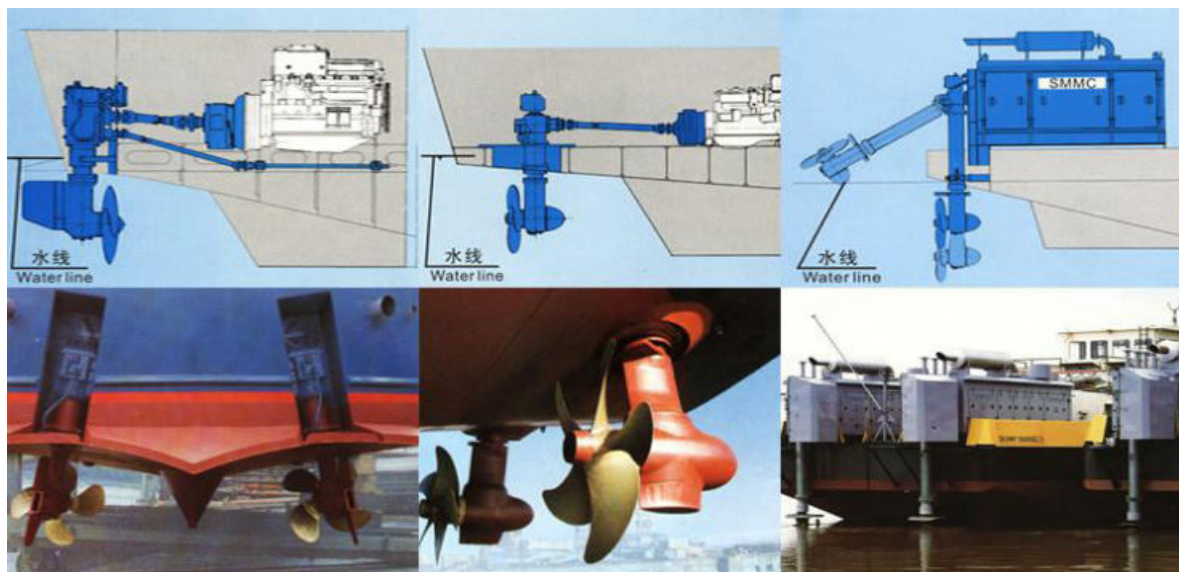
### Structure

1. Driving type: electric motor, hydraulic motor or diesel engine
2. Propeller type: FPP or CPP
3. Installation type: well installation, transom installation and deck installation. Transom installation is used for ships with smaller cabin space, such as floating cranes, passenger ships, inland and coasting vessels, etc. Well installation is suitable for tugs, ferries

well station, floating dock and survey ships. Deck installation is a complete propulsion unit integrating the rudder propeller and diesel engine.

4. Drive mode: L-Drive or Z-Drive

5. Available with the nozzle or without nozzle



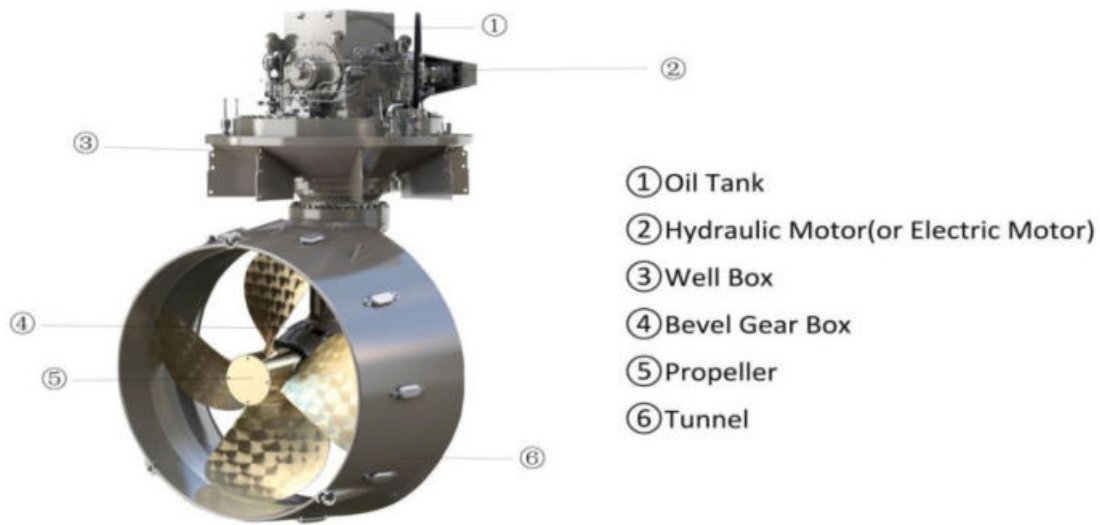
Transom Installation

Well Installation

Deck Installation

### Advantages

1. 360 degrees full thrust, thus optimum maneuverability
2. Low noise, less vibration
3. Compact structure, easy installation and maintenance
4. Lowest fuel consumption, high efficiency
5. High precision, strong loading and long service life
6. Approved by CCS, BV, LR, ABS...



### Technical Data

Max.Input power		Input speed(rpm)	Propeller speed(rpm)		Propeller Dia.(mm)	
kW	HP		No nozzle	With nozzle	No nozzle	With nozzle
15	20.5	2400/2200/2000/1800	1400		350	300
		1500/1200/1000				
50	68	2400/2200/2000/1800	1255		415	395
		1500/1200/1000				
80	109	2200/2000/1800/1600	995		525	500
		1500/1200/1000/900				
120	163	2200/2000/1800/1600	970		645	610
		1500/1200/1000/900				
160	218	2200/2000/1800/1600	795	840	745	705
		1500/1200/1000/900				
200	272	2000/1800/1600/1500	715	750	830	790
		1200/1000/900/800				
250	340	2000/1800/1600/1500	635	670	930	885
		1200/1000/900/800				
300	408	2000/1800/1600/1500	580	610	1020	970
		1200/1000/900/800				
350	476	2000/1800/1600/1500	540	565	1100	1045
		1200/1000/900/800				
400	544	1800/1500/1200	505	530	1175	1120
		1000/900/825/750/600				
450	612	1800/1500/1200	475	500	1250	1185
		1000/900/825/750/600				
500	680	1800/1500/1200	450	475	1315	1250
		1000/900/825/750/600				

600	816	1800/1600/1500/1200	410	430	1440	1370
		1000/900/825/750/600				
750	1020	1800/1600/1500/1200	370	385	1610	1530
		1000/900/825/750/600				
900	1224	1800/1600/1500/1200	335	355	1765	1675
		1000/900/825/750/600				
1000	1360	1800/1600/1500/1200	320	335	1860	1765
		1000/900/825/750/600				
1105	1503	1800/1600/1500/1200	305	320	1955	1860
		1000/900/825/750/600				
1325	1802	1800/1600/1500/1200	275	290	2140	2035
		1000/900/825/750/600				
1500	2040	1800/1600/1500/1200	260	275	2280	2165
		1000/900/825/750/600				
1765	2400	1600/1500/1200/1000	240	250	2470	2350
		900/825/750/550				
1912	2600	1600/1500/1200/1000	230	240	2570	2445
		900/825/750/550				
2206	3000	1600/1500/1200/1000	215	225	2760	2625
		900/825/750/550				
2600	3536	1600/1500/1200/1000	195	210	3000	2850
		900/825/750/550				
3000	4080	1600/1500/1200/1000	185	195	3220	3060
		900/825/750/550				
3500	4760	1600/1500/1200/1000	170	180	3480	3310
		900/825/750/550				
4000	5440	1600/1500/1200/1000	160	165	3720	3550
		900/825/750/550				
4500	6120	1600/1500/1200/1000	150	160	3950	3750
		900/825/750/550				

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