

KAD43P/DP

6-cylinder, direct injected marine diesel engine with charge air compressor, turbocharger, aftercooler and Duoprop-drive 170 kW (230 hp)*

* Power rating – see Technical Data

Compressor-driven

Hi-Tech engine

Volvo Penta's 6-cylinder KAD43P/DP is a compressor-driven, turbocharged, high performance engine with aftercooler producing high torque at low engine speeds. This means unique acceleration properties and excellent driveability.

Economic marine engine

KAD43P is a reliable and economic marine engine with considerable power resources and is specially developed for planing craft.

The engine is compact and has an advantageous weight to power ratio making it excellent for both single and multi-engine installation.

Direct injection

Direct injection (DI) results in low thermal load and low fuel consumption compared with swirl chamber engines (IDI) with the same cylinder capacity. The engine have also a longer service life.

The advanced combustion system minimizes noxious exhaust emission and enhances overall enjoyment of boating.

Super-charging

The engine is supercharged with a mechanically driven compressor and an exhaust driven turbocharger. The compressor supplies compressed air at low engine speeds and while acceleration. The turbo takes over when the charging pressure has reached the proper level.

The interaction of compressor and turbo produces high torque over the whole speed range and this contributes to cleaner exhaust gases and fuel economy giving excellent acceleration and driving characteristics.

Aftercooler

The air heats up when it is compressed. The aftercooler cools the compressed and heated air and raises its oxygen content so that the engine can use the fuel more efficiently.

Easy to service

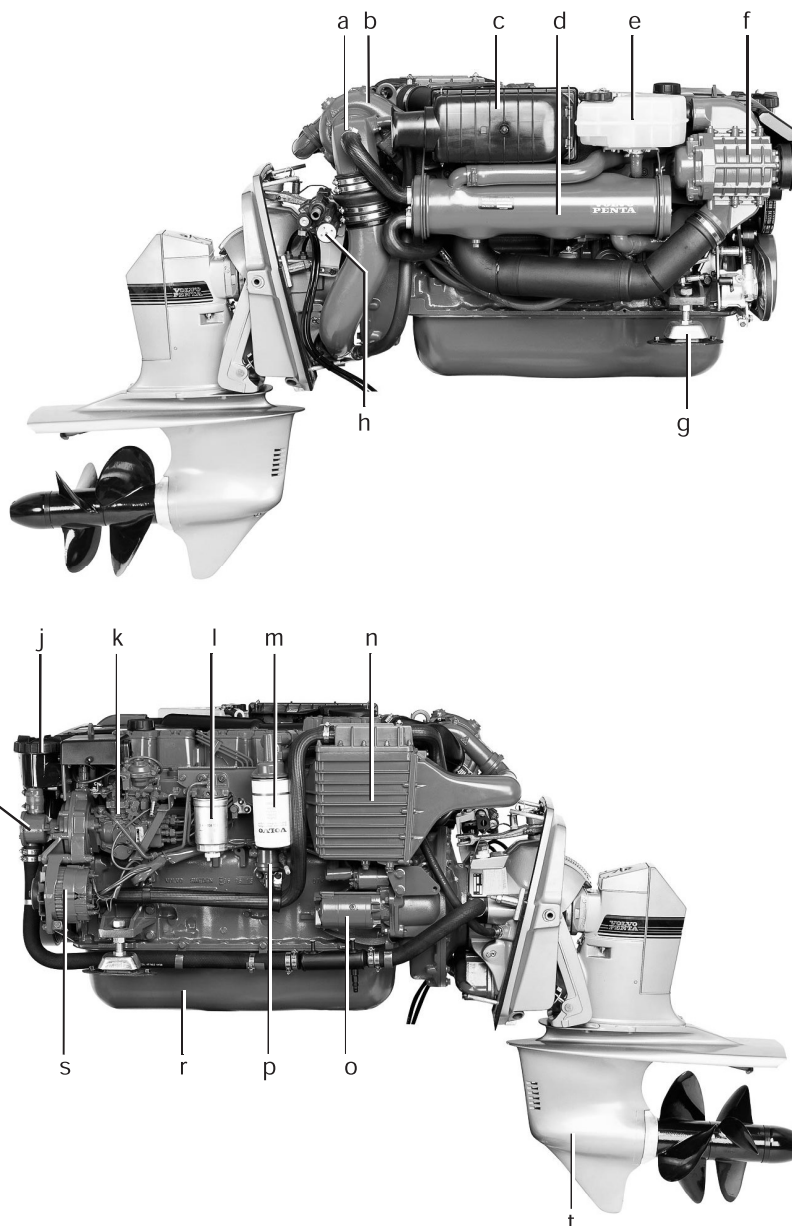
The engine is designed for easy maintenance and service.

All the important service points on the engine are conveniently located at the top and the port side.

DP drive

The DP drive with its twin counter-rotating propellers provides a harmonious drive unit with unbeatable characteristics in the boat in terms of speed, acceleration and fuel economy.

It also produces less noise and vibration, better steering and manoeuvring characteristics, better grip in the water and a shorter time to planing compared with single propeller systems.



The engine shown may vary from the standard unit.

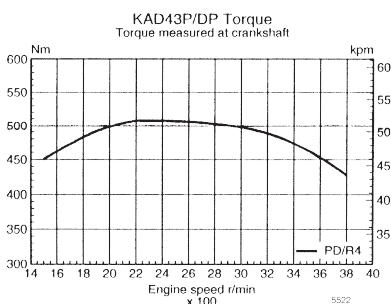
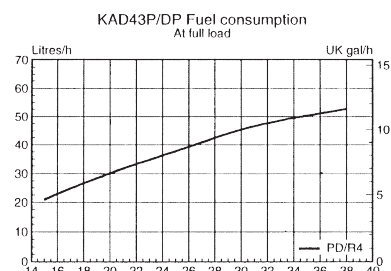
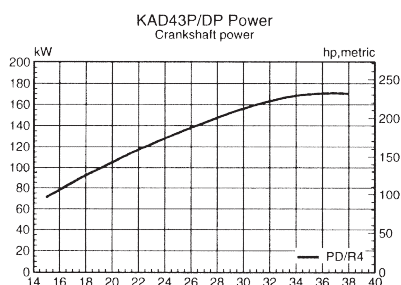
- | | | |
|-----------------------------------|-----------------------------|--------------------------|
| a. Exhaust elbow, wet type | h. Power trim pump | o. Starter motor 3.0 kW |
| b. Turbocharger | i. Sea water pump | p. Feed pump |
| c. Air filter | j. Sea water filter | r. Oil sump |
| d. Heat exchanger | k. Injection pump | s. Alternator 14 V/ 60 A |
| e. Expansion tank | l. Fuel filter | t. DP drive |
| f. Compressor | m. Oil filter | |
| g. Flexible front engine mounting | n. Aftercooler, watercooled | |

KAD43P/DP

General data

Type designation	KAD43P/DP (PD/R4)
No of cylinders	6
Configuration	4-stroke direct-injected turbocharged aftercooled, compressor driven diesel engine
Fuel grade EN590	1D or 2D
Bore, mm (in)	92 (3.62)
Stroke, mm (in)	90 (3.54)
Displacement, litres (in ³)	3.6 (219)
Compression ratio	17.5:1
Crankshaft power ¹⁾	
PD/R4 (3900 r/min) kW (hp)	170 (230)
Propeller shaft power ¹⁾	
PD/R4 (3900 r/min) kW (hp)	159 (216)
Drive ratio DP-E	1.78:1
Dry weight with DP, kg (lb)	570 (1257)

1) Technical data in accordance with ISO 8665 and ISO 3046 Standard Fuel Stop Power. Fuel 40°C (104°F), lower calorific value of 42700 kJ/kg and density of 840 g/litre.



R4 = Rating 4

Applicaiton definitions, see page 4

Engine equipped with

Compressor, belt-driven
Fresh water cooled turbocharger
Fresh water cooling, thermostat-controlled with tubular heat exchanger
Sea water strainer
Sea water pump with rubber impeller
Sea water cooled aftercooler
Sea water cooled tubular oil cooler
Prewired el.system for connection to instrument panel
Alternator 14 V/60 A
Starter motor 12 V/3.0 kW
Engine brackets in front
Flexible engine mounts

Technical description

Engine and block

- Cylinder block and cylinder head made of cast iron alloy for good corrosion resistance and long service life
- Oil-cooled pistons with two compression rings and one oil scraper ring.
- Replaceable wet cylinder liners
- Replaceable valve seats
- Seven-bearing crankshaft

Fuel system

- Rotor-type injection pump with a mechanical governor for accurate speed control
- Smoke limiter
- Fine fuel filter with water separator
- Feed pump with hand primer
- Electrically operated stopping device.

Cooling system

- Thermostatically controlled fresh water cooling
- Tubular heat exchanger with separate transparent expansion tank.
- Coolant system prepared for hot water outlet
- Sea water strainer and easily accessible impeller pump

Inlet system

- Inlet system designed to produce optimal air rotation which provides perfect combustion. This results in high power and low fuel consumption
- Inlet silencer with replaceable filter.
- Closed crankcase vent system
- Air silencer on inlet and outlet side of compressor

Exhaust system

- Sea water-cooled exhaust elbow of cast iron with a stainless steel insert
- Complete connection for exhaust outlet through the drive

Supercharger system

- Exhaust-driven fresh water-cooled turbocharger
- Mechanically driven compressor

Lubrication system

- Pressure lubrication system with easily replaced full-flow oil filter on the side of the engine
- Tubular oil cooler that can be cleaned

Engine mounting

- Flexible mounting which provides sound and vibration insulation. The engine has two adjustable rubber mounts in front and rubber suspension between flywheel housing and transom shield

Drive

- Complete with transom shield, flywheel cover and installation components
- The drive can be tilted up by 42°
- Protective zinc anodes prevent corrosion.
- The coolant water inlet at the front of the drive provides a reliable coolant water supply to the engine
- Built-in kick-up function to reduce possible damage, in the event the drive strikes an underwater object

Power Trim

- Power Trim is an electrically-operated hydraulic system for trimming the drive angle while in use. The actual trim angle is indicated with five LEDs and a digital display on the DC Trim instrument
- An analog instrument is also available

Electrical system

- 12 V corrosion-protected electrical system, complete with instrumentation
- 14 V/60 A marine alternator
- Charging regulator with battery sensor for voltage drop compensation.
- The alternator is prepared for a bulkhead-mounted double-diode set which automatically distributes the charge current to two separate battery circuits
- Automatic 8 A fuse with manual reset
- Starter motor power 3.0 kW.

Instrument panel

- Complete panel or separate instruments fitted with:
- Key switch, voltmeter, temperature gauge, rev counter, instrument lighting, hour meter, oil pressure gauge, fuses, alarm for temperature, oil pressure and charging, alarm test

Miscellaneous

- 3, 5, or 7 m extension cable for the instrument panel with plug-in connector

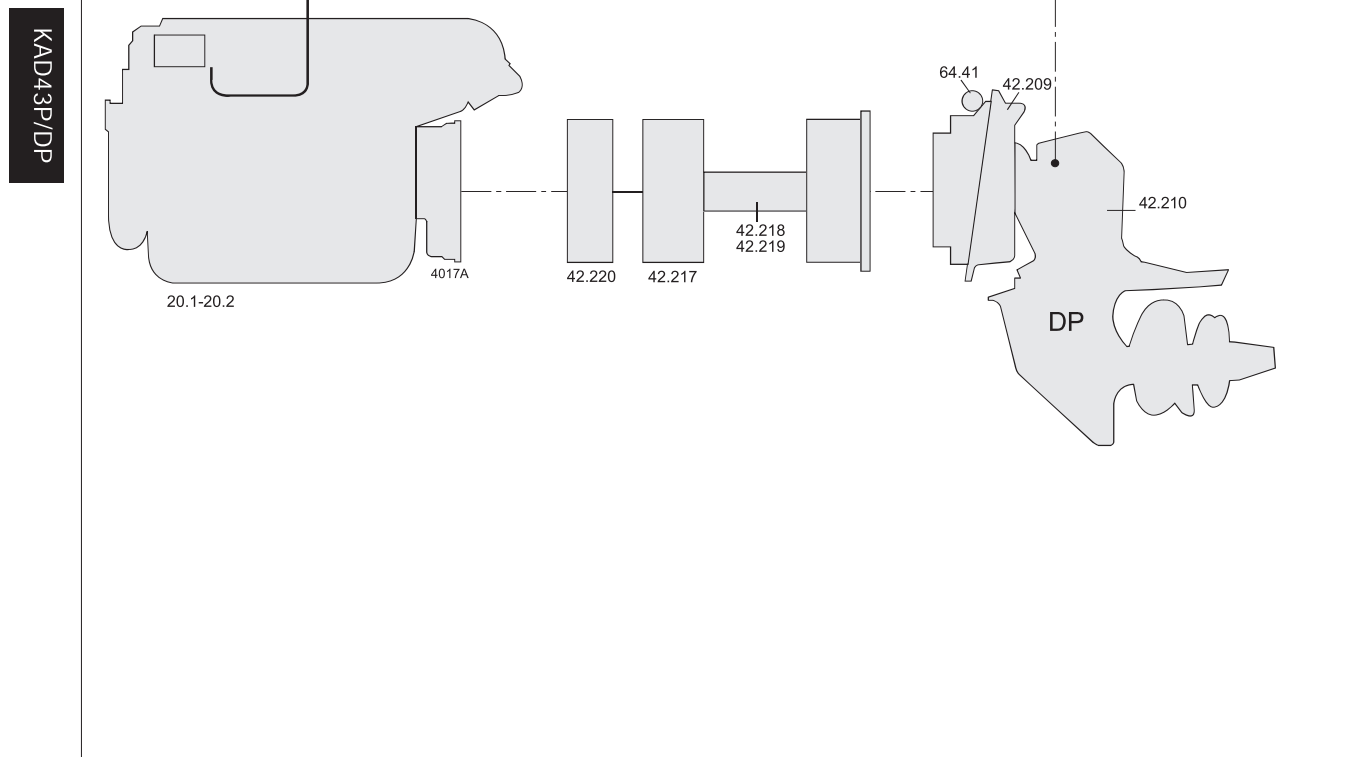
Accessories

- An extensive range of accessories for:
- Fuel system, cooling system, control system, steering system, instrument, electric system, comfort & Safety, propeller & Drive, maintenance

For detailed information, please see Accessories Catalogue



Optional equipment KAD43P/DP



Order Specification KAD43P/DP

	Group	Pos. No.	Equipment	Order . No.	See. equip.	Note
20	Engine	1	KAD43P/DP, 12 V without power steering	869108		PD/R4 Power setting. Del. class 2 W
		2	KAD43P/DP, 12 V with power steering	869109		PD/R4 Power setting. Del. class 2 W
26	Cooling system	66	Hot water outlet	860706		
30	Electrical system	63	Kit for extra alternator mount	3581630		Altenator, see accessories
38	Instrument and senders	36	Main instrument panel, 12 V	873590	x	
		37	Main starter key kit, 12 V	873583	x	
		38	Instrument kit, 12 V	873286	x	
		41	Tachometer kit, 12 V	873830	x	
		42	Y-connector	1140598	x	
		35	Instrument panel, flybridge	873593	x	
		39	Flybridge panel kit	873582		
		49	Temperature sensor	840074		For twin 38.36 and 38.37
		50	Oil pressure sensor	866836		For twin 38.36 and 38.37
		25	Front ring for 52 mm instrument	858643		
		208	Holder for 52 mm instrument	873207		
		26	Front ring for 72 mm tachometer	873517		
		209	Holder for 72 mm tachometer	873208		
		55	Extension cable, 3 m (9.8 ft)	846648		For connection between instrument panel and engine terminal box.
		56	Extension cable, 5 m (16.4 ft)	846649		For connection between instrument panel and engine terminal box.
		57	Extension cable, 7 m (23.0 ft)	846650		For connection between instrument panel and engine terminal box.
		86	Extension cable, 9 m (29.5 ft)	873838		For connection between instrument panel and engine terminal box.
		87	Extension cable, 11 m (36.1 ft)	873839		For connection between instrument panel and engine terminal box.
		64	Digital Power Trim instrument kit	872239	x	2:nd station
		65	Control panel for Power Trim	3855650	x	
		66	Analog Power Trim instrument kit	873136	x	
		67	Control unit for 38.66	873226	x	
		201	Digital Power Trim instrument kit	873227	x	
42	Trans-mission	209	Transom shield kit, type DP-E	3868724	x	
		210	Transmission, model DP-E, ratio 1.78:1	3868727	x	Only in comb with power steering
		217	Jackshaft kit	3856231	x	
		218	Jackshaft L=1650 mm	853850	x	
		219	Jackshaft L=1100 mm	853944	x	
64	Steering system	256	Rear suspension kit for jackshaft	3581711	x	
		8	Steering cable attachment	872388		To be used only with hydraulic steering
		41	Servo cylinder kit for power steering	872229	x	Only one required for twin installation
		42	Servo pump for power steering	861599	x	Only one required for twin installation
	Accessories		For general information about accessories, please see publication Volvo Penta Accessories and Maintenance Parts.			

KAD43P/DP

Technical Data KAD43P/DP

Speed	r/min	1500	2000	2500	3000	3500	3800	3900
Crankshaft power	kW	70.7	106.4	133	157	169	169	169
	hp	96	145	181	214	230	230	230
Propellershaft power	kW						159	
	hp						216	
Torque at crankshaft	Nm	450	508	508	500	469	427	
	lbft	332	375	375	369	346	315	
Mean piston speed	m/s	4.5	6.0	7.5	9.0	10.5	11.4	
	ft/s	14.8	19.7	24.6	29.5	34.4	37.4	
Effective mean pressure	bar	15.7	17.7	17.7	17.4	16.4	14.9	
	psi	228	257	257	252	238	216	
Max combustion pressure	bar	138	144	150	158	160	160	
	psi	2001	2089	2176	2292	2321	2321	
Specific fuel consumption at crankshaft power	g/kWh	248	240	236	245	246	260	
	lb/hph	0.402	0.389	0.382	0.379	0.399	0.421	
Radiated heat in percent of crankshaft power	%	29	11	8	13	12	12	
Total heat rejection to cooling water in percent of crankshaft power	%	93	93	95	97	104	111	
Specific exhaust heating effect in percent of crankshaft power	%	73	69	68	73	73	78	
Exhaust temperature at the exhaust pipe connecting flange after the turbocharger	°C	470	475	450	455	420	420	
	°F	878	887	842	851	788	788	
The highest permissible back pressure in the exhaust line	bar						0.3	
	psi						4.4	
Engine air consumption at 81°F, atmospheric pressure of 1 bar	m³/h	277	404	522	642	796	848	
	ft³/min	163	238	307	378	469	499	
Exhaust gas flow at crankshaft power	m³/h	757	1099	1352	1648	1859	1933	
	ft³/min	456	647	796	970	1094	1138	
Fresh water circulation pump flow	m³/h	6.78	9.18	11.46	13.50	15.48	16.50	
	gal/min	29.9	40.4	50.5	59.4	68.2	72.6	
Max permissible temperature on fresh circulation water outlet	°C						85	
	°F						185	
Total pumphead fresh water circulation pump	bar	0.50	0.74	1.00	1.35	1.72	1.95	
	psi	7.25	10.7	14.5	19.6	25.0	28.3	
Sea water pump flow	m³/h	2.46	3.24	4.02	4.74	5.40	5.76	
	gal/min	10.8	14.3	17.7	20.9	23.8	25.4	
Specific lubricating oil consumption	g/kWh						0.8	
	lb/hph						0.001	

Technical data in accordance with ISO 8665 and ISO 3046 Standard Fuel Stop Power.
Fuel 40°C (104°F), lower calorific value of 42700 kJ/kg and density of 840 g/liter.