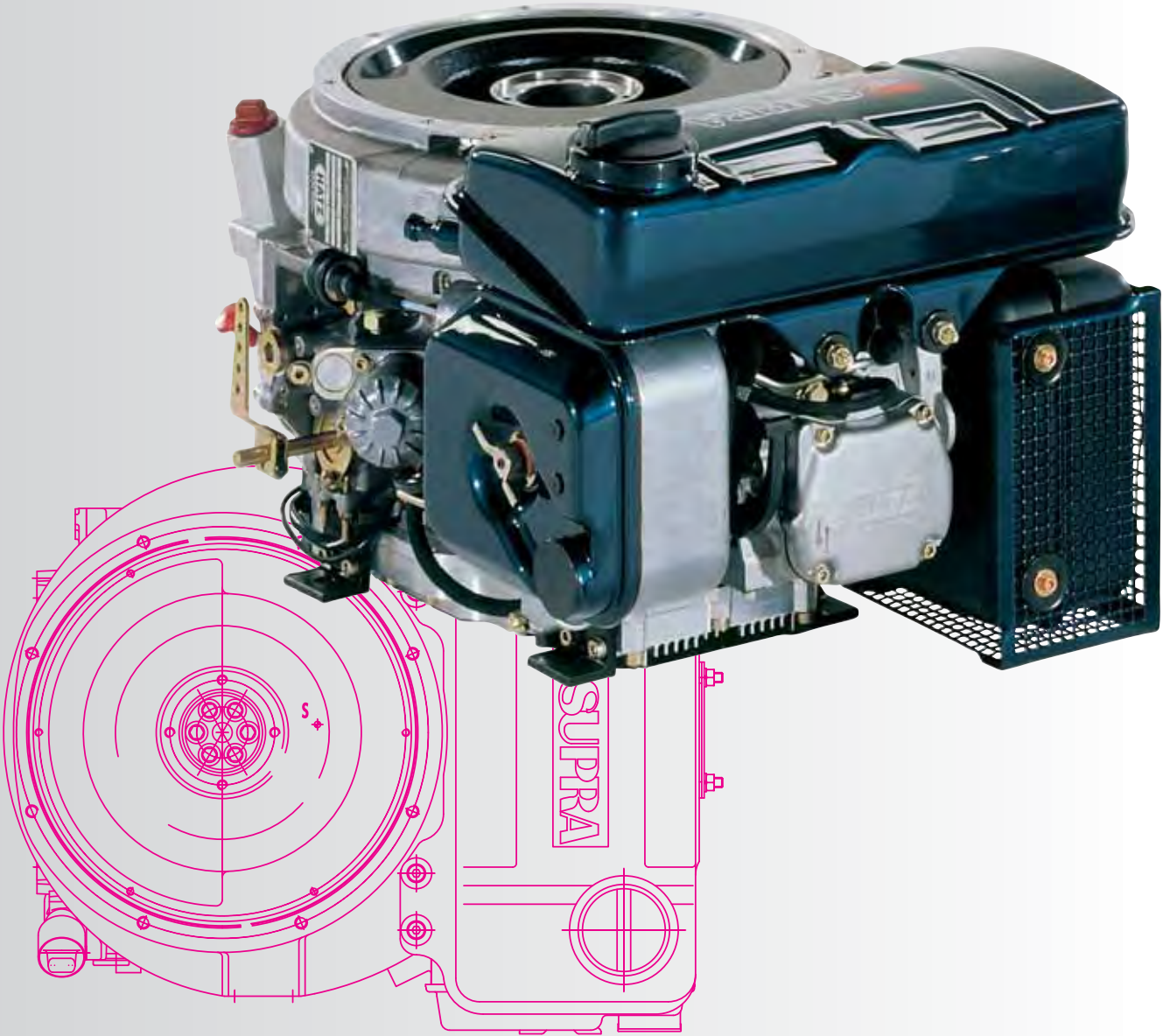




D-series



1D90V/W

1D90V/W 5.8 - 11.2 kW

SUPRA

AN AIR COOLED ONE CYLINDER DIESEL ENGINE WITH VERTICAL SHAFT

SUPRA

1D90V/W

Exhaust reduced types on request

EPA II

EPA IV (2008)

CARB II

CARB IV (2008)



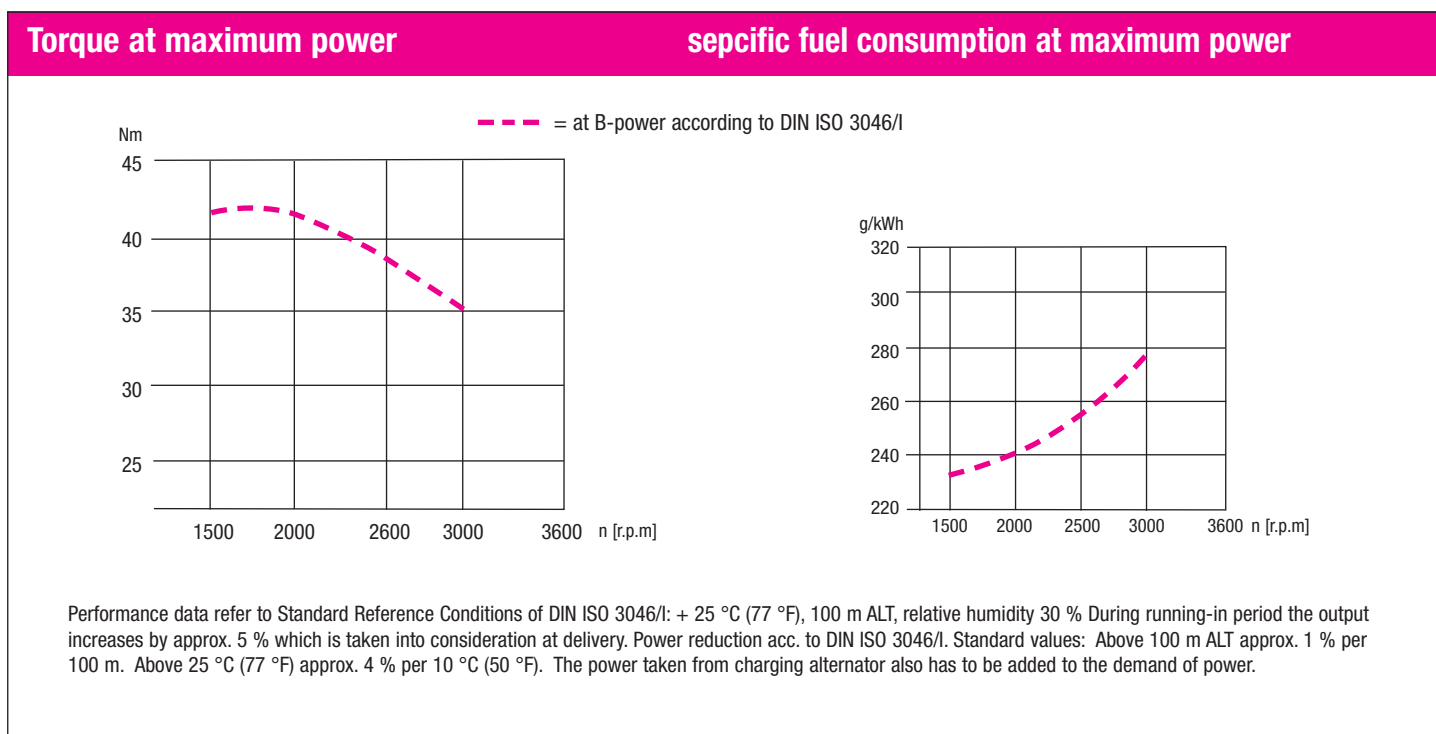
Design

- Aircooled single-cylinder four stroke Diesel engines.
- Horizontal cylinder.
- Crankcase in light alloy, diecast. Cylinder of grey cast iron.
- Cylinder head in light alloy.
- Crankshaft and big end in slide bearings.
- Direct injection, multi-hole nozzle.
- Valve control via camshaft, cam followers, pushrods and rockers.
- Pressure lubrication, with gear-type oil pump.
- On request oil filter in main flow.
- Lightalloy oil sump cased with sheet steel.
- Flywheel fan, charging alternator integrated into flywheel. No V-belt necessary.

Characteristics

- Denoised: emission of noise reduced to the absolute minimum by means of design features and precision manufacture.
- Low fuel consumption.
- Favourable exhaust gas values below acc. to EPA and CARB.
- Robust: long life engine.
- Extensive interchangeability of parts within the engine family **D**.
- Reliable: no V-belts.
- Easy to service: because automatic injection pump bleeding.
- Friendly to the environment: Ventilation of crankcase leads into the intake port.
- Automatic: extra fuel device.
- Electric start.

Technical data		1D90.	
Number of cylinders		1	
Bore x stroke	mm	104 x 85	
	inches	4.09 x 3.35	
Displacement	l	0.722	
	cu. in.	44.0	
Mean piston speed at 3000 r.p.m.	m/s	8.5	
	ft/min	1673	
Compression ratio		20.5	
Lub. oil consumption, related to full load		approx. 1% of fuel consumption	
Lub. oil capacity max. / min.	l	1.6 / 0.9	
	US qts	1.7 / 0.95	
Speed control	lowest idle speed	approx. 800 r.p.m.	
	static speed droop	approx. 5% at 3000 r.p.m.	



Performance table	SPECIAL OUTPUT ON REQUEST		1D90.	
	Hatz Stand.	r.p.m.	kW	HP
ISO net brake fuel stop power (IFN) for intermittent load acc. to DIN ISO 3046/I.	B	3000	11.2	15.2
		2600	10.3	14.0
		2300	9.5	12.9
		2000	8.4	11.4
		1800	7.6	10.3
		1500	6.4	8.7
ISO-standard power (ICXN) (10% overload permissible) and ISO-standard fuel stop power (no overload permissible) acc. to DIN ISO 3046/I. For constant speed and constant load (ICFN).	S	3000	10.2	13.9
		2600	9.4	12.8
		2300	8.6	11.7
		2000	7.7	10.5
		1800	6.8	9.2
		1500	5.8	7.9

Installation data		1D90.
Combustion air required at 3000 r.p.m. approx. ¹⁾	m ³ / min	1.1
	cu.ft./min	39
Cooling air required at 3000 r.p.m. approx. ¹⁾	m ³ / min	15
	cu.ft./min	530
Permanent tilting	max. degrees	25
Moment of inertia	kgm ²	0.51
	lb.ft ²	12.5
Starter motor		12 V - 2.0 kW (2.7 HP) • 24 V - 2.5 kW (3.4 HP)
Alternator charging current at 3000 / 1500 r.p.m.		14 V - approx. 16 A / 5 A • 28 V - approx. 9 A / 4 A
Battery capacity	min / max. Ah	12 V - 45 / 88 Ah • 24 V - 36 / 55 Ah

¹⁾ For other r.p.m. there is a linear reduction in the air requirement

Permissible load on power-take-off points

Max. permissible radial load

$$F1 = \frac{477\,000}{L1 \text{ (mm)} - 50.5} \text{ (N)}$$

$$F2 = \frac{67\,500}{L2 \text{ (mm)} - 134} \text{ (N)}$$

*) Radial power-take-off (belt) in direction of fuel tank requires external bearing resp. consultation is requested.

Transmissible torque
 A: 100%
 B: 100%

Max. permissible axial force
 F4 = 2250 N
 F5 = 1350 N

Maintenance and operating points

For the engine to achieve its maximum life, it is essential for it to be serviced meticulously at regular intervals.

The better the accessibility, the more promptly and conscientiously the engine will be maintained.

Please convince yourself personally that all service and operation points are easily accessible before delivering your machine to the customer.

Electrical equipment

The engine-mounted components, such as starter, alternator and switches, are connected to the instrument box by means of a 2 m cable harness. The engine is started and controlled from this instrument box. Instrument box and cable harness are part of the additional equipment and supplied according to the number of electrical safety features which are required. If the engine has to be started at temperatures below - 10 °C, it must be equipped with a pre-heating system (glow plug) (additional equipment). Further additional equipment includes automatic start and stop, remote control etc. Please ask for drawings and wiring diagrams.

www.hatz-diesel.com

Power-Take-Off and Sense of Rotation

- Power-take-off at the flywheel A at engine speed.
- Power-take-off at the governor side B at engine speed (fig. 1).
- Sense of Rotation see figure 1.
- Engine can be flange-mounted at governor side and flywheel side.

Engine models

- **1D90V:** counter-clockwise rotation (fig. 1), with 50% balancing of free mass forces.
- **1D90W:** counter-clockwise rotation (fig. 1), with 100% balancing of free mass forces. (Referring to free mass forces of first order) (fig.2).

Engine variants

- **Variant XI** : Engine with electric start 12 V, (figure 3).
- **Variant XIII** : Engine with electric start 24 V, (figure 3).

Weight incl.tank, air filter and exhaust silencer

	Var. XI		Var. XIII	
	kg	lbs.	kg	lbs.
1D90 V	106	233.6	106	233.6
1D90 W	108	238.0	108	238.0

Mounting of engine

- For engine speed over 2300 - 2500 r.p.m. it is recommended to use flexible mounts.

Scope of Delivery of Engine

Engine tested for full load on test bench. Engine fitted with flywheel-fan, variable speed governor, dry-type air filter, automatic extra fuel device, automatic bleeding.

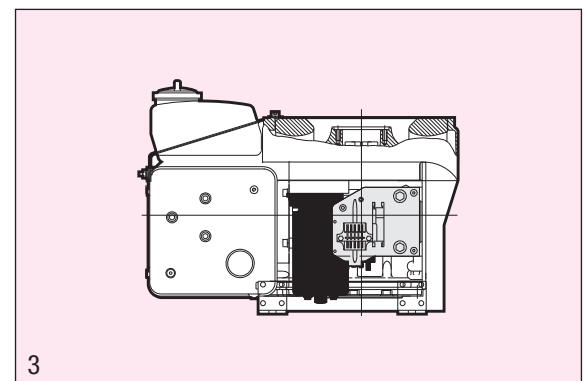
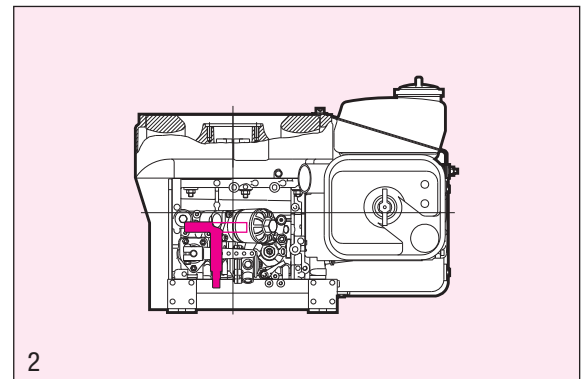
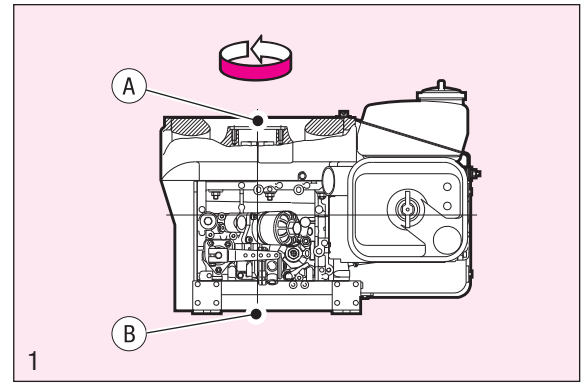
Parts made of sheet metal painted black, crankcase of light alloy not painted.

No oil in engine.

Additional equipment: Gaskets for 1st maintenance

Further equipment included in engine variants:

- **Variant XI** : Starter 12 V, 2.0 kW, alternator 14 V, 16 A, cables, oil pressure switch, gearing
- **Variant XIII:** Starter 24 V, 2.5 kW, alternator 28 V, 9 A, cables, oil pressure switch, gearing

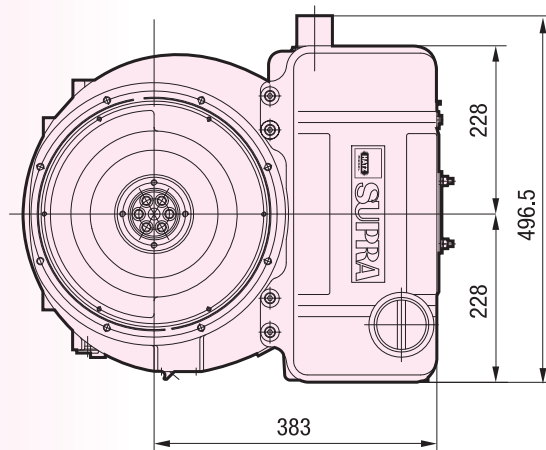
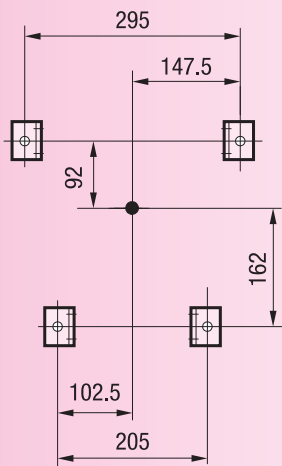
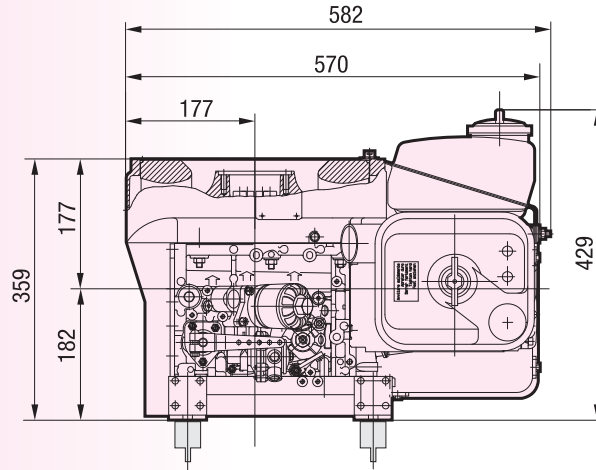
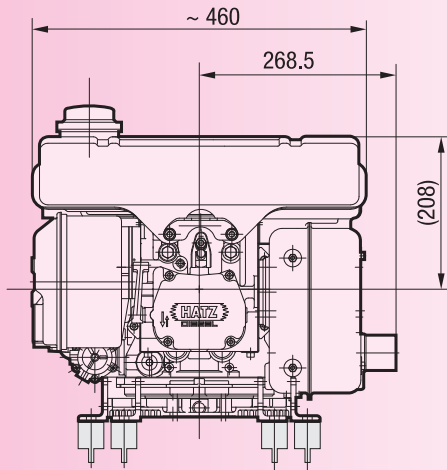


Additional equipment

Thanks to the complete programme of additional equipment every engine can be adapted to the special requirements of every application.

As a minimum, every engine needs the „additional equipment, necessary for operation“.

Dimensions



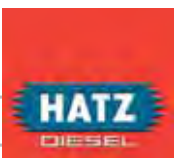
Spread at outlines ± 3 mm due to tolerance.

Drawings with detailed - and connection measures can either be demanded or downloaded as pdf- resp. dxf-file which are shown in the Internet.

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