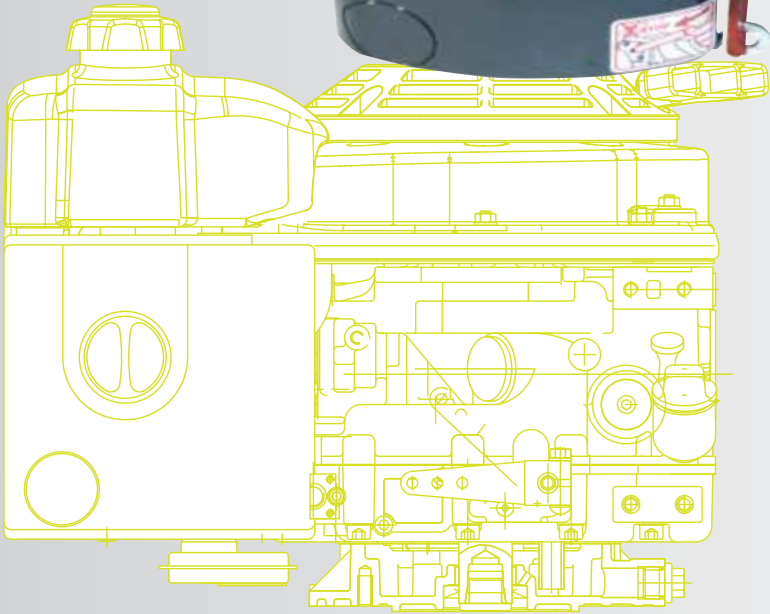




B-series



1B20V • 1B30V • 1B40V • 1B50V

1B20V	•	1.4-3.5 kW	1B30V	•	2.1-5.4 kW
1B40V	•	3.2-7.5 kW	1B50V	•	3.5-8.0 kW

THE CHALLENGERS:
AIR COOLED SINGLE-CYLINDER DIESEL
WITH VERTIKAL SHAFT

Exhaust reduced types on request

EPA TIER IV **CARB TIER IV**



Design

- Air-cooled single-cylinder 4-stroke Diesel engine.
- Horizontal cylinder.
- Light alloy diecast cylinder crankcase.
- Light alloy cylinder head.
- Forged crankshaft.
- Light alloy piston for low free forces of gravity.
- Lubrication by pressurised circulation of oil, fine screen filtering in main flow.
- Valve control by rocker, push-rods, tappets and camshaft.

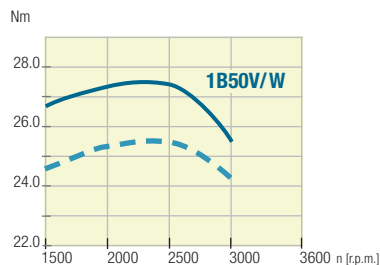
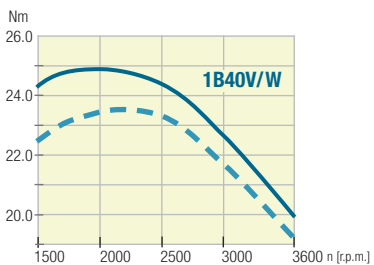
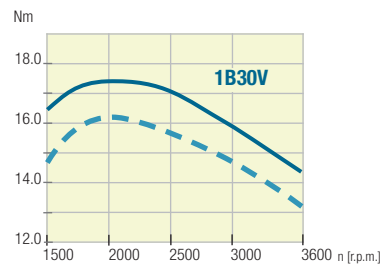
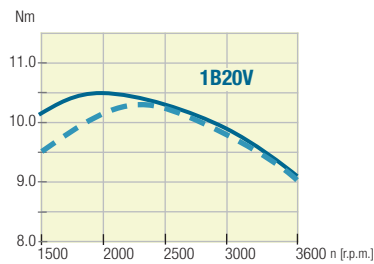
Characteristics

- Direct injection.
- Compression from 1:20.5 to 1:22. Good cold start performance.
- Fuel orientated mixture preparation. Result: excellent exhaust quality.
Certificates from EPA and CARB.
- Speed regulation by spring-loaded governor.
Proportionality < 5% at 3000 / 3600 r.p.m.
- The control cover houses the governor, the entire valve drive, the injector pump drive, the automatic decompression system and oil pump.
- Oil drain on both (narrow) sides of the engine. This gives free access of at least one drain position for almost all installations.
- Dry air filter with paper cartridge and integrated pre-cleaner.
- Cooling fan and AC generator incorporated in the flywheel (not sensitive to dust).
- Exhaust outlet flexible as regards both position and direction of exit.

Technical data		1B20V	1B30V	1B40V/W	1B50V/W
Number of cylinders		1	1	1	1
Bore x stroke	mm	69 x 65	80 x 69	88 x 76	93 x 76
	inches	2.72 x 2.56	3.15 x 2.72	3.46 x 2.99	3.66 x 2.99
Displacement	l	0.243	0.347	0.462	0.517
	cu.in.	14.82	21.18	28.19	31.55
Mean piston speed at 3000 r.p.m.	m/s	6.5	6.9	7.6	7.6
	ft/min	1280	1358	1496	1496
Compression ratio		22	21.5	21	20.5
Lub. oil consumption, related to full load		approx.1 % of fuel consumption			
Lub. oil capacity max. / min.	l	0.9 / 0.4	1.1 / 0.6	1.5 / 0.7	1.55 / 0.75
	US qts	0.95 / 0.42	1.16 / 0.63	1.59 / 0.74	1.64 / 0.77
Speed control	lowest idle speed	approx. 1000 r.p.m.			approx. 800 r.p.m.
	static speed droop	approx. 5% at 3000 r.p.m.			

Torque at maximum power

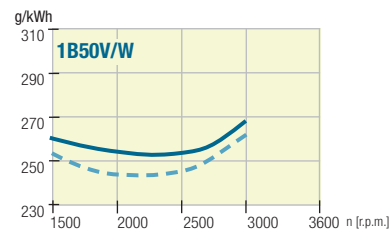
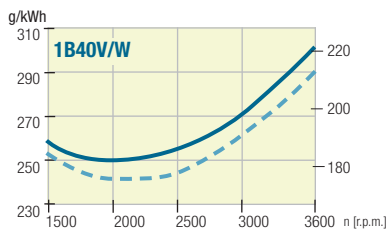
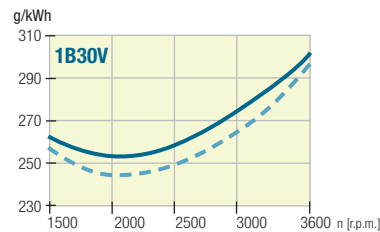
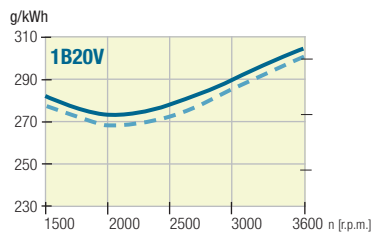
— = at F-power according to DIN ISO 1585 - - - = at B-power according to ISO 3046-1



Performance data refer to Standard Reference Conditions of ISO 3046-1: + 25 °C (77 °F), 100 kPa, relative humidity 30 %
 During running-in period the output increases by approx. 5 % which is taken into consideration at delivery.
 Power reduction acc. to ISO 3046-1.
 Standard values: Above 100 m ALT approx. 1 % per 100 m.
 Above 25 °C (77 °F) approx. 4 % per 10 °C (50 °F).
 The power taken from charging alternator also has to be added to the demand of power. (approx. 0.2 kW)

Specific fuel consumption at maximum power

— = at F-power according to DIN ISO 1585 - - - = at B-power according to ISO 3046-1



Installation data		1B20V	1B30V	1B40V/W	1B50V/W
Combustion air required at 3000 r.p.m. approx. ¹⁾	m ³ / min	0.35	0.52	0.69	0.78
	cu. ft./min	12	18	24	28
Cooling air required at 3000 r.p.m. approx. ¹⁾	m ³ / min	4.2	6.0	7.3	7.6
	cu. ft./min	148	212	257	268
Permanent tilting	max. degrees	25			
Starter motor		12 V - 1.0 kW – 24 V - 1.6 kW			
Alternator charging current at 3000 / 1500 r.p.m.		14 V - 14 A / 7 A – 28 V - 10 A / 5 A			
Battery capacity	min / max. Ah	12 V - 36 / 60 Ah – 24 V - 24 / 44 Ah			

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

Permissible load on power-take-off points

1B20V / 1B30V

max. permissible radial force

$$F_1 = \frac{60\,000}{L \text{ (mm)} - 70} \text{ (N)}$$

max. permissible axial force

$$F_2 = 800 \text{ (N)}$$

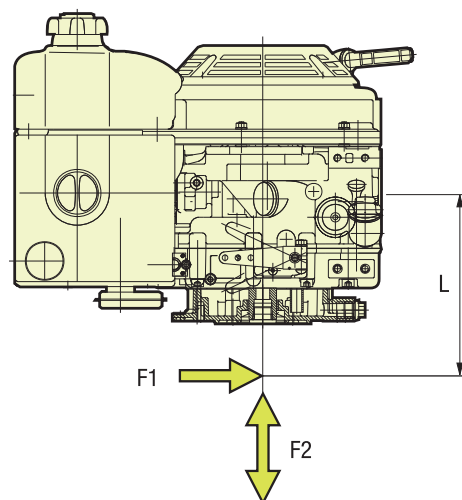
1B40V/W / 1B50V/W

max. permissible radial force

$$F_1 = \frac{62\,600}{L \text{ (mm)} - 84} \text{ (N)}$$

max. permissible axial force

$$F_2 = 1200 \text{ (N)}$$



1

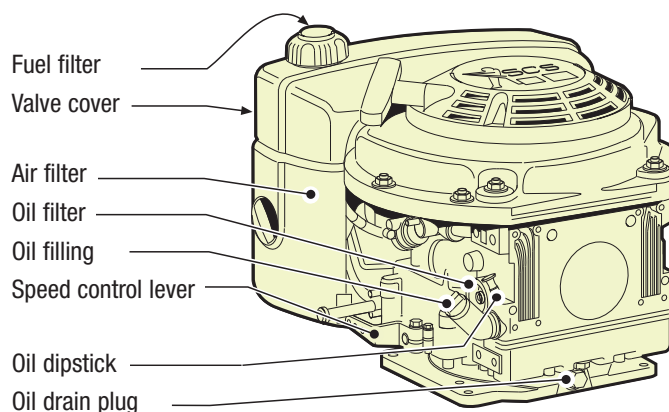
Maintenance and operating points

To achieve the engine's maximum life, it is essential that the engine gets serviced meticulously at regular intervals.

During your first installation please make sure that easy accessibility of service and operating points is assured.

The easier the accessibility is, the sooner and more conscientious 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.



2

Electrical equipment

Starter-switchboard-instruments will be delivered upon request as switchboard-instruments with cable (2 m) loose. 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, engine must

be fitted with a pre-heating system (glow plug) (additional equipment). Further additional equipments include 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 crankshaft - governor side with engine speed, with max. engine speed, 100 %.
Different stub-shafts (pic. 6)
Radial loading capacity, see pic. 1.
- Sense of rotation anti-clockwise (fig. 3)

Engine models

- **Version 1B20V** :1500 r.p.m. bis 3600 r.p.m.
- **Version 1B30V** :1500 r.p.m. bis 3600 r.p.m.
- **Version 1B40V** :1500 r.p.m. bis 3600 r.p.m.
- **Version 1B40W** :1500 r.p.m. bis 3600 r.p.m.
- **Version 1B50V** :1500 r.p.m. bis 3000 r.p.m.
- **Version 1B50W** :1500 r.p.m. bis 3000 r.p.m.

V: without additional counter balance

W: with additional counter balance

Engine variants

- **Variant VIII** : Engine with Recoil-start on flywheel side (fig 4).
- **Variant XI** : Engine with electric start 12 V and Recoil-start as an option (fig. 5).
- **Variant XIII** : Engine with electric start 24 V and Recoil-start as an option (fig. 5).

Weight incl. tank, air filter and exhaust silencer

	1B20V		1B30V		1B40V/W		1B50V/W	
	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.
Variant VIII	30.0	66.1	37.0	81.6	50.0	110.2	53.2	117.3
Variant XI / XIII	34.8	76.7	41.8	92.1	55.3	121.9	58.5	128.9

Scope of delivery of engine in standard equipment

Engine tested for full load on test bench. Engine fitted with blower fan, variable speed governor, lubricating oilfilter, dry-type airfilter, automatic decompression system, automatic injection pump bleeding, strap for transportation (only suitable to carry the engine weight).

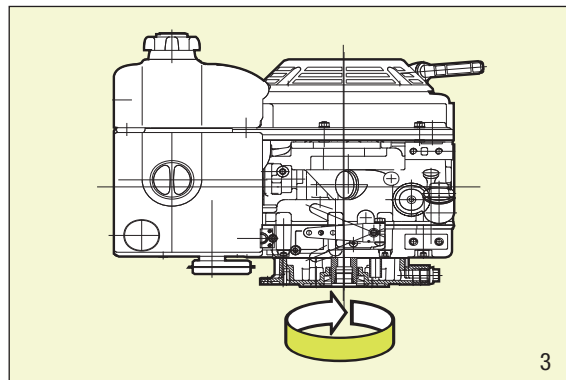
Light metal housing not painted. Sheet metal parts painted.

Engine without oil.

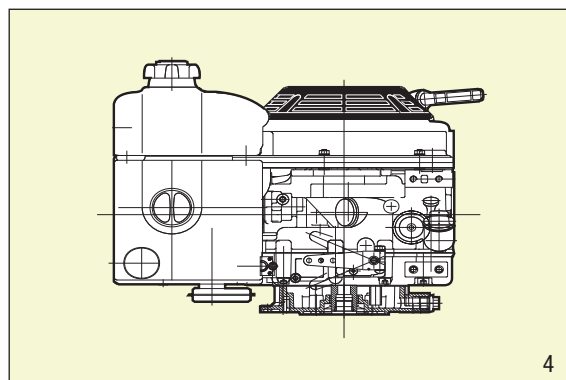
Accessories: Gaskets for 1st maintenance

Further equipment included in engine variants:

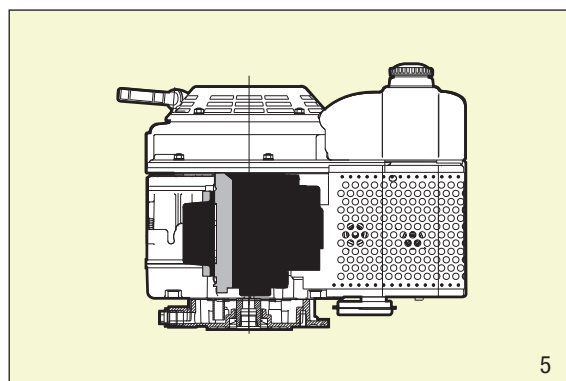
- **Variant VIII** : Recoil starter
- **Variant XI** : Electric starter 12 V, Generator 14 V, engine wiring, gear ring.
- **Variant XIII** : Electric starter 24 V, Generator 28 V, engine wiring, gear ring.



3



4



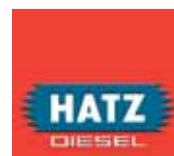
5

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".

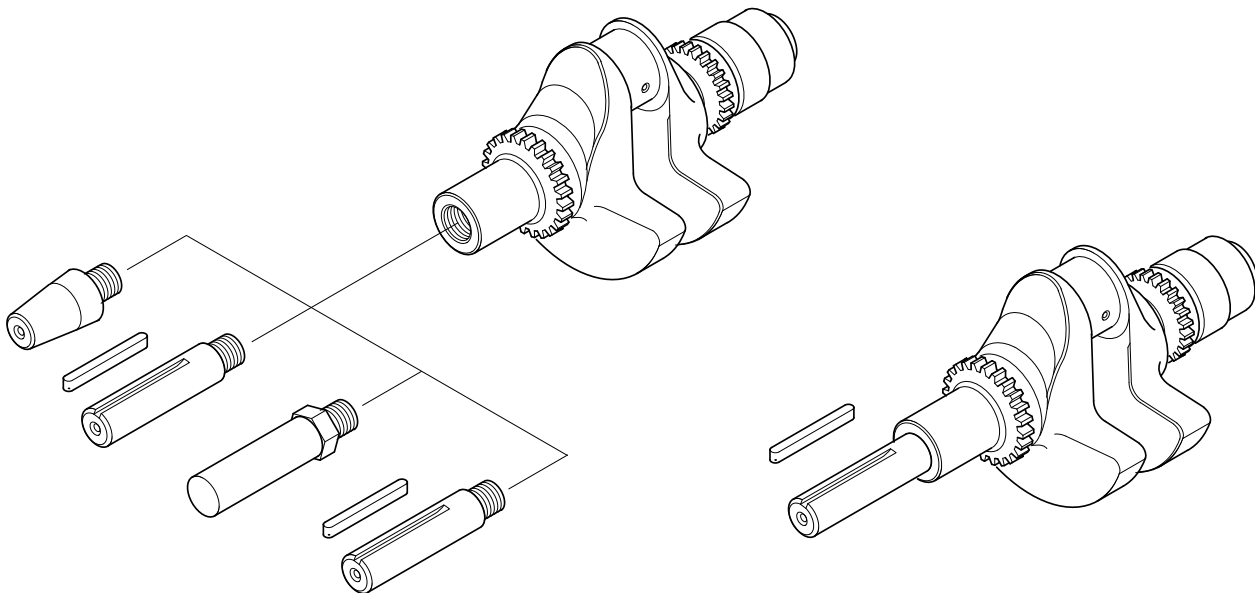
You find out details at our HATZ-contracting partners.



Performance table			1B20V		1B30V		1B40V/W		1B50V/W	
	Hatz-Stand.	r.p.m.	kW*	HP*	kW*	HP*	kW*	HP*	kW*	HP*
Vehicle output acc. to DIN ISO 1585.	F	3600	3.5	4.8	5.4	7.3	7.5	10.2	—	—
		3000	3.1	4.2	5.0	6.8	7.1	9.7	8.0	10.9
		2600	2.8	3.8	4.6	6.3	6.6	9.0	7.4	10.1
		2300	2.5	3.4	4.1	5.6	6.0	8.2	6.6	9.0
		2000	2.2	3.0	3.6	4.9	5.2	7.2	5.7	7.8
		1800	1.9	2.6	3.3	4.5	4.6	6.3	5.1	6.9
		1500	1.6	2.2	2.6	3.5	3.8	5.2	4.2	5.7
ISO net brake fuel stop power (IFN) for strongly intermittent load acc. to DIN ISO 3046-1.	B	3600	3.4	4.6	5.0	6.8	7.3	9.9	—	—
		3000	3.1	4.2	4.6	6.3	6.8	9.2	7.6	10.3
		2600	2.8	3.8	4.2	5.7	6.3	8.6	6.9	9.4
		2300	2.5	3.4	3.9	5.3	5.7	7.8	6.2	8.4
		2000	2.1	2.9	3.4	4.6	4.9	6.7	5.3	7.2
		1800	1.9	2.6	3.0	4.1	4.4	6.0	4.7	6.4
		1500	1.5	2.0	2.3	3.1	3.5	4.8	3.9	5.3
ISO-standard power (ICXN) (10% overload permissible) and ISO-standard fuel stop power (no overload permissible) acc. to DIN ISO 3046-1. For constant speed and constant load (ICFN).	S	3600	3.1	4.2	4.5	6.1	6.5	8.8	—	—
		3000	2.8	3.8	4.2	5.7	6.1	8.3	6.8	9.2
		2600	2.5	3.4	3.8	5.2	5.6	7.6	6.2	8.4
		2300	2.2	3.0	3.5	4.8	5.1	6.9	5.5	7.5
		2000	1.9	2.6	3.1	4.2	4.4	6.0	4.8	6.5
		1800	1.7	2.3	2.7	3.7	3.9	5.3	4.2	5.7
		1500	1.4	1.9	2.1	2.9	3.2	4.4	3.5	4.8

* Performance specifications without exhaust certificates. Performance tables with exhaust certificates upon request.

Selection of available shaft forms



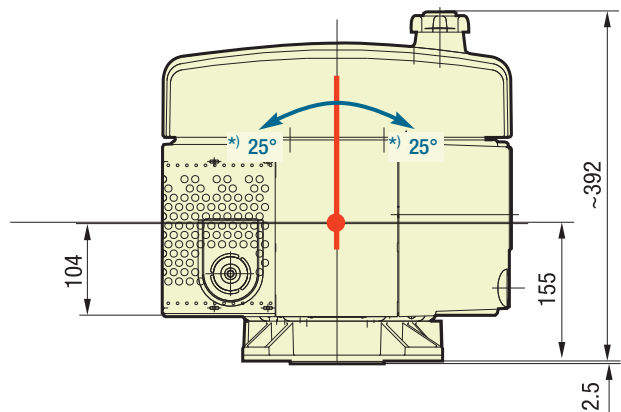
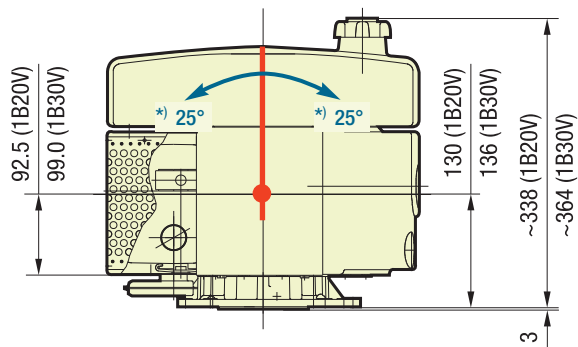
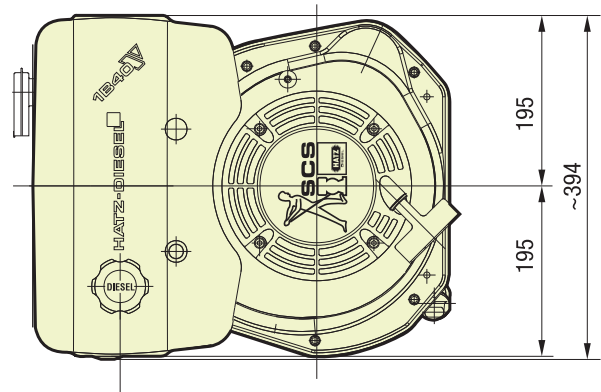
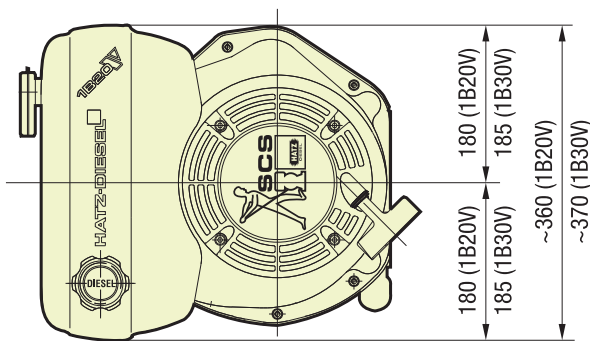
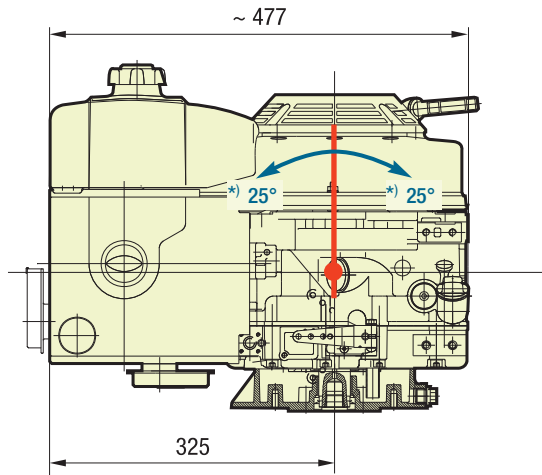
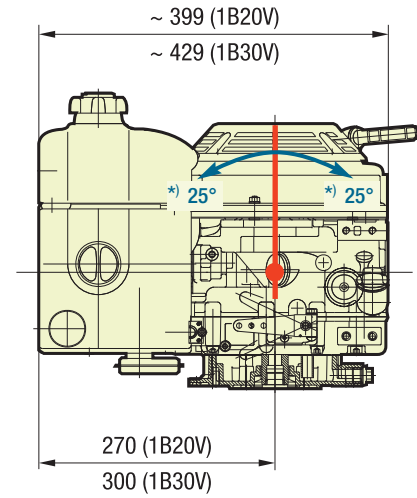
1B20V - 1B30V - 1B40V/W - 1B50V/W
Version for retrofit shafts

1B40V/W - 1B50V/W
cyl. with thread $\varnothing 1''$

1B20V / 1B30V

1B40V/W / 1B50V/W

1) max. permanent tilting



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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5 / 630 ENG - 05.08 - 1 Printed in Germany
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