

OPERATION MANUAL

Vibratory plate compactors

VD15E, 18E, VD20E, 24E



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ORIGINAL OPERATION MANUAL (2006/42/EC)

(issued 02/2012)

ES PROHLÁŠENÍ O SHODĚ (originál)**EC Declaration of Conformity (original)**

Prohlašujeme, že zařízení definované níže uvedenými údaji je ve shodě s požadavky níže uvedených NV a směrnic

We declare that the trough below mentioned specifications defined equipment complies with requirements of below cited Directives

Výrobce (manufacturer):	NTC STAVEBNÍ TECHNIKA spol. s r.o.
Sídlo firmy (company domicile):	V Aleji 654, Nové Město nad Metují 549 01
Sídlo provozovny: (office premises)	Maloskalická 120, Česká Skalice 552 03
IČ (identification number):	63221152
Osoba pověřená sestavením a uchováváním technické dokumentace: (Person in charge of assembling and storing technical documentation)	NTC STAVEBNÍ TECHNIKA spol. s r.o.
Název (model):	VIBRAČNÍ DESKA JEDNOSMĚRNÁ / VIBRATORY PLATE
Typ (type):	VD15E, 18E, 20E, 24E
Výrobní číslo (serial number)	
Popis (description):	Vibrační desky jsou určeny pro zhutňování všech druhů zemin včetně navazujících půdních úseků, pro zhutňování příkopů a ploch, jakož i pro zhutňování asfaltových povrchů. Při použití s plastovou podložkou je možné vibrační desku používat rovněž pro zahutnění zámkové dlažby. Pohon vibrační desky je zajištěn čtyřdobým jednoválcovým motorem HONDA (čistý výkon: 3,6 kW). <i>The forward vibratory plates are designed for compaction of soils or asphalt layers, when used with an optional plastic pad it can be used also for compaction of asphalt surfaces. The machine is driven with four-stroke single-cylinder engine HONDA (net power 3,6 kW).</i>
Všechna příslušná ustanovení, která výrobek splňuje (The product meets all relevant provisions)	Strojní zařízení – směrnice 2006/42/ES; NV č.176/2008 Sb. <i>Machinery Directive 2006/42/EC</i> Emise hluku – směrnice 2000/14/ES; NV č.9/2002 Sb. <i>Noise Emission 2000/14/EC</i> Elektromagnetická kompatibilita – směrnice 2004/108/ES; NV č.616/2006 Sb. <i>Electromagnetic Compatibility Directive 2004/108/EC</i>
Harmonizované technické normy a technické normy: (The harmonized technical standards and technical standards)	ČSN EN ISO 12100, ČSN EN 500-1+A1, ČSN EN 500-4, ČSN EN 474-1+A1, ČSN EN 60204-1 ed.2, EN ISO 14982:2009
Osoby zúčastněné na posouzení shody (Persons involved in the conformity assessment)	Autorizovaná osoba č. 255 (authorized Body No. 255) Notifikovaná osoba č. 1016 (the European Notified Body No. 1016) Státní zkušebna zemědělských, potravinářských a lesnických strojů, a.s., Trhanovského 622/11, 16304 Praha 6-Řepy, ČR <i>The Government Testing Laboratory of Agricultural, Food Industry and Forestry Machines, Joint-stock company</i>
Použitý postup na posouzení shody: (To the conformity assessment applied procedure)	Na základě směrnice 2000/14/ES příloha VI; NV č.9/2002 Sb., příloha č.5 <i>Pursuant to the Directive for Noise Emission 2000/14/EC Annex VI</i> Na základě směrnice 2006/42/ES příloha VIII; NV č.176/2008 Sb., příloha č.8 <i>Pursuant to the Machinery Directive 2006/42/EC Annex VIII</i>
Naměřená hladina akustického výkonu: (Measured sound power level)	L_{WA} = 103 dB
Garantovaná hladina akustického výkonu: (Guaranteed sound power level)	L_{WA} = 105 dB

Poznámka: Veškeré předpisy byly použity ve znění jejich změn a doplňků platných v době vydání tohoto prohlášení bez jejich citování.
Note: All regulations were applied in wording of later amendments and modifications valid at the time of this declaration issue without any citation of them.

Místo a datum vydání:
Place and date of issue:
Česká Skalice, 28.05.2012

Osoba zmocněná k podpisu za výrobce:
Signed by the person entitled to deal in the name of producer:

Jméno (Name):
Ing. Petr Ratsam

Funkce (Grade)
jednatel společnosti (Company Executive)

Podpis (signature)

Congratulations! You have purchased a non-reversible vibratory plate compactor. You receive high-quality and powerful compaction machine, intended for professional use under the heaviest conditions.

Read carefully this operation manual before starting the machine and always keep the instruction - this way you will secure safe operation, high working output and long durability of the machine.

The manufacturer bears no responsibility for damages arising from not keeping the operation manual.



The manufacturer of this machine is the company NTC STAVEBNÍ TECHNIKA spol. s r.o.

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1. SAFETY INSTRUCTIONS

1.1. General Safety Instructions for Work with Small Tools and Device

1.1.1. Qualification Requirements

As a rule, no machine operator's card is required for work with small tools and devices. Nevertheless, the person in charge of operating small tools and devices individually should meet the following conditions:

1. The persons to be charged with working with small tools and devices should:
 - be older than 18;
 - be physically and mentally fit for this kind of work;
 - be properly trained and have shown the employer their capabilities to operate such machines;
 - be expected to work duly and properly according to their supervisors' instructions;
2. Before the work is started, the operator should acquaint himself with the Operating Instructions and to follow them during the work.
3. The operator should acquaint himself with the safety instructions applicable to the respective machine and follow these instructions for the whole time of work. The acquaintance with the instructions should be provable, which means that the operator should confirm this fact by his or her signature.

1.1.2. Contractor's Obligations

The contractor is deemed to be a natural or legal entity in charge with performing the construction work using the given machine. The contractor is responsible for safety of the work with the machine.

The contractor is especially obliged:

- To designate the machine operator and to train him duly and properly;
- To provide the operator with safe conditions for working with the machine;
- To supervise the observance of the respective safety instructions;
- To supervise whether the operator follows the respective Operating Instructions;
- To provide organizational backup for regular inspections, maintenance and repairs of the machine;
- To provide suitable, safe and secured place for storing the machine if not in use.

Moreover, the contractor is obliged to provide organizational backup for observing other legal requirements for labour safety and other regulations applicable to the given workplace.

1.1.3. Operator's Obligations

The machine operator should be designated by the contractor providing always that the provisions of Par. 1.1.1 above are met.

The operator is especially obliged:

- To acquaint himself with the Operating Instructions including the applicable labour-safety rules before the work is started;
- To follow all the provisions of the Operating Instructions;
- To acquaint himself with the workplace itself including the labour-safety rules applicable for the given workplace and to follow the rules;
- To pay full attention to the machine operation;
- To provide organizational backup for regular inspections, maintenance and repairs of the machine;
- To require the employer to provide the conditions for following the safety instructions, for carrying out regular inspections, maintenance and repairs of the machine.
- To prevent the machine from being damaged or stolen and from unauthorized use. To store the machine in a safe and duly secured place after work.

1.1.4. Machine Operation

When working with the machine operator must observe the following guidelines:

1. Check the machine, especially all its protective elements (e.g. covers) and controls. Make sure that there are no leaks of fuel from the fuel system or oil from the engine. Should a defect is found, the machine must not be operated until the defect is repaired.
2. Use personal protective means (such as the respective crash helmet, ear protectors, protective goggles, gloves, shoes). The protective clothing should be close-fitting, not loose. Loose or damaged (torn) clothing should not be used. Any chains, watches, rings, etc. should not be worn as they can be caught by rotating parts of the machine and injure the operator.
3. Before work, check whether the machine can be safely started up without endangering the operating staff or other persons nearby.
4. Do not start up the engine in closed spaces unless sufficient ventilation is provided.
5. Pay full attention to the machine operation to prevent injury or collision with solid obstacles, other machines or vehicles.
6. Listen the run of the machine carefully. In case of unusual sounds or if smoke appears, stop the machine immediately check the machine and get it repaired.
7. Fill the machine with fuel only at standstill. The fuel must not come into contact with hot parts of the machine. If the fuel is spilled over, wipe up the fuel immediately. Do not fill the tank up to the neck.
8. See to it that that the fuel tank cap is tight. If not in operation, the fuel valve should be closed. If the machine is transported for a longer distance the fuel tank should be emptied.
CAUTION – broken or leaking fuel tanks and fuel piping can cause explosion, it is necessary to replace them without delay.
9. The machine should not be operated everywhere where there is danger of explosion of combustible gases or dust.
10. When operating the machine in closed spaces (tunnels, shafts, deep holes, etc.), the operator should be provided with fresh air supply (see the applicable regulations for constructional work).
11. After the work is finished, stop the engine, put the machine in a safe place, secure it against theft or unauthorized use. The machine should be stored in such a manner that it cannot fall down or overturn and that it is not an obstacle to other machines and vehicles.

1.1.5. Inspections, Maintenance & Repairs

1. Check the technical condition of the machine regularly and focus on perfect functioning of protective and control elements. If a defect is found, have it repaired without delay.
2. Machine servicing may only be carried out by a duly qualified person authorized by the contractor. Machine servicing can also be carried out by the worker of the respective service organization.
3. The machine should be serviced in a clean and safe place. If possible, service the machine in a workshop with the adequate equipment. If it is necessary to service the machine in-situ, the place should be secured in such a manner that any collision with other machines or vehicles is eliminated. The machine should not be serviced in otherwise dangerous places (landslides, cave-ins, operation of other machines and vehicles etc.).
4. Service the machine at standstill with the engine off only. If there is a need for starting up the engine when servicing the machine, pay full attention to labour safety.
5. When repairing the machine, use the original spare parts only. Only original spare parts (that have been tested and approved by the manufacturer) can guarantee save operation of the machine.
6. Any changes and modifications of the machine can only be made with the manufacturer's express consent.

1.1.6. Loading & Transportation

1. The machine may only be loaded and transported using a device or a vehicle with the lifting or loading capacity corresponding to the weight of the machine (see "Basic Specifications").
2. When loading the machine with a crane, all the regulations applicable to work with a crane should be observed. This should be done by a duly qualified person(s).
3. The sling should be placed in the marked place on the machine frame.
4. When handling the machine manually, more persons is necessary in order not to exceed maximum permissible weight to be lifted by one person.
5. During transportation, the machine should be sufficiently secured against overturning, falling or shifting. The slings should be fixed on the marked place(s).
6. During transportation, the shaft of the machine should be lifted and duly fixed in position.

1.2. Prohibited Operations

It is strictly prohibited:

- To use the machine for purposes other than those the machine is intended for;
- To control the machine in a different way from that set forth in the Operating Instructions;
- To operate the machine under influence of alcoholic beverages or drugs;
- To operate the machine in such a manner that safety of persons, buildings, structures, things or road traffic and its smoothness is endangered.
- To operate the machine if other persons are within the working radius of the machine;
- To operate the machine with any of its protective elements removed or damaged;
- To operate the machine in dangerous areas with imminent external danger such as caving-in the machine, landslides, overturning the machine, release of dangerous substances, risk of explosion or fire, electric shock hazard, etc.)
- To operate the machine in the areas where buildings, other structures or underground services could be damaged (e.g. by excessive vibrations).
- To operate the machine within the protective zones of electric lines and transformer stations;
- To cross electric cables with the machine unless they are sufficiently protected against mechanical damage;
- To operate the machine at poor visibility or at night without sufficient illumination of the whole workplace;
- To leave the machine while in operation or to leave the machine without having secured it against unauthorized use;
- To deactivate safety and protective elements or to change their parameters;
- To operate the machine with leaking oil, fuel or other liquids;
- To start up the engine in a manner different from that mentioned in the Operating Instructions;
- To clean the machine or to remove dirt while in operation;
- To smoke or use open fire when fueling or lubricating the machine, when checking the fuel level or the accumulator.

1.3. Hygienic Principles

Oil products (fuels, lubricants) are substances dangerous to health. Workers who come into contact with these substances when operating, maintaining or repairing machines should observe general principles of health protection and follow the hygienic and safety instructions issued by manufacturers of such substances. They are especially obliged:

- To protect their skin from coming into contact with such substances;
- To wash their hands thoroughly after work, before eating and to put a suitable regenerating cream on them.

Oil products as well as other detergents, preservatives and dangerous substances should at all times be stored in original, properly marked containers. Never allow storing such substances in different containers, in unlabelled containers or in food containers or bottles in order to prevent confusion. Store such substances out of the reach of children. If such substance come into contact with the skin, eyes or if inhaled or ingested, apply the first-aid measures and seek medical attention immediately.

1.4. Environmental Principles

Fuels, lubricants and operating liquids in individual systems of the machine are dangerous for the environment. After the end of their service life, they become dangerous waste materials. Moreover, the parts of the machine that come into contact with the above substances are also dangerous (e.g. filters). Please prevent these substances from their getting into soil or water (including sewerage systems). These substances should be stored in such a manner that all accidental spills can be caught. If such substances are released when refueling or lubricating the machine, dispose them in a proper and safe manner (sprinkle them with an absorbent, have them disposed by a specialized firm). Dispose the used liquids according to the respective regulations.

1.5. Disposal of the Machine after the End of Its Service Life

When disposing the machine after the end of its service life, the user is obliged to comply with all the applicable legal regulations. When disposing the machine, the oil filling from the engine and the vibrating mechanism as well as the respective filters should be removed. Pursuant to the Waste Material Disposal Act, the owner of the disposed machine is obliged:

- To hand over the metal parts of the machine only to those persons who are duly authorized to dispose, collect or purchase metal materials;
- To hand over the used engine and hydraulic oil only to those persons who are duly authorized to dispose used oils;

NTC cannot be held responsible for any damages to the user's health or to the environment if the aforementioned hygienic and environmental principles are not observed.

1.6. Safety Instructions for Work with Compacting Machines

Compacting machines are vibration plates, vibration (jumping) rammers and vibration rollers. When working with these machines, the following safety instructions should be followed:

1. Before work, evaluate the bearing capacity of the terrain, locate the places of underground spaces and underground services to prevent caving-in the machine or damaging the underground structures.
2. When working with the machine close to buildings and structures, bear in mind the possibility of damaging the buildings or structures by vibrations.
3. When operating the machines in excavation pits, secure the walls of the pit to prevent them from sliding and causing injury to the operators.
4. When operating the machines on embankments, do not work on the very edge of the embankment so that it should not slide down causing turning the machine over.
5. It is strictly prohibited to operate the machine on such slopes where there is danger of turning the machine over or of loss of adhesion resulting in an uncontrolled skid of the machine.

1.7. Hygienic data**Noise:**

Declared level of acoustic pressure A in workplace of the operator
(measured according to ČSN EN ISO 11201 by conditions determined in ČSN EN 500-4, Annex B)

	VD15E	VD18E	VD20E	VD24E
L_{pA,d} [dB]	91+4	92+4	91,5+2,5	91+1

Guaranteed level of acoustic power A

(measured according to NV č.9/2002 Sb., Annex č. 3, part B, point 9c) and ČSN EN ISO 3744:2010)

	VD15E	VD18E	VD20E	VD24E
L_{WA,G} [dB]	105	105	105	105

Vibration:

Declared overall value of vibrations acceleration – transferred to hand – arm of vibratory plate operator
(measured according to ČSN EN ISO 20643 by conditions determined in ČSN EN 500-4, Annex C).

	VD15E	VD18E	VD20E	VD24E
a_{hvd} [m.s⁻²]	7,6+3,1	6,0+2,4	9,7+3,9	8,7+3,5





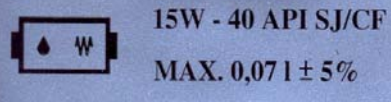


With regard to value of declared level of acoustic pressure in operator's area and value of vibrations transferred to operator's arms, when operating particular type of vibratory plate it is necessary to use, in accordance to Government regulation no. 272/2011 Sb. in valid version, personal protection equipment effectual in such level of acoustic pressure or vibrations transferred to arms, whose values for particular type of vibratory plate are determined by machine operator by workplace categorization.

Manuals for operation of vibratory plate must be modified so, that there are obvious technological pauses leading to interruption of operator machine usage.

1.8. List of safety symbols used on the machine

At the designated types of machinery vibration plate types VD15E, 18E, 20E and 24E to comply with the Act No. 22/1997 Coll. on technical requirements for products, as amended, located stickers symbols safety signs, symbols and informative descriptions of the design and implementation determine the technical norm.

The following text shows individual stickers (labels) placed on the machine. Each individual sticker is provided with the respective explanatory text.

<p>1.</p>	<p>A united sticker comprising safety signs according to ČSN ISO 3864 (symbols B.2.5, B.3.1 and NB.2.26) and the CE symbols pursuant to Governmental Order 291/2000 Sb. including the explanatory text. Sign B.2.5 orders the operating staff to wear ear protectors when the machine is in operation. Sign 7.28 informs the operating staff that they are obliged to read the Operating Instructions before work with the machine. The NB.2.26 sign orders the operating staff (operators) to wear protective gloves when working with the machine to protect the hands from vibrations. Warning sign B.3.1 (exclamation mark) warns the operators against danger. Information for the operating staff how to perform repairs, cleaning and setting the machine.</p>	
<p>2.</p>	<p>Sticking label No. 8.1 pursuant to ČSN ISO 6405-1 marks the location of the engine oil discharging screw.</p>	
<p>3.</p>	<p>Sticking label No. 7.25 pursuant to ČSN ISO 6405-1 (the symbol marks the hoisting point, (i.e. the place in which the machine can be hoisted).</p>	
<p>4.</p>	<p>A sticker informing the operating staff about the fuel to be used for the engine of the machine.</p>	
<p>5.</p>	<p>Sticker with the symbol vibrator and verbal indication of the type specified oil and its maximum volume</p>	
<p>6.</p>	<p>Sticker "RED CIRCLE" Sticker indicates the closing screw hole for pouring oil into the vibrator machine.</p>	
<p>7.</p>	<p>A sticker showing the noise level measured according to the conditions set forth in Noise Emission Directive 2000/14/EC</p>	

1.9. Disposal of the Packing Material

The company of *NTC STAVEBNÍ TECHNIKA spol. s r.o.* is registered with the *EKO-KOM a.s.* company. This means that there is a contract between *EKO-KOM a.s.* and *NTC STAVEBNÍ TECHNIKA spol. s r.o.* on repurchase of all kinds of packing materials either by *NTC* or by suppliers of the packing materials.

2. TECHNICAL DESCRIPTION

Vibratory plates are designed for compaction of all types of soils, including soil related sections for compaction of trenches and areas. When used with a plastic backing plate vibration can also be used for ground paving.

These vibratory plates have optimized centrifugal force and compaction area and thus reach optimal compaction effect. The vibratory effect is ensured by non-directed eccentric which creates circular vibration. The main working part - the base plate - is a structure made of welded steel. The vibrator is bolted or welded to the base plate. The engine plate is mounted to the base plate through the rubber mounts. The vibratory plate is driven by a four-stroke single-cylinder air cooled engine. The engine is connected with the vibrator by a drive belt, with a centrifugal clutch which disengages the drive at idle speed.

The operator controls the machine using its handle.

Special equipment to transport is the chassis vibration plates and plastic mat compaction paving.

2.1. Basic technical data:

Vibration plates are characterized by one-way design with a comfortable cushioned handle and folding ROPS, which protects the engine from damage and ease of handling.

Type		VD15E	VD18E	VD20E	VD24E
Weight	[kg]	75	85	95	105
Frequency	[Hz]	100	100	100	100
Centrifugal force	[kN]	15	18	20	24
Max. speed	[m/min]	25	25	25	25
Max. gradability	[%]	30	30	30	30
ENGINE		HONDA	HONDA	HONDA	HONDA
Model		GX160	GX160	GX160	GX160
Fuel		gasoline	gasoline	gasoline	gasoline
Oil sensor		YES	YES	YES	YES
Net engine power*	[kW]	3,6	3,6	3,6	3,6
Rated engine speed	[RPM]	3600	3600	3600	3600
Fuel consumption	[l/hr]	1,4	1,4	1,4	1,4

*performance of engine is according to SAE J1349

Actual output of the engine installed in the machine can be different with regard to various factors, such as operation speed of the engine, operation conditions, maintenance and other factors.

Engine operation speed is not identical with engine rated speed and this is set according to technical parameters of the machine.

Basic dimensions:

Dimension	H	H1	H2	L	L1	L2	W
VD15E	920	1000	475	1035	565	675	400
VD18E	920	1000	475	1035	565	675	450
VD20E	925	1005	480	1035	565	675	500
VD24E	925	1005	480	1035	565	675	500

Heavily marked dimensions are given in the tender section of the catalog business.

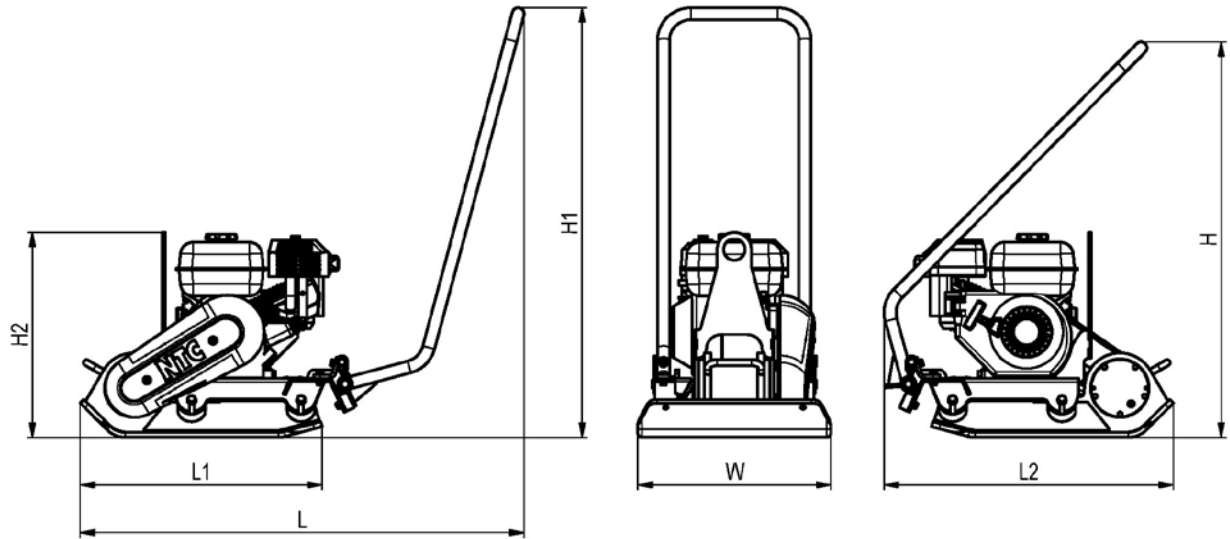
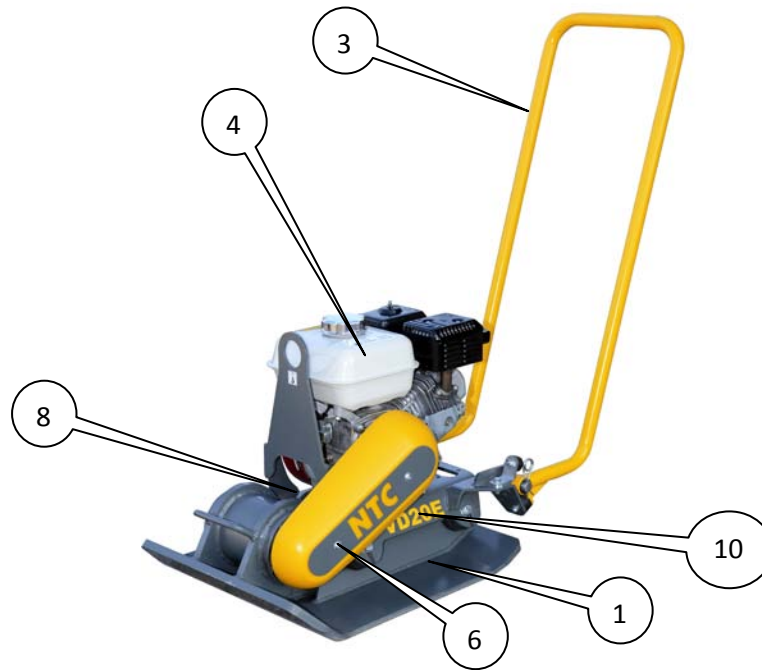


Fig. Basic description of the machine



1. Plate with vibratory, 3. Frame with handlebars Easy, 4. Engine Easy, 6. Cover, 7. Belt cover, 10. Signs

2.2. Lubricants

For use in both engine and the vibrator use high-quality engine oils of the following specifications: 15W-40 API SJ/CF

- engine oil HONDA GX160
- oil in the vibrator

capacity 0,60 l
capacity 0,07 l ± 5%

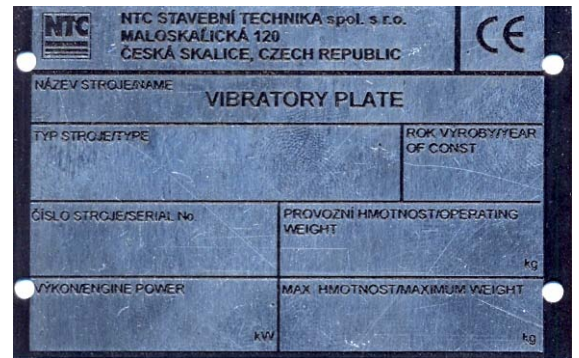
2.3. Machine identification

It is highly important to refer the exact type and serial number of your machine whenever contacting the manufacturer or the dealer (i.e. for warranty reasons, ordering of spare parts or service, for technical questions). These data are stated at the type plate.

Fig. Location of type plate



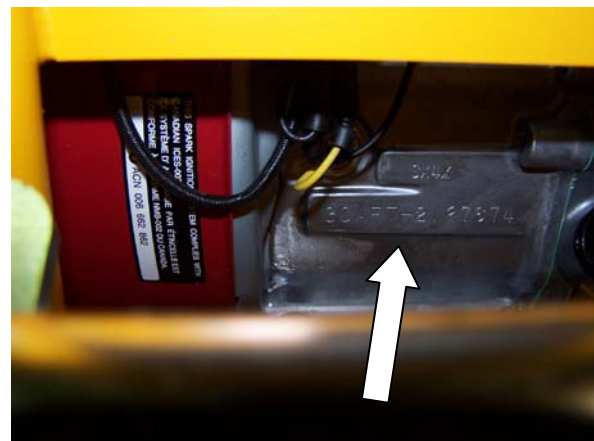
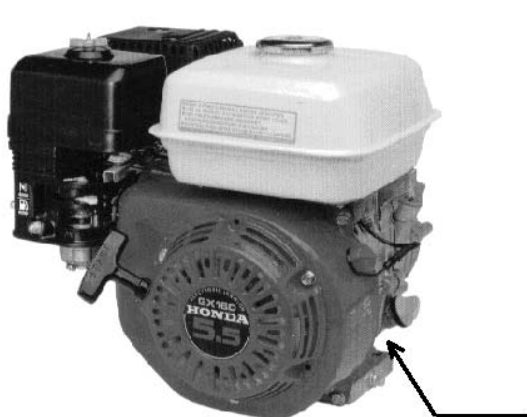
Fig. Example of type plate



2.4. Identification of the engine

In the case of engine related problems refer also the engine type and serial number. This number is stamped at the engine block (for HONDA). In a case of doubts please contact an authorized service or the manufacturer.

Fig. Location of serial number at the HONDA engine



It is recommended to write down important identification data of your machine into the following table. You will find it useful when ordering parts or service, in case of a warranty claim or in the event of reporting stolen equipment:

Model	
Serial number	
Year of production	
Engine type	
Engine serial number	

3. PRIOR TO STARTING

- Continually check that the engine leaks or a vibrator oil. You contact an authorized service center or manufacturer in case of failure.
- Bolted joints are glued to rubber mount. We therefore recommend against any potential activity associated with the tightening and loosening of joints and contact information to an authorized service or the manufacturer.

3.1. Inspection of engine oil level

Check the oil level every day!

Use only the recommended types of oil. Choose the oil viscosity to match the thermal conditions of space use.

ATTENTION:

Running the engine with insufficient oil level can result in serious engine damage.

In case of oil leakage from the engine immediately stop the operation of the machine and call service or contact the manufacturer.

Checking the oil level must be in accordance with the instructions for operating the engine!

Place the machine into a horizontal position. Before you unscrew the plug from the control / filler on the engine, so carefully clean the area to prevent degradation of oil contamination and subsequent engine damage. With proper oil level is level with the hole at the same time, oil is leaking slightly.

Fig. Check engine oil level



3.2. Visual inspection of the machine

Inspect the machine regularly, with particular attention to:

- completeness of the machine (missing parts);
- condition of the protective devices (covers) and controls;
- bolter connections;
- fuel or oil leakage;
- intactness of rubber mounts.

3.3. Inspection of fuel level

For gasoline engines use gasoline for motor vehicles with an octane rating of 90 or more. We recommend that petrol NATURAL 95.

At low levels of fuel is the fuel necessary to fill up the edge of the filtered water.

Never use dirty gasoline or mixture with oil. Prevent dust, dirt or water from entering into the tank.

3.4. Inspection o air filter

This activity is performed in accordance with the instructions for operating the engine!

Place the machine into a horizontal position.

Paper cartridge air filter, check to make sure that it is clean and in good condition.

Paper filter cartridge carefully clean with compressed air from the inside out. In the case of significant pollution filter paper cartridge change.

Wash the foam cuff Jarov water, **not flammable!** In case of damage replace the foam cuff.

Fig. Inspection of air filter - HONDA engines



Never operate the engine without the filter or with a damaged one. Dirt and dust entering the engine would cause its rapid damage.

4. OPERATING THE MACHINE

4.1. Starting

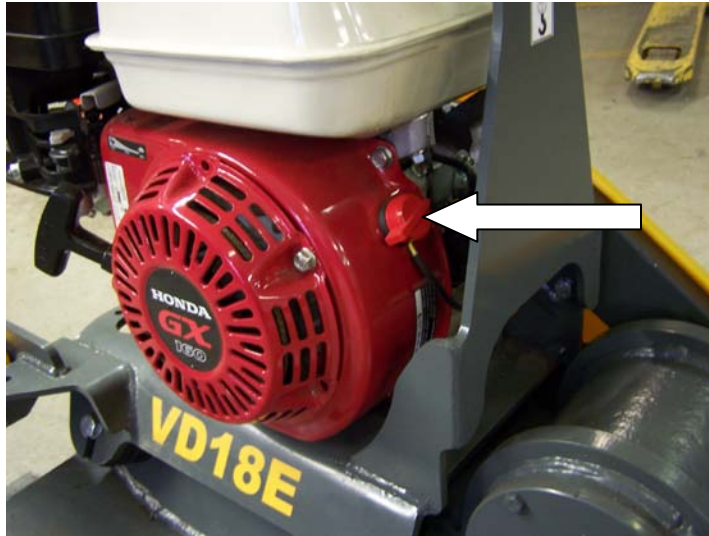
1. Turn the fuel valve to the open position

Fig. Open fuel valve engine



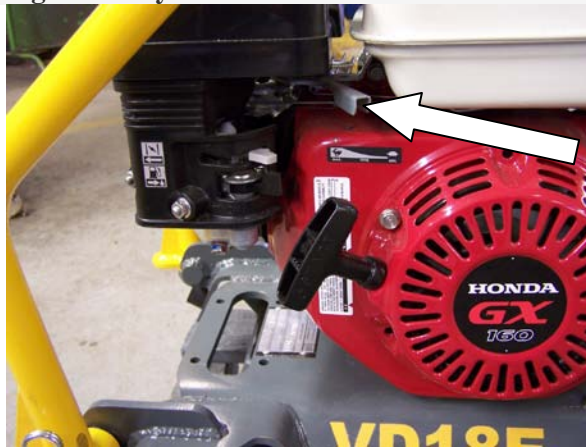
2. Turn the switch (ignition switch) the motor position ON (lever switch down)

Fig. Engine ON/OFF switch



3. Engine throttle position to give SLOWLY (slightly open throttle)

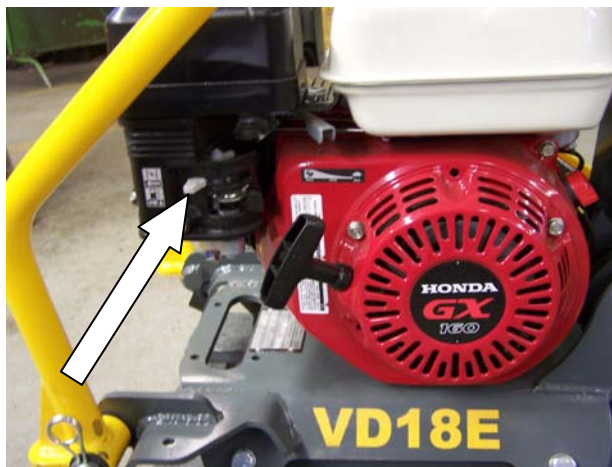
Fig. Lever position in gas engine slowly



4. Turn the choke to start position.

Do not choke when the engine is warm or if the higher ambient temperature.

Fig. On the motor choke



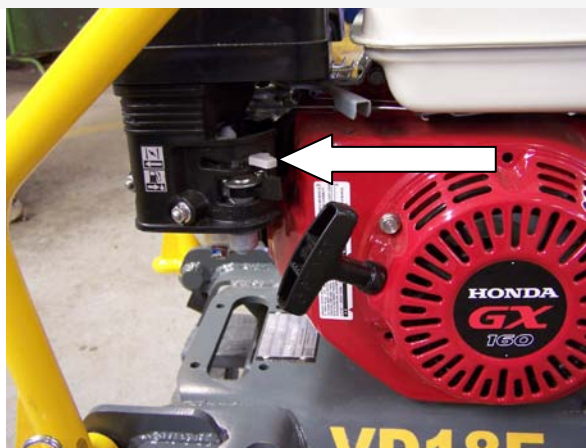
5. Handle pull the starter cord until you feel resistance, then pull rapidly
Starter cord handle drop sharply back. In retrospect, it moving her hands to hold.

Fig. Starter motor pulled out cord



6. After a gradual warm up the engine, move the choke lever to OFF position.

Fig. Choke off the engine



7. Motor full loads before running moment leave to heat up.
8. Move the throttle to full throttle position. At about 1700 rev / min centrifugal clutch automatically switches the machine begins to vibrate.

Fig. The lever position, engine throttle



Starting and stopping the engine is described in detail in the attached instruction manual Honda engine.

4.2. Operating the machine

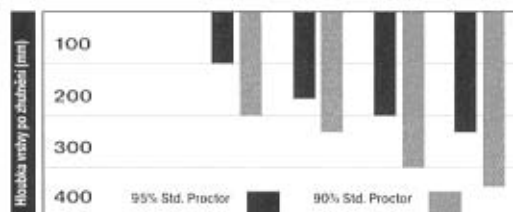
Run the machine across the area to be compacted, keeping slightly overlapping lanes. For good compaction, it is recommended to do 4 travels in each lane.

For soil compaction, the best results will be reached when compacting by layers, each layer not thicker than 20-30 cm of loose soil, depending on the type of soil.

Approximate compaction effect for compaction to 90% (95%) of Proctor Standard is shown in the following table. For exact control of the degree of compaction, some method of compaction measurement must be used.

TAB. Compaction effect

This table is valid for sand and gravel, considering 4 passes. For mixed soils is reduced by approx. 30%.



4.3. Turning the engine OFF

1. Set up the throttle control lever into the idle position. The centrifugal clutch gets disengaged and vibration will stop.

Fig. Lever position in gas engine slowly



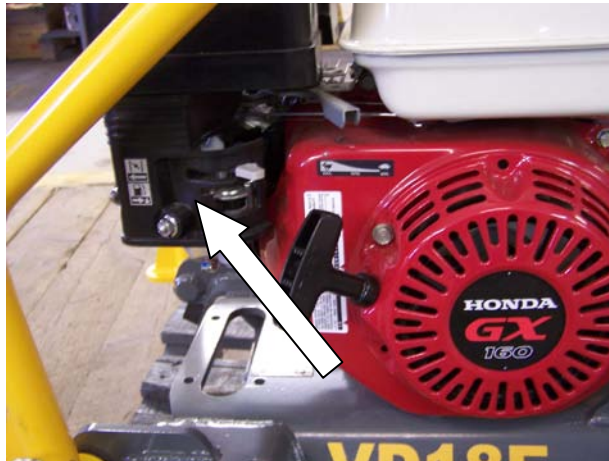
2. Turn the ignition switch into the "OFF" position (switch lever is up).

Fig. Engine ON/OFF switch



3. Turn the fuel valve to the closed position.

Fig. Closed fuel valve engine



4.4. Handling, transport, storage

When handling the machine and its transport strictly follow the safety instructions in this manuals, and generally applicable transcripts to work with handling equipment or lifting equipment.

4.4.1. Manual handling

When manual handling is usually needed to co-parties for order to comply with the maximum load weight, which the worker may lift. Lift the machine frame for or the grips. Do not lift the machine engine!

4.4.2. Handling by crane

The machine is allowed to handle and transport the equipment only with adequate capacity (weight machines is given in chapter "Technical Specifications").

When loading crane it must comply with applicable regulations to work with the crane. This activity may be performed only by qualified person (s) with valid card.

Binding means fix it in the space frame of the machine.

4.4.3. Handling by forklift

If the machine is often handled with a forklift (for example when sending collection service), we attach a variety of machine and send it together with a variety. For one machine is suitable for "small" range of dimensions 0.8 x 0.6 m, two machines for a variety of standard EUR 1.2 x 0.8 m.

4.4.4. Transport

When transporting the machine it must be adequately secured against overturning, falling or shifting to the base.

The machine must be transported in an upright position.

4.4.5. Storage

Store the machine in place secured against theft and misuse. We recommend a dry sheltered place does not affect the chemical substances and where there is excessive dust.

Before long-term storage engine first clean, repair the damaged areas and preserve the paint (including the preservation of the motor). Clearly label the machine is conserved.

4.5. Special conditions of operation

4.5.1. Operation at low ambient temperature

Compaction at temperature below freezing is highly dependent on water content in the soil to be compacted. Under such conditions, soil becomes harder and more difficult to compact. It is possible to compact dry materials or rapidly compact fresh soil, before it gets frozen.

4.5.2. Operation at high altitudes

With increasing altitude, engine power decreases due to changed oxygen content. Within certain extent, it is possible to improve the engine power by installing different main nozzle and by adjusting the carburetor (gasoline engines) or by adjusting the injection system (diesel engines). Should the machine be operated in high altitudes (above 1500 m above sea level), contact the engine manufacturer to carry out the adjustments.

In case that you intent to operate the machine in high altitudes in the time of purchase, consult the manufacturer.

4.5.3. Operation in Dusty Environment

In case that the machine is operated in extremely dusty environment, it is recommended to shorten the service intervals for cleaning or replacement of the air filter.

Clean the machine from dust regularly.

5. MAINTENANCE

Basic maintenance as described in this Operation Manual can be carried out by the operator. Repairs and adjustments beyond the extent of this Manual should be done by an authorized service center.

In the warranty period it is strictly prohibited to dismantle the vibrator; such repair can be done exclusively by an authorized service center. Further, no interventions into engine except of the prescribed maintenance are allowed in the warranty period.

Bolts of the rubber mounts are secured with a glue. Therefore it is highly recommended to contact authorized service before dismantling or mounting the rubber mounts.

5.1. Engine maintenance

- see enclosed engine operation manual.

5.2. Tensioning of the drive belt

Inspect tensioning of the drive belt on a regular basis. Belt deflection should be about 10mm under finger pressure (2 kg).

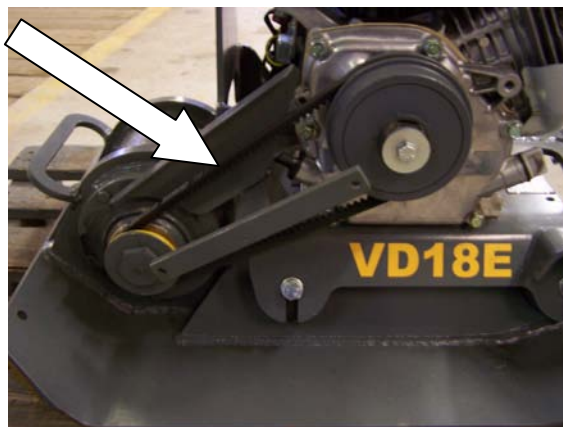
When necessary to tighten the belt, proceed as follows:

- Loose two bolt fastening the water tank. Tilt the tank forwards and carefully place aside (not necessary to disconnect the water hose).
- Loose four bolts that fasten the engine to the base plate and a lock nut of the tensioning screw (located under the water tank).
- Tension the drive belt by means of the tensioning screw.
- Re-tighten the bolts and the lock nut.
- Replace the water tank.

Bear in mind that the drive belt connects the engine and the vibrator, which are in mutual movement under operation. Be careful not to overtension the belt, so that it is able to allow this movement.

DO NOT OVERTENSION THE BELT!

Fig. Inspection of drive belt tensioning



5.3. Inspection of vibrator oil level

Continually check that oil leaking from the vibrator. Interval control and exchange of oil in the vibrator (see section 6)

The vibrator is filled with $0.07 \text{ l} \pm 5\%$ oil 15W-40.

To check the oil level, proceed as follows:

Place the machine on a level area.

Unscrew the inspection plug (marked "oil level"; oil should slightly run out).

In case of oil escape, stop the machine immediately and contact authorized service.

In the warranty period only authorized service may carry out repairs of the vibrator. Any unauthorized intervention into the vibrator voids warranty.

ATTENTION

Low oil level in the vibrator may cause serious damage to the bearings vibrator

High oil level will increase the temperature of the vibrator, reduces engine power or engine "chokes".

5.4. Exchange of oil in the vibrator

To carry out oil exchange, proceed as follows:

- warm-up the vibrator to operational temperature
- turn off the engine, unscrew the drain plug (marked with an arrow)

Fig. Filling, inspection and draining plug



- incline the machine to drain off oil completely (c/a 0,07 ltr)
- add oil vibrator (filling control drain plug on vibrator - marked in red, see section 5.3) so that the oil level after settling just reached the lower edge of the hole plugs - oil leaking slightly

5.5. Inspection of bolted connections

We recommend starting the machine before each check screw connections.

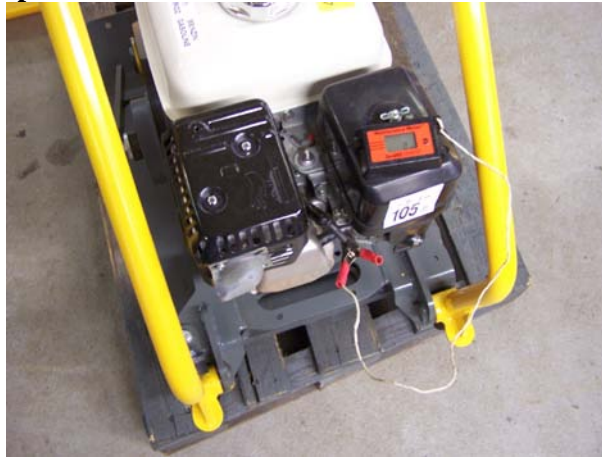
Caution - All the important screw connections on the machine are glued and bolts are tight prescribed torque. We therefore recommend against any potential activity associated with the tightening and loosening of joints and contact information to an authorized service or the manufacturer.

5.6. Setting the centrifugal clutch

If the starting clutch speed reaches 1950 RPM it can cause it to slip and subsequent damage.

It is recommended to have the clutch checked and adjusted by authorized service.

Fig. Measuring of engine speed



5.7. Adjustment of engine speed

In case of repair or replacement of the engine, adjust the engine speed as follows:

Remove the belt cover and measure revolutions of the vibrator pulley. The vibrator frequency is 100Hz (6000 VPM) and the engine speed is 3324 RPM.

Measure the revolutions with a suitable speedometer.

It is recommended to have the engine speed checked and adjusted by authorized service.

NEVER ADJUST HIGHER ENGINE SPEED!

When exceeding the engine speed set by the manufacturer may damage the machine.

The manufacturer does not recognize the claims of defects arising from this cause! DURING THIS WARRANTY MAY MAKE ADJUSTMENTS AUTHORIZED SERVICE ONLY!

Fig. Speed control shaker



6. NOTES:

7. MAINTENANCE SCHEDULE

This maintenance schedule contains only the most important operations. Besides of these operations, carry out maintenance and repairs of the machine as necessary depending on the respective conditions of operation. Check also the engine operation manual.

WARNING:

Turn off the engine before any maintenance or repair activity.

Use genuine spare parts only. Use of non-original spare parts may lead to damage to the machine. The manufacturer will not honor any warranty claim arising from such reason.

Item	Operation	Initial inspection	After 1st month or 20 hours	Every 3 months or 50 hours	Every 6 months or 100 hours
Engine oil	Inspection of oil level	<input checked="" type="checkbox"/>	DAILY		
	Exchange		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Air filter	Inspection	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/> (1)	
	Cleaning				
Spark plug	Inspection - cleaning				<input checked="" type="checkbox"/>
Filter bowl	Cleaning				<input checked="" type="checkbox"/>
Fuel hose	Inspection - exchange	Every two years			
Valve clearance	Inspection - adjustment	Every 12 months or 250 hours (2)			
Fuel tank and sieve	Cleaning	Every 12 months or 300 hours (2)			
Vibrator	Inspection of oil level, exchange	Inspection for tightness - daily		Oil replacement - every 2 years	
Drive belt (3)	Tensioning			<input checked="" type="checkbox"/>	
Rubber mounts	Inspection of the integrity				150 hours
Handle assembly	Lubrication, exchange				<input checked="" type="checkbox"/>

- 1. To be carried more often when operating in dusty environment!**
- 2. It is recommended to be carried out by authorized service.**
- 3. Replacement of drive belt every 300 hours.**

8. WARRANTY TERMS

The NTC construction machines are designed and manufactured to suit to long-term operation even under the toughest operating conditions. In accordance with long-term experience we can say that the machines reliably work not only for the warranty period, but even much longer.

Should the machine still fail to work to your full satisfaction, we are ready to be anytime helpful solving the problem. In a case of a failure, proceed as follows:

1. Check, whether the failure is not caused by a failure to follow the operation manual, or exclude trivial problems such as empty fuel tank, low oil level or clogged air filter.
2. If you do not succeed to repair the problem this way, contact the manufacturer or any authorized service (see the warranty certificate).
 - company name, your name, phone and fax number
 - machine model and serial number
 - description of the failure
 - in case that the machine is in warranty, inform the service that you are reporting a warranty claim and state date of purchase
4. In case of a warranty claim, the claim must be consequently submitted in writing, preferably using the form "Warranty Protocol".
5. Every warranty claim will be immediately considered and the service technician will discuss with you the method of repairing.

The following warranty conditions are valid for all NTC products:

Unless agreed otherwise, the producer warranties its products and good for a period of 12 months from date of delivery to the end-user. Should a failure cause by improper design, material or workmanship should occur within the warranty period, the manufacturer will by its sole decision repair or replace the faulty part.

The warranty does not cover fast wearing parts, such as the drive belts, rubber mounts, filter elements, spark plugs or control cables.

The manufacturer bears no responsibility for failures arising from failure to follow the operation manual, by improper maintenance or lack of it, by unprofessional service action, by using the machine for other than intended purpose, by using unsuitable fuels, lubricants, accident or act of God. The manufacturer further bears no responsibility for damages caused by transportation or storage. The warranty conditions are also stated at the warranty certificate.

Warranty Protocol

Number: (to be filled in by NTC comm. dept.)

Failure reporting (to be filled in by user of the machine):

Model:		Serial number:	
Detailed description of the failure:			
Is the machine in operable condition?	YES*	NO*	
Date of the failure occurrence:		Date of reporting:	
Date of purchase:		The machine was purchased from: NTC / dealer*	Dealer:
User: (address, phone, contact person)			
Location of machine usage: (if different from the user's address)			

This properly filled in protocol should be sent by fax or registered letter to the above address; that will help us to resolve your warranty claim quickly.

Confirmation of rightfulness of the warranty claim (to be filled in by NTC commercial department):

Date of sale:		Warranty void:	YES/NO*
Is the machine in warranty at the moment of reporting?	YES/NO*	Name:	Signature:

QC signature:

Date: