Vibratory Rollers
DV201 - DV202 - DV204

Service Manual

Cre 9-54980

DV201 - DV202 - DV204
Vibratory Rollers

CONTENT

DV201 - DV202 - DV204
Vibratory Rollers

CONTENT

INTRODUCTION

This series of Vibratory Rollers is suitable for compaction of all kinds of ground and for large and average-scale site pretaration in highway construction (construction of highways, railways, airports), in hydro-engineering (construction of dams), in building construction (industrial areas, ports), and the like.

These machines are manufactured in compliance with the latest developments and standards, which ensure their safe function.

If the machine is used incorrectly, by untrained operators or for other purposes than those stipulated within, there is a danger of an accident or damage to the equipment or injury to personnel.

The main purpose of this manual is to give the information necessary for carrying out assembly and disassembly of the machine as well as service repairs of main assemblies of the equipment. It contains technical and installation data, instructions on how to adjust the machine and how to use special tools, fixtures and aids.

The manufacturer continuously seeks to make product improvements on the basis of experience and latest developments in the field.

For this reason, the manufacturer may make some changes in drawings, descriptions and designs in this manual.

SAFETY INSTRUCTIONS

GENERAL SAFETY INSTRUCTIONS

The following safety instructions must be observed by ALL personnel repairing the machine.

1. Repairs may be carried out by skilled, trained and experienced personnel only.
2. When performing repairs, always use our service manual. Special instructions for the assembly work are given in individual chapters of this manual.
3. Before putting the machine into operation familiarize yourselves with the machine controls as explained in the “Operator’s Manual” and make sure that you are completely familiar with the machine.
4. Do not use the machine if you do not fully understand all controls and until this know how the machine works.
5. Familiarize yourself with the area where you will work.
6. Do not carry out any redesign work or modifications on the machine because you could compromise the safety of the equipment.
7. Original parts and accessories have been designed especially for this machine.
8. Installation and use of spare parts not supplied by the manufacturer of the machine or not authorized by them can have negative effects on operational characteristics and safe operation of the machine.

REPAIRING AND INSPECTING THE MACHINE

1. Wear working clothes and boots.
2. Use gloves when handling oils, fuel or coolant.
3. Protect your eyes with a full face shield when handling the battery.
4. Place the equipment on a flat and firm surface before starting repair. Secure the machine to prevent spontaneous movement.
5. Secure the frame of the machine and the drum to prevent rotation using a locking pin and a draw bar.
6. Before starting work remove the starter switch key, disconnect the batteries and let hot parts cool down.
7. Attach a "Do not operate" warning note to the steering wheel and leave it there for the duration of the service work.
8. Wash the equipment thoroughly. If you use steam, do not expose electrical components and insulation directly to the steam, otherwise cover them beforehand.
9. Keep all parts absolutely clean when dismantling, mounting, and servicing each assembly. Protect removed parts from getting soiled.
10. Clean the surface of dismantled parts and do the necessary to ensure adequately dust-free working conditions and a suitable storage area.
11. Be careful when handling cleaning agents. Do not use fuel or other easy inflammable materials for cleaning.
12. Dry the cleaned parts and immediately cover with anti-corrosive protective oil, never install corroded parts.
13. Tools, hoists, safety equipment on chains, and other additional items must be serviceable and in good condition.
14. Use hoists and fasteners (ropes, chains) that have sufficient lifting capacity and are in good condition.
15. Make sure that there is enough fresh air supply when starting up the equipment in an enclosed area.

16. Before operating the equipment make sure there is nobody on the machine or close by. Starting up of the machine must always be announced with an audible alarm, also after any pause in operation before the equipment is restarted. Those present on the machine and dangerously close by must leave the machine after the alarm has been sounded.
17. Do not adjust moving equipment.
18. When working (adjusting) on a running engine, avoid touching hot and rotating parts. During work on a running engine, another person must be present that can easily access the emergency switch and must be in contact at all times with the person performing the adjustment, to be able to switch off the engine immediately when necessary.
19. Use only approved makes of motor, gear and hydraulic oil and coolant.

WORKING ON HYDRAULIC CIRCUITS

1. Make sure that no hydraulic circuit is under pressure before opening it. Hydraulic oil leaks under pressure may penetrate your skin and cause serious injury.
2. Mark all parts, hoses and pipes before removing them.
3. Do not operate hydraulic pumps and hydraulic motors without oil.
4. There is danger of being scalded when handling hot oil.
5. Do not warm oil to temperatures above 160°C (320°F), oil or its fumes may ignite.
6. For cleaning and wiping hydraulic parts use lint free material.
7. When reassembling parts use hydraulic oil, not grease, as a lubricant.
8. Clean screws and bolts carefully before installation, wash hoses and pipes and blow through them using compressed air.
9. Always use new seals and packing in sealing areas during re-installation.
10. Fill new components with hydraulic oil before installation.
11. Rinse the hydraulic circuit after replacing a hydraulic component; clean the hydraulic reservoir as well.
12. Replace the oil filter cartridge.
13. Fill the hydraulic circuit with clean oil of the recommended viscosity, but only when the engine has been stopped.
14. Wipe off excess oil.
15. Check connections for tightness and any oil leaks, before applying pressure to the system.
16. Do not adjust safety valves.
17. After all work has been finished, recheck all connections and replace all safety items.
18. After finishing the work put all protective devices back in place.
19. After putting the machine into operation.
    - Check the level in the hydraulic reservoir.
    - Check the output pressure of hydraulic pumps if they have been replaced as well as safety valve pressure. Carry out the measurements at a temperature of 40°C (104°F).

WORKING ON THE FUEL SYSTEM

Mixtures of gasoline and diesel (winter fuel) are as inflammable as gasoline.

1. Do not refuel in closed areas.
2. Wipe off excess fuel.
3. Do not smoke when working on the fuel system and do not use open frames. There is a danger of fire.

WORKING ON ELECTRICAL WIRING

1. Disconnect the battery when carrying out any repairs on the charging circuit to avoid accidental short-circuits.
2. When dismantling, first disconnect the cable from the negative pole (-), then the cable from the positive one (+).
3. Do not disconnect batteries when the engine is running.
4. Connect the “minus” pole of the battery to the chassis and the “plus” pole to terminal “B+” from the alternator. Opposite connection will cause the whole semi-conductor device to be destroyed.
5. When starting with an auxiliary external supply, do not disconnect the supply before is the battery the machine is charging. Make sure of the starting voltage of the auxiliary external supply, (for 24 V).
6. Do not put the alternator into no-load operation, i.e. with the wire disconnected from the “+” terminal and connected to the “D+” terminal.
7. Do not check the presence of voltage in the wire by sparking it on the chassis of the equipment.
8. Do not do anything that produces sparks.
9. When handling batteries, use protective rubber gloves and full face protection.
10. Protect your skin and clothes from stains caused by electrolyte or lead particles.
11. If electrolyte gets into your eyes, rinse them with running water for 15 minutes. Then see a doctor as soon as possible.
12. When electrolyte stains your skin or clothes, take off your clothes, wash the stained area with soapy water or with a solution of baking soda and water and see a doctor.
13. In the event of accidentally swallowing electrolyte, drink as much milk or water as possible or a solution of milk of magnesia and immediately see a doctor.
14. Never pour distilled water into the cells unless the operation of the machine or charging outside the machine follows. In this case, the battery would discharge rapidly.
15. Never add sulfuric acid (H_2SO_4).
16. Do not overturn the batteries because electrolyte could run out of the air vents in the battery.
17. If acid (electrolyte) is spilled, rinse the area with water and neutralize it with lime.
18. When the batteries are being charged, hydrogen is released and, mixed with air, makes an explosive, easily combustible mixture. Do not use open flames and do not smoke.

WELDING ON THE MACHINE

Before starting arc welding, disconnect all parts with semi-conductors from electrical wiring, i.e.:

- engine alternator,
- hourmeter,
- control unit under the instrument panel,
- ground both the supply and the machine that is being repaired,
- protect the supply point against moisture,
- place the ground terminal close to the welded joint,
- when parts are welded or when the machine is in the suspended position, insulate the point of current transfer to avoid current entering the hoist, or use a non-conducting rope.

SEALS

1. Always use new seals.
2. You can obtain seals kits in spare part form.

HARDWARE TORQUE

1. Use a torque wrench to obtain correct hardware torque.
2. Fastening screw and nut are tightened according to the table.
3. Screw grades are shown normally on the screw head.
4. Hardware torque is given in the tables.
5. Threaded connections for hydraulics are tightened as specified in the tables.
6. The given hardware torque specifications are valid for dry screw threads.
7. Use new self-locking nuts only.

ENVIRONMENTAL MEASURES AND HEALTH PRECAUTIONS

When repairing the machine, observe the general principles of health protection and environment protection, along with all laws, regulations, and guidelines related to these problems, as applicable to the territory where the machine is used.

HYGIENE

1. Oil products, coolants, battery acids, and paints including thinners can be harmful to your health and they can cause serious injury.
2. It is necessary to always observe safety and health instructions enclosed with products and use personal protective aids when handling them.
3. Personnel in contact with these products during servicing must observe the general principles relating to conservation and keep in mind safety and health guidelines as given by manufacturers of such products, especially the following:
   - protect the eyes and skin when working with batteries,
   - protect the skin when handling oil products, paint, and coolants,
   - workers should wash their hands properly after finishing their work and apply proper healing hand lotions,
   - when working with the cooling system it is necessary to observe the instructions in the manuals supplied with the machine.
4. Oil products, coolants, batteries, and paint including organic thinners as well as cleaners and preservatives should be always stored in their original packaging and properly labeled. Do not store such products in unlabeled bottles and other containers because there is a danger of confusion. Confusion with food or drinks is especially dangerous.
5. If your skin or eyes are accidentally splashed or fumes inhaled, apply first aid immediately. In case of accidental consumption of such products see your doctor immediately.

ECOLOGICAL PRECAUTIONS

1. Contents of machine systems and some parts of the machine, when no longer in use, represent great risks to the environment.
2. The following products especially belong to this category:
   - both organic and synthetic lubricating materials, oils and fuel,
   - coolants,
   - battery acids and batteries themselves,
   - cleaning agents and preservatives,
   - all removed filters and filter elements,
   - all used and discarded hydraulic and fuel hoses, rubber - metals and the other elements exposed to the above products.
3. The above parts and materials must be handled, after they had been discarded, in accordance with prevailing national/regional regulations on environmental protection and in conformance with directives relating to health conservation.
4. When hydraulic liquids, fuel, cooling systems and their components are being removed it is necessary to prevent spillage on the ground by using retaining vessels and by plugging all openings.
5. In the event of leakage, the contaminated area-must be immediately dried with sawdust, or similar absorbing material.
6. Contaminated dirt must be removed to prevent further contamination. The soil and absorbing material must be disposed of safely.

FIRE PRECAUTIONS

1. From a fire risk point of view, the flammable liquids used are divided into the following risk classes

   II. Risk class

   - oil

   IV. Risk class

   - mineral oils

   - lubricants

   - anti-freeze

2. The place where oil is being changed must not be situated in an area where there is danger of explosions or fire.

3. Notices showing that smoking and open flames are not allowed must be installed there.

4. The receptacles used to catch drained flammable liquids must be of adequate capacity.

5. Portable fire extinguishers must be available.

6. Oil and oil products should be handled in special containers, e.g.: metal barrels, drums or cans.

7. Liquid containers must be properly shut and sealed when stored.

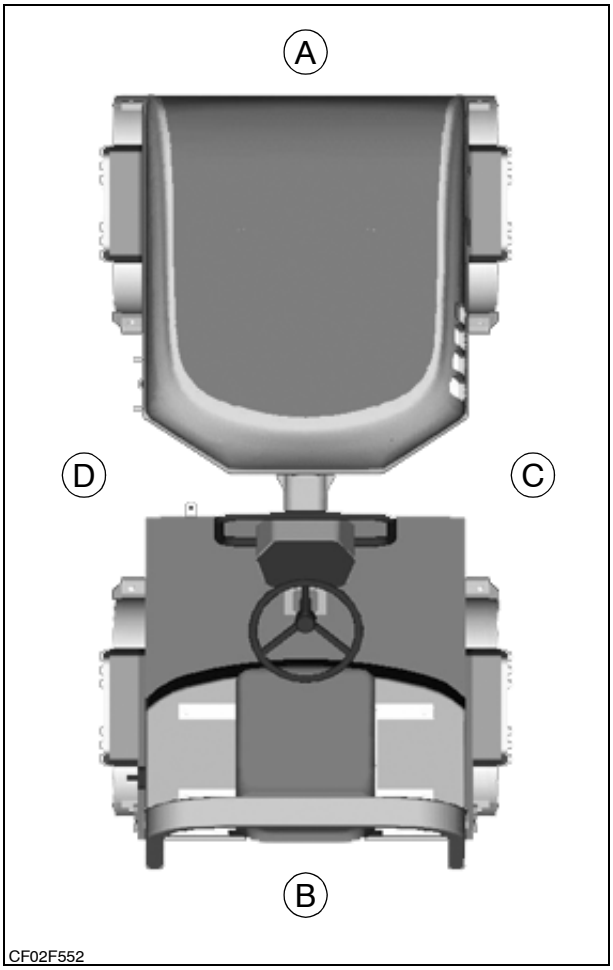
8. The containers should have an air vent. They should be always be stored with the air vent up and there must be measures taken to prevent leakage.

9. The containers must be labeled with indelible inscriptions showing their contents and flammability class.

RIGHT, LEFT, FRONT AND REAR OF THE MACHINE

As used in this manual, the terms "right", "left", "front" and "rear" indicate the sides of the machine as seen from the operator's seat.

A. FRONT
B. REAR
C. RIGHT-HAND SIDE
D. LEFT-HAND SIDE



1

TYPE, SERIAL NUMBER AND YEAR OF MANUFACTURE

When ordering parts, requesting information or assistance, always give your Dealer the type, serial number and year of manufacture of your machine.

In the spaces below, write the type, serial number and year of manufacture of your machine as well as the type and the serial number of the engine.

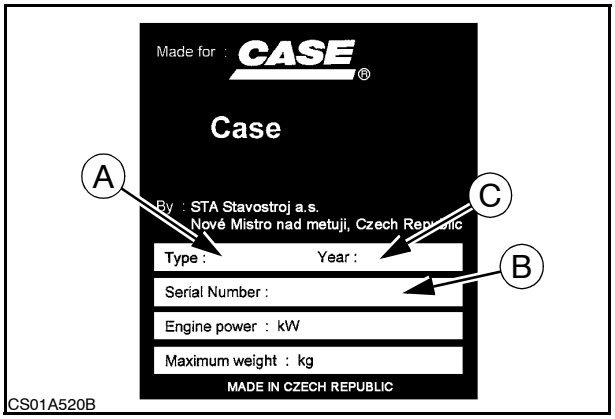
MACHINE

2

(A) Type .....

(B) Serial number .....

(C) Year of manufacturer.....

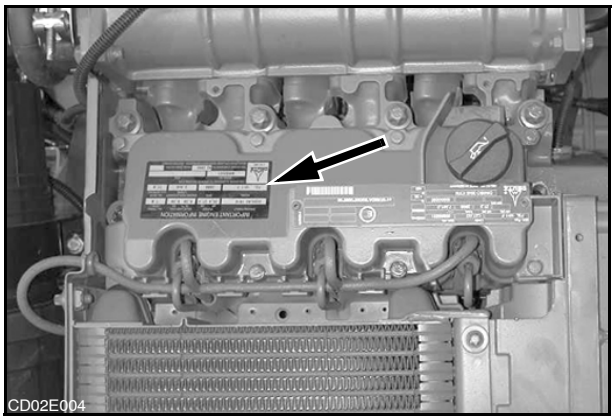


3

ENGINE

Make and type.....

Serial number .....



4

ROPS FRAME

5

TORQUE SPECIFICATIONS

FASTENING HARDWARE

Inspection and re-tightening

1. Regularly check that hardware is not loose.
2. Use torque limiting wrenches to tighten screws and nuts.

Screws with metric threads

Screw size	Torque					
	For screws 5.8 (5 S)		For screws 8.8 (8 G)		For screws 10.9 (10 K)	
	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft
M4	2	1	3	2	4	3
M5	4	3	6	4	8	6
M6	7	5	10	7	14	10
M8	16	12	22.5	17	32.5	24
M10	31.5	23	44	32	62	46
M12	53	39	75	55	105	77
M14	79	58	118	87	165	122
M16	113	83	165	122	226	167
M18	172	127	245	181	343	253
M20	226	167	314	232	441	325
M22	284	209	392	289	559	412
M24	392	289	549	405	755	557

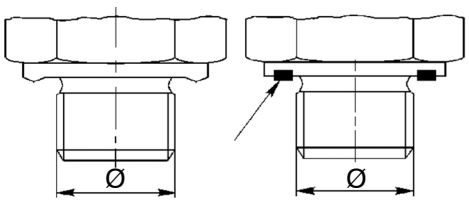
NOTE: *Lock nuts may be used a maximum of three times when approved.*

SCREW TYPE HOSE CONNECTIONS

			Screw type connections with “O” Rings					
			Nm			lb-ft		
Wrench size	**Thread**	**Hose**	**Nominal**	**Min**	**Max**	**Nominal**	**Min**	**Max**
14	M12x1.5	6	20	15	25	15	11	18
17	M14x1.5	8	38	30	45	28	22	33
19	M16x1.5	8	45	38	52	33	28	38
		10						
22	M18x1.5	10	51	43	58	38	32	43
		12						
24	M20x1.5	12	58	50	65	43	37	48
27	M22x1.5	14	74	60	88	55	44	65
		15						
30	M24x1.5	16	74	60	88	55	44	65
32	M26x1.5	18	105	85	128	77	63	92
36	M30x2	20	135	115	155	100	85	114
		22						
41	36x2	25	166	140	192	122	103	142
46		28						
50	M42x2	30	240	210	270	177	155	199
50	M45x2	35	290	255	325	214	188	240
	M52x2	38	330	280	380	243	207	280
		42						

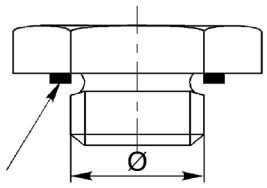
PLUGS AND NECKS

Table of tightening torques for necks and plugs with tightening edge, or with flat packing:



CS01C502 6

	Neck torque	
Ø	Nm	lb-ft
G 1/8“	25	18
G 1/4“	40	30
G 3/8“	95	70
G 1/2“	130	96
G 3/4“	250	184
G 1“	400	295
G 11/4“	600	443
G 11/2“	800	590
M 10x1	25	18
M 12x1.5	30	22
M 14x1.5	50	37
M 16x1.5	60	44
M 18x1.5	60	44
M 20x1.5	140	103
M 22x1.5	140	103
M 26x1.5	220	162
M 27x1.5	250	184
M 33x1.5	400	295
M 42x1.5	600	443
M 48x1.5	800	590



CS01C503 7

	Plugs torque	
Ø	Nm	lb-ft
G 1/8“	15	11
G 1/4“	33	24
G 3/8“	70	52
G 1/2“	90	66
G 3/4“	150	111
G 1“	220	162
G 11/4“	600	443
G 11/2“	800	590
M 10x1	13	10
M 12x1.5	30	22
M 14x1.5	40	30
M 16x1.5	60	44
M 18x1.5	70	52
M 20x1.5	90	66
M 22x1.5	100	74
M 26x1.5	120	89
M 27x1.5	150	111
M 33x1.5	250	184
M 42x1.5	400	295
M 48x1.5	500	369

SERVICING INTRUCTIONS

Respect the maintenance intervals by checking the hourmeter daily. Before carrying out any service work, park the machine on flat, firm ground, away from any obstacles. Unless otherwise specified, all service work should be carried out with the engine shut down and the starter switch key removed. It is preferable to wait for all circuits to cool down before beginning work. Wear suitable clothing and use appropriate safety equipment.

Clean all grease points before greasing. Clean around plugs and orifices before adding fluid. No dirt or foreign matter must be allowed to enter components or circuits.

⚠ WARNING ⚠

Be sure all the service operations in this section are carried out punctually at the intervals given, in order to ensure optimum performance levels and maximum safety when using the machine.
There is a risk of serious injury if maintenance or repairs are not performed correctly. If you do not understand the maintenance procedures, consult your Dealer.

⚠ WARNING ⚠

Before carrying out any service work, proceed as follows:
- Park the machine on hard, flat ground.
- Shut down the engine and remove the starter switch key.
- Put blocks under the drums to prevent the machine from moving.
- Block the machine articulation.

When performing maintenance work on the machine, place a “Do not operate” label on the front console. Never leave the operator’s compartment while the engine is running.

Any modification to this machine without prior authorization could cause serious injury. Do not make any modifications without authorization. Consult your Dealer.

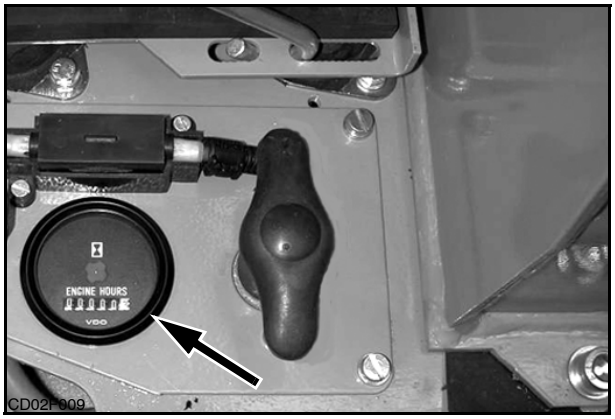
IMPORTANT: *If you use your machine in particularly harsh conditions (dusty or corrosive atmosphere), the servicing intervals should be reduced accordingly.*
Take particular care to replace all filters regularly. Clean filters mean longer engine running life.
Do not pour used oil onto the ground or down a drain. Stock the oil in sealed containers for collection by a company which recycles or disposes of it.

HOURMETER

Located under the engine hood, near the battery, the hourmeter enables servicing operations to be scheduled. It works in the same way as a clock when the engine is running.

Servicing intervals are carefully calculated to guarantee safe and efficient machine operation.

Be sure to carry out all the servicing operations properly, as defined in this manual.



1

SERVICING INTERVAL

PAGE	SERVICE POINTS	INTERVALS IN HOURS						
		BLEED	CLEAN	REPLACE	CHECK	GREASE	DRAIN	NOTE
4-11	Engine oil level				20			Q
4-14	Fuel tank level				20			Q
4-18	Ail filter restriction warning lamp				20			Q
4-22	Air filter dust ejector				20			Q
4-23	Hydraulic oil level				20			Q
4-25	Hydraulic oil filter obstruction indicator				20			Q
4-27	Drum oil level				20			Q
4-29	Water level (drum sprinkler system)				20			Q
5-1	Lighting and warning devices				20			Q
5-2	Oil cooler				20			Q
4-8	Machine articulations and operator's seat guide					250		
4-32	Sprinkler system filter		250 (H)					B
5-3	Engine air intake system				250 (H)			
5-3	Radiator		250 (H)		250 (H)			
5-4	Vibratory shock absorber nut torque				250 (H)			
5-5	Air system intake				250 (H)			
6-3	Electrolyte level check				250			P
4-11	Engine oil						500 (B)	A
4-11	Engine oil filter			500 (B)				A
5-6	Alternator/fan belt tension				500 (B)			A
4-15	Fuel pump filter			1000				C
4-15	Fuel filter	D		1000 (B)				C
4-24	Hydraulic fluid			1000 (R)				
4-25	Hydraulic oil filter			1000 (R)				F, G
4-28	Drums						1000	C
5-4	Shock absorber				1000			C
5-9	Engine valve clearance				1000			C, N
5-13	Fuel system hoses			1000 (S)	1000 (C)			
5-13	Exhaust				1000 (C)			
5-8	Engine alternator and fan belt			3000				J
5-14	Engine/tension roller belt			4500				M
4-17	Fuel tank		D					
4-18	Air filter element							E
4-31	Water tanks		D					
5-14	Engine belt tension				I			
5-14	Steering drive belt tension				I			
5-15	Drum scrapers				I			
5-16	Cleaning the machine							K
5-16	Hardware torque specifications							I, L

NOTE A : Replace/Check every 500 hours or every 6 months, whichever comes first.

NOTE B : Or after the first 100 hours during the run-in period.

NOTE C : Replace/Check every 1000 hours or every year, whichever comes first.

NOTE D : If necessary.

NOTE E : Clean or replace whenever the restriction indicator is red or systematically after one year or cleaning five times.

NOTE F : Clean or replace whenever the restriction indicator is red or systematically every 1000 hours.

NOTE G : To be carried out also whenever the hydraulic fluid is replaced.

NOTE H : Every 250 hours or every 3 months, whichever comes first.

NOTE I : Check regularly.

NOTE J : Replace every 3000 hours or every 5 years, whichever comes first.

NOTE K : Once a week minimum.

NOTE L : The self-locking nuts can be used 3 times only.

NOTE M : Replace every 4500 hours or every 5 years, whichever comes first.

NOTE N : Check the valve clearance after the first 500 hours during the run-in period.

NOTE P : Check every 250 hours or every 3 months, whichever comes first or whenever the battery charge warning light on the front console stays on after starting the engine.

NOTE Q : Or daily.

NOTE R : Or every 2 years.

NOTE S : Systematically every 2 years.

FLUIDS AND LUBRICANTS

Lubricants must have the correct properties for each application.

⚠ WARNING ⚠

The conditions of use for individual fluids and lubricants must be respected.

ENGINE OIL

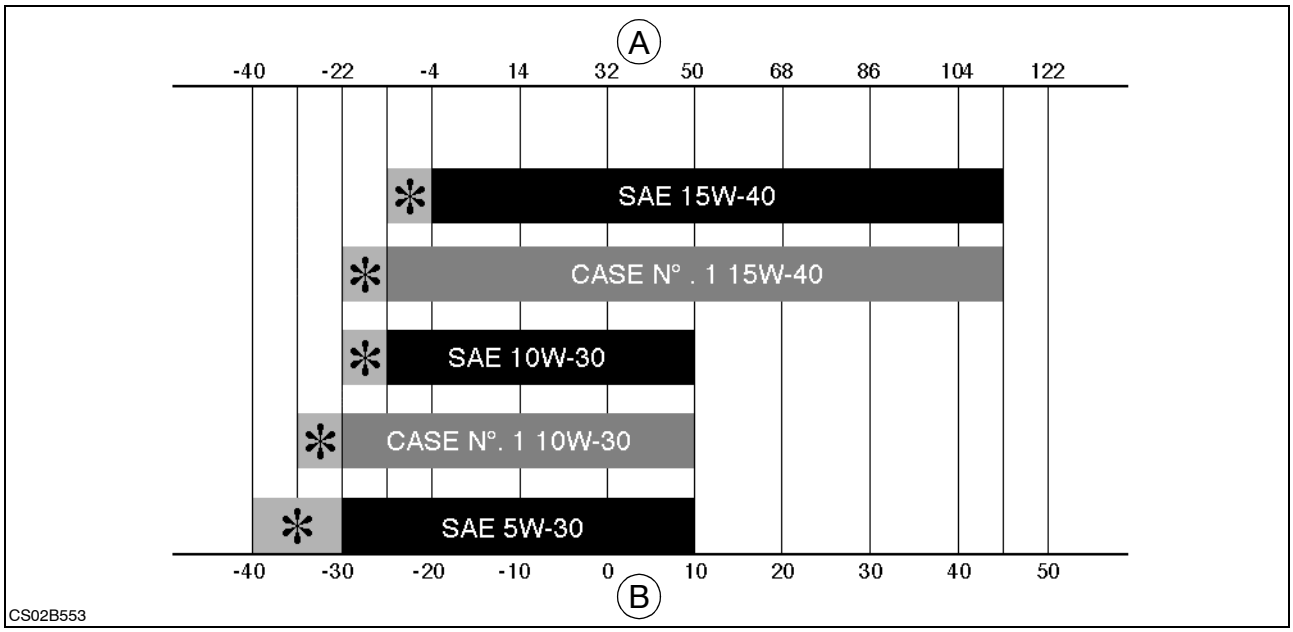
IMPORTANT: *Use high quality oil and respect the oil changing intervals so as to ensure maximum engine life.*

Categories of oil to be used : CASE N°1 Multiperformance or Performance or API/CG/CF.

The type of oil to use depends on ambient temperature:

- SAE 15W40: All seasons
- SAE 10W30: Winter
- SAE 5W30: Arctic

The following table gives the temperature ranges for different oils, depending on their viscosity.



2

(A) Fahrenheit Temperature
(B) Celsius Temperature
(*) Use of an engine oil heater is required

NOTE: *Do not put any Performance Additive or other additive in the sump. Oil change intervals shown in this manual are based on tests carried out on lubricants.*

GREASE

Use extreme pressure oil, type NLGI grade 2 or CASE Molydisulfide grease.

FUEL

Use fuel which is to ASTM (American Society for Testing and Materials) D975 standard.

Use grade N°2 fuel. The use of other types of fuel can result in a loss of power and may cause high fuel consumption.

When the temperature is very cold, the use of a mixture of N°1 and N°2 fuel is permitted. See your fuel vendor for winter fuel requirements in your area.

If the temperature falls below the fuel cloud point (point at which wax begins to form) the wax crystals will cause power loss or will prevent the engine from starting.

IMPORTANT: *In cold weather, fill the fuel tank at the end of the day's work, in order to prevent the formation of condensation.*

Long storage can lead to the accumulation of impurities and condensation in the fuel. Engine trouble can often be traced to the presence of water in the fuel.

The storage tank must be placed outside and the temperature of the fuel should be kept as low as possible. Drain off water and impurities regularly.

ANTI-FREEZE/ANTI-CORROSION

Use anti-freeze in all seasons to protect the sprinkling system from corrosion and any risk of freezing.

For areas where ambient temperature is over -36°C (-32.8°F), use a blend of 50% ethylene-glycol based anti-freeze.

For areas where the temperature is below -36°C (-32.8°F), it is advisable to use a blend of 40% water and 60% anti-freeze.

HYDRAULIC FLUID

It is indispensable to use a high quality, ISO VG 46 type hydraulic fluid which is suitable for high pressure applications.

See the table below showing the choice of oils available.

Manufacturer	Type of oil
Viscosity class in conformance with ISO 6743/4, DIN 51519	VG 46
Viscosity class in conformance with CETOP RP 91H	HV 46
AGIP	AGIP ARNICA 46
ARAL	VITAM HF 46
AVIA	AVILUB HVI 46
BP	BARTRAN HV 46
CASTROL	HYSPIN AWH 46
CHEVRON	EP 46 HV
ELF	HYDRELF 46
ESSO	UNIVIS N 46
FINA	HYDRAN HV 46
FUCHS	RENOLIN MR 46 HV
MOBIL	MOBIL DTE 15
ÖMV	HLP - M46
SHELL	TELLUS T46
TEXACO	RANDO OIL HDC2 46
TOTAL	EQUIVIS ZS 46

BIODEGRADABLE HYDRAULIC FLUID

The hydraulic system may be filled with synthetic oil under the following conditions :

PANOLIN-HLP Synth 15/22/32/68 is a fully synthetic, high performance oil classified according to VDMA directive 24/568. It complies with articles 2 and 3 of DIN 51524. In case of leakage oil is completely degradable by microorganisms present in water and in the soil.

During operation of the machine all contamination in all forms must be avoided (wear, dust, etc.).

The fluid used must be checked regularly by taking samples (see table below) and having them tested. When taking the samples it is necessary to follow the procedure laid down by PANOLIN Company laboratories. The best solution is to have PANOLIN Company take the samples directly.

Sample taking interval	Use in normal conditions	Use in harsh conditions
First check	500 h	250 h
Second check	1000 h	500 h
Subsequent checks	Every 1000 hours or once a year	Every 500 hours or once a year

NOTE : *When filling up with biodegradable oil, mixing of up to 2% with other types of oil is authorized.*

Organic oil may be replaced by synthetic oil in compliance with VDMA directive 24/569.

IMPORTANT : *Water content in the oil may not exceed 0.1%.*

IMPORTANT : *Mixing PANOLIN-HLP Synth oil with other biodegradable oils is strictly forbidden.*

NOTE : *Always contact the manufacturer or PANOLIN Company prior to deciding to mix or change oils.*

FLUID AND LUBRICANT CAPACITIES AND SPECIFICATIONS

Components	Fluids and lubricants	Capacity
Engine	SAE 15W40 - 10W30 - 5W30 oil	6.5 liters (1.72 gal US)
Hydraulic system	VG 46 oil	38 liters (10.04 gal US)
Fuel system (**DV201, DV202**)	Grade N°2 fuel	67 liters (17.7 gal US)
Fuel system (**DV204**)	Grade N°2 fuel	72 liters (19 gal US)
Machine articulation	NLGI grade 2 grease	as needed
Drum vibration	SAE 15W40 - 10W30 - 5W30 oil	2 x 1.8 liters (2 x 0.48 gal US)
Battery	Distilled water	as needed
Front sprinkler reservoir	Water - Anti-freeze (**DV201, DV202**)	53 liters (14 gal US)
	Water - Anti-freeze (**DV204**)	67 liters (17.7 gal US)
Rear sprinkler reservoir	Water - Anti-freeze (**DV201**, **DV202**)	150 liters (39.6 gal US)
	Water - Anti-freeze (**DV204**)	160 liters (42.3 gal US)

NOTES

DESCRIPTION

Front frame (1)
The front frame is a weldment, and it contains a fuel tank. A plastic water tank (14) is placed in the front part of the frame along with a hydraulic oil tank (13) and a storage battery (20) with a master switch. The driving unit is flexibly mounted in the rear part of the frame. The whole space of the front frame is covered with a hinged laminated cowl.

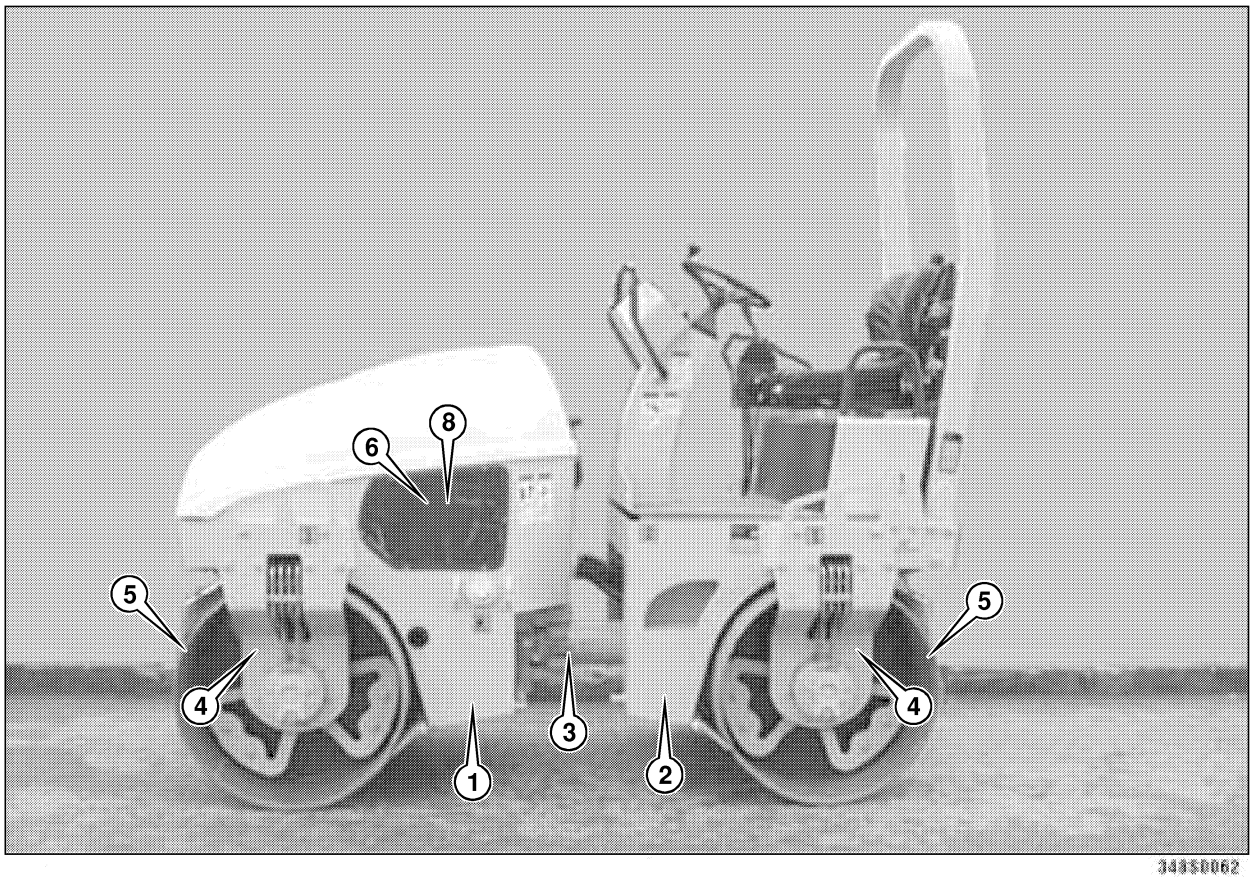
Rear frame (2)
The rear frame is a weldment too. The platform (15) and plastic water tank (14) are flexibly mounted on the frame. The protective frame (21) is fixed to the rear part of the frame.

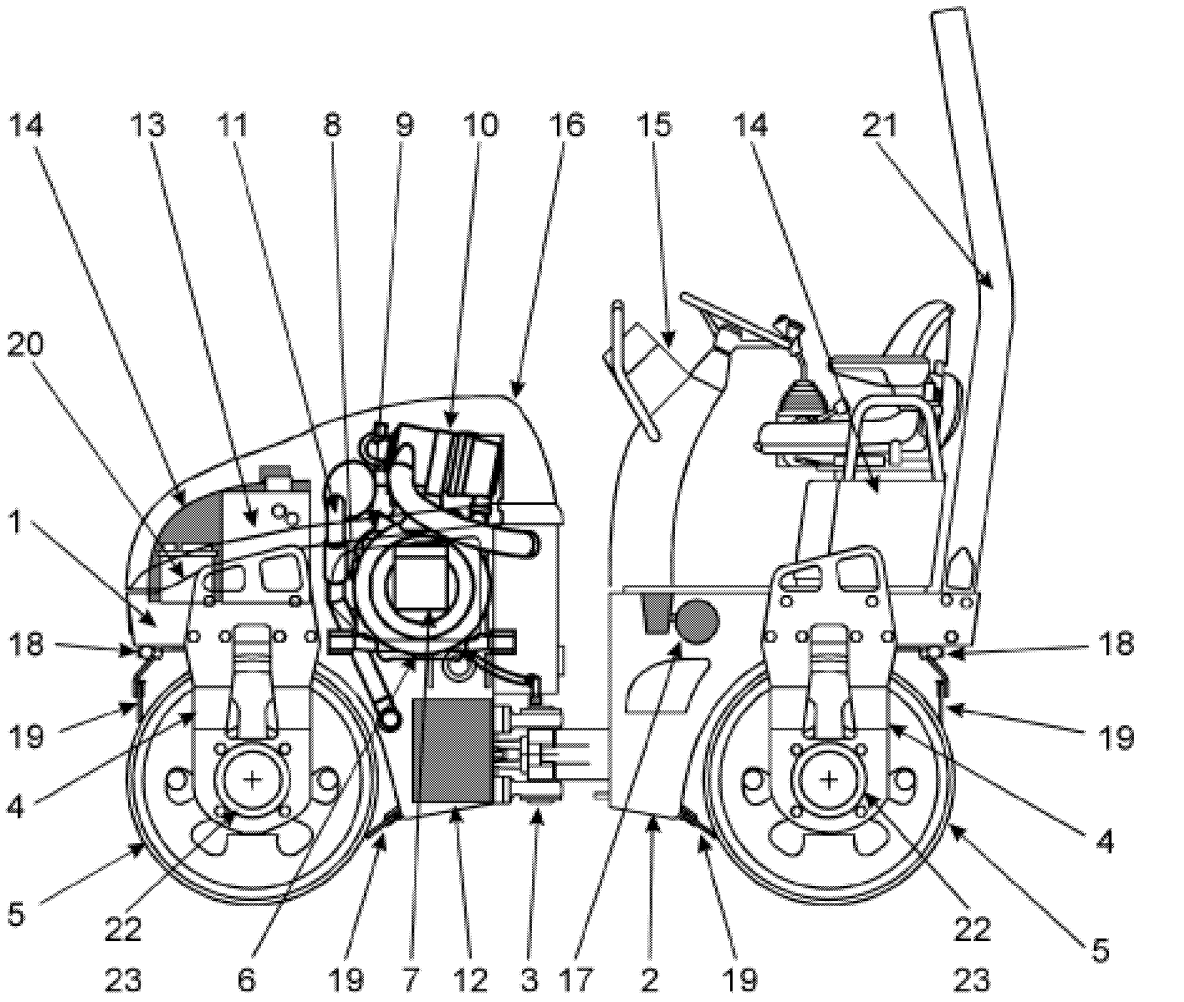
Articulated joint (3)
The hinge joins the front and rear frames. It has a horizontal pin (1) and a vertical pin (2). Both are mounted in bearings that make it possible for both parts to turn horizontally as well as vertically.

Front and rear forks (4)
The forks attach the drums flexibly to the rear and front frames. The travel hydraulic motor is fixed to the left fork; the absorber plate with two rubberized metal pieces is also flexibly attached to the right fork

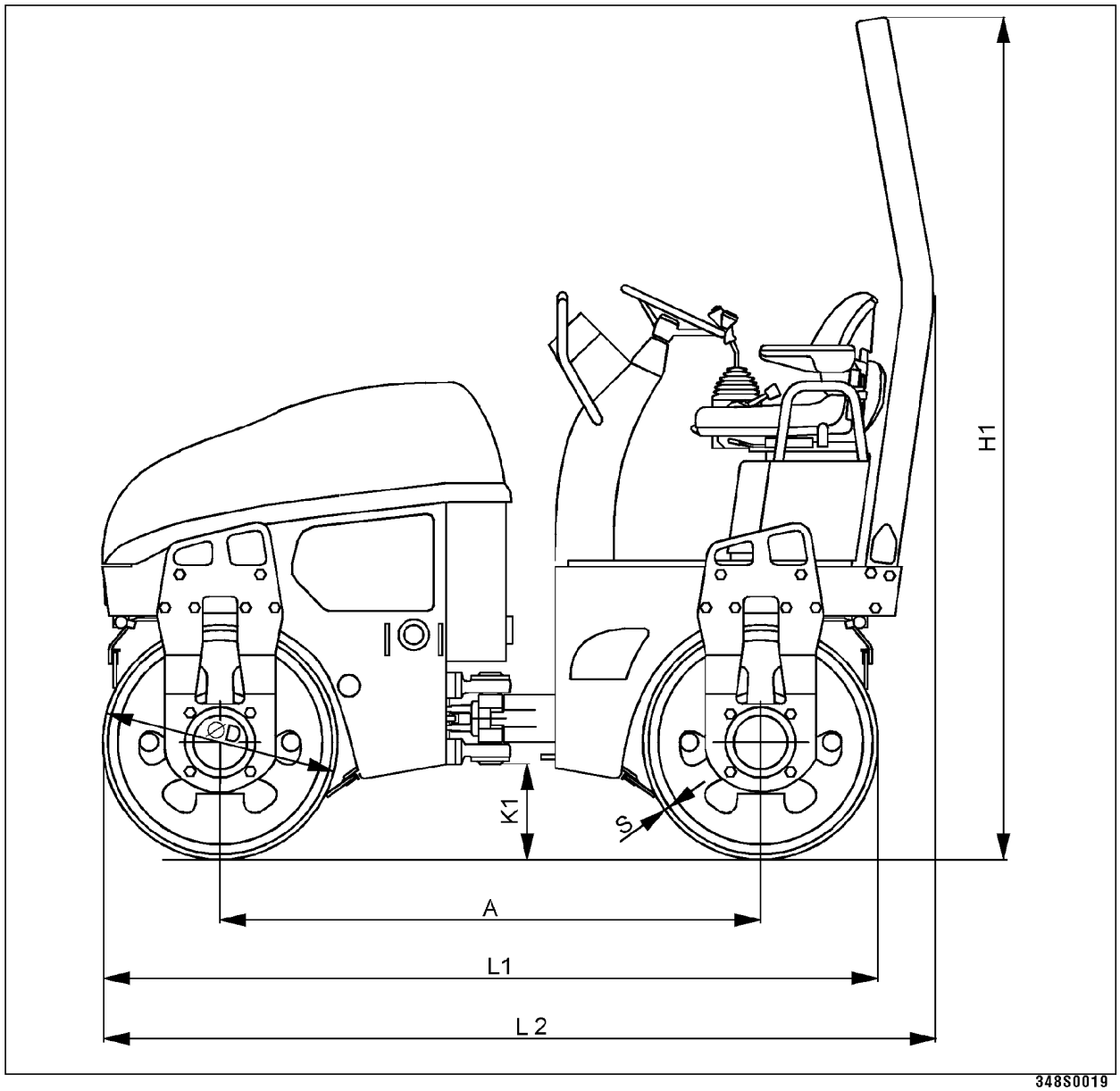
Front and rear drums (5)
The drum is welded of steel plates. In the lids there are roller bearings with the shaft of the vibrator with two eccenters. The shaft is driven through a clutch by the vibration hydraulic motor. The bearings are lubricated by a grease fill. The drum rotates in the bearing in the right lid and the bearing of the hydraulic motor.

Driving unit
This unit is flexibly mounted in the front frame. It consists of a combustion engine with air cooling (6) which is driven by the travel hydraulic generator via the clutch. Two gear hydraulic generators – vibration and servosteering (8) – are mounted on the engine side.



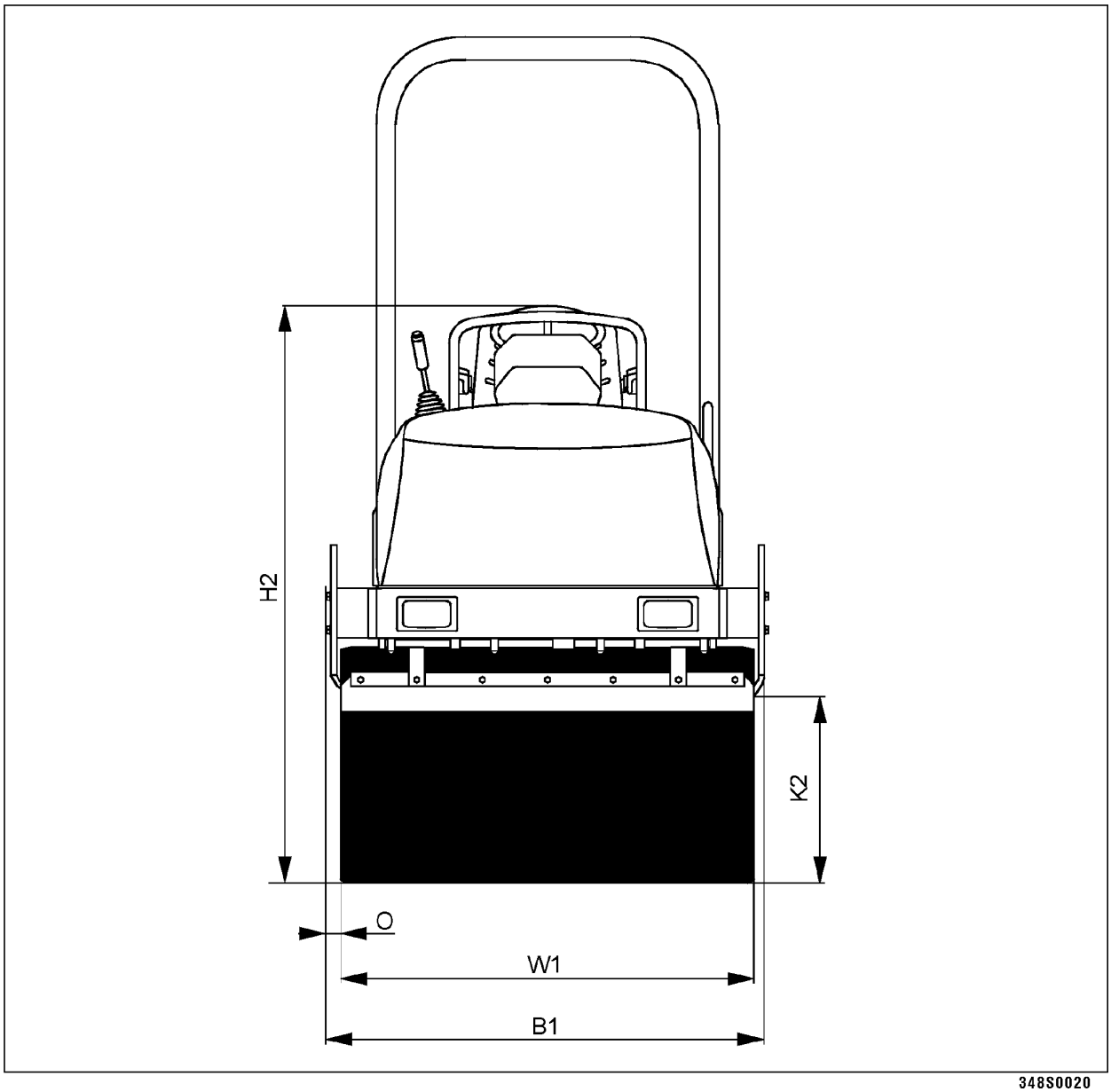

14
13
11
8
9
10
16
15
14
21
20
1
18
19
4
5
22
23
6
19
7
12
3
17
2
19
22
23
5
4
19
18
34880001

1 - Front frame
2 - Rear frame
3 - Articulated joint
4 - Front and rear forks
5 - Front and rear drum
6 - Engine
7 - Hydraulic generator of travel
8 - Tandem hydraulic generator of vibration and power steering
9 - Hydraulic oil cooler
10 - Motor air filter
11 - Exhaust
12 - Fuel tank
13 - Hydraulic oil tank
14 - Sprinkling water tank front and rear
15 - Platform
16 - Hood
17 - Sprinkling pump
18 - Sprinkling of the drums
19 - Scrapers of the drums
20 - Battery
21 - Protective frame ROPS
22 - Travel hydraulic motor
23 - Vibration hydraulic motor



348S0019

Dimensions in mm (in)	A	D	H1	K1	L1	L2
DV 201	1715	738	2660	310	2453	2640
	(67,5)	(29,06)	(104,72)	(12,2)	(96,6)	(104)
DV 202	1715	738	2660	310	2453	2640
	(67,5)	(29,06)	(104,72)	(12,2)	(96,6)	(104)
DV 204	1715	746	2660	310	2461	2640
	(67,5)	(29,4)	(104,72)	(12,2)	(96,89)	(104)



348S0020

Dimensions in mm (in)	S	B1	H2	K2	O	W1
DV 201	12	1090	1825	590	45	1000
	(0,47)	(42,9)	(71,85)	(23,22)	(1,77)	(39,37)
DV 202	12	1290	1825	590	45	1200
	(0,47)	(50,79)	(71,85)	(23,22)	(1,77)	(47,24)
DV 204	16	1396	1825	590	48	1300
	(0,63)	(54,96)	(71,85)	(23,22)	(1,89)	(51,18)

Technical data

Weights

		DV 201		DV 202	
Working weight with ROPS due to EN 500-1	kg (lb)	2520	(5550)	2790	(6145)
front drum	kg (lb)	1185	(2610)	1320	(2907)
rear drum	kg (lb)	1335	(2940)	1470	(3238)
Static linear load of the front drum	kg/cm (lb/in)	11,8	(66,2)	11,0	(61,6)
Static linear load of the rear drum	kg/cm (lb/in)	13,3	(74,6)	12,2	(68,6)
Working weight with ROPS due to ISO 6016	kg (lb)	2645	(5826)	2915	(6420)
Load of the front drum	kg (lb)	1220	(2687)	1355	(2985)
Load of the rear drum	kg (lb)	1425	(3139)	1560	(3435)
Static linear load of the front drum	kg/cm (lb/in)	12,2	(68,2)	11,3	(63,2)
Static linear load of the rear drum	kg/cm (lb/in)	14,2	(79,7)	13,0	(72,8)

		DV 204	
Working weight with ROPS due to EN 500-1	kg (lb)	3335	(7346)
front drum	kg (lb)	1660	(3656)
rear drum	kg (lb)	1675	(3690)
Static linear load of the front drum	kg/cm (lb/in)	12,8	(71,4)
Static linear load of the rear drum	kg/cm (lb/in)	12,9	(72,1)
Working weight with ROPS due to ISO 6016	kg (lb)	3480	(7665)
Load of the front drum	kg (lb)	1705	(3755)
Load of the rear drum	kg (lb)	1775	(3910)
Static linear load of the front drum	kg/cm (lb/in)	13,1	(73,3)
Static linear load of the rear drum	kg/cm (lb/in)	13,7	(76,4)

The weight data can differ from above mentioned data according to the further customers' requirements for the machine's equipment and accessories.

Note: Operation weight to EN 500-1 = CECE

Driving

		DV 201/DV 202		DV 204	
The travel speed smoothly regulable in booth directions					
1st range - working	km/h (MPH)	7,5	(4,7)	5,3	(3,3)
2nd range - transport	km/h (MPH)	13,6	(8,5)	10	(6,2)
Steering angle	± °	33		33	
Front drum oscillation at the vertical level	± °	10		10	
Theoretical machine's gradeability	%	40		40	
Side static stability	°	30		30	

Vibration

		DV 201		DV 202	
Drive		hydrostatic			
Vibration exciter		one-level, circle undirected vibration			
Frequency	Hz	53/62		53/62	
	(VPM)	(3180/3720)		(3180/3720)	
Nominal amplitude	mm (in)	0,47	(0,0185)	0,47	(0,0185)
Centrifugal force at one drum	kN (lb)	20,8/28,5		23,8/32,5	
	(lb)	(4580/6277)		(5242/7159)	

		DV 204	
Drive		hydrostatic	
Vibration exciter		one-level, circle undirected vibration	
Frequency	Hz	53/62	
	(VPM)	(3180/3720)	
Nominal amplitude	mm (in)	0,45	(0,0177)
Centrifugal force at one drum	kN (lb)	29,4/40,3	
	(lb)	(6476/8877)	