AMMANN
YANMAR

YANMAR®

MINI - EXCAVATORS

OPERATION & MAINTENANCE MANUAL (GB)

Models: **ViO15-2A (EP)**
ViO20-3 (EP)
ViO25-3 (EP)
ViO30/35-3 (EP)
ViO45/55 (EP)



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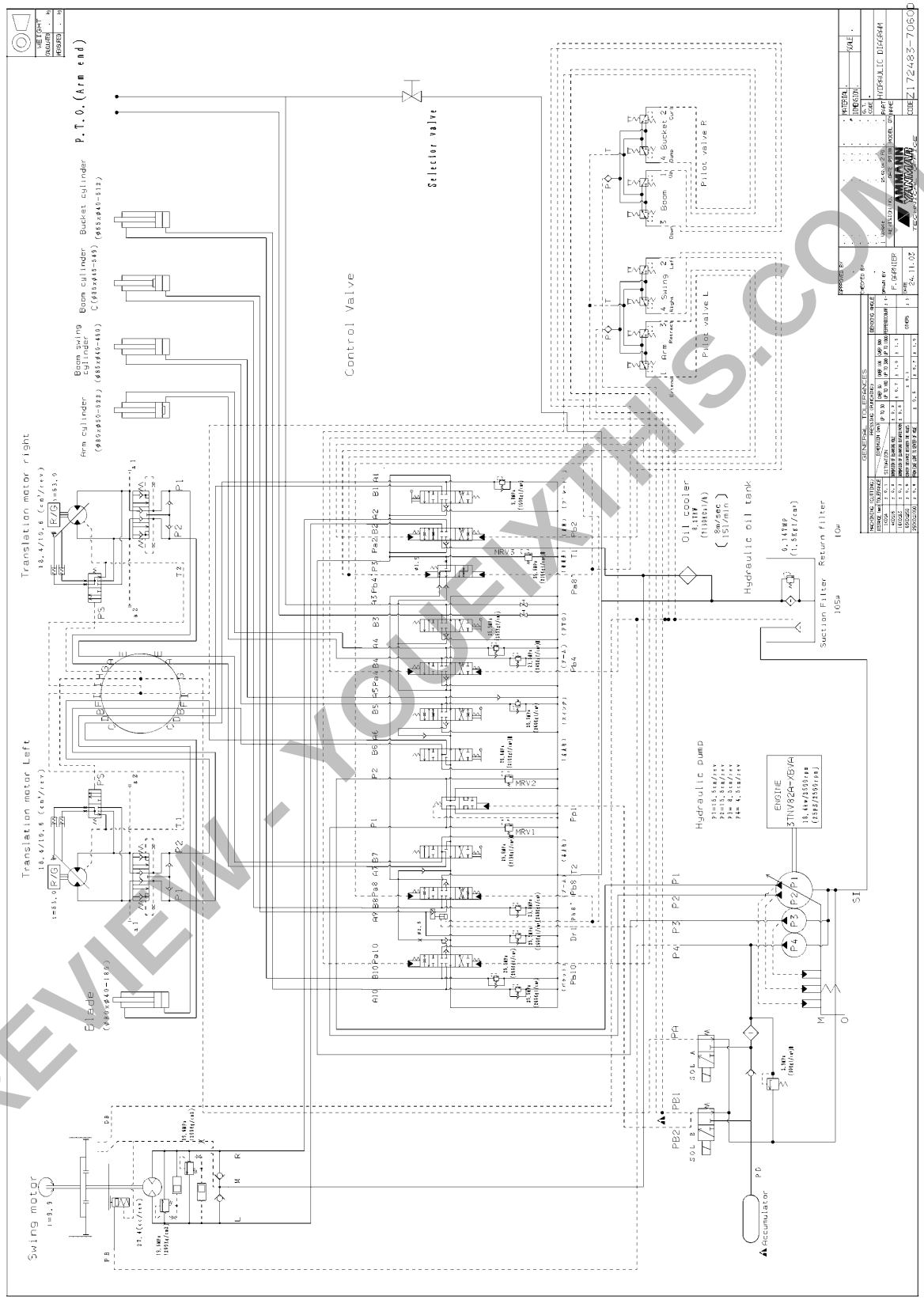
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ViO30-3

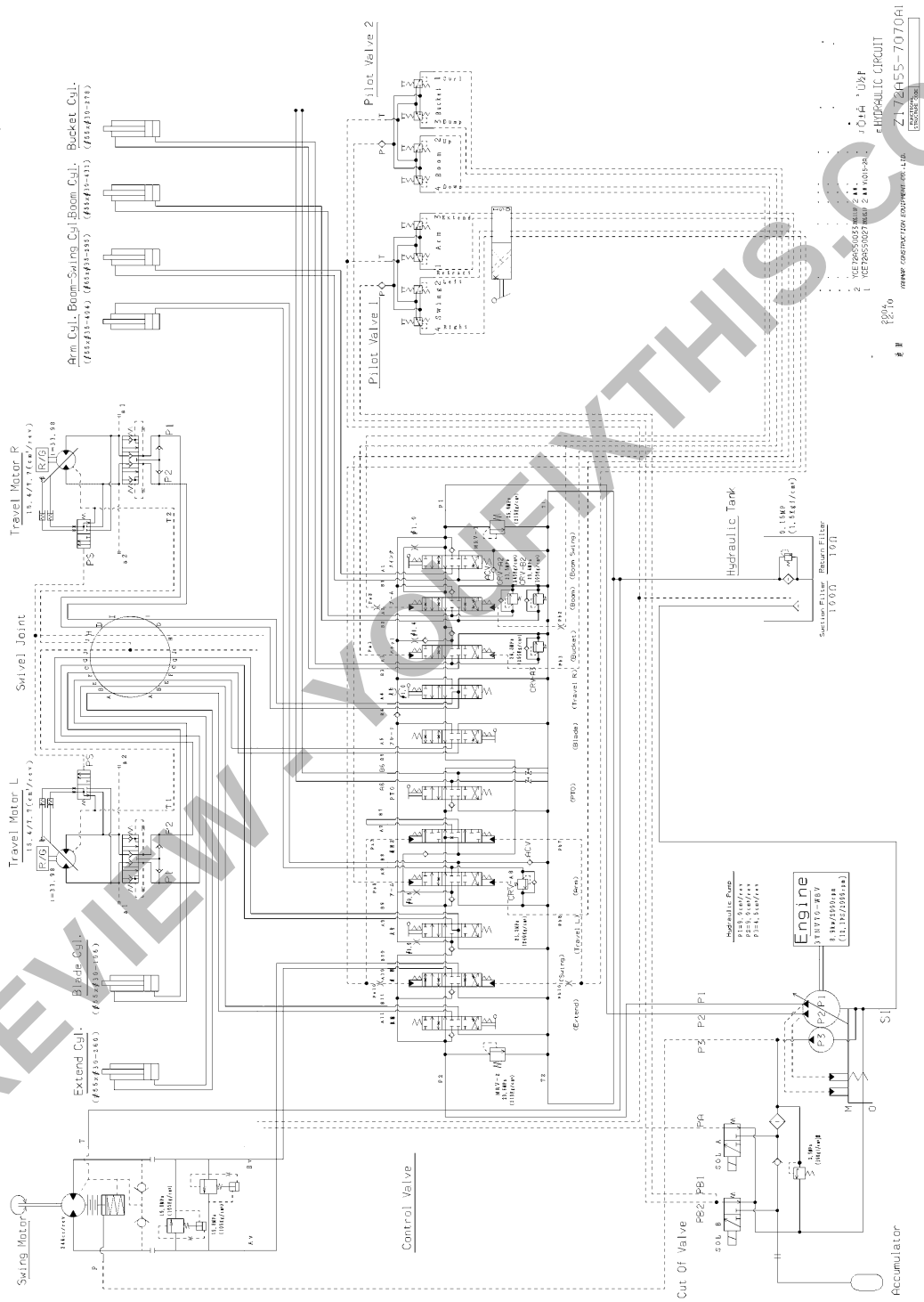


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23 Hydraulic and wiring diagrams

23.1 Hydraulic diagrams ViO15-2A



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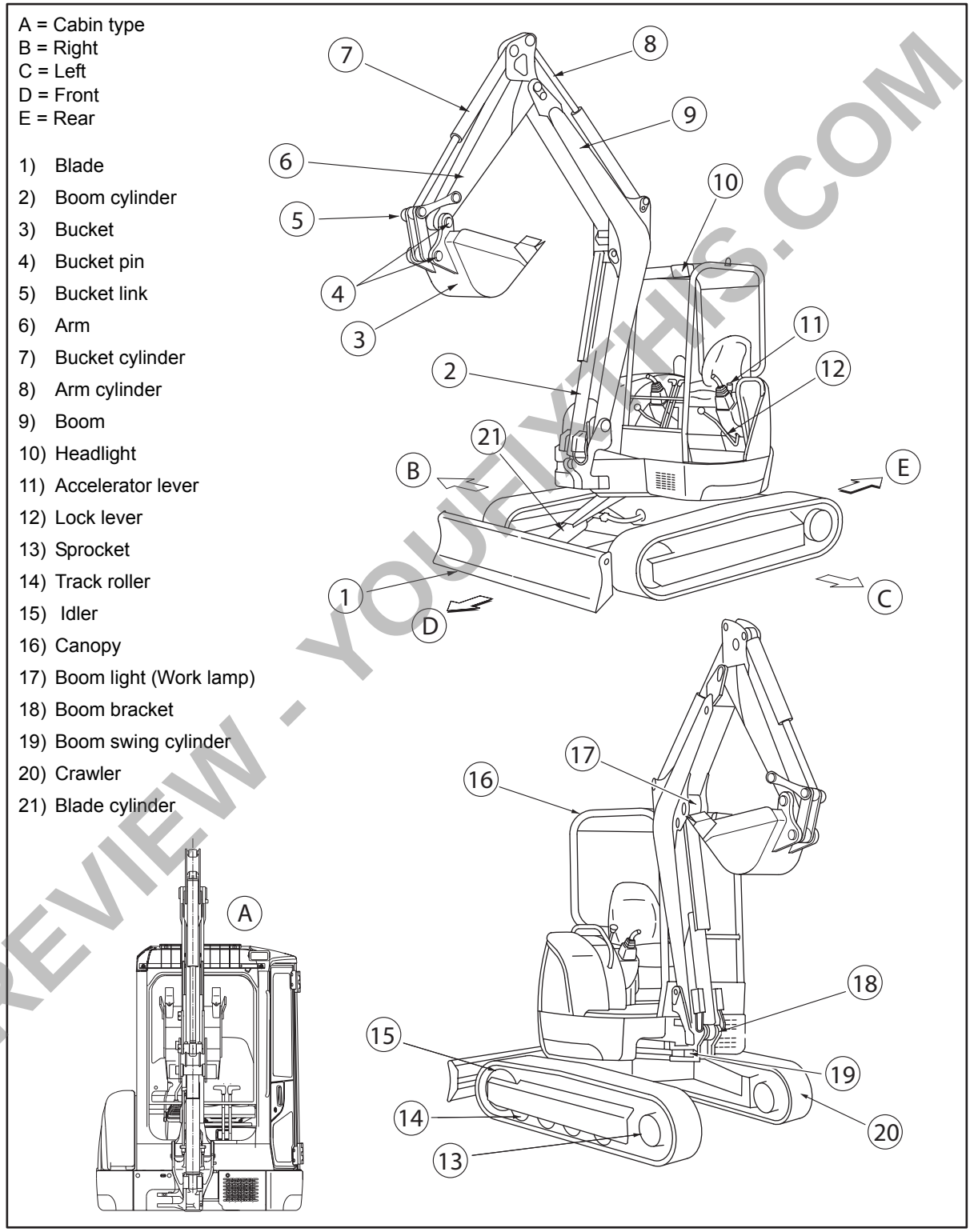
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9 Identification of Important Parts

9.1 Overview of the machine

A = Cabin type
B = Right
C = Left
D = Front
E = Rear

1) Blade
2) Boom cylinder
3) Bucket
4) Bucket pin
5) Bucket link
6) Arm
7) Bucket cylinder
8) Arm cylinder
9) Boom
10) Headlight
11) Accelerator lever
12) Lock lever
13) Sprocket
14) Track roller
15) Idler
16) Canopy
17) Boom light (Work lamp)
18) Boom bracket
19) Boom swing cylinder
20) Crawler
21) Blade cylinder



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12 Transportation

12.1 Precautions for transporting the machine

Shipping weight: Refer to the specifications table.

⚠ CAUTION

- **Select a route for transporting the machine based on the road width and clearance, and the height and weight of the machine.**

For safer transportation, comply with all local regulations and laws.

12.2 Suspending the machine

⚠ CAUTION

- **Never suspend the machine if any person is on the machine or the implement.**
- **Use wire ropes strong enough for the weight of the machine.**
- **Do not suspend the machine in any way other than that explained on the following page.**
- **Failure to suspend the machine as prescribed will throw the machine off balance.**
- **Do not swing the machine being suspended.**
- **When suspending the machine, keep the machine in balance taking care on the center of gravity of the machine.**
- **Never stand near or under the suspended machine.**

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21 Specifications

21.1 Specifications

		ViO15-2A
Crawlers		rubber
H (crawler tension)	mm	8~13
Items		Canopy

Weight (in compliance with CE standards)

Operating mass (with operator + 75 kg)	kg	1680

Working range and performance

Operating temperature range	°C	-15 ~ 40
Bucket capacity, standard	m^3	0,05
Bucket width, standard	mm	450
Maximum digging depth	mm	2100
Maximum vertical wall digging depth	mm	1750
Maximum cutting height	mm	3620
Maximum dumping height	mm	2560
Maximum digging radius of the ground	mm	3620
Front minimum swing radius <at swinging the boom>	mm	1500 <1375>
Boom swing angle : left / right		42° / 65°
Maximum digging force : bucket / arm	kN	13,7
Travel speed : high / low	km / h	4,3 / 2,1
Maximum gradient		30°
Swing speed	rpm	8,5
Average ground pressure, standard crawler	kg / cm^2	0,28
Hydraulic pump displacement	L / min	9 X 2 <Variable displacement pumps>
System relief set pressure	MPa	P1: 20,6 / P2: 20,6

Engine		**ViO15-2A**
Type	-	Vertical three cycle water-cooled diesel engine
Model	-	YANMAR 3TNV70 - WBV
Rated output / revs	kW / rpm	8,9 / 2000
Displacement	cm^3	854
Compression pressure	MPa	3,24 ~ 2,55 at 250 rpm
Nozzle injection pressure	MPa	11,8 ~ 12,8
Generator capacity	V / A	12 / 20
Type	V / Ah	12 / 36

Subject to technical modifications

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17 Fueling, Oiling and Greasing Based on Temperature Range

17.1 Fuel and oil

Select fuel and oil based on the temperature range.
If you start the engine at air temperatures lower than 32°F (0°C), use SAE10W, SAE10W-30, or SAE15W-40 even if the temperature in the daytime rises to 50°F (10°C) or so.

17.2 Cooling water

Because a YANMAR genuine long-life coolant (LLC) is added to the cooling water, you need not change it unless the temperature falls bellow -31°F (-35°C).

Components	Fluid	Recommendations with regard to temperature ranges	Prescribed amount (litre)			
		(°F) -4 14 32 50 68 86 (°C) (-20) (-10) (0) (10) (20) (30)	ViO15-2A	ViO20-3	ViO25-3	
Engine	Engine oil	SAE 10WCD SAE 10W-30CD SAE 15W-40CD	3,0 +0,4	3,5 + 0,4	3,5 +0,4	with filter
Travel reduction gear	Gear oil	SAE 90 (GL-4)	0,35	0,4	0,4	for each reduction gear
Hydraulic oil sytstem	Hydraulic oil	ISO VG46	13,8 6,2	26,0 13,0	26,0 13,0	in the tank the rest
Fuel tank	Ligh oil	No.2-D No.3-D No.3-D (S)	20,0	28,5	28,5	
Cooling system	Water	YANMAR genuine long-life coolant (LLC) added	2,2 0,4	2,9 0,4	2,9 0,4	radiator subtank

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5 Basic Precautions

⚠ WARNING

It is the user's responsibility to determine if an application presents any dangerous phenomena, for example: toxic gases, ground conditions requiring special precautions and measures to be taken to eliminate or reduce risks.

Follow safety rules at your workplace

- The operation and servicing of this machine is restricted to qualified persons.
- When operating or servicing the machine, follow all the safety rules, precautions and procedures.
- Any work performed by a team or with a signal person should be conducted in accordance with signals agreed on beforehand.

⚠ DANGER

The machines are not equipped to operate in explosive environments.

Install safety devices

- Make sure that all guards and covers are installed in their correct position. If any of them are damaged, repair them immediately.
- The proper use of all safety devices, such as lock lever, should be well understood by the machine operator.
- Never remove the safety devices. Always make sure that they operate properly. Incorrect operation of the safety devices could cause serious bodily injury.

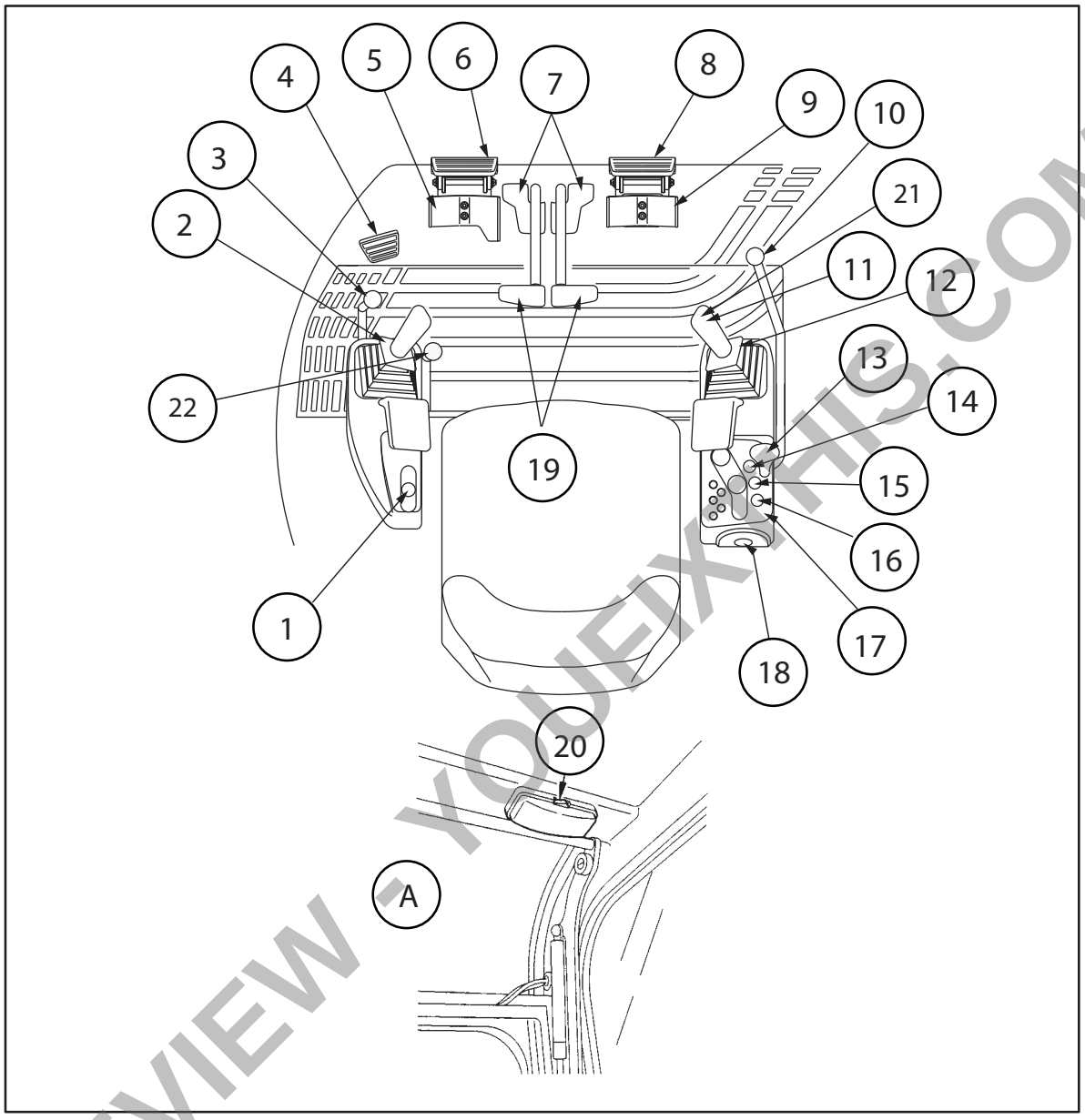
Fasten the seatbelt

- For your safety, a rollover protection structure (ROPS), falling object protective structure (FOPS) and a rotary tipping protective structure (TOPS) with a safety belt are installed. (Depending on model)
- Always fasten the seatbelt and adjust snugly before you operate the machine.
- The seatbelt must be replaced after an accident.
- In addition the seat and seat mounting must be checked by your dealer after an accident has occurred.
- If the seat and seat mounting are damaged, they must be replaced.

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9.2 Controls and switches (depending on model)

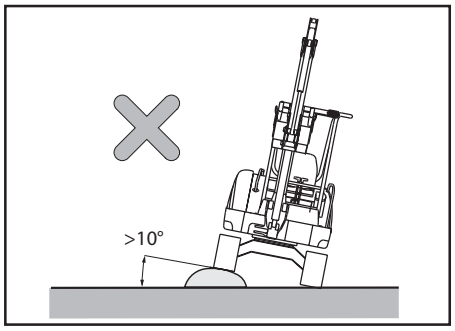


A = For cabin type

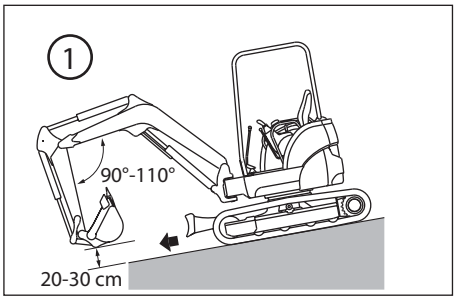
1) Accelerator lever
2) Control lever (L)
3) Lock lever
4) 2nd speed pedal
5) P.T.O. pedal
6) Pedal guard
7) Travel pedal
8) Pedal guard
9) Boom swing pedal
10) Lock lever
11) Horn switch
12) Control lever (R)
13) Blade lever
14) Light switch
15) Wiper switch (for cabin type)
16) Heater switch (for cabin type)
17) Monitor
18) Starter switch
19) Travel lever
20) Room lamp switch
21) P.T.O. -switch (depending on model)
22) Track spacing lever (depending on model)

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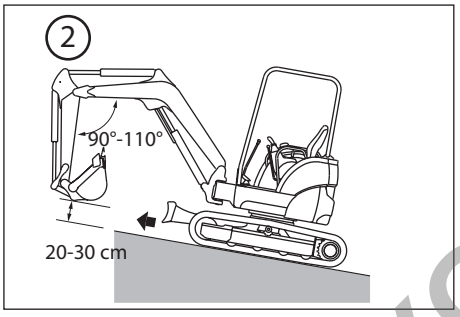


- Travel the machine at a low speed and slow down when turning on rough terrain.
- Avoid running over obstacles if possible. If unavoidable, run the machine at a low speed while keeping the implement close to the ground. Never run over obstacles that may cause the machine to tilt more than 10 degrees.

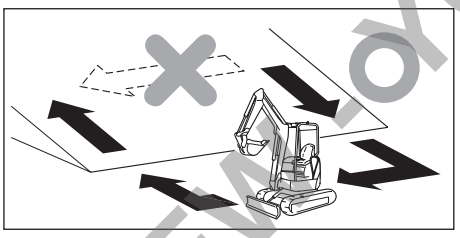


Running the machine on a slope

- Run the machine carefully on a slope to avoid overturning or skidding sidewards.
- When running the machine on a slope, keep the bucket 20 to 30 cm above the ground so that you can immediately lower it to the ground and stop the machine in an emergency.
- Never turn the machine on a slope or run it across the slope.
- Move down to flat ground and then make a turn.
- On grasses, dead leaves or a wet metal plate, even with a slight gradient, the machine will easily slip. Under those circumstances, run the machine carefully at low speed to prevent it from skidding.



(1) Going down a slope
(2) Going up a slope



Note: For the maximum accepted gradient, refer to the specification table.

Braking when going down a slope

- When going down a slope, you can automatically brake the machine by setting the travel levers to the neutral position.

When the crawler is slipping

- If you cannot climb a slope by operating the travel levers because the crawler is slipping, retract the arm and make use of the pull-back power of the implement to climb the slope.

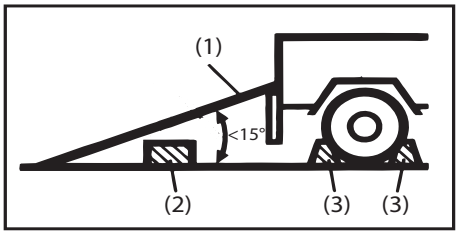
When the engine stops

- If the engine stops while climbing a slope, set the travel levers to the neutral position, stop the machine, and restart the engine.

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6.6 Precautions for transportation



Precautions for loading and unloading the machine

(1) Ramp plate
(2) Block
(3) Stoppers

- Be careful in loading and unloading the machine, because it is a job of high hazard potential.
- Load or unload the machine at a low engine speed, and low travel speed.
- Load or unload the machine on the level, solid ground away from the shoulder of the road.
- Use ramp plates of adequate strength with hooks on their ends.
- Check to see that the ramp plates are wide, long, and thick enough to sustain the load so that you can load or unload the machine safely. Support the ramp plates with blocks, to provide additional strength.
- Securely hook the ramp plates to the deck of the truck so that they will not come off.
- Remove grease, oil, and other slippery deposits from the ramp plates, and remove mud from the tracks to prevent the machine from skidding on the ramp plates.
- Do not load or unload the machine if the ramp plates are slippery because of rain, snow or ice.
- Never change travel direction while on the ramp plates. If you need to change travel direction, go down the ramp plates, and change direction on the ground.
- After loading the machine, block it with lumber and secure the machine with a chain or a wire rope so that the machine will not move during transit.

Precautions for transporting

- Transport the machine safely in accordance with the laws associated with applicable law.
- Select a travel route consistent with the width, height and weight of the machine loaded on the truck.

⚠ CAUTION

Load or unload the machine on level, solid ground far away from the shoulder of the road.

After loading the machine in a safe position on the truck, secure the machine as follows:

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