

WINTERIZING YOUR HITACHI WHEEL LOADER



When the cold, winter months set in, you need to take the same care and precautions for your ZW wheel loader as you would any other vehicle you own. Winterizing preparation can help prevent long-term damage and costly repairs, whether you operate in the cold or set your fleet in storage. Follow these procedures with winter in mind for your machine's regular maintenance in cold temperatures to ensure better performance and more quality work from your ZW loader, through the winter and all year long.

OILS, FUELS, GREASES AND OTHER FLUIDS

- Engine, transmission, axle, hydraulic oils, and fuels must be correctly matched to ambient temperature ranges. See chart below.
- Select a NLGI grease rating that has pumping ability in your ambient temperature

RECOMMENDED FLUIDS

	Kind of Oil	Ambient Temperature						Change Interval (hours)
		-22° -30°	-4° -20°	14° -10°	32° 0°	50° 10°	68° 20°	
Engine	Engine Oil API CJ-4, JASO DH-2	SAE 10W-30		SAE 15W-40				500
Transmission	Engine Oil Drive Train Oil	SAE 10W Drive Train Transmission Oil						HD10 1,000
Hydraulic System	Hydraulic Oil: Hitachi Super WH 46 NH, JCMAS HK VG46W	ISO VG46				ISO VG32		2,000/4,000*
Differential & Planetary	Drive Train Oil with Friction Modifier	Drive Train Transmission Oil HD50						2,000
Fuel Tank	Ultra Low Sulfur Diesel Fuel	ASTM D975 No. 2 ASTM D975 No. 1						Daily
DEF Tank (if necessary)	Diesel Exhaust Fluid							As Required

* Please refer to operator's manual.

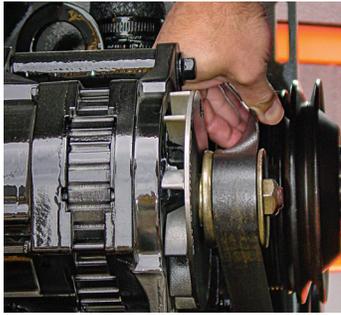
IMPORTANT: For engine coolant, never accept less than -22°F (-30)

RECOMMENDED MIXTURE OF ANTIFREEZE

Ambient Temperature		-31° F (-35° C)	-22° F (-30° C)	-13° F (-25° C)	-4° F (-20° C)	5° F (-15° C)
Pure Water	gal	7.5	8.3	9.1	9.9	10.7
	(liter)	(28.2)	(31.2)	(34.2)	(37.2)	(40.2)
Antifreeze	gal	8.4	7.6	6.8	6.0	5.2
	(liter)	(31.8)	(28.8)	(25.8)	(22.8)	(19.8)
Mixture Ratio (%)		53	48	43	38	33

Sample chart. Please refer to operator's manual.

REPUTATIONS ARE BUILT ON IT



Checking Fan Belt



Coolant Tank Reservoir Inspection



HVAC Air Recirculation Filter



Checking Battery Terminals



HVAC Fresh Air Filter



Adding conditioner to fuel storage tank



Engine Compartment Inspection



Checking Air Vents



Checking windshield wiper blade



Antifreeze windshield washer fluid

GENERAL TIPS AND TECHNIQUES

- Be sure fuel supply tanks are free of dirt, water and microbial sludge.
- Make sure drive belt and pulleys are in good condition to drive the alternator.
- Make sure batteries are fully charged, and the charging system produces full voltage and current.
- Check battery terminals for corrosion. Clean and cover them with a dielectric grease.
- Numerous cold weather aid packages are available that are designed to warm the engine, fuel, transmission and hydraulic reservoirs.
- Antifreeze and DCA levels (for Cummins engines only) must be maintained for conditions. Check your DCA-4 coolant additive.
- Service your HVAC system:
 - Filters
 - Blower and evaporator fans are working properly
 - Evaporator box is clean
 - Check the defroster vents to ensure a steady flow of air
 - Check and change your wiper blades as needed
 - Use antifreeze windshield washer fluid to prevent freezing
- Machines equipped with DEF/Ad Blue are designed to deal with freezing and thawing. Freezing does not affect the DEF. DEF freezes at about 12°F (-11°C). DEF tank heaters are provided on all machines.
- Perform any diagnostics and minor repairs in early Fall before cold weather sets in. Working in freezing temperatures can be a real challenge.

MAINTENANCE PROCEDURES BY TEMPERATURE RANGE

32°F to 45°F (0° C to 8°C)

- Fluids and Greases: Refer to recommended lubricants chart for correct oil viscosity selection.
- Be sure starting aids, intake manifold heater grids, or ether injection operate properly.

0°F to 32°F (-20° C to 0°C)

- Fluids and Greases: Use engine coolant heat elements for antifreeze.
- Use engine coolant heat elements for easier cold weather starting.
- Provide a short warm-up period prior to operating the machine including the hydraulic system oil.
- Fuel grade change may be considered; treatment may be needed to prevent waxing. Consult your local fuel distributor.

-40°F+ F (-40° C to 20°C)

- Fluids and Greases: Refer to recommended lubricants chart for correct oil viscosity selection. Synthetic fluids may be required.
- Use engine coolant heat elements for antifreeze.
- Heater elements for Fuel, Hydraulic and Transmission reservoirs may be required.
- Recheck tire pressure.
- Keep the machine parked out of the mud, as tires can freeze to the ground. Any hydro-inflation **MUST** be cold-weather friendly. When possible, store machine indoors.
- Provide a longer warm-up period prior to operating the machine, as components are typically much colder.
- Fuel grade change must be made: treatment is required to prevent waxing. Consult your local fuel distributor.

-40°F/C or Below

- Some metals' strength and flexibility can be affected.
- Tires, hoses, O-rings and seals can be affected

Consult your authorized Hitachi dealer.





FEATURES AND BENEFITS

The tips and techniques outlined here should net you longer equipment life, fewer cold weather breakdowns, and higher resale values. Winterizing heating aids save on warm-up time, save fuel, prolong the life of your battery and reduce idle time.

Always read and understand your operation and maintenance manuals.

CAUTION

Explosion Hazard

Never use Ether or other flammable substances to start Hitachi ZW engines. Engines are equipped with electric heater starting aids.

Use of Ether could cause an explosion which could result in death, serious injury and engine damage.

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