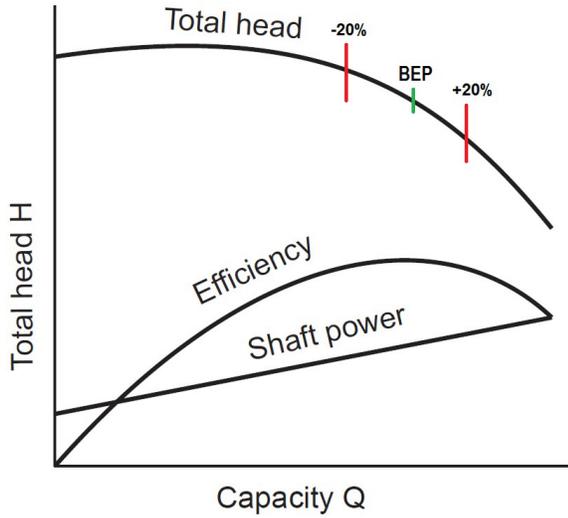


 **TSURUMI PUMP**[™]
BUILT FOR WORK[®]
PREVENTATIVE MAINTENANCE GUIDE



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Run pump within 20% of BEP



Use proper control panel



Set overload devices

Set overload amperage to the rated amperage of the pump



Install pressure gauge and take pressure

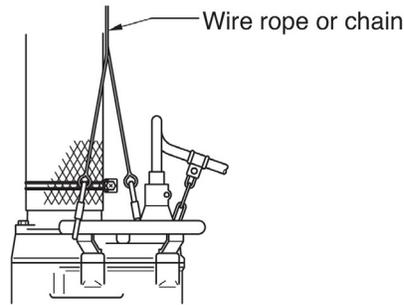
Make sure pump is operating within the BEP and that the performance point has not changed.



✔ Treat power cables with care

⚠ CAUTION	
	<p>● Be sure to provide a ground wire securely. Do not connect the ground wire to a gas pipe, water pipe, lightning rod, or telephone ground wire. Improper grounding could cause electrical shock.</p> 
	<p>● Do not scratch, fold, twist, make alterations, or bundle the cable, or use it as a lifting device. The cable may be damaged, which may cause electrical leakage, short-circuit, electrical shock, or fire.</p> 
	<p>● Do not use the cable if it is damaged. Connect every conductor of the cable securely to the terminals. Failure to observe this can lead to electrical shock, short-circuit, or fire.</p> 

Do not pull or support the pump from its cable.
Use a wire rope or chain.



✔ Pull pump for maintenance if performance drops more than 15%

Continually monitor output pressure and/or flowrate to detect changes in performance

If performance drops:

- ✓ Check impeller wear
- ✓ Check gap between impeller and suction cover
- ✓ Check debris buildup in pump casing

✔ Megger pump monthly

- ✓ Use a Megohmmeter to check insulation resistance from the pump cable leads.
- ✓ Insulation resistance reference value = 1MΩ min.

✔ Check oil regularly

- ✓ Recommended to check oil every 6 months or after 3,000 hours of use, whichever comes first.
- ✓ Remove the oil plug and take out a small amount of oil. The oil can be extracted easily by tilting the pump so that the oil plug faces downward. If the oil appears discolored or intermixed with water, a likely cause is a defective shaft-sealing device (i.e. mechanical seal), which requires that the pump be disassembled and repaired.
- ✓ Replacement part frequency:

Part	Replacement frequency
Mechanical Seal	When oil in oil compartment becomes milky
Lubricant ; Turbine Oil VG32 (non-additive) ...	Every 6,000 hours or 12 month, whichever comes first
Packing, O-Ring	Each time pump is disassembled or inspected
Oil Seal	When ring is worn, and each time pump is disassembled or inspected
Shaft sleeve	When it becomes worn

✓ Monitor voltage / amperage



✓ Listen for change in bearing noise



✓ Follow maintenance schedule as shown in operation manual

Interval	Inspection item	
EveryDay	Measure operating current	To be below the rated current
	Measure power supply voltage	Power supply voltage tolerance (within $\pm 5\%$ of the rated voltage)
Monthly	Measuring insulation resistance	Insulation resistance reference value = 1M Ω min. Note: The motor must be inspected if the insulation resistance is considerably lower than that obtained during the last inspection.
	Pump inspection	A noticeable drop in performance may indicate wear in the impeller etc., or else clogging of the strainer stand, etc. Remove the clogged debris, and replace any worn parts.
Semi-yearly	Inspection of lifting wire rope or chain	Replace if damage, corrosion, or wear has occurred to the wire rope or the chain. Remove if foreign object is attaching to it.
	Inspecting oil	Check the oil every 6 months or after 3,000 hours of use, whichever comes first.
Yearly	Change oil	Change the oil every 12 months or after 6,000 hours of use, whichever comes first.
	Change mechanical seal	
Every 2 to 5 years	Overhaul	The pump must be overhauled even if the pump appears normal during operation. The pump may need to be overhauled earlier if it is used continuously or repeatedly.

✓ Have a backup pump

For critical applications where a need for minimal downtime is a must, a backup pump is vital.

