

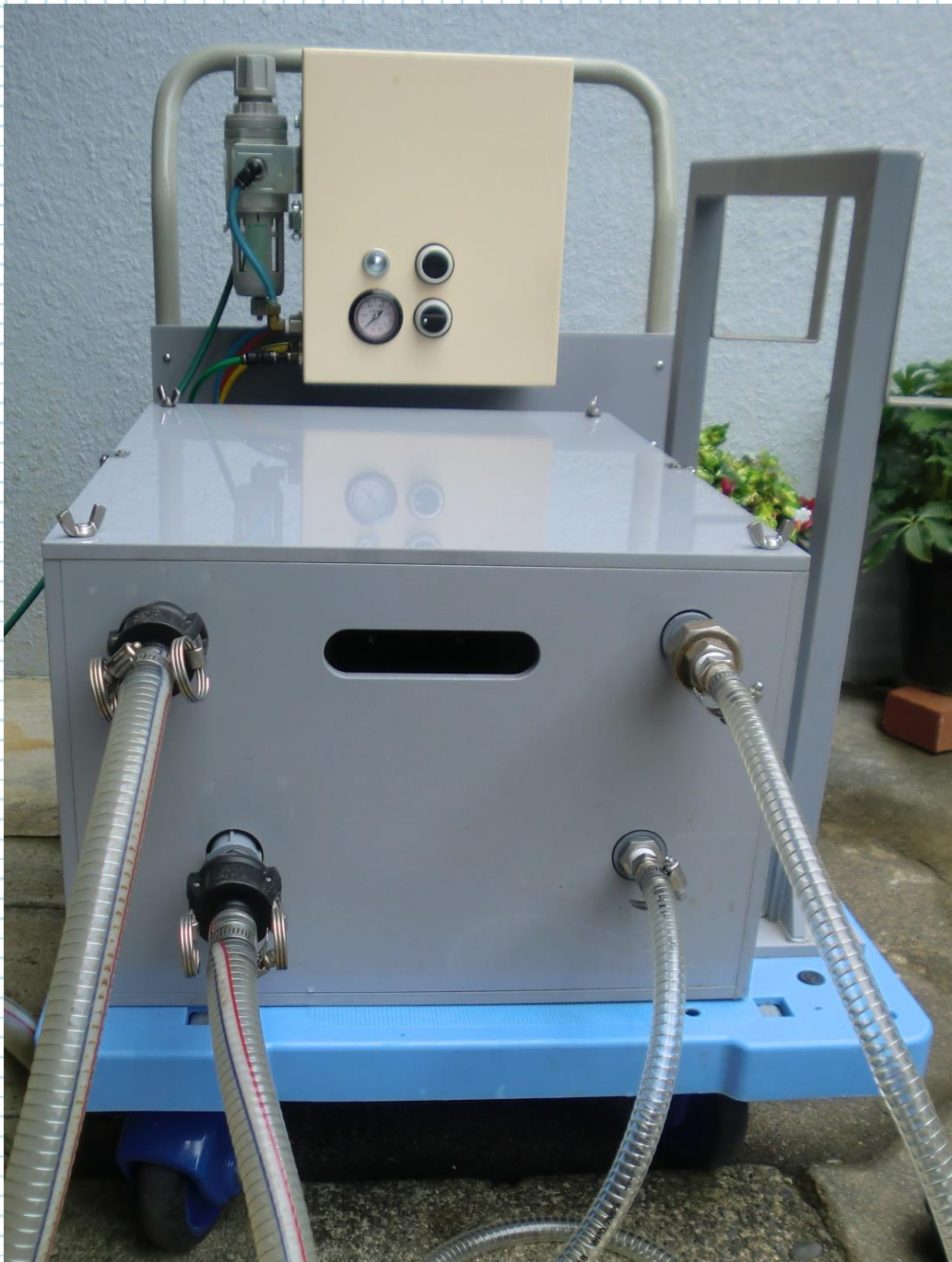
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For scale removal of cooling water pipes

Shuttle cleaner

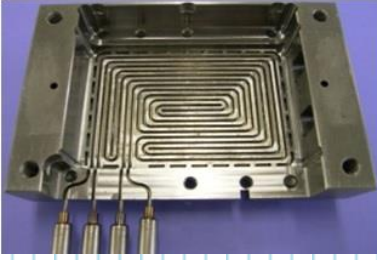
PDF catalog

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Then you will jump to the youtube video.



Conventional shuttle cleaner

Cleaning example



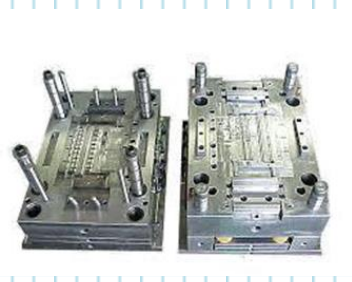
Refrigerant pipe



Oil cooler



Brazing plate heat exchanger



Mold



Mechanical cooler



Plate heat exchanger



Brazing plate heat exchanger



Nozzle



Vacuum deposition equipment



Fine cooling water piping



Factory piping



Heater core



Oil cooler



Rubber processing machine



Cooling drum

The workers want to use "water" as a cleaning fluid when performing maintenance on machinery and equipment, I understand. Scale may not be removed as dramatically as when using "acid", but "water" is also superior in terms of cleaning fluid cost and waste liquid treatment cost. Here, let's compare "water" and "acid" as cleaning fluids.

When using only "water"

Flow rate and temperature	Before cleaning	After cleaning	difference
Water flow rate (LPM)	7.5 ~8.5	13.5 ~14.0	5.5~6.0
Under the hopper (°C)	98.5	60.3	38.2
Next to the oil cooler (°C)	67.9	45.6	22.3
Cooling water piping IN (°C)	22.1	20.1	02.0
Cooling water piping OUT (°C)	37.5	26.7	10.8
Oil temperature (°C)	89.5	46.4	43.1



Before cleaning



After cleaning

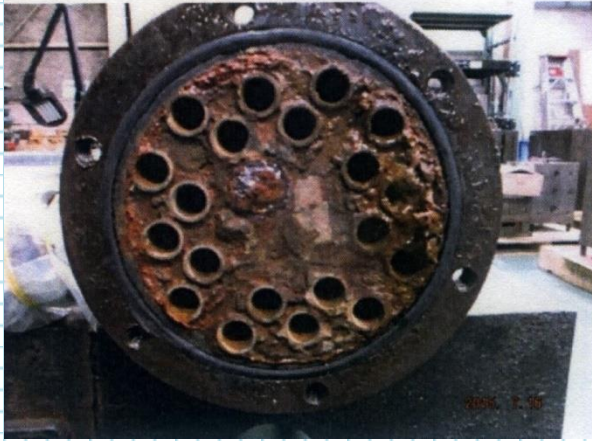
The data was provided by a plastic molding company in Aichi prefecture.

Comparison of "water" and "acid"

It is an oil cooler used in the customer's Vietnam factory. I came here because I heard the words, "If the result of the trial cleaning is good, I will buy a shuttle cleaner."



The customer said the situation before cleaning as follows. The holes in the cooling water pipes are clogged with rust and calcium, and the other side cannot be seen. As he pumped water, 50% of the original flow passed. So he told me. First, wash with "water" for 2 hours, and then with "acidic cleaning agent" for 2 hours. He wants to compare the effects of each.



Before cleaning



After cleaning

Effect of "water" The blockage rate was improved from 50% to 25%. It can be used for maintenance.
Effect of "acid" The other side of the cooling water piping after the air blower can now be seen. It's perfect.

Video: <https://www.youtube.com/watch?v=Nfu3oNBPeHM>

The data was provided by a plastic molding company in Osaka Prefecture.

When using "acidic cleaning agent"

The foundry industry has electric furnace equipment for melting raw materials, and cooling water pipes run around the electric furnace. This customer should be a flow rate of 40 LPM by nature. The flow is currently is currently below 3 LPM. Due to the shutdown of the most upstream equipment, all production down to the downstream has stopped. As a result of cleaning with the shuttle cleaner, it recovered to 40 LPM.



Video: <https://www.youtube.com/watch?v=LaiXdjGAUPQ>

The data was provided by a casting company.

When using "acidic fluid"

There were several customers who were completely occluded. Isn't the "shuttle cleaner" that remove the "complete blockage" a wonderful achievement? When I come across such a customer I always say in advance. First of all, we cannot guarantee that it will pass. Even if it passes, it cannot be said at this point when it will pass. However, there is a high possibility that it may pass from our experince. In multiple cases, there are many patterns that pass on the second day. If the cleaning fluid is set to "acidic cleaning agent", the solidified scale will gradually be reduced. It will crumble from the tip and eventually "open".



Video <https://www.youtube.com/watch?v=yJw8z3Y9rRE>

The data was provided by a chemical factory in Tochigi prefecture.



Slurry from the piping passage

Video <https://www.youtube.com/watch?v=fPioTqW48TY&t=15s>

The data was provided by a plastic molding company in Ibaraki prefecture.

Conventional shuttle cleaner

Basically anything can be cleaned as long as it has a pipe shape. The cleaning fluid can be water or acid. However, it is preferable to wash it with water. In that case, it is convenient to check in advance "how many hours of cleaning with water can remove the scale" when setting later. When acidified, our track record is that the scale usually drops in an hour. It's perfect in 2 hours.

Operates using only compressed air as power. No electricity required.
Lightweight so that you can work alone.

It can also be cleaned with a heat exchanger where each plate is welded. Fine piping is not a problem. You can also clean long meandering tubes.

At the time of "cleaning", the following things occur in the pipe that is the cleaning object.

Step 1: The cleaning fluid enters from doorway 1 to doorway 2 at high pressure and speed.

At this time, the scale is pressed.

Step 2: The cleaning fluid is sucked from the doorway 2 towards the doorway 1. At this time, the scale is peeled off from the wall at low pressure.

The step 1 → the step 2 cycle usually occurs once per second.

Stages 1 and 2 occur many times, destroying the scale.

Future Shuttle cleaner: Option Description

Option 1: Install a load counter.

First, set each part. When the shuttle cleaner is operated in that state, the load counter indicates the number of times the actuator has been operated. The actuator is a sensor that indicates the load on the liquid side: the degree of clogging. That is, the number of operations of the actuator before cleaning is low. As the cleaning progresses, the number of actuator operations gradually increases. For example, assuming that the value of the load counter at the start of cleaning is 10, it means that the load has been reduced to 1/3 when it reaches 30 when cleaning is performed.

Being able to see the value on the load counter is a guide to know how much cleaning is done.

Option 2: Install a load counter with output.

In option 1, it is the worker's job to switch off. Here, by installing a load counter with output, it can be automatically "stopped" at the upper limit. At the same time as "stopping", the sound of an air whistle informs it. The operation is described below.

Put the switch in the "clean" position at the start of cleaning. → Read the maximum value of the load counter for the 2nd and 3rd times. → For example, if the value is 20, set 40, which reduces the load to 1/2, as the upper limit of the load counter. → When the load reaches 40, it automatically stops, the color of the display changes, and the air whistle sounds.

In the PL plastic type, the wetted parts are all made of plastic only.

In the case of PL type, PP, PTFE, PVC, etc. come into contact with the liquid.

The temperature resistance is 60 ° C. Resistant to most acids.

For ST stainless steel type, all wetted parts are made of stainless steel only.

Model description

Model example: R.PL. OP1. C.300.30.67.50.1825.900

R	R renewal driver type						
PL	PL plastic			ST stainless steel			
OP	None			Option 1 or 2			
C	driver material			C-coated steel		S-stainless steel	
300	reciprocating cleaning time		2-30 seconds		20-300 seconds		
30	1WAY circulation time		2-30 seconds		20-300 seconds		
67	Discharge rate per actuator (cc)						
	67	100	222	340	552	1,825	1,825
50	Maximum flow rate (Lpm)						
	50	100	150	220	340	650	900
	Piping connection						
	1/2	1	1	1-1/4	1-1/2	2	3
1825	Pump discharge rate (cc)						
	67	100	222	340	552	1,825	1,825
900	Maximum flow rate (Lpm)						
	50	100	150	220	340	650	900
	Piping connection						
	1/2	1	1	1-1/4	1-1/2	2	3

You must choose one that has more actuator capacity than pump capacity.

The product contains a suction strainer that passes through a Φ 2mm solid.

Also, two 3m hoses from the shuttle washer to the bucket (includes one suction strainer and one discharge pipe).

In addition, two 5m hoses from the shuttle washer to the object to be cleaned are included.

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