

COVERD PLUNGER

A plunger of fuel injection pump in diesel engine is indispensable part and could not be ignore it because it affects fuel combustion conditions considerably.
 If you have worn-out and/or damaged plunger, we can revive it as a Covered Plunger by thermal spraying of Ni-based Self-flushing Alloy (NSA).



Covered Plungers will offer following merits:

1. Reasonable prices

Old used plunger to be revived as a Covered Plunger with reasonable cost.

2. High reliability

Covered Plungers offer high reliability even in heavy chemical environment using severe fuel oil.

3. High performance

Covered Plungers keep high performances in long term and they have much longer life compared with normal prevailing plungers.

Outstanding futures of Covered Plungers

By using NSA, Covered Plungers have following outstanding futures:

NSA

	Ingredients (%)							Hardness
	Ni	Cr	B	Si	C	Fe	Others	HRC
NSA	Base	13 ~ 17	2.5 ~ 3.2	3.0 ~ 4.5	0.7 ~ 1.2	<4.5	<3.5	55 ~ 60

1. Anti- abrasive

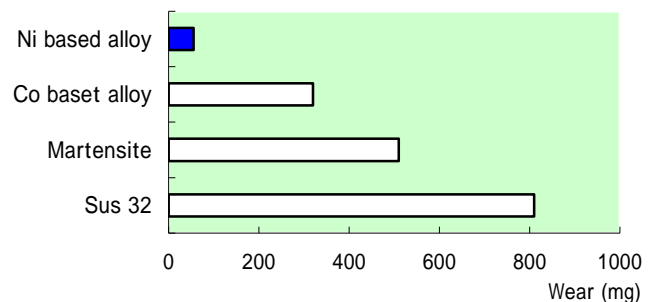
Abrasive wear is the most popular wear mechanism of plungers.

Fig.1 shows superior NSA's anti-abrasive character.

Abrasive wear of normal plunger



Fig.1 Abrasive Test



2. Chemical resistance

Table 1 shows superior future of NSA against chemical environment.

Table 1 Corrosive Resistance

Chemical	Density %	Temp.	Ni-based self-flushing alloy	SUS 304
H2SO4	5	25	A	B
HCl	5	25	A	A
NaOH	10	Boil	A	A

Damage grade A: under 5mil/yr B: 5 ~ 50mil/yr C: above 50mil/yr mil: 10⁻³in.

Corrosive wear of Normal plunger

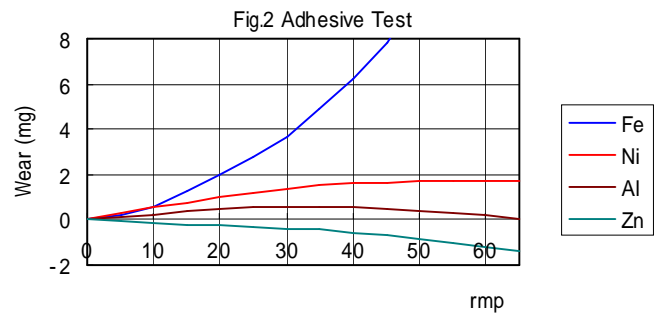


3. Anti-adhesive

The barrel of plungers are made of steel, hence, the property of Ni is also suitable for the plungers against adhesive wear.

Fig.2 shows wearing rate of each material against steel wheel when wheel speed has changed.

As it shows, when wheel speed has accelerated, wearing rate of Fe has increased remarkably in spite of wearing rate of Ni has kept stability in lower rate.



Other futures

By spraying NSA, slider surface and groove part of plungers to be covered and filled up with NSA. After that, slider part to be finished up, and as final procedures, groove part to be carved by Electrolytic Grinding Machine.

This final procedure could offer high circularity of the groove part in Covered Plungers.

This high circularity contributes to higher performance of Covered Plungers.

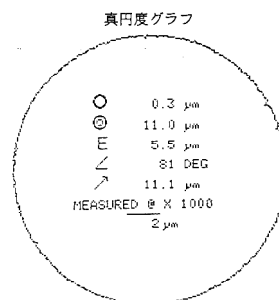
After sprayed NSA



After finished slider part



Circularity of the Covered Plunger

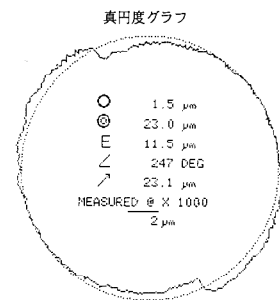


ID:

11-APR-94

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Circularity of the normal plunger



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