DH-α Chain (DHA)

The pin with a super-hard surface coating protects the critical area from adverse environments

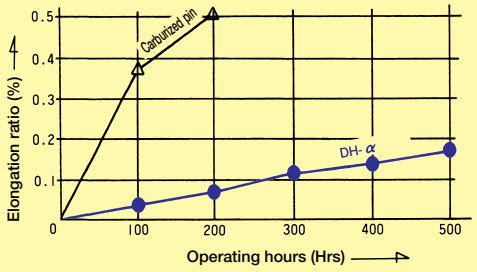
Perfect lubrication makes chain life longer. It is not easy to avoid deterioration due to its own oxidation and mixture with contaminants. In this case, DH-α chain shows good performance. Excellent performance can be expected under non-lubricated conditions and in such critical conditions where dirt, dust or fine metal particles work into the chain.

Recommended uses

- Environments where soil, sand or dust directly comes into contact with the chain (O-ring chains are recommended if applicable.).
- Applications where a chain is lubricated in an oil bath and the oil is heavily deteriorated due to the contamination of foreign objects.
- To avoid chain kinking by heat between pin and bushing.

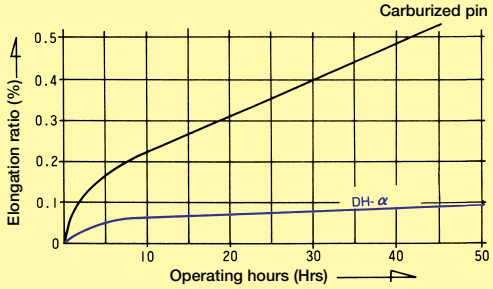
Wear resistance performance

Ⅰ. Wear resistance performance under degraded lubricant condition



(Test conditions)
①Chain Sample: DID06B (p=9.525)
②Drive: 14N.T/10,000rpm·33N.T/ 4242rpm
③Tension: 30kgf (6.0kW)
④Lubrication: By oil bath with wasted automobile engine oil

Ⅱ. Wear resistance performance under sandy & dusty condition



(Test conditions)
①Chain Sample: DID40 (p=12.70)
②Drive: 21N.T/ 1090rpm·21N.T/ 1090rpm
③Tension: 140kgf (6.8kW)
④Lubrication: Initial grease only. Continuous scattering of sand on the chain in operation

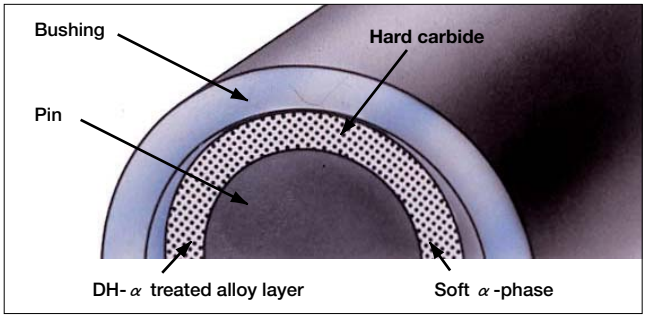
Tested by DAIDO

Comparison of properties

	Carburizing	Nitriding	H-Cr plating	DH-α
Layer	High carbon	Iron nitride	Chrome	Chrome carbide
Surface hardness (HV)	750~850	750~1,100	900~1,100	1,300~1,500
Actual thickness of treated layer	100 or more	10 or more	10~100	5~20
Surface hardness lowering temperature	200 or more	500 or more	300 or more	900 or more
Peeling resistance	○	○	×	◎
Wear resistance	△	○	○	◎

Structure of DH-α

DH-α refers to a hard layer formed on the surface of a pin. This layer contains harder carbide as illustrated below, so it provides excellent wear resistance even in the use for adverse conditions such as the contamination of hard foreign objects as well as in oxidation resistance. (Patented)



Selection of chains

The strength of DH-α chain is the same as that of standard roller chains. For selecting a suitable DH-α chain, refer to "Selection of Chains" (P120~123).

Connecting links and offset links

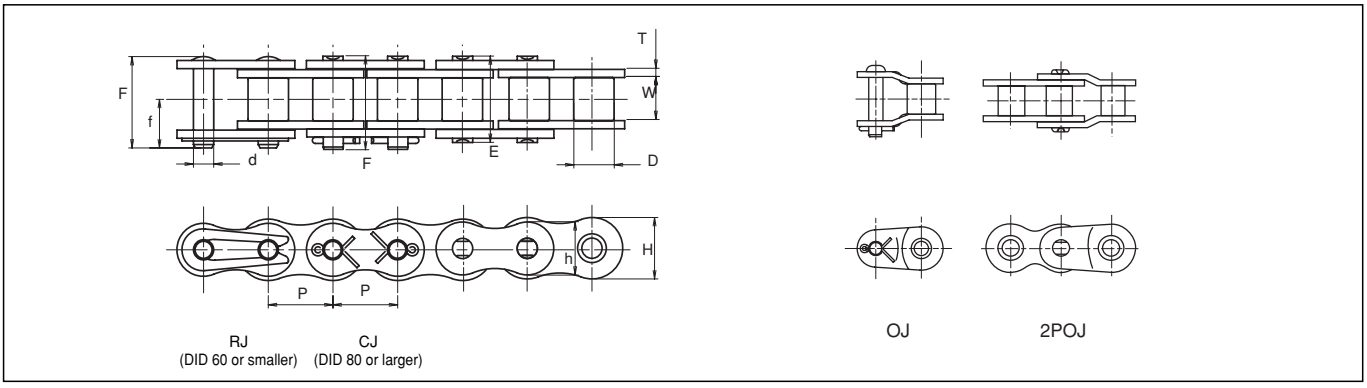
Use the connecting links and offset links for standard roller chains. While a chain has many links, the numbers of connecting link and offset link is 1 or 2, and, therefore, their influence on the wear of the entire chain is small.

Sprockets

The dimensions of DH-α chain is the same as those of standard roller chains. Use standard sprockets for standard roller chains.

Microstructure

The white layer is a layer by DH-α treatment, and the black grains visible in the layer are chromium carbide.



Dimensions

Unit (mm)

Chain No.	Pitch	Roller link width	Roller (Bush) dia.	Pin						Plate			Avg. tensile strength		Max. allowable load		Approx. weight (kg/m)
	P	W	D	d	E	F	f	L	ℓ	T	H	h	kN	kgf	kN	kgf	
* DID 25 DHA	6.35	3.18	(3.30)	2.31	7.8	8.5	4.7	——	——	0.72	5.9	5.20	4.41	450	0.73	75	0.13
* DID 35 DHA	9.525	4.78	(5.08)	3.59	12.0	13.1	7.3	13.9	7.8	1.25	9.0	7.75	11.2	1,150	2.15	220	0.32
DID 41 DHA	12.70	6.38	7.77	3.59	13.7	14.6	7.9	15.2	8.6	1.20	9.6	8.00	10.7	1,100	2.35	240	0.39
DID 40 DHA	12.70	7.95	7.92	3.97	16.5	17.6	9.5	19.3	10.6	1.50	12.0	10.40	19.1	1,950	3.72	380	0.63
DID 50 DHA	15.875	9.53	10.16	5.09	20.3	21.9	11.6	23.1	12.1	2.00	15.0	13.00	30.9	3,150	6.86	700	1.06
DID 60 DHA	19.05	12.70	11.91	5.96	25.4	26.9	14.3	30.0	15.7	2.40	18.1	15.60	44.1	4,500	9.31	950	1.44

Note: Those marked with * indicate bushing chains.