

# NIMET

WHERE  
INNOVATION  
LIVES

WH

## INDUCTION HARDENED AND GROUND HOLLOW LINEAR SHAFTS

TECHNICAL SHEET

NI-WH-TS-2020

# NI-SERIES



## INDUCTION HARDENED AND GROUND HOLLOW LINEAR SHAFTS

### STEEL GRADES CORRESPONDENTS

EN	Werkstoff	DIN	B.S.	UNI	JIS	GOST	AISI / SAE / ASTM
C60E	1.1221	Ck60	060A62, 070M60	C60	S58C	60, 60G, 60GA	1060

### CHEMICAL COMPOSITION - IN % BY WEIGHT

Steel grade	C	Si	Mn	P	S	Cr	Ni	Mo	V
C60E	0.57 ÷ 0.65	0.10 ÷ 0.40	0.60 ÷ 0.90	max. 0.025	max. 0.035	max. 0.4	max. 0.4	max. 0.1	-

### MECHANICAL PROPERTIES

Steel grade	Tensile strength	Yield strength	Elongation
	R <sub>m</sub> N/mm <sup>2</sup>	R <sub>p0.2</sub> N/mm <sup>2</sup>	A <sub>5</sub> %
C60+NBK	720 - 900	min. 390	min. 13

NBK = normalized in a protective atmosphere.

### HARDENABILITY

Steel grade	Surface hardness HRC min.
C60E	60



The hardening depth (SHD according to EN ISO 15787 or Rht according to DIN 6773) is defined as the distance from the steel surface up to the point where the hardness value is 80% of the minimum guaranteed value of the surface hardness and it is established in accordance with ISO 13012, depending on the shaft's size.

The minimum guaranteed value of the surface hardness varies depending the steel grade.

# NI-SERIES



## INDUCTION HARDENED AND GROUND HOLLOW LINEAR SHAFTS

Steel grades C60E

Surface hardness 62±2 HRC

Surface roughness Ra max. 0.20 µm

Length tolerance ±200 mm

Surface hardening depth, SHD according to EN ISO 15787

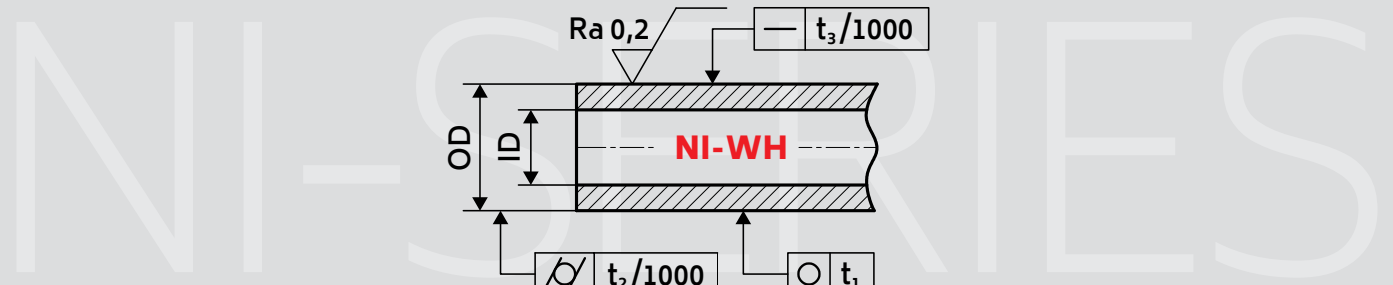
On request special lengths, tolerances and dimensions

### NI-WH/METRIC

Outside Diameter OD	Inside Diameter ID	Weight kg/m	Series	Standard length mm	Surface hardening depth	Roundness (circularity)	Parallelism (cylindricity)	Straightness	Standard tolerance
					SHD (min. + tol.) mm	t <sub>1</sub> max. µm	t <sub>2</sub> max. µm	t <sub>3</sub> max. mm/m	ISO h6 µm
12	4	0.79	NI-WH 12x4	6000	0.4+0.4	5	8	0.20	0/-11
12	7	0.59	NI-WH 12x7	6000	0.4+0.4	5	8	0.20	0/-11
16	7	1.28	NI-WH 16x7	6000	0.4+0.4	5	8	0.20	0/-11
20	14	1.25	NI-WH 20x14	6000	0.6+0.5	6	9	0.20	0/-13
25	15	2.47	NI-WH 25x15	6000	0.8+0.8	6	9	0.15	0/-13
30	18	3.55	NI-WH 30x18	6000	0.9+0.8	6	9	0.15	0/-13
40	28	5.03	NI-WH 40x28	6000	1.2+1.1	7	11	0.15	0/-16
40	26	5.70	NI-WH 40x26	6000	1.2+1.1	7	11	0.15	0/-16
50	30	9.87	NI-WH 50x30	6000	1.5+1.2	7	11	0.15	0/-16
60	36	14.20	NI-WH 60x36	6000	1.5+1.2	8	13	0.15	0/-19
80	57	19.42	NI-WH 80x57	6000	1.6+1.3	10	13	0.20	0/-19

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The minimum guaranteed value of the surface hardness varies depending the steel grade.



Steel grades C60E

Surface hardness 62±2 HRC

Surface roughness Ra max. 0.20 µm

Length tolerance ±200 mm

Surface hardening depth, SHD according to EN ISO 15787

On request special lengths, tolerances and dimensions

## NI-WH / IMPERIAL

Outside Diameter OD		Inside Diameter ID		Weight kg/m	Series	Standard length inch	Surface hardening depth SHD (min. + tol.) inch	Roundness (circularity) t <sub>1</sub> max. inch	Parallelism (cylindricity) t <sub>2</sub> max. inch	Straightness t <sub>3</sub> max. in/ft	Standard tolerance Class "L" inch
mm	inch	mm	inch								
15.875	0.625	6.35	0.25	1.30	<b>NI-WH 15.875x6.35</b>	236.22	0.024 + 0.020	0.000197	0.000315	0.00246	-0.0005 / -0.001
19.05	0.75	11.125	0.438	1.48	<b>NI-WH 19.05x11.125</b>	236.22	0.035 + 0.032	0.000236	0.000354	0.00246	-0.0005 / -0.001
25.4	1	15.494	0.61	2.50	<b>NI-WH 25.4x15.494</b>	236.22	0.035 + 0.032	0.000236	0.000354	0.00185	-0.0005 / -0.001
31.75	1.25	18.288	0.72	4.15	<b>NI-WH 31.75x18.288</b>	236.22	0.035 + 0.032	0.000236	0.000354	0.00185	-0.0005 / -0.001
38.1	1.5	22.606	0.89	5.80	<b>NI-WH 38.1x22.606</b>	236.22	0.047 + 0.043	0.000276	0.000433	0.00185	-0.0006 / -0.0011
50.8	2	31.75	1.25	9.69	<b>NI-WH 50.8x31.75</b>	236.22	0.059 + 0.043	0.000276	0.000433	0.00185	-0.0006 / -0.0013

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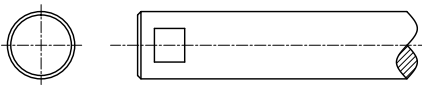
The minimum guaranteed value of the surface hardness varies depending the steel grade.

# NI-SERIES

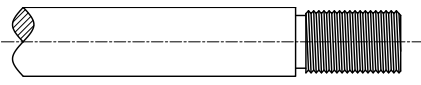


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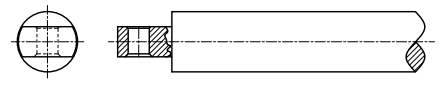
CROSSWISE GROOVE



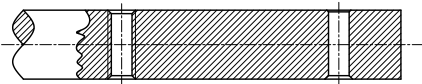
OUTSIDE DIAMETER THREAD



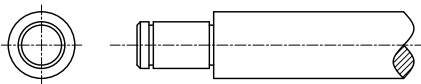
END FOR MOUNT WITH CLEVIS CLAMP



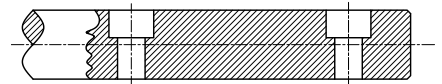
TAPPED OR DRILLED HOLES  
RADIALLY THROUGH SHAFT



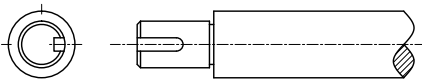
GROOVES FOR SNAP RING



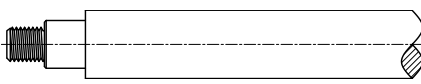
RADIAL DRILLING HOLES, BORED



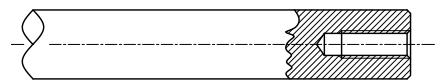
REDUCED DIAMETER WITH/  
WITHOUT FEATHER KEYWAY



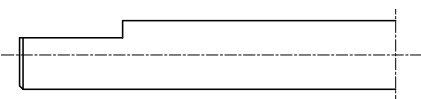
REDUCED DIAMETER WITH  
THREADED END



AXIAL DRILLED AND THREADED  
TO ENDS



D-CUT SHAPE



### PACKING SOLUTIONS

- Branorost paper, spacer rings, raffia and wooden boxes for  $\varnothing$  4 - 16 mm.
- Bundles protected with branorost paper, spacer rings and raffia for  $\varnothing$  over 16 mm. Same range but in chrome plated condition can be packed in individual cardboard tubes.
- Customized packaging solutions - wooden cases and wooden Euro-pallets.
- Aluminum foil vacuum bags extra protection of bundles for overseas transportation.

### STORAGE AND HANDLING RECOMMENDATIONS

- Keep the products stored in dry and covered spaces.
- Whenever possible, please use the crane to load or unload the bundles; when you use the fork lift, please avoid the direct contact of the forks with the products.
- Always lift the bundles using textile slings. Do not use metal slings during handling of bundles.
- Always use gloves when handling the shafts.
- Always keep dry the cardboard tubes that protect the chromed products.



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