

# NIMET

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INNOVATION  
LIVES

WP

## DEEP CASE HARDENED AND GROUND SHAFTS FOR BALL SCREWS

TECHNICAL SHEET

NI-WP-TS-2020

# NI-SERIES

WP

## DEEP CASE HARDENED AND GROUND SHAFTS FOR BALL SCREWS

### STEEL GRADES CORRESPONDENTS

EN	Werkstoff	DIN	B.S.	UNI	JIS	GOST	AISI / SAE / ASTM
C53	1.1213	Cf53 (C53G)	070M55	C53	S50C	50	1050
C55E	1.1203	Ck55	060A57, 070M55	C55	S55C, S55CM	55	1055
42CrMo4	1.7725	42CrMo4	708M40	42CrMo4	SCM440(H)	35KHM	4140
50CrMo4	1.7228	50CrMo4	708M50	-	SCM445(H)	-	4150, 4147

### CHEMICAL COMPOSITION - IN % BY WEIGHT

Steel grade	C	Si	Mn	P	S	Cr	Ni	Mo	V
Cf53	0.50 ÷ 0.57	0.15 ÷ 0.35	0.40 ÷ 0.70	max. 0.025	max. 0.035	-	-	-	-
C55E	0.52 ÷ 0.60	0.10 ÷ 0.40	0.60 ÷ 0.90	max. 0.025	max. 0.035	max. 0.4	max. 0.4	max. 0.1	-
42CrMo4	0.38 ÷ 0.45	max. 0.4	0.60 ÷ 0.90	max. 0.025	max. 0.035	0.90 ÷ 1.20	-	0.15 ÷ 0.30	-
50CrMo4	0.46 ÷ 0.54	max. 0.4	0.50 ÷ 0.80	max. 0.025	max. 0.035	0.90 ÷ 1.20	-	0.15 ÷ 0.30	-

### MECHANICAL PROPERTIES

Steel grade	Diameter	Tensile strength	Yield strength	Elongation	Hardness	Norm
	Ø mm	R <sub>m</sub> N/mm <sup>2</sup>	R <sub>p0.2</sub> N/mm <sup>2</sup>	A <sub>5</sub> %	Brinell HB	
Cf53+N	Ø ≤ 16	610 - 760	min. 340	min. 16	min. 183	DIN 17212
	16 < Ø ≤ 100	610 - 760	min. 340	min. 16	-	
C55E+N	Ø ≤ 16	min. 680	min. 370	min. 11	min. 208	EN ISO 683-1
	16 < Ø ≤ 100	min. 640	min. 330	min. 12	min. 198	
42CrMo4+QT	Ø ≤ 16	1100 - 1300	min. 900	min. 10	298 - 359	EN ISO 683-2
	16 < Ø ≤ 40	1000 - 1200	min. 750	min. 11	298 - 359	
50CrMo4+QT	40 < Ø ≤ 100	900 - 1100	min. 650	min. 12	271 - 331	EN ISO 683-2
	Ø ≤ 16	1100 - 1300	min. 900	min. 9	330 - 380	
50CrMo4+QT	16 < Ø ≤ 40	1000 - 1200	min. 780	min. 10	325 - 360	EN ISO 683-2
	40 < Ø ≤ 100	900 - 1100	min. 700	min. 12	265 - 330	

N=normalized, QT=quenched and tempered

### HARDENABILITY

Steel grade	Surface hardness HRC min.
Cf53	60
C55E	60
42CrMo4+QT	60
50CrMo4+QT	60

QT = quenched and tempered

NI  
SERIES

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



## DEEP CASE HARDENED AND GROUND SHAFTS FOR BALL SCREWS

Steel grades Cf53, C55E, 42CrMo4+QT, 50CrMo4+QT

Surface hardness min. 60 HRC

Surface roughness Ra max. 0.25 µm

Length tolerance ±200 mm

Surface hardening depth, SHD according to EN ISO 15787

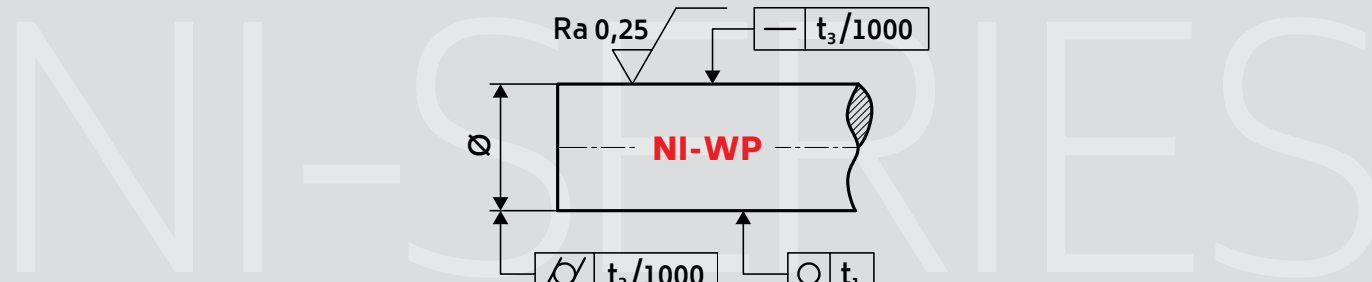
On request special lengths, tolerances and dimensions

### NI-WP/METRIC

Shaft Diameter Ø	Weight	Series	Standard length	Surface hardening depth	Roundness (circularity)	Parallelism (cylindricity)	Straightness	Standard tolerance
				SHD	t <sub>1</sub>	t <sub>2</sub>	t <sub>3</sub>	ISO h6
mm	kg/m		mm	min. mm	max. µm	max. µm	max. mm/m	µm
20	2.46	<b>NI-WP 20</b>	6000	4.0	6	9	0.3	0/-13
25	3.85	<b>NI-WP 25</b>	6000	4.0	6	9	0.3	0/-13
30	5.55	<b>NI-WP 30</b>	6000	5.0	6	9	0.3	0/-13
35	7.55	<b>NI-WP 35</b>	6000	6.0	7	11	0.3	0/-16
40	9.86	<b>NI-WP 40</b>	6000	6.0	7	11	0.3	0/-16
45	12.48	<b>NI-WP 45</b>	6000	6.0	7	11	0.3	0/-16
50	15.41	<b>NI-WP 50</b>	6000	6.0	7	11	0.3	0/-16
60	22.18	<b>NI-WP 60</b>	6000	6.5	8	13	0.3	0/-19
70	30.19	<b>NI-WP 70</b>	6000	6.5	8	13	0.3	0/-19
80	39.44	<b>NI-WP 80</b>	6000	6.5	8	13	0.3	0/-19
90	49.91	<b>NI-WP 90</b>	6000	6.5	10	15	0.4	0/-22
100	61.62	<b>NI-WP 100</b>	6000	6.5	10	15	0.4	0/-22

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



Steel grades Cf53, C55E, 42CrMo4+QT, 50CrMo4+QT

Surface hardness min. 60 HRC

Surface roughness Ra max. 0.25 µm

Length tolerance ±200 mm

Surface hardening depth, SHD according to EN ISO 15787

On request special lengths, tolerances and dimensions

## NI-WP / IMPERIAL

Shaft Diameter Ø		Weight	Series	Standard length	Surface hardening depth SHD	Roundness (circularity) t <sub>1</sub>	Parallelism (cylindricity) t <sub>2</sub>	Straightness t <sub>3</sub>	Standard tolerance Class "L"
mm	inch	kg/m		inch	min. inch	max. inch	max. inch	max. in/ft	inch
19.05	0.75	2.24	<b>NI-WP 19.05</b>	236.22	0.157	0.00024	0.00035	0.00360	-0.0005 / -0.001
25.4	1	3.98	<b>NI-WP 25.4</b>	236.22	0.157	0.00024	0.00035	0.00360	-0.0005 / -0.001
31.75	1.25	6.21	<b>NI-WP 31.75</b>	236.22	0.197	0.00024	0.00035	0.00360	-0.0005 / -0.001
34.925	1.375	7.52	<b>NI-WP 34.925</b>	236.22	0.236	0.00028	0.00043	0.00360	-0.0005 / -0.001
38.1	1.5	8.94	<b>NI-WP 38.1</b>	236.22	0.236	0.00028	0.00043	0.00360	-0.0006 / -0.0011
44.45	1.75	12.17	<b>NI-WP 44.45</b>	236.22	0.236	0.00028	0.00043	0.00360	-0.0006 / -0.0011
50.8	2	15.9	<b>NI-WP 50.8</b>	236.22	0.236	0.00028	0.00043	0.00360	-0.0006 / -0.0013
57.15	2.25	20.13	<b>NI-WP 57.15</b>	236.22	0.256	0.00031	0.00051	0.00360	-0.0007 / -0.0015
63.5	2.5	24.85	<b>NI-WP 63.5</b>	236.22	0.256	0.00031	0.00051	0.00360	-0.0007 / -0.0015
76.2	3	35.78	<b>NI-WP 76.2</b>	236.22	0.256	0.00031	0.00051	0.00360	-0.0008 / -0.0017
88.9	3.5	48.70	<b>NI-WP 88.9</b>	236.22	0.256	0.00039	0.00059	0.00480	-0.0010 / -0.0020
101.6	4	63.61	<b>NI-WP 101.6</b>	236.22	0.256	0.00039	0.00059	0.00480	-0.0012 / -0.0024

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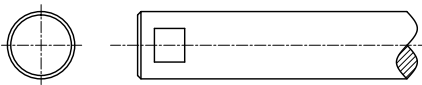
The minimum guaranteed value of the surface hardness varies depending the steel grade.

# NI-SERIES

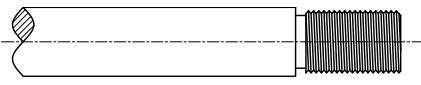


## DEEP CASE HARDENED AND GROUND SHAFTS FOR BALL SCREWS

CROSSWISE GROOVE



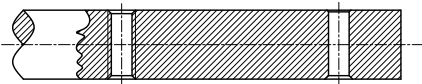
OUTSIDE DIAMETER THREAD



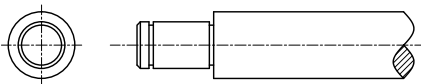
END FOR MOUNT WITH CLEVIS  
CLAMP



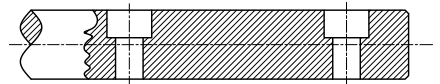
TAPPED OR DRILLED HOLES  
RADIALLY THROUGH SHAFT



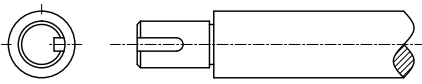
GROOVES FOR SNAP RING



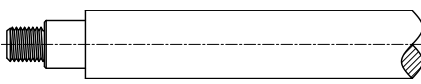
RADIAL DRILLING HOLES, BORED



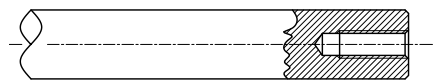
REDUCED DIAMETER WITH/  
WITHOUT FEATHER KEYWAY



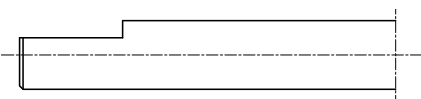
REDUCED DIAMETER WITH  
THREADED END



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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