Series	Description
NI-WHV *metric and imperial sizes*	Induction hardened and hard chrome plated hollow linear shafts steel grade: C60E / OD: Ø16 - 50 mm / Ø5/8" - 2"

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	1064

Chemical composition - % by weight

Steel grade	Norm	C	Si	Mn	P	S	Cr	Ni.	Mo	V
C60E	EN 10083-2	0.57 ÷ 0.65	max. 0.4	0.60 ÷ 0.90	max. 0.030	max. 0.035	max. 0.4	max. 0.4	max. 0.1	-

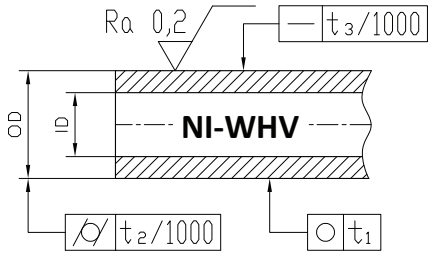
Mechanical properties for hollow shafts

Steel grade	Yield strength $R_{p\,0.2}$ N/mm²	Tensile strength R_m N/mm²	Elongation A_5 %
C60+NBK	min. 390	720 - 900	min. 13

NBK = normalized in a protective atmosphere.

Induction Hardened and Hard Chrome Plated Hollow Linear Shafts

steel grade: C60E (alternative C55E)



Outside Diameter OD	Inside Diameter ID	Weight	Series	Standard length	Surface hardening depth SHD	Roundness (circularity) t1 max.	Parallelism (cylindricity) t2 max.	Straightness t3 max.	Standard tolerance ISO h7
mm	mm	kg/m		mm	mm	µm	µm	mm/m	µm
16	7	1.28	NI-WHV 16x7	6000	0.4 + 0.4	8	12	0.20	0 / -18
20	14	1.25	NI-WHV 20x14	6000	0.6 + 0.5	9	12	0.20	0 / -21
25	15	2.47	NI-WHV 25x15	6000	0.8 + 0.8	9	12	0.15	0 / -21
30	18	3.55	NI-WHV 30x18	6000	0.9 + 0.8	9	12	0.15	0 / -21
40	28	5.03	NI-WHV 40x28	6000	1.2 + 1.1	11	15	0.15	0 / -25
40	26	5.70	NI-WHV 40x26	6000	1.2 + 1.1	11	15	0.15	0 / -25
50	30	9.87	NI-WHV 50x30	6000	1.5 + 1.2	11	15	0.15	0 / -25

Outside Diameter OD		Inside Diameter ID		Weight	Series	Standard length	Surface hardening depth SHD	Roundness (circularity) t1 max.	Parallelism (cylindricity) t2 max.	Straightness t3 max.	Standard tolerance Class "L"
mm	inch	mm	inch	kg/m		inch	inch	inch	inch	in/ft	inch
15.875	5/8	6.35	0.25	1.30	NI-WHV 15.875x6.35	236.22	0.024 + 0.020	0.000315	0.000472	0.00246	-0.0005 / -0.001
19.05	3/4	11.125	0.438	1.48	NI-WHV 19.05x11.125	236.22	0.035 + 0.032	0.000354	0.000472	0.00246	-0.0005 / -0.001
25.4	1	15.494	0.61	2.50	NI-WHV25.4x15.494	236.22	0.035 + 0.032	0.000354	0.000472	0.00185	-0.0005 / -0.001
31.75	1¼	18.288	0.72	4.15	NI-WHV 31.75x18.288	236.22	0.035 + 0.032	0.000354	0.000472	0.00185	-0.0005 / -0.001
38.1	1½	22.606	0.89	5.80	NI-WHV 38.1x22.606	236.22	0.047 + 0.043	0.000433	0.000591	0.00185	-0.0006 / -0.0011
50.8	2	31.75	1.25	9.69	NI-WHV 50.8x31.75	236.22	0.059 + 0.043	0.000433	0.000591	0.00185	-0.0006 / -0.0013

- Surface hardness: 62±2 HRC
- Surface roughness: Ra: max. 0.20 µm
- Chrome thickness: 12±5 µm
- Chrome layer microhardness: 900 - 1100 HV0.1
- Length tolerance: ±200 mm
- Surface hardening depth, SHD: according to EN ISO 15787
- On request: special lengths, tolerances and dimensions

- *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 between the steel grade.*