

Induction hardened and ground stainless steel linear shafts

Ni-WRA

X90CrMoV18 (W1.4112)

Dimensions

Ø6 - 50 mm

Surface hardness

57±2 HRC

Surface roughness

Ra max. 0.20 µm

Standard indicative length

6400 (-0/+200) mm
other, on request

Surface hardening depth, SHD

according to EN ISO 15787

On request

special lengths, tolerances and dimensions

Chemical composition - in % by weight

Steel grade	C	Si	Mn	P	S	Cr	Ni	Mo	V
X90CrMoV18	0.85 ÷ 0.95	max. 1.0	max. 1.0	max. 0.040	max. 0.030	17.0 ÷ 19.0	-	0.90 ÷ 1.30	0.07 ÷ 0.12

Mechanical properties

Steel grade	Diameter Ø mm	Tensile strength R _m N/mm ²	Yield strength R _{p0.2} N/mm ²	Elongation A ₅ %	Hardness Brinell HB
X90CrMoV18+A	6 < Ø ≤ 50	min. 738	min. 427	min. 9	max. 285

A=annealed

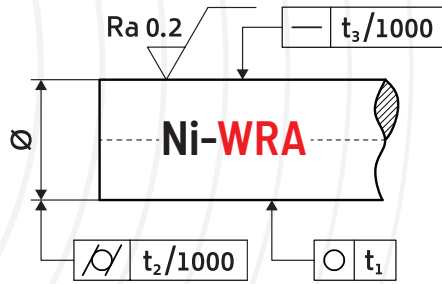
Steel grades correspondences

EN	Werkstoff	DIN	B.S.	UNI	JIS	GOST	AISI / SAE / ASTM
X90CrMoV18	1.4112	X90CrMoV18	-	-	-	-	440B

NI-WRA / Metric

Series	Shaft diameter Ø mm	Surface hardening depth SHD (min. + tol.) mm	Roundness t ₁ max. µm	Parallelism t ₂ max. µm	Straightness t ₃ max. mm/m	Standard tolerance ISO h6 µm
NI-WRA 6	6	0.4 + 0.9	4	6	0.25	0 / -8
NI-WRA 8	8	0.4 + 0.9	4	6	0.20	0 / -9
NI-WRA 10	10	0.4 + 0.9	4	6	0.20	0 / -9
NI-WRA 12	12	0.6 + 0.9	5	8	0.20	0 / -11
NI-WRA 14	14	0.6 + 0.9	5	8	0.20	0 / -11
NI-WRA 15	15	0.6 + 0.9	5	8	0.20	0 / -11
NI-WRA 16	16	0.6 + 0.9	5	8	0.20	0 / -11
NI-WRA 20	20	0.8 + 0.8	6	9	0.20	0 / -13
NI-WRA 25	25	0.9 + 0.8	6	9	0.15	0 / -13
NI-WRA 30	30	0.9 + 0.8	6	9	0.15	0 / -13
NI-WRA 35	35	1.5 + 1.3	7	11	0.15	0 / -16
NI-WRA 40	40	1.5 + 1.3	7	11	0.15	0 / -16
NI-WRA 50	50	1.5 + 1.3	7	11	0.15	0 / -16

WRA



Dimensions

Ø1/4" - 2"

Surface hardness

57±2 HRC

Surface roughness

Ra max. 0.20 µm

Standard indicative length

6400 (-0/+200) mm / 251.96 (-0/+8)"
other, on request

Surface hardening depth, SHD

according to EN ISO 15787

On request

special lengths, tolerances and dimensions

Chemical composition - in % by weight

Steel grade	C	Si	Mn	P	S	Cr	Ni	Mo	V
X90CrMoV18	0.85 ÷ 0.95	max. 1.0	max. 1.0	max. 0.040	max. 0.030	17.0 ÷ 19.0	-	0.90 ÷ 1.30	0.07 ÷ 0.12

Mechanical properties

Steel grade	Diameter Ø inch	Tensile strength R _m N/mm ²	Yield strength R _{p0.2} N/mm ²	Elongation A ₅ %	Hardness Brinell HB
X90CrMoV18+A	0.25 < Ø ≤ 2	min. 738	min. 427	min. 9	max. 285

A=annealed

Steel grades correspondences

EN	Werkstoff	DIN	B.S.	UNI	JIS	GOST	AISI / SAE / ASTM
X90CrMoV18	1.4112	X90CrMoV18	-	-	-	-	440B

NI-WRA / Imperial

Series	Shaft diameter Ø		Surface hardening depth SHD (min. + tol.) inch	Roundness t ₁ max. inch	Parallelism t ₂ max. inch	Straightness t ₃ max. inch/ft	Standard tolerance Class "L" inch
	mm	inch					
NI-WRA 6.35	6.35	0.25	0.016 + 0.035	0.00016	0.00024	0.00308	-0.0005 / -0.001
NI-WRA 9.525	9.525	0.375	0.016 + 0.035	0.00016	0.00024	0.00246	-0.0005 / -0.001
NI-WRA 12.7	12.7	0.5	0.024 + 0.035	0.00020	0.00031	0.00246	-0.0005 / -0.001
NI-WRA 15.875	15.875	0.625	0.024 + 0.035	0.00020	0.00031	0.00246	-0.0005 / -0.001
NI-WRA 19.05	19.05	0.75	0.032 + 0.032	0.00024	0.00035	0.00246	-0.0005 / -0.001
NI-WRA 25.4	25.4	1	0.035 + 0.032	0.00024	0.00035	0.00185	-0.0005 / -0.001
NI-WRA 31.75	31.75	1.25	0.059 + 0.051	0.00028	0.00043	0.00185	-0.0005 / -0.001
NI-WRA 38.1	38.1	1.5	0.059 + 0.051	0.00028	0.00043	0.00185	-0.0006 / -0.0011
NI-WRA 50.8	50.8	2	0.087 + 0.063	0.00028	0.00043	0.00185	-0.0006 / -0.0013