

## LINEAR SHAFTS / *Barra Lineare*

### **A-LINE**

Ground linear shaft, no chromium  
*/ Lineare rettificato non cromato*

### **A- LINE 10**

Chrome layer thickness: 10 µm min  
*/ Spessore dello strato di cromo: 10 µm min*

### **A- LINE 25 (upon request)**

Chrome layer thickness: 25 µm min  
*/ Spessore dello strato di cromo: 25 µm min*

### **W / WZ**

C53 / C45 ground and induction hardened linear shaft  
*Barra lineare in acciaio al carbonio C53 / C45 rettificata e temprata*

### **WV / WVZ**

C53 / C45 ground, induction hardened and chrome plated linear shaft  
*Barra lineare in acciaio al carbonio C53 / C45 rettificata, temprata e cromata*

### **WRA / WRAZ**

A440B stainless steel ground and induction hardened linear shaft  
*Barra lineare in acciaio inossidabile A440B rettificata e temprata*

### **WRB / WRBZ**

X46 stainless steel ground and induction hardened linear shaft  
*Barra lineare in acciaio inossidabile X46 rettificata e temprata*

# LINEAR SHAFTS / Barra Lineare

## STEEL GRADE CORRESPONDENCE / CORRISPONDENZE ACCIAIO

ASO CODE / CODICE ASO	EN	BS	W	AFNOR	ASTM
C53	Cf53	070MS	1.1213	XC48TS	1024
C45	C45E	1.1191	080N45	XC45	1045
C60	C60E	080A62	1.1221	1C60	1060
A440B	X90CrMoV18	-	1.4112	-	440B
X46	X46Cr13	-	1.4034	Z44Cr13	420C

## CHEMICAL COMPOSITION IN % BY WEIGHT

STEEL GRADE / ACCIAIO	C	Si	Mn	Pmax	S	Cr	Ni	Mo	V
Cf53	0.50÷0.57	0.15÷0.535	0.40÷0.70	0.025	max. 0.035	-	-	-	-
C45E	0.42÷0.50	max. 0.40	0.50-0.80	max. 0.030	max. 0.035	max. 0.40	max. 0.10	max. 0.40	-
C60E	0.57÷0.65	max. 0.40	0.60÷0.90	0.030	max. 0.035	max. 0.40	max. 0.40	max. 0.10	-
X90CrMoV18	0.85÷0.95	max. 1.00	max. 1.00	0.040	0.015÷0.030	17.00÷19.00	-	0.90÷1.30	0.07÷0.12
X46Cr13	0.43÷0.50	max. 1.00	max. 1.00	0.040	max. 0.030	12.00÷14.00	-	-	-

## MECHANICAL PROPERTIES

Product type / Tipo prodotto	Steel Grade / Acciaio	Dim.range Gamma (mm)	Delivery Condition / Trattamento	Tensile Strength / Carico di Rottura Rm [Mpa] (Psi)	Yield Point / Snervamento Rp0,2 [Mpa]	Elongation / Allungamento A [%]	Surface Hardness / Durezza superficiale HRC
Shaft / Barra	Cf53	4≤Ø≤10	+C +IH	785÷1120 (114000÷162000)	≥610 (88500)	≥5	62±2
		10<Ø≤16		750÷1100 (109000÷159000)	≥535 (77500)	≥5	
		16<Ø<20		710÷1075 (103000÷156000)	≥460 (66500)	≥6	
		20≤Ø≤100	+IH	610÷760 (88500÷110000)	≥340 (49000)	≥16	
	C45E	Ø>100	+IH	≥560 (81000)	≥275 (40000)	≥16	min. 55
	X90CrMoV18	Ø≤60	+A +IH	-	-	-	56±3
	X46Cr13	Ø≤60	+A +IH	≤910 (132000)	-	-	55±3
Hollow shaft / Tubo	C60E	Ø≤16	+N +IH	≥720 (104000)	≥390 (56500)	≥11	62±2
		16<Ø≤40		≥620 (90000)	≥380 (55000)	≥13	
		40<Ø≤80		≥570 (82500)	≥360 (52000)	≥14	

## LENGTHS / LUNGHEZZE

Linear Shafts are supplied in random lengths 6000 - 7000 mm  
 Le barre lineari sono forniti in lunghezze commerciali 6000 - 7000 mm

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## DIMENSIONAL RANGE / GAMMA DIMENSIONALE

STANDARD TOLERANCE GROUND LINEAR SHAFT / TOLLERANZA STANDARD ASTE DI SCORRIMENTO TEMPRATE (µm)	STANDARD TOLERANCE GROUND LINEAR SHAFT / TOLLERANZA STANDARD ASTE DI SCORRIMENTO TEMPRATE (inch)	ROUNDNESS / ROTONDITÀ t1 (µm)	PARALLELISM / PARALLELLISMO t2 (µm)	STANDARD TOLERANCE CHROME LINEAR SHAFT / TOLLERANZA STANDARD ASTE DI SCORRIMENTO CROMATE (µm)	STANDARD TOLERANCE CHROME LINEAR SHAFT / TOLLERANZA STANDARD ASTE DI SCORRIMENTO CROMATE (inch)	ROUNDNESS / ROTONDITÀ (CIRCULAR) t1 (µm)	PARALLELISM / PARALLELLISMO (CYLINDRIC) t2 (µm)
0/-8		4	6	0/-12		6	10
0/-8		4	6	0/-12		6	10
	-0.0005/0.001	4	6		0/-0.000591	6	10
0/-9		4	6	0/-15		6	10
	-0.0005/0.001	4	6		0/-0.000591	6	10
0/-9		4	6	0/-15		6	10
0/-11		5	8	0/-18		8	12
	-0.0005/0.001	5	8		0/-0.000709	8	12
0/-11		5	8	0/-18		8	12
0/-11		5	8	0/-18		8	12
0/-11		5	8	0/-18		8	12
	-0.0005/0.001	5	8		0/-0.000709	8	12
0/-11		5	8	0/-18		8	12
0/-11		5	8	0/-18		8	12
	-0.0005/0.001	6	9		0/-0.000827	9	13
0/-13		6	9	0/-21		9	13
0/-13		6	9	0/-21		9	13
0/-13		6	9	0/-21		9	13
0/-13		6	9	0/-21		9	13
	-0.0005/0.001	6	9		0/-0.000827	9	13
0/-13		6	9	0/-21		9	13
0/-13		6	9	0/-21		9	13
	-0.0005/0.001	7	11		0/-0.000984	11	14
0/-16		7	11	0/-25		11	14
0/-16		7	11	0/-25		11	14
	-0.0006/0.0011	7	11		0/-0.000984	11	14
0/-16		7	11	0/-25		11	14
0/-16		7	11	0/-25		11	14
0/-16		7	11	0/-25		11	14
	-0.0006/0.0013	8	13		0/-0.001181	12	15
0/-19		8	13	0/-30		12	15
	-0.0007/-0.0015	8	13		0/-0.001181	12	15
0/-19		8	13	0/-30		12	15
	-0.0007/-0.0015	8	13		0/-0.001181	12	15
0/-19		8	13	0/-30		12	15
0/-19		8	13	0/-30		12	15
0/-19		8	13	0/-30		12	15
	-0.0008/-0.0017	8	13		0/-0.001181	12	15
0/-19		8	13	0/-30		12	15
0/-22		9	16	0/-35		14	17
0/-22		9	16	0/-35		14	17
0/-22		10	16	0/-35		14	17