

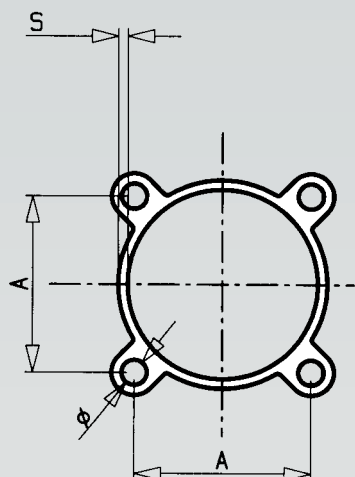
# PNEUMATIKA



**METRA**

*People.Aluminium*

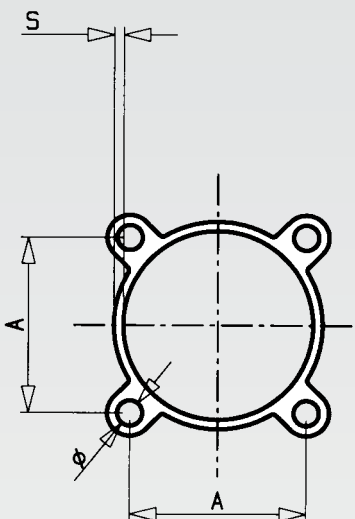




## CALIBRATED "ISO" CYLINDERS, METRIC THREAD WITH ROLLING

Alesaggi <i>Bores</i>	mm	32	40	50	63	80	100	125	160
Tolleranze sugli alesaggi <i>Tolerances on boring</i>	mm	+0.25 -0	+0.25 -0	+0.25 -0	+0.35 -0	+0.35 -0	+0.35 -0	+0.6 -0	+0.7 -0
Sigla profilato <i>Profile code</i>		R5219	R5220	R5221	R5222	R5223	R5224	R5235	R5468
Tolleranze sugli alesaggi <i>Tolerances on boring</i>	mm	+0.16 -0	+0.16 -0	+0.16 -0	+0.19 -0	+0.22 -0	+0.35 -0	+0.6 -0	+0.7 -0
Sigla profilato <i>Profile code</i>		R8082	R8083	R8084	R8085	R8086	R5224	R5235	R5468
Interasse "A" <i>Centre-to-centre "A"</i>	mm	32.5	38	46.5	56.5	72	89	110	140
Spessore minimo "S" <i>Minimum thickness "S"</i>	mm	2	2.5	2.5	2.5	3	3	3.5	5
Ø fissaggio testate <i>Ø head fastening</i>	mm	5.4	5.4	7.4	7.4	9.25	9.25	10.5	17.5
Peso <i>Weight</i>	Kg/ml	1.378	1.628	2.249	2.600	3.661	4.919	7.084	12.263

The diameter of the 4 holes are predisposed for metric threading with rolling or using self-threading screws.



## CALIBRATED "ISO" CYLINDERS, TRADITIONAL METRIC THREAD

Alesaggi <i>Bores</i>	mm	32	40	50	63	80	100	125	160
Tolleranze sugli alesaggi <i>Tolerances on boring</i>	mm	+0.25 -0	+0.25 -0	+0.25 -0	+0.35 -0	+0.35 -0	+0.35 -0	+0.6 -0	+0.7 -0
Sigla profilato <i>Profile code</i>		R5229	R5230	R5231	R5232	R5233	R5234	R5235	R5468
Tolleranze sugli alesaggi <i>Tolerances on boring</i>	mm	+0.16 -0	+0.16 -0	+0.16 -0	+0.19 -0	+0.22 -0	+0.35 -0	+0.6 -0	+0.7 -0
Sigla profilato <i>Profile code</i>		R8077	R8078	R8079	R8080	R8081	R5234	R5235	R5468
Interasse "A" <i>Centre-to-centre "A"</i>	mm	32.5	38	46.5	56.5	72	89	110	140
Spessore minimo "S" <i>Minimum thickness "S"</i>	mm	2	2.5	2.5	2.5	3	3	3.5	5
Ø fissaggio testate <i>Ø head fastening</i>	mm	5.35	5.35	6.65	6.65	8.75	8.75	10.5	17.5
Peso <i>Weight</i>	Kg/ml	1.323	1.577	2.077	2.561	3.629	4.911	7.084	12.263

The diameters of the 4 holes are predisposed for traditional metric threading.

**D**al 1962 la Metra produce profilati in alluminio.

L'esperienza nel campo degli estrusi a disegno maturata durante la progettazione delle 18000 matrici fino ad oggi realizzate, ha consentito alla Metra di studiare prodotti specifici per la pneumatica ad altissimo contenuto tecnologico.

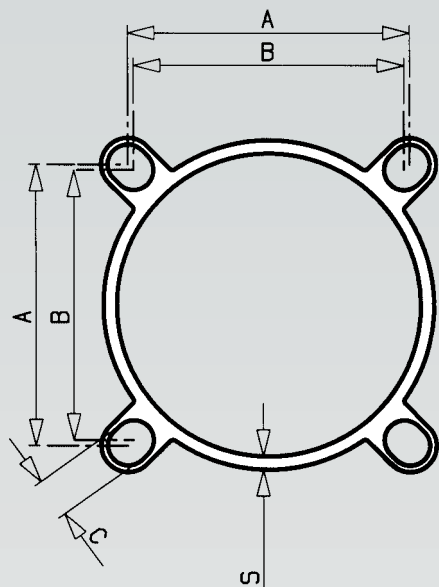
La combinazione di una sofisticata tecnica di

estrusione con una successiva lavorazione eseguita nella parte interna della camicia del cilindro, ha permesso di ottenere eccezionali prestazioni.

L'ossidazione interna ed esterna che viene realizzata nello stabilimento della Metra, garantisce inoltre eccellenti standard qualitativi nel rispetto delle più severe normative internazionali.

**M**etra has been producing aluminium profiles since 1962. The experience in the field of customised extruded products gained while designing the 18000 matrices to date, has allowed Metra to design specific products for pneumatics with high technological content.

The combination of a sophisticated extrusion technique, with subsequent processing performed in the inner part of the cylinder liner, ensures exceptional performance. The internal and external oxidation process carried out in the Metra facilities also ensures excellent quality standards, in compliance with the most stringent international standards.

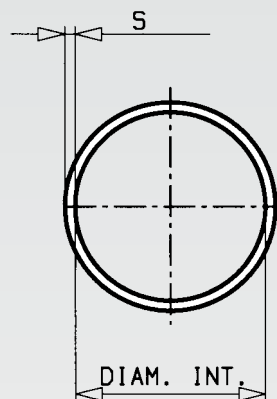


## CALIBRATED "ISO" CYLINDERS WITH SLOTS

Alesaggi Bores	mm	32	40	50	63	80	100	125
Tolleranze sugli alesaggi Tolerances on boring	mm	+0.25 -0	+0.25 -0	+0.25 -0	+0.35 -0	+0.35 -0	+0.45 -0	+0.6 -0
Sigla profilato Profile code		R5239	R5240	R5241	R5242	R5243	R5244	R5486
Tolleranze sugli alesaggi Tolerances on boring	mm	33.02	39.95	48.93	59.04	74.25	90.01	110
Sigla profilato Profile code	mm	32.53	38.04	46.53	56.57	71.27	89.02	110
Interasse "A" Centre-to-centre "A"	mm	2	2.5	2.5	2.5	3	3	3.5
"C" fissaggio testate C head fastening	mm	6.5	6.5	8.5	8.5	10.5	10.5	17.5
Peso Weight	Kg/ml	1.267	1.544	1.960	2.322	3.238	4.375	7.171

## CALIBRATED ROUND PIPES

H11					H12-H13				
CODE	Ø INT.	TOL.	Ø EXT. FOR TH.	WEIGHT	CODE	Ø INT.	TOL.	Ø EXT. FOR TH.	WEIGHT
R 7545	20	H11 +0,13/-0	25x2,5	0,478	R 6212	27	H12-H13 +0,25/-0	30x1,5	0,361
R 7144	25	H11 +0,13/-0	30x2,5	0,583	R 5647	32	H12 +0,25/-0	36x2	0,579
R 8585	26	H11 +0,13/-0	31x2,5	0,605	R 6213	35	H12 +0,25/-0	40x2,5	0,795
R 8711	28	H11 +0,13/-0	34x3	0,788	R 5362	40	H12 +0,25/-0	45x2,5	0,902
R 9195	30	H11 +0,16/-0	35x2,5	0,689	R 5363	50	H12 +0,25/-0	55x2,5	1,112
R 8087	32	H11 +0,16/-0	36x2	0,589	R 6214	58	H11-H12 +0,25/-0	63x2,5	1,283
R 7273	32	H11 +0,16/-0	38x3	0,891	R 5364	63	H12-H13 +0,35/-0	68x2,5	1,388
R 8154	36	H11 +0,16/-0	40x2	0,645	R 6215	70	H12-H13 +0,35/-0	75x2,5	1,537
R 9311	37,2	H11 +0,16/-0	43,2x3	1,023	R 7455	75	H12-H13 +0,35/-0	80x2,5	1,537
R 8216	40	H11 +0,16/-0	44x2	0,716	R 5498	80	H12-H13 +0,35/-0	86x3	2,144
R 8088	40	H11 +0,16/-0	45x2,5	0,902	R 6216	85	H12 +0,35/-0	90x2,5	1,855
R 7145	40	H11 +0,16/-0	46x3	1,096	R 6217	100	H12 +0,35/-0	105x2,5	2,173
R 9678	40	H11 +0,16/-0	47x3,5	1,291	R 5499	100	H12 +0,35/-0	106x3	2,622
R 8268	42	H11 +0,16/-0	49x3,5	1,35	R 5500	110	H12 +0,35/-0	116x3	2,875
R 7683	45	H11 +0,16/-0	50x2,5	1,007	R 5648	125	H12-H13 +0,6/-0	132x3,5	3,815
R 7776	50	H11 +0,16/-0	54x2	0,883	R 9313	125	H13-H14 +0,7/-0	135x5	5,513
R 8089	50	H11 +0,16/-0	55x2,5	1,112	R 9312	150	H13-H14 +0,7/-0	160x,5	6,575
R 7364	50	H11 +0,19/-0	56x3	1,35	R 7197	160	H13-H14 +0,7/-0	167x3,5	4,854
R 7264	55	H11 +0,19/-0	60x2,5	1,217	R 5466	160	H13-H14 +0,7/-0	170x5	6,998
R 7204	60	H11 +0,19/-0	65x2,5	1,326	R 5467	200	H14-H15 +1,5/-0	210x5	8,695
R 8155	60	H11 +0,19/-0	67x3,5	1,885					
R 8090	63	H11 +0,19/-0	68x2,5	1,388					
R 7597	63	H11 +0,19/-0	69x3	1,679					
R 8156	63	H11 +0,19/-0	73x5	2,884					
R 7598	70	H11 +0,19/-0	76x3	1,857					
R 7241	80	H11 +0,22/-0	85x2,5	1,749					
R 8091	80	H11 +0,22/-0	86x3	2,114					
R 7868	80	H11 +0,22/-0	87x3,5	2,479					
R 9555	80	H11 +0,22/-0	88x4	2,851					

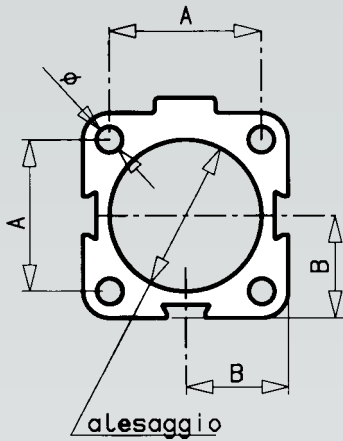


Tutto il materiale viene attentamente controllato e verificato nel laboratorio d'analisi profili, dotato di moderne attrezzature elettroniche. Sistematicamente vengono verificate la rotondità della camicia e la rugosità della superficie interna con una esplorazione a 360°, secondo le

norme DIN 4786. Combinazione chimica, dimensioni dei cilindri, durezza dell'ossido e caratteristiche meccaniche sono statisticamente controllati mediante un proiettore profili e specifiche analisi di laboratorio.

All material is carefully checked and tested in the profile analysis laboratory, equipped with modern electronic equipment. The roundness of the liner and the roughness of the inner surface are checked systematically with a 360° inspection, according to DIN 4786 standards.

Chemical combination, cylinder dimensions, hardness of the oxide and mechanical characteristics are checked statistically by means of a profile projector and specific laboratory analyses.

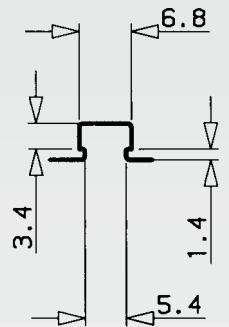
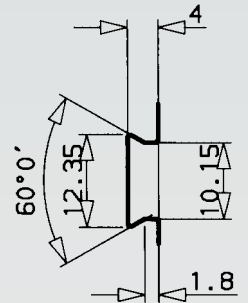
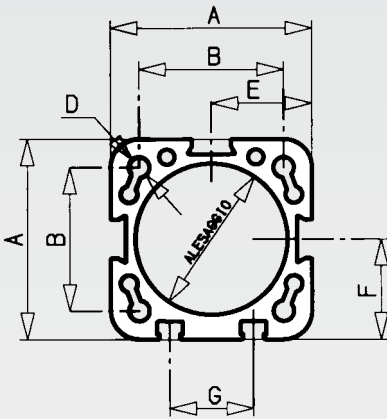
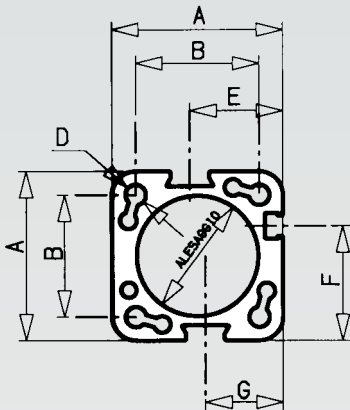


## CALIBRATED "SHORT STROKE" CYLINDERS

Alesaggi <i>Bores</i>	mm	32	40	50	63	80	100
Tolleranze sugli alesaggi <i>Tolerances on boring</i>	mm	+0.25 -0	+0.25 -0	+0.25 -0	+0.35 -0	+0.35 -0	+0.45 -0
Sigla profilato <i>Profile code</i>		R9007	R9008	R9009	R9010	R9011	R9012
Interasse "A" <i>Centre-to-centre "A"</i>	mm	34	40	50	60	77	94
Interasse cava sensore "B" <i>Sensor slot centre-to-centre "B"</i>	mm	23	27	32.5	39.5	49	59
$\emptyset$ fissaggio testate <i><math>\emptyset</math> head fastening</i>	mm	5	6.75	6.75	8.5	10.25	10.25
Peso <i>Weight</i>	Kg/ml	3.09	3.85	5.61	7.67	11.33	15.35

## CALIBRATED "COMPACT" CYLINDERS

Alesaggi <i>Bores</i>	mm	32	40	50	63
Tolleranze sugli alesaggi <i>Tolerances on boring</i>	mm	+0.16 -0	+0.16 -0	+0.16 -0	+0.19 -0
Sigla profilato <i>Profile code</i>		R9331	R9332	R9333	R9334
Quota "A" <i>Dimension "A"</i>	mm	45	53	63	76.5
Interasse "B" <i>Centre-to-centre "B"</i>	mm	32,5	38	46.5	56.5
Interasse cava sensore "E" <i>Sensor slot centre-to-centre "E"</i>	mm	24,5	26.5	31.5	38.25
Interasse cava sensore "F" <i>Sensor slot centre-to-centre "F"</i>	mm	30.5	26.5	31.5	38.25
Interasse cava sensore "G" <i>Sensor slot centre-to-centre "G"</i>	mm	20.5	22	24	29
$\emptyset$ fissaggio testate <i><math>\emptyset</math> head fastening</i>	mm	5.4	5.4	7.4	7.4
Peso <i>Weight</i>	Kg/ml	2.37	2.98	3.82	5.68



Legg - Alloy: EN AW 6060 stato fisico T5

Composizione chimica - Chemical composition:

Si	Fe	Cu	Mn	Mg	Zn	Ti	Cr	Al
0,3÷0,6	0,1÷0,3	0,1	0,1	0,35÷0,6	0,15	0,1	0,05	resto

Caratteristiche meccaniche indicative - Indicative mechanical characteristics

Rm	Rp 0,2		
N/mm <sup>2</sup>	N/mm <sup>2</sup>	$\Delta\%$	HB
245	200	9	70

Ossidazione: anodizzazione classe 20 micron interno ed esterno durezza media dello strato d'ossido 420 HV

Oxidation: anodisation class 20 micron, internal and external, medium hardness of the oxide layer 420 HV

Rugosità interna - Internal roughness: Ra radial  $\leq 0,6$  micron - Rmax radial 9 micron - Ra axial  $\leq 0,4$  micron

Lunghezza barre - Bar length: max 6,00 mt.

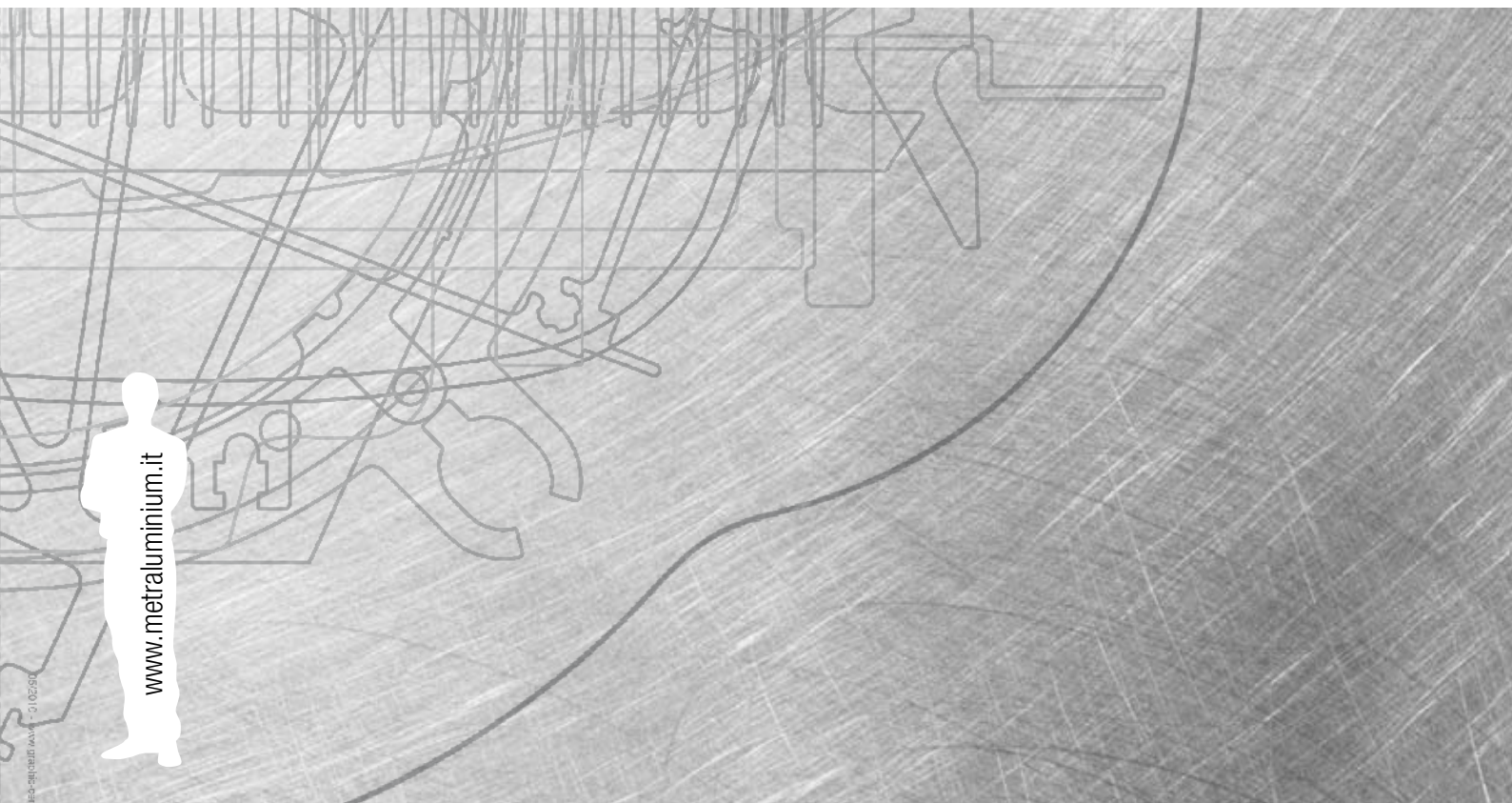


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