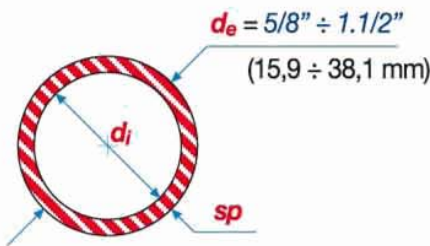


## Per piastre tubiere di grosso spessore

For thick tube-sheets

Pour plaques tubulaires de grande épaisseur

Für Rohrböden mit großer Stärke



$RE_{min} = 1.1/8" (28,6 \text{ mm})$

$RE_{max} = 6.3/4" (171,5 \text{ mm})$

### Codice d'esempio per ordinazione mandrini

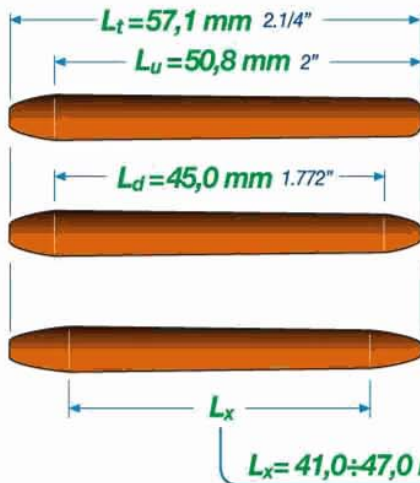
Sample code for ordering tube expanders  
Code d'exemple pour commande dudgeons  
Bestellnr. Bestellbeispiel Rohrwalze

### Testa di battuta

Thrust collar  
Tête de butée  
Anschlagkopf



$d_e 1" - 11 \text{ B.W.G.}$



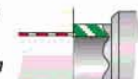
**STD** → R51.#-6

**DLS** → R51.#-6-DLS

**DLX** → R51.#-6-DLX-L<sub>x</sub>

### a battuta piana

with plane shoulder  
à butée plane  
mit flachem Anschlag



01 ÷ 16/A  
 $V = 0$

### con incavo a 3 mm

with 3 mm recess  
avec entaille à 3 mm  
mit 3 mm Eindrehung



01 ÷ 16/A  
 $V = 3 \text{ mm}$   
(0.118")

### con incavo profondo

with deep recess  
avec entaille profonde  
mit tiefer Eindrehung



011 ÷ 3/B  
 $V_{max} = 15 \text{ mm}$   
5 ÷ 11 (0.590")  
 $V_{max} = 20 \text{ mm}$   
12 ÷ 16/A (0.787")  
 $V_{max} = 26 \text{ mm}$   
(1.024")

Tubo  
Tube  
Rohr

$d_e$ inches mm	$sp$		$d_i$	
	B.W.G.	inches mm	inches mm	inches mm
5/8" (15,9)	14	0.083 2,11	0.459 11,7	0.437 ÷ 0.500 11,1 ÷ 12,7
	15	0.072 1,83	0.481 12,2	0.452 ÷ 0.523 11,5 ÷ 13,3
	16	0.065 1,65	0.495 12,6	0.472 ÷ 0.543 12,0 ÷ 13,8
	17	0.058 1,47	0.509 12,9	0.492 ÷ 0.571 12,5 ÷ 14,5
	18	0.049 1,24	0.527 13,4	0.512 ÷ 0.590 13,0 ÷ 15,0
	19	0.042 1,07	0.541 13,7	
	20	0.035 0,89	0.555 14,1	0.531 ÷ 0.610 13,5 ÷ 15,5
	22	0.028 0,71	0.569 14,5	

Espansione  
Expansion  
Expansion  
Walzbereich

Mandrino  
Tube expander  
Dudgeon  
Rohrwalzen

Rulli  
Rolls  
Galets  
Rollen

Spina  
Mandrel  
Broche  
Dorn

Mandrinatrici consigliate  
Suggested rolling machines  
Dudgeonneuses conseillées  
Empfohlene Rohreinwalzanlagen

Elettriche  
Electrical  
Electriques  
elektrisch

F90  
MS/40 M4/V  
Matex

Pneumatiche  
Pneumatic  
Pneumatiques  
pneumatisch

Macrol 750

F90  
MP/1 M4/V  
MS/60

Matex

Minirol 500  
Macrol 1350

Rif. 5R/81  
Ref. 5R/81  
Réf. 5R/81  
Siehe 5R/81



Consigliate  
Suggested  
Conseillées  
Empfehlung

Possibili  
Possible  
Possibles  
Variationsmöglichkeiten



# R/51

de inches mm	Tubo Tube Rohr		di		Espansione Expansion Walzbereich		Mandrino Tube expander Rohrwalzen	Rulli Rolls Galets Rollen	Spina Mandrel Broche Dorn	Mandrinatrici consigliate Suggested rolling machines Dudgeonneuses conseillées Empfohlene Rohreinwalzanlagen			
	B.W.G.	sp	inches	mm	inches	mm	Cod.	Cod.	Cod.	inches	mm	Elettriche Electrical Electric elektrisch	Pneumatiche Pneumatic Pneumatiques pneumatisch
		inches	mm										
3/4" (19,0)	10	0.134	3,40	0.482	12,2	0.452 ÷ 0.523	11,5 ÷ 13,3	R51.#-02	02-L	5-02÷02/A	3/8" (9,5)	F90 + M4/V M4/L MS/30 Matex	Macrol 450
				0.492	12,5	0.472 ÷ 0.543	12,0 ÷ 13,8	R51.#-02/A	02/A-L				
	11	0.120	3,05	0.510	12,9	0.492 ÷ 0.571	12,5 ÷ 14,5	R51.#-03	03-L				
				0.532	13,4	0.512 ÷ 0.590	13,0 ÷ 15,0	R51.#-04	04-L	5-03÷1			
				0.560	14,2	0.531 ÷ 0.610	13,5 ÷ 15,5	R51.#-1	1-1/A-L	5-1/A			
	14	0.083	2,11	0.584	14,8	0.551 ÷ 0.639	14,0 ÷ 16,2	R51.#-1/A	1-1/A-L				
				0.606	15,3	0.570 ÷ 0.669	14,5 ÷ 17,0	R51.#-2	2-L	5-2÷3/B			
				0.620	15,7	0.590 ÷ 0.689	15,0 ÷ 17,5	R51.#-2/A	2/A-L				
	18	0.049	1,24	0.652	16,5	0.610 ÷ 0.709	15,5 ÷ 18,0	R51.#-3	3-L				
				0.634	16,0	0.630 ÷ 0.728	16,0 ÷ 18,5	R51.#-3/A	3/A-L				
			0.680	17,2					3/B-L				
20	0.035	0,89	0.680	17,2	0.650 ÷ 0.748	16,5 ÷ 19,0	R51.#-3/B	3/B-L					
21	0.032	0,81	0.686	17,4									
			0.694	17,6									
7/8" (22,2)	10	0.134	3,40	0.607	15,4	0.570 ÷ 0.669	14,5 ÷ 17,0	R51.#-2-M	2-L	5-2÷3/B	3/8" (9,5)	F90 + M4/V M4/L MS/30 Matex	Macrol 450
				0.635	16,1	0.610 ÷ 0.709	15,5 ÷ 18,0	R51.#-3-M	3-L				
	12	0.109	2,77	0.657	16,6	0.630 ÷ 0.728	16,0 ÷ 18,5	R51.#-3/A-M	3/A-L				
				0.669	17,0	0.650 ÷ 0.748	16,5 ÷ 19,0	R51.#-3/B-M	3/B-L	5-5÷6			
	13	0.095	2,41	0.685	17,4								
				0.709	18,0	0.681 ÷ 0.799	17,3 ÷ 20,3	R51.#-5-M	5-L	5-7÷8/A			
	15	0.072	1,83	0.731	18,5	0.700 ÷ 0.812	17,8 ÷ 20,8	R51.#-5/A-M	5/A-L				
				0.745	18,9	0.720 ÷ 0.838	18,3 ÷ 21,3	R51.#-6-M	6-7-L				
				0.759	19,2					6-7-L			
	18	0.049	1,24	0.777	19,7	0.748 ÷ 0.866	19,0 ÷ 22,0	R51.#-7	6-7-L				
19	0.042	1,07	0.791	20,0									
			0.805	20,4					6-7-L				
20	0.035	0,89	0.805	20,4	0.748 ÷ 0.866	19,0 ÷ 22,0	R51.#-7-M	6-7-L					
21	0.032	0,81	0.811	20,6									
			0.819	20,8									
1" (25,4)	8	0.165	4,19	0.670	17,0	0.650 ÷ 0.748	16,5 ÷ 19,0	R51.#-3/B-S	3/B-L	5-2÷3/B	3/8" (9,5)	F90 + M4/L M4/V Matex	Macrol 200
				0.685	17,4	0.681 ÷ 0.799	17,3 ÷ 20,3	R51.#-5	5-L				
	9	0.148	3,76	0.704	17,9	0.700 ÷ 0.812	17,8 ÷ 20,8	R51.#-5/A	5/A-L				
				0.732	18,6	0.720 ÷ 0.838	18,3 ÷ 21,3	R51.#-6	6-7-L	5-5÷6			
	10	0.134	3,40	0.732	18,6	0.748 ÷ 0.866	19,0 ÷ 22,0	R51.#-7	6-7-L				
				0.760	19,3	0.767 ÷ 0.886	19,5 ÷ 22,5	R51.#-7/A	7/A-L	5-7÷8/A			
	11	0.120	3,05	0.760	19,3	0.787 ÷ 0.905	20,0 ÷ 23,0	R51.#-8	8-L				
				0.782	19,8	0.807 ÷ 0.925	20,5 ÷ 23,5	R51.#-8/A	8/A-L				
				0.791	20,1					9-L			
	13	0.095	2,41	0.810	20,6	0.827 ÷ 0.964	21,0 ÷ 24,5	R51.#-9	9-L				
				0.834	21,2	0.846 ÷ 0.984	21,5 ÷ 25,0	R51.#-9/A	9/A-L				
				0.856	21,7					9/A-L			
16	0.065	1,65	0.870	22,1	0.866 ÷ 1.004	22,0 ÷ 25,5	R51.#-10	10-L					
17	0.058	1,47	0.884	22,4									
			0.902	22,9					10-L				
18	0.049	1,24	0.902	22,9									
			0.916	23,2									
			0.930	23,6					10-L				
20	0.035	0,89	0.930	23,6									
21	0.032	0,81	0.936	23,8									
			0.944	24,0									





de inches mm	Tubo Tube Tube Rohr				Espansione Expansion Expansion Walzbereich		Mandrino Tube expander Dudgeon Rohrwalzen	Rulli Rolls Galets Rollen	Spina Mandrel Broche Dorn	inches mm	Mandrinatrici consigliate Suggested rolling machines Dudgeonuses conseillées Empfohlene Rohrwalzanlagen				
	B.W.G.	sp inches	mm	dj inches	mm	Cod.	Cod.	Cod.	Elettriche Electrical Electriques elektrisch		Pneumatiche Pneumatic Pneumatiques pneumatich				
	inches	mm	inches	mm	inches	mm	inches	mm	inches		mm				
1.1/8" (28,5)	11	0.120	3,05	0.885	22,4	0.846 ÷ 0.984	21,5 ÷ 25,0	R51.-#-9/A-M	9/A-L	5-9÷11	3/8" (9,5)	F90 + M4/L M4/V Matex	Macrol 200		
	12	0.109	2,77	0.907	22,9	0.866 ÷ 1.004	22,0 ÷ 25,5	R51.-#-10-M	10-L						
	13	0.095	2,41	0.935	23,7	0.905 ÷ 1.043	23,0 ÷ 26,5	R51.-#-11-M	11-L						
	14	0.083	2,11	0.959	24,3	0.945 ÷ 1.102	24,0 ÷ 28,0	R51.-#-12-M	12-L	5-12÷14/A	1/2" (12,7)	F90 + M4/V MS/40 M4/L Matex	Macrol 450		
	16	0.065	1,65	0.995	25,2			R51.-#-12/A-M	12/A-L						
	18	0.049	1,24	1.027	26,0	0.984 ÷ 1.142	25,0 ÷ 29,0	R51.-#-11	11-L	5-9÷11	3/8" (9,5)	F90 + M4/L M4/V Matex	Macrol 130		
	20	0.035	0,89	1.055	26,7			R51.-#-12	12-L						
22	0.028	0,71	1.069	27,1	R51.-#-12/A			12/A-L							
1.1/4" (31,8)	9	0.148	3,76	0.954	24,3	0.905 ÷ 1.043	23,0 ÷ 26,5	R51.-#-11	11-L	5-12÷14/A	1/2" (12,7)	F90 + M4/L M4/V Matex	Macrol 200		
	10	0.134	3,40	0.982	25,0	0.945 ÷ 1.102	24,0 ÷ 28,0	R51.-#-12	12-L						
	11	0.120	3,05	1.010	25,7	0.984 ÷ 1.142	25,0 ÷ 29,0	R51.-#-12/A	12/A-L						
	12	0.109	2,77	1.032	26,2	1.027 ÷ 1.181	26,0 ÷ 30,0	R51.-#-13	13-L	5-15÷16/A	1/2" (12,7)	F90 + M4/L M4/V Matex	Macrol 130		
	13	0.095	2,41	1.060	27,0			R51.-#-13/A	13/A-L						
	14	0.083	2,11	1.084	27,6	1.063 ÷ 1.220	27,0 ÷ 31,0	R51.-#-14	14-15-L	5-12÷14/A	3/8" (9,5)	F90 + M4/L M4/V Matex	Macrol 200		
	16	0.065	1,65	1.120	28,5			R51.-#-14-M	14-15-L						
17	0.058	1,47	1.134	28,8	R51.-#-14/A-M			14/A-15/A-L							
1.3/8" (34,9)	12	0.109	2,77	1.157	29,3	1.102 ÷ 1.260	28,0 ÷ 32,0	R51.-#-14-M	14-15-L	5-12÷14/A	1/2" (12,7)	F90 + M4/L M4/V Matex	Macrol 130		
	14	0.083	2,11	1.209	30,7	1.142 ÷ 1.299	29,0 ÷ 33,0	R51.-#-14/A-M	14/A-15/A-L						
	16	0.065	1,65	1.245	31,6	1.181 ÷ 1.338	30,0 ÷ 34,0	R51.-#-15-M	14-15-L	5-15÷16/A	1/2" (12,7)	F90 + M4/L M4/V Matex	Macrol 200		
	18	0.049	1,24	1.277	32,4	1.220 ÷ 1.378	31,0 ÷ 35,0	R51.-#-15/A-M	14/A-15/A-L						
	20	0.035	0,89	1.305	33,1	1.260 ÷ 1.417	32,0 ÷ 36,0	R51.-#-16-M	16-L						
22	0.028	0,71	1.319	33,5	1.142 ÷ 1.299	29,0 ÷ 33,0	R51.-#-14/A	14/A-15/A-L	5-12÷14/A	1/2" (12,7)	F90 + M4/L MG/49 Matex	Macrol 130 Masterol 180			
1.1/2" (38,1)	8	0.165	4,19	1.170			29,7	1.181 ÷ 1.338				30,0 ÷ 34,0	R51.-#-15	14-15-L	
	9	0.148	3,76	1.204			30,6						R51.-#-15/A	14/A-15/A-L	
	10	0.134	3,40	1.232			31,3	1.220 ÷ 1.378	31,0 ÷ 35,0	R51.-#-16	16-L	5-15÷16/A	1/2" (12,7)	F90 + M4/L M4/V Matex	Macrol 200
	11	0.120	3,05	1.260			32,0			R51.-#-16/A	16/A-L				
	12	0.109	2,77	1.282			32,5	1.260 ÷ 1.417	32,0 ÷ 36,0	R51.-#-14/A	14/A-15/A-L				
	13	0.095	2,41	1.310			33,3			R51.-#-15	14-15-L				
	14	0.083	2,11	1.334	33,9	R51.-#-15/A	14/A-15/A-L								
	15	0.072	1,83	1.356	34,4	1.319 ÷ 1.476	33,5 ÷ 37,5	R51.-#-16	16-L	5-12÷14/A	1/2" (12,7)	F90 + M4/L M4/V Matex	Macrol 130		
	16	0.065	1,65	1.370	34,8			R51.-#-15/A	14/A-15/A-L						
	17	0.058	1,47	1.384	35,1			R51.-#-16	16-L						
	18	0.049	1,24	1.402	35,6			R51.-#-16/A	16/A-L						
20	0.035	0,89	1.430	36,3											
22	0.028	0,71	1.444	36,7											

# R/50/260 R/50/360

TE-31 R/50

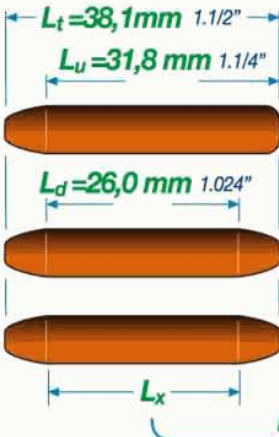
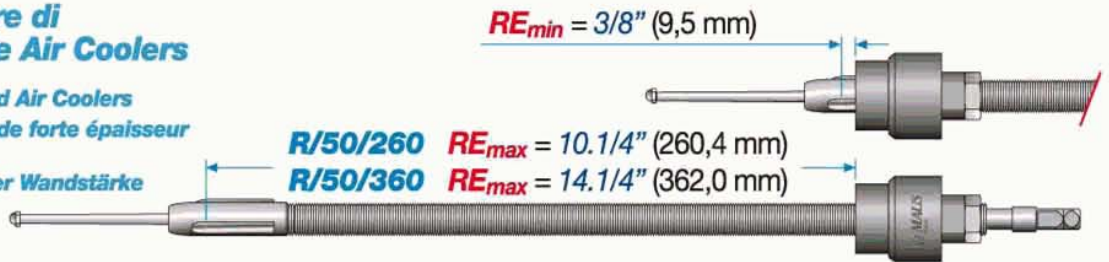
## Per piastre tubiere di grosso spessore e Air Coolers

For thick tube-sheets and Air Coolers  
 Pour plaques tubulaires de forte épaisseur et Air Coolers  
 Für Rohrböden mit großer Wandstärke und Luftkühler

$RE_{min} = 3/8'' (9,5 \text{ mm})$

R/50/260  $RE_{max} = 10.1/4'' (260,4 \text{ mm})$

R/50/360  $RE_{max} = 14.1/4'' (362,0 \text{ mm})$



### Codice d'esempio per ordinazione mandrini

Sample code for ordering tube expanders  
 Code d'exemple pour commande dudgeons  
 Bestellnr. Bestellbeispiel Rohrwalze

$d_e 1'' - 18 \text{ B.W.G. SP } 13.3/4'' 349,25 \text{ mm}$

**STD** → R50.1 / 360 -9/A  
**DLS** → R50.1 / 360 -9/A-DLS  
**DLX** → R50.1 / 360 -9/A-DLX-L<sub>x</sub>

### Esempio codice per ordinazione spina

Sample code for ordering mandrels  
 Exemple code pour commande broche  
 Bestellnr. Bestellbeispiel Dorn

R/50/260 → 5B-9÷11

R/50/360 → 5C-9÷11

# R/51/100 R/51/280 R/51/380

TE-37 R/51

## Per piastre tubiere di grosso spessore e Air Coolers

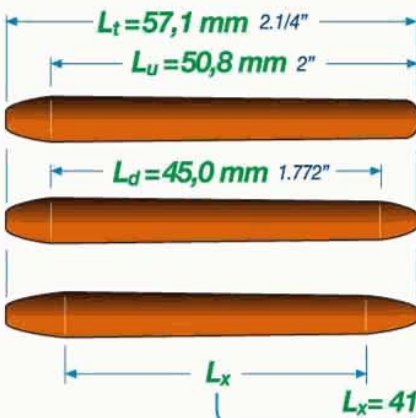
For thick tube-sheets and Air Coolers  
 Pour plaques tubulaires de forte épaisseur et Air Coolers  
 Für Rohrböden mit großer Wandstärke und Luftkühler

$RE_{min} = 1.1/8'' (28,6 \text{ mm})$

R/51/100  $RE_{max} = 100 \text{ mm (4'')}$

R/51/280  $RE_{max} = 280 \text{ mm (11'')}$

R/51/380  $RE_{max} = 380 \text{ mm (15'')}$



### Codice d'esempio per ordinazione mandrini

Sample code for ordering tube expanders  
 Code d'exemple pour commande dudgeons  
 Bestellnr. Bestellbeispiel Rohrwalze

$d_e 1.3/8'' - 12 \text{ B.W.G. SP } 10'' 254 \text{ mm}$

**STD** → R51.1 / 280 -14  
**DLS** → R51.1 / 280 -14-DLS  
**DLX** → R51.1 / 280 -14-DLX-43

### Esempio codice per ordinazione spina

Sample code for ordering mandrels  
 Exemple code pour commande broche  
 Bestellnr. Bestellbeispiel Dorn

R/51/100 → 5A-12÷14/A

R/51/280 → 5B-12÷14/A

R/51/380 → 5C-12÷14/A

TE-59

Per applicazioni in Air Coolers si consiglia l'utilizzo della testa .6

For applications in Air Coolers the .6 thrust collar is advised  
 Pour applications dans les unités Air Coolers on conseille l'utilisation de la tête .6  
 Für Anwendungen an Luftkühlern wird die Verwendung des Kopfes .6 empfohlen

TE-40

MAUS