

## Per piastre tubiere di grosso spessore

For thick tube-sheets

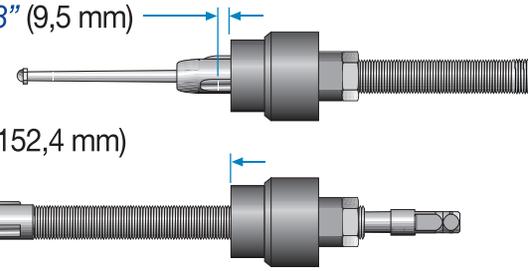
Pour plaques tubulaires de grande épaisseur

Für Rohrböden mit großer Stärke



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

$RE_{max} = 6''$  (152,4 mm)



Testa di battuta

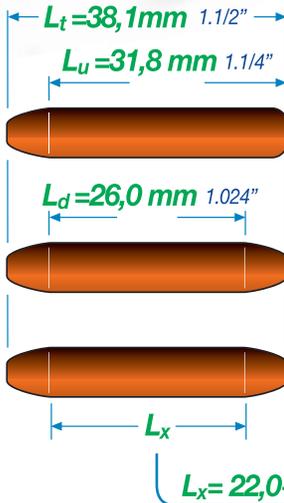
Thrust collar  
Tête de butée  
Anschlagkopf



Codice d'esempio per ordinazione mandrini

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

$de$  1.1/4" - 11 B.W.G.

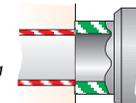


**STD** → R50.#-12

**DLS** → R50.#-12-DLS

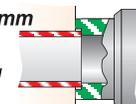
**DLX** → R50.#-12-DLX- $L_x$

a battuta piana  
with plane shoulder  
a butée plane  
mit flachem Anschlag



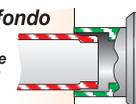
017 ÷ 16/A  
 $V = 0$

con incavo a 3 mm  
with 3 mm recess  
avec entaille à 3 mm  
mit 3 mm Eindrehung



011 ÷ 16/A  
 $V = 3$  mm  
(0.118")

con incavo profondo  
with deep recess  
avec entaille profonde  
mit tiefer Eindrehung



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

$L_x = 22,0 \div 28,0$  mm 0.866" ÷ 1.102"

Tubo  
Tube  
TUBE  
Rohr

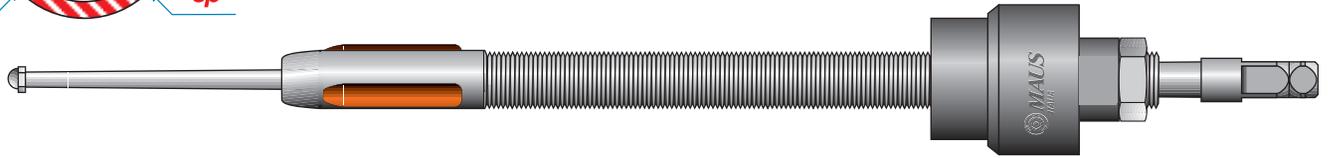
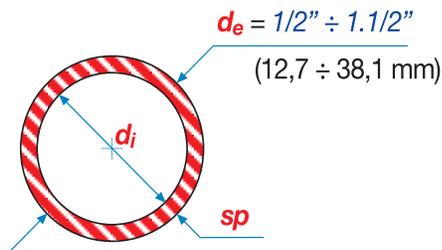
$de$ inches mm	B.W.G.	$sp$		$d_i$		Espansione		Mandrino Tube expander Dudgeon Rohrwalzen Cod.	Rulli Rolls Galets Rollen Cod.	Spina Mandrel Broche Dorn Cod.	$\nabla$ inches mm	Elettriche Electrical Electriques elektrisch	Pneumatiche Pneumatic Pneumatiques pneumatisch	
		inches	mm	inches	mm	inches	mm							
1/2" (12,7)	14	0.083	2,11	0.315	8,0	0.307 ÷ 0.354	7,8 ÷ 9,0	R50.0-017	017-C	5-017÷012	3/8" (9,5)	F90 MS/40 M4/V MS/60	Macrol 750	
				0.323	8,2	0.315 ÷ 0.362	8,0 ÷ 9,2	R50.0-016	016-C					
				0.334	8,5	0.323 ÷ 0.370	8,2 ÷ 9,4	R50.0-015	015-C					
				0.342	8,7	0.331 ÷ 0.378	8,4 ÷ 9,6	R50.0-014	014-C					
	15	0.072	1,83	0.356	9,0	0.338 ÷ 0.386	8,6 ÷ 9,8	R50.0-013	013-011-C					
				0.362	9,2	0.346 ÷ 0.393	8,8 ÷ 10,0	R50.0-012	012-010-C					
				0.370	9,4	0.354 ÷ 0.409	9,0 ÷ 10,4	R50.#-011	013-011-C					
				0.378	9,6	0.362 ÷ 0.417	9,2 ÷ 10,6	R50.#-010	012-010-C					
	16	0.065	1,65	0.384	9,7	0.370 ÷ 0.425	9,4 ÷ 10,8	R50.#-09	09-C		5-011÷09	3/8" (9,5)	F90 MP/2 M4/V MS/60	Minirol 500 Macrol 1350
				0.402	10,2	0.378 ÷ 0.441	9,6 ÷ 11,2	R50.#-00	00-C					
				0.430	10,9	0.397 ÷ 0.460	10,1 ÷ 11,7	R50.#-00/A	00/A-C					
				0.417 ÷ 0.480	10,6 ÷ 12,2	R50.#-01	01-C							
5/8" (15,9)	12	0.109	2,77	0.407	10,3	0.378 ÷ 0.441	9,6 ÷ 11,2	R50.#-00-M	00-C	5-02÷02/A	3/8" (9,5)	F90 MS/40 M4/V MS/60	Macrol 750	
				0.421	10,7	0.397 ÷ 0.460	10,1 ÷ 11,7	R50.#-00/A-M	00/A-C					
	13	0.095	2,41	0.435	11,1	0.417 ÷ 0.480	10,6 ÷ 12,2	R50.#-01-M	01-C					
				0.459	11,7	0.437 ÷ 0.500	11,1 ÷ 12,7	R50.#-01/A-M	01/A-C					
	14	0.083	2,11	0.481	12,2	0.452 ÷ 0.523	11,5 ÷ 13,3	R50.#-02-M	02-C					
				0.495	12,6	0.472 ÷ 0.543	12,0 ÷ 13,8	R50.#-02/A-M	02/A-C					
	15	0.072	1,83	0.509	12,9	0.492 ÷ 0.571	12,5 ÷ 14,5	R50.#-03-M	03-C					
				0.512 ÷ 0.590	13,0 ÷ 15,0	R50.#-04-M	04-C							
	16	0.065	1,65	0.531 ÷ 0.610	13,5 ÷ 15,5	R50.#-1-M	1-1/A-C							
				0.555	14,1									
17	0.058	1,47	0.569	14,5										
			0.571	14,5										
18	0.049	1,24												
19	0.042	1,07												
20	0.035	0,89												
22	0.028	0,71												

Mandrinatrici consigliate

Suggested rolling machines  
Dudgeonneuses conseillées  
Empfohlene Rohrreinwalzanlagen



de inches mm	Tubo Tube Tube Rohr		di		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			
	B.W.G.	sp	inches	mm	inches	mm	Cod.	Cod.	Cod.	inches mm	Elektrische Electrical Electriques 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	R50.#-02	02-C	5-02÷02/A	3/8" (9,5)	F90 + M4/V M4/L MS/40  Matex	Macrol 450
				0.492	12,5	0.472 ÷ 0.543	12,0 ÷ 13,8	R50.#-02/A	02/A-C				
	11	0.120	3,05	0.510	12,9	0.492 ÷ 0.571	12,5 ÷ 14,5	R50.#-03	03-C				
	12	0.109	2,77	0.532	13,4	0.512 ÷ 0.590	13,0 ÷ 15,0	R50.#-04	04-C	5-03÷1			
	13	0.095	2,41	0.560	14,2	0.531 ÷ 0.610	13,5 ÷ 15,5	R50.#-1	1-1/A-C				
	14	0.083	2,11	0.584	14,8	0.551 ÷ 0.639	14,0 ÷ 16,2	R50.#-1/A	1-1/A-C	5-1/A			
	15	0.072	1,83	0.606	15,3	0.570 ÷ 0.669	14,5 ÷ 17,0	R50.#-2	2-C				
	16	0.065	1,65	0.620	15,7	0.590 ÷ 0.689	15,0 ÷ 17,5	R50.#-2/A	2/A-C				
	17	0.058	1,47	0.634	16,0								
	18	0.049	1,24	0.652	16,5	0.610 ÷ 0.709	15,5 ÷ 18,0	R50.#-3	3-C	5-2÷3/B			
19	0.042	1,07	0.666	16,8	0.630 ÷ 0.728	16,0 ÷ 18,5	R50.#-3/A	3/A-C					
20	0.035	0,89	0.680	17,2									
21	0.032	0,81	0.686	17,4	0.650 ÷ 0.748	16,5 ÷ 19,0	R50.#-3/B	3/B-C					
22	0.028	0,71	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	R50.#-2-M	2-C	3/8" (9,5)	F90 + M4/V M4/L MS/40  Matex	Macrol 450	
	11	0.120	3,05	0.635	16,1	0.610 ÷ 0.709	15,5 ÷ 18,0	R50.#-3-M	3-C				
	12	0.109	2,77	0.657	16,6	0.630 ÷ 0.728	16,0 ÷ 18,5	R50.#-3/A-M	3/A-C				5-2÷3/B
				0.669	17,0	0.650 ÷ 0.748	16,5 ÷ 19,0	R50.#-3/B-M	3/B-C				
	13	0.095	2,41	0.685	17,4								
	14	0.083	2,11	0.709	18,0	0.681 ÷ 0.799	17,3 ÷ 20,3	R50.#-5-M	5-C				
	15	0.072	1,83	0.731	18,5	0.700 ÷ 0.812	17,8 ÷ 20,8	R50.#-5/A-M	5/A-C				
	16	0.065	1,65	0.745	18,9								5-5÷6
	17	0.058	1,47	0.759	19,2	0.720 ÷ 0.838	18,3 ÷ 21,3	R50.#-6-M	6-7-C				
	18	0.049	1,24	0.777	19,7								
19	0.042	1,07	0.791	20,0									
20	0.035	0,89	0.805	20,4									
21	0.032	0,81	0.811	20,6	0.748 ÷ 0.866	19,0 ÷ 22,0	R50.#-7-M	6-7-C	5-7÷8/A				
22	0.028	0,71	0.819	20,8									
1" (25,4)	8	0.165	4,19	0.670	17,0	0.650 ÷ 0.748	16,5 ÷ 19,0	R50.#-3/B-S	3/B-C	5-2÷3/B	3/8" (9,5)	F90 + M4/L MS/30 M4/V  Matex	Macrol 450
				0.685	17,4								
	9	0.148	3,76	0.704	17,9	0.681 ÷ 0.799	17,3 ÷ 20,3	R50.#-5	5-C				
	10	0.134	3,40	0.732	18,6	0.700 ÷ 0.812	17,8 ÷ 20,8	R50.#-5/A	5/A-C	5-5÷6			
	11	0.120	3,05	0.760	19,3	0.720 ÷ 0.838	18,3 ÷ 21,3	R50.#-6	6-7-C				
	12	0.109	2,77	0.782	19,8	0.748 ÷ 0.866	19,0 ÷ 22,0	R50.#-7	6-7-C				
				0.791	20,1	0.767 ÷ 0.886	19,5 ÷ 22,5	R50.#-7/A	7/A-C	5-7÷8/A			
	13	0.095	2,41	0.810	20,6	0.787 ÷ 0.905	20,0 ÷ 23,0	R50.#-8	8-C				
	14	0.083	2,11	0.834	21,2	0.807 ÷ 0.925	20,5 ÷ 23,5	R50.#-8/A	8/A-C				
	15	0.072	1,83	0.856	21,7								
	16	0.065	1,65	0.870	22,1	0.827 ÷ 0.964	21,0 ÷ 24,5	R50.#-9	9-C				
	17	0.058	1,47	0.884	22,4								
	18	0.049	1,24	0.902	22,9								
	19	0.042	1,07	0.916	23,2	0.846 ÷ 0.984	21,5 ÷ 25,0	R50.#-9/A	9/A-C	5-9÷11			
20	0.035	0,89	0.930	23,6									
21	0.032	0,81	0.936	23,8	0.866 ÷ 1.004	22,0 ÷ 25,5	R50.#-10	10-C					
22	0.028	0,71	0.944	24,0									



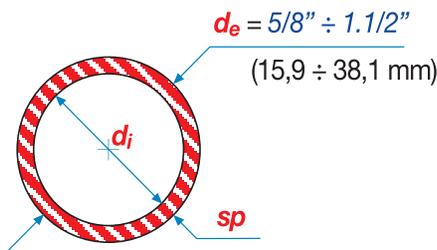
$d_e$ inches mm	Tubo Tube Rohr		$d_i$		Espansione Expansion Walzbereich		Mandrino Tube expander Dudgeon Rohrwalzen	Rulli Rolls Galets Rollen	Spina Mandrel Broche Dorn	$\square$ inches mm	Mandrinatrici consigliate Suggested rolling machines Dudgeonneuses conseillées Empfohlene Rohreinwalzanlagen		
	B.W.G.	$sp$ inches mm	inches mm	inches mm	inches mm	inches mm	Cod.	Cod.	Cod.		Electriche Electrical Electriques elektrisch	Pneumatiche Pneumatic Pneumatiques pneumatisch	
1.1/8" (28,5)	11	0.120	3,05	0.885	22,4	0.846 ÷ 0.984	21,5 ÷ 25,0	R50.#-9/A-M	9/A-C	5-9 ÷ 11	3/8" (9,5)	F90 M4/L MS/40 M4/V Matex	Macrol 450
	12	0.109	2,77	0.907	22,9	0.866 ÷ 1.004	22,0 ÷ 25,5	R50.#-10-M	10-C				
	13	0.095	2,41	0.935	23,7	0.905 ÷ 1.043	23,0 ÷ 26,5	R50.#-11-M	11-C				
	14	0.083	2,11	0.959	24,3	0.945 ÷ 1.102	24,0 ÷ 28,0	R50.#-12-M	12-C	5-12 ÷ 14/A	1/2" (12,7)	F90 M4/V M4/L MS/60 Matex	Macrol 750
	16	0.065	1,65	0.995	25,2	0.984 ÷ 1.142	25,0 ÷ 29,0	R50.#-12/A-M	12/A-C				
	18	0.049	1,24	1.027	26,0								
	20	0.035	0,89	1.055	26,7								
22	0.028	0,71	1.069	27,1									
1.1/4" (31,8)	9	0.148	3,76	0.954	24,3	0.905 ÷ 1.043	23,0 ÷ 26,5	R50.#-11	11-C	5-9 ÷ 11	3/8" (9,5)	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	R50.#-12	12-C				
	11	0.120	3,05	1.010	25,7	0.984 ÷ 1.142	25,0 ÷ 29,0	R50.#-12/A	12/A-C				
	12	0.109	2,77	1.032	26,2	1.027 ÷ 1.181	26,0 ÷ 30,0	R50.#-13	13-C	5-12 ÷ 14/A	1/2" (12,7)	F90 M4/L M4/V Matex	Macrol 450
	13	0.095	2,41	1.060	27,0	1.063 ÷ 1.220	27,0 ÷ 31,0	R50.#-13/A	13/A-C				
	14	0.083	2,11	1.084	27,6								
	16	0.065	1,65	1.120	28,5								
	17	0.058	1,47	1.134	28,8								
18	0.049	1,24	1.152	29,3	1.102 ÷ 1.260	28,0 ÷ 32,0	R50.#-14	14-15-C					
20	0.035	0,89	1.180	30,0									
22	0.028	0,71	1.194	30,4									
1.3/8" (34,9)	12	0.109	2,77	1.157	29,3	1.102 ÷ 1.260	28,0 ÷ 32,0	R50.#-14-M	14-15-C	5-12 ÷ 14/A	1/2" (12,7)	F90 M4/L M4/V Matex	Macrol 200
	14	0.083	2,11	1.209	30,7	1.142 ÷ 1.299	29,0 ÷ 33,0	R50.#-14/A-M	14/A-15/A-C				
	16	0.065	1,65	1.245	31,6	1.181 ÷ 1.338	30,0 ÷ 34,0	R50.#-15-M	14-15-C				
	18	0.049	1,24	1.277	32,4	1.220 ÷ 1.378	31,0 ÷ 35,0	R50.#-15/A-M	14/A-15/A-C	5-15 ÷ 16/A			
	20	0.035	0,89	1.305	33,1	1.260 ÷ 1.417	32,0 ÷ 36,0	R50.#-16-M	16-C				
	22	0.028	0,71	1.319	33,5								
1.1/2" (38,1)	8	0.165	4,19	1.170	29,7	1.142 ÷ 1.299	29,0 ÷ 33,0	R50.#-14/A	14/A-15/A-C	5-12 ÷ 14/A	1/2" (12,7)	F90 M4/L M4/V Matex	Macrol 200
	9	0.148	3,76	1.204	30,6	1.181 ÷ 1.338	30,0 ÷ 34,0	R50.#-15	14-15-C				
	10	0.134	3,40	1.232	31,3	1.220 ÷ 1.378	31,0 ÷ 35,0	R50.#-15/A	14/A-15/A-C				
	11	0.120	3,05	1.260	32,0	1.260 ÷ 1.417	32,0 ÷ 36,0	R50.#-16	16-C	5-15 ÷ 16/A			
	12	0.109	2,77	1.282	32,5								
	13	0.095	2,41	1.310	33,3								
	14	0.083	2,11	1.334	33,9								
	15	0.072	1,83	1.356	34,4								
	16	0.065	1,65	1.370	34,8	1.319 ÷ 1.476	33,5 ÷ 37,5	R50.#-16/A	16/A-C				
	17	0.058	1,47	1.384	35,1								
	18	0.049	1,24	1.402	35,6								
20	0.035	0,89	1.430	36,3									
22	0.028	0,71	1.444	36,7									

## 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 mm)

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

Codice d'esempio per ordinazione mandrini

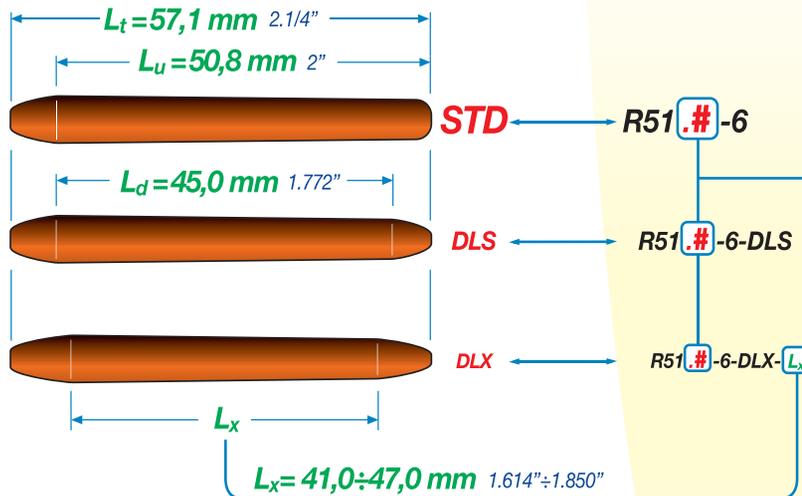
Sample code for ordering tube expanders  
Code d'exemple pour commande dudgeons  
Bestellnr. Bestellbeispiel Rohrwalze

Testa di battuta

Thrust collar  
Tête de butée  
Anschlagkopf

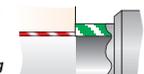


$d_e 1"$  - 11 B.W.G.



a battuta piana

with plane shoulder  
a butée plane  
mit flachem Anschlag



01 ÷ 16/A  
 $V = 0$

con incavo a 3 mm

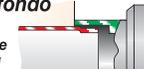
with 3 mm recess  
avec entaille à 3 mm  
mit 3 mm Eindrehung



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  
Tube  
Rohr

Mandratrici consigliate

Suggested rolling machines  
Dudgeonneuses conseillées  
Empfohlene Rohrwalzanlagen

$d_e$ inches mm	$sp$		$d_i$		Espansione Expansion Walzbereich		Mandrino Tube expander Dudgeon Rohrwalzen	Rulli Rolls Galets Rollen	Spina Mandrel Broche Dorn	$\nabla$ inches mm	Elektrische Electrical Electriques elektrisch	Pneumatiche Pneumatic Pneumatiques pneumatisch	
	B.W.G.	inches	mm	inches	mm	inches	mm	Cod.	Cod.		Cod.	F90 MS/40 M4/V Matex	Macrol 750
5/8" (15,9)	14	0.083	2,11	0.459	11,7	0.437 ÷ 0.500	11,1 ÷ 12,7	R51.#-01/A-M	01/A-L	5-01/A	3/8" (9,5)	F90 MS/40 M4/V Matex	Macrol 750
	15	0.072	1,83	0.481	12,2	0.452 ÷ 0.523	11,5 ÷ 13,3	R51.#-02-M	02-L	5-02 ÷ 02/A			
	16	0.065	1,65	0.495	12,6	0.472 ÷ 0.543	12,0 ÷ 13,8	R51.#-02/A-M	02/A-L				
	17	0.058	1,47	0.509	12,9	0.492 ÷ 0.571	12,5 ÷ 14,5	R51.#-03-M	03-L				
	18	0.049	1,24	0.527	13,4	0.512 ÷ 0.590	13,0 ÷ 15,0	R51.#-04-M	04-L	5-03 ÷ 1	F90 MP/1 M4/V MS/60 Matex	Minirol 500 Macrol 1350	
	19	0.042	1,07	0.541	13,7								0.531 ÷ 0.610
	20	0.035	0,89	0.555	14,1								
	22	0.028	0,71	0.569	14,5								

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



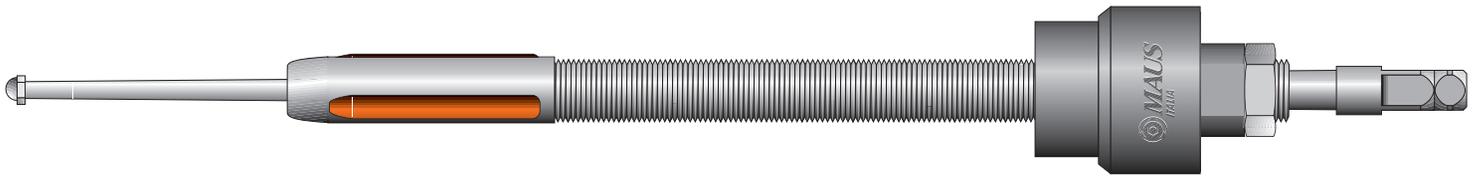
Consigliate  
Suggested  
Conseillées  
Empfehlung

Possibili  
Possible  
Possibles  
Variationsmöglichkeiten

MAUS  
ITALIA



de inches mm	Tubo Tube Tube Rohr				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				
	B.W.G.	sp		dj		inches	mm	Cod.	Cod.	Cod.	inches mm	Elektrische Electrical Electriques elektrisch	Pneumatiche Pneumatic Pneumatiques pneumatisch	
		inches	mm	inches	mm							inches	mm	Electrical Electriques elektrisch
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 +	Macrol 450	
				0.492	12,5	0.472 ÷ 0.543	12,0 ÷ 13,8	R51.#-02/A	02/A-L			M4/V M4/L MS/30		
				0.510	12,9	0.492 ÷ 0.571	12,5 ÷ 14,5	R51.#-03	03-L	5-03÷1		Matex		
		11	0.120	3,05	0.510	12,9	0.492 ÷ 0.571	12,5 ÷ 14,5	R51.#-03	03-L				
		12	0.109	2,77	0.532	13,4	0.512 ÷ 0.590	13,0 ÷ 15,0	R51.#-04	04-L				
		13	0.095	2,41	0.560	14,2	0.531 ÷ 0.610	13,5 ÷ 15,5	R51.#-1	1-1/A-L				
		14	0.083	2,11	0.584	14,8	0.551 ÷ 0.639	14,0 ÷ 16,2	R51.#-1/A	1-1/A-L	5-1/A			
		15	0.072	1,83	0.606	15,3	0.570 ÷ 0.669	14,5 ÷ 17,0	R51.#-2	2-L				
		16	0.065	1,65	0.620	15,7	0.590 ÷ 0.689	15,0 ÷ 17,5	R51.#-2/A	2/A-L				
		17	0.058	1,47	0.634	16,0	0.610 ÷ 0.709	15,5 ÷ 18,0	R51.#-3	3-L	5-2÷3/B	F90 +	Macrol 750	
		18	0.049	1,24	0.652	16,5	0.630 ÷ 0.728	16,0 ÷ 18,5	R51.#-3/A	3/A-L		M4/L MS/60 M4/V		
	19	0.042	1,07	0.666	16,8	0.650 ÷ 0.748	16,5 ÷ 19,0	R51.#-3/B	3/B-L		Matex			
	20	0.035	0,89	0.680	17,2									
	21	0.032	0,81	0.686	17,4									
	22	0.028	0,71	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 +	Macrol 450	
				0.635	16,1	0.610 ÷ 0.709	15,5 ÷ 18,0	R51.#-3-M	3-L					M4/V M4/L MS/30
				0.657	16,6	0.630 ÷ 0.728	16,0 ÷ 18,5	R51.#-3/A-M	3/A-L					Matex
				0.669	17,0	0.650 ÷ 0.748	16,5 ÷ 19,0	R51.#-3/B-M	3/B-L					
		13	0.095	2,41	0.685	17,4	0.681 ÷ 0.799	17,3 ÷ 20,3	R51.#-5-M	5-L				
		14	0.083	2,11	0.709	18,0	0.700 ÷ 0.812	17,8 ÷ 20,8	R51.#-5/A-M	5/A-L				
		15	0.072	1,83	0.731	18,5	0.720 ÷ 0.838	18,3 ÷ 21,3	R51.#-6-M	6-7-L	5-5÷6	F90 +	Macrol 750	
		16	0.065	1,65	0.745	18,9						M4/L MS/60 M4/V		
		17	0.058	1,47	0.759	19,2	0.748 ÷ 0.866	19,0 ÷ 22,0	R51.#-7-M	6-7-L	5-7÷8/A	Matex		
		18	0.049	1,24	0.777	19,7								
		19	0.042	1,07	0.791	20,0								
	20	0.035	0,89	0.805	20,4									
	21	0.032	0,81	0.811	20,6									
	22	0.028	0,71	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 +	Macrol 200	
				0.685	17,4	0.681 ÷ 0.799	17,3 ÷ 20,3	R51.#-5	5-L			M4/L M4/V		
				0.704	17,9	0.700 ÷ 0.812	17,8 ÷ 20,8	R51.#-5/A	5/A-L	5-5÷6		Matex		
		9	0.148	3,76	0.704	17,9	0.720 ÷ 0.838	18,3 ÷ 21,3	R51.#-6	6-7-L				
		10	0.134	3,40	0.732	18,6	0.748 ÷ 0.866	19,0 ÷ 22,0	R51.#-7	6-7-L				
		11	0.120	3,05	0.760	19,3	0.767 ÷ 0.886	19,5 ÷ 22,5	R51.#-7/A	7/A-L	5-7÷8/A			
		12	0.109	2,77	0.782	19,8	0.787 ÷ 0.905	20,0 ÷ 23,0	R51.#-8	8-L				
		13	0.095	2,41	0.810	20,6	0.807 ÷ 0.925	20,5 ÷ 23,5	R51.#-8/A	8/A-L				
		14	0.083	2,11	0.834	21,2	0.827 ÷ 0.964	21,0 ÷ 24,5	R51.#-9	9-L				
		15	0.072	1,83	0.856	21,7	0.846 ÷ 0.984	21,5 ÷ 25,0	R51.#-9/A	9/A-L	5-9÷11	F90 +	Macrol 450	
		16	0.065	1,65	0.870	22,1						M4/V M4/L MS/40		
		17	0.058	1,47	0.884	22,4						Matex		
	18	0.049	1,24	0.902	22,9									
	19	0.042	1,07	0.916	23,2									
	20	0.035	0,89	0.930	23,6									
	21	0.032	0,81	0.936	23,8	0.866 ÷ 1.004	22,0 ÷ 25,5	R51.#-10	10-L					
	22	0.028	0,71	0.944	24,0									



de inches mm	Tubo Tube Tube Rohr		di		Espansione Expansion Expansion Walzbereich		Mandrino Tube expander Dudgeon Rohrwalzen	Rulli Rolls Galets Rollen	Spina Mandrel Broche Dorn	inches mm	Mandrinatrici consigliate Suggested rolling machines Dudgeonneuses conseillées Empfohlene Rohrenwalzanlagen		
	B.W.G.	inches	mm	inches	mm	inches	mm	Cod.	Cod.		Cod.	Electriche Electrical Electriques elektrisch	Pneumatiche Pneumatic Pneumatiques pneumatisch
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	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	Macrol 450
	16	0.065	1,65	0.995	25,2	0.984 ÷ 1.142	25,0 ÷ 29,0	R51.#-12/A-M	12/A-L				
	18	0.049	1,24	1.027	26,0								
	20	0.035	0,89	1.055	26,7								
22	0.028	0,71	1.069	27,1									
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	5-9 ÷ 11	3/8" (9,5)	F90 + M4/L M4/V	Macrol 130
	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	5-12 ÷ 14/A	1/2" (12,7)	F90	Macrol 200
	13	0.095	2,41	1.060	27,0	1.063 ÷ 1.220	27,0 ÷ 31,0	R51.#-13/A	13/A-L				
	14	0.083	2,11	1.084	27,6								
	16	0.065	1,65	1.120	28,5								
	17	0.058	1,47	1.134	28,8								
18	0.049	1,24	1.152	29,3	1.102 ÷ 1.260	28,0 ÷ 32,0	R51.#-14	14-15-L					
20	0.035	0,89	1.180	30,0									
22	0.028	0,71	1.194	30,4									
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	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	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								
1.1/2" (38,1)	8	0.165	4,19	1.170	29,7	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	Macrol 130 Masterrol 180
	9	0.148	3,76	1.204	30,6	1.181 ÷ 1.338	30,0 ÷ 34,0	R51.#-15	14-15-L				
	10	0.134	3,40	1.232	31,3	1.220 ÷ 1.378	31,0 ÷ 35,0	R51.#-15/A	14/A-15/A-L				
	11	0.120	3,05	1.260	32,0	1.260 ÷ 1.417	32,0 ÷ 36,0	R51.#-16	16-L	5-15 ÷ 16/A	1/2" (12,7)	F90	Macrol 200
	12	0.109	2,77	1.282	32,5								
	13	0.095	2,41	1.310	33,3								
	14	0.083	2,11	1.334	33,9								
	15	0.072	1,83	1.356	34,4	1.319 ÷ 1.476	33,5 ÷ 37,5	R51.#-16/A	16/A-L				
	16	0.065	1,65	1.370	34,8								
	17	0.058	1,47	1.384	35,1								
	18	0.049	1,24	1.402	35,6								
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

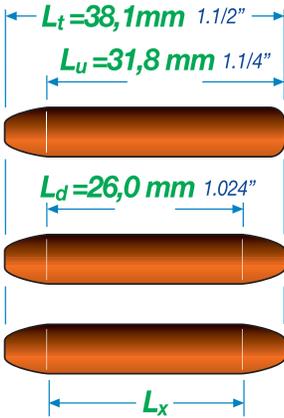
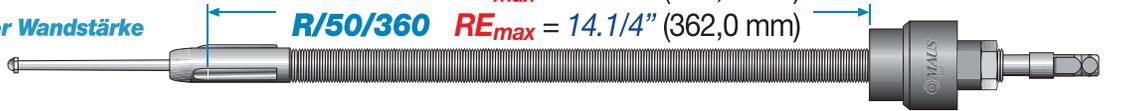
## Per piastre tubiere di grosso spessore e Air Coolers

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 mm)

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

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



STD

DLS

DLX

### 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 B.W.G. SP 13.3/4" 349,25 mm

R50.1 / 360 -9/A

$RE_{max}$

R50.1 / 360 -9/A-DLS

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

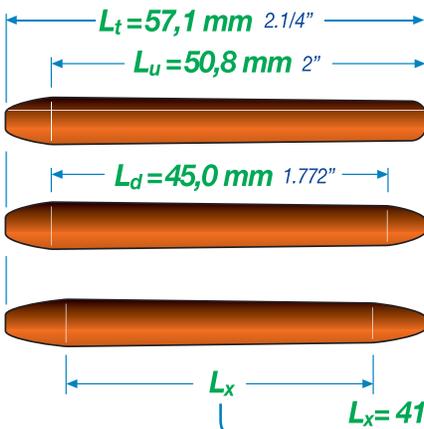
For thick tube-sheets and Air Coolers  
Pour plaques tubulaires de forte épaisseur  
et Air Coolers  
Für Rohrböden mit großer Wandstärke  
und Luftkühler

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

R/51/100  $RE_{max} = 100$  mm (4")

R/51/280  $RE_{max} = 280$  mm (11")

R/51/380  $RE_{max} = 380$  mm (15")



STD

DLS

DLX

### 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 B.W.G. SP 10" 254 mm

R51.1 / 280 -14

$RE_{max}$

R51.1 / 280 -14-DLS

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



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

