

900 Series

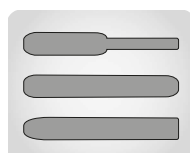
Tools for expanding tubes in condensers, chillers, heat exchangers, fin fan coolers, feedwater heaters and surface condensers.



WORKING RANGE

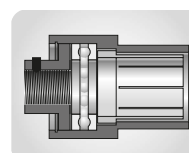
TUBE ID	TUBE OD	TUBE SHEET
3,86 - 8,41 mm	6,35 - 9,50 MM	6,3 - 31,7 MM
0,152" - 0,331"	1/4" - 3/8"	1/4" to 1-1/4"

OPTIONAL SPARES AND ACCESSORIES



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TUBE OD		TUBE GAUGE			TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL	MANDREL SQUARE		PNEUMATIC MOTOR *	ELECTRIC MOTOR *
											1/4 TO 3/4"		3/4 TO 1-1/4"						
[INCH]	[MM]	[BWG]	[INCH]	[MM]	[INCH]	[MM]	MIN	MAX	MIN	MAX	TOOL NO.	ROLL NO.	TOOL NO.	ROLL NO.		[INCH]	[MM]		
1/4	6,35	18	0,049	1,24	0,152	3,86	0,151	0,173	3,84	4,39	921	921	-	-	M-39	1/4"	6,3	K20-2500	TES3000 S6000
		19	0,042	1,07	0,166	4,22	0,165	0,185	4,19	4,70	922	923	-	-	M-39	1/4"	6,3		
		20	0,035	0,89	0,180	4,57	0,175	0,200	4,45	5,08	923	923	-	-	M-40	1/4"	6,3		
		21	0,027	1,83	0,186	4,72	0,180	0,207	4,57	5,26	924	924	-	-	M-40	1/4"	6,3		
		22	0,028	0,71	0,194	4,93	0,190	0,216	4,83	5,49	925	925	-	-	M-41	1/4"	6,3		
		23	0,025	0,64	0,200	5,08	0,195	0,222	4,95	5,64	926	923	-	-	M-41	1/4"	6,3		
		24	0,022	0,56	0,206	5,23	0,201	0,230	5,11	5,84	927	924	-	-	M-41	1/4"	6,3		
		28	0,014	0,35	0,222	5,6	0,222	0,238	5,6	6,0	928	903	-	-	928	1/4"	6,3		
		29	0,013	0,33	0,224	5,7	0,222	0,238	5,6	6,0	928	903	-	-	928	1/4"	6,3		
		30	0,012	0,30	0,226	5,7	0,222	0,238	5,6	6,0	928	903	-	-	928	1/4"	6,3		
3/8	9,5	14	0,83	2,10	0,209	5,3	0,201	0,232	5,1	5,8	927	924	-	-	M-41	1/4"	6,3	K20-1800	TES3000 S3000
		15	0,072	1,83	0,231	5,87	0,230	0,265	5,84	6,73	915	903	-	-	M-42	1/4"	6,3		
		16	0,065	1,65	0,245	6,22	0,240	0,275	6,10	6,99	916	916	916L	916L	M-36	1/4"	6,3		
		17	0,058	1,47	0,259	6,58	0,255	0,289	6,48	7,34	918	903	920	904	M-38	1/4"	6,3		
		18	0,049	1,24	0,277	7,04	0,272	0,307	6,91	7,80	901	903	902	904	M-30	1/4"	6,3		
		19	0,042	1,07	0,291	7,39	0,286	0,320	7,26	8,13	903	903	904	904	M-31	1/4"	6,3		
		20	0,035	0,89	0,305	7,75	0,300	0,334	7,62	8,48	905	907	906	908	M-32	1/4"	6,3		
		21	0,032	0,81	0,311	7,90	0,306	0,340	7,77	8,64	907	907	908	908	M-33	1/4"	6,3		
		22	0,028	0,71	0,319	8,10	0,314	0,349	7,98	8,86	909	909	910	910	M-34	1/4"	6,3		
		23	0,025	0,64	0,325	8,26	0,320	0,357	8,13	9,07	911	911	912	912	M-34	1/4"	6,3		
		24	0,022	0,56	0,331	8,41	0,319	0,357	8,10	9,07	911	911	912	912	M-34	1/4"	6,3		

* Motor recommendation applies only to most popular cases with a standard percentage of the wall reduction. The recommendation can be different for thicker tube sheet, harder and exotic metal tube and a higher percentage of wall reduction.

1300 Series

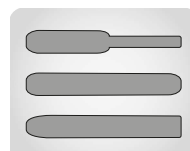
Tools for expanding tubes in condensers, chillers, heat exchangers, fin fan coolers, feedwater heaters and surface condensers.



WORKING RANGE

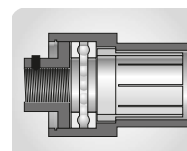
TUBE ID	TUBE OD	TUBE SHEET
5,87 - 8,41 mm	9,5 MM	19,0 - 88,9 MM
0,231" - 0,331"	3/8"	3/4" to 3-1/2"

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TUBE OD		TUBE GAUGE			TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL	MANDREL SQUARE		PNEUMATIC MOTOR	ELECTRIC MOTOR
											3/4" TO 3"		1-1/4" TO 3-1/2"						
							[INCH]	[MM]	[BWG]	[INCH]	[MM]	[INCH]	[MM]	MIN		MAX	MIN		
3/8	9,5	15	0,072	1,83	0,231	5,87	0,230	0,265	5,84	6,73	1315	1315	1316	1316		M-86	1/4"		
		16	0,065	1,65	0,245	6,22	0,240	0,275	6,10	6,99	1319	1315	1319-L	916-L	M-86	1/4"	6,3		
		17	0,058	1,47	0,259	6,58	0,255	0,289	6,48	7,34	1317	903	1318	904	M-88	1/4"	6,3		
		18	0,049	1,24	0,277	7,04	0,272	0,307	6,91	7,80	1301	903	1302	904	M-80	1/4"	6,3		
		19	0,042	1,07	0,291	7,39	0,286	0,320	7,26	8,13	1303	903	1304	904	M-81	1/4"	6,3		
		20	0,035	0,89	0,305	7,75	0,300	0,334	7,62	8,48	1305	907	1306	908	M-82	1/4"	6,3		
		21	0,032	0,81	0,311	7,90	0,306	0,340	7,77	8,64	1307	907	1308	908	M-83	1/4"	6,3		
		22	0,028	0,71	0,319	8,10	0,314	0,349	7,98	8,86	1309	909	1310	910	M-84	1/4"	6,3		
		23	0,025	0,64	0,325	8,26	0,320	0,357	8,13	9,07	1311	911	1312	912	M-84	1/4"	6,3		
		24	0,022	0,56	0,331	8,41	0,319	0,357	8,10	9,07	1311	911	1312	912	M-84	1/4"	6,3		

* Motor recommendation applies only to most popular cases with a standard percentage of the wall reduction. The recommendation can be different for thicker tube sheet, harder and exotic metal tube and a higher percentage of wall reduction.

800 Series

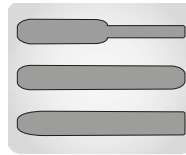
Tools for expanding tubes in condensers, chillers, heat exchangers, fin fan coolers, feedwater heaters and surface condensers.
As a standard expanders are supplied with STC collar. Available in regular and long reaches and as the 5-rolls version for rolling thin walls. Many different shaped rolls are available.



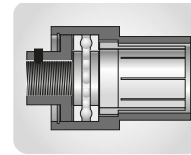
WORKING RANGE

TUBE ID	TUBE OD	TUBE SHEET
8,48 - 26,9 mm	12,7 - 38,1 MM	12,7 - 57,1 MM
0,334" - 1,027"	1/2" to 1-1/2"	1/2" to 2-1/4"

OPTIONAL SPARES AND ACCESSORIES



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TUBE OD		TUBE GAUGE				TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL	MANDREL SQUARE		PNEUMATIC MOTOR *	ELECTRIC MOTOR *
												1/2 TO 1-1/2"		1-1/4 TO 2-1/4"						
								[INCH]	[MM]	[BWG]	[INCH]	[MM]	[INCH]	[MM]	MIN		MAX	MIN		
3/8	9,5	22-24	0,027	0,71	0,314	8,00	0,307	0,358	7,80	9,10	795	795	-	-	795	3/8	9,5	K20-500	TES300 S1500 or TESMini2 HTO	
1/2	12,7	14	0,083	2,11	0,334	8,48	0,324	0,374	8,23	9,50	797	797	-	-	797	3/8	9,5			
		15	0,072	1,83	0,356	9,04	0,348	0,398	8,84	10,11	799	R-1	-	-	799	3/8	9,5	K20-1800		
		16	0,065	1,65	0,370	9,40	0,36	0,410	9,14	10,41	801	R-1	-	-	M-1	3/8	9,5			
		17	0,058	1,47	0,384	9,75	0,374	0,424	9,50	10,77	803	R-2	-	-	M-1	3/8	9,5			
		18	0,049	1,24	0,402	10,21	0,392	0,447	9,96	11,35	805	R-3	-	-	M-2	3/8	9,5			
5/8	15,8	20	0,035	0,89	0,430	10,92	0,406	0,461	10,31	11,71	805[S]	R-3	-	-	M-3	3/8	9,5	K50-600	TES3000 G1450 or TesMini2 ES2	
		12	0,109	2,77	0,407	10,34	0,392	0,447	9,96	11,35	805	R-3	-	-	M-2	3/8	9,5			
		13	0,095	2,41	0,435	11,05	0,425	0,480	10,80	12,19	807	R-4	-	-	M-3	3/8	9,5			
		14	0,083	2,11	0,459	11,66	0,449	0,509	11,40	12,93	809	R-4	810	R-4-A	M-4	3/8	9,5			
		15	0,072	1,83	0,481	12,22	0,471	0,536	11,96	13,61	811	R-5	812	R-5A	M-5	3/8	9,5			
		16	0,065	1,65	0,495	12,57	0,485	0,550	12,32	13,97	813	R-6	814	R-6A	M-5	3/8	9,5	K50-1250	TES3000 G1000 or TESMini2 DUO	
		17	0,058	1,47	0,509	12,93	0,499	0,564	12,67	14,33	815	R-6	816	R-6A	M-6	3/8	9,5			
		18	0,049	1,24	0,527	13,39	0,517	0,572	13,13	14,53	817	R-7	818	R-7-A	M-7 M-5	3/8	9,5			
		19	0,042	1,07	0,541	13,74	0,522	0,582	13,26	14,78	819	R-7	820	R-7-A	M-6	3/8	9,5			
		20	0,035	0,89	0,555	14,10	0,536	0,596	13,61	15,14	819[S]	R-7	820[S]	R-7-A	M-8	3/8	9,5			
		21	0,032	0,81	0,561	14,25	0,536	0,596	13,61	15,14	819[S]	R-7	820[S]	R-7-A	M-8	3/8	9,5			
		22	0,028	0,71	0,569	14,45	0,536	0,596	13,61	15,14	819[S]	R-7	820[S]	R-7-A	M-8	3/8	9,5			
3/4	19	10	0,134	3,40	0,482	12,24	0,471	0,536	11,96	13,61	811	R-5	812	R-5-A	M-5	3/8	9,5	K60-900	TES3000 + G1000 TESMini 2 +ES2	
		11	0,120	3,05	0,510	12,95	0,499	0,564	12,67	14,33	815	R-6	816	R-6-A	M-6	3/8	9,5			
		12	0,109	2,77	0,532	13,51	0,522	0,582	13,26	14,78	819	R-7	820	R-7-A	M-6	3/8	9,5	K50-400	TES3000 G1450 or TESMini2 ES2	
		13	0,095	2,41	0,560	14,22	0,550	0,615	13,97	15,62	821	R-8	822	R-8-A	M-8	3/8	9,5			
		14	0,083	2,11	0,584	14,83	0,574	0,639	14,58	16,23	823	R-9	824	R-9-A	M-8	3/8	9,5	K50-600		
		15	0,072	1,83	0,606	15,39	0,596	0,661	15,14	16,79	825	R-10	826	R-10-A	M-8	3/8	9,5			
		16	0,065	1,65	0,620	15,75	0,605	0,685	15,37	17,40	827	R-10	828	R-10-A	M-9	3/8	9,5	K50-1250	TES3000 G1000 or TESMini2 DUO	
		17	0,058	1,47	0,634	16,10	0,619	0,699	15,72	17,75	829	R-11	830	R-11-A	M-9	3/8	9,5			
		18	0,049	1,24	0,652	16,56	0,619	0,699	15,72	17,75	829	R-11	830	R-11-A	M-9	3/8	9,5			
		19	0,042	1,07	0,666	16,92	0,642	0,722	16,31	18,34	831	R-12	832	R-12-A	M-9	3/8	9,5			
		20	0,035	0,89	0,680	17,27	0,642	0,722	16,31	18,34	831	R-12	832	R-12-A	M-9	3/8	9,5			
		21	0,032	0,81	0,686	17,42	0,642	0,722	16,31	18,34	831	R-12	832	R-12-A	M-9	3/8	9,5			
22	0,028	0,71	0,694	17,63	0,642	0,722	16,31	18,34	831	R-12	832	R-12-A	M-9	3/8	9,5					

800 Series

TUBE OD		TUBE GAUGE			TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL	MANDREL SQUARE		PNEUMATIC MOTOR *	ELECTRIC MOTOR *
											1/2 TO 1-1/2"		1-1/4 TO 2-1/4"						
							[INCH]		[MM]		12,7 TO 38,1 MM		31,7 TO 57,1 MM						
[INCH]	[MM]	[BWG]	[INCH]	[MM]	[INCH]	[MM]	MIN	MAX	MIN	MAX	TOOL NO.	ROLL NO.	TOOL NO.	ROLL NO.		[INCH]	[MM]		
7/8	22,2	10	0,134	3,40	0,607	15,42	0,596	0,661	15,14	16,79	825	R-10	826	R-10-A	M-8	3/8	9,5	K50-400	TES3000 G1000 or TESMini2 ES2
		11	0,120	3,05	0,635	16,13	0,619	0,699	15,72	17,75	829	R-11	830	R-11-A	M-9	3/8	9,5		
		12	0,109	2,77	0,657	16,69	0,642	0,722	16,31	18,34	831	R-12	832	R-12-A	M-9	3/8	9,5		
		13	0,095	2,41	0,685	17,40	0,670	0,750	17,02	19,05	833	R-13	834	R-13-A	M-10	3/8	9,5	K50-600	
		14	0,083	2,11	0,709	18,01	0,685	0,774	17,40	19,66	835	R-14	836	R-14-A	M-11	3/8	9,5		
		15	0,072	1,83	0,731	18,57	0,712	0,801	18,08	20,35	837	R-15	838	R-15-A	M-11	3/8	9,5		
		16	0,065	1,65	0,745	18,92	0,726	0,815	18,44	20,70	839	R-15	840	R-15-A	M-12	3/8	9,5		
		17	0,058	1,47	0,759	19,28	0,740	0,829	18,80	21,06	843	R-16	844	R-16-A	M-12	3/8	9,5	K50-1250	
18	0,049	1,24	0,777	19,74	0,740	0,829	18,80	21,06	843	R-16	844	R-16-A	M-12	3/8	9,5				
1	25,4	8	0,165	4,19	0,670	17,02	0,655	0,735	16,64	18,67	841	R-13	842	R-13-A	M-9	3/8	9,5	K60-400	TES3000 G1000 or TESMini2 ES2
		9	0,148	3,76	0,704	17,88	0,685	0,774	17,40	19,66	835	R-14	836	R-14-A	M-11	3/8	9,5		
		10	0,134	3,40	0,732	18,59	0,712	0,801	18,08	20,35	837	R-15	838	R-15-A	M-11	3/8	9,5		
		11	0,120	3,05	0,760	19,30	0,740	0,829	18,80	21,06	843	R-16	844	R-16-A	M-12	3/8	9,5	K50-400	
		12	0,109	2,77	0,782	19,86	0,763	0,852	19,38	21,64	845	R-17	846	R-17-A	M-12	3/8	9,5		
		13	0,095	2,41	0,810	20,57	0,791	0,880	20,09	22,35	847	R-18	848	R-18-A	M-12	3/8	9,5		
		14	0,083	2,11	0,834	21,18	0,810	0,909	20,57	23,09	849	R-18	850	R-18-A	M-13	3/8	9,5	K50-600	
		15	0,072	1,83	0,856	21,74	0,837	0,936	21,26	23,77	851	R-19	852	R-19-A	M-13	3/8	9,5		
		16	0,065	1,65	0,870	22,10	0,837	0,936	21,26	23,77	851	R-19	852	R-19-A	M-13	3/8	9,5		
		17	0,058	1,47	0,884	22,45	0,865	0,964	21,97	24,49	855	R-21	856	R-21-A	M-13	3/8	9,5	K50-600	
		18	0,049	1,24	0,902	22,91	0,865	0,964	21,97	24,49	855	R-21	856	R-21-A	M-13	3/8	9,5		
		19	0,042	1,07	0,916	23,27	0,865	0,964	21,97	24,49	855	R-21	856	R-21-A	M-13	3/8	9,5		
1-1/8	28,5	20	0,035	0,89	0,930	23,62	0,865	0,964	21,97	24,49	855	R-21	856	R-21-A	M-13	3/8	9,5	K60-400	TES3000 G1000 or TESMini2 DU1
		8	0,165	4,19	0,795	20,19	0,776	0,875	19,71	22,23	853	R-20	854	R-20-A	M-13	3/8	9,5		
		9	0,148	3,76	0,829	21,06	0,810	0,909	20,57	23,09	849	R-18	850	R-18-A	M-13	3/8	9,5		
		10	0,134	3,40	0,857	21,77	0,837	0,936	21,26	23,77	851	R-19	852	R-19-A	M-13	3/8	9,5		
		11	0,120	3,05	0,885	22,48	0,865	0,964	21,97	24,49	855	R-21	856	R-21-A	M-13	3/8	9,5		
		12	0,109	2,77	0,907	23,04	0,883	0,982	22,43	24,94	857	R-21	858	R-21-A	M-14	1/2	12,7		
		13	0,095	2,41	0,935	23,75	0,916	1,015	23,27	25,78	859	R-22	860	R-22-A	M-14	1/2	12,7		
		14	0,083	2,11	0,959	24,36	0,935	1,044	23,75	26,52	861	R-23	862	R-23-A	M-15	1/2	12,7		
		15	0,072	1,83	0,981	24,92	0,962	1,071	24,43	27,20	863	R-24	864	R-24-A	M-15	1/2	12,7		
		16	0,065	1,65	0,995	25,27	0,962	1,071	24,43	27,20	863	R-24	864	R-24-A	M-15	1/2	12,7		
1-1/4	31,7	17	0,058	1,47	1,009	25,63	0,990	1,099	25,15	27,91	867	R-26	868	R-26-A	M-16	1/2	12,7	K60-400	TES3000 G1000 or TESMini2 DU1
		18	0,049	1,24	1,027	26,09	0,990	1,099	25,15	27,91	867	R-26	868	R-26-A	M-16	1/2	12,7		
		8	0,165	4,19	0,92	23,37	0,901	1,010	22,89	25,65	865	R-25	866	R-25-A	M-15	1/2	12,7		
		9	0,148	3,76	0,954	24,23	0,935	1,044	23,75	26,52	861	R-23	862	R-23-A	M-15	1/2	12,7		
		10	0,134	3,40	0,982	24,94	0,962	1,071	24,43	27,20	863	R-24	864	R-24-A	M-15	1/2	12,7		
		11	0,120	3,05	1,010	25,65	0,990	1,099	25,15	27,91	867	R-26	868	R-26-A	M-16	1/2	12,7		
		12	0,109	2,77	1,032	26,21	1,013	1,122	25,73	28,50	869	R-27	870	R-27-A	M-16	1/2	12,7		
		13	0,095	2,41	1,060	26,92	1,041	1,150	26,44	29,21	871	R-28	872	R-28-A	M-17	1/2	12,7		
		14	0,083	2,11	1,084	27,53	1,060	1,169	26,92	29,69	873	R-29	874	R-29-A	M-17	1/2	12,7		
		15	0,072	1,83	1,106	28,09	1,087	1,196	27,61	30,38	875	R-30	876	R-30-A	M-17	1/2	12,7		
		16	0,065	1,65	1,12	28,45	1,087	1,196	27,61	30,38	875	R-30	876	R-30-A	M-17	1/2	12,7		
		17	0,058	1,47	1,134	28,80	1,115	1,224	28,32	31,09	879	R-30	880	R-30-A	M-18	1/2	12,7		
18	0,049	1,24	1,152	29,26	1,115	1,224	28,32	31,09	879	R-30	880	R-30-A	M-18	1/2	12,7				

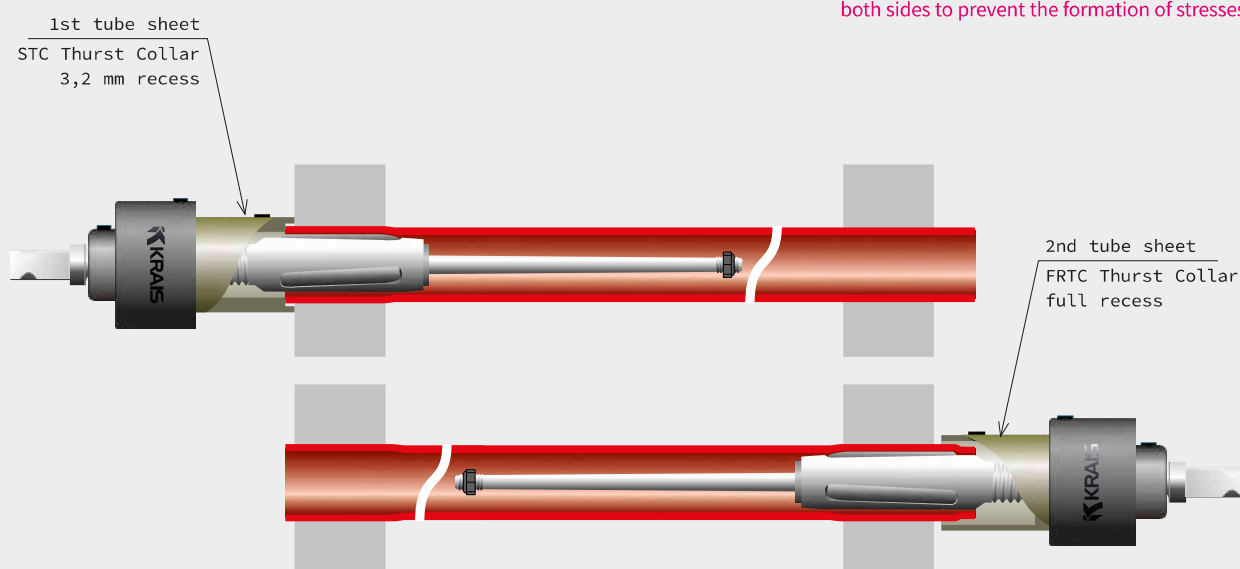
800 Series

TUBE OD		TUBE GAUGE			TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL	MANDREL SQUARE		PNEUMATIC MOTOR *	ELECTRIC MOTOR *
											1/2 TO 1-1/2"		1-1/4 TO 2-1/4"						
							[INCH]		[MM]		12,7 TO 38,1 MM		31,7 TO 57,1 MM						
[INCH]	[MM]	[BWG]	[INCH]	[MM]	[INCH]	[MM]	MIN	MAX	MIN	MAX	TOOL NO.	ROLL NO.	TOOL NO.	ROLL NO.	[INCH]	[MM]			
1-3/8	34,9	8	0,165	4,19	1,045	26,54	1,026	1,135	26,06	28,83	877	R-31	878	R-31-A	M-17	1/2	12,7	K60-250	TES3000 G400 or TESMini2 DU1
		9	0,148	3,76	1,079	27,41	1,060	1,169	26,92	29,69	873	R-29	874	R-29-A	M-17	1/2	12,7		
		10	0,134	3,40	1,107	28,12	1,087	1,196	27,61	30,38	875	R-30	876	R-30-A	M-17	1/2	12,7		
		11	0,120	3,05	1,135	28,83	1,115	1,224	28,32	31,09	879	R-30	880	R-30-A	M-18	1/2	12,7		
		12	0,109	2,77	1,157	29,39	1,133	1,242	28,78	31,55	881	R-32	882	R-32-A	M-18	1/2	12,7	K60-400	
		13	0,095	2,41	1,185	30,10	1,160	1,275	29,46	32,39	883	R-33	884	R-33-A	M-19	1/2	12,7		
		14	0,083	2,11	1,209	30,71	1,179	1,294	29,95	32,87	885	R-34	886	R-34-A	M-20	1/2	12,7		
		15	0,072	1,83	1,231	31,27	1,206	1,321	30,63	33,55	887	R-35	888	R-35-A	M-20	1/2	12,7		
16	0,065	1,65	1,245	31,62	1,206	1,321	30,63	33,55	887	R-35	888	R-35-A	M-20	1/2	12,7				
1-1/2	38,1	8	0,165	4,19	1,170	29,72	1,145	1,260	29,08	32,00	889	R-34	890	R-34-A	M-19	1/2	12,7	K60-250	TES3000 G400 or TESMini2 DU1
		9	0,148	3,76	1,204	30,58	1,179	1,294	29,95	32,87	885	R-34	886	R-34-A	M-20	1/2	12,7		
		10	0,134	3,40	1,232	31,29	1,206	1,321	30,63	33,55	887	R-35	888	R-35-A	M-20	1/2	12,7		
		11	0,120	3,05	1,260	32,00	1,235	1,350	31,37	34,29	891	R-36	892	R-36-A	M-20	1/2	12,7		
		12	0,109	2,77	1,282	32,56	1,257	1,372	31,93	34,85	893	R-37	894	R-37-A	M-20	1/2	12,7	K60-400	
		13	0,095	2,41	1,310	33,27	1,285	1,400	32,64	35,56	895	R-37	896	R-37-A	M-21	1/2	12,7		
		14	0,083	2,11	1,334	33,88	1,285	1,400	32,64	35,56	895	R-37	896	R-37-A	M-21	1/2	12,7		
		15	0,072	1,83	1,356	34,44	1,331	1,446	33,81	36,73	897	R-38	898	R-38-A	M-21	1/2	12,7		
		16	0,065	1,65	1,370	34,80	1,331	1,446	33,81	36,73	897	R-38	898	R-38-A	M-21	1/2	12,7		
		17	0,058	1,47	1,384	35,15	1,331	1,472	33,81	37,39	899	R-38	900	R-38-A	M-22	1/2	12,7		
		18	0,049	1,24	1,402	35,61	1,331	1,472	33,81	37,39	899	R-38	900	R-38-A	M-22	1/2	12,7		
		19	0,042	1,07	1,416	35,97	1,331	1,472	33,81	37,39	899	R-38	900	R-38-A	M-22	1/2	12,7		
20	0,035	0,89	1,430	36,32	1,331	1,472	33,81	37,39	899	R-38	900	R-38-A	M-22	1/2	12,7				

* Motor recommendation applies only to most popular cases with a standard percentage of the wall reduction. The recommendation can be different for thicker tube sheet, harder and exotic metal tube and a higher percentage of wall reduction.

RECOMMENDATION

Recommended selection of thrust collars when rolling pipes from both sides to prevent the formation of stresses.



800-5 Five Roll Series

Tools for expanding tubes in condensers, chillers, heat exchangers, fin fan coolers, feedwater heaters and surface condensers.

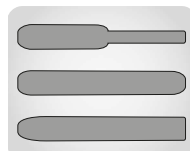
As a standard expanders are supplied with STC collar. Available in regular and long reaches and as the 3-rolls version. Many different shaped rolls are available.



WORKING RANGE

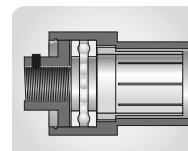
TUBE ID	TUBE OD	TUBE SHEET
12,98 - 36,68 MM	15,8 - 38,1 MM	12,7 - 57,1 MM
0,509" - 1,440"	5/8" to 1-1/2"	1/2" to 2-1/4"

OPTIONAL SPARES AND ACCESSORIES



ROLLS ON REQUEST

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THRUST COLLARS

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ROLLING MOTORS

→ CHAPTER PAGE 44

TUBE OD		TUBE GAUGE		TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL	MANDREL SQUARE		PNEUMATIC MOTOR *	ELECTRIC MOTOR *	
										1/2" TO 1-1/2"		1-1/4" TO 2-1/4"							
						[INCH]	[MM]	[INCH]	[MM]	MIN	MAX	MIN	MAX		TOOL NO.	ROLL NO.			TOOL NO.
5/8	15,8	17	0,058	1,47	0,509	12,93	0,499	0,564	12,67	14,33	815-5	R-4-5	816-5	R-4-A-5	M-816-5	3/8	9,5	K50-1250	TES3000 G1000 or TESMini2 DUO
		18	0,049	1,24	0,527	13,39	0,517	0,572	13,13	14,53	817-5	R-4-5	818-5	R-4-A-5	M-9	3/8	9,5		
		19	0,042	1,07	0,541	13,74	0,522	0,582	13,26	14,78	819-5	R-4-5	820-5	R-4-A-5	M-820-5	3/8	9,5		
		20	0,035	0,89	0,555	14,10	0,536	0,596	13,61	15,14	819-5[S]	R-4-5	820-5[S]	R-4-A-5	820-5[S]	3/8	9,5		
		21	0,032	0,81	0,561	14,25	0,536	0,596	13,61	15,14	819-5[S]	R-4-5	820-5[S]	R-4-A-5	820-5[S]	3/8	9,5		
		22	0,028	0,71	0,569	14,45	0,536	0,596	13,61	15,14	819-5[S]	R-4-5	820-5[S]	R-4-A-5	820-5[S]	3/8	9,5		
3/4	19,0	13	0,095	2,41	0,560	14,22	0,550	0,615	13,97	15,62	821-5	R-5-5	822-5	R-5-A-5	M-822-5	3/8	9,5	K50-600	TES3000 + G1450 TesMini2 + ES2
		14	0,083	2,11	0,584	14,83	0,574	0,639	14,58	16,23	823-5	R-6-5	824-5	R-6-A-5	M-824-5	3/8	9,5		
		15	0,072	1,83	0,606	15,39	0,590	0,661	14,99	16,79	825-5	R-7-5	826-5	R-7-A-5	M-826-5	3/8	9,5		
		16	0,065	1,65	0,620	15,75	0,605	0,685	15,37	17,40	827-5	R-7-5	828-5	R-7-A-5	M-13	3/8	9,5	K50-1250	TES3000 G1000 or TESMini2 DUO
		17	0,058	1,47	0,634	16,10	0,619	0,699	15,72	17,75	829-5	R-7-5	830-5	R-7-A-5	M-830-5	3/8	9,5		
		18	0,049	1,24	0,652	16,56	0,619	0,699	15,72	17,75	829-5	R-7-5	830-5	R-7-A-5	M-830-5	3/8	9,5		
		19	0,042	1,07	0,666	16,92	0,642	0,722	16,31	18,34	831-5	R-9-5	832-5	R-9-A-5	M-13	3/8	9,5		
		20	0,035	0,89	0,680	17,27	0,642	0,722	16,31	18,34	831-5	R-9-5	832-5	R-9-A-5	M-13	3/8	9,5		
		21	0,032	0,81	0,686	17,42	0,642	0,722	16,31	18,34	831-5	R-9-5	832-5	R-9-A-5	M-13	3/8	9,5		
		22	0,028	0,71	0,694	17,63	0,642	0,722	16,31	18,34	831-5	R-9-5	832-5	R-9-A-5	M-13	3/8	9,5		
7/8	22,2	13	0,095	2,41	0,685	17,40	0,670	0,750	17,02	19,05	833-5	R-9-5	834-5	R-9-A-5	M-14-3/8	3/8	9,5	K50-600	TES3000 G1450 or TESMini2 ES2
		14	0,083	2,11	0,709	18,01	0,685	0,774	17,40	19,66	835-5	R-10-5	836-5	R-10-A-5	M-15	3/8	9,5		
		16	0,065	1,65	0,745	18,92	0,726	0,815	18,44	20,70	839-5	R-11-5	840-5	R-11-A-5	M-840-5	3/8	9,5		
		17	0,058	1,47	0,759	19,28	0,740	0,829	18,80	21,06	843-5	R-11-5	844-5	R-11-A-5	M-17-3/8	3/8	9,5	K50-1250	TES3000 G1000 or TESMini2 DUO
		18	0,049	1,24	0,777	19,74	0,740	0,829	18,80	21,06	843-5	R-11-5	844-5	R-11-A-5	M-17-3/8	3/8	9,5		
		19	0,042	1,07	0,791	20,09	0,763	0,852	19,38	21,64	845-5	R-11-5	846-5	R-11-A-5	M-18-3/8	3/8	9,5		
		20	0,035	0,89	0,805	20,45	0,763	0,852	19,38	21,64	845-5	R-11-5	846-5	R-11-A-5	M-18-3/8	3/8	9,5		
		21	0,032	0,81	0,811	20,60	0,763	0,852	19,38	21,64	845-5	R-11-5	846-5	R-11-A-5	M-18-3/8	3/8	9,5		
		22	0,028	0,71	0,819	20,80	0,763	0,852	19,38	21,64	845-5	R-11-5	846-5	R-11-A-5	M-18-3/8	3/8	9,5		

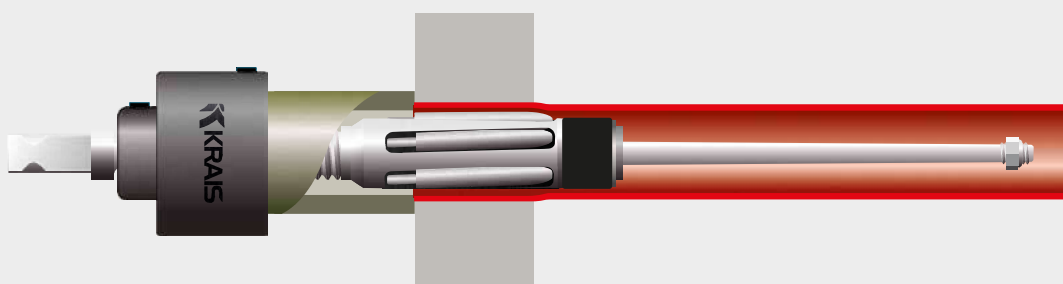
800-5 Five Roll Series

TUBE OD		TUBE GAUGE			TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL	MANDREL SQUARE		PNEUMATIC MOTOR *	ELECTRIC MOTOR *
											1/2" TO 1-1/2"		1-1/4" TO 2-1/4"						
							[INCH]	[MM]	[BWG]	[INCH]	[MM]	[INCH]	[MM]	MIN		MAX	MIN		
1	25,4	12	0,109	2,77	0,782	19,86	0,763	0,852	19,38	21,64	845-5	R-11-5	846-5	R-11-A-5	M-18-3/8	3/8	9,5	K50-600	TES3000 G1450 or TESMini2 ES2
		13	0,095	2,41	0,810	20,57	0,791	0,880	20,09	22,35	847-5	R-13-5	848-5	R-13-A-5	M-18-3/8	3/8	9,5		
		14	0,083	2,11	0,834	21,18	0,810	0,909	20,57	23,09	849-5	R-12-5	850-5	R-12-A-5	M-850-5	3/8	9,5		
		15	0,072	1,83	0,856	21,74	0,837	0,936	21,26	23,77	851-5	R-14-5	852-5	R-14-A-5	M-852-5	3/8	9,5		
		16	0,065	1,65	0,87	22,10	0,837	0,936	21,26	23,77	851-5	R-13-5	852-5	R-13-A-5	M-852-5	3/8	9,5		
	17	0,058	1,47	0,884	22,45	0,865	0,964	21,97	24,49	855-5	R-13-5	856-5	R-13-A-5	M-856-5	3/8	9,5	K50-1250	TES3000 G1000 or TESMini2 DU0	
	18	0,049	1,24	0,902	22,91	0,865	0,964	21,97	24,49	855-5	R-13-5	856-5	R-13-A-5	M-856-5	3/8	9,5			
	19	0,042	1,07	0,916	23,27	0,865	0,964	21,97	24,49	855-5	R-13-5	856-5	R-13-A-5	M-856-5	3/8	9,5			
	20	0,035	0,89	0,93	23,62	0,865	0,964	21,97	24,49	855-5	R-13-5	856-5	R-13-A-5	M-856-5	3/8	9,5			
	21	0,032	0,81	0,936	23,77	0,883	0,982	22,43	24,94	857-5	R-15-5	858-5	R-15-A-5	M-21-3/8	3/8	9,5			
1-1/8	28,5	12	0,109	2,77	0,907	23,04	0,883	0,982	22,43	24,94	857-5	R-15-5	858-5	R-15-A-5	M-21-3/8	3/8	9,5	K60-400	TES3000 + G1000 TESMini2 + DU1
		13	0,095	2,41	0,935	23,75	0,916	1,015	23,27	25,78	859-5	R-16-5	860-5	R-16-A-5	M-860-5	1/2	12,7		
		14	0,083	2,11	0,959	24,36	0,935	1,044	23,75	26,52	861-5	R-17-5	862-5	R-17-A-5	M-862-5	1/2	12,7		
1-1/4	31,7	15	0,072	1,83	1,106	28,09	1,087	1,196	27,61	30,38	875-5	R-21-5	876-5	R-21-A-5	M-876-5	1/2	12,7	K60-400	TES3000 G1000 or TESMini2 DU1
		16	0,065	1,65	1,120	28,45	1,087	1,196	27,61	30,38	875-5	R-21-5	876-5	R-21-A-5	M-876-5	1/2	12,7		
		17	0,058	1,47	1,134	28,80	1,115	1,231	28,32	31,27	879-5	R-21-5	880-5	R-21-A-5	M-880-5	1/2	12,7		
		18	0,049	1,24	1,152	29,26	1,115	1,231	28,32	31,27	879-5	R-21-5	880-5	R-21-A-5	M-880-5	1/2	12,7		
		19	0,042	1,07	1,166	29,62	1,115	1,231	28,32	31,27	879-5	R-21-5	880-5	R-21-A-5	M-880-5	1/2	12,7		
		20	0,035	0,89	1,180	29,97	1,115	1,231	28,32	31,27	879-5	R-21-5	880-5	R-21-A-5	M-880-5	1/2	12,7		
		21	0,032	0,81	1,186	30,12	1,115	1,231	28,32	31,27	879-5	R-21-5	880-5	R-21-A-5	M-880-5	1/2	12,7		
1-3/8	34,9	12	0,109	2,77	1,157	29,39	1,133	1,242	28,78	31,55	881-5	R-21-5	882-5	R-21-A-5	M-882-5	1/2	12,7	K60-250	
		14	0,083	2,11	1,209	30,71	1,179	1,294	29,95	32,87	885-5	R-23-5	886-5	R-23-A-5	M-882-5	1/2	12,7		
1-1/2	38,1	17	0,058	1,47	1,384	35,15	1,331	1,472	33,81	37,39	899-5	R-29-5	900-5	R-29-A-5	M-900-5	1/2	12,7	K60-900	TES3000 G1000 or TESMini2 ES2
		18	0,049	1,24	1,402	35,61	1,331	1,472	33,81	37,39	899-5	R-29-5	900-5	R-29-A-5	M-900-5	1/2	12,7		
		19	0,042	1,07	1,416	35,97	1,331	1,472	33,81	37,39	899-5	R-29-5	900-5	R-29-A-5	M-900-5	1/2	12,7		
		20	0,035	0,89	1,430	36,32	1,331	1,472	33,81	37,39	899-5	R-29-5	900-5	R-29-A-5	M-900-5	1/2	12,7		
		21	0,032	0,81	1,436	36,47	1,331	1,472	33,81	37,39	899-5	R-29-5	900-5	R-29-A-5	M-900-5	1/2	12,7		
		22	0,028	0,71	1,444	36,68	1,331	1,472	33,81	37,39	899-5	R-29-5	900-5	R-29-A-5	M-900-5	1/2	12,7		

* Motor recommendation applies only to most popular cases with a standard percentage of the wall reduction. The recommendation can be different for thicker tube sheet, harder and exotic metal tube and a higher percentage of wall reduction.

RECOMMENDATION

For the thin wall tube, it is recommended to use 5 roll expanders with bottle rolls (BL) type rolls and BL type thrust collar to prevent the tube to be retracted inside the thrust collar making the tube projection uneven or even effectively jammed the tube inside collar.



1200 Series

Tools for expanding tubes in condensers, chillers, heat exchangers, fin fan coolers, feedwater heaters and surface condensers.

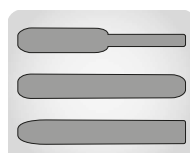
As a standard expanders are supplied with STC collar. Available in regular and long reaches (some diameters, up to 5m) and as the 5-rolls version for rolling thin walls. Many different shaped rolls are available.

WORKING RANGE

TUBE ID	TUBE OD	TUBE SHEET
8,48 - 36,32 MM	12,7 - 38,1 MM	See table below
0,334 - 1,430"	1/2" to 1-1/2"	

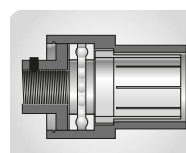


OPTIONAL SPARES AND ACCESSORIES



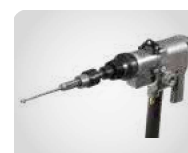
ROLLS ON REQUEST

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THRUST COLLARS

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ROLLING MOTORS

→ CHAPTER PAGE 44

TUBE SHEET THICKNESS

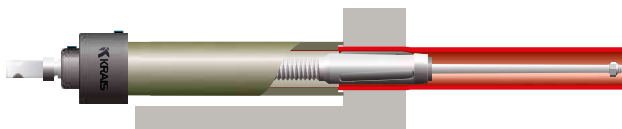
ROLLS	REACH	TUBE SHEET THICKNESS	
		[INCH]	[MM]
1 1/2" 38,1	STD	1 1/2 - 6"	38,1 - 152,4 mm
	A	1 1/2 - 8"	38,1 - 203,2 mm
	B	1 1/2 - 10"	38,1 - 254,0 mm
	C	1 1/2 - 12"	38,1 - 304,8 mm
2 1/4" 57,1	STD	2 1/4 - 6 3/4"	57,1 - 171,4 mm
	A	2 1/4 - 8 3/4"	57,1 - 222,2 mm
	B	2 1/4 - 10 3/4"	57,1 - 273,0 mm
	C	2 1/4 - 12 3/4"	57,1 - 323,8 mm

NOTE!

Please note that expanders are equipped with "UNIVERSAL NOSE PIECE" which shorten the expansion reach by 3/4". In order to receive full expansion reach, expander has to be equipped with "SHORT NOSE PIECE".

OPTIONAL

Special extended thrust collars to reach the face of the tube sheet



TUBE OD		TUBE GAUGE			TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL	MANDREL SQUARE		PNEUMATIC MOTOR *	ELECTRIC MOTOR *
											1/2" TO 6"		2-1/4" TO 6-3/4"						
							[INCH]	[MM]	[BWG]	[INCH]	[MM]	[INCH]	[MM]	MIN		MAX	MIN		
3/8	9,5	22-24	0,027	0,71	0,314	8,00	0,307	0,358	7,80	9,10	1195	795	-	-	M-1195	3/8	9,5	K20-500	TES300 S1500 or TESMini2 HT0
1/2	12,7	14	0,083	2,11	0,334	8,48	0,324	0,374	8,23	9,50	1197	797	-	-	1197	3/8	9,5		
		15	0,072	1,83	0,356	9,04	0,348	0,398	8,84	10,11	1199	R-1	-	-	1199	3/8	9,5		
		16	0,065	1,65	0,370	9,40	0,36	0,41	9,14	10,41	1201	R-1	-	-	M-51	3/8	9,5		
		17	0,058	1,47	0,384	9,75	0,374	0,424	9,50	10,77	1203	R-2	-	-	M-51	3/8	9,5		
		18	0,049	1,24	0,402	10,21	0,392	0,447	9,96	11,35	1205	R-3	-	-	M-52	3/8	9,5		
5/8	15,8	20	0,035	0,89	0,430	10,92	0,406	0,461	10,31	11,71	1205[S]	R-3	-	-	M-53	3/8	9,5	K20-1800	
		12	0,109	2,77	0,407	10,34	0,392	0,447	9,96	11,35	1205	R-3	-	-	M-52	3/8	9,5		
		13	0,095	2,41	0,435	11,05	0,425	0,480	10,80	12,19	1207	R-4	-	-	M-53	3/8	9,5		
		14	0,083	2,11	0,459	11,66	0,449	0,509	11,40	12,93	1209	R-4	1210	R-4-A	M-54	3/8	9,5		
		15	0,072	1,83	0,481	12,22	0,471	0,536	11,96	13,61	1211	R-5	1212	R-5A	M-55	3/8	9,5		
		16	0,065	1,65	0,495	12,57	0,485	0,550	12,32	13,97	1213	R-6	1214	R-6A	M-55	3/8	9,5	K50-600	TES3000 G1450 or TesMini2 ES2
		17	0,058	1,47	0,509	12,93	0,499	0,564	12,67	14,33	1215	R-6	1216	R-6A	M-56	3/8	9,5		
		18	0,049	1,24	0,527	13,39	0,517	0,572	13,13	14,53	1217	R-7	1218	R-7-A	M-58 M-55	3/8	9,5		
		19	0,042	1,07	0,541	13,74	0,522	0,582	13,26	14,78	1219	R-7	1220	R-7-A	M-56	3/8	9,5		
		20	0,035	0,89	0,555	14,10	0,536	0,596	13,61	15,14	1219[S]	R-7	1220[S]	R-7-A	M-58	3/8	9,5		
		21	0,032	0,81	0,561	14,25	0,536	0,596	13,61	15,14	1219[S]	R-7	1220[S]	R-7-A	M-58	3/8	9,5		
		22	0,028	0,71	0,569	14,45	0,536	0,596	13,61	15,14	1219[S]	R-7	1220[S]	R-7-A	M-58	3/8	9,5		

1200 Series

TUBE OD		TUBE GAUGE		TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL	MANDREL SQUARE		PNEUMATIC MOTOR *	ELECTRIC MOTOR *	
										1/2" TO 6"		2-1/4" TO 6-3/4"							
						[INCH]	[MM]	[BWG]	[INCH]	[MM]	[INCH]	[MM]	MIN		MAX	MIN			MAX
3/4	19	10	0,134	3,40	0,482	12,24	0,471	0,536	11,96	13,61	1211	R-5	1212	R-5-A	M-55	3/8	9,5	K60-900	TES3000 + G1000 TESMini2 + ES2
		11	0,120	3,05	0,510	12,95	0,499	0,564	12,67	14,33	1215	R-6	1216	R-6-A	M-56	3/8	9,5		
		12	0,109	2,77	0,532	13,51	0,522	0,582	13,26	14,78	1219	R-7	1220	R-7-A	M-56	3/8	9,5		
		13	0,095	2,41	0,560	14,22	0,55	0,615	13,97	15,62	1221	R-8	1222	R-8-A	M-58	3/8	9,5	K50-400	TES3000 G1450 or TESMini2 ES2
		14	0,083	2,11	0,584	14,83	0,574	0,639	14,58	16,23	1223	R-9	1224	R-9-A	M-58	3/8	9,5		
		15	0,072	1,83	0,606	15,39	0,596	0,661	15,14	16,79	1225	R-10	1226	R-10-A	M-58	3/8	9,5	K50-600	
		16	0,065	1,65	0,620	15,75	0,605	0,685	15,37	17,40	1227	R-10	1228	R-10-A	M-59	3/8	9,5		
		17	0,058	1,47	0,634	16,10	0,619	0,699	15,72	17,75	1229	R-11	1230	R-11-A	M-59	3/8	9,5	K60-900	TES3000 G1000 or TESMini2 DUO
		18	0,049	1,24	0,652	16,56	0,619	0,699	15,72	17,75	1229	R-11	1230	R-11-A	M-59	3/8	9,5		
		19	0,042	1,07	0,666	16,92	0,642	0,722	16,31	18,34	1231	R-12	1232	R-12-A	M-59	3/8	9,5		
		20	0,035	0,89	0,680	17,27	0,642	0,722	16,31	18,34	1231	R-12	1232	R-12-A	M-59	3/8	9,5		
		21	0,032	0,81	0,686	17,42	0,642	0,722	16,31	18,34	1231	R-12	1232	R-12-A	M-59	3/8	9,5		
		22	0,028	0,71	0,694	17,63	0,642	0,722	16,31	18,34	1231	R-12	1232	R-12-A	M-59	3/8	9,5		
7/8	22,2	10	0,134	3,40	0,607	15,42	0,596	0,661	15,14	16,79	1225	R-10	1226	R-10-A	M-58	3/8	9,5	K50-400	TES3000 G1000 or TESMini2 ES2
		11	0,120	3,05	0,635	16,13	0,619	0,699	15,72	17,75	1229	R-11	1230	R-11-A	M-59	3/8	9,5		
		12	0,109	2,77	0,657	16,69	0,642	0,722	16,31	18,34	1231	R-12	1232	R-12-A	M-59	3/8	9,5		
		13	0,095	2,41	0,685	17,40	0,67	0,750	17,02	19,05	1233	R-13	1234	R-13-A	M-60	3/8	9,5	K50-600	
		14	0,083	2,11	0,709	18,01	0,685	0,774	17,40	19,66	1235	R-14	1236	R-14-A	M-61	3/8	9,5		
		15	0,072	1,83	0,731	18,57	0,712	0,801	18,08	20,35	1237	R-15	1238	R-15-A	M-61	3/8	9,5		
		16	0,065	1,65	0,745	18,92	0,726	0,815	18,44	20,70	1239	R-15	1240	R-15-A	M-62	3/8	9,5	K50-1250	TES3000 + G1450 TESMini2 ES2
		17	0,058	1,47	0,759	19,28	0,740	0,829	18,80	21,06	1243	R-16	1244	R-16-A	M-62	3/8	9,5		
1	25,4	18	0,049	1,24	0,777	19,74	0,740	0,829	18,80	21,06	1243	R-16	1244	R-16-A	M-62	3/8	9,5	K60-400	
		8	0,165	4,19	0,670	17,02	0,655	0,735	16,64	18,67	1241	R-13	1242	R-13-A	M-59	3/8	9,5		
		9	0,148	3,76	0,704	17,88	0,685	0,774	17,40	19,66	1235	R-14	1236	R-14-A	M-61	3/8	9,5		
		10	0,134	3,40	0,732	18,59	0,712	0,801	18,08	20,35	1237	R-15	1238	R-15-A	M-61	3/8	9,5		
		11	0,120	3,05	0,760	19,30	0,740	0,829	18,80	21,06	1243	R-16	1244	R-16-A	M-62	3/8	9,5		
		12	0,109	2,77	0,782	19,86	0,763	0,852	19,38	21,64	1245	R-17	1246	R-17-A	M-62	3/8	9,5	K50-400	TES3000 G1000 or TESMini2 ES2
		13	0,095	2,41	0,810	20,57	0,791	0,880	20,09	22,35	1247	R-18	1248	R-18-A	M-62	3/8	9,5		
		14	0,083	2,11	0,834	21,18	0,810	0,909	20,57	23,09	1249	R-18	1250	R-18-A	M-63	3/8	9,5		
		15	0,072	1,83	0,856	21,74	0,837	0,936	21,26	23,77	1251	R-19	1252	R-19-A	M-63	3/8	9,5	K50-600	
		16	0,065	1,65	0,870	22,10	0,837	0,936	21,26	23,77	1251	R-19	1252	R-19-A	M-63	3/8	9,5		
		17	0,058	1,47	0,884	22,45	0,865	0,964	21,97	24,49	1255	R-21	1256	R-21-A	M-63	3/8	9,5		
		18	0,049	1,24	0,902	22,91	0,865	0,964	21,97	24,49	1255	R-21	1256	R-21-A	M-63	3/8	9,5		
1-1/8	28,5	19	0,042	1,07	0,916	23,27	0,865	0,964	21,97	24,49	1255	R-21	1256	R-21-A	M-63	3/8	9,5	K60-400	TES3000 G1000 or TESMini2 DU1
		20	0,035	0,89	0,930	23,62	0,865	0,964	21,97	24,49	1255	R-21	1256	R-21-A	M-63	3/8	9,5		
		8	0,165	4,19	0,795	20,19	0,776	0,875	19,71	22,23	1253	R-20	1254	R-20-A	M-63	3/8	9,5		
		9	0,148	3,76	0,829	21,06	0,810	0,909	20,57	23,09	1249	R-18	1250	R-18-A	M-63	3/8	9,5		
		10	0,134	3,40	0,857	21,77	0,837	0,936	21,26	23,77	1251	R-19	1252	R-19-A	M-63	3/8	9,5		
		11	0,120	3,05	0,885	22,48	0,865	0,964	21,97	24,49	1255	R-21	1256	R-21-A	M-63	3/8	9,5	K60-400	
		12	0,109	2,77	0,907	23,04	0,883	0,982	22,43	24,94	1257	R-21	1258	R-21-A	M-64	1/2	12,7		
		13	0,095	2,41	0,935	23,75	0,916	1,015	23,27	25,78	1259	R-22	1260	R-22-A	M-64	1/2	12,7		
		14	0,083	2,11	0,959	24,36	0,935	1,044	23,75	26,52	1261	R-23	1262	R-23-A	M-65	1/2	12,7		
		15	0,072	1,83	0,981	24,92	0,962	1,071	24,43	27,20	1263	R-24	1264	R-24-A	M-65	1/2	12,7		
		16	0,065	1,65	0,995	25,27	0,962	1,071	24,43	27,20	1263	R-24	1264	R-24-A	M-65	1/2	12,7	K60-400	
		17	0,058	1,47	1,009	25,63	0,990	1,099	25,15	27,91	1267	R-26	1268	R-26-A	M-66	1/2	12,7		
		18	0,049	1,24	1,027	26,09	0,990	1,099	25,15	27,91	1267	R-26	1268	R-26-A	M-66	1/2	12,7		

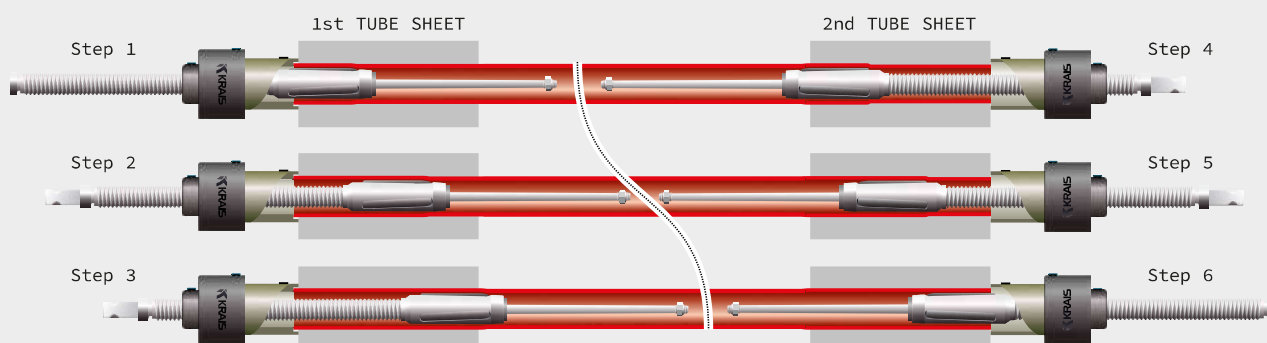
1200 Series

TUBE OD		TUBE GAUGE			TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL	MANDREL SQUARE		PNEUMATIC MOTOR *	ELECTRIC MOTOR *
											1/2" TO 6"		2-1/4" TO 6-3/4"						
							[INCH]	[MM]	[BWG]	[INCH]	[MM]	[INCH]	[MM]	MIN		MAX	MIN		
1-1/4	31,7	8	0,165	4,19	0,92	23,37	0,901	1,010	22,89	25,65	1265	R-25	1266	R-25-A	M-65	1/2	12,7	K60-400	TES3000 G1000 or TESMini2 DU1
		9	0,148	3,76	0,954	24,23	0,935	1,044	23,75	26,52	1261	R-23	1262	R-23-A	M-65	1/2	12,7		
		10	0,134	3,40	0,982	24,94	0,962	1,071	24,43	27,20	1263	R-24	1264	R-24-A	M-65	1/2	12,7		
		11	0,120	3,05	1,010	25,65	0,990	1,099	25,15	27,91	1267	R-26	1268	R-26-A	M-66	1/2	12,7		
		12	0,109	2,77	1,032	26,21	1,013	1,122	25,73	28,50	1269	R-27	1270	R-27-A	M-66	1/2	12,7		
		13	0,095	2,41	1,060	26,92	1,041	1,150	26,44	29,21	1271	R-28	1272	R-28-A	M-67	1/2	12,7		
		14	0,083	2,11	1,084	27,53	1,060	1,169	26,92	29,69	1273	R-29	1274	R-29-A	M-67	1/2	12,7		
		15	0,072	1,83	1,106	28,09	1,087	1,196	27,61	30,38	1275	R-30	1276	R-30-A	M-67	1/2	12,7		
		16	0,065	1,65	1,12	28,45	1,087	1,196	27,61	30,38	1275	R-30	1276	R-30-A	M-67	1/2	12,7		
		17	0,058	1,47	1,134	28,80	1,115	1,224	28,32	31,09	1279	R-30	1280	R-30-A	M-68	1/2	12,7		
1-3/8	34,9	8	0,165	4,19	1,045	26,54	1,026	1,135	26,06	28,83	1277	R-31	1278	R-31-A	M-67	1/2	12,7	K60-250	TES3000 G400 or TESMini2 DU1
		9	0,148	3,76	1,079	27,41	1,060	1,169	26,92	29,69	1273	R-29	1274	R-29-A	M-67	1/2	12,7		
		10	0,134	3,40	1,107	28,12	1,087	1,196	27,61	30,38	1275	R-30	1276	R-30-A	M-67	1/2	12,7		
		11	0,120	3,05	1,135	28,83	1,115	1,224	28,32	31,09	1279	R-30	1280	R-30-A	M-68	1/2	12,7		
		12	0,109	2,77	1,157	29,39	1,133	1,242	28,78	31,55	1281	R-32	1282	R-32-A	M-68	1/2	12,7	K60-400	
		13	0,095	2,41	1,185	30,10	1,160	1,275	29,46	32,39	1283	R-33	1284	R-33-A	M-69	1/2	12,7		
		14	0,083	2,11	1,209	30,71	1,179	1,294	29,95	32,87	1285	R-34	1286	R-34-A	M-70	1/2	12,7		
		15	0,072	1,83	1,231	31,27	1,206	1,321	30,63	33,55	1287	R-35	1288	R-35-A	M-70	1/2	12,7		
		16	0,065	1,65	1,245	31,62	1,206	1,321	30,63	33,55	1287	R-35	1288	R-35-A	M-70	1/2	12,7		
1-1/2	38,1	8	0,165	4,19	1,170	29,72	1,145	1,260	29,08	32,00	1289	R-34	1290	R-34-A	M-69	1/2	12,7	K60-250	
		9	0,148	3,76	1,204	30,58	1,145	1,294	29,08	32,87	1285	R-34	1286	R-34-A	M-70	1/2	12,7		
		10	0,134	3,40	1,232	31,29	1,206	1,321	30,63	33,55	1287	R-35	1288	R-35-A	M-70	1/2	12,7		
		11	0,120	3,05	1,260	32,00	1,235	1,350	31,37	34,29	1291	R-36	1292	R-36-A	M-70	1/2	12,7		
		12	0,109	2,77	1,282	32,56	1,257	1,372	31,93	34,85	1293	R-37	1294	R-37-A	M-70	1/2	12,7	K60-400	TES3000 G400 or TESMini2 DU1
		13	0,095	2,41	1,310	33,27	1,285	1,400	32,64	35,56	1295	R-37	1296	R-37-A	M-71	1/2	12,7		
		14	0,083	2,11	1,334	33,88	1,285	1,400	32,64	35,56	1295	R-37	1296	R-37-A	M-71	1/2	12,7		
		15	0,072	1,83	1,356	34,44	1,331	1,446	33,81	36,73	1297	R-38	1298	R-38-A	M-71	1/2	12,7		
		16	0,065	1,65	1,370	34,80	1,331	1,446	33,81	36,73	1297	R-38	1298	R-38-A	M-71	1/2	12,7		
		17	0,058	1,47	1,384	35,15	1,331	1,472	33,81	37,39	1299	R-38	1300	R-38-A	M-72	1/2	12,7		
		18	0,049	1,24	1,402	35,61	1,331	1,472	33,81	37,39	1299	R-38	1300	R-38-A	M-72	1/2	12,7		
19	0,042	1,07	1,416	35,97	1,331	1,472	33,81	37,39	1299	R-38	1300	R-38-A	M-72	1/2	12,7				
20	0,035	0,89	1,430	36,32	1,331	1,472	33,81	37,39	1299	R-38	1300	R-38-A	M-72	1/2	12,7				

* Motor recommendation applies only to most popular cases with a standard percentage of the wall reduction. The recommendation can be different for thicker tube sheet, harder and exotic metal tube and a higher percentage of wall reduction.

i RECOMMENDATION

Recommended order of step by step expanding in a thick tube sheets in order to avoid tension between both tube sheets after rolling.



1200-5 Five Roll Series

Tools for expanding tubes in condensers, chillers, heat exchangers, fin fan coolers, feedwater heaters and surface condensers.

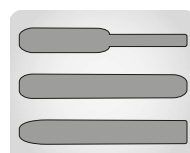
As a standard expanders are supplied with STC collar but for 5-roll versions, especially for 19 to 22 GA tubes, TWTC thin wall thrust collar is recommended. Available in regular and long reaches (some diameters, up to 5 m) and as the 3-rolls version.

WORKING RANGE

TUBE ID	TUBE OD	TUBE SHEET
14,83 - 36,32 MM	19,0 - 38,1 MM	See table below
0,584 - 1,430"	1/2" to 1-1/2"	

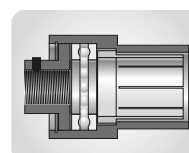


OPTIONAL SPARES AND ACCESSORIES



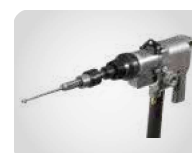
ROLLS ON REQUEST

→ PAGE 11



THRUST COLLARS

→ PAGE 10



ROLLING MOTORS

→ CHAPTER PAGE 44

TUBE SHEET THICKNESS

ROLLS	REACH	TUBE SHEET THICKNESS	
		[INCH]	[MM]
1-1/2" 38,1	STD	1 1/2 - 6"	38,1 - 152,4 mm
	A	1 1/2 - 8"	38,1 - 203,2 mm
	B	1 1/2 - 10"	38,1 - 254,0 mm
	C	1 1/2 - 12"	38,1 - 304,8 mm
2-1/4" 57,1	STD	2 1/4 - 6 3/4"	57,1 - 171,4 mm
	A	2 1/4 - 8 3/4"	57,1 - 222,2 mm
	B	2 1/4 - 10 3/4"	57,1 - 273,0 mm
	C	2 1/4 - 12 3/4"	57,1 - 323,8 mm

NOTE!

Please note that expanders are equipped with "UNIVERSAL NOSE PIECE" which shorten the expansion reach by 3/4". In order to receive full expansion reach, expander has to be equipped with "SHORT NOSE PIECE".

TUBE OD		TUBE GAUGE		TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL		MANDREL SQUARE		PNEUMATIC MOTOR *	ELECTRIC MOTOR *
										1/2" TO 6"		2-1/4" TO 6-3/4"							
						[INCH]	[MM]	[BWG]	[INCH]	[MM]	[INCH]	[MM]	MIN						
5/8	15,8	17	0,058	1,47	0,509	12,93	0,499	0,564	12,67	14,33	1215-5	R-4-5	1216-5	R-4-A-5	M-1216-5	3/8	9,5	K50-1250	TES3000 G1000 or TESMini2 DUO
		18	0,049	1,24	0,527	13,39	0,517	0,572	13,13	14,53	1217-5	R-4-5	1218-5	R-4-A-5	M-59	3/8	9,5		
		19	0,042	1,07	0,541	13,74	0,522	0,582	13,26	14,78	1219-5	R-4-5	1220-5	R-4-A-5	M-1220-5	3/8	9,5		
		20	0,035	0,89	0,555	14,10	0,536	0,596	13,61	15,14	1219-5[S]	R-4-5	1220-5[S]	R-4-A-5	M-1220-5[S]	3/8	9,5		
		21	0,032	0,81	0,561	14,25	0,536	0,596	13,61	15,14	1219-5[S]	R-4-5	1220-5[S]	R-4-A-5	M-1220-5[S]	3/8	9,5		
		22	0,028	0,71	0,569	14,45	0,536	0,596	13,61	15,14	1219-5[S]	R-4-5	1220-5[S]	R-4-A-5	M-1220-5[S]	3/8	9,5		
3/4	19,0	13	0,095	2,41	0,560	14,22	0,550	0,615	13,97	15,62	1221-5	R-5-5	1222-5	R-5-A-5	M-1222-5	3/8	9,5	K50-600	TES3000 G1450 or TESMini2 ES2
		14	0,083	2,11	0,584	14,83	0,574	0,639	14,58	16,23	1223-5	R-6-5	1224-5	R-6-A-5	M-1224-5	3/8	9,5		
		15	0,072	1,83	0,606	15,39	0,590	0,661	14,99	16,79	1225-5	R-7-5	1226-5	R-7-A-5	M-1226-5	3/8	9,5		
3/4	19,0	16	0,065	1,65	0,620	15,75	0,605	0,685	15,37	17,40	1227-5	R-7-5	1228-5	R-7-A-5	M-63	3/8	9,5	K50-1250	TES3000 G1000 or TESMini2 DUO
		17	0,058	1,47	0,634	16,10	0,619	0,699	15,72	17,75	1229-5	R-7-5	1230-5	R-7-A-5	M-1230-5	3/8	9,5		
		18	0,049	1,24	0,652	16,56	0,619	0,699	15,72	17,75	1229-5	R-7-5	1230-5	R-7-A-5	M-1230-5	3/8	9,5		
		19	0,042	1,07	0,666	16,92	0,642	0,722	16,31	18,34	1231-5	R-9-5	1232-5	R-9-A-5	M-63	3/8	9,5		
		20	0,035	0,89	0,680	17,27	0,642	0,722	16,31	18,34	1231-5	R-9-5	1232-5	R-9-A-5	M-63	3/8	9,5		
		21	0,032	0,81	0,686	17,42	0,642	0,722	16,31	18,34	1231-5	R-9-5	1232-5	R-9-A-5	M-63	3/8	9,5		
7/8	22,2	22	0,028	0,71	0,694	17,63	0,642	0,722	16,31	18,34	1231-5	R-9-5	1232-5	R-9-A-5	M-63	3/8	9,5	K50-600	TES3000 G1450 or TESMini2 ES2
		13	0,095	2,41	0,685	17,40	0,670	0,750	17,02	19,05	1233-5	R-9-5	1234-5	R-9-A-5	M-64-3/8	3/8	9,5		
		14	0,083	2,11	0,709	18,01	0,685	0,774	17,40	19,66	1235-5	R-10-5	1236-5	R-10-A-5	M-65	3/8	9,5		
		16	0,065	1,65	0,745	18,92	0,726	0,815	18,44	20,70	1239-5	R-11-5	1240-5	R-11-A-5	M-1240-5	3/8	9,5		
		17	0,058	1,47	0,759	19,28	0,740	0,829	18,80	21,06	1243-5	R-11-5	1244-5	R-11-A-5	M-67-3/8	3/8	9,5		
		18	0,049	1,24	0,777	19,74	0,740	0,829	18,80	21,06	1243-5	R-11-5	1244-5	R-11-A-5	M-67-3/8	3/8	9,5		
		19	0,042	1,07	0,791	20,09	0,763	0,852	19,38	21,64	1245-5	R-11-5	1246-5	R-11-A-5	M-68-3/8	3/8	9,5		
		20	0,035	0,89	0,805	20,45	0,763	0,852	19,38	21,64	1245-5	R-11-5	1246-5	R-11-A-5	M-68-3/8	3/8	9,5		
7/8	22,2	21	0,032	0,81	0,811	20,60	0,763	0,852	19,38	21,64	1245-5	R-11-5	1246-5	R-11-A-5	M-68-3/8	3/8	9,5	K50-1250	TES3000 G1000 or TESMini2 DUO
		22	0,028	0,71	0,819	20,80	0,763	0,852	19,38	21,64	1245-5	R-11-5	1246-5	R-11-A-5	M-68-3/8	3/8	9,5		

TUBE OD		TUBE GAUGE			TUBE ID		EXPANSION RANGE				TUBE SHEET THICKNESS				MANDREL		MANDREL SQUARE		PNEUMATIC MOTOR *	ELECTRIC MOTOR *
											1/2" TO 6"		2-1/4" TO 6-3/4"							
							[INCH]	[MM]	[BWG]	[INCH]	[MM]	[INCH]	[MM]	MIN						
1	25,4	12	0,109	2,77	0,782	19,86	0,763	0,852	19,38	21,64	1245-5	R-11-5	1246-5	R-11-A-5	M-68-3/8	3/8	9,5	K50-600	TES3000 G1450 or TESMini2 ES2	
		13	0,095	2,41	0,810	20,57	0,791	0,880	20,09	22,35	1247-5	R-13-5	1248-5	R-13-A-5	M-68-3/8	3/8	9,5			
		14	0,083	2,11	0,834	21,18	0,810	0,909	20,57	23,09	1249-5	R-12-5	1250-5	R-12-A-5	M-1250-5	3/8	9,5			
		15	0,072	1,83	0,856	21,74	0,837	0,936	21,26	23,77	1251-5	R-14-5	1252-5	R-14-A-5	M-1252-5	3/8	9,5			
		16	0,065	1,65	0,87	22,10	0,837	0,936	21,26	23,77	1251-5	R-14-5	1252-5	R-14-A-5	M-1252-5	3/8	9,5			
		17	0,058	1,47	0,884	22,45	0,865	0,964	21,97	24,49	1255-5	R-13-5	1256-5	R-13-A-5	M-1256-5	3/8	9,5			
		18	0,049	1,24	0,902	22,91	0,865	0,964	21,97	24,49	1255-5	R-13-5	1256-5	R-13-A-5	M-1256-5	3/8	9,5			
		19	0,042	1,07	0,916	23,27	0,865	0,964	21,97	24,49	1255-5	R-13-5	1256-5	R-13-A-5	M-1256-5	3/8	9,5			
		20	0,035	0,89	0,93	23,62	0,865	0,964	21,97	24,49	1255-5	R-13-5	1256-5	R-13-A-5	M-1256-5	3/8	9,5			
		21	0,032	0,81	0,936	23,77	0,883	0,982	22,43	24,94	1257-5	R-15-5	1258-5	R-15-A-5	M-71-3/8	3/8	9,5			
1-1/8	28,5	22	0,028	0,71	0,944	23,98	0,883	0,982	22,43	24,94	1257-5	R-15-5	1258-5	R-15-A-5	M-71-3/8	3/8	9,5	K60-400	TES3000 G1000 or TESMini2 DU1	
		12	0,109	2,77	0,907	23,04	0,883	0,982	22,43	24,94	1257-5	R-15-5	1258-5	R-15-A-5	M-71-3/8	3/8	9,5			
1-1/4	31,7	13	0,095	2,41	0,935	23,75	0,916	1,015	23,27	25,78	1259-5	R-16-5	1260-5	R-16-A-5	M-1260-5	1/2	12,7	K60-400	TES3000 G1000 or TESMini2 DU1	
		14	0,083	2,11	0,959	24,36	0,935	1,044	23,75	26,52	1261-5	R-17-5	1262-5	R-17-A-5	M-1262-5	1/2	12,7			
		15	0,072	1,83	1,106	28,09	1,087	1,196	27,61	30,38	1275-5	R-21-5	1276-5	R-21-A-5	M-1276-5	1/2	12,7			
		16	0,065	1,65	1,120	28,45	1,087	1,196	27,61	30,38	1275-5	R-21-5	1276-5	R-21-A-5	M-1276-5	1/2	12,7			
		17	0,058	1,47	1,134	28,80	1,115	1,231	28,32	31,27	1279-5	R-21-5	1280-5	R-21-A-5	M-1280-5	1/2	12,7			
		18	0,049	1,24	1,152	29,26	1,115	1,231	28,32	31,27	1279-5	R-21-5	1280-5	R-21-A-5	M-1280-5	1/2	12,7			
		19	0,042	1,07	1,166	29,62	1,115	1,231	28,32	31,27	1279-5	R-21-5	1280-5	R-21-A-5	M-1280-5	1/2	12,7			
		20	0,035	0,89	1,180	29,97	1,115	1,231	28,32	31,27	1279-5	R-21-5	1280-5	R-21-A-5	M-1280-5	1/2	12,7			
		21	0,032	0,81	1,186	30,12	1,115	1,231	28,32	31,27	1279-5	R-21-5	1280-5	R-21-A-5	M-1280-5	1/2	12,7			
		22	0,028	0,71	1,194	30,33	1,115	1,231	28,32	31,27	1279-5	R-21-5	1280-5	R-21-A-5	M-1280-5	1/2	12,7			
1-3/8	34,9	12	0,109	2,77	1,157	29,39	1,133	1,242	28,78	31,55	1281-5	R-21-5	1282-5	R-21-A-5	M-1282-5	1/2	12,7	K60-250		
		14	0,083	2,11	1,209	30,71	1,179	1,294	29,95	32,87	1285-5	R-23-5	1286-5	R-23-A-5	M-1282-5	1/2	12,7			
1-1/2	38,1	17	0,058	1,47	1,384	35,15	1,331	1,472	33,81	37,39	1299-5	R-29-5	1300-5	R-29-A-5	M-1300-5	1/2	12,7	K60-900	TES3000 G1000 or TESMini2 ES2	
		18	0,049	1,24	1,402	35,61	1,331	1,472	33,81	37,39	1299-5	R-29-5	1300-5	R-29-A-5	M-1300-5	1/2	12,7			
		19	0,042	1,07	1,416	35,97	1,331	1,472	33,81	37,39	1299-5	R-29-5	1300-5	R-29-A-5	M-1300-5	1/2	12,7			
		20	0,035	0,89	1,430	36,32	1,331	1,472	33,81	37,39	1299-5	R-29-5	1300-5	R-29-A-5	M-1300-5	1/2	12,7			
		21	0,032	0,81	1,436	36,47	1,331	1,472	33,81	37,39	1299-5	R-29-5	1300-5	R-29-A-5	M-1300-5	1/2	12,7			
		22	0,028	0,71	1,444	36,68	1,331	1,472	33,81	37,39	1299-5	R-29-5	1300-5	R-29-A-5	M-1300-5	1/2	12,7			

* Motor recommendation applies only to most popular cases with a standard percentage of the wall reduction. The recommendation can be different for thicker tube sheet, harder and exotic metal tube and a higher percentage of wall reduction.

RECOMMENDATION

Recommended order of step by step expanding in a thick tube sheets in order to avoid tension between both tube sheets after rolling.

