

KENCO INJECTORS

Models KINJ, KINJM AND KRINJ

MAXIMUM ALLOWED PIPELINE FLOW RATE IN GALLONS PER MINUTE NOTE 4

METAL INJECTORS (316 SS, ALLOY 20, HC-276, ETC.)

FOR GASES ONLY

		NOMINAL PROCESS PIPE DIAMETER, STD. WEIGHT																				
		NOM. DIA.	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
		Actual I.D.	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026	5.047	6.065	7.981	10.020	12.000	13.250	15.250	17.250	19.250	23.250
INSERTION LENGTH	1.75	274	480	779	1,347	1,834	3,023	4,313	6,660	8,907	11,468	18,023	26,026	45,068	71,038	101,886	124,218	164,548	210,538	262,189	382,472	
	2.00	218	383	621	1,074	1,462	2,409	3,438	5,308	7,099	9,140	14,364	20,743	35,920	56,618	81,204	99,003	131,147	167,801	208,968	304,834	
	3.00	111	194	314	544	741	1,221	1,741	2,689	3,596	4,631	7,277	10,509	18,197	28,682	41,138	50,155	66,439	85,008	105,863	154,428	
	4.00	72	127	205	355	484	798	1,138	1,757	2,350	3,026	4,755	6,866	11,890	18,741	26,879	32,770	43,410	55,543	69,169	100,901	
	5.00	52	91	148	256	348	574	819	1,264	1,690	2,176	3,420	4,939	8,553	13,481	19,335	23,573	31,227	39,954	49,756	72,583	
	6.00	40	70	113	196	267	439	627	968	1,295	1,667	2,620	3,783	6,551	10,325	14,809	18,055	23,917	30,601	38,109	55,592	
	7.00	21	37	60	104	142	234	334	516	690	888	1,396	2,016	3,491	5,503	7,893	9,623	12,747	16,310	20,311	29,629	
	8.00	16	29	47	81	110	181	258	398	533	686	1,078	1,556	2,694	4,247	6,091	7,427	9,838	12,587	15,675	22,867	
	8.50	15	26	41	72	97	161	229	354	473	609	958	1,383	2,395	3,775	5,415	6,601	8,745	11,189	13,934	20,326	

HOW TO READ THE TABLE:

1. Locate the pipe diameter that the injector will be installed into along the top row.
2. Locate the desired insertion length along the left side column.
3. Locate the box where the pipe diameter and the insertion length intersect.
4. The number in the box is the maximum flow rate past the injector tip in the pipeline in gallons per minute for which an injector with that insertion length will not suffer structural damage.

EXAMPLE:

If you wish to install an injector with a 4" insertion length into a 2" nominal diameter pipe, the flow rate cannot exceed 798 gallons per min

Reference: Calculations used to formulate this chart are based on "Stress Analysis of Thermowells", J.E. Brock, Naval Postgraduate School, Monterey, 1974
ASME PTC 19.3 - 1974 Temperature Measurement

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NOMINAL PROCESS PIPE DIAMETER, .375" WALL THICKNESS																					
NOM. DIA.	14	16	18	20	24	30	32	34	36	38	40	42	44	46	48	50	52	54	56	60	
Actual I.D.	13.250	15.250	17.250	19.250	23.250	29.250	31.250	33.250	35.250	37.250	39.250	41.250	43.250	45.250	47.250	49.250	51.250	53.250	55.250	59.250	
INSERTION LENGTH	6	18,055	23,917	30,601	38,109	55,592	87,986	100,430	113,696	127,785	142,697	158,432	174,989	192,369	210,572	229,597	249,445	270,116	291,610	313,926	361,027
	7	9,623	12,747	16,310	20,311	29,629	46,894	53,526	60,597	68,106	76,053	84,439	93,264	102,527	112,228	122,368	132,947	143,963	155,419	167,313	192,416
	8	7,427	9,838	12,587	15,675	22,867	36,191	41,310	46,767	52,562	58,696	65,168	71,978	79,127	86,615	94,440	102,605	111,107	119,948	129,127	148,502
	8.5	6,601	8,745	11,189	13,934	20,326	32,170	36,720	41,570	46,722	52,174	57,927	63,981	70,335	76,991	83,947	91,204	98,762	106,621	114,780	132,001
	9	5,927	7,851	10,045	12,509	18,248	28,882	32,967	37,321	41,946	46,841	52,006	57,441	63,146	69,121	75,366	81,882	88,667	95,722	103,048	118,509
	10	5,020	6,650	8,508	10,595	15,456	24,463	27,922	31,611	35,528	39,674	44,049	48,652	53,484	58,545	63,835	69,353	75,100	81,076	87,281	100,376
	11	4,319	5,722	7,321	9,117	13,299	21,049	24,026	27,199	30,570	34,137	37,901	41,862	46,020	50,375	54,926	59,675	64,620	69,761	75,100	86,368
	12	3,769	4,993	6,388	7,956	11,605	18,368	20,966	23,735	26,676	29,789	33,074	36,531	40,159	43,959	47,931	52,074	56,389	60,876	65,535	75,368
	13	3,331	4,412	5,645	7,030	10,256	16,232	18,527	20,975	23,574	26,325	29,227	32,282	35,488	38,846	42,356	46,018	49,831	53,796	57,913	66,602
	14	2,970	3,934	5,033	6,268	9,144	14,472	16,519	18,701	21,019	23,472	26,060	28,783	31,642	34,636	37,765	41,030	44,430	47,965	51,636	59,383
	15	2,669	3,535	4,524	5,633	8,218	13,006	14,846	16,807	18,889	21,094	23,420	25,867	28,436	31,127	33,940	36,874	39,929	43,106	46,405	53,368
	16	2,420	3,205	4,101	5,107	7,450	11,792	13,459	15,237	17,125	19,124	21,232	23,451	25,780	28,220	30,770	33,430	36,200	39,080	42,071	48,383
	17	2,205	2,921	3,737	4,654	6,788	10,744	12,264	13,884	15,604	17,425	19,347	21,369	23,491	25,714	28,037	30,461	32,985	35,610	38,335	44,086
	18	2,026	2,684	3,434	4,276	6,238	9,873	11,269	12,758	14,339	16,012	17,778	19,636	21,586	23,629	25,763	27,991	30,310	32,722	35,226	40,511
	19	1,865	2,471	3,161	3,937	5,743	9,090	10,375	11,746	13,201	14,742	16,367	18,078	19,873	21,754	23,719	25,770	27,905	30,126	32,431	37,297
	20	1,728	2,289	2,928	3,647	5,320	8,420	9,610	10,880	12,228	13,655	15,161	16,745	18,408	20,150	21,971	23,870	25,848	27,905	30,040	34,547
	21	1,607	2,129	2,724	3,393	4,949	7,833	8,941	10,122	11,376	12,704	14,105	15,579	17,126	18,746	20,440	22,207	24,047	25,961	27,948	32,141
	22	1,500	1,987	2,542	3,166	4,618	7,309	8,343	9,445	10,616	11,855	13,162	14,537	15,981	17,493	19,074	20,723	22,440	24,226	26,080	29,992
	23	1,405	1,862	2,382	2,966	4,327	6,849	7,817	8,850	9,947	11,107	12,332	13,621	14,974	16,391	17,872	19,416	21,025	22,699	24,436	28,102
24	1,319	1,748	2,236	2,785	4,063	6,430	7,339	8,309	9,338	10,428	11,578	12,788	14,058	15,388	16,778	18,229	19,740	21,310	22,941	26,383	

HOW TO READ THE TABLE:

1. Locate the pipe diameter that the injector will be installed into along the top row.
2. Locate the desired insertion length along the left side column.
3. Locate the box where the pipe diameter and the insertion length intersect.
4. The number in the box is the maximum flow rate past the injector tip in the pipeline in gallons per minute for which an injector with that insertion length will not suffer structural damage.

EXAMPLE:

If you wish to install an injector with a 16" insertion length into a 24" nominal diameter pipe, the flow rate cannot exceed 7,450 gallons per min

Reference: Calculations used to formulate this chart are based on "Stress Analysis of Thermowells", J.E. Brock, Naval Postgraduate School, Monterey, 1974
ASME PTC 19.3 - 1974 Temperature Measurement