

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 LIQUIDS 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	163	286	463	801	1,091	1,798	2,566	3,961	5,298	6,822	10,720	15,481	26,807	42,254	60,604	73,887	97,876	125,232	155,955	227,501
	2.00	139	244	395	684	930	1,534	2,188	3,379	4,519	5,818	9,144	13,205	22,865	36,041	51,692	63,022	83,484	106,817	133,022	194,048
	3.00	83	146	237	409	557	919	1,311	2,024	2,707	3,485	5,477	7,909	13,695	21,587	30,961	37,747	50,003	63,978	79,674	116,225
	4.00	58	102	165	285	388	640	913	1,410	1,886	2,428	3,816	5,511	9,543	15,042	21,574	26,302	34,842	44,580	55,517	80,986
	5.00	43	76	124	214	291	480	684	1,057	1,413	1,820	2,860	4,130	7,151	11,271	16,166	19,710	26,109	33,406	41,601	60,686
	6.00	34	60	97	168	229	377	538	831	1,112	1,432	2,250	3,249	5,626	8,868	12,719	15,506	20,541	26,282	32,729	47,744
	7.00	28	49	79	137	187	307	439	677	906	1,167	1,833	2,647	4,584	7,226	10,364	12,635	16,738	21,416	26,670	38,905
	8.00	16	28	45	78	106	175	249	385	514	662	1,041	1,503	2,602	4,102	5,883	7,173	9,502	12,158	15,140	22,086
	8.50	15	26	42	73	99	163	233	359	480	619	972	1,404	2,431	3,832	5,496	6,700	8,876	11,356	14,142	20,630

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 640 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

MAXIMUM ALLOWED PIPELINE FLOW RATE IN GALLONS PER MINUTE NOTE 4 METAL INJECTORS (316 SS, ALLOY 20, HC-276, ETC.) FOR LIQUIDS ONLY

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	15,506	20,541	26,282	32,729	47,744	75,566	86,254	97,647	109,748	122,555	136,068	150,288	165,215	180,848	197,188	214,234	231,988	250,447	269,613	310,066
	7	12,635	16,738	21,416	26,670	38,905	61,576	70,284	79,568	89,429	99,864	110,876	122,463	134,626	147,365	160,680	174,570	189,036	204,078	219,696	252,659
	8	7,173	9,502	12,158	15,140	22,086	34,956	39,899	45,170	50,767	56,692	62,943	69,521	76,426	83,657	91,216	99,101	107,314	115,853	124,719	143,431
	8.5	6,700	8,876	11,356	14,142	20,630	32,652	37,270	42,193	47,421	52,955	58,794	64,939	71,389	78,144	85,204	92,570	100,241	108,217	116,499	133,978
	9	6,283	8,323	10,650	13,262	19,347	30,620	34,951	39,568	44,471	49,660	55,136	60,898	66,947	73,282	79,903	86,810	94,004	101,484	109,250	125,642
	10	5,578	7,390	9,455	11,775	17,176	27,185	31,030	35,129	39,482	44,090	48,951	54,067	59,437	65,061	70,940	77,072	83,459	90,100	96,995	111,548
	11	5,007	6,632	8,486	10,568	15,416	24,400	27,851	31,530	35,437	39,572	43,936	48,527	53,347	58,395	63,671	69,175	74,907	80,868	87,056	100,118
	12	4,538	6,012	7,692	9,579	13,974	22,117	25,245	28,580	32,121	35,870	39,825	43,987	48,356	52,931	57,714	62,703	67,899	73,302	78,911	90,751
	13	4,143	5,488	7,022	8,745	12,757	20,190	23,046	26,090	29,323	32,745	36,355	40,155	44,143	48,320	52,685	57,240	61,983	66,915	72,036	82,845
	14	3,761	4,981	6,374	7,937	11,579	18,326	20,918	23,681	26,616	29,722	32,999	36,447	40,067	43,859	47,821	51,955	56,261	60,738	65,386	75,196
	15	3,425	4,537	5,806	7,230	10,547	16,692	19,053	21,570	24,243	27,072	30,057	33,198	36,496	39,949	43,558	47,324	51,246	55,323	59,557	68,493
	16	3,129	4,145	5,303	6,604	9,634	15,247	17,404	19,703	22,144	24,728	27,455	30,324	33,336	36,490	39,787	43,227	46,809	50,534	54,401	62,563
	17	2,871	3,803	4,866	6,060	8,840	13,991	15,969	18,079	20,319	22,690	25,192	27,825	30,589	33,483	36,508	39,664	42,951	46,369	49,917	57,407
	18	2,643	3,501	4,480	5,579	8,138	12,881	14,702	16,644	18,707	20,890	23,193	25,617	28,162	30,826	33,612	36,517	39,543	42,690	45,957	52,852
	19	2,441	3,234	4,137	5,153	7,516	11,896	13,579	15,372	17,277	19,294	21,421	23,660	26,009	28,471	31,043	33,726	36,521	39,427	42,445	48,813
	20	2,261	2,995	3,832	4,772	6,961	11,017	12,575	14,236	16,000	17,867	19,837	21,910	24,086	26,365	28,747	31,233	33,821	36,512	39,306	45,204
	21	2,097	2,778	3,555	4,427	6,458	10,221	11,666	13,207	14,844	16,576	18,404	20,327	22,346	24,461	26,671	28,976	31,377	33,874	36,467	41,938
	22	1,951	2,585	3,307	4,118	6,008	9,509	10,853	12,287	13,810	15,421	17,122	18,911	20,789	22,756	24,812	26,957	29,191	31,514	33,926	39,016
	23	1,818	2,408	3,081	3,837	5,598	8,859	10,112	11,448	12,867	14,368	15,953	17,620	19,370	21,203	23,118	25,117	27,198	29,362	31,609	36,352
	24	1,702	2,254	2,885	3,592	5,240	8,294	9,467	10,717	12,045	13,451	14,934	16,495	18,133	19,849	21,643	23,514	25,462	27,488	29,592	34,032

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 9,634 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