

Properties of HDPE pipe

High density polyethylene pipe (HDPE) has several properties that make it very different from “traditional” water works pipe materials:

- **Coefficient of thermal expansion** is over 10 times that of DI and steel and 3 times that of PVC. In practical terms, this means HDPE pipe shrinks 10 times as much as DI and 3 times as much as PVC when it gets cold. This can loosen any fittings installed on it. Also, it's length shrinks 1 inch per 100 feet of pipe length with a 10° F temperature drop, making it likely to pull out of unrestrained couplings.
- **Yield strength** of HDPE is approximately $\frac{1}{50}$ that of DI or steel and $\frac{1}{5}$ that of PVC.
- **Modulus of Elasticity** of HDPE is much lower than other pipe materials, which means it is not as rigid.
- **Creep** is continuous yield of material under stress. HDPE will creep if the stress placed on it gets above a certain level. If great care is not taken when designing fittings for use on HDPE pipe, this stress level can be exceeded and fittings that work great today may fail later as the HDPE creeps.
- **Low coefficient of friction** means HDPE is very “slick.” This makes it easy for fittings to rotate on the pipe or migrate along it.
- **Toe-in** occurs when HDPE is cut. This can affect tapping sleeves and saddles, and makes stiffeners difficult to install in pipe ends.

Limitations of Romac products for use on HDPE pipe

HDPE has a lower modulus of elasticity and higher coefficient of thermal expansion than other pipe materials. These properties cause HDPE pipe to expand and contract much more from changes in temperature and/or pressure than other piping materials. Because of these and other properties, great care must be taken in choosing fittings and repair products for use on HDPE pipe. Romac products in this catalog section are designed to function within the following limitations:

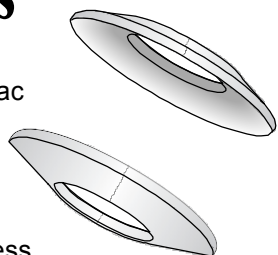
- Pipe must be manufactured in accordance with AWWA Standard ANSI/AWWA C906-90 / with respect to size.
- Operating temperatures are limited to 85° F maximum and 32° F minimum.
- Operating pressure is limited to 150 psi or the rating of the pipe, whichever is less.
- Pipe systems must be designed to compensate for pipe movement so as to prevent fittings from migrating or rotating on the pipe.
- Products are intended for use in underground service only.
- Romac internal pipe stiffeners must be used when coupling pipe ends.
- Proper restraint must be used when coupling pipe ends to prevent pullout from hydraulic forces or temperature changes.




Romac cannot warrant products used in applications that are outside one or more of these limitations. CONTACT CANADA PIPELINE ACCESSORIES 604 856-7250 if you have questions about the use of our products on HDPE pipe.

Spring Washers

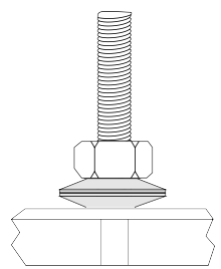
Spring washers are used with Romac products for HDPE pipe to help counteract the problem of pipe contraction during temperature and pressure changes. They are made of a special "spring" grade of stainless steel.



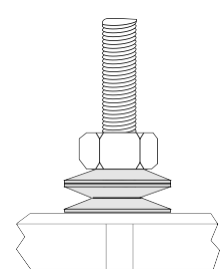


Only products listed in the HDPE Products section are suitable for use with HDPE pipe. Do not use products not listed in this section on HDPE!

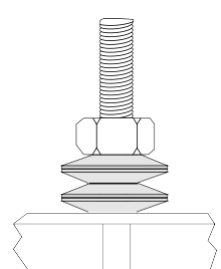
The proper number of bolts have been provided for each fitting based on the limitations on Page 8-1.



Two Spring Washers



Three Spring Washers



Four Spring Washers

DIMENSIONS OF COMMON HDPE PIPE

NOMINAL PIPE SIZE	OUTSIDE DIAMETER	SDR 21		SDR 17		SDR 13.5		SDR 11		SDR 9	
		PRESSURE CLASS 80		PRESSURE CLASS 100		PRESSURE CLASS 128		PRESSURE CLASS 160		PRESSURE CLASS 200	
		INSIDE DIAMETER	WALL THICKNESS	INSIDE DIAMETER	WALL THICKNESS	INSIDE DIAMETER	WALL THICKNESS	INSIDE DIAMETER	WALL THICKNESS	INSIDE DIAMETER	WALL THICKNESS
3"	3.50	3.167	0.167	3.088	0.206	2.981	0.259	2.864	0.318	2.722	0.389
	4"	4.50	4.071	0.214	3.971	0.265	3.833	0.333	3.682	0.409	3.500
5"	4.80	4.343	0.229	4.235	0.282	4.089	0.356	3.927	0.436	3.733	0.533
	6"	5.56	5.033	0.265	4.909	0.327	4.739	0.412	4.552	0.506	4.327
8"	6.63	5.994	0.315	5.846	0.390	5.644	0.491	5.420	0.602	5.153	0.736
	10"	6.90	6.243	0.329	6.088	0.406	5.878	0.511	5.645	0.627	5.367
12"	8.63	7.804	0.411	7.610	0.507	7.347	0.639	7.057	0.784	6.708	0.958
	14"	9.05	8.188	0.431	7.985	0.532	7.709	0.670	7.405	0.823	7.039
16"	10.75	9.726	0.512	9.485	0.632	9.157	0.796	8.795	0.977	8.361	1.194
	18"	11.10	10.043	0.529	9.794	0.653	9.456	0.822	9.082	1.009	8.633
20"	12.75	11.536	0.607	11.250	0.750	10.861	0.944	10.432	1.159	9.917	1.417
	22"	13.20	11.943	0.629	11.647	0.776	11.244	0.978	10.800	1.200	10.267
24"	14.00	12.667	0.667	12.353	0.824	11.926	1.037	11.455	1.273	10.889	1.556
	26"	16.00	14.476	0.762	14.118	0.941	13.630	1.185	13.091	1.455	12.444
28"	18.00	16.286	0.857	15.882	1.059	15.333	1.333	14.727	1.636	14.000	2.000
	30"	20.00	18.095	0.952	17.647	1.176	17.037	1.481	16.364	1.818	15.556
36"	22.00	19.905	1.048	19.412	1.294	18.741	1.630	18.000	2.000	17.111	2.444
	42"	24.00	21.714	1.143	21.176	1.412	20.444	1.778	19.636	2.182	18.667

This chart is based on information in AWWA Standard ANSI/AWWA C906-90.

All dimensions are nominal and subject to manufacturing tolerances.