

I.D. (in.)	tr,min (in.)
3.00	0.24

Guidance for Design Limits - 3" Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, ft (by **design/operating pressure**, psig)

Pump Wgt

(lb)

	50 psig	100 psig	125 psig	150 psig	175 psig	200 psig	225 psig	232 psig	261 psig	290 psig
250	794 ft	713 ft	672 ft	631 ft	590 ft	549 ft	509 ft	497 ft	450 ft	402 ft
500	745 ft	663 ft	622 ft	581 ft	541 ft	500 ft	459 ft	447 ft	400 ft	353 ft
750	695 ft	614 ft	573 ft	532 ft	491 ft	450 ft	409 ft	398 ft	350 ft	303 ft
1,000	646 ft	564 ft	523 ft	482 ft	441 ft	401 ft	360 ft	348 ft	301 ft	253 ft
1,250	596 ft	514 ft	473 ft	433 ft	392 ft	351 ft	310 ft	299 ft	251 ft	204 ft
1,500	546 ft	465 ft	424 ft	383 ft	342 ft	301 ft	260 ft	249 ft	202 ft	154 ft
1,750	497 ft	415 ft	374 ft	333 ft	293 ft	252 ft	211 ft	199 ft	152 ft	105 ft
2,000	447 ft	365 ft	325 ft	284 ft	243 ft	202 ft	161 ft	150 ft	102 ft	55 ft

Allowable Sustained Longitudinal Stress: 1,932 psi

Maximum Recommended Column Length, ft (by **shut-in pressure**, psig)

Pump Wgt

(lb)

	75 psig	150 psig	188 psig	225 psig	263 psig	300 psig	338 psig	348 psig	392 psig	435 psig
250	1058 ft	936 ft	873 ft	813 ft	751 ft	690 ft	628 ft	612 ft	540 ft	470 ft
500	1008 ft	886 ft	824 ft	763 ft	701 ft	641 ft	579 ft	562 ft	491 ft	420 ft
750	959 ft	836 ft	774 ft	714 ft	652 ft	591 ft	529 ft	513 ft	441 ft	371 ft
1,000	909 ft	787 ft	725 ft	664 ft	602 ft	542 ft	480 ft	463 ft	391 ft	321 ft
1,250	860 ft	737 ft	675 ft	615 ft	552 ft	492 ft	430 ft	414 ft	342 ft	271 ft
1,500	810 ft	687 ft	625 ft	565 ft	503 ft	442 ft	380 ft	364 ft	292 ft	222 ft
1,750	760 ft	638 ft	576 ft	515 ft	453 ft	393 ft	331 ft	314 ft	242 ft	172 ft
2,000	711 ft	588 ft	526 ft	466 ft	404 ft	343 ft	281 ft	265 ft	193 ft	123 ft

Allowable Occasional Longitudinal Stress: 2,567 psi

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (mm)	tr,min (mm)
76.2	6.0

Guidance for Design Limits - 3" (DN80) Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, m (by **design/operating pressure**, bar)

Pump Wgt

(kg)

	3.4 bar	6.9 bar	8.6 bar	10.3 bar	12.1 bar	13.8 bar	15.5 bar	16.0 bar	18.0 bar	20.0 bar
114	242 m	217 m	205 m	192 m	180 m	167 m	155 m	151 m	137 m	123 m
227	227 m	202 m	190 m	177 m	165 m	152 m	140 m	136 m	122 m	108 m
341	212 m	187 m	175 m	162 m	150 m	137 m	125 m	121 m	107 m	92 m
454	197 m	172 m	159 m	147 m	134 m	122 m	110 m	106 m	92 m	77 m
568	182 m	157 m	144 m	132 m	119 m	107 m	94 m	91 m	77 m	62 m
681	166 m	142 m	129 m	117 m	104 m	92 m	79 m	76 m	62 m	47 m
795	151 m	126 m	114 m	101 m	89 m	77 m	64 m	61 m	46 m	32 m
908	136 m	111 m	99 m	87 m	74 m	62 m	49 m	46 m	31 m	17 m

Allowable Sustained Longitudinal Stress: 13.3 MPa

Maximum Recommended Column Length, m (by **shut-in pressure**, psig)

Pump Wgt

(kg)

	5.2 bar	10.3 bar	13.0 bar	15.5 bar	18.1 bar	20.7 bar	23.3 bar	24.0 bar	27.0 bar	30.0 bar
114	322 m	285 m	266 m	248 m	229 m	210 m	191 m	187 m	165 m	143 m
227	307 m	270 m	251 m	233 m	214 m	195 m	176 m	171 m	150 m	128 m
341	292 m	255 m	236 m	218 m	199 m	180 m	161 m	156 m	134 m	113 m
454	277 m	240 m	221 m	202 m	183 m	165 m	146 m	141 m	119 m	98 m
568	262 m	225 m	206 m	187 m	168 m	150 m	131 m	126 m	104 m	83 m
681	247 m	209 m	191 m	172 m	153 m	135 m	116 m	111 m	89 m	68 m
795	232 m	194 m	176 m	157 m	138 m	120 m	101 m	96 m	74 m	52 m
908	217 m	179 m	160 m	142 m	123 m	105 m	86 m	81 m	59 m	37 m

Allowable Occasional Longitudinal Stress: 17.7 MPa

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (in.)	tr,min (in.)
4.00	0.24

Guidance for Design Limits - 4" Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, ft (by **design/operating pressure**, psig)

Pump Wgt

(lb)

	50 psig	100 psig	125 psig	150 psig	175 psig	200 psig	225 psig	232 psig	261 psig	290 psig
250	638 ft	550 ft	507 ft	463 ft	419 ft	376 ft	332 ft	320 ft	269 ft	219 ft
500	607 ft	520 ft	476 ft	432 ft	388 ft	345 ft	301 ft	289 ft	238 ft	188 ft
750	576 ft	489 ft	445 ft	401 ft	358 ft	314 ft	270 ft	258 ft	207 ft	157 ft
1,000	545 ft	458 ft	414 ft	370 ft	327 ft	283 ft	239 ft	227 ft	176 ft	126 ft
1,250	514 ft	427 ft	383 ft	339 ft	296 ft	252 ft	208 ft	196 ft	145 ft	95 ft
1,500	483 ft	396 ft	352 ft	308 ft	265 ft	221 ft	177 ft	165 ft	114 ft	64 ft
1,750	452 ft	365 ft	321 ft	277 ft	234 ft	190 ft	146 ft	134 ft	83 ft	33 ft
2,000	421 ft	334 ft	290 ft	246 ft	203 ft	159 ft	115 ft	103 ft	52 ft	2 ft

Allowable Sustained Longitudinal Stress: 1,932 psi

Maximum Recommended Column Length, ft (by **shut-in pressure**, psig)

Pump Wgt

(lb)

	75 psig	150 psig	188 psig	225 psig	263 psig	300 psig	338 psig	348 psig	392 psig	435 psig
250	843 ft	712 ft	645 ft	581 ft	514 ft	450 ft	383 ft	366 ft	289 ft	214 ft
500	812 ft	681 ft	614 ft	550 ft	483 ft	419 ft	352 ft	335 ft	258 ft	183 ft
750	781 ft	650 ft	584 ft	519 ft	452 ft	388 ft	321 ft	304 ft	227 ft	152 ft
1,000	750 ft	619 ft	553 ft	488 ft	422 ft	357 ft	291 ft	273 ft	196 ft	121 ft
1,250	719 ft	588 ft	522 ft	457 ft	391 ft	326 ft	260 ft	242 ft	165 ft	90 ft
1,500	688 ft	557 ft	491 ft	426 ft	360 ft	295 ft	229 ft	211 ft	134 ft	59 ft
1,750	657 ft	526 ft	460 ft	395 ft	329 ft	264 ft	198 ft	180 ft	103 ft	28 ft
2,000	626 ft	495 ft	429 ft	364 ft	298 ft	233 ft	167 ft	149 ft	72 ft	N/A

Allowable Occasional Longitudinal Stress: 2,567 psi

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (mm)	tr,min (mm)
101.6	6.0

Guidance for Design Limits - 4" (DN100) Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, m (by **design/operating pressure**, bar)

Pump Wgt

(kg)

	3.4 bar	6.9 bar	8.6 bar	10.3 bar	12.1 bar	13.8 bar	15.5 bar	16.0 bar	18.0 bar	20.0 bar
114	194 m	168 m	155 m	141 m	128 m	115 m	101 m	98 m	82 m	67 m
227	185 m	158 m	145 m	132 m	118 m	105 m	92 m	88 m	73 m	57 m
341	176 m	149 m	136 m	122 m	109 m	96 m	82 m	79 m	63 m	48 m
454	166 m	140 m	126 m	113 m	100 m	86 m	73 m	69 m	54 m	38 m
568	157 m	130 m	117 m	103 m	90 m	77 m	63 m	60 m	44 m	29 m
681	147 m	121 m	107 m	94 m	81 m	67 m	54 m	50 m	35 m	20 m
795	138 m	111 m	98 m	84 m	71 m	58 m	45 m	41 m	25 m	10 m
908	128 m	102 m	88 m	75 m	62 m	48 m	35 m	31 m	16 m	1 m

Allowable Sustained Longitudinal Stress: 13.3 MPa

Maximum Recommended Column Length, m (by **shut-in pressure**, psig)

Pump Wgt

(kg)

	5.2 bar	10.3 bar	13.0 bar	15.5 bar	18.1 bar	20.7 bar	23.3 bar	24.0 bar	27.0 bar	30.0 bar
114	257 m	217 m	197 m	177 m	157 m	137 m	117 m	112 m	88 m	65 m
227	247 m	208 m	187 m	168 m	147 m	128 m	107 m	102 m	79 m	56 m
341	238 m	198 m	178 m	158 m	138 m	118 m	98 m	93 m	69 m	46 m
454	229 m	189 m	169 m	149 m	129 m	109 m	89 m	83 m	60 m	37 m
568	219 m	179 m	159 m	139 m	119 m	99 m	79 m	74 m	50 m	27 m
681	210 m	170 m	150 m	130 m	110 m	90 m	70 m	64 m	41 m	18 m
795	200 m	160 m	140 m	120 m	100 m	80 m	60 m	55 m	31 m	9 m
908	191 m	151 m	131 m	111 m	91 m	71 m	51 m	45 m	22 m	N/A

Allowable Occasional Longitudinal Stress: 17.7 MPa

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (in.)	tr,min (in.)
6.00	0.30

Guidance for Design Limits - 6" Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, ft (by **design/operating pressure**, psig)

Pump Wgt

(lb)

	50 psig	100 psig	125 psig	150 psig	175 psig	200 psig	225 psig	232 psig	261 psig	290 psig
500	540 ft	449 ft	404 ft	359 ft	313 ft	268 ft	223 ft	210 ft	158 ft	105 ft
750	525 ft	435 ft	389 ft	344 ft	299 ft	254 ft	208 ft	196 ft	143 ft	91 ft
1,000	511 ft	420 ft	375 ft	330 ft	284 ft	239 ft	194 ft	181 ft	129 ft	76 ft
1,250	496 ft	406 ft	360 ft	315 ft	270 ft	224 ft	179 ft	166 ft	114 ft	61 ft
1,500	482 ft	391 ft	346 ft	300 ft	255 ft	210 ft	165 ft	152 ft	99 ft	47 ft
1,750	467 ft	376 ft	331 ft	286 ft	241 ft	195 ft	150 ft	137 ft	85 ft	32 ft
2,000	452 ft	362 ft	317 ft	271 ft	226 ft	181 ft	136 ft	123 ft	70 ft	18 ft
2,250	438 ft	347 ft	302 ft	257 ft	212 ft	166 ft	121 ft	108 ft	56 ft	3 ft

Allowable Sustained Longitudinal Stress: 1,932 psi

Maximum Recommended Column Length, ft (by **shut-in pressure**, psig)

Pump Wgt

(lb)

	75 psig	150 psig	188 psig	225 psig	263 psig	300 psig	338 psig	348 psig	392 psig	435 psig
500	711 ft	575 ft	507 ft	440 ft	371 ft	304 ft	235 ft	217 ft	137 ft	59 ft
750	697 ft	561 ft	492 ft	425 ft	356 ft	289 ft	220 ft	202 ft	123 ft	45 ft
1,000	682 ft	546 ft	478 ft	411 ft	342 ft	275 ft	206 ft	188 ft	108 ft	30 ft
1,250	668 ft	532 ft	463 ft	396 ft	327 ft	260 ft	191 ft	173 ft	94 ft	16 ft
1,500	653 ft	517 ft	448 ft	381 ft	313 ft	246 ft	177 ft	159 ft	79 ft	1 ft
1,750	639 ft	503 ft	434 ft	367 ft	298 ft	231 ft	162 ft	144 ft	65 ft	N/A
2,000	624 ft	488 ft	419 ft	352 ft	284 ft	217 ft	148 ft	130 ft	50 ft	N/A
2,250	609 ft	474 ft	405 ft	338 ft	269 ft	202 ft	133 ft	115 ft	35 ft	N/A

Allowable Occasional Longitudinal Stress: 2,567 psi

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (mm)	tr,min (mm)
152.4	7.5

Guidance for Design Limits - 6" (DN150) Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, m (by **design/operating pressure**, bar)

Pump Wgt

(kg)

	3.4 bar	6.9 bar	8.6 bar	10.3 bar	12.1 bar	13.8 bar	15.5 bar	16.0 bar	18.0 bar	20.0 bar
227	165 m	137 m	123 m	109 m	95 m	82 m	68 m	64 m	48 m	32 m
341	160 m	133 m	119 m	105 m	91 m	77 m	63 m	60 m	44 m	28 m
454	156 m	128 m	114 m	101 m	87 m	73 m	59 m	55 m	39 m	23 m
568	151 m	124 m	110 m	96 m	82 m	68 m	55 m	51 m	35 m	19 m
681	147 m	119 m	105 m	91 m	78 m	64 m	50 m	46 m	30 m	14 m
795	142 m	115 m	101 m	87 m	73 m	59 m	46 m	42 m	26 m	10 m
908	138 m	110 m	97 m	83 m	69 m	55 m	41 m	37 m	21 m	5 m
1,022	134 m	106 m	92 m	78 m	65 m	51 m	37 m	33 m	17 m	1 m

Allowable Sustained Longitudinal Stress: 13.3 MPa

Maximum Recommended Column Length, m (by **shut-in pressure**, psig)

Pump Wgt

(kg)

	5.2 bar	10.3 bar	13.0 bar	15.5 bar	18.1 bar	20.7 bar	23.3 bar	24.0 bar	27.0 bar	30.0 bar
227	217 m	175 m	155 m	134 m	113 m	93 m	72 m	66 m	42 m	18 m
341	212 m	171 m	150 m	130 m	109 m	88 m	67 m	62 m	37 m	14 m
454	208 m	166 m	146 m	125 m	104 m	84 m	63 m	57 m	33 m	9 m
568	204 m	162 m	141 m	121 m	100 m	79 m	58 m	53 m	29 m	5 m
681	199 m	158 m	137 m	116 m	95 m	75 m	54 m	48 m	24 m	0 m
795	195 m	153 m	132 m	112 m	91 m	70 m	49 m	44 m	20 m	N/A
908	190 m	149 m	128 m	107 m	87 m	66 m	45 m	40 m	15 m	N/A
1,022	186 m	144 m	123 m	103 m	82 m	62 m	41 m	35 m	11 m	N/A

Allowable Occasional Longitudinal Stress: 17.7 MPa

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (in.)	tr,min (in.)
8.00	0.36

Guidance for Design Limits - 8" Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, ft (by **design/operating pressure**, psig)

Pump Wgt

(lb)

	50 psig	100 psig	125 psig	150 psig	175 psig	200 psig	225 psig	232 psig	261 psig	290 psig
500	498 ft	406 ft	360 ft	314 ft	268 ft	222 ft	175 ft	163 ft	109 ft	55 ft
750	490 ft	398 ft	352 ft	305 ft	259 ft	213 ft	167 ft	154 ft	101 ft	47 ft
1,000	481 ft	389 ft	343 ft	297 ft	251 ft	205 ft	159 ft	146 ft	92 ft	39 ft
1,250	473 ft	381 ft	335 ft	289 ft	242 ft	196 ft	150 ft	137 ft	84 ft	30 ft
1,500	465 ft	372 ft	326 ft	280 ft	234 ft	188 ft	142 ft	129 ft	75 ft	22 ft
1,750	456 ft	364 ft	318 ft	272 ft	226 ft	180 ft	133 ft	120 ft	67 ft	13 ft
2,000	448 ft	356 ft	309 ft	263 ft	217 ft	171 ft	125 ft	112 ft	59 ft	5 ft
2,250	439 ft	347 ft	301 ft	255 ft	209 ft	163 ft	117 ft	104 ft	50 ft	N/A

Allowable Sustained Longitudinal Stress: 1,932 psi

Maximum Recommended Column Length, ft (by **shut-in pressure**, psig)

Pump Wgt

(lb)

	75 psig	150 psig	188 psig	225 psig	263 psig	300 psig	338 psig	348 psig	392 psig	435 psig
500	652 ft	514 ft	443 ft	375 ft	305 ft	237 ft	167 ft	148 ft	67 ft	N/A
750	644 ft	505 ft	435 ft	367 ft	297 ft	228 ft	158 ft	140 ft	59 ft	N/A
1,000	635 ft	497 ft	427 ft	358 ft	288 ft	220 ft	150 ft	131 ft	50 ft	N/A
1,250	627 ft	488 ft	418 ft	350 ft	280 ft	212 ft	141 ft	123 ft	42 ft	N/A
1,500	618 ft	480 ft	410 ft	342 ft	271 ft	203 ft	133 ft	115 ft	33 ft	N/A
1,750	610 ft	472 ft	401 ft	333 ft	263 ft	195 ft	125 ft	106 ft	25 ft	N/A
2,000	602 ft	463 ft	393 ft	325 ft	255 ft	186 ft	116 ft	98 ft	17 ft	N/A
2,250	593 ft	455 ft	385 ft	316 ft	246 ft	178 ft	108 ft	89 ft	8 ft	N/A

Allowable Occasional Longitudinal Stress: 2,567 psi

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (mm)	tr,min (mm)
203.2	9.0

Guidance for Design Limits - 8" (DN200) Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, m (by **design/operating pressure**, bar)

Pump Wgt

(kg)

	3.4 bar	6.9 bar	8.6 bar	10.3 bar	12.1 bar	13.8 bar	15.5 bar	16.0 bar	18.0 bar	20.0 bar
227	152 m	124 m	110 m	96 m	82 m	68 m	53 m	50 m	33 m	17 m
341	149 m	121 m	107 m	93 m	79 m	65 m	51 m	47 m	31 m	14 m
454	147 m	119 m	105 m	91 m	77 m	62 m	48 m	45 m	28 m	12 m
568	144 m	116 m	102 m	88 m	74 m	60 m	46 m	42 m	26 m	9 m
681	142 m	113 m	99 m	85 m	71 m	57 m	43 m	39 m	23 m	7 m
795	139 m	111 m	97 m	83 m	69 m	55 m	41 m	37 m	20 m	4 m
908	137 m	109 m	94 m	80 m	66 m	52 m	38 m	34 m	18 m	2 m
1,022	134 m	106 m	92 m	78 m	64 m	50 m	36 m	32 m	15 m	N/A

Allowable Sustained Longitudinal Stress: 13.3 MPa

Maximum Recommended Column Length, m (by **shut-in pressure**, psig)

Pump Wgt

(kg)

	5.2 bar	10.3 bar	13.0 bar	15.5 bar	18.1 bar	20.7 bar	23.3 bar	24.0 bar	27.0 bar	30.0 bar
227	199 m	157 m	135 m	114 m	93 m	72 m	51 m	45 m	20 m	N/A
341	196 m	154 m	133 m	112 m	91 m	69 m	48 m	43 m	18 m	N/A
454	194 m	151 m	130 m	109 m	88 m	67 m	46 m	40 m	15 m	N/A
568	191 m	149 m	127 m	107 m	85 m	65 m	43 m	37 m	13 m	N/A
681	188 m	146 m	125 m	104 m	83 m	62 m	41 m	35 m	10 m	N/A
795	186 m	144 m	122 m	101 m	80 m	59 m	38 m	32 m	8 m	N/A
908	183 m	141 m	120 m	99 m	78 m	57 m	35 m	30 m	5 m	N/A
1,022	181 m	139 m	117 m	96 m	75 m	54 m	33 m	27 m	2 m	N/A

Allowable Occasional Longitudinal Stress: 17.7 MPa

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (in.)	tr,min (in.)
10.00	0.42

Guidance for Design Limits - 10" Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, ft (by **design/operating pressure**, psig)

Pump Wgt
(lb)

	50 psig	100 psig	125 psig	150 psig	175 psig	200 psig	225 psig	232 psig	261 psig	290 psig
1,000	460 ft	367 ft	320 ft	273 ft	227 ft	180 ft	133 ft	120 ft	66 ft	12 ft
1,250	454 ft	361 ft	314 ft	268 ft	221 ft	174 ft	128 ft	115 ft	61 ft	6 ft
1,500	449 ft	356 ft	309 ft	262 ft	216 ft	169 ft	122 ft	109 ft	55 ft	1 ft
1,750	443 ft	350 ft	303 ft	257 ft	210 ft	163 ft	117 ft	104 ft	50 ft	N/A
2,000	438 ft	345 ft	298 ft	251 ft	205 ft	158 ft	111 ft	98 ft	44 ft	N/A
2,250	432 ft	339 ft	292 ft	246 ft	199 ft	152 ft	106 ft	93 ft	39 ft	N/A
2,500	427 ft	334 ft	287 ft	240 ft	194 ft	147 ft	100 ft	87 ft	33 ft	N/A
2,750	421 ft	328 ft	282 ft	235 ft	188 ft	142 ft	95 ft	82 ft	28 ft	N/A

Allowable Sustained Longitudinal Stress: 1,932 psi

Maximum Recommended Column Length, ft (by **shut-in pressure**, psig)

Pump Wgt
(lb)

	75 psig	150 psig	188 psig	225 psig	263 psig	300 psig	338 psig	348 psig	392 psig	435 psig
1,000	602 ft	462 ft	391 ft	322 ft	251 ft	182 ft	111 ft	93 ft	11 ft	N/A
1,250	597 ft	457 ft	386 ft	317 ft	246 ft	177 ft	106 ft	87 ft	5 ft	N/A
1,500	591 ft	451 ft	380 ft	311 ft	241 ft	171 ft	101 ft	82 ft	0 ft	N/A
1,750	586 ft	446 ft	375 ft	306 ft	235 ft	166 ft	95 ft	76 ft	N/A	N/A
2,000	580 ft	440 ft	370 ft	300 ft	230 ft	160 ft	90 ft	71 ft	N/A	N/A
2,250	575 ft	435 ft	364 ft	295 ft	224 ft	155 ft	84 ft	65 ft	N/A	N/A
2,500	569 ft	430 ft	359 ft	290 ft	219 ft	150 ft	79 ft	60 ft	N/A	N/A
2,750	564 ft	424 ft	353 ft	284 ft	213 ft	144 ft	73 ft	54 ft	N/A	N/A

Allowable Occasional Longitudinal Stress: 2,567 psi

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.
 N/A = a loading condition that is not recommended.
 "Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (mm)	tr,min (mm)
254.0	10.6

Guidance for Design Limits - 10" (DN250) Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, m (by **design/operating pressure**, bar)

Pump Wgt

(kg)

454

568

681

795

908

1,022

1,135

1,249

	3.4 bar	6.9 bar	8.6 bar	10.3 bar	12.1 bar	13.8 bar	15.5 bar	16.0 bar	18.0 bar	20.0 bar
454	140 m	112 m	98 m	83 m	69 m	55 m	41 m	37 m	20 m	4 m
568	138 m	110 m	96 m	82 m	67 m	53 m	39 m	35 m	19 m	2 m
681	137 m	109 m	94 m	80 m	66 m	52 m	37 m	33 m	17 m	0 m
795	135 m	107 m	92 m	78 m	64 m	50 m	36 m	32 m	15 m	N/A
908	134 m	105 m	91 m	77 m	62 m	48 m	34 m	30 m	13 m	N/A
1,022	132 m	103 m	89 m	75 m	61 m	46 m	32 m	28 m	12 m	N/A
1,135	130 m	102 m	87 m	73 m	59 m	45 m	30 m	27 m	10 m	N/A
1,249	128 m	100 m	86 m	72 m	57 m	43 m	29 m	25 m	9 m	N/A

Allowable Sustained Longitudinal Stress: 13.3 MPa

Maximum Recommended Column Length, m (by **shut-in pressure**, psig)

Pump Wgt

(kg)

454

568

681

795

908

1,022

1,135

1,249

	5.2 bar	10.3 bar	13.0 bar	15.5 bar	18.1 bar	20.7 bar	23.3 bar	24.0 bar	27.0 bar	30.0 bar
454	183 m	141 m	119 m	98 m	77 m	55 m	34 m	28 m	3 m	N/A
568	182 m	139 m	118 m	97 m	75 m	54 m	32 m	27 m	2 m	N/A
681	180 m	137 m	116 m	95 m	73 m	52 m	31 m	25 m	0 m	N/A
795	179 m	136 m	114 m	93 m	72 m	51 m	29 m	23 m	N/A	N/A
908	177 m	134 m	113 m	91 m	70 m	49 m	27 m	22 m	N/A	N/A
1,022	175 m	133 m	111 m	90 m	68 m	47 m	26 m	20 m	N/A	N/A
1,135	173 m	131 m	109 m	88 m	67 m	46 m	24 m	18 m	N/A	N/A
1,249	172 m	129 m	108 m	87 m	65 m	44 m	22 m	16 m	N/A	N/A

Allowable Occasional Longitudinal Stress: 17.7 MPa

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (in.)	tr,min (in.)
12.00	0.48

Guidance for Design Limits - 12" Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, ft (by **design/operating pressure**, psig)

Pump Wgt
(lb)

	50 psig	100 psig	125 psig	150 psig	175 psig	200 psig	225 psig	232 psig	261 psig	290 psig
1,000	444 ft	349 ft	302 ft	255 ft	208 ft	161 ft	114 ft	101 ft	47 ft	N/A
1,500	436 ft	342 ft	295 ft	248 ft	201 ft	154 ft	107 ft	94 ft	39 ft	N/A
2,000	428 ft	334 ft	287 ft	240 ft	193 ft	146 ft	99 ft	86 ft	31 ft	N/A
2,500	420 ft	326 ft	279 ft	232 ft	185 ft	138 ft	91 ft	78 ft	24 ft	N/A
3,000	413 ft	319 ft	272 ft	225 ft	178 ft	131 ft	84 ft	70 ft	16 ft	N/A
3,500	405 ft	311 ft	264 ft	217 ft	170 ft	123 ft	76 ft	63 ft	8 ft	N/A
4,000	397 ft	303 ft	256 ft	209 ft	162 ft	115 ft	68 ft	55 ft	0 ft	N/A
4,500	390 ft	296 ft	249 ft	202 ft	155 ft	108 ft	61 ft	47 ft	N/A	N/A

Allowable Sustained Longitudinal Stress: 1,932 psi

Maximum Recommended Column Length, ft (by **shut-in pressure**, psig)

Pump Wgt
(lb)

	75 psig	150 psig	188 psig	225 psig	263 psig	300 psig	338 psig	348 psig	392 psig	435 psig
1,000	578 ft	437 ft	366 ft	296 ft	225 ft	155 ft	84 ft	65 ft	N/A	N/A
1,500	571 ft	430 ft	358 ft	289 ft	217 ft	148 ft	76 ft	57 ft	N/A	N/A
2,000	563 ft	422 ft	350 ft	281 ft	209 ft	140 ft	68 ft	50 ft	N/A	N/A
2,500	555 ft	414 ft	343 ft	273 ft	202 ft	132 ft	61 ft	42 ft	N/A	N/A
3,000	548 ft	407 ft	335 ft	265 ft	194 ft	124 ft	53 ft	34 ft	N/A	N/A
3,500	540 ft	399 ft	327 ft	258 ft	186 ft	117 ft	45 ft	26 ft	N/A	N/A
4,000	532 ft	391 ft	320 ft	250 ft	179 ft	109 ft	38 ft	19 ft	N/A	N/A
4,500	525 ft	383 ft	312 ft	242 ft	171 ft	101 ft	30 ft	11 ft	N/A	N/A

Allowable Occasional Longitudinal Stress: 2,567 psi

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (mm)	tr,min (mm)
304.8	12.1

Guidance for Design Limits - 12" (DN300) Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, m (by **design/operating pressure**, bar)

Pump Wgt

(kg)

454

681

908

1,135

1,362

1,589

1,816

2,043

	3.4 bar	6.9 bar	8.6 bar	10.3 bar	12.1 bar	13.8 bar	15.5 bar	16.0 bar	18.0 bar	20.0 bar
454	135 m	106 m	92 m	78 m	63 m	49 m	35 m	31 m	14 m	N/A
681	133 m	104 m	90 m	76 m	61 m	47 m	33 m	29 m	12 m	N/A
908	130 m	102 m	87 m	73 m	59 m	45 m	30 m	26 m	9 m	N/A
1,135	128 m	99 m	85 m	71 m	56 m	42 m	28 m	24 m	7 m	N/A
1,362	126 m	97 m	83 m	69 m	54 m	40 m	26 m	21 m	5 m	N/A
1,589	123 m	95 m	80 m	66 m	52 m	37 m	23 m	19 m	2 m	N/A
1,816	121 m	92 m	78 m	64 m	49 m	35 m	21 m	17 m	0 m	N/A
2,043	119 m	90 m	76 m	62 m	47 m	33 m	19 m	14 m	N/A	N/A

Allowable Sustained Longitudinal Stress: 13.3 MPa

Maximum Recommended Column Length, m (by **shut-in pressure**, psig)

Pump Wgt

(kg)

454

681

908

1,135

1,362

1,589

1,816

2,043

	5.2 bar	10.3 bar	13.0 bar	15.5 bar	18.1 bar	20.7 bar	23.3 bar	24.0 bar	27.0 bar	30.0 bar
454	176 m	133 m	112 m	90 m	69 m	47 m	26 m	20 m	N/A	N/A
681	174 m	131 m	109 m	88 m	66 m	45 m	23 m	17 m	N/A	N/A
908	172 m	129 m	107 m	86 m	64 m	43 m	21 m	15 m	N/A	N/A
1,135	169 m	126 m	105 m	83 m	62 m	40 m	19 m	13 m	N/A	N/A
1,362	167 m	124 m	102 m	81 m	59 m	38 m	16 m	10 m	N/A	N/A
1,589	165 m	122 m	100 m	79 m	57 m	36 m	14 m	8 m	N/A	N/A
1,816	162 m	119 m	98 m	76 m	55 m	33 m	12 m	6 m	N/A	N/A
2,043	160 m	117 m	95 m	74 m	52 m	31 m	9 m	3 m	N/A	N/A

Allowable Occasional Longitudinal Stress: 17.7 MPa

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (in.)	tr,min (in.)
14.25	0.59

Guidance for Design Limits - 14" Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, ft (by **design/operating pressure**, psig)

Pump Wgt
(lb)

	50 psig	100 psig	125 psig	150 psig	175 psig	200 psig	225 psig	232 psig	261 psig	290 psig
1,500	467 ft	373 ft	327 ft	280 ft	234 ft	187 ft	140 ft	127 ft	73 ft	19 ft
2,500	456 ft	363 ft	316 ft	269 ft	223 ft	176 ft	129 ft	116 ft	62 ft	8 ft
3,500	445 ft	352 ft	305 ft	259 ft	212 ft	165 ft	119 ft	106 ft	52 ft	N/A
4,500	434 ft	341 ft	294 ft	248 ft	201 ft	155 ft	108 ft	95 ft	41 ft	N/A
5,500	424 ft	330 ft	284 ft	237 ft	190 ft	144 ft	97 ft	84 ft	30 ft	N/A
6,500	413 ft	320 ft	273 ft	226 ft	180 ft	133 ft	86 ft	73 ft	19 ft	N/A
7,500	402 ft	309 ft	262 ft	216 ft	169 ft	122 ft	76 ft	63 ft	8 ft	N/A
8,500	391 ft	298 ft	251 ft	205 ft	158 ft	111 ft	65 ft	52 ft	N/A	N/A

Allowable Sustained Longitudinal Stress: 1,932 psi

Maximum Recommended Column Length, ft (by **shut-in pressure**, psig)

Pump Wgt
(lb)

	75 psig	150 psig	188 psig	225 psig	263 psig	300 psig	338 psig	348 psig	392 psig	435 psig
1,500	610 ft	470 ft	399 ft	330 ft	259 ft	190 ft	119 ft	100 ft	18 ft	N/A
2,500	599 ft	459 ft	388 ft	319 ft	248 ft	179 ft	108 ft	90 ft	7 ft	N/A
3,500	588 ft	448 ft	377 ft	308 ft	237 ft	168 ft	97 ft	79 ft	N/A	N/A
4,500	577 ft	437 ft	366 ft	297 ft	227 ft	158 ft	87 ft	68 ft	N/A	N/A
5,500	567 ft	427 ft	356 ft	287 ft	216 ft	147 ft	76 ft	57 ft	N/A	N/A
6,500	556 ft	416 ft	345 ft	276 ft	205 ft	136 ft	65 ft	46 ft	N/A	N/A
7,500	545 ft	405 ft	334 ft	265 ft	194 ft	125 ft	54 ft	36 ft	N/A	N/A
8,500	534 ft	394 ft	323 ft	254 ft	183 ft	114 ft	44 ft	25 ft	N/A	N/A

Allowable Occasional Longitudinal Stress: 2,567 psi

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (mm)	tr,min (mm)
362.0	15.1

Guidance for Design Limits - 14" (DN350) Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, m (by **design/operating pressure**, bar)

Pump Wgt
(kg)

	3.4 bar	6.9 bar	8.6 bar	10.3 bar	12.1 bar	13.8 bar	15.5 bar	16.0 bar	18.0 bar	20.0 bar
681	142 m	114 m	100 m	85 m	71 m	57 m	43 m	39 m	22 m	6 m
1,135	139 m	111 m	96 m	82 m	68 m	54 m	39 m	35 m	19 m	2 m
1,589	136 m	107 m	93 m	79 m	65 m	50 m	36 m	32 m	16 m	N/A
2,043	132 m	104 m	90 m	76 m	61 m	47 m	33 m	29 m	12 m	N/A
2,497	129 m	101 m	87 m	72 m	58 m	44 m	30 m	26 m	9 m	N/A
2,951	126 m	98 m	83 m	69 m	55 m	41 m	26 m	22 m	6 m	N/A
3,405	123 m	94 m	80 m	66 m	52 m	37 m	23 m	19 m	2 m	N/A
3,859	119 m	91 m	77 m	62 m	48 m	34 m	20 m	16 m	N/A	N/A

Allowable Sustained Longitudinal Stress: 13.3 MPa

Maximum Recommended Column Length, m (by **shut-in pressure**, psig)

Pump Wgt
(kg)

	5.2 bar	10.3 bar	13.0 bar	15.5 bar	18.1 bar	20.7 bar	23.3 bar	24.0 bar	27.0 bar	30.0 bar
681	186 m	143 m	122 m	101 m	79 m	58 m	36 m	30 m	5 m	N/A
1,135	183 m	140 m	118 m	97 m	76 m	55 m	33 m	27 m	2 m	N/A
1,589	179 m	137 m	115 m	94 m	72 m	51 m	30 m	24 m	N/A	N/A
2,043	176 m	133 m	112 m	91 m	69 m	48 m	27 m	21 m	N/A	N/A
2,497	173 m	130 m	109 m	87 m	66 m	45 m	23 m	17 m	N/A	N/A
2,951	169 m	127 m	105 m	84 m	62 m	41 m	20 m	14 m	N/A	N/A
3,405	166 m	123 m	102 m	81 m	59 m	38 m	16 m	11 m	N/A	N/A
3,859	163 m	120 m	98 m	77 m	56 m	35 m	13 m	8 m	N/A	N/A

Allowable Occasional Longitudinal Stress: 17.7 MPa

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (in.)	tr,min (in.)
16.25	0.65

Guidance for Design Limits - 16" Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, ft (by **design/operating pressure**, psig)

Pump Wgt
(lb)

	50 psig	100 psig	125 psig	150 psig	175 psig	200 psig	225 psig	232 psig	261 psig	290 psig
1,500	453 ft	360 ft	313 ft	266 ft	219 ft	172 ft	125 ft	112 ft	58 ft	3 ft
2,500	445 ft	351 ft	304 ft	257 ft	211 ft	164 ft	117 ft	104 ft	49 ft	N/A
3,500	437 ft	343 ft	296 ft	249 ft	202 ft	155 ft	108 ft	95 ft	41 ft	N/A
4,500	428 ft	335 ft	288 ft	241 ft	194 ft	147 ft	100 ft	87 ft	32 ft	N/A
5,500	420 ft	326 ft	279 ft	232 ft	185 ft	139 ft	92 ft	78 ft	24 ft	N/A
6,500	412 ft	318 ft	271 ft	224 ft	177 ft	130 ft	83 ft	70 ft	16 ft	N/A
7,500	403 ft	309 ft	263 ft	216 ft	169 ft	122 ft	75 ft	62 ft	7 ft	N/A
8,500	395 ft	301 ft	254 ft	207 ft	160 ft	113 ft	67 ft	53 ft	N/A	N/A

Allowable Sustained Longitudinal Stress: 1,932 psi

Maximum Recommended Column Length, ft (by **shut-in pressure**, psig)

Pump Wgt
(lb)

	75 psig	150 psig	188 psig	225 psig	263 psig	300 psig	338 psig	348 psig	392 psig	435 psig
1,500	591 ft	450 ft	379 ft	309 ft	238 ft	168 ft	97 ft	78 ft	N/A	N/A
2,500	582 ft	442 ft	370 ft	301 ft	230 ft	160 ft	89 ft	70 ft	N/A	N/A
3,500	574 ft	433 ft	362 ft	293 ft	221 ft	152 ft	80 ft	62 ft	N/A	N/A
4,500	566 ft	425 ft	354 ft	284 ft	213 ft	143 ft	72 ft	53 ft	N/A	N/A
5,500	557 ft	417 ft	345 ft	276 ft	204 ft	135 ft	64 ft	45 ft	N/A	N/A
6,500	549 ft	408 ft	337 ft	267 ft	196 ft	127 ft	55 ft	37 ft	N/A	N/A
7,500	541 ft	400 ft	328 ft	259 ft	188 ft	118 ft	47 ft	28 ft	N/A	N/A
8,500	532 ft	391 ft	320 ft	251 ft	179 ft	110 ft	39 ft	20 ft	N/A	N/A

Allowable Occasional Longitudinal Stress: 2,567 psi

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (mm)	tr,min (mm)
412.8	16.6

Guidance for Design Limits - 16" (DN400) Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, m (by **design/operating pressure**, bar)

Pump Wgt
(kg)

	3.4 bar	6.9 bar	8.6 bar	10.3 bar	12.1 bar	13.8 bar	15.5 bar	16.0 bar	18.0 bar	20.0 bar
681	138 m	110 m	95 m	81 m	67 m	52 m	38 m	34 m	18 m	1 m
1,135	136 m	107 m	93 m	78 m	64 m	50 m	36 m	32 m	15 m	N/A
1,589	133 m	105 m	90 m	76 m	62 m	47 m	33 m	29 m	12 m	N/A
2,043	130 m	102 m	88 m	73 m	59 m	45 m	30 m	27 m	10 m	N/A
2,497	128 m	99 m	85 m	71 m	56 m	42 m	28 m	24 m	7 m	N/A
2,951	126 m	97 m	83 m	68 m	54 m	40 m	25 m	21 m	5 m	N/A
3,405	123 m	94 m	80 m	66 m	52 m	37 m	23 m	19 m	2 m	N/A
3,859	120 m	92 m	77 m	63 m	49 m	34 m	20 m	16 m	N/A	N/A

Allowable Sustained Longitudinal Stress: 13.3 MPa

Maximum Recommended Column Length, m (by **shut-in pressure**, psig)

Pump Wgt
(kg)

	5.2 bar	10.3 bar	13.0 bar	15.5 bar	18.1 bar	20.7 bar	23.3 bar	24.0 bar	27.0 bar	30.0 bar
681	180 m	137 m	116 m	94 m	73 m	51 m	30 m	24 m	N/A	N/A
1,135	177 m	135 m	113 m	92 m	70 m	49 m	27 m	21 m	N/A	N/A
1,589	175 m	132 m	110 m	89 m	67 m	46 m	24 m	19 m	N/A	N/A
2,043	173 m	130 m	108 m	87 m	65 m	44 m	22 m	16 m	N/A	N/A
2,497	170 m	127 m	105 m	84 m	62 m	41 m	20 m	14 m	N/A	N/A
2,951	167 m	124 m	103 m	81 m	60 m	39 m	17 m	11 m	N/A	N/A
3,405	165 m	122 m	100 m	79 m	57 m	36 m	14 m	9 m	N/A	N/A
3,859	162 m	119 m	98 m	77 m	55 m	34 m	12 m	6 m	N/A	N/A

Allowable Occasional Longitudinal Stress: 17.7 MPa

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (in.)	tr,min (in.)
18.25	0.71

Guidance for Design Limits - 18" Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, ft (by **design/operating pressure**, psig)

Pump Wgt
(lb)

	50 psig	100 psig	125 psig	150 psig	175 psig	200 psig	225 psig	232 psig	261 psig	290 psig
2,000	439 ft	345 ft	298 ft	251 ft	204 ft	156 ft	109 ft	96 ft	42 ft	N/A
3,000	433 ft	338 ft	291 ft	244 ft	197 ft	150 ft	103 ft	90 ft	35 ft	N/A
4,000	426 ft	332 ft	285 ft	237 ft	190 ft	143 ft	96 ft	83 ft	28 ft	N/A
5,000	419 ft	325 ft	278 ft	231 ft	184 ft	136 ft	89 ft	76 ft	21 ft	N/A
6,000	413 ft	318 ft	271 ft	224 ft	177 ft	130 ft	83 ft	69 ft	15 ft	N/A
7,000	406 ft	312 ft	264 ft	217 ft	170 ft	123 ft	76 ft	63 ft	8 ft	N/A
8,000	399 ft	305 ft	258 ft	211 ft	164 ft	116 ft	69 ft	56 ft	1 ft	N/A
9,000	393 ft	298 ft	251 ft	204 ft	157 ft	110 ft	63 ft	49 ft	N/A	N/A

Allowable Sustained Longitudinal Stress: 1,932 psi

Maximum Recommended Column Length, ft (by **shut-in pressure**, psig)

Pump Wgt
(lb)

	75 psig	150 psig	188 psig	225 psig	263 psig	300 psig	338 psig	348 psig	392 psig	435 psig
2,000	572 ft	431 ft	359 ft	289 ft	218 ft	148 ft	76 ft	57 ft	N/A	N/A
3,000	565 ft	424 ft	352 ft	283 ft	211 ft	141 ft	70 ft	51 ft	N/A	N/A
4,000	559 ft	417 ft	346 ft	276 ft	204 ft	135 ft	63 ft	44 ft	N/A	N/A
5,000	552 ft	411 ft	339 ft	269 ft	198 ft	128 ft	56 ft	37 ft	N/A	N/A
6,000	545 ft	404 ft	332 ft	263 ft	191 ft	121 ft	50 ft	31 ft	N/A	N/A
7,000	539 ft	397 ft	326 ft	256 ft	184 ft	115 ft	43 ft	24 ft	N/A	N/A
8,000	532 ft	391 ft	319 ft	249 ft	178 ft	108 ft	36 ft	17 ft	N/A	N/A
9,000	525 ft	384 ft	312 ft	243 ft	171 ft	101 ft	30 ft	11 ft	N/A	N/A

Allowable Occasional Longitudinal Stress: 2,567 psi

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (mm)	tr,min (mm)
463.6	18.1

Guidance for Design Limits - 18" (DN450) Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, m (by **design/operating pressure**, bar)

Pump Wgt
(kg)

	3.4 bar	6.9 bar	8.6 bar	10.3 bar	12.1 bar	13.8 bar	15.5 bar	16.0 bar	18.0 bar	20.0 bar
908	134 m	105 m	91 m	77 m	62 m	48 m	33 m	29 m	13 m	N/A
1,362	132 m	103 m	89 m	74 m	60 m	46 m	31 m	27 m	11 m	N/A
1,816	130 m	101 m	87 m	72 m	58 m	44 m	29 m	25 m	9 m	N/A
2,270	128 m	99 m	85 m	70 m	56 m	41 m	27 m	23 m	6 m	N/A
2,724	126 m	97 m	83 m	68 m	54 m	40 m	25 m	21 m	5 m	N/A
3,178	124 m	95 m	80 m	66 m	52 m	37 m	23 m	19 m	2 m	N/A
3,632	122 m	93 m	79 m	64 m	50 m	35 m	21 m	17 m	0 m	N/A
4,086	120 m	91 m	77 m	62 m	48 m	34 m	19 m	15 m	N/A	N/A

Allowable Sustained Longitudinal Stress: 13.3 MPa

Maximum Recommended Column Length, m (by **shut-in pressure**, psig)

Pump Wgt
(kg)

	5.2 bar	10.3 bar	13.0 bar	15.5 bar	18.1 bar	20.7 bar	23.3 bar	24.0 bar	27.0 bar	30.0 bar
908	174 m	131 m	109 m	88 m	66 m	45 m	23 m	17 m	N/A	N/A
1,362	172 m	129 m	107 m	86 m	64 m	43 m	21 m	16 m	N/A	N/A
1,816	170 m	127 m	105 m	84 m	62 m	41 m	19 m	13 m	N/A	N/A
2,270	168 m	125 m	103 m	82 m	60 m	39 m	17 m	11 m	N/A	N/A
2,724	166 m	123 m	101 m	80 m	58 m	37 m	15 m	9 m	N/A	N/A
3,178	164 m	121 m	99 m	78 m	56 m	35 m	13 m	7 m	N/A	N/A
3,632	162 m	119 m	97 m	76 m	54 m	33 m	11 m	5 m	N/A	N/A
4,086	160 m	117 m	95 m	74 m	52 m	31 m	9 m	3 m	N/A	N/A

Allowable Occasional Longitudinal Stress: 17.7 MPa

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (in.)	tr,min (in.)
20.25	0.83

Guidance for Design Limits - 20" Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, ft (by **design/operating pressure**, psig)

Pump Wgt
(lb)

	50 psig	100 psig	125 psig	150 psig	175 psig	200 psig	225 psig	232 psig	261 psig	290 psig
2,500	462 ft	369 ft	322 ft	275 ft	229 ft	182 ft	135 ft	122 ft	68 ft	14 ft
3,500	457 ft	364 ft	317 ft	270 ft	223 ft	177 ft	130 ft	117 ft	63 ft	8 ft
4,500	452 ft	358 ft	311 ft	265 ft	218 ft	171 ft	124 ft	111 ft	57 ft	3 ft
5,500	446 ft	353 ft	306 ft	259 ft	213 ft	166 ft	119 ft	106 ft	52 ft	N/A
6,500	441 ft	348 ft	301 ft	254 ft	207 ft	161 ft	114 ft	101 ft	46 ft	N/A
7,500	436 ft	342 ft	295 ft	249 ft	202 ft	155 ft	108 ft	95 ft	41 ft	N/A
8,500	430 ft	337 ft	290 ft	243 ft	197 ft	150 ft	103 ft	90 ft	36 ft	N/A
9,500	425 ft	331 ft	285 ft	238 ft	191 ft	144 ft	98 ft	85 ft	30 ft	N/A

Allowable Sustained Longitudinal Stress: 1,932 psi

Maximum Recommended Column Length, ft (by **shut-in pressure**, psig)

Pump Wgt
(lb)

	75 psig	150 psig	188 psig	225 psig	263 psig	300 psig	338 psig	348 psig	392 psig	435 psig
2,500	603 ft	463 ft	392 ft	322 ft	251 ft	182 ft	111 ft	92 ft	10 ft	N/A
3,500	598 ft	457 ft	386 ft	317 ft	246 ft	177 ft	106 ft	87 ft	5 ft	N/A
4,500	592 ft	452 ft	381 ft	312 ft	241 ft	172 ft	100 ft	82 ft	N/A	N/A
5,500	587 ft	447 ft	376 ft	306 ft	235 ft	166 ft	95 ft	76 ft	N/A	N/A
6,500	582 ft	441 ft	370 ft	301 ft	230 ft	161 ft	90 ft	71 ft	N/A	N/A
7,500	576 ft	436 ft	365 ft	296 ft	225 ft	155 ft	84 ft	66 ft	N/A	N/A
8,500	571 ft	431 ft	360 ft	290 ft	219 ft	150 ft	79 ft	60 ft	N/A	N/A
9,500	566 ft	425 ft	354 ft	285 ft	214 ft	145 ft	74 ft	55 ft	N/A	N/A

Allowable Occasional Longitudinal Stress: 2,567 psi

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (mm)	tr,min (mm)
514.4	21.1

Guidance for Design Limits - 20" (DN500) Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, m (by **design/operating pressure**, bar)

Pump Wgt
(kg)

	3.4 bar	6.9 bar	8.6 bar	10.3 bar	12.1 bar	13.8 bar	15.5 bar	16.0 bar	18.0 bar	20.0 bar
1,135	141 m	112 m	98 m	84 m	70 m	55 m	41 m	37 m	21 m	4 m
1,589	139 m	111 m	97 m	82 m	68 m	54 m	40 m	36 m	19 m	2 m
2,043	138 m	109 m	95 m	81 m	66 m	52 m	38 m	34 m	17 m	1 m
2,497	136 m	108 m	93 m	79 m	65 m	51 m	36 m	32 m	16 m	N/A
2,951	134 m	106 m	92 m	77 m	63 m	49 m	35 m	31 m	14 m	N/A
3,405	133 m	104 m	90 m	76 m	62 m	47 m	33 m	29 m	12 m	N/A
3,859	131 m	103 m	88 m	74 m	60 m	46 m	31 m	27 m	11 m	N/A
4,313	130 m	101 m	87 m	73 m	58 m	44 m	30 m	26 m	9 m	N/A

Allowable Sustained Longitudinal Stress: 13.3 MPa

Maximum Recommended Column Length, m (by **shut-in pressure**, psig)

Pump Wgt
(kg)

	5.2 bar	10.3 bar	13.0 bar	15.5 bar	18.1 bar	20.7 bar	23.3 bar	24.0 bar	27.0 bar	30.0 bar
1,135	184 m	141 m	119 m	98 m	77 m	55 m	34 m	28 m	3 m	N/A
1,589	182 m	139 m	118 m	97 m	75 m	54 m	32 m	27 m	2 m	N/A
2,043	180 m	138 m	116 m	95 m	73 m	52 m	30 m	25 m	N/A	N/A
2,497	179 m	136 m	115 m	93 m	72 m	51 m	29 m	23 m	N/A	N/A
2,951	177 m	134 m	113 m	92 m	70 m	49 m	27 m	22 m	N/A	N/A
3,405	176 m	133 m	111 m	90 m	69 m	47 m	26 m	20 m	N/A	N/A
3,859	174 m	131 m	110 m	88 m	67 m	46 m	24 m	18 m	N/A	N/A
4,313	173 m	130 m	108 m	87 m	65 m	44 m	23 m	17 m	N/A	N/A

Allowable Occasional Longitudinal Stress: 17.7 MPa

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (in.)	tr,min (in.)
24.25	0.95

Guidance for Design Limits - 24" Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, ft (by **design/operating pressure**, psig)

Pump Wgt
(lb)

	50 psig	100 psig	125 psig	150 psig	175 psig	200 psig	225 psig	232 psig	261 psig	290 psig
3,000	443 ft	349 ft	302 ft	254 ft	207 ft	160 ft	113 ft	100 ft	45 ft	N/A
4,000	439 ft	345 ft	298 ft	251 ft	204 ft	156 ft	109 ft	96 ft	42 ft	N/A
5,000	435 ft	341 ft	294 ft	247 ft	200 ft	153 ft	106 ft	92 ft	38 ft	N/A
6,000	431 ft	337 ft	290 ft	243 ft	196 ft	149 ft	102 ft	89 ft	34 ft	N/A
7,000	428 ft	334 ft	286 ft	239 ft	192 ft	145 ft	98 ft	85 ft	30 ft	N/A
8,000	424 ft	330 ft	283 ft	236 ft	188 ft	141 ft	94 ft	81 ft	26 ft	N/A
9,000	420 ft	326 ft	279 ft	232 ft	185 ft	138 ft	90 ft	77 ft	23 ft	N/A
10,000	416 ft	322 ft	275 ft	228 ft	181 ft	134 ft	87 ft	74 ft	19 ft	N/A

Allowable Sustained Longitudinal Stress: 1,932 psi

Maximum Recommended Column Length, ft (by **shut-in pressure**, psig)

Pump Wgt
(lb)

	75 psig	150 psig	188 psig	225 psig	263 psig	300 psig	338 psig	348 psig	392 psig	435 psig
3,000	576 ft	435 ft	363 ft	294 ft	222 ft	152 ft	81 ft	62 ft	N/A	N/A
4,000	572 ft	431 ft	359 ft	290 ft	218 ft	148 ft	77 ft	58 ft	N/A	N/A
5,000	569 ft	427 ft	356 ft	286 ft	214 ft	145 ft	73 ft	54 ft	N/A	N/A
6,000	565 ft	423 ft	352 ft	282 ft	211 ft	141 ft	69 ft	50 ft	N/A	N/A
7,000	561 ft	420 ft	348 ft	278 ft	207 ft	137 ft	66 ft	47 ft	N/A	N/A
8,000	557 ft	416 ft	344 ft	275 ft	203 ft	133 ft	62 ft	43 ft	N/A	N/A
9,000	553 ft	412 ft	341 ft	271 ft	199 ft	130 ft	58 ft	39 ft	N/A	N/A
10,000	550 ft	408 ft	337 ft	267 ft	195 ft	126 ft	54 ft	35 ft	N/A	N/A

Allowable Occasional Longitudinal Stress: 2,567 psi

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.

I.D. (mm)	tr,min (mm)
616.0	24.1

Guidance for Design Limits - 24" (DN600) Column Pipe - FIBERBOND® 20HV

Maximum Recommended Column Length, m (by **design/operating pressure**, bar)

Pump Wgt
(kg)

	3.4 bar	6.9 bar	8.6 bar	10.3 bar	12.1 bar	13.8 bar	15.5 bar	16.0 bar	18.0 bar	20.0 bar
1,362	135 m	106 m	92 m	77 m	63 m	49 m	34 m	30 m	14 m	N/A
1,816	134 m	105 m	91 m	77 m	62 m	48 m	33 m	29 m	13 m	N/A
2,270	133 m	104 m	90 m	75 m	61 m	47 m	32 m	28 m	12 m	N/A
2,724	131 m	103 m	88 m	74 m	60 m	45 m	31 m	27 m	10 m	N/A
3,178	130 m	102 m	87 m	73 m	59 m	44 m	30 m	26 m	9 m	N/A
3,632	129 m	101 m	86 m	72 m	57 m	43 m	29 m	25 m	8 m	N/A
4,086	128 m	99 m	85 m	71 m	56 m	42 m	27 m	23 m	7 m	N/A
4,540	127 m	98 m	84 m	69 m	55 m	41 m	27 m	23 m	6 m	N/A

Allowable Sustained Longitudinal Stress: 13.3 MPa

Maximum Recommended Column Length, m (by **shut-in pressure**, psig)

Pump Wgt
(kg)

	5.2 bar	10.3 bar	13.0 bar	15.5 bar	18.1 bar	20.7 bar	23.3 bar	24.0 bar	27.0 bar	30.0 bar
1,362	176 m	133 m	111 m	90 m	68 m	46 m	25 m	19 m	N/A	N/A
1,816	174 m	131 m	109 m	88 m	66 m	45 m	23 m	18 m	N/A	N/A
2,270	173 m	130 m	109 m	87 m	65 m	44 m	22 m	16 m	N/A	N/A
2,724	172 m	129 m	107 m	86 m	64 m	43 m	21 m	15 m	N/A	N/A
3,178	171 m	128 m	106 m	85 m	63 m	42 m	20 m	14 m	N/A	N/A
3,632	170 m	127 m	105 m	84 m	62 m	41 m	19 m	13 m	N/A	N/A
4,086	169 m	126 m	104 m	83 m	61 m	40 m	18 m	12 m	N/A	N/A
4,540	168 m	124 m	103 m	81 m	59 m	38 m	16 m	11 m	N/A	N/A

Allowable Occasional Longitudinal Stress: 17.7 MPa

Note: column length is limited by both sustained and occasional loading conditions. Read the column length for sustained conditions, based on design/operating pressure from the top table. Also read a second column length for occasional conditions, based on shut-in pressure from the bottom table. Maximum recommended column length is the lower of these two values.

N/A = a loading condition that is not recommended.

"Shut-in" pressure is also referred to as "shut-off" pressure.