

Better By Design



A-D TECHNOLOGIES
Bull-Line® Pull Tape Guide

Bull-Knot Joining Procedure

Woven Bull-Line® POLYESTER Fiber

WP25 LUBED A0901 BULL-LINE

8844 FT

- Economical • Best burn-through (conduit cutting) resistance • Good blowability into conduit
- Accurate sequential foot or meter markings • Can also be factory pre-installed into conduit
- Available on reels in a wide variety of continuous lengths

The following joining procedures for Bull-Line® Pull Tape were developed for tying two lengths of Bull-Line™ together or tying one length of Bull-Line® to a pulling swivel or pulling eye. The Bull-Knot was developed to be simple to tie yet provide consistent high strength. It is compact in size which minimizes hangup when pulling through the conduit system. In laboratory tensile testing and actual field use, the Bull-Knot has proven to be more reliable and outperforms "bowline" and other more recently developed pull tape knots. The Bull-Knot also works well on lubricated Bull-Line®.



STEP 1
Double up 12 inches of Bull-Line®.



STEP 2
Tie a loose overhand knot.



STEP 3
Retrace the original overhand knot with a double strand of the adjoining tape end.



STEP 4
Keep the flat surface in continuous contact between the two tape lengths.



STEP 5
Pull slack out evenly from both ends.



STEP 6
Wrap completely Bull-Knot ends with vinyl tape.

Joining One Length Of Bull-Line® To Pulling Eye



STEP 1
Double up 24 inches of Bull-Line® end to be joined to the swivel or pulling eye.



STEP 2
Tie a loose overhand knot in the double strand, about 18 inches away from the free tape end.



STEP 3
Thread the free end through the pulling eye or swivel.



STEP 4
Retrace the original overhand knot with the double stranded free end.



STEP 5
Keep the flat surface in continuous contact between the two doubled tape lengths... pull slack out evenly from both ends and wrap completed Bull-Knot ends with vinyl tape.

Part Number	Minimum Tensile Strength (Pounds / Kilograms)	Approximate Width	Reel Size	Full Pallet Size	Reels Per Pallet	Weight Per Reel** (lbs.)
WP05 1000	500 / 227	1/4" (6 mm)	8"*	42" Sq. x 47"	64	6
WP05 3000	500 / 227	1/4" (6 mm)	11-3/4"	42" Sq. x 47"	36	15
WP05 5000	500 / 227	1/4" (6 mm)	11-3/4"	42" Sq. x 47"	36	22
WP05 10000	500 / 227	1/4" (6 mm)	11-3/4"	42" Sq. x 47"	27	42
WP05 10000	500 / 227	1/4" (6 mm)	11-3/4"	48" Sq. x 47"	48	42
WP10 1000	1000 / 455	7/16" (11 mm)	8"	42" Sq. x 47"	64	8
WP10 3000	1000 / 455	7/16" (11 mm)	11-3/4"	42" Sq. x 47"	45	19
WP10 5000	1000 / 455	7/16" (11 mm)	14-1/2"	42" Sq. x 47"	10	30
WP10 5000	1000 / 455	7/16" (11 mm)	14-1/2"	48" Sq. x 47"	36	30
WP10 10000	1000 / 455	7/16" (11 mm)	16"	48" Sq. x 43-1/2"	18	60
WP12 1000	1250 / 568	1/2" (13 mm)	8"	42" Sq. x 47"	64	8
WP12 3000	1250 / 568	1/2" (13 mm)	11-3/4"	42" Sq. x 47"	45	21
BLWP12 3000	1250 / 568	1/2" (13 mm)	11-3/4"	48" Sq. x 64"	80	21
WP12 5000	1250 / 568	1/2" (13 mm)	14-1/2"	42" Sq. x 43-1/2"	10	34
BLWP12 5000	1250 / 568	1/2" (13 mm)	14-1/2"	48" Sq. x 27"	36	34
WP12 10000	1250 / 568	1/2" (13 mm)	16"	48" Sq. x 43-1/2"	18	67
WP15 1000	1500 / 682	9/16" (14 mm)	11-3/4"	42" Sq. x 47"	36	12
WP15 3000	1500 / 682	9/16" (14 mm)	13 1/2"	42" Sq. x 47"	45	31
WP15 5000	1500 / 682	9/16" (14 mm)	14-1/2"	42" Sq. x 43-1/2"	10	55
WP15 5000	1500 / 682	9/16" (14 mm)	18"	48" Sq. x 43-1/2"	36	108
WP15 10000	1500 / 682	9/16" (14 mm)	18"	42" Sq. x 43-1/2"	8	108
WP18 1000	1800 / 818	5/8" (16 mm)	11-3/4"	42" Sq. x 47"	45	14
WP18 3000	1800 / 818	5/8" (16 mm)	13-1/2"	42" Sq. x 47"	45	35
WP18 5000	1800 / 818	5/8" (16 mm)	16"	42" Sq. x 43-1/2"	10	62
WP18 5000	1800 / 818	5/8" (16 mm)	18"	48" Sq. x 43-1/2"	18	80
WP18 10000	1800 / 818	5/8" (16 mm)	18"	42" Sq. x 43-1/2"	8	115
WP18 900M	1800 / 818	5/8" (16 mm)	14"	42" Sq. x 47"	16	36
WP18 2000M	1800 / 818	5/8" (16 mm)	18"	42" Sq. x 43-1/2"	8	80
WP25 1000	2500 / 1136	7/8" (22 mm)	11-3/4"	42" Sq. x 47"	45	15
WP25 1500	2500 / 1136	7/8" (22 mm)	11-3/4"	42" Sq. x 47"	45	24
WP25 1500	2500 / 1136	7/8" (22 mm)	11-3/4"	48" Sq. x 47"	80	24
WP25 3000	2500 / 1136	7/8" (22 mm)	14-1/2"	48" Sq. x 43-1/2"	36	50
WP25 5000	2500 / 1136	7/8" (22 mm)	16"	42" Sq. x 43-1/2"	10	84
WP25 5000	2500 / 1136	7/8" (22 mm)	18"	48" Sq. x 43-1/2"	18	109
WP25 10000	2500 / 1136	7/8" (22 mm)	24"	42" Sq. x 43-1/2"	2	166
WP25 10000	2500 / 1136	7/8" (22 mm)	24"	48" Sq. x 43-1/2"	4	166
WP25 2000M	2500 / 1136	7/8" (22 mm)	18"	42" Sq. x 43-1/2"	8	109
WP40 1000	4000 / 1818	5/8" (16 mm)	11-3/4"	42" Sq. x 47"	36	26
WP40 1000	4000 / 1818	5/8" (16 mm)	11-3/4"	48" Sq. x 47"	64	26
WP40 3000	4000 / 1818	5/8" (16 mm)	16"	42" Sq. x 43-1/2"	8	83
WP40 5000	4000 / 1818	5/8" (16 mm)	24"	42" Sq. x 43-1/2"	2	137
WP40 5000	4000 / 1818	5/8" (16 mm)	24"	48" Sq. x 43-1/2"	8	259
WP60 1000	6000 / 2727	3/4" (19 mm)	14-1/2"	48" Sq. x 43-1/2"	36	37
WP60 3000	6000 / 2727	3/4" (19 mm)	18"	42" Sq. x 43-1/2"	8	155
WP60 3000	6000 / 2727	3/4" (19 mm)	24"	48" Sq. x 43-1/2"	18	155
WP60 5000	6000 / 2727	3/4" (19 mm)	24"	42" Sq. x 43-1/2"	2	155
WP60 5000	6000 / 2727	3/4" (19 mm)	24"	48" Sq. x 43-1/2"	8	155

*All 8" reels are sold 4 per carton.

**Reel weight includes tape weight, reel weight and box weight.

42" square pallet weighs 55 lbs.

48" square pallet weighs 72 lbs.

Woven Bull-Line® ARAMID Fiber

WK25 LUBED AISAI "BULL-LINE"

0017 FT

WK25 LUBED AIS

- High strength, low stretch • Very good burn-through (conduit cutting) resistance • Excellent blowability into conduit
- Accurate sequential foot or meter markings • Available on reels in a wide variety of continuous lengths
- Can also be factory pre-installed into conduit

w/Polyweft	100% Aramid	Minimum Tensile Strength (Pounds / Kilograms)	Approximate Width	Reel Size	Full Pallet Size	Reels Per Pallet	Weight Per Reel** (lbs.)
WK06 1000	WKK06 1000	600 / 273	1/8" (3 mm)	8"*	42" Sq. x 47"	64	5
WK06 3000	WKK06 3000	600 / 273	1/8" (3 mm)	11-3/4"	42" Sq. x 47"	36	10
WK06 5000	WKK06 5000	600 / 273	1/8" (3 mm)	11-3/4"	42" Sq. x 47"	36	14
WK06 10000	WKK06 10000	600 / 273	1/8" (3 mm)	11-3/4"	42" Sq. x 47"	36	25
WK06 10000	WKK06 10000	600 / 273	1/8" (3 mm)	11-3/4"	48" Sq. x 47"	64	25
WK10 1000	WKK10 1000	1000 / 455	3/16" (5 mm)	8"	42" Sq. x 47"	64	6
WK10 3000	WKK10 3000	1000 / 455	3/16" (5 mm)	11-3/4"	42" Sq. x 47"	36	15
WK10 5000	WKK10 5000	1000 / 455	3/16" (5 mm)	11-3/4"	42" Sq. x 47"	36	22
WK10 10000	WKK10 10000	1000 / 455	3/16" (5 mm)	11-3/4"	42" Sq. x 43-1/2"	27	37
WK12 1000	WKK12 1000	1250 / 568	3/8" (10 mm)	8"	42" Sq. x 47"	64	7
WK12 3000	WKK12 3000	1250 / 568	3/8" (10 mm)	11-3/4"	42" Sq. x 47"	36	18
WK12 5000	WKK12 5000	1250 / 568	3/8" (10 mm)	11-3/4"	42" Sq. x 47"	36	27
WK12 10000	WKK12 10000	1250 / 568	3/8" (10 mm)	16"	42" Sq. x 43-1/2"	8	57
WK15 1000	WKK15 1000	1500 / 682	7/16" (11 mm)	8"	42" Sq. x 47"	64	19
WK15 3000	WKK15 3000	1500 / 682	7/16" (11 mm)	11-3/4"	42" Sq. x 47"	36	19
WK15 5000	WKK15 5000	1500 / 682	7/16" (11 mm)	11-3/4"	42" Sq. x 47"	36	30
WK15 10000	WKK15 10000	1500 / 682	7/16" (11 mm)	16"	42" Sq. x 43-1/2"	10	62
WK18 1000	WKK18 1000	1800 / 818	1/2" (13 mm)	8"	42" Sq. x 47"	64	8
WK18 3000	WKK18 3000	1800 / 818	1/2" (13 mm)	11-3/4"	42" Sq. x 47"	36	20
WK18 5000	WKK18 5000	1800 / 818	1/2" (13 mm)	11-3/4"	42" Sq. x 47"	27	32
WK18 5000	WKK18 5000	1800 / 818	1/2" (13 mm)	11-3/4"	48" Sq. x 47"	48	32
WK18 10000	WKK18 10000	1800 / 818	1/2" (13 mm)	11-3/4"	42" Sq. x 43-1/2"	10	65
WK18 1000M	WKK18 1000M	1800 / 818	1/2" (13 mm)	11-3/4"	42" Sq. x 47"	36	22
WK25 1000	WKK25 1000	2500 / 1136	3/4" (19 mm)	8"	42" Sq. x 47"	64	9
WK25 3000	WKK25 3000	2500 / 1136	3/4" (19 mm)	11-3/4"	42" Sq. x 47"	36	23
WK25 5000	WKK25 5000	2500 / 1136	3/4" (19 mm)	14-1/2"	42" Sq. x 43-1/2"	10	38
WK25 10000	WKK25 10000	2500 / 1136	3/4" (19 mm)	16"	42" Sq. x 43-1/2"	10	71
WK40 1000	WKK40 1000	4000 / 1818	7/8" (22 mm)	11-3/4"	42" Sq. x 47"	36	13
WK40 3000	WKK40 3000	4000 / 1818	7/8" (22 mm)	14-1/2"	42" Sq. x 43-1/2"	10	35
WK40 5000	WKK40 5000	4000 / 1818	7/8" (22 mm)	16"	42" Sq. x 43-1/2"	10	56
WK40 10000	WKK40 10000	4000 / 1818	7/8" (22 mm)	18"	42" Sq. x 43-1/2"	8	110
WK40 10000	WKK40 10000	4000 / 1818	7/8" (22 mm)	18"	48" Sq. x 43-1/2"	8	110

Woven Tone-Tape POLYESTER or ARAMID Fiber

"BULL-LINE" LUBED WP12 TONE-TAPE

0099 FT

- Incorporates a tracer wire for signal locating • Corrosion resistant fibers and conductor • Accurate sequential foot or meter markings
- Wire conductors can be easily spliced in the field • Can also be factory pre-installed into conduit

Part Number	Description	Tensile Strength	Available in other strengths and with multiple locator wires upon request.
WP12 LC	Woven Polyester Tone-Tape	Up To 1250 lbs. (568 kgs)	
WK12 LC	Woven Aramid Tone-Tape	Up To 1250 lbs. (568 kgs)	
WP18 LC	Woven Polyester Tone-Tape	Up to 1800 lbs. (818 kgs)	
WP25 LC	Woven Polyester Tone-Tape	Up to 2500 lbs. (1136 kAgS)	

Accessories

Foam Line Carriers

Lightweight cylinder-shaped foam carriers are ideal for short runs and runs with multiple bends. Useful for pneumatically blowing in pull lines as well as for cleaning water and debris from conduits. Available in diameters from 3/4" to 6".



Part No.	Conduit Size (I.D.)		Packaging
	Inches	mm	
DA 52 050	1/2	13	10 foam carriers/carton
DA 52 075	3/4	19	10 foam carriers/carton
DA 52 100	1	25	10 foam carriers/carton
DA 52 125	1-1/4	32	10 foam carriers/carton
DA 52 150	1-1/2	38	5 foam carriers/carton
DA 52 200	2	51	5 foam carriers/carton
DA 52 250	2-1/2	64	5 foam carriers/carton
DA 52 300	3	76	5 foam carriers/carton
DA 52 350	3-1/2	89	2 foam carriers/carton
DA 52 400	4	102	2 foam carriers/carton
DA 52 500	5	127	2 foam carriers/carton
DA 52 600	6	152	2 foam carriers/carton

Missile Line Carriers

Plastic missile line carriers are fast and highly efficient for pneumatic placement of pull lines into larger conduits (2" - 6"). They work well in out-of-round conduit and can even travel over minor obstructions within the conduit.



Part No.	Conduit Size (I.D.)		Packaging
	Inches	mm	
DA 53 200	2	51	1 missile/carton
DA 53 250	2-1/2	64	1 missile/carton
DA 53 300	3	76	1 missile/carton
DA 53 350	3-1/2	89	1 missile/carton
DA 53 400	4	102	1 missile/carton
DA 53 500	5	127	1 missile/carton
DA 53 600	6	152	1 missile/carton

Tape Gun Seal-Offs (FS)

Rubberized seal-offs are used with DA 45 Tape Insertion Gun to fit into conduits ranging in sizes from 1/2" to 6".



Part No.	Conduit Size (I.D.)		Packaging
	Inches	mm	
DA 50 1000	1/2 - 1-1/4	13 - 32	1 seal-off per carton
DA 50 2500	1-1/4 - 2-1/2	32 - 64	1 seal-off per carton
DA 50 6000	2-1/2 - 6	64 - 152	1 seal-off per carton

Inflatable Pull Line Carriers

Inflatable bag construction adjusts to fit the diameter of a variety of conduit sizes, and can conform to move through cable-occupied conduit. Durable, rip-stop nylon construction assures long life. Four sizes accommodate conduit diameters up to 6".



Part No.	Conduit Size (I.D.)		Packaging
	Inches	mm	
DA 51 100	3/4 - 1 1/4	19 - 32	5 bags/carton
DA 51 200	1-1/4 - 2-1/2	38 - 64	5 bags/carton
DA 51 300	3 - 4	76 - 102	2 bags/carton
DA 51 500	4 - 6	102 - 152	2 bags/carton

1-3.00" MD Inflatable Carriers

403466	1	25.4	1 each
403467	1.25	31.75	1 each
403468	1.50	38.1	1 each
403469	2	50.8	1 each
404982	2.5	63.5	1 each
404984	3	76.2	1 each

Pull Line Darts

Used to pneumatically install pull line into conduit. Dart is constructed of a series of flexible rubber washers reinforced with smaller diameter metal washers for durability. Sizes range from 1/2" to 3".



Part No.	Conduit Size (I.D.)		Packaging
	Inches	mm	
DA 46 050	1/2	13	1 dart per carton
DA 46 075	3/4	19	1 dart per carton
DA 46 100	1	25	1 dart per carton
DA 46 118	1-1/8	29	1 dart per carton
DA 46 125	1-1/4	32	1 dart per carton
DA 46 138	1-3/8	35	1 dart per carton
DA 46 150	1-1/2	38	1 dart per carton
DA 46 175	1-3/4	45	1 dart per carton
DA 46 200	2	51	1 dart per carton
DA 46 250	2-1/2	64	1 dart per carton
DA 46 300	3	76	1 dart per carton

Tape Gun (Pneumatic)

Used to pneumatically blow dart/pull line assembly into conduit. Features cut-off valve and standard air compressor quick disconnect. Connects to DA 50 series seal-off to fit into conduit opening.



Part No.	Description	Packaging
DA 45	Tape Insertion Gun (Pneumatic)	1 gun per carton
DA 45 K	Tape Insertion Gun Kit	3 seal-offs, 1 gun

Product Selection Guide

Which Type Of Pull Line Is Best For You?

There's really no comparison in performance between pull tapes and plastic poly-ropes. Bull-Line® pull tapes are superior in cable pulling effectiveness as well as protection of conduit and innerduct systems. However, choosing which type of pull tape is best suited for your application may not be as obvious. There are clear advantages to both aramid and polyester based pull tapes. Use the following guide to determine which Bull-Line® pull tape is best for you.

Property	Woven Aramid Pull Tapes	Woven Polyester Pull Tapes	Plastic "Poly-Ropes"
Tensile Strength			
Strength / Weight Ratio	Very High	Medium	Low
% Elongation at Yield	< 4%	< 15%	> 400%
Coefficient Of Friction			
Bull-Line™	< 0.12	< 0.10	N/A
<i>Coefficient of friction is significantly affected by pulling speed and load. Pull lines can contribute significant frictional drag during difficult pulls. Bull-Line pull tapes have the lowest coefficient of friction of any available pull tape.</i>			
Conduit Burn-Through (Cutting) Resistance	Good	Best	Poor
<i>Bull-Line® pull tapes have superior resistance to conduit burn-through. Plastic "poly-ropes" are very load-sensitive, and can easily melt and fuse into the conduit.</i>			
Blowability Into Conduit	Excellent	Very Good	Poor
<i>Bull-Line® lubrication treatment minimizes pull tape "bunch-up" when air-blowing into conduit.</i>			
Reusability	Fair / Good	Best	Good
Weatherability			
UV Resistance	Good	Best	Good
Water Resistance	Good	Good	Good
Accuracy Of Markings	Best	Very Good	(Cannot Mark)
Overall Effectiveness			
Longer Cable Pulls	Best	Good	Poor
Shorter Cable Pulls	Best	Very Good	Poor / Fair
Safety	Best	Very Good	Poor

NOTE: A-D TECHNOLOGIES has made every attempt to assure that the information contained in this product bulletin is accurate. The information supplied may change without notice. This information is intended to inform the reader of the typical characteristics of the pipe and accessories that are described and should not be considered complete with regard to design considerations. Contact an A-D TECHNOLOGIES representative regarding any questions about this document and to determine if the information contained within is current.

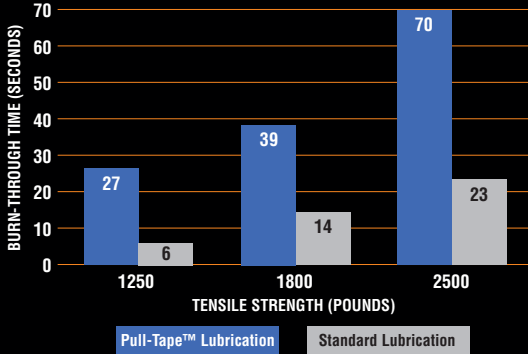
Knot Efficiencies

KNOT	Breaking Strength	% Efficiency
Control - No Knot	2610	100.0
Square Knot (reef)	773	29.6
Bowline	1081	41.4
*Double-Ply Retraced Overhand	1576	60.4

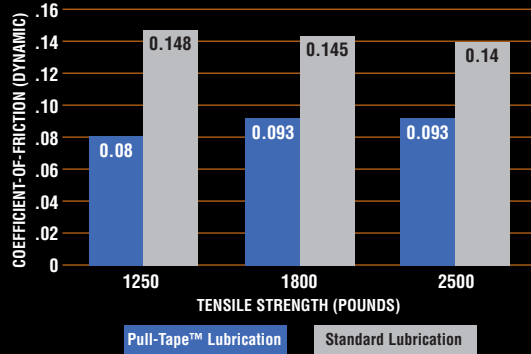
*Bull-Knot: Easy to tie, but unique; occupies little volume; difficult to tie poorly; tensile consistently one of the best

Compare The Performance

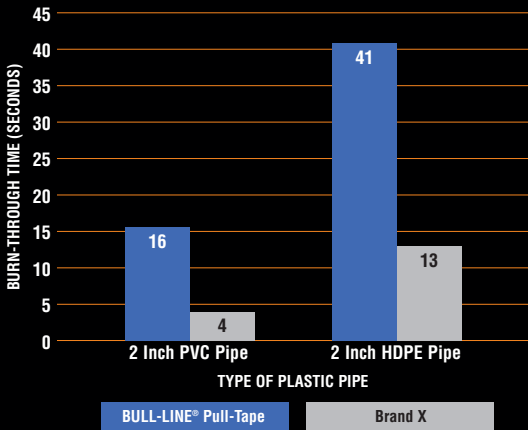
**Polyester Pull Tape: Burn-Through Time vs Tensile Strength
(2 inch PVC Pipe)**



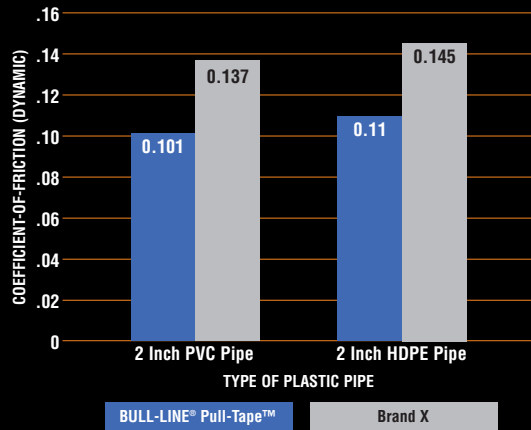
**Polyester Pull Tape: C.O.F. vs Tensile Strength
(2 inch PVC Pipe)**



**1800# Woven KEVLAR Pull Tapes
BURN THROUGH TIMES**



**1800# Woven ARAMID Pull Tapes
COEFFICIENT-OF-FRICTION**



A-D TECHNOLOGIES

835 INNOVATION DR. • KNOXVILLE, TN 37932
 PHONE 865-218-3460 • FAX 865-218-3463
 800-847-7661 • E-MAIL info@adtechnologies.com
 WEB SITE www.adtechnologies.com



Customer Service: 800-321-7914



Customer Service: 800-847-7661

Plant Locations:

Elyria, OH • Graniteville, SC • Middlesboro, KY • McAlester, OK • North Salt Lake City, UT • Sparks, NV
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