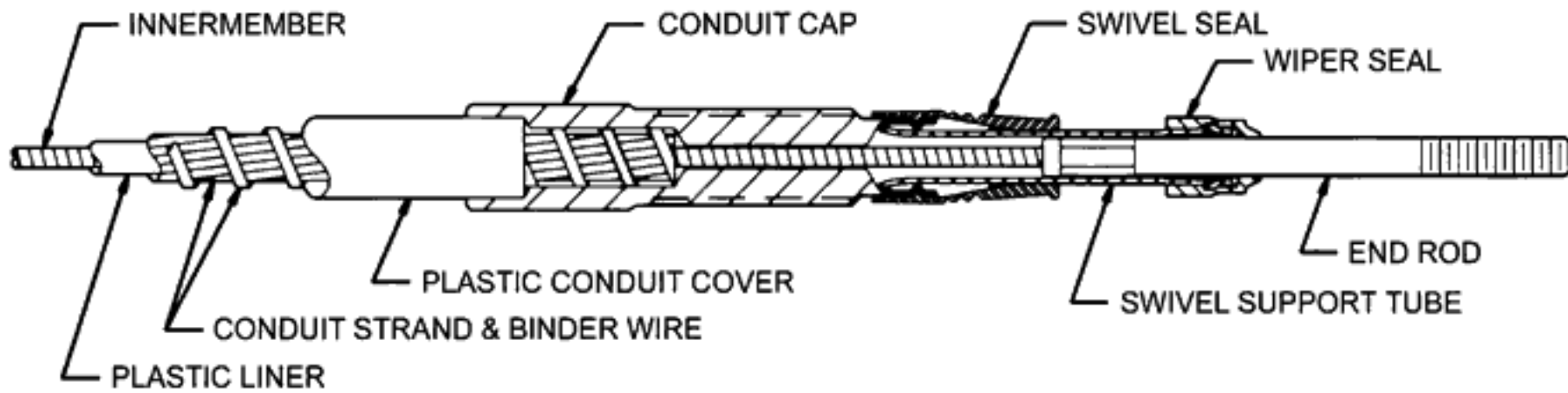


Cablecraft's Time-Proven Design

The design of today's Cablecraft control has evolved from over 50 years experience in meeting a wide variety of industrial, marine and aircraft applications. Combined with careful selection of materials and fabrication methods, this design provides users the most versatile, highest quality control available today.



Conduit: First to develop the "binder wire," Cablecraft's superior design out performs the competition's "imitations."

UTILITY: Gray plastic covering. Used on 173, 174, and 175 series cables.

LOW-FRICTION-EXT: Green plastic covering. Used on 313, 314 and 315 controls.

Innerelement: Made of flexible IX19 carbon strand, armored with a swaged steel jacket for smoothness and compression strength.

173 - Carbon steel jacket.

174 & 175 - Stainless steel jacket.

313, 314 & 315 - Extruded nylon cover over carbon steel jacket.

Lubrication: All standard Cablecraft controls are lubricated during construction with carefully selected compounds to provide optimum performance. No further service is necessary or recommended.

End Rods: All end rods are 300 series stainless steel burnished to a flawless finish.

Wiper Seals: Designed to prevent entry of moisture and contamination into the support tube and provide a bearing surface for the end rod. Improved model 5 seals (brown) are standard and Model 6 seals (gray) are optional for severe conditions.

Support Tube and Swivel Seal: The swivel joint between the support tube and conduit cap is designed to allow 8 degrees swivel from control center line.

Plated steel- 173, 313 controls.

Stainless steel - 174, 175, 314, 315 controls.

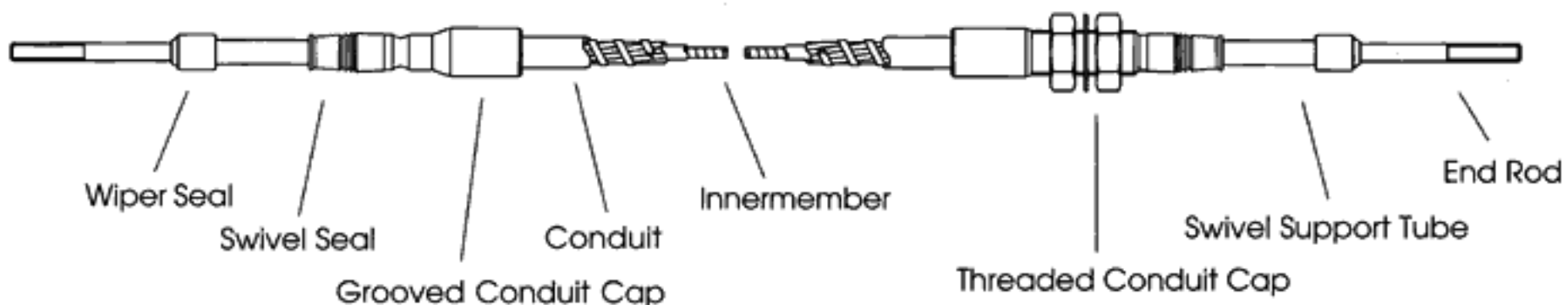
The swivel seal protects this joint from entry of moisture and contamination.

Conduit Caps: Threaded for bulkhead installation or grooved for clamp application.

Plated steel - 173, 174, 313, & 314 controls.

Stainless steel- 175 & 315 controls.

Cablecraft Standard Push-Pull Cable Terminology



How to Identify Push-Pull Cables

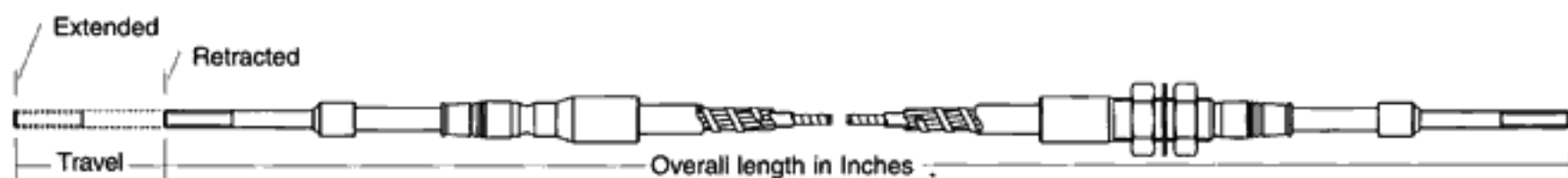
Your goal is to determine the information required to make up the "ordering code" or part number. An example of a typical ordering code is 173-VTG-3-144.

173 - V TG - 3 - 144

Step 1: Determine the "**duty**" (size) of the cable by the diameter and threads of the end rods. **V** = 10-32, **L** = 1/4-28, **M** = 5/16-24, **H** = 3/8-24.
(**V**ery light duty; **L**ight duty; **M**edium duty; **H**eavy duty)

Step 2: Determine the type of **conduit end** fittings (conduit caps) for left end and right end. **T** = Threaded, **G** = Grooved. TT, GG or TG combinations.

Step 3: Determine the **travel** of the end rod. 1" through 6" in one inch increments.



Step 4: Determine the overall **length** of the cable.

Step 5: Determine cable materials depending on usage and conditions. See details of 173, 174, 175 Utility and 313, 314, 315 Low-Friction EXT.

Utility: "The Rugged Gray Cable," is the industry standard and is designed for a long life under rugged conditions (173, 174, 175).

Low-Friction - EXT: "The Green Cable," is the proper cable to use when superior efficiency is required. The extruded nylon cover over the innermember works extremely smoothly with the poly liner (313, 314, 315).

(See "Specifications" on page 4 and "Ordering Code" on page 5 to determine part number)

Push-Pull Cable Specifications

	Threaded Swivel Conduit Fitting		'A' DIMENSION THREADED SWIVEL (Control at mid travel)	MINIMUM TRAVEL	WORKING INPUT LOAD Push/Pull	MAXIMUM INPUT OVERLOAD Push/Pull	'A' DIMENSION GROOVED SWIVEL (Control at mid travel)	Grooved Swivel Conduit Fitting	
VLD		4.38	1"	80/120	120/180	3.69			
		5.87	2"	80/120	120/180	5.19			
		7.38	3"	70/120	110/180	6.69			
		8.87	4"	60/120	90/180	8.19			
		10.38	5"	45/120	70/180	9.69			
		11.87	6"	30/120	45/180	11.19			
LD		4.62	1"	150/230	230/350	4.00			
		6.12	2"	150/230	230/350	5.50			
		7.62	3"	125/230	190/350	7.00			
		9.12	4"	100/230	150/350	8.50			
		10.62	5"	75/230	110/350	10.00			
		12.12	6"	5-230	75/350	11.50			
MD		5.06	1"	250/400	400/600	4.38			
		6.56	2"	250/400	400/600	5.87			
		8.06	3"	210/400	300/600	7.38			
		9.56	4"	170/400	250/600	8.87			
		11.06	5"	130/400	200/600	10.38			
		12.56	6"	100/400	150/600	11.87			
HD		5.69	1"	700/1000	1000/1500	5.19			
		7.19	2"	700/1000	1000/1500	6.69			
		8.69	3"	600/1000	900/1500	8.19			
		10.19	4"	500/1000	750/1500	9.69			
		11.69	5"	400/1000	600/1500	11.19			
		13.19	6"	30-1000	450/1500	12.69			

Low Friction-EXT and Utility Cables Design Criteria

Efficiency

Efficiency factor ratings are for comparative purposes and may vary due to length, rate of travel, direction of travel, bend radius and temperature.

To Compare Efficiency:

$$\text{Input force} = \frac{\text{Output load (lbs)} \times \text{total degrees of bend}}{\text{Efficiency factor} + \text{output load}}$$

Efficiency Factors:

Low Friction - EXT	.0012
Utility	.002

DUTY	MINIMUM BEND. RAD.
VLD	2"
LD	3"
MD	5"
HD	6"

Backlash

Nominal Backlash = Backlash factor x total degrees of bend.

Backlash Factors:

VLD	.00015
LD	.00020
MD	.00025
HD	.00030

Temperature range: -65° to +230° F

Ordering Code for Push-Pull Cable Controls

314 (6) - L TT - 3 - 144 (AP)

Control Type -----

Low Friction - EXT

- 313 With Stainless Steel End Rods
- 314 With Stainless Steel Support Tubes, and End Rods
- 315 All Exposed Fittings/parts are Stainless Steel

Utility

- 173 With Stainless Steel End Rods
- 174 With Stainless Steel Support Tubes, End Rods and Innermember Armor
- 175 All Exposed Fittings/parts are Stainless Steel Plus Stainless Innermember Armor

Seal Options -----

(Use This Number Only If Requesting Optional Seals)

- 6 Model 6 Wiper Seal, Optional on all Controls

Cable Size -----

Letter	End Rod Thread	Letter	End Rod Thread
V	10-32 UNF	L	1/4-28 UNF
M	5/16 UNF	H	3/8 UNF

End Fitting Combination -----

- T Threaded Swivel
- G Threaded Swivel

Cable Travel, In Inches (1", 2", 3", 4", 5", 6") -----

Length, In Inches +/- .25 Inches -----

Suffix Letters For Additional Features -----

(Use Only If Requesting Optional Features)

N	End Rod Jam Nuts (2 each)	W	Extra Shakeproof Washers on Conduit Ends
A	Combination of N and W	P	Stamp with Customer Part Number
S	Stamp with Cablecraft and Customer Part Number	M	Metic End Rods (Optional)
		V	M5 x .8
		L	M6 x 1.0
		M	M8 x 1.25
		H	M10 x 1.5