

CALIFORNIA PUSH-PULL, INC.

2022 EDITION

QUADRASTAT

Cablecraft.

PUSH PULL PULL ONLY CLUTCH & BRAKE CABLES

CONTROL HEADS

twist lock
non locking
micro adjust

CONTROL LEVERS

SPOOL VALVE ADAPTORS

CONTROL CABLES

ACCESSORIES

clevises
eye ends
clamps
etc.

100%
LOAD
TESTED

**FLEXIBLE
SMOOTH OPERATION
RUGGED
RELIABLE**



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SPECIALIZING IN REPLACEMENT AND CUSTOM BUILT CABLES

3 COMMERCE CT., STE. 130 • CHICO, CA 95928

530-893-4060 • Fax 530-893-4062

www.push-pull.com • info@push-pull.com

Locally Assembled Cable Controls

with Threaded or Grooved Conduit End Fittings

Part Number Code

SAMPLE PART NO. 173-MTG-2-90

Construction

- 173—Utility with stainless end rods.
- 174—Marine utility with stainless end rods, stainless support tube and stainless armor inner member.
- 183—Low Friction with teflon and nylon wear surfaces and stainless steel end rods.
- 184—Marine Low Friction with teflon and nylon wear surfaces, stainless steel end rods, stainless steel swivel support tubes and stainless steel inner member.

Duty (load carrying capacity)

Available in: V (Very light duty), L (Light duty), M (Medium duty), H (Heavy duty). Determine by load or end rod diameter from table A below.

Conduit End Fittings

TT (Threaded fittings both ends), GG (Grooved fittings both ends), TG (Threaded fitting one end and Grooved on the other). See table A and diagram B below for dimensions.

Length of Travel

1 to 6 inches. Determine from table A and diagram C below.

Length Overall (in inches)

A Duty Load capacities and length of travel

Basic Part Number	ALL CABLES				THREADED CONDUIT END FITTINGS								GROOVED CONDUIT END FITTINGS										
	Thread "F"	Min. Bend Radius Inches	Pull Load Capacity All travels Pounds	Push Load Capacity for Travel Shown in pounds						Thread "W"	Dimension "A" for Travel Shown in inches												
				1" & 2"	3"	4"	5"	6"	Groove Dimension		Dimension "A" for Travel Shown in inches												
Radius Inches	Root Diam. Inches	1"	2"	3"	4"	5"	6"	Radius Inches	Root Diam. Inches	1"	2"	3"	4"	5"	6"								
V	10-32 x 0.89	2	120	80	70	60	45	30	7/16-20 x 1.12"	4.38	5.87	7.38	8.87	10.38	11.87	.13 (width)	.25	3.69	5.19	6.69	8.19	9.69	11.13
L	1/4-28 x 1.00	3	230	150	125	100	75	50	5/8-18 x 1.50"	4.62	6.12	7.62	9.12	10.62	12.12	.17	.41	4.00	5.50	7.00	8.50	10.00	11.50
M	5/16-24 x 1.19	5	400	250	210	170	130	100	11/16-16 x 1.75"	5.06	6.56	8.06	9.56	11.06	12.56	.17	.47	4.33	5.87	7.38	8.87	10.38	11.87
H	3/8-24 x 1.38	6	1,000	700	600	500	400	300	7/8-14 x 2.00"	5.69	7.19	8.69	10.19	11.69	13.19	.20	.50	5.19	6.69	8.19	9.69	11.19	12.69

MM conversions: 1 inch = 25.4 mm. 1 mm = .03937 inches. 1 lb = .4536 kg. 1 kg = 2.2046 lbs.

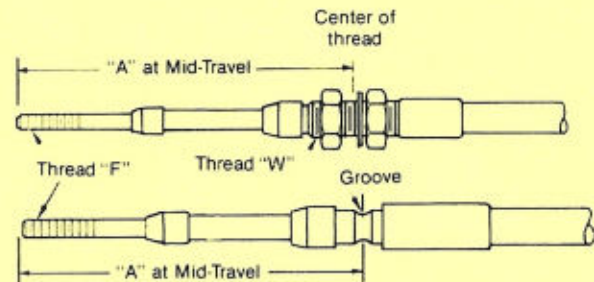
B Conduit End Fittings

Type T

Threaded Conduit End Fitting for bulkhead mounting

Type G

Grooved Conduit End Fitting for mounting with U-bolts or clamps.



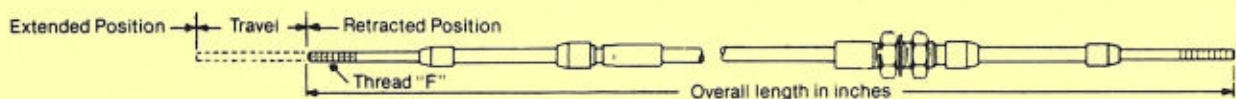
C Overall length and travel in inches

FOR REPLACEMENT CABLES

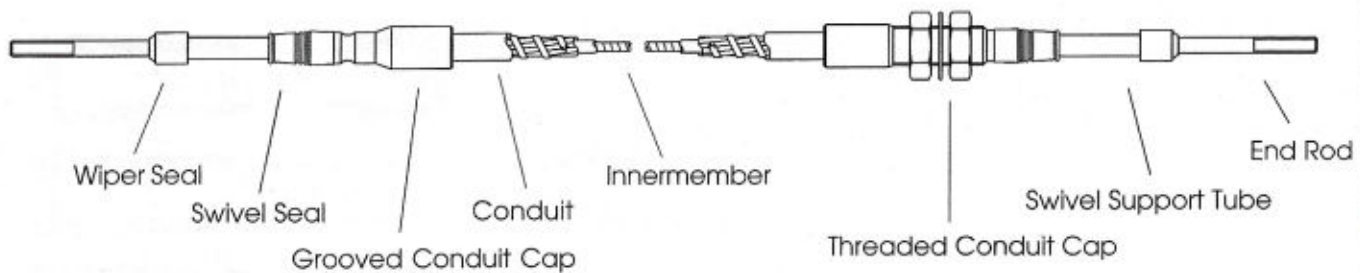
- A. Remove old cable.
- B. Measure length as shown below.
- C. Measure length of travel. 1" through 6"
- D. Determine size of thread "F."
Select basic part number from Table above.

FOR NEW CABLES

- A. Determine overall length.
- B. Measure travel required. Add 1/4" and then round upward to nearest whole inch.
- C. Determine loads and select Basic part number from Table A.



Standard Push-Pull Cable Terminology

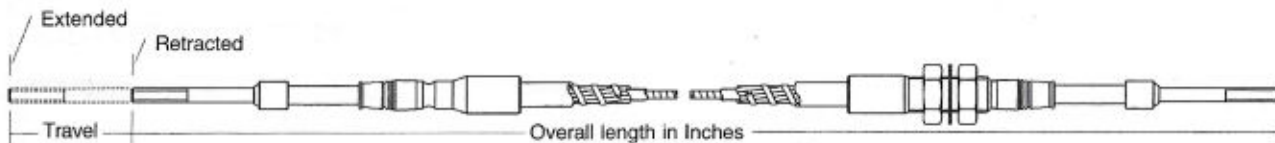


How to Identify Push-Pull Cables

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.
(Very light duty; Light duty; Medium duty; Heavy 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)

Visual Comparison Chart for Determining Travel

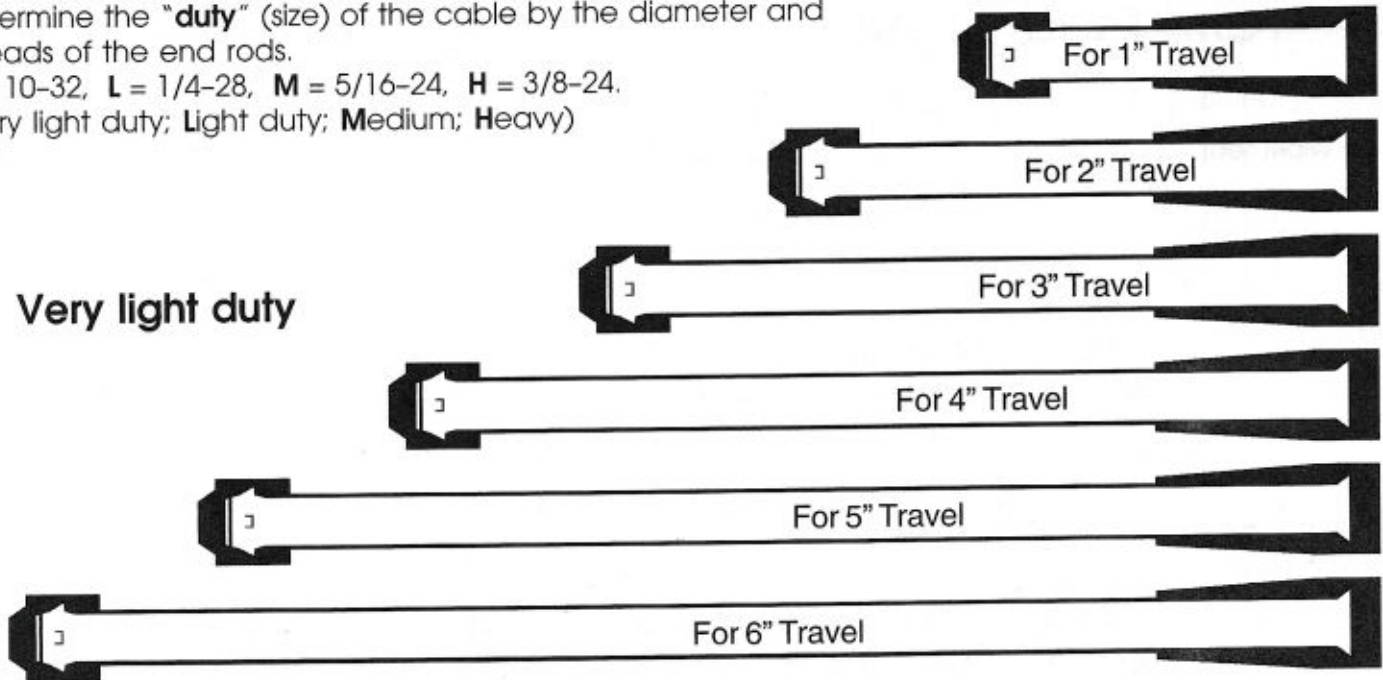
To determine the "travel" on an existing cable, you can compare the length of the support tubes with the illustrations below and on the next page.

Determine the "duty" (size) of the cable by the diameter and threads of the end rods.

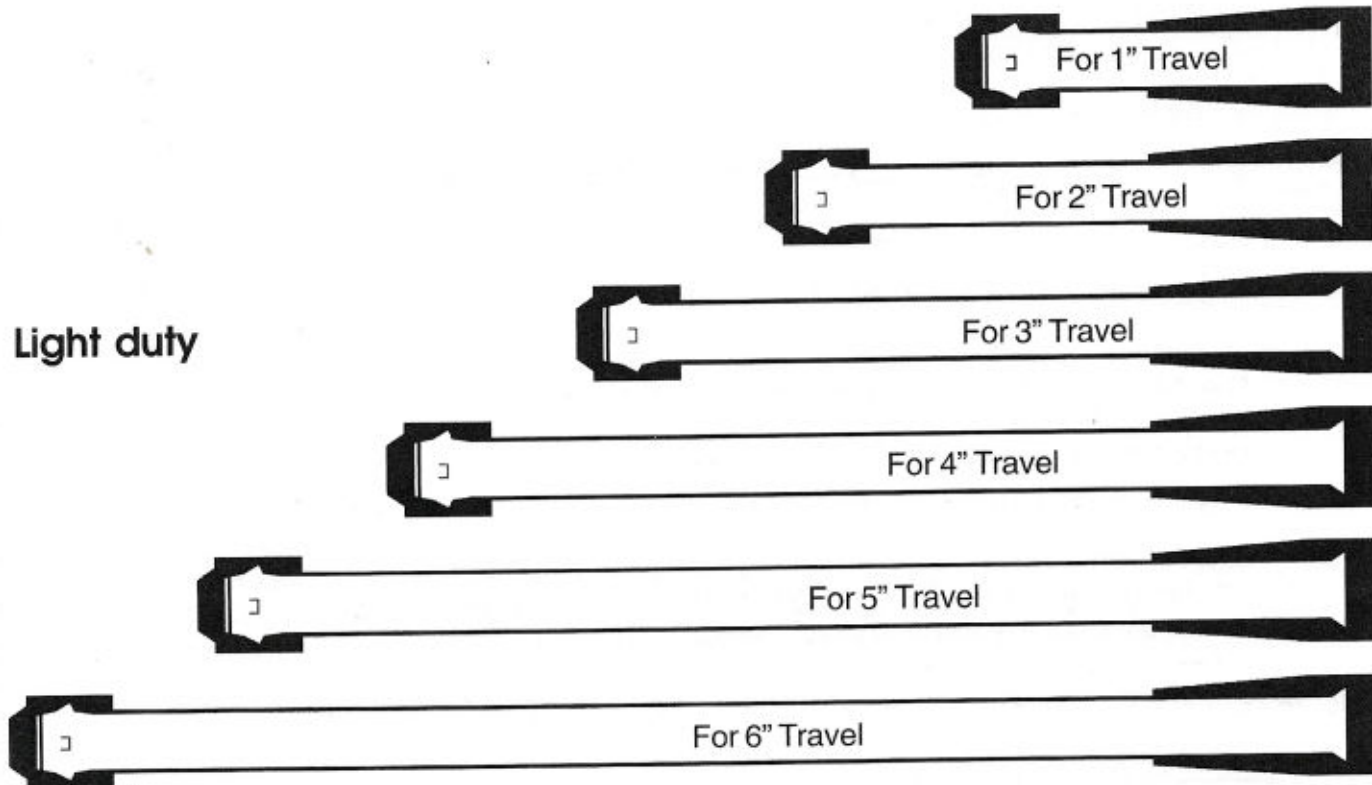
V = 10-32, **L** = 1/4-28, **M** = 5/16-24, **H** = 3/8-24.

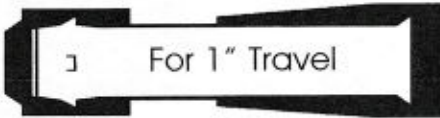
(Very light duty; Light duty; Medium; Heavy)

Very light duty

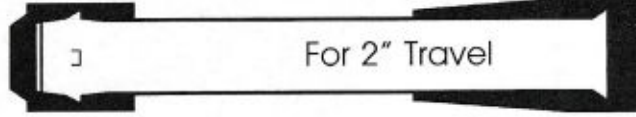


Light duty

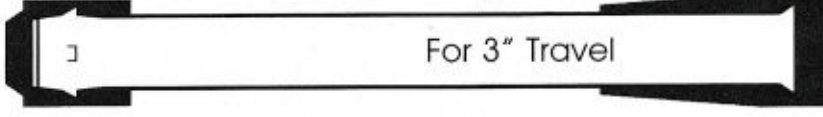




For 1" Travel

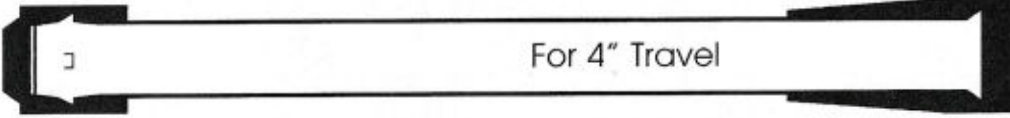


For 2" Travel

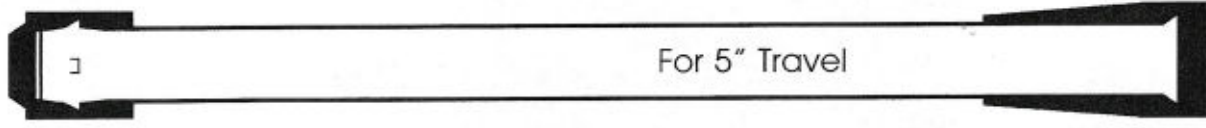


For 3" Travel

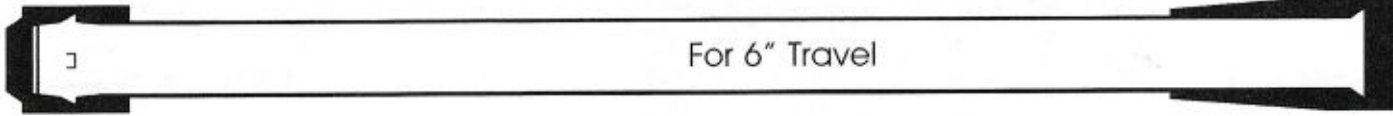
Medium duty



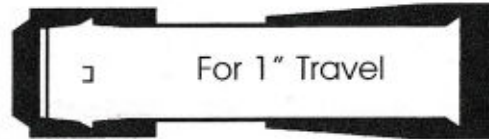
For 4" Travel



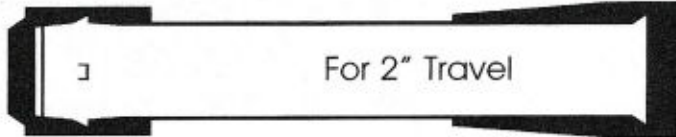
For 5" Travel



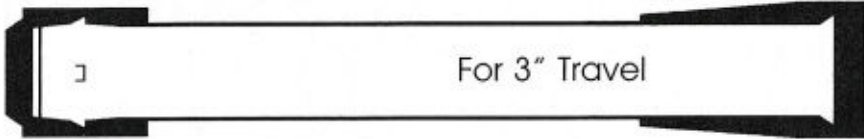
For 6" Travel



For 1" Travel

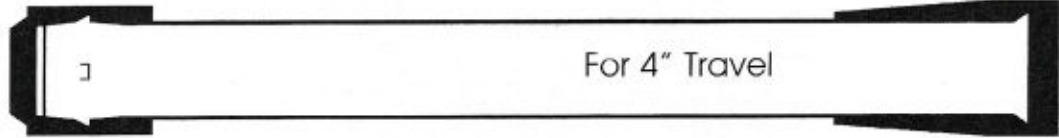


For 2" Travel

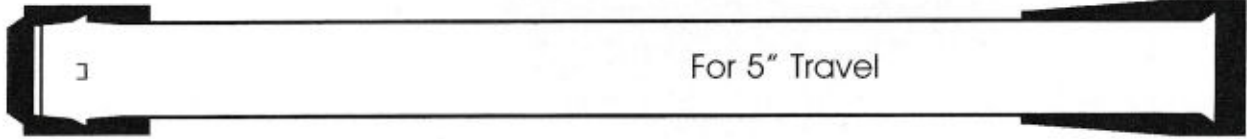


For 3" Travel

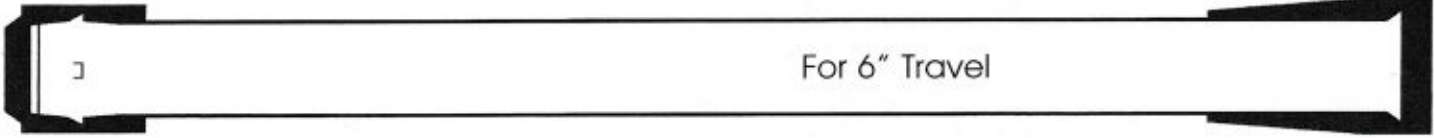
Heavy duty



For 4" Travel



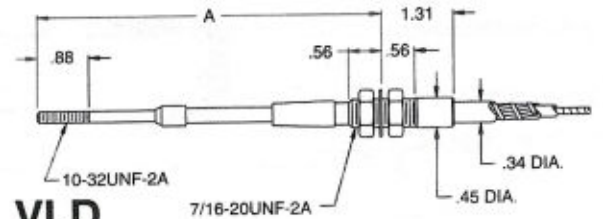
For 5" Travel



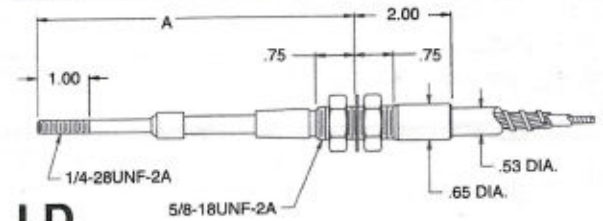
For 6" Travel

UTILITY CONTROLS

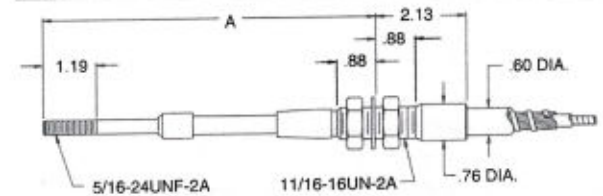
THREADED SWIVEL CONDUIT FITTING



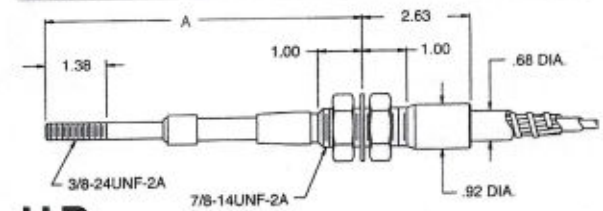
VLD



LD



MD



HD

Inner Operating Member

Liner

Conduit Strand Wire

Binder Wire

Grey Plastic Cover

Conduit End Fitting

Swivel Seal

Swivel Support Tube

Wiper Seal

End Rod

- Greater flexibility
- High strength
- Wide temperature capability
-65° to +230° F.

DESIGN CRITERIA

DUTY	MINIMUM BEND RAD.	BACKLASH FACTOR Note (1)	EFFICIENCY FACTOR
VLD	2"	.00015	002 See formula below Note (2)
LD	3"	.00020	
MD	5"	.00025	
HD	6"	.00030	

(1) Per degree of bend

(2) Input force = output load (lbs) x total degrees of bend x efficiency factor + output load (lbs)

'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)
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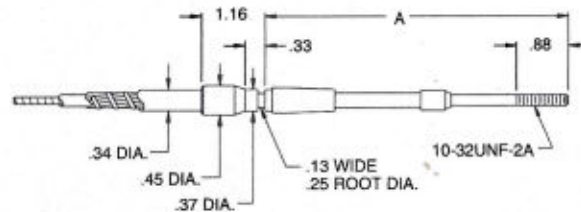
4.38	1"	80/120	120/180	3.69
5.87	2"	80/120	120/180	5.19
7.38	3"	70/120	110/180	6.69
8.87	4"	60/120	90/180	8.19
10.38	5"	45/120	70/180	9.69
11.87	6"	30/120	45/180	11.19

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"	50/230	75/350	11.50

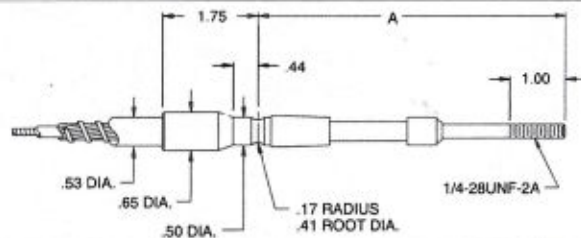
5.06	1"	250/400	400/600	4.38
6.56	2"	250/400	400/600	5.87
8.06	3"	210/400	300/600	7.38
9.56	4"	170/400	250/600	8.87
11.06	5"	130/400	200/600	10.38
12.56	6"	100/400	150/600	11.87

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"	300/1000	450/1500	12.69

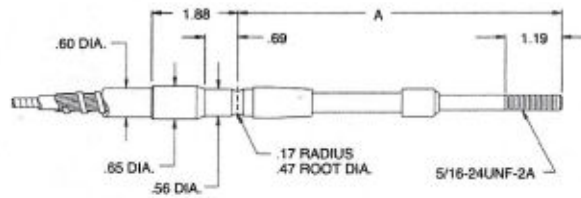
GROOVED SWIVEL CONDUIT FITTING



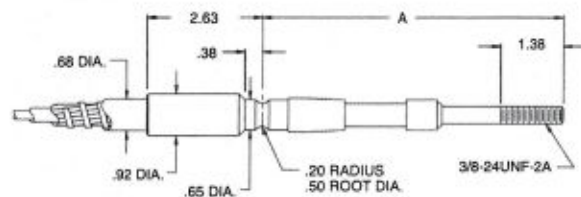
VLD



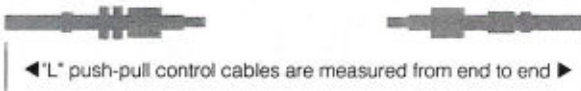
LD



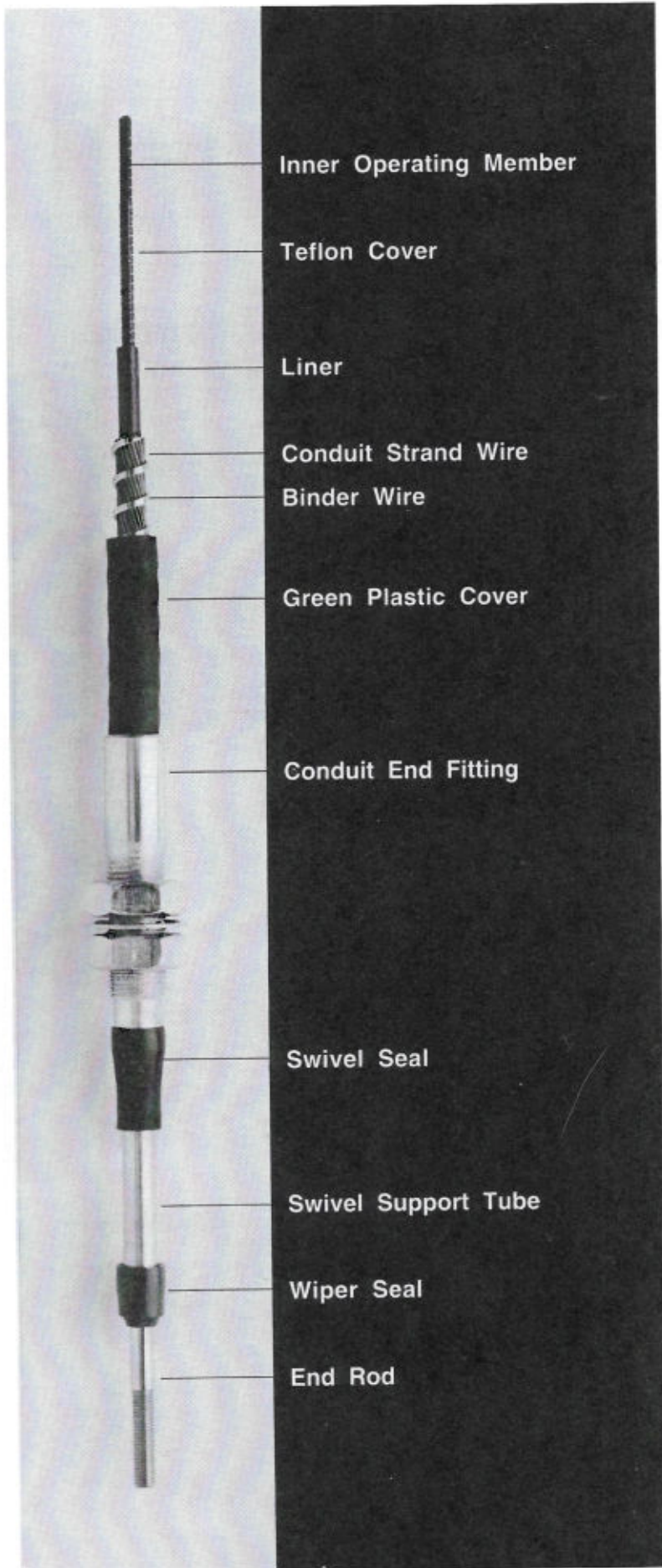
MD



HD



LOW FRICTION CONTROLS



Inner Operating Member

Teflon Cover

Liner

Conduit Strand Wire

Binder Wire

Green Plastic Cover

Conduit End Fitting

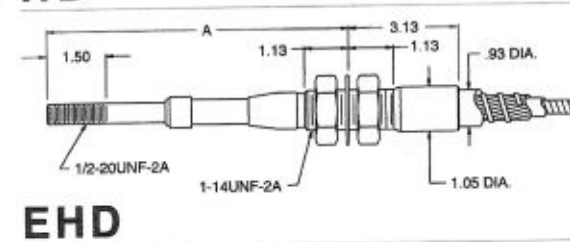
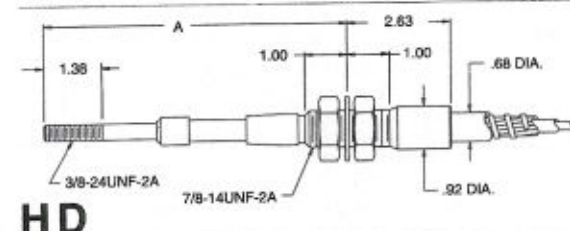
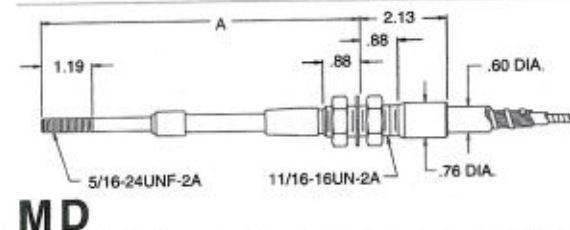
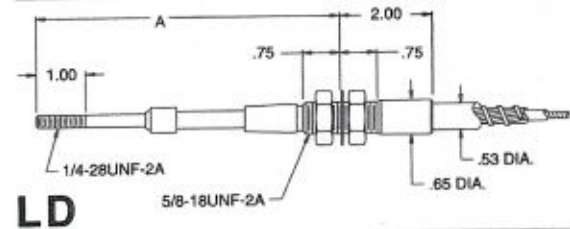
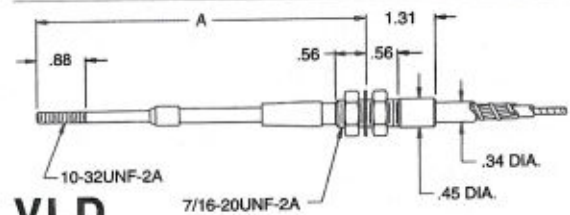
Swivel Seal

Swivel Support Tube

Wiper Seal

End Rod

THREADED SWIVEL CONDUIT FITTING



- Superior efficiency
- Greater flexibility
- High strength
- Widest temperature capability
-65° to +310° F.

DESIGN CRITERIA

DUTY	MINIMUM BEND RAD.	BACKLASH FACTOR Note (1)	EFFICIENCY FACTOR
VLD	2"	.00015	.001
LD	3"	.00020	See formula below Note (2)
MD	5"	.00025	
HD	6"	.00030	
EHD	8"	.00035	

(1) Per degree of bend

(2) Input force = output load (lbs) x total degrees of bend x efficiency factor + output load (lbs)

'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)
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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

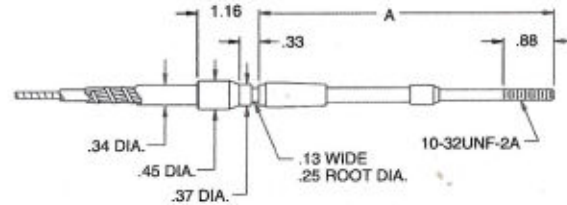
4.62	1"	150/230	230/350	4.00
6.12	2"	150/230	230/350	5.50
7.62	3"	125/230	190/350	7.00
9.12	4"	100/230	150/350	8.50
10.62	5"	75/230	110/350	10.00
12.12	6"	50/230	75/350	11.50

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

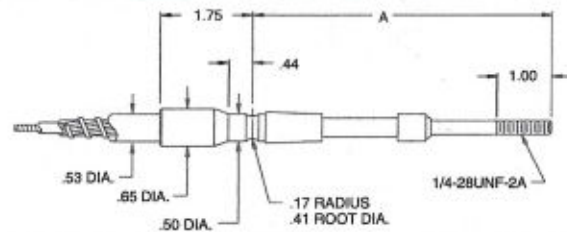
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7.19	2"	700/1000	1000/1500	6.69
8.69	3"	600/1000	900/1500	8.19
10.19	4"	500/1000	750/1500	9.69
11.69	5"	400/1000	600/1500	11.19
13.19	6"	300/1000	450/1500	12.69

6.12	1"	1200/1500	1800/2200	5.50
7.62	2"	1200/1500	1800/2200	7.00
9.12	3"	1100/1500	1600/2200	8.50
10.62	4"	900/1500	1300/2200	10.00
12.12	5"	700/1500	1000/2200	11.50
13.62	6"	500/1500	750/2200	13.00

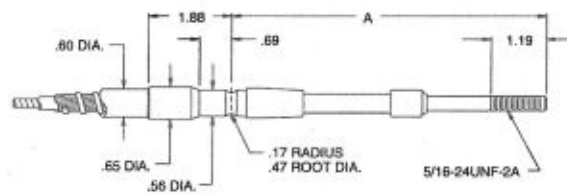
GROOVED SWIVEL CONDUIT FITTING



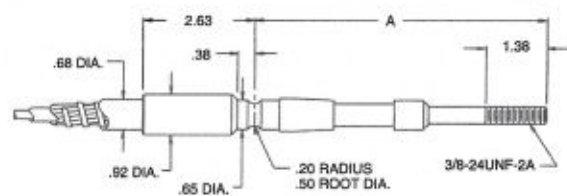
VLD



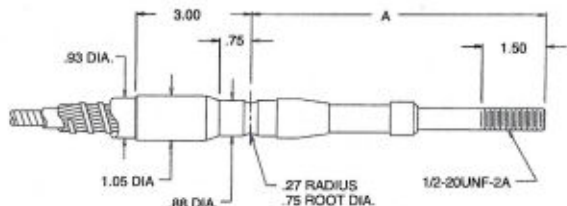
LD



MD



HD



EHD



◀ 'L' push-pull control cables are measured from end to end ▶

Push-Pull Standard Order Code

Cablecraft® Ordering Codes

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
- 176 VLD, LD Black - High heat housing, rated at 340°

Low Friction

- 183 with Stainless Steel End Rods
- 184 with Stainless Steel Support Tubes and End Rods
- 185 all Exposed Fittings/Parts are Stainless Steel

Seal Options

- 6 (Use this number only if requesting optional Model 6 wiper seal, optional on all controls)

Cable Size

Letter	End Rod Thread
V	10-32 UNF
L	1/4-28 UNF
M	5/16-24 UNF
H	3/8-24 UNF

End Fitting Combinations (Options: GG, TG, TT)

- T Threaded Swivel
- G Grooved Swivel

Cable Travel: 1, 2, 3, 4, 5, 6 (inches)

Length +/- .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 Metric End Rods (optional)
 - V M5 x .8
 - L M6 x 1.0
 - M M8 x 1.25
 - H M10 x 1.5

High Performance Push-Pull Control Cable

Notes: (Design Parameters)

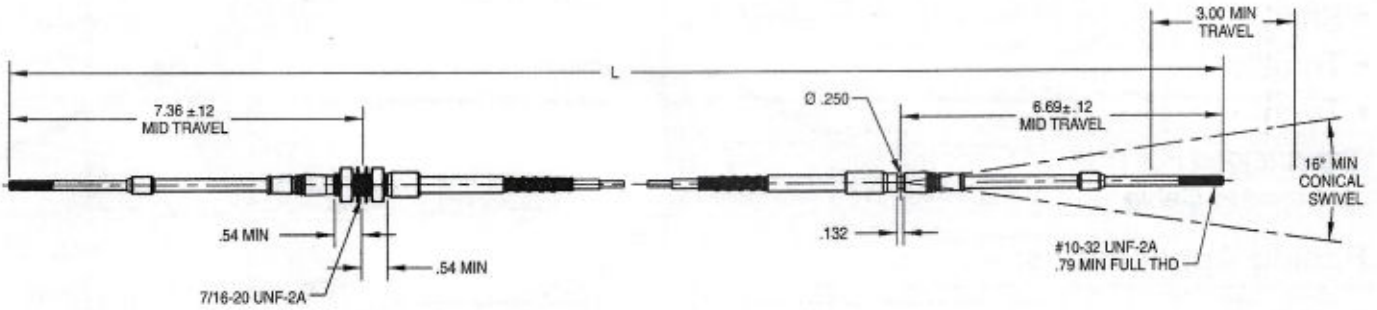
Travel: 3" minimum

Minimum bend radius: 4.00"

Operating temperature:

from -65°F to +350°F

Slim line grooved conduit cap for marine applications, call for details



All line art dimensions are represented in inches

High Performance Cable Ordering Codes

795 - 6 - V - TT - 3 - 144

Control Type _____

*(All End Rods are Stainless Steel)

795 All Exposed Fittings/Parts are Stainless Steel – both ends

796 All Exposed Fittings/Parts are Stainless Steel – one end – Carbon Steel Opposite*

Seal Options _____

6 Standard

Cable Size _____

V 10-32 UNF End Rods – Very Light Duty

End Fitting Combinations (TT, TG, GT, GG) _____

			stainless end	opposite end
795	T	T	796 T	T
	T	G	T	G
	G	G	G	T
			G	G

Cable Travel: 3 (inches) _____

Length +/- .25 (inches) _____

Push-Pull Blue Max™

Marine Applications:

- Shift
- Throttle
- Trim

*Not Intended For Use
as Steering Cable*

Racing Applications:

- Shift
- Fuel Shut Off
- Chute Release
- Throttle

*Not Intended For Use
as Steering Cable*

Features:

- Travel: 3.00"
- Bulkhead type (threaded)
conduit caps, stainless steel
- Clamp type (grooved)
conduit caps, stainless steel
- 10-32 end rod threads
- BB, BC, CC options are all available
- High temperature

Material:

- 1 x 19 Stainless Steel Wrapped
Innermember
- RHOS Rated
- Stainless Steel
- LDPE Covered (Blue) Conduit
- Binder Wire Conduit Core PTFE



Cablecraft Motion Controls' New Blue Max™ cable line is the high performance control cable to solve your push-pull requirements. This superior control is born of aviation engineering design, with extreme low friction and minimal loss of motion. Offering unparalleled performance with the finest, smoothest feel in the industry.

This outstanding design is excellent for long runs with complicated cable routing while being extremely efficient on shorter runs.

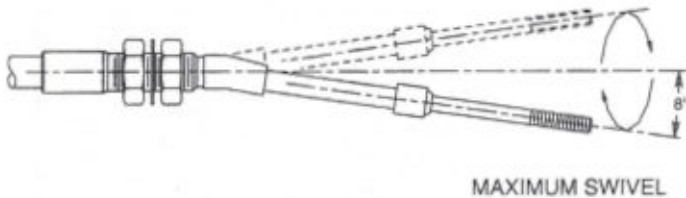
Along with a true 4-inch minimum bend radius, lubed for life, and binder wired PTFE core conduit, the outer jacket is resistant to abrasions, gasoline, diesel, and chemicals.

If you are seeing red over your control problems, make the Blue Max high performance line of cables your next move.

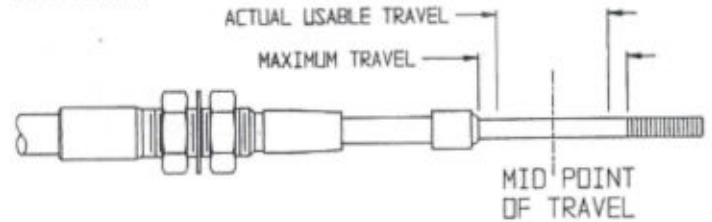
Control Cable Cautions & Warnings

The following cautions describe application and installation information.

1. Do not install control cables on any application which may exceed any of the design parameters of the control cable.
2. Cablecraft control cables are designed and assembled to be non-repairable. Do not attempt to modify this control cable.
3. Cablecraft cables are designed to be contaminant resistant; not contaminant proof. Protect the cable from contaminants such as gas, oil, diesel fuel, water, dirt and chemicals which may damage the control cable.
4. Protect the control cable from physical damage by paint, kinking, vibration, etc., which may damage the control cable.
5. Control cables have the best load capacity in the **pull** mode. Always install the control cable so it **pulls** the greatest load, and **pushes** the smaller load; and **pulls** the item into the neutral or "off" position.
6. Do not install the control cable with the power on or the engine running. Serious injury or death could result.
7. The swivel angle must be centered within the available swivel angle.



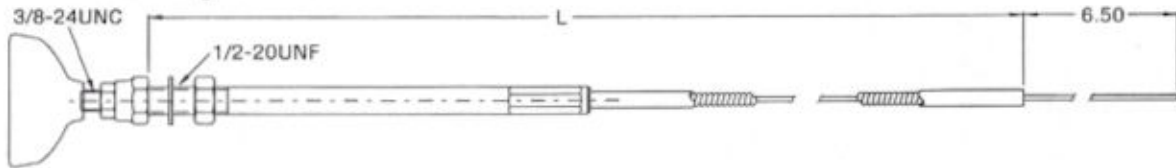
8. The usable stroke must be centered within the available travel:



The following warnings describe important push-pull cable operation and maintenance information.

1. Do not adjust the control cable with the power on or the engine running. Serious injury or death could result.
2. A gradual or sudden increase in the no-load friction (cable disconnect at both ends) of a control cable is an indication of a pending or present performance problem. The control cable should be replaced, otherwise serious injury or death may result.
3. A gradual or sudden decrease in the usable stroke, is an indication of a pending or present performance problem. The control cable should be replaced, otherwise serious injury or death may result.
4. Control cables which have moisture inside of them and/or have frozen should be replaced. Do not apply heat to thaw or dry control cables.
5. Cablecraft control cables are lubricated for the life of the control cable. Do not remove the seal or lubricate the control cable.
6. Cablecraft control cables are designed to be non-repairable. Do not attempt to repair this control cable.

Standard Replacement PTO Control Cable



The quality replacement cable for power take-off control that equals or surpasses original equipment standards. Adaptable to mounting brackets of Muncie, Chelsea and similar cable-actuated PTOs.

Part No. 872-507-L
(Round Wire Construction)
("L" = Length)

PTO Cable Attachment Kit.

(For use with non-lock cables)

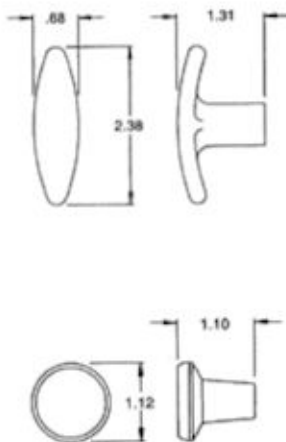
Attach your custom-built cable to Chelsea or similar PTO units with the same mounting pattern that have a 3 inch hole-center to hole-center lever arm. Cable and handle ordered separately.



Attachment Kit	Cable Size	Handle Stem	PTO Knob
175-600-004	VLD	1/4-28	165-183-001
175-600-005	LD	5/16-18	165-183-003

Optional Knobs for Non-Lock Control Heads

Part numbers shown below are of reinforced black nylon. Specify knob in part number for all non-locking controls. (included in price)

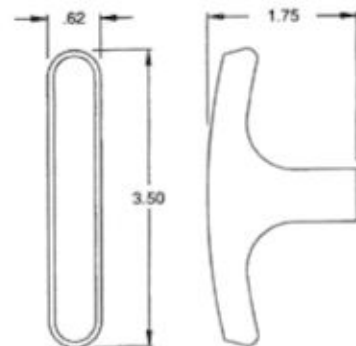


Inscription	Part Number		
	Thread Size		
	1/4-20	1/4-28	5/16-18
None	005	014	013
STOP	015	016	017
SHUTOFF	002	008	018
THROTTLE	019	020	021
CHOKE	022	023	024
OPEN	025	026	027
CLOSE	028	029	030
EMER. STOP	031	032	033

Inscription	Part Number	
	Thread Size	
	1/4-20	1/4-28
None	306	308
STOP	317	314
SHUTOFF	318	319
THROTTLE	320	321
CHOKE	309	322
OPEN	323	324
CLOSE	325	326
EMER. STOP	327	328

Cast aluminum oversize T-handle (not included in price)

Inscription	Part Number		
	Thread Size		
	1/4-20	1/4-28	5/16-18
None	201	202	203

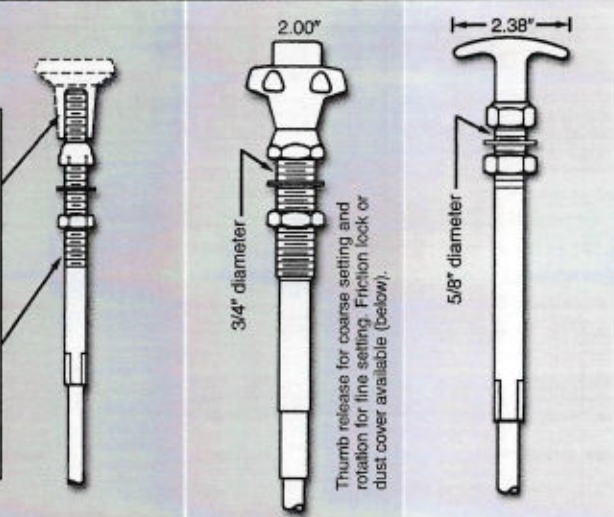


Locally Assembled Control Head Cables

Order Knob from Chart Below

KNOB THREAD DIAMETER
 Utility/Low-Friction EXT
 VLD 1/4-28 UNF
 LD 5/16-18 UNC
 Commercial
 VLD 1/4-20 UNC

MOUNTING HOLE DIAMETER
 Utility/Low-Friction EXT
 VLD 7/16 diam.
 LD 5/8 diam.
 Commercial 3/8 diam.

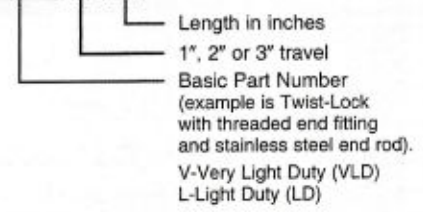


Utility & Low-Friction EXT
 1", 2" and 3" travel
 2" min. bend radius on VLD
 3" min. bend radius on LD
 60 lb. load rating

How to Order
 1. Select the basic part number.
 2. Indicate travel per example below.
 3. Indicate length in inches.

Part Number Code Example:

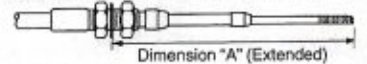
56V32 - 3 - 120



	NON-LOCKING		MICRO-ADJUST		TWIST-LOCK	
	VLD	LD	VLD	LD	VLD	LD
Utility	86V32*	96L32*	26V32*	26L32*	56V32*	56L32*
	86V42**	96L42**	26V42**	26L42**	56V42**	56L42**
Low-Friction EXT	81V32*	91L32*	21V32*	21L32*	51V32*	51L32*
	81V42**	91L42**	21V42**	21L42**	51V42**	51L42**
Utility	86V33*	96L33*	26V33*	26L33*	56V33*	56L33*
	86V43**	96L43**	26V43**	26L43**	56V43**	56L43**
Low-Friction EXT	81V33*	91L33*	21V33*	21L33*	51V33*	51L33*
	81V43**	91L43**	21V43**	21L43**	51V43**	51L43**
Commercial	79V00		29V00		59V00	
VLD Trim-to-length Control Head Cables with stainless steel wire innermember.	79V04		29V04		59V04	
Up to 3" travel 5" min. bend radius 20 lb. pull load rating.	79V05		29V05		59V05	

Output End Options

Threaded Conduit End Fitting



Travel	VLD	LD
1"	4.94	5.18
2"	6.93	7.18
3"	8.94	9.18

Grooved Conduit End Fitting

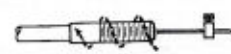


Travel	VLD	LD
1"	4.25	4.56
2"	6.25	6.56
3"	8.25	8.56

Twist-On Conduit Ends



3/8" diam.
No. 161-775-000



3/8-24 UNF
No. 161-581-000



3/8" diam.
No. 161-579-000

*3 = Stainless steel end rod **4 = Stainless steel end rod, support tube and innermember armor

Optional Knobs for Non-Locking Controls

	Utility and Low-Friction EXT		Commercial Trim-to-Length
	VLD	LD	
Thread Sizes	1/4 - 28 UNF	5/16 - 18 UNC	1/4 - 20 UNC
1" Round	165-172-308	None	165-172-306
2.4" T-Handle	165-172-014	165-172-013	165-172-005
2" Mushroom	165-103-001	165-103-006	165-103-002
2" PTO	165-183-001	165-183-003	165-183-002

Friction Lock

To order, add suffix "F" to Micro-Adjust part numbers. For example 16V02F would indicate a Friction Lock with a utility cable and a threaded conduit end fitting.

(Must be attached prior to assembly).



Control Head Cable Specifications

Micro Adjust							
Twist Lock							
Non Lock	<p>Must specify knob - page 14</p>						
Non Lock	<p>Must specify knob - page 14</p>						
		Extended Dimensions	Non Lock VLD	Non Lock LD	Twist Lock	Micro Adjust	
VLD		Travel "A" 1" 4.94" 2" 6.94" 3" 8.94"	81V32 81V42 86V32 86V42	-----	51V32 51V42 56V32 56V42	21V32DF 21V42DF 26V32DF 26V42DF	EXT UTL
VLD		Travel "A" 1" 4.25" 2" 6.25" 3" 8.25"	81V33 81V43 86V33 86V43	-----	51V33 51V43 56V33 56V43	21V33DF 21V43DF 26V33DF 26V43DF	EXT UTL
LD		Travel "A" 1" 5.18" 2" 7.18" 3" 9.18"	-----	91L32 91L42 96L32 96L42	51L32 51L42 56L32 56L42	21L32DF 21L42DF 26L32DF 26L43DF	EXT UTL
LD		Travel "A" 1" 4.56" 2" 6.56" 3" 8.56"	-----	91L33 91L43 96L33 96L43	51L33 51L43 56L33 56L43	21L33DF 21L43DF 26L33DF 26L43DF	EXT UTL
VLD		-----	CA215	-----	CA217	CA219	UTL
LD		-----	-----	CA216	CA218	CA220	UTL

Control Head Cable Order Code

Cablecraft® Ordering Codes

Control Head Type

- 2 = Micro Adjust
- 5 = Twist Lock with 2.38" Plastic Handle
- 6 = Twist Lock with 3.5" Metal Handle
- 7 = Non-Locking with 3/8"-24 UNF Mounting
- 8 = Non-Locking with 7/16"-20 UNF Mounting
- 9 = Non-Locking with 5/8"-18 UNF Mounting

Cable Type

- 1 = Low Friction-EXT
- 6 = Utility

Cable Size

- V = Very Light Duty
- L = Light Duty

Stainless Steel Options

- 0 = Carbon Steel Fittings
- 3 = with Stainless Steel End Rod
- 4 = with Stainless Steel End Rod, Support Tube and Innermember Armor

Output End Fittings

- 2 = Threaded Swivel
- 3 = Grooved Swivel

Micro Adjust only Cable Options

- D = Disconnect Feature
- F = Friction Lock Accessory

Seal Options (Use this number only if requesting optional seals)

- 5 = Improved Model 5 Wiper Seal is Standard on Low Friction-EXT & Utility
- 6 = Model 6 Wiper Seal, Optional on All Controls

Cable Travel — 1" - 3" (For Output Fittings Style 2 & 3 Only)

Overall Length — (See overall length dimension points indicated on each illustration)

Knob Option — (For Control Head Types 7, 8 and 9, see page 14 for handle options)

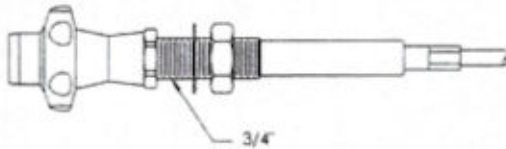
2 - 1 - L - 3 - 2 - DF - (6) - 3 - 120 /

Control Heads Commercial

Factory assembled, trim-to-length, with stainless steel solid wire innermember. Up to 3" travel, 5" minimum bend radius and 20 lb pull load rating.

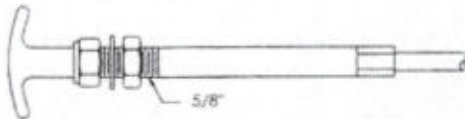
Micro Adjust

Part No. 29V00-L (without Friction Lock)
Part No. 29V000F-L (with Friction Lock)



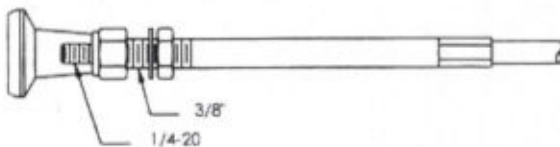
Twist Lock

Part No. 59V00-L



Non Lock (shown with 306 knob)

Part No. 79V00-L



Twist-On Conduit Ends

(Standard for Control Heads on left)
Part No. 161-775 (3/8" Dia.)



Optional for Control Heads on left

3/8-24 UNF, Part No. 161-581



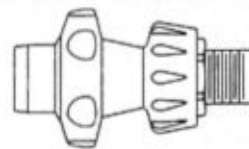
Optional for Control Heads on left

3/8" Dia., Part No. 161-579



Friction Lock Kit

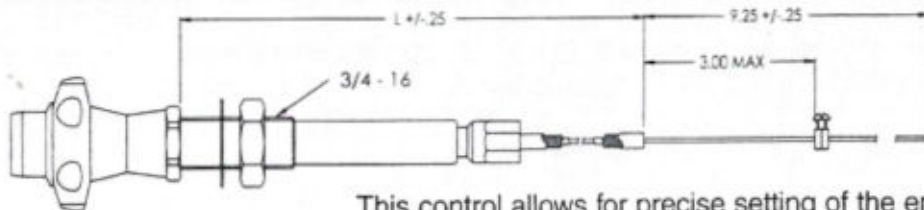
Part No. 165-510-215



For part number 29V00. Includes adjustment ring and compression washer.

Truck Throttle Control

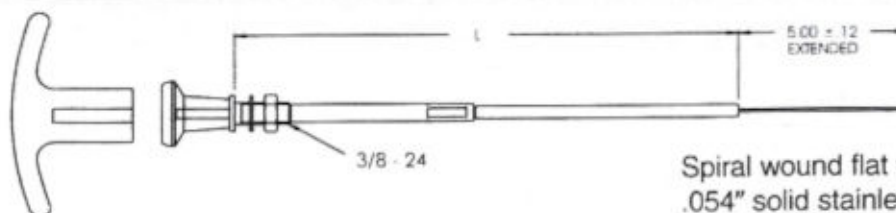
Part No. 286-009-L ("L" = Length)



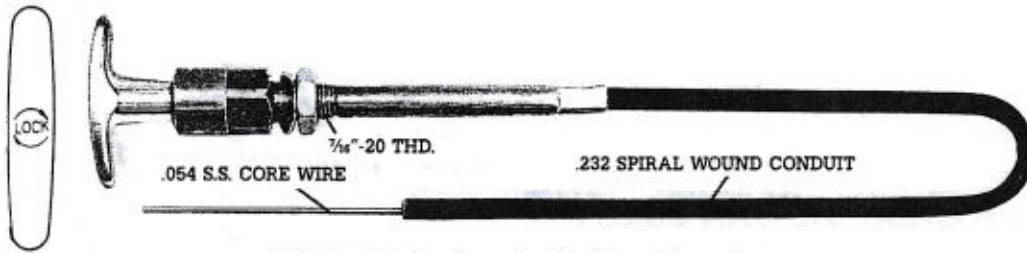
This control allows for precise setting of the engine RPM when the PTO is engaged or as a manual control of the idle position during engine warm up (Friction Lock optional).

Non-Locking, Non-Rotating Control Head

Part No. 165-437-L Black Knob ("L" = Length), Part No. 165-438-L Black T-Handle ("L" = Length)

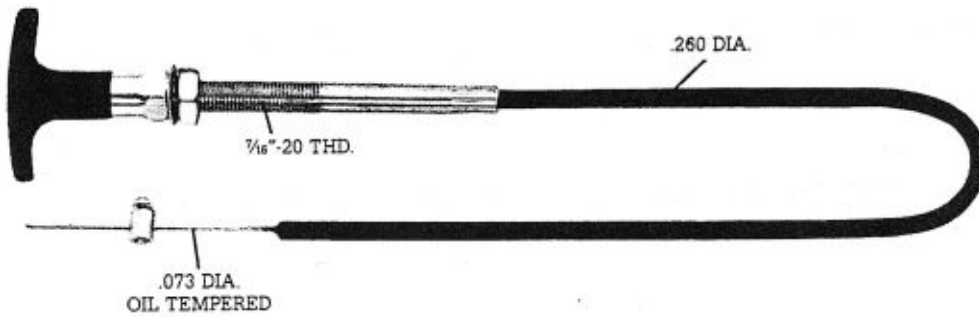


Spiral wound flat wire conduit
.054" solid stainless innermember



Spiral wound can be cut with side cutting pliers.

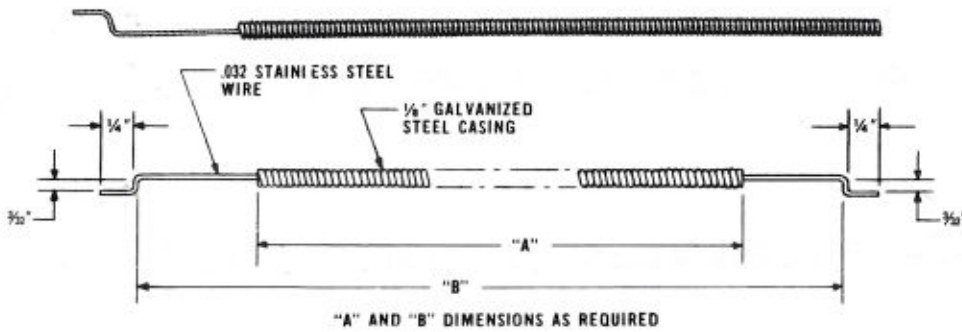
LIGHT DUTY TWIST LOCK



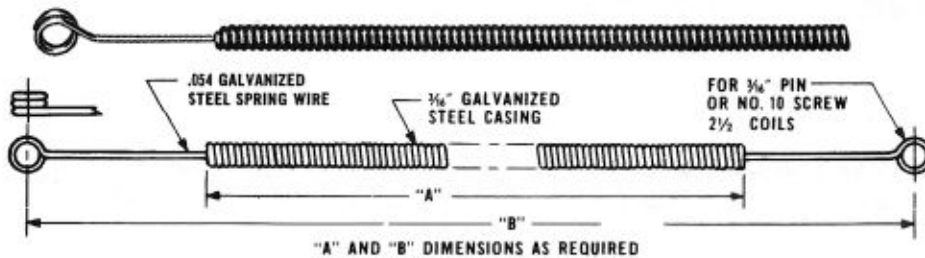
MEDIUM DUTY TWIST LOCK



LIGHT DUTY CHOKE CABLE



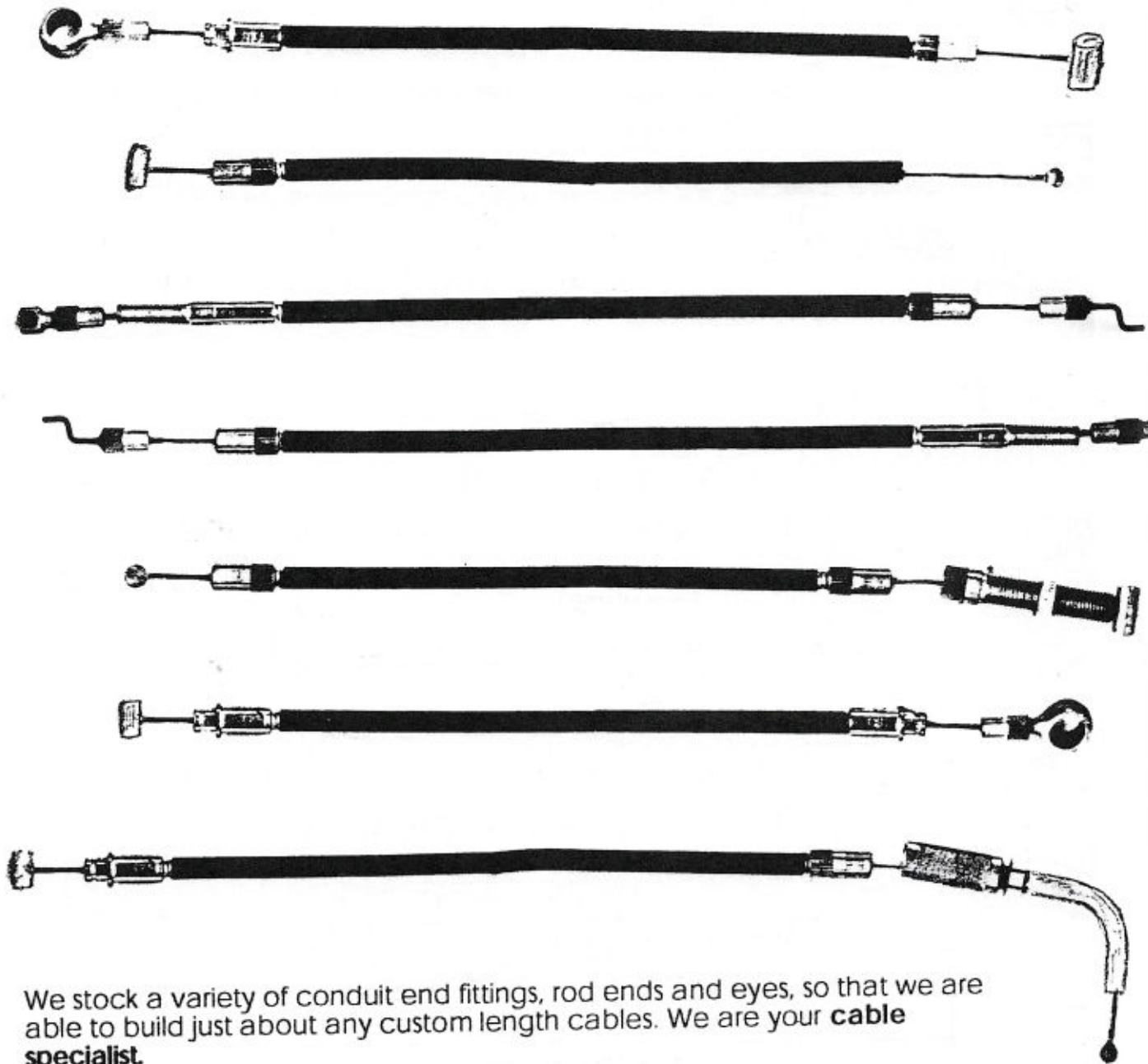
Light Load Connector Controls



CUSTOM BUILT CABLES

SPECIALTY CABLES
A-Z
PUSH-PULL - BRAKE - CLUTCH

* IF IT'S A CABLE WE CAN BUILD IT*



We stock a variety of conduit end fittings, rod ends and eyes, so that we are able to build just about any custom length cables. We are your **cable specialist**.

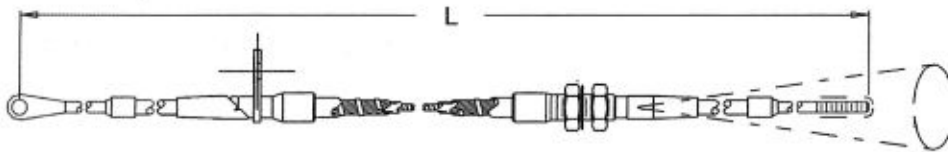
Automotive shift cables.

Replacements for popular brand shift cables.

Order Code: X=3 for Carbon Steel, X=4 for Stainless Steel; L=Length

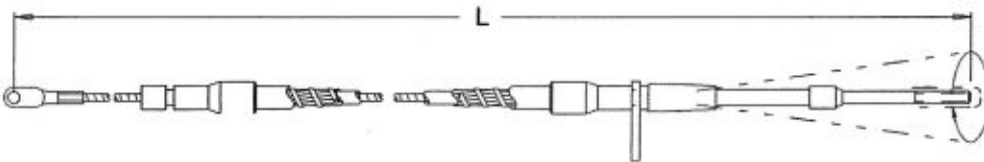
B&M shift

Part No. CA248-X-L



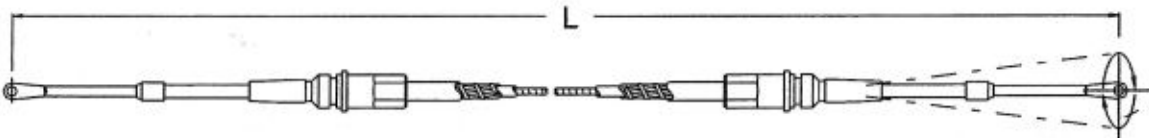
Dodge Motor Home

Part No. CA249-X-L



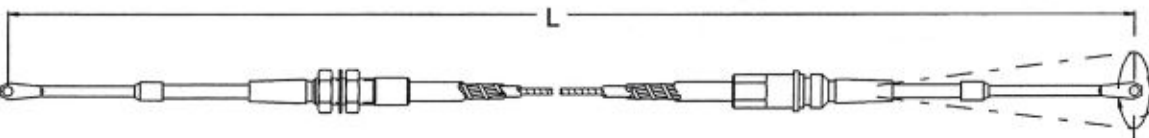
Hurst Shift

Part No. CA273-X-L



Hurst Shift

Part No. CA274-X-L



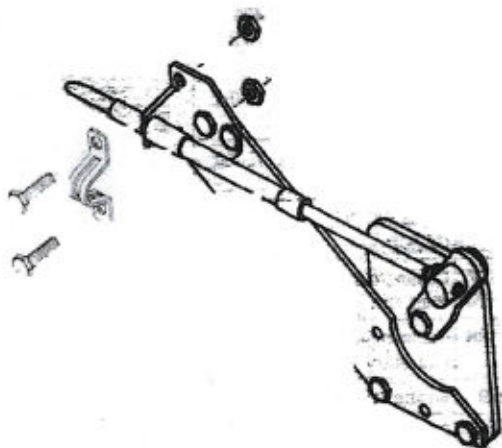
Hurst Shift

Part No. CA275-X-L



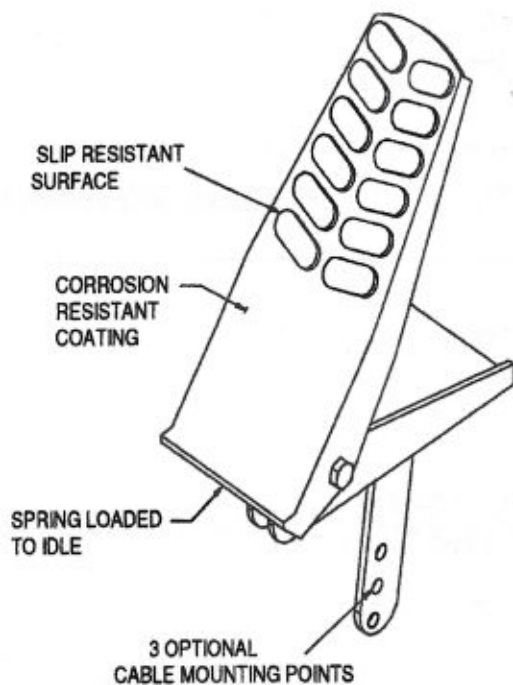
SPECIAL PURPOSE CONTROLS

PTO PUMP AND VALVE CONNECTION KITS



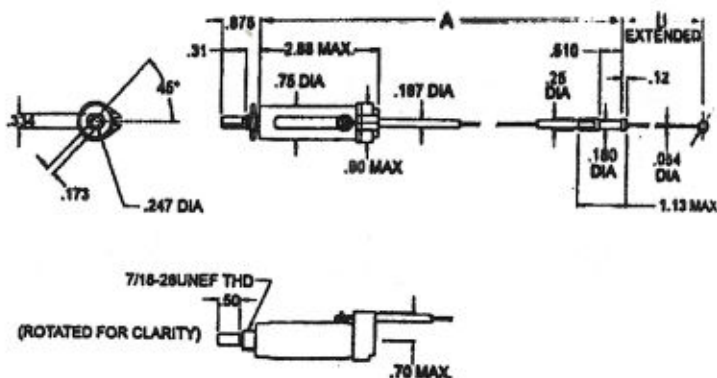
FOR DOUBLE GEAR CHELSEA AND
SIMILAR P.TO. PART NO BPT
FOR SINGLE GEAR PART NO BPTSG

BRISTOW ACCELERATOR PEDAL



IDEAL FOR SMALL VEHICLES
LIGHT LOADS
WHEN ECONOMY IS IMPORTANT

VENT CONTROL



ROTIARY TO LINEAR MOTION CONVERTER

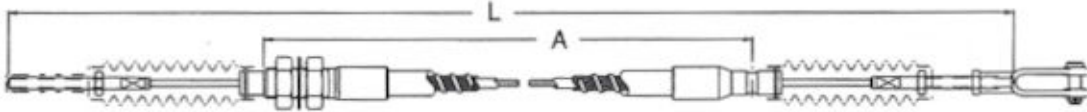
Throttle/Accelerator Cables (Pull-Only)

Part No. A156-637-L (1/4-28 end rods) Grooved-Grooved
 Part No. A156-657-L (10-32 end rods) Grooved-Grooved

"A" dimension fixed in relation to "L" dimension.
 Bellows on both ends.



Part No. A156-638-L (1/4-28 end rods) Threaded-Grooved
 Part No. A156-658-L (10-32 end rods) Threaded-Grooved

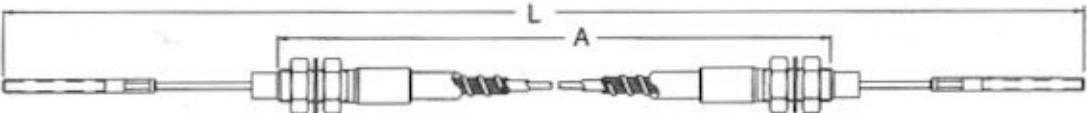


Part No. A156-679-L (1/4-28 end rods) Threaded-Threaded
 Part No. A156-680-L (10-32 end rods) Threaded-Threaded



Part No. CA305-TT-A-L (1/4-28 end rods) Threaded-Threaded
 Part No. CA306-TT-A-L (10-32 end rods) Threaded-Threaded

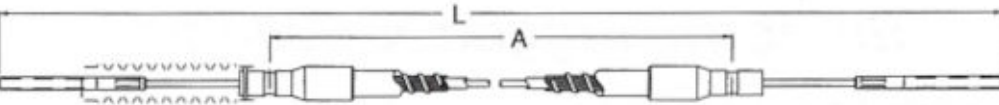
"A" dimension variable in relation to "L" dimension.
 Bellows optional.



Part No. CA305-TG-A-L (1/4-28 end rods) Threaded-Grooved
 Part No. CA306-TG-A-L (10-32 end rods) Threaded-Grooved



Part No. CA305-GG-A-L (1/4-28 end rods) Grooved-Grooved
 Part No. CA306-GG-A-L (10-32 end rods) Grooved-Grooved



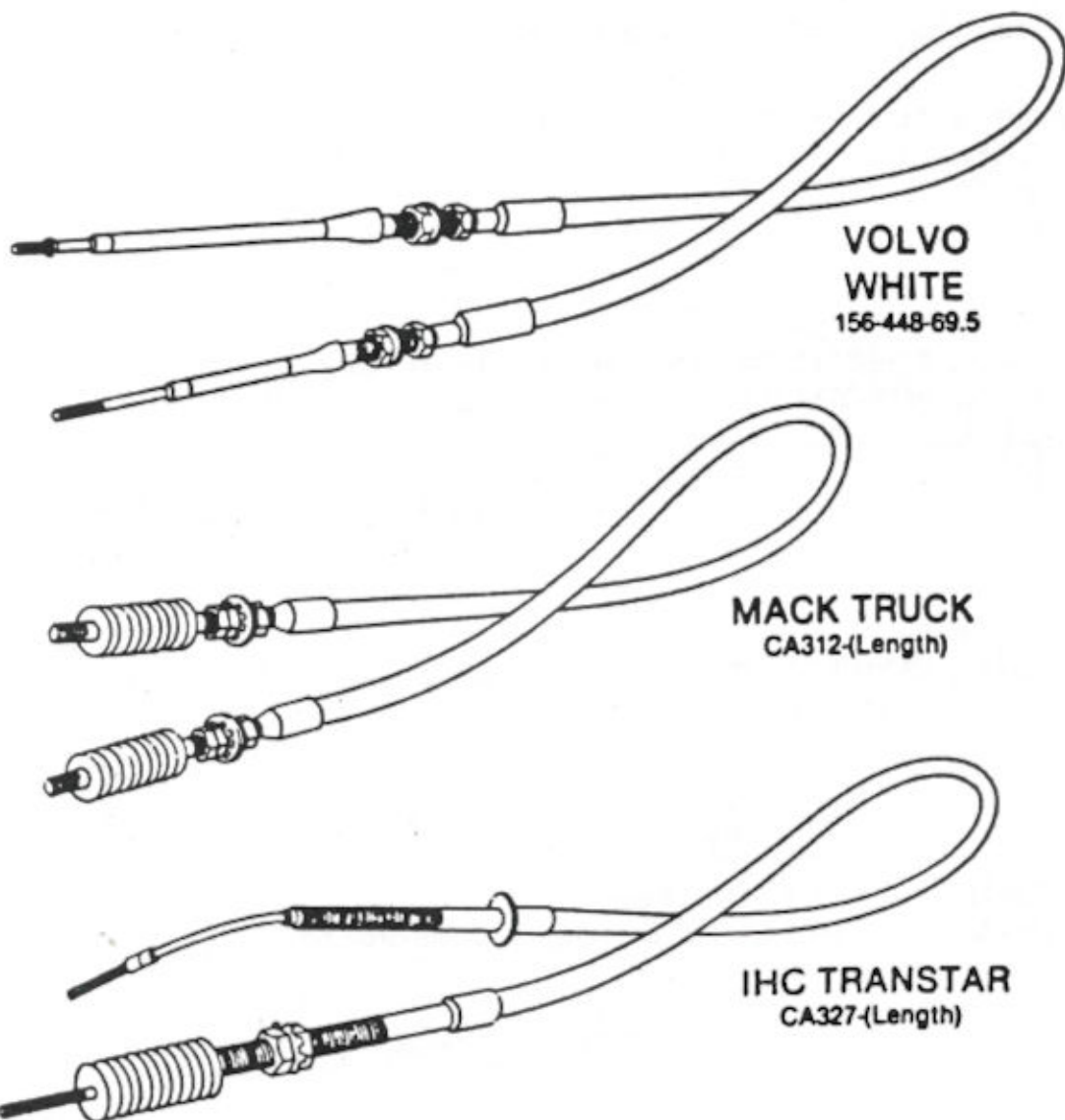
Part No. CA307-A-L (1/4-28 end rods) Special



CLUTCH CONTROL CABLES

A High Quality
Replacement for Most
Cab Over Engine Vehicles

The most flexible control cable in the industry



**VOLVO
WHITE**
156-448-69.5

MACK TRUCK
CA312-(Length)

IHC TRANSTAR
CA327-(Length)

Smooth/Rugged & Reliable

All Cable Assemblers stock components for the immediate assembling of control cables to meet your requirements.

No other clutch cable offers the ease of installation that our added flexibility provides.

Order your cable by overall length or manufacturer's number.

Cable Assemblers will also provide same-day delivery on push-pull, PTO and brake cables.

Clutch Cables (Pull-Only)

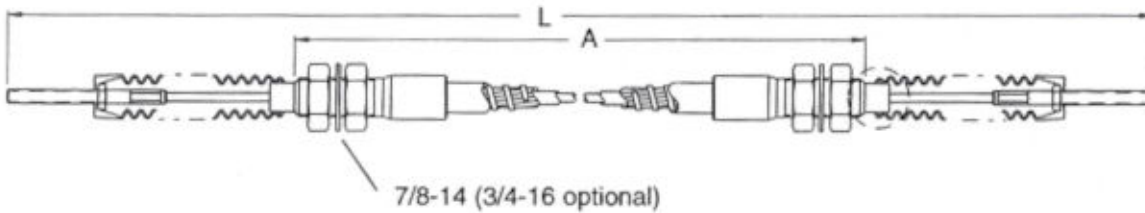
High quality replacements for most cab-over engine vehicles and other similar applications. Built to your specifications by your local cable assembler.

Generic clutch replacement cables HD conduit, special clutch inner member.

Part No. CA235-A-L (5/16-24 end rods)

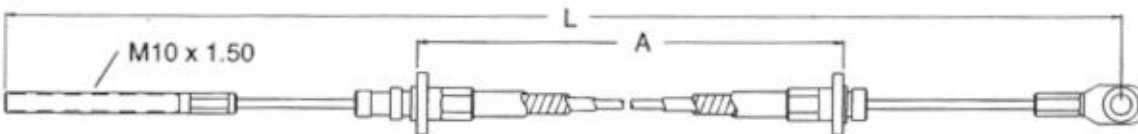
Part No. CA236-A-L (3/8-24 end rods)

Order Code: L=Length overall; A=Conduit length



General Motors style clutch cable. 1500lb brake conduit and innermember.

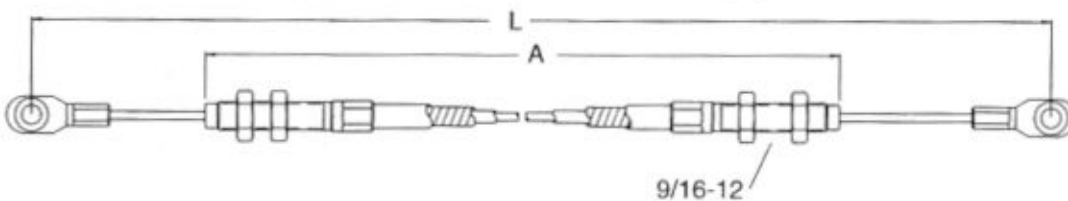
Part No. CA270-XXX (XXX = Dash number, see table below)



Dash No.	Equivalent G/M Part No.	L	A	Conduit	Inner-member
-010	15520115	76.69	47.56	47.26	69.83
-009	15518380	71.65	43.31	43.01	64.79
-008	15518379	79.53	51.18	50.88	72.67
-007	15518378	74.21	44.88	44.38	67.35
-006	15518377	66.93	37.60	37.30	60.07
-005	15507983	69.01	44.55	44.25	62.15
-004	15507982	52.75	26.00	25.70	45.89
-003	15507981	72.91	45.27	44.97	66.05
-002	15507980	72.95	44.49	44.19	66.09
-001	15507979	68.07	40.94	40.64	61.21

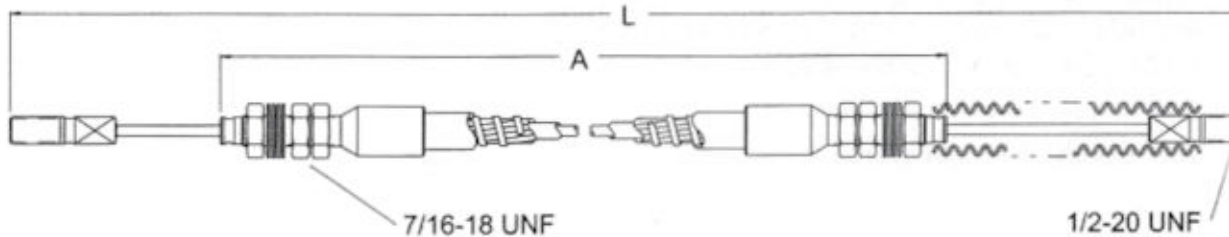
General Motors style clutch cable. 1500lb brake conduit and innermember.

Part No. CA271-A-L (L=Length overall; A=Conduit length)



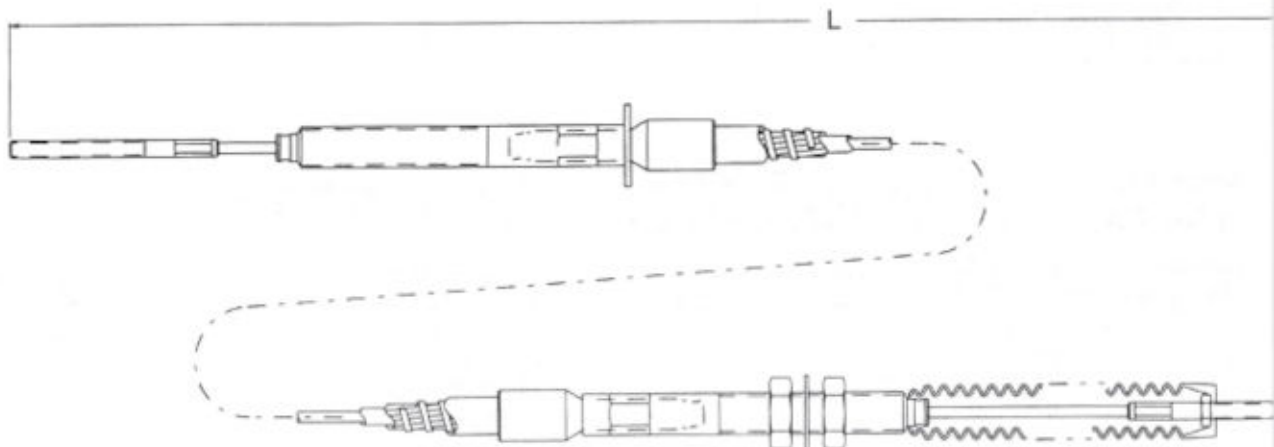
Clutch Cables (Pull-Only)

Mack Truck® style clutch cable. HD conduit and special clutch innermember.
Part No. CA312-A-L (A=Conduit length; L=Length overall; see table)



Part Number	A	L
CA312-34.6-42.0	34.6	42.0
CA312-55.6-63.0	55.6	63.0
CA312-79.6-87.0	79.6	87.0
CA312-85.6-93.0	85.6	93.0
CA312-91.6-99.0	91.6	99.0
CA312-102.6-110.0	102.6	110.0
CA312-127.6-135.0	127.6	135.0
CA312-25.6-36.0	25.6	36.0
CA312-34.6-45.0	34.6	45.0
CA312-43.6-54.0	43.6	54.0
CA312-55.6-66.0	55.5	66.0
CA312-67.6-78.0	67.6	78.0
CA312-79.6-90.0	79.6	90.0
CA312-85.6-95.0	85.6	96.0
CA312-91.6-102.0	91.6	102.0
CA312-103.6-114.0	103.6	114.0
CA312-118.6-129.0	118.6	129.0
CA312-29.6-40.0	29.6	40.0
CA312-95.6-106.0	95.6	106.0
CA312-107.6-188.0	107.6	118.0

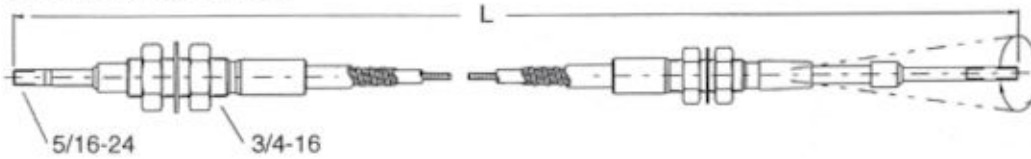
IHC Transtar® style clutch cable. HD conduit and special clutch innermember.
Part No. CA327-L (L=Length overall)



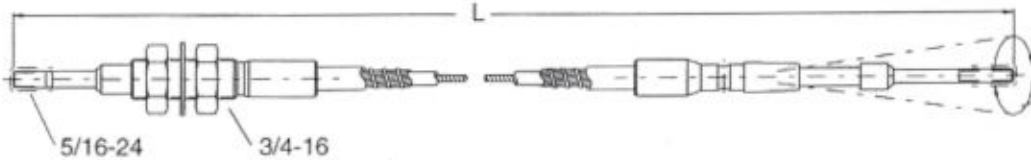
Remote Valve Control (RCV) Cables

Used to operate hydraulic valves. Ideal for wet-line kits, relocating valves, or vehicle modifications. Mounting kits available for most popular "spool" type valves.

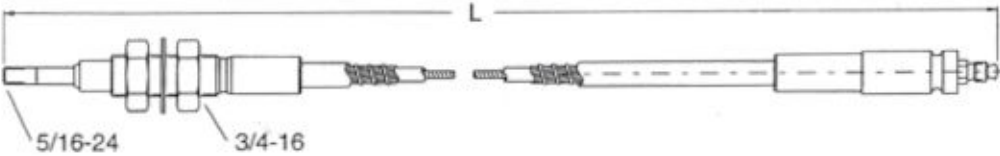
Part No. A17X-334 Utility
Part No. A31X-334 EXT



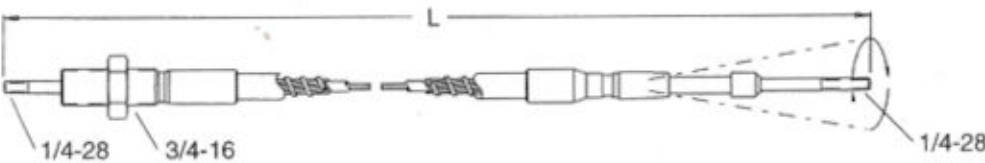
Part No. A17X-335 Utility
Part No. A31X-335 EXT



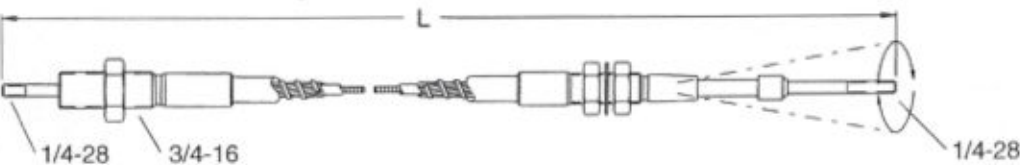
Part No. A17X-342 Utility



Part No. A17X-351 Utility



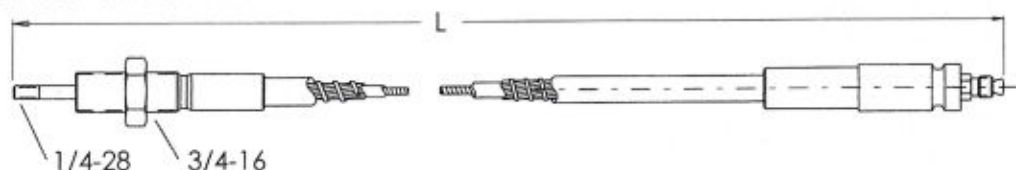
Part No. A17X-352 Utility



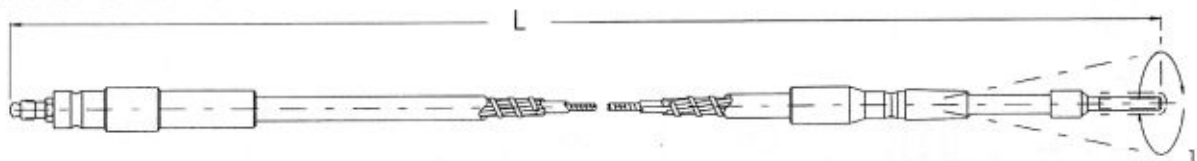
Remote Valve Control (RVC) Cables (continued)

Part No. CA260 Utility

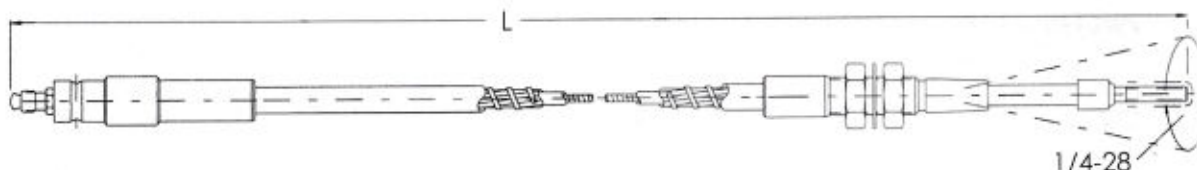
Part No. CA261 EXT



Part No. CA22XG



Part No. CA22XT



Cable Mounting Kits

Cablecraft mounting kits fit most popular valves.

Part Number	For Use On:
185-101-001	Comm. Shearing 505
185-101-002	Comm. Shearing D50
185-101-003	Comm. Shearing A35
185-101-004	Comm. Shearing A20
185-101-005	Comm. Shearing VA20
185-101-006	HUSCO 6000
185-101-007	HUSCO 7120
185-101-008	Gresen V20, V31P, V42, CP, CT, CPT, CS, 25P, 5PK



Kit Includes:
Adapter Bracket, Clevis,
Clevis pin, and hardware

VALVE ADAPTOR KITS

SPECIFICATIONS

Valve adaptor kits provide a means of attaching the control cable to the valve. The adaptor also provides physical protection to the valve spool and cable end rod.

Adaptors are designated as Internal Clevis, External Clevis or Spring End, depending on the means of attachment to the spool.

CABLE

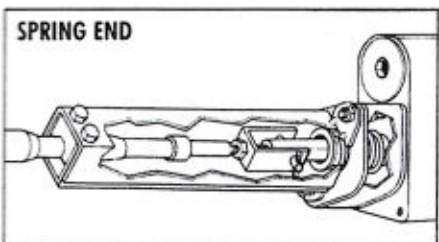
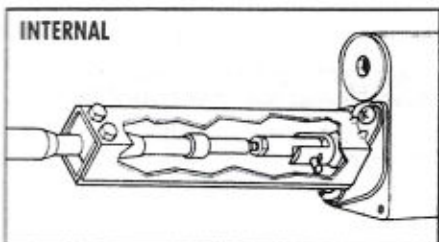
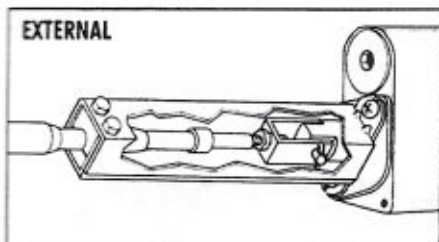
Standard 2 inch Output Stroke Push-Pull, Clamp Type Grooved Conduit (Clamp) Cable

MATERIAL

Housing - Zinc Plated Steel
Clamps - Zinc Die Cast
Hardware - Zinc Plated

HARDWARE

Includes Clevis and all Associated Hardware



MAKE	MODEL	QUADRATAT PART NUMBER		CLEVIS STYLE	LENGTH IN INCHES	
		CABLE SIZE			C4 KIT	C6 KIT
		1/4-28	5/16-24			
BRAND	A0775	C455	----	External	8.22	---
	ST2	C455	----	External	8.22	---
COMMER- CIAL INTERTEC	VA-20	C410	C610	Spring End	8.90	8.90
	VA-20	C432	C632	External	7.70	8.05
	VA-35	C419	C619	Spring End	8.75	8.75
	KA-18	C481	C681	External	8.05	8.40
CROSS	CV	C403	C603	External	7.70	8.05
	CA	C402	C602	External	7.70	8.05
	CD	C402	C602	External	7.70	8.05
	BA	C482	C682	Spring End	8.65	8.65
ENERGY	CVA200	C404	C604	Internal	8.05	8.40
	CVP	C405	C605	Internal	8.05	8.40
	CVSD	C404	C604	Internal	8.05	8.40
DANA GRESEN	V-15 (M)	C411	C611	External	7.70	8.05
	V-15 (F)	C412	C612	Internal	7.70	8.05
	25P	C420	C620	Internal	7.70	8.05
	CS	C406	C606	Internal	8.05	8.40
	V12	C411	C611	External	7.70	8.05
	V20	C406	C606	Internal	8.05	8.40
	V20	C423	C623	Spring End	8.79	8.79
	V42	C407	C607	Internal	8.05	8.40
HUSCO PARKER	6000	C408	C608	External	7.70	8.05
	VDP11/12	C409	C609	External	7.35	7.70
PRINCE	RD5200	C422	C622	External	8.09	8.44
	RD5300	C422	C622	External	8.09	8.44
	20T/20P	C406	C606	Internal	7.80	8.15
REXROTH	MP-18	C429	C629	External	8.05	8.40



QUADRATAT CORP.

A SUBSIDIARY OF ADAMS RITE MANUFACTURING CO.

260 Santa Fe Street, Pomona, CA 91767

Phone: 909-632-2300 · Fax: 909-632-2369

Website: www.quadrastat.com · E-mail: engineering@quadrastat.com

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CONTROL SYSTEMS

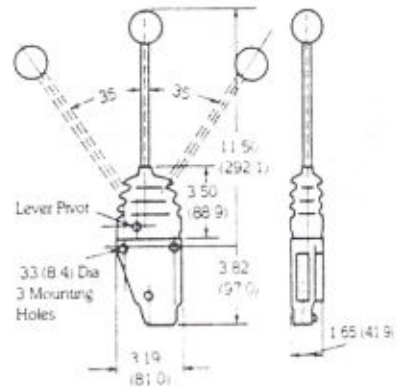
REMOTE VALVE CONTROL SYSTEM

Single Axis Remote Valve Control

Weatherproof zinc diecast control can be mounted on interior or exterior of vehicle. Units can be mounted singly or stacked for multi-spool valves.

PART NO.	DESCRIPTION	WEIGHT
B206301	Single axis remote valve control	2.95 lbs.

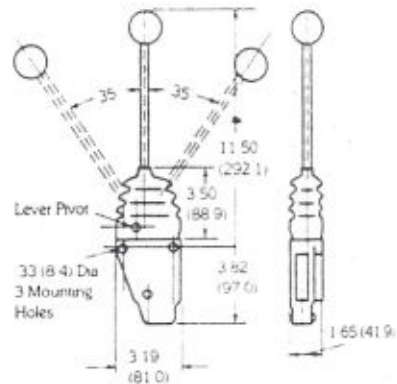
All dimensions shown are nominal.



Single Axis with Detent Remote Valve Control

Like single axis model with added safety feature of detents.

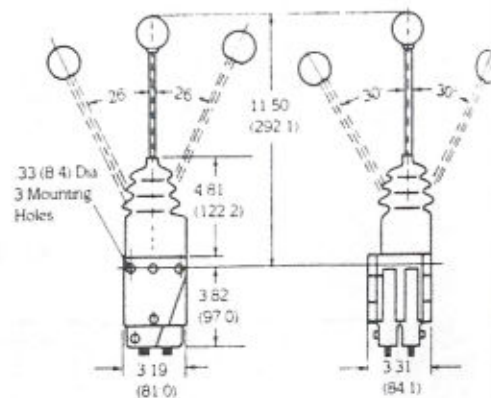
PART NO.	DESCRIPTION
B206301001	Single axis remote valve control w/center detent
B206301002	Single axis remote valve control w/end detent
B206301003	Single axis remote valve control w/center and end detent



Dual Axis Remote Valve Control

Dual axis controls are used to control two valves simultaneously.

PART NO.	DESCRIPTION
B206305	Dual axis remote valve control



MODULAR VALVE CONTROL SYSTEMS

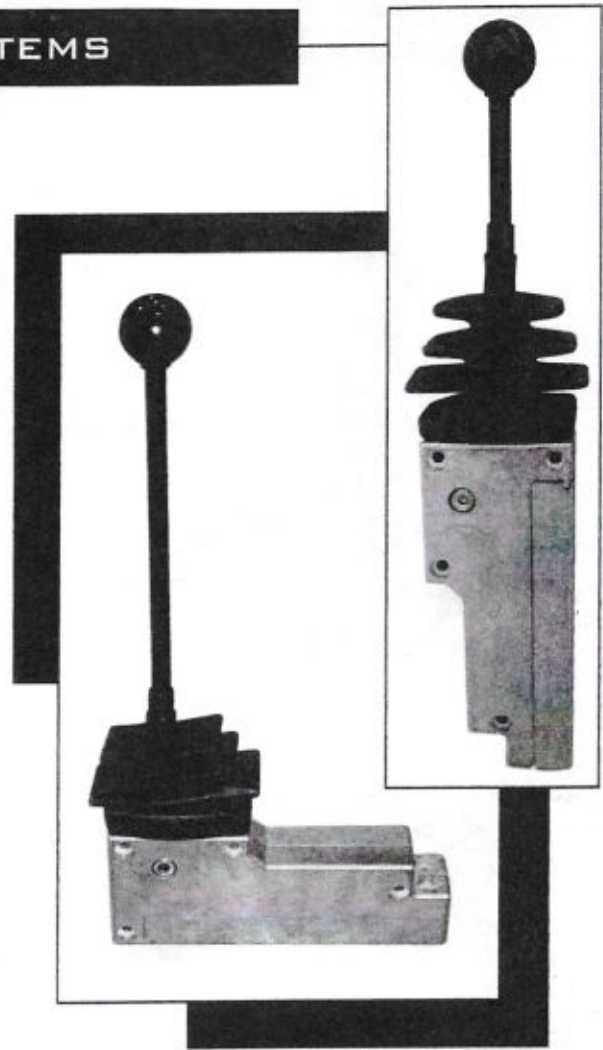
The C80 Series Remote Valve Control provides a Heavy duty Lever for stroking hydraulic spool valves, winch valves or transmission valves.

STANDARD FEATURES

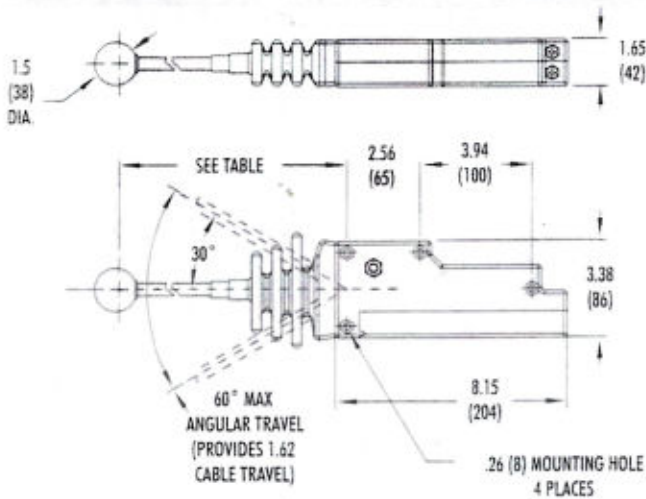
- ± 0.81 inch (± 20 mm) Output Stroke
- Maximum Working Load:
 1/4-28 End Rod Cable - 100 lbs (445N)
 5/16-24 End Rod Cable - 200 lbs (890N)
- Pre-Loaded Center Return spring
- Symmetrical Lever Action; $\pm 30^\circ$ Maximum Lever on Mounting Center Line
- Enclosed assembly, Zinc Die Cast Body
- Uses Standard Configuration, Push-Pull cable - Clamp Type, 2 inch Output Stroke, either 1/4-28 or 5/16-24 End Rod

CENTERING FORCE LBS. (N)

0 Travel	1/2 Travel	Full Travel
11 lbs. (49N)	13 lbs. (58N)	15 lbs. (67N)

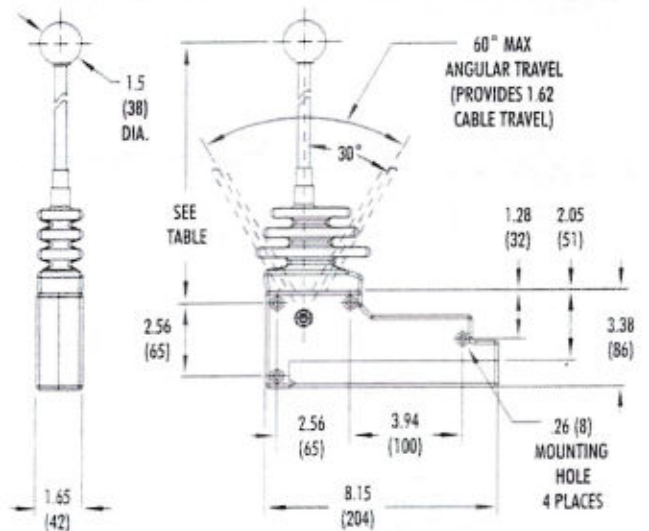


C85 - IN LINE CONTROL



LEVER LENGTH	DIMENSION INCHES (mm)	MECHANICAL ADVANTAGE
1	8.13 (207)	5.5:1
2	11.38 (289)	7.5:1
3	14.63 (372)	9.5:1
G*	8.50 (216)	5.8:1

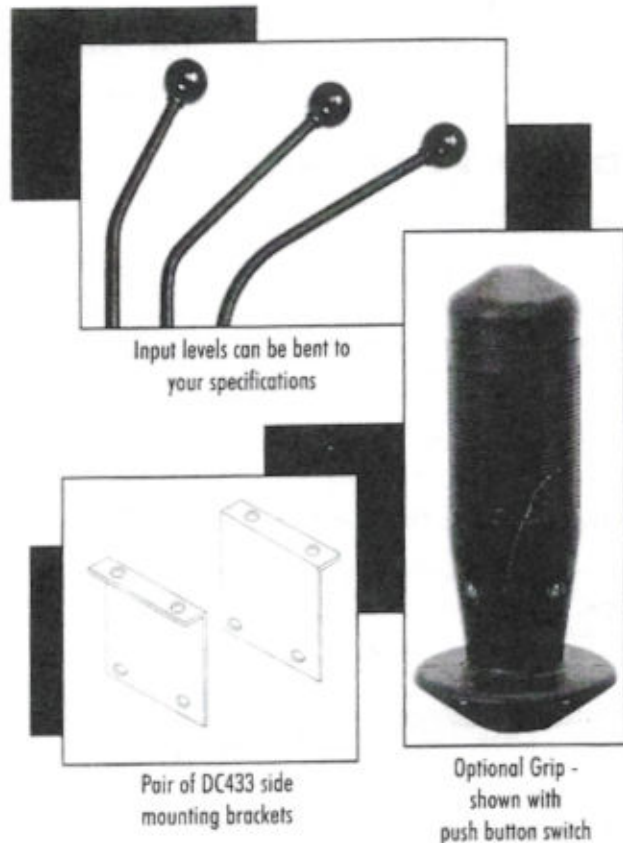
C84 - RIGHT ANGLE CONTROL



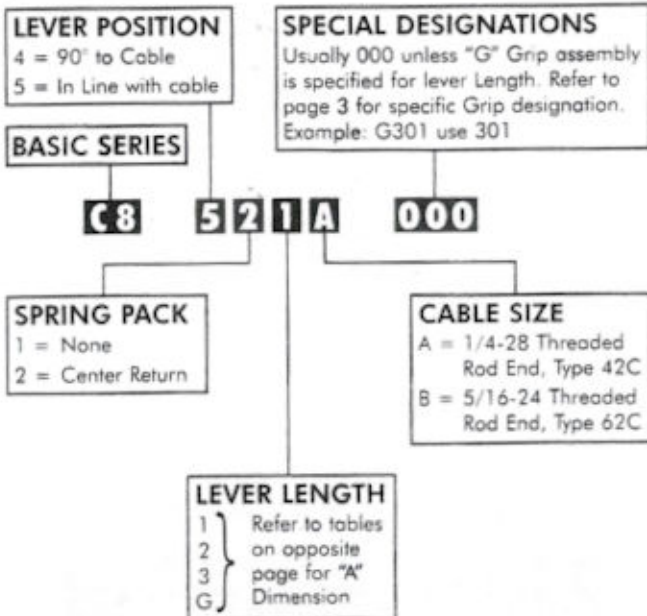
LEVER LENGTH	DIMENSION INCHES (mm)	MECHANICAL ADVANTAGE
1	9.15 (232)	5.5:1
2	12.40 (315)	7.5:1
3	14.65 (398)	9.5:1
G*	9.60 (244)	6.2:1

OPTIONS

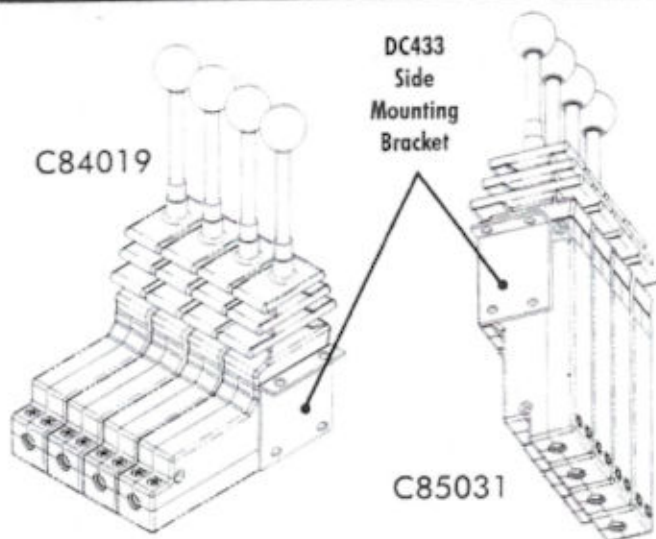
- Inline (C85) or Right Angle (C84) Output Stroke
- 3 Standard Lever Lengths
- Grip with Electrical Switches
- Center Position Lock with Pull-Up Knob Release
- Fore and Aft Position Lock with Pull-up Knob Release (C84 only)
- No Centering Spring:
0 to 1.62 inch (41 mm) Output Stroke
- Biased Return Spring:
0 to 1.62 inch (41 mm) Output Stroke - Pulling Cable (Spring pulls Cable toward zero)
- Bent Input Levers
- Stacked Control Assemblies



PART NO./ORDERING SYSTEM



MULTILEVER ASSEMBLIES



STYLE	MULTILEVER PACKAGES			
	2 Lever	3 Lever	4 Lever	5 Lever
C85	C85035	C85030	C85031	C85037
C84	C84020	C84018	C84019	—

Levers - Dash 2 for 7.5:1 Advantage, Spring Centered.
Knob Spacing - 2.00 (50 mm) between Centers,
0.5 (12.6 mm) gap. Cables - 5/6-24, 2 inch.

OPTIONS

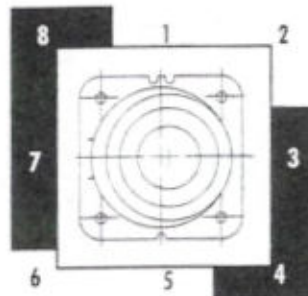
- Grip - with electrical switches (see page 3)
- 1 inch Stroke Cable for installations having minimal cable bends and appropriately short stroke requirements
- Lock to prevent inadvertent motion of the outputs
- Input motion restrictor
- Bent input levers to place the lever in a convenient position for the vehicle operator



Motion Restrictor Plate



Optional Grip - shown with push button switch



Center Position Lock 2 or 3 Positions

PERFORMANCE DATA

Lever Position	Output Motion		Geometric Advantage (with 10.9" Lever)
	A	B	
1	PULL	PUSH	8.8:1
2	PULL	-	6.6:1
3	PULL	PULL	8.8:1
4	-	PULL	6.6:1
5	PUSH	PULL	8.8:1
6	PUSH	-	6.6:1
7	PUSH	PUSH	8.8:1
8	-	PUSH	6.6:1

SPECIFICATIONS

OUTPUT STROKE - 0 to ± 0.50 inches (12.7mm)

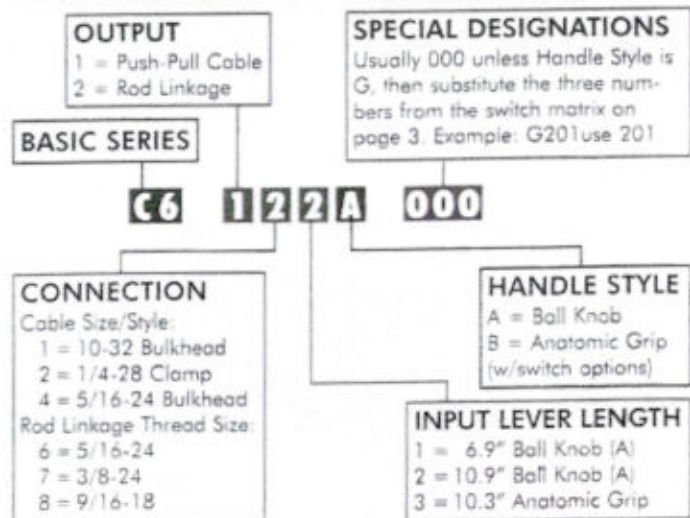
WORKING LOADS - Up to 100lbs. (445N)
Each Output

INPUT MOTION - 0 to +30° All Directions

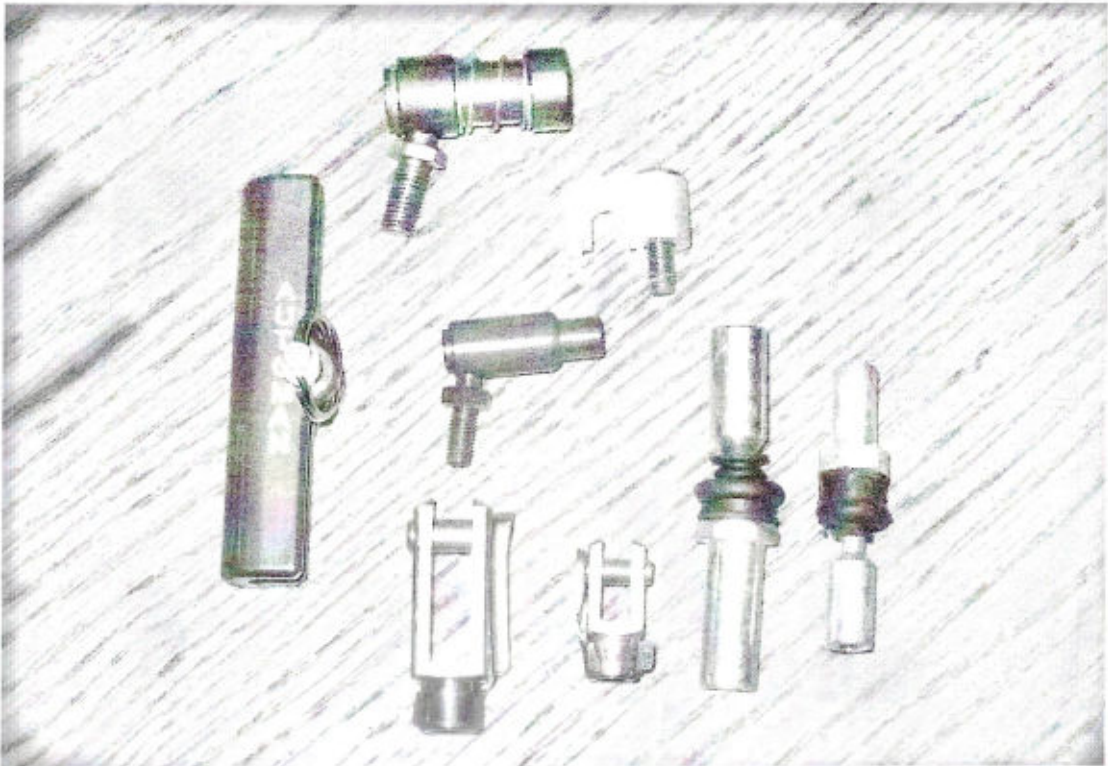
MATERIALS:

- TOP BOOT - Molded EPDM
- BODY - Nylon 901
- SLIDERS - Steel
- LEVER - Steel

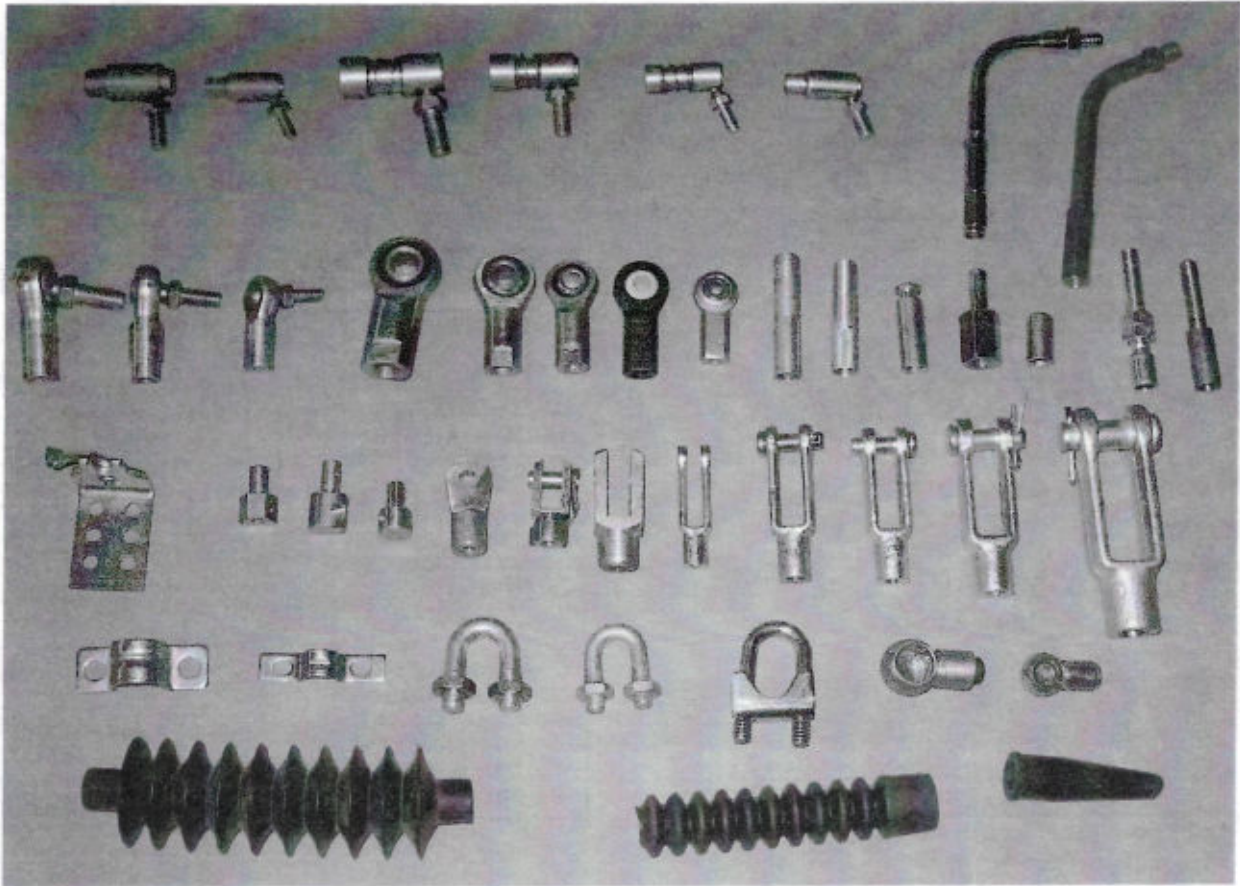
PART NO./ORDERING SYSTEM



SPECIALTY HARDWARE

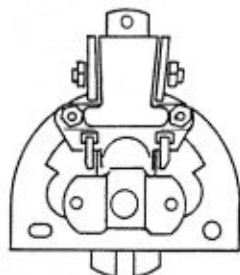


ACCESSORY HARDWARE



QUADRASTAT CONTROLS

SELF-LOCKING



The QUADRASTAT® self-locking Control is a unique control lever that "locks where you leave it."

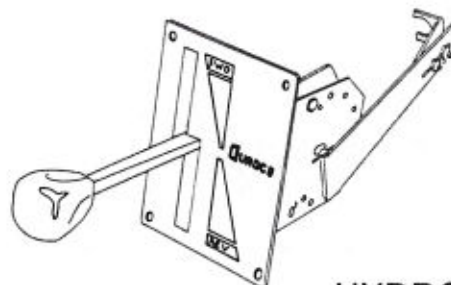
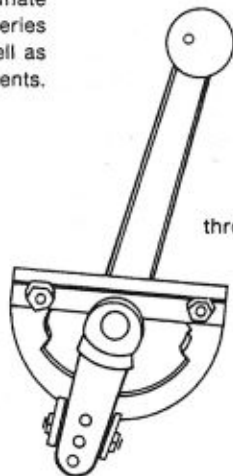
It automatically locks out feedback forces without using ratchets, gates, friction pads, or unlocking knobs. The operator never needs to make any preliminary unlocking

motion to reposition the lever. First used in high performance aircraft, the QUADRASTAT® Control is currently designed and manufactured as an economical anti-feedback device for use in a variety of agricultural and construction equipment applications.

The Q14 Series offers precise control, including backlash adjustment to assure ultimate performance throughout its life. The Q36 Series provides heavier load holding capability as well as the option of position detents.

THROTTLE

THROTTLE Controls on machinery requiring a constant power setting are one of the most common uses of QUADRASTAT® self-locking Controls. The QUADRASTAT® control is by far the most reliable and economical means of achieving a constant engine throttle setting. The Q14010 and Q14020 Series Controls are particularly compact lever assemblies.



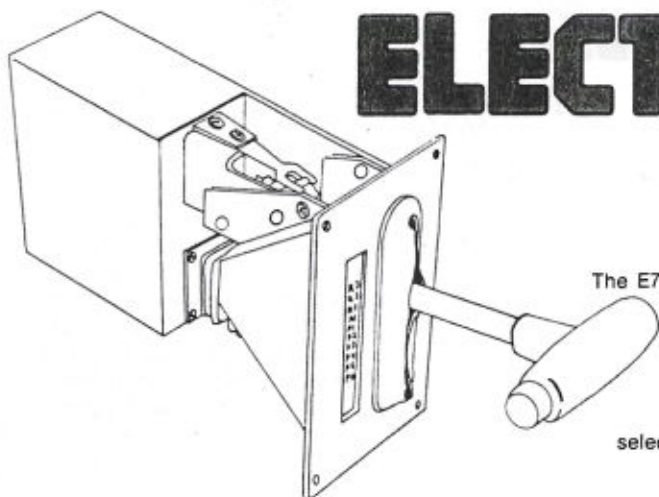
HYDROSTATIC

The versatility of the QUADRASTAT® control is demonstrated when used in the control of HYDROSTATIC TRANSMISSIONS.

The self-locking, anti-feedback feature provides an ideal means of positioning variable displacement pumps and motors. The locking unit may be fitted with a variety of standard input levers, linear or non-linear outputs, cable supports, bracket/housings, and gate plates, allowing the package to be tailored to meet the needs of each vehicle.

The T50 Series is typically used for a single pump or throttle control. The T60 Series has two

Levers for use either as a combination pump and throttle control or a dual pump (motor) control package.

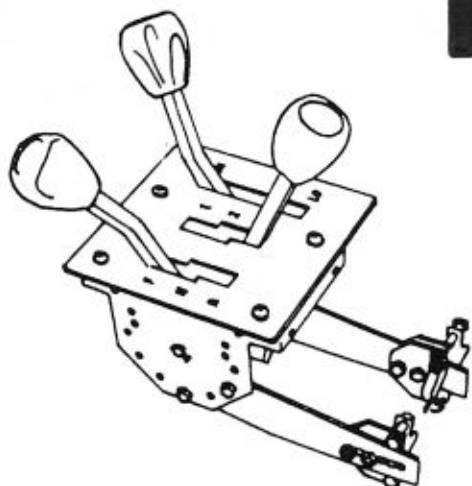


ELECTRONIC SHIFT CONTROL

The E73 Series Control, designed with both electronic and switch options, meets the demand for an environmentally rugged, reliable, and cost effective Control of solenoid operated Transmissions. Electronic units may be programmed to provide such performance features as automatic torque converter lock-up, down shift inhibiting, automatic shifting, load/range selection, or other needs. Systems with proportional solenoids may be programmed using pulse width modulated outputs.

TRANSMISSION CONTROLS

POWERSHIFT



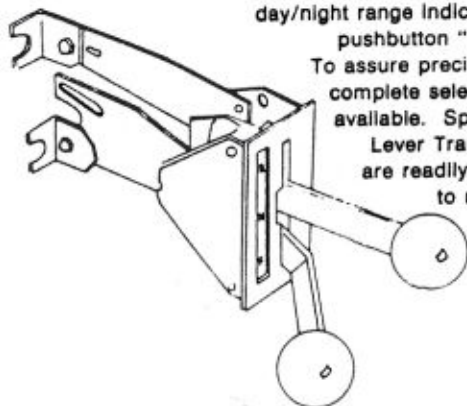
For POWERSHIFT TRANSMISSIONS Quadcast offers a family of one, two, three and four lever Controls for such functions as Direction, Speed, Hi-Ln Range, and 4 Wheel Disconnect. T13, T25, T29, and T38 Series Controls are available in both standard and special configurations to operate Allison, Clark, Funk, Twin Disc, Warner, and ZF Transmissions. These Controls are ruggedly constructed to meet the demands of the off-highway environment. To complete the installation and insure optimum control, a wide range of Transmission Connector Kits is available.

AUTOMATIC

AUTOMATIC TRANSMISSIONS manufactured by Allison, Chrysler, Ford, GMC, and Warner Gear are typically controlled by QUADCO® T70 Series Controls. The T73 Series Control features precision detents,

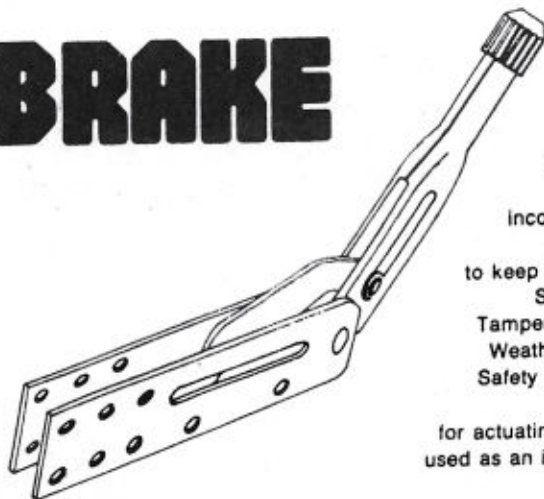
positive locking in each range, an illuminated moving red day/night range indicator, and a convenient and attractive pushbutton "T" handle on the input lever.

To assure precise actuation of the Transmission Valve, a complete selection of Transmission Connector Kits is available. Special Controls, such as the Dual Safety Lever Transmission - Throttle Control shown, are readily developed by our Engineering Staff to meet specific industry needs.



PARKING BRAKE LEVERS

The B40 Series overcenter locking lever is specifically designed to meet the requirements of mechanical parking brakes on both Off and On Highway heavy duty vehicles. The levers



are available for either floor or side mounting. All incorporate an adjustment knob in the handle, an easy way to keep the mechanical linkage taut.

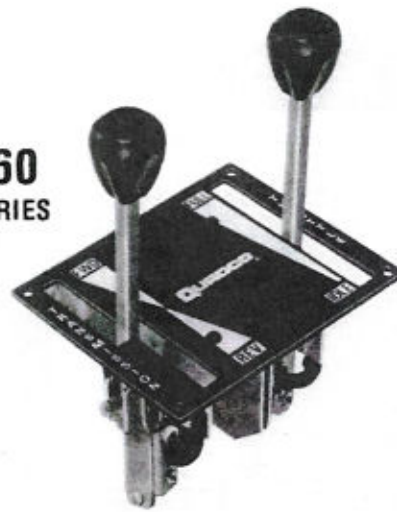
Standard accessories include Tamper Resistant Adjusting Knobs, Weather Resistant "ON" Switches, Safety Latches and Security Locks.

While the lever is normally for actuating parking brakes, it is often used as an inexpensive pull-only throttle or valve control.

**T50
SERIES**



**T60
SERIES**



PART NUMBER SYSTEM and ORDERING PROCEDURE

A COMPLETE PART NUMBER IS COMPOSED OF NINE DIGITS. SINCE EACH CONTROL IS BUILT AT THE FACTORY TO YOUR ORDER, IT IS ESSENTIAL THAT EVERY DIGIT BE SPECIFIED CORRECTLY.

T6018S012

SEVENTH, EIGHT and NINTH digits are assigned to specific gate plate patterns.

SIXTH digit specifies the style and size of the gate plate.

FIFTH digit specifies the angle at which the cable leaves the Control Head and whether the cable must "push" or "pull" as the Control lever is moved toward the front of the vehicle.

FOURTH digit identifies the type and size push-pull control cable which will be used with the Control Head. It is also used to specify a Neutral Start switch, if available.

Three inch (3") stroke cables are standard. Note that a cable is not included as part of the Control Head assembly.

FIRST, SECOND and THIRD digits specify the basic type of Control.

CONTROL MATRIX

	BASIC CONTROL (1st, 2nd, 3rd Digits)	NUMBER LEVERS	CONTROL ACTION		SELF LOCKING or FRICTION	
			NUMBER 1 LEVER	NUMBER 2 LEVER	NUMBER 1 LEVER	NUMBER 2 LEVER
T50 Series	T52	1	Linear	—	Self Locking	—
	T53	1	Linear	—	Friction	—
	T54	1	Non-Linear	—	Self Locking	—
	T55	1	Non-Linear	—	Friction	—
T60 Series	T60	2	Linear "Z"	Linear "I"	Self Locking	Self Locking
	T61	2	Linear "Z"	Linear "I"	Self Locking	Friction
	T63	2	Linear "Z"	Linear "I"	Friction	Friction
	T64	2	Non-Linear "Z"	Linear "I"	Self Locking	Self Locking
	T65	2	Non-Linear "Z"	Linear "I"	Self Locking	Friction
	T66	2	Non-Linear "Z"	Non-Linear "Z"	Friction	Friction
	T67	2	Linear "Z"	Linear "Z"	Self Locking	Self Locking
	T68	2	Non-Linear "Z"	Non-Linear "Z"	Self Locking	Self Locking
	T69		SPECIALS			

SIXTH digit

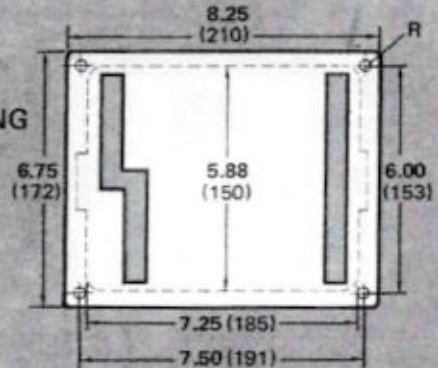
The Gate Plates are case hardened, painted with black enamel, silk screened and over coated with polyurethane.

R Size TOP MOUNTING



PANEL CUTOUT
DIMENSIONS
SHOWN BY
DOTTED LINES
R TO BE .75

S Size TOP MOUNTING



PANEL CUTOUT
DIMENSIONS
SHOWN BY
DOTTED LINES
R TO BE .75

SEVENTH, EIGHTH & NINTH digits

T52 & T53 -

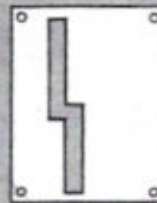
Gate plates are painted black; different lettering from decal sheet T901 may be applied to the reverse side.



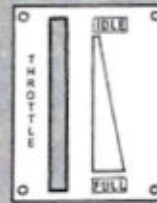
Part Number
001



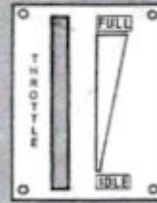
002



007



003



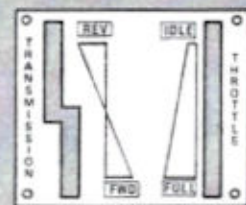
004



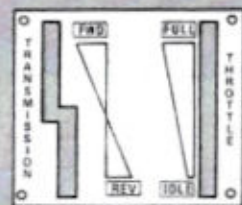
009

T60 & T61 & T63

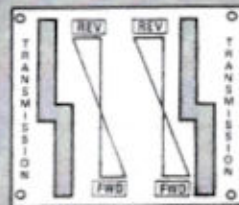
Gate plates are painted black; different lettering from decal sheet T901 may be applied to the reverse side.



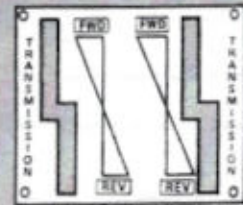
Part Number
001



002



011



012

T67

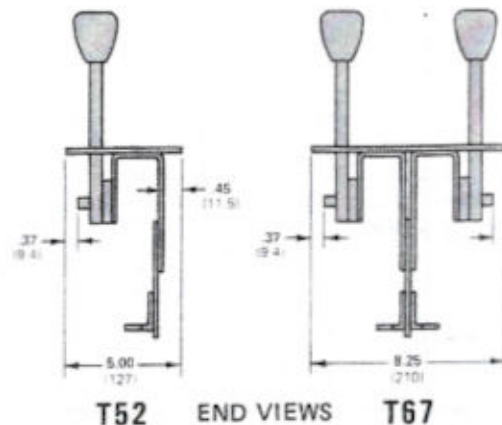
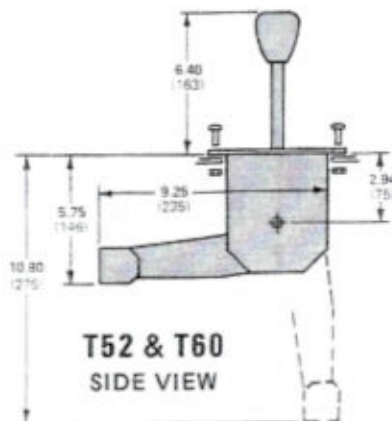
NOTE: Control without gate plate is designated by "X000" in the 6th thru 9th digits.

INSTALLATION

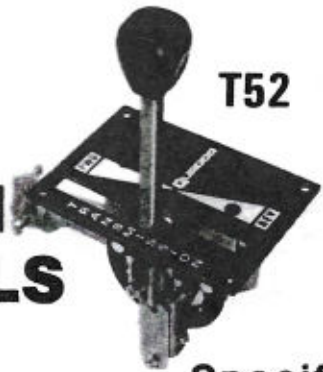
These Controls are designed for surface (TOP) mounting using the gate plate as the mounting plate.

The Control is lowered thru the cutout and secured with four 1/4"-20 black finish, stainless steel screws furnished.

See Top Dimensions under the "SIXTH digit" above.



LINEAR ACTION CONTROLS



T52

Features:

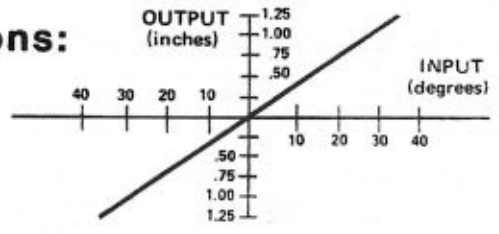
- INFINITELY POSITIONABLE
- QUADRASTAT® SELF LOCKING OR FRICTION FEEDBACK RESTRAINT DEVICE
- POSITIVE NEUTRAL GATE ("Z")
- LINEAR (1:1) OUTPUT MOTION
- CASE HARDENED GATE PLATE
- INTEGRAL CABLE ANCHOR
- NEUTRAL SWITCH OPTION

Specifications:

INPUT:
 Transmission _____ ± 36°
 Throttle _____ 0 to 72°

OUTPUT:
 Transmission _____ ± 1.25 Inches (± 31.8 mm)
 Throttle _____ 0 to 2.50 inches (63.5 mm)

FEEDBACK RESTRAINT:
 QUADRASTAT® _____ 0 to 100 in-lb
 Friction _____ 0 to 20 in-lb



RELATIVE LOST MOTION (HYSTERESIS):
 QUADRASTAT® FRICTION
 At Output _____ ± 0.75° _____ 0
 At Input
 Light Loads _____ ± 0.5° _____ ± 0.2
 Heavy Loads _____ ± 1.5° _____ ± 0.2

FIRST, SECOND & THIRD digits

BASIC CONTROL OPTIONS (1st, 2nd, 3rd Digits)	NUMBER LEVERS	CONTROL ACTION		SELF LOCKING or FRICTION	
		NUMBER 1 LEVER	NUMBER 2 LEVER	NUMBER 1 LEVER	NUMBER 2 LEVER
T52	1	Linear	—	Locking	—
T53	1	Linear	—	Friction	—
T60	2	Linear "Z"	Linear "I"	Locking	Locking
T61	2	Linear "Z"	Linear "I"	Locking	Friction
T63	2	Linear "Z"	Linear "I"	Friction	Friction
T67	2	Linear "Z"	Linear "Z"	Locking	Locking

EXAMPLE: **T6356S002**

FOURTH digit

ALWAYS USE 3" STROKE CABLE

CABLE ROD END	1/4" - 28		5/16" - 24	
	NO	YES	NO	YES
CLAMP END FITTINGS	1	5	2	6
BULKHEAD END FITTINGS	3	7	4	8

FIFTH digit

← FRONT OF VEHICLE ←
 (Control Mounted on Right Side of Driver)

	1	2	3	4
When lever is moved toward front of vehicle CABLE PUSHES				
When lever is moved toward front of vehicle CABLE PULLS				

P.T.O. or Hoist Single Lever Control

P.T.O. LEVER END DETENT

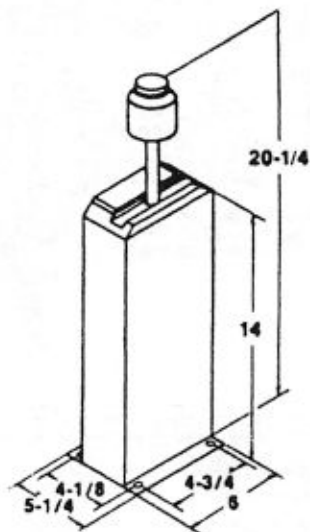
PART NO.	DESCRIPTION	WEIGHT
BSSPT52	Single lever for 1/4"-28 thd. cables	3.85 lbs.
BSSPT62	Single lever for 3/8"-24 thd. cables	3.85 lbs.

HOIST LEVER CENTER DETENT

PART NO.	DESCRIPTION	WEIGHT
BSSPU52	Single lever for 1/4"-28 thd. cables	3.85 lbs.
BSSPU62	Single lever for 3/8"-24 thd. cables	3.85 lbs.

SINGLE LEVER CONSOLE

PART NO.	DESCRIPTION	WEIGHT
BTS	Black epoxy coated steel console for all B Series single lever controls.	7.60 lbs.



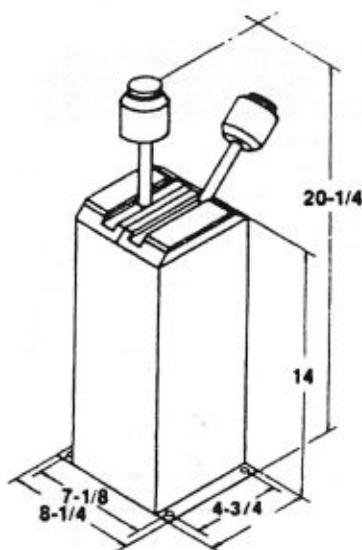
P.T.O.- Hoist Dual Lever Control

P.T.O HOIST DUAL LEVER CONTROL

PART NO.	DESCRIPTION	WEIGHT
BDS52	Dual lever for 1/4"-28 thd. cables	7.5 lbs.
BDS62	Dual lever for 3/8"-24 thd. cables	7.5 lbs.

DUAL LEVER CONSOLE

PART NO.	DESCRIPTION	WEIGHT
BTD	Black epoxy coated steel console for all B Series dual lever controls.	10 lbs.



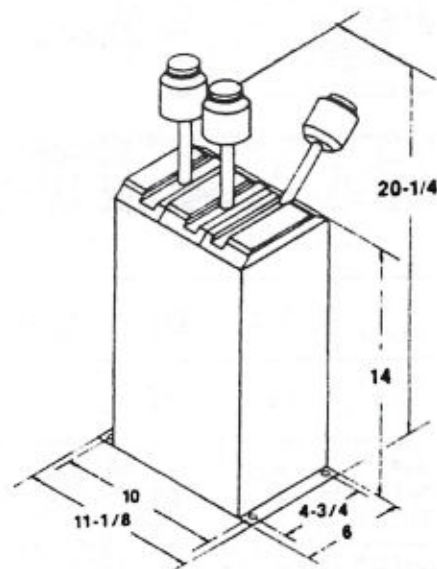
P.T.O.-Hoist-Hoist Triple Lever Control

TRIPLE LEVER CONTROL

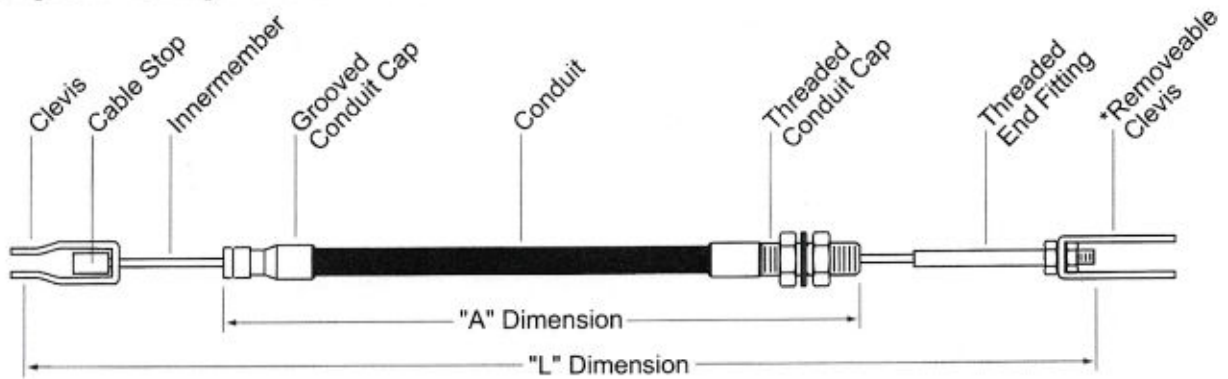
PART NO.	DESCRIPTION	WEIGHT
BTTT52	for 1/4"-28 thd. cables	11.5 lbs.
BTTT62	for 3/8"-24 thd. cables	11.5 lbs.

TRIPLE LEVER CONSOLE

PART NO.	DESCRIPTION	WEIGHT
BTT	Black epoxy coated steel console for all B Series triple lever controls.	11.45 lbs.



Preliminary Ordering Procedure For pull-only cable controls



To specify a pull control, the following information must be given in the order listed:

1. Left innermember end fitting part number.
 2. Left conduit end fitting part number.
 3. Length "A" between conduit fitting reference points in inches.
 4. Right conduit end fitting part number.
 5. Right innermember end fitting part number.
 6. Length "L" of innermember assembly
 7. Travel of the innermember in the conduit in inches. (Note dimensions "L" must be sufficiently greater than dimension "A" to allow desired travel).
- *Removable items should be listed separately.

Sample order code:

CS551 - 072 - 54 - 070 - TE505 - 64 1/2 - 6

Left innermember end fitting part number ---
(Clevis end fitting with cable stop)

Left conduit end fitting part number ---
(Grooved conduit end fitting)

Length of conduit assembly ---
(54") "A" Dimension

Right conduit end fitting part number ---
(Threaded conduit end fitting)

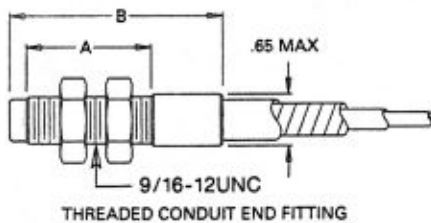
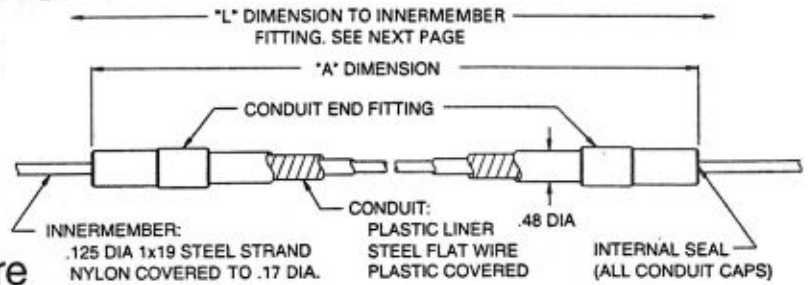
Right innermember end fitting part number ---
(Threaded conduit end fitting)

Length of innermember assembly ---
(64 1/2") "L" Dimension

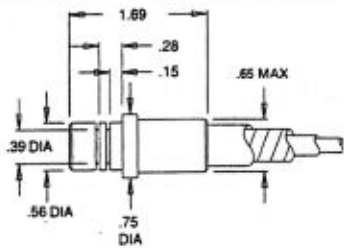
Travel in inches ---
(6")

1500 POUND SERIES with Lined Conduit

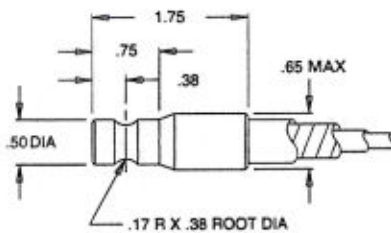
- Ultimate load: 1500 lbs.
- Minimum bend radius: 5"
- See page 7 for ordering procedure



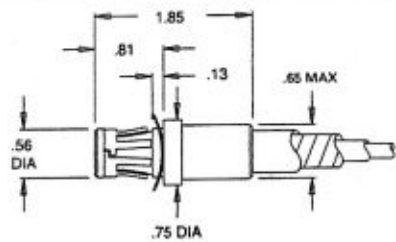
PART NO.	A	B
060	1.4	2.7
061	2.1	3.4



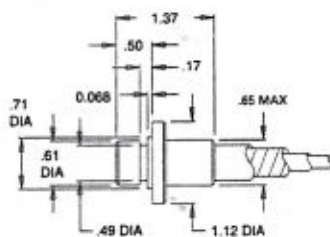
GROOVED CONDUIT END FITTING
PART NO. 064



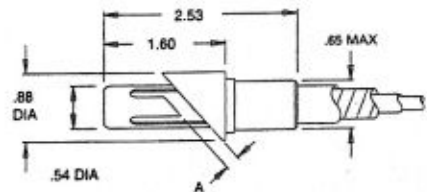
GROOVED CONDUIT END FITTING
PART NO. 062



CLIP-LOCK CONDUIT END FITTING
PART NO. 065
For .125 and .187 thick material.

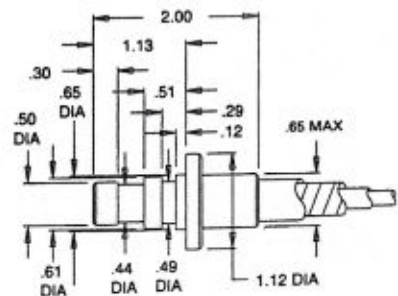


GROOVED CONDUIT END FITTING
PART NO. 026



48° CLIP-LOCK CONDUIT END FITTING

PART NO.	A
066	.13
067	.20



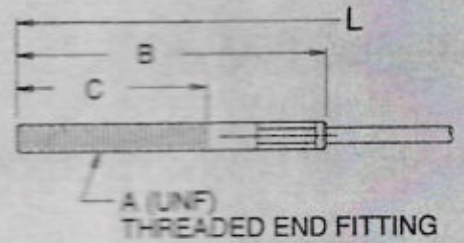
GROOVED CONDUIT END FITTING
PART NO. 027

CONDUIT END FITTINGS

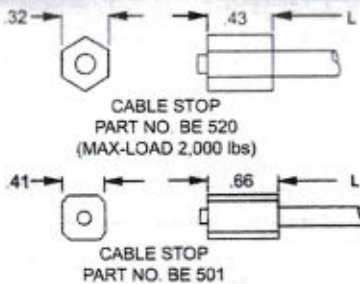
Pull-Only Brake Cable Specifications

Threaded End Fitting

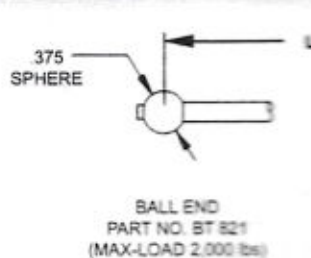
	A	B	C
TE504	5/16-24	3.62	2.22
TE504-006	5/16-24	2.00	.97
TE504-007	5/16-24	6.00	4.60
TE506	3/8-24	2.62	1.47
TE523-001	1/4-28	3.62	2.47



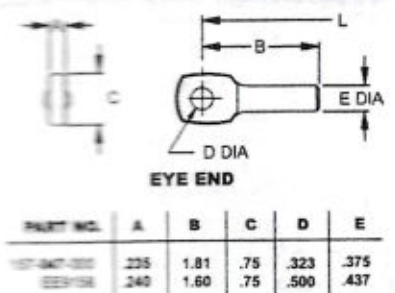
Cable Stop



Ball End



Eye End



Strap Clevis Part Numbers (For both 1500 and 3000 brake)

Open Strap Clevis

	A	B	D	F	G	H
CS540	-	1.62	.31	.62	.43	.266
CS540-001	-	1.62	.31	.62	.51	.266
CS540-006	-	2.50	.38	.75	.57	.386
CS540-007	-	2.50	.31	.62	.51	.266
CS541	-	1.94	.38	.75	.51	.266
CS541-003	-	1.94	.38	.75	.51	.323
CS541-005	-	2.00	.38	.75	.51	.266
CS541-007	-	2.50	.38	.75	.51	.266
CS541-008	-	2.50	.38	.75	.51	.323
CS542*	-	1.08	.50	1.00	.58	.323

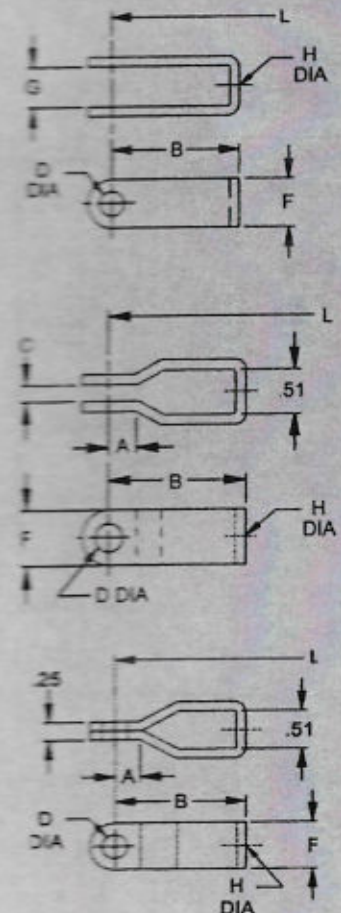
Step Strap Clevis

	A	B	C	D	F	H
CS550	.31	1.56	.19	.31	.62	.266
CS550-001	.31	1.56	.19	.38	.62	.266
CS550-002	.31	1.56	.19	.31	.62	.316
CS550-004	.31	1.56	.19	.25	.62	.266
CS551	.38	1.75	.25	.31	.62	.266
CS551-001	.38	1.75	.25	.38	.62	.266
CS551-002	.75	2.38	.25	.31	.62	.316
CS551-003	.38	1.50	.25	.25	.62	.266
CS552	.31	2.38	.25	.31	.75	.266
CS552-001	.31	2.38	.25	.38	.75	.266
CS552-003	.38	2.38	.25	.43	.75	.316
CS552-004	.38	2.38	.25	.31	.75	.316
CS553	.50	1.88	.19	.38	.75	.266

Closed Strap Clevis

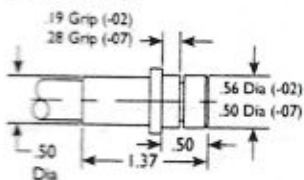
	A	B	C	D	F	H
CS562	.31	1.62	-	.31	.62	.316
CS563	.28	1.75	-	.31	.62	.316
CS564	1.00	2.38	-	.38	.75	.316

*use with 5/16 threaded end rod with nuts only

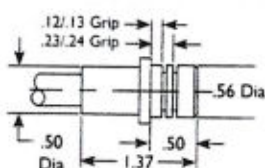


Retaining Ring Conduit Fitting

.125 Series
Part #054
Standard Fitting

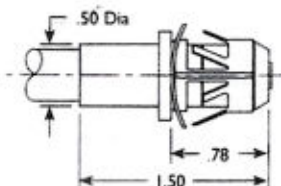


Part #053
Standard Fitting



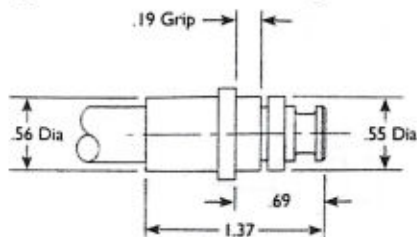
Snap-In Conduit Fitting

.125 Series
Part #055
.12/.18 Grip
.57/.58 Dia Mounting Hole



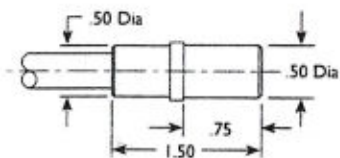
Retaining Ring / Boot Conduit Fitting

.125 Series
Part #056
Standard Fitting



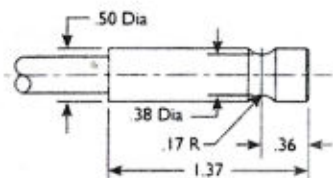
Clamp Type Conduit Fitting

.125 Series
Part #057
Standard Fitting

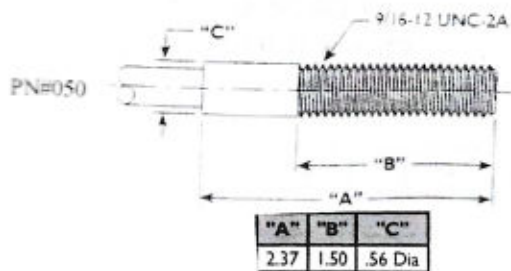
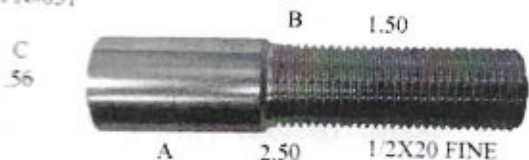


U-Bolt Conduit Fitting

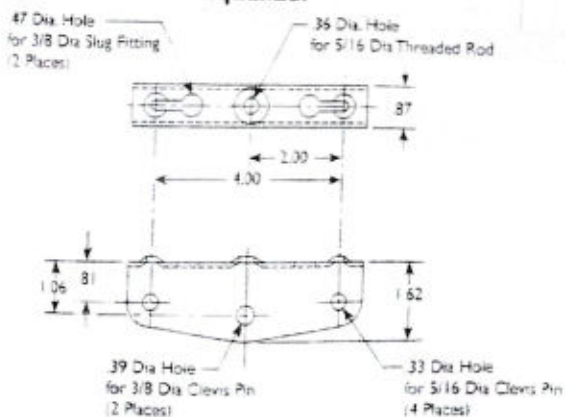
.125 Series
Part #052
Standard Fitting



PN#051

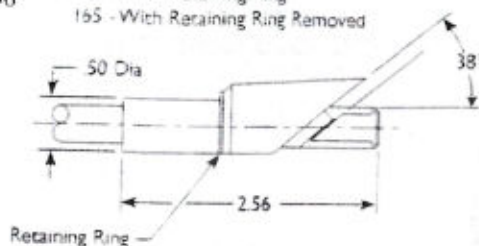


Equalizer

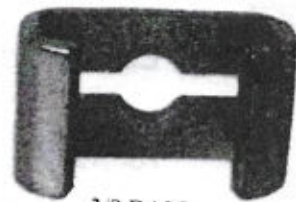


38° Conduit Fitting

PN#056
134 - With Retaining Ring
165 - With Retaining Ring Removed



5/16 ROD



3/8 BALL

Emergency Brake Center Pull

Emergency Brake Cable Coupler

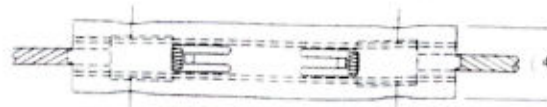
1.75 O.A.L.

255 I.D. WIDE



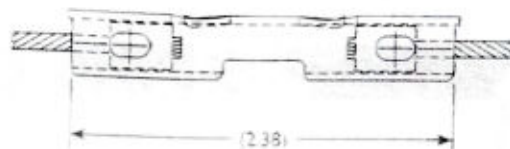
.500 I.D. LONG

SQUARE BRAKE EYE



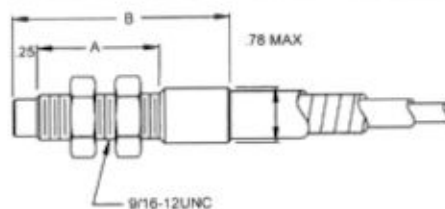
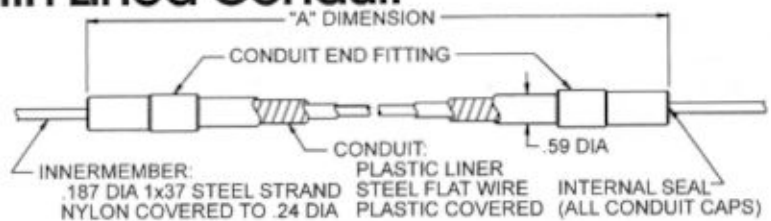
5/16 CYL

Emergency Brake Cable Coupler



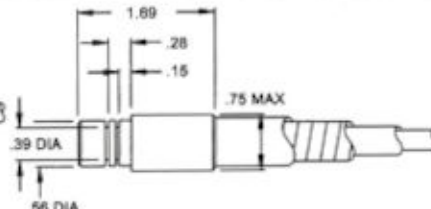
3000 Pound Series with Lined Conduit

Ultimate load: 3000 lbs.
 Minimum bend radius: 7"
 See page 11 for ordering procedure.



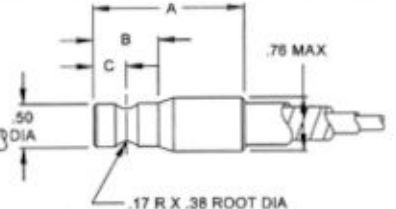
Threaded Conduit End Fitting

Part No.	A	B
070	1.4	2.7
071	2.0	3.3



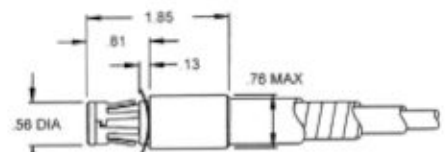
Grooved Conduit End Fitting

Part No.	Use E-Clip
074	175-435-025



Grooved Conduit End Fitting

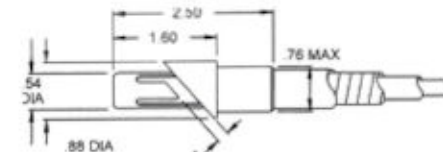
Part No.	A	B	C
072	1.4	2.7	.38
073	2.0	3.3	.44



Clip-Lock Conduit End Fitting

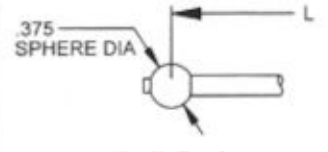
Part No.
075

For .125 or .187 thick material.



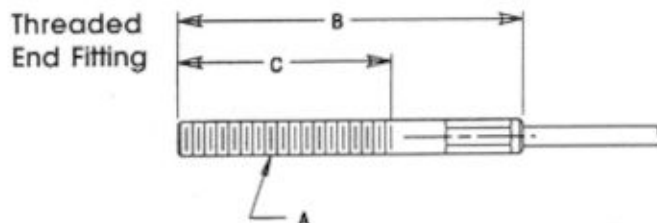
48° Clip-Lock Conduit End Fitting

Part No.	A
076	.33
077	.20



Ball End

Part No. BT 822
 (Max-load 2,000 lbs.)

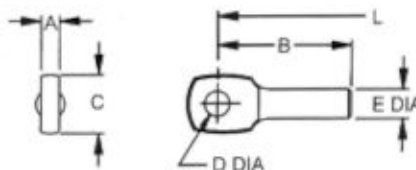


Part No.	A	Swaged	C
TE 505	3/8-24	2.95	2.00
TE 505-1	3/8-24	1.88	1.00
TE 508	3/8-24	2.62	1.50
TE 509-1	3/8-24	4.95	3.75
TE 510-1	5/16-24	2.50	1.50
TE 510-2	5/16-24	3.62	2.24
TE 510-4	5/16-24	4.00	3.00
TE 510-5	1/4-28	3.62	2.50
TE 510-6	5/16-24	2.12	1.00
TE 510-7	5/16-24	2.88	1.50
TE 510-8	5/16-24	5.60	4.47
TE 510-9	5/16-24	3.00	1.91
TE 605	3/8-24	6.00	5.00



Cable Stop

Part No. BE 502



Eye End

Part No.	A	B	C	D	E
157-047-002	.235	1.81	.75	.323	.375

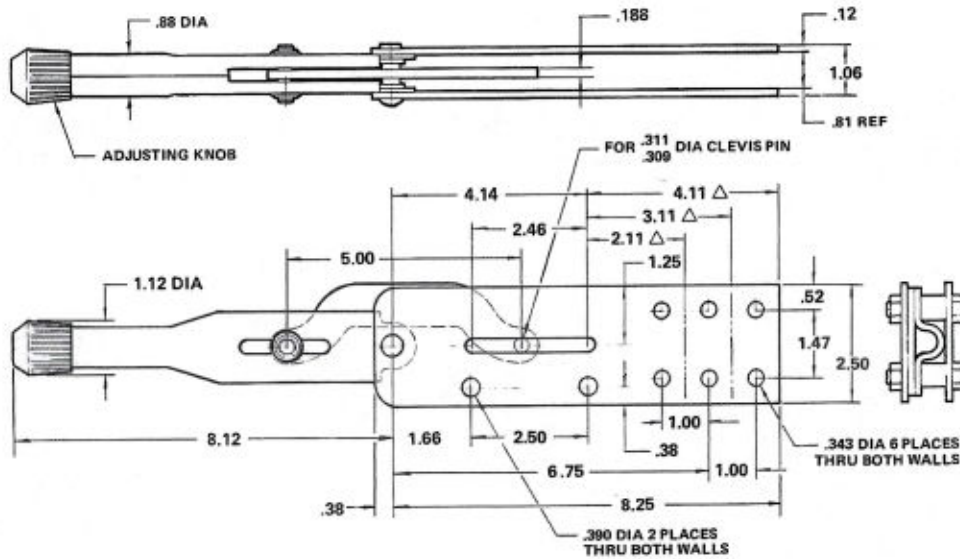
See page 28 for strap clevis part numbers.

MOUNTING CONFIGURATIONS

SIDE MOUNT 165-508-008

2.5 inches (64mm) wide SIDE PLATES; ONE CABLE, with three alternate sets of cable clamp holes. For cowl, instrument panel, seat riser, or frame installation.

Side Mount 165-508-008



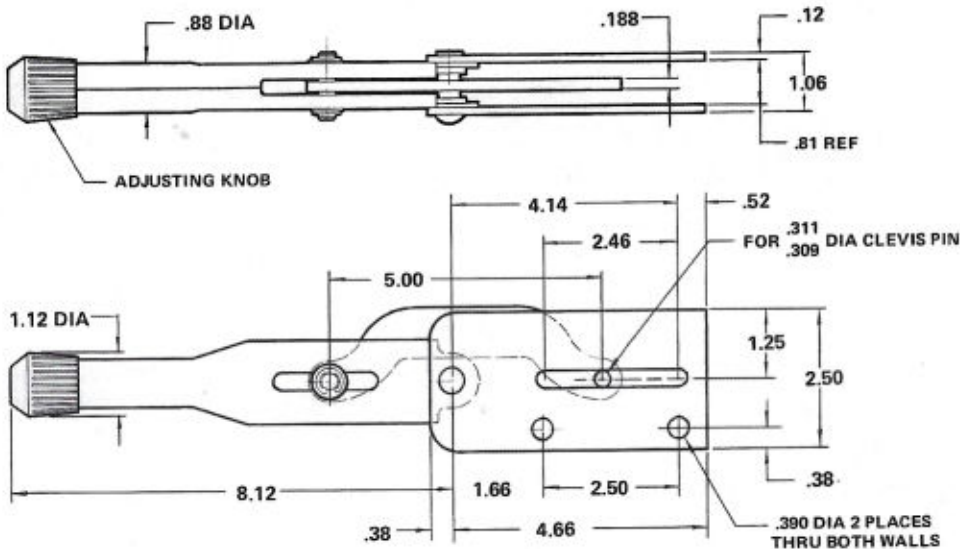
SUPPLIED WITH THE FOLLOWING HARDWARE:

- CLEVIS PIN
- COTTER PIN
- WASHER
- MOUNTING SPACERS (2)
- CABLE CLAMP
- CLAMP BASE
- CLAMP SPACERS (2)

SIDE MOUNT 165-508-009

2.5 inches (64 mm) wide SIDE PLATES; ONE CABLE. For cowl, instrument panel, seat riser, or frame installation. No cable support.

Side Mount 165-508-009



SUPPLIED WITH THE FOLLOWING HARDWARE:

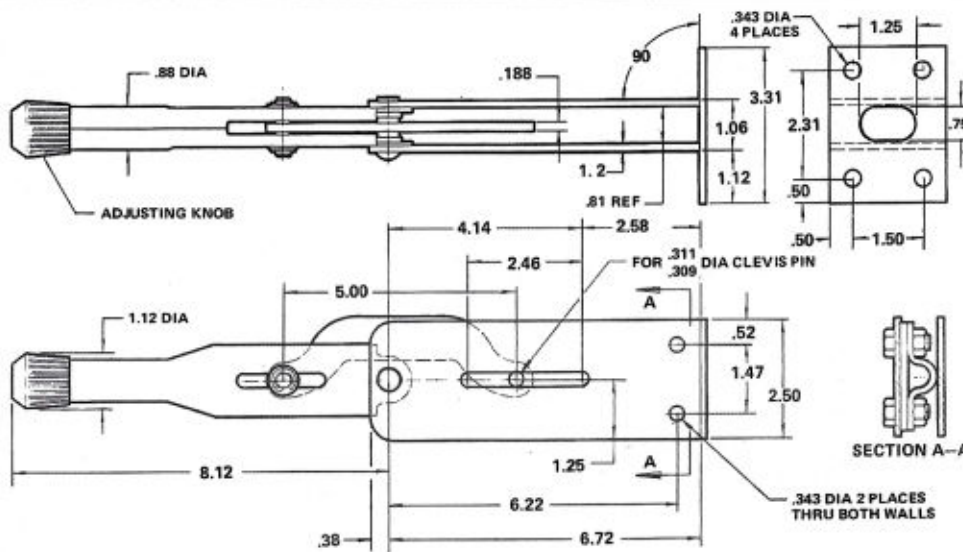
- CLEVIS PIN
- COTTER PIN
- WASHER
- MOUNTING SPACERS (2)

MOUNTING CONFIGURATIONS

FLANGE MOUNT-RIGID 165-508-010

2.5 inches (64mm) wide SIDE PLATES; ONE CABLE. For bulkhead, floor or island (doghouse) installation. The rigid frame maintains alignment of clevis pin guide slots for improved life of both the pin and side plates.

Flange Mount-rigid 165-508-010



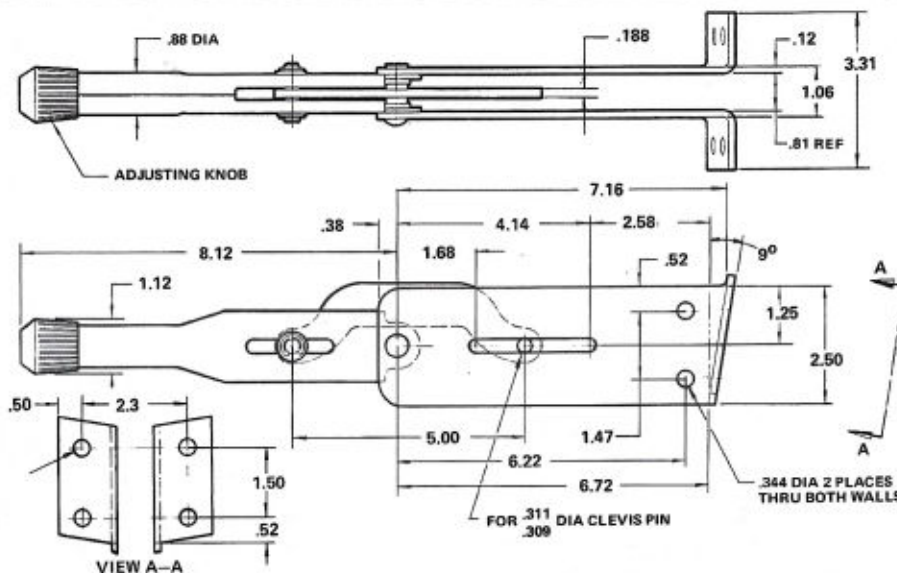
SUPPLIED WITH THE FOLLOWING HARDWARE:

- CLEVIS PIN
- COTTER PIN
- WASHER
- CABLE CLAMP
- CLAMP BASE
- 5/16-24 BOLTS (2)
- 5/16-24 NUTS (2)

FLANGE MOUNT 165-508-078

2.5 inches (64 mm) wide SIDE PLATES; ONE CABLE. For bulkhead, floor, or island (doghouse) installation. Angle wing flange mounting.

Flange Mount-rigid 165-508-078



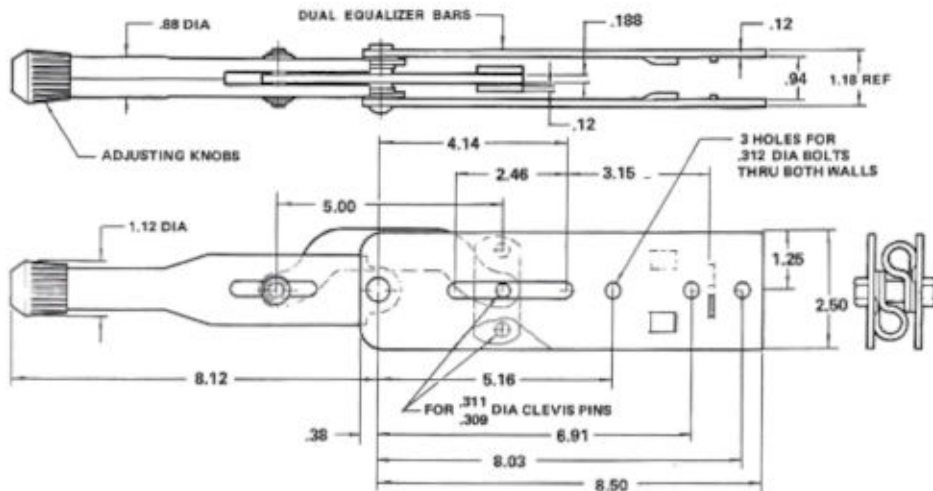
SUPPLIED WITH THE FOLLOWING HARDWARE:

- CLEVIS PIN
- COTTER PIN
- WASHER
- CABLE CLAMP
- CLAMP BASE
- 5/16-24 BOLTS (2)
- 5/16-24 NUTS (2)

MOUNTING CONFIGURATIONS

SIDE MOUNT-DUAL OUTPUT* 165-508-013

2.5 inches (64mm) wide SIDE PLATES; TWO CABLES. For cowl, instrument panel, seat riser, or frame installation. NOTE: When considering load requirements, the load on the lever assembly will be the sum of the load in each cable.

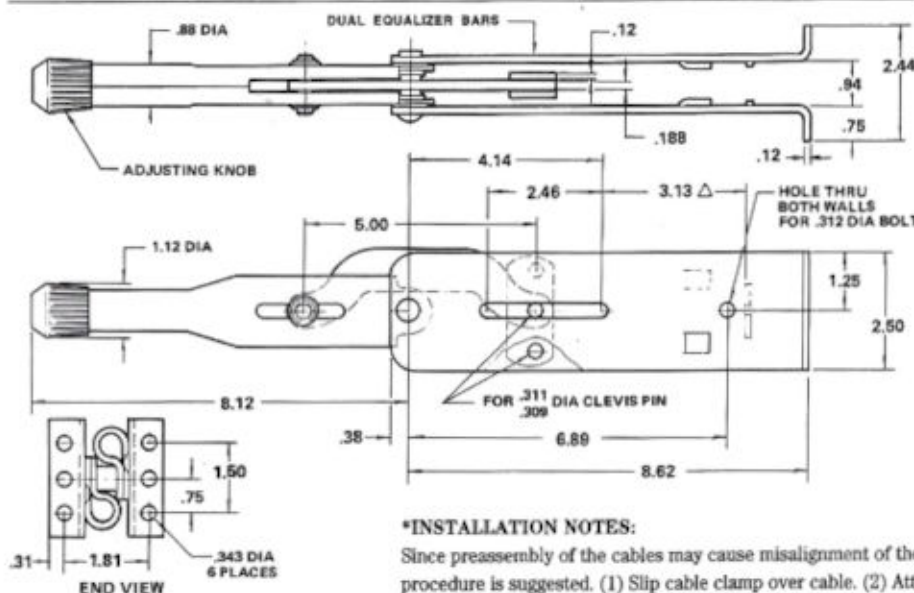


- SUPPLIED WITH THE FOLLOWING HARDWARE:
- CLEVIS PINS (2)
 - COTTER PINS (2)
 - WASHERS (2)
 - MOUNTING SPACERS (2)
 - CABLE CLAMPS (2)
 - CLAMP SPACER

Side Mount-dual output 165-508-013

FLANGE MOUNT-DUAL OUTPUT* 165-508-023

2.5 inches (64mm) wide SIDE PLATES; TWO CABLES. For bulkhead, floor, or island (doghouse) installation. NOTE: When considering the load requirements, the load on the lever assembly will be the sum of the load in each cable. Wing flange mounting.



- SUPPLIED WITH THE FOLLOWING HARDWARE:
- CLEVIS PINS (2)
 - COTTER PINS (2)
 - WASHERS (2)
 - MOUNTING SPACERS (2)
 - CABLE CLAMPS (2)
 - CLAMP SPACER

*INSTALLATION NOTES:

Since preassembly of the cables may cause misalignment of the side plates, the following installation procedure is suggested. (1) Slip cable clamp over cable. (2) Attach cable clevis to equalizer bars with clevis pins and hardware provided. (3) Install cable clamp spacer and lightly tighten the 5/16 bolt. (4) Install lever assembly to the vehicle, tighten for fit only—DO NOT TORQUE. (5) Finish tightening the cable clamp bolt. (6) Complete installation by tightening the mounting bolts.

Flange Mount-dual output 165-508-023

Heavy-Duty Throttle

Applications:

- Medium & heavy-duty trucks
- Construction equipment
- Farm equipment
- Buses

Features:

- Die cast & steel components
- Multiple base bolt patterns
- Spring returned pedal
- Adjustable pedal angle
- Throttle cable exit is adjustable
- Travel: 2.00" maximum
- -25°F — 160°F temperature range (-14°C — 90°C)
- Corrosion-resistant die cast components, plated steel hardware and plastic bushings

Material:

- Coated sheet metal
- Plastic bushings
- Plastic boot plated steel hardware

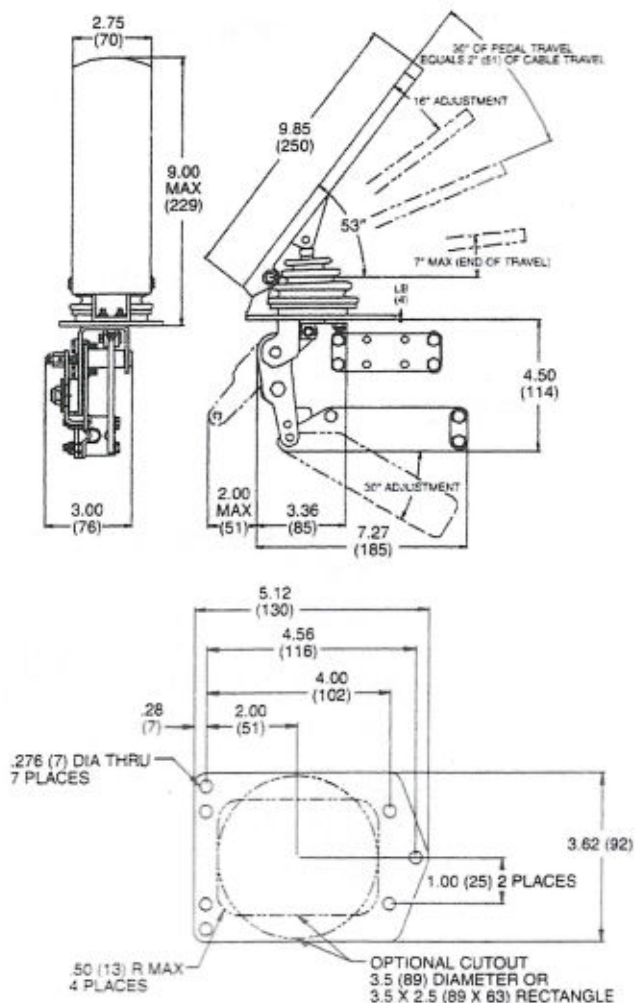
Suggested End Fittings:

- Clevis and pin, or end fitting with right angle bend



Standard Pedal 165-574-001

For use with one pull-only accelerator cable.



Medium-Duty Throttle

Applications:

- Farm machinery
- Heavy machinery
- Landscaping equipment
- Construction equipment
- Warehouse equipment

Features:

- Steel construction
- Rear or front throttle connection
- Multiple base bolt patterns
- Spring returned pedal
- Travel: 3.00" maximum
- -25°F —160°F temperature range (-14°C — 90°C)
- Coated sheet metal components
- Embossed pedal surface reduces slippage

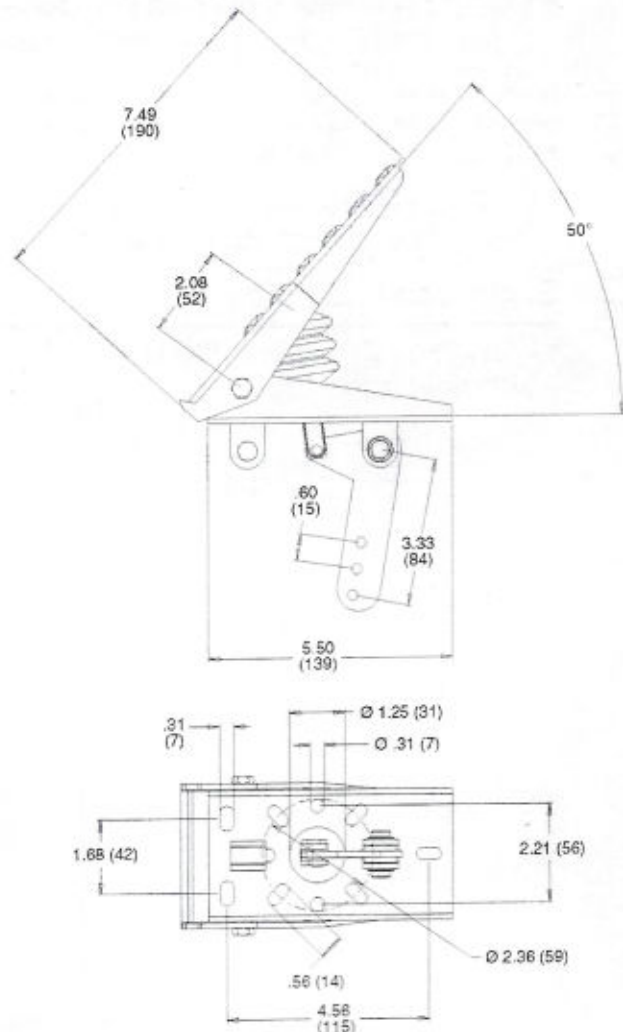
Material:

- Coated sheet metal
- Plastic bushings
- Plastic boot plated steel hardware



Medium-Duty Pedal CH530

For use with single pull-only throttle (gas) cables.



Fast and Economical Installation

A throttle cable simplifies the installation, providing a complete system to suit many applications.

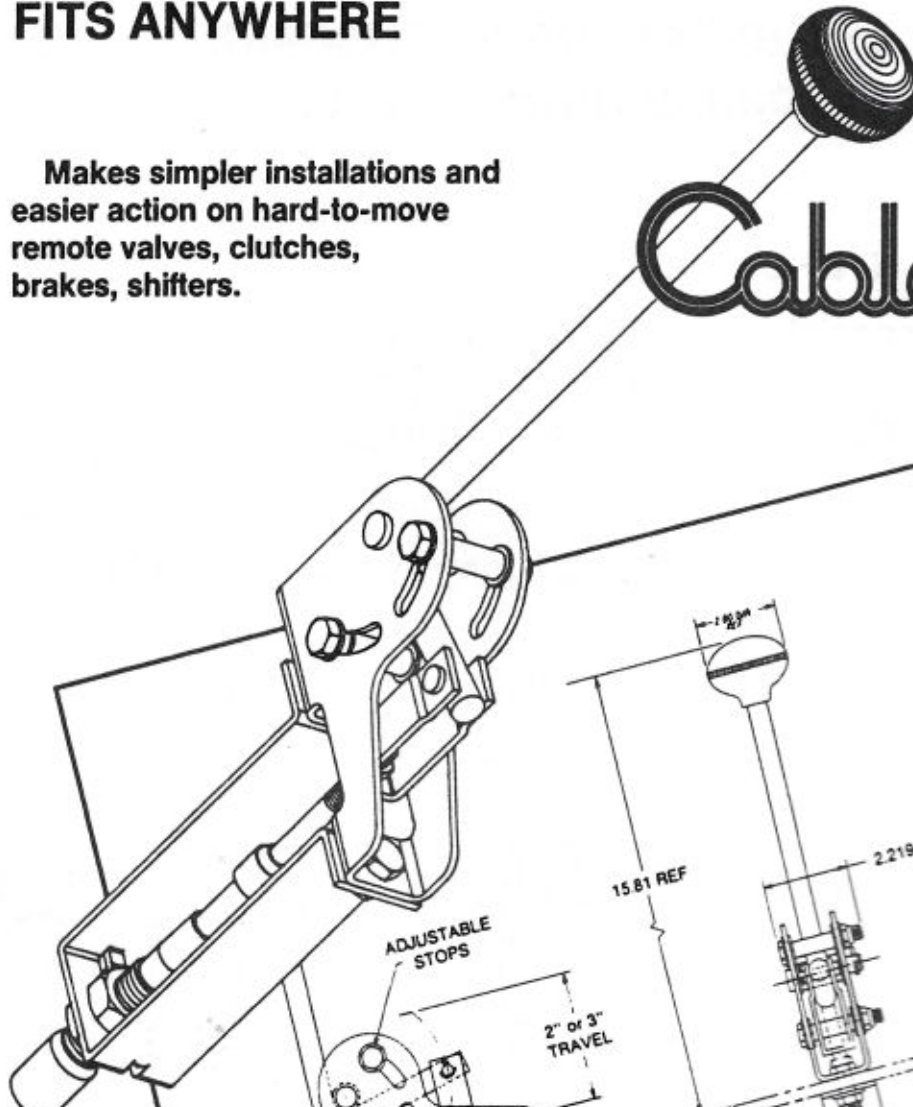
The pedal tower mechanism is designed to be dropped through the floor and secured. Cable attachment can then be quickly and easily completed.

HEAVY DUTY CONTROL LEVER

PART 165-041-002

- VERSATILE
- CUTS COST
- FITS ANYWHERE

Makes simpler installations and easier action on hard-to-move remote valves, clutches, brakes, shifters.



USE LIGHT OR MEDIUM DUTY CABLES WITH 2 OR 3 INCH TRAVEL

HEAVY DUTY CONTROL LEVER
PART 165-041-002

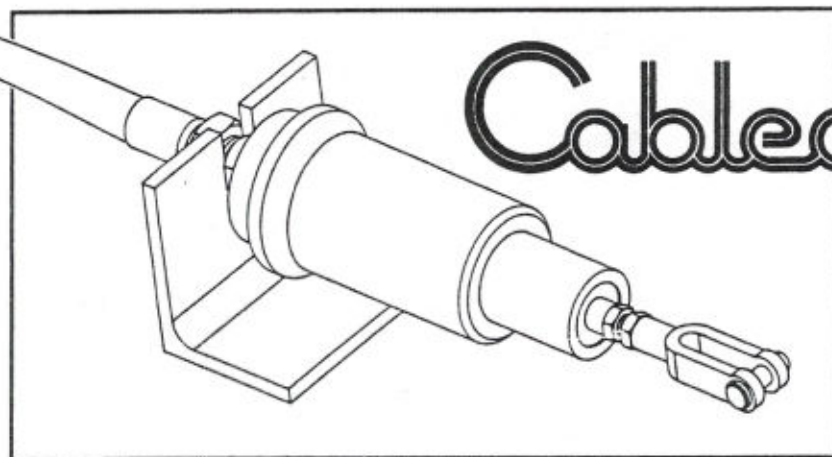
OPTIONAL ADAPTER CLEAVISES	
For	P/N
LD, 2" Travel	165-041-031
LD, 3" Travel	165-041-032
MD, 2" Travel	165-041-033
MD, 3" Travel	165-041-034

HYDROBACK*

*A unique self-centering mechanism
for push-pull control cables.*

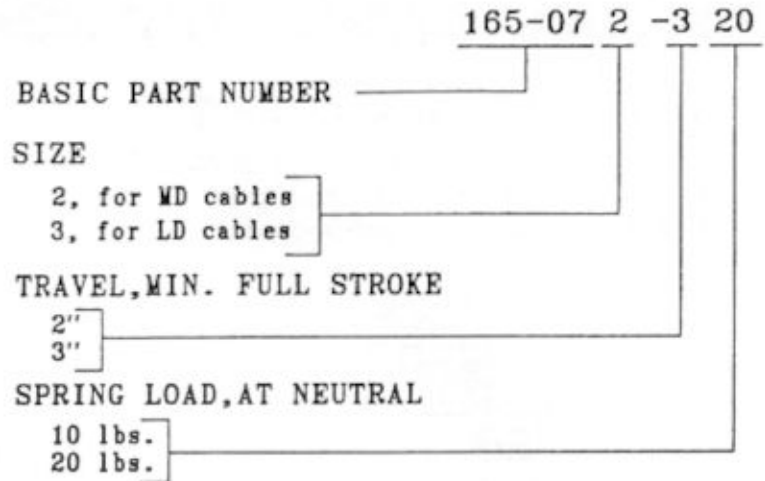
The HYDROBACK:

- especially useful for centering controls on
Hydrostatic Transmissions
Non-detented Hydraulic Valves
- Mounts directly on standard push-pull cables
- Eliminates bulky dual-spring systems and extra
brackets and levers
- Protected linkage for safer operation



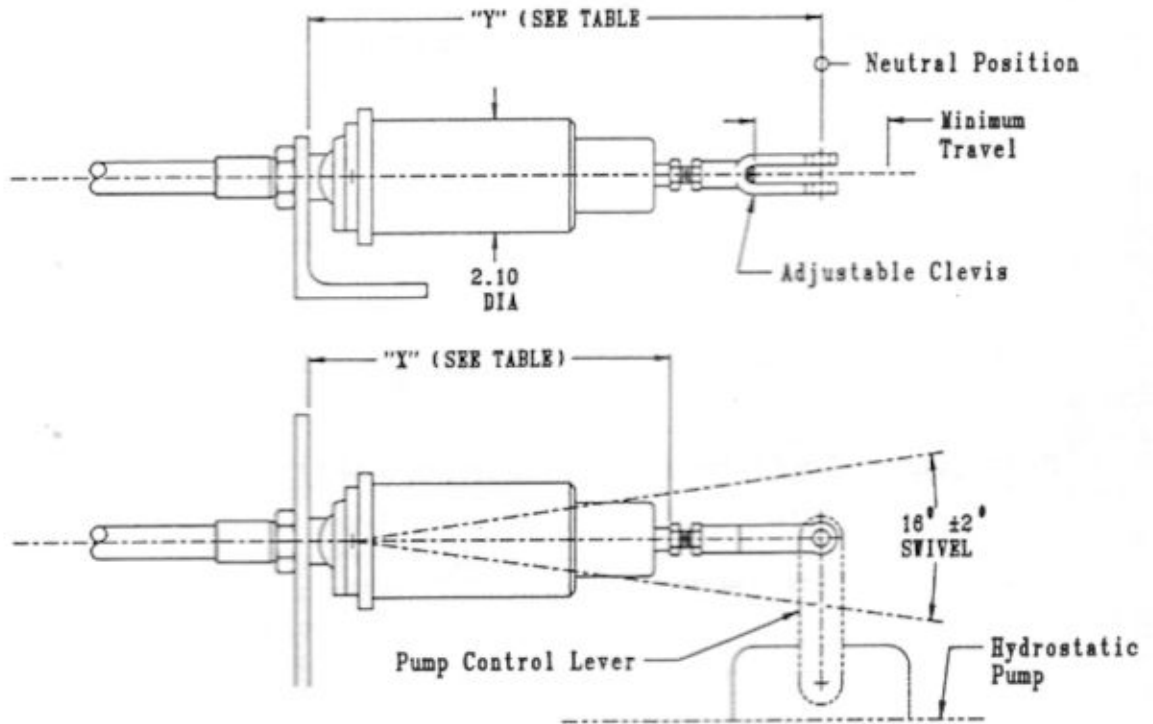
- Economical
- Rugged
- Compact
- Adjustable
- Safe
- Dependable

Ordering Code



EXAMPLE SHOWN: 165-072-320 is Hydroback for MD Cables, 3" travel, 20 lb. spring load at neutral position.

Dimensional Data All Dimensions Are In Inches.

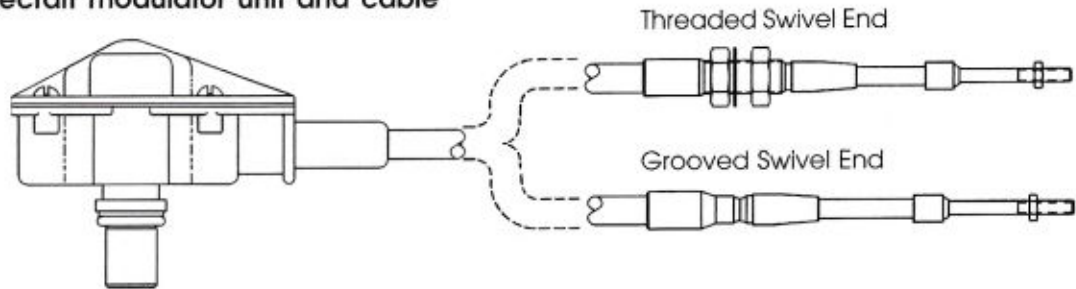


Cable Size	Travel	Part Number	Recommended Clevis	"X"	"Y"	
					Min	Max
LD	2.00	165-073-21b.	AC 208	5.63	7.63	7.87
	3.00	165-073-31b.	AC 208	7.03	8.03	8.27
MD	2.00	165-072-21b.	AC 212	5.63	7.88	8.20
	3.00	165-072-31b.	AC 212	7.03	9.28	9.60

Modulator Cables

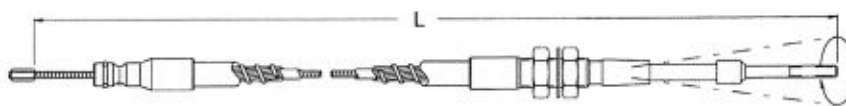
Modulator and cable interconnect Allison® automatic transmission with engine fuel control. Modulator can be set to either "push" or "pull" to operate.

Cablecraft modulator unit and cable



CABLE OUTPUT END	MODULATOR UNIT WITH CABLE		REPLACEMENT MODULATOR BOX
	PULL TO OPERATE	PUSH TO OPERATE	
GROOVED MOUNT			
173 UTILITY	CA 343-001-L	CA 343-002-L	P/N 165-900
174 UTILITY	CA 345-001-L	CA 354-002-L	
THREADED MOUNT			
173 UTILITY	CA 343-001-L	CA 342-002-L	SLIP CLEVIS P/N AC-310
174 UTILITY	CA 341-001-L	CA 341-002-L	

Replacement Cables for Cablecraft modulator

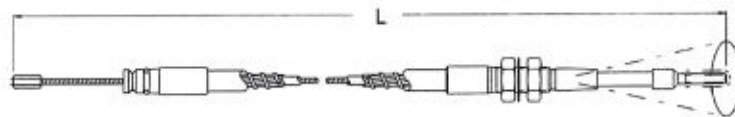


CABLE ONLY PART NO.	CABLE OUTPUT END
	THREADED MOUNT
CA 342-000-L	173 UTILITY
CA 341-000-L	174 UTILITY

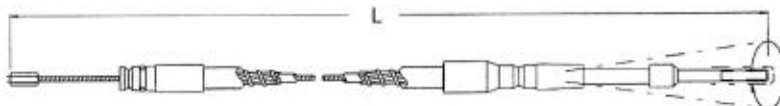


CABLE ONLY PART NO.	CABLE OUTPUT END
	GROOVED MOUNT
CA 343-000-L	173 UTILITY
CA 345-000-L	174 UTILITY

Replacement Cables for other USA manufactured modulator



CABLE ONLY PART NO.	CABLE OUTPUT END
	THREADED MOUNT
CA 212 T-L	173 UTILITY
CA 213 T-L	174 UTILITY



CABLE ONLY PART NO.	CABLE OUTPUT END
	GROOVED MOUNT
CA 212 G-L	173 UTILITY
CA 213 G-L	174 UTILITY

MTS (Manual Transmission System) "Quik Stik" cables

Replacements for Cablecraft's cable operated manual transmission shift system.

Order Code: X=3 for stainless end rods with mod 6 seals.

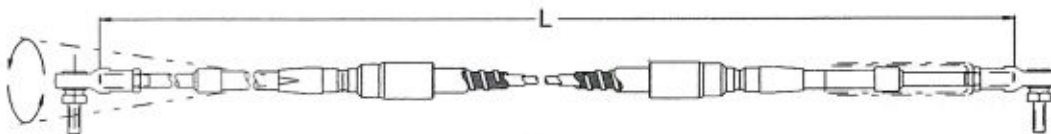
X=4 for stainless support tubes and end rods with mod 6 seals

L=Length

Part No. A31X-105-L Grooved-Grooved



Part No. A31X-106-L Same as -105 but with an umbrella seal

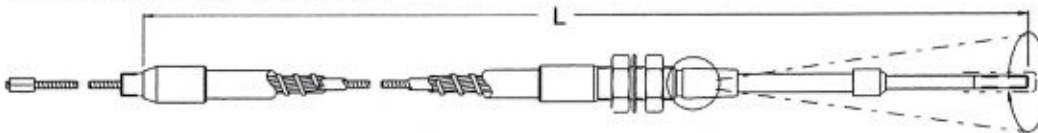


Part No. A31X-113-L Grooved-Threaded

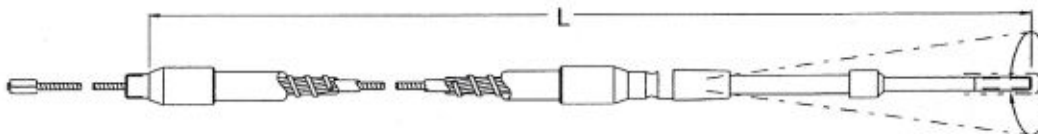


Unidrum Lever Control Replacement Cables

Part No. A17X-330 Grooved



Part No. A17X-332 Threaded



Ordering Code For Unidrum Controls

UDL - 1 4 6 - 2 - 120

BASIC UNIDRUM LEVER ———— **UDL**

KNOB COLOR ———— **1 4 6**

1. BLACK
2. RED

CABLE EXIT POSITION ———— **2**
(SEE ILLUSTRATION)

1. LOWER MOUNT, LEFT EXIT
2. LOWER MOUNT, RIGHT EXIT
3. UPPER MOUNT, LEFT EXIT
4. UPPER MOUNT, RIGHT EXIT

OVERALL LENGTH IN INCHES TO NEAREST 1/2 INCH ———— **120**

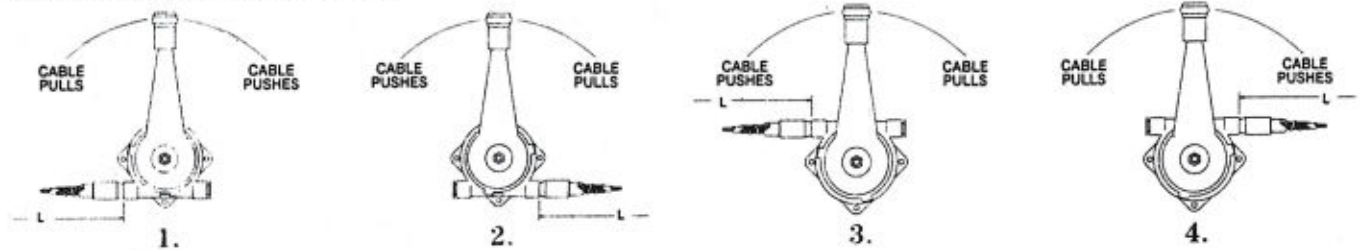
TRAVEL

	CABLE	LEVER
2 -	2"	106°
3 -	3"	160°

OUTPUT END CONFIGURATION AND CABLE SIZE/TYPE
(SEE ILLUSTRATIONS)

STYLE	SIZE	TYPE
1. THREADED SWIVEL, VLD,	VLD,	UTILITY
2. GROOVED SWIVEL, VLD,	VLD,	UTILITY
3. THREADED SWIVEL, LD,	LD,	UTILITY
4. GROOVED SWIVEL, LD,	LD,	UTILITY
5. THREADED CAP, VLD,	VLD,	BRISTOW
6. GROOVED CAP, VLD,	VLD,	BRISTOW

CABLE EXIT POSITIONS



Exit Positions

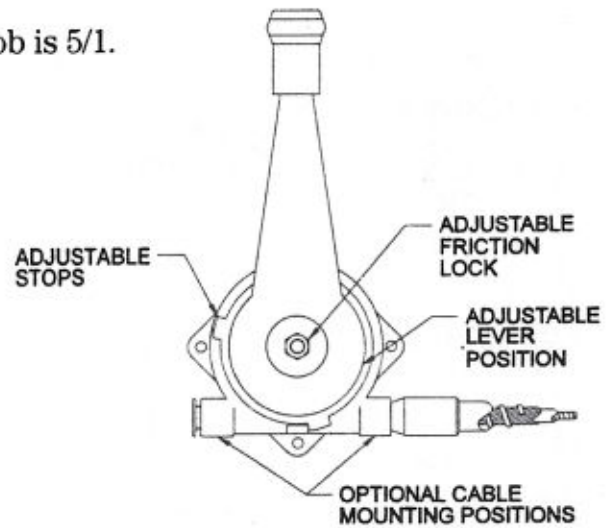
CABLE OUTPUT END FITTINGS

	Threaded Swivel "T"	Dimension A	Grooved Swivel "G"	Dimension A
VLD UTILITY		Per Stroke (extended)		Per Stroke (extended)
		2" 6.94		2" 6.25
		3" 8.94		3" 8.25
LD UTILITY		2" 7.18		2" 6.56
		3" 9.18		3" 8.56
VLD BRISTOW				
		5. (pull-only)		6. (pull-only)

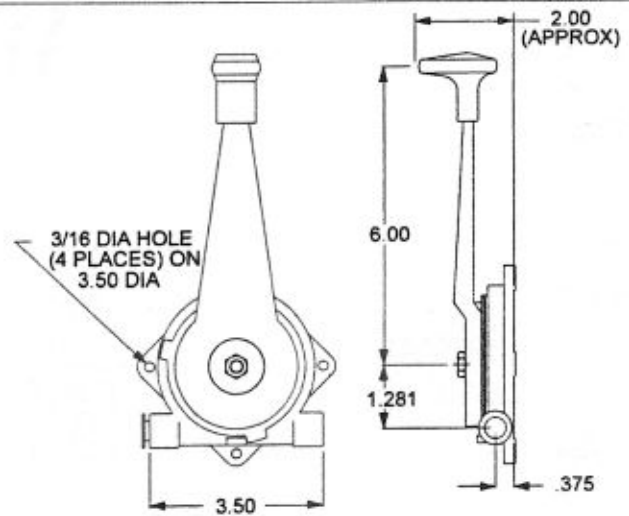
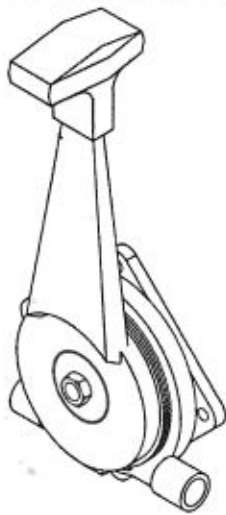
Output End Fittings

Cablecraft's Unidrum Control Lever, the Choice of Professionals

- Hold and operate up to 25 lb. push/pull or pull-only output load. Mechanical advantage at knob is 5/1.
- Self-locking nut for operator adjustment of friction setting.
- Adjustable stop plates allow 10 degree (3/16" linear output) incremental travel adjustment. 2" of cable travel requires 106 degree lever travel. 3" of cable travel requires 160 degree lever travel.
- Lever position is adjustable in 60 degree increments to provide optimum operating range.
- Optional cable entry offers four mounting and direction of operation alternatives.
- Rugged diecast zinc alloy material.
- Mount with (4) 3/16" screws or bolts.



Side Mount



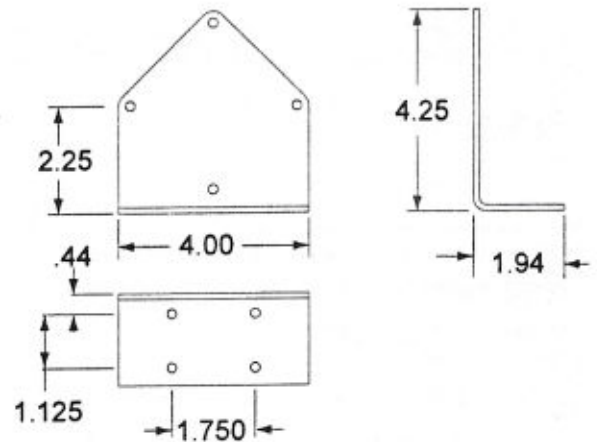
Base Mount Accessory

BASE MOUNT ACCESSORY

Converts a standard side mount UNIDRUM lever to a free-standing, base-mounted lever. For use on horizontal panels or surfaces.

Made from 1/8" steel and zinc-coated for weather resistance. Mounts to the UNIDRUM lever with four 3/16"x 5/8" bolts (not furnished with this bracket).

ORDER PART NUMBER 165-506-003



STUDED ROD EYE

PART NUMBER	INTERNAL THREAD	STUD THREAD
BRE 32 S	10/32	10/32
BRE 52 S	1/4	1/4
BRE 62 S	5/16	5/16
BRE 72 S	3/8	3/8



THREADED PIVOTS

PART NUMBER	INTERNAL THREAD	STUD THREAD
10/32 PIVOT	10-32	1/4"
1/4 PIVOT	1/4-28	1/4"



Bulkhead Bracket - Fits Light & Medium Duty Push Pull Cables

VLD Bulkhead Bracket (Very Light)

Cable Groove Mount - Fits Light & Medium Duty Push Pull Cables

VLD Swingover (Very Light Duty)

VLD Swingover Straight

END ROD THREAD ADAPTERS

PART NUMBER	FROM (INTERNAL)	TO (EXTERNAL)
161-009-001	1/4-28	3/8-28
161-009-003	10-32	5/16-24
161-009-005	1/4-28	3/8-16
161-009-006	5/16-24	3/8-24
161-009-007	10-32	1/4-28

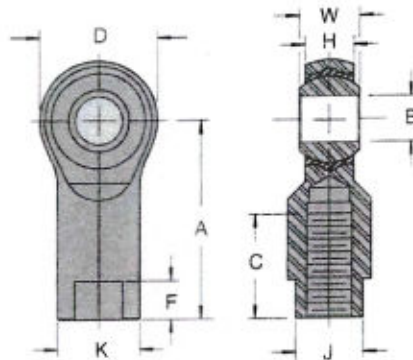


WIRE STOP/PIVOT

PART NUMBER	WIRE	PIN DIA.	SET SCREW
SS 91	.075"	1/4"	10-32 UNF



FEMALE ROD EYE

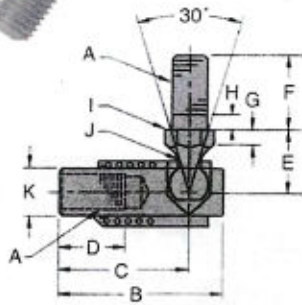


SPF Female Chart

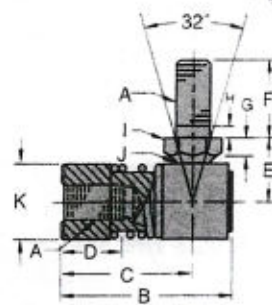
Part Number		B +0020 -0000	W ±.005	H REF	A ±.015	D ±.015	K ±.015	J ±.015	F ±.030	REF	C ±.060	UNF-2B	Ultimate Radial Static Load Capacity (Pounds)	Weight (Pounds)
Right Hand	Left Hand	Ball Bore	Ball Width	Housing Width	Centerline Length	Head Diameter	Shank Diameter	Wrench Flat Width	Wrench Flat Length	Ball Diameter	Thread Length	Thread Size		
SPF3	SPFL3	.1900	.312	.250	1.062	.625	.406	.312	.406	.438	.562	10-32	1,210	.036
SPF4	SPFL4	.2500	.375	.281	1.312	.750	.469	.375	.281	.516	.750	1/4-28	2,470	.059
SPF5	SPFL5	.3125	.437	.344	1.375	.875	.500	.437	.281	.625	.750	5/16-24	2,740	.077
SPF6	SPFL6	.3750	.500	.406	1.625	1.000	.687	.562	.312	.719	.937	3/8-24	4,100	.146
SPF7	SPFL7	.4375	.562	.437	1.812	1.125	.750	.625	.625	.812	1.031	7/16-20	5,350	.192
SPF8	SPFL8	.5000	.625	.500	2.125	1.312	.875	.750	.375	.938	1.187	1/2-20	6,430	.313
SPF10	SPFL10	.6250	.750	.562	2.500	1.500	1.000	.875	.500	1.125	1.500	5/8-18	8,300	.464
SPF12	SPFL12	.7500	.875	.687	2.875	1.750	1.125	1.000	1.000	1.312	1.562	3/4-16	10,900	.672

S/SS/SC Ball Joints

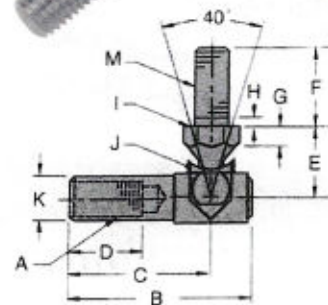
Quick Disconnect with Spring or Spring Clip



Type S



Type SS



Type SC

S/SS/SC CHART

Part Number	A UNF	B ±.020	C ±.020	D MIN	E ±.020	F ±.020	G REF	H REF	I REF	J REF	K REF	M UNF	Ball Diameter REF
S103	10-32	1.094	.906	.437	.437	.437	.125	.062	.312	.171	.312	—	.253
S107S	1/4-28	1.094	.906	.531	.469	.562	.141	.062	.312	.171	.312	—	.253
SS1002	1/4-28	1.250	.969	.531	.469	.562	.125	.078	.375	.192	.561	—	.345
SS1003	5/16-24	1.453	1.125	.594	.531	.687	.125	.094	.437	.224	.625	—	.403
SS1004	3/8-24	1.750	1.375	.812	.687	.875	.156	.109	.500	.273	.750	—	.491
SC103	10-32	1.156	.875	.484	.437	.437	.187	.078	.312	.135	.312	10-32	.250
SCS103	10-32	1.156	.875	.484	.437	.562	.125	.078	.312	.135	.312	1/4-28	.250
SC107	1/4-28	1.250	.969	.531	.437	.562	.125	.078	.312	.135	.312	1/4-28	.250
SCS107	1/4-28	1.250	.969	.531	.437	.437	.125	.078	.312	.135	.312	10-32	.250

CLEVIS ASSEMBLIES

Includes Pin, Washer and Cotter Pin

PART NUMBER	THREAD	PIN DIA.	LENGTH	INSIDE OPENING	INSIDE DEPTH
175-601-202	10-32 UNF	3/16"	1.56"	.19"	1.00"
175-601-204	10-32 UNF	1/4"	2.00"	.29"	1.30"
175-601-206	1/4-28 UNF	1/4"	2.00"	.29"	1.30"
175-601-210	1/4-28 UNF	5/16"	2.25"	.34"	1.44"
175-601-208	5/16-24 UNF	1/4"	2.00"	.29"	1.30"
175-601-212	5/16-24 UNF	5/16"	2.25"	.34"	1.44"
175-601-216	5/16-24 UNF	3/8"	2.50"	.44"	1.63"
175-601-214	3/8-24 UNF	5/16"	2.25"	.34"	1.44"
175-601-218	3/8-24 UNF	3/8"	2.50"	.44"	1.63"
175-601-222	3/8-24 UNF	7/16"	2.88"	.50"	1.88"
175-601-487	3/8-24 UNF	1/2"	3.00"	.57"	1.88"
175-601-220	7/16-20 UNF	3/8"	2.50"	.44"	1.63"
175-601-226	1/2-20 UNF	7/16"	2.88"	.50"	1.88"
175-601-230	1/2-20 UNF	1/2"	3.00"	.57"	1.88"

Length is from center of pin to end of barrel.





VLD/LD Mounting (fits grooved conduit fitting)

Part Number

ST3652

Strap Clamps and Shims



Use With	Strap	Shim
VLD	161-011-001	175-435-050
LD	161-011-002	175-435-051

Compression Springs (for brake cables)



Part Number	Inside Dia.	Outside Dia.	Length	Solid Height	Spring Rate
175-923-001	.30	.437	12.0	4.60	3.93 lb/inch
175-923-002	.30	.437	6.4	3.20	5.75 lb/inch
175-923-006	.30	.437	5.7	2.87	6.23 lb/inch
175-924-001	.26	.437	10.0	6.62	15.97 lb/inch
175-925-003	.40	.500	4.3	1.00	4.47 lb/inch



Adapter Ring

Part Number	For Use With Cable Size
175-435-072	VLD
175-435-081	LD
175-435-082	MD

Bellows (trim to length)

Part Number	For Use With Cable Size	Compressed Length	Extended Length	Max Travel
175-522-001	VLD	3.0"	8.0	6.0"
175-524-002	LD	3.4"	9.7	6.0"
175-525-001	MD	4.5"	11.3	6.0"

Maximum recommended is shown.

Must be trimmed shorter for use on shorter travel cables.

See cutting matrix #CC-111. Adapter rings to mount bellows to conduit fittings.

Spring Return Kit



Convert any LD size, 2" travel threaded swivel end to spring loaded to extended position.

Force with end rod extended - 4.6 lb

Force with end rod retracted - 15.2 lb

Part Numbers	
Spring	175-930-001
Collar	175-435-118
Outer Guide	160-071-025

Umbrella Seal



Part Number	For Use With Cable Size
160-071-005	VLD, 2"
160-071-006	VLD, 3"
160-071-007	VLD, 4"
160-071-008	LD, 2"
160-071-009	LD, 3"
160-071-010	LD, 4"
160-071-011	MD, 2"
160-071-012	MD, 3"
160-071-013	MD, 4"