

- Solid metal construction
- Pilot friendly knobs
- Lifetime lubrication
- Superior low friction conduit
- Custom controls available

## Metal Construction

Unlike the controls of our competitors that use plastic, McFarlane control fittings and components are made from stainless steel, plated steel, anodized aluminum, and brass. All critical swage connections are metal for continued dependability. Our Vernier controls feature locking devices that are precision formed and heat treated in all critical wear areas.

## A Superior Conduit System

McFarlane Aviation's unique conduit has always been the heart of our controls. The conduit is made from carbon steel wire that has been specially formed for increased strength and to give a smooth inside diameter. Two of these specially formed wires are coiled in tandem for increased tensile strength without sacrificing flexibility. A Teflon jacket extruded over the coiled housing provides additional strength and wear resistance to chafing. A virgin Teflon® liner occupies the center of the conduit to reduce friction and ensure reliable operation at all temperature extremes. This system gives our controls good flexibility and smooth low friction operation even when routed with multiple tight bends. The tandem long lay coiling gives our controls good tensile strength and a solid feel under heavy push loads without sacrificing flexibility.

## Knobs Make a Difference

Our "pilot friendly" knobs are all compression molded from a reinforced phenolic or a reinforced melamine-phenol resin. Unlike the soft injection molded knobs of our competitors, our knobs are hard and thermally stable. They resist scratching and do not deteriorate with age. The McFarlane knobs meet the latest F.A.R. requirements for shape and color.

## Vibration Dampening Features

The McFarlane metal swivel joints have a unique Viton® rubber vibration dampening sleeve with a spring load system that dampens engine induced vibration in the push rod guide tube and metal swivel joint. Molded Viton® boots are also used on the push rod guides to seal out contaminants. The Viton® rubber withstands the high temperature of the engine environment while resisting degradation from oil and solvents. This system drastically reduces the vibration fretting and wear that leads to premature control failure.

## Special Lubrication

During assembly, the McFarlane controls have a special lifetime lubrication applied to critical sliding surfaces. This molybdenum disulfide and Teflon® based lubricant with a synthetic grease base has been specially formulated to reduce friction and prevent galling and contamination locking of the control components from -70° F to over 1000° F. This lubricant is available only in McFarlane Aviation controls.

## Consistent Quality

The assembly of McFarlane engine controls is interrupted many times for inspections of all critical elements to ensure only the highest quality controls are produced. Each inner wire swage, each push rod, each conduit fitting and terminal is inspected by our assembly team. As a further measure of quality, a second inspector also checks each critical detail to make sure only controls of the highest quality pass inspection. Attention is given to every detail at McFarlane Aviation. For instance, we verify the torque required to operate every Vernier control to ensure it operates properly and has that smooth feel our customers have come to expect.

## Tough in any Environment

The McFarlane controls have had an outstanding performance and reliability record in all environments. Bush pilots like our controls because they work freely at 50° below zero and have been proven in harsh salt-water environments. Temperatures approaching the melting point of the steel components cannot stop the McFarlane controls from functioning. We have tested our controls in the harshest environments to ensure that they will provide a long reliable service life for the most demanding engine installations.

## Time Tested

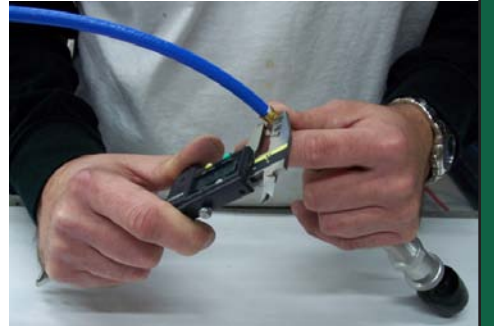
With over 25 years of experience building aircraft engine controls and with thousands of units in airplanes flying on every continent (yes, even Antarctica), McFarlane controls have a proven track record and are universally recognized for their high quality.

## Recommended Service Life

Due to the criticalness of engine controls and considering their operating environment the maximum recommended in service time for McFarlane engine controls is equal to the maximum time between engine overhauls as recommended by the engine manufacturer.

## Custom Controls

Custom engine controls can be manufactured for aircraft not listed in the approved application charts. All McFarlane custom control cables are built to customer provided specifications. McFarlane custom engine controls duplicate the original customer supplied controls in regard to length, thread size and pitch, wear sleeve locations, diameter and travel length. McFarlane custom controls are manufactured to the same standards using the same materials, rigorous testing and inspections as our FAA-PMA products; however, custom controls are not FAA-PMA approved.



**Throttle, Mixture, and Propeller Controls**

- Solid metal construction
- Pilot friendly knobs
- Lifetime lubrication
- Superior low friction conduit

**Carb Heat Controls**

**Longer life and up to 40% off OEM list price!**

- High temperature Teflon lined conduit for reduced vibration wear, longer life and smooth, consistent control
- Cheap controls with poly liners will not tolerate engine temperatures
- Special heavier wire for more fatigue strength and reliability
- Improved friction mechanism
- High quality scratch resistant phenolic knob
- Updated square knob meets the latest FAA standards



Photo courtesy of Dean Zinter 1956 Cessna 172 TD

**The most often replaced Cessna part just got better and now costs less!**

**McFarlane rod ends and wire clamps sold separately!**

Model	Serial Number	Throttle Control	Propeller Control	Mixture Control	Cowl Flap Left Hand	Cowl Flap Right Hand	Carb Heat Control
		Rod End	Rod End	Rod End or Wire Clamp			Wire Clamp
120	8003 thru 15075	MC0411091-7 MCS1104-3 <b>2</b> Rod End		MC600-72 <b>4</b> Wire Clamp N/A			Control N/A MCS2323-1 Wire Clamp
140 <b>1</b>	8001 thru 11846	MC0411091-7 MCS1104-3 <b>2</b> Rod End		MC600-72 <b>4</b> Wire Clamp N/A			Control N/A MCS2323-1 Wire Clamp
140 <b>1</b> , 140A	11847 thru 15724	MC0411091-7 MCS1104-3 <b>2</b> Rod End		MC600-72 <b>4</b> Wire Clamp N/A			MCS2323-1 Wire Clamp MC0411090-4CH <b>3</b> MCS2323-1 Wire Clamp
150 <b>1</b>	17001 thru 17683	MC0411091-7 MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-6 Wire Clamp			Control N/A MCS2323-1 Wire Clamp
150 <b>1</b>	17684 thru 59018	MC0411091-7 MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-6 Wire Clamp			MCS2323-1 Wire Clamp MC0713302-5CH <b>3</b> MCS2323-1 Wire Clamp
150A,B,C,D,E,F	All	MCS1222-11S MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-6 Wire Clamp			MCS1230-2 MCS2323-1 Wire Clamp
150G	All	MCS1222-14S MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-6 Wire Clamp			MCS1230-2 MCS2323-1 Wire Clamp
150H,J,K,L	All	MCC299505-0202S MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-6 Wire Clamp			MCS1230-19 MCS2323-1 Wire Clamp
150M	All	MCC299505-0202S MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-12 Wire Clamp			MCS1230-19 MCS2323-1 Wire Clamp
A150K,L	All	MCC299505-0202S MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-6 Wire Clamp			MCS1230-19 MCS2323-1 Wire Clamp
A150M	All	MCC299505-0202S MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-12 Wire Clamp			MCS1230-19 MCS2323-1 Wire Clamp
F150F	All	MCS1222-11S MCS1104-3 Rod End		Control N/A MCS2323-6 Wire Clamp			MCS1230-2 MCS2323-1 Wire Clamp
F150G	All	MCS1222-14S MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-6 Wire Clamp			MCS1230-2 MCS2323-1 Wire Clamp
F150H,J,K,L	All	MCC299505-0202S MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-6 Wire Clamp			MCS1230-19 MCS2323-1 Wire Clamp
F150M	All	MCC299505-0202S MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-12 Wire Clamp			MCS1230-19 MCS2323-1 Wire Clamp
FA150K,L <b>1</b>	FA1500001 thru FA1500120	MCC299505-0202S MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-6 Wire Clamp			MCS1230-19 MCS2323-1 Wire Clamp
FA150L <b>1</b>	FA1500121 thru FA1500261	MCC299505-0202S MCS1104-3 Rod End		Control N/A MCS2323-6 Wire Clamp			Control N/A MCS2323-1 Wire Clamp
FA150M	FA1500262 thru FA1500336	MCC299505-0202S MCS1104-3 Rod End		Control N/A MCS2323-12 Wire Clamp			Control N/A MCS2323-1 Wire Clamp
FRA150L,M <b>1</b>	FRA1500121 thru FRA1500311	MCC299505-0202S MCS1104-3 Rod End		Control N/A MCS2323-12 Wire Clamp			MCS1230-19 MCS2323-1 Wire Clamp
FRA150M <b>1</b>	FRA1500312 thru FRA1500336	Control N/A MCS1104-3 Rod End		Control N/A MCS2323-12 Wire Clamp			MCS1230-19 MCS2323-1 Wire Clamp
152 <b>1</b>	15279406 thru 15282031	MC9863053-20 MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-13 Wire Clamp			MCS1230-19 MCS2323-5 Wire Clamp
152 <b>1</b>	15282032 thru 15285939	MC9863056-1 MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-13 Wire Clamp			MCS1230-19 MCS2323-5 Wire Clamp
152 <b>1</b>	15285940 thru 15286033	MC9863056-1 MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-13 Wire Clamp			Control N/A MCS2323-5 Wire Clamp
A152 <b>1</b>	A1520735 thru A1520808	MC9863053-20 MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-13 Wire Clamp			MCS1230-19 MCS2323-5 Wire Clamp
A152 <b>1</b>	A1520809 thru A1521049	MC9863056-1 MCS1104-3 Rod End		MC600-72 <b>4</b> MCS2323-13 Wire Clamp			MCS1230-19 MCS2323-5 Wire Clamp

**1** Partial model eligibility.  
**2** If replacing P/N S1186-1 or P/N 0550158 also order RE-KT-1 hardware kit.  
**3** Eligible for use as a carburetor heat control only.  
**4** P/N MC600-72 is a vernier control. Installation is approved as a minor alteration (No STC or Form 337) and may require enlarging the instrument panel mounting hole to 3/4" diameter.

# Push-Pull Controls and Accessories

## Engine, Cowl Flap & Carb Heat Controls - Cessna

Model	Serial Number	Throttle Control		Propeller Control		Mixture Control		Cowl Flap Control		Cowl Flap Right Hand		Carb Heat Control	
		Rod End	Rod End	Rod End	Rod End	Rod End or Wire Clamp	Rod End or Wire Clamp	Left Hand	Right Hand	Wire Clamp	Wire Clamp		
F152 <sup>1</sup>	F15201429 thru F15201528	MC9863053-20				MC600-72 <sup>4</sup>						MCS1230-19	
		MCS1104-3 Rod End				MCS2323-13 Wire Clamp						MCS2323-5 Wire Clamp	
F152 <sup>1</sup>	F15201529 thru F15201952	MC9863056-1				MC600-72 <sup>4</sup>						MCS1230-19	
		MCS1104-3 Rod End				MCS2323-13 Wire Clamp						MCS2323-5 Wire Clamp	
F152 <sup>1</sup>	F15201953 thru F15201980	MC9863056-1				MC600-72 <sup>4</sup>						Control N/A	
		MCS1104-3 Rod End				MCS2323-13 Wire Clamp						MCS2323-5 Wire Clamp	
FA152 <sup>1</sup>	FA1520337 thru FA1520347	MC9863053-20				MC600-72 <sup>4</sup>						MCS1230-19	
		MCS1104-3 Rod End				MCS2323-13 Wire Clamp						MCS2323-5 Wire Clamp	
FA152 <sup>1</sup>	FA1520348 thru FA1520387	MC9863056-1				MC600-72 <sup>4</sup>						MCS1230-19	
		MCS1104-3 Rod End				MCS2323-13 Wire Clamp						MCS2323-5 Wire Clamp	
FA152 <sup>1</sup>	FA1520388 thru FA1520425	MC9863056-1				MC600-72 <sup>4</sup>						Control N/A	
		MCS1104-3 Rod End				MCS2323-13 Wire Clamp						MCS2323-5 Wire Clamp	
170	All	MC0411091-2				MC600-72 <sup>4</sup>						MC0411090-4CH <sup>3</sup>	
		Rod End N/A				MCS2323-2 Wire Clamp						MCS2323-1 Wire Clamp	
170A	All	MC0411091-2				MC600-72 <sup>4</sup>						MC0411090-4CH <sup>3</sup>	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-1 Wire Clamp	
170B <sup>1</sup>	20267 thru 25372	MC0411091-2				MC600-72 <sup>4</sup>						MC0411090-4CH <sup>3</sup>	
		Rod End				Wire Clamp N/A						MCS2323-1 Wire Clamp	
170B <sup>1</sup>	25373 thru 27169	MCS1222-2S <sup>5</sup>				MC600-72 <sup>4</sup>						MC0411090-22CH <sup>3</sup>	
		Rod End				Wire Clamp N/A						MCS2323-1 Wire Clamp	
172 <sup>1</sup>	28000 thru 36965	MCS1222-2S				MC600-72 <sup>4</sup>						MC0411090-22CH <sup>3</sup>	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-1 Wire Clamp	
172 <sup>1</sup>	36966 thru 46754	MCS1222-2S				MC600-72 <sup>4</sup>						MC0713302-5CH <sup>3</sup>	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-1 Wire Clamp	
172A	All	MCS1222-2S				MC600-72 <sup>4</sup>						MC0713302-5CH <sup>3</sup>	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-1 Wire Clamp	
172B,C	All	MCS1222-2S				MC600-72 <sup>4</sup>						MCS1224-4	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-5 Wire Clamp	
172D	All	MCS1222-2S				MC600-72 <sup>4</sup>						Control N/A	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-5 Wire Clamp	
172E,F	All	MCS1222-15S				MC600-72 <sup>4</sup>						MCS1224-4	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-5 Wire Clamp	
172G,H	All	MCS1222-15S				MC600-72 <sup>4</sup>						MCS1230-7	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-5 Wire Clamp	
172I,K,L,M <sup>1</sup>	17256513 thru 17263458	MCC299505-0102				MC600-72 <sup>4</sup>						MCS1230-17	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-5 Wire Clamp	
172M <sup>1</sup>	17263459 thru 17267584	MCC299505-0102				MC600-72 <sup>4</sup>						MCS1230-17	
		Rod End				MCS2323-13 Wire Clamp						MCS2323-5 Wire Clamp	
172N <sup>1</sup>	17267585 thru 17271034	MC9863053-15				MC600-72 <sup>4</sup>						MCS1230-17	
		Rod End				MCS2323-4 Wire Clamp						MCS2323-5 Wire Clamp	
172N <sup>1</sup>	17271035 thru 17274009	MC9863056-3				MC600-72 <sup>4</sup>						MCS1230-17	
		Rod End				MCS2323-4 Wire Clamp						MCS2323-5 Wire Clamp	
172P	17274010 thru 17276654	MC9863056-3				MC600-72 <sup>4</sup>						MCS1230-17	
		Rod End				MCS2323-13 Wire Clamp						MCS2323-5 Wire Clamp	
172Q	All	MC9863056-3				MC600-72 <sup>4</sup>						MCS1241-49	
		Rod End				MCS2323-4 Wire Clamp						MCS2323-5 Wire Clamp	
172R,S	All	MC565-549-021				MC565-548-041							
		Rod End				MCS1104-3 Rod End							
172RG	All	MC9863056-8			MC345-085-9	MC600-72 <sup>4</sup>						Control N/A	
		Rod End			Rod End	MCS2323-11 Wire Clamp						MCS2323-7 Wire Clamp	
F172D	All	MCS1222-2S				MC600-72 <sup>4</sup>						Control N/A	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-5 Wire Clamp	
F172E,F	All	MCS1222-15S				MC600-72 <sup>4</sup>						MCS1224-4	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-5 Wire Clamp	
F172G,H <sup>1</sup>	F172-0180 thru F172-0559	MCS1222-15S				MC600-72 <sup>4</sup>						MCS1230-7	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-5 Wire Clamp	
F172H <sup>1</sup> ,K	F172-0560 thru F17200804	MCC299505-0203S				MC600-72 <sup>4</sup>						MCS1230-17	
		Rod End				MCS2323-2 Wire Clamp						MCS2323-5 Wire Clamp	
F172L,M <sup>1</sup>	F17200805 thru F17201034	MCC299505-0203S				MC600-72 <sup>4</sup>						MCS1230-17	
		Rod End				MCS2323-2 Wire Clamp						Wire Clamp N/A	
F172M <sup>1</sup>	F17201035 thru F17201234	MCC299505-0102				MC600-72 <sup>4</sup>							
		Rod End				MCS2323-2 Wire Clamp							
F172M <sup>1</sup>	F17201235 thru F17201514	MCC299505-0102				MC600-72 <sup>4</sup>						MCS1230-17	
		Rod End				MCS2323-13 Wire Clamp						MCS2323-5 Wire Clamp	
F172N <sup>1</sup>	F17201515 thru F17201749	MC9863053-15				MC600-72 <sup>4</sup>						MCS1230-17	
		Rod End				MCS2323-4 Wire Clamp						MCS2323-5 Wire Clamp	
F172N <sup>1</sup>	F17201750 thru F17202039	MC9863056-3				MC600-72 <sup>4</sup>						MCS1230-17	
		Rod End				MCS2323-4 Wire Clamp						MCS2323-5 Wire Clamp	
F172P	F17202040 thru F17202254	MC9863056-3				MC600-72 <sup>4</sup>						MCS1230-17	
		Rod End				MCS2323-13 Wire Clamp						MCS2323-5 Wire Clamp	
FP172	All	MCS1222-4			MCC299506-0105	Control N/A						Control N/A	
		Rod End			Rod End	MCS2323-4 Wire Clamp						MCS2323-5 Wire Clamp	
FR172E	All	Control N/A			MCS1223-17	Control N/A							
		Rod End			Rod End	MCS1104-3 Rod End							
FR172F,G,H,J <sup>1</sup>	FR1720061 thru FR17200530	MCC299505-0204S			MCC299506B0104	Control N/A							
		Rod End			Rod End	MCS1104-3 Rod End							
FR172J <sup>1</sup>	FR17200531 thru FR17200590	MCC299505-0204S			MCC299506B0104	MC9862066-6							
		Rod End			Rod End	MCS1104-3 Rod End							

<sup>1</sup> Partial model eligibility.  
<sup>2</sup> If replacing P/N S1186-1 or P/N 0550158 also order RE-KT-1 hardware kit.  
<sup>3</sup> Eligible for use as a carburetor heat control only.  
<sup>4</sup> P/N MC600-72 is a vernier control. Installation is approved as a minor alteration (No STC or Form 337) and may require enlarging the instrument panel mounting hole to 3/4" diameter.  
<sup>5</sup> The original Cessna adapter P/N 0513004-16 must be used to angle the control and avoid interference behind the instrument panel.

## Push-Pull Controls and Accessories

### Engine, Cowl Flap & Carb Heat Controls - Cessna

Push Pull Controls and Accessories

Model	Serial Number	Throttle Control	Propeller Control	Mixture Control	Cowl Flap Left Hand	Cowl Flap Right Hand	Carb Heat Control
		Rod End	Rod End	Rod End or Wire Clamp			Wire Clamp
FR172K <sup>4</sup>	FR17200591 thru FR17200630	MC9863053-10 MCS1104-3 Rod End	MCC299506B0104 MCS1104-3 Rod End	MC9862066-6 MCS1104-3 Rod End	MCS1391-26 (one per aircraft)		
FR172K <sup>1</sup>	FR17200631 thru FR17200675	MC9863055-10 MCS1104-3 Rod End	MCC299506B0104 MCS1104-3 Rod End	MC9862066-6 MCS1104-3 Rod End	MCS1391-26 (one per aircraft)		
P172D	All	MCS1222-4 MCS1106-4 Rod End	MCC299506-0105 MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp			MCS1224-4 MCS2323-5 Wire Clamp
R172K <sup>1,4</sup>	R1722000 thru R1722929	MC9863053-10 MCS1104-3 Rod End	MCC299506B0104 MCS1104-3 Rod End	MC9862066-6 MCS1104-3 Rod End	MCS1391-26 (one per aircraft)		
R172K <sup>1</sup>	R1722930 thru R1723454	MC9863055-10 MCS1104-3 Rod End	MCC299506B0104 MCS1104-3 Rod End	MC9862066-6 MCS1104-3 Rod End	MCS1391-26 (one per aircraft)		
175 <sup>1</sup>	55001 thru 55703	MC0411091-27 MCS1106-4 Rod End	Control N/A MCS1104-3 <sup>2</sup> Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp			MC0411090-22CH <sup>3</sup> MCS2323-5 Wire Clamp
175 <sup>1</sup>	55704 thru 56238	MC0411091-30 MCS1106-4 Rod End	Control N/A MCS1104-3 <sup>2</sup> Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp			MC0713302-5CH <sup>3</sup> MCS2323-5 Wire Clamp
175A	All	MCS1222-4 MCS1106-4 Rod End	Control N/A MCS1104-3 <sup>2</sup> Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp			MC0713302-5CH <sup>3</sup> MCS2323-5 Wire Clamp
175B,C	All	MCS1222-4 MCS1106-4 Rod End	Control N/A MCS1104-3 <sup>2</sup> Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp			MCS1224-4 MCS2323-5 Wire Clamp
177	All	MCS1222-19 MCS1104-3 Rod End	Control N/A MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-2 Wire Clamp			MCS1788-2 Wire Clamp N/A
177A	All	MCC299505-0301 MCS1104-3 Rod End	Control N/A MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp			MCS1230-19 MCS2323-5 Wire Clamp
177B <sup>1</sup>	17701371 thru 17702539	MCC299505-0301 MCS1104-3 Rod End	MCC299506-0105 MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MCS1391-25	MCS1391-26	MCS1230-19 MCS2323-5 Wire Clamp
177B <sup>1</sup>	17702540 thru 17702752	MCS65-549-013 MCS1104-3 Rod End	MC345-085-4 MCS1104-3 Rod End	MC600-72 <sup>6</sup> Wire Clamp N/A	MCS1391-25	MCS1391-26	MCS1230-19 MCS2323-5 Wire Clamp
177RG <sup>1</sup>	177RG0001 thru 177RG1051	MCC299505-0401 MCS1104-3 Rod End	MCC299506-0105 MCS1104-3 Rod End	MCS299507-0102 MCS1104-3 Rod End	MCS1391-27	MCS1391-27	
177RG <sup>1</sup>	177RG1052 thru 177RG1366	Control N/A MCS1104-3 Rod End	MC345-085-4 MCS1104-3 Rod End	Control N/A MCS1104-3 Rod End	MCS1391-27	MCS1391-27	
F177RG <sup>1</sup>	F177RG0001 thru F177RG0160	MCC299505-0401 MCS1104-3 Rod End	MCC299506-0105 MCS1104-3 Rod End	MCS299507-0102 MCS1104-3 Rod End			
F177RG <sup>1</sup>	F177RG0161 thru F177RG0177		MC345-085-4 Rod End N/A				
180 <sup>1</sup>	30000 thru 32150	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 <sup>2</sup> Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MC0713041-1 or MC0713041-1B <sup>7</sup> (Dual control, one per aircraft)		MC0411090-22CH <sup>3</sup> MCS2323-5 Wire Clamp
180 <sup>1</sup>	32151 thru 32160	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 <sup>2</sup> Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MC0713041-1 or MC0713041-1B <sup>7</sup> (Dual control, one per aircraft)		Control N/A MCS2323-5 Wire Clamp
180 <sup>1</sup> , 180A	32161 thru 50355	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 <sup>2</sup> Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MC0713041-1 or MC0713041-1B <sup>7</sup> (Dual control, one per aircraft)		MC0713050-2 MCS2323-5 Wire Clamp
180B	50356 thru 50661	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 <sup>2</sup> Rod End	MC0713050-2 <sup>6,3</sup> MCS2323-4 Wire Clamp	MC0713041-1 or MC0713041-1B <sup>7</sup> (Dual control, one per aircraft)		MC0713050-2 MCS2323-5 Wire Clamp
180C	All	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 <sup>2</sup> Rod End	MC0713050-2 <sup>6,3</sup> MCS2323-4 Wire Clamp	MC0713306-1 (Dual control, one per aircraft)		MC0713302-5CH <sup>3</sup> MCS2323-5 Wire Clamp
180D,E	All	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 <sup>2</sup> Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MCS1245-1	MCS1245-2	MC0713302-5CH <sup>3</sup> MCS2323-5 Wire Clamp
180F	All	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MCS1245-1	MCS1245-2	MCS1230-2 MCS2323-5 Wire Clamp
180G	All	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MCS1245-3	MCS1245-2	MCS1230-2 MCS2323-5 Wire Clamp
180H <sup>1</sup>	18051446 thru 18051875	MCS1222-13S MCS1106-4 Rod End	MCS1223-5 MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MCS1572-1	MCS1245-2	MCS1230-2 MCS2323-5 Wire Clamp
180H <sup>1</sup> , J	18051876 thru 18052770	MCC299505-0201S MCS1106-4 Rod End	MCC299506-0103 MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MCS1572-1	MCS1245-2	MCS1230-19 MCS2323-5 Wire Clamp
180K <sup>1</sup>	18052771 thru 18053000	MC9863053-5 MCS1106-4 Rod End	MC345-085-3 MCS1104-3 Rod End	Control N/A MCS2323-4 Wire Clamp	MC9860074-3	MC9860074-4	MCS1230-19 MCS2323-5 Wire Clamp
180K <sup>1</sup>	18053001 thru 18053203	MC9863055-9 MCS1106-4 Rod End	MC345-085-3 MCS1104-3 Rod End	Control N/A MCS2323-4 Wire Clamp	MC9860074-3	MC9860074-4	MCS1230-19 MCS2323-5 Wire Clamp
182	All	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 <sup>2</sup> Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp			Control N/A MCS2323-5 Wire Clamp
182A	All	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 <sup>2</sup> Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp			MC0411090-22CH <sup>3</sup> MCS2323-5 Wire Clamp
182B,C	All	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 <sup>2</sup> Rod End	MC0713050-2 <sup>6,3</sup> MCS2323-4 Wire Clamp	MC0713306-1 (Dual control, one per aircraft)		MC0713302-5CH <sup>3</sup> MCS2323-5 Wire Clamp
182D	All	MCS1222-1S MCS1106-4 Rod End	MCS1223-4 MCS1104-3 <sup>2</sup> Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MCS1245-1	MCS1245-2	MC0713302-5CH <sup>3</sup> MCS2323-5 Wire Clamp
182E,F,G	All	MCS1222-6S MCS1106-4 Rod End	MCS1223-3 MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MC9860058-3	MC9860058-4	MCS1230-3 MCS2323-5 Wire Clamp
182H,J,K	All	MCS1222-13S MCS1106-4 Rod End	MCS1223-6 MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MC9860058-3	MC9860058-4	MCS1230-3 MCS2323-5 Wire Clamp
182L,M,N <sup>1</sup>	18258506 thru 18260445	MCC299505-0201S MCS1106-4 Rod End	MCC299506-0102 MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 Wire Clamp
182N <sup>1</sup> , P <sup>1</sup>	18260446 thru 18261425	MCC299505-0201S MCS1106-4 Rod End	MCC299506-0102 MCS1104-3 Rod End	MC600-72 <sup>6</sup> MCS2323-4 Wire Clamp	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 Wire Clamp

<sup>1</sup> Partial model eligibility.

<sup>2</sup> If replacing P/N S1186-1 or P/N 0550158 also order RE-KT-1 hardware kit.

<sup>3</sup> Eligible for use as a carburetor heat control only.

<sup>4</sup> S/Ns FR17200591 thru FR17200620 and R1722000 thru R1722880 prop control is only eligible for installation if aircraft has been modified as per Cessna Service Letter 78-51.

<sup>5</sup> The MC600-72 control is an approved alternate control for this aircraft. See note <sup>6</sup>.

<sup>6</sup> P/N MC600-72 is a vernier control. Installation is approved as a minor alteration (No STC or Form 337) and may require enlarging the instrument panel mounting hole to 3/4" diameter.

<sup>7</sup> See page 15 for details.

# Push-Pull Controls and Accessories

## Engine, Cowl Flap & Carb Heat Controls - Cessna

Model	Serial Number	Throttle Control	Propeller Control	Mixture Control	Cowl Flap Left Hand	Cowl Flap Right Hand	Carb Heat Control
		Rod End	Rod End	Rod End or Wire Clamp			Wire Clamp
182P <sup>1</sup>	18261426 thru 18264835	MCC299505-0205 MCS1106-4 Rod End	MCC299506-0102 MCS1104-3 Rod End	MC600-72 <sup>2</sup>	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 Wire Clamp
182P <sup>1</sup>	18264836 thru 18265175	MC9863053-5 MCS1106-4 Rod End	MCC299506-0102 MCS1104-3 Rod End	MC600-72 <sup>2</sup> MCS2323-4 Wire Clamp	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 Wire Clamp
182Q <sup>1</sup>	18265176 thru 18266590	MC9863053-5 MCS1106-4 Rod End	MC9862067-3 MCS1104-3 Rod End	MC600-72 <sup>2</sup> MCS2323-4 Wire Clamp	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 Wire Clamp
182Q <sup>1</sup>	18266591 thru 18267715	MC9863055-9 MCS1106-4 Rod End	MC9862067-3 MCS1104-3 Rod End	MC600-72 <sup>2</sup> MCS2323-4 Wire Clamp	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 Wire Clamp
182R	All	MC9863055-9 MCS1106-4 Rod End	MC9862067-3 MCS1104-3 Rod End	MC600-72 <sup>2</sup> MCS2323-4 Wire Clamp	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 Wire Clamp
182S, 182T, T182T	All	MC565-549-031 MCS1104-3 Rod End	MC565-580-038 MCS1104-3 Rod End	MC565-548-042 MCS1104-3 Rod End	MC580-703-024	MC580-703-025	
A182J,K,L,N		Control N/A	Control N/A	Control N/A			
F182P	All	MCS1106-4 Rod End	MCS1104-3 Rod End	MCS2323-4 Wire Clamp			MCS2323-5 Wire Clamp
F182P	All	MC9863053-5 MCS1106-4 Rod End	MCC299506-0102 MCS1104-3 Rod End	MC600-72 <sup>2</sup> MCS2323-4 Wire Clamp			MCS1230-10 MCS2323-5 Wire Clamp
F182Q <sup>1</sup>	F18200026 thru F18200094	MC9863053-5 MCS1106-4 Rod End	MC9862067-3 MCS1104-3 Rod End	MC600-72 <sup>2</sup> MCS2323-4 Wire Clamp			MCS1230-10 MCS2323-5 Wire Clamp
F182Q <sup>1</sup>	F18200095 thru F18200169	MC9863055-9 MCS1106-4 Rod End	MC9862067-3 MCS1104-3 Rod End	MC600-72 <sup>2</sup> MCS2323-4 Wire Clamp			MCS1230-10 MCS2323-5 Wire Clamp
FR182 <sup>1</sup>	FR18200001 thru FR18200020	MC9863053-11 MCS1104-3 Rod End	MC345-085-5 MCS1104-3 Rod End	Control N/A MCS2323-11 Wire Clamp			MCS1230-10 MCS2323-1 Wire Clamp
FR182 <sup>1</sup>	FR18200021 thru FR18200045	MC9863056-6 MCS1104-3 Rod End	MC345-085-5 MCS1104-3 Rod End	Control N/A MCS2323-11 Wire Clamp			MCS1230-10 MCS2323-1 Wire Clamp
FR182 <sup>1</sup>	FR18200046 thru FR18200070	MC9863056-6 MCS1104-3 Rod End	MC345-085-8 MCS1104-3 Rod End	Control N/A MCS2323-11 Wire Clamp			MCS1230-10 MCS2323-1 Wire Clamp
R182 <sup>1</sup>	R18200001 thru R18200583	MC9863053-11 MCS1104-3 Rod End	MC345-085-5 MCS1104-3 Rod End	Control N/A MCS2323-11 Wire Clamp	MC9860075-3	MC9860075-4	MCS1230-10 MCS2323-1 Wire Clamp
R182 <sup>1</sup>	R18200584 thru R18201313	MC9863056-6 MCS1104-3 Rod End	MC345-085-5 MCS1104-3 Rod End	Control N/A MCS2323-11 Wire Clamp	MC9860075-3	MC9860075-4	MCS1230-10 MCS2323-1 Wire Clamp
R182 <sup>1</sup>	R18201314 thru R18202041	MC9863056-6 MCS1104-3 Rod End	MC345-085-8 MCS1104-3 Rod End	Control N/A MCS2323-11 Wire Clamp	MC9860075-3	MC9860075-4	MCS1230-10 MCS2323-1 Wire Clamp
T182	All	MC9863056-7 Rod End N/A	MC345-085-8 MCS1104-3 Rod End	Control N/A MCS2323-11 Wire Clamp	MC9860075-3	MC9860075-4	Control N/A MCS2323-3 Wire Clamp
TR182 <sup>1</sup>	R18200584 thru R18201313	MC9863056-7 MCS1104-3 Rod End	MC345-085-6 MCS1104-3 Rod End	Control N/A MCS2323-11 Wire Clamp	MC9860075-3	MC9860075-4	Control N/A MCS2323-3 Wire Clamp
TR182 <sup>1</sup>	R18201314 thru R18202041	MC9863056-7 MCS1104-3 Rod End	MC345-085-8 MCS1104-3 Rod End	Control N/A MCS2323-11 Wire Clamp	MC9860075-3	MC9860075-4	Control N/A MCS2323-3 Wire Clamp
185	All	MC1213228-3 MCS1104-3 Rod End	MCS1223-5 MCS1104-3 Rod End	MCS1220-4 MCS1104-3 Rod End	MCS1245-3	MCS1245-2	MCS1230-2 Wire Clamp N/A
185A,B,C,D,E	All	MCS1294-1 MCS1104-3 Rod End	MCS1223-5 MCS1104-3 Rod End	MCS1220-4 MCS1104-3 Rod End	MCS1572-1	MCS1245-2	MCS1230-2 Wire Clamp N/A
A185E <sup>1</sup>	185-0968 thru 185-1300	MCS1294-1 MCS1104-3 Rod End	MCS1223-5 MCS1104-3 Rod End	MCS1220-4 MCS1104-3 Rod End	MCS1572-1	MCS1245-2	MCS1230-2 Wire Clamp N/A
A185E <sup>1</sup>	185-1301 thru 18502007	MCC299505-0301 MCS1104-3 Rod End	MCC299506-0103 MCS1104-3 Rod End	MCC299507-0201 MCS1104-3 Rod End	MCS1572-1	MCS1245-2	
A185E <sup>1</sup>	18502008 thru 18502025	MCC299505-0501 MCS1104-3 Rod End	MCC299506-0201 MCS1104-3 Rod End	MCC299507-0401 MCS1104-3 Rod End	MCS1572-1	MCS1245-2	
A185E <sup>1</sup>	18502026 thru 18502027	MCC299505-0301 MCS1104-3 Rod End	MCC299506-0103 MCS1104-3 Rod End	MCC299507-0201 MCS1104-3 Rod End	MCS1572-1	MCS1245-2	
A185E <sup>1</sup>	18502028 thru 18502090	MCC299505-0501 MCS1104-3 Rod End	MCC299506-0201 MCS1104-3 Rod End	MCC299507-0401 MCS1104-3 Rod End	MCS1572-1	MCS1245-2	
A185F <sup>1</sup>	18502091 thru 18502310	MCC299505-0501 MCS1104-3 Rod End	MCC299506-0201 MCS1104-3 Rod End	MCC299507-0401 MCS1104-3 Rod End	MCS1572-1	MCS1245-2	
A185F <sup>1</sup>	18502311 thru 18503153	MCC299505-0501 MCS1104-3 Rod End	MCC299506-0201 MCS1104-3 Rod End	MCC299507-0401 MCS1104-3 Rod End	MCS1572-1	MCS1245-2	
A185F <sup>1</sup>	18503154 thru 18503683	MC9863053-17 MCS1104-3 Rod End	MC345-085-7 MCS1104-3 Rod End	MC9862066-3 MCS1104-3 Rod End	MC9860074-3	MC9860074-4	
A185F <sup>1</sup>	18503684 thru 18504448	MC9863056-5 MCS1106-3 Rod End	MC345-085-7 MCS1104-3 Rod End	MC9862066-3 MCS1104-3 Rod End	MC9860074-3	MC9860074-4	
188, 188A	All	MCS1391-18 MCS1104-3 Rod End	MCS1391-19 MCS1104-3 Rod End	MCS1220-13 MCS1104-3 Rod End			Control N/A MCS2323-5 Wire Clamp
188B, A-188B <sup>2</sup>	All	MCS2149-1 MCS1106-3 Rod End	MCS2149-2 MCS1106-3 Rod End	MCC299507-0301 MCS1106-3 Rod End			Control N/A MCS2323-5 Wire Clamp
A188 <sup>2</sup>	All	MCS1391-20 MCS1104-3 Rod End	MCS1391-19 MCS1104-3 Rod End	MCS1220-13 MCS1104-3 Rod End			Control N/A MCS2323-5 Wire Clamp
A188B <sup>1,2</sup>	18802349 thru 18802745 18802349T thru 18802745T	MCS2149-1 MCS1106-3 Rod End	MCS2149-2 MCS1106-3 Rod End	MCC299507-0301 MCS1106-3 Rod End			Control N/A MCS2323-5 Wire Clamp
A188B <sup>1,2</sup>	18802746 thru 18803973 18802746T thru 18803973T	MCC299508-0301 MCS1106-3 Rod End	MCC299508-0302 MCS1106-3 Rod End	MCC299508-0401 MCS1106-3 Rod End			Control N/A MCS2323-5 Wire Clamp
T188C	All	MCC299508-0303 MCS1106-3 Rod End	MCC299508-0304 MCS1106-3 Rod End	MCC299508-0402 MCS1106-3 Rod End			
190	All	MC0411091-4 MCS1106-3 <sup>2</sup> Rod End	MC0311031-1 MCS1104-3 <sup>2</sup> Rod End	Control N/A MCS1104-3 <sup>2</sup> Rod End			
195, 195A,B	All	MC0411091-4 MCS1106-3 <sup>2</sup> Rod End	MC0311031-2 MCS1104-3 <sup>2</sup> Rod End	Control N/A MCS1104-3 <sup>2</sup> Rod End			
210-5 (205) 210-5A (205A)	All	MCS1219-1 MCS1104-3 Rod End	MCS1223-17 MCS1104-3 Rod End	MCS1220-3 MCS1104-3 Rod End	MC9860074-5	MC9860074-31	

<sup>1</sup> Partial model eligibility.  
<sup>2</sup> If replacing P/N S1186-1 or P/N 0550158 also order RE-KT-1 hardware kit.  
<sup>3</sup> Controls not eligible for A188, A188A, or A188B with Continental O-470 engine.  
<sup>4</sup> P/N MC600-72 is a vernier control. Installation is approved as a minor alteration (No STC or Form 337) and may require enlarging the instrument panel mounting hole to 3/4" diameter.

Push Pull Controls and Accessories

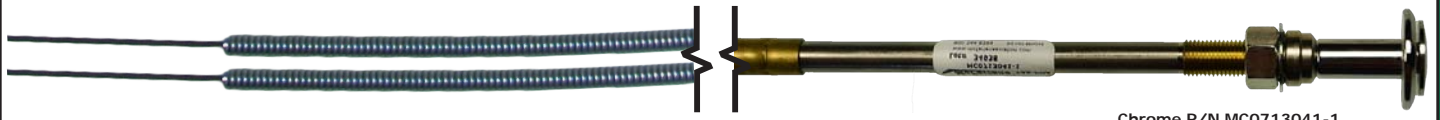
Model	Serial Number	Throttle Control		Propeller Control		Mixture Control		Cowl Flap Left Hand		Cowl Flap Right Hand		Carb Heat Control	
		Rod End	Rod End	Rod End	Rod End	Rod End or Wire Clamp	Rod End	Rod End	Rod End	Rod End	Rod End	Rod End	Wire Clamp
206	All	MCS1219-1	MCS1223-17	MCS1220-3									
206H	All	MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
		MCS565-549-041	MCS565-580-012	MCS565-548-043									
P206, P206A, B	All	MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
		MCS1222-10A	MCS1223-4	MCS1220-3									
P206C, D, E	All	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
T206H	All	MCS565-549-041	MCS565-580-012	MCS565-548-043									
TP206A	P2060161 thru P2060274	MCS1222-10A	MCS1223-4	MCS1220-3									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
TP206A, B	P2060275 thru P2060419	MCS1222-10A	MCS1223-4	MCS1220-3									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
TP206C, D, E	All	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
TU206A	U2060438 thru U2060617	MCS1222-10A	MCS1223-4	MCS1220-3									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
TU206A, B	U2060618 thru U206-0914	MCS1222-10A	MCS1223-4	MCS1220-3									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
TU206C, D, E, F	All	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
TU206G	U20603522 thru U20604649	MC9863053-13	MC9862067-1	MC9862066-1									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
TU206G	U20604650 thru U20607020	MC9863056-2	MC9862067-1	MC9862066-1									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
U206, U206A, B	All	MCS1222-10A	MCS1223-4	MCS1220-3									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
U206C, D, E	All	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
U206F	U20601701 thru U20602199	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
U206F	U20602200 thru U20603521	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
U206G	U20603522 thru U20604649	MC9863053-13	MC9862067-1	MC9862066-1									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
U206G	U20604650 thru U20607020	MC9863056-2	MC9862067-1	MC9862066-1									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
207, T207	All	MCS1222-25A	MCS1223-16	MCS1220-12A									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
207A	20700363 thru 20700482	MC9863053-16	MC9862067-12	MC9862066-5									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
207A	20700483 thru 20700788	MC9863056-4	MC9862067-12	MC9862066-5									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
210, 210A	All	MC1213228-2	MCS1223-17	MC1213229-1									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
210B, C, D	All	MCS1219-1	MCS1223-17	MCS1220-3									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
210E, F, G	All	MCS1222-10A	MCS1223-4	MCS1220-3									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
210H, J	All	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
210K	21059200 thru 21059240	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
210K, L	21059241 thru 21061573	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
210M	All	MC9863053-13	MC9862067-1	MC9862066-1									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
210N	All	MC9863056-2	MC9862067-1	MC9862066-1									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
210R	All	MCC299513-0101	Control N/A	Control N/A									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
P210N	P21000001 thru P21000150	MC9863053-13	MC9862067-1	MC9862066-1									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
P210N	P21000151 thru P21000834	MC9863056-2	MC9862067-1	MC9862066-1									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
P210R	All	MCC299513-0101	Control N/A	Control N/A									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
T210F	All	MCS1222-10A	MCS1223-4	MCS1220-3									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
T210G	All	MCS1222-10A	MCS1223-4	MCS1220-3									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
T210H, J	All	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
T210K	21059200 thru 21059240	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
T210K, L	21059241 thru 21061573	MCC299505-0101	MCC299506-0101	MCC299507-0101									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
T210M	All	MC9863053-13	MC9862067-1	MC9862066-1									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
T210N	All	MC9863056-2	MC9862067-1	MC9862066-1									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									
T210R	All	MCC299513-0101	Control N/A	Control N/A									
		MCS1104-3 Rod End	MCS1104-3 Rod End	MCS1104-3 Rod End									

Partial model eligibility.

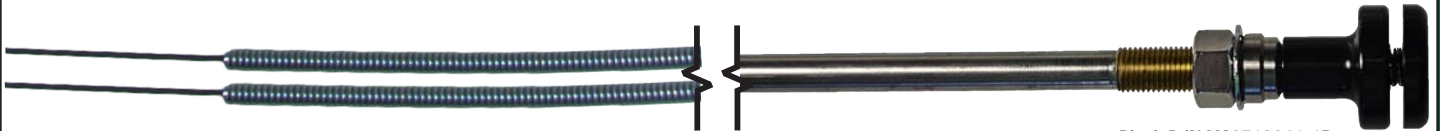
**Dual Cowl Flap Controls for Cessna Aircraft**

Models 180, 180A and 180B

- Solid wire ends
- Choose a chrome or black knob to match your panel!



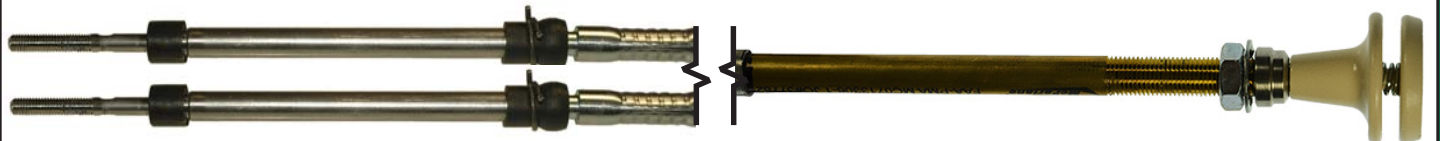
Chrome P/N MC0713041-1



Black P/N MC0713041-1B

Models 180C, 182B and 182C

- Higher locking force than the original prevents cowl flap slippage
- Superior low friction Teflon lined conduit to reduce wear
- Heavier inner wire and conduit mean less deflection under load
- Powder coated aluminum knob for a durable finish
- Push rod ends
- P/N MC0713306-1



**Starter Control Cable**

P/N 0513142-14

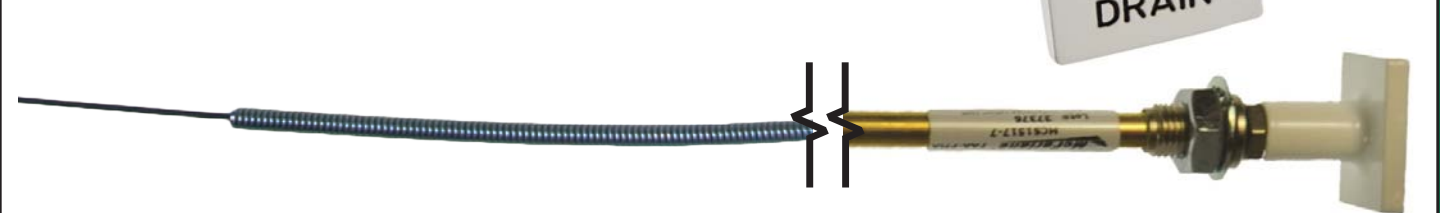
- Fits some earlier model Cessna aircraft
- Manufactured by Cessna
- Panel Mounted



**Fuel Strainer Drain Cables**

*No more plastic knobs in the engine compartment*  
 MCS1517 Series

- Improved aluminum knob with easier to read lettering
- Stainless steel conduit for improved corrosion resistance
- Larger wire diameter for increased strength and wear resistance



See pages 47-48 for eligibility and fuel strainer kits.

**Vacuum Pump Wrench**

Finally a vacuum pump wrench that can get into those really tight spots!

P/N TOOL133 (use for small pumps)

P/N TOOL133-L (use for large pumps)

A different wrench for the two sizes of pumps (one wrench can't do both pumps well)

- Heat treated tool steel
- Precision made
- 1/4" square drive
- Black oxide finish
- Torque wrench friendly



**Cabin Environment and Fuel Shut Off Controls for Cessna Aircraft**

- Special, heavier wire for more fatigue strength and reliability
- Improved push-to-unlock mechanism - more holding strength
- Longer life
- High temperature Teflon lined conduit
- Reduced vibration wear
- Most knobs match originally equipped knobs



Aircraft	Serial Number	Part Number	Aux Cabin Air	Cabin Air	Cabin Air LH	Cabin Air RH	Cabin Heat	Cabin Vent.	Cold Air	Defrost	Fuel Shut Off	Fuel Valve	Fwd Air
180F,G,H	18051184 thru 18051875	MCS1241-1					•						
182E,F,G,H,J,K	All	MCS1241-1		•									
182L,M,N	18258506 thru 18260445	MCS1241-27		•									
182N,P,Q,R,S,T	18260446 and On	MCS1241-34					•						
F182P,Q, FR182	All	MCS1241-34					•						
R182, T182, T182T ,TR182	All	MCS1241-34					•						
185, 185A	185-0001 thru 185-0413	MCS1241-1					•						
185A,B	185-0414 thru 185-0653	MCS1241-1					•					•	
185C	All	MCS1241-1					•						
185D,E	All	MCS1241-1					•						
	185-0968 thru 185-1300	MCS1241-1					•						
A185E	185-1301 thru 185-1599	MCS1241-27									•		
	18501600 thru 18501679	MCS1241-34									•		
188B	18800986 thru 18801824	MCS1241-34						•					
	18801825 thru 18802348	MCS1241-34	•										
	18800986 thru 18801824T	MCS1241-34						•					
A188B, A188B (w/large hopper)	18801825 thru 18802348T	MCS1241-34	•										
	18802349 thru 18802745T	MCS1241-34	•						•				
	18802746 thru 18803973T	MCS1241-34							•				
T188C	All	MCS1241-34							•				
210-5(205)	205-0001 thru 205-0126	MCS1241-1	•	•		•	•						
	205-0127 and On	MCS1241-1	•	•	•	•	•						
206	All	MCS1241-1	•	•			•						
206H	20600001 thru 20608082	MCS1241-34		•			•						
	20608083 and On	MCS1241-34		•			•			•			
P206, P206A,B	All	MCS1241-1	•	•			•						
P206C,D	All	MCS1241-27	•	•			•						
P206E	U20601445 thru U20601587	MCS1241-34		•			•						
	T20608001 thru T20608146	MCS1241-34		•			•						
T206H	T20608147 and On	MCS1241-34		•			•			•			
TP206A,B	All	MCS1241-1		•			•						
TP206C	All	MCS1241-27	•	•			•						
TP206D,E	All	MCS1241-27		•			•						
TU206A	All	MCS1241-1		•			•						
TU206B	All	MCS1241-1	•	•			•						
TU206C,D	All	MCS1241-27	•	•			•						
TU206E,F	U20601445 thru U20602199	MCS1241-27		•			•						
TU206F	U20602200 thru U20603521	MCS1241-34		•			•						
TU206G	All	MCS1241-34		•			•			•			
U206	All	MCS1241-1		•			•						
U206A,B	All	MCS1241-1	•	•			•						
U206C,D	All	MCS1241-27	•	•			•						
U206E,F	All	MCS1241-34		•			•						
U206G	All	MCS1241-34		•			•				•		
207, T207	20100001 thru 20700148	MCS1241-27	•	•			•						
	20700149 thru 20700362	MCS1241-34		•			•						
207A, T207A	All	MCS1241-34		•			•			•			
210B	21057841 thru 21057940	MCS1241-1			•		•						
	21057941 thru 21058085	MCS1241-1					•						
210C	All	MCS1241-1					•						
210D	All	MCS1241-1					•						
210E	All	MCS1241-1	•	•			•						
210F	All	MCS1241-1	•	•			•						
210G	All	MCS1241-1	•	•			•						
210H,J	All	MCS1241-27	•	•			•						
210K,L,M,N,R	All	MCS1241-34		•			•						
P210N,R	All	MCS1241-34					•						•
T210F	All	MCS1241-1		•			•						
T210G	All	MCS1241-1	•	•			•						
T210H,J	All	MCS1241-27	•	•			•						
T210K,L,M,N,R	All	MCS1241-34		•			•						

Partial model eligibility



# Push-Pull Controls and Accessories Engine Controls - Piper

## Throttle, Mixture and Propeller Controls

- Solid metal construction
- Pilot friendly knobs
- Lifetime lubrication
- Superior low friction conduit

## Carb Heat and Alt Air Controls

**Longer life and save up to \$200.00**

- The most commonly replaced controls just got better!
- Special, heavier wire for more fatigue strength and reliability
- Improved friction mechanism
- Reduced vibration wear
- Anti-rotate feature to reduce stress on the inner wire
- High temperature Teflon lined conduit
- Realistic price



Push Pull Controls and Accessories

Model	Serial Number	Throttle Control	Propeller Control	Mixture Control	Carb Heat or Alt Air Control
PA-18, PA-18*105* (Special)	All			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-18*125* (Army L-21A)	All			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-18*135* (Army L-21B)	All			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-18*150*	All			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-18A, PA-18A*135*,A*150*	All			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-18AS*125*, AS*135*, AS*150*	All			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-18S, PA-18S*105*,S*125*,S*135*	All			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-18S *150*	1809001 thru 1809113			MC454-120 5 7 or MC600-72 3	MC454-120 3
PA-18S *150*	18-3771 thru 18-8309025			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-19, PA19S,L-18C	All			MC600-72	
PA-20, PA-20S	20-01 thru 20-811	MC455-139		MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-20, PA-20S	20-812 thru 20-1121	MC455-139		MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-20, PA-20S	20-1122 and On			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-20*115*, PA-20S*115*	20-01 thru 20-1121	MC455-139		MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-20*115*, PA-20S*115*	20-1122 and On			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-20*135*, PA-20S*135*	20-877 thru 20-1121	MC455-139		MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-20*135*, PA-20S*135*	20-1122 and On			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-22	All	MC455-139		MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-22-108	22-8000 and On	MC12693-04		MC454-120 5 7 or MC600-72 3	MC454-120 1
PA-22-135	22-534 thru 22-2377	MC455-139		MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-22-135	22-2379 thru 22-2424	MC455-139		MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-22-135	22-2378, 22-2425 thru 22-3217	MC12693-04		MC454-120 5 7 or MC600-72 3	MC454-120 3
PA-22-135	22-3219 thru 22-3386	MC12693-04		MC454-120 5 7 or MC600-72 3	MC454-120 3
PA-22S-135	22-534 thru 22-2377			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-22S-135	22-2379 thru 22-2424			MC454-120 5 7 or MC600-72 3	MC454-120 2
PA-22S-135	22-2378, 22-2425 thru 22-3217	MC12693-04		MC454-120 5 7 or MC600-72 3	MC454-120 3
PA-22S-135	22-3219 thru 22-3386	MC12693-04		MC454-120 5 7 or MC600-72 3	MC454-120 3
PA-22-150, PA-22S-150	22-2378, 22-2425 thru 22-7642	MC12693-04		MC454-120 5 7 or MC600-72 3	MC454-120 3
PA-22-160, PA-22S-160	22-5139, 22-5603 thru 22-7642	MC12693-04		MC454-120 5 7 or MC600-72 3	MC454-120 3
PA-24	24-1 thru 24-2969			MC454-120 1 7 or MC600-72 3	
PA-24-250	24-1 thru 24-104			MC454-120 1 7	
PA-24-250	24-105 thru 24-2174		MC455-184	MC454-120 1 7 or MC600-72 3 Carb. Engine Only	
PA-24-250	24-2175 thru 24-2969		MC455-252	MC454-120 1 7 or MC600-72 3 Carb. Engine Only	
PA-24-250	24-2970 thru 24-3687		MC455-252	MC600-72 3 Carb. Engine Only	
PA-24-260	24-3642, 24-4000 thru 24-4803		MC455-252	MC600-72 Carb. Engine Only	
PA-24-260	24-4804 thru 24-5034			MC600-72 Carb. Engine Only	
PA-24-400	26-2 thru 26-148			MC22633-04	
PA-28-140	28-20002 thru 28-21095	MC12693-04		MC600-72	MC63902-003 4
PA-28-140	28-21096 thru 28-24999	MC12693-04		MC600-72	MC63902-016 6
PA-28-140	28-25000 thru 28-25821	MC455-353		MC455-352	MC554-167
PA-28-140	28-25822 thru 28-7425418	MC455-353		MC455-352	MC554-093 1
PA-28-140	28-7425419 thru 28-7725290	MC455-353		MC455-352	MC554-094 1
PA-28-150	28-1 thru 28-2627	MC12693-04		MC600-72	MC63902-003 4
PA-28-150	28-2628 thru 28-4377	MC12693-04		MC600-72	MC63902-016 6
PA-28-151	All	MC455-350		MC455-352	MC554-093 1
PA-28-160	28-1 thru 28-2627	MC12693-04		MC600-72	MC63902-003 4
PA-28-160	28-2628 thru 28-4377	MC12693-04		MC600-72	MC63902-016 6
PA-28S-160	28-1 thru 28-1760			MC600-72	MC63902-003 4
PA-28-161	2816001 thru 2816110 (Less 2816066)	MC455-350		MC455-352	MC554-093 1
PA-28-161	2816111 thru 2816119				MC554-093 1
PA-28-161	2841001 thru 2842999	MC455-350		MC455-352	MC554-093 1
PA-28-161	28-7716002 thru 28-8616057	MC455-350		MC455-352	MC554-093 1
PA-28-180	28-671 thru 28-1760	MC12693-04		MC600-72	MC63902-003 4
PA-28-180	28-1761 thru 28-2627	MC12693-04		MC600-72	MC63902-003 4
PA-28-180	28-2628 thru 28-4377	MC12693-04		MC600-72	MC63902-016 6
PA-28-180	28-4378 thru 28-5152	MC455-333		MC455-332	MC66856-007
PA-28-180	28-5153 thru 28-5398	MC455-350		MC455-352	MC66856-007
PA-28-180	28-5399 and On	MC455-350		MC455-352	MC554-095 1
PA-28R-180	28R-30005 thru 28R-30481	MC455-322	MC455-322	MC455-322	
PA-28R-180	28R-30483 thru 28R-31092	MC455-322	MC455-322	MC455-322	
PA-28R-180	28R-31093 thru 28R-31279	MC455-322	MC455-322	MC455-322	MC554-092 1
PA-28R-180	28R-7130001 thru 28R-7130013	MC455-322	MC455-322	MC455-322	MC554-130 1

Eligibility continued on the next page. See notes regarding the Mixture, Carburetor Heat and Alternate Air controls on the next page.



Push Pull Controls and Accessories

Continued from previous page  
FAA-PMA Approved for Piper Aircraft

Model	Serial Number	Throttle Control	Propeller Control	Mixture Control	Carb Heat or Alt Air Control
PA-28R-180	28R-7130014 thru 28R-7130019	MC455-322	MC455-322	MC455-322	
PA-28S-180	28-671 thru 28-2627			MC600-72	MC63902-003 <b>4</b>
PA-28S-180	28-2628 thru 28-4377			MC600-72	MC63902-016 <b>6</b>
PA-28S-180	28-4378 thru 28-5398				MC6856-007
PA-28S-180	28-5399 thru 28-28-7205234				MC554-095 <b>1</b>
PA-28-181	2843001 thru 2843999			MC455-352	MC554-094 <b>1</b>
PA-28-181	2890001 thru 2890205			MC455-352	MC554-095 <b>1</b>
PA-28-181	2890206 thru 2890231			MC455-352	MC554-094 <b>1</b>
PA-28-181	28-7690001 thru 28-8290174	MC455-350		MC455-352	MC554-095 <b>1</b>
PA-28-181	28-8390001 and On	MC455-350		MC455-352	MC554-095 <b>1</b>
PA-28-201T	28-7921001 thru 28-7921095	MC455-322	MC455-322	MC455-361	MC554-387 <b>1</b>
PA-28R-200	28R-30482, 28R-35001 thru 28R-35225	MC455-322	MC455-322	MC455-322	
PA-28R-200	28R-35226 thru 28R-35830	MC455-322	MC455-322	MC455-322	MC554-092 <b>1</b>
PA-28R-200	28R-7135001 thru 28R-7635545	MC455-322	MC455-322	MC455-322	MC554-130 <b>1</b>
PA-28R-201	2837001 thru 2837061	MC455-322	MC455-322	MC455-322	MC554-130 <b>1</b>
PA-28R-201	2844001 thru 2844999				MC554-130 <b>1</b>
PA-28R-201	28R-7737002 thru 28R-7837317	MC455-322	MC455-322	MC455-322	MC554-130 <b>1</b>
PA-28R-201T	28R-7703002 thru 28R-7803372	MC455-322	MC455-322	MC455-361	MC554-387 <b>1</b>
PA-28R-201T	2803001 thru 2803015	MC455-322	MC455-322	MC455-361	MC554-387 <b>1</b>
PA-28RT-201	28R-7918001 thru 28R-8018116	MC455-322	MC455-322	MC455-322	MC554-130 <b>1</b>
PA-28RT-201	28R-8018117 thru 28R-8118000				MC554-130 <b>1</b>
PA-28RT-201	28R-8118001 and On	MC455-322	MC455-322	MC455-322	MC554-130 <b>1</b>
PA-28RT-201T	2831001 thru 2831038				MC554-387 <b>1</b>
PA-28RT-201T	28R-7931001 thru 28R-8031188	MC455-322	MC455-322	MC455-361	MC554-387 <b>1</b>
PA-28RT-201T	28R-8031189 thru 28R-8131000				MC554-387 <b>1</b>
PA-28RT-201T	28R-8131001 and On	MC455-322	MC455-322	MC455-361	MC554-387 <b>1</b>
PA-28-235	28-10003 thru 28-11038	MC12693-04		MC600-72	
PA-28-235	28-11039	MC12693-04			
PA-28-235	28-11040 thru 28-11252	MC455-333		MC455-332	MC6856-007
PA-28-235	28-11253 thru 28-11393	MC455-333		MC455-332	MC554-094 <b>1</b>
PA-28-235	28-7110001 thru 28-7210033	MC455-333		MC455-332	MC554-094 <b>1</b>
PA-28-235	28-7310001 thru 28-7710089	MC455-333	MC455-344	MC455-332	MC554-094 <b>1</b>
PA-28-236	28-11001 thru 2811050				MC554-094 <b>1</b>
PA-28-236	28-7911001 thru 28-8211060	MC455-333	MC455-344	MC455-332	MC554-094 <b>1</b>
PA-28-236	28-8311001 and On	MC455-333	MC455-344	MC455-332	MC554-094 <b>1</b>
PA-32-260	32-451 thru 32-1110				MC63902-021 <b>6</b>
PA-32-260	32-1111 thru 32-1320	MC455-360		MC455-361	MC554-053
PA-32-260	32-7100001 thru 32-7800008	MC455-360		MC455-361	MC554-053
PA-32-300	32-40000 thru 32-40565	MC69530-02	MC65451-04		
PA-32-300	32-40566 thru 32-41018	MC455-358			MC554-051
PA-32-300	32-41019 thru 32-7140000				MC554-051
PA-32-300	32-7140001 thru 32-7940282	MC455-358			MC554-051
PA-32-300	32-7940283 and On				MC554-051
PA-32R-300	All				MC554-051
PA-32RT-300	All				MC554-051
PA-32S-300	32S40566 thru 32S-7240137				MC554-051
PA-32-301	32-8006001 thru 32-8406020	MC455-358			MC554-051
PA-32-301	32-8406021 thru 32-8506000	MC455-358			MC554-051
PA-32-301	32-8506001 and On	MC455-358			MC554-051
PA-32-301FT	All				MC554-051
PA-32-301T	32-8024001 thru 32-8424002	MC455-344		MC455-344	MC553-874
PA-32-301T	32-8524001 and On	MC455-344		MC455-344	
PA-32R-301	3213001 thru 3213103				MC554-051
PA-32R-301	3246001 thru 3246999				MC653-658
PA-32R-301	32R-8013001 thru 32R-8613006				MC554-051
PA-32R-301T	3229001 thru 3229003				MC553-885
PA-32R-301T	3257001 thru 3257999				MC653-658
PA-32R-301T	32R-8029001 thru 32R-8229078	MC455-360		MC455-360	MC553-885
PA-32R-301T	32R-8229079 thru 32R-8329000				MC553-885
PA-32R-301T	32R-8329001 and On	MC455-360		MC455-360	MC553-885
PA-32RT-300T	32R-7787001 thru 32R-7887000				MC554-466
PA-32RT-300T	32R-7887001 thru 32R-7987126	MC455-360		MC455-360	MC554-466
PA-38-112	All				MC554-511 <b>1</b>

- 1** Knob not included.
  - 2** Knob not included. Order P/N MC471-052
  - 3** Knob not included. Order P/N MC471-060
  - 4** Knob P/N MC471-084 included with control.
  - 5** Knob not included. Order P/N MC471-053
  - 6** Knob P/N MC571-131 included with control.
  - 7** P/N MC454-120 duplicates original control.
  - 8** P/N MC600-72 is a vernier control. Installation is approved as a minor alteration (No STC or Form 337) and may require enlarging the instrument panel mounting hole to 3/4" diameter.
- Additional knob eligibility is shown on the following pages.  
Rod end part numbers and eligibility can be found on the following pages.

### Engine Controls for Van's RV Series Aircraft

- Quick delivery, No long lead times
- High quality and affordable
- Lifetime lubrication
- Non certified, designed for listed aircraft models only
- See page 128 for APS brake discs and linings



Model	Throttle	Vernier-Assist Throttle	Mixture	Prop
RV-10	MCRV10-T	MCRV10-TV	MCRV10-M	MCRV10-P
RV-10 W/Aerosport Products Panel	MCRV10-T-A	MCRV10-TV-A	MCRV10-M-A	MCRV10-P-A
RV-12		MCRV12-TV		

Controls designed to work with Van's firewall forward kit. Call for custom installations.

## Cabin Environment Controls for Piper Aircraft

**Longer life and save up to \$200.00**

- Special, heavier wire for more fatigue strength and reliability
- Improved friction mechanism
- Reduced vibration wear
- Anti-rotate feature to reduce stress on the inner wire
- High temperature Teflon lined conduit
- Realistic price



P/N MC454-120 without knob



P/N MC454-120 with  
P/N MC471-052 Knob



P/N MC454-120 with  
P/N MC471-060 Knob

Aircraft	Serial Number	Cabin Heat Control	Cabin Heat Rear Control	Cold Air Inlet Control	Defrost Control	Parking Brake Control
PA-18, PA-18A, PA-18S	All	MC454-120 <b>2</b>				
PA-18 "105" (Special), PA-18S "105" (Special)	All	MC454-120 <b>2</b>				
PA-18 "125" (Army L-21A), PA-18AS "125", PA-18S "125"	All	MC454-120 <b>2</b>				
PA-18 "135" (Army L-21B), PA-18A "135", PA-18S "135"	18-1 thru 18-2167	MC454-120 <b>2</b>				
PA-18 "135" (Army L-21B), PA-18A "135", PA-18S "135"	18-2168 and On	MC454-120 <b>2</b>		MC454-120 <b>2</b>		
PA-18AS "135",	All	MC454-120 <b>1</b>				
PA-18 "150"	All	MC454-120 <b>2</b>				
PA-18A "150", PA-18AS "150"	All	MC454-120 <b>2</b>		MC454-120 <b>2</b>		
PA-18S "150"	1809001 thru 1809113	MC454-120 <b>3</b>		MC454-120 <b>1</b>		
PA-18S "150"	18-3771 thru 18-8309025	MC454-120 <b>2</b>		MC454-120 <b>2,3</b>		
PA-20, PA-20S	20-1 thru 20-553	MC454-120 <b>2</b>				
PA-20, PA-20S	20-554 thru 20-811	MC454-120 <b>2</b>		MC454-120 <b>2</b>		
PA-20, PA-20S	20-812 and On	MC454-120 <b>2</b>	MC454-120 <b>2</b>	MC454-120 <b>2</b>		
PA-20 "115", PA-20S "115"	All	MC454-120 <b>2</b>				
PA-20 "135", PA-20S "135"	20-877, 20-881, 20-885, 20-888	MC454-120 <b>2</b>		MC454-120 <b>2</b>		
PA-20 "135", PA-20S "135"	20-878 thru 20-880	MC454-120 <b>2</b>	MC454-120 <b>2</b>	MC454-120 <b>2</b>		
PA-20 "135", PA-20S "135"	20-882 thru 20-884	MC454-120 <b>2</b>	MC454-120 <b>2</b>	MC454-120 <b>2</b>		
PA-20 "135", PA-20S "135"	20-886 thru 20-887	MC454-120 <b>2</b>	MC454-120 <b>2</b>	MC454-120 <b>2</b>		
PA-20 "135", PA-20S "135"	20-889 and On	MC454-120 <b>2</b>	MC454-120 <b>2</b>	MC454-120 <b>2</b>		
PA-22	All	MC454-120 <b>2</b>	MC454-120 <b>2</b>	MC454-120 <b>2</b>		MC454-120 <b>2</b>
PA-22-108	All	MC454-120 <b>3</b>	MC454-120 <b>3</b>	MC454-120 <b>3</b>		MC454-120 <b>1</b>
PA-22-135	22-534 thru 22-539, 22-543	MC454-120 <b>2</b>		MC454-120 <b>2</b>		MC454-120 <b>2</b>
PA-22-135	22-540 thru 22-542	MC454-120 <b>2</b>	MC454-120 <b>2</b>	MC454-120 <b>2</b>		MC454-120 <b>2</b>
PA-22-135	22-544 thru 22-2377	MC454-120 <b>2</b>	MC454-120 <b>2</b>	MC454-120 <b>2</b>		MC454-120 <b>2</b>
PA-22-135	2378	MC454-120 <b>3</b>	MC454-120 <b>3</b>	MC454-120 <b>3</b>		MC454-120 <b>1</b>
PA-22-135	22-2379 thru 22-2424	MC454-120 <b>2</b>	MC454-120 <b>2</b>	MC454-120 <b>2</b>		MC454-120 <b>2</b>
PA-22-135	22-2425 and On	MC454-120 <b>3</b>	MC454-120 <b>3</b>	MC454-120 <b>3</b>		MC454-120 <b>1</b>
PA-22S-135	22-534 thru 22-2377 and 22-2379 thru 22-2424	MC454-120 <b>2,4</b>	MC454-120 <b>1</b>	MC454-120 <b>2</b>		
PA-22S-135	22-2378, 22-2424 and On	MC454-120 <b>3,4</b>	MC454-120 <b>3</b>	MC454-120 <b>3</b>		
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-2378, 22-2425 thru 22-5138	MC454-120 <b>3</b>	MC454-120 <b>3</b>	MC454-120 <b>3</b>		MC454-120 <b>3</b>
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-2379 thru 22-2424	MC454-120 <b>2</b>	MC454-120 <b>1</b>	MC454-120 <b>2</b>		MC454-120 <b>2</b>
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-5139, 22-5603 and On	MC454-120 <b>3</b>	MC454-120 <b>3</b>	MC454-120 <b>3</b>		MC454-120 <b>1</b>
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-5140 thru 22-5602	MC454-120 <b>3</b>	MC454-120 <b>3</b>	MC454-120 <b>3</b>		MC454-120 <b>3</b>
PA-24, PA-24-250	24-1 thru 24-2174	MC454-120 <b>1</b>		MC454-120 <b>1</b>	MC454-120 <b>1</b>	MC454-120 <b>1</b>
PA-24, PA-24-250	24-2176 thru 24-2298			MC454-120 <b>1</b>		MC454-120 <b>1</b>

**1** Knob not included.

**2** Knob not included. Order P/N MC471-052

**3** Knob not included. Order P/N MC471-060

**4** Quantity 2 each of the Cabin Heat Control is required for this aircraft.

**Additional knob eligibility is on shown on the following page.**

## Swivel Fittings and Studs (Bug Nuts) for Piper Aircraft

P/N 70371-002 swivel fitting and 70371-003 stud are used to attach to solid wire push-pull controls. They wear out due to vibration.

There are two FAA-PMA replacement options. The PMA Products CA70371-002 swivel fitting and CA70371-003 stud, or the Univair U70371-000 swivel assembly.

The U70371-000 replaces Piper P/Ns 70371-000 or 70371-800. These are service kits that include the -002 fitting, the -003 stud as well as an AN320-3 castle shear nut, MS24665-132 cotter pin, and two special sized Piper specific washers.



P/N 70371-002 and  
P/N CA70371-003  
Swivel Fitting and Stud

P/N U70371-000  
Swivel Assembly

Part Number	Description	Eligible Models
CA70371-002 CA70371-003	Swivel Fitting Stud	PA18, PA18-150, PA22, PA23-150, 160, 235, 250, PA24-180, 250, 260, 400, PA25-150, 235, 260, PA28-140, 150, 151, 160, 161, 180, 181, 201T, 235, 236, PA28R-180, 200, 201, 201T, PA28RT-201, 201T, PA30, PA39, PA31-300, 310, 325, 350, PA31-350, T1020, PA31T, 1, 2, PA31P, 350, PA32-260, 300, 301, 301T, PA32R-300, 301, 301T, PA32RT, PA34-200, 200T, 220T, PA36-285, 300, 375, PA38, PA42, PA42-720, 1000, PA44-180, PA46, PA46-310P, 350P
U70371-000	Swivel Fitting Assy.	PA20, PA20S, PA20-135, PA20S-135, PA22-135, PA22S-135, PA22-150, PA22S-150, PA22-160, PA22S-160, PA22-108, PA23, PA23-160

**Control Knobs for Piper Aircraft**

Give your panel an upgrade -  
replace old discolored knobs!

- "Original" look
- Superior quality
- 10-32 thread



Aircraft	Serial Number	Part Number	Knob Type	Alternate Air (Chrome)	Cabin Heat (Chrome)	Cabin Heat (Black)	Cabin Heat (Ivory)	Cabin Heat (Rear)	Cabin Heat (Ivory)	Carburetor Heat (Ivory)	Decal (Black)	Carb. Carburetor Heat (Black)	Carb. Heat (Chrome)	Carburetor Heat (Black)	Cold Air (Black)	Cold Air Inlet (Ivory)	Cold Air Inlet (Chrome)	Defrost (Black)	Mixture (Chrome)	Parking Control (Red)	Parking Brake (Black)	Parking Brake (Ivory)
PA-18, PA-18A, PA-18S	All	MC571-131																				
PA-18 "105" (Special), PA-18S "105"	All	MC571-131																				
PA-18 "125" (Army L-21A), PA-18AS "125", PA18S "125"	All	MC471-060																				
PA-18 "135" (Army L-21B), PA-18A "135", PA-18S "135"	18-1 thru 18-2167	MC471-052																				
PA-18AS "135"	18-1 thru 18-2167	MC471-060																				
PA-18 "135" (Army L-21B), PA-18A "135", PA-18S "135"	18-2168 thru 18-7632	MC471-052																				
PA-18AS "135"	18-2168 thru 18-7632	MC471-060																				
PA-18A "150", PA-18AS "150"	All	MC471-060																				
PA-18S "150"	1809001 thru 1809113	6289																				
PA-18S "150"	18-3771 thru 18-8309025	MC471-060																				
PA-20, PA-20S	20-1 thru 20-553	MC471-060																				
PA-20, PA-20S	20-554 thru 20-811	MC471-060																				
PA-20, PA-20S	20-812 and On	MC471-060																				
PA-20 "115", PA-20S "115"	All	MC471-060																				
PA-20 "135", PA-20S "135"	All	MC471-060																				
PA-22	All	MC471-060																				
PA-22-108	All	MC471-060																				
PA-22-135	22-534 thru 22-539	MC471-060																				
PA-22-135	22-540 thru 22-542	MC471-060																				
PA-22-135	22-543	MC471-060																				
PA-22-135	22-544 thru 22-2377	MC471-060																				
PA-22-135	22-2378	MC471-060																				
PA-22-135	22-2379 thru 22-2424	MC471-060																				
PA-22-135	22-2425 and On	MC471-060																				
PA-22S-135	22-534 thru 22-2377 and 22-2379 thru 22-2424	MC471-060																				
PA-22S-135	22-2378, 22-2425 and On	MC471-060																				
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-2378	MC471-060																				
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-2379 thru 22-2424	MC471-060																				
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-2425 thru 22-5138	MC471-060																				
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-5139	MC471-060																				
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-5140 thru 22-5602	MC471-060																				
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-5603 and On	MC471-060																				
PA-25-235	All	MC471-060																				
PA-25-260	All	MC471-060																				
PA-28-140	28-20002 thru 28-21095	MC471-060																				
PA-28-140	28-21096 thru 28-24999	MC471-060																				
PA-28-150, PA-28-160	28-0001 thru 28-2627	MC471-060																				
PA-28-150, PA-28-160	28-2628 thru 28-4377	MC471-060																				
PA-28S-160	28-1 thru 28-1760	MC471-060																				
PA-28-180, PA-28S-180	28-671 thru 28-2627	MC471-060																				
PA-28-180	28-2628 thru 28-4277	MC471-060																				
PA-28-180	28-4278 thru 28-4377	MC471-060																				
PA-28S-180	28-671 thru 28-2627	MC471-060																				
PA-28S-180	28-2628 thru 28-4377	MC471-060																				
PA-28-235	28-10003 thru 28-10675	MC471-060																				
PA-28-235	28-10676 thru 28-11039	MC471-060																				
PA-32-260	32-1 thru 32-1110	MC471-060																				
PA-32-300	32-40000 thru 32-40565	MC471-060																				
PA-32-300S	32S-15 thru 32S-40565	MC471-060																				

■ Quantity 2 each of knob Cabin Heat (Ivory) is required for these aircraft.



P/N MC471-084  
With P/N 6289 Carb  
Heat Decal  
(Decal sold separately)



P/N MC471-052



P/N MC471-053



P/N MC471-060



P/N MC571-131

### Solid Wire Vernier Mixture Control for Beechcraft, Mooney, Maule, and Stinson Aircraft

FAA-PMA Approved

- Precise mixture control for less than the original replacement part
- Extra long - trim to exact length
- High quality McFarlane manufacture

Make	Model	Serial Number	Part Number
Raytheon (Beechcraft)	19A, M19A, B19,23, A23-19, B23	All	MC600-120
Raytheon (Beechcraft)	35, A35, B35, C35, D35, E35, F35, G35, H35	All	MC600-72
Mooney	M20, M20A, M20B, M20C, M20D	All	MC600-72
Maule	Bee Dee M-4, M4, M-4C, M-4S, M-4T	All with Carbureted Engine	MC600-72
Maule	M-4-220, M-4-220-C, M-4-220S	All with Carbureted Engine	MC600-72
Maule	M-4-220T, M-4-180C, M-4-180S, M-4-180T	All with Carbureted Engine	MC600-72
Maule	M-5-180C, M-5-220T, M-5-235C	All with Carbureted Engine	MC600-72
Maule	M-5-210TC, M-6-180, M-6-235, MX-7-160	All with Carbureted Engine	MC600-72
Maule	MXT-7-160, MX-7-180, MX-7-180A	All with Carbureted Engine	MC600-72
Maule	MXT-7-180, MXT-7-180A, MX-7-180B	All with Carbureted Engine	MC600-72
Maule	MX-7-180C, M-7-235, MX-7-235	All with Carbureted Engine	MC600-72
Maule	MX-7-235A, MX-7-235B, MX-7-235C, M-8-235	All with Carbureted Engine	MC600-72
Univair (Stinson)	108, 108-1, 108-2, 108-3, 108-5	All	MC600-72



### Throttle Controls for Grumman Aircraft

FAA-PMA Approved

- Throttle Controls for aircraft manufactured by Grumman American, Gulfstream Aerospace Corp. or Tiger Aircraft LLC.
- McFarlane has developed a longer conduit terminal that allows extra clearance between the swivel joint and the air filter box at the clamp location.
- Thread length has been tailored to allow full adjustment of the Grumman swivel assembly.
- Push rod length has been tailored to ensure that McFarlane throttle controls duplicate the original controls in fit and function.

Model	Serial Number	Part Number
AA-1	AA1-0433 and On	MC507005-1
AA-1A	AA1A-0001 and On	MC507005-1
AA-1B	AA1B-0001 and On	MC507005-1
AA-1C	AA1B-0601	MC507005-1
AA-1C	AA1C-0001 and On	MC507005-1
AA-5	AA5-0001 and On	MC507005-2
AA-5A	AA5A-0283 and On	MC507005-2
AA-5B	AA5B-0001 and On	MC507005-3



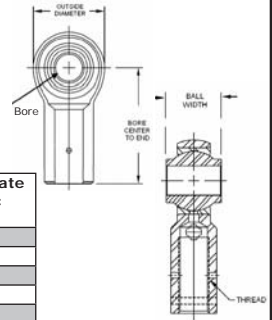
### Engine Controls for Bellanca Viking Aircraft

FAA-PMA Approved

Model	Serial Number	Throttle	Propeller	Mixture
17-30A	30263 and On, and aircraft with a S/N prefix: "75-"	MCS191783-18	MCS191783-1	MCS191783-16
17-31A	73-32-128 and On, and aircraft with a S/N prefix "75-"	MCS191783-18	MCS191783-1	MCS191783-17
17-31ATC	73-31067 and On, and aircraft with a S/N prefix "75-"	MCS191783-18	MCS191783-1	MCS191783-17

### Rod Ends for Experimental Aircraft

Not for use on certified aircraft.  
Not FAA-PMA approved.  
See pages 22-24 for FAA-PMA approved rod ends.

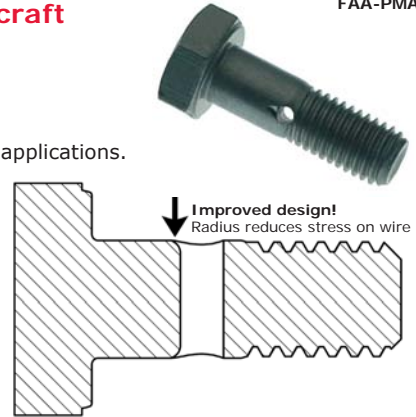
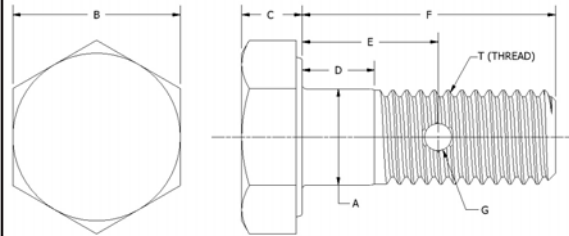


P/N	Bore	O.D.	Bore Ctr to End	Ball Width	Thread	Thread Type	Ultimate Static Load
(-)	(in)	(in)	(in)	(in)	(in)	(-)	(lbs)
MW-3M-500	0.190	0.625	1.062	0.312	10-32	Internal	1,531
GMW-3M-470	0.190	0.750	1.375	0.437	1/4-28	Internal	2,881
GMW-4M-470	0.250	0.812	1.375	0.437	1/4-28	Internal	2,950
MM-3M-500	0.190	0.625	1.250	0.312	10-32	External	1,169

### Bolt Style Wire Clamps for Solid Wire Controls for Cessna Aircraft

FAA-PMA Approved

- Unique design to reduce wire stress
- Heat treated stainless steel for wear and corrosion resistance
- The best for less!
- See pages 10-13 to find the correct clamp for your mixture or carb heat control.
- Go to <http://www.mcfarlaneaviation.com/products> to find the correct clamp for all other applications.



Part Number	A	B	C	D	E	F	G	T	Application
	Bolt Dia. (in)	Wrench Size (in)	Thick (in)	Grip Length (in)	Hole Position (in)	Shank Length (in)	Hole Dia. (in)	Thread (-)	
MCS2323-1	0.188	3/8	0.125	0.250	0.183	0.653	0.073	10-32	Carb heat, starter, mixture, cabin heat, fuel shutoff, strainer drain, defrost, shutter, wastegate, oxygen control, de-ice, heater, airbox, alternate air, flap/elevator, pressure air dump, heat exchanger
MCS2323-2	0.250	7/16	0.156	0.312	0.325	0.781	0.073	1/4 - 28	cabin heat, mixture, defrost
MCS2323-3	0.250	7/16	0.156	0.188	0.199	0.539	0.073	1/4 - 28	strainer drain, cowl flaps, carb heat, alternate air
MCS2323-4	0.250	7/16	0.156	0.313	0.312	0.781	0.073	1/4 - 28	mixture, flap indicator, flap guide, fuel shut-off
MCS2323-5	0.188	3/8	0.125	0.125	0.188	0.531	0.073	10-32	cabin air, carb heat, starter, airbox, defrost, flap, shutter, oxygen
MCS2323-6	0.250	7/16	0.156	0.188	0.355	0.656	0.073	1/4 - 28	mixture, hopper, induction
MCS2323-7	0.188	3/8	0.125	0.250	0.192	0.656	0.076	10-32	fuel shut-off, alternate air, flap elevator trim
MCS2323-8	0.188	3/8	0.125	0.250	0.202	0.656	0.096	10-32	fuel shut-off, oxygen control
MCS2323-9	0.250	7/16	0.156	0.438	0.343	0.906	0.129	1/4 - 28	flap control, flap guide
MCS2323-10	0.188	3/8	0.125	0.125	0.204	0.477	0.079	10-32	fuel shut-off, heat exchanger
MCS2323-11	0.188	3/8	0.125	0.250	0.266	0.656	0.076	10-32	mixture, bleed air, fuel selector, flap/elevator
MCS2323-12	0.250	7/16	0.156	0.188	0.357	0.656	0.073	1/4 - 28	mixture, cabin heat, pressurization
MCS2323-13	0.250	7/16	0.156	0.313	0.271	0.781	0.073	1/4 - 28	mixture, alternate air, bleed air
MCS2323-14	0.188	3/8	0.125	0.125	0.132	0.531	0.082	10-32	cabin heat, cabin air
MCS2323-19	0.188	3/8	0.125	0.125	0.200	0.531	0.094	10-32	defroster

**Rod Ends for Cessna Aircraft**

- Many applications!
- See pages 10-14 for rod ends for Cessna 120 thru 210 engine controls.



Model	Part Number	ALLERON PUSH ROD	ALT AIR CONTROL	CARGO DOOR	COOLING MODULATOR	COWL FLAP	COWL FLAP CONTROL	ELEVATOR BOB WEIGHT LINKAGE	FLAP ACTUATOR PUSH ROD	FLAP CONTROL	FLAP PUSH ROD	INERTIAL SEPARATOR ACTR PUSH ROD	INERTIAL SEPARATOR CONTROL	MAIN GEAR DOOR	MAIN GEAR DOOR ACTUATOR	MIXTURE CONTROL	MIXTURE LINKAGE	NOSE GEAR STEERING ROD	NOSE GEAR DOOR	NOSE GEAR DOOR ACTUATOR	OUTBOARD FLAP PUSH ROD	PROP CONTROL	PROP SYNCRO PUSH ROD	REAR PRESSURIZATION CONTROL	RUDDER BAR	RUDDER BELLCRANK PUSH ROD	SPRAY VALVE PUSH ROD	THROTTLE CONTROL	THROTTLE LINKAGE	WATER RUDDER STEERING	
150, 150A,B,C,D,E,F,G,H,J	MCS1106-3																														
150K,L,M,A-150L, A-150L, A150K,L,M	S1819-3																														
F150F,G,H,J	MCS1106-3																														
F150K,L,M, FA150K,L,M, FRA150L,M	MCS1106-3																														
152, A152, F152, FA152	MCS1104-3																														
172,172A,B,C	MCS1105-3																														
172D,E,F,G,H,I,K,L,M,N,P,Q,R	MCS1106-3																														
172RG	MCS1106-4																														
172S, F172D,E,F,G,H,K,L,M,N,P, FP172	MCS1104-3																														
FR172E,F,G,H,J	MCS1106-3																														
FR172K	MCS1106-3																														
P172D	MCS1106-3																														
R172K	MCS1106-3																														
175, 175A,B,C	MCS1106-3																														
177, 177A,B	MCS1106-3																														
177RG, F177RG	MCS1106-3																														
180,180A,B,C,D,E,F,G,H,J,K	MCS1106-3																														
182, 182A,B,C,D,E,F,G,H,J,K	MCS1106-3																														
182L,M	MCS1106-3																														
182N S/N 18260056 thru 18260445	MCS1106-3																														
182N S/N 18260446 thru 18260825	MCS1106-3																														
182P,Q,R	MCS1106-3																														
182S,T	MCS1106-3																														
F182P,Q	MCS1106-3																														
FR182, R182	MCS1106-3																														
T182	MCS1106-3																														
T182T	MCS1106-3																														
TR182	MCS1106-3																														
185, 185A,B,C,D,E, A185E,F	MCS1106-3																														
188,188A,B, A188, A188A,B, T188C	MCS1106-3																														
210-5 (205), 210-5A (205A)	MCS1106-3																														
206	MCS1106-3																														
206H	MCS1106-3																														
P206,P206A	MCS1106-3																														
P206B,C,D,E	MCS1106-3																														
T206H	MCS1106-3																														
TP206A,B	MCS1106-3																														
TP206C,D,E	MCS1106-3																														
TU206A,B	MCS1106-3																														
TU206C,D,E	MCS1106-3																														
TU206F S/N U20601701 thru U20602199	MCS1106-3																														
TU206F S/N U20602200 thru U20603521,TU206G	MCS1106-3																														
U206, U206A,B,C,D,E,U206F S/N U20601701 thru U20602199	MCS1106-3																														
U206F S/N U20602200 thru U20603521,U206G	MCS1106-3																														
207,207A,T207,T207A	MCS1106-3																														
208,208A,B	MCS1106-3																														
210,210A	MCS1106-3																														
210B,C	MCS1106-3																														
210D,E,F	MCS1106-3																														
210G	MCS1106-3																														
210H,J	MCS1106-3																														
210K,L,M	MCS1106-3																														
210N S/N 21062955 thru 21063168	MCS1106-3																														
210N S/N 21063169	MCS1106-3																														
210N S/N 21063170 thru 21063174	MCS1106-3																														
210N S/N 21063175 thru 21064135	MCS1106-3																														
210N S/N 21064136 thru 21064897	MCS1106-3																														
210R	MCS1106-3																														
P210N S/N P21000001 thru P21000150	MCS1106-3																														
P210N S/N P21000151 thru P21000196	MCS1106-3																														
P210N S/N P21000197	MCS1106-3																														

1 Partial model eligibility.  
 2 P/N S1823-3 is applicable to model 150J only.  
 3 P/N S1107-3 is applicable to models 182, 182A,B,C,D only.

### Rod Ends for Cessna Aircraft

- Many applications!
- See pages 9-14 for rod ends for Cessna 120 thru 210 engine controls.



Model	P/N	ALLERON PUSH ROD	ALT AIR CONTROL	CARGO DOOR	COOLING MODULATOR	COWL FLAP	COWL FLAP CONTROL	ELEVATOR BOB WEIGHT LINKAGE	FLAP ACTR PUSH ROD	FLAP CONTROL	FLAP PUSH ROD	INERTIAL SEPARATOR ACTR PUSH ROD	INERTIAL SEPARATOR CONTROL	MAIN GEAR DOOR	MAIN GEAR DOOR ACTUATOR	MIXTURE CONTROL	MIXTURE LINKAGE	NG STEERING ROD	NOSE GEAR DOOR	NOSE GEAR DOOR ACTUATOR	OUTBOARD FLAP PUSH ROD	PROP CONTROL	PROP SYNCRO PUSH ROD	REAR PRESSURIZATION CONTROL	RUDDER BAR	RUDDER BELCRANK PUSH ROD	SPRAY VALVE PUSH ROD	THROTTLE CONTROL	THROTTLE LINKAGE	WATER RUDDER STS STEERING
P210N	MCS1106-3																													
S/N P21000198 thru P21000212	S1819-3																													
P210N	MCS1106-3																													
S/N P21000213 thru P21000834	S1819-3																													
P210R	MCS1106-3																													
T210F	MCS1106-3																													
T210G	MCS1106-3																													
T210H,J	MCS1106-3																													
T210K,L,M	MCS1106-3																													
T210N	MCS1106-3																													
T210R	MCS1106-3																													
310,310B	MCS1106-3																													
310C,D,F,G,H,I,J,J-1,K	MCS1106-3																													
310L,N	MCS1106-3																													
310P,Q	MCS1106-3																													
310R	MCS1106-3																													
E310H,J	MCS1106-3																													
T310P,Q	MCS1106-3																													
T310R	MCS1106-3																													
320,320-1,320A,B,C	MCS1106-3																													
320D,E,F	MCS1106-3																													
335	MCS1106-3																													
336	MCS1106-3																													
337	MCS1106-3																													
337A,B	MCS1106-3																													
337C	MCS1106-3																													
337D	MCS1106-3																													
337E,F	MCS1106-3																													
337G,H	MCS1106-3																													
F337E,F	MCS1106-3																													
F337G,H	MCS1106-3																													
FT337E,F	MCS1106-3																													
FT337GP (FP337)	MCS1106-3																													
FT337HP (FP337H)	MCS1106-3																													
M337B	MCS1106-3																													
P337H	MCS1106-3																													
T337B,C,D	MCS1106-3																													
T337E,F	MCS1106-3																													
T337G	MCS1106-3																													
T337H	MCS1106-3																													
T337H-SP	MCS1106-3																													

■ Partial model eligibility



MCS1104-3

MCS1105-3

MCS1106-3

MCS1106-4



S1107-3



S1819-3



S1823-3



MCS1819-4

Rod End Dimensions		
Part Number	Bore/Eye	Thread
MCS1104-3	0.19	10-32 Internal
MCS1105-3	0.19	10-32 External
MCS1106-3	0.19	1/4-28 Internal
MCS1106-4	0.25	1/4-28 Internal
S1107-3	0.19	3/8-24 External
S1819-3	0.19	1/4-28 Internal
S1823-3	0.19	3/8-24 External
MCS1819-4	0.25	1/4-28 Internal



Push Pull Controls and Accessories

**Rod Ends for Piper Aircraft**

Model	Part Number	Description/Application	Piper Rod End Dimensions		
			Part Number	Eye	Thread
PA-18/18A, PA-18-105/125/135/150 & PA-18A-125/135/150 S/N's 18-1 thru 18-8309025 and PA18-150 S/N's 1809001 thru 1809113	CA452-335A	Wing panel assembly, uncovered			
PA-22 & PA-22-108/135/150/160	CA452-335A	Wing panel assembly, nose wheel			
PA-23-150/160 PA 23-235/PA23-250 / PA 23-250	CA452-335A	Nose gear, main gear			
PA-24-180/250/260/400	CA452-412	Landing gear retraction system, flap control mechanism, control surfaces			
	CA452-334A	Steering push rod & shimmy dampener, main gear bearing, control system			
	CA452-335A	Bungee assembly, nose wheel, landing gear door			
	CA452-336A	Flap control, nose gear assembly			
PA-28-140/150/160/180/235/R-180/200	CA452-368	Main gear			
	CA452-584	Landing gear door			
	CA452-860A	Shimmy dampener			
PA-28-151/161 S/N 715001 thru 28-7715314, 28-7716001 thru 28-8616057 & 2816001 thru 2816119	CA452-334A	Nose gear			
PA-28-161 S/N 2841001 thru 2841365	CA452-335A	Nose gear, control system, flap control			
	CA452-334A	Nose gear			
PA-28-161 S/N 2842001 & up	CA452-335A	Control system, flap control			
	CA452-336A	Flap control			
PA-28-181 S/N 28-7690001 thru 28-8690056 & 2890001 thru 2890231	CA452-334A	Nose gear			
PA-28-181 S/N 2843001 & up	CA452-335A	Control system			
	CA452-336A	Flap control			
PA-28R-201/201T S/N 28R-773700, 2837001 thru 2837061, 28R7703002 thru 28R-7803372 & 2803001 thru 2803015	CA452-334A	Nose landing gear, main landing gear			
	CA452-335A	Landing gear door, control system, flap control			
	CA452-336A	Flap control			
	CA452-584	Landing gear door			
	CA452-334A	Nose landing gear			
	CA452-335A	Landing gear door, control system, flap control			
	CA452-336A	Flap control			
	CA452-368	Main landing gear			
PA-28RT-201/201T	CA452-334A	Nose landing gear			
PA-30/39	CA452-335A	Landing gear door			
PA-31P	CA452-412	Landing gear retraction system, flap control mechanism			
	CA452-335A	Cabin door step			
PA-31P-350	CA452-412	Cabin door latch, nose landing gear, nose gear steering,			
	CA452-335A	Cabin door step			
PA-31-300/325, PA-31-350, PA-31-350T1020	CA452-412	Cabin door latch, nose landing gear, nose gear steering, elevator trim			
	CA452-412	Nose landing gear, nose gear steering mechanism			
PA-31T/T1/T2	CA452-335A	Cabin door step, engine control			
	CA452-412	Cabin door latch, nose landing gear			
	CA452-860A	Cabin door snubber			
PA-31T3	CA452-335A	Engine controls			
	CA452-412	Nose landing gear, nose gear steering			
	CA452-334A	Nose gear, main gear, control system			
	CA452-335A	Landing gear door, flap control			
	CA452-368	Main gear			
	CA452-584	Landing gear door			
	CA452-860A	Nose gear			
	CA452-334A	Nose gear			
	CA452-335A	Aileron control, flap control			
	CA452-336A	Aileron control, flap control			
	CA452-860A	Nose gear			
PA-32-260/300/R-300	CA452-334A	Nose gear			
	CA452-335A	Aileron control, flap control			
	CA452-336A	Aileron control, flap control			
	CA452-860A	Nose gear			
PA-32-301/301T	CA452-334A	Nose gear			
	CA452-335A	Aileron control, flap control			
	CA452-336A	Aileron control			
	CA452-860A	Nose gear			
PA-32-301 XTC	CA452-334A	Nose gear, main gear			
	CA452-335A	Landing gear door, aileron control, flap control			
	CA452-336A	Aileron control, flap control			
	CA452-368	Main gear			
PA-32-301FT	CA452-334A	Nose gear			
	CA452-335A	Aileron control, flap control			
	CA452-336A	Aileron control			
	CA452-860A	Nose gear			
PA-32R-301/301T S/N 32R-8013001 thru 32R-8613005, 321001 thru 3213103, 32R-8029001 thru 32R-8629006 & 3229001 thru 3229003	CA452-334A	Nose gear, main gear			
	CA452-335A	Landing gear door, aileron control, flap control			
	CA452-336A	Aileron control, flap control			
	CA452-368	Main gear			
	CA452-334A	Main gear			
	CA452-335A	Landing gear door, aileron control, flap control			
	CA452-336A	Aileron control, flap control			
	CA452-368	Main gear			
PA-32R-301/301T S/N 3246001 & up & 3257001 & up	CA452-334A	Nose gear, aileron control, rudder trim, hydraulic system			
	CA452-335A	Nose & main gear door actuation, flap control			
	CA452-336A	Flap control			
	CA452-368	Main gear			
PA-34-200	CA452-334A	Air conditioning, Condenser & scoop, nose gear, hydraulic system rudder trim			
	CA452-335A	Nose & main gear door actuation			
	CA452-336A	Flap control			
	CA452-368	Main gear			
PA-34-200T	CA452-334A	Aileron assembly, nose & main gear actuation			
	CA452-335A	Nose gear, rudder trim hydraulic system, air conditioning, condenser & scoop			
	CA452-336A	Nose & main gear door actuation, aileron control, flap control			
	CA452-336A	Flap control			
	CA452-334A	Nose gear, main gear, control system			
	CA452-335A	Landing gear door, flap control			
	CA452-336A	Flap control			
	CA452-368	Main gear			
	CA452-584	Landing gear door			
PA-34-220T S/N 34-8133001 thru 34-8633031, 3433001 & up, & 3448001 & up, PA-34-220T S/N 3447001 thru 3447029, & 3449001 & up	CA452-584	Elevator & elevator trim control			
	CA452-335A	Cabin door step, engine controls			
	CA452-412	Cabin door latch, nose landing gear, nose gear steering, elevator control			
	CA452-334A	Nose landing gear, main gear			
	CA452-335A	Landing gear door, aileron control, flap control			
	CA452-336A	Aileron control, flap control			
	CA452-584	Landing gear door			
	CA452-334A	Nose gear, nose & main gear door, actuation			
	CA452-335A	Nose & main gear door actuation			
	CA452-412	Flap drive - electrical			
	CA452-860A	Flap drive - electrical, flap drive & hydraulic			
	CA452-334A	Nose gear, nose & main gear door actuation			
	CA452-335A	Main gear			
	CA452-412	Flap Drive-Mechanical			
	CA452-860A	Flap Drive-Mechanical			
	CA452-334A	Nose gear, nose gear door actuation			
	CA452-335A	Main gear door actuation			
	CA452-412	Flap Drive-Mechanical			
	CA452-860A	Flap Drive-Mechanical			
PA-46-310P/350P S/N 46-8408001 thru 46-8608067, 4608001 thru 4608140 & 4622001 thru 4622200	CA452-334A	Nose gear, nose & main gear door actuation			
	CA452-335A	Nose & main gear door actuation			
	CA452-412	Flap drive - electrical			
	CA452-860A	Flap drive - electrical, flap drive & hydraulic			
	CA452-334A	Nose gear, nose & main gear door actuation			
	CA452-335A	Main gear			
	CA452-412	Flap Drive-Mechanical			
	CA452-860A	Flap Drive-Mechanical			
PA-46-350P S/N 4636001 & up	CA452-334A	Nose gear, nose & main gear door actuation			
PA-46R-350T S/N 4692001 & up	CA452-335A	Main gear			
	CA452-412	Flap Drive-Mechanical			
	CA452-860A	Flap Drive-Mechanical			
PA-46-500TP S/N 4697002,4697340,4697399 & up with G1000	CA452-334A	Nose gear, nose & main gear door actuation			
	CA452-335A	Nose & main gear door actuation			
	CA452-412	Flap Drive-Mechanical			
	CA452-860A	Flap Drive-Mechanical			
PA-46-500TP S/N4697001 & up without G1000	CA452-334A	Nose gear, nose & main gear door actuation			
	CA452-335A	Nose & main gear door actuation			
	CA452-412	Flap Drive-Mechanical			
	CA452-860A	Flap Drive-Mechanical			
	CA452-334A	0.19	1/4-28	External	
	CA452-335A	0.19	1/4-28	Internal	
	CA452-336A	0.19	1/4-28	Internal	
	CA452-368	0.50	1/2-20	Internal	
	CA452-412	0.25	5/16-24	External	
	CA452-860A	0.25	1/4-28	External	
	CA452-584	0.19		Spherical	



**Push-to-Unlock Controls**

Perfect for home built or custom projects!

- Quality stainless steel construction with bright powder coated aluminum knobs
- High temperature Teflon lined conduit for smooth, consistent control (Cheap controls with poly liners will not tolerate engine temperatures)
- Heavy duty strength and long life
- Custom laser marking of the knobs is available
- Not for use on certified aircraft, flight controls or flight control trim tabs

**Round knob with solid wire end (MC6150 series):**

Order part number MC6150-071XXLLL where XX is the knob color code and LLL is the length in inches.

- Round Knob - Red, black, blue and clear (silver) or Chrome plated bronze (designed to match vintage controls)
- Available in 4, 6, 8, 10, 12 foot and custom lengths
- May be trimmed to length

**Square knob with solid wire end (MC6160 series):**

Order part number MC6160-071XXLLL where XX is the knob color code and LLL is the length in inches.

- Square black knob with a black or clear (silver) push-button
- Available in 6, 8, 12 foot and custom lengths
- May be trimmed to length
- Ideal for carburetor heat or alternate air

**Round knob with 10-32 threaded push rod end (MC6250 series):**

Order part number MC6250-XXLLL where XX is the knob color code and LLL is the length in inches.

- Round Knob - Red, black, blue and clear (silver)
- Available in 4, 5, 6, 7, 8, 9, 10 foot and custom lengths

**Round knob with dual solid wire ends (MC6350 series):**

Order part number MC6350-XXLLL where XX is the knob color code and LLL is the length in inches.

- Round Knob - Red, black, blue and clear (silver)
- Available in 4, 6, 8, 12 foot and custom lengths
- May be trimmed to length

**Specifications:**

- Travel (stroke): 3" minimum
- Conduit (dual wire controls): 0.188 inch OD Teflon lined wound conduit
- Conduit (single wire controls): 0.24 inch OD Teflon lined wound conduit with a Teflon jacket
- Max Work Loads: Pull: ~25 lbs; Push: ~10 lbs\*
- Minimum Locking Force (measured at the knob): 15 lbs tensile, 10 lbs compression
- Operating Temp: -65 to 450 deg F (knob/housing assembly: -65 to 250 deg F)
- Panel Fitting: 7/16-20 thread

\*Max push load for solid wire end designs is dependent on wire diameter, length of trimmed wire (unsupported by conduit), geometry of wire rigging, and the actuator configuration.



MC6150 series

MC6160 series

MC6250 series

MC6350 series

**Custom Engraved Knobs:**

Custom laser marking of the knobs is available for a small additional fee. Call for details.



Laser Marking  
Clean and durable!



Vintage Chrome also available!

Knob/Color Codes	
Code	Description
BB	Black powder coated aluminum
RR	Red powder coated aluminum
LL	Blue powder coated aluminum
CC	Clear (Silver) anodized aluminum
CB	Black powder coated aluminum with Clear (Silver) push button
HH	Chrome plated brass knob

Push Pull Controls and Accessories

**Turn-to-Lock Controls**

**Perfect for homebuilt or custom projects!**

These versatile controls are ideal for many applications. They feature a turn-to-lock mechanism that requires a quarter turn of the knob to lock or unlock the control.

- Quality stainless steel construction
- High temperature Teflon lined conduit for smooth, consistent control (Cheap controls with poly liners will not tolerate engine temperatures)
- Wire end - may be trimmed to length
- Not for use on certified aircraft, flight controls or flight control trim tabs

**Dual twisted wire ends:** P/N MCTL1014DLLL-K (LLL = length in inches, K = Knob style)

- 1/16" diameter 7X7 stainless steel
- ~ 30 lbs minimum locking force
- Includes two adjustable barrel stops to attach to Rotax choke arms
- Available in 4, 6, 8 and 12 ft lengths

**Dual solid wire ends:** P/N MCTL2254D072-K (K = Knob style)

- 0.071" diameter music wire
- ~ 55 lbs minimum locking force
- 6 foot length

**Single twisted wire end:** P/N MCTL1034-072-K (K = Knob style)

- 1/16" diameter 1X7 stainless steel
- ~ 30 lbs minimum locking force
- 6 foot length

**Single solid wire end:** P/N MCTL2254-072-K (K = Knob style)

- 0.071" diameter music wire
- ~ 55 lbs minimum locking force
- 6 foot length



Knob Style Suffix (-K)	Knob Style
-B	Ball
-F	Fluted
-P	4-Prong
-T	Shortened T-Handle
-FA	Fluted, engraved "Airbox Lock"
-FH	Fluted, engraved "Cabin Heat Lock"
-FL	Fluted, engraved "Lock"
-PL	4-Prong, engraved "Lock"
-TC	T-Handle, engraved "Choke Lock"
-TL	T-Handle, engraved "Lock"
	No knob

MCTL1014D series MCTL2254D series MCTL1034 series MCTL2254 series

**Specifications:**

- Travel (stroke): 4.0" maximum
  - Conduit (dual wire controls): 0.188 in OD Teflon lined
  - Conduit (single wire controls): 0.25 in OD Teflon lined, Teflon jacket
  - Max Work Loads: Pull: ~25 lbs; Push: ~10 lbs\*
  - Operating Temp: -65 to 450°F (knob/housing assembly: -65 to 250°F)
  - Panel Fitting: 1/2-20 UNF thread
- \*Push loads apply to controls with solid wire only and depend on wire diameter, length of wire not supported by conduit, geometry of wire rigging, and the actuator configuration.

**Call us with your custom requirements!**

**Universal Light-Weight Controls**

- For use in non-certified aircraft applications such as carb heat, cabin heat, cabin air, and defrost
- Keyed shaft prevents rotation and maintains knob alignment
- High quality brass and aluminum construction
- Teflon lined conduit for smooth, consistent control (Cheap controls with poly liners will not tolerate engine temperatures)
- Many knob styles available or provide your own knob with 10-32 thread
- Knobs are not included with the control, see page 30 for knob choices
- Available in 4,6,8,10 and 12 ft and custom lengths - Wire end - Easily trimmed to length
- Measured from panel fitting to end of conduit, wires extend at least 3" beyond conduit
- Available with optional creep resistant feature to prevent creep due to engine vibration



**Standard Control:** P/N MCU124-LLL (LLL = length in inches)

**Control with creep resistant feature:** P/N MCU224-LLL (LLL = length in inches)

**Specifications:**

- Travel (stroke): 3.75" maximum\*
- Conduit: 0.188 inch OD Teflon lined
- Max Work Loads: Pull: ~10 lbs; Push: ~5 lbs\*\*
- Operating Temp: -65 to 450°F
- Inner Wire: 0.061 inch solid wire
- Screw thread for knob attachment: 10-32 X .3
- Screw thread for instrument panel: 3/8-24 X .5

\*Installer must ensure maximum travel is not exceeded during installation and rigging of the control.

\*\*Maximum push load with 3-1/2" of wire extending from the conduit. Push loads depend on wire diameter, length of wire not supported by conduit, geometry of the rigging and the actuator configuration.



## Controls for Dual Carburetor 912/914 Series Rotax Engines

**Allows a neat, clean installation without a clunky splitter box**

- Quality metal construction
- High temperature Teflon lined conduit for smooth consistent control (Cheap controls with poly liners will not tolerate engine temperatures)
- Available in 4, 6, 8 and 12 foot and custom lengths - Easily trimmed to length
- Manufactured to the same quality standards as McFarlane's FAA-PMA parts
- Not for use on certified aircraft, or for flight controls or flight control trim tabs



## Throttle Controls for 912/914 Series Rotax Engines

- Includes throttle hardware kit P/N 6408 with lightweight throttle return springs (P/N 6822 and 7235) to prevent throttle creep (see page 27)
- Inner Wire: Heavy duty 0.062 inch diameter, flexible 1/16 1X7 stainless steel twisted wire
- Conduit: 0.188 inch OD Teflon lined for smooth consistent control
- Design work load: 10 lbs (pull only)
- Operating temp: -65 to 450°F

**Panel Mount:** P/N MCT100DLLL (LLL = length in inches. Add a "-B" for a ball knob)

- Super smooth friction lock
- Travel (stroke): 3.75" max
- Typical locking force: 1 to 10 lbs (locking force dependent on friction lock engagement)
- Panel fitting: 1/2-20 UNF thread
- Control length is measured from panel fitting to end of conduit, wires extend 6 inches beyond conduit.
- Two knob options (ball or standard barrel shape)



P/N 6408  
Dual hardware throttle kit

P/N EC03  
Standard style knob

P/N EC53  
Ball style knob



## Vernier-Assist™ Panel Mount:

P/N MCTV0005DLLL with knob or MCVA0005-30DLLL without knob<sup>1</sup> (LLL = length in inches)

- Travel (stroke): 3.5" max
- Typical locking force: 1 to 10 lbs (locking force dependent on friction lock engagement)
- Panel fitting: 3/4-16 UNF X 0.875 inch thread
- Control length is measured from panel fitting to end of conduit, wires extend 6 inches beyond conduit.
- See page 28 for additional details



A vernier without a release button!  
See page 28



## Quadrant Style: P/N MCQ100DLLL (LLL = length in inches)

- Includes convenient dual conduit clamp P/N 6433-1 for simple quadrant mounting
- Viton boot to dampen vibration and seal out dust on the quadrant end
- Travel (stroke): 4" max
- Pushrod thread (quadrant end): 10-32 UNF X 0.65 inch thread
- Control length equals the conduit length, wires extend a minimum of 6 inches beyond the conduit.



P/N 6433-1  
Dual Conduit Clamp

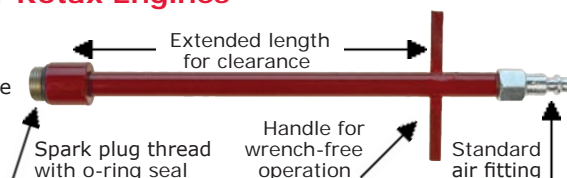


<sup>1</sup> Requires a knob with 1/4-20 thread. See page 29 for available knob options.

## Compression Tester Extension for Rotax Engines

P/N EXTENSION CT12 (12mm thread)

- Wrench-free compression testing
- Allows for exhaust system and baffling clearance
- Makes compression testing easier



Push Pull Controls and Accessories

## Choke Controls for 912/914 Series Rotax Engines

- Includes two adjustable barrel stops P/N 6515 to attach to the carb choke arms (no swaging or soldering necessary)
- Inner Wire: Heavy duty 0.062 inch diameter, flexible 1/16 7X7 stainless steel twisted wire.
- Many knob styles available
- Conduit: 0.188 inch OD Teflon lined for smooth consistent control
- Design work load: 25 lbs (pull only)
- Operating temp: -65 to 450°F (knob housing assembly: -65 to 250°F)
- Control length is measured from panel fitting to end of conduit, wires extend 6 inches beyond conduit.


 P/N 6515  
Barrel Stop

**Turn-to-Lock:** P/N MCTL1014D LLL-K (LLL = length in inches, K = Knob style - see page 30)

These controls feature a turn-to-lock mechanism that requires a quarter turn of the knob to lock or unlock the control at any position.

- Travel (stroke): 4.0" max
- Minimum locking force ~30 lbs
- Panel fitting: 1/2-20 UNF thread



**Non-Locking:** P/N MCC101D LLL-K (LLL = length in inches, K = Knob style - see table below)

Internal elastomer seal to dampen vibration and provide a small amount of resistance. If your choke installation features a return spring, this control will return to the closed position when released.

- Travel (stroke): 3.5" max
- Panel fitting: 7/16-20 X 1.3" UNF thread



Knob Style Suffix (-K)	Knob Style
-RB	Round, Black
-RC	Round, Clear (silver)
-RL	Round, Blue
-RR	Round, Red
-RBC	Round, Black, engraved with "Choke"
-RCC	Round, Clear (silver), engraved with "Choke"
-RLC	Round, Blue, engraved with "Choke"
-RRC	Round, Red, engraved with "Choke"



## Throttle Return Springs

**Stop throttle creep! Kit P/N 7140**

A common complaint about the Rotax 912/914 engines is that the throttle return springs are too strong. McFarlane now stocks alternate springs so you can choose the one that fits your application the best. All McFarlane throttle controls for Rotax engines contain P/N 7140 that includes a red and blue spring with color coordination relative to position lighting on the aircraft. Individual springs can also be purchased, see table on right. For use on non-certified aircraft.



Spring P/N	Relaxed Spring Length (max in)	Approx. Pre Load (lbf)	Spring Rate (lbf/in)
6822, Red, Left	1.6	1.5	2.1-2.7
7235, Blue, Right	1.6	1.5	2.1-2.7
Rotax Original	1.8 (approx.)	2.0	8-12 (approx.)

## Throttle Hardware Kit for Rotax Engines

**Dual Throttle Hardware Kit P/N 6408**

Parts also available separately. For use on non-certified aircraft

**Slip Fit Conduit Terminal P/N 6271**

- M6x1 x 1.00 inch thread for easy adjustment
- Three installation options - (1) Free Fitting: Slip on the conduit, (2) Semi-Permanent: Secure to conduit with provided set screws, (3) Permanent: Epoxy to conduit with set screws

**Adjustable cable stops P/N 6270**

Prevents damage to the carburetor from excessive pilot force at the idle-cutoff position. If needed, install cable stop assembly on control wire(s). Locate stop so that when carburetor is at full idle, the cable stop is against part number 6271 conduit terminal.

**Alternate Carburetor Arm Return Spring P/N 6822 (Red, Left) and 7235 (Blue, Right)**

- Less than half the strength of the original stock Rotax springs
- Prevents throttle "creep" due to excessive return spring force
- Requires 1 per carburetor (2 per engine)
- Installer must determine whether this spring is appropriate for their application.

**Kit contains:**

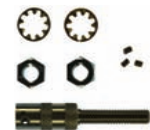
2 each 6271 Slip Fit Conduit Terminal Assemblies, 2 each 6270 Adjustable Cable Stop Assemblies  
1 each 6822 (Red, Left) and 7235 (Blue, Right) Spring, 1 each Hex Wrench



## Slip Fit Conduit Terminals

**P/N 6271 (for 0.188" diameter conduit), P/N 7002 (for 0.258" diameter conduit)**

- M6x1 x 1.00 inch thread for easy adjustment
- Three installation options - (1) Free Fitting: Slip on the conduit, (2) Semi-Permanent: Secure to conduit with provided set screws, (3) Permanent: Epoxy to conduit with set screws



## Conduit Terminal P/N 6424

May be used as a slip fit conduit terminal, or swaged or epoxied onto the conduit. Fits 0.188" diameter conduit. OD is 0.25".

- 2 per control
- Stainless Steel



## Barrel Stop Assembly P/N 6515

- Attach to the carburetor choke arm
  - No swaging or soldering necessary
  - Accepts 1/16" wire
- For MCTL1014D series Turn-to-Lock Choke Controls and MCC101D series Non-Locking Choke Controls.



## Vernier-Assist™ Engine Controls

### Precision Control

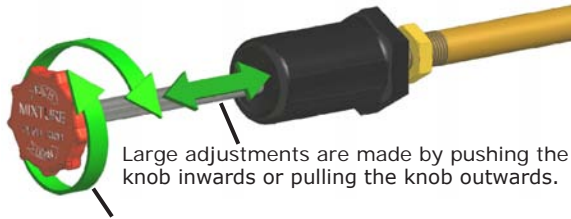
New roller action vernier provides smooth jam-proof coarse and fine adjustment without a release button. (US Pat. No. 8,485,057)

- Light weight and compact behind the dash
- Safer - Our roller action cannot jam!
- Not for use on certified aircraft

Call us with your unique requirements!

#### MCMV Mixture Series

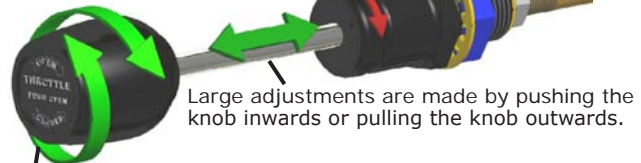
Vernier action with only a 3/8" panel hole!



#### MCTV Throttle Series

Vernier and friction lock - The best of both!

Tension and vernier action is increased by tightening the tension nut.



Fine adjustments are made by rotating the knob clockwise or counterclockwise. The McFarlane Vernier-Assist™ controls use a patented roller action and do not use a positive lock thread engagement. For extreme conduit routing or heavy carburetor load installations, slight inward or outward assist pressure could be required during rotation.

### Alternate knobs available

- All controls below are offered with or without a knob
- As a propeller control use knob P/N 6730
- See page 30 for complete list of 1/4-20 thread knobs



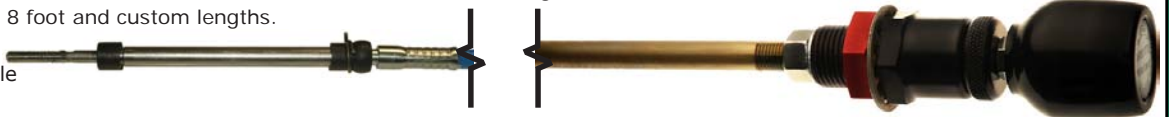
Vernier Assist Roller Pin P/N 6518

Now sold in six packs!

### Throttle Control with 10-32 threaded end:

P/N MCTV1035-LLL with knob or MCVA1035-20-LLL without knob<sup>1</sup> (LLL = length in inches)

- Available in 3, 4, 5, 6, 7, 8 foot and custom lengths.
- Vernier and friction lock
- Requires a 3/4" panel hole



### Throttle Control with 1/4-28 threaded end:

P/N MCTV2035-LLL with knob or MCVA2035-20-LLL without knob<sup>1</sup> (LLL = length in inches)

- Available in 3, 4, 5, 6, 7, 8 foot and custom lengths.
- Vernier and friction lock
- Requires a 3/4" panel hole



### Throttle Control with 5/64" diameter 1X7 twisted stainless wire end:

P/N MCTV3035-LLL with knob or MCVA3035-20-LLL without knob<sup>1</sup> (LLL = length in inches)

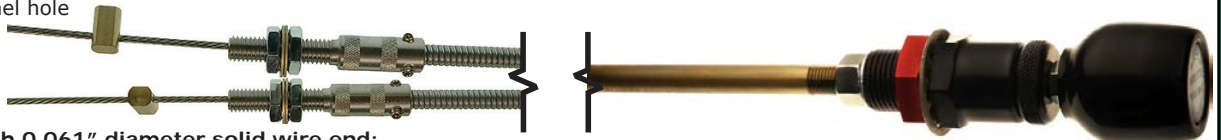
- Available in 4, 6, 8, 12 foot and custom lengths.
- Vernier and friction lock
- Includes P/N 6515 Barrel Stop assembly. See page 27
- Requires a 3/4" panel hole



### Dual Throttle Control with 1/16" diameter 1X7 twisted stainless wire ends:

P/N MCTV0005DLLL with knob or MCVA0005-30DLLL without knob<sup>1</sup> (LLL = length in inches)

- Available in 4, 6, 8, 12 foot and custom lengths.
- Vernier and friction lock
- Includes P/N 6408 hardware kit. See page 27
- Perfect for Rotax 912/914 engines! See page 26
- Requires a 3/4" panel hole



### Mixture Control with 0.061" diameter solid wire end:

P/N MCMV0241-LLL with knob or MCVA0241-03-LLL without knob<sup>1</sup> (LLL = length in inches)

- Available in 4, 6, and 10 foot lengths.
- May be trimmed to length
- Compact behind the dash
- Requires a 3/8" panel hole
- Not recommended for use as a throttle control



<sup>1</sup> Requires a knob with 1/4-20 thread. See page 29 for available knob options.

## Replacement Knobs for McFarlane Push-Pull Controls

Parts used on FAA-PMA approved controls are FAA-PMA approved. All other parts are non FAA-PMA approved.

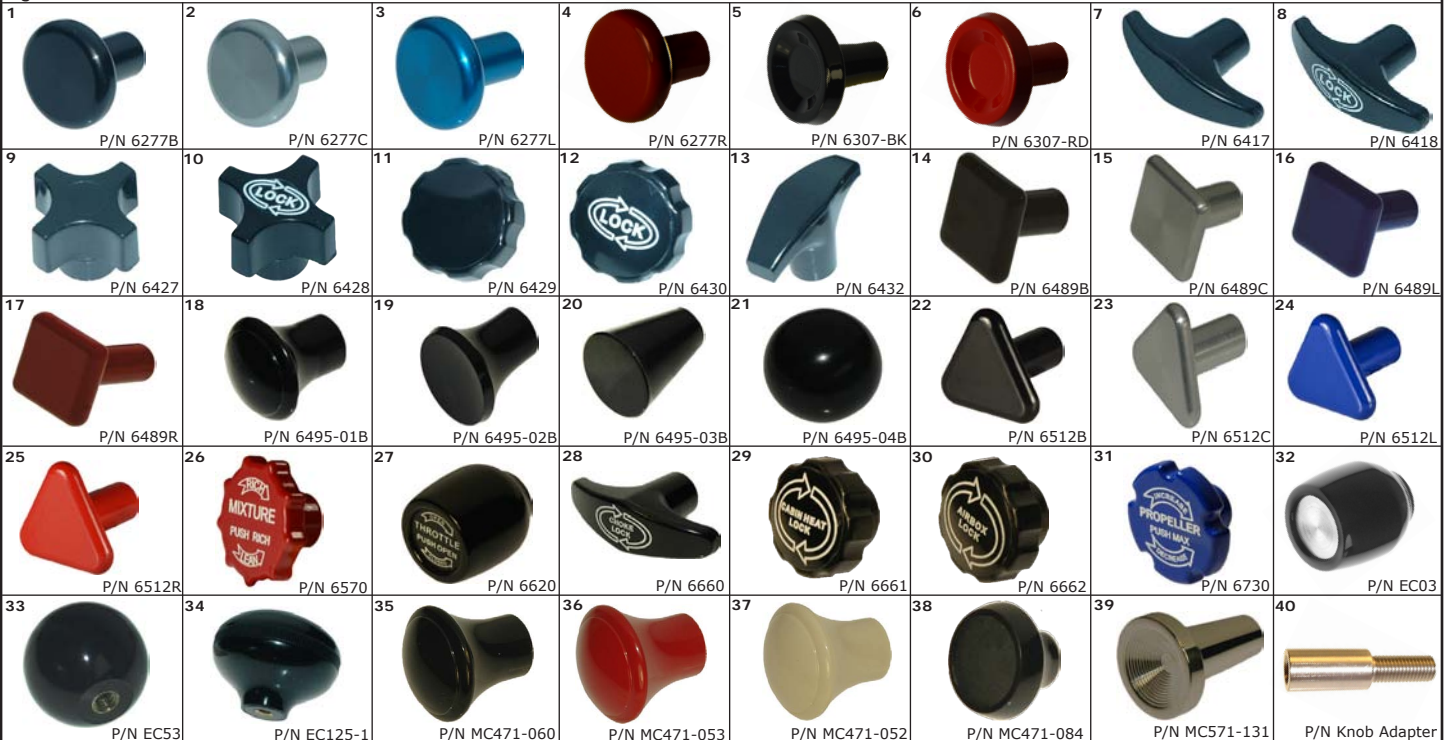
Knobs:							Knob Options		
Part Number	Figure	Description	Thread	Color	Marking	Use Eligibility	Color Code	Primary Marking Code (Secondary)	
6277B	1	Round powder coated aluminum	10-32	Black		MCC101D and MCU series controls			
6277C	2	Round anodized aluminum	10-32	Clear (silver)		MCC101D and MCU series controls			
6277L	3	Round powder coated aluminum	10-32	Blue		MCC101D and MCU series controls	B-Black	A-CABIN AIR only on 6277 series knobs (PULL ON)	
6277R	4	Round powder coated aluminum	10-32	Red		MCC101D and MCU series controls			
6307-BK	5	Round powder coated aluminum	10-32	Black		MCU series controls	C-Clear (Silver)	B-CARB HEAT only on 6489 series knobs (PULL ON)	
6307-RD	6	Round powder coated aluminum	10-32	Red		MCU series controls			
6417	7	T-Handle	1/4-20	Black		MCTL series controls	L-Blue	C-CHOKE use on 6277 series knobs	
6418	8	T-Handle	1/4-20	Black	"Lock" w/arrows	MCTL series controls			
6427	9	4 Prong	1/4-20	Black		MCTL series controls			
6428	10	4 Prong	1/4-20	Black	"Lock" w/arrows	MCTL series controls	R-Red	D-DEFROST only on 6277 series knobs (PULL ON)	
6429	11	Fluted	1/4-20	Black		MCTL series controls			
6430	12	Fluted	1/4-20	Black	"Lock" w/arrows	MCTL series controls			
6432	13	Shortened T-Handle	1-4-20	Black		MCTL series controls		H-CABIN HEAT only on 6277 series knobs (PULL ON)	
6489B	14	Square powder coated aluminum	10-32	Black		MCU series controls			
6489C	15	Square anodized aluminum	10-32	Clear (silver)		MCU series controls			
6489L	16	Square powder coated aluminum	10-32	Blue		MCU series controls		P-PARK BRAKE only on 6277 series knobs (PULL ON)	
6489R	17	Square powder coated aluminum	10-32	Red		MCU series controls			
6495-01B	18	Phenolic	10-32	Black		MCU series controls			
6495-02B	19	Phenolic	10-32	Black		MCU series controls			
6495-03B	20	Phenolic	10-32	Black		MCU series controls			
6495-04B	21	Phenolic	10-32	Black		MCU series controls			
6512B	22	Triangle powder coated aluminum	10-32	Black		MCU series controls			
6512C	23	Triangle anodized aluminum	10-32	Clear (silver)		MCU series controls			
6512L	24	Triangle powder coated aluminum	10-32	Blue		MCU series controls			
6512R	25	Triangle powder coated aluminum	10-32	Red		MCU series controls			
6570	26	Vernier-Assist Mixture	1/4-20	Red		Vernier-Assist Mixture series controls			
6620	27	Vernier-Assist Throttle	1/4-20	Black		Vernier-Assist Throttle series controls			
6660	28	T-Handle	1/4-20	Black	Choke Lock	MCTL series controls			
6661	29	Fluted	1/4-20	Black	Cabin Heat Lock	MCTL series controls			
6662	30	Fluted	1/4-20	Black	Airbox Lock	MCTL series controls			
6730	31	Vernier-Assist Propeller	1/4-20	Blue		Vernier-Assist series controls			
EC03	32	Black Knob	1/4-20	Black		Throttle controls			
EC53	33	Black Ball Knob	1/4-20	Black		P/N MC12693-04 or MC455-139, MCT100D, MCTL and MCC101D series controls			
EC125-1	34	2" Hemisphere	1/4-20	Black					
MC471-060	35	Round, Phenolic	10-32	Black		Piper Cabin Environment Controls			
MC471-053	36	Round, Phenolic	10-32	Red		Piper Mixture Controls			
MC471-052	37	Round, Phenolic	10-32	Ivory		Piper Cabin Environment and Carb Heat Controls			
MC471-084	38	Round, Phenolic	10-32	Black		Piper Carb Heat Controls			
MC571-131	39	Round, Phenolic	10-32	Clear (Silver)		Piper Cabin Environment and Carb Heat Controls			
Knob Adapter	40	Adapts the McFarlane throttle control to the early hemisphere style knobs. Inner thread size is 1/4-20. Outer thread size is 1/4-28.							

Knob Jam Nuts and Lock Washers	
Part Number	Description
EC33	1/4-20 Jam Nut
<b>Use Eligibility:</b> MCTL Series Controls Throttle controls using 1/4-20 threaded fittings (except p/n MC12693-04 & MC455-139)	
MS35650-304	10-32 Jam Nut
<b>Use Eligibility:</b> MCC101D series controls	
MS35333-40	1/4" Steel Lock Washer
<b>Use Eligibility:</b> MCTL and MCC101D Series Controls	
Decals	
6289	Carb Heat Decal
<b>Use Eligibility:</b> Piper Carb Heat Controls	

Custom engraved knobs are available for a small additional fee. Call for details.

See Knob Options table on the right for Color and Marking Codes

Figures 1-40 Photos are not to scale relative to each other



Examples of marked knobs



## Replacement Parts for McFarlane Push-Pull Controls

Parts used on FAA-PMA approved controls are FAA-PMA approved. All other parts are non FAA-PMA approved.

**Boots:** Fuel, oil and temperature resistant, keeps trash out of the control and dampens vibration.

Part Number	Figure	Description	Use Eligibility
235	1	3/16" Pushrod Boot	Controls with a 3/16" pushrod
272	2	1/4" Pushrod Boot	Controls with a 1/4" pushrod
EC04	3	Swivel Boot	Controls employing a swivel joint

**Retaining Nuts and Lock Washers:** The retaining nut threads onto the threaded section of the control on the back side of the instrument panel to secure the control.

Part Number	Description	Use Eligibility
6060-8	4 1/2-20 Retaining Nut	Throttle controls using 1/2-20 threaded fittings
EC111	5 1/2" Lock Washer	Throttle controls using 1/2" threaded fittings
MS35333-44	6 Same as EC111	
6060-12	7 3/4-16 Retaining Nut	Throttle controls using 3/4-16 threaded fittings
EC112	8 3/4" Lock Washer	Throttle controls using 3/4" threaded fittings
MS35333-47	9 Same as EC112	
6196	10 3/8-24 Jam Nut	Cessna carb heat controls
6197	11 3/8" Lock Washer	Cessna carb heat controls
6133	12 7/16-20 Retaining Nut	Throttle controls using 7/16-20 threaded fittings
6260	13 7/16-20 Retaining Nut, Modified	MC6350 Dual Push-to-Unlock controls
EC38	14 7/16" Lock Washer	
EC61	15 3/8" Lock Washer	P/N MC12693-04 or MC455-139
EC62	16 3/8-24 Retaining Nut	P/N MC12693-04 or MC455-139
EC65	17 Throttle Spacer Bushing	P/N MC12693-04 or MC455-139
EC119	18 3/4-16 Retaining Nut Extended Nut	McFarlane vernier controls using 3/4-16 threaded fittings

**Threaded Wear Sleeve Nuts and Lock Washers:** Threaded wear sleeves are used on many McFarlane controls to secure the control to the firewall and/or mounting brackets.

Part Number	Description	Use Eligibility
EC38	19 7/16" Lock Washer	MC565-548 series controls
EC70	20 12M x 1.25 Jam Nut	MC565 series controls
EC72	21 12mm Lock Washer	MC565 series controls

### Spring

Part Number	Description	Use Eligibility
6822	22 Spring, Throttle, Red	Alternate carburetor arm return spring for dual carburetor 912/914 series Rotax engines. Less than half the strength of the original stock Rotax springs. Prevents throttle "creep" due to excessive return spring force.
7235	46 Spring, Throttle, Blue	Requires 1 per carburetor (2 per engine). See page 28.
7140	47 Spring, Throttle Kit (one red and one blue)	

### Adjustable Friction Lock Service Kits

Part Number	Description	Use Eligibility
EC12SK	23 Friction Packing Service Kit	Throttle controls using a 1/2" friction nut
EC312SK	24 Friction Packing Service Kit	Throttle controls using a 9/16" friction nut

### Miscellaneous

Part Number	Description	Use Eligibility
6135	25 1/8" Ball Bearing, sold in 5 packs.	Replaces the ball bearing used in the locking mechanism for the MC6150, MC6250 and MC6350 series Push-to-Unlock controls.
6270	26 Cable Stop Assembly	Rotax Engines
6271	27 Conduit Terminal Assembly, Slip Fit	Rotax Engines
6290-06-12K	28 Panel Hole Reducer 0.375 X 0.75	Includes a flat washer. Not for use on certified aircraft.
6290-08-12K	29 Panel Hole Reducer 0.50 X 0.75	Includes a flat washer. Not for use on certified aircraft.
6408	30 Dual Throttle Hardware Kit	Rotax Engines
6409	31 Allen Wrench	MCTL series controls
6415	32 Panel Bolt, Turn-to-Lock	MCTL series controls
6416	33 Pin, Turn-to-Lock	MCTL series controls
6420	34 Ferrule, Turn-to-Lock, Brass	MCTL series controls
6423	35 Ferrule, Turn-to-Lock, Nylon	MCTL series controls
6424	36 Conduit Terminal	Rotax Choke Controls
6433-1	37 Conduit Clamp	MCQ100 series controls
6515	38 Barrel Stop Assembly	MCC101D and MCTL series controls
6518	39 Vernier Assist Roller Pin	Vernier Assist series controls
6797	40 Control Clip Plate	Rotax Engines
7002	41 Slip Fit Terminal	Rotax Engines
EC02	42 1/2" Friction Adjust Wheel	Throttle controls using a 1/2" friction adjust wheel
EC89	43 Wedge Washer	One used on each side of the instrument panel to angle a control (approx 6.5°) to avoid interference behind the panel. 9/16" ID, sold in pairs.
EC98	44 9/16" Friction Adjust Wheel	Throttle controls using a 9/16" friction adjust wheel
M83248/1-006	45 O-ring	MCC101D series controls

### Conduit Clamps

#### Standard (AN742 Series)

MIL-SPEC standard clamps.

#### Extra Grip (6317 Series)

Similar to standard AN742 clamps, but include a detent groove for better grip on coiled wire conduit.

#### Cushioned CJ Type MIL-Spec (MS21919WCJ Series)

Adel clamps for high temp application. (See page 45)

McFarlane recommends using steel clamps near the engine or exhaust instead of aluminum clamps.



Part Number	Material	Approximate Conduit Diameter
6317-3	Steel	3/16"
6317-4	Steel	1/4"
6317D3	Aluminum	3/16"
6317D4	Aluminum	1/4"
AN742-3	Steel	3/16"
AN742-4	Steel	1/4"
AN742D3	Aluminum	3/16"
AN742D4	Aluminum	1/4"

### Figures 1-45 Photos are not to scale relative to each other

