- **All 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. Our Vernier control locking devices are precision formed and heat treated in critical wear areas.

A Superior Conduit System

Our controls have low-friction smoothness and flexibility, even when routed with multiple tight bends. Our conduits are made from carbon steel wire, specially formed for increased strength and smooth inside diameter. Two of these wires are coiled in tandem for increased tensile strength. A Teflon jacket extruded over the coiled housing provides additional strength and wear-resistance. A virgin Teflon® liner in the center of the conduit reduces friction and ensures reliable operation.

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're scratch-resistant and do not deteriorate. McFarlane knobs meet the latest F.A.R. requirements for shape and color.

Special Lubrication

McFarlane controls have a special lifetime lubrication applied to critical sliding surfaces, made from a molybdenum disulfide and Teflon® based lubricant with a synthetic grease base. Our lubricant will reduce friction and prevent galling and contamination locking of the control components from -70° F to over 1000° F.

Vibration Dampening Features

Our 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 contaminates. The Viton® rubber withstands the high temperature of the engine environment while resisting degradation from oil and solvents. This system drastically reduces the wear that leads to premature control failure.

Time Tested

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

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 an outstanding performance and reliability record in all environments; we test them in the harshest environments to ensure they will provide a long and reliable service life. Bush pilots prefer our controls because they work freely at 50° below zero and have proven solidarity in harsh salt-water. Temperatures approaching the melting point of the steel components cannot stop McFarlane controls from functioning.

Recommended Service Life

Considering the operating environment and criticalness of engine controls, our maximum recommended in-service time for McFarlane engine controls is equal to the maximum time between engine overhauls, as recommended by the engine manufacturer.

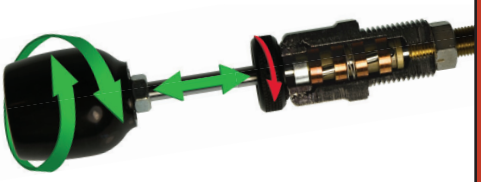
Custom Controls

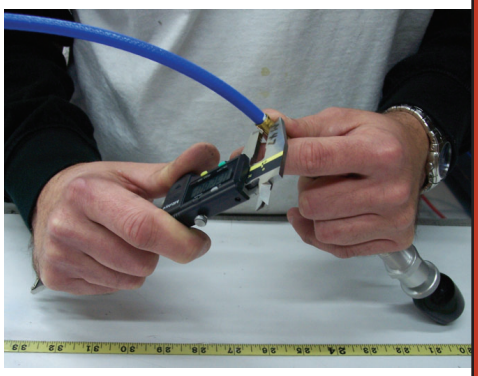
We can manufacture custom engine controls for aircrafts not listed in the approved application charts. All McFarlane custom control cables are built to customer-provided specifications. Our custom controls duplicate the original customer-supplied controls (in length, thread size and pitch, wear sleeve locations, diameter, and travel length). McFarlane custom controls are manufactured to the same standards, materials, rigorous testing, and inspections as our FAA-PMA products – however, custom controls are not FAA-PMA approved.

Vernier-Assist™

McFarlane's patented Vernier-Assist™ offers the pilot precision control of the engine, unlike anything else on the market! The Vernier-Assist assembly operates on friction alone by simply turning the knob, with no threads or locking balls/pins. It also allows for normal coarse movement by pushing in or out on the knob. – Unlike standard threaded vernier controls, this design cannot be jammed. The friction control provides smoothness and precision when operating the throttle and a friction lock secures the control in position, but it can be easily overridden in the case of an emergency. It is now FAA-PMA approved and **SAFE**!

US Patent No. 8,485,057 B1





Vernier-Assist™ Throttle Controls

Precision Control

New roller action vernier provides smooth jam-proof coarse and fine adjustment.

- Jam-proof safety
- Precision power adjustments
- Smooth friction control
- Light and compact
- Standard vernier action, without the button!

Fine adjustments are made by rotating the knob clockwise or counterclockwise. The McFarlane ***Vernier-Assist***™ throttle control uses a patented roller action and does 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.

Part numbers for ***Vernier-Assist***™ are the same as shown in the eligiblity tables except the "MC" prefix changes to "MCVA".

Examples:
Push-Pull P/N MC9863056-2 or ***Vernier-Assist***™ P/N MCVA9863056-2
Push-Pull P/N MCS1222-1S or ***Vernier-Assist***™ P/N MCVAS1222-1S
Push-Pull P/N MCC299505-0101 or ***Vernier-Assist***™ P/N MCVAC299505-0101

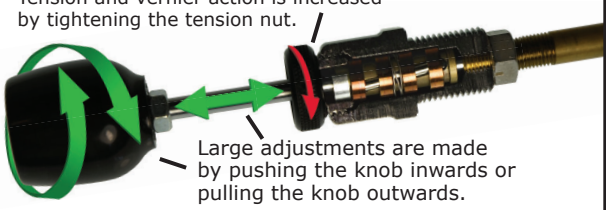
NEW

Now FAA-PMA Approved

New MCVA Throttle Series

Vernier and friction lock - The best of both!

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



Large adjustments are made by pushing the knob inwards or pulling the knob outwards.

Patent No. 8,485,057 B1

Throttle, Mixture, and Propeller Controls

- All 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
  - Cheapy 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

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

Photo courtesy of Dean Zinter 1956 Cessna 172 TD

McFarlane rod ends and wire clamps sold separately!

To Order Vernier-Assist™ Throttle Controls use "MCVA" prefix

To order new FAA-PMA approved *Vernier-Assist*™ throttle controls change "MC" prefix to "MCVA" prefix.

Model	Serial Number	Throttle Control Rod End	Propeller Control Rod End	Mixture Control Rod End or Wire Clamp	Cowl Flap Left Hand	Cowl Flap Right Hand	Carb Heat Control Wire Clamp
120	8003 thru 15075	MC0411091-7 [5]		MC600-72 [4]			*Control N/A*
		MCS1104-3 [2] *Rod End*		*Wire Clamp N/A*			MCS2323-1 *Wire Clamp*
140 [1]	8001 thru 11846	MC0411091-7 [5]		MC600-72 [4]			*Control N/A*
		MCS1104-3 [2] *Rod End*		*Wire Clamp N/A*			MCS2323-1 *Wire Clamp*
140 [1],140A	11847 thru 15724	MC0411091-7 [5]		MC600-72 [4]			MC0411090-4CH [3]
		MCS1104-3 [2] *Rod End*		*Wire Clamp N/A*			MCS2323-1 *Wire Clamp*
150 [1]	17001 thru 17683	MC0411091-7 [5]		MC600-72 [4]			*Control N/A*
		MCS1104-3 *Rod End*		MCS2323-6 *Wire Clamp*			MCS2323-1 *Wire Clamp*
150 [1]	17684 thru 59018	MC0411091-7 [5]		MC600-72 [4]			MC0713302-5CH [3]
		MCS1104-3 *Rod End*		MCS2323-6 *Wire Clamp*			MCS2323-1 *Wire Clamp*
150A,B,C,D,E,F	All	MCS1222-11S [5]		MC600-72 [4]			MCS1230-2
		MCS1104-3 *Rod End*		MCS2323-6 *Wire Clamp*			MCS2323-1 *Wire Clamp*
150G	All	MCS1222-14S [5]		MC600-72 [4]			MCS1230-2
		MCS1104-3 *Rod End*		MCS2323-6 *Wire Clamp*			MCS2323-1 *Wire Clamp*
150H,J,K,L	All	MCC299505-0202S [5]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-6 *Wire Clamp*			MCS2323-1 *Wire Clamp*
150M	All	MCC299505-0202S [5]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-12 *Wire Clamp*			MCS2323-1 *Wire Clamp*
A150K,L	All	MCC299505-0202S [5]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-6 *Wire Clamp*			MCS2323-1 *Wire Clamp*
A150M	All	MCC299505-0202S [5]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-12 *Wire Clamp*			MCS2323-1 *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.
[5] To order ***Vernier-Assist***™ throttle controls change "MC" prefix to "MCVA" prefix

Eligibility continued on next page

Push-Pull Controls and Accessories
Engine, Cowl Flap & Carb Heat Controls - Cessna

McFarlane
FAA-PMA Approved

To order new FAA-PMA approved *Vernier-Assist*™ throttle controls change "MC" prefix to "MCVA" prefix.

Model	Serial Number	Throttle Control / Rod End	Propeller Control / Rod End	Mixture Control / Rod End or Wire Clamp	Cowl Flap Left Hand	Cowl Flap Right Hand	Carb Heat Control / Wire Clamp
F150F	All	MCS1222-11S [6]		*Control N/A*			MCS1230-2
		MCS1104-3 *Rod End*		MCS2323-6 *Wire Clamp*			MCS2323-1 *Wire Clamp*
F150G	All	MCS1222-14S [6]		MC600-72 [4]			MCS1230-2
		MCS1104-3 *Rod End*		MCS2323-6 *Wire Clamp*			MCS2323-1 *Wire Clamp*
F150H,J,K,L	All	MCC299505-0202S [6]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-6 *Wire Clamp*			MCS2323-1 *Wire Clamp*
F150M	All	MCC299505-0202S [6]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-12 *Wire Clamp*			MCS2323-1 *Wire Clamp*
FA150K,L [1]	FA1500001 thru FA1500120	MCC299505-0202S [6]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-6 *Wire Clamp*			MCS2323-1 *Wire Clamp*
FA150L [1]	FA1500121 thru FA1500261	MCC299505-0202S [6]		*Control N/A*			*Control N/A*
		MCS1104-3 *Rod End*		MCS2323-6 *Wire Clamp*			MCS2323-1 *Wire Clamp*
FA150M	FA1500262 thru FA1500336	MCC299505-0202S [6]		*Control N/A*			*Control N/A*
		MCS1104-3 *Rod End*		MCS2323-12 *Wire Clamp*			MCS2323-1 *Wire Clamp*
FRA150L,M [1]	FRA1500121 thru FRA1500311	MCC299505-0202S [6]		*Control N/A*			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-12 *Wire Clamp*			MCS2323-1 *Wire Clamp*
FRA150M [1]	FRA1500312 thru FRA1500336	*Control N/A*		*Control N/A*			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-12 *Wire Clamp*			MCS2323-1 *Wire Clamp*
152 [1]	15279406 thru 15282031	MC9863053-20 [6]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
152 [1]	15282032 thru 15285939	MC9863056-1 [6]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
152 [1]	15285940 thru 15286033	MC9863056-1 [6]		MC600-72 [4]			*Control N/A*
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
A152 [1]	A1520735 thru A1520808	MC9863053-20 [6]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
A152 [1]	A1520809 thru A1521049	MC9863056-1 [6]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
F152 [1]	F15201429 thru F15201528	MC9863053-20 [6]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
F152 [1]	F15201529 thru F15201952	MC9863056-1 [6]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
F152 [1]	F15201953 thru F15201980	MC9863056-1 [6]		MC600-72 [4]			*Control N/A*
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
FA152 [1]	FA1520337 thru FA1520347	MC9863053-20 [6]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
FA152 [1]	FA1520348 thru FA1520387	MC9863056-1 [6]		MC600-72 [4]			MCS1230-19
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
FA152 [1]	FA1520388 thru FA1520425	MC9863056-1 [6]		MC600-72 [4]			*Control N/A*
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
170	All	MC0411091-2 [6]		MC600-72 [4]			MC0411090-4CH [3]
		Rod End N/A		MCS2323-2 *Wire Clamp*			MCS2323-1 *Wire Clamp*
170A	All	MC0411091-2 [6]		MC600-72 [4]			MC0411090-4CH [3]
		MCS1104-3 [2] *Rod End*		MCS2323-2 *Wire Clamp*			MCS2323-1 *Wire Clamp*
170B [1]	20267 thru 25372	MC0411091-2 [6]		MC600-72 [4]			MC0411090-4CH [3]
		MCS1104-3 [2] *Rod End*		*Wire Clamp N/A*			MCS2323-1 *Wire Clamp*
170B [1]	25373 thru 27169	MCS1222-2S [5] [6]		MC600-72 [4]			MC0411090-22CH [3]
		MCS1104-3 [2] *Rod End*		*Wire Clamp N/A*			MCS2323-1 *Wire Clamp*
172 [1]	28000 thru 36965	MCS1222-2S [6]		MC600-72 [4]			MC0411090-22CH [3]
		MCS1104-3 [2] *Rod End*		MCS2323-2 *Wire Clamp*			MCS2323-1 *Wire Clamp*
172 [1]	36966 thru 46754	MCS1222-2S [6]		MC600-72 [4]			MC0713302-5CH [3]
		MCS1104-3 [2] *Rod End*		MCS2323-2 *Wire Clamp*			MCS2323-1 *Wire Clamp*
172A	All	MCS1222-2S [6]		MC600-72 [4]			MC0713302-5CH [3]
		MCS1104-3 [2] *Rod End*		MCS2323-2 *Wire Clamp*			MCS2323-1 *Wire Clamp*
172B,C	All	MCS1222-2S [6]		MC600-72 [4]			MCS1224-4
		MCS1104-3 [2] *Rod End*		MCS2323-2 *Wire Clamp*			MCS2323-5 *Wire Clamp*
172D	All	MCS1222-2S [6]		MC600-72 [4]			MCS1224-4 ***New!***
		MCS1104-3 *Rod End*		MCS2323-2 *Wire Clamp*			MCS2323-5 *Wire Clamp*
172E,F	All	MCS1222-15S [6]		MC600-72 [4]			MCS1224-4
		MCS1104-3 *Rod End*		MCS2323-2 *Wire Clamp*			MCS2323-5 *Wire Clamp*
172G,H	All	MCS1222-15S [6]		MC600-72 [4]			MCS1230-7
		MCS1104-3 *Rod End*		MCS2323-2 *Wire Clamp*			MCS2323-5 *Wire Clamp*
172I,K,L,M [1]	17256513 thru 17263458	MCC299505-0102 [6]		MC600-72 [4]			MCS1230-17
		MCS1104-3 *Rod End*		MCS2323-2 *Wire Clamp*			MCS2323-5 *Wire Clamp*
172M [1]	17263459 thru 17267584	MCC299505-0102 [6]		MC600-72 [4]			MCS1230-17
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
172N [1]	17267585 thru 17271034	MC9863053-15 [6]		MC600-72 [4]			MCS1230-17
		MCS1104-3 *Rod End*		MCS2323-4 *Wire Clamp*			MCS2323-5 *Wire Clamp*
172N [1]	17271035 thru 17274009	MC9863056-3 [6]		MC600-72 [4]			MCS1230-17
		MCS1104-3 *Rod End*		MCS2323-4 *Wire Clamp*			MCS2323-5 *Wire Clamp*
172P	17274010 thru 17276654	MC9863056-3 [6]		MC600-72 [4]			MCS1230-17
		MCS1104-3 *Rod End*		MCS2323-13 *Wire Clamp*			MCS2323-5 *Wire Clamp*
172Q	All	MC9863056-3 [6]		MC600-72 [4]			MCS1241-49
		MCS1104-3 *Rod End*		MCS2323-4 *Wire Clamp*			MCS2323-5 *Wire Clamp*
172R,S	All	MC565-549-021 [6]		MC565-548-041			
		MCS1104-3 *Rod End*		MCS1104-3 *Rod End*			
172RG	All	MC9863056-8 [6]	MC345-085-9	MC600-72 [4]			*Control N/A*
		MCS1104-3 *Rod End*	MCS1104-3 *Rod End*	MCS2323-11 *Wire Clamp*			MCS2323-7 *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.
[5] The original Cessna adapter P/N 0513004-16 must be used to angle the control and avoid interference behind the instrument panel.
[6] To order ***Vernier-Assist***™ throttle controls change "MC" prefix to "MCVA" prefix

Eligibility continued on next page

Push-Pull Controls and Accessories
Engine, Cowl Flap & Carb Heat Controls - Cessna

To order new FAA-PMA approved *Vernier-Assist*™ throttle controls change "MC" prefix to "MCVA" prefix.

Model	Serial Number	Throttle Control Rod End	Propeller Control Rod End	Mixture Control Rod End or Wire Clamp	Cowl Flap Left Hand	Cowl Flap Right Hand	Carb Heat Control Wire Clamp
F172D	All	MCS1222-2S [8] MCS1104-3 *Rod End*		MC600-72 [6] MCS2323-2 *Wire Clamp*			MCS1224-4 ***New!*** MCS2323-5 *Wire Clamp*
F172E,F	All	MCS1222-15S [8] MCS1104-3 *Rod End*		MC600-72 [6] MCS2323-2 *Wire Clamp*			MCS1224-4 MCS2323-5 *Wire Clamp*
F172G,H[1]	F172-0180 thru F172-0559	MCS1222-15S [8] MCS1104-3 *Rod End*		MC600-72 [6] MCS2323-2 *Wire Clamp*			MCS1230-7 MCS2323-5 *Wire Clamp*
F172H[1],K	F172-0560 thru F17200804	MCC299505-0203S [8] MCS1104-3 *Rod End*		MC600-72 [6] MCS2323-2 *Wire Clamp*			MCS1230-17 MCS2323-5 *Wire Clamp*
F172L,M[1]	F17200805 thru F17201034	MCC299505-0203S [8] MCS1104-3 *Rod End*		MC600-72 [6] MCS2323-2 *Wire Clamp*			MCS1230-17 *Wire Clamp N/A*
F172M[1]	F17201035 thru F17201234	MCC299505-0102 [8] MCS1104-3 *Rod End*		MC600-72 [6] MCS2323-2 *Wire Clamp*			
F172M[1]	F17201235 thru F17201514	MCC299505-0102 [8] MCS1104-3 *Rod End*		MC600-72 [6] MCS2323-13 *Wire Clamp*			MCS1230-17 MCS2323-5 *Wire Clamp*
F172N[1]	F17201515 thru F17201749	MC9863053-15 [8] MCS1104-3 *Rod End*		MC600-72 [6] MCS2323-4 *Wire Clamp*			MCS1230-17 MCS2323-5 *Wire Clamp*
F172N[1]	F17201750 thru F17202039	MC9863056-3 [8] MCS1104-3 *Rod End*		MC600-72 [6] MCS2323-4 *Wire Clamp*			MCS1230-17 MCS2323-5 *Wire Clamp*
F172P	F17202040 thru F17202254	MC9863056-3 [8] MCS1104-3 *Rod End*		MC600-72 [6] MCS2323-13 *Wire Clamp*			MCS1230-17 MCS2323-5 *Wire Clamp*
FP172	All	MCS1222-4 [8] MCS1106-4 *Rod End*	MCC299506-0105 MCS1104-3 *Rod End*	*Control N/A* MCS2323-4 *Wire Clamp*			*Control N/A* MCS2323-5 *Wire Clamp*
FR172E	All	*Control N/A* MCS1104-3 *Rod End*	MCS1223-17 MCS1104-3 *Rod End*	*Control N/A* MCS1104-3 *Rod End*			
FR172F,G,H,J[1]	FR17200061 thru FR17200530	MCC299505-0204S [8] MCS1104-3 *Rod End*	MCC299506B0104 MCS1104-3 *Rod End*	*Control N/A* MCS1104-3 *Rod End*			
FR172J[1]	FR17200531 thru FR17200590	MCC299505-0204S [8] MCS1104-3 *Rod End*	MCC299506B0104 MCS1104-3 *Rod End*	MC9862066-6 MCS1104-3 *Rod End*			
FR172K[4]	FR17200591 thru FR17200630	MC9863053-10 [8] MCS1104-3 *Rod End*	MCC299506B0104 MCS1104-3 *Rod End*	MC9862066-6 MCS1104-3 *Rod End*	MCS1391-26 (one per aircraft)		
FR172K[1]	FR17200631 thru FR17200675	MC9863055-10 [8] MCS1104-3 *Rod End*	MCC299506B0104 MCS1104-3 *Rod End*	MC9862066-6 MCS1104-3 *Rod End*	MCS1391-26 (one per aircraft)		
P172D	All	MCS1222-4 [8] MCS1106-4 *Rod End*	MCC299506-0105 MCS1104-3 *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*			MCS1224-4 MCS2323-5 *Wire Clamp*
R172K[1][4]	R1722000 thru R1722929	MC9863053-10 [8] MCS1104-3 *Rod End*	MCC299506B0104 MCS1104-3 *Rod End*	MC9862066-6 MCS1104-3 *Rod End*	MCS1391-26 (one per aircraft)		
R172K[1]	R1722930 thru R1723454	MC9863055-10 [8] MCS1104-3 *Rod End*	MCC299506B0104 MCS1104-3 *Rod End*	MC9862066-6 MCS1104-3 *Rod End*	MCS1391-26 (one per aircraft)		
175[1]	55001 thru 55703	MC0411091-27 [8] MCS1106-4 *Rod End*	*Control N/A* MCS1104-3[2] *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*			MC0411090-22CH [3] MCS2323-5 *Wire Clamp*
175[1]	55704 thru 56238	MC0411091-30 [8] MCS1106-4 *Rod End*	*Control N/A* MCS1104-3[2] *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*			MC0713302-5CH [3] MCS2323-5 *Wire Clamp*
175A	All	MCS1222-4 [8] MCS1106-4 *Rod End*	*Control N/A* MCS1104-3[2] *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*			MC0713302-5CH [3] MCS2323-5 *Wire Clamp*
175B,C	All	MCS1222-4 [8] MCS1106-4 *Rod End*	*Control N/A* MCS1104-3[2] *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*			MCS1224-4 MCS2323-5 *Wire Clamp*
177	All	MCS1222-19 [8] MCS1104-3 *Rod End*	*Control N/A* MCS1104-3 *Rod End*	MC600-72 [6] MCS2323-2 *Wire Clamp*			MCS1788-2 *Wire Clamp N/A*
177A	All	MCC299505-0301 [8] MCS1104-3 *Rod End*	*Control N/A* MCS1104-3 *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*			MCS1230-19 MCS2323-5 *Wire Clamp*
177B[1]	17701371 thru 17702539	MCC299505-0301 [8] MCS1104-3 *Rod End*	MCC299506-0105 MCS1104-3 *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*	MCS1391-25	MCS1391-26	MCS1230-19 MCS2323-5 *Wire Clamp*
177B[1]	17702540 thru 17702752	MC565-549-013 [8] MCS1104-3 *Rod End*	MC345-085-4 MCS1104-3 *Rod End*	MC600-72 [6] *Wire Clamp N/A*	MCS1391-25	MCS1391-26	MCS1230-19 MCS2323-5 *Wire Clamp*
177RG[1]	177RG0001 thru 177RG1051	MCC299505-0401 [8] MCS1104-3 *Rod End*	MCC299506-0105 MCS1104-3 *Rod End*	MCC299507-0102 MCS1104-3 *Rod End*	MCS1391-27	MCS1391-27	
177RG[1]	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[1]	F177RG0001 thru F177RG0160	MCC299505-0401 [8] MCS1104-3 *Rod End*	MCC299506-0105 MCS1104-3 *Rod End*	MCC299507-0102 MCS1104-3 *Rod End*			
F177RG[1]	F177RG0161 thru F177RG0177		MC345-085-4 *Rod End N/A*				
180[1]	30000 thru 32150	MCS1222-1S [8] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3[2] *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*	MC0713041-1 or MC0713041-1B [7] (Dual control, one per aircraft)		MC0411090-22CH [3] MCS2323-5 *Wire Clamp*
180[1]	32151 thru 32160	MCS1222-1S [8] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3[2] *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*	MC0713041-1 or MC0713041-1B [7] (Dual control, one per aircraft)		*Control N/A* MCS2323-5 *Wire Clamp*
180[1],180A	32161 thru 50355	MCS1222-1S [8] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3[2] *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*	MC0713041-1 or MC0713041-1B [7] (Dual control, one per aircraft)		MC0713050-2 MCS2323-5 *Wire Clamp*
180B	50356 thru 50661	MCS1222-1S [8] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3[2] *Rod End*	MC0713050-2 [5][6] MCS2323-4 *Wire Clamp*	MC0713041-1 or MC0713041-1B [7] (Dual control, one per aircraft)		MC0713050-2 MCS2323-5 *Wire Clamp*
180C	All	MCS1222-1S [8] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3[2] *Rod End*	MC0713050-2 [5][6] MCS2323-4 *Wire Clamp*	MC0713306-1 (Dual control, one per aircraft)		MC0713302-5CH [3] MCS2323-5 *Wire Clamp*
180D,E	All	MCS1222-1S [8] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3[2] *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*	MCS1245-1	MCS1245-2	MC0713302-5CH [3] MCS2323-5 *Wire Clamp*
180F	All	MCS1222-1S [8] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3 *Rod End*	MC600-72 [6] MCS2323-4 *Wire Clamp*	MCS1245-1	MCS1245-2	MCS1230-2 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] 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.
[5] The MC600-72 control is an approved alternate control for this aircraft. See note [6].
[6] 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.
[7] See page 20 for details.
[8] To order ***Vernier-Assist***™ throttle controls change "MC" prefix to "MCVA" prefix

Eligibility continued on next page

Push-Pull Controls and Accessories
Engine, Cowl Flap & Carb Heat Controls - Cessna

McFarlane
FAA-PMA Approved

To order new FAA-PMA approved *Vernier-Assist*™ throttle controls change "MC" prefix to "MCVA" prefix.

Model	Serial Number	Throttle Control Rod End	Propeller Control Rod End	Mixture Control Rod End or Wire Clamp	Cowl Flap Left Hand	Cowl Flap Right Hand	Carb Heat Control Wire Clamp
180G	All	MCS1222-1S [5] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MCS1245-3	MCS1245-2	MCS1230-2 MCS2323-5 *Wire Clamp*
180H[1]	18051446 thru 18051875	MCS1222-13S [5] MCS1106-4 *Rod End*	MCS1223-5 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MCS1572-1	MCS1245-2	MCS1230-2 MCS2323-5 *Wire Clamp*
180H[1], J	18051876 thru 18052770	MCC299505-0201S [5] MCS1106-4 *Rod End*	MCC299506-0103 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MCS1572-1	MCS1245-2	MCS1230-19 MCS2323-5 *Wire Clamp*
180K[1]	18052771 thru 18053000	MC9863053-5 [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[1]	18053001 thru 18053203	MC9863055-9 [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*
182	All	MCS1222-1S [5] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3[2] *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*			*Control N/A* MCS2323-5 *Wire Clamp*
182A	All	MCS1222-1S [5] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3[2] *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*			MC0411090-22CH [3] MCS2323-5 *Wire Clamp*
182B,C	All	MCS1222-1S [5] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3[2] *Rod End*	MC0713050-2 [4][6] MCS2323-4 *Wire Clamp*	MC0713306-1 (Dual control, one per aircraft)		MC0713302-5CH [3] MCS2323-5 *Wire Clamp*
182D	All	MCS1222-1S [5] MCS1106-4 *Rod End*	MCS1223-4 MCS1104-3[2] *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MCS1245-1	MCS1245-2	MC0713302-5CH [3] MCS2323-5 *Wire Clamp*
182E,F,G	All	MCS1222-6S [5] MCS1106-4 *Rod End*	MCS1223-3 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MC9860058-3	MC9860058-4	MCS1230-3 MCS2323-5 *Wire Clamp*
182H,J,K	All	MCS1222-13S [5] MCS1106-4 *Rod End*	MCS1223-6 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MC9860058-3	MC9860058-4	MCS1230-3 MCS2323-5 *Wire Clamp*
182L,M,N[1]	18258506 thru 18260445	MCC299505-0201S [5] MCS1106-4 *Rod End*	MCC299506-0102 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 *Wire Clamp*
182N[1], P[1]	18260446 thru 18261425	MCC299505-0201S [5] MCS1106-4 *Rod End*	MCC299506-0102 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 *Wire Clamp*
182P[1]	18261426 thru 18264835	MCC299505-0205 [5] MCS1106-4 *Rod End*	MCC299506-0102 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 *Wire Clamp*
182P[1]	18264836 thru 18265175	MC9863053-5 [5] MCS1106-4 *Rod End*	MCC299506-0102 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 *Wire Clamp*
182Q[1]	18265176 thru 18266590	MC9863053-5 [5] MCS1106-4 *Rod End*	MC9862067-3 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 *Wire Clamp*
182Q[1]	18266591 thru 18267715	MC9863055-9 [5] MCS1106-4 *Rod End*	MC9862067-3 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 *Wire Clamp*
182R	All	MC9863055-9 [5] MCS1106-4 *Rod End*	MC9862067-3 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*	MC9860058-3	MC9860058-4	MCS1230-10 MCS2323-5 *Wire Clamp*
182S, 182T, T182T	All	MC565-549-031 [5] 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* MCS1106-4 *Rod End*	*Control N/A* MCS1104-3 *Rod End*	*Control N/A* MCS2323-4 *Wire Clamp*			MCS2323-5 *Wire Clamp*
F182P	All	MC9863053-5 [5] MCS1106-4 *Rod End*	MCC299506-0102 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*			MCS1230-10 MCS2323-5 *Wire Clamp*
F182Q[1]	F18200026 thru F18200094	MC9863053-5 [5] MCS1106-4 *Rod End*	MC9862067-3 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*			MCS1230-10 MCS2323-5 *Wire Clamp*
F182Q[1]	F18200095 thru F18200169	MC9863055-9 [5] MCS1106-4 *Rod End*	MC9862067-3 MCS1104-3 *Rod End*	MC600-72 [4] MCS2323-4 *Wire Clamp*			MCS1230-10 MCS2323-5 *Wire Clamp*
FR182[1]	FR18200001 thru FR18200020	MC9863053-11 [5] 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[1]	FR18200021 thru FR18200045	MC9863056-6 [5] 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[1]	FR18200046 thru FR18200070	MC9863056-6 [5] 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[1]	R18200001 thru R18200583	MC9863053-11 [5] 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[1]	R18200584 thru R18201313	MC9863056-6 [5] 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[1]	R18201314 thru R18202041	MC9863056-6 [5] 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 [5] *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[1]	R18200584 thru R18201313	MC9863056-7 [5] 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[1]	R18201314 thru R18202041	MC9863056-7 [5] 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 [5] MCS1104-3 *Rod End*	MCS1223-5 MCS1104-3 *Rod End*	MC1213229-2 MCS1104-3 *Rod End*	MCS1245-3	MCS1245-2	MCS1230-2 *Wire Clamp N/A*
185A,B,C,D,E	All	MCS1294-1 [5] 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[1]	185-0968 thru 185-1300	MCS1294-1 [5] 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[1]	185-1301 thru 18502007	MCC299505-0301 [5] MCS1104-3 *Rod End*	MCC299506-0103 MCS1104-3 *Rod End*	MCC299507-0201 MCS1104-3 *Rod End*	MCS1572-1	MCS1245-2	
A185E[1]	18502008 thru 18502025	MCC299505-0501 [5] MCS1104-3 *Rod End*	MCC299506-0201 MCS1104-3 *Rod End*	MCC299507-0401 MCS1104-3 *Rod End*	MCS1572-1	MCS1245-2	
A185E[1]	18502026 thru 18502027	MCC299505-0301 [5] MCS1104-3 *Rod End*	MCC299506-0103 MCS1104-3 *Rod End*	MCC299507-0201 MCS1104-3 *Rod End*	MCS1572-1	MCS1245-2	
A185E[1]	18502028 thru 18502090	MCC299505-0501 [5] MCS1104-3 *Rod End*	MCC299506-0201 MCS1104-3 *Rod End*	MCC299507-0401 MCS1104-3 *Rod End*	MCS1572-1	MCS1245-2	

[1] Partial model eligibility.
[2] If replacing P/N S1186-1 or P/N 0550158 also order RE-KT-1 hardware kit.
[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.
[5] To order ***Vernier-Assist***™ throttle controls change "MC" prefix to "MCVA" prefix
[6] The MC600-72 control is an approved alternate control for this aircraft. See note [4].

Eligibility continued on next page

Push-Pull Controls and Accessories
Engine, Cowl Flap & Carb Heat Controls - Cessna

To order new FAA-PMA approved *Vernier-Assist*™ throttle controls change "MC" prefix to "MCVA" prefix.

Model	Serial Number	Throttle Control Rod End	Propeller Control Rod End	Mixture Control Rod End or Wire Clamp	Cowl Flap Left Hand	Cowl Flap Right Hand	Carb Heat Control Wire Clamp
A185F[1]	18502091 thru 18502310	MCC299505-0501 [2] MCS1104-3 *Rod End*	MCC299506-0201 MCS1104-3 *Rod End*	MCC299507-0401 MCS1104-3 *Rod End*	MCS1572-1	MCS1245-2	
A185F[1]	18502311 thru 18503153	MCC299505-0501 [2] MCS1104-3 *Rod End*	MCC299506-0201 MCS1104-3 *Rod End*	MCC299507-0401 MCS1104-3 *Rod End*	MCS1572-1	MCS1245-2	
A185F[1]	18503154 thru 18503683	MC9863053-17 [2] MCS1104-3 *Rod End*	MC345-085-7 MCS1104-3 *Rod End*	MC9862066-3 MCS1104-3 *Rod End*	MC9860074-3	MC9860074-4	
A185F[1]	18503684 thru 18504448	MC9863056-5 [2] 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 [2] 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[3] A-A188B[3]	All	MCS2149-1 [2] MCS1106-3 *Rod End*	MCS2149-2 MCS1106-3 *Rod End*	MCC299507-0301 MCS1106-3 *Rod End*			*Control N/A* MCS2323-5 *Wire Clamp*
A188[3] A188A[3]	All	MCS1391-20 [2] MCS1104-3 *Rod End*	MCS1391-19 MCS1104-3 *Rod End*	MCS1220-13 MCS1104-3 *Rod End*			*Control N/A* MCS2323-5 *Wire Clamp*
A188B[1][3]	18802349 thru 18802745 18802349T thru 18802745T	MCS2149-1 [2] MCS1106-3 *Rod End*	MCS2149-2 MCS1106-3 *Rod End*	MCC299507-0301 MCS1106-3 *Rod End*			*Control N/A* MCS2323-5 *Wire Clamp*
A188B[1][3]	18802746 thru 18803973 18802746T thru 18803973T	MCC299508-0301 [2] 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 [2] MCS1106-3 *Rod End*	MCC299508-0304 MCS1106-3 *Rod End*	MCC299508-0402 MCS1106-3 *Rod End*			
190	All	MC0411091-4 [2] MCS1106-3[2] *Rod End*	MC0311031-1 MCS1104-3[4] *Rod End*	*Control N/A* MCS1104-3[4] *Rod End*			
195,195A,B	All	MC0411091-4 [2] MCS1106-3[2] *Rod End*	MC0311031-2 MCS1104-3[4] *Rod End*	*Control N/A* MCS1104-3[4] *Rod End*			
210-5 (205) 210-5A (205A)	All	MCS1219-1 [2] MCS1104-3 *Rod End*	MCS1223-17 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
206	All	MCS1219-1 [2] MCS1104-3 *Rod End*	MCS1223-17 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
206H	All	MC565-549-041 [2] MCS1104-3 *Rod End*	MC565-580-012 MCS1104-3 *Rod End*	MC565-548-043 MCS1104-3 *Rod End*	MC580-703-026	MC580-703-027	
P206,P206A,B	All	MCS1222-10A [2] MCS1104-3 *Rod End*	MCS1223-4 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
P206C,D,E	All	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
T206H	All	MC565-549-041 [2] MCS1104-3 *Rod End*	MC565-580-012 MCS1104-3 *Rod End*	MC565-548-043 MCS1104-3 *Rod End*	MC580-703-026	MC580-703-027	
TP206A[1]	P2060161 thru P2060274	MCS1222-10A [2] MCS1104-3 *Rod End*	MCS1223-4 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
TP206A[1], B	P2060275 thru P2060419	MCS1222-10A [2] MCS1104-3 *Rod End*	MCS1223-4 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
TP206C,D,E	All	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
TU206A[1]	U2060438 thru U2060617	MCS1222-10A [2] MCS1104-3 *Rod End*	MCS1223-4 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
TU206A[1], B	U2060618 thru U206-0914	MCS1222-10A [2] MCS1104-3 *Rod End*	MCS1223-4 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
TU206C,D,E,F	All	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
TU206G[1]	U20603522 thru U20604649	MC9863053-13 [2] MCS1104-3 *Rod End*	MC9862067-1 MCS1104-3 *Rod End*	MC9862066-1 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
TU206G[1]	U20604650 thru U20607020	MC9863056-2 [2] MCS1104-3 *Rod End*	MC9862067-1 MCS1104-3 *Rod End*	MC9862066-1 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
U206,U206A,B	All	MCS1222-10A [2] MCS1104-3 *Rod End*	MCS1223-4 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
U206C,D,E	All	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
U206F[1]	U20601701 thru U20602199	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
U206F[1]	U20602200 thru U20603521	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
U206G[1]	U20603522 thru U20604649	MC9863053-13 [2] MCS1104-3 *Rod End*	MC9862067-1 MCS1104-3 *Rod End*	MC9862066-1 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
U206G[1]	U20604650 thru U20607020	MC9863056-2 [2] MCS1104-3 *Rod End*	MC9862067-1 MCS1104-3 *Rod End*	MC9862066-1 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
207,T207	All	MCS1222-25A [2] MCS1104-3 *Rod End*	MCS1223-16 MCS1104-3 *Rod End*	MCS1220-12A MCS1104-3 *Rod End*	MCS1244-29	MCS1244-30	
207A[1] T207A[1]	20700363 thru 20700482	MC9863053-16 [2] MCS1104-3 *Rod End*	MC9862067-12 MCS1104-3 *Rod End*	MC9862066-5 MCS1104-3 *Rod End*	MCS1244-29	MCS1244-30	
207A[1] T207A[1]	20700483 thru 20700788	MC9863056-4 [2] MCS1104-3 *Rod End*	MC9862067-12 MCS1104-3 *Rod End*	MC9862066-5 MCS1104-3 *Rod End*	MCS1244-29	MCS1244-30	
210,210A	All	MC1213228-2 [2] MCS1104-3 *Rod End*	MCS1223-17 MCS1104-3 *Rod End*	MC1213229-1 MCS1104-3 *Rod End*	MC1213040-1	MC1213040-2	
210B,C,D	All	MCS1219-1 [2] MCS1104-3 *Rod End*	MCS1223-17 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
210E,F,G	All	MCS1222-10A [2] MCS1104-3 *Rod End*	MCS1223-4 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
210H,J	All	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
210K[1]	21059200 thru 21059240	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	

[1] Partial model eligibility.
[2] To order ***Vernier-Assist***™ throttle controls change "MC" prefix to "MCVA" prefix
[3] Controls not eligible for A188, A188A, or A188B with Continental O-470 engine.
[4] If replacing P/N S1186-1 or P/N 0550158 also order RE-KT-1 hardware kit.

Eligibility continued on next page

Push-Pull Controls and Accessories
Engine, Cowl Flap & Carb Heat Controls - Cessna

McFarlane
FAA-PMA Approved

To order new FAA-PMA approved *Vernier-Assist*™ throttle controls change "MC" prefix to "MCVA" prefix.

Model	Serial Number	Throttle Control / Rod End	Propeller Control / Rod End	Mixture Control / Rod End or Wire Clamp	Cowl Flap Left Hand	Cowl Flap Right Hand	Carb Heat Control / Wire Clamp
210K[1],L	21059241 thru 21061573	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
210M	All	MC9863053-13 [2] MCS1104-3 *Rod End*	MC9862067-1 MCS1104-3 *Rod End*	MC9862066-1 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
210N	All	MC9863056-2 [2] MCS1104-3 *Rod End*	MC9862067-1 MCS1104-3 *Rod End*	MC9862066-1 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
210R	All	MCC299513-0101 [2] MCS1104-3 *Rod End*	*Control N/A* MCS1104-3 *Rod End*	*Control N/A* MCS1104-3 *Rod End*			
P210N[1]	P21000001 thru P21000150	MC9863053-13 [2] MCS1104-3 *Rod End*	MC9862067-1 MCS1104-3 *Rod End*	MC9862066-1 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
P210N[1]	P21000151 thru P21000834	MC9863056-2 [2] MCS1104-3 *Rod End*	MC9862067-1 MCS1104-3 *Rod End*	MC9862066-1 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
P210R	All	MCC299513-0101 [2] MCS1104-3 *Rod End*	*Control N/A* MCS1104-3 *Rod End*	*Control N/A* MCS1104-3 *Rod End*	*Control N/A* MCS1106-3 *Rod End*	*Control N/A* MCS1106-3 *Rod End*	
T210F	All	MCS1222-10A [2] MCS1104-3 *Rod End*	MCS1223-4 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
T210G	All	MCS1222-10A [2] MCS1104-3 *Rod End*	MCS1223-4 MCS1104-3 *Rod End*	MCS1220-3 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
T210H,J	All	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
T210K[1]	21059200 thru 21059240	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-5	MCS1244-31	
T210K[1],L	21059241 thru 21061573	MCC299505-0101 [2] MCS1104-3 *Rod End*	MCC299506-0101 MCS1104-3 *Rod End*	MCC299507-0101 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
T210M	All	MC9863053-13 [2] MCS1104-3 *Rod End*	MC9862067-1 MCS1104-3 *Rod End*	MC9862066-1 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
T210N	All	MC9863056-2 [2] MCS1104-3 *Rod End*	MC9862067-1 MCS1104-3 *Rod End*	MC9862066-1 MCS1104-3 *Rod End*	MCS1244-32	MCS1244-31	
T210R	All	MCC299513-0101 [2] MCS1104-3 *Rod End*	*Control N/A* MCS1104-3 *Rod End*	*Control N/A* MCS1104-3 *Rod End*	*Control N/A* MCS1106-4 *Rod End*	*Control N/A* MCS1106-4 *Rod End*	

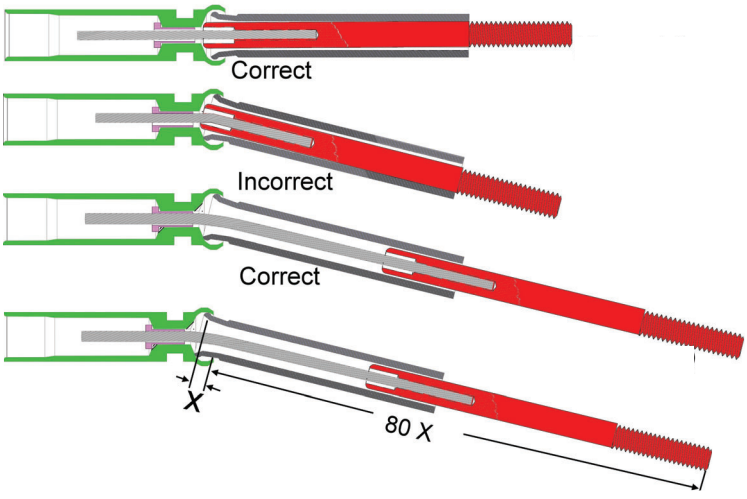
[1] Partial model eligibility. [2] To order ***Vernier-Assist***™ throttle controls change "MC" prefix to "MCVA" prefix

Maintenance Tip:

McFarlane does not recommend any lubrication of our controls, especially the throttle control. A special laminated leather packing is used on our throttle controls to allow smooth friction adjustments as the friction nut is rotated. When lubrication is applied to the control (even at the engine end), the oil can work up the inner core cable and conduit to the leather packing area causing loss of locking friction. The McFarlane controls are built with a self-lubricating Teflon® liner and a stainless steel inner core. A lifetime anti-seize paste lubricant is applied in specific areas to prevent galling and control lockup if the control becomes contaminated in service. The oil can compromise the anti-seize compound installed at the factory. McFarlane and Cessna both recommend new controls at time intervals equal to engine overhaul. Engine controls absorb tremendous vibration over an engine service cycle and the resultant wear and damage cannot be seen from the control exterior. The rubber boots must be kept in good condition as they keep contamination out and are critical to prevent vibration wear. Never re-install a control that has excess friction as this friction is the best indicator of overload internal damage and pending failure.

Engine Control Rigging

- Pushrod must be extended when angles
- Inner flex cable is stressed when pushrod is retracted and angled

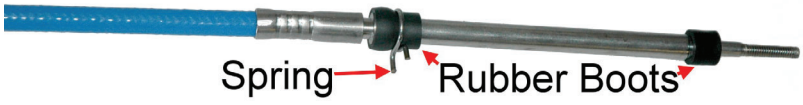


Engine Controls Can Be Damaged

- The pushrod has extreme leverage on the swivel joint
- Do not sideload the pushrod during installation

Always Replace Vibration Boots and Spring After Installation

- Stops vibration erosion and wear
- Seals out dirt

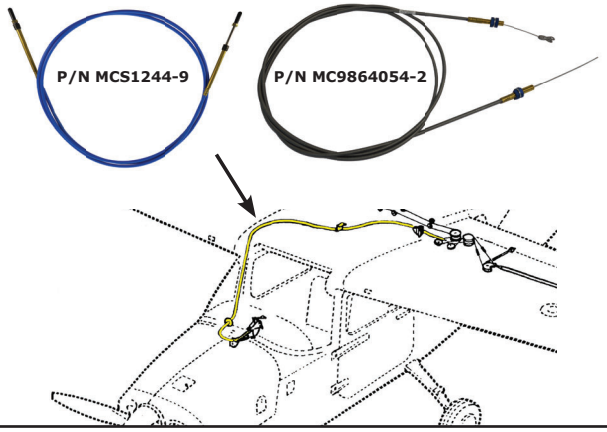


Push-Pull Controls and Accessories
Cowl Flap & Fuel Strainer Drain Controls - Cessna

Cessna Flap Indicator Cables

NEW

- Ours actually work!
- Reduced friction, longer life
- Restore reliability
- Save $$



Aircraft	Serial Number	Part Number	Description
150F,G, F150F,G	15061533 thru 15067198	MC0413416-2	Tube
		MC0413416-6	Cable
150H,J,K,L,M[1]	15067199 thru 15078505	MC0413416-11 MC0413416-6	Tube Cable
A150K,L,M[1]	A1500001 thru A1500684		
F150H,J,K,L,M[1]	F150-0220 thru F15001338		
FA150K,L,M[1]	FA1500001 thru F1500311		
150M[1]	15078506 thru 15079405	MC9864054-2 MC0413416-6	Cable Cable
A150M[1]	A1500685 thru A1500734		
F150M[1]	F15001339 thru F15001428		
FA150M[1]	FA1500312 thru FA1500336		
152, A152, F152, FA152	All	MC9864054-2	Cable
172N,P,Q,R,S, 172RG, F172N,P, FR172K, R172K	All	MC9864054-1	Cable
177B[1] 177RG[1] F177RG[1]	17701634 thru 17702592 177RG0213 thru 177RG1088 F177RG0043 thru F177RG0172	MC9864050-200	Control
	17702593 thru 17702752 177RG1089 thru 177RG1266 F177RG0173 thru F177RG0177	MC9864050-10	Control
FR182, R182[1], TR182[1]	FR18200001 thru FR18200070 R18200001 thru R18201384	MC9864050-12	Control
	R18201385 thru R18202041	MCS2083-2	Control
206H, T206H	All	MC9864050-3	Control
207[1], T207[1]	20700001 thru 20700314	MC9860058-2	Control
	20700315 thru 20700362	MC9864050-2	
210H,J,K,L,M,N[1]	21058937 thru 21063174	MCS1244-9	Control
T210H,J,K,L,M,N[1]	T210-0308 thru 21063174		
210N, 210R[1], T210N, T210R[1]	21063169, 21063175 thru 21064975	MC9864050-16	Control
P210N[1] P210R[1]	P21000197, P21000213 thru P21000874		

[1] Partial model eligibility.

Dual Cowl Flap Controls for Cessna Aircraft

Models 180, 180A and 180B

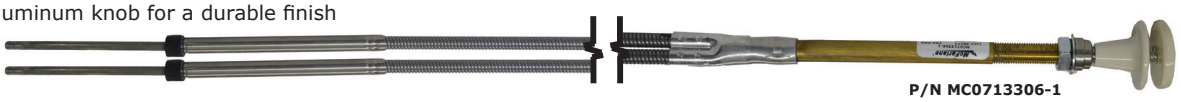
- Solid wire ends
- Choose a chrome or black knob to match your panel!

Chrome P/N MC0713041-1

Black P/N MC0713041-1B

Models 180C, 182B and 182C
P/N MC0713306-1

- 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 aircrafts
- 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 67-68 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)

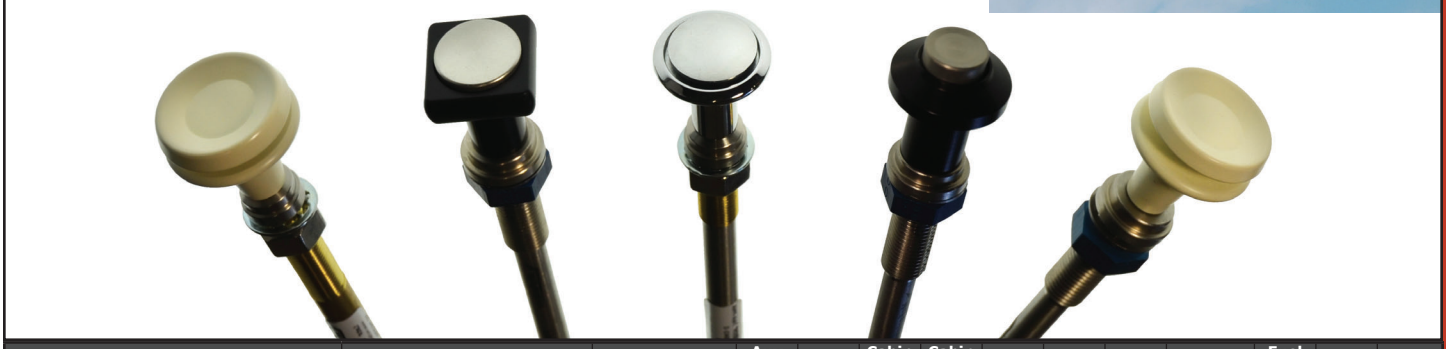
A different wrench for the two sizes of pumps (one wrench can't do both pumps well)

- 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[1]	18051184 thru 18051875	MCS1241-1					•						
182E,F,G,H,J,K	All	MCS1241-1		•			•						
182L,M,N[1]	18258506 thru 18260445	MCS1241-27		•			•						
182N[1],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[1]	185-0001 thru 185-0413	MCS1241-1					•						
185A[1],B	185-0414 thru 185-0653	MCS1241-1					•					•	
185C	All	MCS1241-1					•						
185D,E	All	MCS1241-1					•				•		
A185E	185-0968 thru 185-1300	MCS1241-1					•				•		
	185-1301 thru 185-1599	MCS1241-27									•		
	18501600 thru 18501679	MCS1241-34									•		
188B	18800986 thru 18801824	MCS1241-34						•					
	18801825 thru 18802348	MCS1241-34	•										
A188B, A188B (w/large hopper)	18800986 thru 18801824T	MCS1241-34						•					
	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		•			•						
T206H	T20608001 thru T20608146	MCS1241-34		•			•						
	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[1]	U20601445 thru U20602199	MCS1241-27					•						
TU206F[1]	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		•			•						

[1] Partial model eligibility

Push-Pull Controls and Accessories
Engine Controls - Piper

Vernier-Assist™ Throttle Controls

Precision Control

New roller action vernier provides smooth jam-proof coarse and fine adjustment.

- Jam-proof safety
- Precision power adjustments
- Smooth friction control
- Light and compact
- Standard vernier action, without the button!

Throttle, Mixture and Propeller Controls

- All 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

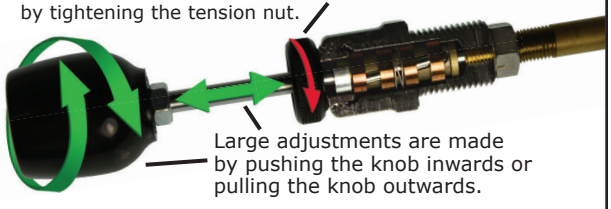
- The most commonly replaced controls just got better
- Special, heavier wire for more fatigue strength and reliability
- Improved friction mechanism
- Reduced vibration wear
- Anti-rotate feature to reduce stress on the inner wire
- High temperature Teflon lined conduit

NEW

New MCVA Throttle Series

Vernier and friction lock - The best of both!

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



Large adjustments are made by pushing the knob inwards or pulling the knob outwards.

Fine adjustments are made by rotating the knob clockwise or counterclockwise. The McFarlane ***Vernier-Assist***™ throttle control uses a patented roller action and does 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.

Patent No. 8,485,057 B1

New! Controls for Piper Super Cub Aircraft!

Model	Serial Number	Throttle Control	Propeller Control	Mixture Control	Carb Heat or Alt Air Control
PA-18, PA-18S	All	MC12694-002 [9] ***New!*** MC12694-000 [10] ***New!***		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-18"105" (Special)	All	MC12694-003 ***New!***		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-18"125" (Army L-21A)	All	MC12694-003 ***New!***		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-18"135" (Army L-21B)	All	MC12694-003 ***New!***		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-18"150"	All	MC12694-003 ***New!***		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-18A, PA-18A"135",A"150"	All	MC12694-003 ***New!***		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-18AS"125", AS"135", AS"150"	All	MC12694-003 ***New!***		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-18S"105",S"125",S"135"	All	MC12694-003 ***New!***		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-18S "150"	1809001 thru 1809113	MC12694-003 ***New!***		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [3]
PA-18S "150"	18-3771 thru 18-8309025	MC12694-003 ***New!***		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-19, PA19S,L-18C	All			MC600-72	
PA-20, PA-20S	20-01 thru 20-811	MC455-139 or MCVA455-139 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-20, PA-20S	20-812 thru 20-1121	MC455-139 or MCVA455-139 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-20, PA-20S	20-1122 and On			MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-20"115", PA-20S"115"	20-01 thru 20-1121	MC455-139 or MCVA455-139 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-20"115", PA-20S"115"	20-1122 and On			MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-20"135", PA-20S"135"	20-877 thru 20-1121	MC455-139 or MCVA455-139 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-20"135", PA-20S"135"	20-1122 and On			MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-22	All	MC455-139 or MCVA455-139 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-22-108	22-8000 and On	MC12693-04 or MCVA12693-04 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [1]
PA-22-135	22-534 thru 22-2377	MC455-139 or MCVA455-139 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-22-135	22-2379 thru 22-2424	MC455-139 or MCVA455-139 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-22-135	22-2378, 22-2425 thru 22-3217	MC12693-04 or MCVA12693-04 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [3]
PA-22-135	22-3219 thru 22-3386	MC12693-04 or MCVA12693-04 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [3]
PA-22S-135	22-534 thru 22-2377			MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-22S-135	22-2379 thru 22-2424			MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [2]
PA-22S-135	22-2378, 22-2425 thru 22-3217	MC12693-04 or MCVA12693-04 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [3]
PA-22S-135	22-3219 thru 22-3386	MC12693-04 or MCVA12693-04 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [3]
PA-22-150, PA-22S-150	22-2378, 22-2425 thru 22-7642	MC12693-04 or MCVA12693-04 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [3]
PA-22-160, PA-22S-160	22-5139, 22-5603 thru 22-7642	MC12693-04 or MCVA12693-04 [11]		MC454-120 [5] [7] or MC600-72 [8]	MC454-120 [3]
PA-24	24-1 thru 24-2969			MC454-120 [1] [7] or MC600-72 [8]	
PA-24-250	24-1 thru 24-104			MC454-120 [1] [7]	
PA-24-250	24-105 thru 24-2174 24-2176 thru 24-2298		MC455-184	MC454-120 [1] [7] or MC600-72 [8] Carb. Engine Only	
PA-24-250	24-2175, 24-2299 thru 24-2969		MC455-252	MC454-120 [1] [7] or MC600-72 [8] Carb. Engine Only	
PA-24-250	24-2970 thru 24-3687		MC455-252	MC600-72 [8] 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 or MCVA12693-04 [11]		MC600-72	MC63902-003 [4]
PA-28-140	28-21096 thru 28-24999	MC12693-04 or MCVA12693-04 [11]		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 or MCVA12693-04 [11]		MC600-72	MC63902-003 [4]
PA-28-150	28-2628 thru 28-4377	MC12693-04 or MCVA12693-04 [11]		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 or MCVA12693-04 [11]		MC600-72	MC63902-003 [4]
PA-28-160	28-2628 thru 28-4377	MC12693-04 or MCVA12693-04 [11]		MC600-72	MC63902-016 [6]
PA-28S-160	28-1 thru 28-1760			MC600-72	MC63902-003 [4]

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

Push-Pull Controls and Accessories
Engine Controls - Piper

McFarlane

Continued from previous page FAA-PMA Approved! Model	Serial Number	Throttle Control	Propeller Control	Mixture Control	Carb Heat or Alt Air Control
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 or MCVA12693-04 [11]		MC600-72	MC63902-003 [4]
PA-28-180	28-1761 thru 28-2627	MC12693-04 or MCVA12693-04 [11]		MC600-72	MC63902-003 [4]
PA-28-180	28-2628 thru 28-4377	MC12693-04 or MCVA12693-04 [11]		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]
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 [4]
PA-28S-180	28-2628 thru 28-4377			MC600-72	MC63902-016 [6]
PA-28S-180	28-4378 thru 28-5398				MC66856-007
PA-28S-180	28-5399 thru 28-28-7205234				MC554-095 [1]
PA-28-181	2843001 thru 2843999			MC455-352	MC554-094 [1]
PA-28-181	2890001 thru 2890205			MC455-352	MC554-095 [1]
PA-28-181	2890206 thru 2890231			MC455-352	MC554-094 [1]
PA-28-181	28-7690001 thru 28-8290174	MC455-350		MC455-352	MC554-095 [1]
PA-28-181	28-8390001 and On	MC455-350		MC455-352	MC554-095 [1]
PA-28-201T	28-7921001 thru 28-7921095	MC455-322	MC455-322	MC455-361	MC554-387 [1]
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 [1]
PA-28R-200	28R-7135001 thru 28R-7635545	MC455-322	MC455-322	MC455-322	MC554-130 [1]
PA-28R-201	2837001 thru 2837061	MC455-322	MC455-322	MC455-322	MC554-130 [1]
PA-28R-201	2844001 thru 2844999				MC554-130 [1]
PA-28R-201	28R-7737002 thru 28R-7837317	MC455-322	MC455-322	MC455-322	MC554-130 [1]
PA-28R-201T	28R-7703002 thru 28R-7803372	MC455-322	MC455-322	MC455-361	MC554-387 [1]
PA-28R-201T	2803001 thru 2803015	MC455-322	MC455-322	MC455-361	MC554-387 [1]
PA-28RT-201	28R-7918001 thru 28R-8018116	MC455-322	MC455-322	MC455-322	MC554-130 [1]
PA-28RT-201	28R-8018117 thru 28R-8118000				MC554-130 [1]
PA-28RT-201	28R-8118001 and On	MC455-322	MC455-322	MC455-322	MC554-130 [1]
PA-28RT-201T	2831001 thru 2831038				MC554-387 [1]
PA-28RT-201T	28R-7931001 thru 28R-8031188	MC455-322	MC455-322	MC455-361	MC554-387 [1]
PA-28RT-201T	28R-8031189 thru 28R-8131000				MC554-387 [1]
PA-28RT-201T	28R-8131001 and On	MC455-322	MC455-322	MC455-361	MC554-387 [1]
PA-28-235	28-10003 thru 28-11038	MC12693-04 or MCVA12693-04 [11]		MC600-72	
PA-28-235	28-11039	MC12693-04 or MCVA12693-04 [11]			
PA-28-235	28-11040 thru 28-11252	MC455-333		MC455-332	MC66856-007
PA-28-235	28-11253 thru 28-11393	MC455-333		MC455-332	MC554-094 [1]
PA-28-235	28-7110001 thru 28-7210033	MC455-333		MC455-332	MC554-094 [1]
PA-28-235	28-7310001 thru 28-7710089	MC455-333	MC455-344	MC455-332	MC554-094 [1]
PA-28-236	28-11001 thru 2811050				MC554-094 [1]
PA-28-236	28-7911001 thru 28-8211060	MC455-333	MC455-344	MC455-332	MC554-094 [1]
PA-28-236	28-8311001 and On	MC455-333	MC455-344	MC455-332	MC554-094 [1]
PA-32-260	32-451 thru 32-1110				MC63902-021 [6]
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 or MC69530-02 [11]	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 [1]

[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.
[9] W/Electrical Equipment
[10] W/O Electrical Equipment
[11] To order ***Vernier-Assist***™ throttle controls change "MC" prefix to "MCVA" prefix.
Additional knob eligibility is on shown on the following pages.
Rod end part numbers and eligibility can be found on the following pages.

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

[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 CA70371-002 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	MC571-131	MC571-131	MC471-060	MC471-052	MC471-060	MC471-052	MC471-052	MC471-060	MC471-084	6289	MC571-131	MC471-060	MC471-052	MC471-060	MC571-131	MC471-060	MC471-052	MC571-131	MC571-053	MC471-060	MC471-052
		Knob Type	Alternate Air (Chrome)	Cabin Heat (Chrome)	Cabin Heat (Black)	Cabin Heat (Ivory)	Cabin Heat (Rear)	Cabin Heat Rear (Ivory)	Cabin Heat Front (Ivory)	Cabin Vent (Black)	Carburetor Heat (Black)	Decal, Carburetor Heat	Carb. Heat (Chrome)	Carburetor Heat (Black)	Carburetor Heat (Ivory)	Cold Air (Black)	Cold Air Inlet (Chrome)	Cold Air Inlet (Black)	Cold Air Inlet (Ivory)	Defrost (Chrome)	Mixture Control (Red)	Parking Brake (Black)	Parking Brake (Ivory)
PA-18, PA-18A, PA-18S	All				•									•						•		•	
PA-18 "105" (Special), PA-18S "105"	All				•									•						•			
PA-18 "125" (Army L-21A), PA-18AS "125", PA18S "125"	All				•									•						•			
PA-18 "135" (Army L-21B), PA-18A "135", PA-18S "135"	18-1 thru 18-2167				•									•						•			
PA-18AS "135"	18-1 thru 18-2167													•						•			
PA-18 "135" (Army L-21B), PA-18A "135", PA-18S "135"	18-2168 thru 18-7632				•									•	•			•		•			
PA-18AS "135"	18-2168 thru 18-7632													•	•			•		•			
PA-18A "150", PA-18AS "150"	All				•									•	•			•		•			
PA-18S "150"	1809001 thru 1809113			•									•							•			
PA-18S "150"	18-3771 thru 18-8309025				•									•			•	•		•			
PA-20, PA-20S	20-1 thru 20-553				•									•									
PA-20, PA-20S	20-554 thru 20-811				•									•				•					
PA-20, PA-20S	20-812 and On				•		•							•				•		•			
PA-20 "115", PA-20S "115"	All				•									•						•			
PA-20 "135", PA-20S "135"	All						•	•						•				•		•			
PA-22	All				•		•							•				•		•			•
PA-22-108	All			•		•			•				•		•					•			
PA-22-135	22-534 thru 22-539				•									•				•		•			•
PA-22-135	22-540 thru 22-542				•		•							•				•		•			•
PA-22-135	22-543				•									•				•		•			•
PA-22-135	22-544 thru 22-2377				•		•							•				•		•			•
PA-22-135	22-2378			•		•			•				•				•			•			
PA-22-135	22-2379 thru 22-2424				•		•							•				•		•			•
PA-22-135	22-2425 and On			•		•			•				•				•			•			
PA-22S-135	22-534 thru 22-2377 and 22-2379 thru 22-2424				• [1]									•				•		•			•
PA-22S-135	22-2378, 22-2425 and On			•		•			•				•				•			•			
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-2378			•		•			•				•				•			•	•		
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-2379 thru 22-2424				• [1]									•				•		•			•
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-2425 thru 22-5138			•		•			•				•				•			•	•		
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-5139			•		•			•				•				•			•			
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-5140 thru 22-5602			•		•			•				•				•			•	•		
PA-22-150, PA-22S-150, PA-22-160, PA-22S-160	22-5603 and On			•		•			•				•				•			•			
PA-25-235	All												•										
PA-25-260	All												•										
PA-28-140	28-20002 thru 28-21095									•	•												
PA-28-140	28-21096 thru 28-24999		•									•				•			•				
PA-28-150, PA-28-160	28-0001 thru 28-2627									•	•												
PA-28-150, PA-28-160	28-2628 thru 28-4377		•									•							•				
PA-28S-160	28-1 thru 28-1760									•	•												
PA-28-180, PA-28S-180	28-671 thru 28-2627									•	•												
PA-28-180	28-2628 thru 28-4277		•									•							•				
PA-28-180	28-4278 thru 28-4377											•							•				
PA-28S-180	28-671 thru 28-2627									•	•												
PA-28S-180	28-2628 thru 28-4377											•											
PA-28-235	28-10003 thru 28-10675									•	•												
PA-28-235	28-10676 thru 28-11039		•									•							•				
PA-32-260	32-1 thru 32-1110											•											
PA-32-300	32-40000 thru 32-40565	•																					
PA-32-300S	32S-15 thru 32S-40565	•																					

[1] 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

NEW
Now FAA-PMA Approved

Vernier-Assist™ Throttle Controls

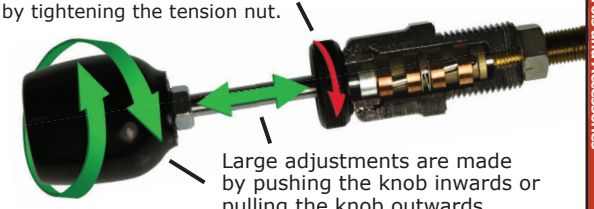
Precision Control

New roller action vernier provides smooth jam-proof coarse and fine adjustment.

- Jam-proof safety
- Precision power adjustments
- Smooth friction control
- Light and compact
- Standard vernier action, without the button!

New MCVA Throttle Series
Vernier and friction lock - The best of both!

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



Large adjustments are made by pushing the knob inwards or pulling the knob outwards.

Patent No. 8,485,057 B1

Fine adjustments are made by rotating the knob clockwise or counterclockwise. The McFarlane ***Vernier-Assist***™ throttle control uses a patented roller action and does 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.

Throttle, Propeller and Mixture Controls for Beechcraft Aircraft

- All metal construction
- Pilot friendly knobs
- Lifetime lubrication
- Superior low friction conduit
- Includes ICA with improved inspection procedures

Copy of ICA, clamps, and seals provided with each control!

Model	Serial Number	Throttle	Propeller	Mixture
19A, M19A, B19,23, A23-19, B23	All	N/A	N/A	MC600-120
35-C33	CD-964 thru CD-1118	MC35-944046-7[1]	MC35-944048-7	N/A
35-C33A	All	MC35-944046-7[1]	MC35-944048-7	MC35-944054-7
E33	All	MC35-944046-7[1]	MC35-944048-7	N/A
E33A, E33C, F33, F33A, F33C, G33	All	MC35-944046-7[1]	MC35-944048-7	MC35-944054-7
35, A35, B35, C35, D35, E35, F35, G35	All	N/A	N/A	MC600-72
H35	All	N/A	N/A	MC35-944054-9
J35, K35, M35	All	N/A	MC35-944048-1	MC35-944054-9
N35	All	N/A	MC35-944048-1	
P35,S35, V35, V35A, V35A-TC	All	MC35-944046-7[1]	MC35-944048-1	MC35-944054-7
V35B, V35B-TC, V35TC	All	MC35-944046-7[1]	MC35-944048-7	MC35-944054-7
V35TC	All	MC35-944046-7[1]	MC35-944048-1	MC35-944054-7
36, A36	E-1 thru E-1945, E-1947 thru E-2103, E-2105 thru E-2110	MC35-944046-7[1]	MC35-944048-7	MC35-944054-7
	E-1946, E-2104, E-2111 and On	MC36-380084-3	MC36-380084-7	MC36-380084-5
A36TC, B36TC	EA-1 thru EA-319, EA-321 thru 388	MC35-944046-7[1]	MC35-944048-7	MC35-944054-9
	EA-320, EA-389 thru EA-439	MC36-380084-3	MC36-380084-7	N/A
G36	All	MC36-380084-3	MC36-380084-7	MC36-380084-5

[1] To order ***Vernier-Assist***™ throttle controls change "MC" prefix to "MCVA" prefix

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 157 for APS brake discs and linings

Model	Throttle	Venier-Assist Throttle	Mixture	Prop
RV-10	MCRV10-T	MCRV10-TV	MCRV10-M	MCRV10-P
RV-12		MCRV12-TV		

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

Throttle Controls for Piper Super Cub

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

Model	Serial Number	Throttle Control
PA-18, PA-18S	All	MC12694-002 [9] ***New!*** MC12694-000 [10] ***New!***
PA-18"105" (Special)	All	MC12694-003 ***New!***
PA-18"125" (Army L-21A)	All	MC12694-003 ***New!***
PA-18"135" (Army L-21B)	All	MC12694-003 ***New!***
PA-18"150"	All	MC12694-003 ***New!***
PA-18A, PA-18A"135",A"150"	All	MC12694-003 ***New!***
PA-18AS"125", AS"135", AS"150"	All	MC12694-003 ***New!***
PA-18S"105",S"125",S"135"	All	MC12694-003 ***New!***
PA-18S "150"	1809001 thru 1809113	MC12694-003 ***New!***
PA-18S "150"	18-3771 thru 18-8309025	MC12694-003 ***New!***

McFarlane
FAA-PMA Approved

New! FAA-PMA approved Beech Baron Push-Pull Controls

Now offering approved controls for your Beechcraft Baron aircraft.

All of our Baron engine controls feature McFarlane's time proven control design, which is *preferred by pilots around the world*.

NEW

- Low-friction Teflon™ lined conduit
- Vibration dampened
- Built to outlast original controls
- Tested to -50° F
- Save $$ without compromising quality or safety
- All control kits include mounting clamps and ICA documents for a seamless installation

Most dependable and durable in the industry!

Aircraft	S/N	Throttle		Propeller		Mixture	
		LH	RH	LH	RH	LH	RH
58 [1] 58A [2]	TH-1388 [1] [2]	MC50-389012-23	MC50-389012-29	MC50-389010-33 MC50-389012-23	MC50-389010-23	MC50-389012-29	MC50-389012-23
	TH-1389	MC102-389010-47	MC102-389010-47	MC102-389010-47	MC102-389010-49	MC102-389010-47	MC102-389010-47
	TH-1390 thru TH-1395 [1] [2]	MC50-389012-23	MC50-389012-29	MC50-389010-33 MC50-389012-23	MC50-389010-23	MC50-389012-29	MC50-389012-23
	TH-1396	MC102-389010-47	MC102-389010-47	MC102-389010-47	MC102-389010-49	MC102-389010-47	MC102-389010-47
	TH-1630	MC102-389010-47	N/A	N/A	N/A	N/A	MC102-389010-47
95-B55, 95-B55A	TC-1608 thru TC-2456	MC50-389012-15	MC50-389012-15	MC50-389010-29	MC50-389010-27	MC50-389010-19	MC50-389010-21
E55, E55A	All	N/A	MC50-389012-19	MC50-389010-23	N/A	MC50-389012-19	MC50-389012-25
56TC	TG-2 thru TG-83	N/A	N/A	MC50-389010-25	N/A	MC50-389012-21	MC50-389012-21
A56TC	TG-84 thru TG-94	N/A	N/A	MC50-389010-25	N/A	MC50-389012-25	MC50-389012-25
95-C55, 95-A55	TC-350, TC-380 thru TC-501	MC50-389012-15	MC50-389012-15	MC50-389010-29	MC50-389010-27	MC50-389010-19	MC50-389010-21
D55,E55	TE-452 thru TE-627 TE-638 thru TE-937 TE-939 thru TE-942	MC50-389012-19	MC50-389012-19	MC50-389010-23	MC50-389010-25	MC50-389012-19	MC50-389012-25
95-55, 95-B55, 95-B55A	All	MC50-389012-15	MC50-389012-15	MC50-389010-29	MC50-389010-27	MC50-389010-19	MC50-389010-21
95-C55, 95-C55A	TE-1 thru TE-451 except TE-50	MC50-389012-19	MC50-389012-19	MC50-389010-23	MC50-389010-25	MC50-389012-19	MC50-389012-25
	TC-350	MC50-389012-15	MC50-389012-15	MC50-389010-29	MC50-389010-27	MC50-389010-19	MC50-389010-21
D55A	TE-452 thru TE-627 TE-638 thru TE-767	MC50-389012-19	MC50-389012-19	MC50-389010-23	MC50-389010-25	MC50-389012-19	MC50-389012-25
E55A	TE-768 thru TE-942 except TE-938	MC50-389012-19	MC50-389012-19	MC50-389010-23	MC50-389010-25	MC50-389012-19	MC50-389012-25
58P	TJ-136 thru TJ-443 except TJ-436	N/A	N/A	N/A	MC102-389010-47	MC102-389010-13	MC102-389010-13
	TJ-3 thru TJ-135				MC102-389010-47	MC50-389012-19	MC50-389012-19
58TC	TK-90	N/A	N/A	N/A		MC50-389012-19	MC50-389012-19
	TK-91 thru TK-146				MC102-389010-47	MC102-389010-13	MC102-389010-13
	TK-148 thru TK-150					MC102-389010-13	MC102-389010-13
G58	All	MC102-389010-47	MC102-389010-47	MC102-389010-47	MC102-389010-49	MC102-389010-47	MC102-389010-47

Notes:
[1] Model 58 S/N 1388, 1390-1395, Prop LH is P/N MC50-389010-33,
[2] Model 58A S/N 1388, 1390-1395, Prop LH is P/N MC50-389012-2

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 [1]
AA-1A	AA1A-0001 and On	MC507005-1 [1]
AA-1B	AA1B-0001 and On	MC507005-1 [1]
AA-1C	AA1B-0601	MC507005-1 [1]
AA-1C	AA1C-0001 and On	MC507005-1 [1]
AA-5	AA5-0001 and On	MC507005-2 [1]
AA-5A	AA5A-0283 and On	MC507005-2 [1]
AA-5B	AA5B-0001 and On	MC507005-3

[1] To order ***Vernier-Assist***™ throttle controls change "MC" prefix to "MCVA" prefix

New! Vernier-Assist™
Throttle Controls
See page 14

Engine Controls for Bellanca Viking Aircraft

FAA-PMA Approved

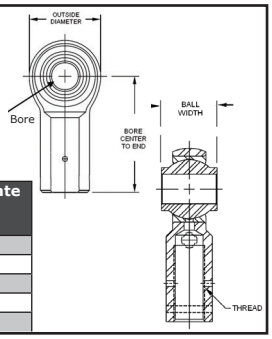
Model	Serial Number	Throttle	Propeller	Mixture
17-30A	30263 and On, and aircraft with a S/N prefix: "75-"	MCS191783-18 [1]	MCS191783-1	MCS191783-16
17-31A	73-32-128 and On, and aircraft with a S/N prefix "75-"	MCS191783-18 [1]	MCS191783-1	MCS191783-17
17-31ATC	73-31067 and On, and aircraft with a S/N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

[1] To order ***Vernier-Assist***™ throttle controls change "MC" prefix to "MCVA" prefix

New! Vernier-Assist™ **Throttle Controls** **See page 14**

Rod Ends for Experimental Aircraft

Not for use on certified aircraft.
Not FAA-PMA approved.
See pages 27-29 for FAA-PMA approved rod ends.

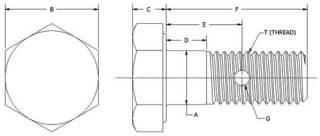


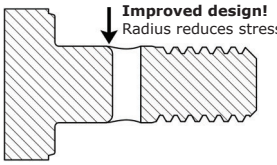
P/N	Bore	O.D.	Bore Ctr to End	Ball Width	Thread	Thread Type	Ultimate Static Load
(~)	(in)	(in)	(in)	(in)	(in)	(~)	(lbs)
MW-3M-500	0.190	0.625	1.062	0.312	10-32	Internal	1,531
GMW-3M-470	0.190	0.750	1.375	0.437	1/4-28	Internal	2,881
GMW-4M-470	0.250	0.812	1.375	0.437	1/4-28	Internal	2,950
MM-3M-500	0.190	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 14-17 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 Bolt Dia. (in)	B Wrench Size (in)	C Thick (in)	D Grip Length (in)	E Hole Position (in)	F Shank Length (in)	G Hole Dia. (in)	T Thread (~)	Application
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 14-18 for rod ends for Cessna 120-210 engine controls.

Model	Part Number	AILERON 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 SEPERATOR ACTR PUSH ROD	INERTIAL SEPERATOR 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
		MCS1106-3	S1819-3	MCS1819-4	MCS1106-3	MCS1104-3	MCS1105-3	MCS1106-3	MCS1106-4	MCS1106-3	MCS1104-3	MCS1104-3	MCS1106-3	MCS1106-4	S1819-3	MCS1106-3	MCS1106-4	MCS1106-3	MCS1106-4	MCS1106-3	S1819-3	MCS1104-3	MCS1106-3	MCS1106-4	MCS1104-3	S1823-3	S1107-3	MCS1105-3	MCS1106-3	MCS1106-4	S1819-3	S1819-3	MCS1104-3	MCS1106-3	MCS1104-3	MCS1104-3	MCS1106-3	MCS1106-4	MCS1104-3	MCS1105-3
150, 150A,B,C,D,E,F,G,H,J[2]			•											•	•										•	•												
150K,L,M,A-150L, A-A150L, A150K,L,M			•												•										•													
F150F,G,H,J			•											•	•										•													
F150K,L,M, FA150K,L,M, FRA150L,M			•												•										•													
152, A152, F152, FA152			•												•										•													
172,172A,B,C			•											•												•												
172D,E,F,G,H,I,K,L,M,N,P,Q,R			•											•	•										•													
172RG														•	•												•											
172S, F172D,E,F,G,H,K,L,M,N,P, FP172			•											•	•										•													
FR172E,F,G,H,J			•											•											•													
FR172K			•											•	•										•													
P172D			•											•	•										•													
R172K			•											•	•										•													
175, 175A,B,C			•											•												•												
177, 177A,B														•											•													
177RG, F177RG										•					•																							
180,180A,B,C,D,E,F,G,H,J,K			•											•																								
182,182A,B,C,D,E,F,G,H,J,K[3]			•											•												•												
182L,M			•										•	•																								
182N[1] S/N 18260056 thru 18260445			•										•	•																								
182N[1] S/N 18260446 thru 18260825			•											•																								
182P,Q,R			•											•																								
182S,T			•																																			
F182P,Q			•											•																								
FR182, R182			•											•													•											
T182			•											•																								
T182T			•																																			
TR182			•											•													•											
185, 185A,B,C,D,E, A185E,F			•											•																								
188,188A,B, A188, A188A,B, T188C														•																					•			
210-5 (205), 210-5A (205A)		•												•																								
206										•				•																								
206H											•				•																								
P206,P206A					•					•				•																								
P206B,C,D,E										•				•																								
T206H											•				•																								
TP206A,B										•				•																								
TP206C,D,E										•			•	•																								
TU206A,B										•				•																								
TU206C,D,E										•			•	•																								
TU206F[1] S/N U20601701 thru U20602199										•				•																								
TU206F[1] S/N U20602200 thru U20603521,TU206G						•				•				•																								•
U206,U206A,B,C,D,E,U206F[1] S/N U20601701 thru U20602199						•				•				•																								
U206F[1] S/N U20602200 thru U20603521,U206G						•				•				•																								•
207,207A,T207,T207A						•				•			•	•																								
208,208A,B										•						•	•									•												
210,210A		•												•					•				•					•										•	
210B,C			•											•														•											
210D,E,F										•				•														•											
210G				•						•																		•			•								
210H,J				•						•			•					•										•			•								
210K,L,M				•						•			•		•			•	•		•					•		•			•								
210N[1] S/N 21062955 thru 21063168				•						•			•	•												•												
210N[1] S/N 21063169				•						•					•												•											
210N[1] S/N 21063170 thru 21063174				•						•			•		•												•											
210N[1] S/N 21063175 thru 21064135				•						•					•												•											
210N[1] S/N 21064136 thru 21064897 210R				•						•					•												•											
P210N[1] S/N P21000001 thru P21000150			•										•		•				•		•						•		•		•								
P210N[1] S/N P21000151 thru P21000196			•										•		•						•						•				•								
P210N[1] S/N P21000197			•												•						•						•				•								

[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.

McFarlane
FAA-PMA Approved

Push-Pull Controls and Accessories

Rod Ends for Cessna Aircraft

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

Model	Part Number	AILERON 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 SEPERATOR ACTR PUSH ROD	INERTIAL SEPERATOR 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 BELLCRANK PUSH ROD	SPRAY VALVE PUSH ROD	THROTTLE CONTROL	THROTTLE LINKAGE	WATER RUDDER STEERING
P210N[1] S/N P21000198 thru P21000212	MCS1106-3	•								•	•				•			•		•	•									
P210N[1] S/N P21000213 thru P21000834	MCS1106-3	•								•	•				•			•		•	•									
P210R	MCS1106-3	•				•				•	•				•			•		•	•									
T210F	MCS1106-3								•		•								•											
T210G	MCS1106-4		•						•										•		•									
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	MCS1106-4	•				•			•		• •			•		• •		• • •	• • •	•		•		•	•	•	•			
T337H	MCS1106-4	•				•					• •			•	•	• •		• • •	• • •	•		•			•	•	•			
T337H-SP	MCS1106-4	•				•			•		• •			•		• •		• • •	• •	•		•		•	•	•	•			

[1] **Partial model eligibility**

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
S2022-3	0.25	3/8-24 LH
S2022-3L	0.25	3/8-24 RH
MCS1819-4	0.25	1/4-28 Internal


MCS1104-3


MCS1105-3


MCS1106-3


MCS1106-4


S1107-3


S1819-3


S1823-3


S2022-3


S2022-3L


MCS1819-4

Rod Ends for Piper Aircraft

Model	Part Number	Description/Application
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
PA-28-140/150/160/180/235/R-180/200	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
	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
	CA452-335A	Nose gear, control system, flap control
PA-28-161 S/N 2841001 thru 2841365	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 PA-28-181 S/N 2843001 & up	CA452-334A	Nose gear
	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
PA-28R-201 S/N 2844001 & up	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
	CA452-335A	Landing gear door
PA-30/39	CA452-412	Landing gear retraction system, flap control mechanism
PA-31P	CA452-335A	Cabin door step
	CA452-412	Cabin door latch, nose landing gear, nose gear steering,
PA-31P-350	CA452-335A	Cabin door step
	CA452-412	Cabin door latch, nose landing gear, nose gear steering, elevator trim
PA-31-300/325, PA-31-350, PA-31-350T1020	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
PA-32-260/300/R-300	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
PA-32-301/301T	CA452-334A	Nose gear
	CA452-335A	Aileron control, flap control
	CA452-336A	Aileron control, flap control
	CA452-860A	Nose gear
PA-32-301 XTC	CA452-334A	Nose gear
PA-32-301FT	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
PA-32R-301/301T S/N 3246001 & up & 3257001 & up	CA452-334A	Main gear
	CA452-335A	Landing gear door, aileron control, flap control
	CA452-336A	Aileron control, flap control
	CA452-368	Main gear
PA-34-200	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-34-200T	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
	CA452-584	Aileron assembly, nose & main gear actuation
PA-34-220T S/N 34-8133001 thru 34-8633031, 3433001 & up, & 3448001 & up, PA-34-220T S/N 3447001 thru 3447029, & 3449001 & up	CA452-334A	Nose gear, rudder trim hydraulic system, air conditioning, condenser & scoop
	CA452-335A	Nose & main gear door actuation, aileron control, flap control
	CA452-336A	Flap control
PA-34RT-300/300T	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-36-285/300/375	CA452-584	Elevator & elevator trim control
PA-42/PA42-720	CA452-335A	Cabin door step, engine controls
PA-42-1000	CA452-412	Cabin door latch, nose landing gear, nose gear steering, elevator control
PA-44-180/180T S/N 44-7995001 thru 44-8207020 & 4495001 thru 4495013 PA-44-180 S/N4496001 & up	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
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
PA-46-350P S/N 4636001 & up PA-46R-350T S/N 4692001 & up	CA452-334A	Nose gear, nose & main gear door actuation
	CA452-335A	Main gear
	CA452-412	Flap Drive-Mechanical
	CA452-860A	Flap Drive-Mechanical
PA-46-500TP S/N 4697002,4697340,4697399 & up with G1000	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-46-500TP 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

Piper Rod End Dimensions

Part Number	Eye	Thread
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 (Cheapy 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 MC6150-071**XXLLL** 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 MC6160-071**XXLLL** where **XX** is the knob color code and **LLL** is the length in inches.

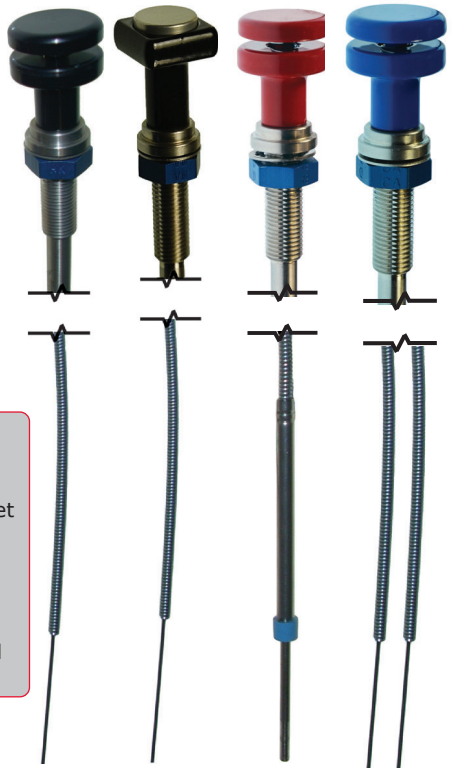
- Square black knob with a black or clear (silver) push-button
- Available in 6, 8, 12 foot and custom lengths
- May be trimmed to length
- Ideal for carburetor heat or alternate air

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



MC6150 series | **MC6160 series** | **MC6250 series** | **MC6350 series**

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.

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

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 (Cheapy 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 MCTL1014D**LLL**-**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

Call us with your custom requirements!

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.

MCTL1014D MCTL2254D series

MCTL1034 MCTL2254 series

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

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 (Cheapy 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 35 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)*

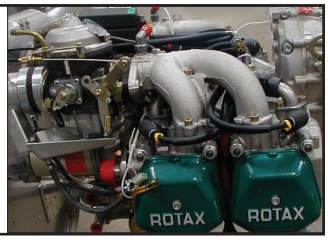
Specifications:
- Travel (stroke): 3.75" maximum*
- Conduit: 0.188 inch OD Teflon lined
- Max Work Loads: Pull: ~10 lbs; Push: ~5 lbs**
- Operating Temp: -65 to 450°F
- Inner Wire: 0.061 inch solid wire
- Screw thread for knob attachment: 10-32 X .3
- Screw thread for instrument panel: 3/8-24 X .5

*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 (Cheapy 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 33)
- 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

P/N 6408
Dual hardware throttle kit

Panel Mount: *P/N MCT100D**LLL** (**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 EC03
Standard style knob

P/N EC53
Ball style knob

***Vernier-Assist*™ Panel Mount:**
*P/N MCTV0005D**LLL*** with knob or *MCVA0005-30D**LLL*** without knob[1] ***(LLL** = length in inches)*

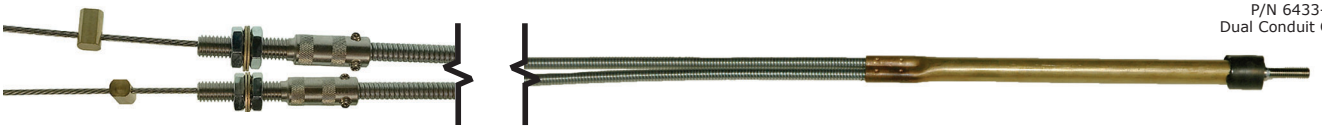
- Travel (stroke): 3.5" max
- Typical locking force: 1 to 10 lbs (locking force dependent on friction lock engagement)
- Panel fitting: 3/4-16 UNF X 0.875 inch thread
- Control length is measured from panel fitting to end of conduit, wires extend 6 inches beyond conduit.
- See page 34 for additional details

A vernier without a release button! See page 34

Quadrant Style: *P/N MCQ100D**LLL** (**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

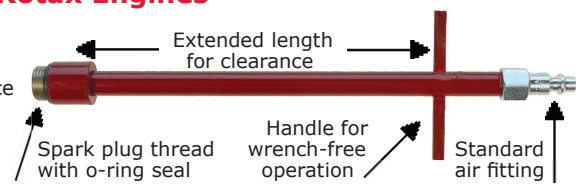


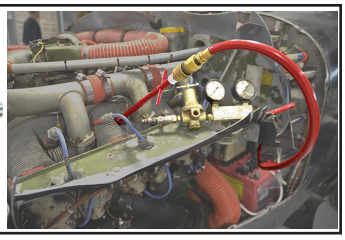
[1] Requires a knob with 1/4-20 thread. See page 37 for available knob options.

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





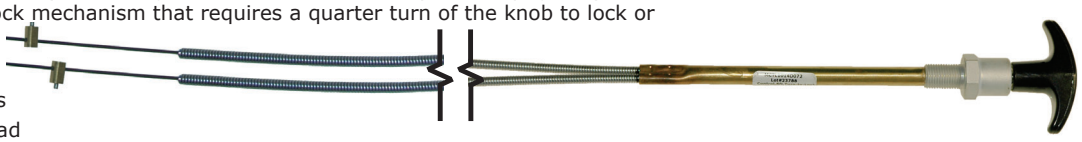
Manufactured by Baines Specialites LLC

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 37)*
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 stocks a variety of springs so you can choose the one that best fits your application. All McFarlane throttle controls for Rotax engines contain P/N 7140. A new design limits potential contact with adjuacent parts. 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™ Throttle Controls

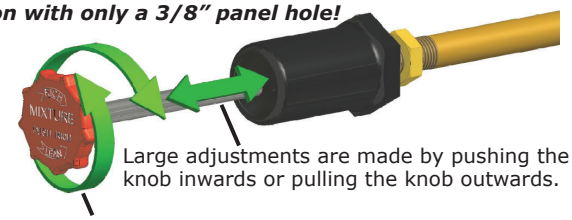
Precision Control

New roller action vernier provides smooth jam-proof coarse and fine adjustment.

- Jam-proof safety
- Precision power adjustments
- Smooth friction control
- Light and compact
- Standard vernier action, without the button!

MCMV Mixture Series

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

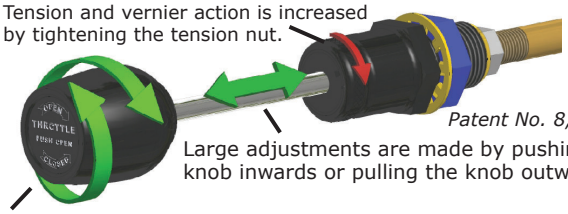


Large adjustments are made by pushing the knob inwards or pulling the knob outwards.

MCVA Throttle Series

Vernier and friction lock - The best of both!

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



Patent No. 8,485,057 B1

Large adjustments are made by pushing the knob inwards or pulling the knob outwards.

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

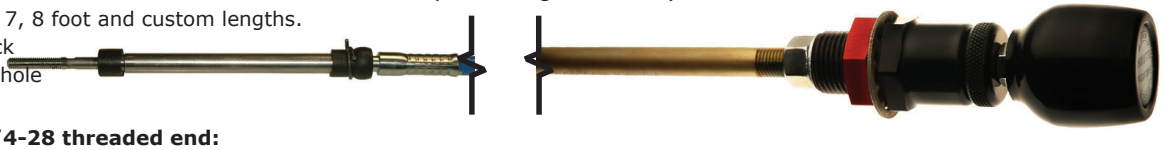
- All controls below are offered with or without a knob
- As a propeller control use knob P/N 6730
- See page 35 for complete list of 1/4-20 thread knobs

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[1] *(**LLL** = length in inches)*

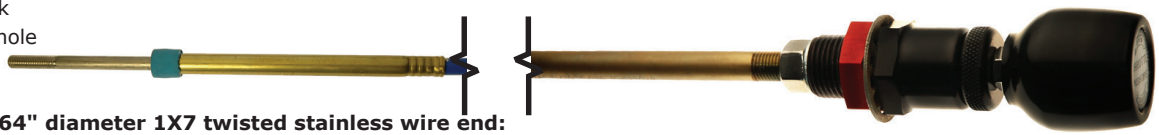
- Available in 3, 4, 5, 6, 7, 8 foot and custom lengths.
- Vernier and friction lock
- Requires a 3/4" panel hole



Throttle Control with 1/4-28 threaded end:

P/N *MCTV2035-**LLL*** with knob or *MCVA2035-20-**LLL*** without knob[1] *(**LLL** = length in inches)*

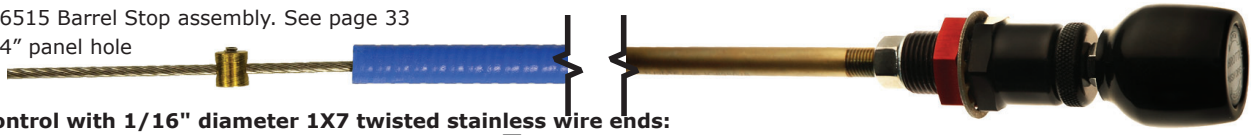
- Available in 3, 4, 5, 6, 7, 8 foot and custom lengths.
- Vernier and friction lock
- Requires a 3/4" panel hole



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

P/N *MCTV3035-**LLL*** with knob or *MCVA3035-20-**LLL*** without knob[1] *(**LLL** = length in inches)*

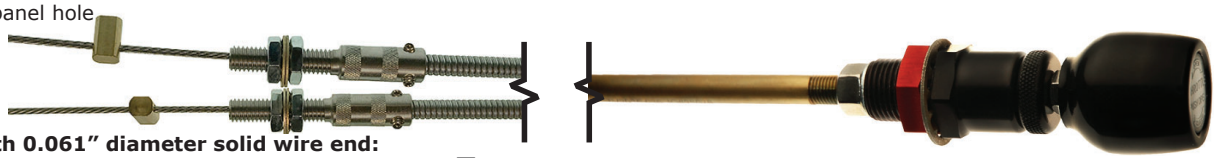
- Available in 4, 6, 8, 12 foot and custom lengths.
- Vernier and friction lock
- Includes P/N 6515 Barrel Stop assembly. See page 33
- Requires a 3/4" panel hole



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

P/N *MCTV0005D**LLL*** with knob or *MCVA0005-30D**LLL*** without knob[1] *(**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 33
- Perfect for Rotax 912/914 engines! See page 32
- 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[1] *(**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

[1] Requires a knob with 1/4-20 thread. See page 37 for available knob options.

Replacement Knobs for McFarlane Push-Pull Controls Photos on page 37

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

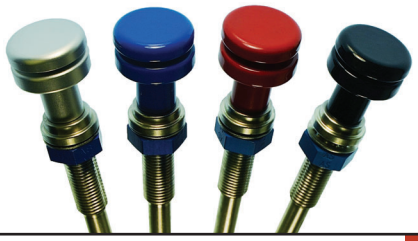
Knobs:

Part Number	Figure	Description	Thread	Color	Marking	Use Eligibility
1536A-B	1	T-Handle	10-32	Black		MCU series controls
1536A-C	2	T-Handle	10-32	Clear		MCU series controls
1536A-GN	3	T-Handle	10-32	Green		MCU series controls
1536A-L	4	T-Handle	10-32	Blue		MCU series controls
1536A-R	5	T-Handle	10-32	Red		MCU series controls
1536A-W	6	T-Handle	10-32	White		MCU series controls
1536A-Y	7	T-Handle	10-32	Yellow		MCU series controls
1536B-B	8	T-Handle	1/4-20	Black		MCTL series controls
1536B-C	9	T-Handle	1/4-20	Clear		MCTL series controls
1536B-GN	10	T-Handle	1/4-20	Green		MCTL series controls
1536B-L	11	T-Handle	1/4-20	Blue		MCTL series controls
1536B-R	12	T-Handle	1/4-20	Red		MCTL series controls
1536B-W	13	T-Handle	1/4-20	White		MCTL series controls
1536B-Y	14	T-Handle	1/4-20	Yellow		MCTL series controls
6277B[1]	15	Round powder coated aluminum	10-32	Black		MCC101D and MCU series controls
6277C[1]	16	Round anodized aluminum	10-32	Clear (silver)		MCC101D and MCU series controls
6277L[1]	17	Round powder coated aluminum	10-32	Blue		MCC101D and MCU series controls
6277R[1]	18	Round powder coated aluminum	10-32	Red		MCC101D and MCU series controls
6307-BK	19	Round powder coated aluminum	10-32	Black		MCU series controls
6307-RD	20	Round powder coated aluminum	10-32	Red		MCU series controls
6417	21	T-Handle	1/4-20	Black		MCTL series controls
6418	22	T-Handle	1/4-20	Black	"Lock" w/arrows	MCTL series controls
6427	23	4 Prong	1/4-20	Black		MCTL series controls
6428	24	4 Prong	1/4-20	Black	"Lock" w/arrows	MCTL series controls
6429	25	Fluted	1/4-20	Black		MCTL series controls
6430	26	Fluted	1/4-20	Black	"Lock" w/arrows	MCTL series controls
6432	27	Shortened T-Handle	1-4-20	Black		MCTL series controls
6489B[1]	28	Square powder coated aluminum	10-32	Black		MCU series controls
6489C[1]	29	Square anodized aluminum	10-32	Clear (silver)		MCU series controls
6489L[1]	30	Square powder coated aluminum	10-32	Blue		MCU series controls
6489R[1]	31	Square powder coated aluminum	10-32	Red		MCU series controls
6495-01B	32	Phenolic	10-32	Black		MCU series controls
6495-02B	33	Phenolic	10-32	Black		MCU series controls
6495-03B	34	Phenolic	10-32	Black		MCU series controls
6495-04B	35	Phenolic	10-32	Black		MCU series controls
6495-04R		Phenolic	10-32	Red		MCU series controls
6512B	36	Triangle powder coated aluminum	10-32	Black		MCU series controls
6512C	37	Triangle anodized aluminum	10-32	Clear (silver)		MCU series controls
6512L	38	Triangle powder coated aluminum	10-32	Blue		MCU series controls
6512R	39	Triangle powder coated aluminum	10-32	Red		MCU series controls
6570	40	Vernier-Assist Mixture	1/4-20	Red		Vernier-Assist Mixture series controls
6620	41	Vernier-Assist Throttle	1/4-20	Black		Vernier-Assist Throttle series controls
6660	42	T-Handle	1/4-20	Black	Choke Lock	MCTL series controls
6661	43	Fluted	1/4-20	Black	Cabin Heat Lock	MCTL series controls
6662	44	Fluted	1/4-20	Black	Airbox Lock	MCTL series controls
6730	45	Vernier-Assist Propeller	1/4-20	Blue		Vernier-Assist series controls
EC03	46	Black Knob	1/4-20	Black		Throttle controls
EC53	47	Black Ball Knob	1/4-20	Black		P/N MC12693-04 or MC455-139, MCT100D, MCTL and MCC101D series controls
EC125-1	48	2" Hemisphere	1/4-20	Black		
MC471-052	49	Round, Phenolic	10-32	Ivory		Piper Cabin Environment and Carb Heat Controls
MC471-053	50	Round, Phenolic	10-32	Red		Piper Mixture Controls
MC471-060	51	Round, Phenolic	10-32	Black		Piper Cabin Environment Controls
MC471-084	52	Round, Phenolic	10-32	Black		Piper Carb Heat Controls
MC571-131	53	Round, Phenolic	10-32	Clear (Silver)		Piper Cabin Environment and Carb Heat Controls
Knob Adapter	54	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.				

[1] See Knob Options table below for Color and Marking Codes

Knob Options	
Color Code	**Primary Marking Code (Secondary)**
B-Black	A-CABIN AIR only on 6277 series knobs (PULL ON)
C-Clear (Silver)	B-CARB HEAT only on 6489 series knobs (PULL ON)
GN-Green	
L-Blue	C-CHOKE use on 6277 series knobs
R-Red	D-DEFROST only on 6277 series knobs (PULL ON)
W-White	
Y-Yellow	
	H-CABIN HEAT only on 6277 series knobs (PULL ON)
	P-PARK BRAKE only on 6277 series knobs (PULL ON)
Knob Jam Nuts and Lock Washers	
Part Number	**Description**
EC33	1/4-20 Jam Nut
Use Eligibility: MCTL Series Controls Throttle controls using 1/4-20 threaded fittings (except p/n MC12693-04 & MC455-139)	
MS35650-304	10-32 Jam Nut
Use Eligibility: MCC101D series controls	
MS35333-40	1/4" Steel Lock Washer
Use Eligibility: MCTL and MCC101D Series Controls	
Decals	
6289	Carb Heat Decal
Use Eligibility: Piper Carb Heat Controls	

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



Replacement Parts for McFarlane Push-Pull Controls

Photos on page 37

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	62	3/16" Pushrod Boot	Controls with a 3/16" pushrod
272	63	1/4" Pushrod Boot	Controls with a 1/4" pushrod
EC04	64	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	Figure	Description	Use Eligibility
6060-8	65	1/2-20 Retaining Nut	Throttle controls using 1/2-20 threaded fittings
EC111	66	1/2" Lock Washer	Throttle controls using 1/2" threaded fittings
MS35333-44	67	Same as EC111	
6060-12	68	3/4-16 Retaining Nut	Throttle controls using 3/4-16 threaded fittings
EC112	69	3/4" Lock Washer	Throttle controls using 3/4" threaded fittings
MS35333-47	70	Same as EC112	
6196	71	3/8-24 Jam Nut	Cessna carb heat controls
6197	72	3/8" Lock Washer	Cessna carb heat controls
6133	73	7/16-20 Retaining Nut	Throttle controls using 7/16-20 threaded fittings
6260	74	7/16-20 Retaining Nut, Modified	MC6350 Dual Push-to-Unlock controls
EC38	75	7/16" Lock Washer	
EC61	76	3/8" Lock Washer	P/N MC12693-04 or MC455-139
EC62	77	3/8-24 Retaining Nut	P/N MC12693-04 or MC455-139
EC65	78	Throttle Spacer Bushing	P/N MC12693-04 or MC455-139
EC119	79	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	Figure	Description	Use Eligibility
EC38	80	7/16" Lock Washer	MC565-548 series controls
EC70	81	12M x 1.25 Jam Nut	MC565 series controls
EC72	82	12mm Lock Washer	MC565 series controls

Spring

Part Number	Figure	Description	Use Eligibility
6822	83	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. Requires 1 per carburetor (2 per engine). See page 28.
7235	107	Spring, Throttle, Blue	
7140	108	Spring, Throttle Kit (one red and one blue)	

Adjustable Friction Lock Service Kits

Part Number	Figure	Description	Use Eligibility
EC12SK	84	Friction Packing Service Kit	Throttle controls using a 1/2" friction nut
EC312SK	85	Friction Packing Service Kit	Throttle controls using a 9/16" friction nut

Miscellaneous

Part Number	Figure	Description	Use Eligibility
6135	86	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	87	Cable Stop Assembly	Rotax Engines
6271	88	Conduit Terminal Assembly, Slip Fit	Rotax Engines
6290-06-12K	89	Panel Hole Reducer 0.375 X 0.75	Includes a flat washer. Not for use on certified aircraft.
6290-08-12K	90	Panel Hole Reducer 0.50 X 0.75	Includes a flat washer. Not for use on certified aircraft.
6408	91	Dual Throttle Hardware Kit	Rotax Engines
6409	92	Allen Wrench	MCTL series controls
6415	93	Panel Bolt, Turn-to-Lock	MCTL series controls
6416	94	Pin, Turn-to-Lock	MCTL series controls
6420	95	Ferrule, Turn-to-Lock, Brass	MCTL series controls
6423	96	Ferrule, Turn-to-Lock, Nylon	MCTL series controls
6424	97	Conduit Terminal	Rotax Choke Controls
6433-1	98	Conduit Clamp	MCQ100 series controls
6515	99	Barrel Stop Assembly	MCC101D and MCTL series controls
6518	100	Vernier Assist Roller Pin	Vernier Assist series controls
6797	101	Control Clip Plate	Typically used on quadrant style controls
7002	102	Slip Fit Terminal	Rotax Engines
EC02	103	1/2" Friction Adjust Wheel	Throttle controls using a 1/2" friction adjust wheel
EC89	104	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. Included with Cessna 170 aircraft throttle control.
EC98	105	9/16" Friction Adjust Wheel	Throttle controls using a 9/16" friction adjust wheel
M83248/1-006	106	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 63)

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"

AN742 Series

6317 Series

MS21919 Series

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

Figures 1-108 Photos are not to scale relative to each other. Product details are on pages 35-36.

1  P/N 1536A-B	2  P/N 1536A-C	3  P/N 1536A-GN	4  P/N 1536A-L	5  P/N 1536A-R	6  P/N 1536A-W	7  P/N 1536A-Y	8  P/N 1536B-B	9  P/N 1536B-C
10  P/N 1536B-GN	11  P/N 1536B-L	12  P/N 1536B-R	13  P/N 1536B-W	14  P/N 1536B-Y	15  P/N 6277B	16  P/N 6277C	17  P/N 6277L	18  P/N 6277R
19  P/N 6307-BK	20  P/N 6307-RD	21  P/N 6417	22  P/N 6418	23  P/N 6427	24  P/N 6428	25  P/N 6429	26  P/N 6430	27  P/N 6432
28  P/N 6489B	29  P/N 6489C	30  P/N 6489L	31  P/N 6489R	32  P/N 6495-01B	33  P/N 6495-02B	34  P/N 6495-03B	35  P/N 6495-04B	36  P/N 6512B
37  P/N 6512C	38  P/N 6512L	39  P/N 6512R	40  P/N 6570	41 P/N 6620	42 P/N 6660	43 P/N 6661	44 P/N 6662	45 P/N 6730
46 P/N EC03	47 P/N EC53	48 P/N EC125-1	49 P/N MC471-052	50 P/N MC471-053	51 P/N MC471-060	52 P/N MC471-084	53 P/N MC571-131	54 P/N KNOB ADAPTER
Examples of marked knobs P/N 6277BP	P/N 6277BC	P/N 6277LP	P/N 6489RB	P/N 6489CB	P/N 6378	P/N 474-084 with P/N 6289 Decal	62 P/N 235	63 P/N 272
64 P/N EC04	65 P/N 6060-8	66 P/N EC111	67 P/N MS35333-44	68 P/N 6060-12	69 P/N EC112	70 P/N MS35333-47	71 P/N 6196	72 P/N 6197
73 P/N 6133	74 P/N 6260	75 P/N EC38	76 P/N EC61	77 P/N EC62	78 P/N EC65	79 P/N EC119	80 P/N EC38	81 P/N EC70
82 P/N EC72	83 P/N 6822	84 P/N EC12SK	85 P/N EC312SK	86 P/N 6135	87 P/N 6270	88 P/N 6271	89 P/N 6290-06-12K	90 P/N 6290-08-12K
91 P/N 6408	92 P/N 6409	93 P/N 6415	94 P/N 6416	95 P/N 6420	96 P/N 6423	97 P/N 6424	98 P/N 6433-1	99 P/N 6515
100 P/N 6518	101 P/N 6797	102 P/N 7002	103 P/N EC02	104 P/N EC89	105 P/N EC98	106 P/N M83248/1-006	107 P/N 7235	108 P/N 7140