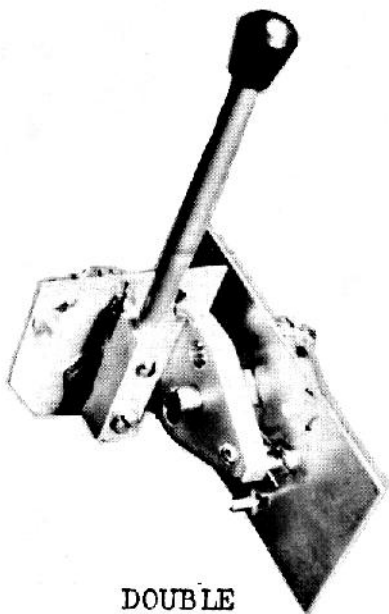
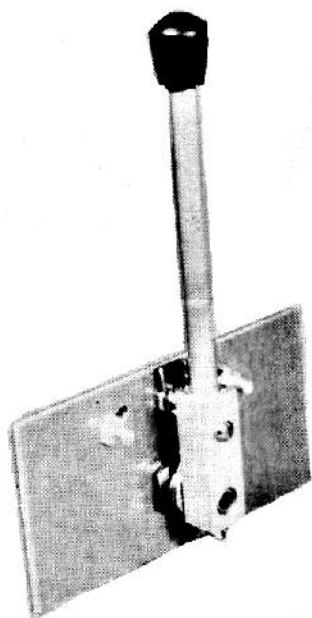


PRO-TROL
Universal Control Stick
Assembly Instructions & Parts List



DOUBLE



SINGLE

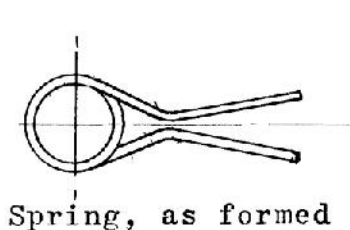
This Control Stick duplicates the control motion found in almost all full-sized aircraft today. It has a self-centering feature which brings the controls back to neutral whenever the stick is released for any reason, and it has a definite 'feel'.

The single unit is for rudder-only systems or for supplementary controls. Pulse proportional systems require the use of potentiometers of the proper value while 'reed' systems require rotary wafer switches. Escapements can be flown with this unit by using a rotary switch and always moving the stick in the same sequence; for example, right rudder and hold or right rudder, left rudder and hold.

The double unit is adaptable to any of the systems referred to as dual proportional using potentiometers or may be adapted to multi-channel reed systems using rotary wafer switches.

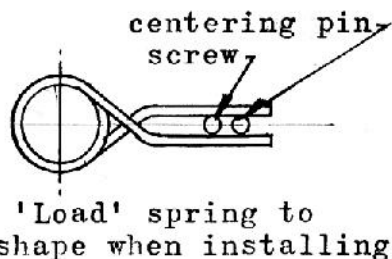
Refer to the photographs of the unit and the exploded view for the relationship of parts. There is only one part to install before any other and this is the centering pin on each plate. Since the shaft of the 'pot' or switch and bearings in them are what these units use for suspension, be sure that these items are of high quality.

For best operation, the relationship between the plate and stick socket and the plate and hanger shown below should be observed.



Spring, as formed

Fig. 1



'Load' spring to shape when installing

Fig. 2

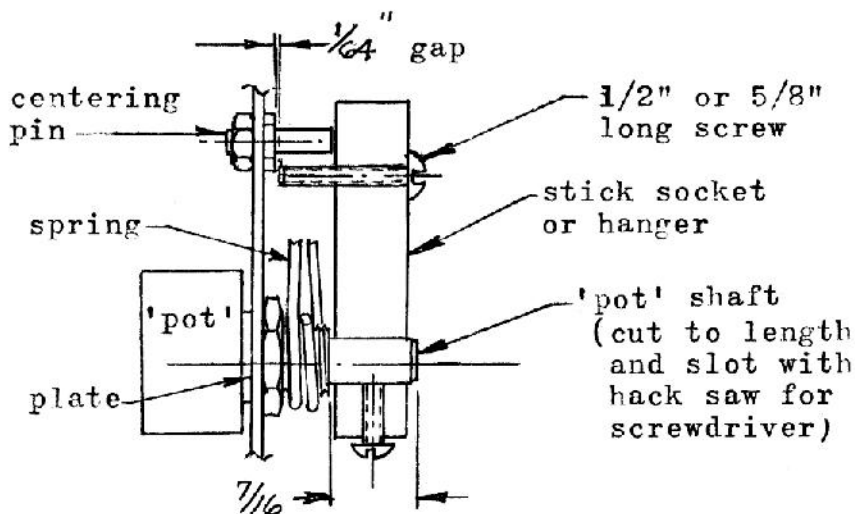
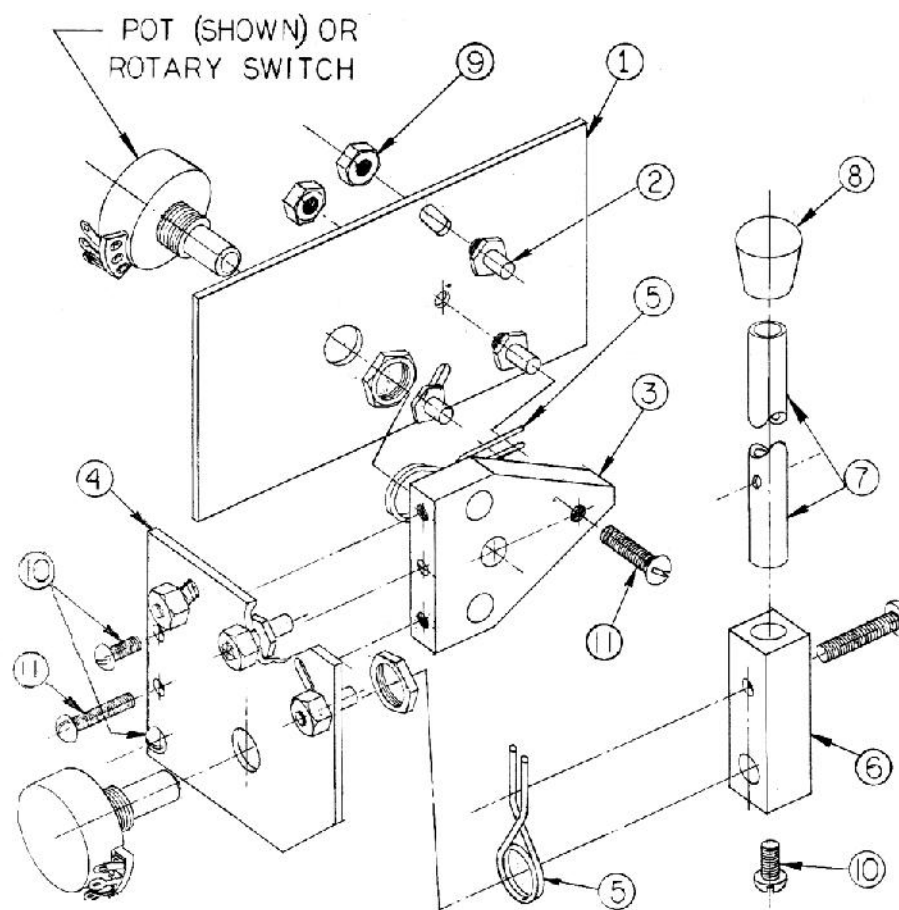


Fig. 3



- ① MOUNTING PLATE (DOUBLE SHOWN)
- ② STOP PIN
- ③ HANGER
- ④ SECONDARY PLATE
- ⑤ CENTERING SPRING
- ⑥ STICK SOCKET
- ⑦ STICK
- ⑧ KNOB
- ⑨ HEX NUTS
- ⑩ 1/4" LONG SCREW
- ⑪ 1/2" LONG SCREW
- ⑫ 5/8" LONG SCREW

No mounting hardware is included for the unit because of the many different methods and locations for installation. Two suggested methods of mounting are, (1 by stand-offs made from tubing and long screws with nuts, and (2 by using short pieces of angle and sheet metal screws or machine screws and nuts. The unit may be mounted in hand held transmitters, space permitting, or in pulse boxes; possibilities are limited only by imagination.

The exploded view shows the relationship of parts for the DOUBLE unit only but the SINGLE is basically the same. The SINGLE unit will consist of one half the assembly work with the data furnished in Figures 1,2 & 3 being typical.

PRO-TROL is manufactured by
 HOBBY HAVEN, PO Box 77, Normandy Br.
 St. Louis, 21, Mo.

Parts List-Double

Part name	Qty	Price
Mounting Plate	1	\$1.00
Stop & Centering Pin	6	.25 ea.
Hanger	1	1.00
Secondary Plate	1	1.00
Centering Spring	2	.40 ea.
Stick Socket	1	.75
Stick	1	.50
Knob	1	.10
Screws and nuts	1 set	.45

Parts List-Single

Mounting Plate	1	\$1.00
Stop & Centering Pin	3	.25 ea.
Centering Spring	1	.40
Stick Socket	1	.75
Stick	1	.50
Knob	1	.10
Screws and nuts	1 set	.25