

MICRO FORCE V MANUAL

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INTRODUCTION

The MICRO FORCE V Zoom Control provides precise servo control for both film and video camera applications. The Micro Force uses advanced electronic technology to provide the most sensitive rugged and reliable device available. The "Force" in the name refers to the manner in which the operator controls the zoom. Light thumb pressure applied to the red control knob controls both the zoom direction and speed. The solid state force sensor is extremely stable and rugged. It gives the operator excellent tactile "feel" and at the same time insures elimination of the problems associated with moving mechanical components.

The MICRO FORCE V differs from its predecessors in that it interfaces to external zoom motors as well as provides the zoom command signal to remotely control most Fujinon, Canon, and Nikon video lenses. In addition, the control provides remote start/stop for film cameras as well as control of the VTR for video cameras.

CAMERA APPLICATION

The Micro Force can be powered directly from the most common film and video cameras. The cameras for which stock cables are available are listed below. The Micro Force may also be powered from an external 12V. battery using the Auxiliary Power Cable.

Film Cameras	Cable
Arriflex BL ArriSR	"BL" cable with 11 pin Fischer connector for use with the Micro Force/Heden motor.
Aaton LTR	"BL" cable with either a 9 pin Amphenol or 6 pin Lemo connector.
Moviecam installed in	"BL" cable with 2 pin Fischer in place of 11 pin Fischer. Remote camera start/stop not functional. Voltage regulator must be installed in Micro Force.
Panavision	"BL" cable with 10 pin Hermaphrodite Lemo in place of Fischer. Voltage regulator must be installed in Micro Force.

The Micro Force interfaces with those Canon, Fujinon and Nikon lenses which are equipped with 12 pin Hirose sockets. Be careful to distinguish between the larger 8 pin screw type Tajimi connector and the smaller 12 pin Hirose.

VIDEO LENSES	CABLE
Fujinon	Fujinon cable
Canon	Canon cable
Nikon	Nikon cable

CONTROL DESCRIPTION

1. Zoom Control Button. Controls both the velocity and direction of the zoom. The zoom speed is proportional to the force applied.
2. Speed Control Knob. Controls the maximum speed and sensitivity.

The control settings are opposite for film and video; when set up for film use, the setting of 10 on the Speed Control Knob corresponds to maximum zoom speed and the setting 0 corresponds maximum speed when used with a video lens.

For Video application (when the control is ordered with a video cable only), the control is set up so that 10 corresponds to maximum speed for a video lens and minimum speed for a film lens.

The change-over procedure between film and video is quite simple and described in the section under Service Information.

3. Camera Run Switch. Remotely stops and starts the film camera or VTR. This switch has three positions; a center position, a momentary position for toggling the Sony VTR, and an on position for running film cameras or Ikegami VTR's.
4. Zap Switch. Momentary switch used in conjunction with the zoom control knob to override the setting of the speed control. This may be used to quickly position the zoom when the speed setting corresponds to a low speed.
5. Servo/Manual Switch. The normal operating position for the control is in the Servo mode. When adjusting the lens by hand, the switch should be put in the Manual position. This switch has no effect for video lens operation.
6. Power Indicator. The red LED glows when power is applied.

7. Zoom Direction Reversing Switch. This switch is located internally on the handgrip edge of the circuit board.

POWER REQUIREMENTS

Voltage: 11 - 17 VDC

Current: Quiescent 65 mA

Maximum Load (stalled motor condition) 1.2 - 1.5A

The Micro Force is normally powered from the camera or video lens. The Auxiliary Power Cable is used to provide power for the control when camera power is unavailable. It interfaces the "BL" type cable to a standard 4-pin Cannon connector.

SERVICE INFORMATION

The only user serviceable part is a 1.5 Amp picofuse located adjacent to pin 1 of the Molex connector. In the event the fuse is blown, the LED power indicator will be dark when power is applied to the unit. The fuse is intended to protect both the electronics, zoom motor and lens from damage. The fuse will blow if the lens is run hard against its stops and/or the motor is left running in a stall condition.

The force sensor (joystick) used in the Microforce is very stable and adjustment is seldom required. If drift is observed the following adjustment procedure should be carried out:

Tools Required: Digital Voltmeter with .1mV resolution (Fluke 75 or equivalent), miniature screwdriver.

1. Turn the Speed Control Pot to its minimum speed setting for film mode (or maximum for video mode.) With no motor attached and with the control in the normal operating position, adjust Pot 5 until the voltage between molex connector Pins 17 and 18 is $0\text{mV} \pm 10\text{mV}$.

2. Next plug the Micro Force into a video lens and adjust Pot 24 until the voltage between molex connector pins 12 and 14 is $0\text{mV} \pm 0.1\text{mV}$.

The Speed Control pot is changed between the Film and Video modes by reversing the connections to pins 4 and 10 of the Molex edge connector. The crimped connections terminating the wires can be slid out of the female socket. Procedure:

1. Disconnect all power from the control.
2. Slide the brown Molex socket away from the pins on the circuit board.
3. Apply light pressure on the wire crimp through the slot in the connector body while gently pulling on the wire. When the pressure releases the crimp from the connector body the wire will slide out. Do the same for the other wire.
4. Interchange the wires by sliding the crimp terminations back into the connector body.
5. Slide the Molex connector back onto the pins of the circuit board.