

arrow^{Fx}

16

CB PLUS™

Fluid Head

OPERATOR'S MANUAL

1078 Arrow ^{Fx} 3 Fluid Head
1080 Arrow ^{Fx} 5 Fluid Head
1082 Arrow ^{Fx} 7 Fluid Head



Features and Controls

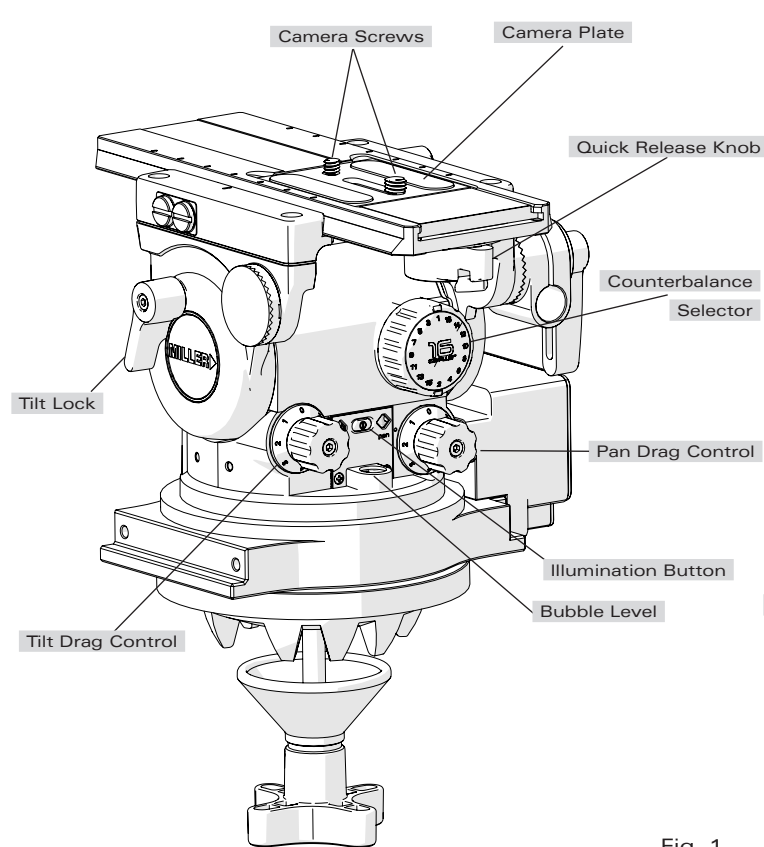


Fig. 1

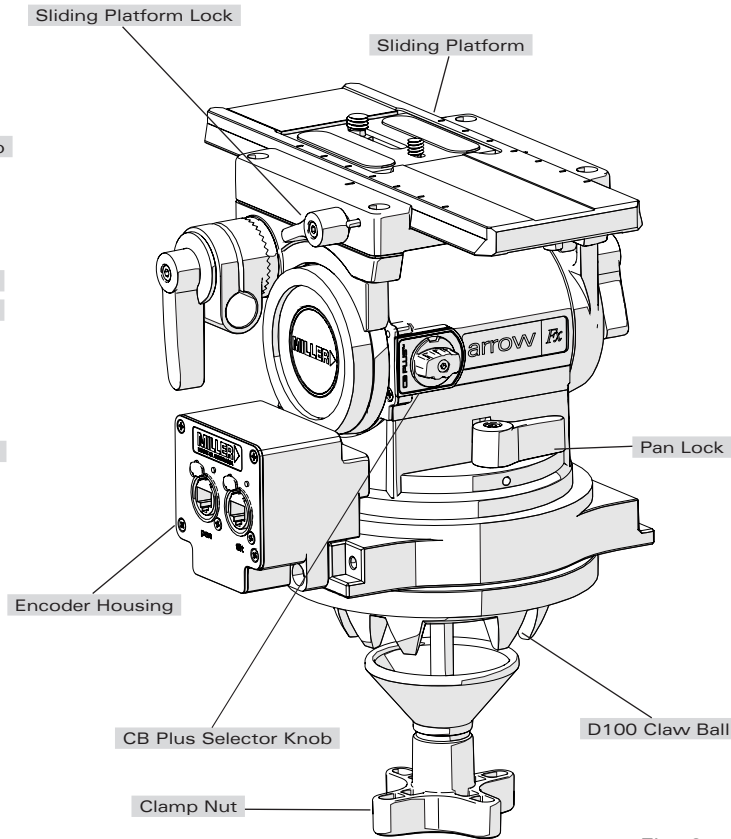


Fig. 2

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Introduction

Thank you for purchasing the Arrow.*fx* fluid head.

This Miller product provides the user precise pan and tilt coordinates through separated (pan and tilt) outputs. These outputs can be coupled with other equipment data to provide augmented visual effects during broadcast and production.

The Arrow.*fx* has been designed to suit a wide range of cameras, lenses and accessories as demanded by ENG, EFP, Studio and Field OB setups.

The robust design and construction of the Arrow.*fx* fluid head offers maximum stability, accuracy and durability and includes precision ball bearing mounted fluid drag plate system in the pan and tilt assembly to deliver true fluid drag performance over the entire temperature and payload range.

The fluid drag and the counterbalance system were designed to provide excellent control and repeatability and offer progressive equal increments of drag and torque.

The Arrow.*fx* fluid head also offers illuminated single control location for operating pan-tilt, counterbalance and viewing bubble level.

Safety Instructions

Please use this manual to familiarise yourself with the operation of the Arrow.*fx* fluid head and observe these instructions to prevent any damage to your equipment. Ensure that all equipment is operating correctly and free from defects and damage, also please ensure that the tripod is steady, secure and that the bowl is approximately horizontal when attaching the camera. The operator is responsible for the safe operation of this piece of equipment.

- Do not exceed the maximum payload capacity of the fluid head.
- Do not use magnets near or around the Arrow.*fx*, this can effect the magnetic rings.
- Do not leave the camera unattended on the fluid head.
- Do not release the SLIDING PLATFORM LOCK whilst the camera is at an angle.
- Do not adjust the tripod whilst the camera is attached to the fluid head.
- Ensure PAN HANDLE CLAMP and CLAMP NUT is securely tightened.
- Apply TILT LOCK when adding/removing equipment from the camera or when attaching/removing the camera from the fluid head.
- Hold camera securely whilst changing counterbalance, pan drag or tilt drag settings.
- Hold the camera securely whilst releasing the QUICK RELEASE KNOB.
- Hold camera securely whilst adjusting the CLAMP NUT to level the fluid head.

Operating Instructions

1. Attaching Mounting Base

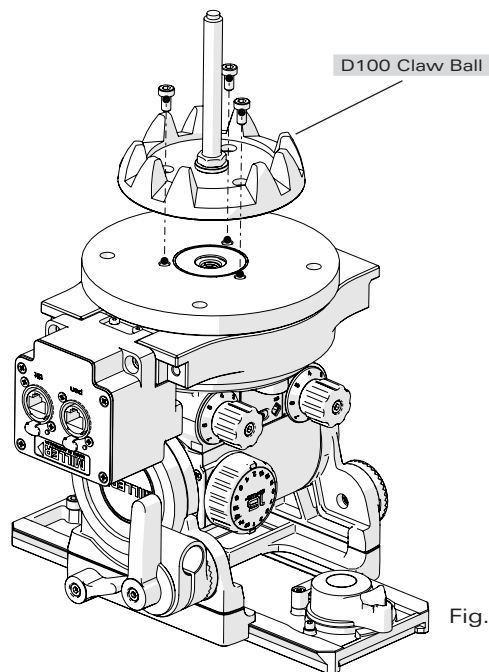


Fig. 3

The Arrow *fx* fluid head comes standard with the D100 Claw Ball which is attached by 3 x M5 screws, these are fixed to head as pictured above (fig. 3), a D150 Claw Ball Level (1290) is also available as an optional accessory.

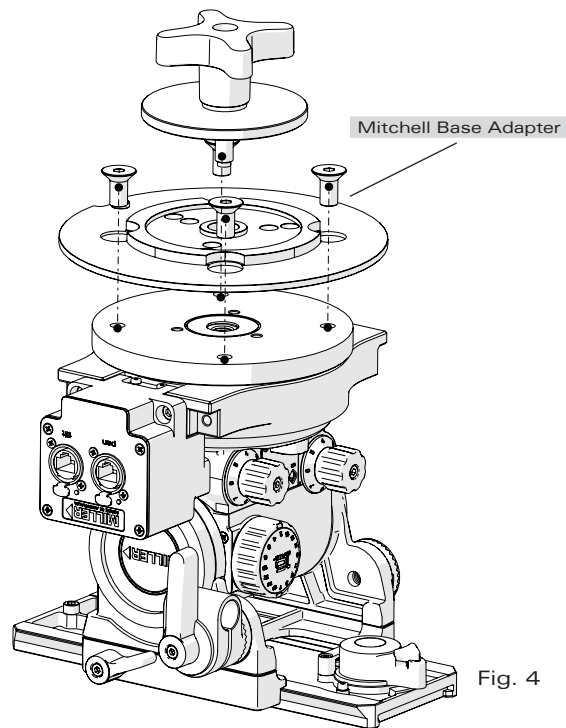


Fig. 4

Available as an optional accessory is the Mitchell Base Adapter (1225) which can be attached using the 4 x 3/8" countersunk screws (fig. 4) or the 3 x M5 screws. This allows you to mount the Arrow *fx* to any Mitchell base tripod, pedestal etc.

Operating Instructions

2.Attaching Encoder Housing

The Arrow *fx* has a removeable encoder housing which allows for easy serviceability. The encoder housing contains the Read heads which intepret the coordonates from the magnetic rings located on the pan and tilt modules on the fluid head.

To remove the encoder housing simply unscrew the 2 x M5 screws (fig. 5).

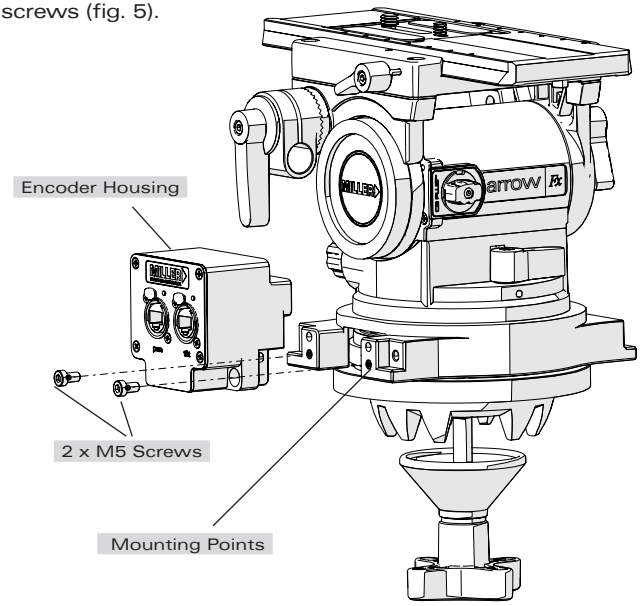
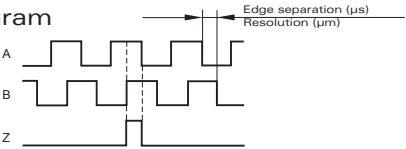


Fig. 5

The output signal from the Arrow *fx* fluid head is a pulse signal (A,-A, B, -B) with a reference signal (Z,-Z) (one count per revolution). The interface box then transmits this calibrated information to your downstream workflow.

Output Diagram



The encoder housing contains the ports (RJ 45) for pan and tilt output (fig. 6). The housing has a LED lights to indicate correct RJ45 connection (green) and the reference point on the magnetic ring (red).

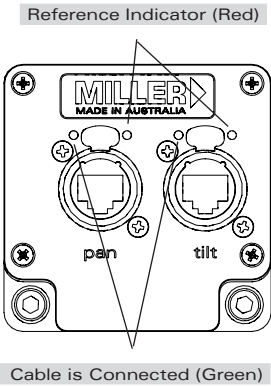


Fig. 6

Operating Instructions

3. Integration

The ArrowFX fluid head can be integrated in two ways.

1. The ArrowFX, coupled with a camera, can transit positional data of camera feed to allow for augmented/virtual feed overlays (fig. 7).
2. The ArrowFX can be used to control a remote head (with camera) (fig. 8). For details on an integrated Egripment control system refer to Appendix (pg 14).

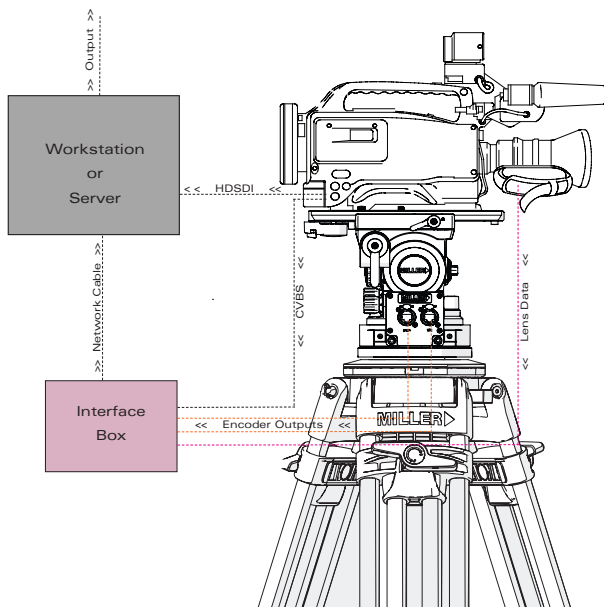


Fig. 7

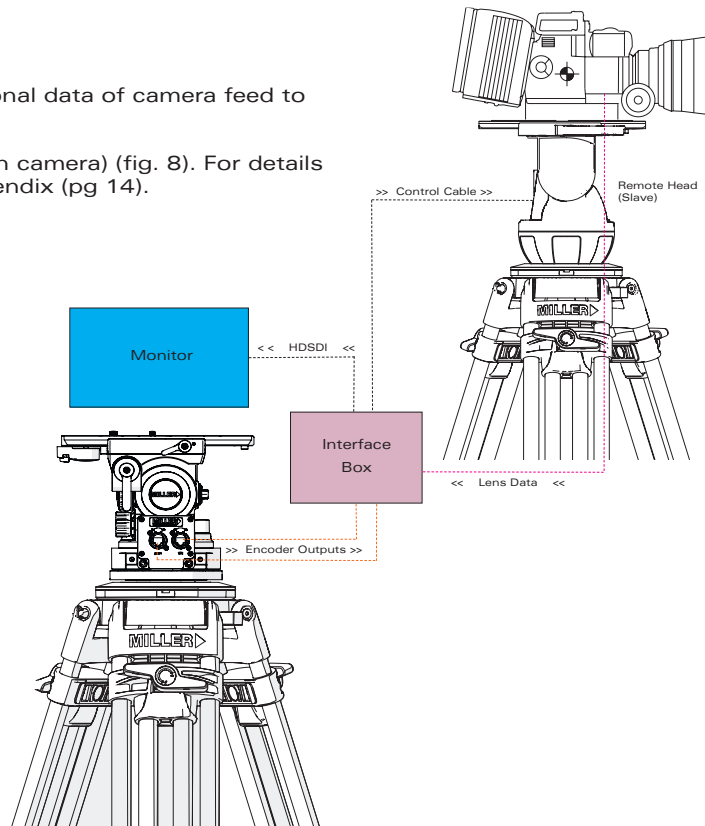


Fig. 8

Operating Instructions

4. Camera Set-up

- 4.1 Remove the CAMERA PLATE by pulling down the SAFETY TAB while rotating the QUICK RELEASE KNOB to the left. The CAMERA PLATE should pop out.
- 4.2 Refer to the Camera's owners manual for correct method of attachment to the CAMERA PLATE. Inspect the CAMERA PLATE and remove the 1/4" and 3/8" screws (for Mini-DV mount) or the 1/4" + PIN ADAPTOR CARRIAGE (ENG mount) as required.
- 4.3 Attach camera accessories, battery and the QUICK RELEASE TRIPOD ADAPTER (if required) to the camera. It is recommended to estimate the camera's Centre of Gravity (C of G) for the purpose of correctly positioning the camera on the CAMERA PLATE. The camera's C of G can be estimated by placing the camera on to a round rod and then shifting it backwards or forwards until a balance point – C of G - is achieved. It is recommended to identify this point on the camera as it will be useful in step 2.6.
- 4.4 Attach the CAMERA PLATE to the camera or the QUICK RELEASE TRIPOD ADAPTOR such that the C of G mark on the camera is approximately 10 – 20 mm behind the front edge of the CAMERA PLATE then securely tighten the screws.
- 4.5 Align the CAMERA PLATE with the SLIDING PLATFORM and slide it in until the safety mechanism is engaged.
- 4.6 Release the SLIDING PLATFORM LOCK and slide the SLIDING PLATFORM such that the camera's C of G is directly above the centre axis of the Fluid Head (fig. 9) and tighten the SLIDING PLATFORM LOCK. If this can not be achieved then reposition the CAMERA PLATE on the camera or the QUICK RELEASE TRIPOD ADAPTOR – step 2.4. This will ensure that the system has maximum stability.

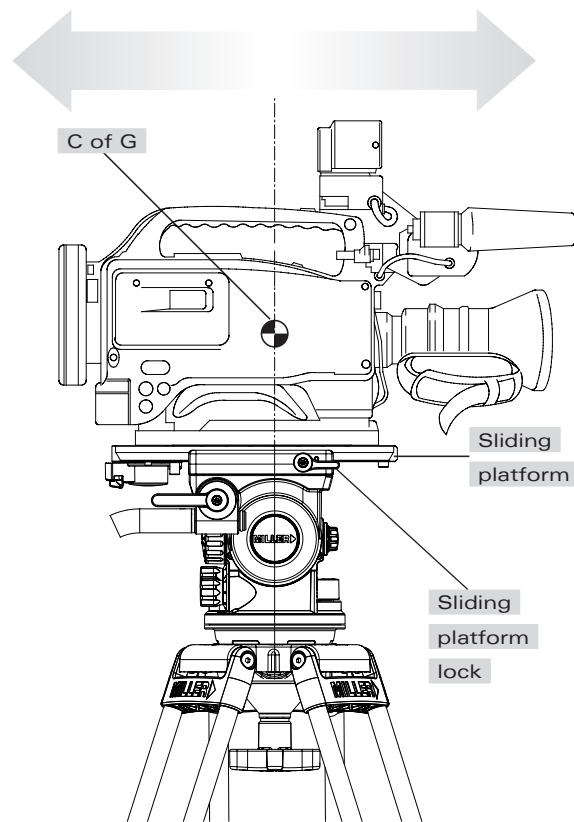


Fig. 9

Operating Instructions

5. Counterbalance Control

The counterbalance system was designed to neutralise the effect of the camera weight when it is tilted. The Arrow^{fx} fluid head offers a 16 position counterbalance system which is operated with the CB SELECTOR KNOB and the CB PLUS SELECTOR KNOB.

The system was designed for an efficient and ergonomic control of the counterbalance mechanism which delivers a wide payload range capacity.

The counterbalance selector knob and the CB PLUS SELECTOR KNOB must be operated when the SLIDING PLATFORM is in a horizontal position.

After changing the counterbalance setting it may be necessary to tilt the camera back and forth to ensure that the CB spring has engaged. The camera must be held securely while changing the counterbalance setting.

- 5.1 For safety select counterbalance position 16, being the orange coloured marker on the CB SELECTOR KNOB pointing to position 16 and the CB PLUS SELECTOR KNOB displaying an orange marker.
- 5.2 Hold the camera and release the TILT LOCK, then gently tilt the camera from the horizontal position forward then backward and observe its response. If the camera 'springs back' to the horizontal position then a lower counterbalance setting is required, rotate the CB SELECTOR KNOB clockwise to a lower position and recheck, select lower setting again if necessary.
- 5.3 Finer adjustments can be made by toggling the CB PLUS SELECTOR KNOB (fig. 10).
- 5.4 Correct counterbalance setting has been achieved when minimum effort is required to move the camera over the entire tilt range.

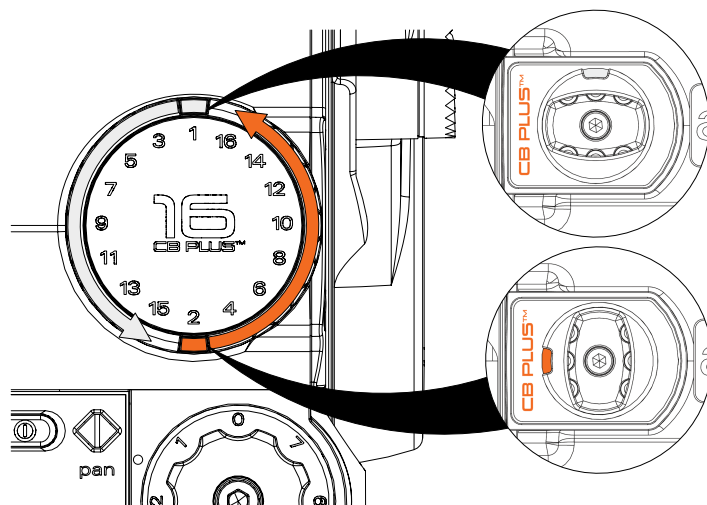


Fig. 10

Operating Instructions

6. Pan-Tilt Drag Control

The Arrow $\sqrt{x}$ fluid head offers 7 selectable positions of fluid drag + zero setting in the pan and tilt (5 for AFX 3). The settings are equally stepped from light drag in position 1 up to heavy drag in position 7, the drag plates are completely disengaged in position zero.

- Do not pan or tilt the fluid head whilst adjusting PAN or TILT DRAG CONTROL or whilst the PAN & TILT DRAG CONTROL is between settings.
- The drag setting can be changed at any tilt or pan angle.

7. Pan-Tilt Lock Control

The Arrow $\sqrt{x}$ fluid head offers high capacity caliper disc brake system to hold the fluid head in a fixed pan and/or tilt position. Camera position will not change when applying or releasing the pan-tilt locks.

- Do not pan or tilt the fluid head whilst the PAN or the TILT LOCK is partially applied.

8. Illumination

The Arrow $\sqrt{x}$ fluid head offers illumination of the PAN & TILT DRAG CONTROL settings, BUBBLE LEVEL and PAN & TILT INDICATOR when the low ambient light conditions exist. Illumination can be achieved by pressing the ILLUMINATION BUTTON once. The light will switch off after 10 seconds.

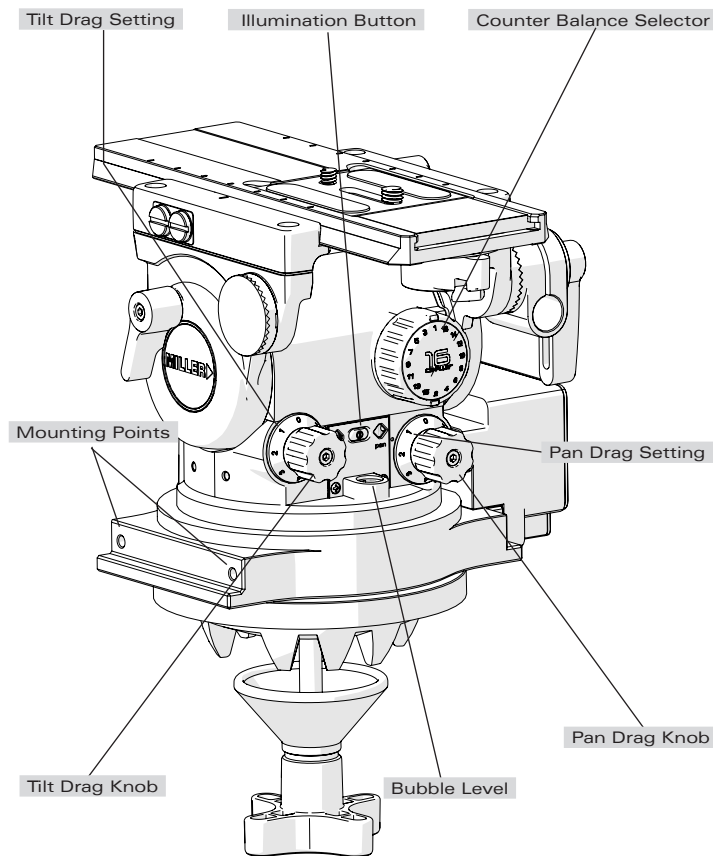


Fig. 11

Maintenance

The Arrow^{fx} fluid head offers high quality surface coatings, dust and moisture seals. Miller recommends keeping the fluid head clean at all times by using soft brushes and lint free cloth to wipe over the surfaces.

- Do not immerse the fluid head in any liquid.
- Do not use stiff brushes, abrasives, harsh detergents and solvents.

Battery Replacement

The Arrow^{fx} fluid head uses a single GP23A type - 12 Volt battery for Illumination. Miller recommends the following batteries to provide long life performance – Duracell MN21/23, Eveready A23 or Vinnic L1028.

- Using a Phillips head #1 screw driver, remove the two RETAINING SCREWS, BATTERY DOOR and the old battery.
- Insert the new battery as shown in (fig. 12).
- Insert the tab on the BATTERY DOOR into the body first then align the two screw holes and tighten the screws snugly.

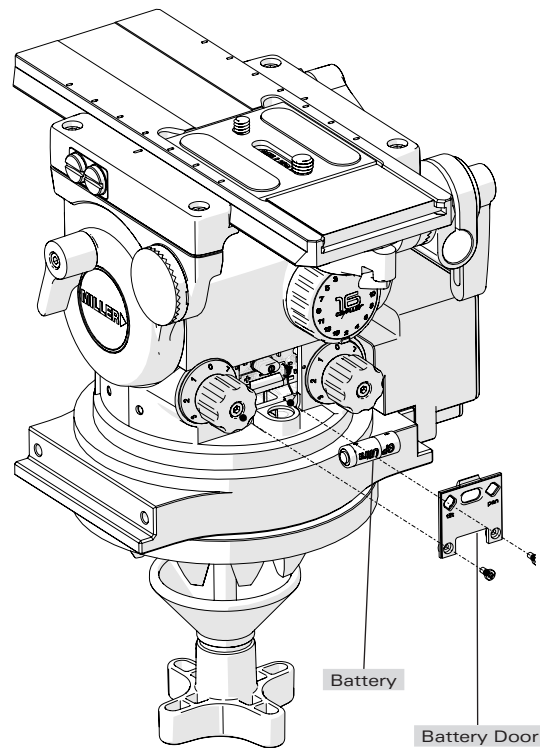


Fig. 12

Specifications

	1078 Arrow <i>fx</i> 3	1080 Arrow <i>fx</i> 5	1082 Arrow <i>fx</i> 7
Weight	4.8kg (10.6lbs)	5.1kg (11.3lbs)	5.1kg (11.3lbs)
Payload range	1-19kg (2.2-41.8lbs)	2-21kg (4.4-46.2lbs)	6-25kg (13.2-55.1lbs)
Pan-tilt drag	5 selectable fluid drag positions + 0		
Pan range	360°		
Pan-tilt locks	Positive lock calliper brake system		
Tilt angle	+90°/-75°		
Counterbalance	16 selectable positions		
Camera platform	Quick release camera plate with 1/4" and 3/8" screws		
Sliding range	120mm (4.7")		
Height above bowl	200mm (7.9") mitchell base / 205mm (8.1") D100mm / D150mm bowl		
Mounting base	Flat base		
Illuminated controls	Bubble level, pan-tilt drag controls		
Temperature range	-40° to +65°C (-40° to +149°F)		
Pan handle	Telescopic 390 to 590mm (15.4 to 23.2")		
Encoder type	Incremental with reference mark		
Tilt resolution	983,040 counts per revolution (with quadrature)		
Pan resolution	1,589,248 counts per revolution (with quadrature)		
Output type	Incremental (A, B, Z, A-, B-, Z-)		
Output connection	RJ45 (Ethercon)		
Power requirements	5V (+/- 10%)		

Technical Illustrations

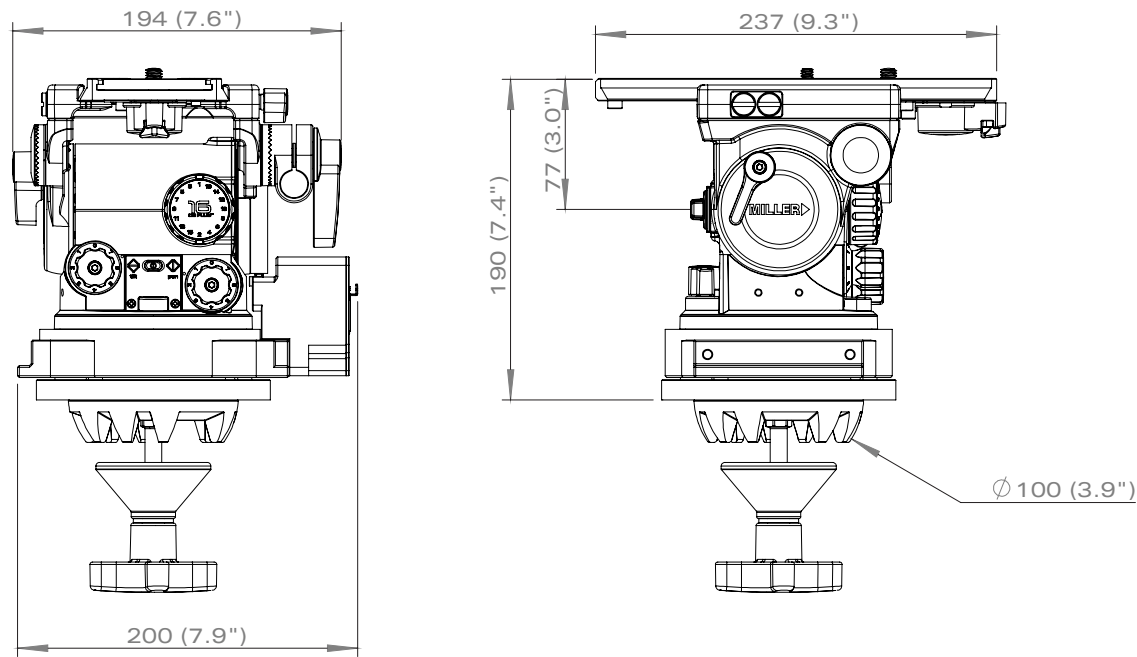


Fig. 13

Storage

The Arrow^{fx} fluid head can be stored for extended periods; Miller recommends storage in a Miller soft case and the following:

- Remove battery.
- Clean the external surfaces.
- Keep in a dry place away from direct sunlight.
- Loosen off PAN & TILT LOCK.

Spare Parts and Accessories

ITEM	ITEM NO.
Battery	P3798
Offset camera plate with 2 x 3/8" screws	858
Camera plate (Euro) with 1/4" & 3/8" screws	860
Camera screw 3/8"	P0037
Camera screw 1/4"	P0036
Additional pan handle - telescopic with clamp	696
Accessory mounting block	1260
Mitchell base adaptor with clamp	1225
D150 Claw ball level	1295

Service, Sales and Support

Please refer to warranty card for complete details. Miller Authorised Service Agents must carry out all service and repair work. Failure to observe this requirement may void warranty. It is advisable to notify Miller or a Miller authorised service agent if a change of performance is observed as a result of dropping or rough usage. For information regarding sales and service of Miller products or for your nearest Miller representative please contact us via our website or at the following:

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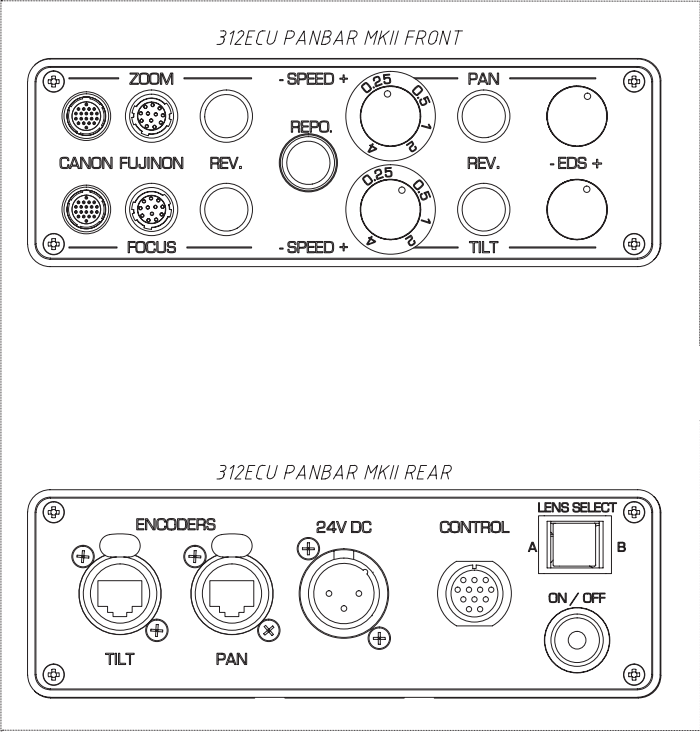
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Appendix

When the Arrow.f^x is integrated with the third party Egriment remote system head use the following network diagram.



Reference only, refer to Egriment.

Fig. 14

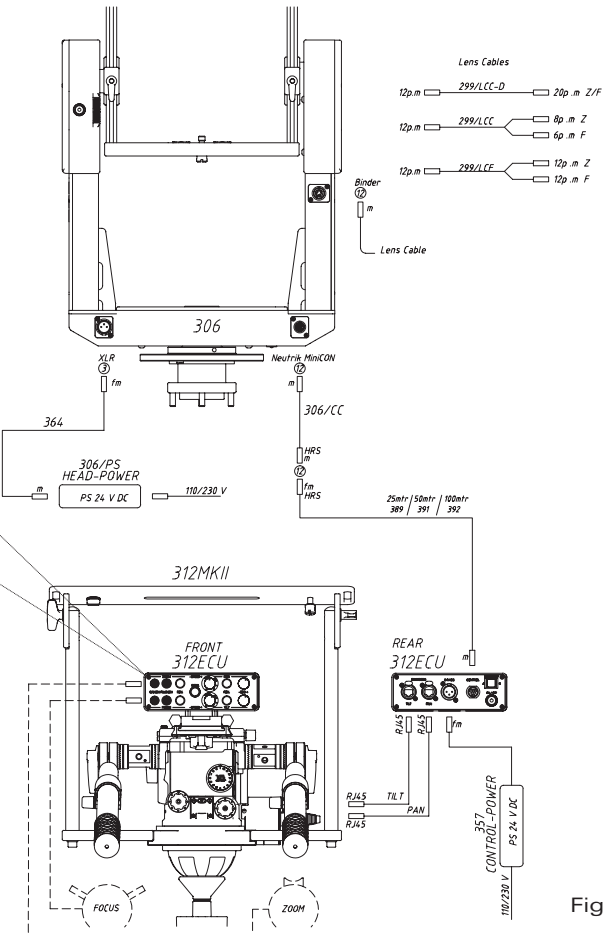


Fig. 15



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