

Vinten

**PAN AND TILT HEAD
TYPE III**

**OPERATORS
HANDBOOK**

**W. Vinten Limited,
715, North Circular Road, Cricklewood, London, N.W.2.
Telephone: GLAdstone 6373-5**

Vinten

**PAN AND TILT HEAD
TYPE III**

**OPERATORS
HANDBOOK**

**W. Vinten Limited,
715, North Circular Road, Cricklewood, London, N.W.2.
Telephone: GLAdstone 6373-5**

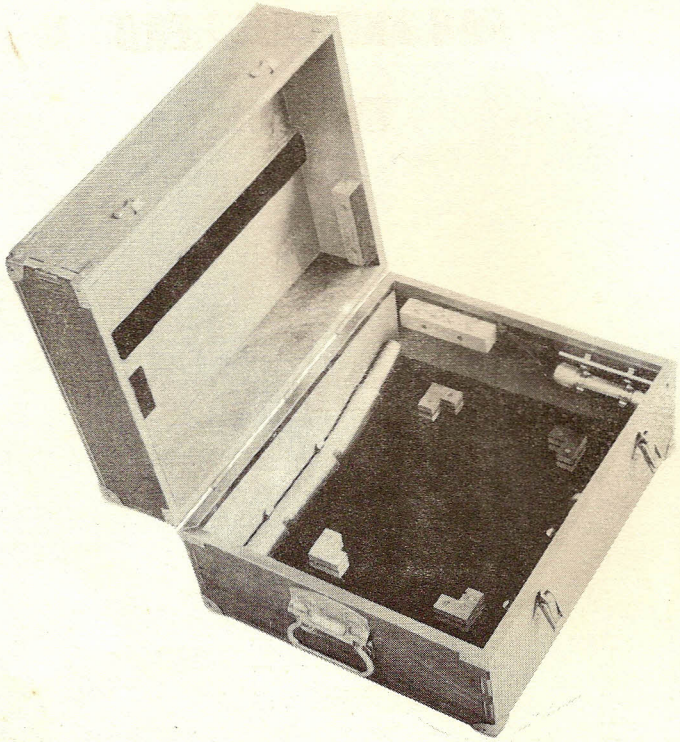
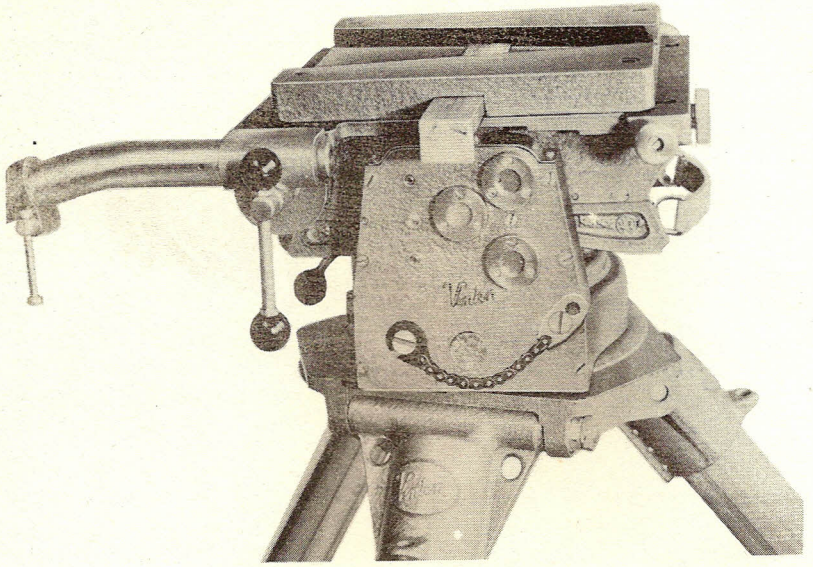


Fig. 1

GENERAL

The Vinten Pan and Tilt Head Type 111 is an entirely new design of camera head; its unique features are the preservation of perfect balance at any-angle of tilt, together with a range of movement increased to 50° tilt in elevation or depression.

These advantages are obtained by the unusual geometry of the moving parts and the system does not depend upon the use of counterbalance weights or springs.

The components are extremely robust and the head will carry cameras weighing up to 250 lbs. (115 kgs.) with a considerable margin.

CONTROLS

The head is provided with a pan bar which can be adjusted for both angle and length and which can be attached to either side of the camera platform. (see p.9)

Pan and tilt movements are fitted with separate locks and both movements have friction adjustments with separate controls.

All the controls are easily accessible at the back of the head.

MOUNTINGS

The head is attached to its support by means of a four bolt fixing or by a centre screw.

The camera may be attached direct to the head by a single screw fixing or via a wedge-action adaptor plate; in either case a fine screw adjustment permits the camera to be accurately positioned in a fore and aft direction.

CASE

A robust wooden carrying case is provided and contains fittings which firmly locate the Head within it. Clipped to the inside walls of the case are the two parts of the Panning Bar, a scaffold clamp, together with its bolts and a box spanner and tommy bar for use with the latter.

CONSTRUCTION

GENERAL

Fig. 2 shows the Pan and Tilt Head from the back; it consists of two main parts:-

The camera platform and
The body

CAMERA PLATFORM

The camera platform (A) is a flat surfaced casting having two identical cam surfaces of steel (B) bolted to the underside. The cams rest upon steel rollers (C) mounted on a cross shaft, rigidly supported by a housing mounted on the base of the head. These cams and rollers support the full weight of the camera. It is these cams which provide the unique features of the Vinten head and cams with two profiles are available; one is calculated to provide for cameras having a C.G. height of approximately 7" from the base while the other covers C.G. heights in the region of 8".

Pivoted to the sides of the platform are two steel guide bars which are located within the side arms by four ball races at each side; the guide bars can move only vertically between their support rollers and thus eliminate any

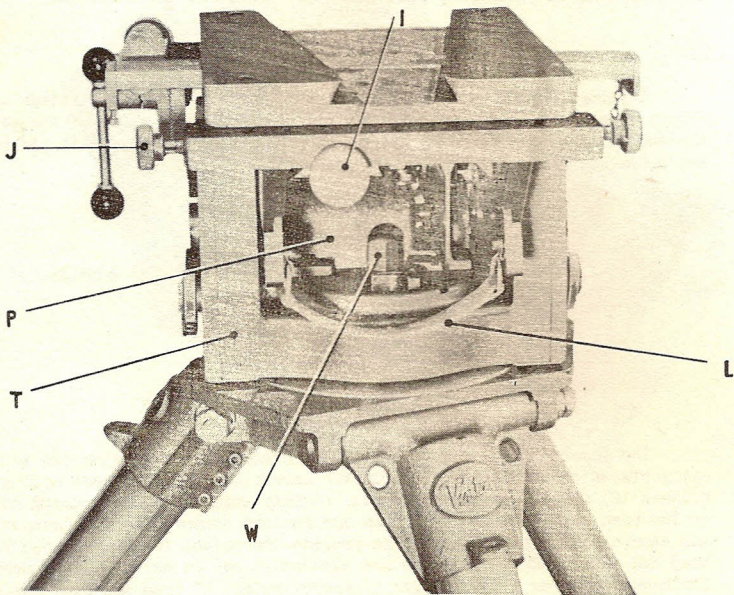
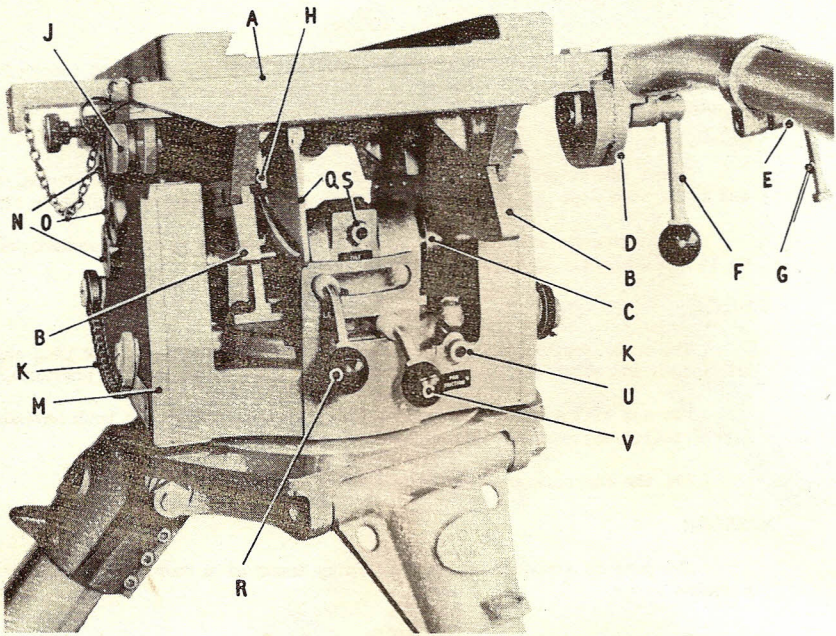


Fig. 2

movement of the camera platform in a fore and aft direction.

A heavy bracket (D) is fitted to a back corner of the platform as an attachment for the Pan Bar (E). Radial serrations on the mating faces permit the Pan Bar to be positively locked to the platform at any one of a large range of angles. The ball-ended tommy bar (F) is used to tighten the clamping bolt.

The Panning Bar is in two telescopic sections, its length being adjusted by slackening the bolt (G) to release the split clamp.

CAMERA MOUNTING

A Vinten Camera Wedge Adaptor Plate is normally used in conjunction with the Head. The Adaptor Plate is free to slide in a fore and aft direction on the top surface of the platform but is restrained by four socket-head screws projecting downwards through slots in the platform. These screws may be locked by a key (H) clipped (when not in use) to the platform casting.

The slots permit the Wedge Adaptor Plate to be moved over a range of 1" (25.4mm.) fore and aft of the centre line, thus compensating for variations in the horizontal position of the centre of gravity in different cameras and permitting it always to be coincident with the pivot point. A fine degree of control is obtained by rotating the knurled knob (I) which turns a leadscrew below the platform. The leadscrew nut is bolted to the Adaptor when this is used but it may also be bolted to a special fitting sliding on the platform and carrying a centre screw fixing for the camera.

CHAIN LATCHES

Each of the chain latches (K), which are used to hold the platform in the horizontal position, consists of a chain fitted at one end with a link and at the other with a hook. The link pivots about an anchor pin secured to the base and is provided with two pivot holes to allow the overall chain length to be adjusted to suit different cams. When in use, the latch hooks are engaged with screwed studs, carrying knurled nuts (J), situated at diametrically opposite corners of the platform. When the nuts are tightened a chamfer on the hook and a taper on the nut ensure that sufficient tension is automatically obtained in the chains to secure and retain the platform in a level position. When not in use each hook locates on a retaining pivot screwed to the base.

Note: The latch chains are designed so that undue pressure on the pan bar will result in breakage of the hook and so avoid damage to the cam and cam locking plates.

A webbing carrying handle is attached to the forward corners of the two cams, at (L).

The body is a heavy casting containing the panning mechanism in the base and having two integral arms closed on the outside by side plates (M) which are retained by countersunk screws, and located by dowels.

Four steel pins are held within each side member and on these are mounted ball races supporting vertical guide bars. The ball races aft of each guide bar are on fixed centres, but the pins within the front races have an eccentric centre portion. These pins are headed, and the heads are located outside the side plates by clamping rings (N). By slackening these rings the pins may be turned, thus advancing the ball races and positioning the guide bars with complete accuracy. The head of each pin is drilled with two holes for use with a special key.

A third ring (O) on each side retains a plastic stop which engages with a cheese-head screw at the bottom of each guide bar, thus limiting the upward movement of the bar, and setting the limits of tilt both up and down.

Bolted to a machined surface on the top of the base is a cast housing (P) containing the tilt friction adjustment.

TILT LOCK

A vertical plate (Q) is attached to the underside of the camera platform and contains a milled slot similar in shape to the cam profile; a clamping device passes through this slot.

The clamp consists of a friction washer pulled up against the inside of plate (Q) by an over-centre cam; this is operated by a lever and knob (R) working through a gate, and clamps the plate against a corresponding friction facing the other side.

TILT FRICTION ADJUSTMENT

It will be seen that as the camera platform is moved through an angle of tilt, the cams will cause rollers (C) to rotate.

These rollers are mounted on a cross-shaft which is carried in ball races within the housing on top of the base casting.

A solid brake drum is pinned to the cross shaft, rotating with the rollers, and a leather-lined steel friction band encircles it. One end of the band is fixed to the housing by two countersunk screws and the other end is attached to a draw bolt projecting through the housing. A knurled nut (S) enables the constriction of the friction band to be controlled and thus acts as the Tilt Friction Adjustment.

PANNING BEARINGS

The base (T) of the Head is a hollow casting bored out to form a circular housing for a heavy ball thrust race. This is supported upon a static, circular base which is bolted down to its support by a four bolt fixing. Alternatively, a four armed spider can be bolted to the bottom of this base and carries a centre screw fixing.

A steel pin projects upwards from the centre of the circular base; mounted on this pin is an angular contact race about which the body rotates in all panning movements. The separate friction and brake mechanisms concerned with panning occupy the annular space between the two ball races.

PAN FRICTION ADJUSTMENT

A cylindrical rim extends upwards from the circular base and forms a fixed brake drum. Around the outside of it is disposed an externally contracting friction band of leather-lined steel; one end of this is fixed and the other is attached to a draw bolt which emerges through the base casting and carries a knurled nut (U) to provide the Pan Friction Adjustment.

PAN LOCK

Within the brake drum is an internally expanding brake having one leading and one trailing shoe. These shoes rest at one end upon an expander which consists of a cam mounted on a short vertical shaft. This shaft projects through the casting and carries a lever and knob (V) which works through the gate and forms the Pan Lock.

The other ends of the shoes rest upon an expander with a wedge action. This expander has a threaded portion which passes up through the base; it can be adjusted externally by removing a domed nut and turning a slotted control beneath it. This adjustment thus provides for wear on the brake shoes.

OPERATION

MOUNTING

The head is mounted as previously described by a four bolt fixing or by a centre screw. A box spanner and tommy bar are provided in the carrying case for use when the former method is adopted.

After fitting it is essential that the head be accurately levelled in both directions and this may be achieved by observing the cross-level mounted at the front of the body casting. This is facilitated by locking the camera platform at its full upward limit of tilt.

FITTING THE CAMERA

First fit the platform chain latches into position by unscrewing the two knurled thumb nuts (J) and locating each hook on its respective stud. Ensure that both hooks are correctly positioned and then tighten the nuts.

Note: When the chain latches are in use the Tilt lock must be applied.

With the camera platform fixed the camera may now be mounted. If the Wedge Adaptor Plate is to be used the camera should be mounted on the wedge, inserted into the Wedge Adaptor Plate, the lock bar pushed home and the safety pin inserted. The camera and wedge must not be forced home but pushed gently into the Adaptor thus allowing the locking bar to operate easily.

Alternatively, the camera may be fitted in the orthodox manner to the centre screw fitting.

In either case it is important to ensure that the camera is complete with all its ancillary equipment such as lenses, coaxial cable, headphones, etc., in order to achieve a permanent balance.

The balancing process is simple; firstly the Tilt Lock is released and the chain latches are freed and the hooks returned to their retaining pivots. The camera is now able to tilt and should be restrained by holding the pan bar. It will be possible, by tilting the head, to sense whether the assembly is front or back heavy; should either be the case the camera must be shifted backwards or forwards respectively relative to its platform. This is done by slackening the four socket head screws using the key provided. The knurled knob for the adjustment screw (1) may now be turned, a clockwise rotation producing a forward movement of the camera; this can be facilitated by tilting the head slightly downwards. A counter-clockwise rotation will, of course, move the camera backwards and will be assisted by tilting the head slightly upwards.

The chain latches must always be used when an out of balance load is put on the head, such as when a Zoom lens is used and the cradle and camera are in position without the front element. The latches must also be employed when the head is travelling unattended on a vehicle with camera mounted, and it is advisable to apply the latches when carrying the head or when stowing it in its case; in these circumstances the Tilt Lock must also be applied.

CONTROLS

The Tilt Lock (R) and the Pan Lock (V) are both locked by movement to the left and unlocked by movement to the right. Both Tilt Friction Adjustment (S) and Pan Friction Adjustment (U) are rotated clock-wise to increase the friction.

SERVICING

The Vinten Head is very robust and little servicing is required. The ball races are correctly lubricated before leaving the factory and should require no further attention.

Adjustments which may be needed after considerable use are (1) Elimination of fore and aft play in the vertical guide bars and (2) The taking up of wear in both Tilt and Pan Lock devices.

VERTICAL GUIDE BARS

After removing the camera

- (1) Loosen the three screws in each clamping ring (N)
- (2) Rotate (clockwise) the headed shafts using a special spanner until all side play is eliminated from the vertical guide bars, which may be checked by extending the bars and attempting to rock them by hand.

When the adjustment is made the clamping rings must be tightened by firmly screwing up the three screws in each.

IMPORTANT. Neither the guide bars nor the cam faces and rollers should be lubricated with any type of oil or grease. Only rolling action occurs at these points and the presence of grease is both unnecessary and certain to trap dust and dirt.

These faces should be wiped over with a dry rag at intervals.

TILT LOCK

Should it be found that the Tilt Lock is becoming less effective it may be simply adjusted.

The centre pin of the clamping device passes through the slot in the platform locking plate and into a projecting lug on the housing below it. The pin is threaded and secured behind the lug by a nut and lock-nut. By slackening the lock-nut the adjusting nut may be screwed up to reduce the clearance in the lock assembly. After adjustment the lock-nut must be re-tightened.

PAN LOCK

Should it be found that the Pan Lock is becoming less effective it is necessary to adjust the brake. Removal of the domed nut (W) gives access to the adjuster. This comprises a threaded rod headed at the lower end, this head being machined to a conical point. At the top this rod is provided with a screwdriver slot. Two expander pins pass crosswise through the bottom end of the adjuster body and bear against the conical surface of the rod; the brake shoes rest against the outer ends of the pins.

After removing the domed nut, the locking nut should be slackened back one turn. A screwdriver may then be used to turn the threaded rod; clockwise rotation expands the shoes to compensate for wear. Correct adjustment must leave the panning movement completely free when the Pan Lock is released.

After adjustment the lock nut must be tightened and the domed nut replaced.

DISMANTLING

Should it become necessary to replace the friction band or the brake shoes in the Panning mechanism or to dismantle the head for any other reason it is essential to observe the following sequence of operations, otherwise damage may

occur to the Head:-

- (1) Remove Wedge Adaptor Plate or single screw fixing.
- (2) Remove Pan bar by unscrewing the tommy bar.
- (3) Remove control knobs and gate.
- (4) Dismantle Tilt Lock assembly by removing the nut and lock nut on the Tilt Lock centre pin and withdrawing the complete assembly away from the Platform Locking plate.
- (5) Remove circular cover plates near bottom of side plates. This gives access to the end of the guide bars. Remove the cheese head stop screws from the bars.
- (6) The Camera Platform is now free and may be removed upwards.
- (7) Remove the Tilt Friction Housing by undoing four socket head screws and easing the housing up from the base casting: two dowels are also used to locate this housing. The cam rollers and shaft are supported in bearings within the housing and will come away with it.
- (8) Remove the locking screw in the top face of the large nut, located in the centre aperture of the body casting. Unscrew the nut. This permits the body carrying the angular contact ball race to be withdrawn from the centre pivot pin, which is attached to the base.
- (9) Lift off the thrust race cage and balls.
- (10) Invert the body casting; the friction adjustment and brake assemblies are now readily accessible from the bottom of the body.
- (11) To remove the friction adjustment assembly first remove the retaining screw at the end of the draw bolt. The knurled nut can then be unscrewed and removed. The static end of the friction band is held by a slotted peg secured through the body by a nut on the top surface; after removing the nut the peg and friction band may be withdrawn from the body and the draw bolt allowed to slide out with it.
- (12) To remove the Pan Lock brake shoes first remove the two Z-shaped support brackets by unscrewing two countersunk screws. The brake shoes are then free and may be withdrawn by expanding their static ends to disengage them from the adjuster assembly. The two shoes will come away complete with the return springs.
- (13) Should it be necessary to dismantle the remainder of the brake mechanism remove the dome nut giving access to the adjuster housing, unscrew the retaining nut and withdraw the assembly.
- (14) Detach the Pan Lock lever by unscrewing the clamp bolt and easing the lever from its square shaft.
- (15) The brake expander cam and shaft may then be withdrawn downward from its bearing.
- (16) To dismantle the Tilt Friction Assembly first remove the retaining bolts and detach the Tilt Friction Assembly housing. Then remove the two countersunk screws on the surface of the housing. These are located just beneath the knurled adjustment knob. A small clamping plate will be released by the screws, freeing the static end of the friction band.
- (17) Remove the taper pins from the roller nearest the Tilt Friction Assembly, and from the brake drum. Drive the roller shaft through the assembly until the brake drum can be removed.
- (18) Remove the retaining screw in the end of the draw bolt; the knurled

nut may then be removed, permitting the draw bolt and friction band to be withdrawn as one.

A new friction band may be inserted by generally reversing the above instructions.

Should it be necessary to dismantle the side members of the body, proceed as follows:-

- (1) Remove camera platform as detailed in (5) and (6) above.
- (2) Remove ten countersunk screws in each side plate.
- (3) Insert four screws (4 B.A.) in the tapped holes in each side plate and screw home to break the joint; each side plate will come away carrying with it the four ball races on their shaft.
- (4) The rear pair of ball races are removed by extracting their shafts from the side plates.
- (5) The front pair of ball races are removed by first unscrewing the countersunk clamping screws and detaching the clamp rings from the outside of the side plates.
- (6) Each shaft must then be extracted from the side plate and the ball race simultaneously. If no suitable extractor is available, the shaft must be driven out carefully using a soft metal driver against the inner end of the shaft and ensuring that the side plate is adequately supported close to the head of the shaft.

CAMERA PLATFORM

It is very unlikely that the camera platform need be dismantled, but should this become necessary the method will in general be evident. If the vertical guide bars are removed for any reason it must be noted that each bar has a channel milled along one edge to afford transverse location. When re-assembling it is important to ensure that the channels face the front of the camera.

CAMS

The two cams are attached to cast webs beneath the camera platform. Each cam and web has a mating pair of rebated surfaces through which pass retaining bolts.

In order to change between the 7" and 8" cams the camera platform should be removed from the body (as detailed earlier), the old cams detached and the new pair fitted.

At the same time it is necessary to fit a different Tilt Locking Plate. The Wedge Adaptor Plate or the single screw fixing plate, when fitted, must be removed from the platform.

The Tilt Locking Plate must then be removed by unscrewing the countersunk screws which, together with two dowels, hold it to a bolting face cast on the bottom of the camera platform. The new Tilt Locking Plate can then be fitted and the head re-assembled.

WEDGE ADAPTOR PLATE

To fit this component it should be placed on top of the camera platform and located in position; the four holes near the corners must line up above the slots in the platform, and the three countersunk holes near the front must coincide with the tapped holes in the adjuster shoe. The latter projects through a slot in the camera platform and must engage with the underside of the Wedge Adaptor Plate.

Four socket headed bolts are screwed upwards through slots in the platform into the tapped (bushed) holes in the Wedge Adaptor Plate: these bolts need only be finger tight. Three countersunk screws are then inserted through the base of the Adaptor Plate and screwed home into the shoe.

When the camera has been fitted and balanced the socket headed bolts are fully tightened by means of the key clipped beneath the camera platform.

Note: Other cams are available to suit types of equipment having different heights of C.G. The construction and fitting procedures are indential to the ones previously described.

CHANGING THE POSITION OF THE PAN BAR

Should it ever become necessary to move the camera pan bar from one side of the platform to the other proceed as follows:-

- (1) Release the knurled thumb nuts and detach the chain latch hooks from the studs.
- (2) Remove the anchor pivots and retaining pivots secured to the base by releasing the four fixing screws.
- (3) Reverse the positions of the latches so that a latch hook that previously engaged the securing stud at the rear of the platform now engages the stud at the front, and vice-versa (see below - Note). Secure the pivots in position by tightening the fixing screws.
- (4) Remove the Pan bar and adjust the platform to its fully forward position.
- (5) Remove the four rear socket head screws holding the pan bar bracket on one side of the platform and the knurled thumb nut support bracket on the other.
- (6) Slacken the remaining screws and remove both brackets.
- (7) Reverse the positions of the brackets on the platform and securely tighten all screws.
- (8) Replace the Pan bar in its new position and secure.

Note: Ensure that, when changing the position of chain latches, the chamfered side of the latch hook is on the outside.

SPARE PARTS FOR MK. III HEAD

426/11A	Tilt Friction Band
426/12A	Pan Friction Band
426/66	Brake Shoe
426/62	Friction Pad
426/86	Locking Washer
426/59	Washer
426/93	Tilt Lock Plate - 5 inch Cam
426/81	Tilt Lock Plate - 7 inch Cam
426/61	Tilt Lock Plate - 8 inch Cam
426/95	Tilt Lock Shims
426/108	Chain Latch hook.

CARRYING CASE - DIMENSIONS

Length	17"
Width	14"
Height	6.5"
Weight	12½ lbs.

PAN & TILT HEAD - DIMENSIONS

Length	12" (300mm.)
Width	14" (350mm.)
Height (without Wedge Adaptor Plate)	7" (175mm.)
Weight " " " "	32.25 lbs. (14.6 kgs.)

