REMOVAL AND INSTALLATION OF THE RED GRATING TURRET

Removal

A large number of motors encoders, etc are located on the red grating turret. They can be serviced to a considerable extent by rotating the turret so the problem grating is at the grating installation hole. Once the grating is removed there is enough access to get to microswitches, the small box of electronics, the encoder, and the rotator motor and clamp motor. For some purposes it may be necessary to remove the red grating turret completely This is done as follows.

(1) The spectrograph should have its optical axis horizontal. This is the way it is normally supported in the Cassegrain module.

(2) Remove the main box with the slit mask machinery and field lens (see another schedule for this).

(3) disconnect the two(?) cables which go to the indent activator and the rotation mechanism on the red grating cover.

(4) Remove the slit viewing lens-prism mechanism from the cover.

(5) Remove the plate with the power supplies for the lamps which are mounted on the turret cover.

(6) Remove the four roller mechanisms on the cover. .....

(7) Remove the screws which hold down the cover. These are all on the outside flange of the cover.

(8) Carefully remove the cover. It should come off in a straight out direction so it does not hit the red turret itself.

(9) Disconnect the large harness which goes from the red rurret through a wrap-up and out through holes in the spectrograph, finally to an 8_inch square black box near the colllimator. Note the wire labels.

(10) While removing the harness remove the connector to the turret encoder switch.

(11) Loosen the set screw which clamps the 2-inch diameter nut on the grating turret axle.

(12) Loosen the 2-inch diameter nut.

(13) support the turret with a sling and a very well secured clamp on the turret.

(14) Remove the 2-inch nut and the conical washer under it.

(15) Carefully slide the turret outwards on its rotation axis until it is free. Be careful with the wrap up cable and note how the cable is layed out for the wrap-up process.

(16) thread the wrap up cable through the spectrograph until it is free.

(17) Place the red grating turret on a table, flat side down for servicing.

Installation of the red Grating turret

This is basically the reverse of the process above but there are additional

steps which must be taken.

(1) Attach the sling to the turret as above and pick up the turret.

(2) thread the wrap-up cable through the spectrograph with the cable properly layed out in the wrap-up area on the top of the turret. (See drawing).

(3) Carefully slide the turret over the axle keeping the cable wrap-up properly arranged.

(4) Put on the conical washer and the 2-nch nut loosely.

(5) Rotate the instrument in its handling fixtrue so the turret is at the top, i.e. the spectrograph looking at the zenith.

(6) make sure the turret is on its axis properly. Tighten the 2-inch nut and tighten the nut clamp.

(7) Return the spectrograph so it is horizontal (pointing to the horizon).

(8) Insert the turret cover. Be sure that the mechanical limits are in the correct place relative to the mechanical stop on the turret. You must turn the turret relative to the cover to engage the six dowels which couple the turret to its rotation drive which is on the cover.

(9) Replace the screws around the flange on the outside of the turret cover. Leave the screws loose.

(10) Again point the spectrograph to the zenith.

(11) Tighten the bolts that hold the cover on.

(12) Point ther spectrograph to the horizon again.

(13) Attach the electrical cables to the cover.

(14) Thread the cable wrap-up through the spectrograph and attach the wires in the 8-inch by 8-inch outlet box near collimator.

(15) Attach the encoder switch to the turret shaft inside the spectrograph. (more heree from Steve!!!!!)

(16) Test all turret functions for proper operation.

(17) Reinstall the slit viewing mechanism and the light source power supplies.

(18) Reinstall the slit mask mechanism.

REMOVAL AND INSTALLATION OF THE COLLIMATOR

The collimator and its support structure consists of the following items. (a) the collimator itself, (b) the base plate with the levelling screws, (c) a round ring which holds the collimator hold-downs, (d) an adaptor (white) which introduces the angle that the collimator must be placed relative to the spectrograph body.

Remove the collimator as follows.

(1) The instrument optical axis should be horizontal as when mounted in the Cassegrain module.

(2) Support the collimator with a sling and crane.

(3) Loosen the bolts that hold the white angle adapter to the spectrograph and remove the whole unit from the spectrograph. It is positioned by two pins.

(4) Put the unit on a table with the white angle adapter down.

(5) Somehow clamp the levelling screws (they fit into a pivot, slot and flat surface) so they cannot move.

(6) Remove the three large hold-down bolts.

(7) Remove the black collimator cell from the white angle adapter. Turn it over and place on blocks on a table. Note that the mirror is now face up and exposed.

(8) Remove the bolts in the outer ring from the under side of the cell. Note that there is now a gap between the two parts of the cell which should be about 0.025-0.030 mils.

(9) Carefully lift the ring from around the collimator mirror. This ring carries the three defining hold-downs which rest on the front surface of the collimator.

(10) Note how all the parts line up with the collimator. The collimator is an off-axis paraboloid with the direction to the optical axis of the collimator and the spectrograph marked by a black line on the side of the collimator.

(11) The collimator can now be removed for coating if desired.

(12) The collimator rests on three radial supports which are held in place by small Allen screws which come in from the rear of the cell. They should not be tightened but are used only to keep things from falling apart. Under the three pads are stacks of Belleville washers (10 washers with three turned to show three gaps in the stack. The overall thickness of the stack should be 0.550 inches). These stacks provide the spacing noted in (8) above.

Installation of the collimator in its cell

(1) Check the three axial supports if necessary.

(2) Place the collimator on the three supports, with the black mark on the side of the mirror pointed in the correct location.

(3) Carefully place the metal ring around the mirror, again being sure that the orientation is correct.

(4) Note the spacing which should be as in (8) above.

(5) Attach the ring to the cell base with the bolts around the perimeter. These should be tightened gradually and uniformly until completely tight.

(6) Pick up the collimator and cell, flip it over, and attach to the angle adapter. Again be sure the orientation is correct.

(7) Put the cell and angle adapter back on the spectrograph body.

(8) Realign the collimator if necessary. See separate schedule for doing this.