

Introduction

For certain measurement applications, such as those using a Dynaflect coated transmission flat, a more precise alignment of the transmission flat is required than can be achieved using the alignment reticle only. This procedure describes how to use a retroreflector (corner cube) for precise alignment.

The high reflectivity coating on the Dynaflect flat returns approximately 10% more light to the interferometer's alignment target than other flats. If there is even a small degree of tilt present, a secondary fringe pattern may be present that will create an artifact in the measurement. This procedure ensures that the reference surface of the transmission flat is precisely perpendicular to the optical axis of the interferometer, thus eliminating this artifact.

Suggested specifications for the retroreflector are: 63.5 mm aperture in 5 arc seconds beam deviation grade. This type of retroreflector is available from such companies as: Coherent, Edmund Scientific, Melles-Griot, and Newport.

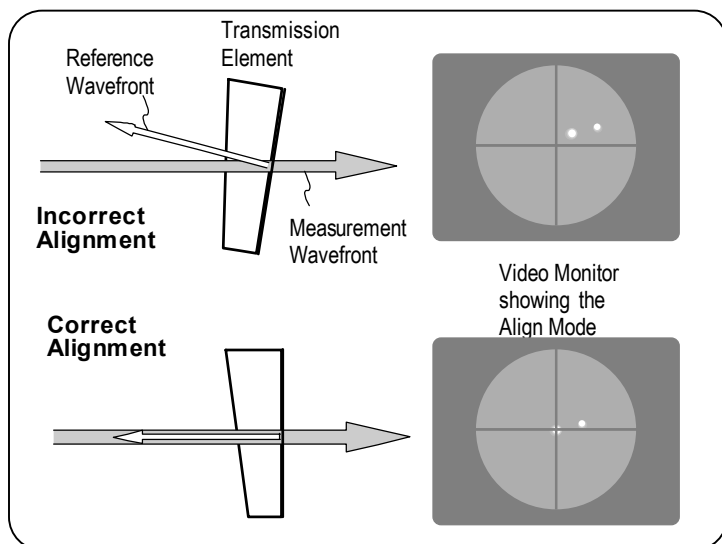
This procedure applies to 1.3 inch (33 mm), 4 inch (102 mm), and 6-inch (152 mm) Dynaflect transmission flats. It assumes that you are familiar with the interferometer's alignment controls. For additional information, refer to the accompanying product manual.

Installing the Transmission Flat

Refer to the original product manual for transmission flat installation instructions.

Aligning the Transmission Flat

1. Push the Beam Attenuator knob to the ON position.
2. Press the Align/View button on the Remote Control unit. The alignment target (crosshairs) and one or more bright spots will be displayed on the monitor. The brightest spot represents the reflection off the reference surface of the transmission flat.

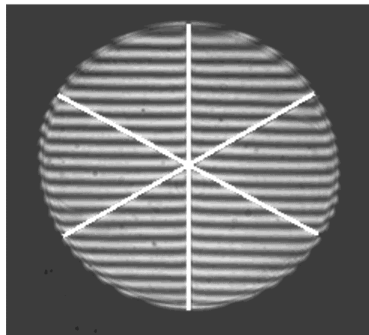


ALIGNING A DYNAFLECT TRANSMISSION FLAT

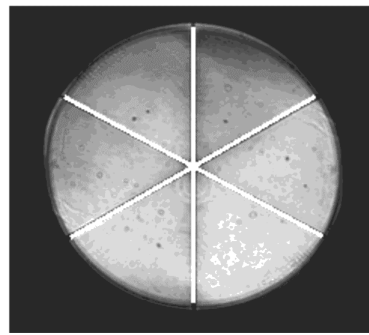
3. Turn the tip and tilt knobs on the interferometer's accessory receptacle until the *brightest* spot is superimposed on the crosshairs center.
4. Press the Align/View button on the Remote Control to switch to view mode.
5. Place the retroreflector in the measurement beam. (There should be an image on the monitor.)
6. Using the tip and tilt knobs on the interferometer's accessory receptacle, adjust the image for a null pattern. Depending upon the quality of the retroreflector, you may not be able to reach a completely null position. In this case, the important factor is that the fringes be symmetrical as shown below.
7. At this point, the Dynaflect flat will be aligned. Remove the retroreflector from the setup and proceed with the measurement process.

Retroreflector #1 Beam Deviation: 1 arc second

Misaligned

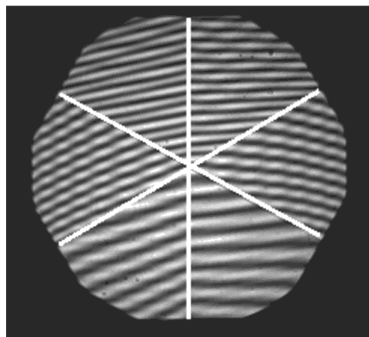


Aligned and nulled



Retroreflector #2 Beam Deviation: 14 arc seconds

Misaligned



Aligned
Note it was not possible to null the pattern; the important factor is that the pattern is symmetrical.

