Carbon Brake User Guide.

- H17i Front Discs New 37mm	**Allowed to wear to 25mm which gives 12mm wear.**
- H17i Rear disc New 35mm thick	**Allowed to wear to 25 mm which gives wear of 10 mm.**
- H18 Pad New 27.0mm	**Pads are allowed to wear down to 12mm which give 15.0mm of wear x 2 = 30.0mm.**
- H18 pad New 25 mm	**Pads are allowed to wear down to 12mm which give 13 mm of wear x 2 = 26.0mm.**
- H13.5 Discs New 35mm	**Allowed to wear to 25mm which gives 10mm wear.**
- H14 Pads New 31.5 / 30 / 25 mm	**Pads are allowed to wear down to 12mm which give 19.5 / 18/ 13 mm of wear respectively.**

Bedding Discs And Pads Prior To Race

Because of its lower operating temperatures, compared to other carbon brake materials, it is easy to achieve running temperatures without the problem of glazing the rubbing faces. Blanking the brake ducts is usually not required in dry conditions. The driver should apply hard brake pressure , in short applications, taking care not to drag the brakes under lighter loads. This may result in glazing. If this occurs and the driver reports there is inadequate retardation, then the pads should be removed from the calipers and both these and the discs should have the rubbing faces de-glazed with emery paper, and the carbon dust removed before use.

Cooling Requirements

The uprights should be designed to provide a cooling air pathway of at least 140cm² area. AP Racing carbon/carbon requires good face cooling. It is worth monitoring airflow / temperature on both inside and outside disc faces during testing. It may be found that a larger face-cooling gap is required for the inside face to equalize the face temperatures. This is due to the tendency of the airflow to bypass this outlet when exiting the upright and flowing to mainly up the outside face. The resultant temperature differential can lead to uneven wear, especially if temperature / wear is high.

Monitoring Temperatures

The most reliable way of monitoring the disc temperature is by the application of indicating paints. Use of pit lane thermocouple temperatures is useful for achieving a front / rear balance. The green (430°C) and red (610°C) paints are usually used. It is not advisable to use the orange (560°C) paint, as this will promote local material oxidation The brown antioxidant paint on H13.5 and H14 and clear coating on H17 and H18 carbon must be completely removed from a section of the disc O.D. before the paints are applied. Failure to do this could result in the indicating paint not changing colour, regardless of the operating temperature. The temperature paint colour change is not instantaneous, but is accelerated by higher temperature and the time at temperature is cumulative..... Con't overleaf.

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Monitoring Temperatures Continued

It is therefore advisable that at least 5 consecutive laps at representative speed are completed before reference to the temperature paint. Turning the green paint 75% across disc width is adequate. Turning the red paint just on the disc edges (2-3mm) is acceptable. Running the material at higher temperatures will only result in increased wear rate. If the red paint has changed across the entire disc width, extra cooling must be applied. Continued running at this level of temperature may result in excessively high wear rates, and can lead to weakening of the disc structure.

If Infrared sensors are used to monitor disc temperatures only the “end of straight or brake on” temperatures are used, as the maximum values can fluctuate with localized face temperatures. For H13/H14 compounds we recommend a brake on temperature of around 325c, and with H17I/H18 compounds 375c

Wear Prediction

If high brake wear is anticipated in the race, it is important to complete as many laps as possible in “race trim” (using a measured set of carbon) during practice. A race wear prediction can then be made using a similar system o that detailed on the attached “Carbon Brake Life Evaluation” sheet. All laps (including “in” and “out” laps) are included and a 1.5 x safety factor applied.

Maintenance

If the disc and pad surfaces are worn unevenly they can be machined flat and parallel again, AP Racing can provide this reconditioning service.

Do not attempt to degrease the material with any solvents. Most contaminates can be evaporated by heating in an oven for half hour at 300°C.

Disc Condition

Experience has shown that if normal operating guidelines are adhered to, AP Racing discs can safely be used down to their minimum thickness. However, for any reason discs are used at very high temperatures it is possible for oxidation to occur throughout the material. This will severely weaken the carbon structure, therefore avoid running the disc the red paint fully blown.

Note:

Please check with AP Racing technical department for the latest information and part number of carbon discs and pads.