

Measurement Committee

Interpretation No. 38

of

AC72 Class Rule Version 1.1 : 22nd February, 2011



Rule References:

Interpretation No.33 (published February 1, 2013).

Question 2;

“If the working lines of a hydraulic system (without an accumulator) are designed at a volume greater than that reasonably required for such a system, would the use of the energy stored in the elasticity of the lines and hydraulic oil be considered to be the use of stored energy for the purposes of rule 19.2?”

Answer;

“Yes, if those lines can maintain a pressure in excess of 6 bar, and the cumulative volume or mechanical properties of the system's components are such that they can provide adequate oil flow to do significant work without the constant application of manual power.”

Question 3;

“If the answer to question 2 above is yes, how will the Measurement Committee determine the compliance of such systems, for example where there are unnecessarily long tubing runs or tubing designs featuring excessive stretch?”

Answer;

“The Competitor shall satisfy the Measurement Committee that all hydraulic systems comply in every way with the AC72 Class Rule. The Measurement Committee will request and review detailed schematics of all hydraulic systems, and may inspect these systems both for compliance with the supplied drawings and compliance with the Class Rule. The Measurement Committee may require physical demonstrations of the system as installed and pressurised to maximum working pressure to quantify the oil flow resulting from the energy stored in the elasticity of the lines and hydraulic oil.”

Questions:

1. With respect to Interpretation 33 question and answer 2, what oil flow would be considered adequate to do significant work?
 2. With respect to Interpretation 33 question and answer 3, what physical demonstration of the system as installed will the **Measurement Committee** apply to quantify the oil flow resulting from the residual energy stored in the elasticity of the lines and hydraulic oil?
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Answers:

1. It is understood that as pressure is applied to a hydraulic system, the hoses expand. For the purpose of PI 33, the energy stored in the elasticity of the lines and hydraulic oil will not be considered capable of doing significant work if the sum total of oil that flows out of the system when tested in accordance with the procedure below is less than 250ml. A system complying with this limitation shall not be considered to be a source of stored energy for the purpose of rule 19.2.
2. The intention of this test procedure is to verify that the hydraulic installation is not arranged to circumvent the stored energy limitations of Rule 19. If, in the opinion of the **Measurement Committee**, this procedure does not accurately achieve this objective, they may devise and use another procedure. Any alternate procedures shall be no less onerous and shall be published as interpretations.

The **Measurement Committee** intends to apply the following test to quantify the oil flow resulting from residual energy stored in a pressurised hydraulic system (the elasticity of the lines, hydraulic oil etc). This test shall be applied to all circuits other than passive hydraulic linkages that in the opinion of the **Measurement Committee** do not contribute to the stored energy within other hydraulic circuits.

Step 1. The yacht shall be presented with the complete hydraulic system intact and functional as used for racing.

Step 2. All link valves and/or isolation valves shall be opened to permit the pressurisation of the largest extent of the hydraulic system that is capable of actuating a function.

Step 3. The system is pressurised to relief valve pressure.

Step 4. The back pressure of the reservoir(s) is released.

Step 5. A single function that receives pressurised oil from the largest extent of each hydraulic circuit is released to atmosphere and the quantity of oil that flows out of the system is captured and measured. The **measurers** may, at their discretion, repeat the test with different hydraulic functions to ensure the flow measured represents the largest possible flow.

Step 6. When multiple independent circuits exist, the total volume of oil that flows out from each hydraulic circuit will be summed to determine compliance with the volume limit specified in answer 1, above.

This interpretation is issued in accordance with Rule 3 of the AC72 Class Rule Version 1.1 : 22nd February, 2011.



Nick Nicholson,
Chairman

for the **Measurement Committee**

24th June 2013
