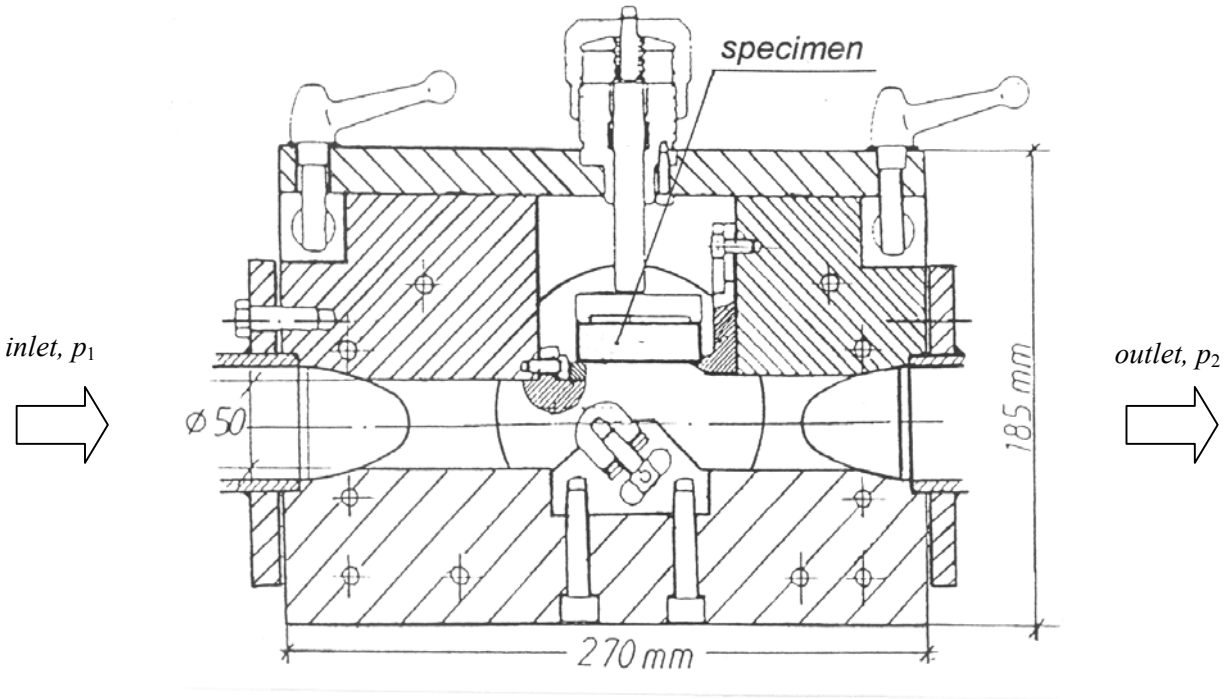
# INTERNATIONAL CAVITATION EROSION TEST
## Test Rig Identification Card

Facility: cavitation tunnel
chamber of barricade and anti-barricade

Laboratory: **Universität Hannover, Institut für Werkstoffkunde**
Appelstraße 11A, 3000 Hannover 1, Germany

1. Sketch of the cavitation chamber with specimens and basic dimensions (streamwise and transverse sections), dimensions and installation sites of the cavitator, specimen, pressure taps etc.




specimen width: 30 mm, height: 8 … 12 mm, length: 60 mm

2. Basic operational data

| | | |
|---|---|---|
| pump power ..... | 12 | kW |
| liquid velocity in the undisturbed flow | | m/s |
| liquid pressure upstream the chamber (gauge) | 600 ÷ 1100 | kPa |
| liquid velocity at the specimen surface | | m/s |
| liquid pressure downstream the chamber (gauge) | 40 ÷120 | kPa |
| standard temperature of liquid | 22 | ˚C |
| other data ..... | | |
| distance barricade/counter-barricade | 2.8 … 3.2 | mm |

designer/manufacturer: Prof. Hartmut Louis,
Institute of Material Science
University of Hannover, Germany

# INTERNATIONAL CAVITATION EROSION TEST

## Laboratory Results Summarisation

Laboratory: **HANNOVER UNIVERSITY**
**INSTITUTE OF MATERIALS SCIENCE**
HANNOVER, Germany

**Facility: CAVITATION TUNNEL**

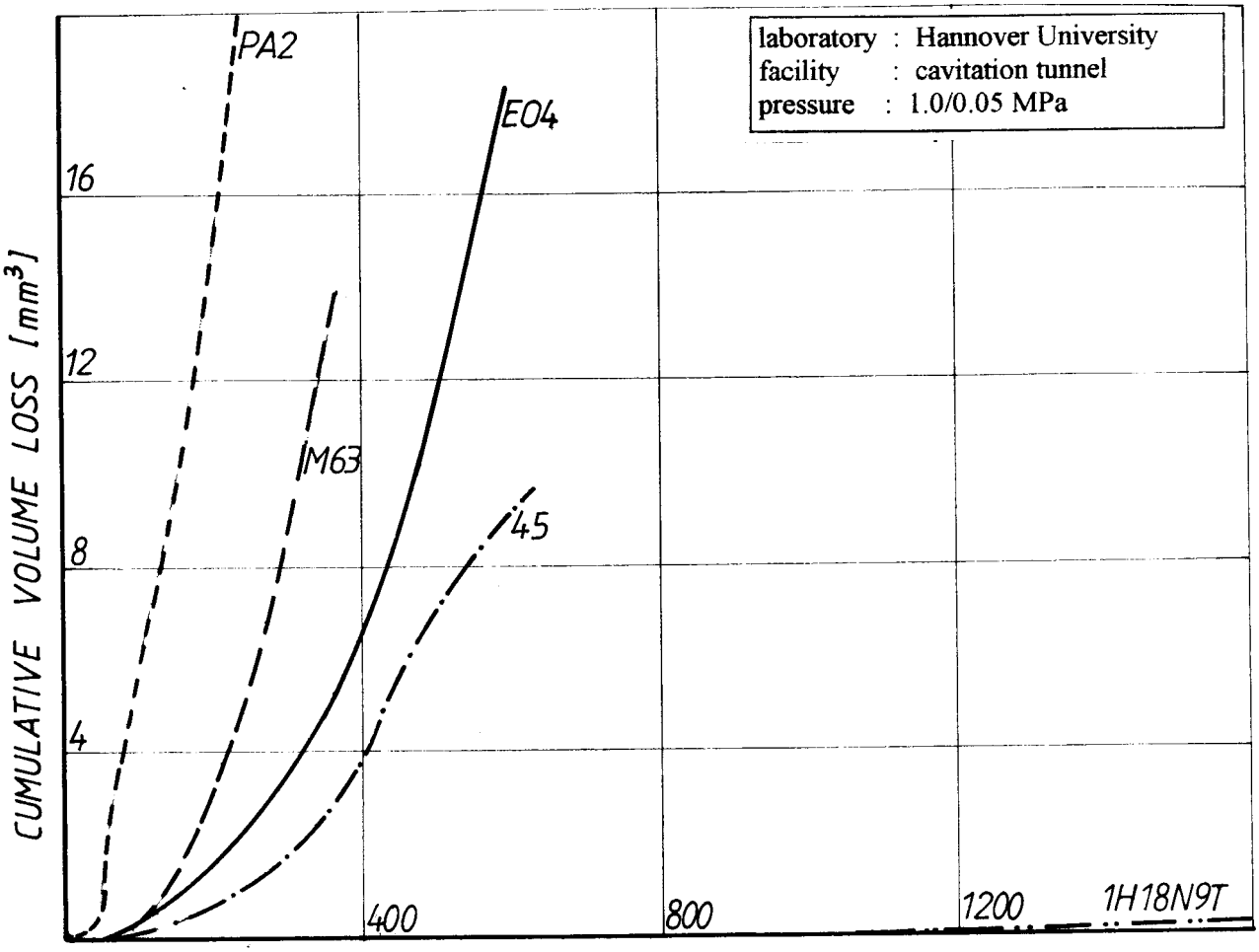
*cavitator:* system of barricades
*specimen:* rectangular plate
*impinged area:* 1800 mm$^2$
*pressure upstream* 1000 kPa
*pressure downstream:* 50 kPa
*flow velocity:* 40 m/s

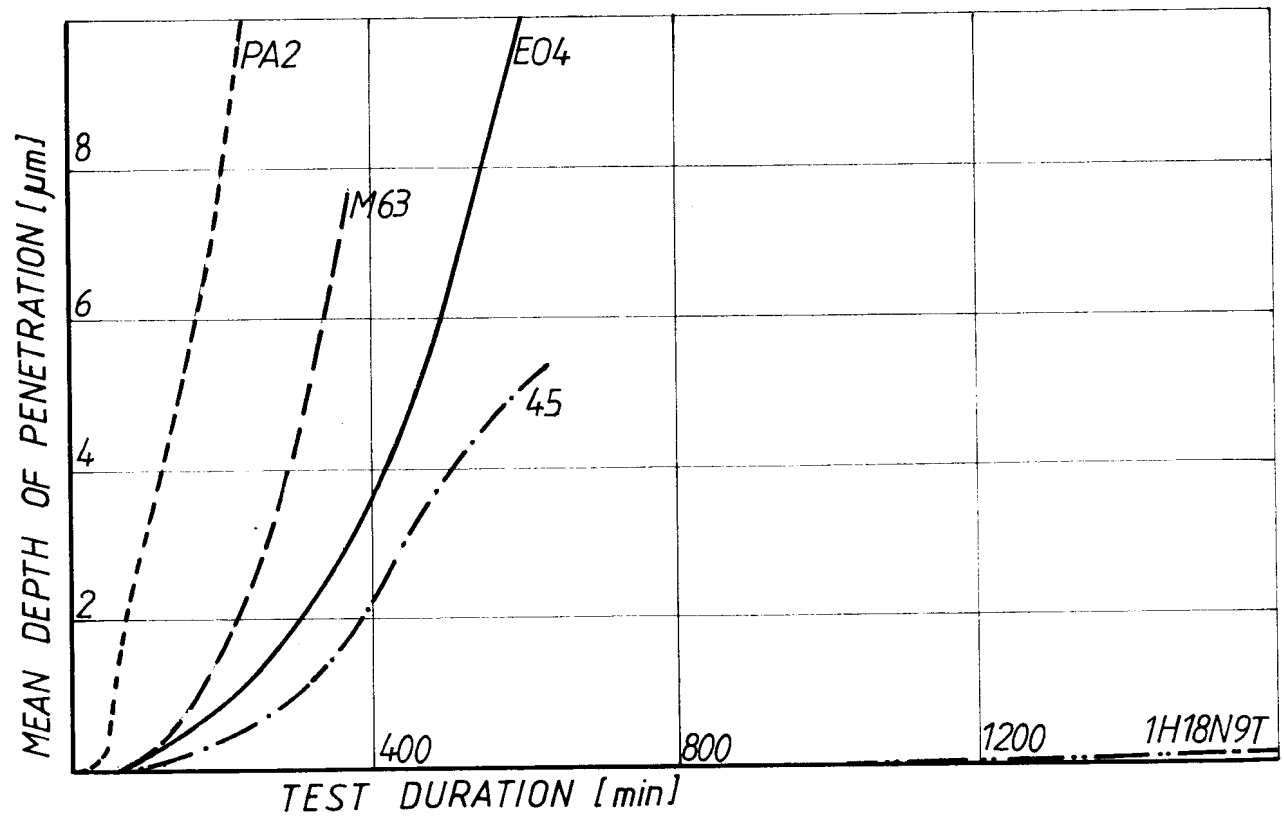
*working liquid:* tap water, pH = 7.8÷8.3, oxygen content: 5.0÷5.2 ppm
temperature: 25 $^0$C

| *material* | *Test duration* | *Volume loss* | *Eroded area* | *Mean&Max Depth of Penetration* | | *Incubation period* $\tau_{0.2}$ | $\tau_{inc}$ | *MDPR* *max* | *ultimate* |
|---|---|---|---|---|---|---|---|---|---|
| | min | mm$^3$ | mm$^2$ | μm | μm | min | min | μm/min | |
| PA2 | 380 | 60.75 | 1800 | 33.75 | - | 10 | 276.7 | 0.215 | - |
| 45 | 623 | 9.58 | 1800 | 5.32 | - | 95 | 280 | 0.0175 | - |
| 1H18N9T | 8428 | 2.37 | 1800 | 1.32 | - | 930 | 2633 | 0.00031 | - |
| PA2 | 370 | 55.5 | 1800 | 30.8 | - | 10 | 276.7 | 0.215 | - |
| M63 | 370 | 13.9 | 1800 | 7.75 | - | 38 | 192.5 | 0.0445 | - |
| E04 | 600 | 18.25 | 1800 | 10.13 | - | 30 | 401.7 | 0.04 | 0.04 |
| 45 | 600 | 9.05 | 1800 | 5.03 | - | 95 | 280 | 0.0175 | - |
| 1H18N9T | 4000 | 0.75 | 1800 | 0.416 | - | 930 | 2633 | 0.00031 | - |

**Comment**

Eroded area has been assumed to cover whole the impinged surface.


laboratory : Hannover University
facility : cavitation tunnel
pressure : 1.0/0.05 MPa
CUMULATIVE VOLUME LOSS [mm³]
16
12
8
4
PA2
E04
M63
45
400
800
1200
1H18N9T


MEAN DEPTH OF PENETRATION [µm]
8
6
4
2
PA2
E04
M63
45
400
800
1200
1H18N9T
TEST DURATION [min]