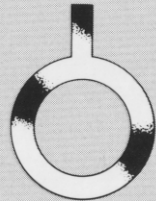


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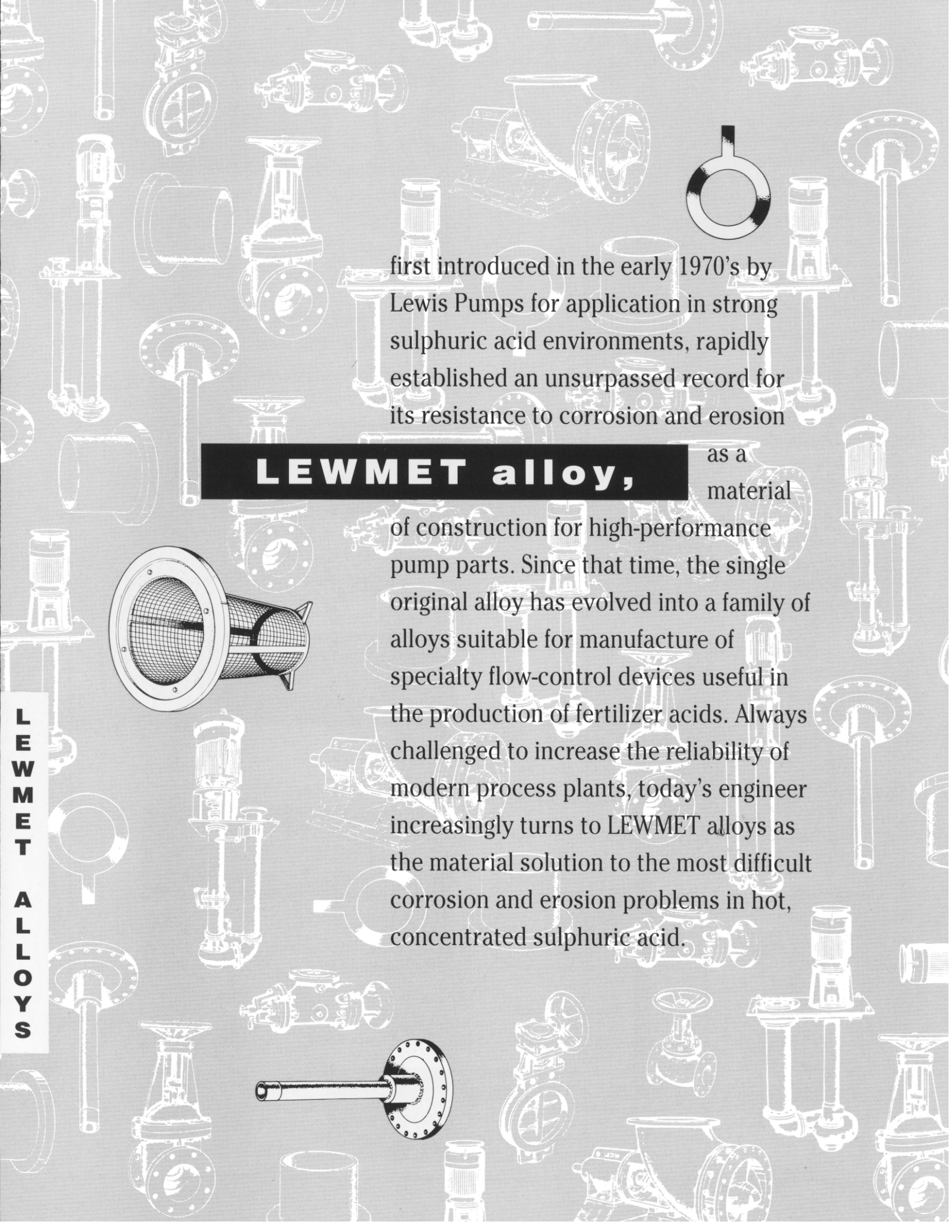
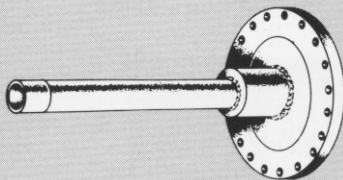
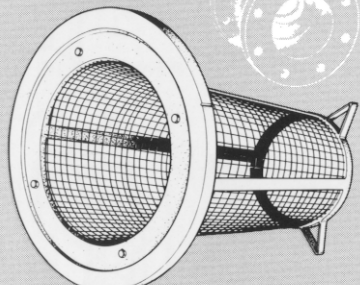


first introduced in the early 1970's by Lewis Pumps for application in strong sulphuric acid environments, rapidly established an unsurpassed record for its resistance to corrosion and erosion

**LEWMET alloy,**

as a material

of construction for high-performance pump parts. Since that time, the single original alloy has evolved into a family of alloys suitable for manufacture of specialty flow-control devices useful in the production of fertilizer acids. Always challenged to increase the reliability of modern process plants, today's engineer increasingly turns to LEWMET alloys as the material solution to the most difficult corrosion and erosion problems in hot, concentrated sulphuric acid.

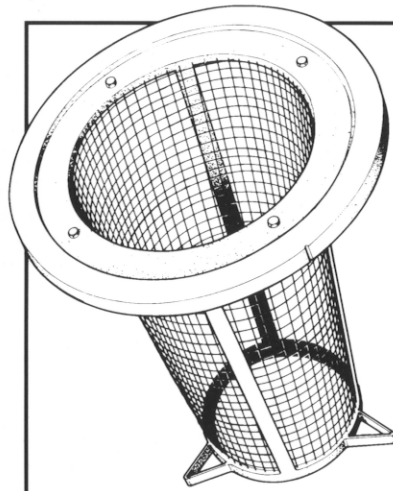


Sulphuric acid, a heavy, viscous, inorganic liquid, is the single most widely used industrial chemical. The corrosivity of sulphuric acid is affected not only by concentration and temperature, but also by the velocity of the process stream and the nature of any abrasive contaminants.

Thus, both sulphuric acid plant engineering contractors and operators must consider all these properties when selecting alloys for critical acid plant components.

**LEWMET** is the Lewis designation for a series of austenitic nickel-based superalloys which are highly resistant to corrosion and abrasion by the process stream. Its unique resistance to velocity accelerated corrosion makes it the ideal material for specialty items.

These items are normally manufactured to customer engineered designs using cast components, wrought components, or a combination of both.

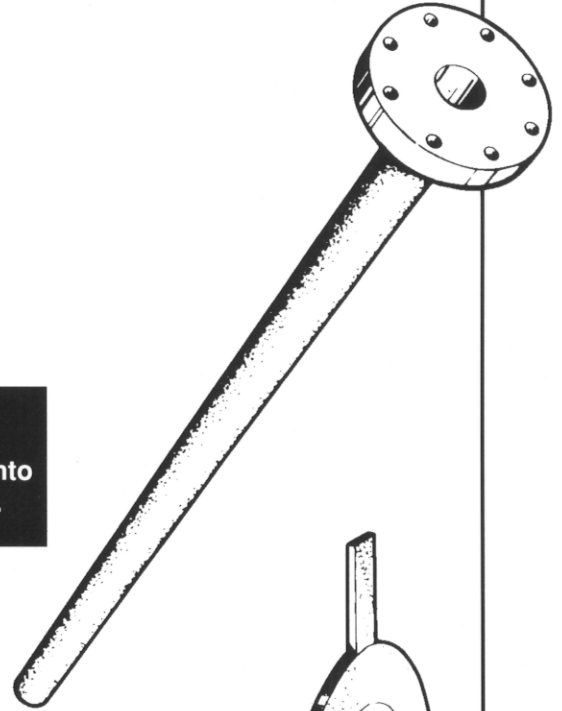


### STRAINERS

Used for in-line applications, pump suction and tower outlet.

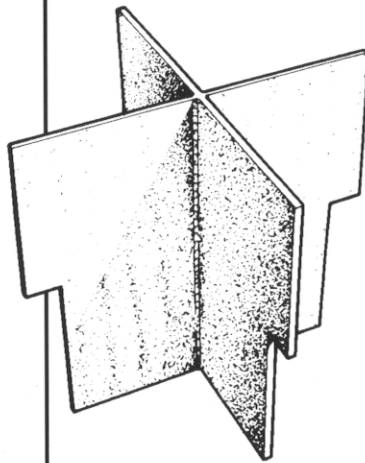
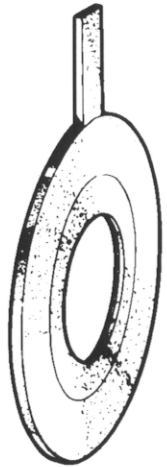
### DILUTION QUILLS

For introduction of water into an acid circulation system.



### ORIFICE PLATES

For tower distribution, pressure measurement and flow control.

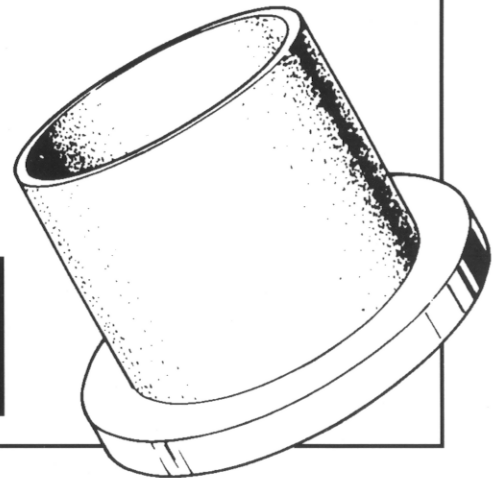


### VORTEX BREAKER

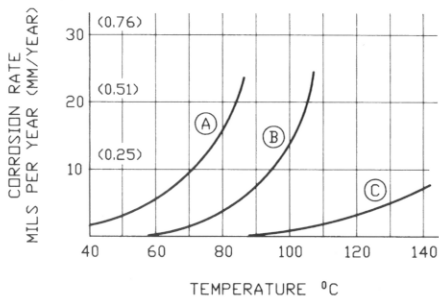
Used in vessel outlets.

### THIMBLES

Used in tower outlet, gas inlet and pump tank outlet applications.



APPROXIMATE CORROSION RATE CURVES FOR VARIOUS ALLOY COMPOSITIONS IN 98% H<sub>2</sub>SO<sub>4</sub> (STATIC TESTS)



- (A) 20Cr-30Ni-3Mo-3.5Cu-Fe (ALLOY 20)
- (B) 16Cr-16Mo-50Ni (ALLOY C)
- (C) 'LEWMET'



# LEWMET ALLOYS

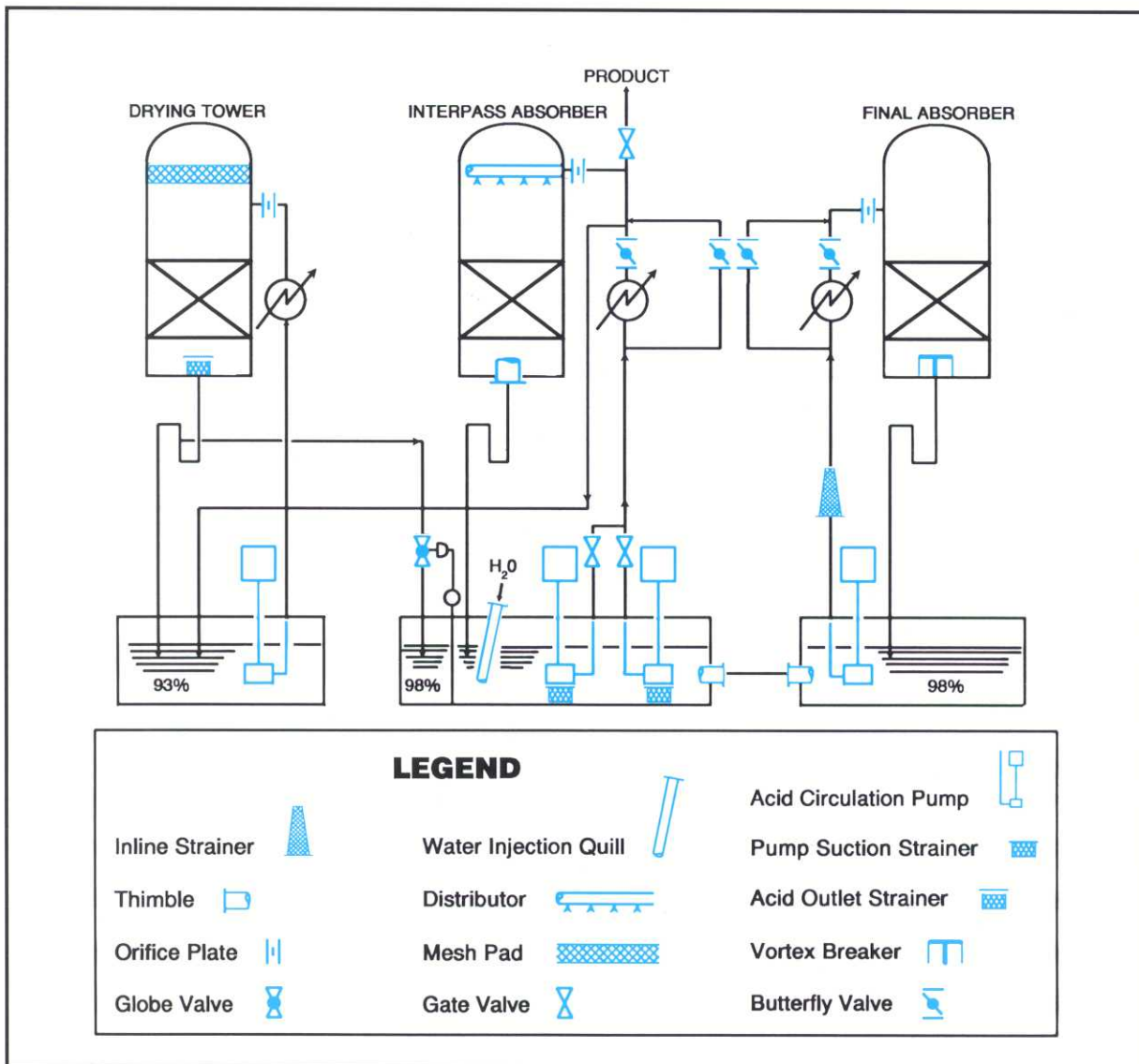
FOR SULPHURIC ACID

**D**rawing upon metallurgical experience gained during decades of operation as a manufacturer of pumping equipment for sulphuric acid manufacture, Chas. S. Lewis & Company introduced the first LEWMET alloy in 1971 for use in high-performance pump components.

This alloy – LEWMET 33 – was specifically designed to provide the user with superior erosion resistance combined with outstanding corrosion resistance in the operating environment of contact process sulphuric acid producing plants.

Having seen the superior performance of LEWMET 33 in the difficult service conditions of the typical absorbing tower circulating pump, knowledgeable plant operators soon recognized the problem-solving potential of LEWMET alloys in other applications.

**PLEASE CONSULT THE LEWIS FACTORY FOR A LEWMET SOLUTION FOR YOUR METALLURGICAL REQUIREMENTS**



## **BENEFITS OF USING LEWMET ALLOY SPECIALTIES**

The user of LEWMET alloy flow control specialties enjoys many benefits which are the direct result of Lewis' long specialization in the design and manufacture of equipment for the fertilizer acids industry:

► **SPECIALIZED METALLURGY.** Lewis is unique among specialized pump manufacturers in its ability to develop appropriate materials – the LEWMET alloys – which provide our customers with unequalled performance in the harsh operating environment of the modern sulphuric acid producing plant.

► **HIGH TOLERANCE FOR PROCESS UPSETS.** LEWMET alloys are designed to perform in a wider range – typically 93% H<sub>2</sub>SO<sub>4</sub> through oleum – than are most commercially available alloys. Additionally, process excursions outside of “normal” conditions – in either concentration or temperature – are usually accommodated without adverse effect on the operating life of the LEWMET alloy.

► **HARDENABILITY AND TOUGHNESS.** LEWMET alloys typically have as-cast hardness levels significantly higher than other austenitic alloys that may be used in H<sub>2</sub>SO<sub>4</sub> circulating systems. In addition, some grades of LEWMET alloys are hardenable to 45 R<sub>c</sub> with no loss of its inherent corrosion resistance, making LEWMET alloys the best-available solution for most difficult abrasive applications in strong acid environments.

Lewis' LEWMET specialties are also available for other inorganic acid applications, including high-temperature energy recovery systems and phosphoric acid services.

## **CUSTOMER SERVICE BENEFITS**

The LEWMET alloy user enjoys many other service benefits as a result of Lewis' long-term specialization:

► **All LEWMET alloy applications are reviewed, and quotations provided, by experienced Lewis headquarters' engineers supported by a fully qualified metallurgical staff. Our goal is “same day response” to all electronic inquiries.**

► **All pricing is established by headquarters on a consistent, uniform, and competitive world-wide basis.**

Lewis offers the ideal solution for your most difficult applications involving corrosion and erosion in sulphuric acid. Please contact us with your requirements.

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