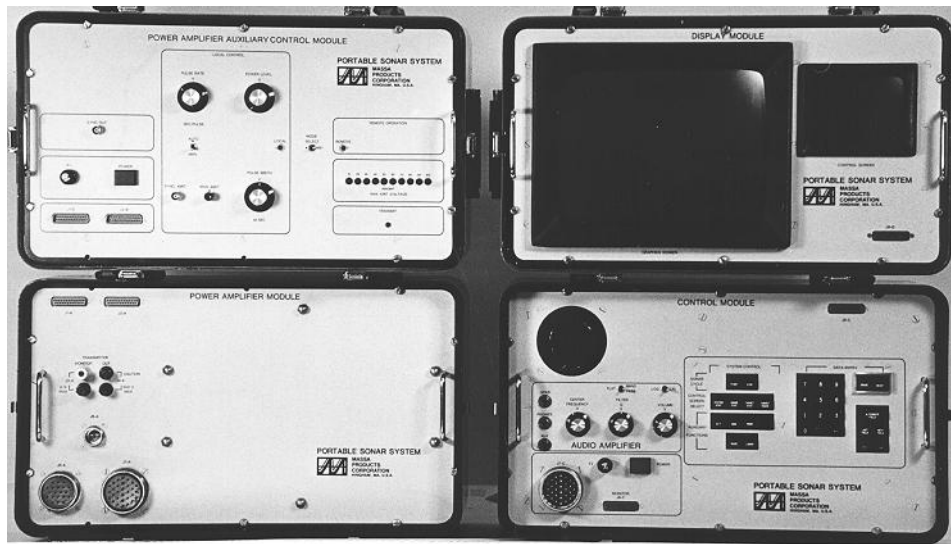


Some of the Mid-Frequency Transducers Developed and Manufactured by Massa

- **TR-229/SQS-35 VDS (1990's - Present)**
 - Massa redesigned the TR-229 Transducer Dual Stave Assembly to meet specs and is the only manufacturer approved
- **TR-330/SQS-56 (1988 - Present)**
 - Massa was given a sole source contract to redesign the cable assemblies and to outfit the entire fleet of Perry Class Frigates (FFG-7)
 - Massa also redesigned the TR-330 Transducer to improve performance, and is the sole approved source
- **TR-237 and TR-238 (1970 - Present)**
 - Massa redesigned ceramic replacement transducers for many different sonar systems (SQS-4,29,30,31,39, 40,41,42,43,44,45,46,49,50,51,52)
- **TR-208A/SQS-23 (1965 - Present)**
 - Massa patented design revolutionized ceramic scanning sonar transducers
 - U.S. Navy made Massa design mandatory
 - Massa has supplied over 60,000 transducer elements

Photographs of the M-1002 Portable Sonar System

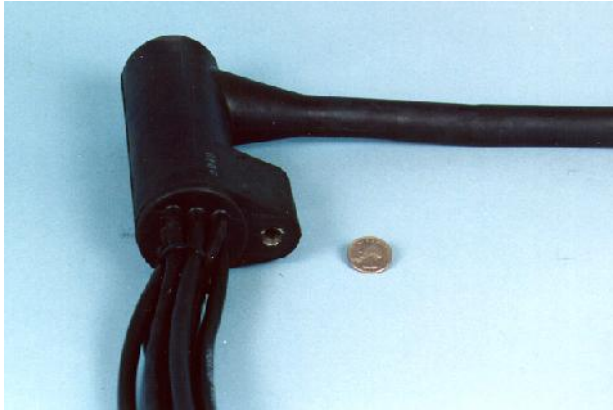


Electronics Modules for Engineering Model of
the Massa M-1002 Portable Sonar System



Fish Assembly Less Streamlined Housing of
the Engineering Model of the M-1002 Portable
Sonar System During Sea Test On-board the
38 ft. Research Vessel R/V Decibel

Massa Redesign of the TR-330/SQS-56 Cable Assemblies



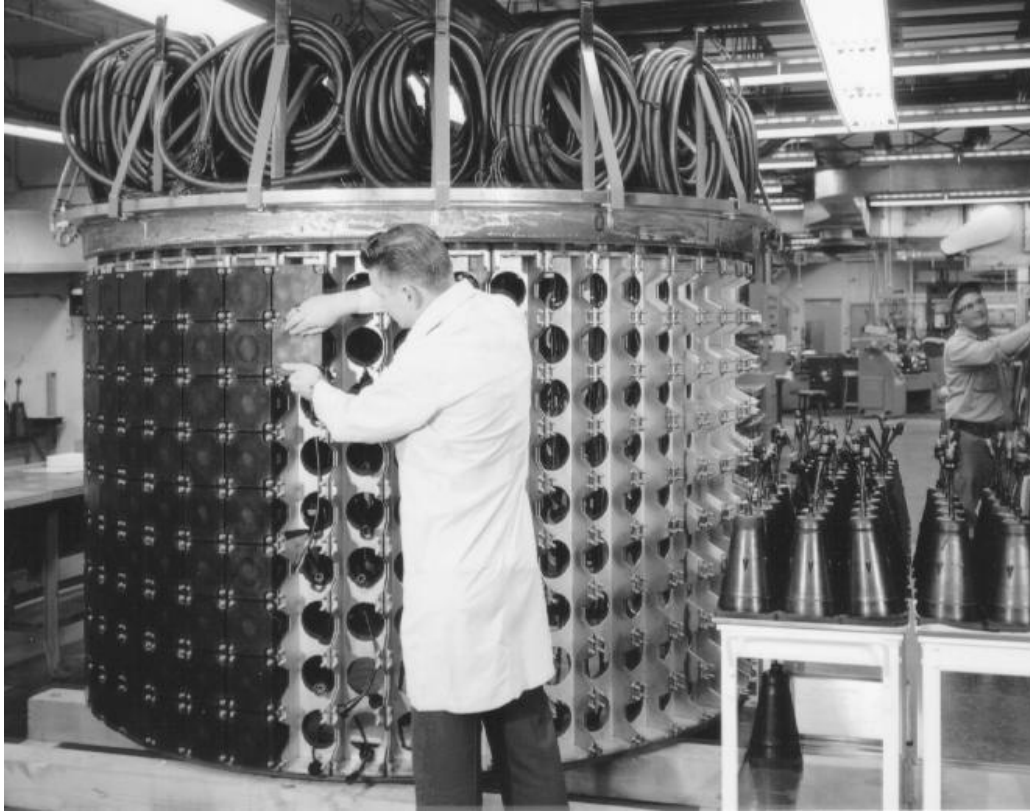
Photograph of "Pot Head" of the Massa Redesigned SQS-56 Cable Assembly



Photograph of Massa Stave Cables Being Installed on a Ship

- Massa was awarded a sole source contract to redesign and manufacture SQS-56 cables for the entire fleet of Perry Class frigates (FFG-7)
 - Massa connector design for the SQS-23 Cables and Transducer was most reliable in the fleet with over 60,000 connections and no reported failures
- Massa redesigned the connectors and "pot head" and submitted first article units 1½ months after receipt of contract
 - Production deliveries started two weeks after First Article approval
 - By the time the first production shipment was due, Massa had completed delivery on over half of the contract requirements
- Massa also redesigned the TR-330 Transducer to improve performance and is first article approved
 - Massa can also fabricate the TR-330A Transducer

TR-208A/SQS-23



- Revolutionized sonar transducer design
 - For ten years, five different manufacturers were given waivers from the spec because it “was beyond the state of the art”
- The Massa design was half the size and cost of previous transducers
- Massa has supplied over 60,000 elements
- Units have operated in fleet for over 20 years
- Used in conjunction With Raytheon DE1191 System