KEMET
a YAGEO company

# Langevin Bolt-on Transducers NBL Series

## **Application Notes**

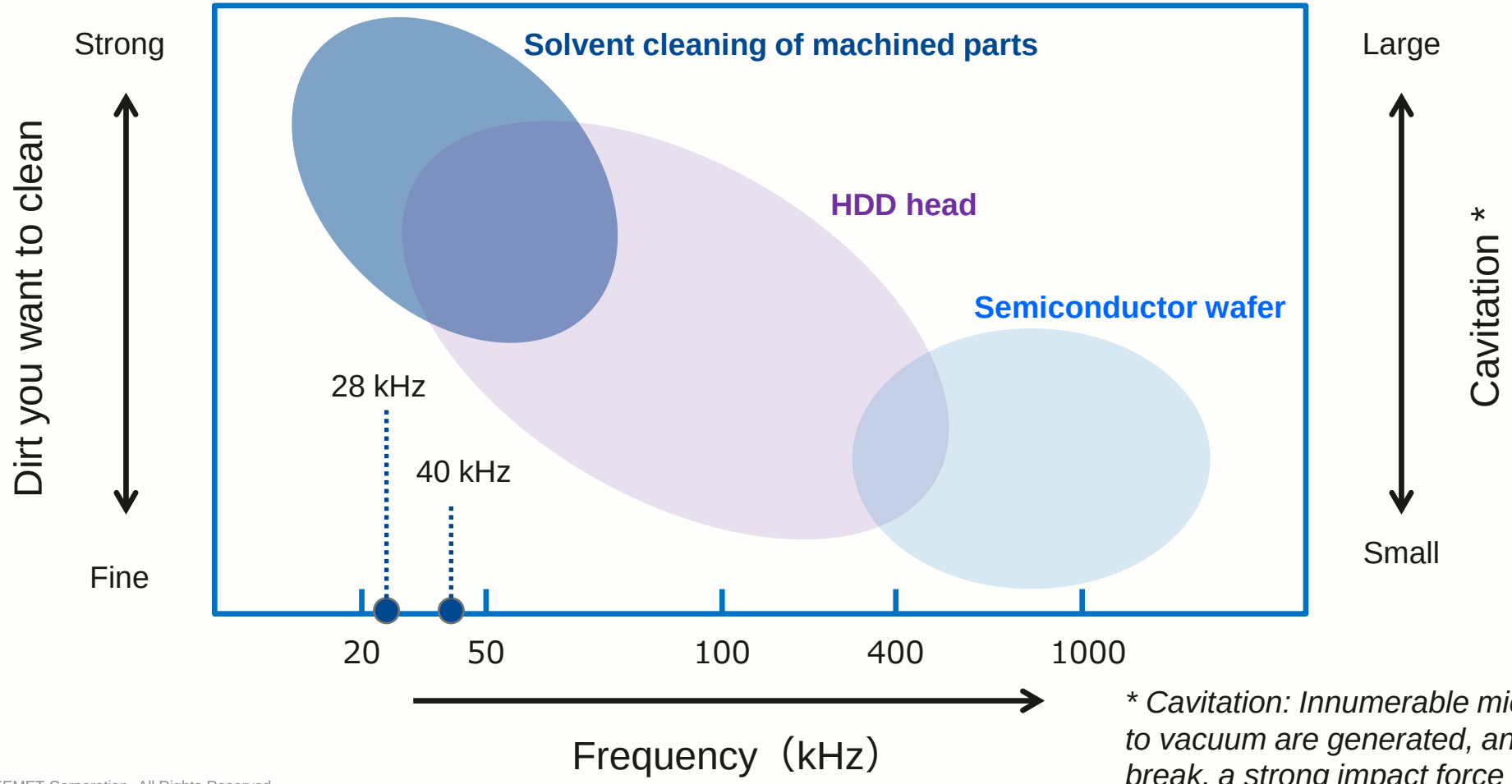
KEMET

a YAGEO company

# For Ultrasonic Cleaning Equipment

# Main Applications for Ultrasonic Cleaning

Highly enhances the cleaning effect by the effects of ultrasonic micromotion, emulsification, etc.




** Cavitation: Innumerable microcavities close to vacuum are generated, and when they break, a strong impact force is generated.*

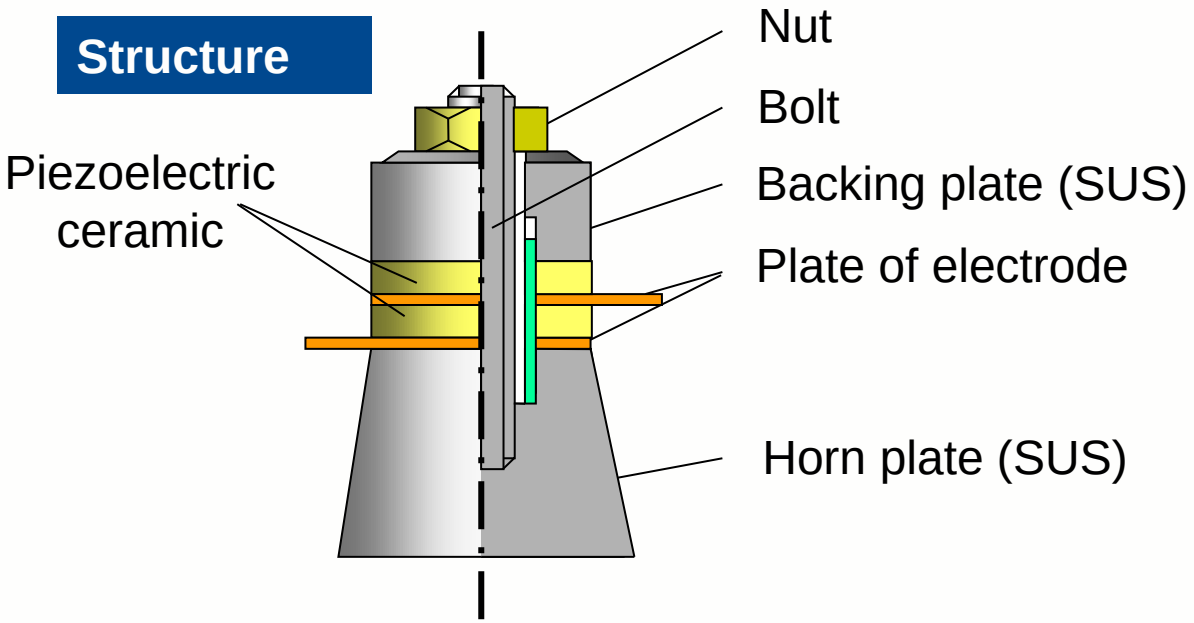
# Types of NBL Series Used for Cleaning Equipment

| | NBL45282H-A3 | NBL45402H-A |
|---|---|---|
| **Appearance** |  |  |
| **Resonant Frequency** | 28 kHz | 40.2 kHz |
| **Static Capacitance (at f = 1 kHz)** | 4,000 pF | 4,000 pF |
| **Maximum Allowable Velocity** | 40 cm/S | 50 cm/S |
| **Maximum Allowable Power** | 50 W * | 50 W * |

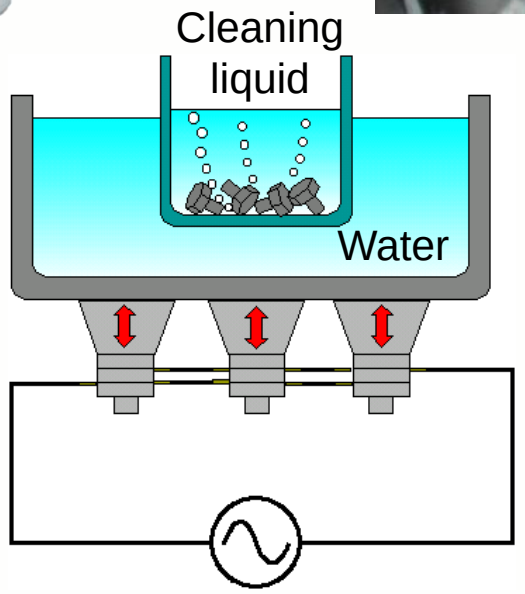
** Maximum allowable power is based on the data where one unit is measured with a water load on one side.*

# Structure and Usage

## Structure





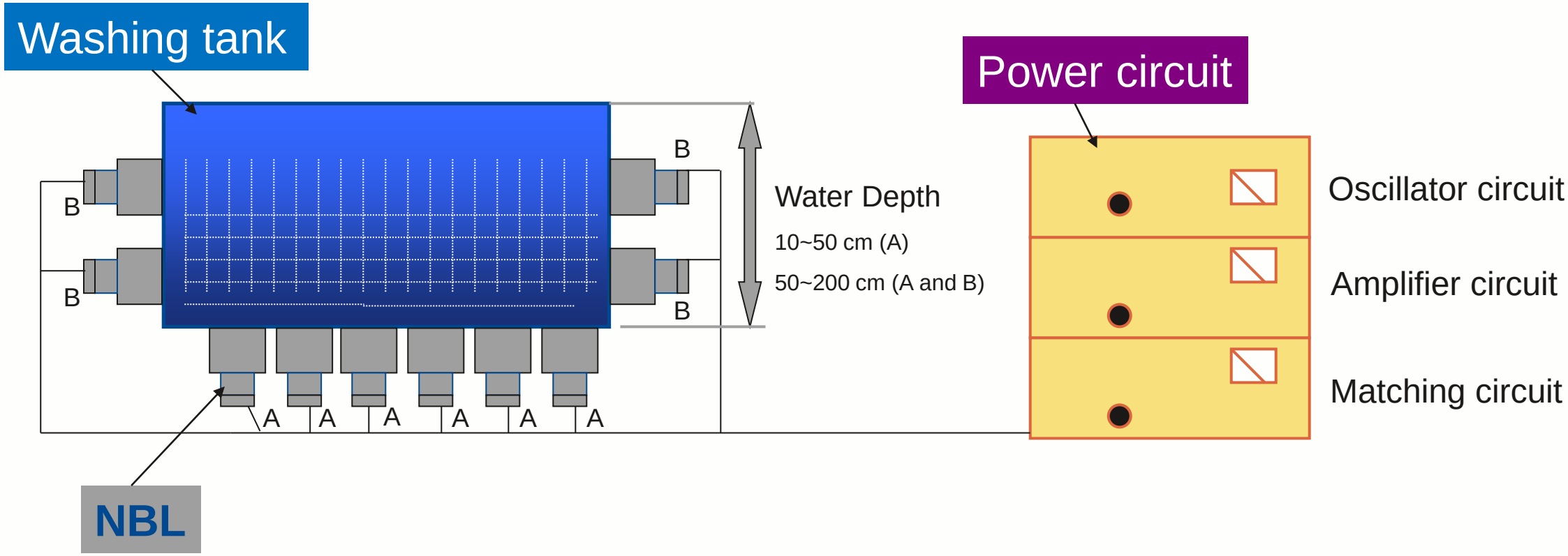



## Features

- Preventing ceramic destruction by pressurizing bolts.
- High efficiency and large amplitude can be obtained.
- Easy to install.

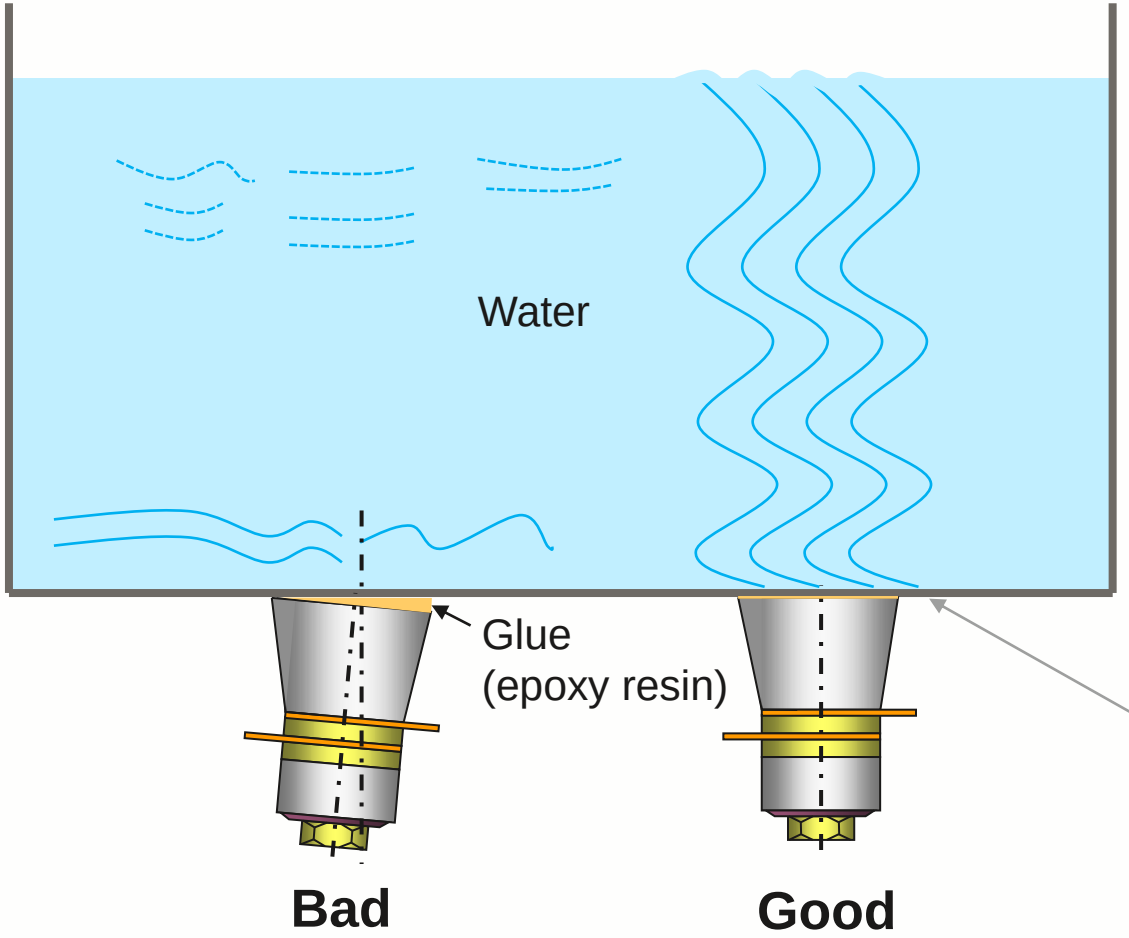
# Configuration Example of Cleaning Equipment

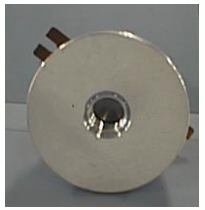
Drive at a safe operating temperature of 120˚C or less.



# Precaution

Make sure that the cleaning plate and the NBL joint surface are in perfect contact.



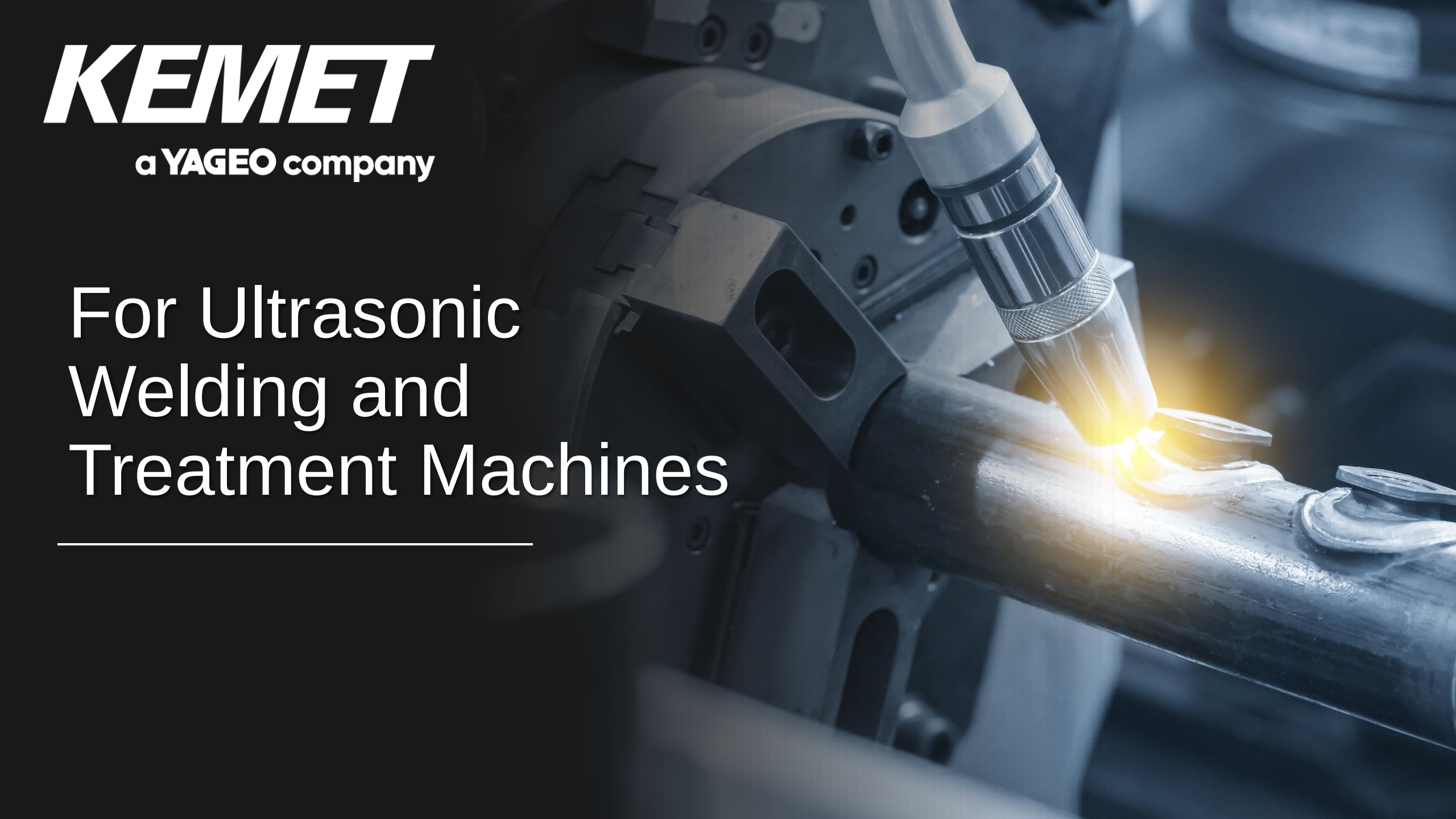
Gluing and screwing (M10, P1.0)

Cavitation weakens when an air layer of several μm intervenes.

KEMET

a YAGEO company

# For Ultrasonic Welding and Treatment Machines



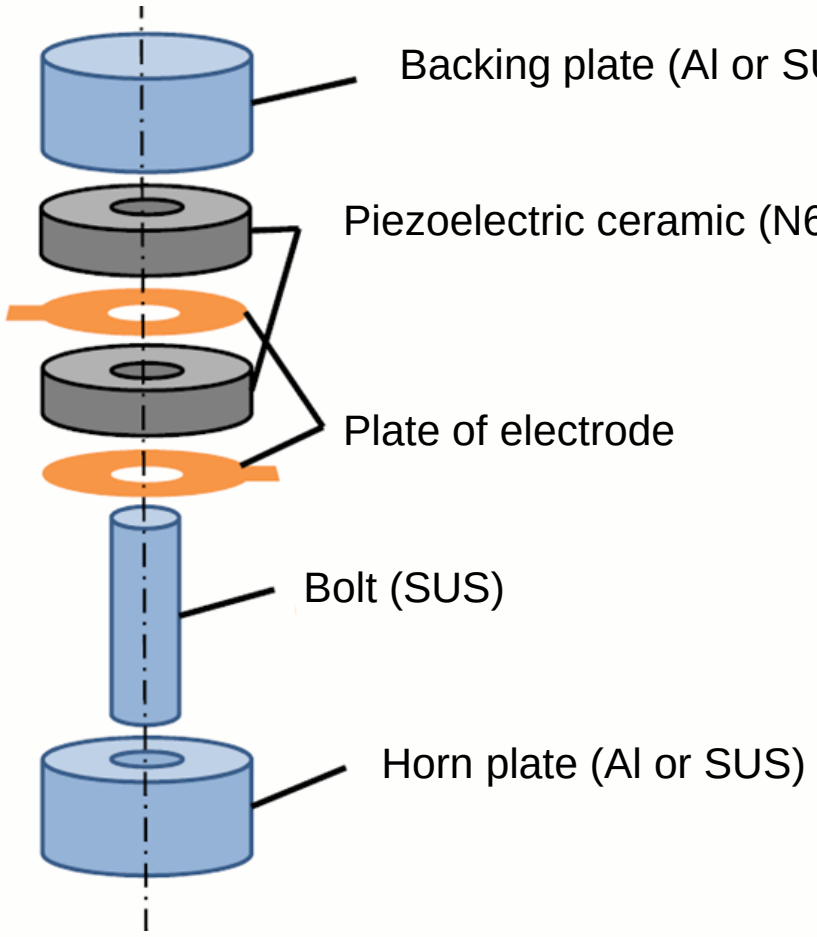
# Types of NBL Series Used for Welding and Cleaning Machines

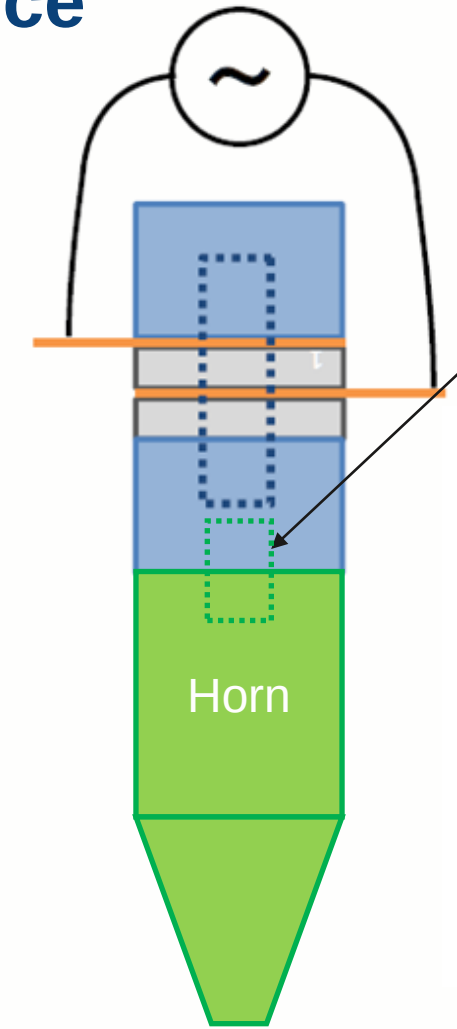
| | NBL15602S | NBL20602S |
|---|---|---|
| **Appearance** |  |  |
| **Resonant Frequency** | 60 kHz | 60 kHz |
| **Static Capacitance (at f = 1 kHz)** | 850 pF | 1,250 pF |
| **Maximum Allowable Velocity** | 50 cm/S | 40 cm/S |
| **Maximum Allowable Power** | 2.5 W * | 3.7 W * |

** Maximum allowable input in no-load state.*

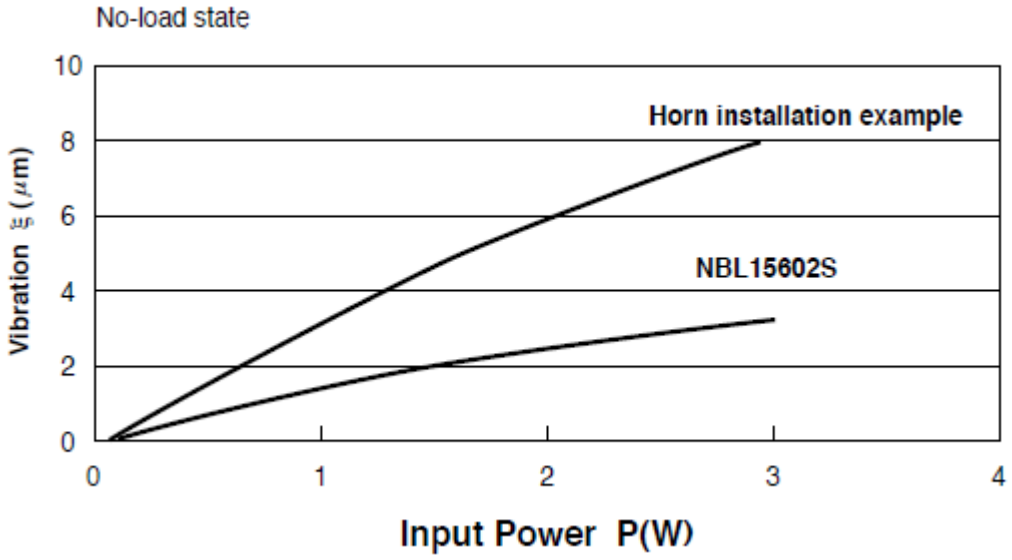
# Structure and Performance

## Structure



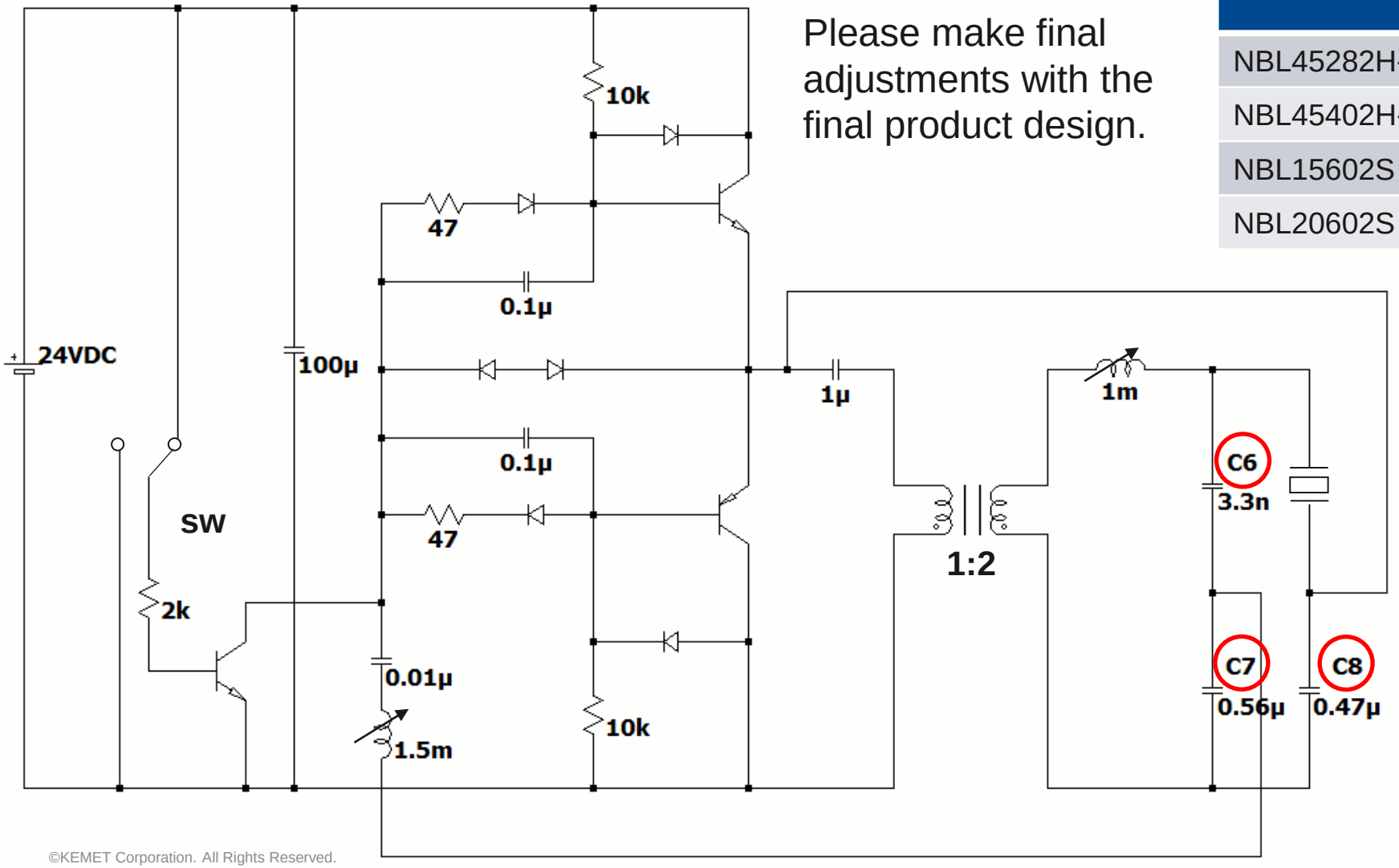




Gluing and thread cutting




Drive at a safe operating temperature of 120˚C or less.

# Reference Circuit for NBL45282H-A3




Please make final adjustments with the final product design.

| | C6 | C7 | C8 |
|---|---|---|---|
| NBL45282H-A3 | 3.3 nF | 0.56 µF | 0.47 µF |
| NBL45402H-A | 3.3 nF | 0.56 µF | 0.47 µF |
| NBL15602S | 1 nF | 0.22 µF | 0.15 µF |
| NBL20602S | 1 nF | 0.22 µF | 0.15 µF |

Transistor should be more than 3A class.