

# CONSTANT FORCE SHAKERS



## YOUR VIBRATION SOLUTION



EX 520 C50 Long stroke shaker  
(550 N)

During structural analysis, forces are imposed on the structure and the measured resulting movement functions allow calculation of the structure's mathematical model.

As it is the basis for all the analysis, modal shakers must be able to provide the requested force for an adapted frequency range, without disturbing the characteristics of the structure under test.

**PRODERA** modal electrodynamics shakers are based on the Laplace Law. A coil is mounted inside the thin air gap of a magnetic field, providing a sine, random or shock force.

### UNIQUE FEATURES

- ◇ Current controlled shakers
- ◇ Nominal forces from 3 to 5 000 N (0.67 to 1124 lbf)
- ◇ Light, linear and robust moving assembly
- ◇ None or low stiffness
- ◇ Display of the position of the moving system  
(as from the EX 220 SC)

The following list gives a glance at the different shaker types available in our catalogue. Each year brings new models which are adapted to our customers' particular tests, so please do not hesitate to contact us.



EX 24 shaker (20 N)

| SHAKER      | Sine Nominal Force (peak value) |         | Force Factor |       | Stroke |        | Moving Assembly Mass |       | Associated Amplifier |
|-------------|---------------------------------|---------|--------------|-------|--------|--------|----------------------|-------|----------------------|
|             | N                               | lbf     | N/A          | lbf/A | mm     | inch   | grams                | lbs   |                      |
| EX 6/3.2    | 3                               | 0.67    | 1.5          | 0.33  | ± 1.5  | ± 0.06 | 8.5                  | 0.01  | A 732                |
| EX 6/4.4    | 4                               | 0.90    | 1            | 0.22  | ± 1.5  | ± 0.06 | 10.5                 | 0.02  | A 732                |
| EX 6/4.2    | 4                               | 0.90    | 2            | 0.45  | ± 3    | ± 0.11 | 11                   | 0.02  | A 732                |
| EX 6/6.4    | 6                               | 1.35    | 1.5          | 0.33  | ± 3    | ± 0.11 | 13.5                 | 0.03  | A 732                |
| EX 8/4.2    | 4                               | 0.90    | 2            | 0.45  | ± 1.5  | ± 0.06 | 8.5                  | 0.01  | A 732                |
| EX 8/5.4    | 5                               | 1.12    | 1.25         | 0.28  | ± 1.5  | ± 0.06 | 10.5                 | 0.02  | A 732                |
| EX 8/5.2    | 5                               | 1.12    | 2.5          | 0.56  | ± 3    | ± 0.11 | 11                   | 0.02  | A 732                |
| EX 8/8.4    | 8                               | 1.80    | 2            | 0.45  | ± 3    | ± 0.11 | 13.5                 | 0.03  | A 732                |
| EX 12       | 10                              | 2.25    | 5            | 1.12  | ± 5    | ± 0.19 | 30                   | 0.06  | A 732                |
| EX 20       | 20                              | 4.50    | 5            | 1.12  | ± 5    | ± 0.19 | 35                   | 0.07  | A 732                |
| EX 24       | 20                              | 4.50    | 5            | 1.12  | ± 5    | ± 0.19 | 61                   | 0.13  | A 732 / A 735        |
| EX 58       | 50                              | 11.24   | 6.25         | 1.40  | ± 6    | ± 0.23 | 110                  | 0.24  | A 735                |
| EX 58 C40   | 75                              | 16.87   | 9.6          | 2.16  | ± 20   | ± 0.78 | 235                  | 0.51  | A 735                |
| EX 220 SC   | 200                             | 44.96   | 10           | 2.24  | ± 10   | ± 0.39 | 195                  | 0.43  | A 648 S              |
| EX 220 C40  | 280                             | 63.00   | 14.2         | 3.19  | ± 20   | ± 0.78 | 375                  | 0.82  | A 648 S              |
| EX 320 C50  | 300                             | 67.44   | 15           | 3.37  | ± 25   | ± 0.98 | 500                  | 1.10  | A 649 HV             |
| EX 520 C50  | 550                             | 123.64  | 27.5         | 6.18  | ± 25   | ± 0.98 | 680                  | 1.50  | A 649 HV             |
| EX 1070 C50 | 1000                            | 224.81  | 20           | 4.49  | ± 25   | ± 0.98 | 2200                 | 4.85  | A 651/S2             |
| EX 1060     | 1200                            | 269.77  | 20           | 4.49  | ± 12.5 | ± 0.49 | 1000                 | 2.20  | A 651/S1             |
| EX 2060     | 2040                            | 458.61  | 34           | 7.64  | ± 12.5 | ± 0.49 | 1000                 | 2.20  | A 651/S2             |
| EX 2060 C50 | 2040                            | 458.61  | 34           | 7.64  | ± 25   | ± 0.98 | 1000                 | 2.20  | A 651/S2             |
| EX 5080     | 5000                            | 1124.04 | 63           | 14.16 | ± 20   | ± 0.78 | 5300                 | 11.68 | A 709                |
| EX 5080 C50 | 5000                            | 1124.04 | 63           | 14.16 | ± 25   | ± 0.98 | 5300                 | 11.68 | A 709                |



# AMPLIFIERS



A 649 HV amplifier

During complex structural modal analysis, force control is critical. The forces must be independent of the movements. **PRODERA's** current controlled amplifiers are your solution.

Specially developed for the **PRODERA's** modal electrodynamics shakers, the power amplifiers are designed for optimum results during modal analysis.

## UNIQUE FEATURES

- ◇ From 30 to 4000 Watts
- ◇ Accurately controlled output current
- ◇ High output impedance in order not to impede the movement of the structure
- ◇ Constant force of shaker independent of the movement of the structure
- ◇ Display of the position of the moving assembly (as from the model A 648 S)
- ◇ Remote controlled (as from the model A 648 S)
- ◇ Accurate measurement of introduced force Newton / Volt
- ◇ No need for force transducer on the amplifier



A large range of power amplifiers.

The following list gives a glance at the different types of amplifiers available in our catalogue. Each year brings new models which are adapted to our customers' particular problems; therefore do not hesitate to contact us.

## ACCESSORIES



Remote control panels

| Amplifier<br>(*: Airborne) | Continuous<br>RMS<br>output<br>(Watts) | Max<br>output<br>current<br>(Amperes) | Max output<br>Voltage<br>(Volts) | Input<br>voltage<br>(Volts) | Power supply*              | Associated Shaker                        |
|----------------------------|--|---------------------------------------|----------------------------------|-----------------------------|----------------------------|--|
| A 732                      | 60 or 30                               | ± 4 or ± 2                            | ± 30                             | ± 5                         | 220 V ±10%                 | EX 6 / EX 8 / EX 12 /<br>EX 20 / EX 24   |
| A 735                      | 120 or 60                              | ± 8 or ± 4                            | ± 30                             | ± 5                         | 220 V ±10%                 | EX 58 / EX 58 C40 / EI 20                |
| A 648 S                    | 400                                    | ± 20                                  | ± 40                             | ± 5                         | 3 x 380 V ±10%             | EX 220 SC / EX 220 C40                   |
| A 649 HV                   | 800                                    | ± 20                                  | ± 80                             | ± 5                         | 3 x 380 V ±10%             | EX 320 C50 / EX 520 C50                  |
| A 651/S1                   | 1200                                   | ± 60                                  | ± 40                             | ± 5                         | 3 x 380 V ±10%             | EX 1060                                  |
| A 651/S2                   | 2400                                   | ± 60                                  | ± 80                             | ± 5                         | 3 x 380 V ±10%             | EX 1070 C50 / EX 2060 /<br>EX 2060 C50   |
| A 709                      | 4000                                   | ± 80                                  | ± 100                            | ± 5                         | 3 x 380 V ±10%             | EX 5080 / EX 5080 C50                    |
| A 735*                     | 120 or 60                              | ± 8 or ± 4                            | ± 30                             | ± 5                         | 115 V - 400 Hz<br>±10%     | EI 20                                    |
| A 520*                     | 400                                    | ± 20                                  | ± 40                             | ± 5                         | 3 x 115 V - 400 Hz<br>±10% | EI 799 (horizontal)<br>EI 797 (vertical) |

\* For export other power supply voltages are available

