

The Tranquilizer is built from the ground up to be as effective as possible for typical “gimbal geometry”. Usually you have quite small amount of mass at the connection point itself (pan motor) and a non-rigid device that tries compensate for incoming motion, thus easily get into self oscillation, when a vibration isolator is “too soft”. We are proud that the Tranquilizer effectively reduces all these problems.

### Tranquilizer Square O-ring inner ring setups:

When configuring square O-rings a general guide is to build with as soft and many rings as possible. The Tranquilizer can be built with 32, 24 or 16pcs of square O-rings and comes pre-installed with 32pcs of Shore 30 rings targeted for a 14.00 kg / 31 lbs setup (including 8pcs passive plates / 5kg). Each passive plate weight 630 gram, so in order to calculate total weight take your gimbal/camera weight and add 3.8 kg / 8.4 lbs (six passive plates) and then you can reduce / add two pair off plates to easily fine tune the total mass. We include 32pcs square O-rings of shore 30 and 40 as standard.

Passive plates are a tool for quickly reach the target weight without changing square O-rings constantly. Usual a good setup is to use 4 up to 8 passive plates in order to get good mass for lighter typ of gimbals (gimbals weight under 5KG, such as DJI Ronin / Freefly MoVi etc). For heavier setups the passive plates makes only minor difference and can be ignored totally if the gimbal / gyro head weighs over 15KG.

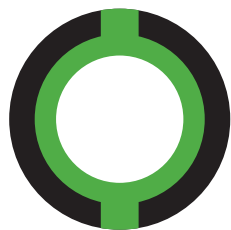
General guide line is to load the Tranquilizer up to 50% load. Usually 40-50% is a range that works in most situations. Do NOT load more than 70% compression because then the Tranquilizer might get totally compressed while in motion and generate ugly shocks. If the Tranquilizer is NOT in use for over 8 hours, please remove the attached weight as the rubber will slowly deform during load and loose some capacity (they will of course go back to its original state once the load is removed.)

PLEASE NOTE THAT THE FOLLOWING RECOMMENDATIONS ARE WHEN THE TRANQUILIZER IS USED WITH COMBINATION ON A BLACK ARM, AND TAKES INTO ACCOUNT ITS FREE FLOATING HANGING + COMBINATION WITH DAMPENERS. FOR OTHER USAGE YOU NORMALLY GO WITH HIGHER SHORES SINCE THE O-RINGS ARE USED TO MORE STRESS.

	Totally compressed at:	min / (40%) - max Target weight range (50%):	Overloaded capacity at (70%):
Shore 20A - 32 pcs Square inner rings:	19.5 kg / 43 lbs	7.8 kg 17.2 lbs ↔ 9.75 kg / 21.5 lbs	11.7 kg / 25.8 lbs
Shore 20A - 24 pcs Square inner rings:	14.5 kg / 32 lbs	5.8 kg / 12.8 lbs ↔ 7.50 kg / 16 lbs	10.15 kg / 22.5 lbs
Shore 20A - 16pcs Square inner rings:	9.75 kg / 21.5 lbs	3.9 kg / 8.6 lbs ↔ 4.90 kg / 10.8 lbs	6.8 kg / 15 lbs
Shore 30A - 32 pcs Square inner rings: Pre-installed unless otherwise stated	28.0 kg / 62 lbs	11.2 kg / 24.7 lbs ↔ 14.00 kg / 31 lbs	19.6 kg / 43.2 lbs
Shore 30A - 24 pcs Square inner rings:	21.0 kg / 46 lbs	8.4 kg / 18.5 lbs ↔ 10.50 kg / 23 lbs	14.7 kg / 32.4 lbs
Shore 30A - 16pcs Square inner rings:	14.0 kg / 32 lbs	5.6 kg / 12.3 lbs ↔ 7.00 kg / 16 lbs	9.8 kg / 21.6 lbs

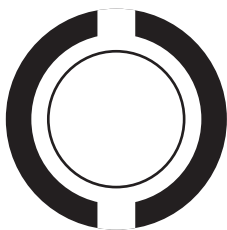
	Totally compressed at:	min / (40%) - max Target weight range (50%):	Overloaded capacity at (70%):
Shore 40A - 32 pcs Square inner rings:	45.0 kg / 99 lbs	18.0 kg / 39.5 lbs ↔ 22.50 kg / 49.5 lbs	31.5 kg / 69.5 lbs
Shore 40A - 24 pcs Square inner rings:	33.5 kg / 74 lbs	13.4 kg / 29.5 lbs ↔ 16.80 kg / 37 lbs	23.5 kg / 51.8 lbs
Shore 40A - 16pcs Square inner rings:	22.5 kg / 49.5 lbs	9.0 kg / 20 lbs ↔ 11.25 kg / 25 lbs	15.8 kg / 34.7 lbs
Shore 50A - 32 pcs Square inner rings:	60.0 kg / 132 lbs	24.0 kg / 53 lbs ↔ 30.00 kg / 67 lbs	42.0 kg / 92.6 lbs
Shore 50A - 24 pcs Square inner rings:	45.0 kg / 99 lbs	18.0 kg / 39.5 lbs ↔ 22.50 kg / 49.5 lbs	31.5 kg / 69.5 lbs
Shore 50A - 16pcs Square inner rings:	30.0 kg / 66 lbs	12.0 kg / 26.5 lbs ↔ 15.00 kg / 33 lbs	21.0 kg / 46.3 lbs
Shore 60A - 32 pcs Square inner rings:	68.0 kg / 150 lbs	27.2 kg / 60.0 lbs ↔ 34.00 kg / 75 lbs	47.5 kg / 104.7 lbs
Shore 60A - 24 pcs Square inner rings:	51.0 kg / 112 lbs	20.5 kg / 45.0 lbs ↔ 25.5 kg / 56 lbs	35.7 kg / 78.7 lbs
Shore 60A - 16pcs Square inner rings:	34.0kg / 75 lbs	13.6 kg / 30.0 lbs ↔ 16.00 kg / 35 lbs	23.8 kg / 52.4 lbs

Tranquilizer shore hardness (NOTE! All polymer rings are made with 5% tolerance so all figures are just a guideline and not 100% accurate, since each mold is slightly different):



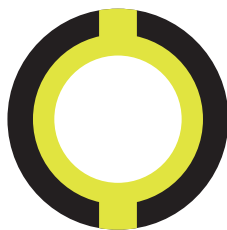
Shore 20  
Green

625g



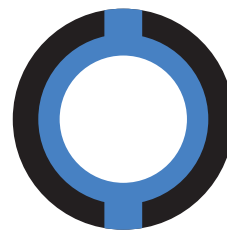
Shore 30  
White

875g



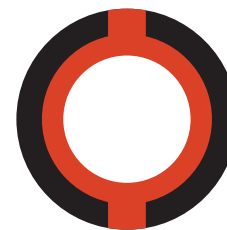
Shore 40  
Yellow

1400g



Shore 50  
Blue

1875g



Shore 60  
Red

2125g

Fully compressed forces per ring:

Tranquilizer weight plate chart (8 passive plates are included in the package. They can also be ordered separately if ever necessary):

Weight plates:	2 pcs : +1.2 kg / +2.6 lbs	4 pcs: +2.5 kg / +5.5 lbs	6 pcs: +3.8 kg / +8.4 lbs	8 pcs: +5.1 kg / + 11.1 lbs
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### Tranquilizer Pan barrel (outer oscillation dampener) configuration:

An important part of the Tranquilizer vibration mount is the tuning for pan oscillation. The phenomenon happens when the vibration mount is too soft and the pan motor starts overcompensating the movement and thus start jittering back and forth. So far the solution has been to take down the stiffness/torque settings, but then then you lose much motor power that you want to have fighting dynamics such as wind etc.

The solution is the outer layer of dampening material that is constructed around the pan motor axis. Since all gimbals are different, some have much stronger torque relationship with the motors than the mass and some not. In general you want to have as weak outer ring dampening configuration or compression dampening material) that allows the vibration mount to work at its fullest, without having too weak configuration so the pan motor starts oscillation. This is a fine tune between stiffness setting and amount of dampening material. We ship the Tranquilizer with softest dampening material (shore 30) that works well with most gimbals such as Freefly MoVi Pro / DJI Ronin. The pan barrels help minimizing pan oscillation, but of course there are always a limit how high gain you can set the motor at until it starts oscillate!

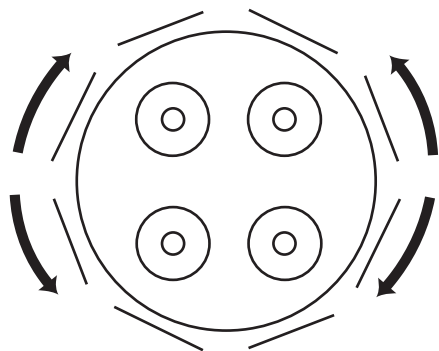
If needed there is also harder shores (shore 50) to change to if your motor is too strong for these soft ones for motor with more pan motor Torque such as Intuitive Aerial Newton and Shotover G1 (sold separately).

### Illustrations for relationship understanding only.

#### Too weak dampening (Too few/weak or no pan barrels).

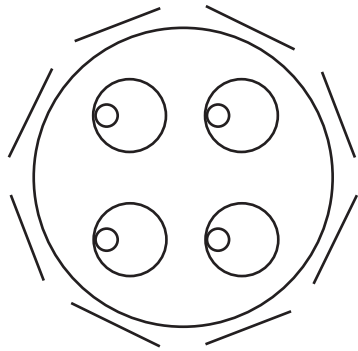
##### While passive:

Vibration mount effective against incoming low frequencies but can start to vibrate randomly even with low stiffness values (sudden jerks).



##### While on vehicle:

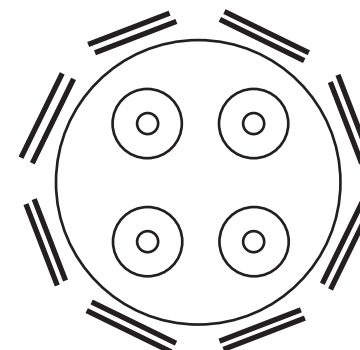
Vibration mount hits the rod ends - too weak on side/side and front/back motion.



#### Good dampening (Good amount of dampeners).

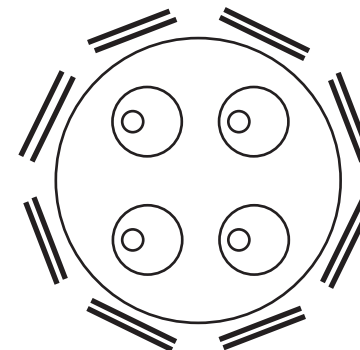
##### While passive:

Vibration mount keeps pan motor in bay at higher stiffness settings - calm state.



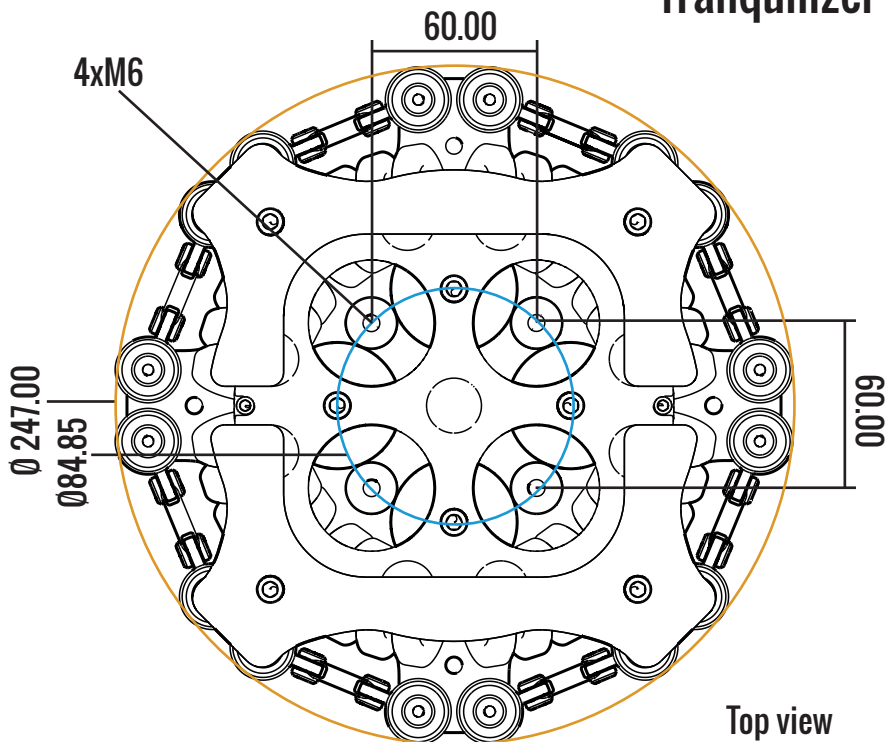
##### While on vehicle:

Vibration mount is strong enough to withstand side to side motion, and keeps within its ±12mm side to side travel distance.

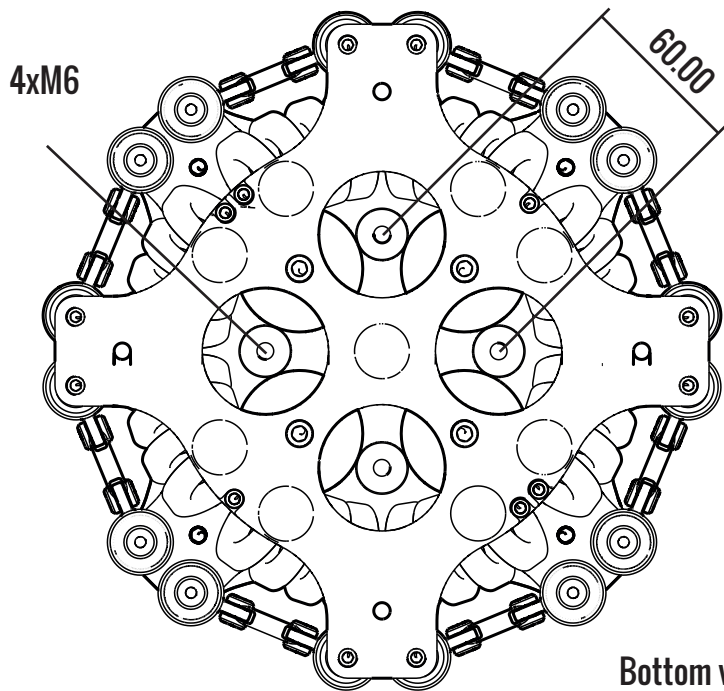


# Tranquilizer Dimensions and weight

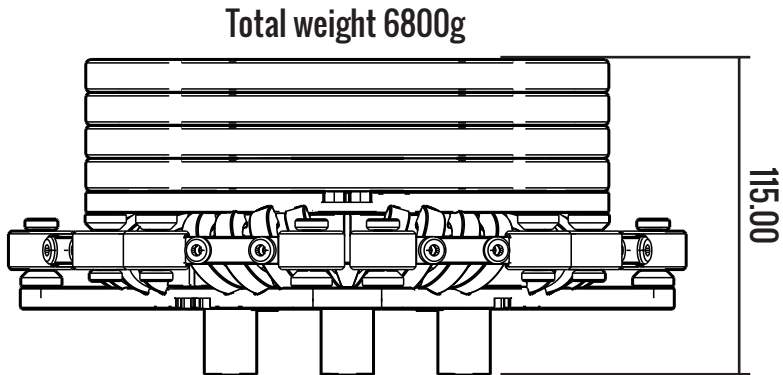
All units in mm



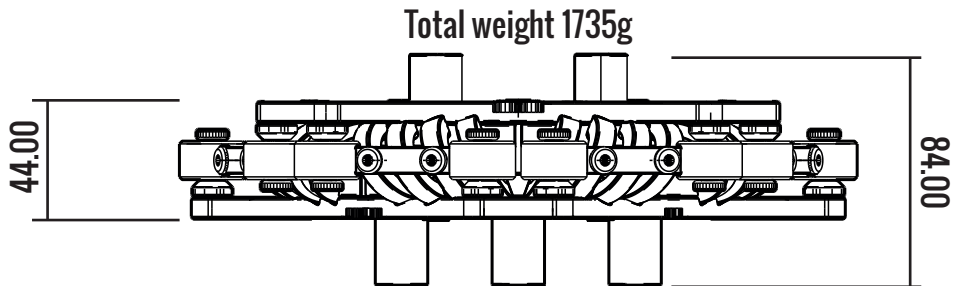
Top view



Bottom view

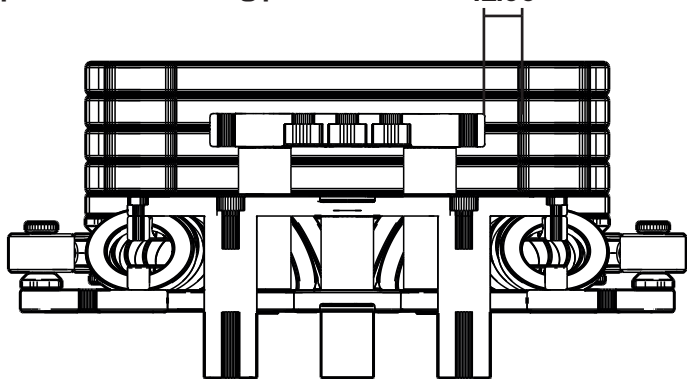


Side view incl. 8 pcs passive plates



Side view without passive plates

NOTE! Minimum clearance needed between passive plates and mounting plate 12.00

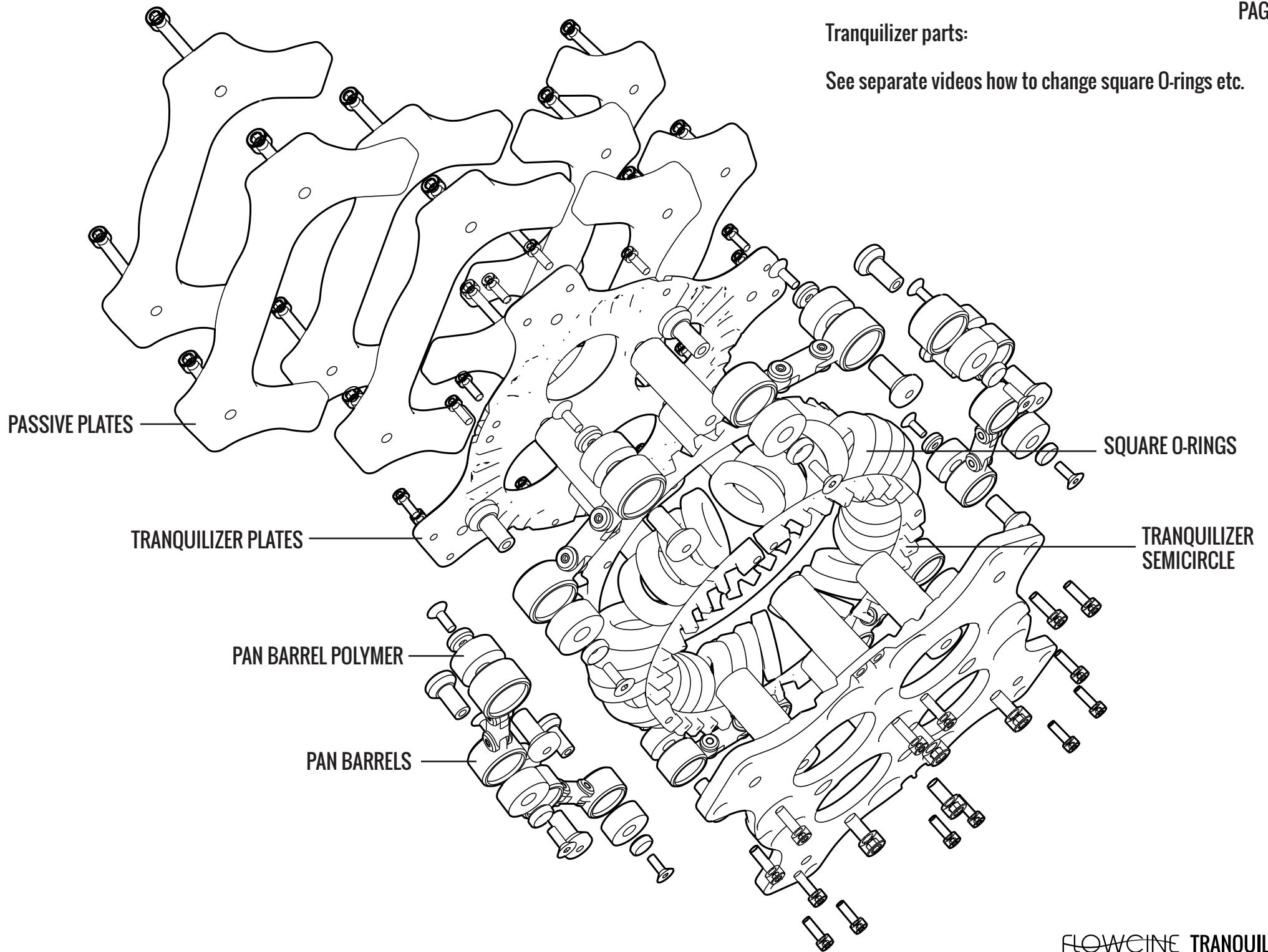


Section view

FLOWCINE TRANQUILIZER

Tranquilizer parts:

See separate videos how to change square O-rings etc.



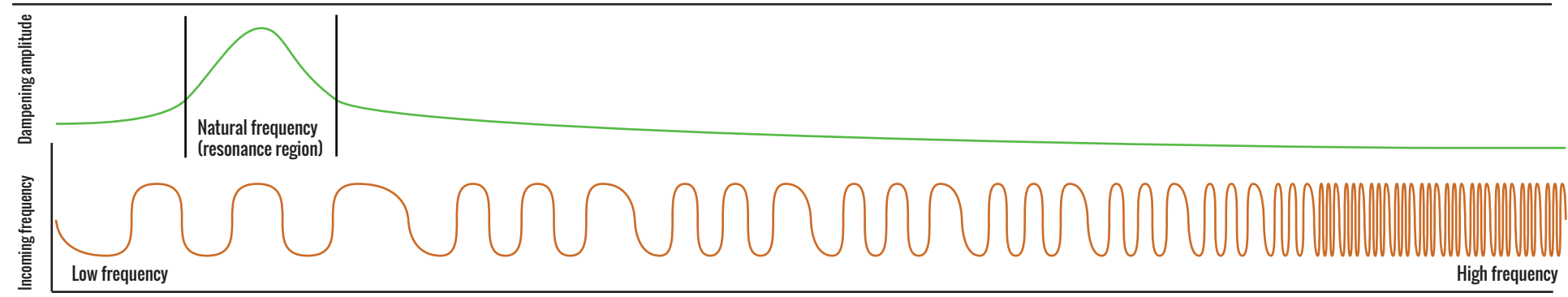


Tranquilizer mount with all pan barrels.

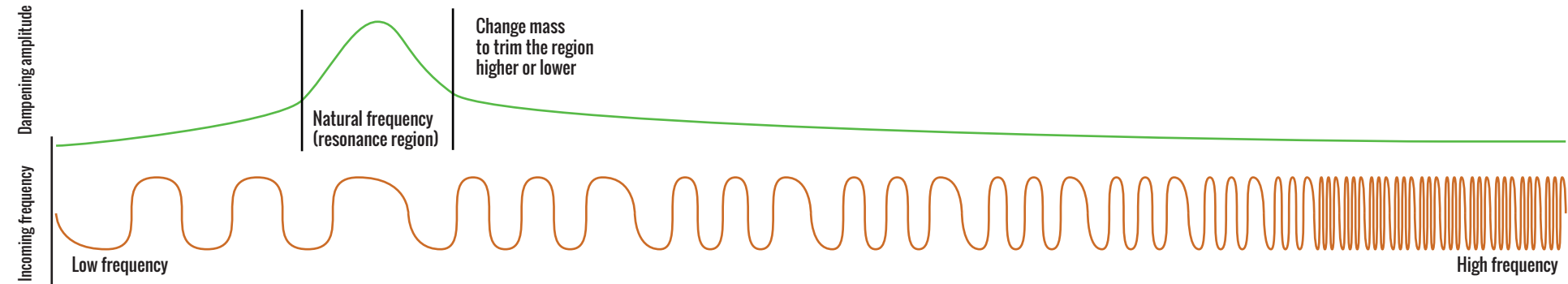


Theory and extra information (not important unless you want better understanding).

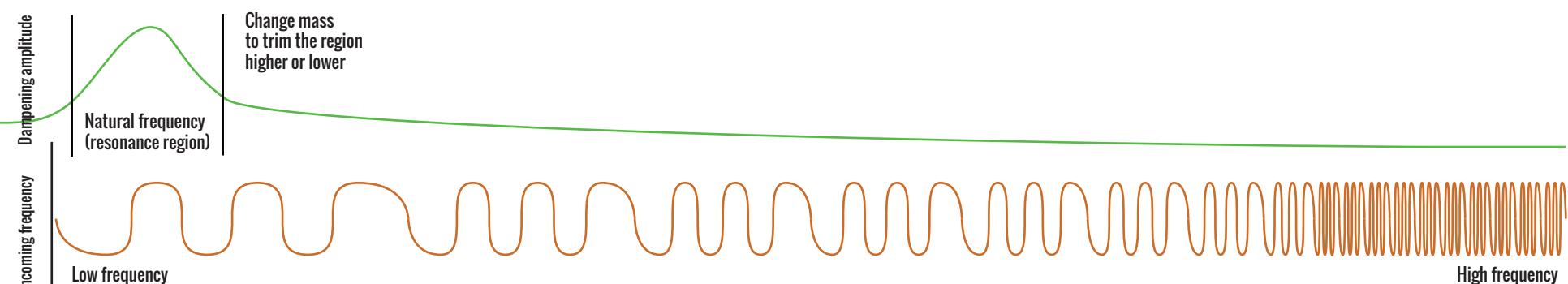
All vibration dampeners have a resonance region where the incoming frequency is amplified for the specific mass. This is also a scenario, where a user can easily change the mass with the weight plates if you for some reason have a frequency that is within the resonance region for the specific vibration mount built. Generally higher frequency is always dampened very effective where low frequency vibration is the region where resonance might happen.



Frequency response curve



Frequency response curve



Frequency response curve

Incoming noise is reduced in the Tranquilizer vibration mount and generates a slower outgoing curve than the incoming one. The more mass you add with weight plates, the slower the outgoing curve will be. However with too much mass and a soft inner Square ring setup, this might cause larger swinging motion (side-to-side) where we don't recommend using more than 8 plates (+4.8kg) in total. More mass also reduces the effect of the gimbal going into "self-oscillation" where the pan motor overcomes the softness of the vibration mount and start compensating back and forth. The idea behind the Tranquilizer vibration mount is for the user to run with higher stiffness/torque settings on the motors, while still have optimal soft vibration mount. More mass is specifically useful when using ATV vehicles with low RPM motors = low frequency, while less mass is more convenient in higher speed scenarios. When the vibration mount hits the sides of the rods, you definitely have too many!

### Illustrations for relationship understanding only.

