DENGENSHA TOA CO., LTD.

SETUP & MAINTENANCE FOR DENGENSHA FEEDER

(This is a quick set-up guide. Please refer to the official instruction manual for details.)

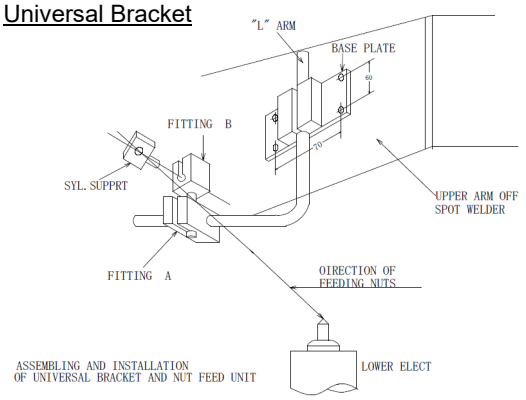
COMMON SETUPS FOR ALL FEEDERS

1. **Set the angle of the Feed Unit**

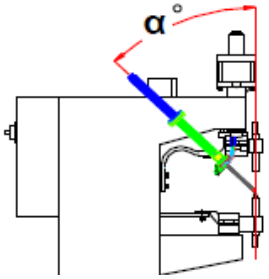
The Universal Bracket consists of four components –Base Plate, “L” Arm, Fitting “A” and Fitting “B”. They are installed on the upper arm of the spot welder. The Feed Unit is mounted to Fitting “B” using the Cylinder. Support of the Feed Unit. The Universal Bracket enables the Feed Unit to be freely oriented.

Nut Feeders (N/F) - The best angle to set the Feed Unit is at 45 degrees. The Feed Unit Assembly can be set between 30 and 60 degrees (or 45 and 60 degrees for separator-less type) depending on the size of the nuts.
Bolt Feeders (B/F) - Bolt Feed Units are always set at 30 degrees.

Universal Bracket



Feed Unit Angle

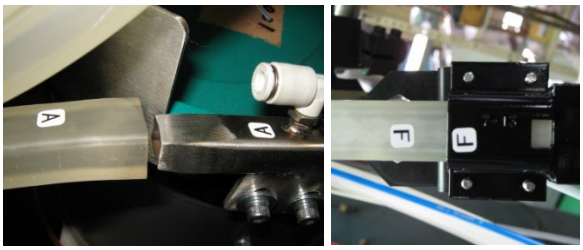


- N/F with separator: α° = 30º - 60º
- N/F separator-less: α° = 45º- 60º
- B/F: 30º

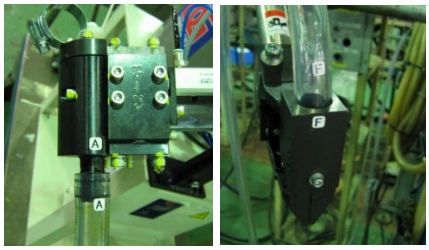
If the Feed Unit is mounted outside the angle shown, incorrect feeding may follow.

2. **Set the Vinyl Tube**

(1) The tube must be connected according to the corresponding marking. After connecting, secure it with the band clamp provided.



N/F (Tube Joint on left and Feed Unit on right)



B/F (Separator on left and Feed Unit on right)

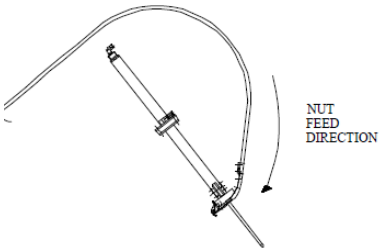
(2) The tube must be installed in **a smooth radius of 300mm or more**. Sharp bends or turns of the tube will restrict a smooth flow of fasteners and result in excessive wear within the tube. Do not constrict the vinyl tube with the wraps, clamps, brackets, or anything that will cause the vinyl tube to collapse. On bolt feeders, the last 12 to 18 inches of the tube should be a straight and vertical as possible to assist in landing the bolts correctly into the Chuck Jaws.

(3) If the tube is too long to install in a smooth radius, Cut the other end since the tube holder of the Feed Unit has an anti-disconnection device.

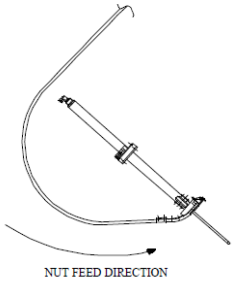
(4) When inserting the tube to the Tube Joint, warm and soften the tube end by a heat gun (or a hair drier). Insert the tube fully to the tube joint and tighten it with a tube clamp. Fasten the set screw to keep the tube in position. If the set screw is protruding too far into the Vinyl Tube it can block proper delivery of fasteners, if the set screw is missing, the Vinyl Tube can walk out and a Fastener may flip, which would then be delivered upside down.

3. **Set the Feed Head Assembly**
   The Head Assembly on the Feed Unit should come in from as vertical a position as possible. This ensures that the nut to be fed is in the correct position resting against the nut stopper.

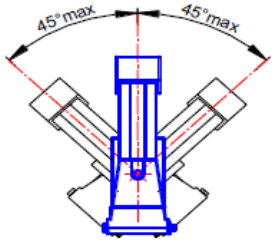
Proper Orientation:
Gravity helps the nuts to properly orient against the nut stopper.



Improper Orientation:
Gravity prevents nuts from orienting against the nut stopper, resulting in misfeed.

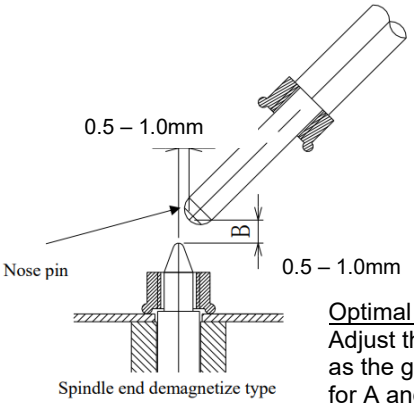


Maximum Rotation of Head Assembly



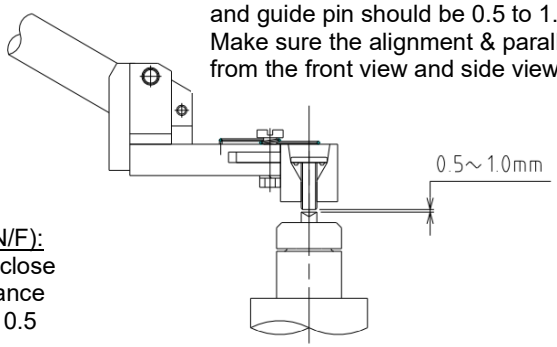
4. **Adjust the air pressure to the correct setting**
   Set the air pressure between the two green arrows on the regulator. This is set between 0.4 Mpa - 0.6 MPa. Blowing the nut with too much pressure will wear out the Nut Stopper early. Blowing a bolt with too much air pressure will result in the bolt not resting in the correct position in the Chuck Jaws.

5. **Set proper alignment of the Nose Pin or Chuck Jaws**
   Proper alignment of Nose Pin or Chuck Jaws against the Weld Pin is important for proper delivery of fasteners. The Spindle/Nose Pin or tip of the bolt in Chuck Jaws should not touch the Weld Pin but should be set up as close as possible.



Optimal Nose Pin Position (N/F):
Adjust the nose pin to be as close as the guide pin. Target distance for A and B is approximately 0.5 to 1.0mm.

Optimal Chuck Jaw Position (B/F):
The distance between the tip of the bolt and guide pin should be 0.5 to 1.0mm. Make sure the alignment & parallelism from the front view and side view.



6. **Correctly set the Air Blow duration Timer.**
   Make sure that the Time (duration) that the Air is blowing, to send a Fastener to the Head Assembly, is not too long. Fasteners should drop from the peak of the Vinyl Tube run without any need for continued air being used. This prolongs the life of the Nut Stoppers, Hinge Plates and Chuck Jaws.

7. **Lubricate the Guide Bushing**.
   A drop of machine oil should be placed on the Spindle once a week. This will lubricate the Guide Bushing and prolong its life.

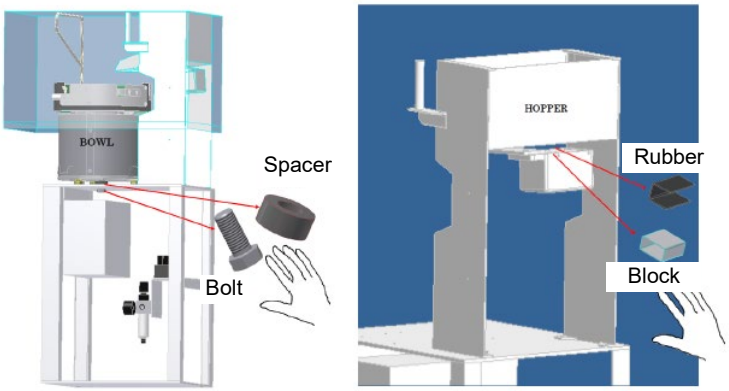
8. **Check the Guide Bushing, Nut Stopper, and Hinge Spring for wear** at least once a month.

9. **Nuts stacked in the Head Assembly**.
   Keep some nuts in the quantity (usually 3) indicated on the feed unit in the Head Assembly (does not apply to Flanged Nuts). This ensures that the last Nut is properly sitting against the Nut Stopper, aligned with the Spindle, and will be delivered to the Weld Pin without a misfeed. This also prolongs the life of the Nut Stopper.

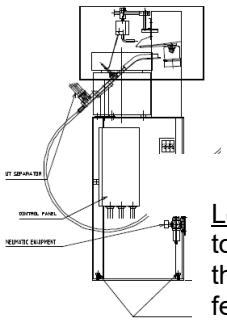
10. **Check the outer diameter of the Upper Electrode (B/F only).**
    It should be 0 to 1mm smaller than the diameter of the bolt head for proper feeding.

VIBRATORY FEEDER-UNIQUE SETUPS

11. **Remove the Shipping Bolt, Spacer, Block** (between Bulk Hopper and Hopper Motor) and the **Rubber Sheet** (covering the Block).



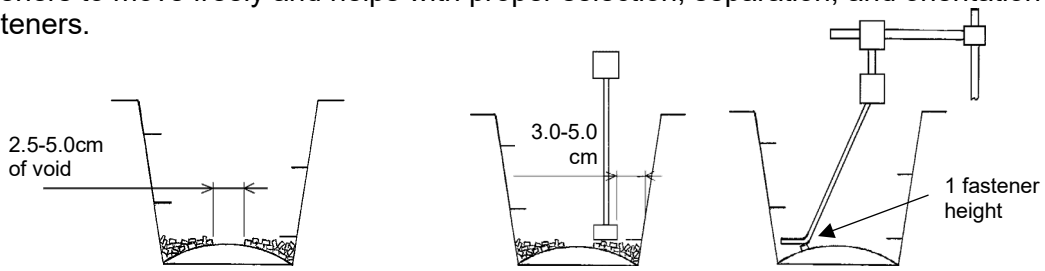
12. **Level the Vibratory Feeder.**
    This ensures proper operation of the Vibratory Bowl. (The Feeder came with [4] Leveling Bolts.) Bowl vibration, proper selection, and orientation of the Nuts works best when the Feeder is level. If the vinyl flexible tube is 3.0m long, which is a standard length, the distance between the FEEDER and the welder should be 1.0m.



Leveling Bolts (front & rear): They are to be used to level the feeder and assure firm placement on the plant floor. An improperly leveled vibratory feeder will not feed nuts or bolts properly.

13. **Adjust the Bulk Hopper door**.
    This should be adjusted to allow a good flow of nuts to be dropped into the bowl. This opening should be 1-1/2 times the height of the nut. Set the door so that not too many nuts are dropped in the vibratory bowl at one time. Never put nuts directly in the vibratory bowl. Nuts are always to be loaded into the bulk hopper. Nuts picked up off the floor are to be discarded and never put back into the hopper.

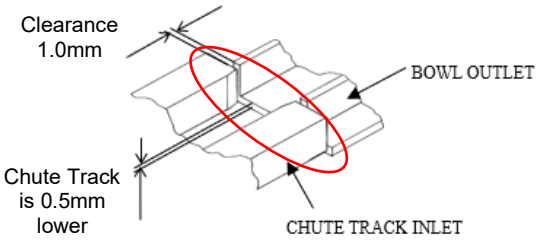
14. **Adjust the Level Switch.**
There should be a void of Fasteners in the center of the Bowl approximately 2.5 to 5.0cm in across depending on the size of the Bowl. The distance between the Level Switch and the inner wall of the vibrator bowl should be approximately 3.0 to 5.0 cm. The distance between the Level Switch and the bottom of the bowl should be one fastener apart. This allows for the fasteners to move freely and helps with proper selection, separation, and orientation of the Fasteners.



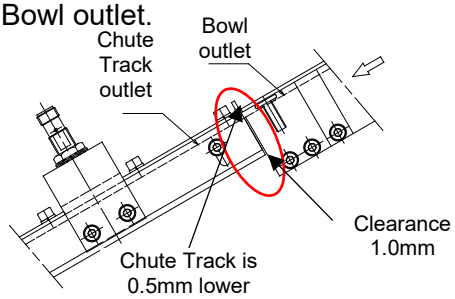
15. **Confirm that the Vibratory Control setting is correct for the Bowl.**
The Vibratory Control setting for the Bowl should not be set too high or too low. The Vibratory Control is tuned at the factory to 3 on dial. Look for good movement and separation in the bowl.

16. **Clean the Vibratory Bowl.**
Keep it free of debris to ensure proper selection of Fasteners. Uncoated steel Vibratory Bowls should be cleaned out as required, using electrical contact cleaner and a clean cloth. Do not use WD40 to clean the Bowl, as it is a lubricant, and the Vibratory Bowl moves the Fasteners by friction. Vibratory Bowls with the Green Friction Coating should be cleaned once at least once a week using a citrus based cleaner. Harsh chemicals will destroy the green friction coating on the Vibratory Bowl.

17. **Check the alignment between the Bowl outlet and Chute Track inlet.**
Check if the Bowl outlet is properly aligned to the Chute Track inlet with 1.0mm clearance. Chute Track should be positioned 0.5mm lower than the Bowl outlet.



N/F bowl and chute track alignment



B/F bowl and chute track alignment

TROUBLESHOOTING TIPS

Causes of Misfeeds	Causes of Upside-Down Nuts
• Alignment of the Spindle with the Weld Pin is incorrect • Worn Guide Bushing • Worn Nut Stopper • Worn Hinge Plate Springs • 3-5 nuts are not stacked in Head Assembly	• Too many Fasteners in the Vibratory Bowl • Vibratory Control setting is too high or too low • Worn out / damaged section of the track in the Vibratory Bowl • Dirty or oily Bowl, debris in the Bowl • Vinyl Tube is not attached correctly at the head assembly, missing Fixing Bolt, or Fixing Bolt is too long • Vibratory Bowl is not leveled

Note: Replace any worn parts causing misfeeds or upside-down nuts.