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# Pro75® Product Notes

Special instructions (supplements standard Pro75® instruction sheets)

## Scope

These notes supplement the standard Pro75® instructions for the following motors: K2000, L995, L1355, L1685, L3200, M1300, M1545, M1675, M2020, M2075, M2080, M2245, M2250, M3100, M3700

This note also explains the proper use of the Pro75® casing spacer.

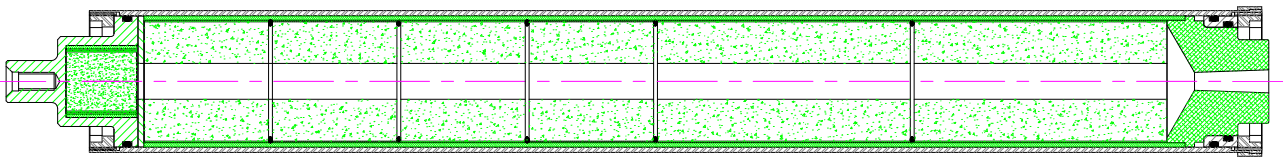
## Pro75® motors using 'half' grains: L995, L1355, L1685, M2075

The L995, L1355 and L1685 Pro75® motors use 'half' grains. These grains are half-length of the regular grain length of Pro75® motors. The purpose of these grains is to improve the shape of the thrust curve and maximize the thrust at lift-off. Two 'half' grains with two spacer o-rings (stacked alternately) occupy the same length inside the motor as a single normal grain with its o-ring spacer.

When assembling motors with 'half' grains ensure that the short grains are loaded closest to the forward closure of the motor. All regular grains will be at the nozzle end. As with the regular grains, an o-ring spacer is placed between each grain.

The table below summarizes the number of regular and 'half' grains in the affected Pro75® motors:

L995: 2 regular grains, 2 'half' grains  
L1355: 2 regular grains, 4 'half' grains  
L1685: 2 regular grains, 6 'half' grains  
M2075: 3 regular grains, 6 'half' grains

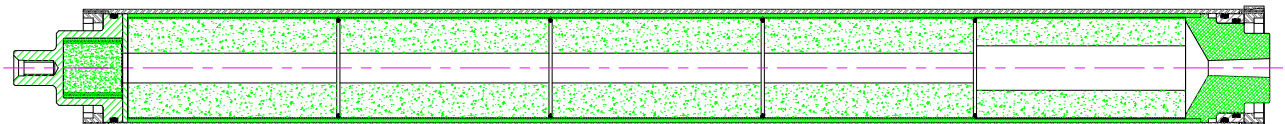


*Assembled Pro75®-4G motor with four 'half' grains.*

## Pro75® motors with stepped grains: M1300 Dual Thrust™ and M2250 C-Star

Dual Thrust™ motors use two different propellant types: a fast burning single grain that creates the extra boost at lift-off and slower burning grains that burn during the sustain phase. The fast burning propellant grain can be recognized by its red color and large port diameter. The M2250 C-Star motor has the same propellant formulation for all grains, but uses a bottom (base) grain with a larger bore.

When assembling motors with a stepped core, ensure that the base grain (with the larger center perforation – bore) is located at the nozzle end of the motor. It is required to bond the grains in the liner (see instructions in next section).



*Assembled Pro75®-5G Dual Thrust™ motor.*

**Pro75® motors requiring grain bonding:****K2000, L3200, M1300, M1545, M1675, M2020, M2080, M2245, M2250, M3100, M3700**

The following motors require bonding of the grains in the liner: K2000/L3200 Vmax™, M1300 Imax™ Dual Thrust, M2250 C-Star™, M3100/M3700 White Thunder™, M2020/M2245 Imax™, M2080 Skidmark™, M1545 Green<sup>3</sup>™, and M1675 Pink™. Bonding the grains in the liner prevents premature blowout of the grains under high acceleration loads or by high core mass flows. **DO NOT USE EPOXY FOR BONDING.**

The process for this is as follows:

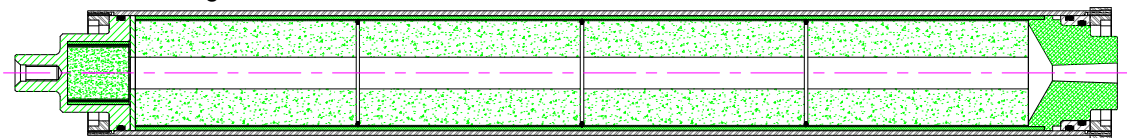
1. The preferred adhesive is Gorilla Polyurethane Glue or Elmer's Glue-All Max (not the white Glue Max!). A 2-oz bottle (e.g. Lowes SKU #: 152243, or Home Depot SKU # 837667) is sufficient for all Pro75 motors.
2. Apply adhesive on the outside (paper liner) of the first grain and use a small brush to spread it evenly. Ensure no adhesive is applied on the grain faces or bore of the propellant.
3. Push the grain in the liner **from the nozzle end** while twisting it. Twisting the grain while inserting it will properly distribute the adhesive. Push it about 1" into the liner.
4. Install a grain spacer o-ring.
5. Repeat steps 2-4 for all grains. Excess adhesive might be scraped off around the end of the liner. This can simply be wiped off.
6. Do not install a spacer o-ring between the bottom grain and the nozzle.
7. Re-install the nozzle and wipe off any excess adhesive.
8. Set the liner/grain assembly upright with the nozzle facing down.
9. Push the top grain down gently through the hole in the forward insulator plate.
10. Let the liner/grain assembly cure in an upright position
11. Continue with the regular assembly process as outlined in the instructions.

Notes:

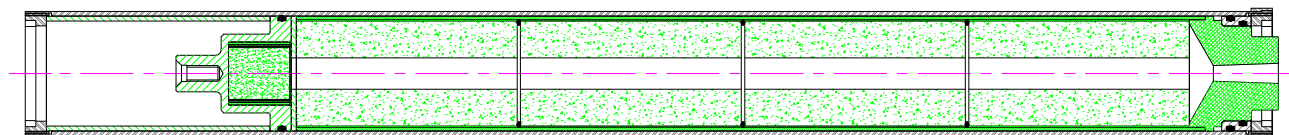
1. Do not insert the bottom grain from the forward closure end of the liner. Most adhesive will have been scraped off when the grain is pushed through all the way and it reaches the end of the liner.
2. For the Pink™ M1675 reload the red grain should be located at the nozzle end. (All other motors use identical grains.)
3. The M2245 Imax™ and M3700 White Thunder™ motor have four (4) longer grains and are bonded like any of the other motors listed above.

**Pro75® casing spacers**

Pro75® casing spacers allow the use of a reload kit intended for a smaller casing size to be used in the next casing size up. For example, a 3-grain reload kit can be used in a 4-grain casing.<sup>i</sup> When assembling a Pro75® motor with a casing spacer, follow the regular instructions provided with the reload kit, and install the casing spacer between the forward closure and forward closure retaining ring as shown in the example below. Do not slide the forward closure all the way from the nozzle end. It is recommended to spray the inside of the casing with some silicone spray to prevent rolling of the forward closure o-ring.



*Pro75®-4G reload in Pro75®-4G casing.*



*Pro75®-4G reload in Pro75®-5G casing using case spacer.*

<sup>i</sup> A 6GXL case can be spaced to a 6G case with a regular spacer. Up to two spacers can be used.