

EXPERIMENTAL MOTOR KIT™ Assembly Guide

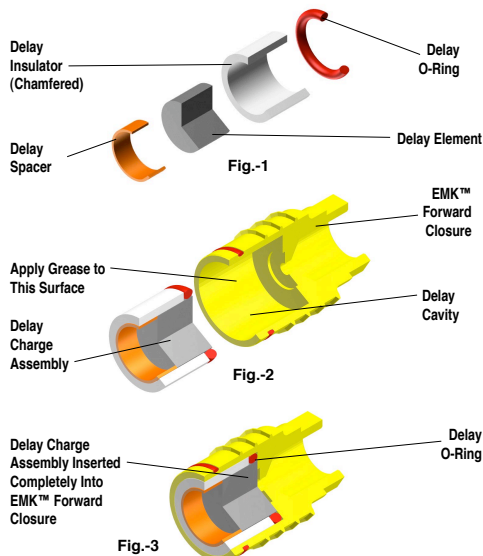
Step 1. Forward Closure Assembly (also see typical assembly drawing on reverse side)

1-1. Apply a light coat of Synco™ Super Lube™ or other grease to the delay o-ring.

1-2. **Fig.-1:** Chamfer both inner edges of the delay insulator with your fingernail. Assemble the delay element, delay insulator, delay spacer (if used) and delay o-ring as shown.

1-3. **Fig.-2:** Apply a **light film** of grease to the inner circumference of the delay cavity (but **not** the forward end of the cavity).

1-4. **Fig.-3:** Insert the delay charge assembly shown in Fig.-2 into the delay cavity, delay o-ring end first, until it is seated against the forward end of the EMK™ forward closure.



Step 2. Case Assembly

2-1. Drill nozzle throat to desired diameter.

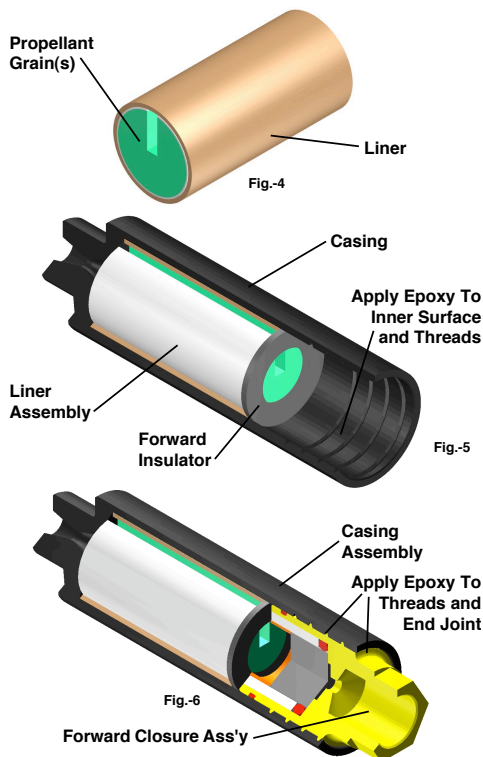
2-2. **Fig.-4:** Install your propellant grain(s) into the liner. **NOTE:** Slotted grains shown in all illustrations. This kit includes a thicker liner and is designed for slot or core-burning grains.

2-3. **Fig.-5:** Push the liner assembly into the motor casing until it is seated against the nozzle end of the case.

2-4. **Fig.-5:** Install the forward insulator (black fiber washer) into the motor casing until it is seated against the liner assembly.

2-5. **Fig.-5:** Mix about 5 grams of a good-quality 5-minute epoxy. Apply a liberal coat of epoxy to the inside surface of the casing in the threaded area above the liner assembly. **CAUTION:** Do not allow epoxy to contact the propellant grain surface.

2-6. **Fig.-6:** Apply a liberal coat of epoxy to the threaded area of the previously assembled forward closure assembly. **CAUTION:** Do not allow epoxy to contact the delay grain surface. With the motor casing held in a horizontal position, thread the forward closure assembly into the open end of the motor casing by hand until it is seated against the forward insulator. Apply additional epoxy to the joint between the forward closure and the case. Set the completed assembly aside to cure in a vertical position.



Experimental Motor Kit™

EMK™ 29/60 'SC' Assembly Guide For Slot and Core-burning Propellant Grains

Parts List

Description	Part no.	Description	Part no.
29/60 EMK casing (0.120" D _i)	01910	Delay insulator	03300
29/60 'SC' EMK liner	02021	Delay o-ring	00001
29mm EMK fwd closure	01916	Ejection charge retainer cap	0406-4
Forward insulator	05420		

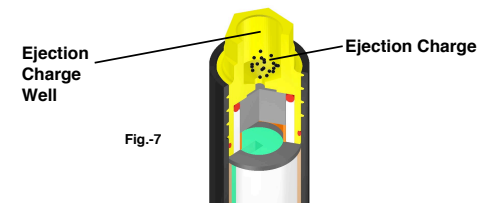
NOTE: Use with RCS part nos. 03162L propellant casting tube (.872" O.D) and 03155L delay casting tube (.610" O.D.). For pre-manufactured delays, use AeroTech Reload Delay Kits (RDKs). Propellant, igniter, delay, delay spacer and ejection charge not included.

NOTICE: FOR USE ONLY BY TRAINED AND CERTIFIED EXPERIMENTAL ROCKET USERS

18 YEARS OF AGE OR OLDER. RCS Rocket Motor Components (RCS), Inc. products are sold "as-is" and no warranty, suitability or fitness for any particular application, either expressed or implied, is made regarding RCS products. Since we cannot control the storage, transportation and use of our products, once sold we cannot assume any responsibility for product storage, transportation or usage. RCS shall not be held responsible for any personal injury or property damage resulting from the handling, storage or use of our products. The buyer assumes all risks and liabilities therefrom and accepts and uses RCS products on these conditions. Note: Your state may provide additional rights not covered by this warranty.

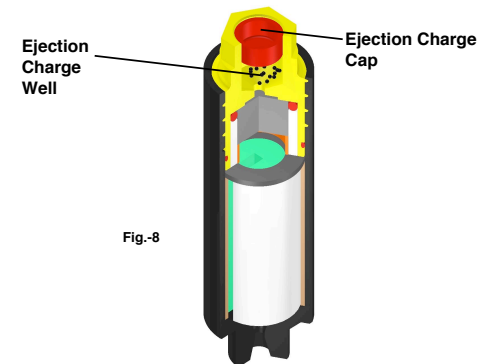
Step 3. Ejection Charge Installation

3-1. **Fig.-7:** Dispense the desired amount of ejection charge into the ejection charge well of the forward closure.



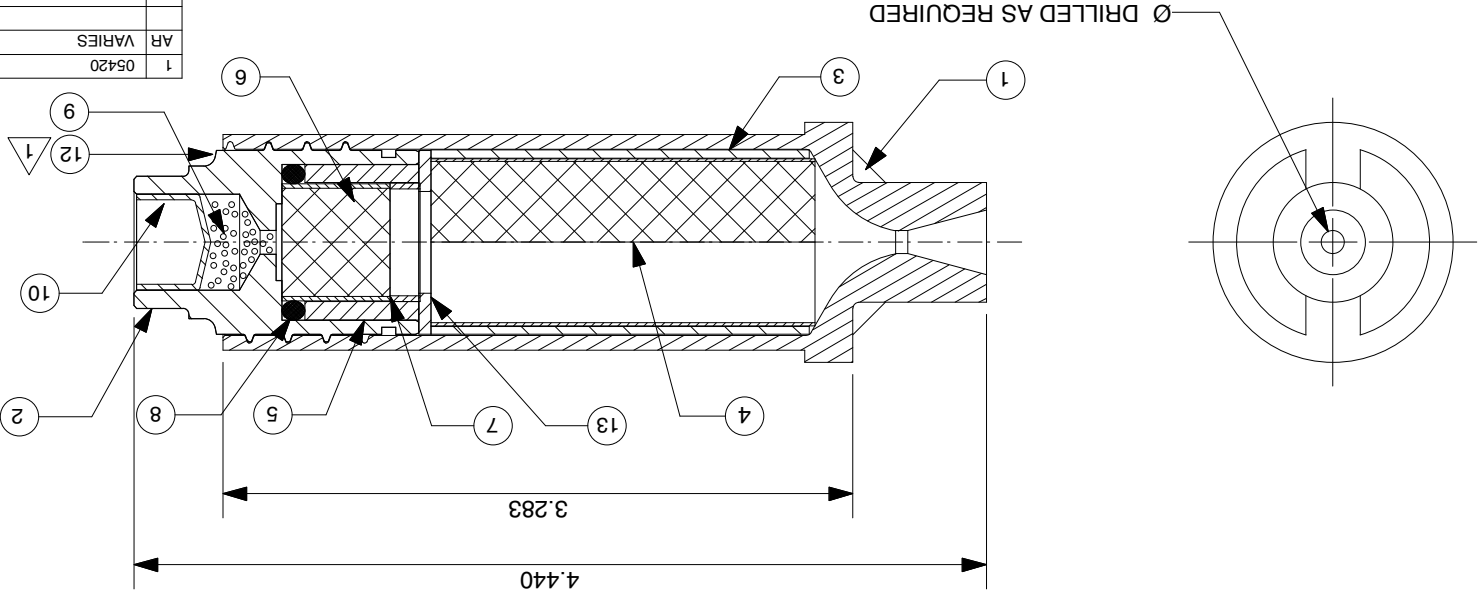
3-2. **Fig.-8:** Press the ejection charge cap (red rubber cap) into the ejection charge well.

3-3. **Fig.-8:** Release the air trapped under the cap by puncturing the center of the cap using the sharp point of a hobby knife.



3-4. **Fig.-8:** With the motor held in a **NOZZLE DOWN** position, gently shake the motor to settle the ejection charge into the cavity above the delay element.

NOTES:
1. APPLY 5 MINUTE EPOXY TO THREADS DURING ASSEMBLY. NO GREASE PERMITTED ON OUTSIDE DIAMETER OF BULKHEAD.



REVISIONS			
EFFECTIVITY	REV	DESCRIPTION	DATE
FUTURE	A	FIRST RELEASE ISSUE, TYP 29/60 SC EMK	12 / 6 / 06
FUTURE	B	REVISED WITH THRUST RING CASE	6 / 2 / 20


QTY	PART NUMBER	DESCRIPTION	ITEM
1	05420	FWD INSULATOR(.955" O.D. X.53" I.D. X.063")	13
AR	VARIES	5 MINUTE EPOXY (5 GRAMS)	12
1			11
1	0406-4	EJECTION CAPPLUG (.500" O.D. X. .38")	10
AR	AR	EJECTION CHARGE	9
1	00001	DELAY O-RING (15MM I.D. X 3MM)	8
1	AR	DELAY SPACER	7
1	AR	DELAY GRAIN (.610" O.D.)	6
1	03300	DELAY INSULATOR (.807" O.D. X .594")	5
AR	AR	PROPELLANT GRAIN(S) (.872" O.D.)	4
1	02021	LINER (.960" O.D. X .877 I.D. X 1.972")	3
1	01916	MOLDED BULKHEAD	2
1	01910	MOLDED CASE	1

UNLESS OTHERWISE SPECIFIED			
DIMENSIONS ARE IN INCHES			
ANGLES	XXX	XX	XX
+	-.005	+	-.010
2 DEG.			

MATERIAL

NOTED

FINISH

CONTRACT NUMBER			2113 W 850 N Cedar City, Utah 84721 (435) 865-7100 (Ph) (435) 865-7120 (Fax)
PREP	G. ROSENFELD 12 / 06		
CHKR		TYPICAL 29/60 SC EMK MOTOR ASSEMBLY	
APVD		SIZE A	EMK2960SC
APVD			
SCALE 1 / 1		SHEET 1 OF 1	