

P&W R-985 Wasp Jr. Task

Judges: Mr. John Koza – P&W Flight Safety Investigations

Mr. Del Laughery – P&W Customer Training

Description: Removal, Electrode Gap Adjustment, and Installation of Spark Plugs on Cylinders #3 & #8

Tools and Equipment List:



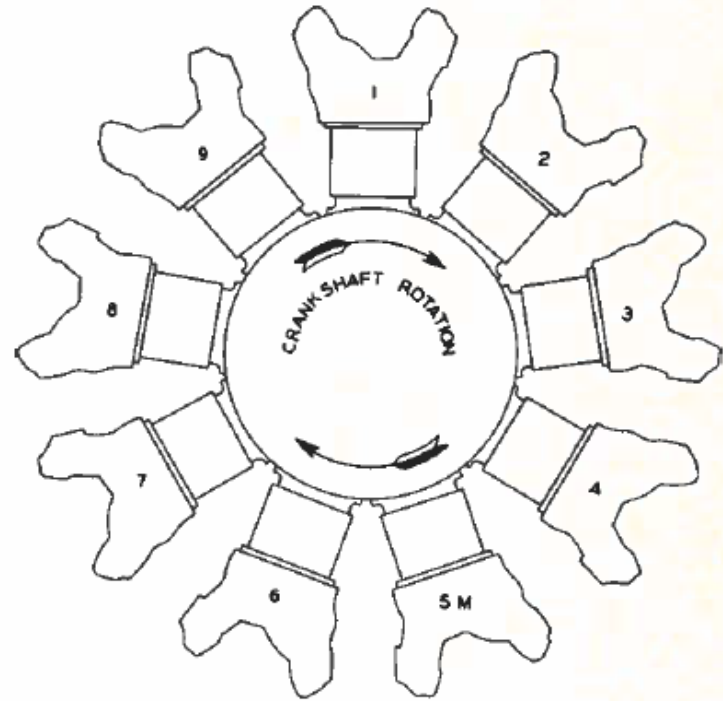
- 3/4" Combination Wrench
- 7/8" Combination Wrench
- 7/8" (3/8" drive) Deep Socket
- 7/8" (3/8" drive) Specialty Socket
- 3/4" (3/8" drive) Crows-foot
- 3/8" Drive Ratchet
- 3/8" Drive 6" Extension
- 3/8" Drive Torque Wrench (40-200 in/lb)
- Spark Plug Electrode Gap Tool(s)

Team members required: Two

Instructions

Removal

- 1) Identify Cylinders #3 and #8 using the chart at right. These are the cylinders which will be worked. Notify the judge.
- 2) Using a 7/8" wrench on the sparkplug as a backup wrench, use a 3/4" wrench to loosen and remove the ignition leads from both spark plugs on cylinders #3 and #8.
- 3) Remove both spark plugs from cylinders #3 & #8 by using a 3/8" drive ratchet, with a 6" extension and a 7/8" deep socket (either provided socket)
- 4) Using the Spark Plug Electrode Gap tool, measure the gap on the removed spark plugs and notify the judge of the observed gap. Then , place the removed spark plugs aside on the work table.



VIEWED FROM REAR OF ENGINE

FIRING ORDER

1-3-5-7-9-2-4-6-8

M=MASTER CYLINDER

Publically Released Data

Instructions

Spark Plug Gap Adjustment

- 5) Select four new spark plugs from the spark plug caddy to be installed to cylinders #3 & #8.
- 6) Using the Spark Plug Electrode Gap adjustment tools provided (at right), set the gaps of the 4 new spark plugs to .018". Verify the gap using the feeler gauges on the tools provided, then provide the freshly gapped plugs to the Judge for verification prior to installation.



Installation

- 7) Install the properly gapped spark plugs to cylinders #3 & #8 by hand as far as possible. Then, using the same tools from step #3, fully seat the spark plugs but do not apply a final torque.

Installation – cont'd...

- 8) Refer to the chart at right. With the values provided, using a 40-200 in/lb 3/8" Drive Torque Wrench, 6" 3/8" drive extension, and 7/8" deep socket, torque the sparkplugs to 50% or 1/2 of the prescribed value. Verify the value with the judge prior to applying the torque.
- 9) Assemble the Ignition Leads to the Spark Plugs in cylinders #3 & #8 by hand as far as possible.
- 10) Using a 7/8" wrench on the spark plug as as a back-up, use a 3/4" wrench to seat the ignition leads installed to the spark plugs in cylinders #3 & #8. Do not apply final torque during this step.
- 11) Refer to the chart at right. Using the values provided, with a 7/8" back-up wrench installed on the spark plug, use a 40-200 in/lb 3/8" drive torque wrench, 6" 3/8" drive extension, and 3/4" 3/8" drive crows-foot to torque the ignition lead nut to 50% or 1/2 the prescribed value. Verify the value with the judge prior to applying the torque.

- END -

Instructions

TABLE 11-13. SPECIFIC TORQUE (continued)

Ref. No.	Description	Recommended Torque
	Propeller Shaft Thrust Bearing Cover Nuts.	100 to 150 lb. in.
772	Pushrod Cover Connectors.	Select to obtain 300 lb. in. minimum driving torque.
	Pushrod Cover Nuts	125 to 150 lb. in.
	Pushrod Cover Nuts (Navy Pushrod Packing Arrangement).	80 to 90 lb. in.
	Rockerbox Cover Nuts.	60 to 75 lb. in.
775	Rockershaft Cups and Nuts (Aluminum)	65 to 100 lb. in.
	Rockershaft Nuts (Steel)	200 to 250 lb. in.
	Spark Plugs.	300 to 360 lb. in.
	Spark Plug Lead Coupling 5/8 - 24 Thread	100 to 120 lb. in.
	3/4 - 20 Thread	140 to 180 lb. in.
771	Starter and Starter Cover Nuts (Two Top Nuts Only).	175 to 200 lb. in.
	Collector Intermediate Gearshaft Nut.	600 to 675 lb. in.
	Valve Adjusting Screw Locknuts	300 to 350 lb. in.
	Valve Rockershaft Nut.	Tighten nut only snug against bushing; then tighten to next cotterpin slot.
	Impeller Shaft Front Nut - P/N 5453 or P/N 34749.	350 lb. in. plus enough for pinning, not to exceed 600 lb. in.

Publically Released Data

Judging Criteria & Penalties:

- If a team does not attempt to complete the task, or abandons the task while in process
- Not wearing safety glasses while performing the task
- Settings on torque wrenches not validated by judge before use
- Failure to use back-up wrenches properly to apply counter-torque
- Failure to check the gap of the removed spark plugs and report findings to judge
- Failure to have judge verify set gap on new plugs to be installed
- Task not fully completed when time is up
- Failure to use acceptable methods per FAA AC 43.13-1B
- Dropping a tool while performing the task