

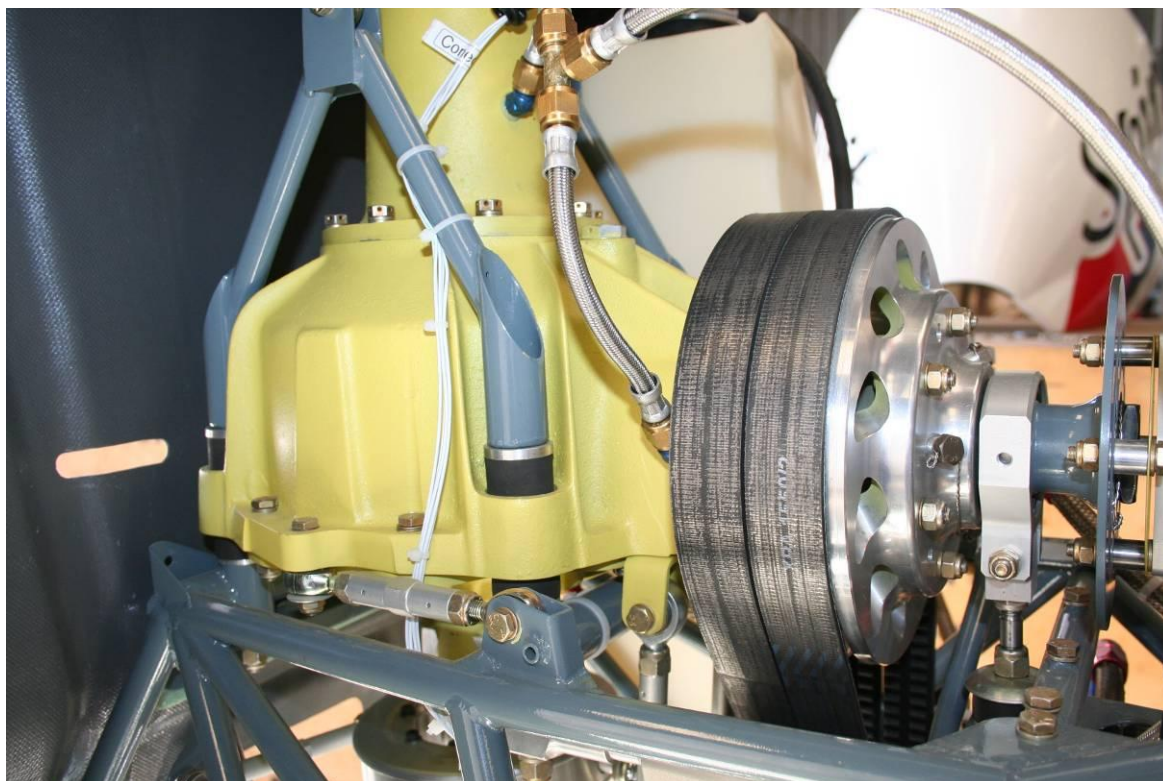
## Phase 4: Main Rotor Gearbox installation

---

Some of the necessary parts required to assemble the Main Rotor Gearbox and its installation to the airframe are easily identified when unpacking from the shipping crate. Small parts are in cardboard box 12, 13, 14, 15 and the bolts, nuts and washers are shrink wrapped in box 18.

**Note:** read the construction phase carefully as some parts may already be assembled to assist shipping.

### MRGB image






## Phase 4: Main Rotor Gearbox installation

### Parts and other components

PARTS	DESCRIPTION	CODE	QTY.	PACK
	Rear Transversal Airframe Support	CH6B_01.054.0.0	1	14
	Cabin Support	CH6B_01.064.0.0	1	13
	Forward Tension Shaft Housing	CH6B_04.019.0.0	1	12
	Main Gearbox	CH6B_06.000.0.0	1	2
	Anti Torque Link Tube	CH6B_06.031.0.0	2	15
	Main Gearbox Articulation Support	CH6B_06.037.0.0	2	15
	Engine Top Attach Bracket	CH6B_06.038.0.0	1	15
	Main Gearbox Spigot	CH6B_06.042.1.0	4	12
	Main Gearbox Rubber Bushing	CH6B_06.042.2.0	10	12
	Lower Main Gearbox Mount Washer	CH6B_06.042.3.0	4	1
	Intermediate Main Gearbox Mount Washer	CH6B_06.042.4.0	4	1

## Phase 4: Main Rotor Gearbox installation

	Upper Main Gearbox Mount Washer	CH6B_06.042.5.0	4	12
	Special Washer	CH6B_13.001.0.0	2	18
	V-Belt	4T0215502	2	12

TOTAL PHASE 4 PARTS: 39

### Necessary tools

- Wrench 9/16 inch
- Wrench 1/2 inch
- Wrench 7/16 inch
- Torque wrench 1,5 to 5 Nm and 5 to 30 Nm
- Vernier calliper – 150 mm

### Other necessary elements

- Safety lock wire – 0.032

**CAUTION**

Where there is no torque indicated, nuts must be torqued to standard torque. A minimum of two threads should be always visible.

### Assembly order

#### Step 1- Installation of the Main Rotor Gearbox to the Airframe

Install the Main Rotor Gearbox parts in the order as shown in Fig.1.

Before installing the MRGB, the Engine Top Attach Bracket must be installed to the rear underside of the MRGB with two MS20074-04-05 bolts and washers AN960-416, and then the bolts lock wired.

**CAUTION**

Do not over torque these bolts in the aluminium housing as you may then strip the thread and damage your Gearbox.

## Phase 4: Main Rotor Gearbox installation

**CAUTION**

Place the transmission V-Belts on the MRGB Pulley when advised below.

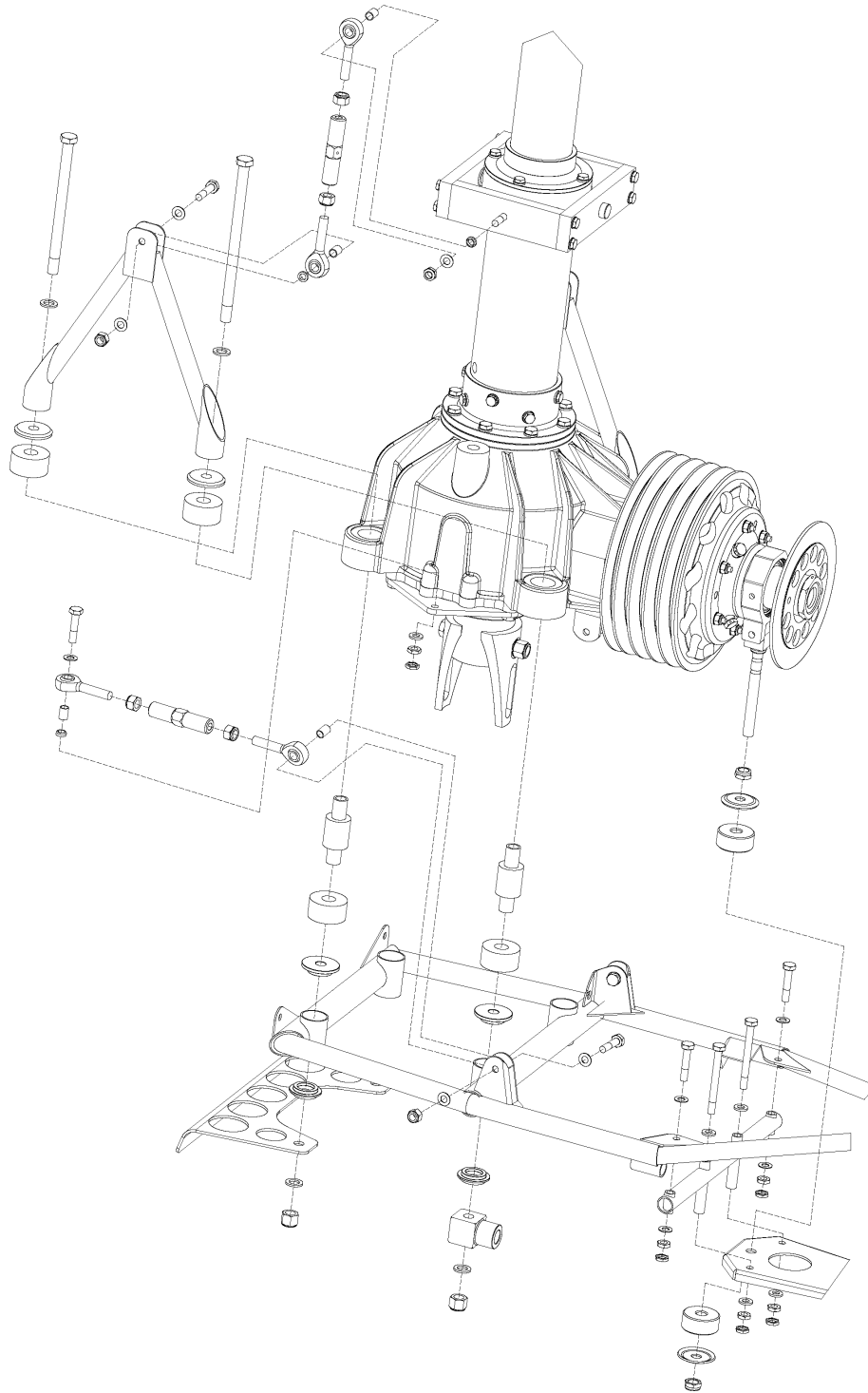


Fig. 1

## Phase 4: Main Rotor Gearbox installation

---

If required, installation of the MRGB starts by fitting the Lower and Intermediate MRGB Mount Washers to the Airframe.

Then fit a MRGB Rubber Bushing on each of the MRGB spigots and sit them on the Intermediate MRGB Mount Washers and then carefully lower the MRGB onto them.

**CAUTION**

Be careful not to scratch or damage the swash plate when lowering the MRGB onto the spigots.

Now fit the top MRGB Rubber Bushing onto the spigots followed by the top MRGB washers (taper up).

Fit the AN6 bolts and 616L washers into the two MRGB Articulation Supports and then gently slide the bolts through the MRGB spigots – noting that the Left Rear bolt is longer than the other three as it retains the intermediate transmission tension shaft front retainer.

Install the Cabin Support in the front part of MRGB.

The order of anchoring the front and right rear (no cabin support at the rear) part of the MRGB front top to bottom is:

- A- Bolt AN6-51A
- B- Washer AN960-616L
- C- MRGB Articulation Support
- D- Upper MRGB Mount Washer
- E- Main Gearbox Rubber Bushing
- F- MRGB Spigot
- G- Main Gearbox Rubber Bushing
- H- Intermediate MRGB Mount Washer
- I- Airframe Support
- J- Lower MRGB Mount Washer
- K- Cabin Support
- L- Washer AN960-616
- M- Washer AN960-616 (If required)
- N- Nut AN365-624

In the left rear corner of MRGB the sequence is repeated but using a longer bolt (bolt AN6-61A). Here is where Forward Tension Shaft Housing is located.

Locate the intermediate transmission and photograph or note the spacer locations before carefully removing the tension shaft.

Fit the front tension shaft support to the AN6 Bolt and hand fit the washer and lock nut.

After checking for lack of burrs, weld bubbles or extra paint in the rear support for the tension shaft on the main frame, lightly lubricate the tension shaft with oil and slide it from back to front through the airframe support to the front support on the AN6 bolt until it touches the bolt.

## Phase 4: Main Rotor Gearbox installation

---

The front support is now aligned with the shaft for when the intermediate transmission is fitted at a later time.

Torque the nut on the AN6 bolt.

Carefully remove the tension shaft by placing a Phillips screwdriver or similar in the hole provided at the rear of the tension shaft. Carefully place the tension shaft with the intermediate transmission and store in a safe location.

### Bolt tightening

Apply a torque of 26 Nm to the nuts of the AN6 MRGB bolts.

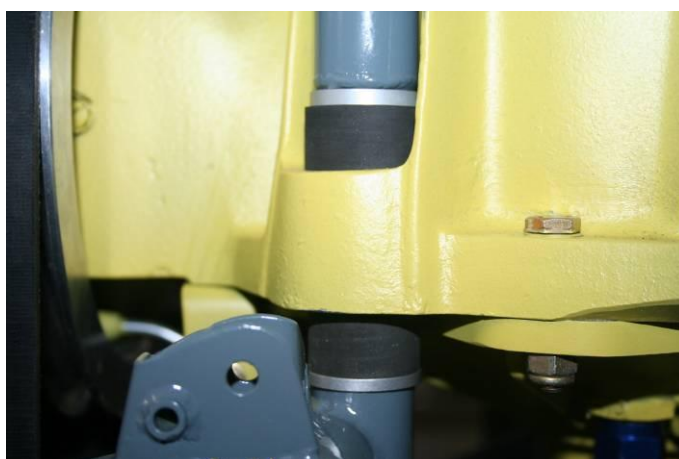


Fig. 2

### **Step 2- Installation of Rear Transversal Airframe Support (01.054) to the Airframe**

Before installation of the rear Transversal Airframe Support to the airframe, fit the V-Belts on the top pulley.

Fit the support as shown in Fig xxx fixed to the Airframe by two bolts AN4-14A, washers AN960-416, nuts AN315-4R and locknuts PAL MS27151-13.

### Bolt tightening

Apply a torque of 7,8 Nm on the nuts of the attach bolts of the Rear Transversal Support, thereafter apply a torque between 1,5 and 3 Nm to the security Pal nut.



## Phase 4: Main Rotor Gearbox installation

---

### Step 3- Installation of the Main Gearbox Rear Support and link to the Transversal Airframe Support

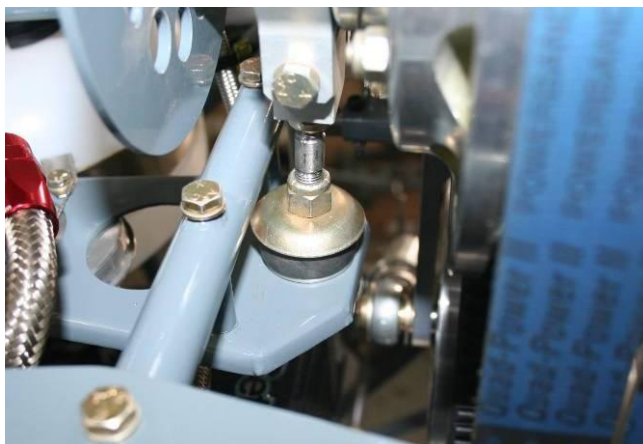


Fig. 3

Remember in Step 3 of Phase 2 that the MRGB Rear Support was attached to the rear of the Airframe.

The front part of MRGB Rear Support should be fixed to the Rear Transversal Airframe Support using two bolts AN4-23A, washers AN960-416, nuts AN315-4R and PAL locknuts.

When placing the AN4-23A bolts don't forget to also insert the Stud of MRGB Rear Bearing Housing into MRGB Rear Support.

- A- Nut AN364-624
- B- Washer AN960-616L
- C- Special Washer
- D- Main Gearbox Rubber Bushing
- E- Main Gearbox Rear Support
- F- Main Gearbox Rubber Bushing
- G- Special Washer
- H- Washer AN960-616L
- I- Nut AN364-624

Tighten the fixing nut of the stud until you observe at least three threads on the underneath side – but adjust the top or bottom lock nuts so that you do not compress the rubbers more than one thread as the rubbers are designed to compress either top or bottom when the MR shaft tilts slightly back and forwards.

**CAUTION**

If the rubbers are manually compressed more than one thread, vibration can occur in the helicopter. Over tightening of the bolt could also produce a misalignment of Tail Rotor Drive Shaft during operation.

## Phase 4: Main Rotor Gearbox installation

---

Once the stud/rubbers are tightened to the correct rubber compression, make sure that angle between MRGB Mast and the tail boom is approximately 90°. Adjust both the rubber compression lock nuts up or down if alignment is required.

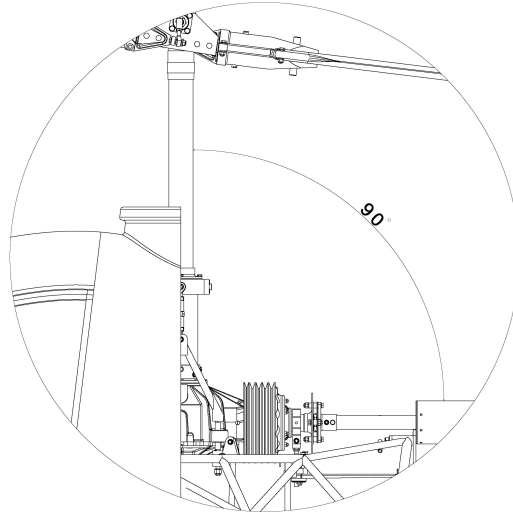


Fig. 4

### Step 4- Assembly and installation of the Bearing Link Tubes between the Upper Main Gearbox Support and the Main Gearbox Articulation Support



Fig. 5

If required, fit rod ends MM5T (right hand thread) and MB5T (left hand thread) in both ends of the Link Tubes and install the tubes as detailed below:

The distance between the centres of rod ends is approx 126 mm



## **Phase 4: Main Rotor Gearbox installation**

---

### Upper Main Gearbox Support

The order inside-out is:

- A- Bolt AN4-14A
- B- Washer AN960-416L
- C- Upper Main Gearbox Support
- D- Washer AN960-416
- E- Rod end spacer
- F- Rod end MM5T with ¼ bushing
- G- Washer AN960-416L
- H- Nut AN364-428A

### Bolt tightening

Apply a torque of 4 Nm to the attach bolts of the upper Main Gearbox support.

### Main Gearbox Articulation Support

The order outside-in is:

- A- Bolt AN4-12A
- B- Washer AN960-416
- C- Main Gearbox Articulation Support
- D- Washer AN960-416
- E- Rod end spacer
- F- Rod end MB5T with ¼ bushing
- G- Main Gearbox Articulation Support
- H- Washer AN960-416
- I- Nut AN365-428A

### Bolt tightening

Apply a torque of 7,8 Nm to the nuts of the bolts of the pylon support.

## Phase 4: Main Rotor Gearbox installation

---

### Step 5- Assembly and installation of MRGB Anti Torque Link Tubes



Fig. 6

If required, fit the rod end MM5T (right hand thread) and MB5T (left) into the ends of both Anti Torque Link Tubes and install them as detailed below.

The distance between centres of the rod ends must be approx 118 mm.

**NOTE**

Occasionally, the torque link tubes need adjusting to fit correctly. Fit the torque link tubes using the sequence below with both tube lock nuts loosened. Fit the bolt to the MRGB first. Lengthen or shorten a tube by turning the tube so that the bolt fit easily into the airframe fitting and then gently tighten the tube so that the rod ends have enough load that they do not swivel. Use a Vernier calliper to ensure that both torque link tubes are approx the same length when installed.

Fit the Link Tube to the MRGB top-down:

- A- Bolt AN4-14A
- B- Washer AN960-416L
- C- MRGB Anti Torque Plate
- D- Washer AN960-416
- E- Rod end MM5T with ¼ bushing
- F- Special Countersunk Washer
- G- Washer AN960-416
- H- Nut AN315-4R
- I- PAL nut

## Phase 4: Main Rotor Gearbox installation

---

Link Tube attachment to Airframe outside-in:

- A- Bolt AN4-10A
- B- Washer AN960-416L
- C- Airframe
- D- Rod end MB5T with  $\frac{1}{4}$  brushing
- E- Airframe
- F- Washer AN960-416
- G- Nut AN315-4R
- H- PAL nut

### Bolts tightening

Apply torque of 7,8 Nm to the nuts of the fixing bolts of anti torque MRGB link and the side of Airframe, thereafter apply a torque of 1,5 to 3 Nm to the security Pal nut.