INSTRUCTION MANUAL NO 801

1050/4000 SEAT TYPE PARACHUTE ASSEMBLY

(MRI GQ 1528)

ISSUE 2 **MARCH 2001**

AMENDMENT RECORD

1 All amendments to text and figures of this manual are to be recorded below.

2 All new material inserted by amendment action will be signified by insertion triangles (ie > New Material <) indicating the amended text or figure.

3 The page holding the amended material will be marked with the Amendment Number in the bottom left hand corner.

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LEADING PARTICULARS

Part No .....MRI GQ 1428
Canopy flying diameter ..... 5.8 m (19.02 ft)
Max all up weight .....127 kg (280 lb)
Max deployment speed.....180 KTAS
Max opening altitude .....3658 m (1200 ft) ASL
Rate of descent:
127 kg (280 lb).....6.6 m/s (21.6 fps)
Forward speed:
All up weight 127 kg (280 lb) .....3.0 m/s (9.8 fps)
Deployment time 127 kg (280 lb) @ 180 KTAS ..... 1.98 secs
Rate of turn 360 deg .....10 secs
Packed dimensions .....35 x 41 15 cm
Approximate weight .....8.0 kg (17.8 lb)

INTRODUCTION

1 The GQ 1050/4000 Parachute Assembly, is a lightweight seat type emergency assembly, designed for use by pilots and aircrew of fixed wing aircraft. The Aeroconical T4000 canopy is designed to give a smooth controlled inflation at high air speeds. The assembly is limited to use by persons up to 127 kg (280 lb) fully equipped and speeds up to 180 KTAS up to 3658 m (12000 ft) ASL.

NOTE

RE-PACKING THIS ASSEMBLY MUST BE UNDERTAKEN BY A CERTIFIED RIGGER.

2 The assembly components are listed in Table 1 and described in the following paragraphs.

TABLE 1 LIST OF COMPONENT PARTS

GQ Drg	Nomenclature	Qty
MRI GQ 1528	Parachute assembly complete	1
MRI GQ 1526	Container and harness	1
MRI GQ 1492	Parachute Aeroconical T4000 (c/w diaper)	1
GQ D 18656	Pilot chute	1
GQ D 18716	Connecting line	1
GQ D 32057	Ripcord	1
GQ D 32090	Closure loop	1
GQ D 30133	Kicker plate	1
GQ D 30769	Toggle steering	2

CANOPY

3 The canopy used in this assembly is the T4000 Aeroconical. It has 20 gores and lines and is block constructed in 1.1 oz nylon ripstop fabric calendered to a porosity of 0 cfm in the upper 3 panels whilst the lower 2 panels have a strength braided nylon. The canopy is constructed with two mesh covered vents to the rear which provide forward drive and turn control via toggles positioned on the rear lift webs.

PILOT CHUTE

4 The pilot chute is a 91 cm diameter, 8 gore, MA1 vane Type, coil spring activated. The spring is rated at 35 lb when compressed to a 25 mm height. The spring cap is equipped with a positioning retaining strop.

PILOT CHUTE CONNECTING LINE

5 The pilot chute connecting line is constructed of 14 mm, 1500 lb tensile strength tubular nylon webbing and connects the pilot chute to the canopy vent lines.

Figure 1 GQ Type 1050/4000 Parachute Assembly

HARNESS AND LIFT WEBS

6 The harness and lift webs are constructed from abrasion resistant 6000 lb tensile strength nylon webbing to PIA-W-27265 Type VII. The adjustable V rings, ejector snap hooks and sliding bar adapters conform to military standards. The harness is integral with the container.

CONTAINER

7 The container is a conventional Seat Type, constructed in cordura nylon fabric and is 35 cm long, 41 cm wide, with a maximum thickness of 15 cm. The size of the container is maintained by the side flap design, which in conjunction with the twin ripcord pins and the single closure loop, which passes completely through the container to retain the pilot parachute in its compressed state.

BACK PAD

8 User comfort is assured by the 6 mm foam padding which is incorporated in the back pad.

PRINCIPLES OF OPERATION

9 The GQ Type 1050/4000 Seat Type Parachute Assembly is a conventional ripcord operated, pilot chute deployed parachute system.

CLEARING THE AIRCRAFT

10 There are no simple rules for jumping clear of a disabled aircraft. The one basic rule is:

ENSURE THAT YOU ARE ABSOLUTELY CLEAR OF THE AIRCRAFT STRUCTURE BEFORE PULLING THE RIPCORD.

Practice climbing out of your aircraft with your parachute on whilst on the ground. Check out obstructions and items of equipment that may snag you or your parachute, remember to avoid them when an actual emergency arises.

Exit sequence

11 Carry out the following sequence of events:

11.1 Release your safety belt and shoulder harness.

11.2 Disconnect or remove headsets, microphones, oxygen.

11.3 Look to the left body panel and locate the ripcord (become familiar with ripcord location on the ground).

Pulling the ripcord

12 Having cleared the aircraft, immediately grasp the ripcord handle with the right hand. With a hard, quick pull, clear the ripcord from its stowage pocket as far as possible. The pilot chute will then be released. Approximately 2 seconds after the ripcord is pulled, the canopy will be fully inflated. You are now in your descent phase.

STEERING

13 The GQ Type 1050/4000 Seat Type Parachute Assembly is fully steerable. Steering is accomplished by pulling down on toggles positioned on the rear risers. Pulling down on the right toggle will cause the canopy to turn right. Conversely, pulling down on the left toggle, the canopy turns left.

LANDING

14 In preparing to land, FACE INTO THE WIND, to reduce your forward speed, for different types of landings proceed as follows:

Normal landing

15 Put your feet together and slightly flex your knees. Land on the balls of your feet, relax and go with the parachute, rolling with the landing. Remove the harness.

High winds

16 Re-emphasize FACE INTO THE WIND to reduce ground speed to a minimum. After landing, if you are able to stand up, run around to the downwind side of the canopy, thus deflating it. If you are unable to stand and are being dragged by the parachute, you should first roll over onto your back so that the container will act as protection. After rolling over, reach up and grasp the left capewell outer cover with the left hand and the right capewell outer cover with the right hand. Pull down to release both covers simultaneously. The release wires are now exposed. Place the left thumb through the release wire of the left capewell and the right thumb through the release wire of the right capewell. Pull down the release wires simultaneously to jettison the canopy.

Water landing

17 Since your landing area cannot be pre-determined, it is always a good idea to wear flotation equipment. The type that is gas inflated with a manual overide is recommended. If you cannot successfully steer your canopy away from a water hazard, you should attempt inflation of your flotation equipment high enough to allow for manual inflation should the gas cartridge fail. Your landing position should be as described in para 16. The water may be shallow causing you to strike the bottom so you should be prepared. After landing, disconnect the chest strap and leg straps and slip out of the harness. Swim or paddle on the flotation equipment to the nearest shore.

NOTE

When using a vest type lifepreserver, care must be taken to ensure the lifepreserver lobes are clear of the parachute harness. The use of vest type flotation equipment that is worn under the harness is NOT recommended as its inflation under the harness could cause serious injury.

TABLE 2 LIST OF PACKING MATERIALS

GQ Drg No/Part No	Nomenclature	Qty
GQ D 30727	Elastic band 51 x 13 mm (2 x 0.5 in)	A/R
BSF58/60/2/3	Scarlet locking thread	A/R
GQ MS 572	Tape white adhesive 25 mm (1 in)	A/R
GQ MS 1870	Thread linen No 18	A/R
GQ MS 462	Loctite superfast 241	A/R

ATTACHING THE CONNECTING LINE AND PILOT CHUTE

18 To attach the connecting line and pilot chute proceed as follows:

18.1 Attach the 64 mm (2.5 in) cord loop attached round the apex lines over the packing table hook.

18.2 Arrange the canopy to lay with No 1 gore uppermost, trace No 1 gore main seam tape from the canopy periphery to the apex. Count off lines 1 to 10 and ensure the 64 mm (2.5 in) cord loop is passing round these lines.

18.3 Pass the small loop of the connecting line round the 10 lines then pass the large loop through the small loop, pull up tight to form a larkshead knot.

18.4 Pass the large loop through the pilot chute and then pass the pilot chute through the large loop, pull up tight to form a larkshead knot.

18.5 At a point 64 mm (2.5 in) from the pilot chute eye pass a stitch of doubled No 18 linen thread through the connecting line loop, tie off the ends of thread with a reef knot and thumb knot (Fig 2).

PREPARING THE DIAPER

19 To prepare the diaper proceed as follows:

19.1 Attach 51 x 13 mm (2 x 0.5 in) elastic bands to each of the webbing tape loops (16 total) attach a further band to the two right and left hand lower loops. Attach two further bands to the two small eyelets ensuring that they are positioned to the side of the flap and not to the lower edge of the diaper (Fig 3).

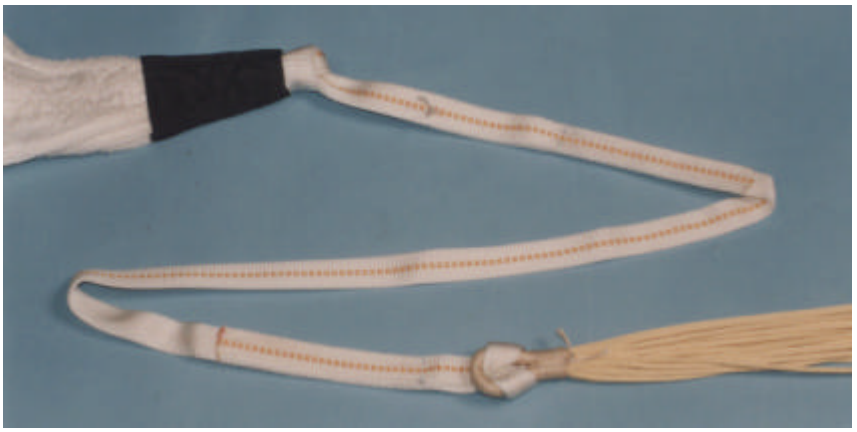


Figure 2 Attaching the connecting line and pilot chute

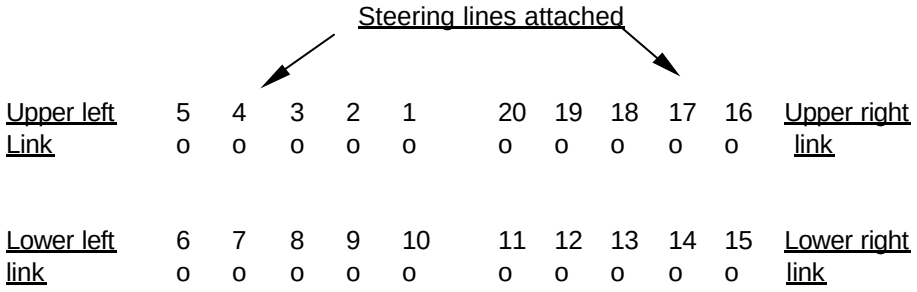
Figure 3 Preparing the diaper

RIGGING LINE CHECK (Fig 4)

20 To carry out a rigging line check, refer to Fig 4 and proceed as follows:

20.1 Ensure that the rigging lines and steering lines are free of twists and entanglements. Carry out a rigging line check, at the attachment links select lines No 1 and 20 positioned at the inside edge of the upper pair of links and lines No 10 and 11 positioned inside edge at the lower pair of links (Fig 4). Trace all four lines from the links to the canopy periphery and ensure they are running clear.

20.2 Ensure each link securing screw is fully tightened if loose or if the links have been replaced the screw threads are to be treated with Loctite on re-assembly.



NOTES

(1) As seen looking towards the canopy periphery.

(2) Ensure that each link is fitted with the rounded shoulder on the inside of each riser.

Figure 4 Rigging line sequence

NOTE

The following directions relate to the viewpoint of the packer standing on the left hand side of the table and looking over the assembly from the pack and harness towards the canopy apex

SECURING THE TOGGLES TO THE RISERS (Fig 5)

21 Red thread tie the toggles to the risers by laying the toggles on the riser web then pass a needle with a single length of red thread through a single thickness of handle on the inboard edge then through the riser, tie off with a reef knot and a thumb knot (Fig 5).

Figure 5 Securing toggles to risers

FOLDING THE CANOPY

22 To fold the canopy refer to fig 6 to 8 and proceed as follows:

22.1 Separate the gores into their respective half sets, with No 1 to 10 on the left and No 11 to 20 on the right.

22.2 With rigging lines 1 to 10 in the left hand and 20 to 11 in the right hand throw the right hand group of lines over the left. Place No 10 line onto the table and commence folding the right hand half of the canopy by placing No 11 line onto No 10, continue folding in sequence until all gores are folded with No 20 gore on top. Straighten all the folded gores from the folded periphery to the apex and place shot bags at intervals along the gores to retain the folds in position.

22.3 To fold the left hand gores, hold the rigging lines of the folded gores Nos 20 to 10 in the right hand and the group of lines 1 to 9 in the left hand. Throw the left hand group over the right hand group, commence folding the left hand of the canopy by placing No 9 rigging line onto No 10 continue in sequence until all gores have been folded with No 1 gore on top. Straighten the folded gores from periphery to apex and place shot bags at intervals along the gores to retain the folds in position.

22.4 Fold the bottom corner of each half set upwards and inwards at 45 degrees so that the hem folds are aligned with the central seam, as shown in fig 6.

22.5 Fold over the side edges of the canopy approximately 152 mm (6 in) over a length of 1.2 m (4 ft) up the canopy tapering of towards the apex (fig 6).

22.6 Fold the whole length of the right hand half set inwards just over the central seam (fig 7) and bring the folded left hand panels across to the right hand outer edge (fig 8).

Figure 6 Folding the canopy : stage 1

Figure 7 Folding the canopy : stage 2

Figure 8 Canopy folded

CLOSING THE DIAPER AND STOWING THE RIGGING LINES (fig 9 and 10)

23 To close the diaper and stow the rigging lines refer to fig 9 and 10 and proceed as follows:

23.1 Fold over the diaper closure flap and position the grouped rigging lines to run centrally over the diaper closure flap.

NOTE

When forming the diaper mouthlock and stowing the rigging lines, ensure that the bights of lines protrude through the elastic bands approximately 32 mm (1.25 in) and that the outgoing lines from each stowage band emerge from each band towards the container.

23.2 Pass the elastic bands attached to the eyelets on the diaper through their corresponding eyelets. Form the diaper mouthlock by first inserting a bight of rigging lines through the top right hand elastic band (fig 9), insert a second bight through the top left hand elastic band (fig 9) this forms the mouthlock and secures the diaper.

23.3 Continue stowing the lines into the elastic bands until all bands are filled. Ensure that 305 mm (12 in) of lines remains unstowed. In order to achieve this, one elastic band may be left unstowed. Should this be the case, remove the unused elastic band. Fig 10 shows all the rigging lines stowed.

Figure 9 Forming the diaper mouthlock

Figure 10 Diaper closed rigging lines stowed

POSITIONING RISERS IN COVERS (fig 11)

24 To position risers into the covers refer to fig 11 and proceed as follows:

24.1 Ensure the pack and harness are positioned onto the packing table with the harness to the table and the open pack facing up.

24.2 Lay the paired risers down the two outer edges of the back pad then bring over the riser cover flap encompassing the risers and secure the touch and close fastener in position (fig 11).

Figure 11 Riser covers secured

PREPARING THE PACK (Fig 12)

25 Fit the closure loop to the base of the pack as follows:

25.1 Fold the backpad underneath the parachute container. At the handle end of the pack, locate the opening to gain access to the inside of the pack base.

25.2 Pass one of the ends of the closure loop between the foam and the board, up through one of the two eyelets in the base of the pack, then pass the other end up through the second eyelet.

25.3 Attach a pull-up cord to each end of the loop. Fig 12 shows the closure loop installed and pull-up cords fitted.

Figure 12 Fitting the closure loop

STOWING THE CANOPY (fig 13 to 18)

26 To stow the canopy, refer to fig 13 to 18 and proceed as follows:

26.1 Lift the diaper over onto the pack and position it against the bottom wall as shown in fig 13. Lay the two pairs of risers alongside the right and left flaps, positioning the pull-up cord inboard of the risers and behind the mouthlock on the diaper.

Figure 13 Risers and diaper positioned in pack

NOTE

All folds must be the same length or depth of the pack.

26.2 Form the first fold in the canopy positioning it in the bottom left hand corner of the pack (fig 14). Ensuring the closure loop is kept in board of the fold as shown in fig 14.

Figure 14 Stowing the canopy : stage 1

26.3 The second fold is made by positioning the canopy from the top left hand corner, taking it down to the bottom left hand corner, bringing the pull-up cord back over the folds of the canopy (fig 15).

26.4 Make a fold in the canopy across the pack from the bottom left hand corner to the bottom right hand corner (across the top of the diaper) (fig 15). Carry the folded canopy from the bottom right hand corner to the top right hand corner ensuring the closure loop is inboard of this fold as shown in fig 15.

Figure 15 Stowing the canopy : stage 2

26.5 Make a fold from the top right hand corner to the bottom right hand corner (fig 16).

Figure 16 Stowing the canopy : stage 3

26.6 Make a further fold from the top right hand corner to the bottom right hand corner as shown in fig 17.

Figure 17 Stowing the canopy : stage 4

26.7 Position the remainder of the canopy including apex from the top right hand corner to top left hand corner, lay back the canopy bridle as shown in fig 18. Ensure the closure loops are inboard of the folds.

Figure 18 Canopy stowed

CLOSING THE PACK (fig 19 to 26)

27 To close the pack, refer to fig 19 to 26 and proceed as follows:

27.1 Pull up the canopy protection flaps located on the base of the pack and ensure they lie between the closure loop and the canopy. Pass the left hand pull-up cord through the eyelet attached to the left hand flap, then pull up the flap and insert the temporary locking pin.

27.2 Pass the right hand pull-up cord through the eyelet attached to the right hand flap ensuring that the canopy protection flaps lie between the closure loop and the canopy, then insert a temporary locking pin through the closure loop (fig 19).

Figure 19 Closing the pack : stage 1

27.3 Position the kicker plate centrally on the closed flaps as shown in fig 20 ensuring that the inner concave curvature is facing up.

27.4 Pass the right hand pull-up cord through the eyelet attached to the right hand side of the kicker plate, pull the loop of the closure loop through the eyelet and secure with temporary locking pin (fig 20).

27.5 Repeat para 27.4 to secure the left hand side of the kicker plate (fig 20).

Figure 20 Positioning the kicker plate

27.6 Coil the connecting line onto the kicker plate, then position the base of the pilot chute onto the coiled connecting line. Fold the pilot chute fabric in 'S' folds onto the connecting line, compress the pilot chute spring then pass the right hand pull-up cord through the eyelet attached to the right hand side of the crown, tuck in all loose fabric then remove the temporary locking pin and re-insert over the pilot chute eyelet.

27.7 Repeat para 27.6 for the left hand eyelet. Fig 21 shows the pilot chute stowed.

Figure 21 Pilot chute secured

27.8 Pass the two pull-up cords through the eyelets in the flap nearest the packer. Pull up the flap and remove the temporary locking pins then re-insert over the flap eyelets (fig 22).

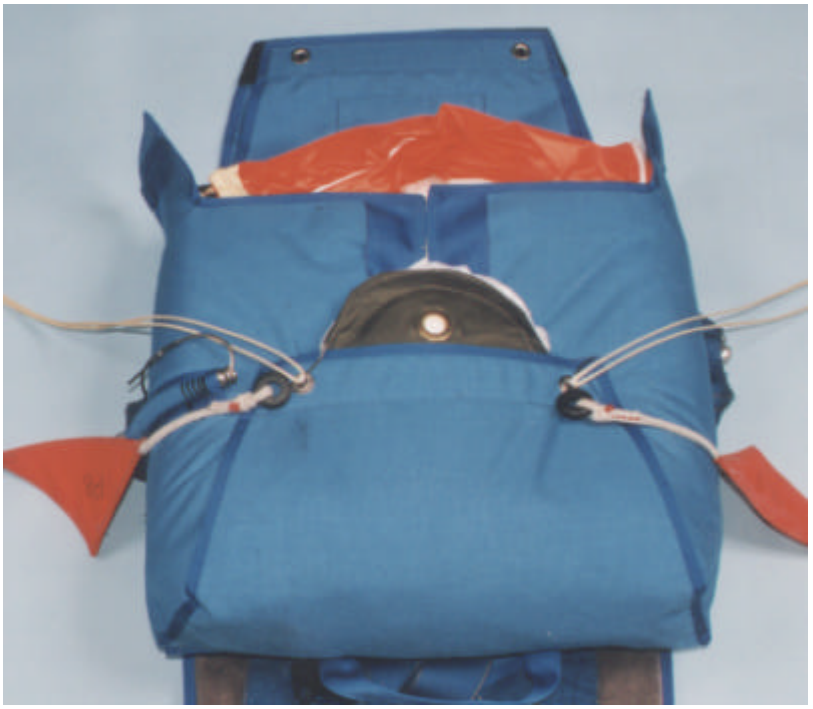


Figure 22 Closing the pack : stage 2

27.9 Finally pass the pull-up cords through the eyelets attached to the flap farthest from the packer, then pull up the flap, remove the temporary locking pins and re-insert over the flap eyelets (fig 23).

Figure 23 Closing the pack : stage 3

CAUTION ...

When finally removing the pull-up cords to ensure that the pack closure loops are not seared the following method of removal is necessary:

Pass the pull-up cord under the end of the ripcord pin, then remove the cord. By using this method when the cord is removed it will run against the ripcord pin and not the closure loop.

27.10 Pull up on the pull-up cord nearest the ripcord housing, then remove the temporary locking pin and fit the inner ripcord pin. Pull up on the second pull-up cord and remove the temporary locking pin and insert the outer ripcord pin. Remove both pull-up cords (fig 24).

Figure 24 Pack closed ripcord pins fitted

27.11 Finally fold over the ripcord protection flap and mate the touch and close fastener (fig 25).

Figure 25 Packing completed