

RotorSport UK Ltd

Service Bulletin

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SB No.: 019 issue 2	CCAR No.: None	Classification: OPTIONAL or RECOMMENDED or MANDATORY
Aircraft type & model (applicability) RotorSport UK MT-03 and MTOsport series	Aircraft serial Nos. effected RSUK/MT-03/all RSUK/MTOsport all	

Problem description & cause of problem if known

Instructors have requested that aircraft already in service can be converted for training use by fitment of rear-seat controls. This SB details the various options and how they are to be fitted to aftermarket aircraft.

Summary:

Factory-built MT-03 and MTOsport aircraft may have some or all of these items fitted under the RSD-series of part numbers:

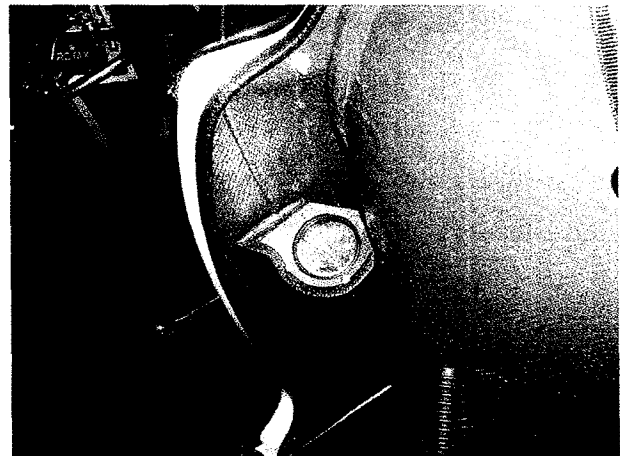
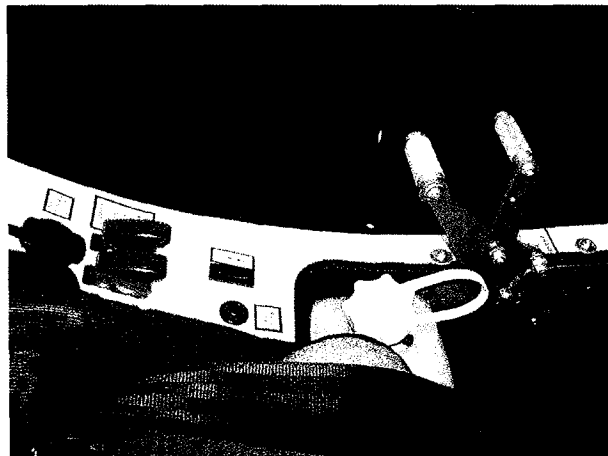
- Instructor pack 1 – rear-seat throttle only
- Instructor pack 2 – rear-seat throttle, ASI, pitch trim switch and kill switches (2)
- Instructor pack 3 – adds rear-seat brake

These packs are now offered for after-market fitment by RotorSport UK Ltd authorised engineers.

Notes:

- i) These UK-approved instructor packs are configured differently to the instructor kits supplied to the German and other markets by Auto-Gyro and described on the Auto-Gyro website. The latter kits are not approved in the UK.
- ii) To avoid confusion, any request for an aftermarket installation kit should refer to the functions as well as the kit number. Also, differing wiring harness issue levels in early MT-03 require examination and selection of the correct interface harness before installation – see “Action required to implement this bulletin – para (A)” and “Parts required to implement the Service Bulletin” later in this document
- iii) Fitment of the rear seat brake requires that the front seat brake lever be fitted with a spring, standard on all MT’s since the rear seat brake was introduced. Check before ordering, so that this may be ordered at the same time if required.

The two photographs below show a comprehensive fit in MT-03 G-YELO. The rear seat PTT button is a standard fitment on MT-03 (very early MT-03 had a switch umbilical) and MTOsport. The rear seat 12VDC power socket is an option, not part of the instructor packs.



Effective date:
08.04.10

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Action required to implement this bulletin (All MTseries aircraft):

A) Electrical switches and ASI

1. Ensure switches are OFF, and battery is isolated. Remember, part of this process will split the wiring harness plugs, which will leave the engine “magnetos” unearthed, and therefore LIVE. It is strongly recommended that Safety Plug RSD7191 is used, as described in Service Information Letter SIL-004.
2. First action - check harness for compatibility to aircraft (there are three types available). Do this by removing the six lower screws that attach the instrument panel, to get access to the rear of the panel. The Harness type can be judged by; a) white harness plugs (early type), b) a spare flylead to attach the harness to (later type), c) those without a flylead require a harness that plugs in between harness plugs. (See also “Parts required to implement the Service Bulletin” at the end of this document)
3. Connect harness into loom, and tie along LHS of the keel, adjacent to the existing harness. Ensure that it is secured in the same place as the existing harness to prevent entanglement with other controls.
4. Run the ASI tube along the rear front seat frame, ensuring no kinks. The harness continues to the rear, up the front of the left rear seat support, along in front of the front support, and then to the control fixing area.
5. Cut the holes as shown in the rear panel and fit the switches. Rivet the earth wire to the airframe (there is a spare hole adjacent).
6. Fit the rear seat ASI. The ASI is located at an angle to the ground of approx 40deg, and around 23cm from the top edge of the front seat (see photos). Offer the bracket into position, and mark out the area.
7. Drill thru the seat for the two rivets, approx 15mm apart to suit the bracket. Then mark out the bracket against those holes, and drill to suit (4mm holes). Clean the area, and pop rivet the bracket in place (washer under the rivet head).
8. Then fill the gap between the LHS of the bracket and the seat with Sikaflex EBT. When cured, fit the ASI with the screws in the box, and connect to the harness supply tube with a length of silicon sleeve. Note - fit the ASI marking before fitting the ASI! Red line is 120mph for the MTOsport, and 100mph for the MT-03. When filling with EBT, mask the area, and smooth down with a wet finger.
9. Using the T piece supplied, connect the harness ASI tube into the black ASI tube behind the instrument panel. TAKE CARE to choose the correct black tube - one is for the compressor too, and connecting to this will destroy the ASI.
10. After completion of the ASI system, confirm correct & equal function of the two ASI's using RSD7179 ASI Field Test Kit (instructions supplied with kit). If one ASI is slow to respond look for kinks in the tube.
11. Clean the composite surface with a suitable low-odour solvent (such as Amberklene LO030) and fit the remainder of the new placards to the rear seat controls as shown in the photographs below
12. Remove safety plug (if fitted) and refit panel screws securely. Confirm full pneumatic function, including from the new switch in the rear seat position. This requires Master “on”, the instrument panel selector set to “Flight” and operation of each trim switch in turn. It is essential that correct operation and sense of each switch is confirmed – in one direction (aft) the compressor will start in order to move the trim system, in the other direction (fwd) the control valve will be heard to release air.. After the test set the selector to “Brake” and turn-the Master “off”.
13. Then, in a safe area, follow normal procedures to start the engine. Turn off each of the four “Mag” switches in turn and confirm that some “mag drop” occurs with each switch. Then turn-off the engine with the front-pair and rear-pair switches independently to ensure correct “kill” function.
14. If all tests are satisfactory, enter the implementation in the logbook with authorisation number, as described on the last page of this document.

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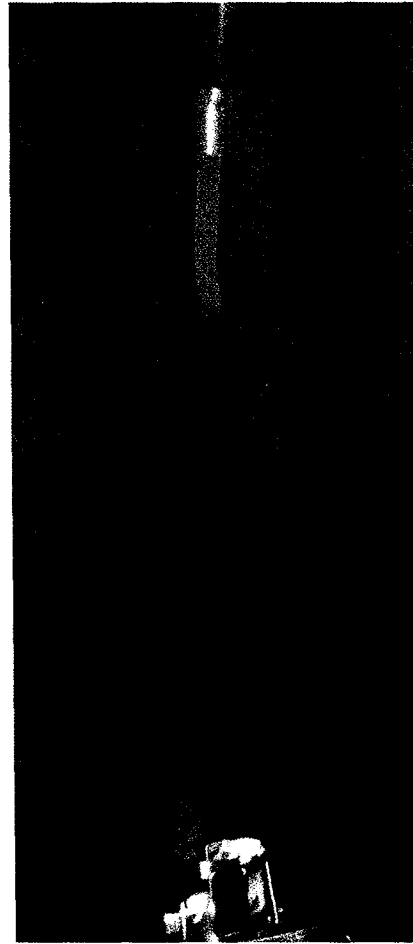
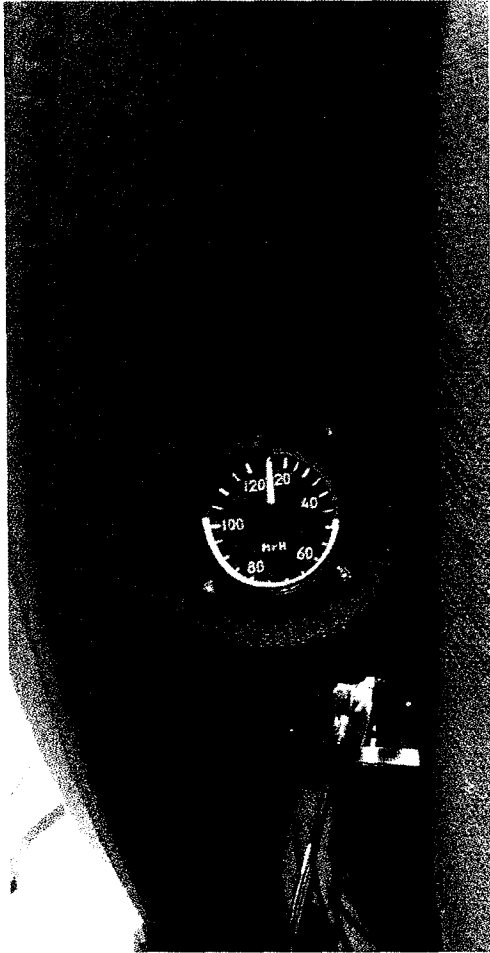
View of underside of rear seat (LHS). Harness passes at the front of the seat frame

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Installation of the rear-seat ASI, its marking, and tubing

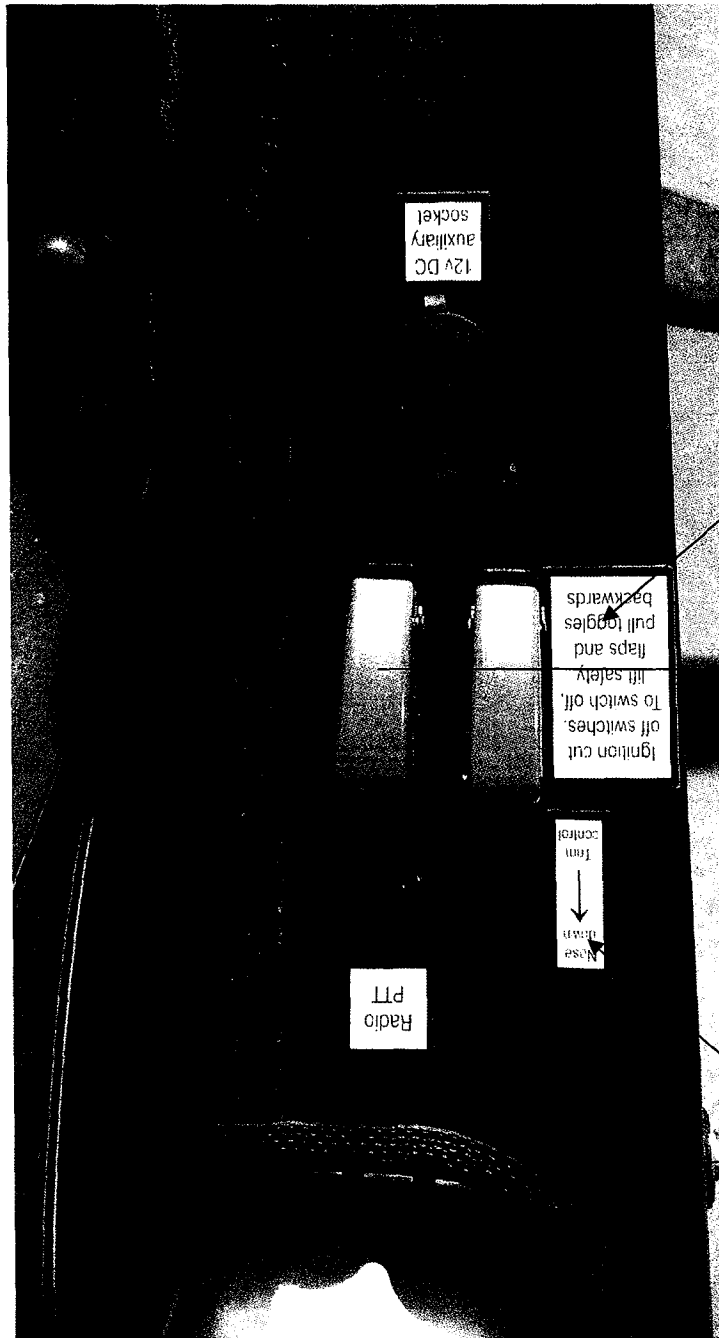
- Note that there are two different markings:
- MT-03 (identified by Vne marker at 100mph)
 - MTOsport (identified by Vne marker at 120mph)

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“Ignition”
placard to left
(i.e. outboard) of
switches

Approx 88mm
Switch centres
29mm

“Trim” placard
to left
(i.e. outboard) of
rocker switch

Installation of the switches (all holes to suit switches)

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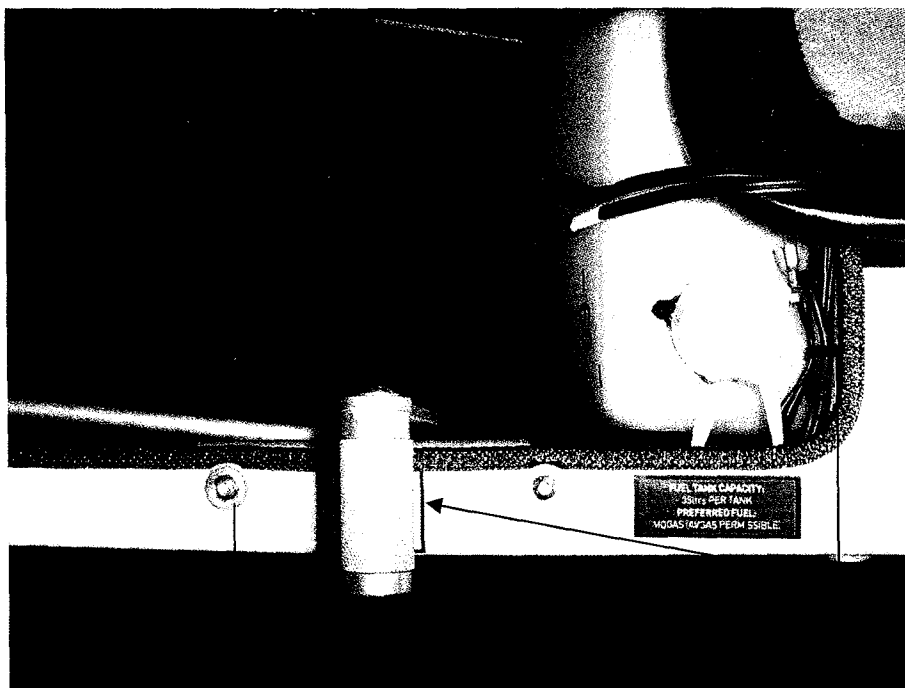
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B) Throttle

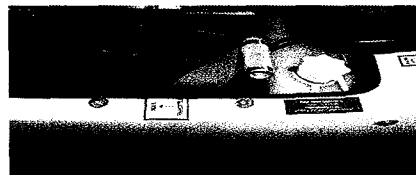
1. Mark-out and drill two 6mm holes positioned as shown below. Fit the throttle assembly to the enclosure using the M6 screws, steel washers, nylon washers and nyloc nuts supplied in the kit.



“Throttle” placard centrally between screws under throttle lever.

Distance to fwd hole 235 – 240mm
Bracket edge 2mm clear of trim strip

2. Connect the extension rod to the front throttle blade by means of the fitting supplied. If necessary adjust the rod end so that the two throttle blades are at roughly the same angle. Tighten locknuts after!
3. Operate the front throttle to its extremes and confirm that the two end-stop bolts are reached. Repeat the movement from the rear throttle and confirm that the front throttle stops are still effective.
4. Fit the new placard. For a throttle-only installation the placard is fitted centrally between the two screws. (for a combined throttle+brake installation see later)



5. In a safe area, follow normal procedures to start the engine. After warming-up confirm that the tick-over speed is correct and that throttle response is normal. Shut down the engine in the normal way
6. If all tests are satisfactory, enter the implementation in the logbook with authorisation number, as described on the last page of this document.

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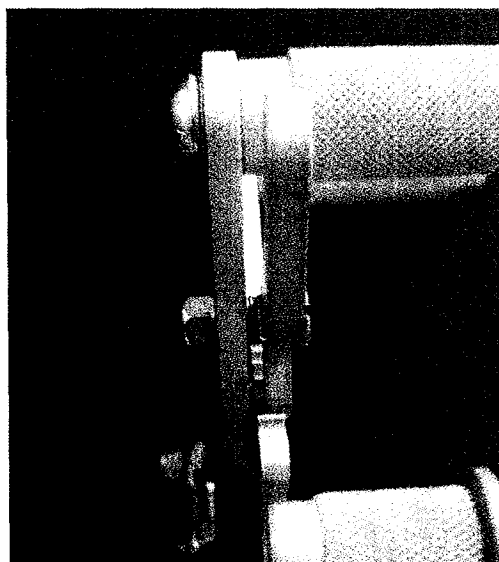
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C) Brake (it is a pre-requisite that a rear-seat throttle has been installed)

1. Check rear seat throttle blade holes are present and ready to accept brake. If not present, replace blade (part number is M.ST28.01.01). Check also that front brake lever has a spring fitted. If not, replace brake lever with new assy RSD7192 (see photo below to see spring location).



Spring

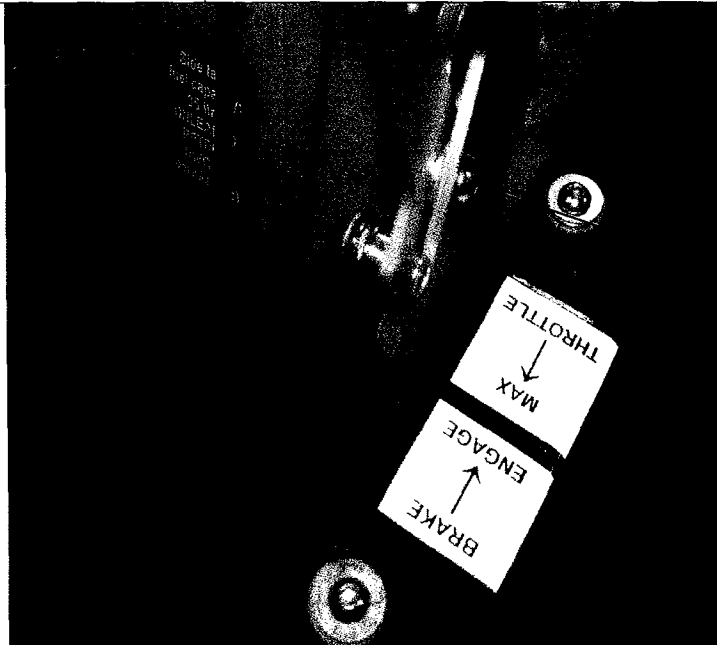
2. Assuming blade is correct, fit cable bracket to lever as shown. Then fit rear seat brake arm to lever as shown. Tighten pivot nut until there's little backlash, and still free pivot.
3. Remove lower brake cylinder bolt on throttle body, and replace with longer countersunk screw in kit (M6x35). Attach cable mount bracket as shown. NB: to improve access to the countersunk screw head temporarily remove the fwd throttle stop screw and gently push the throttle past the stop point. Replace the throttle stop screw at the earliest opportunity, with loctite 243 on the thread.
4. Remove bolt attaching cylinder eye bolt and replace with bolt from kit as shown (M6x35 dome head). Fit cable end as shown
5. Adjust cable so that front brake lever can reach its "off" stop without interference from the rear lever cable fitting.
6. Secure cable to throttle with tie wrap. Cut off excess.
7. Fit new placards as shown below (removing the single "Throttle" placard if previously fitted).
8. With the aid of an assistant check the function of both brake levers and the front-seat parking brake by attempting to push the aircraft with the brakes both "off" and "on".
9. Verify that the throttle controls have not been disturbed by functional check as described in (B) para 3 above.
10. If all tests are satisfactory, enter the implementation in the logbook with authorisation number, as described on the last page of this document.

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Attachment to lever - dome bolt, steel washer between levers, nylon washer, plain washer and nyloc.

View of rear seat brake, supplied pre-assembled with cable attached

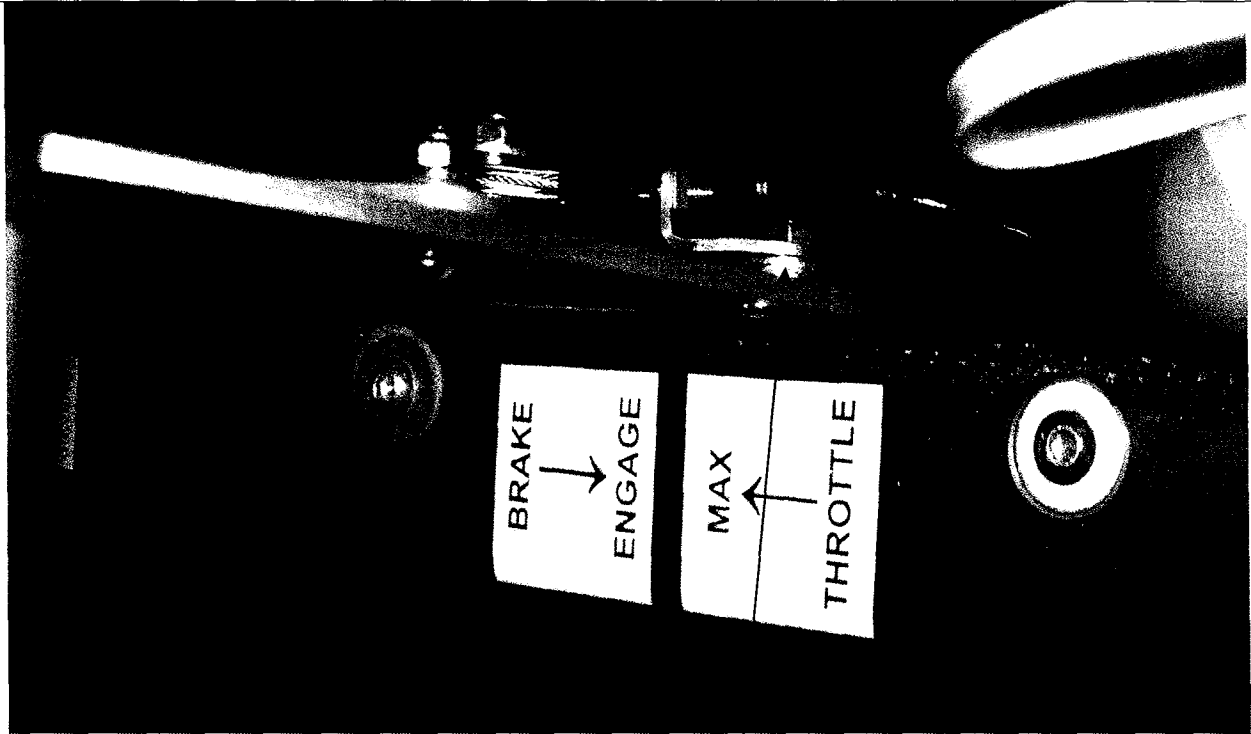
The two placards are fitted centrally between the mounting screws and to the left, (i.e. outboard) of the controls. Clean the composite surface with a suitable low-odour solvent (e.g. Amberklene LO30) prior to placing the placards.

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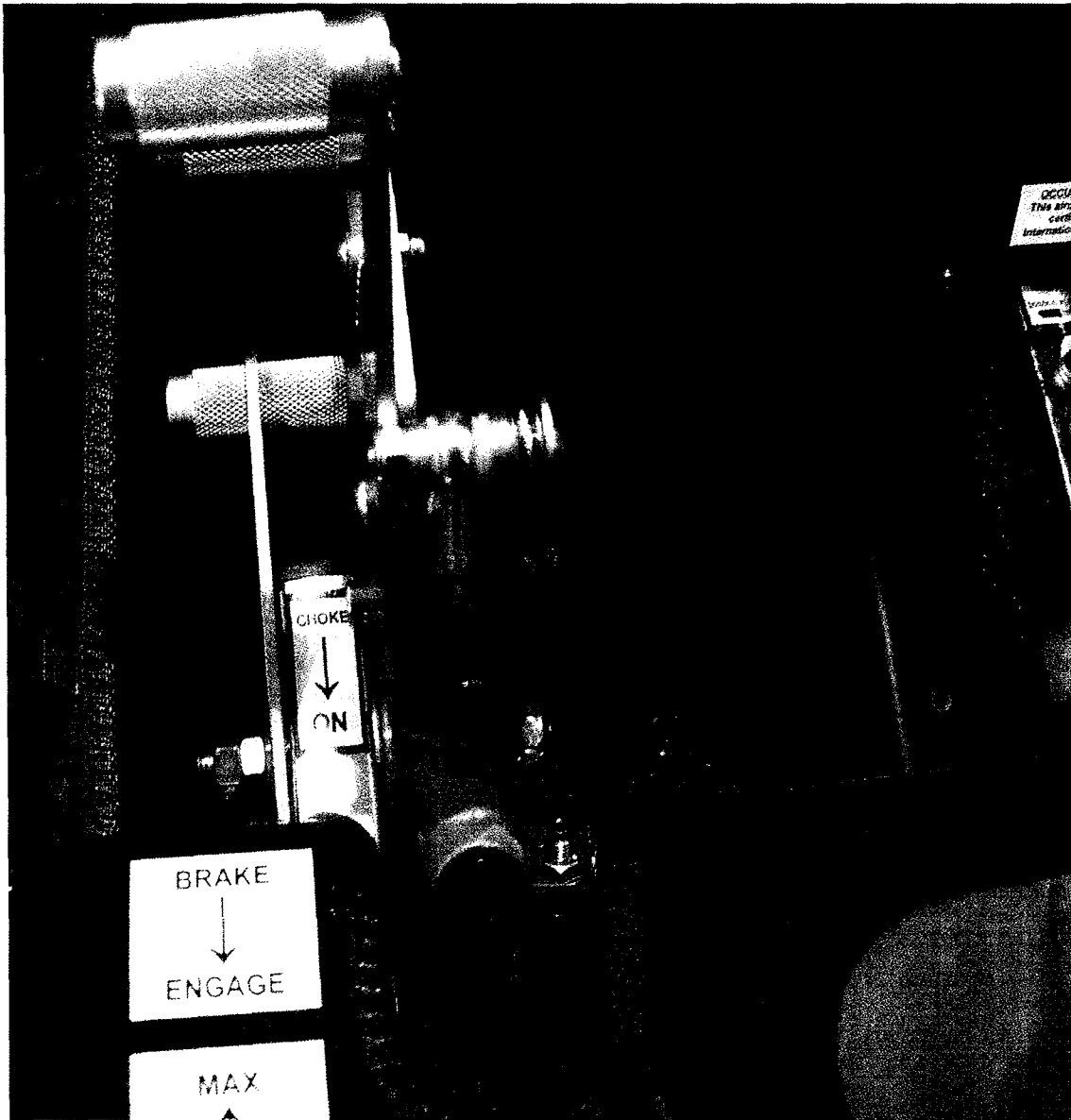
Cable mount bracket. Fitted with countersunk screw,
two plain washers, the bracket and nyloc nut

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This pivot must not be overtight, or brake lever will not fully release!

View showing connection to cylinder (front-seat controls)

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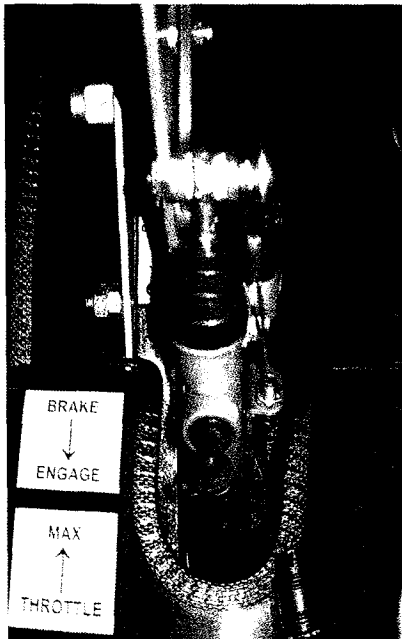
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View of cylinder with longer bolt fitted



Note! Ensure levers do not foul seat when retracted! If necessary, pull off the edge trim, cut back the seat edge, and refit the trim!

View of brake cable attachment.
plain nut on top of cylinder, two plain washers,
the bracket, and the one nyloc nut

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Parts required to implement the Service Bulletin

Early MT-03 (S/no 001-005)

- M.ST28 Rear throttle
- M.ST35 Rear ASI
- M.ST36 Rear brake
- RSD7189 Rear pitch trim/ignition (cable assembly and switches)
- Sikaflex EBT
- Loctite 243
- Cable-ties as required
- UK placards (from standard set)

Mid MT-03 (S/no 006-017)

- M.ST28 Rear throttle
- M.ST35 Rear ASI
- M.ST36 Rear brake
- RSD7190 Rear pitch trim/ignition (cable assembly and switches)
- Sikaflex EBT
- Loctite 243
- Cable-ties as required
- UK placards (from standard set)

Late MT-03 (S/no 018-onwards) and all MTOS (S/no 001-onwards)

- M.ST28 Rear Throttle
- M.ST35 Rear ASI
- M.ST36 Rear Brake
- M.EL20 Trim/ignition cable assembly and switches
- Sikaflex EBT
- Loctite 243
- Cable ties as required
- UK placards (from standard set)

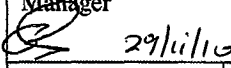
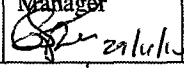
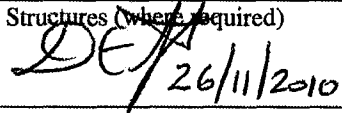
For all aircraft

- RSD7179 ASI Field-Test Kit

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Effect on Pilots Handbook or Maintenance Manual? No, other than to be noted in the next issue of the maintenance manual				
Quality Inspection requirements after action: Duplicate inspection to verify installation correct and all the functional tests described in the sections above. Issue Permit Maintenance Release Certificate (use attached worksheet, which also records the check actions taken). CAA BCAR A3-7 Authorised Person to certify that the work is completed by writing 'SB-019 Instructor Pack 1/2/3 (plus description) incorporated' in the aircraft logbook white pages, and record the action in the pink pages entitled 'Aircraft Modifications'. Both entries must be signed by the CAA Authorised Person together with their CAA Authorisation number. NB: this SB does not carry a modification number as its technical content was approved as part of the original AAN for each aircraft type				
SB authorised by: (name, signature, and date of signature)				
Quality Conformance Manager  29/11/10	Engineering Manager  29/11/10	Chief Test Pilot (if flight performance or safety effect)	Structures (where required)  26/11/2010	
Document completion date:	Issued to:	When	Issuer name	Signature
	Internal			
	CAA			
	Owners			

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Effect on Pilots Handbook or Maintenance Manual? No, other than to be noted in the next issue of the maintenance manual			
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SB authorised by: (name, signature, and date of signature)			
Quality Conformance Manager	Engineering Manager	Chief Test Pilot (if flight performance or safety effect)	Structures (where required)
Document completion date:	Issued to:	When	Signature
	Internal		
	CAA		
	Owners		

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Service Bulletin Implementation Worksheet

Aircraft serial no. Registration G-	Service Bulletin Implementation Worksheet	Date raised: Raised by:	
Purpose – record service bulletin implementation actions taken to update aircraft and return to service.		Document reference: SB-019	
Maintenance manual referred to and issue level/date:			
Note; attach SB sheets to this document			
Task	Notes	Eng'r check/date	Inspector check/date
Confirm which kits have been fitted.			
Confirm newly installed wiring harness is secure and in no danger of fretting from adjacent parts			
Confirm that ASI readings are consistent, front to back seat			
Confirm placards are fitted (as applicable): Rear seat ASI Rear seat brake Rear seat throttle Rear seat kill switches Rear seat Trim sw.			
Confirm locknuts on throttle linkage are tight			
Confirm Brake cable adjusted so that brakes do not bind, and that rear seat brake function acceptable (if fitted)			
Confirm rear seat trim sw direction of operation (front exhaust, rear pump on) and that system functions			
Confirm that front seat throttle cluster returns to idle stop without fouling the seat if the brake is fitted.			
Confirm any other nuts/bolts loosened are retightened securely.			
Confirm engine run up satisfactory, and rear seat kill switches stop engine			
Customer acceptance: Name: Signature/date:	Aircraft hobbs meter reading Confirm logbooks annotated:		
Permit Maintenance Release: The work recorded above has been completed to my satisfaction and in that respect the aircraft is considered fit for flight.			
Engineer/Inspector signature Name: CAA Authorisation code :	Date of work Location where work completed		