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Declassified E.O. 12356 Section 3.3/NND No. 785017

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10000/135/604

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10000/135/604

BALTIMORE IV & V
MAY 1947

From :- Air Headquarters, R.A.F. ITALY, C.M.P. *X*
 To :- A.P.B., I.M.A.S. Rome. (Attention W/Cdr. Grecco). *(1)*
 Date :- 15th May, 1947.
 Ref :- ARI/12096/Eng.4.

Sequence of Operation.

The attached Local Modification List No. 2060/3.
 - Baltimore, is re-directed to you for information and
 necessary action. *(10)*

Shankar

S. RATOLIFFE F/Lt.,
 Air Commodore,
 Air Officer Commanding,
 Air Headquarters, R.A.F. ITALY.

B24 11/5. 1/5. 1/5.

33/A.R.

Stamp Retained 20-5

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Forward to W/ob Thompson.

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Local Modification List No. 2066/2Baltimore.TITLE

- Installation of Target Towing apparatus with Triple Drum Winch Type B.

DESCRIPTION

- This modification provides for the installation of standard type target towing apparatus with a motorised triple drum winch Type "B".

Sequence of operation

1. Obtain or manufacture Items Nos. 1 to 22 as shown in Drgs. Nos. 2036/207, Sheets 1 to 4.
2. Remove the I.F.F. bracket situated on the starboard side of the fuselage between the rear turret armour plate and the former at Station 552.5/8.
3. Remove the lower swivel gun mountings, ammunition boxes, rear floorboards, armour plate, and the two rear fixed gun mounting brackets.
4. Remove the rear turret and ammunition boxes and the rear door latch socket.
5. Position and fit Floor Beams (Det. No.15) using eight 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts and two 2 B.A. x 0.8" M.S. bolts and Simmonds nuts for securing to the rear hatch lock casting, as shown in Drg. No.2036/207, Sheet 1.
6. Secure Strengthening Cable Brackets (Det. No.13) to floor beams using six 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts as shown, after cutting suitable slots in the fuselage skin.
7. Position and fit Pulley Assembly (Det. No.16) using six 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts as shown, removing any rivets which prevent a flush fit and utilizing the holes left to secure the pulley brackets to the fuselage.
8. Position and fit Strengthening Cables (Det. No. 14A) using eight 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts as shown.
9. Remove and modify the rear escape hatch door as shown in Drg. No. 2036/207, Sheet 2.
10. Build up the winch mounting as shown in Drg. No. 2036/207, Sheet 1, and position on the rear fixed gun mounting brackets, after removing four 1/4" diam. bolts utilising the holes left and drilling four additional 1/4" diam. holes to secure the mounting, using eight 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts.
11. Secure Front Cross Tie (Det. No.7) to the mounting and to each side of the formers at Station 552.5/8 using four 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts,

2. Remove the I.P.F. bracket situated on the starboard side of the fuselage between the rear turret armour plate and the former at Station 532.5/3.
3. Remove the lower swivel gun mountings, ammunition boxes, rear floorboards, armour plate, and the two rear fired gun mounting brackets.
4. Remove the rear turret and ammunition boxes and the rear door latch socket.
5. Position and fit Floor Beams (Det. No. 15) using eight 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts and two 2 B.A. x 0.8" M.S. bolts and Simmonds nuts for securing to the rear hatch lock casting, as shown in Drg. No. 203G/207, Sheet 1.
6. Secure Strengthening Cable Brackets (Det. No. 13) to floor beams using six 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts as shown, after cutting suitable slots in the fuselage skin.
7. Position and fit Pulley Assembly (Det. No. 16) using six 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts as shown, removing any rivets which prevent a flush fit and utilizing the holes left to secure the pulley brackets to the fuselage.
8. Position and fit Strengthening Cables (Det. No. 14A) using eight 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts as shown.
9. Remove and modify the rear escape hatch door as shown in Drg. No. 203G/207, Sheet 2.
10. Build up the main winch mounting as shown in Drg. No. 203G/207, Sheet 1, and position on the rear fixed gun mounting brackets, after removing four 1/4" diam. bolts utilising the holes left and drilling four additional 1/4" diam. holes to secure the mounting, using eight 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts.
11. Secure Front Cross Tie (Det. No. 7) to the mounting and to each side of the formers at Station 532.5/3 using four 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts, the former being stiffened by means of hard wood inserts as shown in Drg. No. 203G/207, Sheet 1.
12. Fit hard wood inserts to stiffen the channel sections at position which is the rear support of the gun mounting brackets.
13. Secure Stanchions (Det. No. 10) to the front cross tie and to the gun mounting brackets using two 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts and eight 2 B.A. x 0.3" M.S. bolts and Simmonds nuts, utilizing four existing holes in gun mounting brackets.

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14. Secure Angle Braces (Det. No. 11) to the stanchions and floor beams using four 1/4" B.S.F. x 0.5" M.S. bolts and Simmonds nuts.
15. Secure the winch, with the motor rear most, to the mounting using four 5/16" B.S.F. x 0.8" M.S. bolts and Simmonds nuts so that the cable from the drums to the pulley clears the mounting by at least 1/2 inch.
16. Refit the rear escape hatch door.
17. Fit the ballast weights mounting to the forward floor board using four 1/4" B.S.F. x 0.8" M.S. bolts and Simmonds nuts as shown in Drg. No. 20XG/207, sheet 1 and refit the floor board.
18. Fit suitable floor boards over the floor beams in front of the rear hatch and secure to the floor beams using approximately twenty 2 P.A. x 1.8" M.S. bolts and Simmonds nuts.
19. Fit the baggage storages at positions as shown or any other convenient positions.
20. Fit a locking device to prevent the rear door opening in flight, consisting of a short cable or chain attached to the former at Station 306.3/4, with a ring at the free end to fit over the rear door winding handle; any suitable alternative locking device may be used.
21. Secure Tail Plane Safety Wire Ring Tip Brackets (Det. No. 20) to the tail plane using approximately sixty 1/8" d. x 5/16" duobert rivets.
22. Secure Under Tail Safety Wire Bracket (Det. No. 21) to the fuselage using eight 4 B.A. x 0.4" M.S. bolt and Simmonds nuts, incorporating a stiffening plate on the inside of the fuselage as shown in Drg. No. 20XG/207, Sheet 2.
23. Secure safety Wire Pin Attachment Bracket (Det. No. 22) to the fin using three 2 B.A. x 0.8" M.S. bolt and Simmonds nut.
24. Fit 5 cwt. steel cable as safety wire using turnbuckles at the fin attachment.
25. Fit Control Pane (Det. No. 18) on the port side of the aircraft between the formers at Station 319.11/16" and 332.5/8" and between stringers 10 and 11, inserting a wooden packing piece at the forward station to ensure that the panel is level.
26. Fit a 100 amp. circuit breaker adjacent to circuit breakers Nos. 230 and 233 on the generator control panel assembly situated on the port side of the aircraft opposite the W/O's position.
27. Link the positive sides of the three circuit breakers by a copper strip.
Note- The positive feed for the circuit breakers is cable No. 307.
28. Connect a No. 4 A.W.G. cable from the back side of the 100 amp. circuit breakers and route it to the gun selector switch box, either through the conduit linking the generator control panel assembly with the gun selector switch box, or creating it externally to the conduit.
29. Pass the No. 4 A.W.G. cable through the lower side of the

19. approximately twenty 2 B.A. x 1.3" M.S. bolts and
Simmonds nuts.
Fit the toggle stowages at positions as shown or any
other convenient positions.
20. Fit a locking device to prevent the rear door opening in
flight, consisting of a short cable or chain attached
to the former at Station 306.3/4, with a ring at the
free end to fit over the rear door winding handle;
any suitable alternative locking device may be used.
21. Secure Tail Plane Safety Wire Ring Tip Brackets (Det. No. 20)
to the tail plane using approximately sixty 1/8" x 3/16"
chobert rivets.
22. Secure Under Tail Safety Wire Bracket (Det. No. 21) to the
fuselage using eight 4 B.A. x 0.4" M.S. bolt and Simmonds
nuts, incorporating a stiffening plate on the inside of the
fuselage as shown in Drg. No. 20X/207, Sheet 2.
23. Secure safety Wire Fin Attachment Bracket (Det. No. 22)
to the fin using three 2 B.A. x 0.3" M.S. bolt and Simmonds nut.
Fit 5 cwt. steel cable as safety wire using turnbuckles at the
fin attachment.
24. Fit Control Panel (Det. No. 13) on the port side of the aircraft
between the former at Station 319.11/16" and 332.5/8" and
between stringers 10 and 11, inserting a wooden packing
piece at the forward station to ensure that the panel is level.
25. Fit a 100 amp. circuit breaker adjacent to circuit breakers
Nos. 230 and 228 on the generator control panel assembly
situated on the port side of the aircraft opposite the
W/O's position.
Link the positive sides of the three circuit breakers by a
copper strip.
26. Note- The positive feed for the circuit breakers
is cable No. 207.
27. Connect a No. 4 A.W.G. cable from the dead side of the 100
amp. circuit breakers and route it to the gun selector
switch box, either through the conduit linking the
generator control panel assembly with the gun selector
switch box, or cleating it externally to the conduit.
28. Pass the No. 4 A.W.G. cable through the lower side of the
gun selector switch box and connect the free end to the relay.
Note- The switch on the panel for operating the winch
motor is wired in series with the push button,
the latter being used for "inching" at the last
stages of winding the cable on the drum.
29. Carry out a functioning test on the installation.
Note- Paras. 26) to 29) inclusive do not apply to
Mark III A aircraft with serial numbers FA.200
to FA 674 inclusive. The 100 amp. circuit breaker
and No. 4 A.W.G. cable are already fitted on these
aircraft, the former situated adjacent to the
control panel fitted in para. 25), and the latter
being cable No. 319, which emerges from the gun
selector switch box.
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Material Required

I (A) Modification Set comprising:-

<u>Det. No.</u>	<u>Sheet No.</u>	<u>Description</u>	<u>Qty.</u>
1	5	Top Front and Rear Bearers	2
2	5	Front Angle Posts	2
3	5	Rear Angle Posts	2
4	5	Ties to the Side Elevation	2
5	5	Rear Cross Tie	1
6	5	Rear Tie	1
7	5	Front Cross Tie	1
8	5	Angle Bearers	1
9	5	Strips	2
10	5	Stanchions	2
11	5	Angle Braces	2
12	5	Bracket to Support Motor	2
12A	5	Angle Beams	1
13	4	Strengthening Cable Brackets	2
14	4	Attachment Lugs	2
14A	4	Strengthening Cables	3
15	4	Floor Beams	2
15A	4	Packing Pieces	2
16	4	Pulley Assembly	2
17	4	Strips to Drogue Rack	1
18	4	Control Panel for Motor	4
19	4	Stiffening Bar	1
20	2	Tail Plane Safety Wire Wing Tip Brackets	1
21	2	Under Tail Safety Wire Bracket	2
22	2	Safety Wire Win Attachment Bracket	1

I (B) Additional Items required:-

<u>Ref. No.</u>	<u>Description</u>	<u>Qty.</u>
9A/1309	Gear, target towing, m.g., type B triple drum gear, motorised, 24 volt, Mark I	1
137P/51	Relay	1
50/540	Button, push, double pole, Type B	1
50/146	Switch	1
128/AN32-4-7	Grommets, rubber, 1/4" i.d.	3
30A/2499	Steel, carbon, sheet, 14 S.W.G.	12" x 18"
30B/220	Dural, sheet, 18 S.W.G.	2" x 8"
32B/106	Canvas, duck, white, 36"	3'0"
28D/24	Bolts, M.S., Hx. hd., 5/16" B.S.F. x 0.8" long	4
28D/19	Bolts, M.S., Hx. hd., 1/4" B.S.F. x 0.8" long	50
28D/16	Bolts, M.S., Hx. hd., 2 B.A. x 0.8" long	16
28D/72	Bolts, M.S., Hx. hd., 2 B.A. x 1.8" long	20
28D/3		

12	3	Angle Braces	2
13	3	Bracket to Support Motor	2
14	3	Angle Beams	2
15	4	Strengthening Cable Brackets	1
16	4	Attachment Lugs	2
17	4	Strengthening Cables	2
18	4	Floor Beams	3
19	4	Packing Pieces	2
20	4	Pulley Assembly	2
21	4	Strips to Drogue Rack	1
22	4	Control Panel for Motor	4
	4	Stiffening Bar	1
	2	Tail Plane Safety Wire Wing Tip Brackets	1
	2	Under Tail Safety Wire Bracket	1
	2	Safety Wire Pin Attachment Bracket	1

I (E)

Additional Items Required:-

Ref. No.

9A/1309

Description

Qty.

157E/51	1	Gear, target towing, M.G., Type B	1
53/540	1	triple drum gear, motorised, 24 volt,	
50/146	1	Mark I	
128/AE952-4-7	1	Relay	
50A/2499	1	Button, push, double pole, Type B	
307/220	1	Switch	
325/106	3	Grommets, rubber, 1/4" i.d.	
28D/24	12" x 18"	Steel, carbon, sheet, 14 S.W.G.	
	2" x 8"	Dural, sheet, 18 S.W.G.	
	3'0"	Canvas, duck, white, 36"	
		Bolts, M.S., Hx. hd., 5/16" B.S.F.	
28D/19	4	Bolts, M.S., Hx. hd., 1/4" B.S.F.	
		x 0.8" long	
28D/16	50	Bolts, M.S., Hx. hd., 2 B.A. x 0.8" long	
28D/72	16	Bolts, M.S., Hx. hd., 2 B.A. x 1.8" long	
28D/3	20	Bolts, M.S., Hx. hd., 4 B.A. x 0.4" long	
28E/5849	3	Nuts, M.S., Simmonds 5/16" B.S.F.	
28M/5848	4	Nuts, M.S., Simmonds 1/4" B.S.F.	
28M/5847	50	Nuts, M.S., Simmonds 2 B.A.	
28M/5846	50	Nuts, M.S., Simmonds 4 B.A.	
28M/3073	8	Washers, steel, 0.32" i.d. x 0.75" o.d.	
28M/3072	8	Washers, steel, 0.26" i.d. x 0.60" o.d.	
28M/3071	100	Washers, steel, 0.19" i.d. x 0.50" o.d.	
28M/3070	36	Washers, steel, 0.15" i.d. x 0.40" o.d.	
28M/3084	16	Washers, steel, special, 0.19" i.d. x 1.25" o.d.	
28D/6049	20	Pivots, chobert, L.A., C/sk. hd., 1/8" d x 3/16" long.	
28D/3012	60	Turnbuckles, two eye ends, 4 B.A.	
28X/3295	2	Wire, steel, extra flexible, 5 cwt.	
10E/260	46'0"	Chain, Victor.	
	10'0"		

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II. Material required for Modification Set as at I (A) above.

Det. No.	Ref. No.	Description	Qty.
1	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	5'0"
2	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	3'9"
3	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	3'9"
4	30A/505	M.S., strip 1/8" x 1"	4'4"
5	30A/505	M.S., strip 1/8" x 1"	2'10"
6	30A/2420	M.S., strip 1.1/4" x 3/16"	2'6"
7	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	3'8"
8	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	2'8"
9	30A/2420	M.S., strip, 1.1/4" x 3/16"	2'6"
10	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	4'3"
11	30A/538	M.S., sheet 10 S.W.G.	7" x 4.1/4"
12	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	4'0"
	30A/538	M.S., sheet, 10 S.W.G.	5.1/4" x 5.3/4"
12A	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	4'4"
13	30A/530	M.S. flat, 3" x 1/4"	1'1"
14	30A/504	M.S., strip, 1/8" x 3/4"	1'2"
14A	28X/3450	Wire, steel, extra flexible, 25 cwt.	4'4"
	28U/3042	Turnbuckles, two eye ends, 5/16" B.S.F.	2
15	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	4'3"
15A	30A/295	M.S., flat, 1.1/8" x 1/2"	6"
16	9A/789	Gear, target towing, e.e., Type B	1
		Pulley, main, drivelling	1.3/4"
		M.S., square, 1.1/2"	1'3"
	30A/423	M.S., square, 1.1/2" x 3/4"	1'0" x 1'0"
	30A/2420	M.S., strip, 1.1/4" x 3/16"	2" x 4"
	30A/1233	Steel, plate, 1/4"	1'7"
	31A/5	Ash, 2"	10
	30A/397	M.S., round, 3/16" d.	10
	28A/767	Nuts, M.S., slotted, 2 H.A.	6" x 1'5"
	28E/3060	Pins, split, M.S., 1/32" d. x 1/2" long	7.1/4" x 14"
	30B/219	Dural, sheet, 16 S.W.G.	1'1"
	30B/220	Dural, sheet, 18 S.W.G.	5'6"
	30A/2385	Steel, non shrink, flat, 3/4" x 3/16"	6"
	30A/836	Steel, tubing, round, 1/2" d. x 20 S.W.G.	7"
	30A/845	Steel, tubing, round, 7/8" d. x 20 S.W.G.	3.1/2" x 1'2"
	30B/507	Dural, bar, round, 1" d.	2" x 3"
	30E/218	Dural, sheet, 14 S.W.G.	4
	30A/542	M.S., sheet, 14 S.W.G.	4
	28U/72	Bolts, M.S., H.A. hd., 2 D.A. x 1.8" long	4
	28A/2851	Nuts, M.S., Simonin, 2 D.A.	3
	28M/3071	Washers, M.S., 0.19" i.d. x 0.50" o.d.	6" x 1'0"
	30A/544	M.S., sheet, 16 S.W.G.	6" x 8"
	30B/219	Dural, sheet, 16 S.W.G.	1/2"
	30A/286	M.S., flat, 1" x 1/4"	3"
	30A/396	M.S., round, 5/32" d.	5/8" x 6"
	31A/5	Ash, 3"	
	28A/5850	Nuts, M.S., Simonin, 2 D.A.	

11	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	4'3"
12	30A/538	M.S., sheet 10 S.W.G.	7" x 4.1/4"
	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	4'0"
	30A/538	M.S., sheet, 10 S.W.G.	5.1/4" x 5.3/4"
12A	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	4"
13	30A/330	M.S. flat, 3" x 1/4"	4'4"
14	30A/501	M.S., curip, 1/3" x 3/4"	4'1"
14A	28A/3450	Wire, steel, extra flexible, 25 cwt.	1'2"
	28A/3012	Turbochargers, two eye mds, 5/16" B.S.F.	4'4"
15	30A/1233	Steel, angle, 1.1/4" x 1.1/4" x 1/4"	2
15A	30A/295	M.S., flat, 1.1/8" x 1/2"	4'3"
16	9A/769	Gear, target towing, s.e., Type B	6"
		Pulley, main, swivelling	1
	30A/483	M.S., square, 1.1/2"	1.3/4"
	30A/2420	M.S., steel, 1.1/4" x 3/4"	1'3"
	30A/1233	Steel, plate, 1/2"	1'0" x 1'0"
	31A/5	Ash, 2"	2" x 4"
	30A/597	M.S., round, 3/16" d.	1'7"
17	28A/767	Nuts, M.S., clotted, 2 B.A.	10
18	28E/5000	Pins, split, M.S., 1/32" d, x 1/2" long	10
19	30B/219	Dural, sheet, 16 S.W.G.	6" x 1'5"
20	30B/220	Dural, sheet, 18 S.W.G.	7.1/4" x 14"
	30A/2383	Steel, non shrink, flat, 3/4" x 3/16"	1'1"
	30A/836	Steel, tubing, round, 1/2" d. x 20 S.W.G.	5'6"
	30A/845	Steel, tubing, round, 7/8" d. x 20 S.W.G.	6"
	30B/507	Dural, bar, round, 2" d.	7"
	30B/218	Dural, sheet, 14 S.W.G.	3.1/2" x 1'2"
	30A/342	M.S., sheet, 14 S.W.G.	2" x 3"
	28A/72	Bolts, M.S., 1/2" hd., 2 B.A. x 1.8" long	4
	28A/3851	Nuts, M.S., 1/2" hd., 2 B.A.	4
	28A/3071	Washers, M.S., 0.49" i.d. x 0.50" o.d.	3
	30A/544	M.S., sheet, 16 S.W.G.	6" x 1'0"
	30B/219	Dural, sheet, 16 S.W.G.	6" x 8"
	30A/288	M.S., flat, 1" x 1/4"	1/2"
	30A/396	M.S., round, 5/32" d.	3"
	31A/5	Ash, 3"	3/8" x 6"
	28A/5850	Nuts, M.S., Simmonds 4 B.A.	2
	28A/1930	Rivets, M.S., Su. hd., 1/8" d. x 1/2" long	14
	28A/5649	Rivets, sheet, 16 S.W.G.	20
22	30B/220	Dural, sheet, 16 S.W.G.	2" x 2"

Approximately 150 man hours are required for this work including 100 man hours for manufacture of the necessary parts.

CLASS

EQUIPMENT

EQUIPMENT

- 4

- ALL UNITS

- Modification set as at I (A) above by arrangement with HQ 206 Group. Additional items required as at I (B) above from Unit resources through normal channels.

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