

**BY ORDER OF THE
352 SOW COMMANDER**

**352 SPECIAL OPERATIONS WING
INSTRUCTION 21-115**

15 March 2024



Maintenance

**AIRCRAFT WEIGHT AND
BALANCE PROGRAM**

COMPLIANCE WITH THIS INSTRUCTION IS MANDATORY

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This instruction implements Air Force Policy Directive (AFPD) 21-1, *Maintenance of Military Material* and fulfills the requirements of Department of the Air Force Instruction (DAFI) 21-101, *Aircraft and Equipment Maintenance Management*. It provides guidance and procedures for performing aircraft Weight and Balance (W&B) updates on assigned aircraft. Unit commanders and supervisors will ensure all personnel subject to operations covered by this instruction are thoroughly knowledgeable of the inherent dangers of the operation and the safety precautions necessary for safe and efficient accomplishment. It applies to individuals at all levels within the 352 Special Operations Wing (SOW). This publication may not be supplemented at any level. Refer recommended changes and questions about this publication to the Office of Responsibility (OPR) listed above. The authorities to waive wing/unit level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See Department of the Air Force Manual (DAFMAN) 90-161, *Publishing Processes and Procedures*, Table A10.1 for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS).

Chapter 1

QUALITY ASSURANCE (QA) RESPONSIBILITIES.

- 1.1. Maintain the primary weight and balance books, located on the aircraft.
 - 1.1.1. MC-130J books will be stored at FS 237.00; Weight and Balance (W&B) book holder.
 - 1.1.2. CV-22 books will be stored at FS 369.00-396.00; left FWD storage pocket.
- 1.2. Update and certify weight and balance records and the Automated Weight and Balance System (AWBS), as required.
- 1.3. Ensure DD Form 365-1, *Chart A - Basic Weight Checklist Record* and the AWBS lists all standard configuration items in accordance with TO 1-1B-50, *Basic Technical Order for USAF Aircraft Weight and Balance* and the applicable Mission Design Series, (MDS)-specific configuration publication.
 - 1.3.1. Update all removed or installed items on the DD Form 365-1 - Chart A, DD Form 3653, *Chart C - Basic Weight and Balance Record* and in the AWBS. EXCEPTION: Equipment changes after crew reporting may be annotated on the DD Form 365-4; *Form F - Weight and Balance Clearance Form* by aircrew.
- 1.4. When accompanying aircraft on a TDY or deployment, if necessary, copy the applicable aircraft W&B data from the AWBS to the W&B technicians assigned laptop. Upon return to home station, update the primary AWBS system within 24 hours.
 - 1.4.1. Send aircraft AWBS files to contractor repair teams, depot facilities, etc., when required, through official encrypted email or by sending a CD copy of the AWBS file with the aircraft in the supplemental handbook.
- 1.5. During TCTO planning meetings, ensure W&B update requirements are entered on the AF IMT 2410, *Inspection/TCTO Planning Checklist*.
- 1.6. Backup the AWBS database monthly to ensure accurate weight and balance data.
- 1.7. Perform a complete DD Form 365-1 - Chart A inventory prior to the aircraft departure and upon return to home station for depot maintenance or aircraft transfer.
- 1.8. When aircraft W&B historical records are removed from the QA office, ensure the individual taking control of the records annotates receipt on an AF IMT 1297, *Temporary Issue Receipt*.
 - 1.8.1. Upon return to QA, inspect the records for damage and/or missing documents.
 - 1.8.2. An AF IMT 1297 is not required if the aircraft is being permanently transferred.
 - 1.8.3. CV-22 flying squadron will be provided updated AWBS files prior to the aircrafts next flight on the 352 SOW/A4M sharepoint.

Chapter 2

MAINTENANCE SQUADRON RESPONSIBILITIES

2.1. Ensure assigned aircraft are configured to comply with special mission requirements as stated on the flying schedule. At all other times, aircraft will be maintained in standard configuration.

2.1.1. For MC-130J aircraft, follow AFI 11-2EC/MC-130J, Volume 3, Addenda A, *EC/MC130J Operation Configuration/Mission Planning*.

2.1.1.1. The “Local I” configuration will be a modified “CP-1”. Standardizations will follow requirements listed in [Attachment 3](#).

2.1.2. For CV-22 aircraft follow, 7 SOS Memorandum: *CV-22 Aircraft Standard Configuration Codes*.

2.2. Documentation will be accomplished as follows:

2.2.1. MC-130J units will document W&B jobs as follows:

2.2.1.1. Enter a Red X in the aircraft AFTO Form 781A, *Maintenance Discrepancy and Work Document* and in the Integrated Maintenance Data System (IMDS), stating nomenclature of component upon removal or addition of any item weighing 5 or more pounds. All W&B jobs will be loaded under the Work Unit Code (WUC) 04150.

2.2.1.2. A W&B Red X entry is not required if an item is removed and will be reinstalled or replaced by a like component prior to next flight or if an item is installed but will be removed prior to the next flight.

2.2.1.3. Document installation and removal of armor in the AFTO Form 781A under a “Red X” condition.

2.2.1.3.1. The removed/repositioned armor must be reinstalled in its basic weight location prior to the next scheduled flight.

2.2.1.3.2. A qualified armor technician and “Red X” technician will perform a visual inspection to ensure installed armor is clear of critical areas (i.e. steering cables and rudder pedals) and clear the symbol IAW TO 00-20-1.

2.2.1.3.3. Document a separate weight and balance update job in the next available discrepancy block of the AFTO Form 781A.

2.2.2. CV-22 units will document W&B jobs as follows:

2.2.2.1. Enter a Red X in the aircraft AFTO Form 781A and IMDS stating nomenclature of component upon removal or addition of any item weighing 5 or more pounds. All W&B jobs will be loaded under the Work Unit Code (WUC) 08104150.

2.2.2.2. A W&B Red X entry is not required if an item is removed and will be reinstalled or replaced by a like component prior to next flight or if an item is installed but will be removed prior to the next flight.

2.2.2.3. Document installation and removal of armor in the AFTO Form 781A under a “Red X” condition.

2.2.2.3.1. A qualified armor technician and ‘Red X’ technician will perform a visual inspection to ensure installed armor is clear of critical areas (i.e. steering cables and rudder pedals) and clear the symbol IAW TO 00-20-1.

2.2.2.3.2. Once armor is installed/removed and the installation/removal Red X discrepancy is cleared, either document an Info Note stating, “Armor Installed” in the next available discrepancy block of the AFTO 781A or document on the Info Note page of the AFTO 781A's under the "FORM F ENTRY REQUIRED FOR ABSS (ARMOR)" section by circling either "INSTALLED/REMOVED" in the appropriate sections.

2.2.3. Removal of the supplemental book from an aircraft will be documented in the AFTO Form 781A and the IMDS on a Red X.

2.3. Prior to aircraft jacking, ensure all aircraft weight and balance discrepancies have been completed to ensure accurate DD Form 365-3 - Chart C data is used.

2.4. The Production Superintendent or Expediter will notify QA upon completion of TCTO’s or modifications that require a W&B update.

2.5. PS&D will notify QA prior to aircraft deployments and transfers in which weight and balance records will be required.

2.6. PS&D will track and schedule aircraft weighs using IMDS and the aircraft AFTO Form 781K, *Aerospace Vehicle Inspection, Engine Data, Calendar Inspection and Delayed Discrepancy Document*.

2.7. Prior to an aircraft weigh or inventory, the aircraft must be configured as listed in the applicable -5 TO and the applicable MDS-specific configuration publications. For CV-22’s prepare aircraft for weigh with [Table 2.1](#), for C-130’s TO 1C-130(AHM)J-2-08JG-00-1.

Table 2.1. CV-22 Weigh Preparation Requirements.

| | Required Condition. (Accomplish task with applicable ITEMS task.) |
|----|--|
| 1. | Wash Aircraft, to include stow ring and interior. |
| 2. | After wash, convert nacelles from 90 to 0 degrees to ensure excess water is drained. |
| 3. | Convert to Flt Ready for weigh. |
| 4. | Ensure all reservoirs are filled to normal capacity (Gearbox's, hydraulics, engines, etc.) |
| 5. | With Aircraft level, defuel/de-puddle all fuel tanks. |
| 6. | Tow Aircraft to designated weigh area. |
| 7. | Remove equipment not having a fixed position in the aircraft. (-21, life-support, Seats, Cargo nets, Gun rack, etc.) |
| 8. | Remove MLG inboard tie down rings, and outboard dust caps. |
| 9. | Center Nose Wheel Steering. |

| | |
|-----|---|
| 10. | Ensure Aircraft is dry, no standing water. |
| 11. | Remove all Plugs/Covers. |
| 12. | Have AGE ready (power cart, Hydraulic mule, Nitrogen cart.) |
| 13. | Have Crew Chief / tow team available with tools. (Toolbox, Strut servicing kit, etc.) |
| 14. | Ensure all hangar ventilation is off, and hangar doors can close. |

2.7.1. The aircraft Crew Chief, -21 technician and applicable specialists, as required by QA, will be available during the inventory and/or weighing process.

2.8. Identify and circle the installed munitions configuration code on the 781A INFO NOTE page after each upload/download of munitions.

Chapter 3

OPERATIONS SQUADRON RESPONSIBILITIES

3.1. Configuration changes accomplished at home station require a QA update to the DD Form 365-4 - Form F - Chart C. EXCEPTION: Equipment changes outside of Standard or Special configurations or equipment removed after crew reporting may be annotated on the DD Form 365-4 - Form F.

3.2. Annotate any deviations to the aircraft basic weight (DD Form 365-1 - Chart A) on the DD Form 365-4 - Form F.

3.3. Forward changes to the standard or special configurations to the QA W&B manager and the applicable maintenance squadron Production Superintendent.

3.3.1. Any anticipated reoccurring configuration changes (I.E. HIMAR) will be standardized and agreed upon by Maintenance Production and Aircrew. The standardized list of equipment removed will be sent to the Weight and Balance managers for reference use.

3.4. Ensure all additional and special mission equipment is updated in accordance with DD Form 365-4 - Form F. (I.E. Chaff/Flare upload, Armor install, ect.) IAW applicable -5 series T.O.

3.5. MC-130J specific responsibilities.

3.5.1. Items listed in AFMAN 11-2EC/MC-130J, Volume 3, Addenda A, Table 2.1 are aircraft basic weight items (loose equipment) and will require Form F annotation prior to each flight if removed from its basic weight location.

3.5.2. When installed on the aircraft additional items such as In-Flight Pubs and Aircraft Safe will require Form F annotation.

3.5.3. Chaff and flare individual loaded magazine weights are listed in [Table 3.1](#).

3.5.3.1. Prior to launch, match the circled code on the Info Note page of the aircraft AFTO Form 781A to the appropriate defense expendables configuration code, as determined by the 67 SOS.

3.5.3.2. Chaff/Flare dispenser cover weight is 4lbs each X 18 positions.

Table 3.1. MC-130J Chaff and Flare Individual Loaded Magazine Weights.

| Mag ID | Chaff/Flare | Qty (each) | Weight (each/lbs) |
|--------|----------------------------|------------|-------------------|
| 0 | RR-170 or RR-188 Chaff Mod | 30 | 15 |
| 2 | RR-180 Chaff Mod | 30 | 15.5 |
| 7 | M-206 Flare Mod | 30 | 17.5 |
| 8 | M211 Flare Mod | 30 | 27 |
| 11 | MJU-64 / M206 Flare Mod | 10 / 20 | 21 |
| 12 | MJU-64 / M206 Flare Mod | 18 / 12 | 23 |

3.5.3.3. Armor pieces listed in [Attachment 2](#) are listed in applicable configuration AFI as DD Form 365-3 - Chart C items. The list is broken down by their respective weights, installed positions, and moments on the aircraft. If mission directs repositioning or offloading of specific armor pieces, loadmasters must annotate movement of weight and moment on the DD Form 365-4 - Form F.

Chapter 4

DEPLOYED PROCEDURES

4.1. When a configuration change that removes a Basic Weight item is accomplished at a Forward Operating Location and no QA weight and balance authority is deployed to the location, maintenance personnel will put an Info Note in the AFTO Form 781A indicating the weight, fuselage station, and moment of any equipment added or removed.

4.1.1. The loadmaster or flight engineer will add or subtract the listed weight and moment from the last entry in the DD Form 365-3 - Chart C.

4.1.2. Annotate the new weight and moment in Block 1 of DD 365-4 - Form F.

ROBERT A. HAMMERBECK IV, Lt Col, USAF
Director of Logistics, Engineering and Force
Protection

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFMAN 11-2EC-MC-130J, Volume 3, Addenda A, *EC/MC-130J Operation Configuration/Mission Planning*, 09 December 2020

AFI 33-322, *Records Management and Information Governance Program*, 28 July 2021

AFPD 21-1, *Maintenance of Military Material*, 1 August 2018

DAFI 21-101, *Aircraft and Equipment Maintenance Management*, 20 December 2023

TO 1C-130(M)J-5-1, *Sample Basic Weight Checklist, MC-130J Aircraft*, 30 November 2023

TO 1-1B-50, *Basic Technical Order For USAF Aircraft Weight and Balance*, 31 January 2024

TO C-130 CTI VIEWER *Technical Order Library*

TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*, 19 December 2023

Prescribed Forms

None

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

AFTO Form 781A, *Maintenance Discrepancy and Work Document*

DD Form 365-1, *Chart A - Basic Weight Checklist Record*

DD Form 365-2 *Form B – Aircraft Weighing Record*

DD Form 365-3 - *Chart C*

DD Form 365-4; *Form F - Weight and Balance Clearance Form*

AF IMT 2410, *Inspection/TCTO Planning Checklist*

AF IMT 1297, *Temporary Issue Receipt*

Abbreviations and Acronyms

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFPD—Air Force Policy Directive

AFRIMS—Air Force Records Information Management System

AWABS—Aircraft Weight and Balance System

DAFI—Department of the Air Force Instruction

MDS—Mission Design Series

OPR—Office of Primary Responsibility

PS&D—Maintenance Plans, Scheduling and Documentation

QA—Quality Assurance

QVI—Quality Verification Inspection

RDS—Records Disposition Schedule

TCTO—Time Compliance Technical Order

TO—Technical Order

Attachment 2

MC-130J ARMOR ITEMS LISTING

Table A2.1. MC-130J Armor Items Listing.

| Item Description | Weight | Arm | Moment/1000 |
|--------------------------------|--------|-------|-------------|
| FS1 Pedestal, Pilot Side Fwd | 18 | 122.2 | 2 |
| FS2 Pedestal, Pilot Side Aft | 16 | 145.6 | 2 |
| FS3 Pedestal, Copilot Side Fwd | 18 | 122.2 | 2 |
| FS4 Pedestal, Copilot Side Aft | 16 | 145.6 | 2 |
| FS5 Pilot Wall, Vertical | 19 | 113.7 | 2 |
| FS6 Pilot Floor, Upper | 32 | 113 | 4 |
| FS7 Center Yokes (2) | 9 | 100.8 | 1 |
| FS8 Copilot Wall, Vertical | 16 | 110.5 | 2 |
| FS9 Copilot Floor, Upper | 30 | 113 | 3 |
| FS10 Copilot Floor | 10 | 107.7 | 1 |
| FS11 Copilot Floor Lower | 11 | 123 | 1.4 |
| FS12 Pilot Floor | 10 | 107.7 | 1 |
| FS13 Pilot Floor, Lower | 47 | 157.6 | 7 |
| FS14 Floor, Right | 67 | 166.7 | 7.7 |
| FS15 Floor, Left | 63 | 189.5 | 12 |
| FS16 Floor, Rear, Left | 59 | 212.8 | 13 |
| FS17 Floor, CSO Desk | 25 | 181.9 | 5 |
| FS18 Floor, Rear, Right | 13 | 228.5 | 3 |
| FS19 Floor, Middle, CSO | 37 | 212.5 | 8 |
| FS20 Wall, CSO Desk | 32 | 193.9 | 6 |
| FS21 Wall, CSO Desk, Rear | 49 | 223.4 | 11 |
| FS22 Wall, CSO Desk, Fwd | 29 | 176.2 | 5 |
| FS23 Wall Middle, Right | 32 | 165.8 | 5 |
| FS24 Copilot CB Panel | 32 | 145.1 | 5 |
| FS25 Copilot Kick Window | 42 | 116.5 | 5 |
| FS26 Pilot Kick Window | 42 | 116.5 | 5 |
| FS27 Pilot CB Panel | 32 | 145.1 | 5 |
| FS28 Pilot Dist Panel | 35 | 166.1 | 6 |
| FS29 Galley Wall | 33 | 187.6 | 6 |
| FS30 Aft Console, Center | 15 | 157.6 | 2 |
| FS31 Aft Console, Right | 10 | 157.6 | 2 |
| FS32 Aft Console, Left | 11 | 157.6 | 2 |
| FS33 Floor, Aft CSO | 35 | 225 | 8 |
| FS34 Floor Rear | 16 | 234.2 | 4 |

| Item Description | Weight | Arm | Moment/1000 |
|-----------------------------------|---------------|------------|--------------------|
| FS35 Wall, Right, Rear | 20 | 240.8 | 5 |
| FS36 Wall, Rear | 68 | 240.8 | 16 |
| FS37 Seat Bottom (2) | 26 | 210.5 | 5 |
| FS38 Seat Back (4) | 89 | 177.3 | 16 |
| FS39 Wall, Left, Rear | 13 | 232.5 | 3 |
| FS40 Seat Rail, Pilot | 6 | 144.8 | 1 |
| FS41 Floor, Under Seat (2) | 30 | 134.8 | 4 |
| FS42 Wall, Rear Ladder | 19 | 240.8 | 5 |
| FS43 Seat Rail (2) | 12 | 145.3 | 2 |
| CD1 Crew Door | 66 | 220.5 | 15 |
| CD2 Crew Door, Fwd Trim | 22 | 195 | 4 |
| CD3 Crew Door, Aft Trim | 11 | 240 | 3 |
| CD4 Crew Door, Floor Entrance | 58 | 226.5 | 13 |
| LM1 Paratroop Door, L & R, Upper | 104 | 717 | 75 |
| LM2L Paratroop Door, Left, Lower | 72 | 717 | 52 |
| LM2R Paratroop Door, Right, Lower | 72 | 717 | 52 |
| NW1 Nose Gear, Center | 27 | 145.3 | 4 |
| NW2 Nose Gear, Left | 20 | 147 | 3 |
| NW3 Nose Gear, Right | 48 | 147 | 7 |
| LX2 LOX Bottle, Side (2) | 43 | 151 | 6 |
| LX3 LOX Bottle, Rear | 23 | 161 | 4 |
| LX4 LOX Bottle, Front | 20 | 141 | 3 |
| LX5 LOX Bottle, Top | 4 | 151 | 1 |

MC-130J ARMOR ITEMS LISTING

- Armor items listed as a whole weight in AWBS on DD Form 365-1 (Chart A) as a total weight of the individual positions. Reference: TO 1C-130(M)J-5-1
- Flight Deck 1,259.0lbs, Crew Door 180.0lbs, Paratroop Door 256.0lbs, and Nose Gear and Lox 195.0lbs. Reference: TO 1C-130(M)J-5-1
- Individual pieces removed from the configurations will require a separate entry on the DD Form 365-1 (Chart A) with the appropriate weight, moment, and arm.

Attachment 3

MC-130J "LOCAL 1" CONFIGURATION

Table A3.1. MC-130J "Local I" Configuration.

| Item | Storage Location |
|--|--|
| Forward-most two-man seats on both sides | Stowed |
| Wheel well seats | Stowed |
| Seats aft of wheel well | Installed and folded up |
| Rollers | Flipped up from forward edge of wheel well all the way aft |
| Litter | One installed forward right above the oxygen regulators with the crew entrance door armor secured on top |
| RH jump platform | Secured on top of litter |
| LH jump platform | Under the overhead life support rack (approx. FS 300), secured as far aft as possible |
| Troop door armor | Secured behind the sidewall seats (approx. FS 400) utilizing a cargo strap and sidewall tie down rings |
| Oil/hydro | Storage bin aft of the Aux Hydraulic pump stored to max. Remainder will be stored in a box and secured in the overhead life support rack |
| Life support equipment | Overhead life support rack and life support stowage bins. Extra Parachutes/ML-4' s will be secured as required |
| CDS Aux Rollers | LH storage bin near the bottom edge of the cargo door |
| "Y-Cable" assemblies | RH storage bin near the bottom edge of the cargo door |
| 10K Straps (24 each) | Upper most RH cargo door storage bin |
| 5 K Straps (40 each) | Racks at FS 370-420, remaining stowed in the RH cargo door bin below 10K straps |