

- **Cargo Rack**
- **Power Bench**
- **Sensor Frame**

## **MD500**

### Installation Manual



**Tyler • Cargo Rack • Power Bench • Sensor Frame**  
**For MD500 Series Helicopters**  
**FAA STC # SR01682LA**



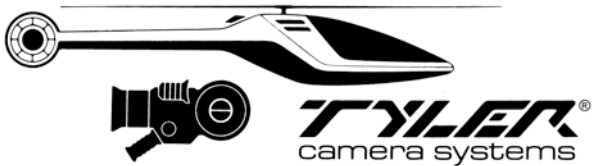
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This manual is available for download from our web site.



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MODEL: MD 369

REPORT #: INST MD5-001

JOB #: \_\_\_\_\_

DATE: 08/17/04

CARGO RACK (MODEL H500)  
 INSTALLATION MANUAL FOR  
 MD 369 D,E,F,FF,500N,600N MODELS

PREPARED BY: C. Tyler

# OF PAGES: 19

CHECKED BY: N. Tyler

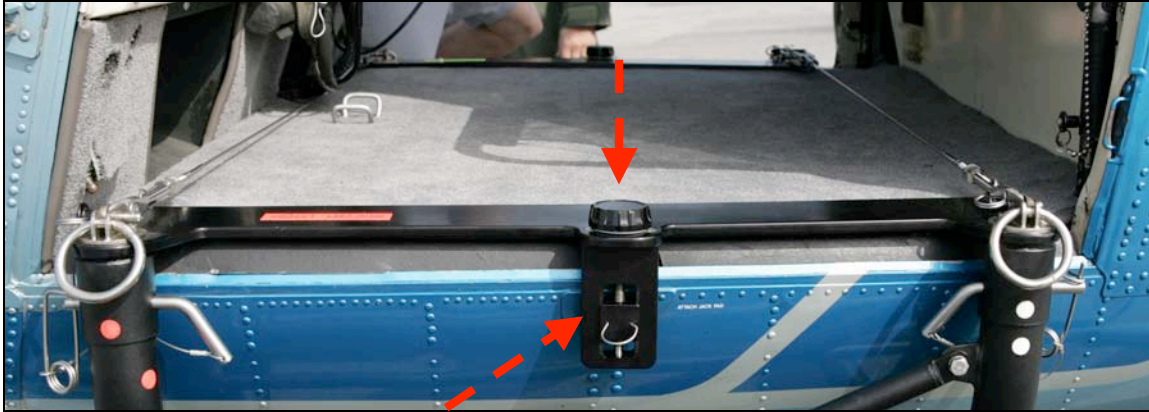
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APPROVED BY: G. Wood

**RECORD OF REVISIONS**

| No. | Revision Inserted | Date     | EFFECTIVE PAGES          | By D.E.R. |
|-----|-------------------|----------|--------------------------|-----------|
| 0   | N/C               | 08/17/04 | ALL                      |           |
| 1   | A                 | 08/12/08 | ADDITION OF SENSOR FRAME |           |
| 2   |                   |          |                          |           |
| 3   |                   |          |                          |           |
| 4   |                   |          |                          |           |

## **SECTION 1 – INSTALLATION OF CARGO RACK (17” or 48”)**



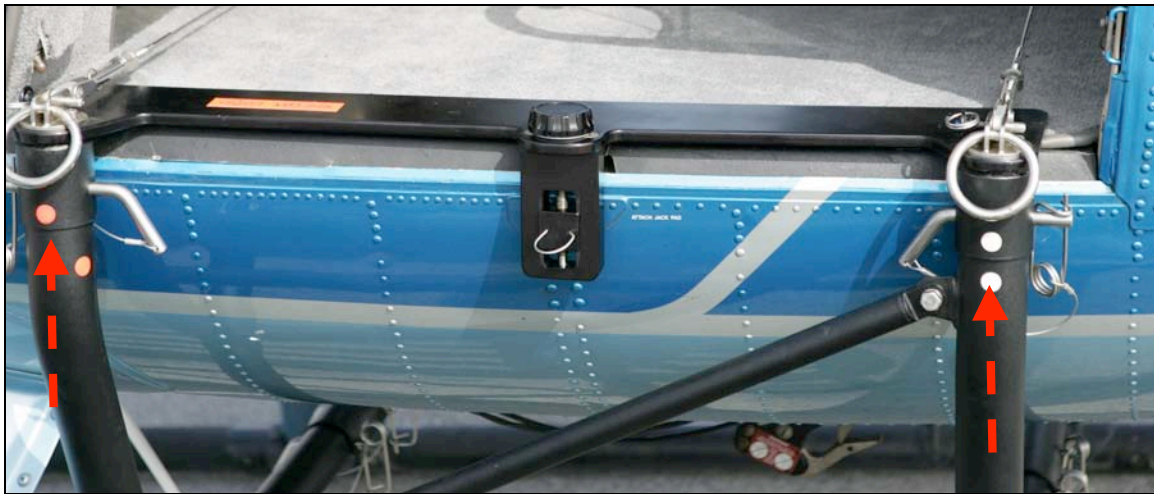
- 1.) Place floor plates (left and right sides) on floor of ship as shown. Insert tab into side of aircraft. Note: Lightly tighten the Lock Knobs (later they will be tightened firmly).



- 2.) Install Cross Cables Assemblies (two on each side) and leave cam-over buckles open (until later).



- 3.) Assemble left/right-front and left/right-rear Platform Tubes by placing them laterally under the ship and connecting the halves with the L-Pins and Safety Clips.



- 4.) Lift Support Tubes up and insert both tubes (on each side) into floor-plate receptacles and fasten with the L-Pins and Safety Clips.



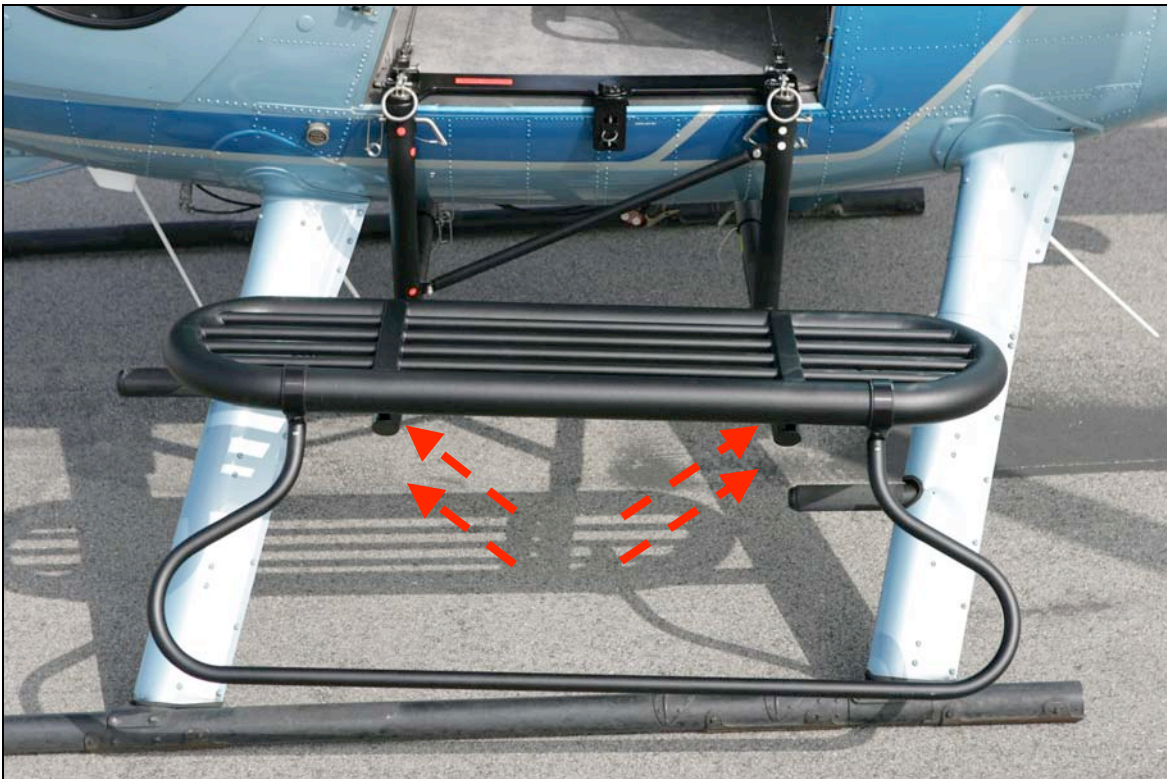
4.) Install fore-to-aft cross brace, using pip-pins.



5.) Firmly tighten Lock Knobs (one on each side).



6.) Adjust for snug tension, then latch cam-over buckles and secure with pip-pins.

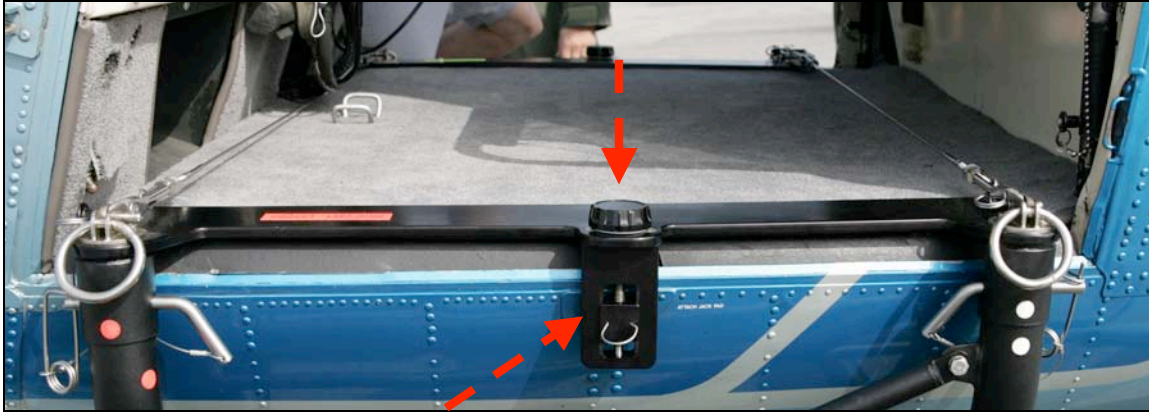


- 5.) Install Cargo Rack (17" or 48") using four (4) bolts, but do not tighten bolts at this time.



***Alternate Cargo Rack (48")***

## **SECTION 2 – INSTALLATION OF POWER BENCH (31”)**



- 1.) Place floor plates (left and right sides) on floor of ship as shown. Insert tab into side of aircraft. Note: Lightly tighten the Lock Knobs (later they will be tightened firmly).



- 2.) Install Cross Cables Assemblies (two on each side) and leave cam-over buckles open (until later).



- 2.) Assemble left/right-front and left/right-rear Platform Tubes by placing them laterally under the ship and connecting the halves with the L-Pins and Safety Clips.



- 3.) Lift Support Tubes up and insert both tubes (on each side) into floor-plate receptacles and fasten with the L-Pins and Safety Clips.





4.) Install fore-to-aft cross brace, using pip-pins.



5.) Firmly tighten Lock Knobs (one on each side).



6.) Adjust for snug tension, then latch cam-over buckles and secure with pip-pins.



- 4.) Install 31" Power Bench using four (4) bolts, but do not tighten bolts at this time.

## **SECTION 3 – OPTIONAL COUNTERWEIGHT INTALLATION**



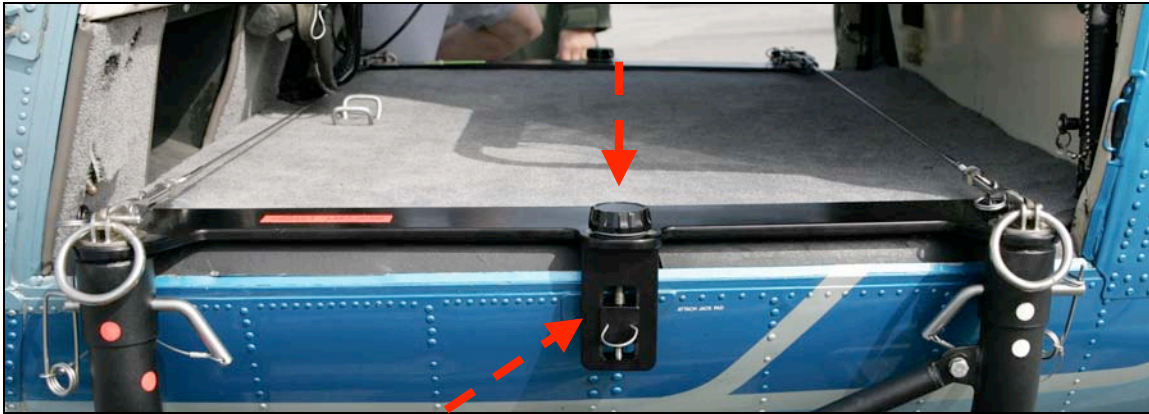
### ***Optional Counterweight Unit for Cargo Rack or Power Bench***

The *optional* Counterweight Unit is used to laterally balance the helicopter against the payload of the Cargo Rack on the opposite side. Therefore, the Counterweight is attached instead of a second Cargo Rack Bench.

The Counterweight Unit is comprised of the following components and may be installed in these configurations:

- Frame only
  - Frame and Box
  - Frame and Extension Tube (not shown)
  - Frame, Extension Tube and Box
- 1.) Attach Counterweight Frame to main support frame by securely tightening the four (4) bolts supplied.
  - 2.) Insert Counterweight Box into Counterweight Tube (with or without the Extension Tube) and secure with Safety-Pin(s) and Clip(s).
  - 3.) If necessary, add ballast weight into Counterweight Box (see Weight & Balance section, page 18 of this manual).

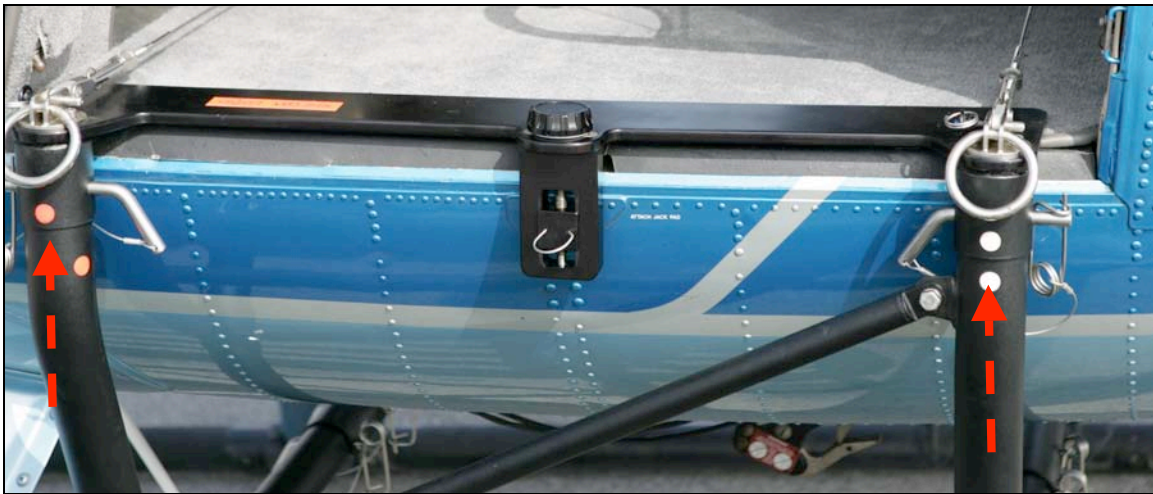
### **SECTION 3 – INSTALLATION OF SENSOR FRAME**



- 1.) Place floor plates (left and right sides) on floor of ship as shown. Insert tab into side of aircraft. Note: Lightly tighten the Lock Knobs (later they will be tightened firmly).



- 2.) Install Cross Cables Assemblies (two on each side) and leave cam-over buckles open (until later).



- 3.) Lift Sensor Frame Support Tubes up and insert into floor-plate receptacles (each side) and fasten with the L-Pins and Safety Clips.



- 4.) Attach fore-to-aft cross brace (left side and right side) using pip-pins.



- 5.) Firmly tighten Lock Knobs (one on each side).



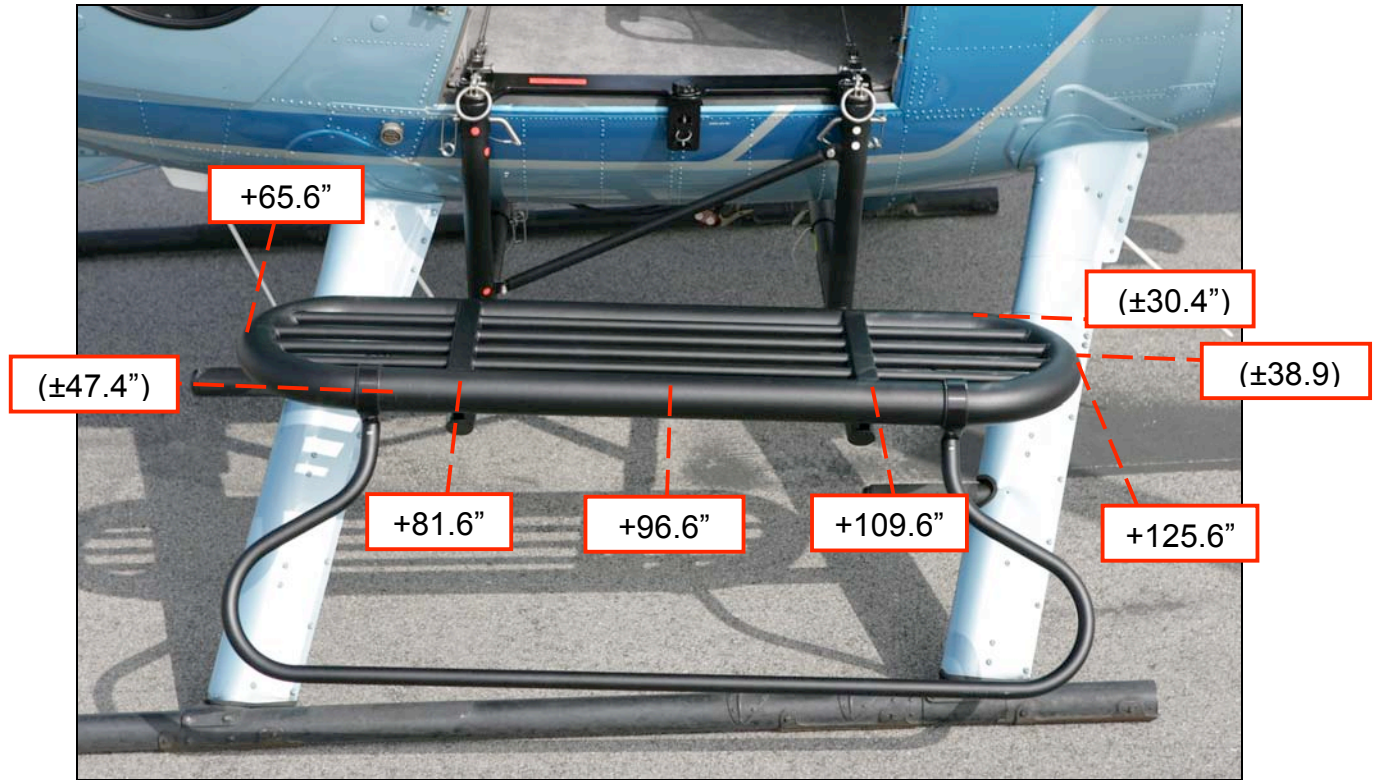
6.) Adjust for snug tension, then latch cam-over buckles and secure with pip-pins.



ABOVE PHOTO IS FOR EXAMPLE ONLY  
The assembled framework (off of ship).

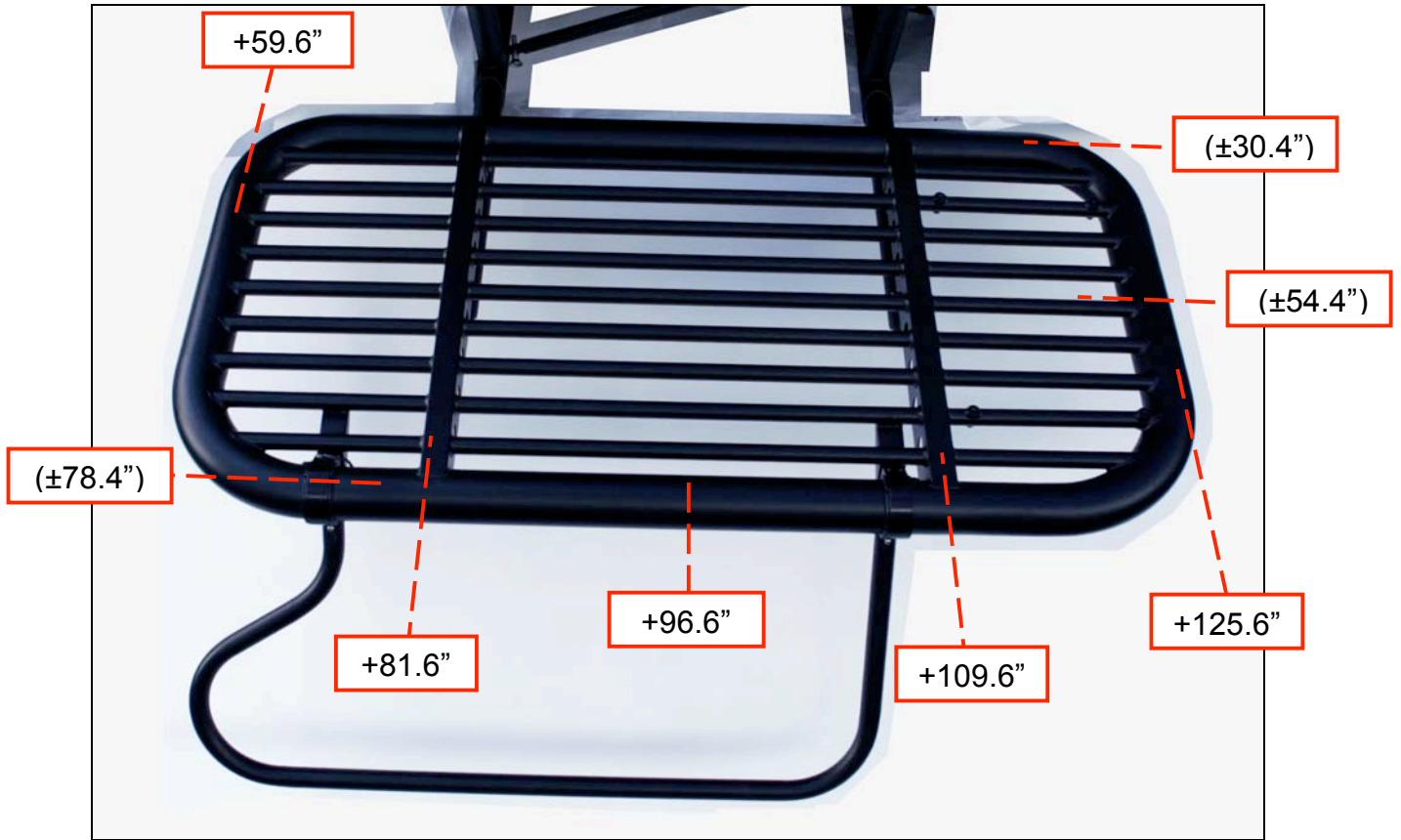
Note: Install of Sensor Package is not shown. However, a device can attach to the fore and aft tabs, and is fastened using four bolts specific to the device.

## **SECTION 4 – WEIGHT & BALANCE**



**Cargo Rack (17" wide)**

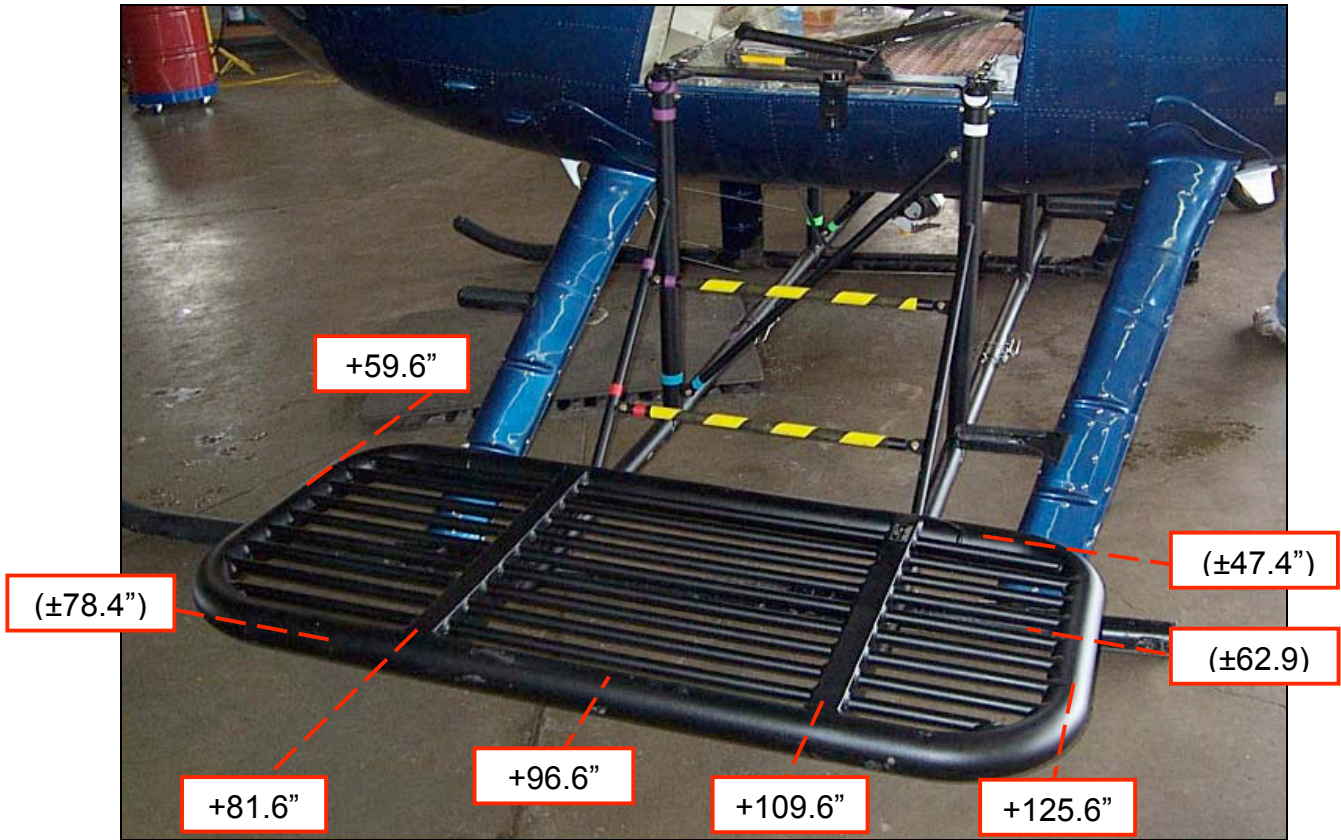
Weight: 33 lbs.



**Cargo Rack (48" wide)**

Weight: 78 lbs.





**Power Bench (31" wide)**

Weight: 45 lbs.



**Optional Counterweight Unit for Cargo Rack or Power Bench**

| Configuration                                      | Weight (lbs.) | Lateral C.G. |
|----------------------------------------------------|---------------|--------------|
| • <b>Frame only</b>                                | 26            | (±22.0")     |
| • <b>Box (empty) on Frame</b>                      | 19            | (±63.4")     |
| • <b>Extension Tube on Frame</b>                   | 35            | (±51.5")     |
| • <b>Box (empty) on Extension Tube &amp; Frame</b> | 19            | (±103.4")    |

Notes: The Extension Tube is not shown. When the above listed lateral positions were calculated, the Counterweight Box was empty. Therefore, adjustments to the figures will be required if weight is added to the Counterweight Box. Up to 80 lbs. of lead plates (20 lbs. each) can be loaded into the Counterweight Box.

| MD 500 WEIGHT & BALANCE DATA (Weight x Arm = Moment) SAMPLE SHEET |     |                            |                                          |                 |                |            |
|-------------------------------------------------------------------|-----|----------------------------|------------------------------------------|-----------------|----------------|------------|
| Tyler Special Operations Platform                                 |     | AIRCRAFT MODEL<br>MD 520 N | REGISTRATION                             | AIRCRAFT<br>S/N | AGENCY         | DATE       |
| ITEM:                                                             |     | LONGITUDINAL<br>WEIGHT     | ARM                                      | MOMENT          | LATERAL<br>ARM | MOMENT     |
| AIRCRAFT EMPTY WEIGHT & C.G.                                      |     | 1874                       | 108.42                                   | 203179.08       | -0.53267       | -998.22358 |
| PILOT (FORWARD LEFT)                                              |     | 200                        | 73.5                                     | 14700           | -13            | -2600      |
| CO-PILOT (FORWARD RIGHT)                                          |     | 0                          | 73.5                                     | 0               | 15.5           | 0          |
| PAX (AFT LEFT)                                                    |     | 0                          | 105                                      | 0               | -12.2          | 0          |
| PAX (AFT RIGHT)                                                   |     | 0                          | 105                                      | 0               | 12.2           | 0          |
| FUEL (64 gals.) 6.8lbs. X # of gals:                              | 64  | 435.2                      | 97.7                                     | 42519.04        | 0              | 0          |
| sub total                                                         |     | 2509.2                     | 563.12                                   | 260398.12       | 1.96733        | 3598.22358 |
| <b>TYLER SPECIAL OPERATIONS<br/>PLATFORM:</b>                     | WT  |                            |                                          |                 |                |            |
| STD MOUNT FRAMEWORK                                               | 68  | 0                          | 96.9                                     | 0               | 0              | 0          |
| DROP DOWN MOUNT FRAMEWORK                                         | 77  | 0                          | 96.9                                     | 0               | 0              | 0          |
| SENSOR FRAMEWORK ( <i>specialty</i> )                             | 44  | 0                          | 96.9                                     | 0               | 0              | 0          |
| R/H BENCH SEAT 17"                                                | 33  | 0                          | 96.9                                     | 0               | 38.9           | 0          |
| L/H BENCH SEAT 17"                                                | 33  | 0                          | 96.9                                     | 0               | -38.9          | 0          |
| L/H BENCH SEAT 31" STD (STEEL<br>67#)                             | 42  | 0                          | 96.9                                     | 0               | 54.4           | 0          |
| L/H BENCH SEAT 31" DROP DOWN                                      | 45  | 0                          | 96.9                                     | 0               | 62.9           | 0          |
| R/H BENCH SEAT 31" DROP DOWN                                      | 45  | 0                          | 96.9                                     | 0               | 62.9           | 0          |
| R/H COUNTER WT ARM (used w/48"<br>bench)                          | 26  | 0                          | 96.9                                     | 0               | 22             | 0          |
| R/H COUNTER WT w/ EXTENSION<br>ARM                                | 35  | 0                          | 96.9                                     | 0               | 51.5           | 0          |
| R/H COUNTER WT BOX                                                | 19  | 0                          | 96.9                                     | 0               | 63.4           | 0          |
| WEIGHTS 20 LBS EA (80 LBS MAX)                                    | 20  | 0                          | 96.9                                     | 0               | 63.4           | 0          |
| R/H COUNTER WT BOX ON<br>EXTENSION                                | 19  | 0                          | 96.9                                     | 0               | 103.4          | 0          |
| WEIGHTS 20 LBS EA (80 LBS MAX)                                    | 20  | 0                          | 96.9                                     | 0               | 103.4          | 0          |
| L/H BENCH SEAT 48" (STEEL)                                        | 78  | 0                          | 96.9                                     | 0               | -45.4          | 0          |
| PAX R/H BENCH 17" (Forward Right)                                 |     | 0                          | 65.6                                     | 0               | 38.9           | 0          |
| PAX L/H BENCH 17" (Forward Left)                                  |     | 0                          | 65.6                                     | 0               | -38.9          | 0          |
| PAX R/H BENCH 31" STD (FORWARD)                                   |     | 0                          | 65.6                                     | 0               | 45.4           | 0          |
| PAX L/H BENCH 31" D DOWN<br>(FORWARD)                             |     | 0                          | 59.6                                     | 0               | -45.4          | 0          |
| PAX R/H BENCH 31" D DOWN<br>(FORWARD)                             |     | 0                          | 59.6                                     | 0               | 45.4           | 0          |
| PAX L/H BENCH 48"(FORWARD)                                        |     | 0                          | 59.6                                     | 0               | 54.4           | 0          |
| SENSOR BOX ( <i>specialty</i> )                                   | 125 | 0                          | 96.9                                     | 0               | 0              | 0          |
| sub total                                                         |     | 0                          | 472.5                                    | 0               | 0              | 0          |
| <b>TOTAL AIRCRAFT WEIGHT:</b>                                     |     | 2509.2                     | 103.7773474                              | 260398.12       | 1.434012267    | 3598.22358 |
| AIRCRAFT MAX GROSS WEIGHT:                                        |     | 3350                       |                                          |                 |                |            |
| NEW USEFUL LOAD:                                                  |     | 840.8                      |                                          |                 |                |            |
| <b>NEW CENTER OF GRAVITY<br/>(LONGITUDINAL)</b>                   |     | 103.7773474                |                                          |                 |                |            |
| <b>NEW CENTER OF GRAVITY<br/>(LATERAL)</b>                        |     | -1.434012267               |                                          |                 |                |            |
| <b>LONGITUDINAL C.G. LIMITS:</b>                                  |     |                            | <b>LATERAL C.G. LIMITS:</b>              |                 |                |            |
| <i>FORWARD LIMIT:</i>                                             |     |                            | L/H LIMIT: -3.0 IN. MINUS                |                 |                |            |
| 99.0 in. @ 3350 lbs.                                              |     |                            | R/H LIMIT: + 3.0 IN. PLUS                |                 |                |            |
| 99.0 in. @ 2600 lbs.                                              |     |                            |                                          |                 |                |            |
| 101.4 in. @ 1796 lbs.                                             |     |                            | <b>EXPANDED LATERAL C.G.<br/>LIMITS:</b> |                 |                |            |
| <i>REARWARD LIMIT:</i>                                            |     |                            | L/H LIMIT: -5.0 IN. MINUS                |                 |                |            |
| 105.5 in. @ 3350 lbs.                                             |     |                            | R/H LIMIT: + 5.0 IN. PLUS                |                 |                |            |
| 107.8 in. @ 2600 lbs.                                             |     |                            |                                          |                 |                |            |
| 110.3 in. @ 1796 lbs.                                             |     |                            |                                          |                 |                |            |