

**LEUPA**

## **Type B(U) Package to Contain Fissile Substances**

# **OPERATION MANUAL**

Made by

**IN/AP**

June01, 2015

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|                        |                                |  |                |                 |  |
|------------------------|--------------------------------|--|----------------|-----------------|--|
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|                        |                                | Name, date, signature/initial              |                |                 |  |
| <b>Letter Revision</b> | <b>Description of Revision</b> | <b>Prepared</b>                            | <b>Revised</b> | <b>Approved</b> |  |
| A                      | Original                       | EL   | JLA            | JCO             |  |
| B                      | Point 7.2.6                    | EL   | JLA            | JCO             |  |
|                        |                                |  |                |                 |  |
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## 1 PURPOSE

1. This manual provides instructions to safely handle RA/0103/B(U)F-96 – LEUPA package for the transport of type LEU radioactive material.

## 2 SCOPE

1. It includes operation procedures for activities such as: handling, loading, unloading, preparation for storage and transport of packages in transit, in a way suitable to the characteristics of design and in compliance with the applicable requisites of regulations in force.

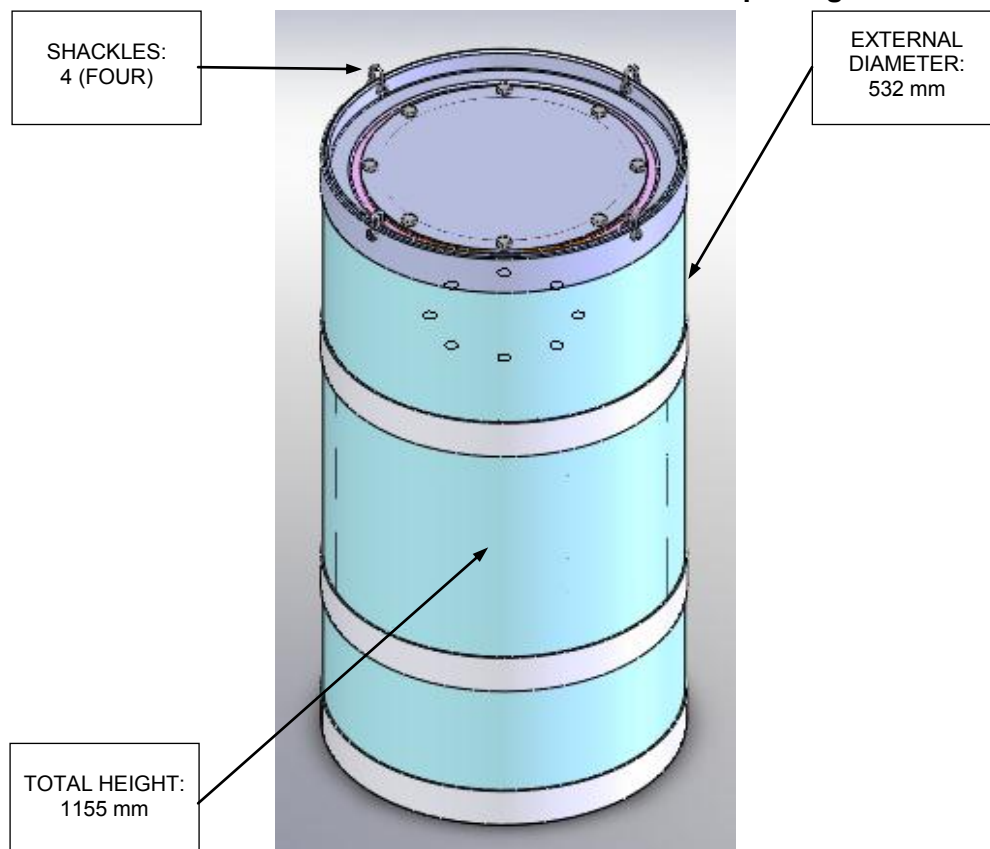
## 3 ABBREVIATIONS

| Abbreviation | Description                                |
|--------------|--|
| LEUPA        | Low Enriched Uranium Package for Transport |

## 4 DESCRIPTION OF PACKAGE

1. The LEUPA package has a net mass (empty) of 377.50 kg and a mass (loaded) of approx. 430 kg.

**Picture 1: General dimension of package**

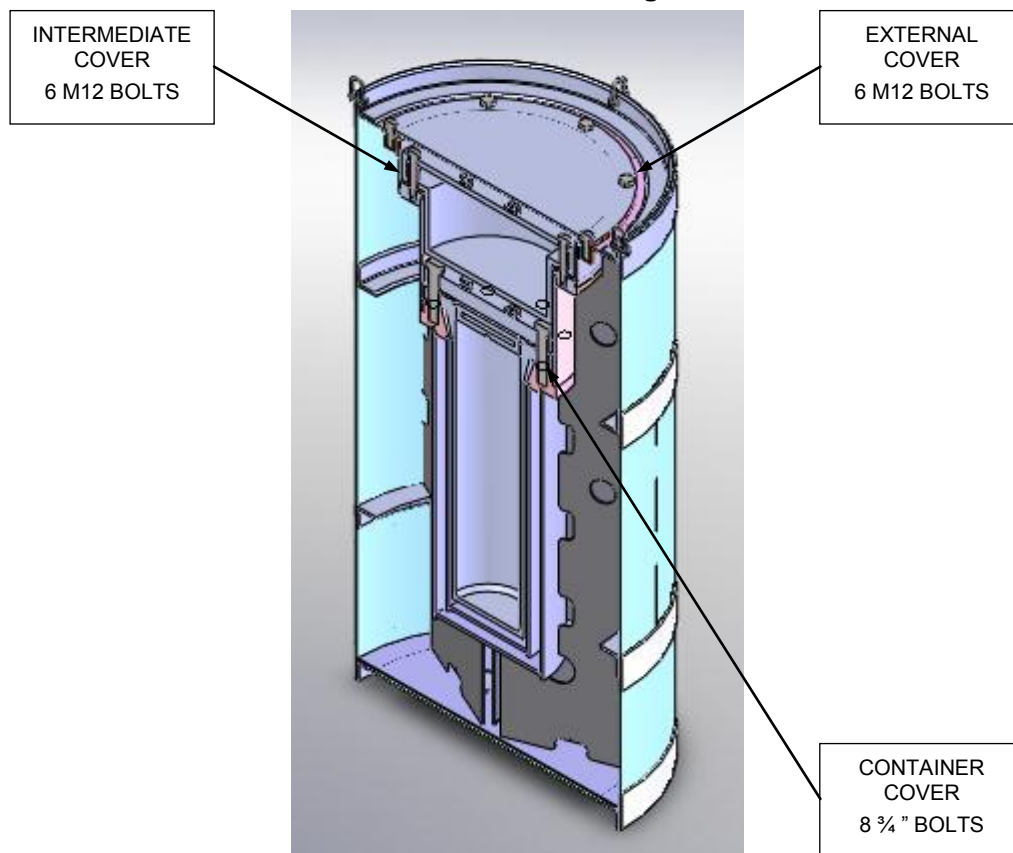


2. The general dimensions of LEUPA package are:

**Table 1: General dimensions of package**

| Detail            | Dimensions |
|-------------------|------------|
| External Diameter | 532 mm     |
| Total Height      | 1155 mm    |

3. The package has in its upper part four (4) shackles to be used for lifting/movement of 500 kg weight each one (see Picture 1:).
4. The package has an external cover secured by six (6) M12 bolts to the main body, an intermediate cover what is also fixed with six (6) M12 bolts to the main body and an inner container cover with spiralgasket, secured by means of eight (8)  $\frac{3}{4}$ " UNC bolts to the inner container (see Picture 2:).

**Picture 2: Package detail**


## 5 PACKAGE INVENTORY

**Table 2: Inventory**

| Components   | Quantity |
|--|----------|
| Main Body (0908-LE01-3AEIN-004)                      | 1        |
| Hex Head Screw M12x30 stainless ISO 4017             | 6        |
| Washer for M12                                       | 6        |
| Nitrile Rubber Gasket 5 mm thick OD 420              | 1        |
| External Cover (0908-LE01-3AEIN-009)                 | 1        |
| Hex Head Screw M12x70 stainless ISO 4017             | 6        |
| Split Lock Washer for M12                            | 6        |
| Intermediate Cover (0908-LE01-3AEIN-008)             | 1        |
| Bolt UNC 3/4" x 3 1/2" ANSI B 18.2.1 carbon steel    | 8        |
| Flat Washer 3/4"                                     | 8        |
| Container Cover Blind Flange # 150 ANSI B 16.5       | 1        |
| Spiral Gasket stainless / graphite DN 125 ASM B16.20 | 1        |
| Inner Can with Screw Cap (0908-LE01-3AEIN-007)       | 4        |

## 6 EQUIPMENT NEEDED FOR HANDLING

**Table 3: Handling elements**

| Elements                    | Quantity  | Specifications   | Use            |
|-----------------------------|-----------|--|----------------|
| Slings                      | 4         | Resistance similar or higher than 7x19+0 (5670 kg) rope.<br>Minimum length 135 cm.                             | Handling       |
| Sling Hooks                 | 4         | DIN 5691 or similar.<br>Working load limit 3250 kg.  | Handling       |
| Shackles                    | 4         | DIN 82101 or similar.<br>Working load limit 3250 kg.   | Handling       |
| Turnbuckles                 | 4         | Standardized.<br>Working load limit 3250 kg.   |                |
| Bolts with Nuts and Washers | 52 (each) | Bolts M10 – Grade 8.8 – DIN 933. Length 75 mm.<br>Nuts M10 – Grade 10 – DIN 934.<br>Washers for M10 – DIN 125. | Transport      |
| Wrench                      | 1         | Tube 19 mm.<br>Socket 3/8".  | External Cover |

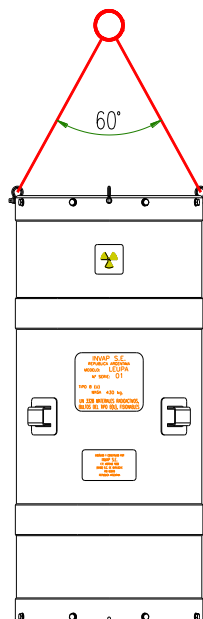
| Elements              | Quantity | Specifications                         | Use                |
|-----------------------|----------|--|--------------------|
| Tube Wrench Extension | 1        |  | Intermediate Cover |
| Ratchet Wrench        |          | Length approx. 300 mm.<br>Socket 3/8". | Inner Cover        |
| Wrench                | 1        | Socket 3/8".                           | General Use        |
| Torque Wrench         | 1        | Tube 1". 1/4".                         | Inner Cover        |

## 7 PROCEDURE

### 7.1 Handling

1. The lifting and moving must be made by means of a sling of four sections joined by a master link and a hook at the end, in accordance with DIN 5691.
2. The hooks must have a minimum 1000 kg working capacity each.
3. The slings can be of a 10 mm (7x19+0) nominal diameter rope, otherwise the rope diameter cannot be less than 6 mm.
4. The angle can be 60°, otherwise, said angle must be less than 90° (see Picture 3:).
5. The shackles must be DIN 82101 or resistant.
6. The slings must be manufactured with standardized components (thimbles, cord grips, hooks, shackles, turnbuckles, etc.).
7. The loading system (crane, lifting gear, etc.) must have a minimum 1000 kg capacity.
8. While handling, the package must be moved at the least possible distance from ground.

**Picture 3: Schematic of package handling**



## 7.2 Loading and Unloading

### 7.2.1 General Guidelines

1. The team work must have at least one professional or technician with the experience in this operation.
2. Operation must be supervised by a professional or technician with the knowledge and experience in criticality and radiological safety.
3. The cleanliness of inner cans must be verified by means of a sweep test.
4. The loading and unloading form (see Picture 13:) must be filled in and attached to the dispatch documentation.
5. Packages must be loaded or unloaded one at a time, avoiding the accumulation of packages in non-planned zones.
6. Before each loading, verify that the radioactive content does not exceed the authorized maximum.
7. Radioactive content must be the one stated in the approval certificate, it must not exceed the authorized maximum.

### 7.2.2 Loading of Fissile Substances in Inner Cans

1. The loading of each inner can, four (4) at the most for each package, must be carried out inside the glove box.
2. The substances to be loaded in the inner cans must have been previously contained in the moisture-sealed polyethylene bags.



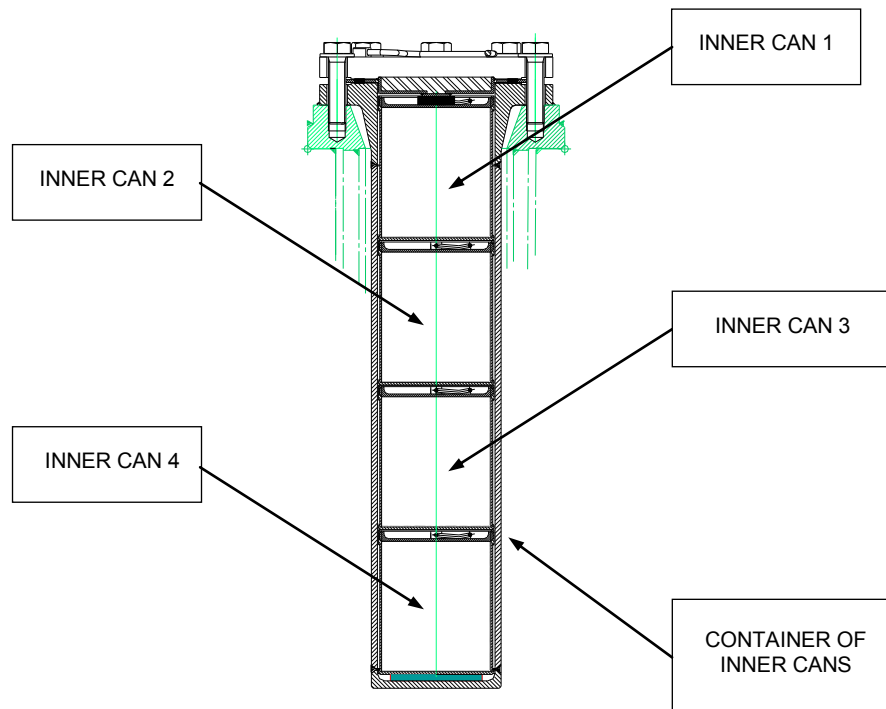
**Picture 4: Inner can**



3. The cans must leave the glove box fully closed and clean.
4. The external cleansing of inner cans must be verified by means of sweep test, and must not exceed  $0.4 \text{ Bq/cm}^2$ .

### **7.2.3 Loading of Inner Cans into the Container**

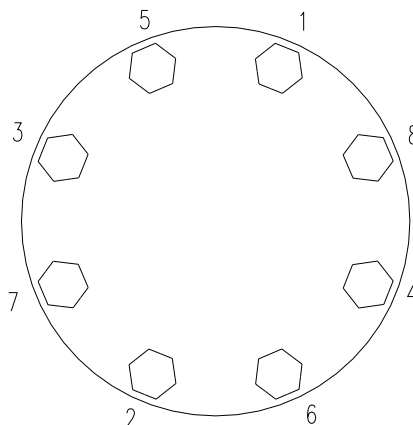
1. Once outside the glove box, the loaded and sealed inner cans must be placed inside the container.
2. The inner cans loaded with fissile substances must be vertically placed inside the package, the cover upwards, and must be piled one on top of the other (see Picture 5:).

**Picture 5: Container details**


3. In case there is volume left within the inner can, it must be filled with expandable resin.

#### 7.2.4 Sealing of Container of Inner Cans

1. Once the inner cans have been placed inside the container, the following steps must be carried out:
  - a. Mount the spiral gasket stainless/graphite on to its place and on its top put the blind flange.
  - b. Place bolts UNC  $\frac{3}{4}$ "—quantity: eight(8)—with their corresponding washers.
  - c. Tighten bolts up to an airtight closure of the container—torque not less than 55 Nm—(see Picture 6:).

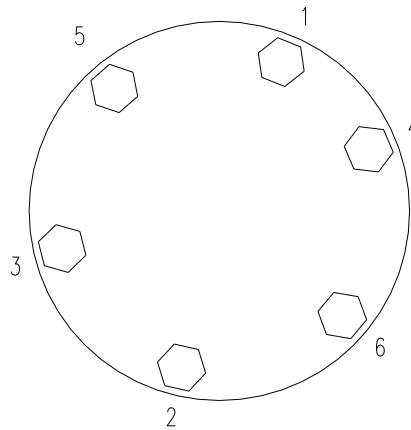
**Picture 6: Recommended sealing sequence (container cover)**


#### 7.2.5 Sealing of LEUPA Package

1. Once the container of inner cans is closed, proceed in the following way:

- a. Place the gasket (nitrile) of the intermediate cover.
- b. The intermediate cover is placed in its position.
- c. Bolts M12–quantity:six (6)–are mounted with their corresponding washers.
- d. Bolts are tightened until the intermediate cover is fixed (torque not less than 15 Nm).
2. Once the intermediate cover is fixed in its position, the following must be done:
  - a. Place the gasket (nitrile) of the external cover.
  - b. Place bolts M12 –quantity: six (6)– with their corresponding washers.
  - c. Bolts are tightened until the external cover is fixed –torque not less than 15 Nm– (see Picture 7:).

**Picture 7: Recommended closure sequence (intermediate/external cover)**



### 7.2.6 Unloading

1. Position the Package in the unloading area
2. Remove all bolts of the Outer Cover
3. Remove the cover bolts of Intermediate Cover
4. Remove the bolts from the lid of Inner Containers
5. Remove the Spiral Gasket
6. Remove all Inner Containers
7. After the download the same loading procedure is performed item 7.2.4 and 7.2.5

### 7.2.7 Transport

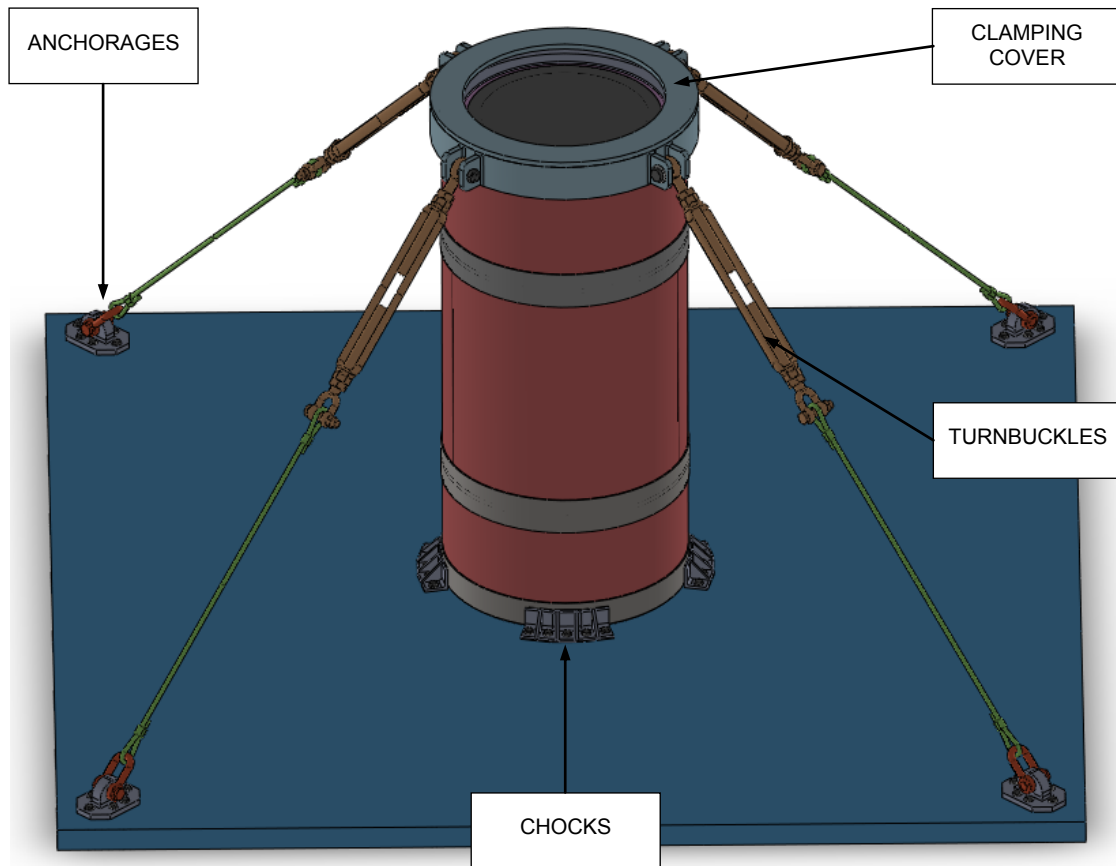
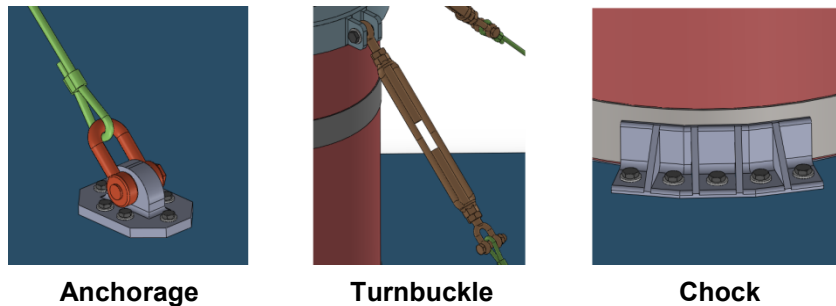
1. Before each dispatch the following must be done:
  - a. Verify the external cleansing of the package by sweep test.
  - b. Complete dispatch form of each package.
  - c. Visually inspect the external look of each package.
  - d. Verify that the temporary radioactive contamination of the external surfaces does not exceed:
    - i. 4 Bq/cm<sup>2</sup> for beta and gamma emitters and low toxicity alpha emitters.
    - ii. 0.4 Bq/cm<sup>2</sup> for all other alpha emitters.
  - e. Verify the Transport Index (TI). This shall be determined as the maximum radiation level in millisievert units per hour (mSv/h) at a distance of one (1) meter from the external surfaces of the package. The determined value is multiplied a hundred times and the

obtained figure is the Transport Index. This figure shall be rounded up (for example 1.13 shall be 1.2), except in cases of 0.05 values or less, which can be considered as zero.

- f. Verify that the ISC value is the one stated in the Approval Certificate of the LEUPA – RA/103/B(U)F-96.
  - g. Verify that the package is duly marked and labelled:
    - i. UN abbreviation.
    - ii. Clover symbol printed (Picture 1 Paragraph 534 – AR 10.16.1 Rev. 2).
    - iii. Labels on package, placed on two opposite sides (Picture 2 Paragraph 536, Picture 5 Paragraph 539 and N° of the United Nations AR10.16.1 Rev. 2).
    - iv. Name of dispatch.
    - v. Net mass.
    - vi. Type of package.
    - vii. Identification mark.
    - viii. Series No.
    - ix. Sender and Addressee address.
  - h. Verify the package has been sealed.
  - i. Verify all required documentation for dispatch.
    - i. Approval Certificate– ARN.
    - ii. Loading Form.
    - iii. Dispatch Form.
    - iv. Sender's certificate/statement (Paragraph 545 – AR 10.16.1 Rev. 2).
    - v. Consignment details (Paragraph 544 – AR 10.16.1 Rev. 2).
  - j. Verify that the approved and in force inspection form is with dispatch documentation.
  - k. Verify that the loading and unloading form is with dispatch documentation(see Picture 8:).
2. Once the above mentioned issues are verified, the LEUPA package is free for transport.

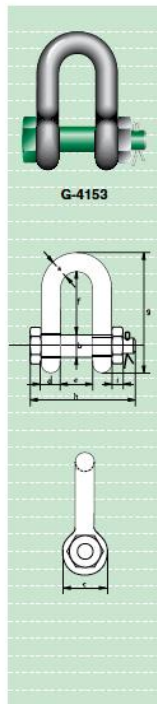
### **7.2.8 Clamping Method during Transport**

1. The transportation of the LEUPA must be with the package in a vertical position with covers upwards on the means of transportation chosen, and it must be fixed with the four (4) turnbuckles by chocks to the floor.
2. For the transportation of the LEUPA package, it is recommended to fix it as explained in Picture 8: and Picture 9:.
3. The angle of turnbuckles can be around 45°(see Picture 8:).
4. The shackles must be standardized, working load limit 3250 kg, or others of higher resistance.
5. Turnbuckles must be standardized, working load limit 3270 kg.
6. The stainless steel rope must be standardized 7x19+0, working load limit 3270 kg.
7. The slings must be manufactured with standardized components(thimbles, cord grips, hooks, shackles, etc.).
8. All bolts used are M10 –grade 8.8 and nuts M10– grade 10.
9. Any other clamping method to be used must be revised and approved by the dispatch manager prior to transport.

**Picture 8: Clamping suggestion**

**Picture 9: Clamping Elements**


10. Verification of clamping mode, the components used and the details thereof are in the Technical Specification No. 0908-LE01-3BSIN-025.
11. Anchorage 0908-LE02-3ASIN-013/ Chock 0908-LE02-3ASIN-014/ Clamping Cover 0908-LE02-3ASIN-015.
12. To select shackles, turnbuckles and ropes, see the following tables in accordance with DIN 5691 standards.

Picture 10: Shackles



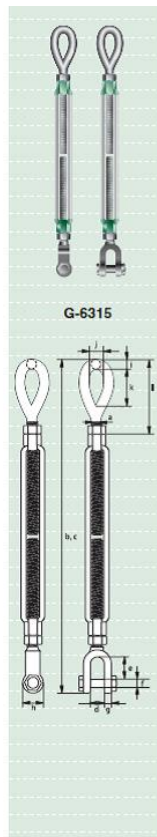
## Green Pin® Standard Shackles

### dee shackles with safety bolt

- **Material** : bow and pin high tensile steel, Grade 6, quenched and tempered
- **Safety Factor** : MBL equals 6 x WLL
- **Standard** : EN 13889 and  
meets performance requirements of US Fed. Spec. RR-C-271 Type IVB Class 3, Grade A
- **Finish** : hot dipped galvanized
- **Temperature Range** : -20 °C up to +200 °C
- **Certification** : at no extra charges this product can be supplied with a works certificate, 3.1 material certificate, manufacturer test certificate, EC Declaration of Conformity and all shackles starting from 2 t can be supplied with DNV 2.7-1 certificate.

| working<br>load<br>limit | diameter<br>bow | diameter<br>pin | diameter<br>eye | width<br>eye | width<br>inside | length<br>inside | length | length<br>bolt | thickness<br>nut | weight<br>each |
|--------------------------|-----------------|-----------------|-----------------|--------------|-----------------|------------------|--------|----------------|------------------|----------------|
| t                        | a               | b               | c               | d            | e               | f                | g      | h              | i                | kg             |
| 2                        | 13.5            | 16              | 34              | 13           | 22              | 43               | 81     | 82             | 13               | 0.39           |
| 3.25                     | 16              | 19              | 40              | 16           | 27              | 51               | 97     | 98             | 17               | 0.67           |
| 4.75                     | 19              | 22              | 46              | 19           | 31              | 59               | 112    | 114            | 19               | 1.08           |
| 6.5                      | 22              | 25              | 52              | 22           | 36              | 73               | 134    | 130            | 22               | 1.66           |
| 8.5                      | 25              | 28              | 59              | 25           | 43              | 85               | 154    | 150            | 25               | 2.46           |
| 9.5                      | 28              | 32              | 66              | 28           | 47              | 90               | 167    | 166            | 27               | 3.4            |
| 12                       | 32              | 35              | 72              | 32           | 51              | 94               | 180    | 178            | 30               | 4.51           |
| 13.5                     | 35              | 38              | 80              | 35           | 57              | 115              | 209    | 197            | 33               | 6.1            |
| 17                       | 38              | 42              | 88              | 38           | 60              | 127              | 230    | 202            | 19               | 7.63           |
| 25                       | 45              | 50              | 103             | 45           | 74              | 149              | 271    | 249            | 23               | 12.88          |
| 35                       | 50              | 57              | 111             | 50           | 83              | 171              | 305    | 269            | 26               | 17.35          |
| 42.5                     | 57              | 65              | 130             | 57           | 95              | 190              | 345    | 301            | 29               | 25.94          |
| 55                       | 65              | 70              | 145             | 65           | 105             | 203              | 376    | 330            | 32               | 35.33          |
| 85                       | 75              | 83              | 162             | 73           | 127             | 229              | 427    | 380            | 39               | 52.97          |

Picture 11: Turnbuckles



## Green Pin® turnbuckles Eye - Jaw

### generally to ASTM F1145-92





- **Material** : drop forged high tensile steel SAE 1035 or 1045
- **Safety factor** : MBL equals 5 x WLL
- **Standard** : generally to ASTM F1145-92  
formerly U.S. Federal Specification FF-T-791b
- **Finish** : hot dipped galvanized
- **Certification** : a works certificate, proof load test certificate  
can be supplied upon request

| diameter<br>thread | take<br>up | length<br>closed<br>position | length<br>open<br>position | opening<br>jaw | length<br>inside<br>jaw | diameter<br>pin | thickness<br>eye | diameter<br>eye | diameter<br>eye | width<br>inside<br>eye | length<br>inside<br>eye | length<br>closed<br>position | working<br>load<br>limit | weight<br>each |
|--------------------|------------|------------------------------|----------------------------|----------------|-------------------------|-----------------|------------------|-----------------|-----------------|------------------------|-------------------------|------------------------------|--------------------------|----------------|
| a                  | b          | c                            | d                          | e              | f                       | g               | h                | i               | j               | k                      | l                       | m                            | tons                     | kg             |
| 3/8                | 6          | 302                          | 416                        | 13             | 22                      | 8               | 8                | 21              | 9               | 13                     | 28                      | 65                           | 0.54                     | 0.34           |
| 1/2                | 6          | 338                          | 452                        | 16             | 26                      | 9.5             | 10               | 25              | 12              | 18                     | 36                      | 80                           | 1                        | 0.69           |
| 1/2                | 9          | 414                          | 585                        | 16             | 26                      | 9.5             | 10               | 25              | 12              | 18                     | 36                      | 80                           | 1                        | 0.78           |
| 1/2                | 12         | 490                          | 719                        | 16             | 26                      | 9.5             | 10               | 25              | 12              | 18                     | 36                      | 80                           | 1                        | 0.93           |
| 3/8                | 6          | 394                          | 508                        | 18             | 33                      | 13              | 13               | 33              | 14              | 21                     | 43                      | 98                           | 1.59                     | 1.07           |
| 3/8                | 9          | 470                          | 641                        | 18             | 33                      | 13              | 13               | 33              | 14              | 21                     | 43                      | 98                           | 1.59                     | 1.39           |
| 3/8                | 12         | 546                          | 775                        | 18             | 33                      | 13              | 13               | 33              | 14              | 21                     | 43                      | 98                           | 1.59                     | 1.71           |
| 3/8                | 6          | 432                          | 546                        | 23             | 38                      | 15.5            | 16               | 41              | 17              | 25                     | 53                      | 113                          | 2.36                     | 1.76           |
| 3/8                | 9          | 508                          | 679                        | 23             | 38                      | 15.5            | 16               | 41              | 17              | 25                     | 53                      | 113                          | 2.36                     | 1.95           |
| 3/8                | 12         | 584                          | 813                        | 23             | 38                      | 15.5            | 16               | 41              | 17              | 25                     | 53                      | 113                          | 2.36                     | 2.43           |
| 3/8                | 18         | 737                          | 1080                       | 23             | 38                      | 15.5            | 16               | 41              | 17              | 25                     | 53                      | 113                          | 2.36                     | 2.98           |
| 1/2                | 12         | 625                          | 854                        | 27             | 44                      | 19              | 18               | 48              | 20              | 31                     | 59                      | 118                          | 3.27                     | 3.52           |
| 1/2                | 18         | 778                          | 1121                       | 27             | 44                      | 19              | 18               | 48              | 20              | 31                     | 59                      | 118                          | 3.27                     | 4.19           |
| 1                  | 6          | 524                          | 638                        | 30             | 52                      | 22              | 20               | 54              | 22              | 36                     | 74                      | 155                          | 4.54                     | 4.05           |
| 1                  | 12         | 676                          | 905                        | 30             | 52                      | 22              | 20               | 54              | 22              | 36                     | 74                      | 155                          | 4.54                     | 5.08           |
| 1                  | 18         | 829                          | 1172                       | 30             | 52                      | 22              | 20               | 54              | 22              | 36                     | 74                      | 155                          | 4.54                     | 6.03           |
| 1                  | 24         | 980                          | 1437                       | 30             | 52                      | 22              | 20               | 54              | 22              | 36                     | 74                      | 155                          | 4.54                     | 7.39           |
| 1 1/2              | 12         | 760                          | 989                        | 44             | 73                      | 29              | 25               | 67              | 29              | 45                     | 88                      | 197                          | 6.9                      | 8.80           |
| 1 1/2              | 18         | 912                          | 1255                       | 44             | 73                      | 29              | 25               | 67              | 29              | 45                     | 88                      | 197                          | 6.9                      | 11             |
| 1 1/2              | 24         | 1064                         | 1521                       | 44             | 73                      | 29              | 25               | 67              | 29              | 45                     | 88                      | 197                          | 6.9                      | 12.9           |
| 1 1/2              | 12         | 823                          | 1052                       | 52             | 70                      | 35              | 27               | 80              | 32              | 54                     | 105                     | 215                          | 9.71                     | 13.1           |
| 1 1/2              | 18         | 975                          | 1318                       | 52             | 70                      | 35              | 27               | 80              | 32              | 54                     | 105                     | 215                          | 9.71                     | 14.7           |
| 1 1/2              | 24         | 1128                         | 1585                       | 52             | 70                      | 35              | 27               | 80              | 32              | 54                     | 105                     | 215                          | 9.71                     | 17.8           |
| 1 1/2              | 18         | 1060                         | 1403                       | 59             | 85                      | 41              | 33               | 90              | 38              | 60                     | 119                     | 254                          | 12.7                     | 22.3           |
| 1 1/2              | 24         | 1213                         | 1670                       | 59             | 85                      | 41              | 33               | 90              | 38              | 60                     | 119                     | 254                          | 12.7                     | 27.5           |
| 2                  | 24         | 1315                         | 1772                       | 64             | 93                      | 51              | 39               | 108             | 45              | 69                     | 146                     | 308                          | 16.78                    | 42.9           |
| 2 1/2              | 24         | 1486                         | 1943                       | 75             | 114                     | 57              | 38               | 143             | 51              | 79                     | 165                     | 344                          | 27.22                    | 68             |
| 2 1/2              | 24         | 1562                         | 2019                       | 89             | 110                     | 70              | 42               | 156             | 57              | 83                     | 178                     | 381                          | 34.02                    | 91             |



## Picture 12: Ropes

### AISI 316 STAINLESS STEEL ROPES LOAD BREAKING LIMIT

| NOMINAL<br>DIAMETER | 1x19+0 standard   | 7x19+0 standard   | 7x7+0 standard   | Dyform 1x19+0   |
|---------------------|---|---|--|---|
|                     |  |  |  |  |
| mm                  | kgf   | kgf   | kgf  | kgf   |
| 2                   | 320   | 226   | 242  | ---   |
| 2,5                 | 500   | 355   | ---  | 690 (1)   |
| 3                   | 720   | 510   | 545  | 1.000 (1)   |
| 4                   | 1.280   | 907   | 968  | 1.780 (1)   |
| 5                   | 2.000   | 1.420   | 1.510  | 2.440   |
| 6                   | 2.880   | 2.040   | 2.180  | 3.550   |
| 7                   | 3.550   | 2.780   | 2.970  | 4.910   |
| 8                   | 4.640   | 3.630   | 3.870  | 6.150   |
| 10                  | 7.250   | 5.670   | 6.050  | 9.770   |
| 11                  | 8.770   | ---   | ---  | 12.100  |
| 12                  | 10.400  | 8.160   | 8.710  | 14.400  |
| 14                  | 14.180  | 11.100  | 11.900   | 19.300 (2)  |
| 16                  | 18.560  | 13.600  | ---  | 25.600 (2)  |
| 19                  | 21.620  | ---   | ---  | 32.000 (3)  |
| 22                  | 29.070  | ---   | ---  | ---   |
| 26                  | 40.600  | ---   | ---  | ---   |

#### 7.2.7.1 Alternative Clamping Method

1. For those cases in which the means of transportation does not allow for the clamping method described above in 6.2.7, the following shall be done:
  - a. The container must be placed vertically.
  - b. It must be fixed on the upper part by means of the clamping cover.
  - c. Its base shall have movement restrictions so that it may not slide.
  - d. It must have at least four (4) anchorages. All of them clamped on its bottom to the transportation floor.
  - e. Vertical and horizontal movements must be restricted.
  - f. In case this clamping method is used the dispatch manager must approve it for its transport.

#### 7.2.8 Storage

1. No special environment conditions are needed for storage.
2. No more than six (6) of this type of packages can be stored in the same site.
3. They must not be piled up.

#### 7.2.9 Empty Packages

1. To be dispatched as exempted package, the plates with radioactive symbol must be covered, in such a way that they may not fall off until arrival. The following steps shall be checked:
  - a. The package must be kept in good conditions and tightly closed.
  - b. The inner contamination level cannot exceed:
    - 400 Bq/cm<sup>2</sup> for beta and gamma emitters and low toxicity alpha emitters; and
    - 40 Bq/cm<sup>2</sup> for all other alpha emitters.
  - c. The radiation level at any external part of the exempted package shall not exceed 5 µSv/h.

- d. Labels that may have been on its surface while loaded with radioactive material will be discarded.
- e. Place the UN No. on exempted packages.

## 8 FORMS SAMPLE

**Picture 13: Loading and unloading form**

| LOADING AND UNLOADING FORM  |                                    |              |                 |
|---|------------------------------------|--------------|-----------------|
| LEUPA PACKAGE   |                                    |              |                 |
| SERIES NUMBER:  |                                    | DATE: / /    |                 |
| LOADING/UNLOADING FISSILE MATERIAL<br>(Weight and type of Fissile Material) |                                    |              |                 |
| Number of Inner Cans:   |                                    |              |                 |
| No.   | Description                        | Observations | Done/Supervised |
| 1   | Technical Manager                  |              |                 |
| 2   | Safety and Radioprotection Manager |              |                 |
| 3   | Verify Radioactive Content         |              |                 |
| 4   | Tightening of Container Flange     | Torque:      |                 |
| 5   | Tightening of Intermediate Cover   | Torque:      |                 |
| 6   | Tightening of External Cover       | Torque:      |                 |



**Picture 14: Dispatch form**

| <b>DISPATCH FORM</b> |  |                     |                        |
|----------------------|--|---------------------|------------------------|
| LEUPA PACKAGE        |  |                     |                        |
| SERIES NUMBER:       |  | DATE: / /           |                        |
| <b>No.</b>           | <b>Description</b>   | <b>Observations</b> | <b>Done/Supervised</b> |
| 1                    | Visual Inspection  |                     |                        |
| 2                    | Verify Surface Radioactive Contamination<br>( $< 4 \text{ Bq/cm}^2$ ) /<br>( $< 0.4 \text{ Bq/cm}^2$ ) |                     |                        |
| 3                    | Transport Index<br>(in one meter)  |                     |                        |
| 4                    | Safety Index as regards<br>Cricality (ISC)   |                     |                        |
| 5                    | Verify Labels and Marks  |                     |                        |
| 6                    | Verify Seals   |                     |                        |
| 7                    | Verify Documentation   |                     |                        |
| 8                    | Verify Clamping Method   |                     |                        |

**Picture 15: Consignment Details**

| CONSIGNMENT DETAILS   |  |  |   |
|---|--|--|---|
| Correct name of Dispatch:   |  | (AR 10.16.1 Rev. 2 – Table 1)                                    |   |
| “7”   |  |  |   |
| Sender: (Name and Address)  |  |  |   |
| Addressee: (Name and Address)   |  |  |   |
| <b>UN</b>   |  | UN assigned Number to the Material (AR 10.16.1 Rev. 2 – Table 1) |   |
| Name or Symbol of the Transported Radionuclides:  |  | URANIUM 235 ( %)   |   |
| Physical and Chemical Description:  |  |  |   |
| <b>Total Mass in grams<br/>(Fissile Substance)</b>  |  | grams  | Fuel Elements/Plates (Quantity of Plate Carriers) |
| Category of Package   |  | I – WHITE  |   |
|   |  | II – YELLOW  |   |
|   |  | III – YELLOW   |   |
| Transport Index (ΣIT):  |  |  |   |
| Safety Index as regards Criticality (ΣISC):   |  |  |   |
| Applicable Identification Mark from Competent Authority: B(U)F – RA/0103/B(U)F-96 Package Others:   |  |  |   |
| Dispatch on exclusive use mode  |  |  |   |
|   |  | YES  | NO  |
| <p>“I hereby state that the content of this consignment is wholly and fully described above under the correct name dispatch; and that it has been classified, packed, marked and labelled, and it is by all means in appropriate conditions for its transport, in accordance with international and national regulations in force”.</p> |  |  |   |
| Signature   |  | Print Full Name  | Date  |