

HTS Leads Installation Reports



FERMILAB
Technical
Division

**7500 A HTS Power Leads for the
LHC DFBX:
Installation of the Current Leads**

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Box "H"



FERMILAB
Technical Division

Installation of the LHC HTS Current Leads

Lead: DFLX 11

Signed

Wayne E. Johnson

Date

8-12-05



**7500 A HTS Power Leads for the
LHC DFBX:
Installation of the Current Leads
at Meyer Tool & Manufacturing**

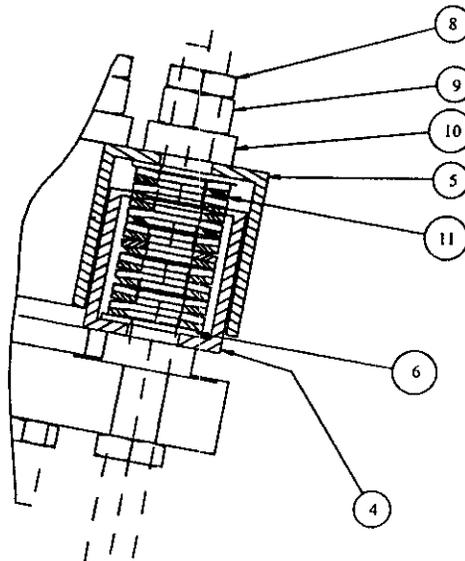


Figure 1.31b An installed Belleville washer assembly.

1.29 Tighten the 6 Belleville washer assemblies to apply load to the PEEK seal.

1.29.1 Back down the tensioning rod nuts used in Step 1.25 so they are about 5 mm below the power lead flange.

1.29.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 15.84 B 15.82 C 15.85 D 15.76 E 15.66 F 15.99

1.29.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 14.04 B 14.02 C 14.05 D 13.96 E 13.86 F 14.19

1.29.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts ¼ turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened ¼ turn, check off the appropriate line.

A B ✓ C ✓ D ✓ E ✓ F ✓

A ✓ B ✓ C ✓ D ✓ E ✓ F ✓



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A B C D E F
 A B C D E F
 A B C D E F
 A B C D E F
 A _____ B _____ C _____ D _____ E _____ F _____
 A _____ B _____ C _____ D _____ E _____ F _____

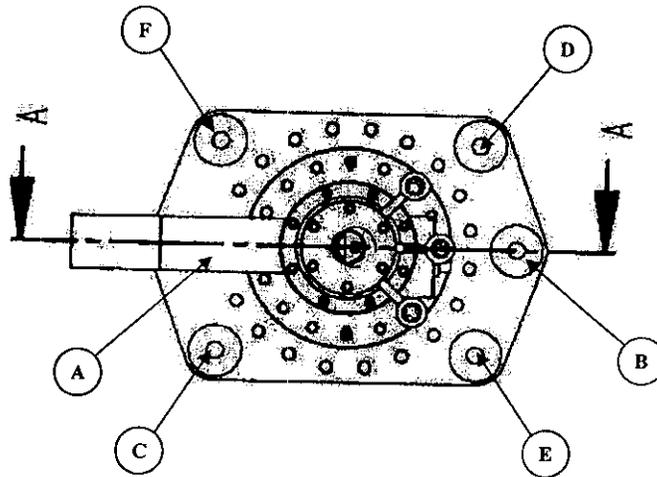


Figure 1.32.2 The specified sequence for tightening the Belleville washer assemblies.

1.29.5 Remove the adjustable parallels from under each Belleville washer assembly, then replace them and measure the final gaps 'y' in Figure 1.31a. Units are mm.

A 13.96 B 13.92 C 13.98 D 14.00 E 13.73 F 14.08

1.29.6 Attach a Conflat flange with a pressure gauge and a fill valve to the gas outlet port. Pressurize to 10 psig. The seal is acceptable if the pressure loss is less than 1 psi after 2 minutes.

1.30 Reduce compression of Belleville washer assemblies.

1.30.1 Remove the Teflon centering ring from the installed power lead.

1.30.2 Back off the loading nuts sequentially to reduce the Belleville compression to 0.75 mm (0.030 in).

1.31 Tighten down the jam nuts to secure the loading nuts on the installed Belleville washer assemblies.

Lead DFLX _____



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Technical Division

Installation of the LHC HTS Current Leads

Lead: DFLX 11

Signed

Mike Jeeringa

Date

10/17/05



**7500 A HTS Power Leads for the
LHC DFBX:
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1.32.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 15.74 B 16.19 C 16.11 D 15.77 E 15.57 F 16.18

1.32.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 13.94 B 14.39 C 14.31 D 13.97 E 13.77 F 14.38

1.32.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts ¼ turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened ¼ turn, check off the appropriate line.

A	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	C	<input checked="" type="checkbox"/>	D	<input checked="" type="checkbox"/>	E	<input checked="" type="checkbox"/>	F	<input checked="" type="checkbox"/>
A	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	C	<input checked="" type="checkbox"/>	D	<input checked="" type="checkbox"/>	E	<input checked="" type="checkbox"/>	F	<input checked="" type="checkbox"/>
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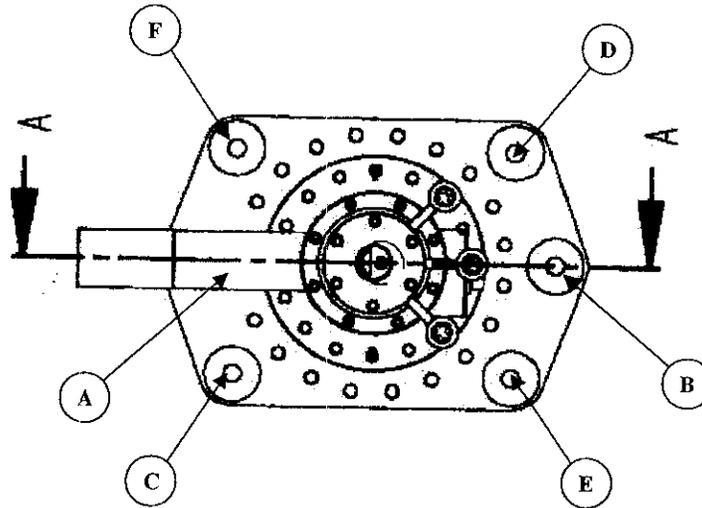


Figure 1.32.2 The specified sequence for tightening the Belleville washer assemblies.

1.32.5 Remove the adjustable parallels from under each Belleville washer assembly, then replace them and measure the final gaps 'y' in Figure 1.31a. Units are mm.

A 13.95 B 14.39 C 14.29 D 13.98 E 13.79 F 14.36

- 1.33 Remove the Teflon centering shim blocks from the installed power lead.
- 1.34 Tighten down the jam nuts to secure the loading nuts on the installed Belleville washer assemblies.
- 1.35 Tighten the tensioning stud nuts against the underside of the power lead flange to provide stability during transportation.
- 1.36 Bolt a heater onto the power lead. Use thermally conductive grease at the interface between the heater and the power lead.



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Box "H"



FERMILAB
Technical Division

Installation of the LHC HTS Current Leads

Lead: DFLX 34

Signed

Wayne E. Johnson

Date

8-12-05



**7500 A HTS Power Leads for the
LHC DFBX:
Installation of the Current Leads
at Meyer Tool & Manufacturing**

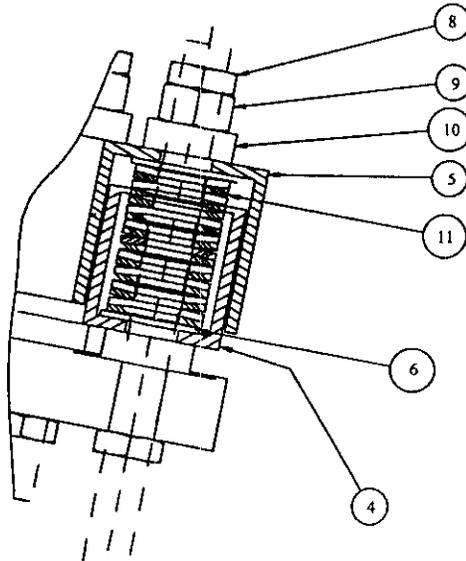


Figure 1.31b An installed Belleville washer assembly.

- 1.29 Tighten the 6 Belleville washer assemblies to apply load to the PEEK seal.
- 1.29.1 Back down the tensioning rod nuts used in Step 1.25 so they are about 5 mm below the power lead flange.
- 1.29.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 16.02 B 15.69 C 15.47 D 15.41 E 15.74 F 16.07

- 1.29.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 14.22 B 13.89 C 13.67 D 13.61 E 13.94 F 14.27

- 1.29.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts ¼ turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened ¼ turn, check off the appropriate line.

A ✓ B ✓ C ✓ D ✓ E ✓ F ✓
 A ✓ B ✓ C ✓ D ✓ E ✓ F ✓



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A ✓ B ✓ C ✓ D ✓ E ✓ F ✓
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 A ✓ B C D ✓ E F ✓
 A B C D E F
 A B C D E F

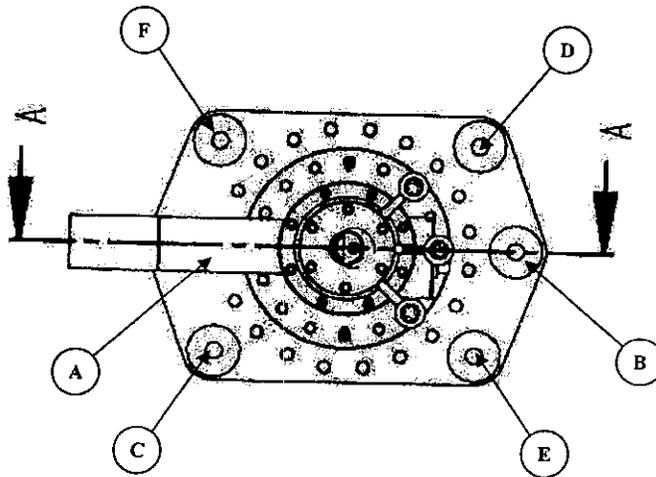


Figure 1.32.2 The specified sequence for tightening the Belleville washer assemblies.

1.29.5 Remove the adjustable parallels from under each Belleville washer assembly, then replace them and measure the final gaps 'y' in Figure 1.31a. Units are mm.

A 13.28 B 13.81 C 13.67 D 13.61 E 13.89 F 14.29

1.29.6 Attach a Conflat flange with a pressure gauge and a fill valve to the gas outlet port. Pressurize to 10 psig. The seal is acceptable if the pressure loss is less than 1 psi after 2 minutes.

1.30 Reduce compression of Belleville washer assemblies.

1.30.1 Remove the Teflon centering ring from the installed power lead.

1.30.2 Back off the loading nuts sequentially to reduce the Belleville compression to 0.75 mm (0.030 in).

1.31 Tighten down the jam nuts to secure the loading nuts on the installed Belleville washer assemblies.



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Technical Division

Installation of the LHC HTS Current Leads

Lead: DFLX 34

Signed

Mike Jennings

Date

10/17/05



**7500 A HTS Power Leads for the
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1.32.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 15.66 B 15.97 C 15.90 D 15.63 E 16.09 F 15.87

1.32.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 13.86 B 14.17 C 14.10 D 13.83 E 14.29 F 14.07

1.32.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts 1/4 turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened 1/4 turn, check off the appropriate line.

A	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	C	<input checked="" type="checkbox"/>	D	<input checked="" type="checkbox"/>	E	<input checked="" type="checkbox"/>	F	<input checked="" type="checkbox"/>
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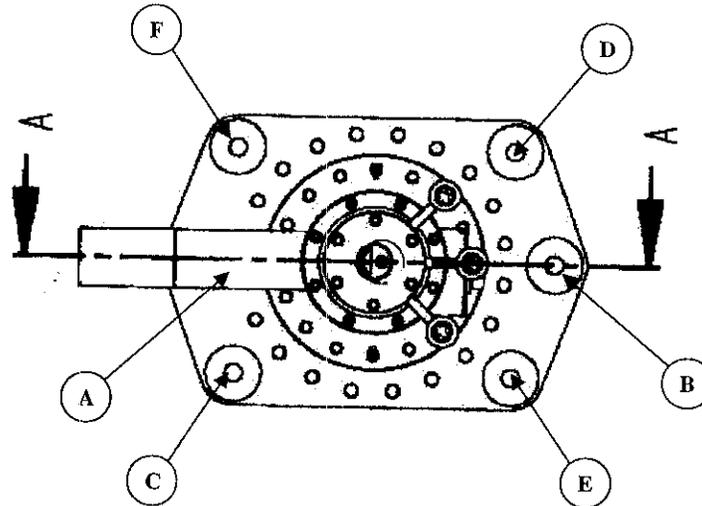


Figure 1.32.2 The specified sequence for tightening the Belleville washer assemblies.

1.32.5 Remove the adjustable parallels from under each Belleville washer assembly, then replace them and measure the final gaps 'y' in Figure 1.31a. Units are mm.

A 13.85 B 14.15 C 14.12 D 13.82 E 14.26 F 14.08

- 1.33 Remove the Teflon centering shim blocks from the installed power lead.
- 1.34 Tighten down the jam nuts to secure the loading nuts on the installed Belleville washer assemblies.
- 1.35 Tighten the tensioning stud nuts against the underside of the power lead flange to provide stability during transportation.
- 1.36 Bolt a heater onto the power lead. Use thermally conductive grease at the interface between the heater and the power lead.



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Box "H"



FERMILAB
Technical Division

Installation of the LHC HTS Current Leads

Lead: DFLX 35

Signed

Wayne E. Johnson

Date

8-12-05



**7500 A HTS Power Leads for the
LHC DFBX:
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at Meyer Tool & Manufacturing**

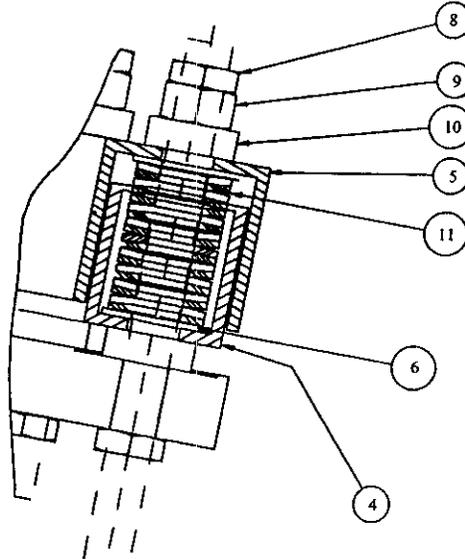


Figure 1.31b An installed Belleville washer assembly.

- 1.29 Tighten the 6 Belleville washer assemblies to apply load to the PEEK seal.
- 1.29.1 Back down the tensioning rod nuts used in Step 1.25 so they are about 5 mm below the power lead flange.
- 1.29.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 15.84 B 16.05 C 15.71 D 15.75 E 15.70 F 15.72

- 1.29.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 14.04 B 14.25 C 13.91 D 13.95 E 13.90 F 13.92

- 1.29.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts ¼ turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened ¼ turn, check off the appropriate line.

A B C D E F

A B C D E F



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A ✓ B ✓ C ✓ D ✓ E ✓ F ✓
 A ✓ B ✓ C ✓ D ✓ E ✓ F 0
 A ✓ B ✓ C ✓ D ✓ E ✓ F 0
 A ✓ B C ✓ D E F ✓
 A ✓ B C D E F ✓
 A B C D E F

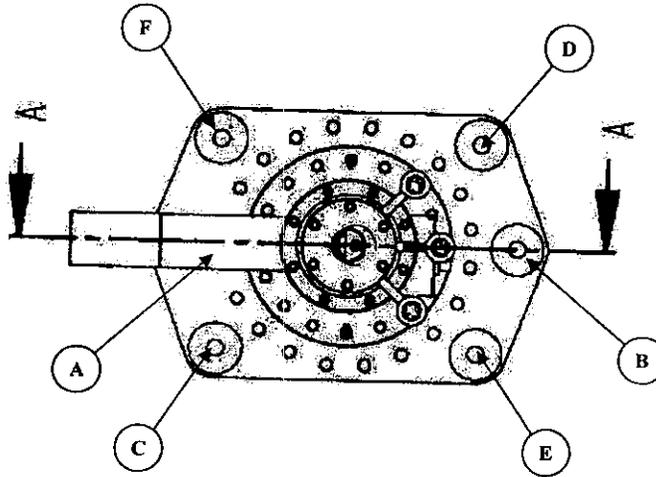


Figure 1.32.2 The specified sequence for tightening the Belleville washer assemblies.

1.29.5 Remove the adjustable parallels from under each Belleville washer assembly, then replace them and measure the final gaps 'y' in Figure 1.31a. Units are mm.

A 13.96 B 14.24 C 13.89 D 13.98 E 13.89 F 13.93

1.29.6 Attach a Conflat flange with a pressure gauge and a fill valve to the gas outlet port. Pressurize to 10 psig. The seal is acceptable if the pressure loss is less than 1 psi after 2 minutes.

1.30 Reduce compression of Belleville washer assemblies.

1.30.1 Remove the Teflon centering ring from the installed power lead.

1.30.2 Back off the loading nuts sequentially to reduce the Belleville compression to 0.75 mm (0.030 in).

1.31 Tighten down the jam nuts to secure the loading nuts on the installed Belleville washer assemblies.

Lead DFLX



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Installation of the LHC HTS Current Leads

Lead: DFLX 35

Signed Mike Jennings Date 10/17/05



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1.32.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 15.74 B 15.99 C 16.44 D 15.60 E 16.03 F 15.80

1.32.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 13.94 B 14.19 C 14.64 D 13.80 E 14.23 F 14.00

1.32.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts 1/4 turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened 1/4 turn, check off the appropriate line.

A	<u>✓</u>	B	<u>✓</u>	C	<u>✓</u>	D	<u>✓</u>	E	<u>✓</u>	F	<u>✓</u>
A	<u>✓</u>	B	<u>✓</u>	C	<u>✓</u>	D	<u>✓</u>	E	<u>✓</u>	F	<u>✓</u>
A	<u>✓</u>	B	<u>✓</u>	C	<u>✓</u>	D	<u>✓</u>	E	<u>✓</u>	F	<u>✓</u>
A	<u>✓</u>	B	<u>✓</u>	C	<u>✓</u>	D	<u>✓</u>	E	<u>✓</u>	F	<u>✓</u>
A	<u>✓</u>	B	<u>✓</u>	C	<u>✓</u>	D	<u>✓</u>	E	<u>✓</u>	F	<u>✓</u>
A	<u>✓</u>	B	<u>✓</u>	C	<u>✓</u>	D	<u>✓</u>	E	<u>✓</u>	F	<u>✓</u>
A	_____	B	_____	C	_____	D	_____	E	_____	F	_____
A	_____	B	_____	C	_____	D	_____	E	_____	F	_____

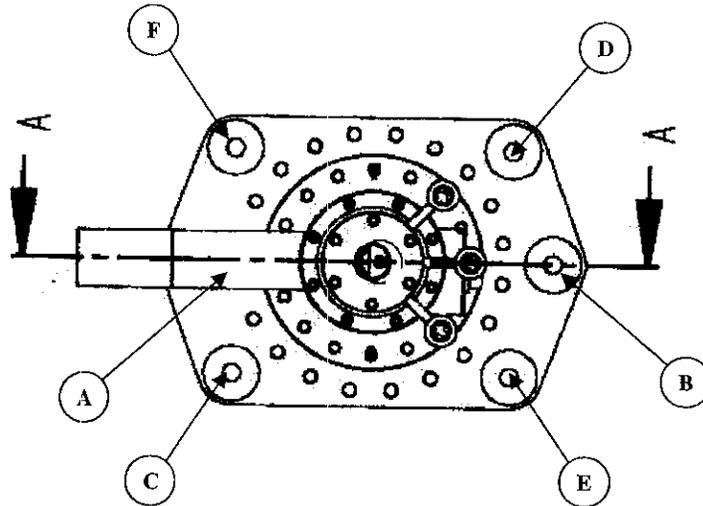


Figure 1.32.2 The specified sequence for tightening the Belleville washer assemblies.

1.32.5 Remove the adjustable parallels from under each Belleville washer assembly, then replace them and measure the final gaps 'y' in Figure 1.31a. Units are mm.

A 13.96 B 14.20 C 14.61 D 13.83 E 14.21 F 13.98

- 1.33 Remove the Teflon centering shim blocks from the installed power lead.
- 1.34 Tighten down the jam nuts to secure the loading nuts on the installed Belleville washer assemblies.
- 1.35 Tighten the tensioning stud nuts against the underside of the power lead flange to provide stability during transportation.
- 1.36 Bolt a heater onto the power lead. Use thermally conductive grease at the interface between the heater and the power lead.



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FERMILAB
Technical Division

Installation of the LHC HTS Current Leads

Lead: DFLX 36

Signed

Mike Deina

Date

10/17/05



**7500 A HTS Power Leads for the
 LHC DFBX:
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1.32.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 15.96 B 15.97 C 16.30 D 15.26 E 16.52 F 15.54

1.32.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 14.16 B 14.17 C 14.50 D 13.46 E 14.72 F 13.74

1.32.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts ¼ turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened ¼ turn, check off the appropriate line.

A ✓ B ✓ C ✓ D ✓ E ✓ F ✓
 A ✓ B ✓ C ✓ D ✓ E ✓ F ✓
 A ✓ B ✓ C ✓ D ✓ E ✓ F ✓
 A ✓ B ✓ C ✓ D ✓ E ✓ F ✓
 A ✓ B ✓ C ✓ D ✓ E ✓ F ✓
 A ✓ B ✓ C ✓ D ✓ E ✓ F ✓
 A _____ B _____ C _____ D _____ E _____ F _____
 A _____ B _____ C _____ D _____ E _____ F _____

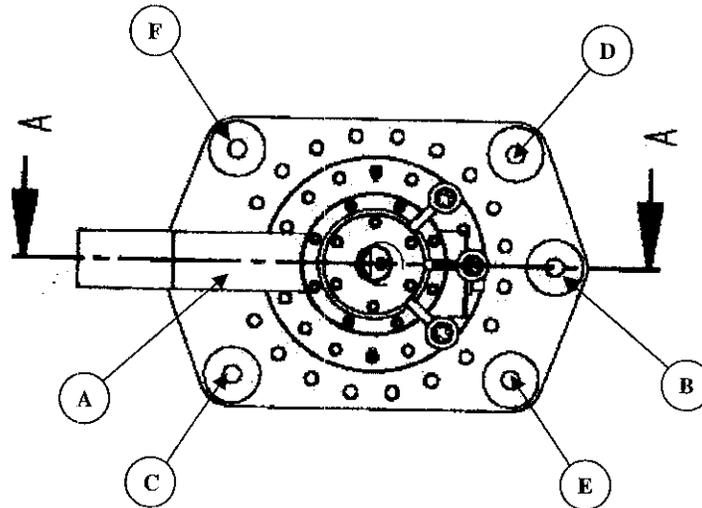


Figure 1.32.2 The specified sequence for tightening the Belleville washer assemblies.

1.32.5 Remove the adjustable parallels from under each Belleville washer assembly, then replace them and measure the final gaps 'y' in Figure 1.31a. Units are mm.

A 14.14 B 14.17 C 14.48 D 13.49 E 14.70 F 13.71

- 1.33 Remove the Teflon centering shim blocks from the installed power lead.
- 1.34 Tighten down the jam nuts to secure the loading nuts on the installed Belleville washer assemblies.
- 1.35 Tighten the tensioning stud nuts against the underside of the power lead flange to provide stability during transportation.
- 1.36 Bolt a heater onto the power lead. Use thermally conductive grease at the interface between the heater and the power lead.



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Box "H"



FERMILAB
Technical Division

Installation of the LHC HTS Current Leads

Lead: DFLX 37

Signed Wayne E. Johnson Date 8-12-05



7500 A HTS Power Leads for the LHC DFBX: Installation of the Current Leads at Meyer Tool & Manufacturing

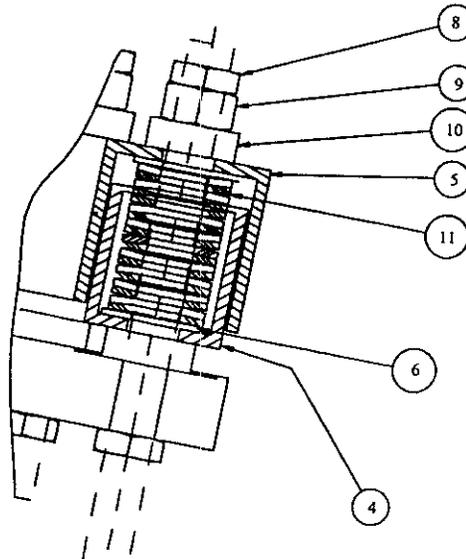


Figure 1.31b An installed Belleville washer assembly.

- 1.29 Tighten the 6 Belleville washer assemblies to apply load to the PEEK seal.
- 1.29.1 Back down the tensioning rod nuts used in Step 1.25 so they are about 5 mm below the power lead flange.
- 1.29.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 16.29 B 16.15 C 15.67 D 15.91 E 15.83 F 16.07

- 1.29.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 14.49 B 14.35 C 13.87 D 14.11 E 14.03 F 14.27

- 1.29.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts ¼ turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened ¼ turn, check off the appropriate line.

A ✓ B ✓ C ✓ D ✓ E ✓ F ✓

A ✓ B ✓ C ✓ D ✓ E ✓ F ✓



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Installation of the LHC HTS Current Leads

Lead: DFLX 37

Signed

Mike Perry

Date

10/17/05



**7500 A HTS Power Leads for the
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1.32.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 16.01 B 16.01 C 16.02 D 15.71 E 15.60 F 15.97

1.32.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 14.21 B 14.21 C 14.22 D 13.91 E 13.80 F 14.17

1.32.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts ¼ turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened ¼ turn, check off the appropriate line.

A	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	C	<input checked="" type="checkbox"/>	D	<input checked="" type="checkbox"/>	E	<input checked="" type="checkbox"/>	F	<input checked="" type="checkbox"/>
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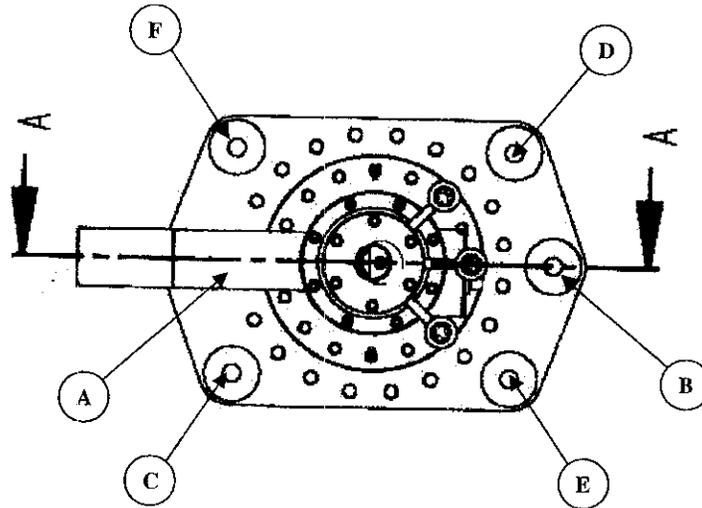


Figure 1.32.2 The specified sequence for tightening the Belleville washer assemblies.

1.32.5 Remove the adjustable parallels from under each Belleville washer assembly, then replace them and measure the final gaps 'y' in Figure 1.31a. Units are mm.

A 14.22 B 14.23 C 14.21 D 13.93 E 13.28 F 14.19

- 1.33 Remove the Teflon centering shim blocks from the installed power lead.
- 1.34 Tighten down the jam nuts to secure the loading nuts on the installed Belleville washer assemblies.
- 1.35 Tighten the tensioning stud nuts against the underside of the power lead flange to provide stability during transportation.
- 1.36 Bolt a heater onto the power lead. Use thermally conductive grease at the interface between the heater and the power lead.



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FERMILAB
Technical Division

Installation of the LHC HTS Current Leads

Lead: DFLX 38

Signed Wayne E. Job Date 8-15-05



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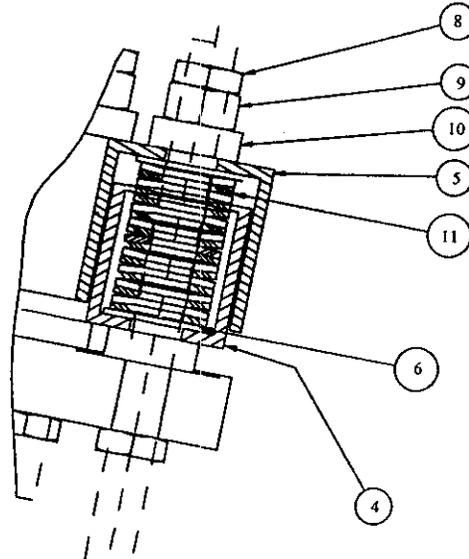


Figure 1.31b An installed Belleville washer assembly.

- 1.29 Tighten the 6 Belleville washer assemblies to apply load to the PEEK seal.
- 1.29.1 Back down the tensioning rod nuts used in Step 1.25 so they are about 5 mm below the power lead flange.
- 1.29.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 15.65 B 15.95 C 15.65 D 15.51 E 15.93 F 15.69

- 1.29.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 13.85 B 14.15 C 13.85 D 13.71 E 14.13 F 13.89

- 1.29.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts ¼ turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened ¼ turn, check off the appropriate line.

A ✓ B ✓ C ✓ D ✓ E ✓ F ✓

A ✓ B ✓ C ✓ D ✓ E ✓ F ✓

Lead DFLX _____



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A ✓ B ✓ C ✓ D ✓ E ✓ F ✓
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 A B ✓ C D ✓ E F ✓
 A B C D E F

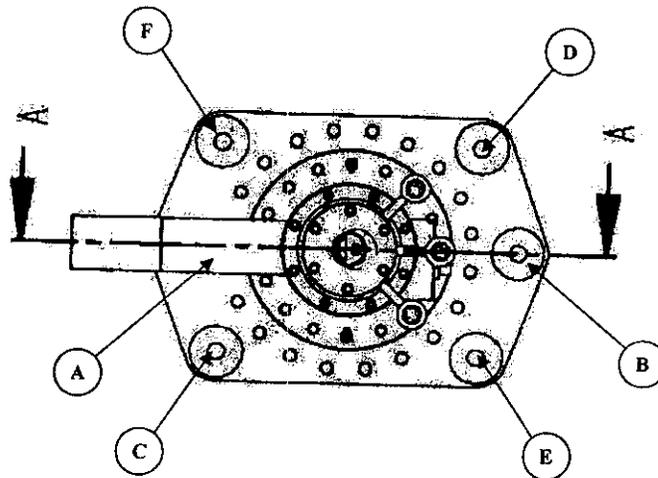


Figure 1.32.2 The specified sequence for tightening the Belleville washer assemblies.

1.29.5 Remove the adjustable parallels from under each Belleville washer assembly, then replace them and measure the final gaps 'y' in Figure 1.31a. Units are mm.

A 13.69 B 14.13 C 13.86 D 13.71 E 13.97 F 13.89

1.29.6 Attach a Conflat flange with a pressure gauge and a fill valve to the gas outlet port. Pressurize to 10 psig. The seal is acceptable if the pressure loss is less than 1 psi after 2 minutes.

1.30 Reduce compression of Belleville washer assemblies.

1.30.1 Remove the Teflon centering ring from the installed power lead.

1.30.2 Back off the loading nuts sequentially to reduce the Belleville compression to 0.75 mm (0.030 in).

1.31 Tighten down the jam nuts to secure the loading nuts on the installed Belleville washer assemblies.

Lead DFLX



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Technical Division

Installation of the LHC HTS Current Leads

Lead: DFLX 38

Signed

Mike Digna

Date

10/17/05



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1.32.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 15.82 B 15.87 C 15.76 D 15.98 E 16.09 F 15.83

1.32.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 14.02 B 14.07 C 13.96 D 14.18 E 14.29 F 14.03

1.32.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts ¼ turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened ¼ turn, check off the appropriate line.

A	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	C	<input checked="" type="checkbox"/>	D	<input checked="" type="checkbox"/>	E	<input checked="" type="checkbox"/>	F	<input checked="" type="checkbox"/>
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A	<input checked="" type="checkbox"/>	B	<input checked="" type="checkbox"/>	C	<input checked="" type="checkbox"/>	D	<input checked="" type="checkbox"/>	E	<input checked="" type="checkbox"/>	F	<input checked="" type="checkbox"/>
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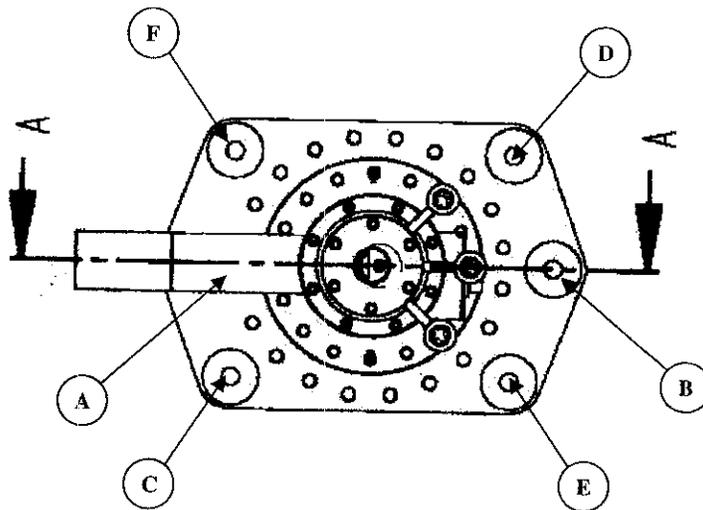


Figure 1.32.2 The specified sequence for tightening the Belleville washer assemblies.

1.32.5 Remove the adjustable parallels from under each Belleville washer assembly, then replace them and measure the final gaps 'y' in Figure 1.31a. Units are mm.

A 14.00 B 14.07 C 13.95 D 14.16 E 14.27 F 14.05

- 1.33 Remove the Teflon centering shim blocks from the installed power lead.
- 1.34 Tighten down the jam nuts to secure the loading nuts on the installed Belleville washer assemblies.
- 1.35 Tighten the tensioning stud nuts against the underside of the power lead flange to provide stability during transportation.
- 1.36 Bolt a heater onto the power lead. Use thermally conductive grease at the interface between the heater and the power lead.



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Box "H"



FERMILAB
Technical Division

Installation of the LHC HTS Current Leads

Lead: DFLX 36

Signed Wayne E. John Date 8-12-05



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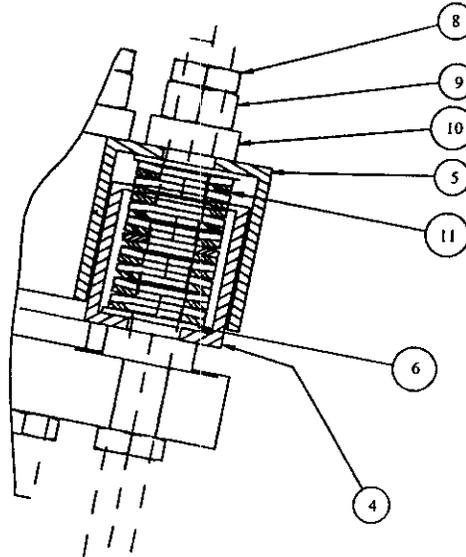


Figure 1.31b An installed Belleville washer assembly.

- 1.29 Tighten the 6 Belleville washer assemblies to apply load to the PEEK seal.
- 1.29.1 Back down the tensioning rod nuts used in Step 1.25 so they are about 5 mm below the power lead flange.
- 1.29.2 Tighten the 6 loading nuts finger-tight. With adjustable parallels, measure and record the gap 'y' indicated in Figure 1.31a between Item 5 (Belleville washer holder upper half) and the power lead top flange at the 6 locations specified in Figure 1.32.2. Units are mm.

A 15.59 B 15.98 C 15.91 D 16.00 E 16.33 F 15.86

- 1.29.3 For each of the six studs: remove the adjustable parallel, adjust it for 1.8 mm of compression, and return the adjustable parallel into position under the Belleville washer holder. Record the adjusted heights of the adjustable parallels. Units are mm.

A 13.79 B 14.18 C 14.11 D 14.20 E 14.53 F 14.06

- 1.29.4 Using the sequence A through F in Figure 1.32.2, sequentially tighten the loading nuts ¼ turn until the total compression is 1.8 mm at each of the six locations. As each loading nut is tightened ¼ turn, check off the appropriate line.

A B C D E F

A B C D E F

Lead DFLX _____



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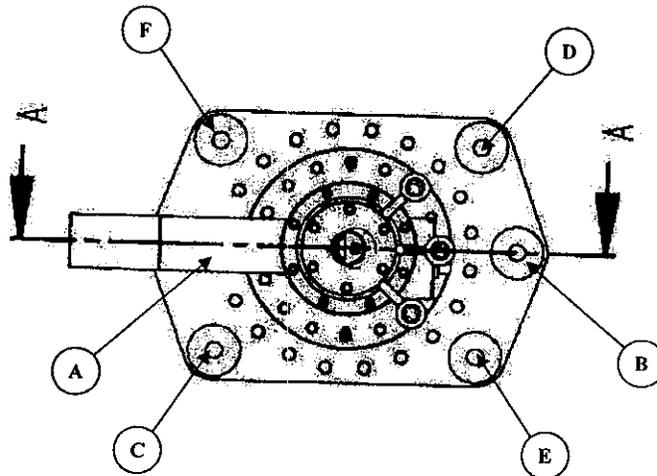


Figure 1.32.2 The specified sequence for tightening the Belleville washer assemblies.

1.29.5 Remove the adjustable parallels from under each Belleville washer assembly, then replace them and measure the final gaps 'y' in Figure 1.31a. Units are mm.

A 13.62 B 14.17 C 14.06 D 14.30 E 14.48 F 14.01

1.29.6 Attach a Conflat flange with a pressure gauge and a fill valve to the gas outlet port. Pressurize to 10 psig. The seal is acceptable if the pressure loss is less than 1 psi after 2 minutes.

1.30 Reduce compression of Belleville washer assemblies.

1.30.1 Remove the Teflon centering ring from the installed power lead.

1.30.2 Back off the loading nuts sequentially to reduce the Belleville compression to 0.75 mm (0.030 in).

1.31 Tighten down the jam nuts to secure the loading nuts on the installed Belleville washer assemblies.

Lead DFLX