



**QM-C-8.1/Coupler/0020**

**Inspection Plan (Check Sheet)**

**M/s. Amsted Steel Foundries (India) Pvt. Ltd., Baddi (H.P.)**

**Item : High Capacity Draft Gear Model – Stucki PowRGuard XE**

**Spec : RDSO Specification WD-71-BD-15 (Rev. 1)**

**Amd. :**

**Drg. No. & Alt. :**

- .....
- 1 Firm's Name :
  - 2 Date (Period) of Inspection :
  - I. Contact details :
  - II. Contact No. and Date :
  - III. Order Placing authority :
  - IV. Specification No. :  
(As mentioned in the contract)
  - V. Drawing No. :  
(As mentioned in the contract)
  - 3 Quantity on Order :
  - 4 Quantity offered for inspection :
  - 5 Date of offering for inspection :
  - 6 Consignee :
  - 7 Delivery Period :

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### Summary of Results

Sl. No.	Items Inspected	Specified values	Observation
1	Metallurgical & Chemical Properties of Housing, Spring Seat & Front Follower	Verification of WTC from supplier	
2	Housing	Gauging	
3	Spring Corner Coil	Verification of WTC from supplier	
4	Spring Outer Coil	Verification of WTC from supplier	
5	Spring Inner Coil	Verification of WTC from supplier	
6	Spring Cap	WTC	
7	Spring Seat	Gauging	
8	Outer Stationary Plate	Gauging	
9	Movable Plate	Gauging	
10	Tapered Pate	Gauging	
11	Friction Shoe	Gauging	
12	Center Wedge	Gauging	
13	Follower	Gauging	
14	Wedge Shoe Insert	Gauging	
15	Production Testing	Verify from record	
16	Status of QAP	Verify from record	

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## Inspection Check Sheet

Lot size – 50 Nos. max.

Sample size – 2 nos.

1. Manufacturing & Inspection of Upgraded High Capacity Draft Gear & its components as per manufacturers approved QAP.
2. Visual Inspection.  
Sample size: One assembly

**STUCKI PowRGuard XE**

Sl. No.	Components	Remarks of RDSO inspecting official
1	Housing	
2	Spring Corner Coil	
3	Spring Outer Coil	
4	Spring Inner Coil	
5	Spring Cap	
6	Spring Seat	
7	Outer Stationary Plate	
8	Movable Plate	
9	Tapered Plate	
10	Friction Shoe	
11	Center Wedge	
12	Friction Shoe Insert	
13	Follower	

3. Metallurgical & Chemical Testing of Draft Gear Housing

Heat No.	
Serial no.	

4. Chemical Analysis of Housing (as per WTC)

Sl. No.	Parameter	Specified value %		Observed value %
		Stucki Standard 08946	Alternate composition	
1	Carbon	0.27 - 0.32	0.28 - 0.33	
2	Manganese	0.9 - 1.20	0.6 - 0.90	
3	Silicon	0.35 - 0.50	0.40 - 0.60	
4	Sulphur	0.04 max.	0.03 max.	
5	Phosphorus	0.04 max.	0.03 max.	
6	Chromium	0.30 - 0.40	0.50 - 0.80	
7	Nickel	0.20 - 0.25	0.50 - 0.60	
8	Moly	0.15 - 0.25	0.15 - 0.25	
9	Copper	0.20 max.		
10	Vanadium	0.03 max.		
11	Aluminium	0.03 - 0.08	0.02 - 0.05	

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5. Chemical Analysis of Front Follower (as per WTC)

Sl. No.	Parameter	Specified value %		Observed value %
		AAR M201 Gr. E	RDSO specs WD-70-BD-10	
1	Carbon	0.32 Max	0.28 - 0.33	
2	Manganese	1.85 Max	0.6 - 0.90	
3	Silicon	1.5 max	0.40 - 0.60	
4	Sulphur	0.04 max.	0.03 max.	
5	Phosphorus	0.04 max.	0.03 max.	
6	Chromium		0.50 - 0.80	
7	Nickel		0.50 - 0.60	
8	Moly		0.15 - 0.25	
9	Aluminium		0.02 - 0.05	

6. Chemical Analysis of Spring Seat (as per WTC)

Sl. No.	Parameter	Specified value %		Observed value %
		Stucki Standard 08946	Alternate composition	
1	Carbon	0.27 - 0.32	0.28 - 0.33	
2	Manganese	0.9 - 1.20	0.6 - 0.90	
3	Silicon	0.35 - 0.50	0.40 - 0.60	
4	Sulphur	0.04 max.	0.03 max.	
5	Phosphorus	0.04 max.	0.03 max.	
6	Chromium	0.30 - 0.40	0.50 - 0.80	
7	Nickel	0.20 - 0.25	0.50 - 0.60	
8	Moly	0.15 - 0.25	0.15 - 0.25	
9	Copper	0.20 max.		
10	Vanadium	0.03 max.		
11	Aluminium	0.03 - 0.08	0.02 - 0.05	

7. Mechanical & metallurgical Properties of Housing (as per WTC)

Sl. No.	Parameter	Specified value	Observed value
1	UTS	827 Mpa	
2	YS	689 Mpa	
3	EL %	14 % Min.	
4	RA %	30 % Min.	
5	Imp.	27 J Min. at -40 C <sup>0</sup>	
6	Hardness	241 - 311	

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**8. Mechanical & metallurgical Properties of Front Follower (as per WTC)**

Sl. No.	Parameter	Specified value	Observed value
1	UTS	825 N/sq. mm	
2	YS	690 N/sq. mm	
3	EL %	14 % Min.	
4	RA %	30 % Min.	
5	Imp.	3.5 Kgm Min. at -40 C <sup>0</sup>	
6	Hardness	241 - 311	

**9. Mechanical & metallurgical Properties of Spring Seat (as per WTC)**

Sl. No.	Parameter	Specified value	Observed value
1	UTS	827 Mpa	
2	YS	689 Mpa	
3	EL %	14 % Min.	
4	RA %	30 % Min.	
5	Imp.	27 J Min. at -40 C <sup>0</sup>	
6	Hardness	241 - 311	

**10. Dimensions by gauging (Assembly)**

Sample - Two No.

Heat No. & Serial No.

Sl. No.	Description	Gauge No.	Observation	
			Sample 1	Sample 2
1	Free Height	Tool A		
2	Pre Shortened Height	Tool B		

**11. Dimensions by gauging (DG Housing) to be measured after disassembly.**

Sample size – 1 No.

Sl. No.	Description	Gauge No.	Observation
1	Go Gauge, case Shelf Height and Position	A/08318	
2	Housing, Inside Width GO Gauge	A/08332	
3	Housing Spring Relief Gauge	A/08336	
4	Housing Wear Pad Shelf Go-Gauge	A/08338	
5	Housing Inside Height and Perpendicularity Gauge	A/08561	
6	Housing Inside Height and Perpendicularity Gauge Opposite	A/08564	
7	Draft Gear Housing Height Go-Gauge	A/08567	
8	Spring Seat Clearance Go-Gauge	A/08579	
9	Housing Height and Width Gauge	A/08621	
10	Tab Thickness No-Go Gauge	A/08909	

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**12. Dimensions by gauging (Spring Seat) to be measured after disassembly.**  
Sample size – 1 No.

Sl. No.	Description	Gauge No.	Observation
1	Spring Seat, Length and Width Go-Gauge	A/08576	
2	Spring Seat Spring Cap Position Gauge	A/08582	
3	Spring Seat Go Gauge	A/08617	
4	Spring Seat No-Go Gauge	A/08619	

**13. Dimensions by gauging (Outer Stationary Plate) to be measured after disassembly.**  
Sample size – 1 No.

Sl. No.	Description	Gauge No.	Observation
1	Outer Stationary Plate Go/No-Go Gauge	A/08604	

**14. Dimensions by gauging (Movable Plate) to be measured after disassembly.**  
Sample size – 1 No.

Sl. No.	Description	Gauge No.	Observation
1	Movable Plate Gauge Assembly	A/IDG-00049	

**15. Dimensions by gauging (Tapered Plate) to be measured after disassembly.**  
Sample size – 1 No.

Sl. No.	Description	Gauge No.	Observation
1	Tapered Plate Width GO/NO-GO Gauge	A/08209	
2	MMC Gauge of 5.31 Dim-Tapered Plate	A/08211	
3	Tapered Plate Ear Height GO Gauge	A/08219	
4	Tapered Plate Go Gauge	A/08594	
4	Tapered Plate No-Go gauge	A/08615	

**16. Dimensions by gauging (Friction Shoe) to be measured after disassembly.**  
Sample size – 1 No.

Sl. No.	Description	Gauge No.	Observation
1	Friction Shoe Insert Slot Width NO-GO Gauge	A/08199	
2	Friction Shoe Insert Slot width GO Gauge	A/08200	
3	Friction Shoe Go Gauge	A/08606	
4	Friction Shoe No-Go Gauge	A/08608	

**17. Dimensions by gauging (Center Wedge) to be measured after disassembly.**  
Sample size – 1 No.

Sl. No.	Description	Gauge No.	Observation
1	Center Wedge Go Gauge	A/08610	
2	Center Wedge No-Go Gauge	A/08612	

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**18. Dimensions by gauging (Friction Shoe Insert) to be measured after disassembly.**  
**Sample size – 1 No.**

Sl. No.	Description	Gauge No.	Observation
1	Friction Shoe Insert GO-NOGO Gauge	A/A0002	

**19. Dimensions by gauging (Front Follower) to be measured after disassembly.**  
**Sample size – 1 No.**

Sl. No.	Description	Gauge No.	Observation
1	AAR type E, E/F and F Coupler Length, Width, Thickness and backface Gauge	A/34643	
2	AAR Type F Interlocking Coupler Front Follower Centering Lug Seat Gauge	A0004	
3	AAR Type F Interlocking Coupler Front Follower Shank Butt Seat Gauge	A0003	

**20. Verification of WTC Corner Coil Spring (5% per lot)**

Description	Parameter	Observation						
Free Height	13.05 <sup>±</sup> ±/±0.17 <sup>±</sup>							
Hardness	461 – 511 BHN							

**21. Verification of WTC Outer Coil Spring (5% per lot)**

Description	Parameter	Observation						
Free Height	15.76 <sup>±</sup> ±/±0.17 <sup>±</sup>							
Hardness	461 – 511 BHN							

**22. Verification of WTC Inner Coil Spring (5% per lot)**

Description	Parameter	Observation						
Free Height	17.94 <sup>±</sup> ±/±0.22 <sup>±</sup>							
Hardness	461 – 511 BHN							

**23. Production Testing:**

- I. Check all the test results of the tests conducted at different stages by manufacturer.
- II. The Draft gear manufacturer shall conduct the official capacity test (as defined in Clause 2 of Annexure-1) of 5% of Purchase Order or 5 in 100 whichever is higher and maintain as a part of its internal records.
- III. The Inspecting Authority shall audit check the QAP records of manufacturer to ensure that draft gear components are manufactured as per QAP of the manufacturer and meets the requirements of dimensions, chemical properties, mechanical properties as laid down in QAP.
- IV. It should be possible for Inspecting Authority to find out QAP test/ inspection records of draft gear components with Serial no. cast on draft gear housing. On failure to meet this requirement, whole lot shall be rejected.

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- V. Two draft gears shall be selected by the Inspecting authority from a lot of not less than fifty (50) draft gears. They shall be measured both in assembled and in disassembled condition. The dimensions shall be checked with gauges, which should be in conformity with Manufacturer's approved drawings.
- VI. At least 2 draft gears out of every 100 draft gear or part there of shall be drop hammer tested to in presence of Inspecting Authority to ensure minimum capacity of the specification under which it has been approved. The test shall consist of the minimum number of blows required to produce the minimum capacity required. If any unacceptable gears are found, this will necessitate testing of the next 50 untested gears to 100% capacity. If any defective gears are found within that 50,100% capacity testing shall be continued until 50 consecutive gears have been tested without failure.
- VII. Draft gear follower (if Grade 'E' cast steel) shall be tested for Chemical composition, Mechanical properties, Impact Test, Hardness and Dimensions as per procedure given in RDSO specification for Upgraded High tensile CBC No. WD-70-BD-10 (Rev-2) or latest. Draft Gear follower (if rolled steel) shall be Test, General requirement of casting acceptance, Marking, Weight variation tested for material, heat treatment and hardness as given in AAR Catalogue No. Y46AE as per AAR Standard S-119.

**24. Minimum Capacity Test Result**

**Lot size – 100 Nos. max.**

**Sample size – 2 nos.**

**Testing Procedure: WIS 009/3**

<b>Sl. No.</b>	<b>Draft Gear Heat No. &amp; Sl. No.</b>	<b>Capacity obtained in Tup Hammer test (Min. Capacity 45000ft.lb)</b>
1		
2		
3		
4		
5		

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