

Report n. 11494

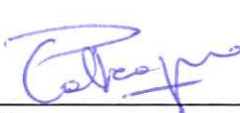
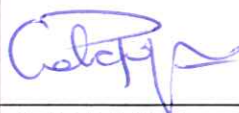
Rev. 00

**Results of Shock Tests on
"19" SUBRACK EUROPAC PRO RUGGED
(6HE 84 TE 235T)"**

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Data emissione / Issue date: 25/1/2013

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Titolo / Title Results of Shock Tests on "19" SUBRACK EUROPAC PRO RUGGED (6HE 84 TE 235T)"			
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Sommario / Abstract <i>In questo rapporto vengono descritti i risultati delle prove d'urto eseguite in data 17/1/2013 per la qualificazione della "19" SUBRACK EUROPAC PRO RUGGED (6HE 84 TE 235T)".</i> <i>Le prove sono state realizzate utilizzando la macchina d'urto per pesi medi della sala prove CETENA di Riva Trigoso, per conto della Pentair Schroff GmbH.</i> <i>This report describes shock test results performed on January 17th 2013, on the "19" SUBRACK EUROPAC PRO RUGGED (6HE 84 TE 235T)" produced by Pentair Schroff GmbH.</i> <i>Tests have been carried out using medium-weight shock machine located at the CETENA's laboratory in Riva Trigoso, on behalf of Pentair Schroff GmbH.</i>			
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Pagine / Sheets 19	Commessa / Job 6917052144	Note / Notes According to PRO37	

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Revisioni Precedenti / Previous Revisions

Rev.	Data / Date	Contenuto della revisione / Revision Content	Autori / Authors

Contenuto della revisione corrente / Current revision content

1. PURPOSE.

In this report, are reported the results of shock test performed on January 17th 2013 on the " 19" SUBRACK EUROPAC PRO RUGGED (6HE 84 TE 235T)" produced by Pentair Schroff GmbH.

Tests have been carried out using a medium-weight shock machine located at CETENA's test laboratory in Riva Trigoso, on behalf of Pentair Schroff GmbH (order 32021591/OP on August 7th 2012).

Test has been realized in compliance with MIL S 901 D.

2. DESCRIPTION OF THE TESTED MACHINERY.

The following machinery has been tested:

- 19" SUBRACK EUROPAC PRO RUGGED (6HE 84 TE 235T)

3. SHOCK TEST.

3.1 MACHINERY CONNECTION TO SHOCK MACHINE

Attachment 3 shows how the tested equipment has been connected to the shock machine.

The assembly was fixed over the anvil plate using two "standard channels", as foreseen by rule for 31 kg net weight.

3.2 TEST METHODOLOGIES.

The tests consisted in submitting the object to 9 shocks divided in to three series of three shocks each. Every series is characterized by two values of anvil table travel (76 and 38 mm) and two values of height of hammer drop that depends on the total weight on the anvil table.

During the first test series, the assembly was mounted directly to the anvil table, receiving shock in the vertical direction; in the second series, the assembly was mounted to the anvil plate with 30° inclined retainer in transversal direction, in the third series, the assembly was mounted to the anvil plate with 30° inclined retainer in longitudinal direction.

Heights of hammer drop depend on total weight above the anvil plate and are reported in attachment 4.

3.3 MACHINERY CONDITIONS DURING TEST.

The equipment classified as Grade B I, during the test was in non-operating state.

3.4 RESULTS OF INSPECTIONS AFTER EACH SHOCK TEST.

After each shock the items were controlled to check structural integrity and functioning.

3.5 SHOCK TEST DOCUMENTATION.

Attachment 4 reports test summary where weights, height of hammer drop and the results of each visual control are reported.

The certificates that testify test executions and results are reported in attachment 5.

3.6 TEST RESULTS.

After the first shock the upper and lower covers were deformed, 4 additional locking fixtures have been mounted on the top cover to reinforce its structure. After the third shock, internal electrical connectors on the outside mounted dummy boards were broken. To avoid this problem, connectors have to be soldered.

On the upper and on the lower covers, minimum 6 locking fixtures have to be used.

We can conclude that the:

- 19" SUBRACK EUROPAC PRO RUGGED (6HE 84 TE 235T)

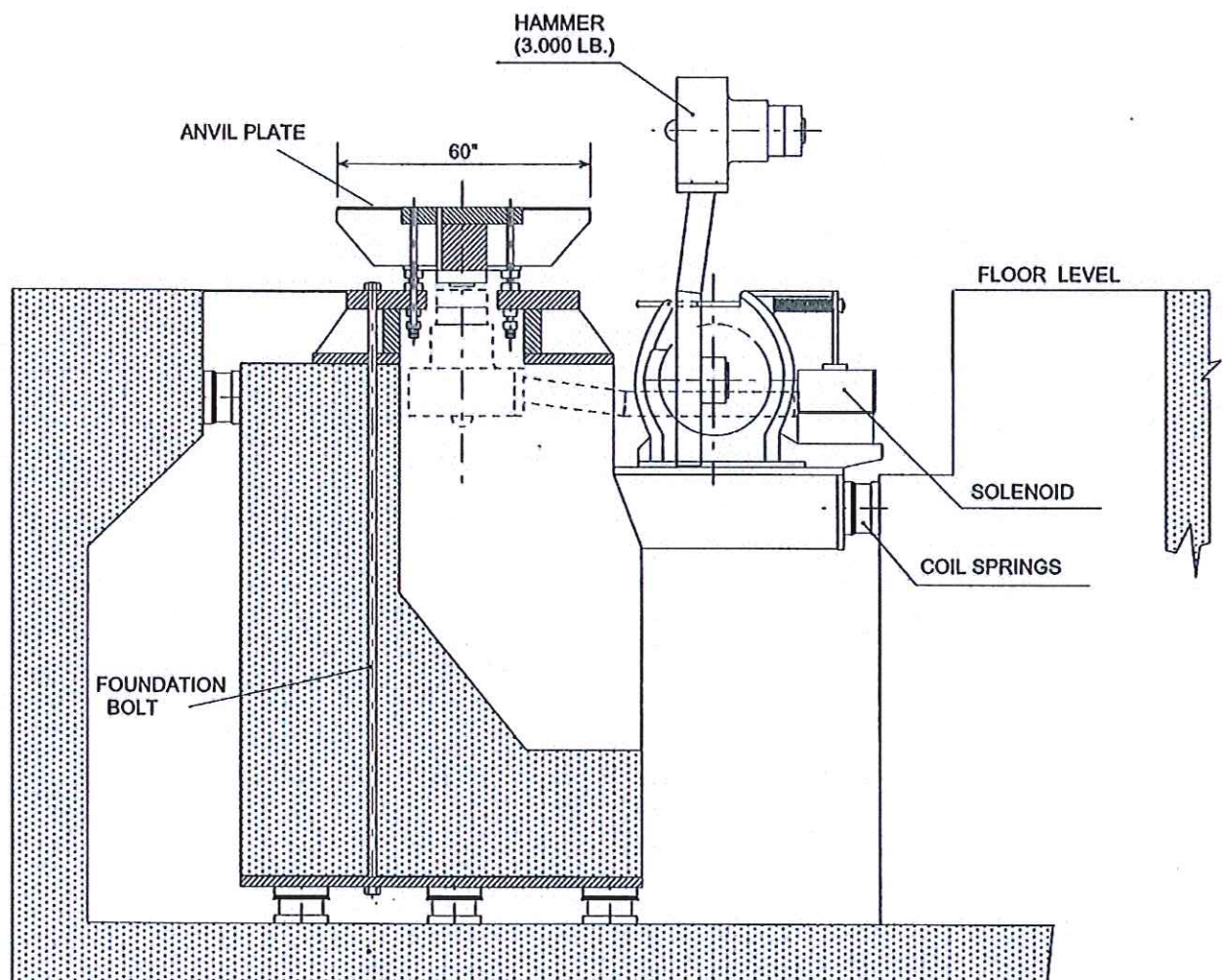
has satisfied the shock test according to MIL-S-901D.

ATTCHMENTS

1. Plant layout on medium-weight shock machine of Cetena Laboratory in Riva Trigoso
2. Drawings of the items
3. Photo
4. Test resumes
5. Copy of Shock Test Certificates

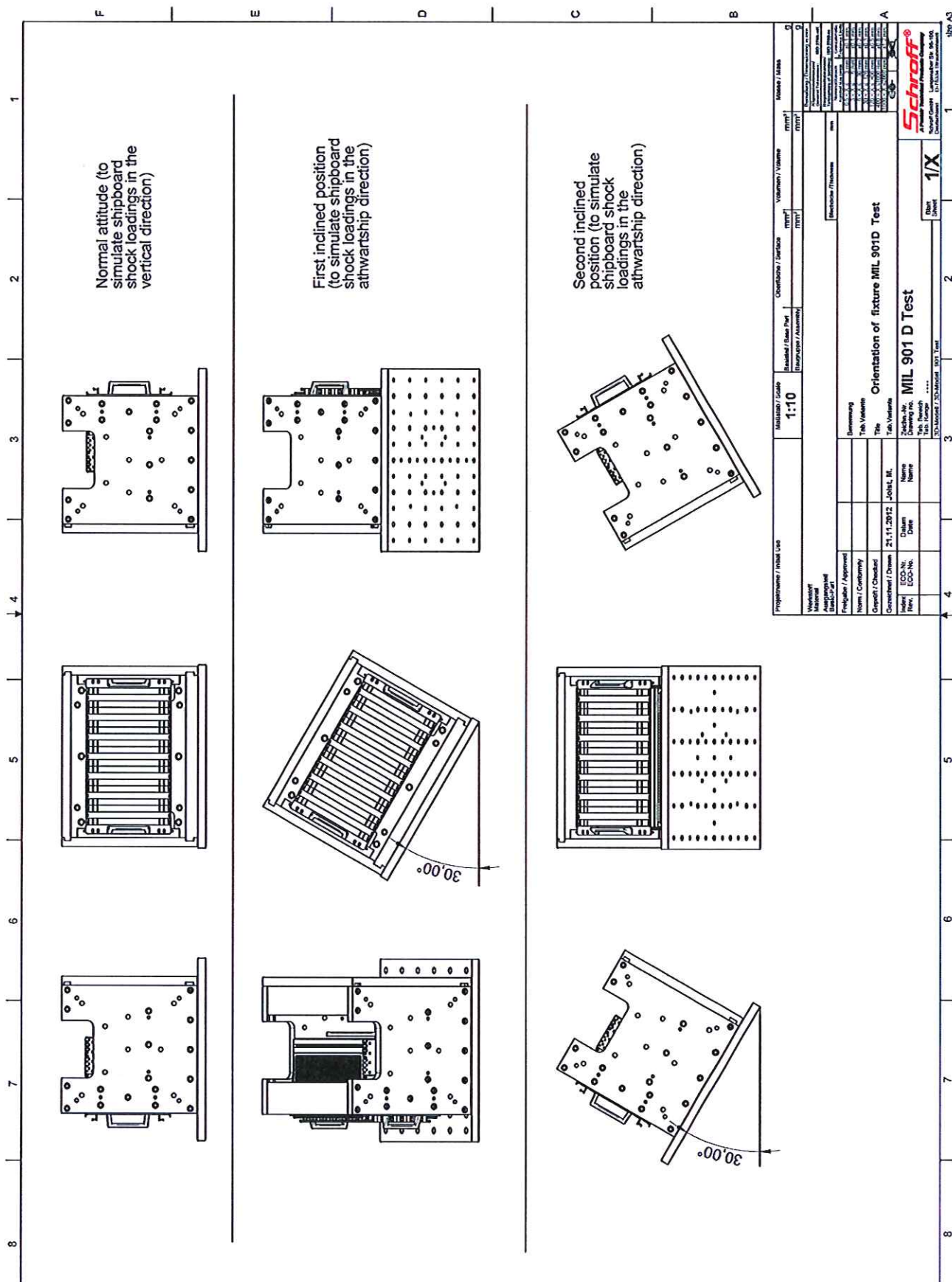
Annex 1

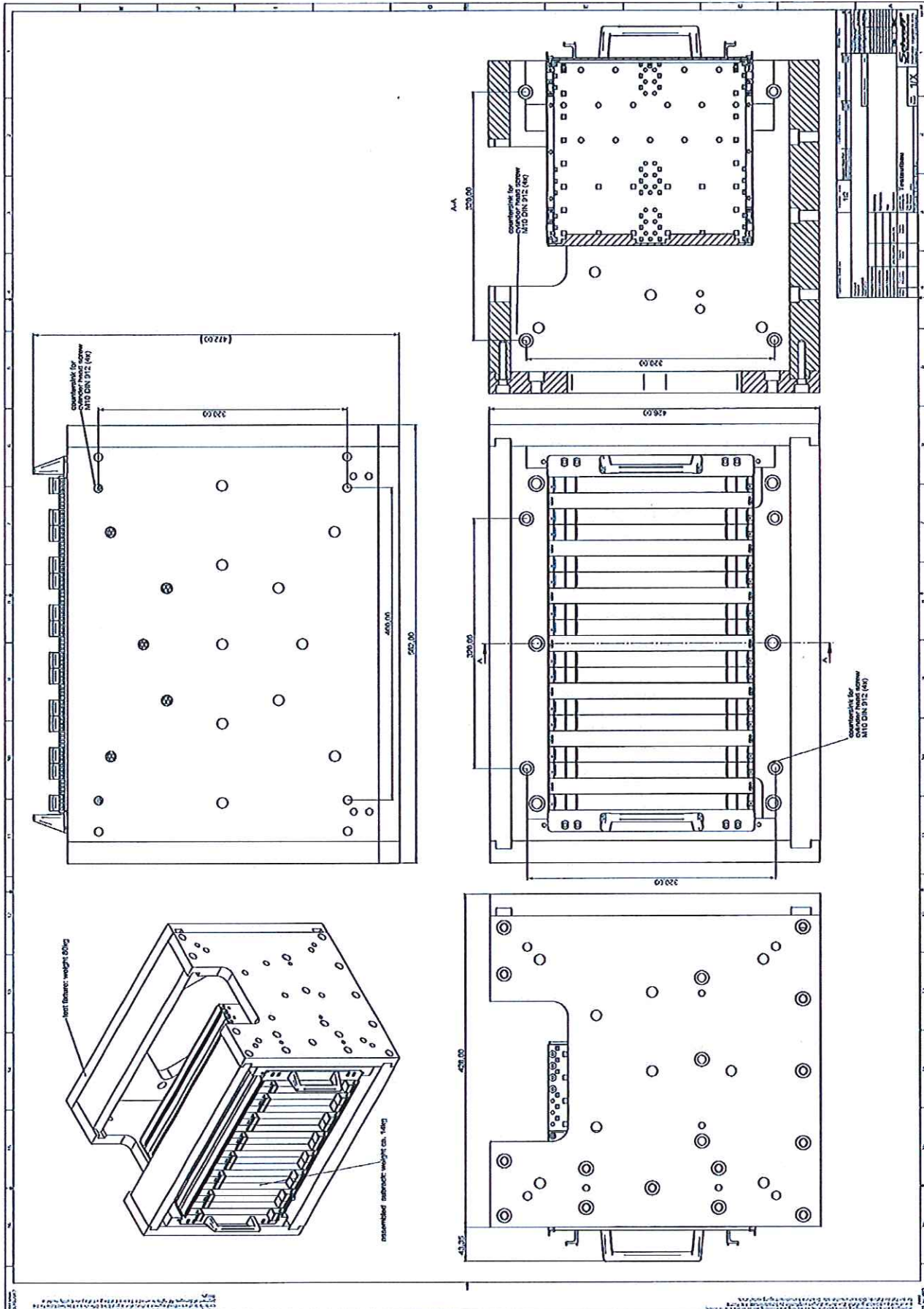
Plant layout on medium-weight shock machine of Cetena Laboratory in Riva Trigoso

SHOCK TESTING MACHINE

Annex 2

Drawing of the item





Annex 3

Photos



Figure 1 - Shock testing machine horizontal position (front view)

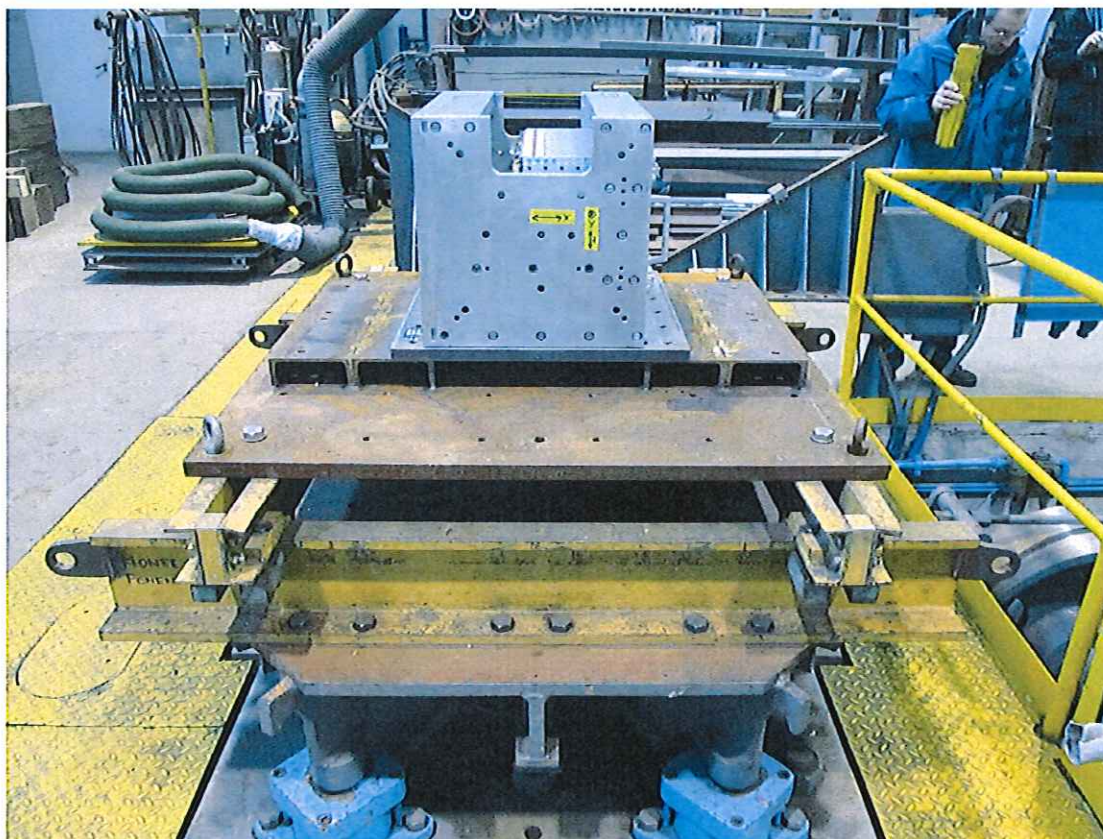


Figure 2 - Shock testing machine horizontal position (side view)



Figure 3 - Shock testing machine 30° transversal

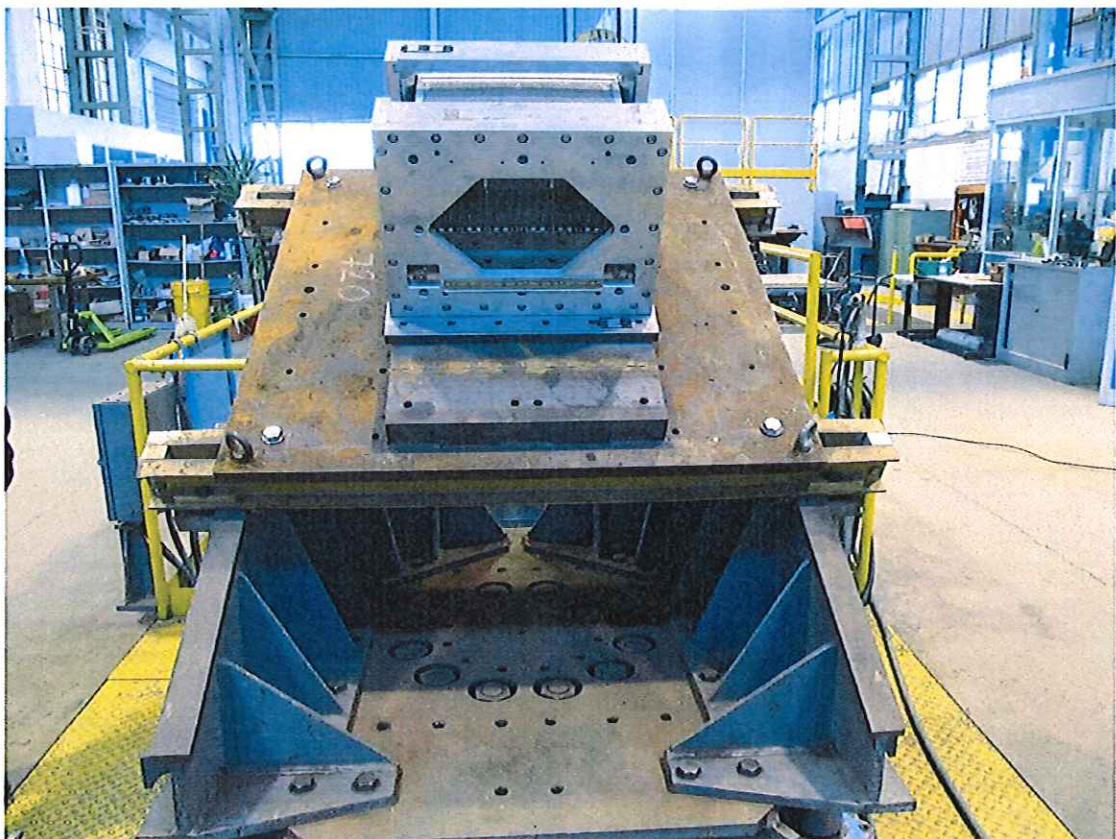


Figure 4 - Shock testing machine 30° longitudinal

Annex 4

Test resume

 CETENA CENTRO PER GLI STUDI DI TECNICA NAVALE		FGA	Commissa/Job 6917052144	Pagina n°/Page no. 1
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SHOCK TEST N°1

TEST DOCUMENT N° **01 M3** RIVA TRIGOSO: **17/01/2013**

ITEM DESCRIPTION: **19" SUBRACK EUROPAC PRO RUGGED (6HE 84 TE 235T) 14 Plug in units a 500g are mounted.**

MANUFACTURER: **Pentair Schnoff GmbH**

CETENA JOB N°: **6917052144** DATE: **30/08/2012** SERIAL N°: **-**

RESILIENT MOUNTS: **-** ASSEMBLED WEIGHT (Kg): **529**

SERVICE: **-** SHOCK MACHINE: **MTWSM**

ELECTRIC MOTOR: **-** BOARD LOCATION: **-**

MILITARY SPECIFICATION: **MIL S 901 D**

CONTROL AFTER THE TEST	CONTROL DETAILS	TEST RESULT	POSSIBLE OBSERVATION
Horizontal position 1	After Shock	OK	
Horizontal position 2	After Shock	OK	
Horizontal position 3	After Shock	OK	
Inclined Long. 4	After Shock	OK	
Inclined Long. 5	After Shock	OK	
Inclined Long. 6	After Shock	OK	
Inclined Transv. 7	After Shock	OK	
Inclined Transv. 8	After Shock	OK	
Inclined Transv. 9	After Shock	OK	

Note: After the first shock the upper and lower covers were deformed, 4 additional locking fixtures have been mounted on the top cover, the internal electrical connectors on the outside mounted dummy boards were broken. Connectors have to be soldered.

ITEM AND STANDARD MOUNTING WEIGHTS (Kg)

Item	Horiz.	30°
Standard Mounting	233	790
TOTAL	812	1319

SHIPBUILDING CHANNEL

Type	N°
Standard	2

SUPPORTING CHANNELS:

WEIGHT	Horiz.	30°
Clamp & End Clamp	184	688
Supporting Channels	69	69
Bolts	30	33
Total	283	790

CETENA
Dott. F. Gaggero
Mr. D. Perazzo

ATTENDING STAFF
Mr. D. Perazzo

PENTAIR
Eng. Michael Joist

TEST RESULT
FAVOURABLE

TEST DOCUMENT N° **01 M3**

ITEM DESCRIPTION: **19" SUBRACK EUROPAC PRO RUGGED (6HE 84 TE 235T) 14 Plug in units a 500g are mounted.**

MANUFACTURER: **Pentair Schnoff GmbH**

CETENA JOB N°: **6917052144** DATE: **30/08/2012** SERIAL N°: **-**

RESILIENT MOUNTS: **-** ASSEMBLED WEIGHT (Kg): **529**

SERVICE: **-** SHOCK MACHINE: **MTWSM**

ELECTRIC MOTOR: **-** BOARD LOCATION: **-**

MILITARY SPECIFICATION: **MIL S 901 D**

TEST RESULT
FAVOURABLE

CETENA CENTRO PER GLI STUDI DI TECNICA NAVALE		FOA	Commissa/Job 6917052144	Pagina n°/Page no. 1
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SHOCK TEST N°1

TEST DOCUMENT N°		RVA TRIGOSO:		17/01/2013
ITEM DESCRIPTION:		19" SUBRACK EUROPAC PRO RUGGED (6HE 84 TE 235T) 14 Plug in units ± 500g are mounted.		
MANUFACTURER:	Pentair Schrott GmbH	DRAWING N°	-	
CETENA JOB N°:	6917052144	DATE	30/09/2012	SERIAL N°
RESILIENT MOUNTS:	-	ITEM WEIGHT (lb):	31	ASSEMBLED WEIGHT (lb):
SERVICE:	-	SHOCK MACHINE:	MVSIM	
ELECTRIC MOTOR:	-	BOARD LOCATION:	-	
		MILITARY SPECIFICATION:	MIL S 901 D	

ITEM AND STANDARD MOUNTING WEIGHTS (lb)		Horiz.	30°
Item	2571	2571	
Standard Mounting	625	1742	
TOTAL	3196	4314	

SHIPBUILDING CHANNEL		N°
Type	Standard	2

SUPPORTING CHANNELS:		2
WEIGHT	Horiz.	30°
Clamp & End Clamp	406	1517
Supporting Channels	152	152
Bolts	67	74
Total	625	1742

SHOCK	Hammer Height (ft)	Anvil (in)	Position
1°	1	3	0°
2°	2	3	0°
3°	2	1.5	0°
4°	1.25	3	30° Transv
5°	2.25	3	30° Transv
6°	2.25	1.5	30° Transv
7°	1.25	3	30° Long.
8°	2.25	3	30° Long.
9°	2.25	1.5	30° Long.

CONTROL AFTER THE TEST	CONTROL DETAILS	TEST RESULT	POSSIBLE OBSERVATION
Horizontal position	After Shock 1	OK	
Horizontal position	After Shock 2	OK	
Horizontal position	After Shock 3	OK	
Inclined Long.	After Shock 4	OK	
Inclined Long.	After Shock 5	OK	
Inclined Long.	After Shock 6	OK	
Inclined Transv.	After Shock 7	OK	
Inclined Transv.	After Shock 8	OK	
Inclined Transv.	After Shock 9	OK	

Note: After the first shock the upper and lower covers were deformed, 4 additional locking fixtures have been mounted on the top cover, the internal electrical connectors on the outside mounted dummy boards were broken. Connectors have to be soldered.

CETENA RESPONSIBLE

Dot. F. Gaggero
Mr. D. Perazzo

ATTENDING STAFF

PENTAIR
Eng. Michael Joist

CETENA S.p.A.

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TEST RESULT

FAVOURABLE

Annex 5

Shock test certificates



CERTIFICATO DI PROVA D'URTO SHOCK TEST CERTIFICATE Dp.40036214/D/8* (On 09/05/2002)		1/13	Eseguito a RIVA TRIGOSO II Test carried out at RIVA TRIGOSO on	17/01/2013
Test richiesto da Test requested by		Pentair Schroff GmbH		PAGINA/PAGE 1/2
Descrizione dell'esemplare in prova Description of the tested item		19" SUBRACK EUROPAC PRO RUGGED (6HE 84 TE 235T)		
Unità / Unit --				
Ditta fornitrice Manufacturer		Pentair Schroff GmbH		
		Dis N° -- Drawing N° -- Matricola N° -- S/N		
Locazione a bordo Onboard Location		Servizio -- Service		
Grado di resistenza esemplare Item Shock grade		B		
Tipo di Esemplare Item type		19" SUBRACK EUROPAC PRO RUGGED		
Tipo Resilienti Resilient mounts type:		--		
Peso Esemplare Item weight		14 kg		
Tipo di Prova Shock test type		B1		
Macchina Impiegata/Machinery used Shock testing machine for medium weight equipment MWSM in RIVA TRIGOSO laboratory		529 kg		
Peso in Prova Total weight during the test		529 kg		
Condizioni di Funzionamento Working conditions				
The item was in non operating state during tests.				
Normativa di Prova Test Rules		MIL S 901 D		
Eccezioni alla Normativa Test Rules exception		--		
Esito della Prova Test result		The equipment has satisfied the test		
Eventuali Suggerimenti Suggestions				
Connectors on dummy boards have additionally to be soldered. On the upper and on the lower covers, minimum 6 locking fixtures have to be used.				
Collaudo Funzionale eseguito da Functional test performed by		Presso At		Documento Document
Prova D'integrità eseguita da Integrity test performed by		Presso At		Documento Document
CETENA		CETENA Laboratory		
Esito Result		The equipment has satisfied the test		
Controllo Smontaggio Eseguito da Dismount test performed by		Presso At		Documento Document
--				
Esito Result				
Parti Sostituite/Modificate Substituted or modified parts				
After the fist shock the upper amd lower covers were deformed, 4 additional locking fixtures have been mounted on the top cover				



CERTIFICATO DI PROVA D'URTO
SHOCK TEST CERTIFICATE
Dp.40036214/D/8° (0n 09/05/2002)

1/13

Eseguito a RIVA TRIGOSO il
Test carried out at RIVA TRIGOSO on

17/01/2013

Test richiesto da
Test requested by

Pentair Schroff GmbH

PAGINA/PAGE 2/2

Descrizione dell'esemplare in prova
Description of the tested item

**19" SUBRACK EUROPAC PRO RUGGED
(6HE 84 TE 235T)**

Unità / Unit --

FOTOGRAFIE O SCHIZZO DELL'ESEMPLARE IN PROVA
TESTING ITEM PICTURES OR DRAWINGS



Horizontal Plan



Inclined 30°
Transversal



Inclined 30°
Longitudinal



Visti i risultati delle prove, si certifica che il componente ha superato la prova prevista dalla MIL S 901 D
According to test results, it is certified that the component has satisfied the tests as required by MIL S 901 D

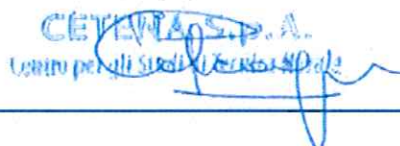
Eventuali Osservazioni
Possible Observations

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FIRME
SIGNATURES

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