

**TEST CERTIFICATES**

Raw Mat. Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	37424100-P
Batch no.	A6311	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021
SIZE:-	M.24X100	Certification in Accordance with EN-10204 type , 3.1 (edition 2013).	

**CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)**

HSFG BOLT (EN-14399-3)										
M.24X100		C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%	
		SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				
	OBSERVATION	0.253	1.128	0.006	0.018	0.158	0.155			0.00281
HSFG NUT (EN-14399-3)										
M.24		C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%	
		SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.				
	OBSERVATION	0.419	0.777	0.013	0.009	0.194				
HSFG WASHER (EN-14399-6)										
M.24		C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%	
		SPECIFIED								
	OBSERVATION	0.421	0.759	0.032	0.031	0.245				

**MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)**

HSFG BOLT (EN-14399-3)						
M.24X100	No. of checked Samples		Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
		1	SPECIFIED	212.000	293.000	23-34
		OBSERVATION	212.600	332.100	30-31	44J
HSFG NUT (EN-14399-3)						
M.24	No. of checked Samples		Hardness(HV)		Proof Load (KN)	
	1	SPECIFIED	233-353		324.800	
		OBSERVATION	300-310		325.050	
HSFG WASHER (EN-14399-6)						
M.24	No. of checked Samples		Hardness(HV)			
	1	SPECIFIED	300-370			
		OBSERVATION	320-340			

**DIMENSIONS**

HSFG BOLT (EN-14399-3)									
M.24X100	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
								MIN	MAX
	5	40.00	14.10	23.16	54 MIN	23.57	98.25		
		41.00	15.90	24.84		23.95	101.75		
OBSERVATION1	1	40.36	15.21	23.65	55.25	23.75	99.25		OK
OBSERVATION2	2	40.45	15.10	23.59	55.41	23.69	99.85		OK
OBSERVATION3	3	40.52	15.16	23.71	55.36	23.78	98.95		OK
OBSERVATION4	4	40.51	14.95	23.59	54.94	23.81	100.25		OK
OBSERVATION5	5	40.26	14.59	23.69	55.26	23.75	99.36		OK
HSFG NUT (EN-14399-3)									
M.24	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT					
				MIN	MAX	OK	NOT OK		
	5	40.00	20.20						
		41.00	21.50						
OBSERVATION 1	1	40.69	21.10		OK				
OBSERVATION2	2	40.74	20.95		OK				
OBSERVATION3	3	40.59	20.85		OK				
OBSERVATION4	4	40.62	20.94		OK				
OBSERVATION5	5	40.65	20.89		OK				
HSFG WASHER (EN-14399-6)									
M.24	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions				
					MIN	MAX	OK	NOT OK	
	5	25.00	43.38	3.70					
		25.33	44.00	4.30					
OBSERVATION 1	1	25.26	43.87	3.79		OK			
OBSERVATION2	2	25.20	43.74	4.06		OK			
OBSERVATION3	3	25.26	43.84	4.10		OK			
OBSERVATION4	4	25.21	43.90	3.95		OK			
OBSERVATION5	5	25.19	43.89	3.84		OK			

**COATING**

COATING ( PLAIN FINISH )		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.24X100	PLAIN	PLAIN
NUT	M.24	PLAIN	PLAIN
WASHER	M.24	PLAIN	PLAIN

RESULT:- OK

<p>Authentication</p> <p>This certificate is an original only, if signed</p> <p>SIGNED </p> <p>FOR CERTIFICATION CONTROL</p> <p>DATE :</p>	 0045-CPR-1536	<p>Test conducted by:</p> <p></p> <p style="text-align: right;">FOR GDPA FASTENERS</p> <p style="text-align: center;">Name &amp; Stamp</p> <p style="text-align: center;">Q.C. Inspector -                      Q.C. Manager</p>
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# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3742480-P
Batch no.	A6311	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR.8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021

SIZE:- M.24X80 Certification in Accordance with EN-10204 type , 3.1 (edition 2013).

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)									
M.24X80		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				0.003 MAX.
	OBSERVATION	0.253	1.128	0.006	0.018	0.158	0.155		0.00281
HSFG NUT (EN-14399-3)									
M.24		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.				
	OBSERVATION	0.419	0.777	0.013	0.009	0.194			
HSFG WASHER (EN-14399-6)									
M.24		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED								
	OBSERVATION	0.421	0.759	0.032	0.031	0.245			

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)					
M.24X80	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
	1	SPECIFIED 212.000	293.000	23-34	27J
		OBSERVATION 212.900	338.500	29-30	44J
HSFG NUT (EN-14399-3)					
M.24	No. of checked Samples	Hardness(HV)	Proof Load (KN)		
	1	SPECIFIED 233-353	324.800		
		OBSERVATION 300-310	324.900		
HSFG WASHER (EN-14399-6)					
M.24	No. of checked Samples	Hardness(HV)			
	1	SPECIFIED 300-370			
		OBSERVATION 320-340			

### DIMENSIONS

HSFG BOLT (EN-14399-3)									
M.24X80	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
SPECIFIED	5	40.00	14.10	23.16	54 MIN	23.57	78.50	OK/NOT OK	
		MIN 41.00	15.90	24.84		23.95	81.50		
		MAX 40.65	15.02	23.65	54.85	23.75	80.69	OK	
OBSERVATION1	1	40.55	15.10	23.59	55.20	23.76	80.11	OK	
OBSERVATION2	2	40.45	15.10	23.60	54.85	23.82	79.68	OK	
OBSERVATION3	3	40.49	14.95	23.64	54.59	23.74	81.02	OK	
OBSERVATION4	4	40.39	14.90	23.66	54.59	23.78	80.25	OK	
OBSERVATION5	5								
HSFG NUT (EN-14399-3)									
M.24	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT					
SPECIFIED	5	40.00	20.20	OK/NOT OK					
		MIN 41.00	21.50						
		MAX 40.65	20.89	OK					
OBSERVATION1	1	40.60	20.90	OK					
OBSERVATION2	2	40.74	20.78	OK					
OBSERVATION3	3	40.56	21.06	OK					
OBSERVATION4	4	40.59	21.10	OK					
OBSERVATION5	5								
HSFG WASHER (EN-14399-6)									
M.24	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions				
SPECIFIED	5	25.00	43.38	3.70	OK/NOT OK				
		MIN 25.33	44.00	4.30					
		MAX 25.20	43.89	3.95	OK				
OBSERVATION1	1	25.10	43.85	3.89	OK				
OBSERVATION2	2	25.29	43.90	3.90	OK				
OBSERVATION3	3	25.14	43.90	4.06	OK				
OBSERVATION4	4	25.10	43.80	3.95	OK				
OBSERVATION5	5								

### COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.24X80	PLAIN	PLAIN
NUT	M.24	PLAIN	PLAIN
WASHER	M.24	PLAIN	PLAIN

RESULT:- OK

Authentication

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FOR CERTIFICATION CONTROL

DATE:



0045-CPR-1536

Test conducted by:

Name & Stamp

Q.C. Inspector

FOR GDPA FASTENERS

Name & Stamp

Q.C. Manager



# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date:- 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3742470-P
Batch no.	A6311	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021

SIZE:- M.24X70 Certification in Accordance with EN-10204 type , 3.1 (edition 2013).

## CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)									
M.24X70		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				0.003 MAX.
	OBSERVATION	0.253	1.128	0.006	0.018	0.158	0.155		0.00281
HSFG NUT (EN-14399-3)									
M.24		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.				
	OBSERVATION	0.419	0.777	0.013	0.009	0.194			
HSFG WASHER (EN-14399-6)									
M.24		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED								
	OBSERVATION	0.421	0.759	0.032	0.031	0.245			

## MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)					
M.24X70	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
	1	SPECIFIED 212.000	293.000	23-34	27J
		OBSERVATION 212.400	338.100	29-30	43J
HSFG NUT (EN-14399-3)					
M.24	No. of checked Samples	Hardness(HV)	Proof Load (KN)		
	1	SPECIFIED 233-353	324.800		
		OBSERVATION 300-310	325.000		
HSFG WASHER (EN-14399-6)					
M.24	No. of checked Samples	Hardness(HV)			
	1	SPECIFIED 300-370			
		OBSERVATION 320-340			

## DIMENSIONS

HSFG BOLT (EN-14399-3)										
M.24X70	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT		
SPECIFIED	MIN	5	40.00	14.10	23.16	54 MIN	23.57	68.50	OK/NOT OK	
	MAX		41.00	15.90	24.84		23.95	71.50		
OBSERVATION1	1		40.42	15.15	23.68	55.65	23.81	70.65	OK	
OBSERVATION2	2		40.36	15.10	23.60	54.42	23.80	69.85	OK	
OBSERVATION3	3		40.58	14.95	23.65	54.59	23.80	69.10	OK	
OBSERVATION4	4		40.65	14.90	23.65	55.69	23.78	69.57	OK	
OBSERVATION5	5		40.42	14.79	23.68	54.85	23.75	69.36	OK	
HSFG NUT (EN-14399-3)										
M.24	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT						
SPECIFIED	MIN	5	40.00	20.20	OK/NOT OK					
	MAX		41.00	21.50						
OBSERVATION 1	1		40.65	20.91	OK					
OBSERVATION2	2		40.41	21.05	OK					
OBSERVATION3	3		40.36	21.11	OK					
OBSERVATION4	4		40.52	20.89	OK					
OBSERVATION5	5		40.48	20.79	OK					
HSFG WASHER (EN-14399-6)										
M.24	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions					
SPECIFIED	MIN	5	25.00	43.38	3.70	OK/NOT OK				
	MAX		25.33	44.00	4.30					
OBSERVATION 1	1		25.21	43.90	3.82	OK				
OBSERVATION2	2		25.20	43.85	3.90	OK				
OBSERVATION3	3		25.19	43.79	4.02	OK				
OBSERVATION4	4		25.21	43.85	3.89	OK				
OBSERVATION5	5		25.21	43.90	3.90	OK				

## COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.24X70	PLAIN	PLAIN
NUT	M.24	PLAIN	PLAIN
WASHER	M.24	PLAIN	PLAIN

RESULT:- OK

### Authentication

This certificate is an original only, if signed

SIGNED  
FOR CERTIFICATION CONTROL

DATE:



0045-CPR-1536

Test conducted by:

*[Signature]*  
Name & Stamp  
Q.C. Inspector

FOR GDPA FASTENERS

Name & Stamp  
Q.C. Manager

# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat. Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3741650-P
Batch no.	A6124	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR.8,8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021
SIZE:-	M.16X50	Certification in Accordance with EN-10204 type , 3.1 (edition 2013).	

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)										
M.16X50	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
		OBSERVATION	0.20-0.55	1.028	0.025 MAX.	0.014	0.154	0.363		0.003 MAX.
		0.253		0.003					0.00248	
HSFG NUT (EN-14399-3)										
M.16	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	OBSERVATION	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.	0.079	0.121		0.00278	
		0.295	0.901	0.008	0.007					
HSFG WASHER (EN-14399-6)										
M.16	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	OBSERVATION	0.427	0.820	0.030	0.031	0.227				

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)						
M.16X50	No. of checked Samples		Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
		OBSERVATION	94.700	158.100	30-31	42J
HSFG NUT (EN-14399-3)						
M.16	No. of checked Samples		Hardness(HV)		Proof Load (KN)	
			1	SPECIFIED	200-302	138.200
		OBSERVATION	260-290	138.400		
HSFG WASHER (EN-14399-6)						
M.16	No. of checked Samples		Hardness(HV)			
			1	SPECIFIED	300-370	
		OBSERVATION	320-330			

### DIMENSIONS

HSFG BOLT (EN-14399-3)									
M.16X50	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
								SPECIFIED	5
		27.00	10.75	16.70		15.96	51.25		
OBSERVATION1	1	25.54	10.12	15.78	38.25	15.75	50.25	OK	
OBSERVATION2	2	25.53	10.10	15.68	38.65	15.78	50.32	OK	
OBSERVATION3	3	25.41	10.21	15.69	38.74	15.73	50.14	OK	
OBSERVATION4	4	26.35	10.05	15.74	38.95	15.73	49.89	OK	
OBSERVATION5	5	26.29	10.11	15.71	38.41	15.76	50.14	OK	
HSFG NUT (EN-14399-3)									
M.16	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT					
				SPECIFIED	14.10	OK/NOT OK			
		26.16	14.80						
OBSERVATION 1	1	26.71	14.37		OK				
OBSERVATION2	2	26.68	14.25		OK				
OBSERVATION3	3	26.74	14.56		OK				
OBSERVATION4	4	26.71	14.23		OK				
OBSERVATION5	5	26.69	14.58		OK				
HSFG WASHER (EN-14399-6)									
M.16	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions				
					SPECIFIED	17.00	29.48	3.70	OK/NOT OK
		17.27	30.00	4.30					
OBSERVATION 1	1	17.15	29.74	3.95		OK			
OBSERVATION2	2	17.20	29.75	4.12		OK			
OBSERVATION3	3	17.11	29.77	4.10		OK			
OBSERVATION4	4	17.24	29.79	4.10		OK			
OBSERVATION5	5	17.20	29.78	4.20		OK			

### COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.16X50		
NUT	M.16	PLAIN	PLAIN
WASHER	M.16	PLAIN	PLAIN

RESULT:- OK

#### Authentication

This certificate is an original only, if signed

SIGNED

FOR CERTIFICATION CONTROL

DATE:

**CE**  
0045-CPR-1536

Test conducted by:

Name & Stamp

Q.C. Inspector

FOR GDPA FASTENERS

Name & Stamp

Q.C. Manager



# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3741655-P
Batch no.	A6124	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021
SIZE:-	M.16X55	Certification in Accordance with EN-10204 type , 3.1 (edeton 2013).	

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)									
M.16X55		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				0.003 MAX.
	OBSERVATION	0.253	1.028	0.003	0.014	0.154	0.363		0.00248
HSFG NUT (EN-14399-3)									
M.16		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.				
	OBSERVATION	0.295	0.901	0.008	0.007	0.079	0.121		0.00278
HSFG WASHER (EN-14399-6)									
M.16		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED								
	OBSERVATION	0.427	0.820	0.030	0.031	0.227			

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)						
M.16X55	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C	
	1	SPECIFIED	94.500	130.000	23-34	27J
		OBSERVATION	94.900	142.750	29-30	43J
HSFG NUT (EN-14399-3)						
M.16	No. of checked Samples	Hardness(HV)	Proof Load (KN)			
	1	SPECIFIED	200-302	138.200		
		OBSERVATION	260-290	138.400		
HSFG WASHER (EN-14399-6)						
M.16	No. of checked Samples	Hardness(HV)				
	1	SPECIFIED	300-370			
		OBSERVATION	320-330			

### DIMENSIONS

HSFG BOLT (EN-14399-3)									
M.16X55	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
SPECIFIED	MIN	5	26.16	9.25	15.30	38 MIN	15.68	53.50	OK/NOT OK
	MAX		27.00	10.75	16.70		15.96	56.50	
OBSERVATION1		1	26.65	10.25	15.65	38.69	15.75	55.69	OK
OBSERVATION2		2	26.60	10.20	15.65	38.69	15.78	55.10	OK
OBSERVATION3		3	26.59	10.26	15.69	38.75	15.73	54.95	OK
OBSERVATION4		4	26.54	10.11	15.60	38.69	15.73	55.95	OK
OBSERVATIONS5		5	26.61	10.18	15.64	38.99	15.76	55.90	OK
HSFG NUT (EN-14399-3)									
M.16	No. of checked Pcs	Across Flat (S)	NUT Height (m)		THREAD DIMENSION OK WITH BOLT				
SPECIFIED	MIN	5	26.16	14.10	OK/NOT OK				
	MAX		27.00	14.80					
OBSERVATION 1		1	26.65	14.56	OK				
OBSERVATION2		2	26.60	14.41	OK				
OBSERVATION3		3	26.58	14.52	OK				
OBSERVATION4		4	26.74	14.55	OK				
OBSERVATIONS5		5	26.70	14.61	OK				
HSFG WASHER (EN-14399-6)									
M.16	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions				
SPECIFIED	MIN	5	17.00	29.48	3.70	OK/NOT OK			
	MAX		17.27	30.00	4.30				
OBSERVATION 1		1	17.20	29.85	4.12	OK			
OBSERVATION2		2	17.21	29.74	4.10	OK			
OBSERVATION3		3	17.20	29.89	3.89	OK			
OBSERVATION4		4	17.15	29.78	3.95	OK			
OBSERVATIONS5		5	17.20	29.84	3.90	OK			

### COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.16X55	PLAIN	PLAIN
NUT	M.16	PLAIN	PLAIN
WASHER	M.16	PLAIN	PLAIN

RESULT:- OK

#### Authentication

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FOR CERTIFICATION CONTROL

DATE:



0045-CPR-1536

Test conducted by:

Name & Stamp

Q.C. Inspector

FOR GDPA FASTENERS

Name & Stamp

Q.C. Manager



# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDE/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3741660-P
Batch no.	A6124	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR. 8.8, HSFG NUT TO EN.14399-3 CL.8, HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021
SIZE:-	M.16X60	Certification in Accordance with EN-10204 type , 3.1 (edition 2013).	

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)									
M.16X60		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				0.003 MAX.
	OBSERVATION	0.253	1.028	0.003	0.014	0.154	0.363		0.00248
HSFG NUT (EN-14399-3)									
M.16		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.				
	OBSERVATION	0.295	0.901	0.008	0.007	0.079	0.121		0.00278
HSFG WASHER (EN-14399-6)									
M.16		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED								
	OBSERVATION	0.427	0.820	0.030	0.031	0.227			

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)					
M.16X60	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
	1	SPECIFIED	94.500	130.000	23-34
		OBSERVATION	94.800	152.300	30-31
					44J
HSFG NUT (EN-14399-3)					
M.16	No. of checked Samples	Hardness(HV)	Proof Load (KN)		
	1	SPECIFIED	200-302	138.200	
		OBSERVATION	260-290	138.400	
HSFG WASHER (EN-14399-6)					
M.16	No. of checked Samples	Hardness(HV)			
	1	SPECIFIED	300-370		
		OBSERVATION	320-330		

### DIMENSIONS

HSFG BOLT (EN-14399-3)										
M.16X60	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia. (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT		
SPECIFIED	MIN	5	26.16	9.25	15.30	38 MIN	15.68	58.50	OK/NOT OK	
	MAX		27.00	10.75	16.70		15.96	61.50		
OBSERVATION1	1		26.41	10.25	15.66	38.95	15.82	60.58	OK	
OBSERVATION2	2		26.36	10.32	15.65	38.48	15.80	60.55	OK	
OBSERVATION3	3		26.52	10.28	15.61	38.69	15.78	60.69	OK	
OBSERVATION4	4		26.44	10.35	15.70	38.75	15.80	60.58	OK	
OBSERVATION5	5		26.48	10.24	16.65	38.69	15.81	60.68	OK	
HSFG NUT (EN-14399-3)										
M.16	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT						
SPECIFIED	MIN	5	26.16	14.10	OK/NOT OK					
	MAX		27.00	14.80						
OBSERVATION 1	1		26.65	14.45	OK					
OBSERVATION2	2		26.60	14.65	OK					
OBSERVATION3	3		26.65	14.58	OK					
OBSERVATION4	4		26.69	14.65	OK					
OBSERVATION5	5		26.75	14.51	OK					
HSFG WASHER (EN-14399-6)										
M.16	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions					
SPECIFIED	MIN	5	17.00	29.48	3.70	OK/NOT OK				
	MAX		17.27	30.00	4.30					
OBSERVATION 1	1		17.20	29.80	3.90	OK				
OBSERVATION2	2		17.21	29.82	4.06	OK				
OBSERVATION3	3		17.18	29.81	4.10	OK				
OBSERVATION4	4		17.21	29.78	4.05	OK				
OBSERVATION5	5		17.20	29.79	4.11	OK				

### COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.16X60	PLAIN	PLAIN
NUT	M.16	PLAIN	PLAIN
WASHER	M.16	PLAIN	PLAIN

RESULT:- OK

#### Authentication

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FOR CERTIFICATION CONTROL

DATE :



0045-CPR-1536

Test conducted by:

*[Signature]*  
Name & Stamp  
Q.C. Inspector

FOR GDPA FASTENERS

Name & Stamp

Q.C. Manager

# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat. Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3741665-P
Batch no.	A6124	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021
SIZE:-	M.16X65	Certification in Accordance with EN-10204 type , 3.1 (edition 2013).	

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)									
M.16X65	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
		OBSERVATION	0.20-0.55	1.028	0.025 MAX.	0.014	0.154	0.363	
HSFG NUT (EN-14399-3)									
M.16	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
		OBSERVATION	0.58 MAX.	0.30 MIN. 0.901	0.058 MAX.	0.048 MAX. 0.007	0.079	0.121	
HSFG WASHER (EN-14399-6)									
M.16	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
		OBSERVATION	0.427	0.820	0.030	0.031	0.227		

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)						
M.16X65	No. of checked Samples		Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
		1	Specified	94.500	130.000	23-34
		OBSERVATION	94.900	151.000	30-31	44J
HSFG NUT (EN-14399-3)						
M.16	No. of checked Samples		Hardness(HV)	Proof Load (KN)		
	1	Specified	200-302	138.200		
		OBSERVATION	260-290	138.400		
HSFG WASHER (EN-14399-6)						
M.16	No. of checked Samples		Hardness(HV)			
	1	Specified	300-370			
		OBSERVATION	320-330			

### DIMENSIONS

HSFG BOLT (EN-14399-3)										
M.16X65	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT		
								MIN	MAX	OK/NOT OK
	5	26.16	9.25	15.30	38 MIN	15.68	63.50		OK/NOT OK	
	1	27.00	10.75	16.70		15.96	66.50		OK	
	1	25.41	10.26	15.71	38.69	15.78	65.59		OK	
	2	25.40	10.11	15.71	38.78	15.81	65.84		OK	
	3	25.59	10.26	15.75	38.84	15.78	65.46		OK	
	4	25.57	10.21	15.71	38.59	15.78	65.59		OK	
	5	25.55	10.18	15.75	38.78	15.78	65.44		OK	
HSFG NUT (EN-14399-3)										
M.16	No. of checked Pcs	Across Flat (S)			NUT Height (m)		THREAD DIMENSION OK WITH BOLT			
		MIN	MAX		14.10	14.80	OK/NOT OK			
	5	26.16	27.00		14.65	14.51	OK			
	1	26.51	26.53		14.56	14.54	OK			
	2	26.53	26.54		14.54	14.49	OK			
	3	26.54	26.56		14.54		OK			
	4	26.56	26.25		14.49		OK			
	5	26.25					OK			
HSFG WASHER (EN-14399-6)										
M.16	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions					
					MIN	MAX	OK/NOT OK			
	5	17.00	29.48	3.70	17.27	30.00	4.30	OK/NOT OK		
	1	17.12	29.75	3.90	17.19	29.85	3.98	OK		
	2	17.19	29.75	3.90	17.21	29.84	3.89	OK		
	3	17.19	29.80	3.91	17.19	29.90	3.91	OK		
	4	17.19	29.84	3.90	17.15	29.84	3.90	OK		
	5	17.15	29.84	3.90				OK		

### COATING

COATING (PLAIN FINISH)		No. of samples/specified		Average coating thickness of ZINC in microns	
BOLT	M.16X65	PLAIN	30	PLAIN	30
NUT	M.16	PLAIN	30	PLAIN	30
WASHER	M.16	PLAIN	30	PLAIN	30

RESULT:- OK

#### Authentication

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FOR CERTIFICATION CONTROL

DATE:

**CE**  
0045-CPR-1536

#### Test conducted by:

*[Signature]*  
Name & Stamp

Q.C. Inspector

FOR GDPA FASTENERS

*[Signature]*  
Name & Stamp

Q.C. Manager



# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date- 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3741670-P
Batch no.	A6124	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021
SIZE:-	M.16X70	Certification in Accordance with EN-10204 type , 3.1 (edition 2013).	

## CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)									
M.16X70	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
		OBSERVATION	0.20-0.55	0.253	0.025 MAX.	0.014	0.154	0.363	
HSFG NUT (EN-14399-3)									
M.16	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	OBSERVATION	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.007	0.079	0.121		0.00278
HSFG WASHER (EN-14399-6)									
M.16	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	OBSERVATION	0.427	0.820	0.030	0.031	0.227			

## MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)						
M.16X70	No. of checked Samples		Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
		1	Specified	94.500	130.000	23-34
		OBSERVATION	95.950	149.000	29-30	43J
HSFG NUT (EN-14399-3)						
M.16	No. of checked Samples		Hardness(HV)	Proof Load (KN)		
	1	Specified	200-302	138.200		
		OBSERVATION	260-290	138.400		
HSFG WASHER (EN-14399-6)						
M.16	No. of checked Samples		Hardness(HV)			
	1	Specified	300-370			
		OBSERVATION	320-330			

## DIMENSIONS

HSFG BOLT (EN-14399-3)									
M.16X70	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
								Specified	MIN
	MAX		27.00	10.75	16.70		15.96	71.50	
OBSERVATION1	1	26.54	10.12	15.78	38.95	15.75	71.12		OK
OBSERVATION2	2	26.53	10.10	15.68	38.65	15.78	70.57		OK
OBSERVATION3	3	26.41	10.21	15.69	38.74	15.73	70.69		OK
OBSERVATION4	4	26.35	10.05	15.74	38.95	15.73	70.15		OK
OBSERVATION5	5	26.29	10.11	15.71	38.41	15.76	70.58		OK
HSFG NUT (EN-14399-3)									
M.16	No. of checked Pcs	Across Flat (S)			NUT Height (m)		THREAD DIMENSION OK WITH BOLT		
		Specified	MIN	5	26.16	14.10	OK/NOT OK		
	MAX		27.00	14.80					
OBSERVATION 1	1	26.71		14.37	OK				
OBSERVATION2	2	26.68		14.25	OK				
OBSERVATION3	3	26.74		14.56	OK				
OBSERVATION4	4	26.71		14.23	OK				
OBSERVATION5	5	26.69		14.58	OK				
HSFG WASHER (EN-14399-6)									
M.16	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions				
					Specified	MIN	5	17.00	29.48
	MAX		17.27	30.00	4.30				
OBSERVATION 1	1	17.15	29.74	3.95	OK				
OBSERVATION2	2	17.20	29.75	4.12	OK				
OBSERVATION3	3	17.11	29.77	4.10	OK				
OBSERVATION4	4	17.24	29.79	4.10	OK				
OBSERVATION5	5	17.20	29.78	4.20	OK				

## COATING

COATING (PLAIN FINISH)		No. of samples/specified		Average coating thickness of ZINC in microns	
BOLT	M.16X70	PLAIN		PLAIN	
NUT	M.16	PLAIN		PLAIN	
WASHER	M.16	PLAIN		PLAIN	

RESULT:- OK

### Authentication

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DATE :



0045-CPR-1536

Test conducted by:

*[Signature]*  
Name & Stamp  
Q.C. Inspector

*[Signature]*  
Name & Stamp  
Q.C. Manager





# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date:- 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3742060-P
Batch no.	A6055	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021

SIZE:- M.20X60 Certification in Accordance with EN-10204 type , 3.1 (edition 2013).

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)									
M.20X60		C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				0.003 MAX.
	OBSERVATION	0.247	1.042	0.001	0.017	0.190	0.362		0.00255
HSFG NUT (EN-14399-3)									
M.20		C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.				
	OBSERVATION	0.295	0.901	0.008	0.007	0.079	0.121		0.00278
HSFG WASHER (EN-14399-6)									
M.20		C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED								
	OBSERVATION	0.427	0.820	0.030	0.031	0.227			

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)					
M.20X60	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
	1	SPECIFIED	147.000	203.000	23-34
		OBSERVATION	147.600	237.100	29-30
					44J
HSFG NUT (EN-14399-3)					
M.20	No. of checked Samples	Hardness(HV)	Proof Load (KN)		
	1	SPECIFIED	233-353	225.400	
		OBSERVATION	300-310	225.600	
HSFG WASHER (EN-14399-6)					
M.20	No. of checked Samples	Hardness(HV)			
	1	SPECIFIED	300-370		
		OBSERVATION	320-330		

### DIMENSIONS

HSFG BOLT (EN-14399-3)									
M.20X60	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia. (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
SPECIFIED	MIN	5	31.00	11.60	19.16	46 MIN	19.62	58.50	OK/NOT OK
	MAX		32.00	13.40	20.84		19.95	61.50	
OBSERVATION1		1	31.36	12.32	19.70	46.85	19.70	60.54	OK
OBSERVATION2		2	31.45	12.41	19.65	46.25	19.70	60.59	OK
OBSERVATION3		3	31.52	12.10	19.65	46.69	19.74	60.10	OK
OBSERVATION4		4	31.52	12.15	19.65	46.89	19.78	60.84	OK
OBSERVATION5		5	31.41	12.23	19.68	46.59	19.75	60.89	OK
HSFG NUT (EN-14399-3)									
M.20	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT					
SPECIFIED	MIN	5	31.00	16.90	OK/NOT OK				
	MAX		32.00	18.00					
OBSERVATION 1		1	31.65	17.25	OK				
OBSERVATION2		2	31.68	17.45	OK				
OBSERVATION3		3	31.65	17.19	OK				
OBSERVATION4		4	31.49	17.65	OK				
OBSERVATION5		5	31.59	17.35	OK				
HSFG WASHER (EN-14399-6)									
M.20	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions				
SPECIFIED	MIN	5	21.00	36.38	3.70	OK/NOT OK			
	MAX		21.33	37.00	4.30				
OBSERVATION 1		1	21.27	36.85	4.15	OK			
OBSERVATION2		2	21.25	36.92	4.10	OK			
OBSERVATION3		3	21.26	36.90	4.12	OK			
OBSERVATION4		4	21.20	36.89	3.95	OK			
OBSERVATION5		5	21.26	36.85	3.89	OK			

### COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.20X60	PLAIN	PLAIN
NUT	M.20	PLAIN	PLAIN
WASHER	M.20	PLAIN	PLAIN

RESULT:- OK

#### Authentication

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FOR CERTIFICATION CONTROL

DATE:

  
0045-CPR-1536

Test conducted by:

  
Name & Stamp  
Q.C. Inspector


  
Name & Stamp  
Q.C. Manager



# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDE/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3742065-P
Batch no.	A6055	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021

SIZE:- M.20X65 Certification in Accordance with EN-10204 type , 3.1 (edition 2013).

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)									
M.20X65		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				0.003 MAX.
	OBSERVATION	0.247	1.042	0.001	0.017	0.190	0.362		0.00255
HSFG NUT (EN-14399-3)									
M.20		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.				
	OBSERVATION	0.295	0.901	0.008	0.007	0.079	0.121		0.00278
HSFG WASHER (EN-14399-6)									
M.20		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED								
	OBSERVATION	0.427	0.820	0.030	0.031	0.227			

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)					
M.20X65	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
	1	SPECIFIED 147.000	203.000	23-34	27J
		OBSERVATION 148.650	246.150	30-31	43J
HSFG NUT (EN-14399-3)					
M.20	No. of checked Samples	Hardness(HV)	Proof Load (KN)		
	1	SPECIFIED 233-353	225.400		
		OBSERVATION 300-310	225.600		
HSFG WASHER (EN-14399-6)					
M.20	No. of checked Samples	Hardness(HV)			
	1	SPECIFIED 300-370			
		OBSERVATION 320-330			

### DIMENSIONS

HSFG BOLT (EN-14399-3)										
M.20X65	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT		
SPECIFIED	MIN	5	31.00	11.60	19.16	46 MIN	19.62	63.50	OK/NOT OK	
	MAX		32.00	13.40	20.84		19.95	66.50		
OBSERVATION1		1	31.45	12.15	19.75	46.52	19.75	64.85	OK	
OBSERVATION2		2	31.40	12.26	19.70	46.59	19.80	66.15	OK	
OBSERVATION3		3	31.42	12.32	19.74	47.25	19.78	66.10	OK	
OBSERVATION4		4	31.39	12.30	19.78	47.10	19.70	66.15	OK	
OBSERVATION5		5	31.41	12.25	19.71	47.15	19.78	66.36	OK	
HSFG NUT (EN-14399-3)										
M.20	No. of checked Pcs	Across Flat (S)	NUT Height (m)		THREAD DIMENSION OK WITH BOLT					
SPECIFIED	MIN	5	31.00	16.90	OK/NOT OK					
	MAX		32.00	18.00						
OBSERVATION 1		1	31.65	17.25	OK					
OBSERVATION2		2	31.68	17.45	OK					
OBSERVATION3		3	31.65	17.19	OK					
OBSERVATION4		4	31.49	17.65	OK					
OBSERVATION5		5	31.59	17.35	OK					
HSFG WASHER (EN-14399-6)										
M.20	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions					
SPECIFIED	MIN	5	21.00	36.38	3.70	OK/NOT OK				
	MAX		21.33	37.00	4.30					
OBSERVATION 1		1	21.20	36.85	4.10	OK				
OBSERVATION2		2	21.15	36.92	4.02	OK				
OBSERVATION3		3	21.19	36.90	4.10	OK				
OBSERVATION4		4	21.15	36.89	4.06	OK				
OBSERVATION5		5	21.14	36.85	4.11	OK				

### COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.20X65	PLAIN	PLAIN
NUT	M.20	PLAIN	PLAIN
WASHER	M.20	PLAIN	PLAIN

RESULT:- OK

### Authentication

This certificate is an original only, if signed

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DATE:



0045-CPR-1536

Test conducted by:

Name & Stamp

Q.C. Inspector

FOR GDPA FASTENERS

Name & Stamp

Q.C. Manager

# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat. Heat No. GDI/ORB E-5021	P.O.No. E-5021
BUYER ORDER NO. 200957	Certificate No. 3742070-P
Batch no. A6055	Invoice No. 374ES/E-5021
Customer: ORBITAL FASTENERS LTD.	Date of Issue 13.02.2017
Description: HSFG BOLT TO EN.14399-3 GR.8.8, HSFG NUT TO EN.14399-3 CL.8, HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No. E-5021
SIZE: M.20X70	Certification in Accordance with EN-10204 type , 3.1 (edition 2013).

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)										
M.20X70	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
		OBSERVATION	0.20-0.55	0.247	1.042	0.025 MAX.	0.008	0.017	0.190	0.362
HSFG NUT (EN-14399-3)										
M.20	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	OBSERVATION	0.58 MAX.	0.295	0.30 MIN.	0.901	0.058 MAX.	0.007	0.079	0.121	0.00278
HSFG WASHER (EN-14399-6)										
M.20	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	OBSERVATION	0.427	0.820	0.030	0.031	0.227				

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)						
M.20X70	No. of checked Samples		Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
		1	SPECIFIED	147.000	203.000	23-34
		OBSERVATION	147.450	230.750	29-30	44J
HSFG NUT (EN-14399-3)						
M.20	No. of checked Samples		Hardness(HV)		Proof Load (KN)	
	1	SPECIFIED	233-353		225.400	
		OBSERVATION	300-310		225.600	
HSFG WASHER (EN-14399-6)						
M.20	No. of checked Samples		Hardness(HV)			
	1	SPECIFIED	300-370			
		OBSERVATION	320-330			

### DIMENSIONS

HSFG BOLT (EN-14399-3)									
M.20X70	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
								SPECIFIED	MIN
	MAX		32.00	13.40	20.84		19.95	71.50	
OBSERVATION1	1	31.36	12.32	19.70	46.85	19.75	70.45		OK
OBSERVATION2	2	31.45	12.41	19.65	46.25	19.71	70.81		OK
OBSERVATION3	3	31.52	12.10	19.65	46.69	19.78	71.05		OK
OBSERVATION4	4	31.52	12.15	19.65	46.89	19.75	69.25		OK
OBSERVATIONS5	5	31.41	12.23	19.68	46.59	19.74	69.15		OK
HSFG NUT (EN-14399-3)									
M.20	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT					
				SPECIFIED	MIN	5	31.00	16.90	OK/NOT OK
	MAX		32.00	18.00					
OBSERVATION 1	1	31.52	17.56		OK				
OBSERVATION2	2	31.45	17.41		OK				
OBSERVATION3	3	31.42	17.56		OK				
OBSERVATION4	4	31.65	17.25		OK				
OBSERVATIONS5	5	31.42	17.36		OK				
HSFG WASHER (EN-14399-6)									
M.20	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions				
					SPECIFIED	MIN	5	21.00	36.38
	MAX		21.33	37.00	4.30				
OBSERVATION 1	1	21.15	36.80	3.95		OK			
OBSERVATION2	2	21.19	36.75	3.92		OK			
OBSERVATION3	3	21.14	36.78	3.96		OK			
OBSERVATION4	4	21.19	36.81	3.95		OK			
OBSERVATIONS5	5	21.25	36.79	3.89		OK			

### COATING

COATING (PLAIN FINISH)			No. of samples/specified		Average coating thickness of ZINC in microns	
BOLT	M.20X70		PLAIN		PLAIN	
NUT	M.20		PLAIN		PLAIN	
WASHER	M.20		PLAIN		PLAIN	

RESULT:- OK

<p><b>Authentication</b></p> <p>This certificate is an original only, if signed</p> <p>SIGNED: </p> <p>FOR CERTIFICATION CONTROL</p> <p>DATE:</p>	 0045-CPR-1536	<p>Test conducted by:</p> <p></p> <p>Name &amp; Stamp</p> <p>Q.C. Inspector</p>
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FOR GDPA FASTENERS

Name & Stamp

Q.C. Manager



# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3742075-P
Batch no.	A6055	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CLR,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021
SIZE:-	M.20X75	Certification in Accordance with EN-10204 type , 3.1 (edition 2013).	

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)										
M.20X75		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				0.003 MAX.	
	OBSERVATION	0.247	1.042	0.001	0.017	0.190	0.362		0.00255	
HSFG NUT (EN-14399-3)										
M.20		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.					
	OBSERVATION	0.295	0.901	0.008	0.007	0.079	0.121		0.00278	
HSFG WASHER (EN-14399-6)										
M.20		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	SPECIFIED									
	OBSERVATION	0.427	0.820	0.030	0.031	0.227				

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)					
M.20X75	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
	1	SPECIFIED 147.000	203.000	23-34	27J
		OBSERVATION 147.200	239.150	29-30	44J
HSFG NUT (EN-14399-3)					
M.20	No. of checked Samples	Hardness(HV)	Proof Load (KN)		
	1	SPECIFIED 233-353	225.400		
		OBSERVATION 300-310	225.650		
HSFG WASHER (EN-14399-6)					
M.20	No. of checked Samples	Hardness(HV)			
	1	SPECIFIED 300-370			
		OBSERVATION 320-330			

### DIMENSIONS

HSFG BOLT (EN-14399-3)										
M.20X75	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia. (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT		
SPECIFIED	MIN	5	31.00	11.60	19.16	46 MIN	19.62	73.50	OK/NOT OK	
	MAX		32.00	13.40	20.84		19.95	76.50		
OBSERVATION1		1	31.52	12.11	19.65	47.25	19.75	75.69	OK	
OBSERVATION2		2	31.51	12.36	19.71	47.10	19.78	75.94	OK	
OBSERVATION3		3	31.45	12.25	19.74	46.84	19.71	75.84	OK	
OBSERVATION4		4	31.52	12.10	19.71	46.80	19.75	76.15	OK	
OBSERVATION5		5	31.45	12.26	19.70	46.71	19.71	75.98	OK	
HSFG NUT (EN-14399-3)										
M.20	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT						
SPECIFIED	MIN	5	31.00	16.90	OK/NOT OK					
	MAX		32.00	18.00						
OBSERVATION 1		1	31.74	17.54	OK					
OBSERVATION2		2	31.52	17.51	OK					
OBSERVATION3		3	31.49	17.48	OK					
OBSERVATION4		4	31.58	17.25	OK					
OBSERVATION5		5	31.51	17.49	OK					
HSFG WASHER (EN-14399-6)										
M.20	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions					
SPECIFIED	MIN	5	21.00	36.38	3.70	OK/NOT OK				
	MAX		21.33	37.00	4.30					
OBSERVATION 1		1	21.25	36.75	3.96	OK				
OBSERVATION2		2	21.15	36.81	3.90	OK				
OBSERVATION3		3	21.25	36.78	4.10	OK				
OBSERVATION4		4	21.10	36.85	4.06	OK				
OBSERVATION5		5	21.19	36.74	4.09	OK				

### COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.20X75	PLAIN	PLAIN
NUT	M.20	PLAIN	PLAIN
WASHER	M.20	PLAIN	PLAIN

RESULT:- OK

Authentication  
This certificate is an original only, if signed

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FOR CERTIFICATE CONTROL  
DATE:



0045-CPR-1536

Test conducted by:

Name & Stamp  
Q.C. Inspector

FOR GDPA FASTENERS  
Name & Stamp  
Q.C. Manager

# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date:- 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3742080-P
Batch no.	A6055	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021
SIZE:-	M.20X80	Certification in Accordance with EN-10204 type , 3.1 (edition 2013).	

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)										
M.20X80	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
			0.20-0.55		0.025 MAX.	0.025 MAX.				0.003 MAX.
	OBSERVATION	0.247	1.042	0.001	0.017	0.190	0.362		0.00255	
HSFG NUT (EN-14399-3)										
M.20	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
			0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.				0.00278
	OBSERVATION	0.295	0.901	0.008	0.007	0.079	0.121			
HSFG WASHER (EN-14399-6)										
M.20	Specified	C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	OBSERVATION	0.427	0.820	0.030	0.031	0.227				

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)						
M.20X80	No. of checked Samples		Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
		1				
		Specified	147.000	203.000	23-34	27J
		OBSERVATION	147.900	249.100	31-32	47J
HSFG NUT (EN-14399-3)						
M.20	No. of checked Samples		Hardness(HV)		Proof Load (KN)	
		1				
		Specified	233-353		225.400	
		OBSERVATION	300-310		225.550	
HSFG WASHER (EN-14399-6)						
M.20	No. of checked Samples		Hardness(HV)			
		1				
		Specified	300-370			
		OBSERVATION	320-330			

### DIMENSIONS

HSFG BOLT (EN-14399-3)									
M.20X80	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
								Specified	MIN
	MAX		32.00	13.40	20.84		19.95	81.50	
OBSERVATION1	1	31.36	12.32	19.70	46.85	19.70	79.52		OK
OBSERVATION2	2	31.45	12.41	19.65	47.14	19.70	80.25		OK
OBSERVATION3	3	31.52	12.10	19.65	46.69	19.74	80.11		OK
OBSERVATION4	4	31.52	12.15	19.65	46.89	19.78	81.10		OK
OBSERVATION5	5	31.41	12.23	19.68	46.59	19.75	80.91		OK
HSFG NUT (EN-14399-3)									
M.20	No. of checked Pcs	Across Flat (s)			NUT Height (m)		THREAD DIMENSION OK WITH BOLT		
		Specified	MIN	5	31.00	16.90	OK/NOT OK		
	MAX		32.00	18.00					
OBSERVATION 1	1	31.60	17.54		OK				
OBSERVATION2	2	31.55	17.66		OK				
OBSERVATION3	3	31.52	17.54		OK				
OBSERVATION4	4	31.49	17.56		OK				
OBSERVATION5	5	31.40	17.41		OK				
HSFG WASHER (EN-14399-6)									
M.20	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions				
					Specified	MIN	5	21.00	36.38
	MAX		21.33	37.00	4.30				
OBSERVATION 1	1	21.20	36.85	4.02		OK			
OBSERVATION2	2	21.26	36.75	4.11		OK			
OBSERVATION3	3	21.25	36.81	4.12		OK			
OBSERVATION4	4	21.21	36.81	4.02		OK			
OBSERVATION5	5	21.29	36.78	4.12		OK			

### COATING

COATING (PLAIN FINISH)		No. of samples/specified		Average coating thickness of ZINC in microns	
BOLT	M.20X80		PLAIN		PLAIN
NUT	M.20		PLAIN		PLAIN
WASHER	M.20		PLAIN		PLAIN

RESULT:- OK

#### Authentication

This certificate is an original only, if signed

SIGNED:   
FOR CERTIFICATE CONTROL  
DATE:



Test conducted by:

  
Name & Stamp  
Q.C. Inspector

  
Name & Stamp  
FOR GDPA FASTENERS  
Q.C. Manager



# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3742090-P
Batch no.	A6055	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021
SIZE:-	M.20X90	Certification in Accordance with EN-10204 type , 3.1 (edition 2013).	

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)									
	C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%	
M.20X90	0.20-0.55		0.025 MAX.	0.025 MAX.					0.003 MAX.
	0.247	1.042	0.001	0.017	0.190	0.362			0.00255
	OBSERVATION								
HSFG NUT (EN-14399-3)									
	C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%	
M.20	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.					
	0.295	0.901	0.008	0.007	0.079	0.121			0.00278
	OBSERVATION								
HSFG WASHER (EN-14399-6)									
	C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%	
M.20									
	0.427	0.820	0.030	0.031	0.227				
	OBSERVATION								

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)					
	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
M.20X90	1	147.000	203.000	23-34	27J
		148.050	230.200	28-29	44J
		OBSERVATION			
HSFG NUT (EN-14399-3)					
	No. of checked Samples	Hardness(HV)	Proof Load (KN)		
M.20	1	233-353	225.400		
		300-310	225.600		
		OBSERVATION			
HSFG WASHER (EN-14399-6)					
	No. of checked Samples	Hardness(HV)			
M.20	1	300-370			
		320-330			
		OBSERVATION			

### DIMENSIONS

HSFG BOLT (EN-14399-3)									
	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
M.20X90	5	31.00	11.60	19.16	46 MIN	19.62	88.25	OK/NOT OK	
		32.00	13.40	20.84		19.95	91.75		
		OBSERVATION							
	1	31.40	12.45	19.68	47.25	19.78	89.52	OK	
	2	31.48	12.42	19.59	47.10	19.75	89.10	OK	
	3	31.51	12.35	19.62	46.90	19.78	89.69	OK	
	4	31.42	12.25	19.65	46.85	19.78	89.25	OK	
	5	31.48	12.29	19.66	46.95	19.76	89.30	OK	
		OBSERVATIONS							
HSFG NUT (EN-14399-3)									
	No. of checked Pcs	Across Flat (S)	NUT Height (m)		THREAD DIMENSION OK WITH BOLT				
M.20	5	31.00	16.90		OK/NOT OK				
		32.00	18.00						
		OBSERVATION							
	1	31.49	17.52		OK				
	2	31.55	17.36		OK				
	3	31.61	17.81		OK				
	4	31.60	17.54		OK				
	5	31.59	17.69		OK				
		OBSERVATIONS							
HSFG WASHER (EN-14399-6)									
	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions				
M.20	5	21.00	36.38	3.70	OK/NOT OK				
		21.33	37.00	4.30					
		OBSERVATION							
	1	21.28	36.78	3.95	OK				
	2	21.25	36.80	3.90	OK				
	3	21.16	36.81	4.06	OK				
	4	21.24	36.78	4.10	OK				
	5	21.26	36.80	4.12	OK				
		OBSERVATIONS							

### COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.20X90	PLAIN	PLAIN
NUT	M.20	PLAIN	PLAIN
WASHER	M.20	PLAIN	PLAIN

RESULT:- OK

### Authentication

This certificate is an original only, if signed

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FOR CERTIFICATION CONTROL

DATE:



0045-CPR-1536

Test conducted by:

*[Signature]*  
Name & Stamp

Q.C. Inspector

FOR GDPA FASTENERS

*[Signature]*  
Name & Stamp

Q.C. Manager

# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDE/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	37420100-P
Batch no.	A6055	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021
SIZE:-	M.20X100	Certification in Accordance with EN-10204 type . 3.1 (edeton 2013).	

## CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)									
M.20X100		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				0.003 MAX.
	OBSERVATION	0.247	1.042	0.001	0.017	0.190	0.362		0.00255
HSFG NUT (EN-14399-3)									
M.20		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.				
	OBSERVATION	0.295	0.901	0.008	0.007	0.079	0.121		0.00278
HSFG WASHER (EN-14399-6)									
M.20		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED								
	OBSERVATION	0.427	0.820	0.030	0.031	0.227			

## MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)					
M.20X100	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
	1	SPECIFIED	147.000	203.000	23-34
		OBSERVATION	148.850	234.150	27
				29-30	471
HSFG NUT (EN-14399-3)					
M.20	No. of checked Samples	Hardness(HV)	Proof Load (KN)		
	1	SPECIFIED	233-353	225.400	
		OBSERVATION	300-310	225.600	
HSFG WASHER (EN-14399-6)					
M.20	No. of checked Samples	Hardness(HV)			
	1	SPECIFIED	300-370		
		OBSERVATION	320-330		

## DIMENSIONS

HSFG BOLT (EN-14399-3)									
M.20X100	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
SPECIFIED	MIN	5	31.00	11.60	19.16	46 MIN	19.62	98.25	OK/NOT OK
	MAX		32.00	13.40	20.84		19.95	101.75	
OBSERVATION1	1	31.65	12.36	19.65	47.10	19.75	99.25		OK
OBSERVATION2	2	31.60	12.52	19.70	46.85	19.74	99.01		OK
OBSERVATION3	3	31.60	12.15	19.65	46.80	19.70	100.25		OK
OBSERVATION4	4	31.56	12.18	19.68	46.75	19.75	99.68		OK
OBSERVATION5	5	31.44	12.31	19.70	46.90	19.80	99.95		OK
HSFG NUT (EN-14399-3)									
M.20	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT					
SPECIFIED	MIN	5	31.00	16.90	OK/NOT OK				
	MAX		32.00	18.00					
OBSERVATION 1	1	31.65	17.25		OK				
OBSERVATION2	2	31.68	17.45		OK				
OBSERVATION3	3	31.65	17.19		OK				
OBSERVATION4	4	31.49	17.65		OK				
OBSERVATION5	5	31.59	17.35		OK				
HSFG WASHER (EN-14399-6)									
M.20	No. of checked Pcs	Hole Dia. (d1)	Outer Dia. (d2)	Thickness (h)	Dimensions				
SPECIFIED	MIN	5	21.00	36.38	3.70	OK/NOT OK			
	MAX		21.33	37.00	4.30				
OBSERVATION 1	1	21.20	36.85	4.02		OK			
OBSERVATION2	2	21.25	36.92	3.95		OK			
OBSERVATION3	3	21.25	36.80	4.12		OK			
OBSERVATION4	4	21.15	36.89	4.10		OK			
OBSERVATION5	5	21.20	36.91	4.06		OK			

## COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.20X100	PLAIN	PLAIN
NUT	M.20	PLAIN	PLAIN
WASHER	M.20	PLAIN	PLAIN

RESULT:- OK

### Authentication

This certificate is an original only, if signed

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FOR CERTIFICATION CONTROL  
DATE:



0045-CPR-1536

Test conducted by:

Name & Stamp

Q.C. Inspector

FOR GDPA FASTENERS

Name & Stamp

Q.C. Manager



# GDPA FASTENERS

REV. B  
CODE QP/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3742475-P
Batch no.	A6311	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021

SIZE:- M.24X75 Certification in Accordance with EN-10204 type , 3.1 (edeton 2013).

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)										
M.24X75		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				0.003 MAX.	
	OBSERVATION	0.253	1.128	0.006	0.018	0.158	0.155		0.00281	

  

HSFG NUT (EN-14399-3)										
M.24		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.					
	OBSERVATION	0.419	0.777	0.013	0.009	0.194				

  

HSFG WASHER (EN-14399-6)										
M.24		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	SPECIFIED									
	OBSERVATION	0.421	0.759	0.032	0.031	0.245				

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)						
M.24X75	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C	
	1	SPECIFIED 212.000	293.000	23-34	27J	
		OBSERVATION 212.650	317.100	28-29	44J	

  

HSFG NUT (EN-14399-3)			
M.24	No. of checked Samples	Hardness(HV)	Proof Load (KN)
	1	SPECIFIED 233-353	324.800
		OBSERVATION 300-310	325.000

  

HSFG WASHER (EN-14399-6)			
M.24	No. of checked Samples	Hardness(HV)	
	1	SPECIFIED 300-370	
		OBSERVATION 320-340	

### DIMENSIONS

HSFG BOLT (EN-14399-3)									
M.24X75	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
SPECIFIED	5	40.00	14.10	23.16	54 MIN	23.57	73.50	OK/NOT OK	
		MIN	41.00	15.90	24.84	23.95	76.50		
		MAX							
OBSERVATION1	1	40.56	15.15	23.70	55.56	23.75	74.85	OK	
OBSERVATION2	2	40.41	15.10	23.70	55.25	23.81	74.48	OK	
OBSERVATION3	3	40.56	15.10	23.68	55.10	23.74	75.68	OK	
OBSERVATION4	4	40.65	15.06	23.74	54.85	23.78	75.65	OK	
OBSERVATION5	5	40.61	15.14	23.59	55.41	23.70	74.95	OK	

  

HSFG NUT (EN-14399-3)				
M.24	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT
SPECIFIED	5	40.00	20.20	OK/NOT OK
		MIN	41.00	
		MAX	21.50	
OBSERVATION 1	1	40.65	21.10	OK
OBSERVATION2	2	40.41	21.15	OK
OBSERVATION3	3	40.40	21.11	OK
OBSERVATION4	4	40.52	21.03	OK
OBSERVATION5	5	40.49	20.89	OK

  

HSFG WASHER (EN-14399-6)					
M.24	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions
SPECIFIED	5	25.00	43.38	3.70	OK/NOT OK
		MIN	25.33	44.00	4.30
		MAX	25.25	43.52	4.15
OBSERVATION 1	1	25.25	43.52	4.15	OK
OBSERVATION2	2	25.21	43.85	4.10	OK
OBSERVATION3	3	25.20	43.65	4.12	OK
OBSERVATION4	4	25.21	43.85	3.95	OK
OBSERVATION5	5	25.26	43.80	3.89	OK

### COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.24X75	PLAIN	PLAIN
NUT	M.24	PLAIN	PLAIN
WASHER	M.24	PLAIN	PLAIN

RESULT:- OK

Authentication This certificate is an original only, if signed SIGNED FOR CERTIFICATION CONTROL DATE:	 0045-CPR-1536	Test conducted by:  Name & Stamp Q.C. Inspector	FOR GDPA FASTENERS  Name & Stamp Q.C. Manager
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# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date:- 11/01/13

## TEST CERTIFICATES

Raw Mat. Heat No.	GDF/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	3742490-P
Batch no.	A6311	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8.8,HSFG NUT TO EN.14399-3 CL.8,HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021
SIZE:-	M.24X90	Certification in Accordance with EN-10204 type , 3.1 (edition 2013).	

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)									
M.24X90		C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				
	OBSERVATION	0.253	1.128	0.006	0.018	0.158	0.155		0.003 MAX. 0.00281
HSFG NUT (EN-14399-3)									
M.24		C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.				
	OBSERVATION	0.419	0.777	0.013	0.009	0.194			
HSFG WASHER (EN-14399-6)									
M.24		C%	Mn%	5%	P%	Si%	Cr%	Mo%	B%
	SPECIFIED								
	OBSERVATION	0.421	0.759	0.032	0.031	0.245			

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)					
M.24X90	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
	1	SPECIFIED 212.000	293.000	23-34	27J
		OBSERVATION 212.750	330.350	30-31	47J
HSFG NUT (EN-14399-3)					
M.24	No. of checked Samples	Hardness(HV)	Proof Load (KN)		
	1	SPECIFIED 233-353	324.800		
		OBSERVATION 300-310	324.900		
HSFG WASHER (EN-14399-6)					
M.24	No. of checked Samples	Hardness(HV)			
	1	SPECIFIED 300-370			
		OBSERVATION 320-340			

### DIMENSIONS

HSFG BOLT (EN-14399-3)									
M.24X90	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia. (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT	
SPECIFIED	5	40.00	14.10	23.16	54 MIN	23.57	88.25	OK/NOT OK	
		MIN	41.00	15.90	24.84	23.95	91.75		
		MAX	41.00	15.90	24.84	23.95	91.75		
OBSERVATION1	1	40.45	14.91	23.81	55.25	23.75	89.10	OK	
OBSERVATION2	2	40.56	14.85	23.75	55.50	23.69	90.25	OK	
OBSERVATION3	3	40.63	14.95	23.78	54.85	23.85	89.65	OK	
OBSERVATION4	4	40.58	14.90	23.70	54.45	23.74	90.25	OK	
OBSERVATION5	5	40.65	14.90	23.74	54.59	23.75	89.54	OK	
HSFG NUT (EN-14399-3)									
M.24	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT					
SPECIFIED	5	40.00	20.20	OK/NOT OK					
		MIN	41.00						
		MAX	41.00						
OBSERVATION 1	1	40.65	20.85	OK					
OBSERVATION2	2	40.25	20.91	OK					
OBSERVATION3	3	40.58	20.79	OK					
OBSERVATION4	4	40.45	20.95	OK					
OBSERVATION5	5	40.36	20.89	OK					
HSFG WASHER (EN-14399-6)									
M.24	No. of checked Pcs	Hole Dia.(d1)	Outer Dia.(d2)	Thickness (h)	Dimensions				
SPECIFIED	5	25.00	43.38	3.70	OK/NOT OK				
		MIN	25.33	44.00					
		MAX	25.33	44.00					
OBSERVATION 1	1	25.25	43.85	4.05	OK				
OBSERVATION2	2	25.24	43.75	4.11	OK				
OBSERVATION3	3	25.28	43.69	4.10	OK				
OBSERVATION4	4	25.24	43.95	4.10	OK				
OBSERVATION5	5	25.26	43.91	3.91	OK				

### COATING

COATING (PLAIN FINISH)			No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.24X90		PLAIN	PLAIN
NUT	M.24		PLAIN	PLAIN
WASHER	M.24		PLAIN	PLAIN

RESULT:- OK

#### Authentication

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FOR CERTIFICATION CONTROL

DATE:



0045-CPR-1536

Test conducted by:

Name & Stamp  
Q.C. Inspector

FOR GDPA FASTENERS

Name & Stamp

Q.C. Manager



# GDPA FASTENERS

REV. B  
CODE QF/QC/03  
Date: 11/01/13

## TEST CERTIFICATES

Raw Mat.Heat No.	GD/ORB E-5021	P.O.No.	E-5021
BUYER ORDER NO.	200957	Certificate No.	37424120-P
Batch no.	A6311	Invoice No.	374ES/E-5021
Customer:	ORBITAL FASTENERS LTD.	Date of Issue	13.02.2017
Description:	HSFG BOLT TO EN.14399-3 GR-8, HSFG NUT TO EN.14399-3 CL.8, HSFG WASHER TO EN.14399-6 300HV (PLAIN FINISH)	Order No.	E-5021

SIZE:- M.24X120 Certification in Accordance with EN-10204 type , 3.1 (edition 2013).

### CHEMICAL COMPOSITION (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)										
M.24X120		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	SPECIFIED	0.20-0.55		0.025 MAX.	0.025 MAX.				0.003 MAX.	
	OBSERVATION	0.253	1.128	0.006	0.018	0.158	0.155		0.00281	
HSFG NUT (EN-14399-3)										
M.24		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	SPECIFIED	0.58 MAX.	0.30 MIN.	0.058 MAX.	0.048 MAX.					
	OBSERVATION	0.419	0.777	0.013	0.009	0.194				
HSFG WASHER (EN-14399-6)										
M.24		C%	Mn%	S%	P%	Si%	Cr%	Mo%	B%	
	SPECIFIED									
	OBSERVATION	0.421	0.759	0.032	0.031	0.245				

### MECHANICAL PROPERTIES (AS PER 898 PART 1,2 : 2013)

HSFG BOLT (EN-14399-3)					
M.24X120	No. of checked Samples	Proof Load (KN)	Ultimate test (KN)	Hardness (HRC)	IMPACT TEST JULES @MINUS 20°C
	1	SPECIFIED 212.000	293.000	23-34	27J
		OBSERVATION 212.200	326.600	30-31	43J
HSFG NUT (EN-14399-3)					
M.24	No. of checked Samples	Hardness(HV)	Proof Load (KN)		
	1	SPECIFIED 233-353	324.800		
		OBSERVATION 300-310	325.050		
HSFG WASHER (EN-14399-6)					
M.24	No. of checked Samples	Hardness(HV)			
	1	SPECIFIED 300-370			
		OBSERVATION 320-340			

### DIMENSIONS

HSFG BOLT (EN-14399-3)										
M.24X120	No. of checked Pcs	Width across flat (s)	Head Height (K)	Shank dia (ds)	Thread Length (B)	THREAD DIA. (d)	Total Length (L)	THREAD DIMENSION OK WITH NUT		
SPECIFIED	MIN	5	40.00	14.10	23.16	54 MIN	23.57	118.25	OK/NOT OK	
	MAX		41.00	15.90	24.84		23.95	121.75		
OBSERVATION1	1	40.25	15.10	23.65	54.90	23.71	120.95	OK		
OBSERVATION2	2	40.36	15.14	23.60	54.85	23.75	119.10	OK		
OBSERVATION3	3	40.24	14.95	23.59	55.10	23.71	119.68	OK		
OBSERVATION4	4	40.36	14.90	23.70	54.69	23.71	119.57	OK		
OBSERVATION5	5	40.52	14.95	23.69	54.98	23.75	119.95	OK		
HSFG NUT (EN-14399-3)										
M.24	No. of checked Pcs	Across Flat (S)	NUT Height (m)	THREAD DIMENSION OK WITH BOLT						
SPECIFIED	MIN	5	40.00	20.20	OK/NOT OK					
	MAX		41.00	21.50						
OBSERVATION 1	1	40.68	20.95	OK						
OBSERVATION2	2	40.70	20.89	OK						
OBSERVATION3	3	40.69	21.12	OK						
OBSERVATION4	4	40.58	21.06	OK						
OBSERVATION5	5	40.61	21.10	OK						
HSFG WASHER (EN-14399-6)										
M.24	No. of checked Pcs	Hole Dia. (d1)	Outer Dia. (d2)	Thickness (h)	Dimensions					
SPECIFIED	MIN	5	25.00	43.38	3.70	OK/NOT OK				
	MAX		25.33	44.00	4.30					
OBSERVATION 1	1	25.26	43.95	3.95	OK					
OBSERVATION2	2	25.25	43.85	3.92	OK					
OBSERVATION3	3	25.22	43.92	3.95	OK					
OBSERVATION4	4	25.21	43.74	3.89	OK					
OBSERVATION5	5	25.29	43.81	3.96	OK					

### COATING

COATING (PLAIN FINISH)		No. of samples/specified	Average coating thickness of ZINC in microns
BOLT	M.24X120	PLAIN	PLAIN
NUT	M.24	PLAIN	PLAIN
WASHER	M.24	PLAIN	PLAIN

RESULT:- OK

#### Authentication

This certificate is an original only, if signed

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FOR CERTIFICATION CONTROL

DATE:



0045-CPR-1536

Test conducted by:

Q.C. Inspector

FOR GDPA FASTENERS

Name &amp; Stamp

Q.C. Manager