

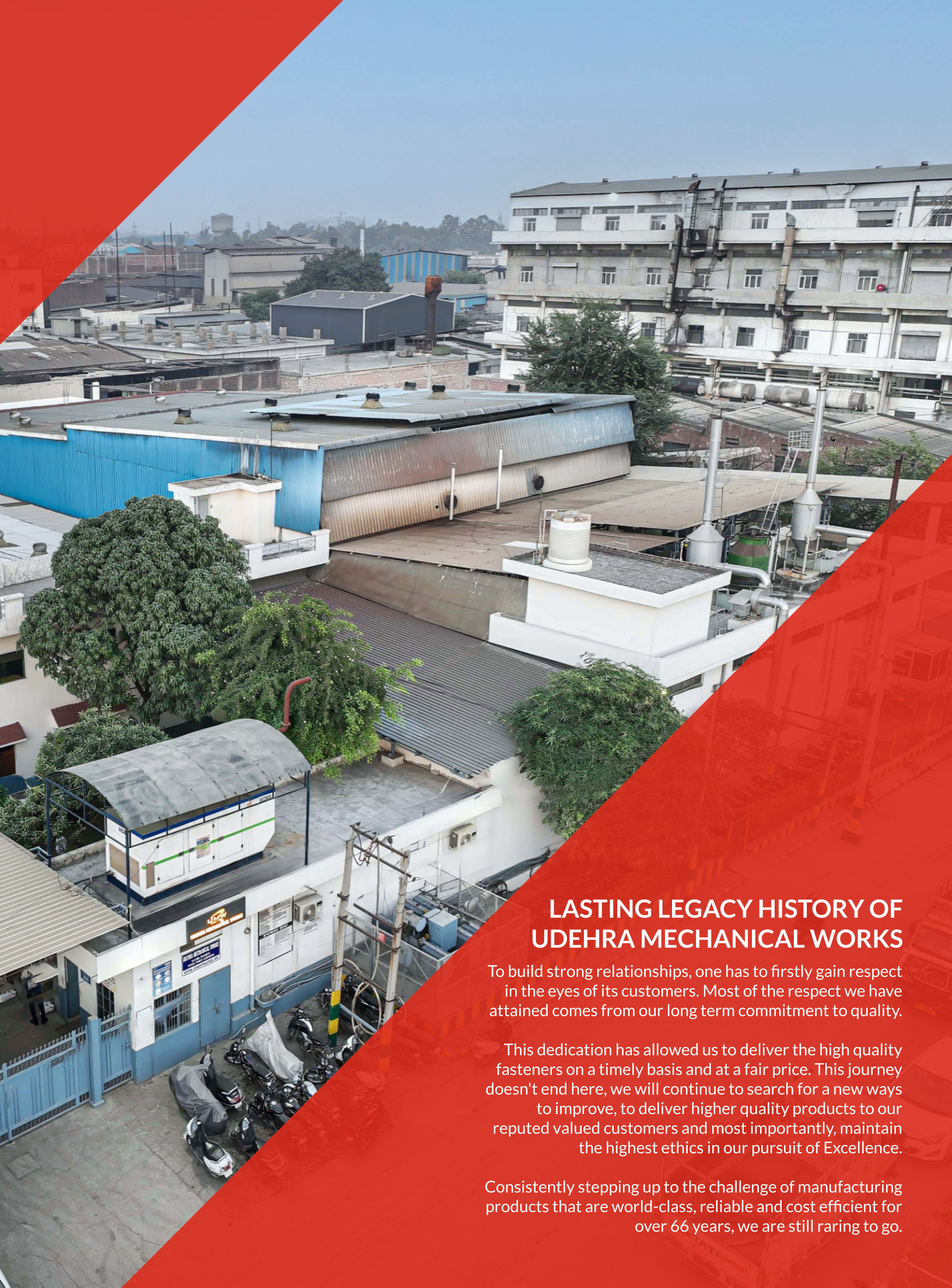


WE ARE
CAPABLE
TO CATER YOUR
DEMANDS
OF HIGH TENSILE
INDUSTRIAL FASTENERS
CARBON STEEL/ALLOY STEEL/STAINLESS STEEL

UDEHRA MECHANICAL WORKS

AN ISO 9001:2015 CERTIFIED COMPANY

Manufacturers & Exporters of: All types of High Tensile Industrial Fasteners



LASTING LEGACY HISTORY OF UDEHRA MECHANICAL WORKS

To build strong relationships, one has to firstly gain respect in the eyes of its customers. Most of the respect we have attained comes from our long term commitment to quality.

This dedication has allowed us to deliver the high quality fasteners on a timely basis and at a fair price. This journey doesn't end here, we will continue to search for a new ways to improve, to deliver higher quality products to our reputed valued customers and most importantly, maintain the highest ethics in our pursuit of Excellence.

Consistently stepping up to the challenge of manufacturing products that are world-class, reliable and cost efficient for over 66 years, we are still raring to go.



MANAGEMENT MESSAGE

Since 1957 we have been working to improve your business.

“The fastener industry is the foundation industry of any economy especially in developing countries which are aiming to significantly increase investment in the future for infrastructure and growth of the manufacturing sector”

“UMW” runs as a family business for more than 3 Decades. UMW has proven the history, successfully developing cost effective, time saving practical solutions for various Products like High Tensile Industrial Fasteners, Etc. We have been successful in catering to diverse industrial segments that includes Oil & Gas Fields, Petrochemical Industries, Railways, Wind Turbines, Solar Panels, Construction & Building Interiors, Heavy Duty Structures, etc. For most requirements, we offer shipment as per customers need.

Referring to above, it is a company defined by the character and integrity of its people. As we work to serve and satisfy our customers, to build strong relationship through technology and product positions. Innovation and creation, we must always keep paramount in our minds. The importance of advancing our outstanding reputation through our personal integrity, our shared values and through our consistently ethical and honest business conduct.

We are proud about our past and very excited about future.

Vision

Each and every fastener delivered under the name of UMW has been exclusively manufactured in India using the advance technology, time-tested processes, evolving practices, and skilled resources.

Mission

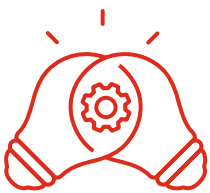
To provide "Quality Fasteners" to the "World of Manufacturing" for enhancing their operational efficiency.

Values

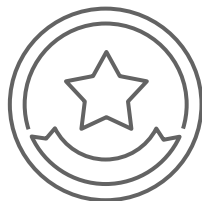
The company also provides clean, congenial and commensurate work environment to its employees thereby keeping the work force motivated and self driven to provide their best to the company and our customers.

Why work with UMW?

Through our years of experience, we promise the quality of our products, the best price, the best choice, enthusiasm, product knowledge and understanding specific needs of our customers. Besides this, our fair dealing, ethical business practices and easy payment modes make us the first choice of the clients.



PASSIONATE
EXPERTS



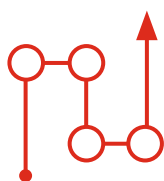
QUALITY
STANDARDS



RESEARCH &
DEVELOPMENT



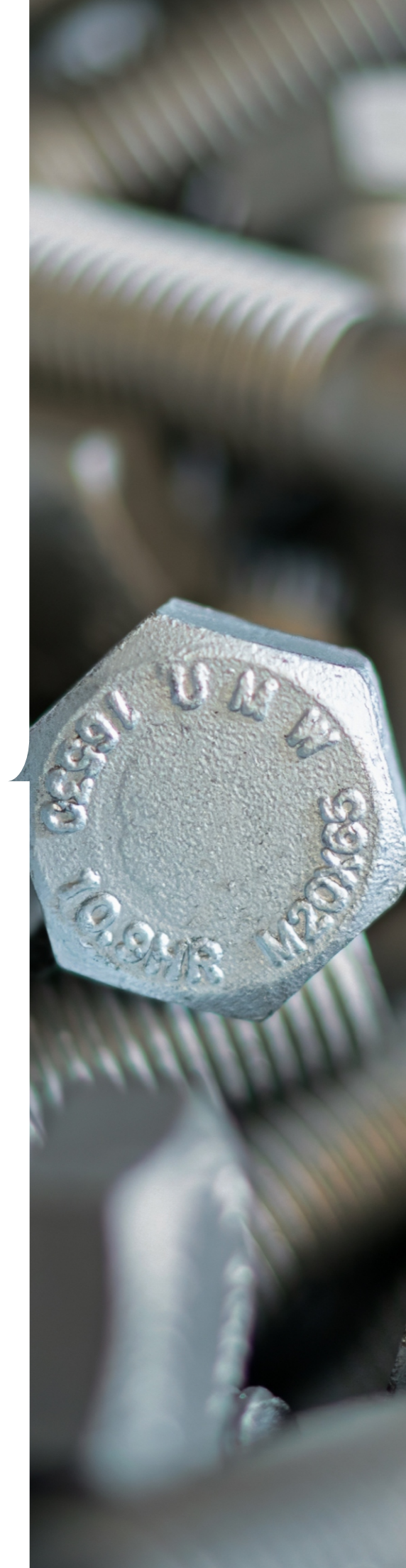
SOLUTIONS
LED



VERTICALLY INTEGRATED
BUSINESS MODEL



SUSTAINABILITY
APPROACH



CORPORATE PROFILE

We have great pleasure in introducing our selves as one of the leading manufacturers and suppliers of superior quality fasteners to industries across the globe. Udehra Mechanical Works Incepted in the year 1957, UMW is now serving more than 275 reputed organizations in various fields across India and abroad.

Our products are tested to make them ready for the toughest conditions across different industries. Our wide range of Standard and Non - Standard Products offers a reliable source for various industrial requirements with World-Class Quality. The major initiatives of growth will be through strategic acquisitions and diversifications into new product areas which will help the company in placing itself in a position of strength in various parts of the world in supply chain management. We started the manufacturing of Fasteners in Ludhiana.

With time the experience we gained enabled us to add High Tensile Fasteners to our manufacturing capabilities. Our line of products is manufactured with the intention of conforming to the strict international standards such as DIN, ASTM, BS, ANSI, etc. We make sure even custom orders with client specific requirements of dimensions and shapes and treated with the same standards of manufacture.

The company is trusted and reputed amongst its customers for providing technically robust end to end solutions to any industrial needs. It always works in close harness with its customers through its skilled and outstanding team of human resources. We have been accepting new challenge. We analyze each project critically and after careful consideration ensure that the design of structures is tailored to optimally fit the required purpose.



INNOVATION
BEYOND IMAGINATION

QUALITY CONTROL

Quality in UMW is an understood fact and an ever-evolving process

At UMW, we believe in putting "Quality First" as our core value- Our QM system has a singular focus on prevention instead of error correction. That is why we take the minutest issues with utmost seriousness to ensure fasteners are manufactured in compliance with codes & specifications . We are committed to deliver customers orders within the stipulated time, as it plays a vital role in establishing a company as a reliable brand. Our wide distribution network and flexibility in production and workforce enable us to meet this objective. We have easy access to our raw materials and thus are capable to fulfill bulk and immediate requirements of our clients.



BOLT TORQUE TENSION TESTING MACHINE

LIST OF TESTING EQUIPMENTS

Sr.No.	Machine/Equipment Names	Make	Range	Testing Parameters / Usage
1.	Digital Rockwell Hardness Tester	FIE	100KGF / 150KGF	To check the Hardness of any material in HRC/HRB Scale digitally.
2.	Universal Testing Machine/ With Computer Software	FIE	0-1000 KN	To evaluate the Physical Property of any material by performing tests such as Tensile Strength, Yield Strength, Elongation%, RA%, Proof Load and Compression Load.
3.	Rockwell Hardness Tester	FIE	150KGF	To check the Hardness of any material in HRC/HRB Scale analogly.
4.	Positive Material Identification Machine	THERMO FISHER	25 Element	To Check Chemical Composition of Material
5.	Spectro Machine	OXFORD	28 Element	To Check Chemical Composition of Material
6.	Impact Testing Machine / Digital Temperature Controller	FIE	0-300 J	To check the shock absorption value at a specific temperature by conducting Impact Testing.
7.	Bolt Torque Tension Testing Machine	SUSHMA	0-5000 Nm	To check Torque/Tensioning of an assembly consists k-factor , Clamp Load, Nut Rotation Angle and Torque.
8.	Coating Thickness Gauge	ELCOMETER	0-1350 μ m	To Check the coating thickness of any coated material such as HDG, Electro Plating, Zinc Flake, Etc.
9.	Profile Projector	MITUTOYO	X-150mm,Y-150mm/ Ang.-360°	To Measure The Horizontal or Vertical Dimensions, Angles, Root Radius, Depth, Etc.
10.	Magnetic Crack Detector	FLAWCHECK DEFECTOSCOPE	0-3000 Amp.(AC)	To check the surface discontinuity such as Cracks on by performing Magnetic Particle Inspection.
11.	Feeler Gauge	ATUL	0.03-1 mm	To measure the gaps in assembly or in any component.
12.	Digital External Micrometer	BAKER	0-25 mm	To check the diameter , width, thickness of any article.
13.	Hardening Furnace	QTE	800 X 300 mm	To Hard and Quench any material to achieve the initial desired Physical Property
14.	Tempering Furnace	QTE	800 X 300 mm & 1600 X 2800 mm	To Temper any material subsequent of Hardening process for relieving the stress to achieve the desired Physical Property such as Tensile strength, Hardness, etc.
15.	Continuous Hardening Furnace	QTE	2750 X 695 X 100 mm	To Hard and Quench any material in continuos form to achieve the initial desired Physical Property.
16.	Continuous Tempering Furnace	QTE	4100 X 695 X 100 mm	To Temper any material subsequent of Hardening process for relieving the stress to achieve the desired Physical Property such as Tensile strength, Hardness, etc.
17.	Rotary Furnace	MD ENTERPRISES	68 X 68 mm	To Hard and Quench any material to achieve the initial desired Physical Property
18.	Electronic Extensometer	FIE	Up to 10.00 mm	To evaluate the yield strength under the criteria of Physical Property Testing performed on UTM Machine.



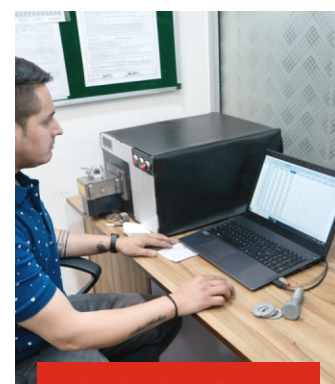
UNIVERSAL TESTING MACHINE WITH ELECTRONIC EXTENSOMETER



PROFILE PROJECTOR



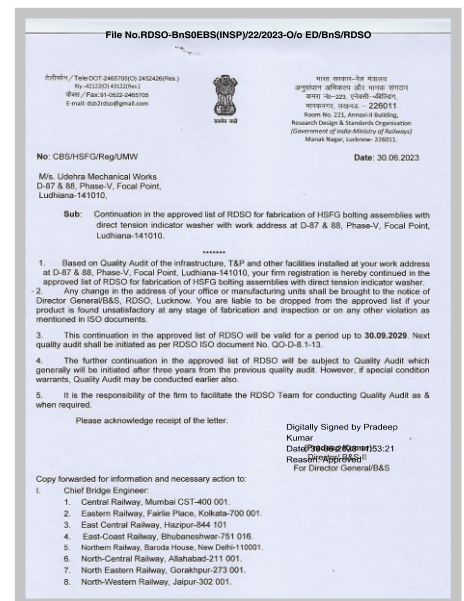
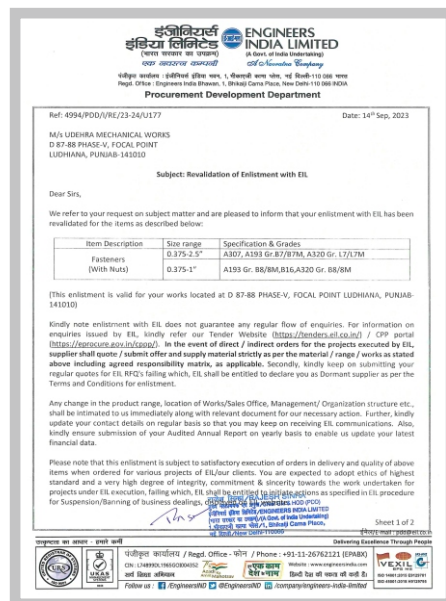
DIGITAL & MANUAL ROCKWELL HARDNESS TESTER



SPECTRO MACHINE



ISO 9001:2015 Certification



ISO 14001:2015 Certification

Engineers India Ltd. Certification

RDSO Certification



IMPACT TESTING MACHINE



MICRO EXAMINATION (MICROSCOPE)



POSITIVE MATERIAL IDENTIFICATION MACHINE (PMI)



MAGNETIC CRACK DETECTOR (MPI)

INFRASTRUCTURE

Our Core Competence



We have constructed a well-developed infrastructure that is equipped with all the state-of-art machines and equipment. Our infrastructure is segregated into various departments like advanced production facility, testing laboratory, Research, and Development unit, and a spacious warehouse, which enables us to manufacture a high-grade range of these products. We have equipped our manufacturing unit with the latest machines, testing laboratory and R & D unit improved contemporary machinery, robust construction and these machines are operated by our most efficient and skilled professionals. We have a modern infrastructure set up. And, our unit is well connected with shipment modes that enable us to timely delivery of our heavy-duty products at the customer's end.

Our set up also has the large warehouse that enables our persons to store the bulk quantity of products and though meets the needs of the customers. Our sections are: Manufacturing, Quality controlling, Warehousing & packaging, Logistic, Administrative, etc.





RAW MATERIAL IN STOCK



COLD FORGING



REDUCING



TRIMMING



NUT MACHINING



NUT THREADING



STUD / BOLT THREADING

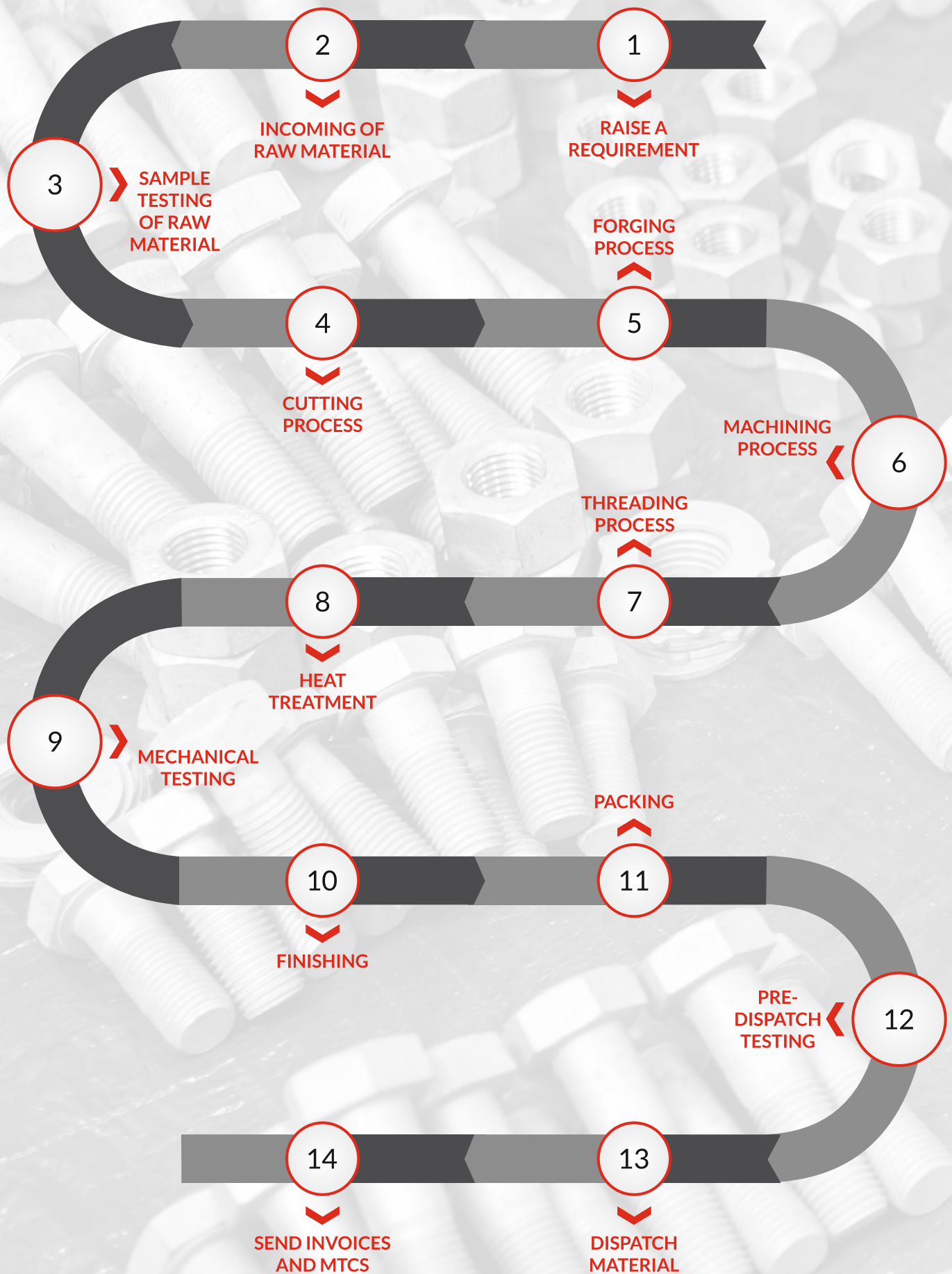


CONTINUES HEAT TREATMENT FURNACE



GALAVANIZED

MANUFACTURING PROCESS FLOW



PRODUCTION PROCESS UMW



STEEL WIRE ROD



WIRE DRAWING



COLD FORGING



THREAD ROLLING



SHIPMENTS



PACKING



SURFACE TREATMENT



HEAT TREATMENT

Raw material storage area, with proper segregation, color code for identification and identification tags

- Raw material is carefully stored in racks with proper color code and identification tags. This raw material is identified with incoming traceability number which is maintained in production and is used in traceability till the end of the manufacturing process.
- Currently we are procuring this raw material from renowned steel suppliers.



BOLTS & SCREWS

Range: M10 to M100 or 3/8" to 4"

Length: up to 300mm or 12"

Grades / Raw Material:

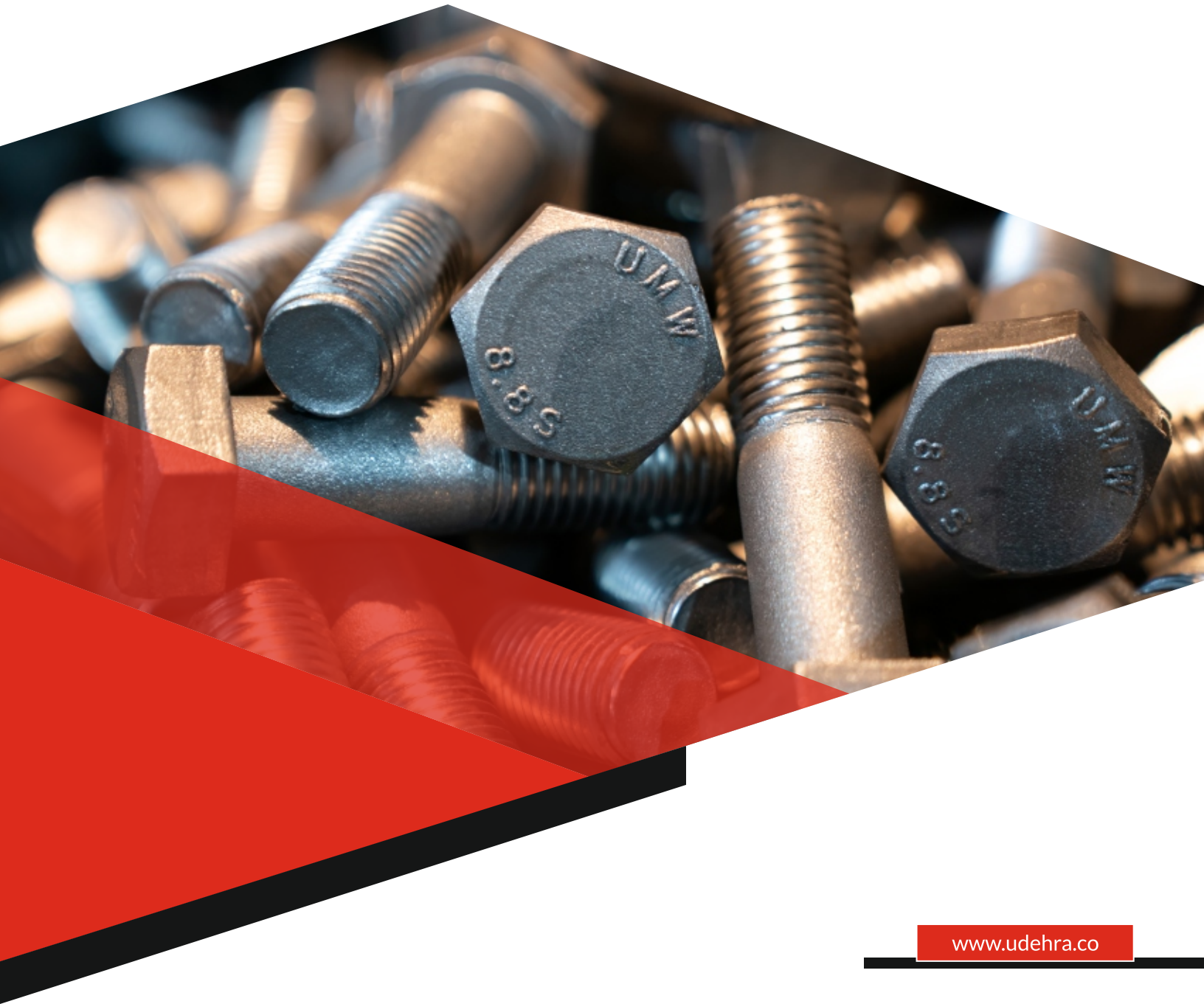
4.6, 4.8, 5.6, 5.8, 8S, 8.8, 8.8S, 10S,
10.9, 10.9S, 12.9, B7, B7M

Other grades also available as per
customer requirement

Bolts & Screws as per DIN 931 / DIN 933 /
DIN 960 / DIN 961 / DIN 7990 / DIN 603 / DIN 604 /
DIN 605 / DIN 607 / DIN 608 / DIN 610 / DIN 6914 /
DIN 6915 / BS 1083 / BS 1738 / BS 1769 /
ASTM A - 307 / ASTM A - 490M / IS 6639 /
ISO 7412 / IS 1363 / IS 1364 / IS 2585 / IS 3138 /
IS 3640 / IS 10238 / IS 3757 : 1985 GR.8.8S & 10.9S
EN 14399 : 2015 GR.8.8HR & 10.9HR
ASTM A325M GR.A325M-8S & GR.A325M-10S

Threads:

MM, BSW, BSF, UNC, UNF, UN, NC





HEX BOLTS & SCREWS



STRUCTURAL HEAVY BOLTS



HSFG BOLTS



HIGH TENSILE BOLTS & SCREWS



FLANGE BOLTS



CARRIAGE BOLTS



SOCKET HEAD CAP SCREW



FOUNDATION BOLTS



GUARD RAIL BOLTS

Finish Available Zinc Flake / Zinc Electroplating / Hot Dip Galvanised / Cadmium Plating & PTFE Coating & as per customer requirements.

STUDS / BOLTS

Range: M10 to M100 or 7/16" to 4"

Length: Up to 2 Mtr. or 78"

Grades / Raw Material:

ASTM A 193 GR.B7, ASTM A 193 GR. B7M,
ASTM A 193 GR. B16, ASTM A 320 GR.L7,
ASTM A 320 GR.L7M, ASTM A 193/A320 GR.B8,
ASTM A 193/A320 GR.B8M, ASTM A 307 GR.A,B,
or as per customer requirement.



Finish Available Zinc Flake /
Zinc Electroplating / Hot Dip Galvanised /
Cadmium Plating & PTFE Coating & as per
customer requirements.

STRUCTURAL BOLTING

As per IS 3757, EN-14399, ASTM A325, ISO 7412, EN 15048, DIN 6914



TTHSB BOLTS EN:14399-10 (TENSION CONTROL BOLTS)

Range: M12 to M30
Grade: 10.9



EN 14399 PRE-LOADED STRUCTURAL BOLTING ASSEMBLIES

Range: M12 to M36
Grade: 8.8HR, 10.9HR, 10.9HV



EN 15048 NON-PRELOADED STRUCTURAL BOLTING ASSEMBLIES

Range: M10 to M36
Grade: 4.6, 4.8, 5.6, 5.8, 6.8, 8.8, 10.9



Finish Available Zinc Flake /
Zinc Electroplating / Hot Dip Galvanised /
Cadmium Plating & PTFE Coating & as per
customer requirements.

NUTS

Range: M10 to M100 or 7/16" to 4"

Grades / Raw Material:

4, 6, 7, 8, 8S, 10, 10S, 12, 2H, 2HM

Other grades also available as per customer requirement

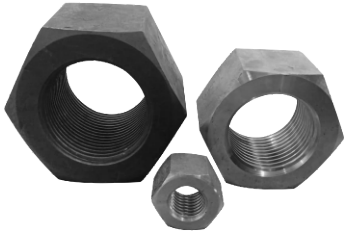
Nuts as per

DIN 934 DIN 555 / DIN 6915 / IS 6623 / EN 14399-3
/ ASTM A 194 / ASTM A 563

Threads:

MM, BSW, BSF, UNC, UNF, UN, NC





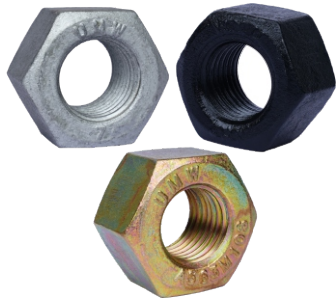
2H HEAVY HEX NUTS



LOCK NUTS



HSFG NUTS



HEX NUTS



HIGH TENSILE NUTS



NYLOCK NUTS



LONG NUTS



CASTLE NUTS



SQUARE NUTS

Finish Available Zinc Flake / Zinc Electroplating / Hot Dip Galvanised / Cadmium Plating & PTFE Coating & as per customer requirements.

WASHERS

Range: M6 to M80 & 1/4" to 3.25"

Grades / Raw Material:

100 HV, 140 HV, 200 HV, 350 HV,
400 HV, Spring Steel C-62

Other grades also available
as per customer requirement.

Washers as per DIN 471 / DIN 472 / DIN 9021
/ DIN 127 B / DIN 137 / DIN 617 K / DIN 6798
/ DIN 6798 J / DIN 7980 / DIN 74361 C / DIN
7603 / DIN 125 A / DIN 125 B / DIN 126 / DIN
6903 / DIN 440 R / DIN 433 / IS 2016 / DIN
2093 / DIN 6903 / DIN 6916 / DIN 7349 / DIN
7989 / DIN 7993 / BS 4320 A, B / BS 4320 C,
ASTM F436 (1985) / DTI F959 / DIN 7967 /
DIN 6916 / IS: 6649, EN 14399-5 OR 6 & EN
14399-9 / IS: 2016, ASTM A F436 / F436M



Finish Available Zinc Flake /
Zinc Electroplating / Hot Dip Galvanised /
Cadmium Plating & PTFE Coating & as per
customer requirements.

ROAD CRASH BARRIER FASTENERS



BUTTON HEAD BOLTS

Range: M10 to M100 or 7/16" to 4"

Grades / Raw Material:

2, 4.6, 5, 8.8 or as per
customer requirement.



BUTTON HEAD NIB BOLTS

Range: M10 to M100 or 7/16" to 4"

Grades / Raw Material:

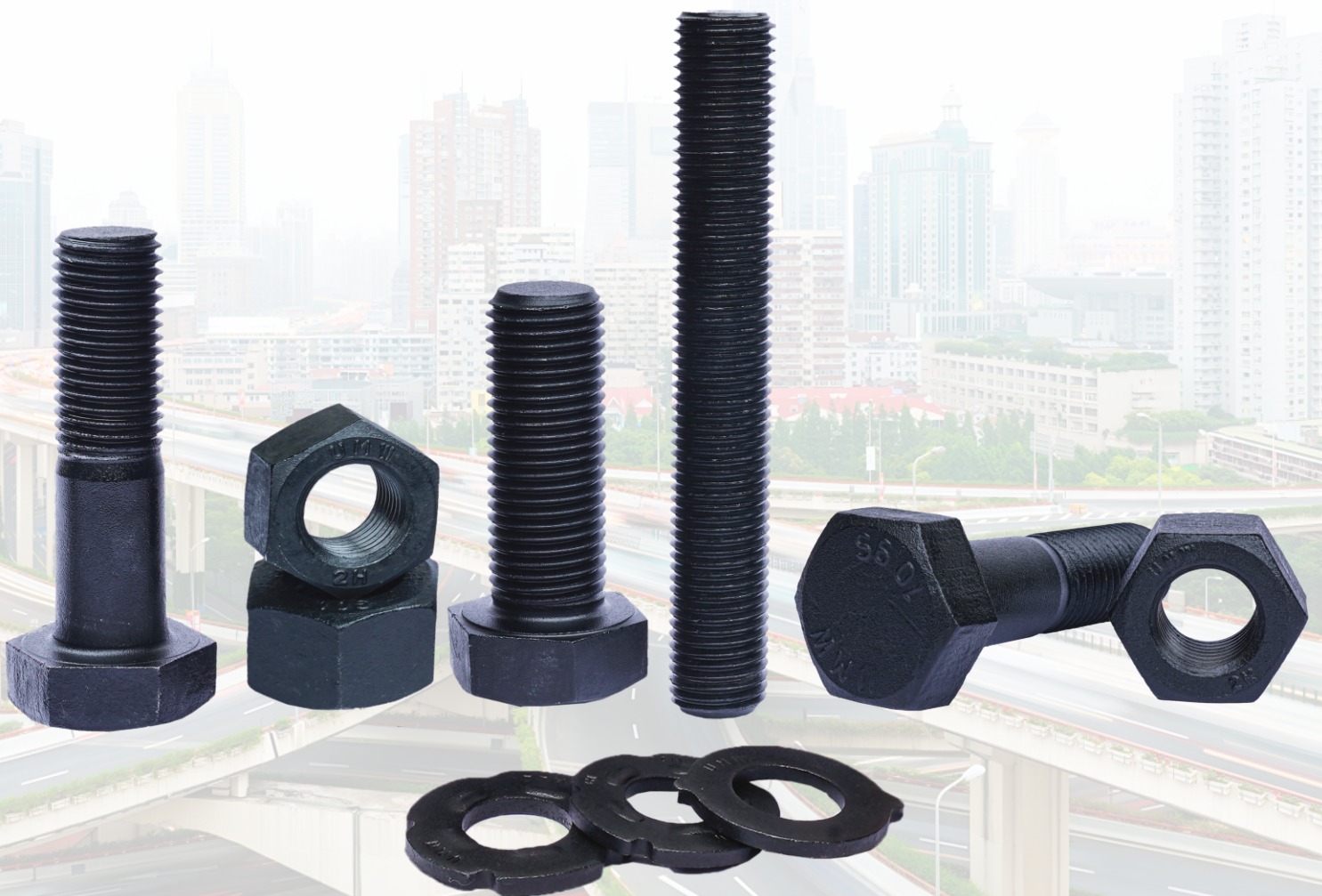
2, 4.6, 5, 8.8 or as per
customer requirement.

Finish Available Zinc Flake /

Zinc Electroplating / Hot Dip Galvanised /
Cadmium Plating & PTFE Coating & as per
customer requirements.



INDIA'S MOST TRUSTED
HIGH TENSILE FASTENERS
BRAND SINCE 1957



STRONG
GRIP THAT'S LET
YOU BE **ON THE**
TOP



Udehra
Mechanical
Works

GRIP

That never goes

LOOSE



Udehra
Mechanical
Works

UMW HIGH TENSILE FASTENERS

High Strength Friction Grip Bolts (HSFG) bolts are high strength structural bolts which have been tightened such as to induce tension in the bolt shank. Due to the tension in the bolt, the interface between the plies (steel members in a joint) cannot move relative to each other. High friction grip bolts are commonly used in structural steelwork. They normally consist of high tensile strength bolts and nuts with washers. The bolts are tightened to a shank tension so that the transverse load across the joint is resisted by the friction between the plated rather than the bolt shank's shear strength.

Standards	Property Class	Range Metric	Finish
DIN 931, 933, 934 IS 1364, 4000, 3757 BS 1083, 1786 ISO 4014, 4017	8.8S / 10.9S	M6-M48	BLACKODIZE HOT DIP GALVANIZED ELECTRO ZINC PLATING CADMIUM

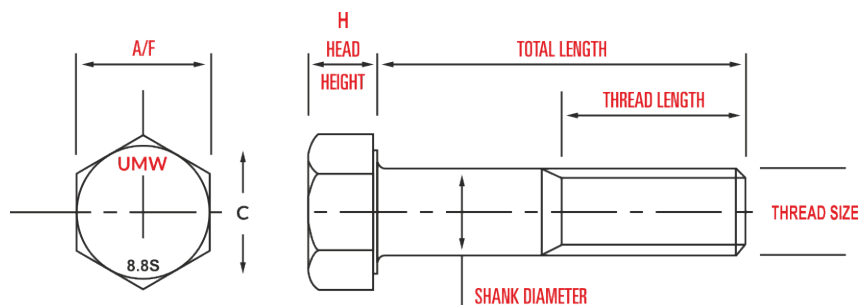
ADVANTAGES:-

HSFG bolts have the following advantages when compared with normal bolts:



- The performance of preloaded HSFG bolts under fatigue loading is good because the prestressed bolts are subjected to reduced stress range during each loading cycle when compared with unloaded bolts.
- For structures adjacent to machinery which generate substantial vibration, preloading bolts can help to avoid the loosening of bolts.
- HSFG bolts are used in connections where any slight slip movement would render the integrity of the whole structures break down.
- Owing to its high tensile strength, it is commonly used in connections which require the taking up of high flexure and the tensile stress generated could be readily resisted by its high tensile strength.

PHYSICAL PROPERTIES OF UMW HSFG BOLTS:-

Property Class			8.8S		10.9S	
Diameter			<16		>16	
Unit			N/mm2	Kgf/mm2	N/mm2	Kgf/mm2
Tensile Strength Min.			800	81.5	830	84.6
Yield Strength, 0.2% Offset Min.			640	65.2	660	67.2
Proof Load Stress			580	59.1	600	61.2
Shear Strength, Min.			480	48.9	498	50.8
Hardness	BRINELL	HB	219-285		242-319	
	ROCKWELL	HRC	20-30		23-34	
Elongation % on GL = $\sqrt{5.65A}$. A= Cross Sectional Area.			12% Min.		9% Min.	



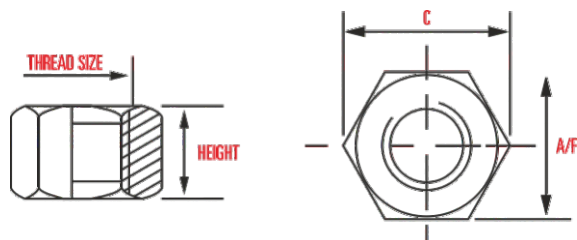
H.S.F.G BOLTS, CONFIRMING TO IS 3757

Dia & Pitch	M16 X 2	M20 X 2.5	M22 X 2.5	M24 X 3	M27 X 3	M30 X 3.5	M36 X 4	Mech Property	Threads	Identification
Shank Dia	15.30 - 16.70	19.16 - 20.84	21.16 - 22.84	23.16 - 24.84	26.16 - 27.84	29.16 - 30.84	35.00 - 37.00	8.8 or 10.9 as per ISO 898 IS 1367 (3)	ISO Metric 6g' class as per ISO 965 IS 4218	 OR 
A/F	26.16 - 27.00	33.00 - 34.00	35.00 - 36.00	40.00 - 41.00	45.00 - 46.00	49.00 - 50.00	58.80 - 60.00			
Head Height	9.25 - 10.75	11.60 - 13.40	13.10 - 14.90	14.10 - 15.90	16.10 - 17.90	17.65 - 19.75	21.45 - 23.55			
Thread L < 100	31	36	38	41	44	49	56			
Length > 100	38	43	45	48	51	56	63			
Proof Load in N	8.8S 10.9S	91060 130310	147000 203350	181800 251490	211800 292990	275400 380970	336600 465630	490200 678110		



GRIP LENGTH & WEIGHTS OF BOLTS (KGS/1000PCS)

Dia	M16		M 20		M 22		M 24		M 27		M 30		M 36	
Length	(GL)	Wt.	(GL)	Wt.	(GL)	Wt.	(GL)	Wt.	(GL)	Wt.	(GL)	Wt.	(GL)	Wt.
40	10 to 14	102.8	—	—	—	—	—	—	—	—	—	—	—	—
45	15 to 19	110.7	11 to 15	180.3	—	—	—	—	—	—	—	—	—	—
50	20 to 24	118.6	16 to 20	192.6	12 to 16	252.0	—	—	—	—	—	—	—	—
55	25 to 29	126.5	21 to 25	205.0	17 to 21	266.9	15 to 19	337.4	—	—	—	—	—	—
60	30 to 34	134.4	26 to 30	217.3	22 to 26	281.8	20 to 24	355.2	17 to 21	480.9	—	—	—	—
65	35 to 39	142.3	31 to 35	229.6	27 to 31	296.7	25 to 29	372.9	22 to 26	503.4	—	—	—	—
70	40 to 44	150.2	36 to 40	241.9	32 to 36	311.6	30 to 34	390.7	27 to 31	525.8	24 to 28	672.5	—	—
75	45 to 49	158.1	41 to 45	254.3	37 to 41	326.6	35 to 39	408.4	32 to 36	548.3	29 to 33	700.3	23 to 27	1089.1
80	50 to 54	166.0	46 to 50	266.6	42 to 46	341.5	40 to 44	426.2	37 to 41	570.8	34 to 38	728.0	28 to 32	1129.0
85	55 to 59	173.9	51 to 55	278.9	47 to 51	356.4	45 to 49	443.9	42 to 46	593.2	39 to 43	755.7	33 to 37	1169.0
90	60 to 64	181.7	56 to 60	291.3	52 to 56	371.3	50 to 54	461.7	47 to 51	615.7	44 to 48	783.5	38 to 42	1209.0
95	65 to 69	189.6	61 to 65	303.6	56 to 61	386.2	55 to 59	479.4	52 to 56	638.2	49 to 53	811.2	43 to 47	1248.9
100	70 to 74	197.5	66 to 70	315.9	62 to 66	401.2	60 to 64	497.2	57 to 61	660.7	54 to 58	839.0	48 to 52	1288.9
110	75 to 84	211.4	71 to 80	337.7	67 to 76	427.8	65 to 74	528.5	62 to 71	685.6	59 to 68	888.4	53 to 62	1362.0
120	85 to 94	227.2	81 to 90	362.4	77 to 86	457.7	75 to 84	564.1	72 to 81	730.6	69 to 78	943.9	63 to 72	1441.9
130	95 to 104	243.0	91 to 100	387.0	87 to 96	487.5	85 to 94	599.6	82 to 91	775.5	79 to 88	999.4	73 to 82	1521.8
140	105 to 114	258.8	101 to 110	411.7	97 to 106	517.3	95 to 104	635.1	92 to 101	820.5	89 to 98	1054.9	83 to 92	1601.7
150	115 to 124	274.6	111 to 120	436.3	107 to 116	547.2	105 to 114	670.6	102 to 111	865.4	99 to 108	1110.4	93 to 102	1681.6
160	125 to 134	290.3	121 to 130	461.0	117 to 126	577.0	115 to 124	706.1	112 to 121	910.4	109 to 118	1165.8	103 to 112	1761.5
170	135 to 144	306.1	131 to 140	485.7	127 to 136	606.9	125 to 134	741.6	122 to 131	955.3	119 to 128	1221.3	113 to 122	1841.4
180	145 to 154	321.9	141 to 150	510.3	137 to 146	636.7	135 to 144	777.1	132 to 141	1000.2	129 to 138	1276.8	123 to 132	1921.3
190	155 to 164	337.7	151 to 160	535.0	147 to 156	666.5	145 to 154	812.6	142 to 151	1045.2	139 to 148	1332.3	133 to 142	2001.2
200	165 to 174	353.5	161 to 170	559.6	157 to 166	694.4	155 to 164	848.2	152 to 161	1090.2	149 to 158	1387.8	143 to 152	2081.1
210	—	—	—	—	—	—	—	—	162 to 171	1135.2	159 to 168	1443.3	153 to 162	2161.0
220	—	—	—	—	—	—	—	—	172 to 181	1180.1	169 to 178	1498.8	163 to 172	2240.9
230	—	—	—	—	—	—	—	—	182 to 191	1225.0	179 to 188	1554.3	173 to 182	2320.8
240	—	—	—	—	—	—	—	—	191 to 201	1270.0	189 to 198	1609.8	183 to 192	2400.7
250	—	—	—	—	—	—	—	—	202 to 211	1314.0	199 to 208	1665.3	193 to 202	2480.6
260	—	—	—	—	—	—	—	—	212 to 221	1359.9	209 to 218	1720.7	203 to 212	2560.5
270	—	—	—	—	—	—	—	—	222 to 231	1404.9	219 to 228	1776.2	213 to 222	2640.4
280	—	—	—	—	—	—	—	—	232 to 241	1449.8	229 to 238	1831.7	223 to 232	2720.3
290	—	—	—	—	—	—	—	—	242 to 251	1493.9	239 to 248	1887.2	232 to 242	2800.2
300	—	—	—	—	—	—	—	—	252 to 261	1538.9	249 to 258	1942.7	243 to 252	2880.1

NOTE : All figures are in MM. GL Denotes Grip Length



HSFG NUTS CONFORMING TO IS : 6623 : ISO 4775

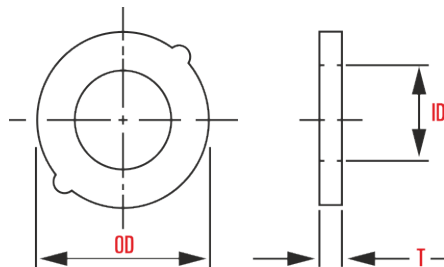
Dia & Pitch		M16 X 2	M20 X 2.5	M22 X 2.5	M24 X 3.0	M27 X 3.0	M30 X 3.5	M36 X 4	Mech Property	Threads	Identification
A/F		26.16 - 27.00	33.00 - 34.00	35.00 - 36.00	40.00 - 41.00	45.00 - 46.00	49.00 - 50.00	58.8 - 60.00	class 8 or 10 as per ISO 898 (2) IS : 1367 (6)	ISO Metrics 6H class as per ISO 965 IS : 4218	 OR 
Height		16.40/17.10	19.40 - 20.7	22.30 - 23.60	22.90 - 24.20	26.30 - 27.60	29.10 - 30.70	35.00 - 36.60			
Proof	8. S	168900	263400	325700	379500	403400	603100	878300			
Load in N	10 S	195500	305000	377200	439500	571500	698400	1017200			
Wt. Kg/1000 pcs		60.4	115.3	142.8	197.7	282.3	365.0	600.0			

NUT ROTATION/PART TURN METHOD

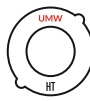
BOLT DIA (MM)	BOLT LENGTH (MM)	
	<115 NUT ROTATION	>115 NUT ROTATION
M16	½	¾
M18	½	¾
M20	½	¾
M22	½	¾
M24	½	¾
M27	½	¾
M30	½	¾
M36	½	¾

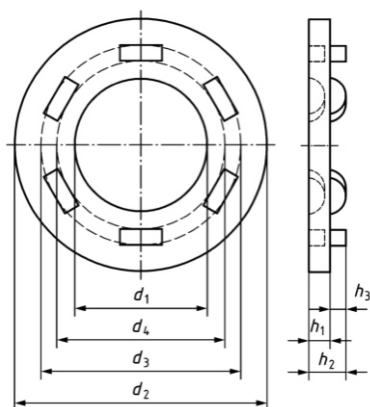
Mechanical Properties of H.S.F.G. Nuts

Thread Size	Property Class 8		Property Class 10	
	Proof Load	Hardness	Proof Load	Hardness
	Newtons		Newtons	
M 16	168900	HRC 24 to HRC 38	195500	HRC 26 to HRC 38
M 20	263400		305000	
(M 22)	325700		377200	
M 24	379500		439500	
(M 27)	493400		571500	
M 30	603100		698400	
M 36	878300		1017200	



H.S.S WASHERS CONFORMING TO IS 6649

SIZE	M 16	M 20	M 22	M 24	M 27	M 30	M 36	Hardness	Identification
I.D.	18.00 - 18.43	22.00 - 22.52	24.00 - 24.52	26.00 - 26.52	30.00 - 30.52	33.00 - 33.62	39.00 - 39.62	35 HRC	
O.D.	32.40 - 34.00	40.40 - 42.00	42.40 - 44.00	48.40 - 50.00	54.10 - 56.00	58.10 - 60.00	70.10 - 72.00	to	
Thickness	3.1 - 4.6	3.1 - 4.6	3.4 - 4.6	3.4 - 4.6	3.4 - 4.6	3.4 - 4.6	3.4 - 4.6	45 HRC	
Weight kg/1000 pcs	20.3	31.3	33.2	44.7	54.8	61.4	89.7		



Key

- d1 Internal diameter
- d2 External diameter
- d3 Protrusion tangential diameter
- d4 Protrusion internal diameter
- h1 Material thickness
- h2 Height over protrusions
- h3 Height of protrusions



DIMENSION OF COMPRESSIBLE WASHER- TYPE DIRECT TENSILE INDICATOR

FOR USE WITH BOLT OF DESIGNATION	INTERNAL DIAMETER d1		EXTERNAL DIAMETER d2		MATERIAL THICKNESS h1	HEIGHT OVER PROTRUSIONS h2	HEIGHT OF PROTRUSIONS h3	PROTRUSIONS TANGENTIAL DIAMETER d3	PROTRUSIONS INTERNAL DIAMETER d4
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
M12	12.75	12.85	26.00	32.50	2.50	5.50	0.80	20.00	13.85
M16	16.75	16.85	35.00	36.80	3.00	6.00	0.80	25.00	17.85
M20	20.95	21.05	41.00	46.00	3.50	6.50	0.80	29.00	22.05
M22	23.05	23.15	46.50	50.60	4.00	7.00	0.80	33.00	24.15
M24	25.15	25.25	50.00	55.60	4.00	7.00	0.80	38.00	26.25
M27	28.30	28.40	54.00	62.10	4.00	7.00	0.80	43.00	29.40
M30	31.45	31.55	59.00	69.00	4.00	7.00	0.80	46.50	32.55
M36	37.75	37.85	78.00	83.00	4.00	7.50	0.80	56.00	38.85

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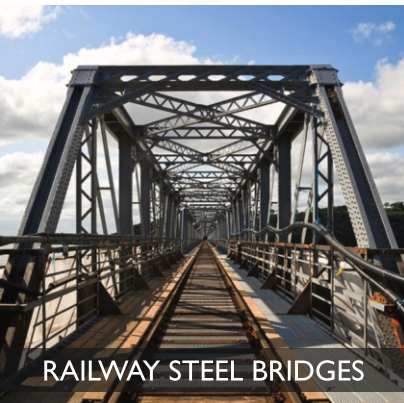
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