



भारतीय पटसन निगम लिमिटेड The Jute Corporation of India Limited

(A Government of India Enterprise)

प्रधान कार्यालय: पटसन भवन, तीसरी और चौथी मंजिल, ब्लॉक-सीएफ, एक्शन एरिया - 1, न्यू टाउन, कोलकाता - 700156
Head Office: Patsan Bhavan, 3rd & 4th Floor, Block-CF, Action Area - 1, New Town, Kolkata - 700156
सी.आई.एन./ C.I.N.: U17232WB1971GOI027958



NOTICE Ref. No. : JCI/Bale Press/2025-26/01.

Date: 09-04-2025

Sub.: Inviting QUOTATIONS from Bonafide, skilled & resourceful vendors for development of suitable designs of an existing modified Jute Bale Press machine available at JCI.

The Jute Corporation of India Limited (JCI) is a working as a nodal agency of Government of India for conducting raw jute purchase from farmers in Minimum Support Price (MSP). Besides doing MSP operation of raw jute JCI also carries our various JDP activities.

This is to bring an information for all concerned that JCI has already developed a prototype bale press machine for preparing raw jute bales. The said bale press machine is developed in collaboration with CSIR-Central Mechanical Engineering Research Institute (CMERI). The design of the said bale press machine is attached herewith this notice for reference and knowledge of all concerned. The developed machine is installed at Katwa DPC, JCI. JCI intended to do further modification in the design.

With reference to the Captioned Sub. & Ref. No., The Jute Corporation of India Limited (JCI) is inviting quotation for further development of suitable designs in line with the age old bale press machines used by jute industry for the purpose of jute bale preparation and in line with the modified Jute Bale Press machine available at Katwa DPC, JCI. The Vendors are requested to submit their respective Quotation along with their design, proposal & corresponding rates to JCI (address mentioned below).

Essential Criteria for vendors to develop suitable designs of the proposed Jute Bale press machine are mentioned below:

1. Valid registration in the form of Trade License, Memorandum and Articles of Association (If the applicant is a company), MSME Registrations, PAN and Partnership deed (if any).
2. GSTIN (If applicable)
3. Experience - The applicant should possess good track records for designing & manufacturing of Bale Press machines and/or must have minimum 5-year experience in manufacturing, installation & operationalization of raw jute Bale Press or similar type of machines.
4. Bidders are requested to submit their proposal of design considering below mentioned three options.
 - a) Hydraulic Type (With electrical type) Bale Press Machine.
 - b) Electrical motor driven type Bale Press Machine.
 - c) Bale Press Machine with no electric involvement.
5. Following points should be considered during development of the required design.
 - a. Proposed compact Bale Press machine should be robust in design.



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- b. Bale making time should be completed by 2-3 minutes.
- c. The machine should be able to withstand 150 to 200 bales preparation cycle per day.
- d. The bale size shall be 4.5 ft x 2.5 ft x 1.5 ft, or the minimum possible dimensions to accommodate 150 kg of raw jute.
6. Maintenance should be easy, and spare parts should be easy to source.
7. This notice is issued to finalize a suitable design for the raw jute bale press machine. JCI may subsequently invite tenders for the development of the bale press machine based on the finalized design.
8. Must have executed business of at least Rs. 50 lakh or more per single calendar year for at least three years with supporting documents (purchase order or order completion certificate or any relevant documents).
9. Selection Procedure:
 - a) All bidders are requested to submit their bid along with the details of the design and proposal to JCI by 18-04-2025 at 2:00PM.
 - b) Evaluation Criteria:
Evaluation for selection of the suitable agency will be on the basis of a weighted scoring system. Weighted scoring system will be as per below.

Item	Sub Head	Score	Remarks
Technical Evaluation	Total Experience in the field of Machine manufacturing (Year)	10 X (No of year of experience / Highest no of year of experience)	
	Total Experience in the field of Bale Press Machine manufacturing (year)	10 X (No of year of experience / Highest no of year of experience)	
	Design	Total Marks is 70	All successful bidders will be called for presentation on the details of the design and working plans timelines etc. Committee of JCI will finalize the marks for each agency.
Financial Evaluation	Price quoted for the design	10 X (Lowest Price / Bid Price)	

Note:

- Vendors will be selected based on the total marks obtained as per the above criteria.
- **Points of highlight on the Presentation of the design**
Robustness of the machine, Required Manpower details, Time taken for preparing bales, Required Pressing Time, Brief Specification of Materials to use for machine and parts, List of material, Dimension of the machine, Compression Ratio of the press, Possible dimensions of the bales, details BOQ, Motor rating, Grouting details, Anchoring regarding, Feeding of raw jute & delivery of bale procedure, Bale producing quantities per day.
- Proposal of the bidders will be evaluated separately for each type of design as per the point no 4 above



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Head Office: Patsan Bhavan, 3rd & 4th Floor, Block-CF, Action Area - 1, New Town, Kolkata - 700156
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10. Authenticated copy of documents, duly self-attested about the details of business mentioning the products by the agency in last years to be submitted along with the bid.

The submitted Quotation(s) to be submitted at Patsan Bhavan, 3rd & 4th Floor, Block-CF, Action Area - 1, New Town, Kolkata - 700156 by 18-04-2025 at 2:00PM. The quotations will be opened on 18-04-2025 at 2:30 PM at the same venue. Pre-bid meetings will be held at 2:30PM on 11-04-2025. For any further details bidders may contact Mr. Koushik Das, Manager (O/M), JCI (Contact Number: +91 9593163744, Email: kd2823@jicimail.in)

On subject of the bid, the Bidders should mention "Development of suitable successful designs of an existing modified Jute Bale Press machine available at JCI". Bidder's contact Mobile number should be mentioned in the proposal.

The Bidder should have at least Valid PAN Card, GST registration & Bank A/C. no.

N.B: Undersigned reserves the right to Cancel or Reject any or all the Quotations without assigning any reason, Or, Undersigned reserves the right to cancel captioned Quotation Invitation.

Format for Price Bid

Sl No	Type of Bale Press Machine Design	Charges for the design (Rs)	Other Charges (If any)
1	Hydraulic Type (With electrical type) Bale Press Machine.		
2	Electrical motor driven type Bale Press Machine.		
3	Bale Press Machine with no electric involvement.		

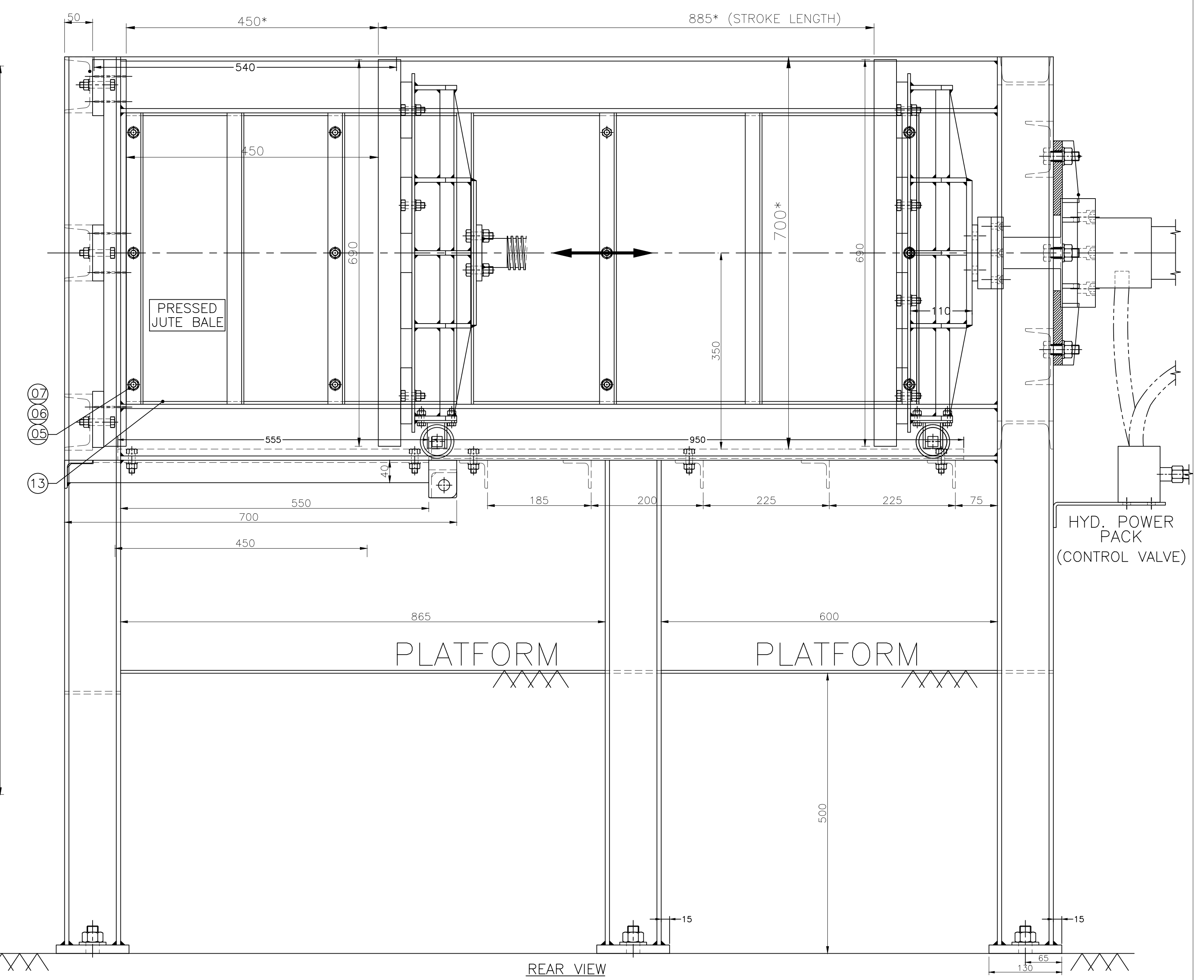
Thanking You,

Yours faithfully,

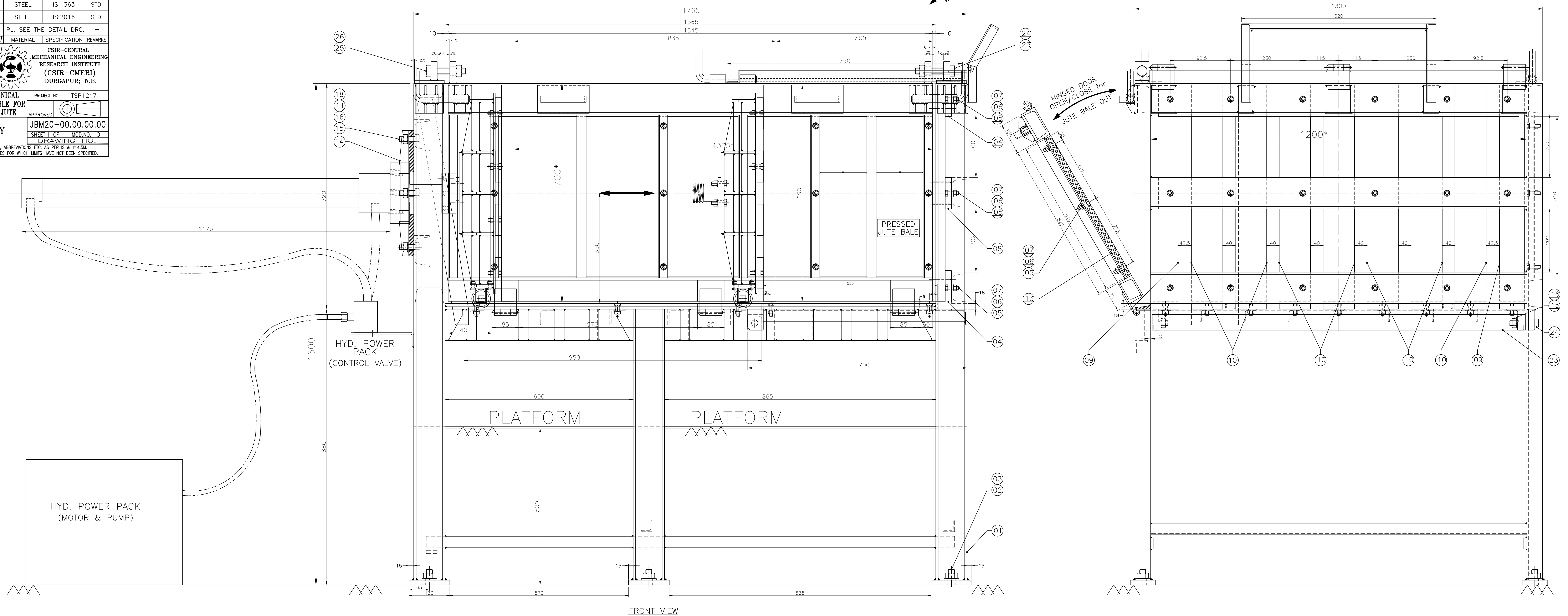
Kalyan Mazumdar

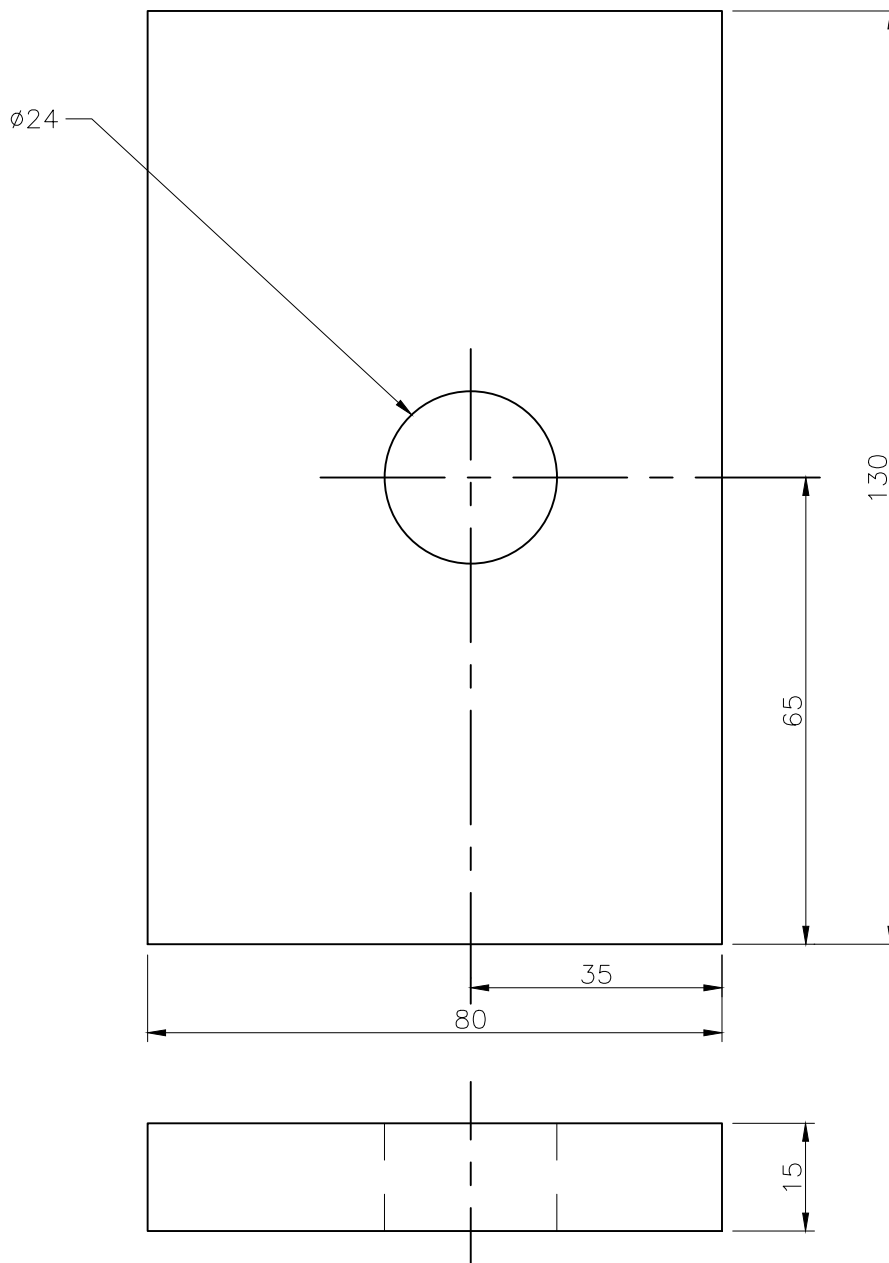
Kalyan Kumar Mazumdar

General Manager (O/M)



PART NO. DRAWING NO.		DESCRIPTION		DATE	MATERIAL	COLOR	SPECIFICATION	REMARKS
SCALE: 1:5		SIGNATURE		DATE				
DO NOT SCALE		DESGN. A. MATHI & A. PRESEED LAYUNTA PRAGASAKKADAM 20/09/2020 DYNTH. A. BAKSHI & S. MOHAN 10/07/2020 CHND. J. DEBILING & B. BAUI 13/07/2020 2020 JUNE Building Machine Dept. COMPUTER FILE NAME		CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR, W.B.				
		DEVELOPMENT OF A MECHANICAL BAL PRESS MACHINE SUITABLE FOR PACKING OF BALES RAU JUTE		PROJECT NO.: TSP1 217 APPROVED: _____ JWB20-001.00.00.00.00 SUBJ-01 OF 1 (MOJO) NO. DRAWING NO.				
		GENERAL ASSEMBLY						
(A) DIMENSIONS ARE IN MM. UNLESS SPECIFIED OTHERWISE. (B) CODES, PATENT ABBREVIATIONS ETC. ARE AS IS & 1/16" = 1.5875 mm. (C) DIMENSIONS ARE TO BE GIVEN FOR DIMENSIONS OF ALL PARTS SURFACES FOR ALL PARTS.								





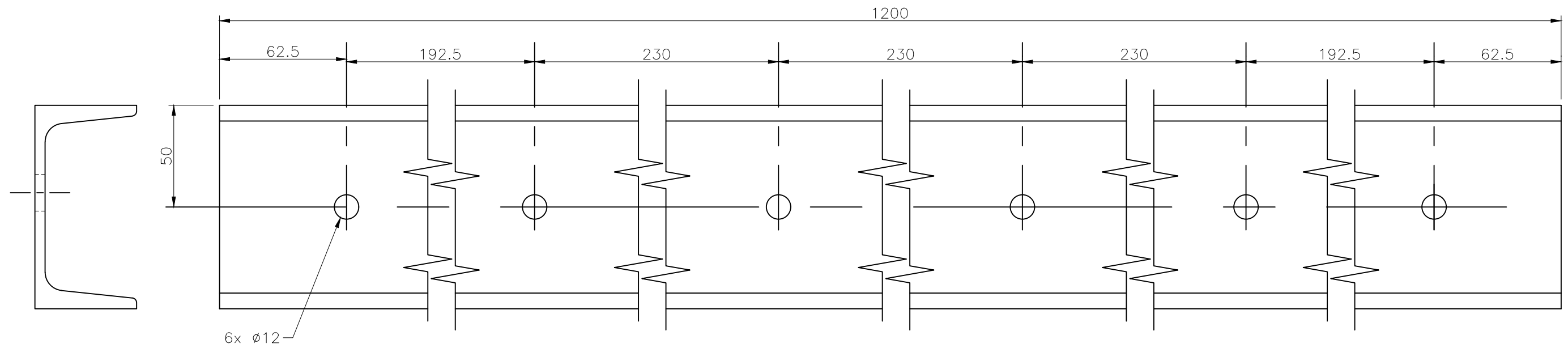
N.B.:—

1. ALL SHARP EDGES ARE TO BE REMOVED.

6.3

01/1	BASE PLATE	06	STEEL	Fe410W IS:2062	—
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:1		SIGNATURE		DATE	
DO NOT SCALE		DSGN.	A MAITY & A PRASAD	01.06.2020	
		LAYOUT	A PRASAD & A BAIJU	20.05.2020	
		DRN.	A BAIJU & S MOSAN	10.07.2020	
		CHKD.	SK MANDAL & A BAIJU	15.09.2020	
		JUTE STRUCTURAL DRG.dwg			
		COMPUTER FILE NAME			
DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE			PROJECT NO.: TSP1217		
DETAIL GENERAL ASSEMBLY			JBM20-00.00.00.01		
			SHEET 2 OF 14 MOD.NO.: 0 DRAWING NO.		
Mod. date	No. off	Ref.	Ini-tials		

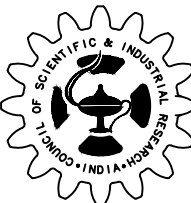
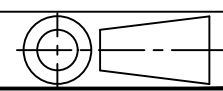
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.



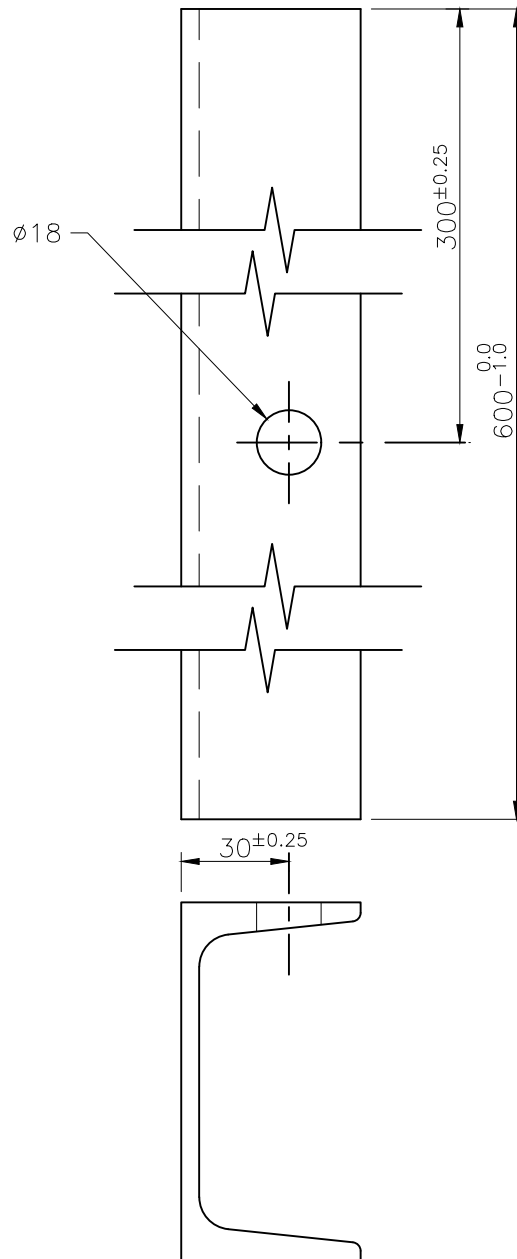
N.B.:—

1. ALL SHARP EDGES ARE TO BE REMOVED.

6.3

01/6		CHANNEL -5		03		STEEL		ISMC100x1200L IS:808		-			
PART NO.		DESCRIPTION		NO. OFF / ASSY		MATERIAL		SPECIFICATION		REMARKS			
SCALE: 1:2				SIGNATURE		DATE		 CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR; W.B.					
DO NOT SCALE				DSGN.		A MAITY & A PRASAD						01.06.2020	
				LAYOUT		A PRASAD & A BAIJU						20.05.2020	
				DRN.		A BAIJU & S MOSAN						10.07.2020	
				CHKD.		SK MANDAL & A BAIJU						15.09.2020	
				JUTE STRUCTURAL DRG.dwg									
				COMPUTER FILE NAME									
				DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE						PROJECT NO.: TSP1217			
				DETAIL GENERAL ASSEMBLY						APPROVED 			
										JBM20-00.00.00.01			
										SHEET 3 OF 14 MOD.NO.: 0			
Mod. date				No. off		Ref.		Ini-tials		DRAWING NO.			

(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.



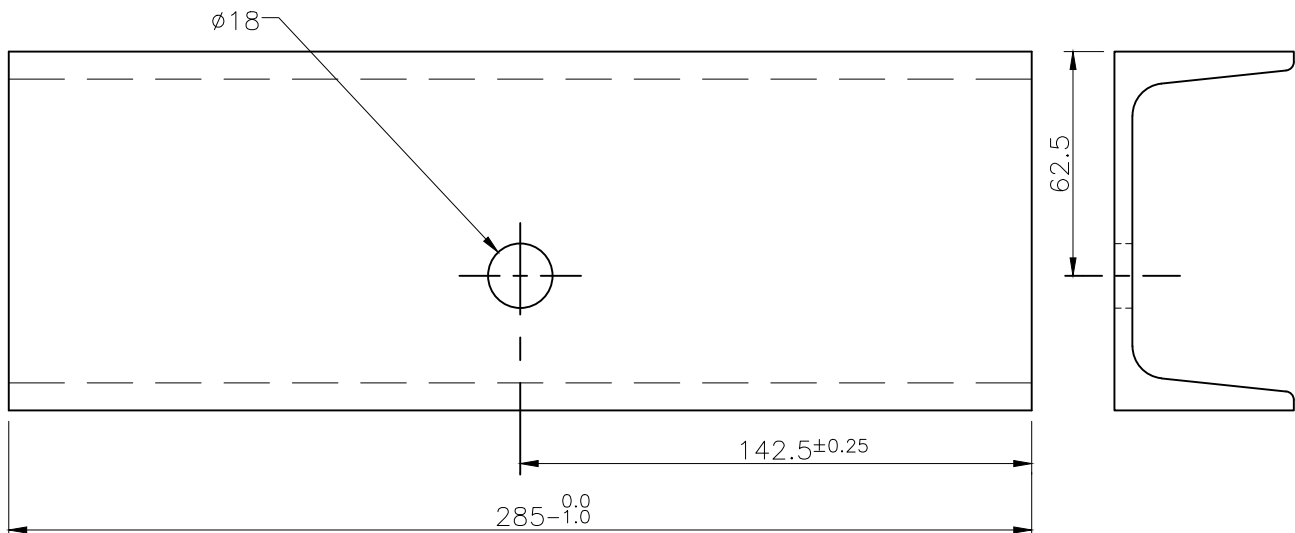
N.B.:—

1. ALL SHARP EDGES ARE TO BE REMOVED.

6.3

01/7	CHANNEL -6	02	STEEL	ISMC100x600L IS:808	—
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:2		SIGNATURE		DATE	
DO NOT SCALE		DSGN.	A MAITY & A PRASAD	01.06.2020	
		LAYOUT	A PRASAD & A BAIJU	20.05.2020	
		DRN.	A BAIJU & S MOSAN	10.07.2020	
		CHKD.	SK MANDAL & A BAIJU	15.09.2020	
		JUTE STRUCTURAL DRG.dwg			
		COMPUTER FILE NAME			
DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE			PROJECT NO.: TSP1217		
DETAIL GENERAL ASSEMBLY			APPROVED		
			JBM20-00.00.00.01		
			SHEET 4 OF 14 MOD.NO.: 0		
			DRAWING NO.		
Mod. date	No. off	Ref.	Ini- tials		

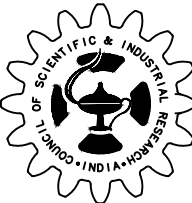
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.



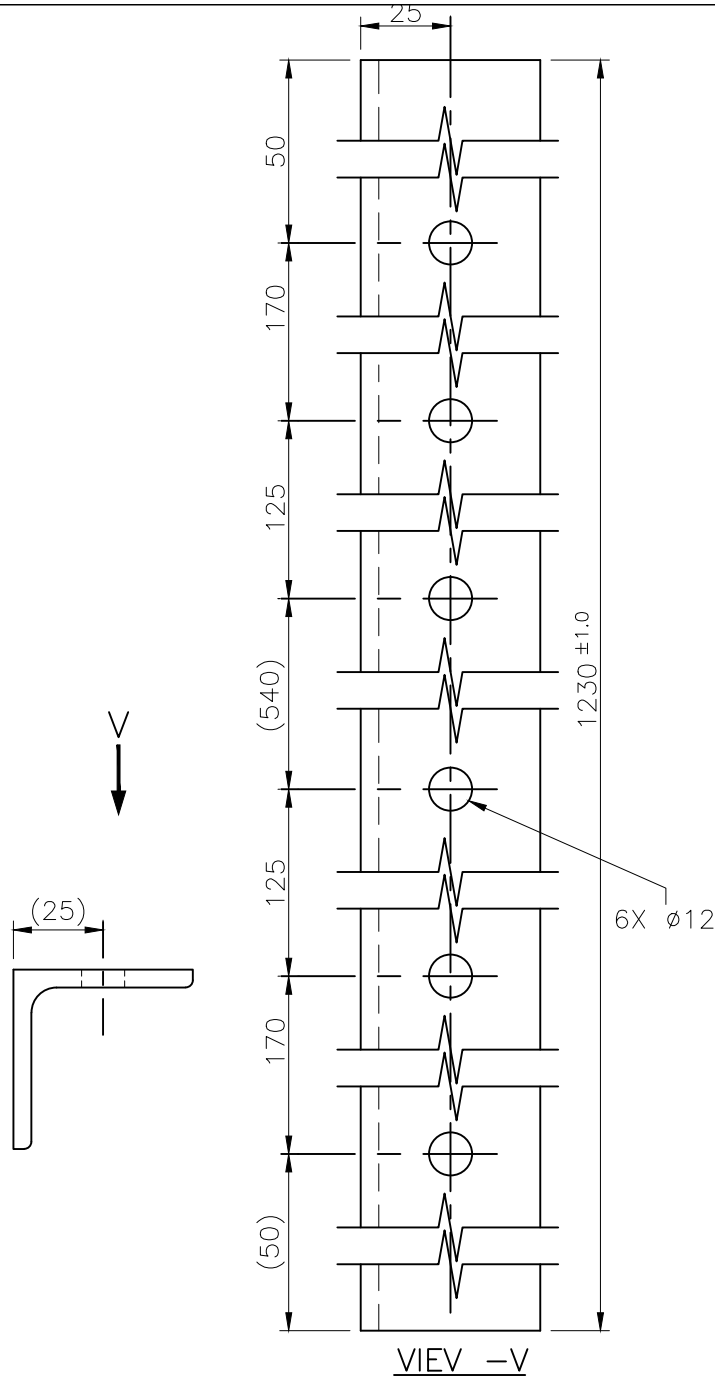
N.B.:—

1. ALL SHARP EDGES ARE TO BE REMOVED.



01/8	CHANNEL -7	02	STEEL	ISMC100x285L IS:808	—
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:2		SIGNATURE		DATE	 CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR; W.B.
DO NOT SCALE		DSGN.	A MAITY & A PRASAD	01.06.2020	
		LAYOUT	A PRASAD & A BAIJU	20.05.2020	
		DRN.	A BAIJU & S MOSAN	10.07.2020	
		CHKD.	SK MANDAL & A BAIJU	15.09.2020	
		JUTE STRUCTURAL DRG.dwg			
		COMPUTER FILE NAME			
		DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE			PROJECT NO.: TSP1217
					APPROVED
		DETAIL GENERAL ASSEMBLY			JBM20-00.00.00.01
					SHEET 5 OF 14 MOD.NO.: 0
Mod. date	No. off	Ref.	Ini-tials	DRAWING NO.	

(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.

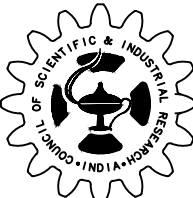
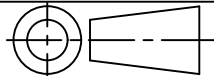


VIEW -V

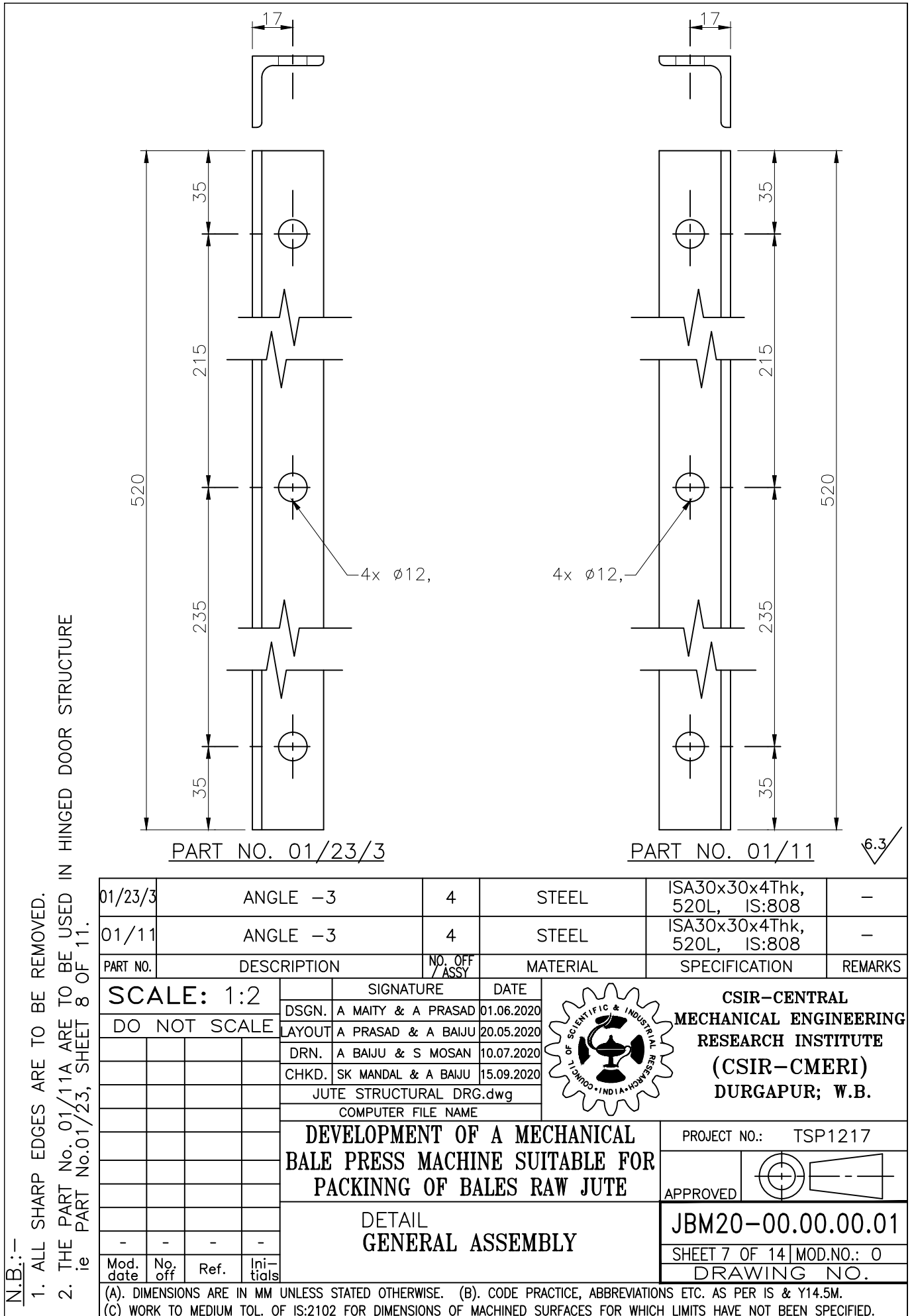
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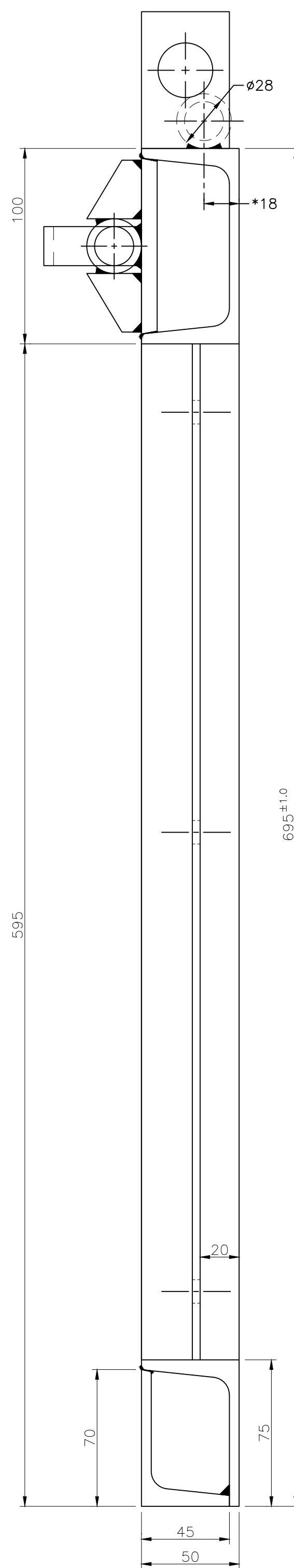
N.B.:-

1. ALL SHARP EDGES ARE TO BE REMOVED.

01/9	ANGLE -1	03	STEEL	ISA50x50x5Thk, 1230L, IS:808	-	
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS	
SCALE: 1:2		SIGNATURE		DATE	 CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR; W.B.	
DO NOT SCALE		DSGN.	A MAITY & A PRASAD	01.06.2020		
		LAYOUT	A PRASAD & A BAIJU	20.05.2020		
		DRN.	A BAIJU & S MOSAN	10.07.2020		
		CHKD.	SK MANDAL & A BAIJU	15.09.2020		
		JUTE STRUCTURAL DRG.dwg				
		COMPUTER FILE NAME				
		DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE				PROJECT NO.: TSP1217
		DETAIL GENERAL ASSEMBLY				APPROVED 
						JBM20-00.00.00.01
Mod. date	No. off	Ref.	Ini- tials	SHEET 6 OF 14 MOD.NO.: 0		
				DRAWING NO.		

(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.

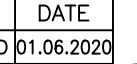




Technical drawing of a rectangular plate. The top view shows a rectangle with a width of 85. The side view shows a profile with a total height of 70 and a base thickness of 69.

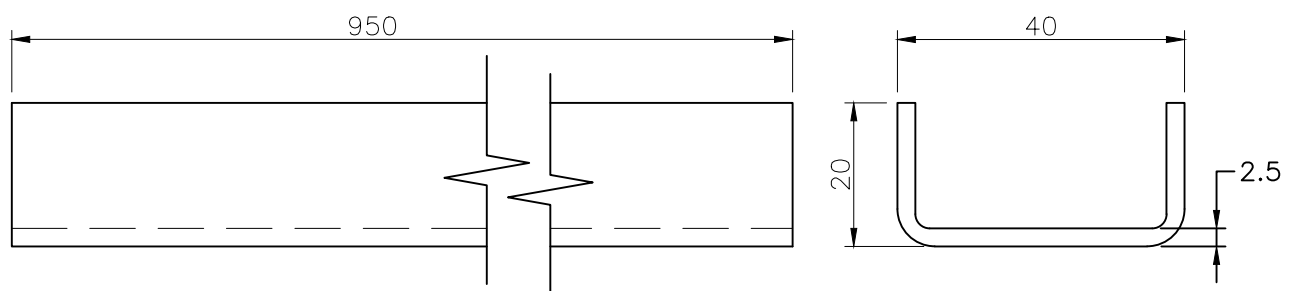
PART No. 01/23/5

01/23/01	DOOR LOCK BRACKET -2	1+1	STEEL	F6410W IS:2062	—	—
01/23/01	HANDLE	1+1	STEEL	F6410W IS:2062	—	—
01/23/01	SUPPORT PLATE -3	1+1	STEEL	F6410W IS:2062	—	—
01/23/01	LOCKING TUBE SUPPORT	4+4	STEEL	F6410W IS:2062	PART NO. 0/0/0	SHEET 1 OF 1
01/23/01	LOCKING TUBE	02	STEEL	0028x02x10W IS:2062	PART NO. 0/0/0	SHEET 1 OF 1
01/23/01	SUPPORT PLATE -1	02	STEEL	F6410W IS:2062	PART NO. 0/0/0	SHEET 1 OF 1
01/23/01	CHANNEL CUT	03	STEEL	ISM300100x45 IS:808	TO BE MADE	—
01/23/01	ANGLE -4	04	STEEL	ISAC3030x13x1 IS:808	TO BE MADE	—
01/23/01	ANGLE -3	04	STEEL	ISAC3030x14x3 IS:808	PART NO. 0/0/0	SHEET 1 OF 1
01/23/01	CUT CHANNEL -2	01	STEEL	ISM300100x45 IS:808	TO BE MADE	FROM SECTION
01/23/01	CHANNEL -8	01	STEEL	ISM300100x154 IS:808	TO BE MADE	FROM SECTION

01/23 HINGED DOOR STRUCTURE		01	AS SHOWN ABOVE		
CHK NO.	DESCRIPTION	NO. OF PGS	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:2		SIGNATURE	DATE	CSIR-CENTRAL MECHANICAL ENGINEERING	
DO NOT SCALE		DIGN. A. MATHY & A. PRASAD 01.06.2020		RESEARCH INSTITUTE	
		AVUTHU A. SANKAR & A. BAJU 02.06.2020		RESEARCH INSTITUTE	
		CHITRA A. BALU & S. VIGNAN 10.07.2020		(CSIR-CMERI)	
		CHITRA S. KANAKA & A. BALU 15.09.2020		DURGAPUR, W.B.	
		JUTE STRUCTURAL DRWG (mg)			
		COMPILED FILE NAME			
DEVELOPMENT OF A MECHANICAL			PROJECT NO.	TSP1217	
BALE PRESS MACHINE SUITABLE FOR					
PACKING OF BALES RAW JUTE					
DETAIL			JBM20-00.00.00.00.01		
GENERAL ASSEMBLY			SHEET # OF 14 (MOOD NO.) OF 5		
Mod.	Rev.	Issued	DRAWING NO.		
Mod.	Rev.	Issued	SHEET # OF 14 (MOOD NO.) OF 5		
ALL DIMENSIONS ARE IN NEW UNITS UNLESS OTHERWISE SPECIFIED. (B) WORK PRACTICE, ABBREVIATIONS ETC. AS PER IS 14546.					
© WORK TO REMAIN TIL 02-02-2020 FOR DIMENSIONS & MODIFIED SPECIFICATIONS FOR WHICH WORK HAS BEEN SPECIFIED.					

N.B:-

1. THE PART Nos. ARE JOINED BY WELDING AS PER THE DRAWING AND DIMENSIONS GIVEN.
2. PROPER EDGE PREPARATIONS TO BE MADE ON THE PARTS WHICH ARE JOINED BY WELDING TO ENSURE ADEQUATE STRENGTH TO GET ON THE WELDED PARTS WHILE PERFORMING THE JUTE BALING (PRESSING) PROCESS.
3. THE "*" MARKED DIMENSIONS ARE TENTATIVE WITH THE CORRESPONDING MAIN STRUCTURAL BODY PARTS FOR EASILY LOCKING/UNLOCKING.
4. THE PART NO. 01/23/11 TO BE WELDED TO 01/23/1 BY KEEPING THE HOLE CONCENTRIC WITH THE HOLE OF PART NO. 01/31 OF MAIN STRUCTURAL BODY.



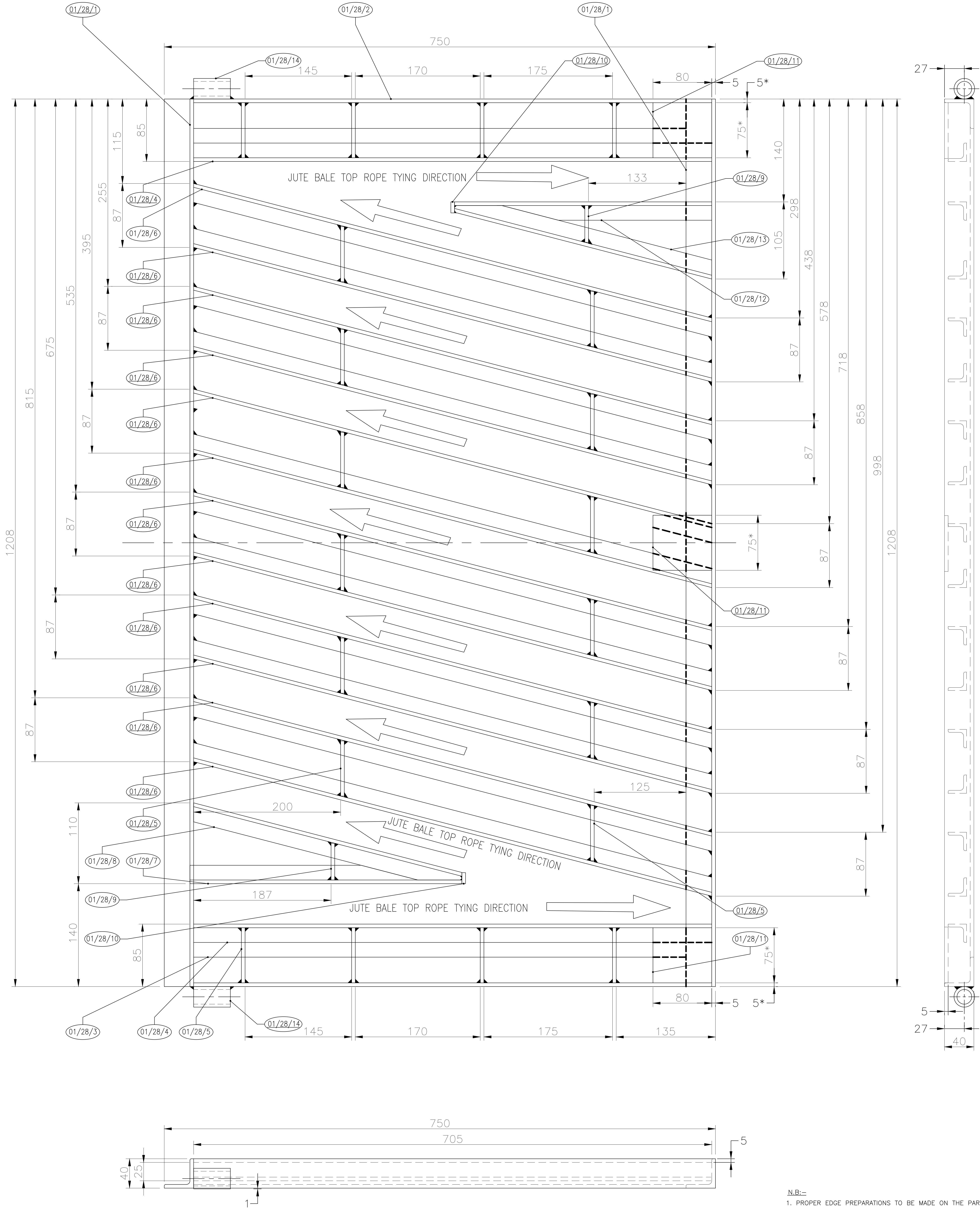
N.B.:-

1. ALL SHARP EDGES ARE TO BE REMOVED.
2. THE COMPONENT IS TO BE WELDED TO PART Nos 01/9 & 01/10.

6.3/

01/27	GUIDE CHANNEL	02	STEEL	Fe410W, IS:2062	—
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:1		SIGNATURE		DATE	
DO NOT SCALE		DSGN.	A MAITY & A PRASAD	01.06.2020	
		LAYOUT	A PRASAD & A BAIJU	20.05.2020	
		DRN.	A BAIJU & S MOSAN	10.07.2020	
		CHKD.	SK MANDAL & A BAIJU	15.09.2020	
		JUTE STRUCTURAL DRG.dwg			
		COMPUTER FILE NAME			
DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE			PROJECT NO.: TSP1217		
			APPROVED		
			JBM20-00.00.00.01		
			SHEET 9 OF 14 MOD.NO.: 0		
DETAIL GENERAL ASSEMBLY			DRAWING NO.		
Mod. date	No. off	Ref.	Ini-tials		

(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.

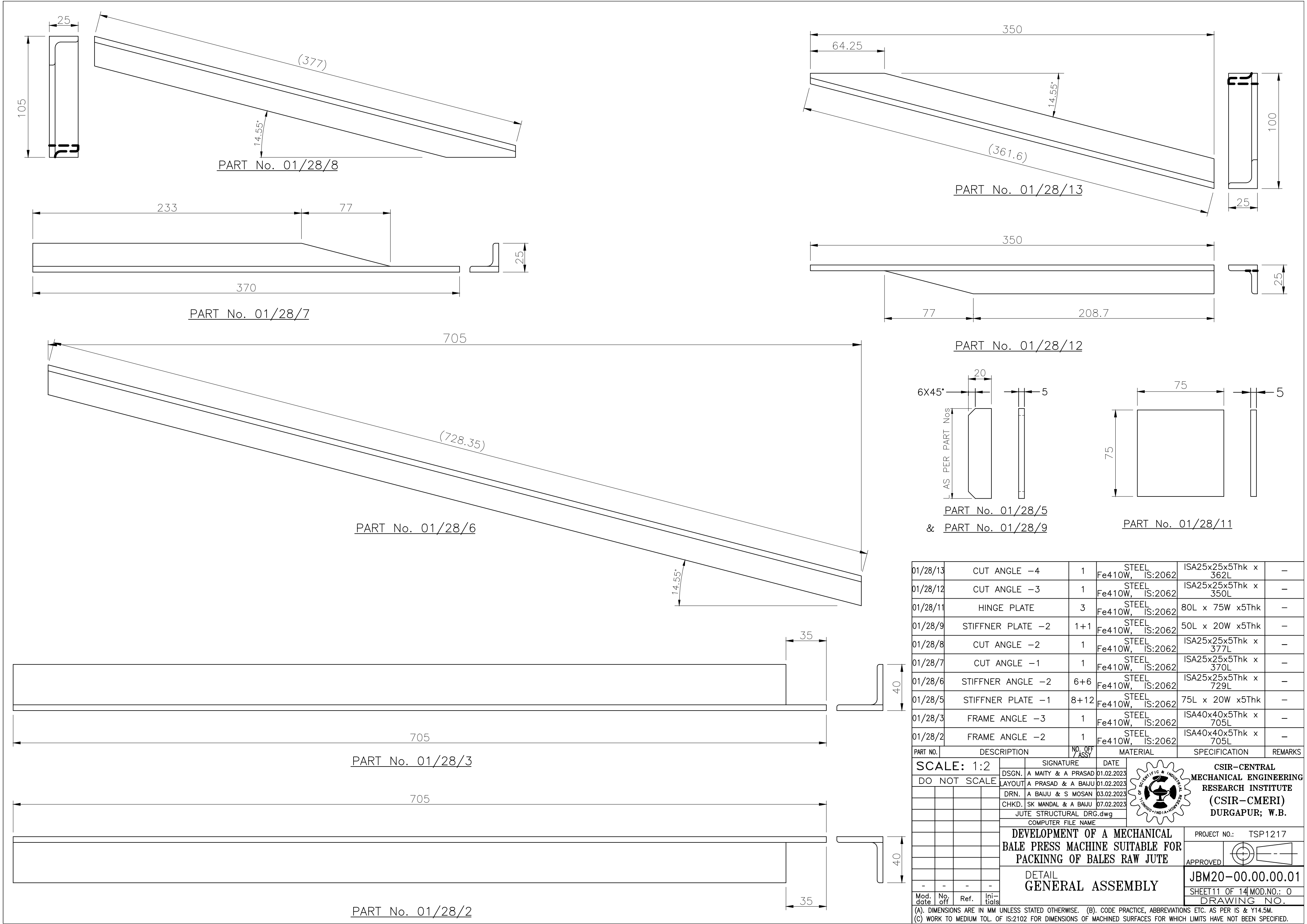


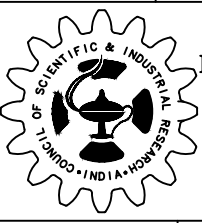
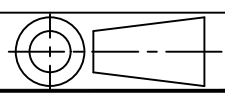
N.B:-

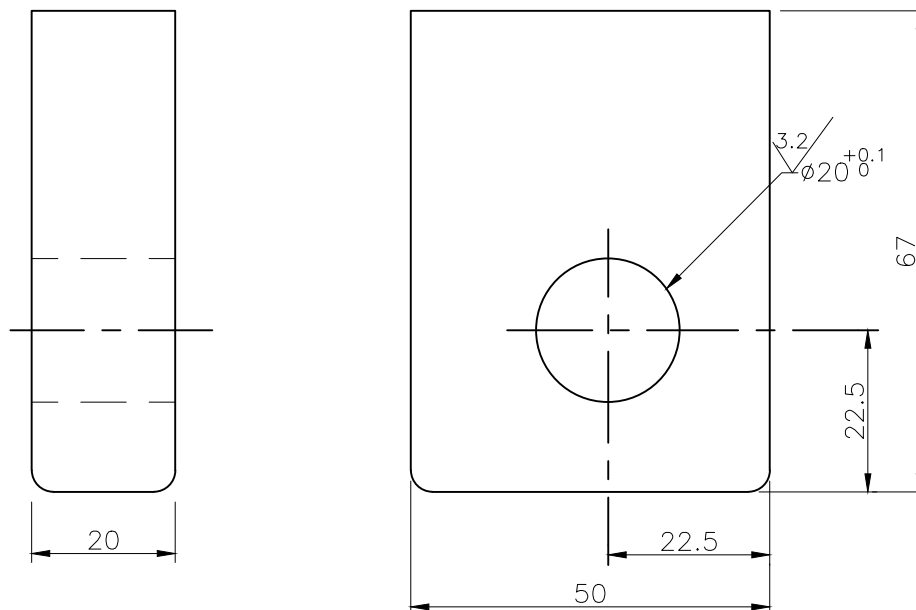
1. PROPER EDGE PREPARATIONS TO BE MADE ON THE PARTS WHICH ARE JOINED BY WELDING TOGETHER TO ENSURE ADEQUATE STRENGTH OF THE WELDED STRUCTURE WHILE PERFORMING THE JUTE BALING (PRESSING) PROCESS.
2. THE PART Nos. 01/28/1 (2Nos.), 01/28/2 (1No.) and 01/28/3 (1No.) ARE TO BE WELDED TOGETHER AS SHOWN IN THE DRAWING TO MAKE THE FRAME OF SIZE 1208 x 750 AT FIRST.
3. THE '*' MARKED DIMENSIONS ARE TENTATIVE WITH THE CORRESPONDING MAIN STRUCTURAL BODY PARTS FOR EASILY LOCKING/UNLOCKING.

01/28/14	LOCKING TUBE	1+1	STEEL Fe410W, IS:2062	OD28xID20x 50L TUBE	-
01/28/13	CUT ANGLE -4	1	STEEL Fe410W, IS:2062	ISA25x25x5Thk x 362L	-
01/28/12	CUT ANGLE -3	1	STEEL Fe410W, IS:2062	ISA25x25x5Thk x 360L	-
01/28/11	HINGE PLATE	1+1+1	STEEL Fe410W, IS:2062	75L x 80W x5Thk	-
01/28/10	STIFFNER PLATE -3	1+1	STEEL Fe410W, IS:2062	15L x 25W x5Thk	-
01/28/9	STIFFNER PLATE -2	1+1	STEEL Fe410W, IS:2062	50L x 20W x5Thk	-
01/28/8	CUT ANGLE -2	1	STEEL Fe410W, IS:2062	ISA25x25x5Thk x 377L	-
01/28/7	CUT ANGLE -1	1	STEEL Fe410W, IS:2062	ISA25x25x5Thk x 370L	-
01/28/6	STIFFNER ANGLE -2	6+6	STEEL Fe410W, IS:2062	ISA25x25x5Thk x 729L	-
01/28/5	STIFFNER PLATE -1	8+12	STEEL Fe410W, IS:2062	75L x 20W x5Thk	-
01/28/4	STIFFNER ANGLE -1	1+1	STEEL Fe410W, IS:2062	ISA25x25x5Thk x 705L	-
01/28/3	FRAME ANGLE -3	1	STEEL Fe410W, IS:2062	ISA40x40x5Thk x 705L	-
01/28/2	FRAME ANGLE -2	1	STEEL Fe410W, IS:2062	ISA40x40x5Thk x 1208L	-
01/28/1	FRAME ANGLE -1	1+1	STEEL Fe410W, IS:2062	ISA40x40x5Thk x 1208L	-

01/28	SLOTTED TOP COVER		1	AS SHOWN ABOVE		708L	-
PART NO.	DESCRIPTION		NO. OF PIECES	MATERIAL	SPECIFICATION	REMARKS	
SCALE: 1:2							
DO NOT SCALE							
SIGNATURE			DATE		CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR, W.B.		
DSGN. A. MAITY & A. PRASAD 01.02.2023							
LAYOUT. A. PRASAD & A. BALUJ 01.02.2023							
DRN. A. BALUJ & S. MOHAN 03.02.2023							
CHKD. SK. MANDEL & A. BALUJ 07.02.2023							
JUTE STRUCTURAL DRG.dwg							
COMPUTER FILE NAME							
DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKING OF BALES RAW JUTE				PROJECT NO.:	TSP1217		
APPROVED							
DETAIL GENERAL ASSEMBLY				JBM20-00.00.00.01			
				SHEET NO. OF 14 MOD NO.: 0			
				DRAWING NO.			
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.							
(C). WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.							



01/28/13	CUT ANGLE -4	1	STEEL Fe410W, IS:2062	ISA25x25x5Thk x 362L	-
01/28/12	CUT ANGLE -3	1	STEEL Fe410W, IS:2062	ISA25x25x5Thk x 350L	-
01/28/11	HINGE PLATE	3	STEEL Fe410W, IS:2062	80L x 75W x5Thk	-
01/28/9	STIFFNER PLATE -2	1+1	STEEL Fe410W, IS:2062	50L x 20W x5Thk	-
01/28/8	CUT ANGLE -2	1	STEEL Fe410W, IS:2062	ISA25x25x5Thk x 377L	-
01/28/7	CUT ANGLE -1	1	STEEL Fe410W, IS:2062	ISA25x25x5Thk x 370L	-
01/28/6	STIFFNER ANGLE -2	6+6	STEEL Fe410W, IS:2062	ISA25x25x5Thk x 729L	-
01/28/5	STIFFNER PLATE -1	8+12	STEEL Fe410W, IS:2062	75L x 20W x5Thk	-
01/28/3	FRAME ANGLE -3	1	STEEL Fe410W, IS:2062	ISA40x40x5Thk x 705L	-
01/28/2	FRAME ANGLE -2	1	STEEL Fe410W, IS:2062	ISA40x40x5Thk x 705L	-
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:2		SIGNATURE		DATE	
DO NOT SCALE		DSGN. A MAITY & A PRASAD		01.02.2023	
		LAYOUT A PRASAD & A BAIJU		01.02.2023	
		DRN. A BAIJU & S MOSAN		03.02.2023	
		CHKD. SK MANDAL & A BAIJU		07.02.2023	
		JUTE STRUCTURAL DRG.dwg			
		COMPUTER FILE NAME			
		DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKING OF BALES RAW JUTE			PROJECT NO.: TSP1217
		DETAIL GENERAL ASSEMBLY			
					JBM20-00.00.00.01
Mod. date	No. off	Ref.	Ini- tials	SHEET 11 OF 14 MOD.NO.: 0 DRAWING NO.	
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M. (C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.					



N.B.:-

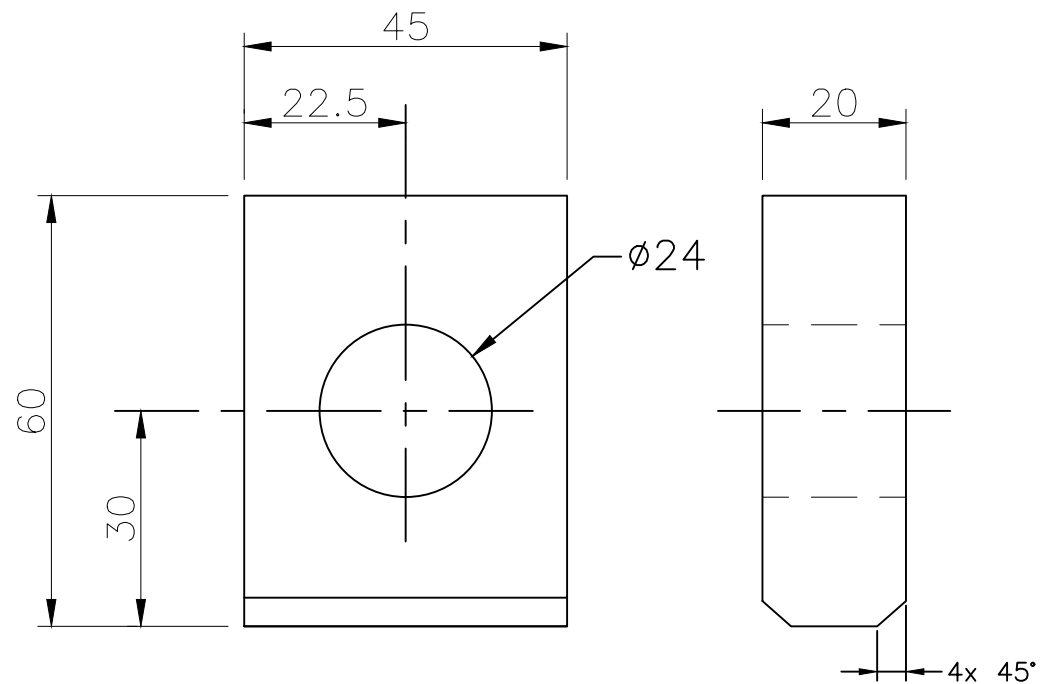
1. ALL SHARP EDGES ARE TO BE REMOVED.

6.3

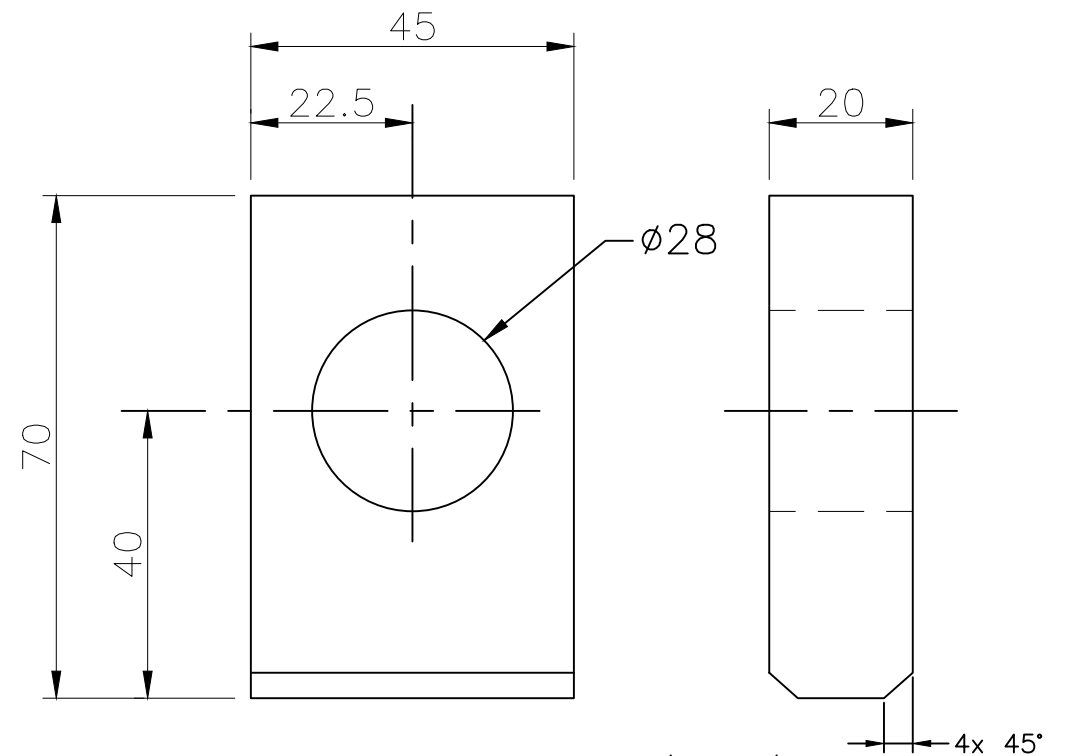
01/29	BOTTOM DOOR HOLDING LUG -1	02	STEEL	Fe410W IS:2062	-
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:1		SIGNATURE		DATE	
DO NOT SCALE		DSGN.	A MAITY & A PRASAD	01.06.2020	
		LAYOUT	A PRASAD & A BAIJU	20.05.2020	
		DRN.	A BAIJU & S MOSAN	10.07.2020	
		CHKD.	SK MANDAL & A BAIJU	15.09.2020	
		JUTE STRUCTURAL DRG.dwg			
		COMPUTER FILE NAME			
DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE			PROJECT NO.: TSP1217		
			APPROVED		
DETAIL GENERAL ASSEMBLY			JBM20-00.00.00.01		
			SHEET12 OF 14 MOD.NO.: 0 DRAWING NO.		
Mod. date	No. off	Ref.	Ini- tials		

(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.

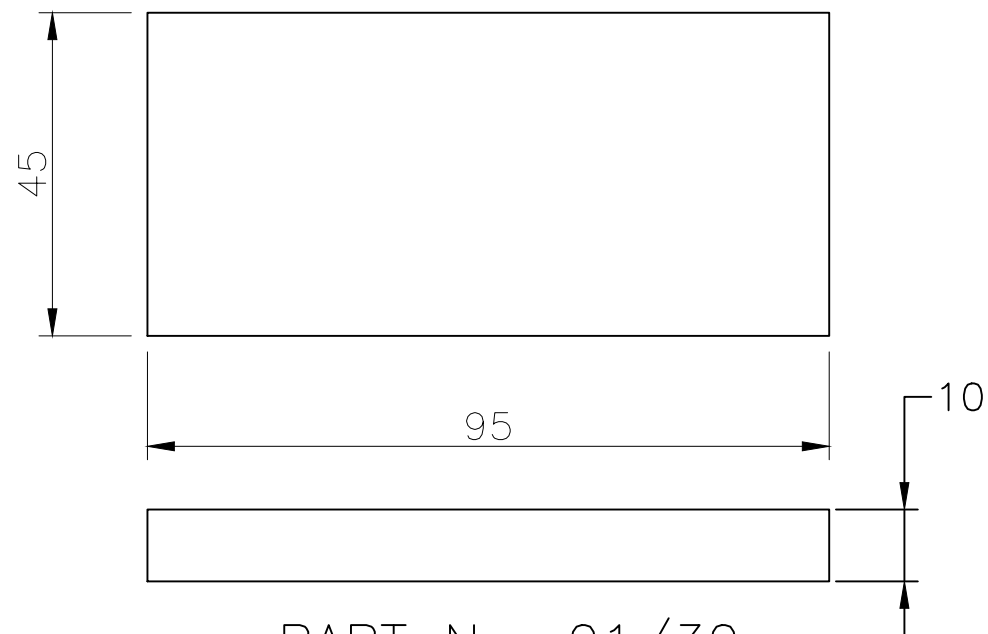
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.



PART No. 01/31
(No. OF 2)

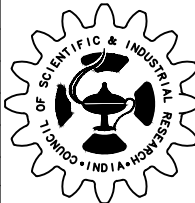
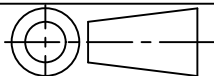


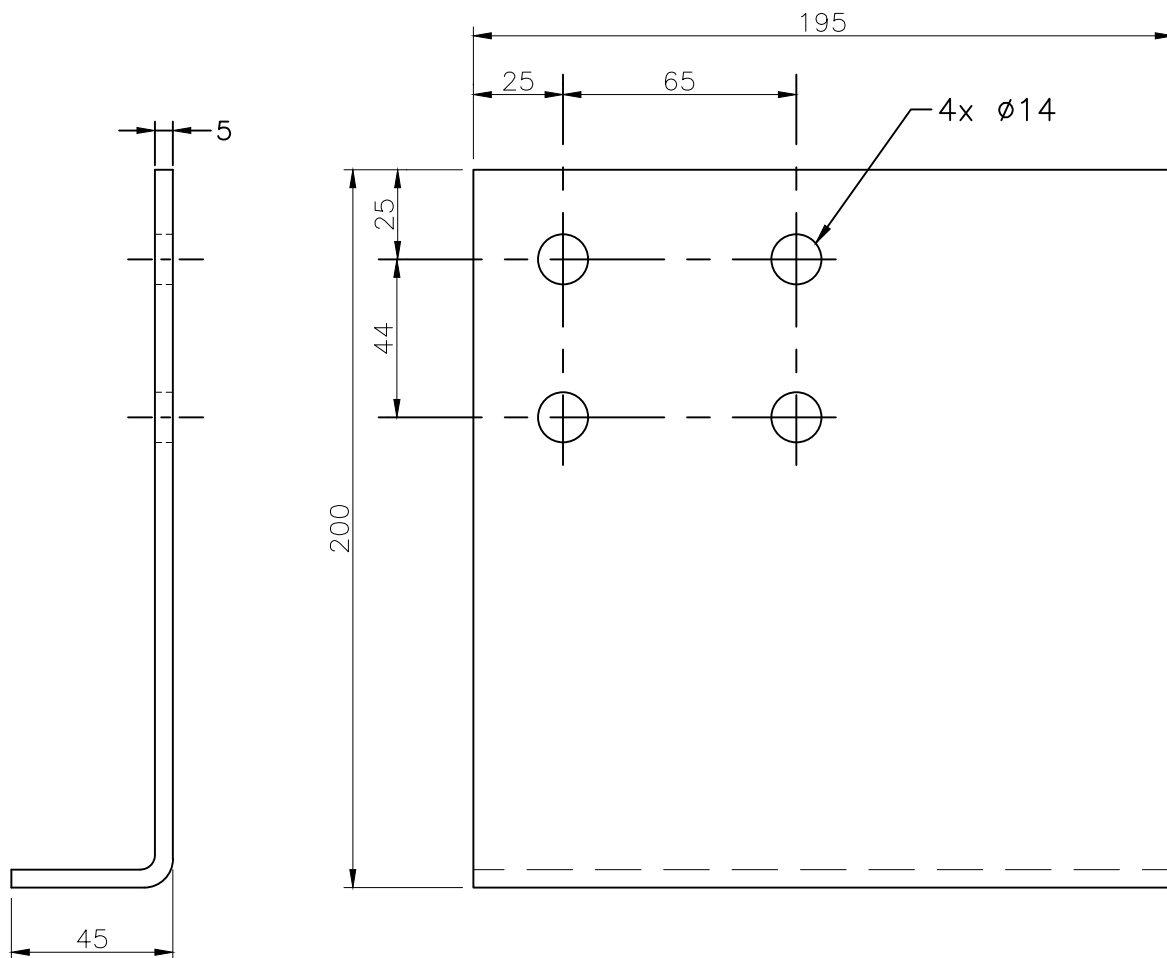
PART No. 01/23/11
(No. OF 2)



PART No. 01/30
(No. OF 2)

N.B.: -
1. ALL SHARP EDGES ARE TO BE REMOVED.

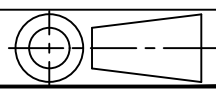
01/23/11	DOOR LOCK BRACKET -2		02	STEEL	70Lx45Wx20Thk Fe410W, IS:2062	WELDED TO HINGED DOOR
01/31	DOOR LOCK BRACKET -1		02	STEEL	60Lx45Wx20Thk Fe410W, IS:2062	-
01/30	DOOR LOCK BRACKET BASE		02	STEEL	95Lx45Wx10Thk Fe410W, IS:2062	-
PART NO.	DESCRIPTION		NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:1			SIGNATURE		DATE	 CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR; W.B.
DO NOT SCALE			DSGN.		A MAITY & A PRASAD 01.06.2020	
			LAYOUT		A PRASAD & A BAIJU 20.05.2020	
			DRN.		A BAIJU & S MOSAN 15.07.2021	
			CHKD.		SK MANDAL & A BAIJU 10.08.2021	
			JUTE STRUCTURAL DRG.dwg			
			COMPUTER FILE NAME			
			DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKING OF BALES RAW JUTE			PROJECT NO.: TSP1217
			DETAIL GENERAL ASSEMBLY			
						APPROVED
						JBM20-00.00.00.01
						SHEET13 OF 14 MOD.NO.:
						DRAWING NO.
10/7/21	1	-	-			
Mod. date	No. off	Ref.	Ini- tials			
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M. (C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.						



N.B.:—

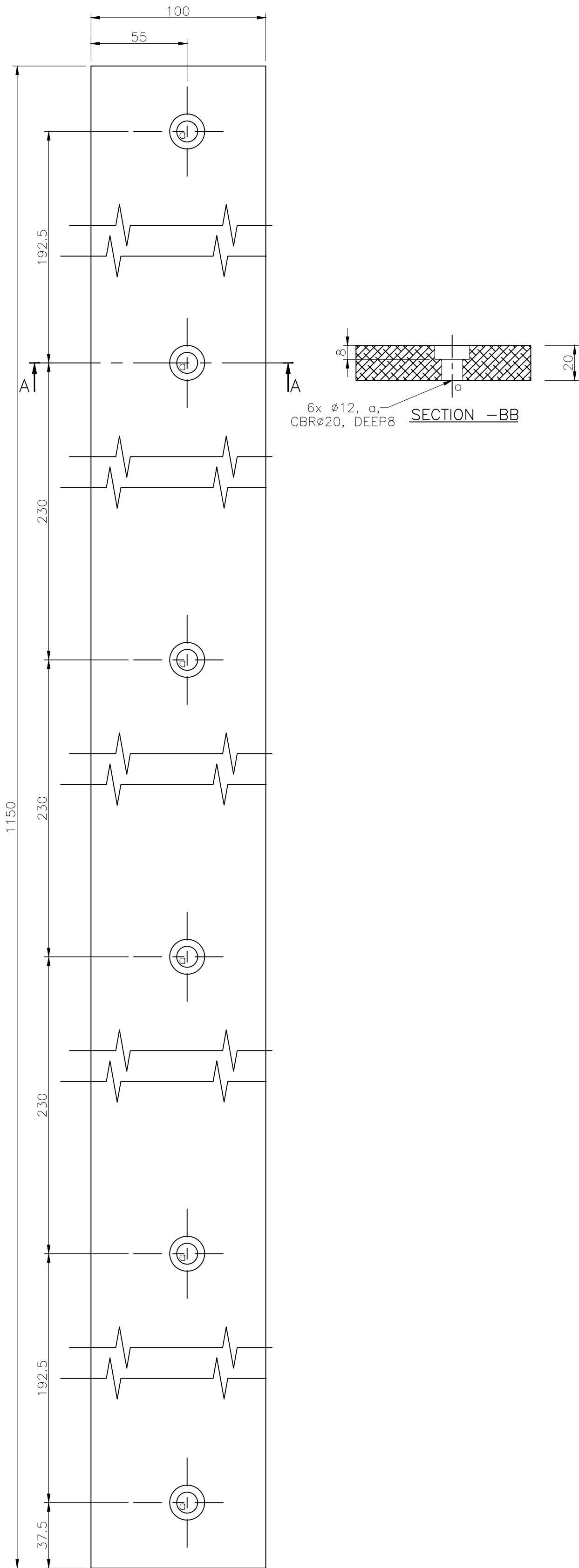
1. ALL SHARP EDGES ARE TO BE REMOVED.

6.3

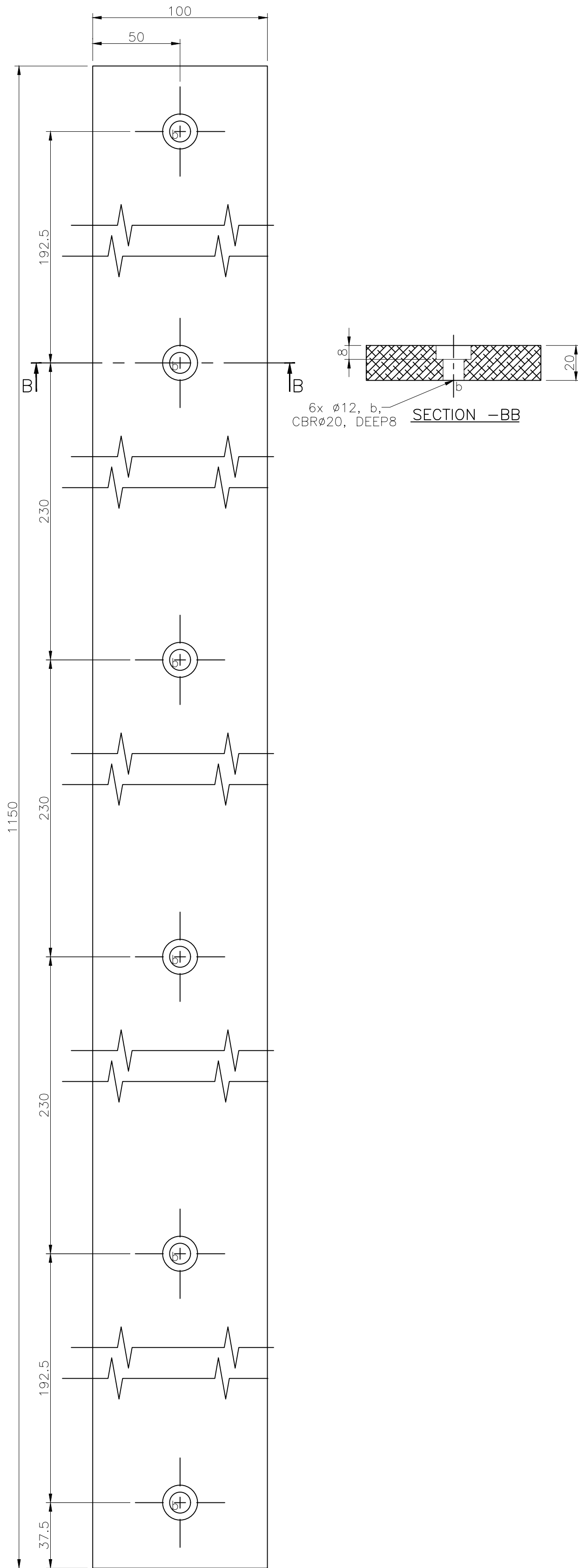
01/32	VALVE SUPPORT PLATE	01	STEEL	Fe410W IS:2062	—
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:2		SIGNATURE		DATE	
DO NOT SCALE		DSGN.	A MAITY & A PRASAD	01.06.2020	
		LAYOUT	A PRASAD & A BAIJU	20.05.2020	
		DRN.	A BAIJU & S MOSAN	10.07.2020	
		CHKD.	SK MANDAL & A BAIJU	15.09.2020	
		JUTE STRUCTURAL DRG.dwg			
		COMPUTER FILE NAME			
DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE			PROJECT NO.: TSP1217		
			APPROVED 		
DETAIL GENERAL ASSEMBLY			JBM20-00.00.00.01		
			SHEET14 OF 14 MOD.NO.: 0 DRAWING NO.		
Mod. date	No. off	Ref.	Ini- tials		

(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.

(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.

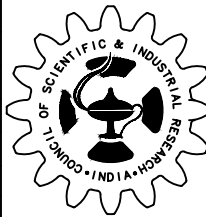
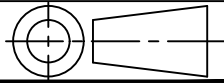


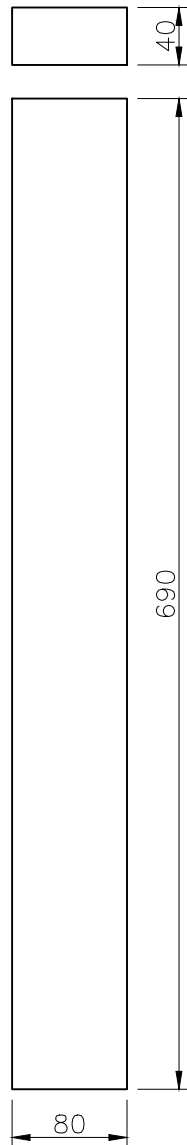
PART No: 04



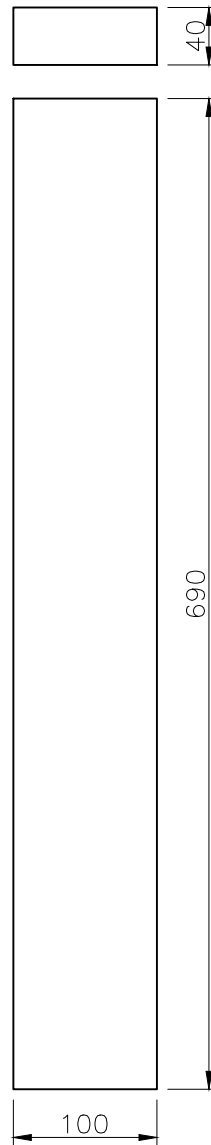
PART No: 08

N.B.: -
1. ALL SHARP EDGES ARE TO BE REMOVED.
2. THE HOLES 'a' & 'b' WITH CBR TO BE MADE IN ALIGNED WITH THE CORRESPONDING HOLES ON THE SUPPORTING STRUCTURES (BOTTOM DOOR FRAME).

08	WOODEN PLANK -2		1	WOOD	1150Lx100Wx20Thk	-	
04	WOODEN PLANK -1		1+1	WOOD	1150Lx100Wx20Thk	-	
PART NO.		DESCRIPTION		NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:2		SIGNATURE		DATE		 CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR, W.B.	
DO NOT SCALE		DSGN. A MAITY & A PRASAD		01.06.2020			
		LAYOUT A PRASAD & SK MANDAL		20.05.2020			
		DRN. A BAIJU & S MOSAN		21.01.2022			
		CHKD. SK MANDAL & A BAIJU		24.01.2022			
		JUTE STRUCTURAL DRG.dwg				PROJECT NO.: TSP1217 APPROVED  JBM20-00.00.00.02 SHEET 1 OF 1 MOD.NO.: 0 DRAWING NO.	
		COMPUTER FILE NAME					
DEVELOPMENT OF A MECHANICAL							
BALE PRESS MACHINE SUITABLE FOR							
PACKING OF BALES RAW JUTE							
		DETAIL				20/1/2022 Mod. date 1 No. off - Ref. - Ini-tials	
GENERAL ASSEMBLY							
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.							
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.							



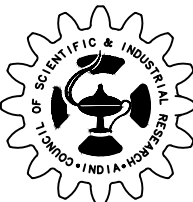
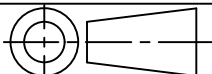
PART No: 09



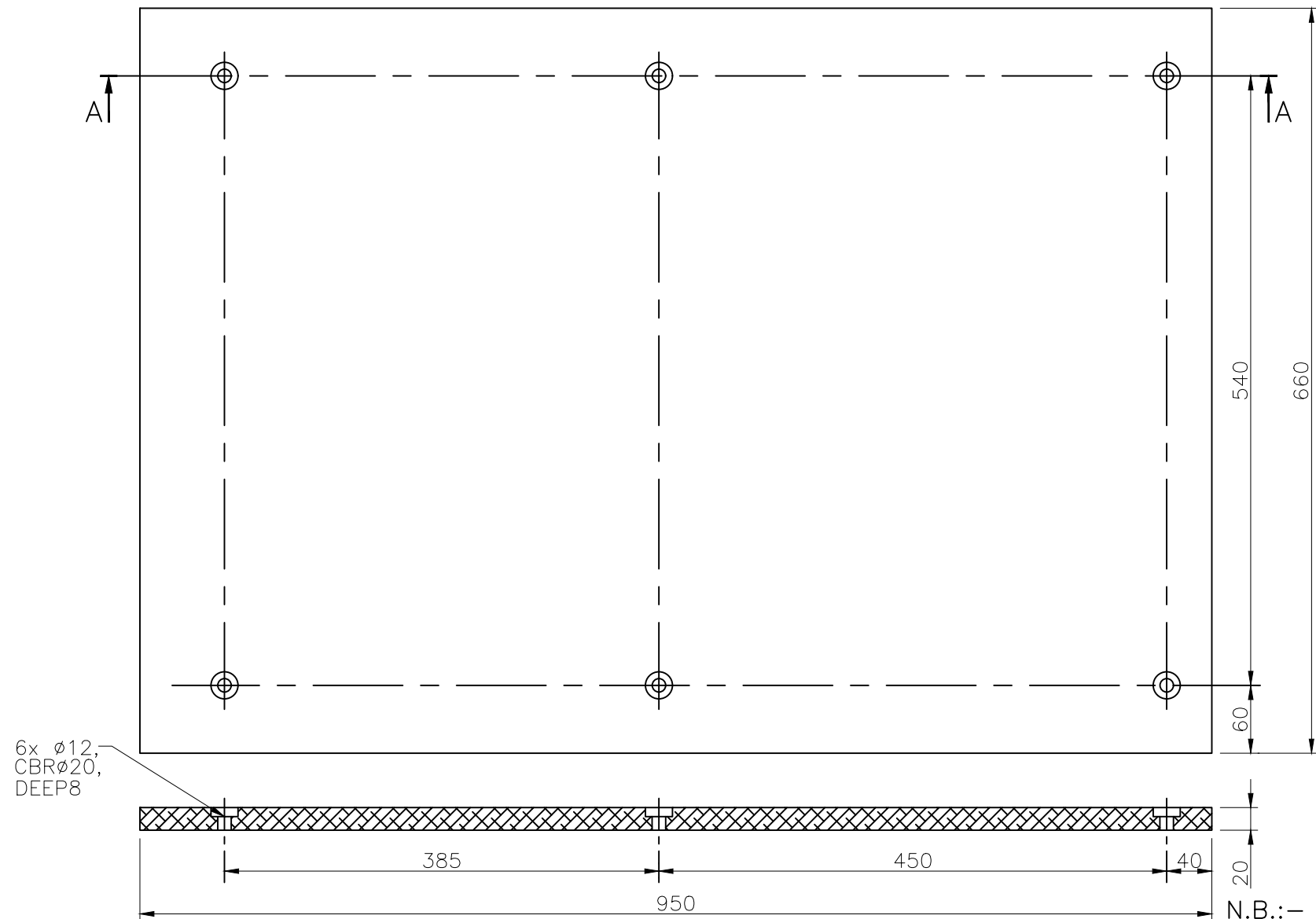
PART No: 10

N.B.:-

ALL SHARP EDGES ARE TO BE REMOVED.

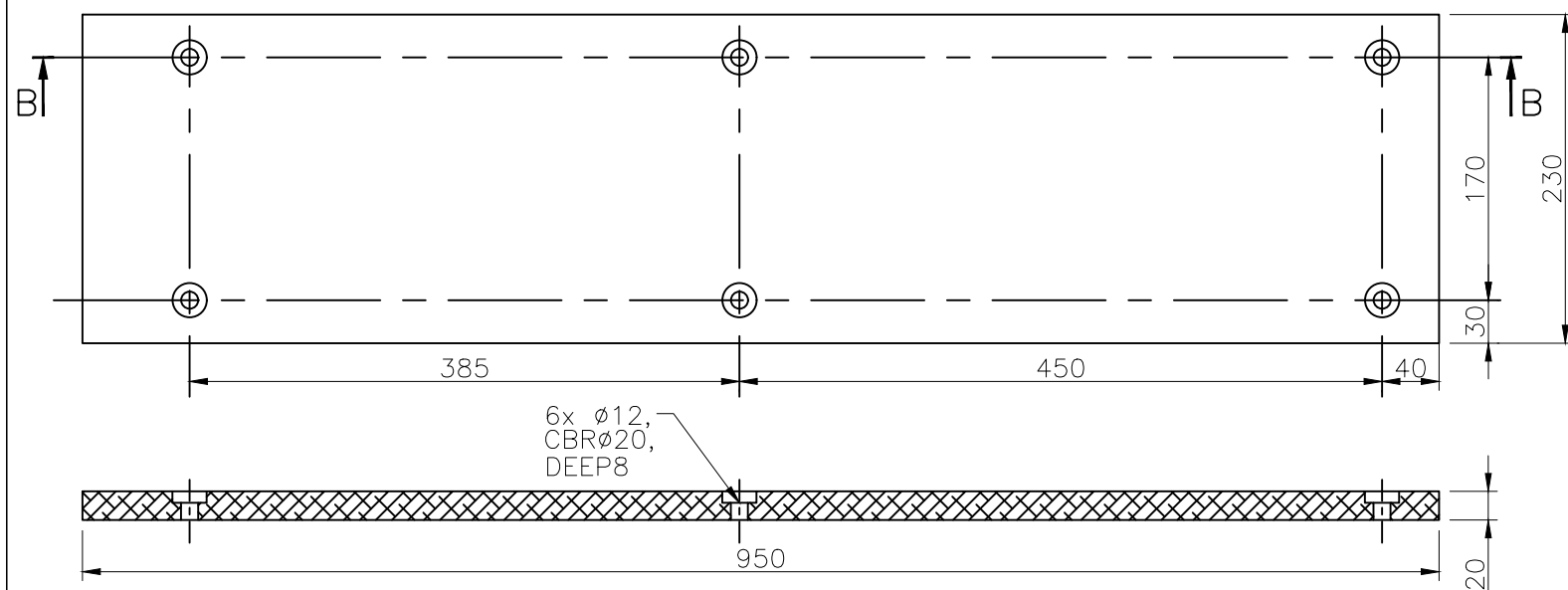
10	WOODEN PLANKING -4	7+7=14	WOOD	690Lx100Wx40Thk	—	
09	WOODEN PLANKING -3	2+2=4	WOOD	690Lx80Wx40Thk	—	
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS	
SCALE: 1:5		SIGNATURE	DATE	 CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR; W.B.		
DO NOT SCALE		DSGN.	A MAITY & A PRASAD			01.06.2020
		LAYOUT	A PRASAD & A BAIJU			20.05.2020
		DRN.	A BAIJU & S MOSAN			10.07.2020
		CHKD.	SK MANDAL & A BAIJU			15.09.2020
		JUTE STRUCTURAL DRG.dwg				
		COMPUTER FILE NAME				
DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE			PROJECT NO.: TSP1217			
DETAIL GENERAL ASSEMBLY			APPROVED			
			JBM20-00.00.00.03			
10/12/20	1	-	-	SHEET 1 OF 1	MOD.NO.: 1	
Mod. date	No. off	Ref.	Ini-tials	DRAWING NO.		
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M. (C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.						

(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.

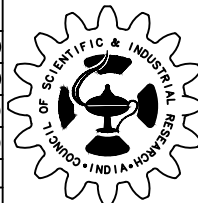
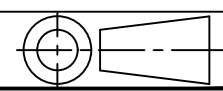


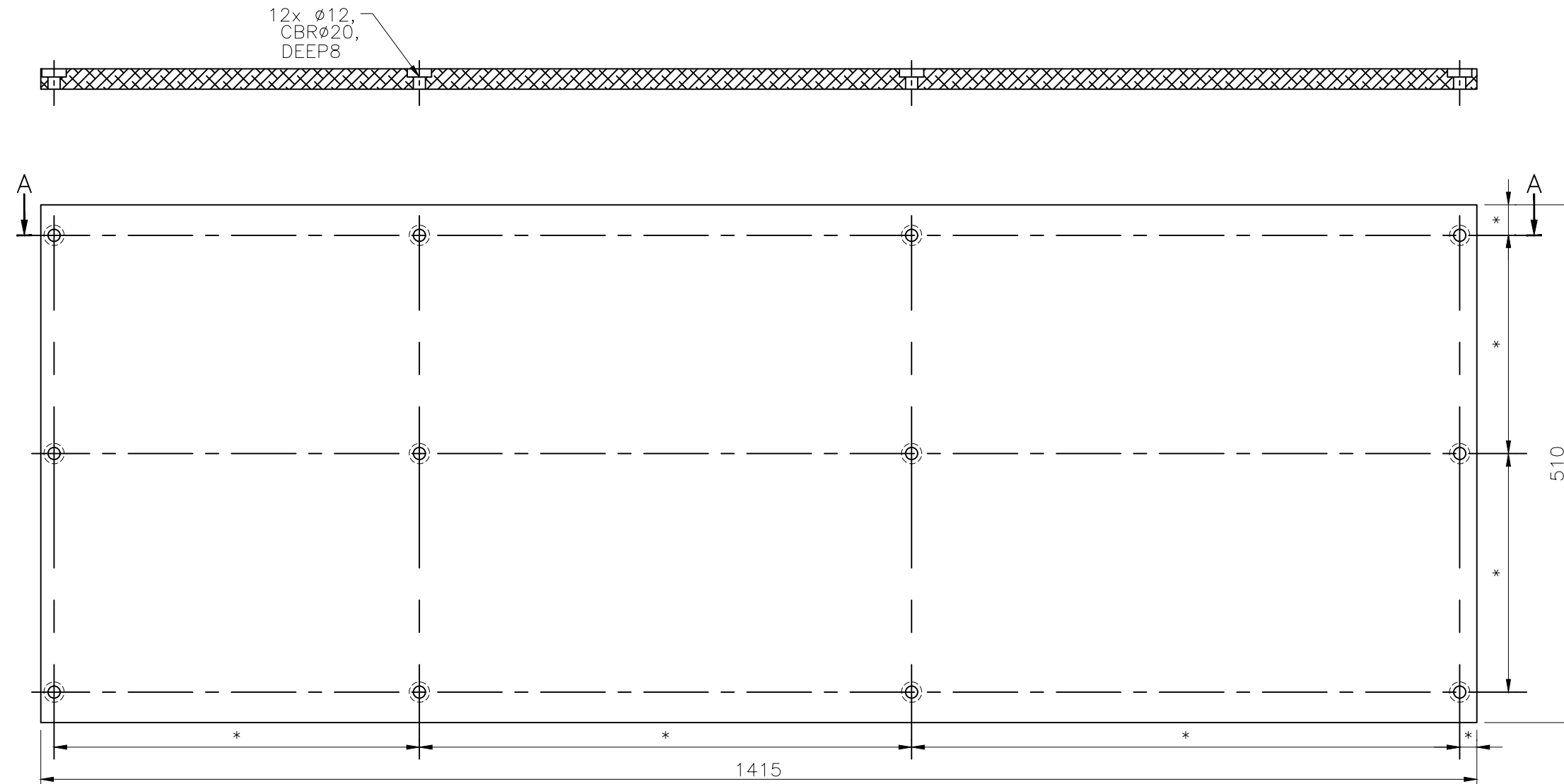
SECTION -AA

- N.B.:-
1. ALL SHARP EDGES ARE TO BE REMOVED.
 2. THE HOLES WITH CBR TO BE MADE IN ALIGNED WITH THE CORRESPONDING HOLES ON THE SUPPORTING STRUCTURES.

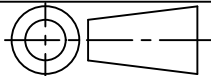


SECTION -BB

12	WOODEN PLANKING –6			01	WOOD	950Lx660Wx20Thk	–
11	WOODEN PLANK –5			02	WOOD	950Lx230Wx20Thk	–
PART NO.	DESCRIPTION			NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:5				SIGNATURE		DATE	
DO NOT SCALE				DSGN. A MAITY & A PRASAD		01.06.2020	
				LAYOUT A PRASAD & A BAIJU		20.05.2020	
				DRN. A BAIJU & S MOSAN		10.07.2020	
				CHKD. SK MANDAL & A BAIJU		15.09.2020	
				JUTE STRUCTURAL DRG.dwg			
				COMPUTER FILE NAME			
				 CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR; W.B.			
				DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINGNG OF BALES RAW JUTE			
				DETAIL GENERAL ASSEMBLY			
				PROJECT NO.: TSP1217			
				APPROVED 			
				JBM20-00.00.00.04			
				SHEET 1 OF 1 MOD.NO.: 0			
				DRAWING NO.			
Mod. date	No. off	Ref.	Ini-tials				
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M. (C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.							

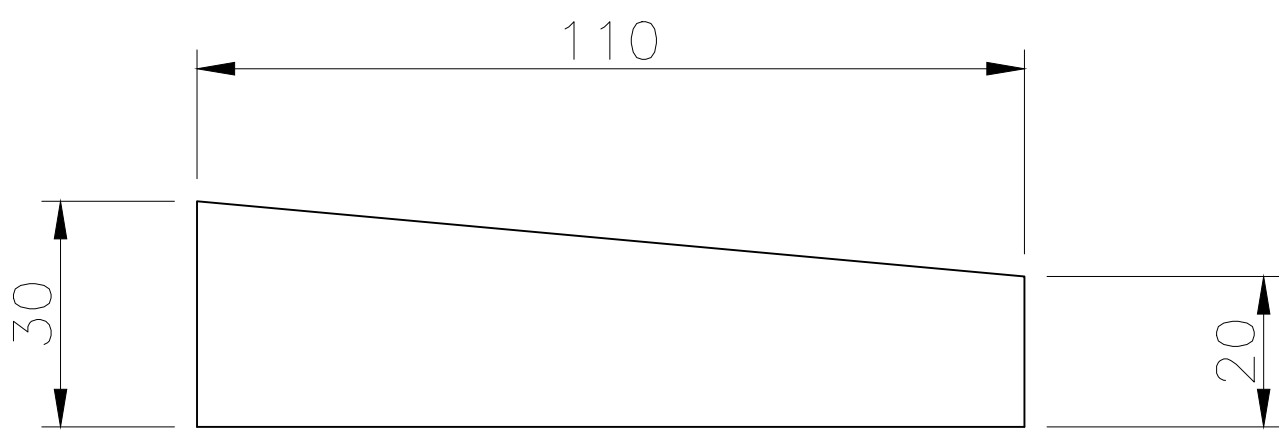
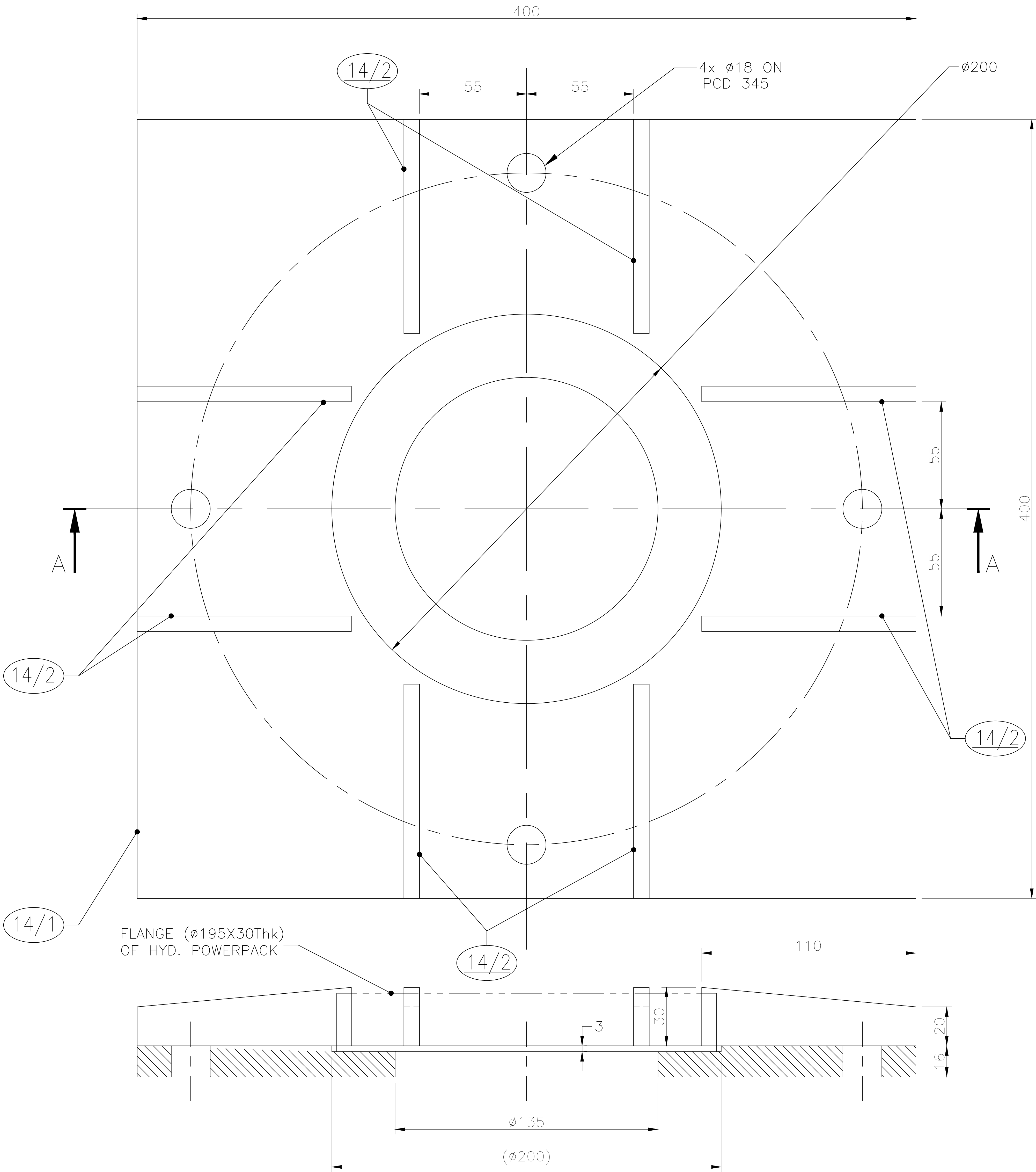


1. ALL SHARP EDGES ARE TO BE REMOVED.
2. THE '*' MARKED DIMENSIONS FOR POSITION OF HOLES WITH CBR TO BE MADE IN ALIGNED WITH THE CORRESPONDING HOLES ON THE SUPPORTING STRUCTURES.

13	WOODEN PLANK -7			1+1	WOOD	1415Lx510Wx20Thk	—
PART NO.	DESCRIPTION			NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:5				SIGNATURE		DATE	
DO NOT SCALE		DSGN.		A MAITY & A PRASAD		01.06.2020	
		LAYOUT		A PRASAD & A BAIJU		20.05.2020	
		DRN.		A BAIJU & S MOSAN		10.07.2020	
		CHKD.		SK MANDAL & A BAIJU		15.09.2020	
		JUTE STRUCTURAL DRG.dwg					
		COMPUTER FILE NAME					
		DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE					
		PROJECT NO.: TSP1217					
		APPROVED					
		JBM20-00.00.00.05					
		SHEET 1 OF 1 MOD.NO.: 0					
		DRAWING NO.					
Mod. date	No. off	Ref.	Ini-tials				

(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.

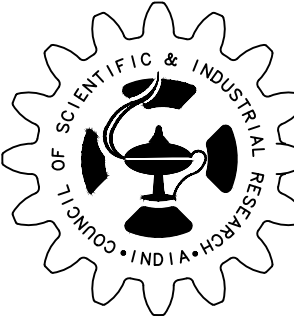
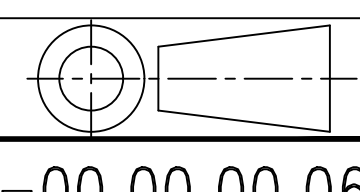
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.



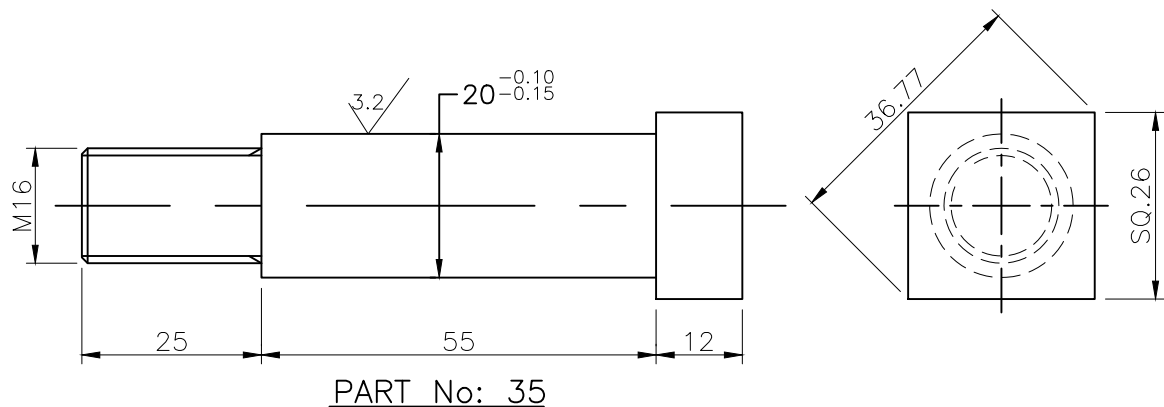
PART No. 14/2
(No. OF 8)

- N.B.:—
1. ALL SHARP EDGES ARE TO BE REMOVED.
 2. THE PARTS ARE TO BE JOINED BY WELDING AS PER DRAWING.
 3. THE FLANGE (SIZE $\phi 195 \times 30$ THK WITH M16 TAPPED HOLES) OF HYD. POWERPACK IS TO BE WELDED CONCENTRIC WITH THE HOLE $\phi 135$ OF THE PART.

14/2	PLATE STIFFNER	08	STEEL Fe410W, IS:2062	110Wx30WX8Thk	—
14/1	SQ. PLATE	01	STEEL Fe410W, IS:2062	400SQ.x16Thk	—

14	CYLINDER BRACKET		01	PL. SEE THE ABOVE		—
PART NO.	DESCRIPTION		NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: NTS			SIGNATURE		DATE	 CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR; W.B.
DO NOT SCALE			DSGN.	A MAITY & A PRASAD	01.06.2020	
			LAYOUT	A PRASAD & A BAIJU	20.05.2020	
			DRN.	A BAIJU & S MOSAN	29.03.2022	
			CHKD.	SK MANDAL & A BAIJU	30.03.2022	
			JUTE STRUCTURAL DRG.dwg			
			COMPUTER FILE NAME			
			DEVELOPMENT OF A MECHANICAL			
			BALE PRESS MACHINE SUITABLE FOR			
			PACKING OF BALES RAW JUTE			
			DETAIL			
			GENERAL ASSEMBLY			
			PROJECT NO.: TSP1217			
			APPROVED 			
			JBM20-00.00.00.06			
			SHEET 1 OF 1 MOD.NO.: 0			
			DRAWING NO.			
Mod. date	No. off	Ref.	Initials			

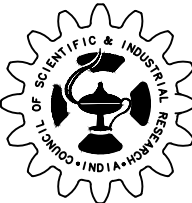
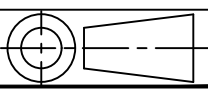
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.



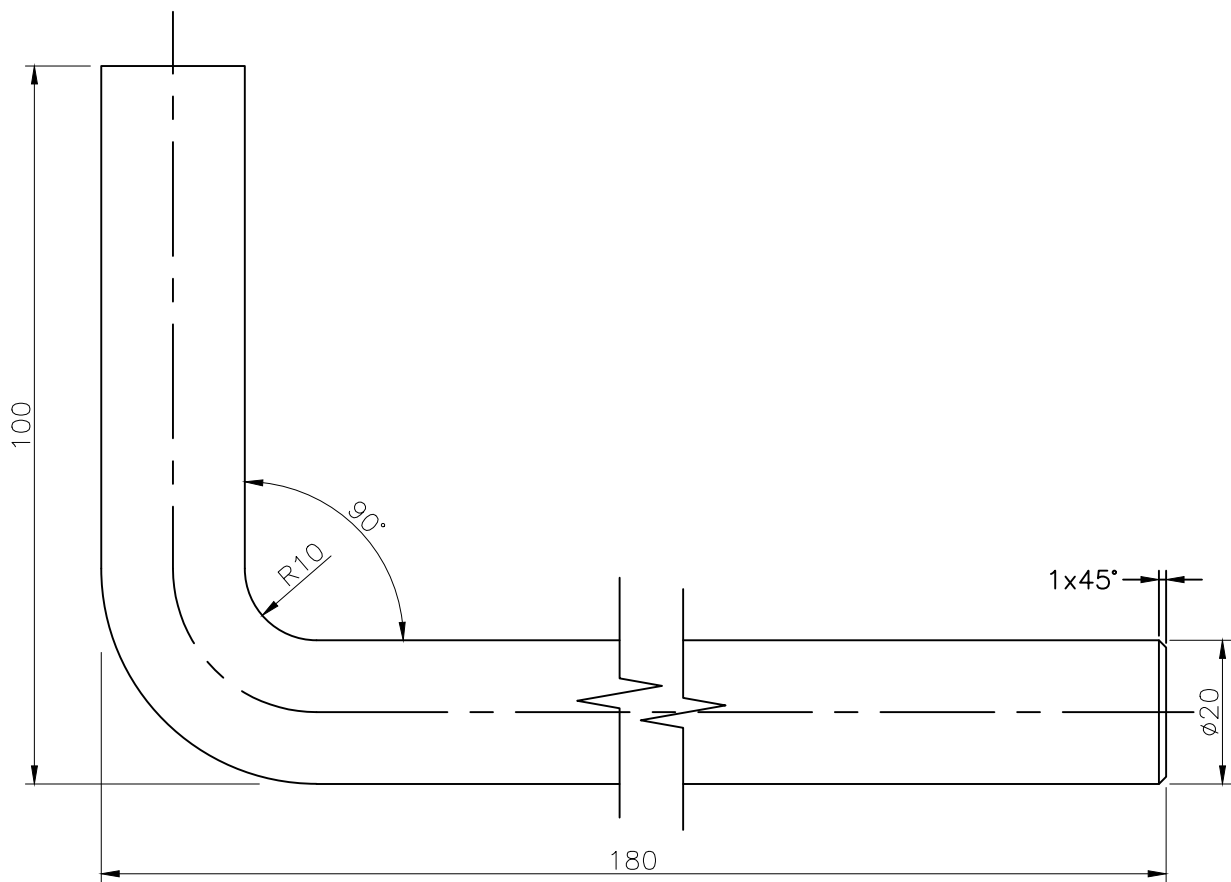
N.B.:-

1. ALL SHARP EDGES ARE TO BE REMOVED.
2. THE MATERIAL IS EQUIVALENT TO EN24.

6.3 / (3.2)

24	DOOR HOLDING BOLT	02	STEEL	40NiCr4Mo3 IS:1570 (Part 4)	-
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:1		SIGNATURE		DATE	
DO NOT SCALE		DSGN.	A MAITY & A PRASAD	01.06.2020	
		LAYOUT	A PRASAD & A BAIJU	20.05.2020	
		DRN.	A BAIJU & S MOSAN	10.07.2020	
		CHKD.	SK MANDAL & A BAIJU	15.09.2020	
		JUTE STRUCTURAL DRG.dwg			
		COMPUTER FILE NAME			
			 CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR; W.B.		
			DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE		
			PROJECT NO.: TSP1217		
			APPROVED 		
			JBM20-00.00.00.07		
			SHEET 1 OF 1 MOD.NO.: 0		
			DRAWING NO.		
Mod. date	No. off	Ref.	Ini-tials		

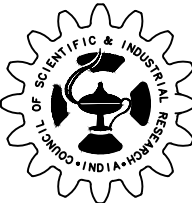
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.



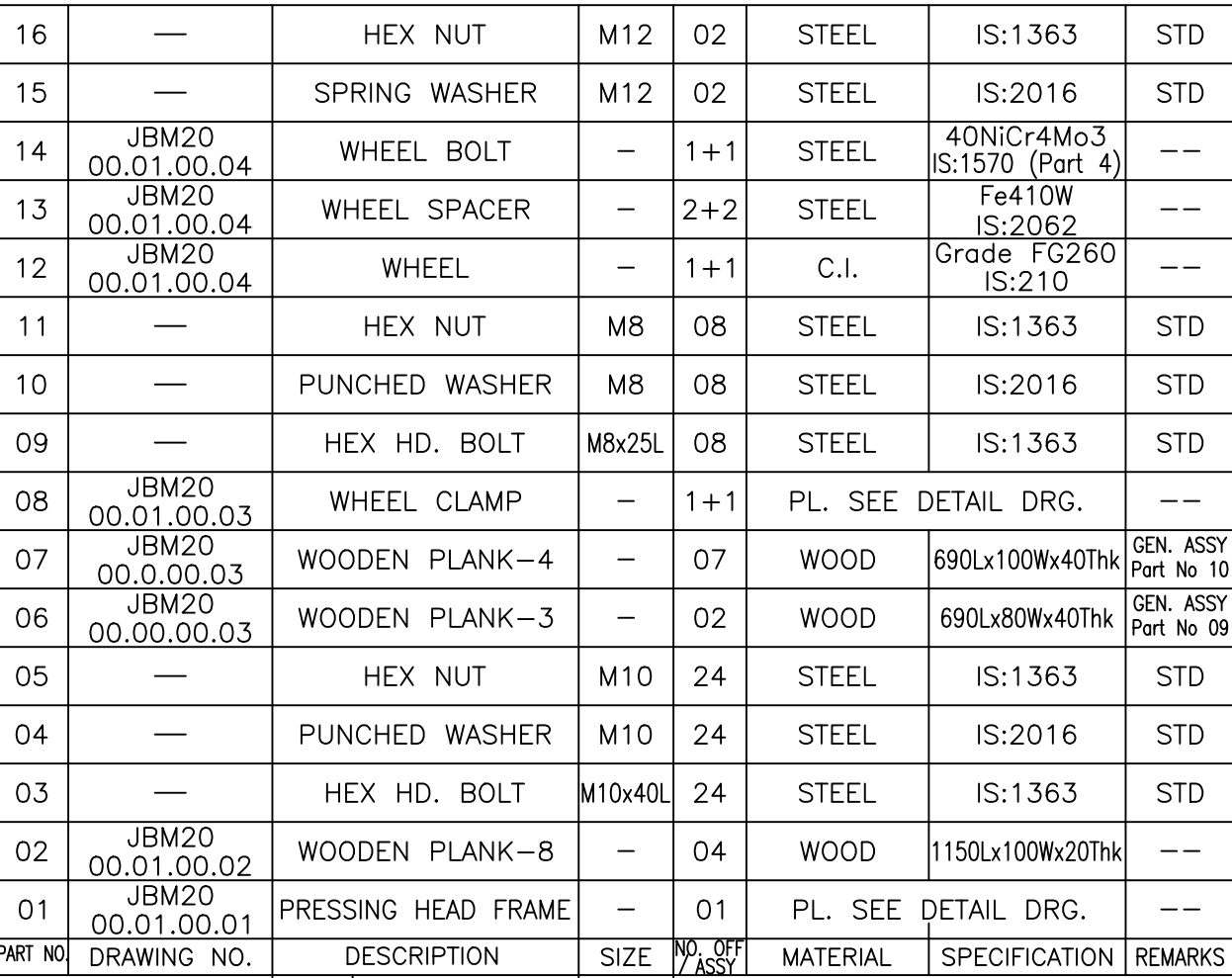
N.B.:-

1. ALL SHARP EDGES ARE TO BE REMOVED.
2. THE MATERIAL IS EQUIVALENT TO EN24.

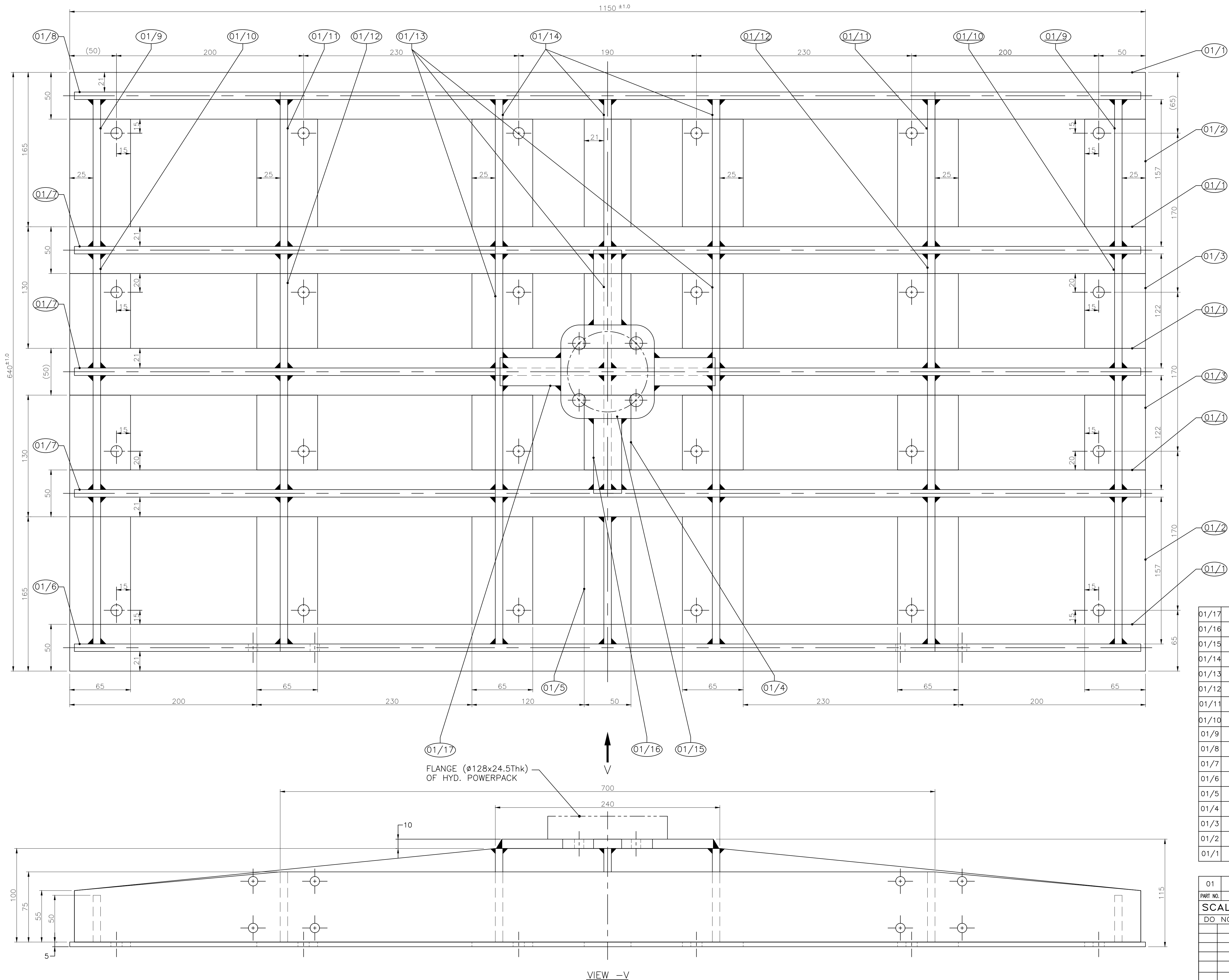
3.2/

27	LOCKING HANDLE	4	STEEL	40NiCr4Mo3 IS:1570 (Part 4)	-
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:1		SIGNATURE		DATE	
DO NOT SCALE		DSGN.	A MAITY & A PRASAD	01.06.2020	
		LAYOUT	A PRASAD & A BAIJU	20.05.2020	
		DRN.	A BAIJU & S MOSAN	10.07.2020	
		CHKD.	SK MANDAL & A BAIJU	15.09.2020	
		JUTE STRUCTURAL DRG.dwg			
		COMPUTER FILE NAME			
		 CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR; W.B.			PROJECT NO.: TSP1217
					APPROVED
		DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE			JBM20-00.00.00.08
					DETAIL GENERAL ASSEMBLY
Mod. date	No. off	Ref.	Ini- tials	SHEET 1 OF 1 MOD.NO.: 0	
				DRAWING NO.	

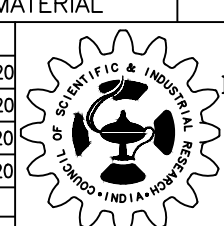
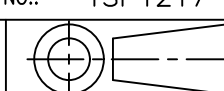
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.



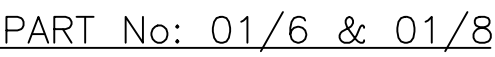
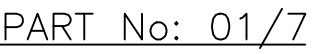
N.B:-
PART Nos. 06 & 07 ARE TO BE JOINTED TO PART No 02 WITH NAILS.



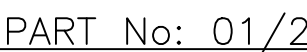
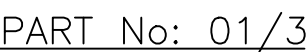
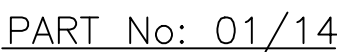
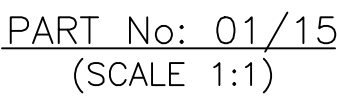
01/17	MS PALTE -17	1+1	STEEL	Fe410W IS:2062	30Wx10Thkx65L
01/16	MS PALTE -16	1+1	STEEL	Fe410W IS:2062	30Wx10Thkx80L
01/15	MS PALTE -15	01	STEEL	Fe410W IS:2062	100Lx100Wx 10Thk
01/14	MS PALTE -14	3+3	STEEL	Fe410W IS:2062	100Wx8Thk x157L
01/13	MS PALTE -13	3+3	STEEL	Fe410W IS:2062	100Wx8Thk x122L
01/12	MS PALTE -12	2+2	STEEL	Fe410W IS:2062	75Wx8Thk x122L
01/11	MS PALTE -11	2+2	STEEL	Fe410W IS:2062	75Wx8Thk x157L
01/10	MS PALTE -10	2+2	STEEL	Fe410W IS:2062	50Wx8Thk x122L
01/9	MS PALTE -9	2+2	STEEL	Fe410W IS:2062	50Wx8Thk x157L
01/8	MS PALTE -8	01	STEEL	Fe410W IS:2062	8Thk PLATE
01/7	MS PALTE -7	03	STEEL	Fe410W IS:2062	8Thk PLATE
01/6	MS PALTE -6	01	STEEL	Fe410W IS:2062	8Thk PLATE WITH 4 HOLES
01/5	MS PALTE -5	1+1	STEEL	Fe410W IS:2062	50Wx5Thk x115L
01/4	MS PALTE -4	1+1	STEEL	Fe410W IS:2062	65Wx5Thk x80L
01/3	MS PALTE -3	6+6	STEEL	Fe410W IS:2062	65Wx5Thk x80L
01/2	MS PALTE -2	6+6	STEEL	Fe410W IS:2062	65Wx5Thk x115L
01/1	MS PALTE -1	05	STEEL	Fe410W IS:2062	50Wx5Thk x150L

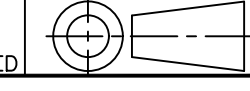
01	PRESSING HEAD FRAME			01	AS SHOWN ABOVE		-	
PART NO.	DESCRIPTION			NO. OF ASSY	MATERIAL	SPECIFICATION	REMARKS	
SCALE: 1:2								
DO NOT SCALE								
			SIGNATURE	DATE		CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR, W.B.		
			DSGN: A MATHY & A PRASAD	01.06.2020				
			LAYOUT: A PRASAD & A BALUJ	20.05.2020				
			DRN: A BALUJ & S MOSAN	10.07.2020				
			CHKD: SK MANDAL & A BALUJ	15.09.2020				
			JUTE STRUCTURAL DRG.dwg					
			COMPUTER FILE NAME					
			DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKING OF BALES RAW JUTE				PROJECT NO.: TSP1217	
			DETAIL PRESSING HEAD ASSEMBLY				APPROVED	
							JBM20-00.01.00.01	
						SHEET 1 OF 2 MOD.NO.: 0 DRAWING NO.		
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M. (C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.								

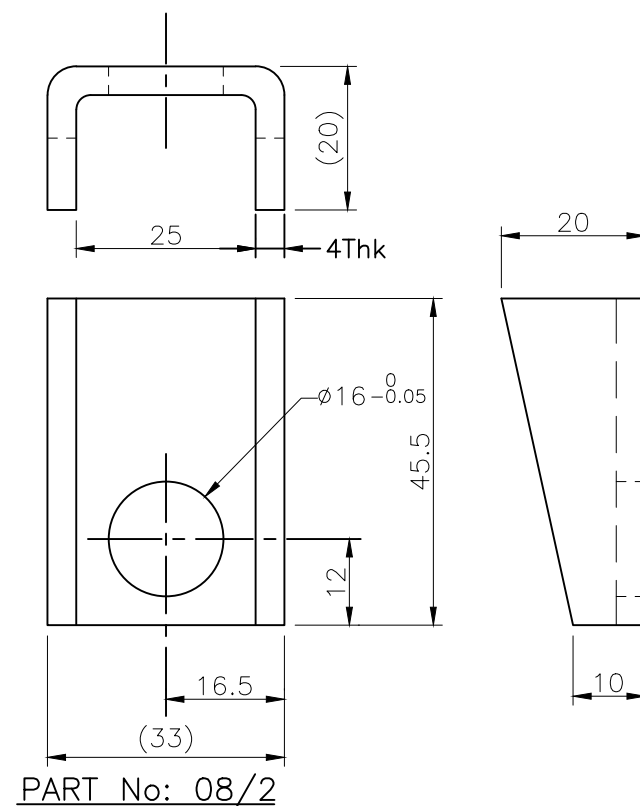
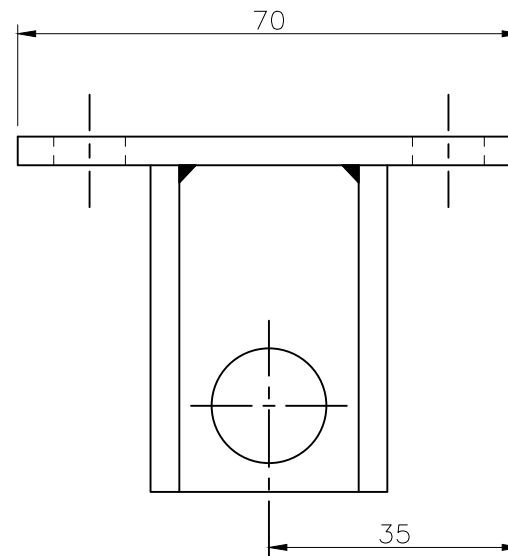
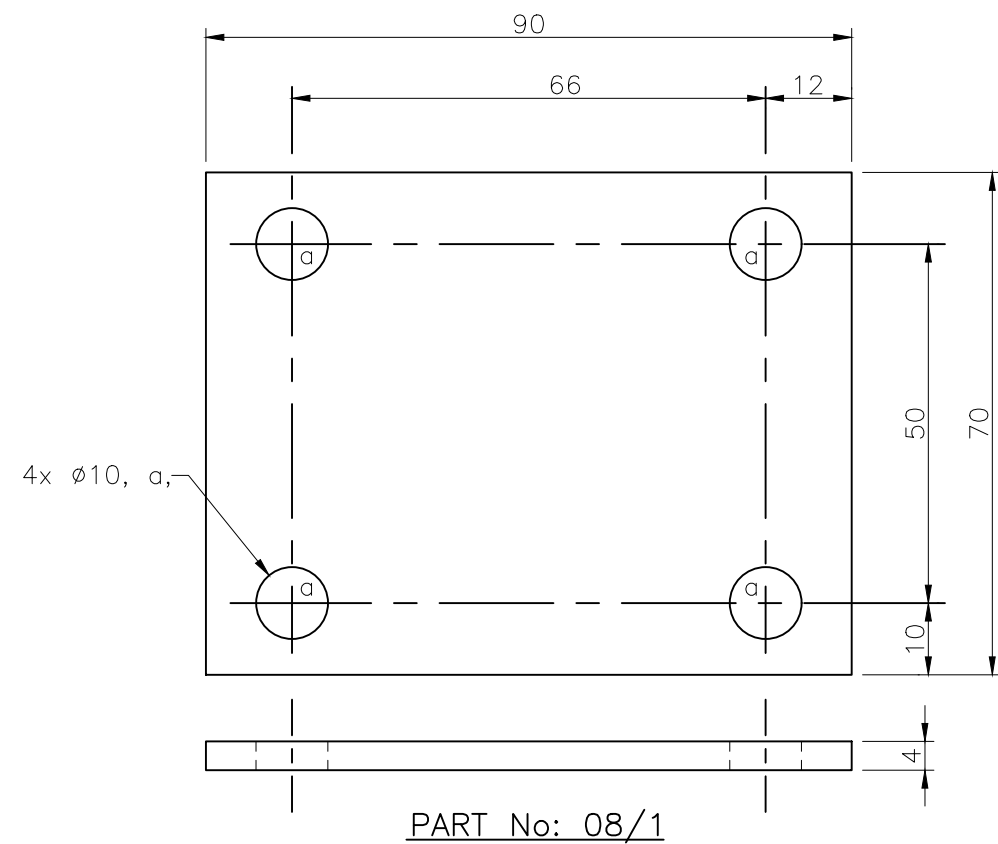
N.B.:-
1. ALL SHARP EDGES ARE TO BE REMOVED.
2. THE FLANGE (SIZE ø128x24.5THK WITH M10 TAPPED HOLES) OF HYD. POWERPACK IS TO BE WELDED AT THE MIDPOINT OF THE PRESSING HEAD FRAME STRUCTURE AS SHOWN



THE 8 Nos. HOLES 'a' IS TO BE
DRILLED ONLY ON PART No: 01/6.
(i.e. PART No: 01/8 HAS NO HOLES)



01/15	MS PALTE –15	01	STEEL	Fe410W IS:2062	98L989W10TH
01/14	MS PALTE – 14	3+3	STEEL	Fe410W IS:2062	8TH PLATE
01/8	MS PALTE – 8	01	STEEL	Fe410W IS:2062	8TH PLATE (WITHOUT HOLES)
01/7	MS PALTE – 7	03	STEEL	Fe410W IS:2062	8TH PLATE
01/6	MS PALTE – 6	01	STEEL	Fe410W IS:2062	8TH PLATE (WITH 8Holes HOLES)
01/3	MS PALTE – 3	6+6	STEEL	Fe410W IS:2062	65W57thk x8L
01/2	MS PALTE – 2	6+6	STEEL	Fe410W IS:2062	65W57thk x15L
PART NO.	DESCRIPTION	UNIT / PART	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:2		SIGNATURE		DATE	
DO NOT SCALE		DSGN. A MAITY & A PRASAD		01.06.2020	
		LAYOUT A PRASAD & A BAJJU		20.05.2020	
		CHKD. A BAJJU & S MOSAN		10.07.2020	
		CHKD. SK MANDAL & A BAJJU		15.09.2020	
		JUTE STRUCTURAL Dwg.dwg			
COMPUTER FILE NAME					
					
DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKING OF BALES RAW JUTE				PROJECT NO.	TSP1217
DETAIL PRESSING HEAD ASSEMBLY					
				APPROVED	
				JBW20-00.01.00.01	
				SHEET 2 OF 2 MOD.NO.: 0	
				DRAWING NO.	
(A) DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.					
(C) WORK TO MEDIUM TOL. OF IS:1202 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.					

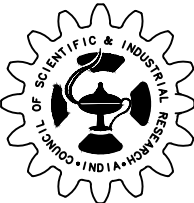
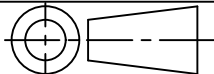


N.B.:-

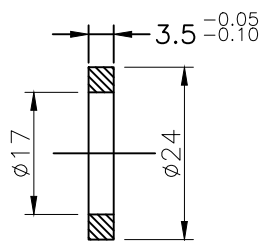
1. ALL SHARP EDGES ARE TO BE REMOVED.

3.2/

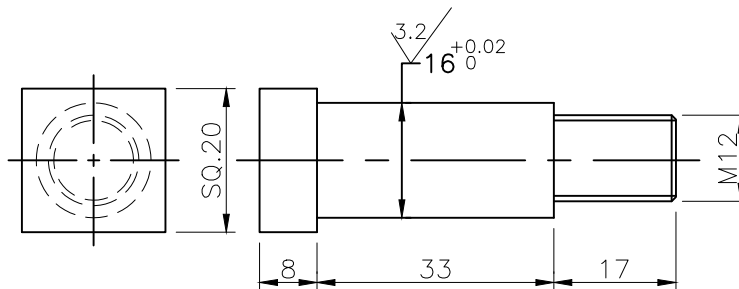
08/2	WHEEL HOLDER PLATE	2+2	STEEL	Fe410W IS:2062	—
08/1	WHEEL CLAMP PLATE	1+1	STEEL	Fe410W IS:2062	—

08	WHEEL CLAMP		1+1	PL. SEE THE ABOVE		—		
PART NO.	DESCRIPTION		NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS		
SCALE: 1:1			SIGNATURE		DATE	 CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR; W.B.		
			DSGN. A MAITY & A PRASAD		01.06.2020			
DO NOT SCALE			LAYOUT A PRASAD & A BAIJU		20.05.2020			
			DRN. A BAIJU & S MOSAN		10.07.2020			
			CHKD. SK MANDAL & A BAIJU		15.09.2020			
			JUTE STRUCTURAL DRG.dwg					
			COMPUTER FILE NAME					
			DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE				PROJECT NO.: TSP1217	
								APPROVED 
			DETAIL PRESSING HEAD ASSEMBLY			JBM20-00.01.00.03		
							SHEET 1 OF 1	MOD.NO.:
							DRAWING NO.	
Mod. date	No. off	Ref.	Ini-tials					

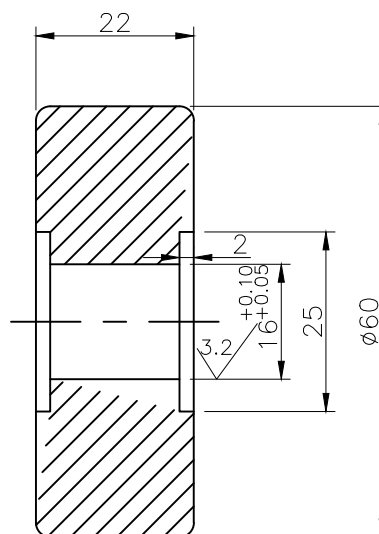
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.



PART No: 13



PART No: 14

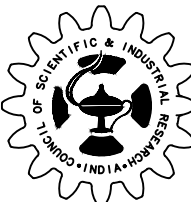
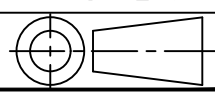


PART No: 12

N.B.:—

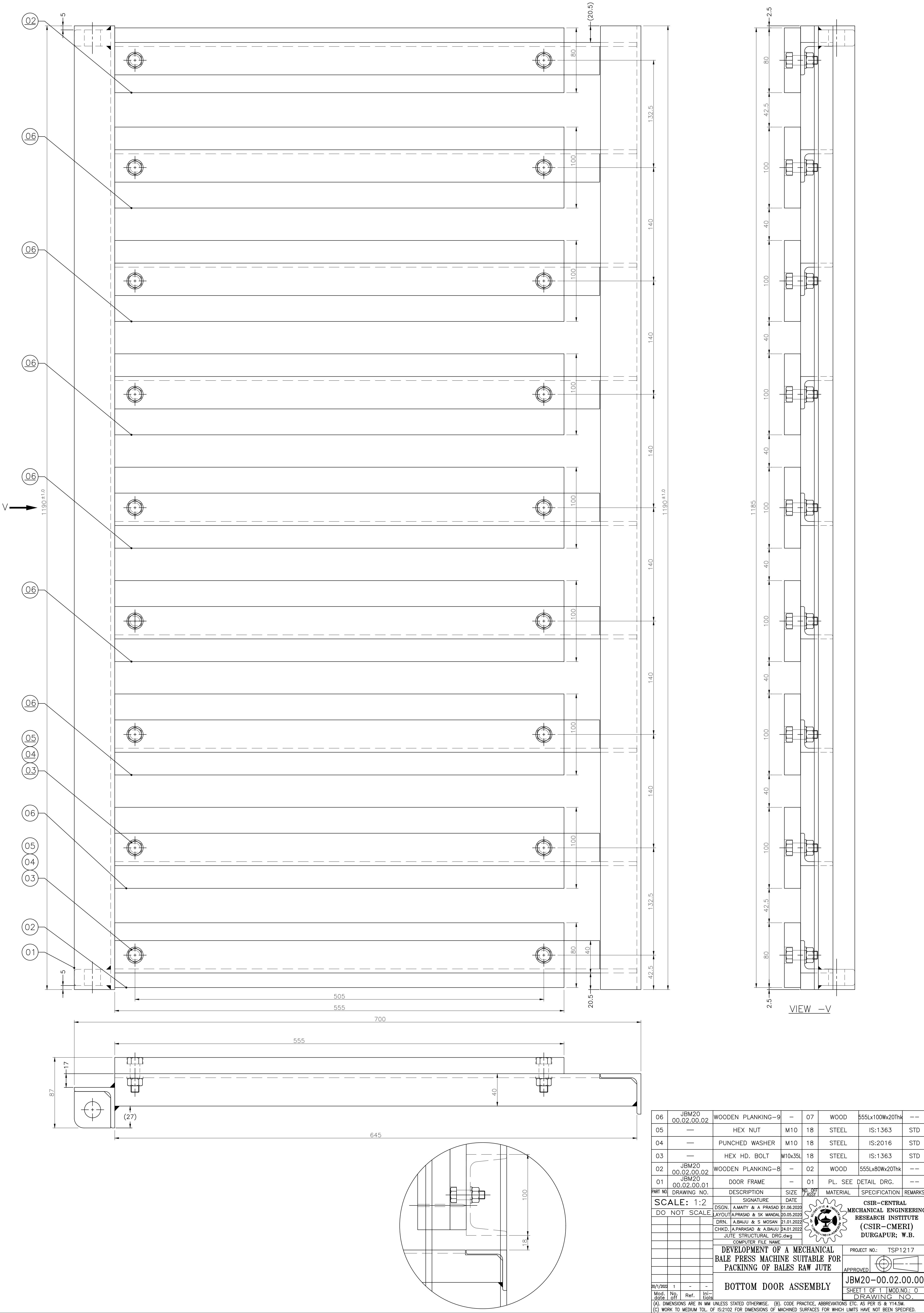
1. ALL SHARP EDGES TO BE REMOVED.
2. THE MATERIAL IS EQUIVALENT TO EN24.

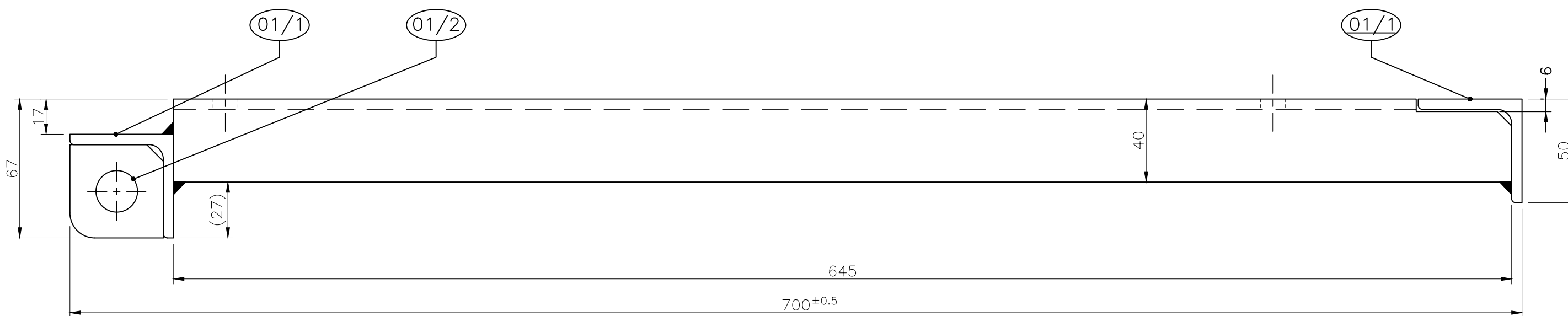
6.3/(3.2/)

14	WHEEL BOLT	1+1	STEEL	40NiCr4Mo3 IS:1570 (Part 4)	—
13	WHEEL SPACER	2+2	STEEL	Fe410W IS:2062	—
12	WHEEL	1+1	STEEL	Grade FG260 IS:210	—
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:1		SIGNATURE		DATE	 CSIR—CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR—CMERI) DURGAPUR; W.B.
DO NOT SCALE		DSGN.	A MAITY & A PRASAD	01.06.2020	
		LAYOUT	A PRASAD & A BAIJU	20.05.2020	
		DRN.	A BAIJU & S MOSAN	10.07.2020	
		CHKD.	SK MANDAL & A BAIJU	15.09.2020	
		JUTE STRUCTURAL DRG.dwg			
		COMPUTER FILE NAME			PROJECT NO.: TSP1217  APPROVED JBM20—00.01.00.04 SHEET 1 OF 1 MOD.NO.: 0 DRAWING NO.
		DEVELOPMENT OF A MECHANICAL			
		BALE PRESS MACHINE SUITABLE FOR			
		PACKINNG OF BALES RAW JUTE			
		DETAIL			
		PRESSING HEAD ASSEMBLY			
Mod. date	No. off	Ref.	Ini-tials		

(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.

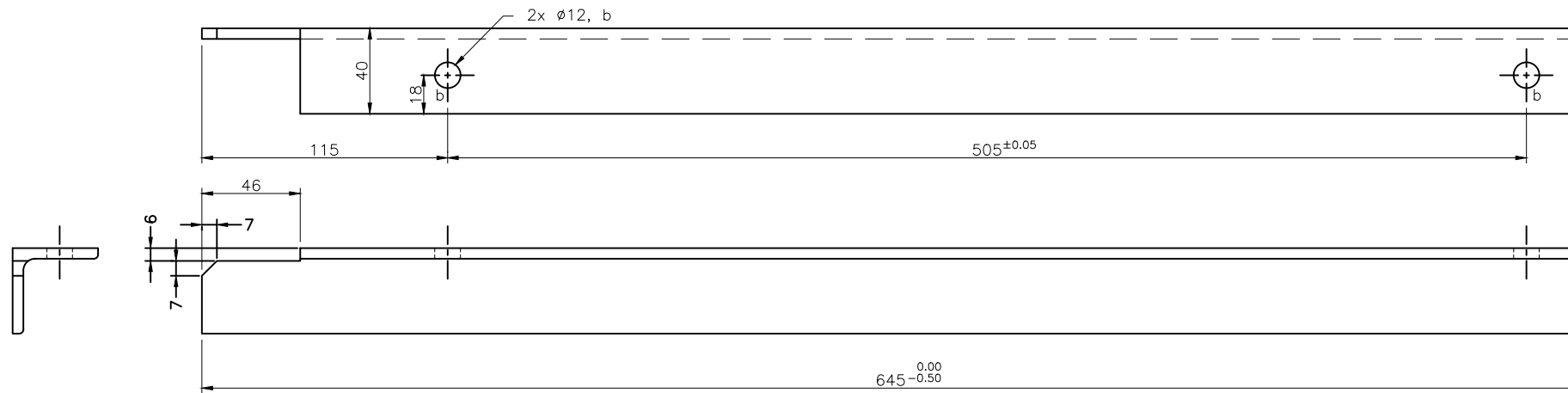
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.



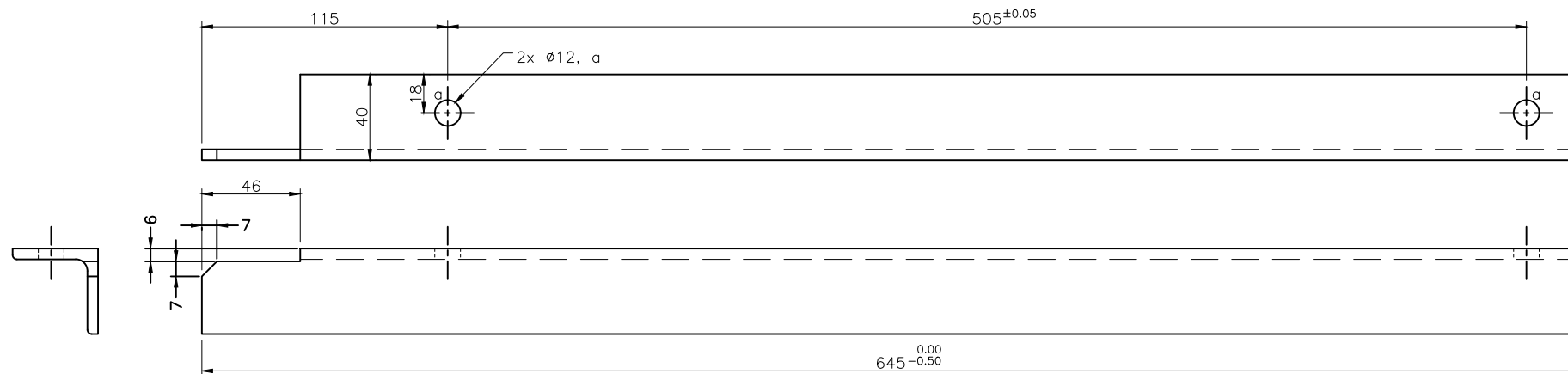


✓6.3 (✓3.2)

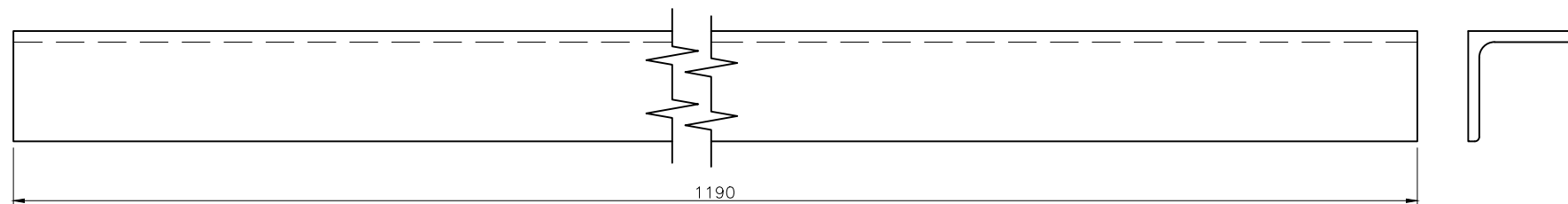
01	BOTTOM DOOR FRAME	01	AS SHOWN ABOVE		—	
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS	
SCALE: 1:2				CSIR-CENTRAL MECHANICAL ENGINEERING RESEARCH INSTITUTE (CSIR-CMERI) DURGAPUR, W.B.		
DO NOT SCALE	SIGNATURE _____ DATE _____ DSGN. A MAITY & A PRASAD 01.06.2020 LAYOUT A PRASAD & A BAJJU 20.05.2020 DRN. A BAJJU & S MOSANI 21.01.2022 CHKD. SK WANDAL & A BAJJU 24.01.2022 JUTE STRUCTURAL DRG.dwg COMPUTER FILE NAME _____					
DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKING OF BALES RAW JUTE				PROJECT NO.: TSP1217		
DETAIL BOTTOM DOOR ASSEMBLY						
20/1/2022	1			—	—	APPROVED
Mod./date	No. off	Ref.	Inp- tels	SHEET 1 OF 2	MOD.NO.: 0 DRAWING NO.	
(A) DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M. (C) WORK TO MEDIUM TOL. OF ± 0.12 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.						



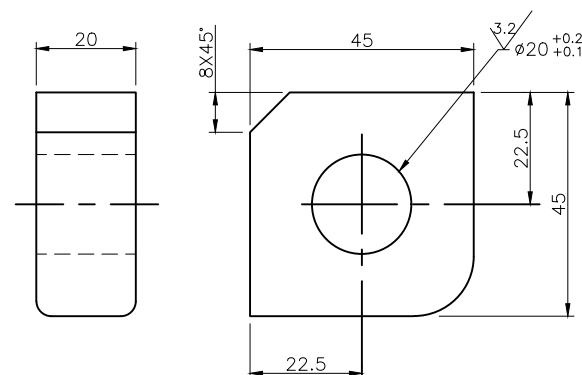
PART No: 01/4
(NO. OFF -4)



PART No: 01/3
(NO. OFF -5)



PART No: 01/1



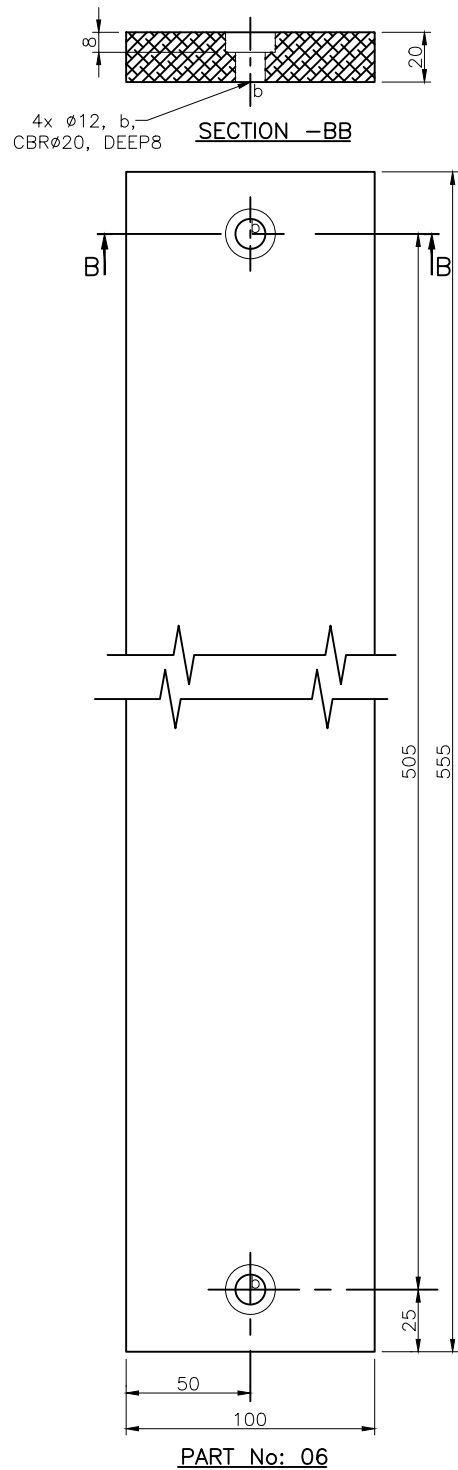
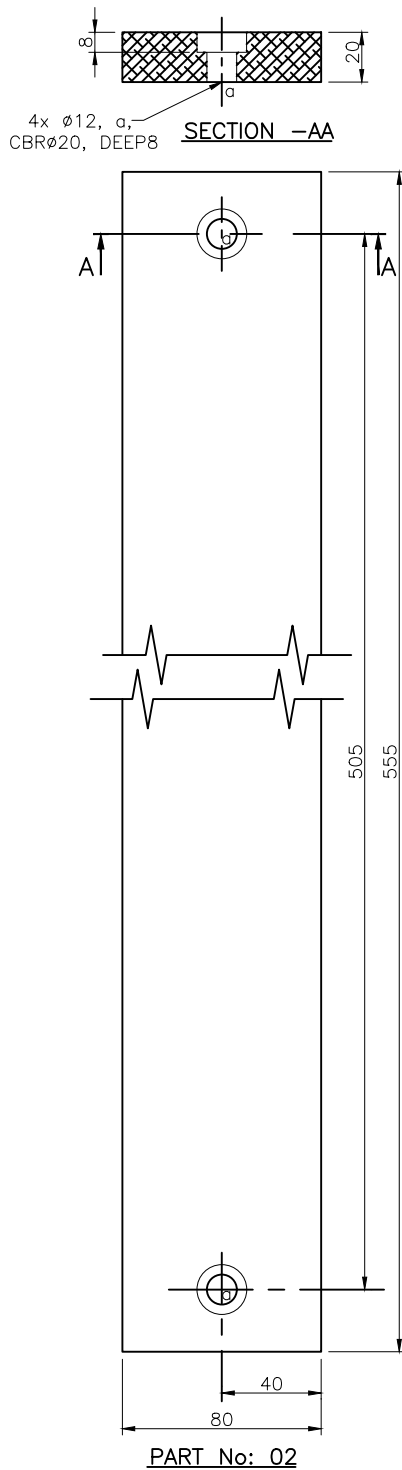
PART No: 01/2
(SCALE -1:1)
(NO. OFF -2)

N.B.:-

- ALL SHARP EDGES ARE TO BE REMOVED.
- 2 Nos SQ. HOLES TO BE MADE ON ONE No. OF PART No: 01/1
- THE '*' MARKED DIMENSIONS 22x11 SQ. HOLES IS TENTATIVELY GIVEN AND THOSE ARE RELATED TO STD. SPRING LOCK AVAILABLE IN MARKET.

6.3/(3.2)

01/4	ANGLE -8	04	STEEL	ISA40x40x5Thk 645L, IS:808	-
01/3	ANGLE -7	05	STEEL	ISA40x40x5Thk 645L, IS:808	-
01/2	BOTTOM DOOR HOLDING LUG -2	02	STEEL	Fe410W IS:2062	-
01/1	ANGLE -6	1+1	STEEL	ISA50x50x5Thk 1190L, IS:808	-
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:2					
DO NOT SCALE					
			SIGNATURE	DATE	
			DSGN. A MAITY & A PRASAD	01.06.2020	
			LAYOUT A PRASAD & A BALU	20.05.2020	
			DRN. A BALU & S MOSAN	21.01.2022	
			CHKD. SK MANDAL & A BALU	24.01.2022	
			JUTE STRUCTURAL DRG.dwg		
			COMPUTER FILE NAME		
DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKING OF BALES RAW JUTE				PROJECT NO.: TSP1217	
DETAIL BOTTOM DOOR ASSEMBLY				APPROVED	
				JBM20-00.02.00.01	
				SHEET 2 OF 2	MOD.NO.: 0
				DRAWING NO.	
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M. (C). WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.					



N.B.:-

1. ALL SHARP EDGES ARE TO BE REMOVED.
2. THE HOLES 'a' & 'b' WITH CBR TO BE MADE IN ALIGNED WITH THE CORRESPONDING HOLES ON THE SUPPORTING STRUCTURES (BOTTOM DOOR FRAME).

06	WOODEN PLANKING -9	07	WOOD	555Lx100Wx20Thk	-
02	WOODEN PLANKING -8	02	WOOD	555Lx80Wx20Thk	-
PART NO.	DESCRIPTION	NO. OFF / ASSY	MATERIAL	SPECIFICATION	REMARKS
SCALE: 1:2		SIGNATURE		DATE	
DO NOT SCALE		DSGN. A MAITY & A PRASAD		01.06.2020	
		LAYOUT A PRASAD & SK MANDAL		20.05.2020	
		DRN. A BAIJU & S MOSAN		21.01.2022	
		CHKD. SK MANDAL & A BAIJU		24.01.2022	
		JUTE STRUCTURAL DRG.dwg			
		COMPUTER FILE NAME			
		DEVELOPMENT OF A MECHANICAL BALE PRESS MACHINE SUITABLE FOR PACKINNG OF BALES RAW JUTE		PROJECT NO.: TSP1217	
		DETAIL		APPROVED 	
		BOTTOM DOOR ASSEMBLY		JBM20-00.02.00.02	
				SHEET 1 OF 1 MOD.NO.: 0	
				DRAWING NO.	
06/1/2022	1	-	-		
Mod. date	No. off	Ref.	Ini-tials		
(A). DIMENSIONS ARE IN MM UNLESS STATED OTHERWISE. (B). CODE PRACTICE, ABBREVIATIONS ETC. AS PER IS & Y14.5M.					
(C) WORK TO MEDIUM TOL. OF IS:2102 FOR DIMENSIONS OF MACHINED SURFACES FOR WHICH LIMITS HAVE NOT BEEN SPECIFIED.					

Name of the Laboratory : CSIR-Central Mechanical engineering Research Institute, Durgapur	
PROJECT COMPLETION/KIA/CLOSED REPORT	
Project Title: Development of a Modified Version of Press Machine suitable for Bailing raw Jute	Project No.: TSP 1217
	Date of Project Initiation: 16.01.2020
Project Team Members: Project Leader: From CSIR-CMERI, Durgapur 1. Mr. Ashok Kumar Prasad, Senior Principal Scientist Project Leader: From Jute Corporation of India, Kolkata. 1. Mr. Anindya Majumdar, Chief Manager (Operations & Marketing) Co – Project Leader : • Dr. Atanu Maity, Chief. Sct • Dr. S.K Mandal, Senior Principal Scientist • Arun Baiju V.G, Sr.Tech.officer (1) R&D Members : From CSIR-CMERI • S. Mosan, Technician (2) • M.K Biswal, Sr.Tech.officer (2) • R.K. Halder, Technician (2) • T. Mondal, Technician (2) R&D Members: Jute Corporation of India, Kolkata. 1. Mr. Koushik Das, Dy. Marketing Manager	Date of Completion: 30.04.2022 (after extension)
	Class : Public document (Free/Priced) Restricted circulation √ Only to client Secret
Customer/Client's name and address for externally funded projects/Name of Agency in case of GIA projects:	Classification : In-house Grant-in-Aid Sponsored √ Consultancy Collaborative
	Date of Report: 29.05.2024
Area: Product Development Sub Area: For Societal use	Specify Type: Product Development On-going Area: Jute Bale Pressing Machine New area initiated: Yes
Key words : socio economic, biodegradable, greenhouse, environment, sustainable	

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Abstract :

The raw jute plays an important role in the socio-economic and ecological settings in India. Due to biodegradable nature the natural fiber has a contribution to the environment and it is also the friend of soil and water. It has having a unique characteristic of absorbing atmospheric CO₂ that is one major greenhouse gas and exhale O₂ more than needed for air purification. The jute fiber helps to reduce deforestation because the products made from jute can substitute the use of wood. The paper pulp is also being manufactured by jute and it contributes in restoring forest. The jute is considered as sustainable as it creates to the environment and recycling in nature. However, beside environmental benefits, jute is contributing towards the economy of India since a long time.

Since long time, the Jute Corporation of India (JCI) had been involved in processing and making of bales from the raw jute for ease of transportation so that maximum amount of jute fiber can be transported to many parts of the country and also to abroad. The processing of raw jute to the bale is a long method and to perform this operation good quality machine is required. At present the available machines at different DPC offices of JCI in west Bengal are very old, primitive and required more time and labour for the making of bales from raw jute. Four to five numbers of steps with huge efforts are involved in making a complete bale. Hence to overcome these problems, a combined (mechanical cum hydraulic) operated Bale Press Machine has been developed at CMERI which is suitable for making of bales from raw jute. The developed machine has been tested successfully, and it is being installed and commissioned at DPC Katwa (JCI).

Report Issuance Authority : Name : Ashok Kumar Prasad

Signature :

Ak Prasad
05/06/2024

Forwarded by Group Head: Dr. D. N. Ray, Sr. Pr. Scientist and Head ISEG

PROJECT COMPLETION/KIA/CLOSED REPORT

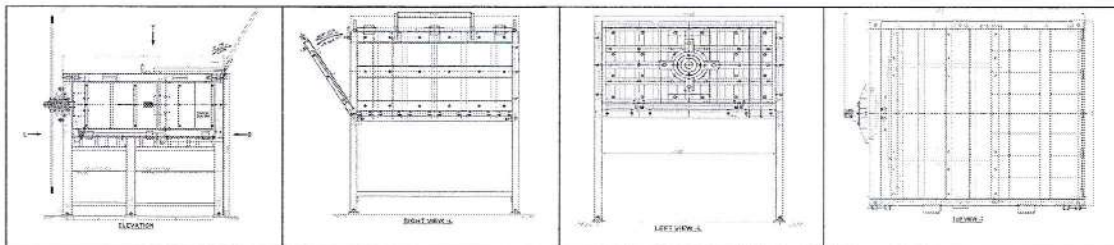
- i. Project Title: Development of a Modified Version of Press Machine suitable for Bailing raw Jute
- ii. Assisting units/divisions/individuals/external sources : Advanced Manufacturing Center
CSIR-CMERI
- iii. Introduction :

Jute is an important natural fiber crop in India next to cotton. In trade and industry, jute crops known as raw jute as their uses are almost same and play an important role in the country's economy. The raw jute was originally considered as a source of raw material for packaging industries only. But it has now emerged as a versatile raw material for diverse field of applications, such as, textile industries, paper industries, building and automotive industries, use as soil saver, use as decorative and furnishing materials, etc. The raw jute is bio-degradable in nature and a renewable source, it is considered as an environment friendly crops and it helps in maintaining the environment and also ecological balance. Now-a-days, the people of the world are very much worried about the growing environmental pollution and ecological degradation and they are trying hard to find out a real solution to mitigate this problem. In the process, they find out the virtue of the use of natural fiber like raw jute and as such there is a prospect of the crop in future. Jute as a natural fiber has some definite inherent advantages. Its silky luster, high tensile strength, low exhaustibility, considerable heat resistance and long staple length are the qualities that cannot be matched by synthetic fiber. Further attraction of Jute lies in its easy availability, inexhaustible quantity at a comparatively cheaper rate than other materials; it can easily be blended with other natural and manmade fibers.

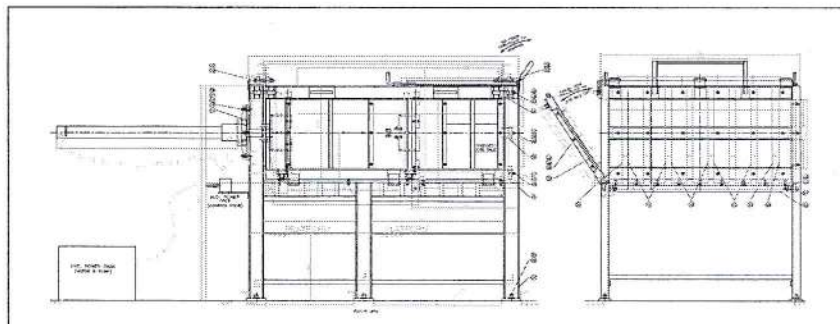
- iv. Conceived/Initial/Proposed objectives of the Project :
 - Development of Combined Bale Pressing Machine.
 - Compact size
 - Single stage operation.
 - Transportable in nature.
- v. The objectives achieved
Developed a Combined Mechanical cum Hydraulic Jute Bale pressing machine for packing of raw jute.
- i. Details of the work done
 - Basic idea involved, its novelty/uniqueness/outstanding features
 - Incorporation of Hydraulic unit for fast pressing and to obtained accurate bale size within short time.
 - Reducing the Machine size to compact.
 - The machine can be transported as per the requirement.
 - Details of materials (traceability / accuracy):
 - The raw materials utilized mostly conform to ISO standard.
 - Equipment utilized:
 - For the development of the Hydraulic bale press machine the available existing machining facilities of CSIR- CMERI, was utilized including the CNC machines for better accuracy and finish & also to reduce the machining time.

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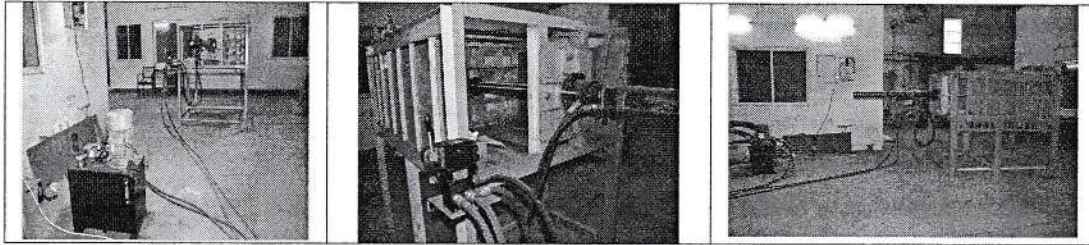
- Process/technology development details (variability in condition, range/limits) :
 - The project leads to the development of a new process and technology for making the bale by using the raw jute.
- Design and engineering details (including industrial specs of Raw Material and Equipment) :
 - ✓ Design and engineering details were considered to obtain better design and accurate finished product. The raw materials utilized are all of ISO Standard.
For detail, please refer to Annexure-I.
- Instruments for operating/ realising the technology/process
 - One manuals will be prepared for safe operation of the machine.
- Safeguards and precautions
 - ❖ Indication has already been marked on the machine for the safeguard and precaution while running the machine to prevent any accident to occur.
- Trouble shooting and unusual conditions resolution
 - It will be clearly mentioned in the manual for any type of trouble shooting and unusual conditions.
- Environmental considerations:
 - The environmental condition does not have any effect on the machine.
- Any special requirements (RMS, Equipment, Manpower)



CAD Drawing of Mechanical Type Bale Press



CAD Drawing of Hydraulic Type Bale Press



Hydraulically operated Bale Press

- Instruments for operating/realising the technology/process
 - The developed technology/process is human friendly for its operation. One single acting bi directional valve is fitted to move the piston front and back, which will be operated by a hand operated lever.
 - Safeguards and precautions

The safeguard and precautions for operation of machines before starting the pressing operation is that all the fasteners must be properly checked, the top cover must be closed, the piston pressing the raw jute should not cross the pressing limit line as marked on the machine surface, the finished bale should be taken out by loosening the bolts and by lowering one side cover towards ground. The hydraulic pressure should be checked before pressing.
 - Trouble shooting and unusual conditions resolution
 - The developed prototype is hydraulically operated so it should be trouble free. Jute may stick to the shaft sometime, it should be cleaned regularly and grease should be applied to the area which is continuously moving. The oil level of the hydraulic unit should be checked before and after the operation.
 - Environmental considerations :
 - The raw jute materials are environmental friendly so, it mixes with the soil very easily so fertility of the soil will be maintained.
 - Any special requirements (RMS, Equipment, Manpower).
 - References etc
- vii. Financial Aspects: -
- (a) Amount received from sponsor : -
(if sponsored)
 - (b) Attached Utilization Certificate as per Standard Format or Annexure-I
- viii. Particulars of equipment/construction/building/software/hardware acquired (with cost), from the project, if any: - Nil
- ix. What are the development "outputs" and "outcomes" of the project
- A. Contribution to Science
- Write up on the contribution made vis-à-vis comparative International Position.
 - a) The literature survey reveals that some hydraulically operated machines are available but its orientation is different to some extent.

- Number of publications and patents, copy right and trademarks etc.
- b) The publication is under process waiting for its acceptance.
- Importance of the contribution typically as an input to applied R&D /technology development, new insight into understanding of a phenomenon etc.

B. Contribution to Economy / Society

- Its application, uses, benefits, advantages, influences:
This is a technological development in the field of bale press making using raw jute. The raw jute has a very good demand for the handloom products, packaging purpose and several other purposes. This new development will help in enhance the production.
- Technical write-up highlighting the uniqueness, novelty, improvement / advantages/ vis-a vis contemporary S&T and field practices;
- Users, licensees, beneficiaries (direct/indirect) of the development if any and collaborators, partners, facilitators of the development
 - This new developed technology will be utilized by the JCI for making bale.
- Quantification of benefits to the laboratory.

The laboratory will be benefitted only when the technology will be transferred to the manufacturer / entrepreneur.

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Annexure-I

Force requirement for pressing operation

The maximum force a person can apply to rotate the handle attached with the wheel to move the pressing head forward to compress the jute fiber is calculated by using the formula as shown in Fig.1. The relevant data are given in Table1.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Compression capacity, W	Screw Mean Dia. (mm)	Pitch length (mm)	Gear Ratio (G)	Arm Radius (m)	Revolutions Per Min (RPM)	Revolving Force, F (N) @ screw		Torque, T @ nut (Nm)		Considering 2 persons operating on each power screw, Force (Kgf) / PERSON each side		Arm Revolution for stroke movement of mm	Expected Time IN MINUTE (for double start screw together) @ RPM	Expected Minutes (for single start power screw) @ RPM
TONNE	mm	mm		m	in Degree	Square thread	Trapezoidal	Square	Trapezoidal	Square	Trapezoidal	1400	12	12
10	60	9	1	0.85	14.5	20530.53935	21050.09189	615.95878	631.8827566	38.88775854	39.88322972	155.5555556	6.481481481	12.962963
10	60	9	1	0.85	14.5	20530.53935	21050.09189	615.91618	631.8827566	38.88775854	39.88322972	155.5555556	6.481481481	12.962963
8.5	60	9	1	0.85	14.5	17450.95845	17897.6781	523.528753	536.9303431	33.05459475	33.90074526	155.5555556	6.481481481	12.962963
8	60	9	1	0.85	14.5	16424.43148	16844.87351	492.732944	505.3462053	31.11020583	31.90656377	155.5555556	6.481481481	12.962963
7.5	60	9	1	0.85	14.5	15397.90451	15792.06892	461.937135	473.7620675	29.1856189	29.91242229	155.5555556	6.481481481	12.962963
7	60	9	1	0.85	14.5	14371.37754	14739.20432	431.141326	442.1779296	27.22143097	27.9182608	155.5555556	6.481481481	12.962963
6	60	9	1	0.85	14.5	12318.32361	12633.65513	369.549708	379.000654	23.33265512	23.92993783	155.5555556	6.481481481	12.962963
5	60	9	1	0.85	14.5	10265.26967	10528.04594	307.95809	315.8413783	19.44387927	19.94161406	155.5555556	6.481481481	12.962963
4	60	9	1	0.85	14.5	8212.215739	8422.436755	246.366472	252.6731027	15.55510341	15.95329189	155.5555556	6.481481481	12.962963
3	60	9	1	0.85	14.5	6159.101804	6316.827596	184.774854	189.504827	11.60632756	11.96496892	155.5555556	6.481481481	12.962963
2	60	9	1	0.85	14.5	4106.10787	4211.218378	123.183236	126.3365513	7.777551707	7.976845943	155.5555556	6.481481481	12.962963
1	60	9	1	0.85	14.5	2053.053935	2105.09189	61.591618	63.16827566	3.888775854	3.988322972	155.5555556	6.481481481	12.962963
INPUT CELL INTERMEDIATE OUTPUT FINAL OUTPUT TIME MANAGEMENT Note: 1. Actually we do not know after how much stroke length what compression force would generate. 2. Material inertia force would add up extra. 3. At different rotation angles Upward force of right hand (62 N - 107 N) & Downward force of right hand (75-116 N); at "L" posture of arm our strength is high Source https://mms.rsc.nasa.gov/sections/section04.htm please check Strength Section 4.9 or page 11-12 of pdf format 4. https://nptel.ac.in/content/storage2/course/112105125/pdf/module-6%20Lesson-1.pdf (NPTEL IIT KGP FORCE CALCULATION)														

Fig.1 Standard table for the calculation of force for compressing

Table1: Force calculation data

Sl No.	Specification	Value
01	The compressive force to press the raw jute	5 Ton
02	mean diameter	60mm
03	Pitch of the thread	9mm
04	Gear Ratio	0.85
05	Type of thread	Trapezoidal
06	Pressure angle	14.5°

Based on the above data, the required force exerted by one person is 190.6 N. Considering two workers to rotate the handle to move the pressing head forward along with the power screw, total required force is required is 381 N and it was found that this force is enough to rotate the handle easily to move the pressing head for pressing of raw jute to make a bale.

Selection of Human Hand Pressing Capabilities

Fig.2 shows the typical strength of human in respect of force exerted by arm, hand and thumb/finger. From the figure it is found that the force applied by hands in upward and downward direction varies. The right hand usually exerts a force of 62 to 107 N in upward direction and 75 to 116 N in downward direction respectively. Similar case is with left hand also. Thus it may be stated that the selected force will be sufficient for two workers together to rotate the handle with ease and this rotational movement will be enough to convert forward or backward movement of the lead screw which will be utilized to compress the jute fiber to a jute bale as a finished product.

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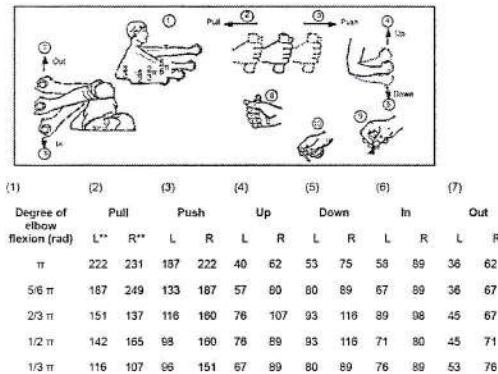


Fig.2 Arm, Hand and Thumb/Finger strength (5th percentile Male data)⁵

Design and Analysis

Design

Based on the conceptual design, 3D CAD Model was developed of the whole machine as shown in Fig.3a and in this case, we have selected the power screw (Fig. 3b) as pressure exerting tools or load bearing part. Thus, it may be considered as the main critical parts of the whole machine. The design calculation was carried out and analysis of power screw has been performed to find out the strength of the selected member. The design analysis was carried out in three steps: first modelling of the critical part, then the pre processing and finally the analysis of the developed component. In order to research the design, the belongings of substances have been integrated conforming to Indian Standard, into the version together with the forces, pressure and strain. After completion of this process, the developed model is divided into a large number of interconnect elements which results in an appropriate meshing and each member of the element shows its individual mechanical and material properties. The resulting data thus obtain was used to predict the resultant effect of the forces at meticulous point on the model principally the load bearing area like joints etc.

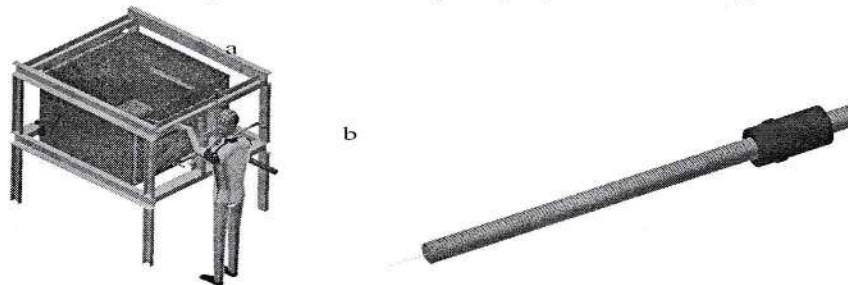


Fig.3 3D CAD Model: a) developed prototype b) Lead screw or power screw

Analysis of the elements:

The analysis of the critical members is very important to check whether the selected element fails during actual working condition when the required load is applied. Design analysis was carried out by applying the vertical loads to check whether the selected elements have the tendency to bend when the force is applied during actual working conditions. As mentioned earlier that the compressive force to press the raw jute is approximated as 5 kN, by taking factor of safety equals to 1.5, net load of 6.5 Ton or 64.765 kN was considered in this study. The results of the analysis show that the size of the power screw selected is enough to take the load without producing any deformation during the repetitive process of operation of the prototype.

Design of Power Screw:

Power screws, which might be additionally called lead screws, are used to transform rotary movement into linear motion as shown in Fig. 4 (a-c). With accurately sized threads, they are capable for huge mechanical advantage and can raise or move huge loads. In this study, we have selected the square thread, having mean diameter $d_m = 60$, as it is having the maximum strength. The standard pitch length was chosen as 9 mm for

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our purpose. It has been selected considering the amount of pressure will be applied on the arm. If the pitch length is higher, one has to apply much more force for each revolution, while the total number of revolutions is kept less to reduce the operation time; if the number of revolutions is more than the workers experiences fatigue more frequently. The force required to compress by using square thread is similar to lifting a weight against wedge. The mean diameter and force acting plane has shown in Fig.4d; selected square thread and force analysis at the interface of a lead screw and nut while lifting and lowering a load has depicted in Fig.4e and 4f respectively.

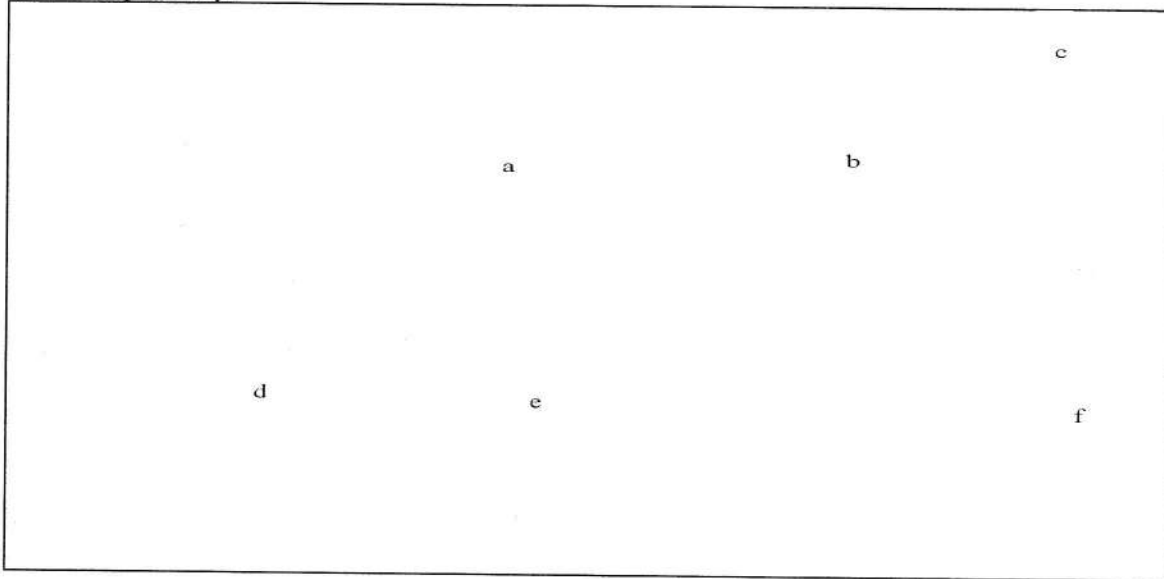


Fig.4 Power screw details⁶ : a, b, c - Power screw and its application in a screw jack; d - mean diameter with force acting plane; e - square thread; f - force analysis in lifting and lowering a load

Governing equation for the force required⁷⁻⁸

$$P = \frac{F(l + \pi f d_m)}{\pi d_m - fl} \text{ -----(i)}$$

Where , F = Compressive force, f = Friction Co-efficient, d_m = Mean diameter, l = lead = $n.p$
 n = No of thread start, p = pitch of thread

Now when a collar is attached with the screw to take the axial load, it will generate frictional moment. So, the torque required to rotate the handle is given by⁹⁻¹⁰

$$T_R = P \frac{d_m}{2} + Ff \frac{d_c}{2} + M_o \text{ Nm -----(ii)}$$

Where d_c = mean collar diameter = 70 mm, and M_o = other moments due to bearing, where the value is M_o = 20.6 Nm as per SKF bearing data¹⁰.

In this study, SKF 33033 bearing was considered which can withstand a standard radial load of 1.1 kN and axial thrust of 68.67 kN, d_c = 70 mm, M_o = 20.6 Nm. T_R must be overcome by the workers utilizing their arms with rotational movement. Following data has been considered as: F = 6.5 Tonne, Arm length = 1m and assuming that 2 nos. of labors is working simultaneously. The calculations are depicted in Table 2.

Table 2: Calculation of force exerted by two labors

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Sl. No.	F, compressive force (Ton)	Mean Dia, d_m (mm)	Pitch length (mm)	Arm length, l (m)	Thread angle (deg)	Force per person in Kgf
1	7.0	60	9	1	14.5	21.98
2	6.5	60	9	1	14.5	20.41
3	6.0	60	9	1	14.5	18.84
4	5.5	60	9	1	14.5	17.27
5	5.0	60	9	1	14.5	15.70

From the Table 2 as well as from the literature survey¹¹ it is very much clear that a man can exert an upward force of 62 N to 107 N and downward force of 75N to 116N. Hence the combined effect these forces are 21.98 or 22 Kgf = 215.82 N, this is the maximum amount of force exerted by a worker by hand movement. It is assumed from the above calculation that an Indian labour is having the capability to exert this amount of force to operate any hand rotating machine, under this maximum loading condition.

Stress analysis of critical part (Lead screw)

The complete bale press machine was developed with the main structural parts, few angles, channels etc. and power screw to compress the entire jute to make bales. Thus, this power screw or lead screw was considered as the main critical component of the entire machine. Stress analysis was done in this critical part.

Following are the observations⁹:

- The body of the screw will be subjected to torque T_R which will result in twisting of screw as follows:

$$\tau = \frac{16T_R}{\pi d_r^3} \text{ ----(iii)}$$

- In addition to this, the screw will be subjected to the compressive force along the central axis as follows:

$$\sigma_c = -\frac{4F}{\pi d_r^2} \text{ -----(iv)}$$

- The bearing stress will be developed in thread-nut areas to act at the base of the thread:

$$\sigma_b = -\frac{2F}{\pi d_m n_t p} \text{ ----(v) where, } n_t = \text{No of thread engaged with the nut.}$$

It was found from the experiment, that the 1st thread takes 38% of the total load, following 25%, 18% by the 2nd and 3rd respectively. The 6th and 7th thread remains stress free. Hence

$$\sigma_b = -\frac{2 \times 0.38F}{\pi d_m p} \text{ ----- (vi)}$$

As the 1st thread is taking maximum load, hence during our analysis we have considered the maximum loading condition of the 1st thread. By the application of the stress during experiment it has been observed that by the application of this amount of load, the 1st thread remains safe and there is no sign of any bending throughout the thread length. The thread is also subjected to bending stress at the root of the thread, which is

$$\text{given by } \sigma_b = \frac{6F}{\pi d_m n_t p} = \frac{6 \times 0.38F}{\pi d_r p} \text{ -----(vii)}$$

This is the most significant force among all the other forces acting on the screw thread, where the chances of failure is maximum as the tread acts like a cantilever beam. The transverse shear stress at the center of the

thread root is given by the formula: $\tau_t = \frac{3F}{\pi d_r n_t p} \text{ ----- (viii)}$

Considering all the stresses acting on the thread, the stress was calculated using Von Mises failure criteria and the Maximum Shear Stress criteria (MSS) to ascertain whether the selected screw thread was safe or not.

The maximum Von Mises stress σ_{eq} for a triaxial state of stress can be given by

$$\sigma_{eq} = \sqrt{\frac{1}{2}[(\sigma_1 - \sigma_2)^2 + (\sigma_2 - \sigma_3)^2 + (\sigma_3 - \sigma_1)^2]} \text{ ----- (ix)}$$

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Here $\sigma_1 = \sigma_c$ and $\sigma_2 = \sigma_b$ and $\sigma_3 = 0$ and in order to find the MSS, it is required to find out the principal stress.

$\tau_{\max} = \frac{\sigma_1 - \sigma_3}{2}$ --- (x), where σ_1 and σ_3 are principal stresses. After getting the $\tau_{\max}$ and the σ_{eq} values, a suitable was selected in such a way that the material is safe.

The theoretical calculations are as follows:

In this study, $d_m = 60$, $f = 0.15$, $d_r = (60 - 9/2) = 55.5$ mm, $F = 6.5$ Ton = (6.5×9.8) kN = 63.765 kN

Using eq. (ii), $T_R = \frac{63.765 \times 60 \times (1 + \pi \times 0.16 \times 60)}{2 (\pi \times 60 - 0.16 \times 9)} = \frac{63.765 \times 60 \times (1 + \pi \times 0.16 \times 60)}{2 (\pi \times 60 - 0.16 \times 9)} = 695.734$ Nm; eq. (iii), $\tau_{\max} = 20.72$ MPa; eq. (iv), $\sigma_c = -26.357$ MPa

eq. (vii), $\sigma_b = 92.64$ MPa; eq. (viii), $\tau_{\max} = 46.1$ $\frac{3 \times 0.38 \times 63.765 \times 1000}{\pi \times 55.5 \times 1 \times 9} = 46.1$ $\frac{3 \times 0.38 \times 63.765 \times 1000}{\pi \times 55.5 \times 1 \times 9} = 46.1$

MPa (taking $F \sim 0.38F$ and $n_f = 1$)

Finally, σ_{eq} was calculated as 114 MPa. From the principle stresses theory it can be derived as

$\frac{-26.357}{2} \pm \sqrt{\frac{-26.357^2}{2} + 20.72^2} = \frac{-26.357}{2} \pm \sqrt{\frac{-26.357^2}{2} + 20.72^2} = 11.37$ MPa and -37.73 MPa respectively.

As per MSS theory at the root of the thread,

$\tau_{\max} = \frac{(92.64 - (-37.73))}{2} = \frac{(92.64 - (-37.73))}{2} = 65.185$ MPa (Maximum shear stress). This is the maximum

value of stress developed at the root of the thread and from the standard value it is observed that within this value it is safe (Lead screw). The finite element analysis of the lead screw was also done. The material for the lead screw considered as En24 with materials properties as Tensile strength: 850-1000 MPa, Yield strength: 650 MPa. $\tau_{\max} = 650/2 = 325$ MPa. So Factor of safety = $325/65.185 = 5.0$. Thus it is quite safe.

Results and discussion

Development and working of the prototype

The complete working prototype was developed at our Institute based on the cited design analysis and design specifications, as shown in Fig.5a. The vertical support of the machine structure is hinged with the base, so that it can be completely folded downward to release the final bale. The pressing head was made with special nut and casted bracket attached to lead screw with cylindrical bearings. The length of the lead screw is long around 600 mm (Fig.5b). The pressing head will move forward and backward as per the rotation of lead screw by rotating the handle (Fig 5c). A wooden box was made using the main structures where raw juts are fed for making bales. When the feeding of the raw jute is completed, then the top covers is closed and locked with the pin. By the rotation of the handle with 2 persons, pressing head will move till it reaches the max limit as per the attached scale (Fig.5d). After that tying and knotting operation is performed by opening the top cover. Now the jute bale is completely ready and it was taken out from the machine by opening the one end of the side structure of the machine, which is hinged with the main structure. The finished bale (Fig. 5e) is now can be moved to the stockyard. The finite element analysis results of the designed lead screw are shown in Fig.5f. It gives, von-Moises stress as 4.283×10^5 N/m² or 428 MPa, which is much lower than the yield strength of the lead screw. The final specifications of the developed working prototype are: **Overall dimension:** 2000 x1300 x1625 mm (l x h x b); **Capacity:** 16 bales in eight hours (max.); **Weight of the finished bale:** 150 kg; **Dimension of the finished bale:** 1200x700x450 mm; **Manpower required:** 02 nos.; **Time to make a bale:** max 30 mins.

Ak Prasad

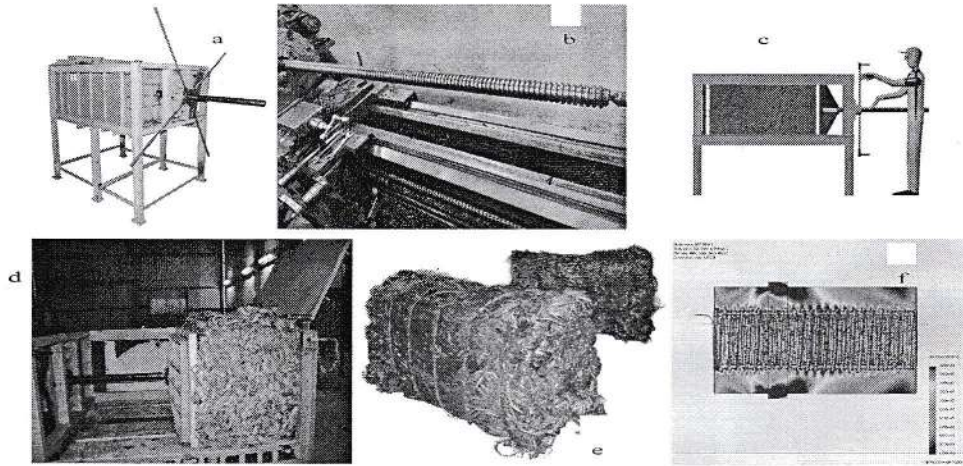


Fig.5; a - Working prototype; b - Lead screw manufacturing; c – working of pressing head; d – Pressing of raw jute; e – finished bale; f - analysis of lead screw

Arshad