

OPERATION & MAINTENANCE MANUAL FOR

UNIVERSAL SINGLE TYRE INFATOR AND SAFETY CAGE



PART No. NMP.UTC.01.00.00

(GENERAL AND TECHNICAL INFORMATION

PARTS CATALOGUE AND RELATED INFORMATION)

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2. INTRODUCTION

Universal Single Tyre Inflator and Safety Cage is designed to inflate aircraft tyres to desired pressure automatically. Indicating lights and audible alarms announce Tyre Fill/ Tire Fault conditions. The system provides faster fill times by calculating the fill rate required for each tyre.

Tyre Inflation Safety Cage is a steel walled, wood lined structure designed to contain the tyre and any debris in the event of a failure during tyre inflation. A trolley with rollers within the cage allows the operator to easily position and index the tyre to make connecting the supply hose easier.

Features and Benefits:

Easy and Dependable Operation

- Automatically inflates the tyre to the required pressure, up to 400 PSI .
- Does not require the operator to monitor the system.
- The tyre inflator will indicate when tyre is full.

Time Saving and Safety

- Improved productivity and reduced operating costs with faster fill times and increased operator safety.

Ease of Calibration and Maintenance

- The tyre inflator uses pressure transducers to accurately indicate the tire pressure. The detailed instruction manual ensures quick and easy equipment maintenance and calibration verification procedures.





Controls

- Easy to use pushbutton and potentiometer controls for increasing and decreasing desired pressure. The digital display will indicate desired pressure and the actual pressure during inflation. Indicating lights and audible alarms displaying filling conditions.

3. BEFORE YOU START

SYMBOLS USED

The following are the symbols used throughout the manual

S.NO	SYMBOL	DESCRIPTION
1		Read the user manual before operating the instrument
2		Warning:- Conditions that may cause hazards to the user if not handled carefully
3		Special information
4		Caution:- Conditions that may damage the instrument if not handled carefully

4. EQUIPMENT CERTIFICATION

Certification

Nexa Mumbai certifies that the equipment meets all quality requirement as per engineering standard and satisfies the published specifications at the time of installation.

Technical Assistance

Please contact the manufacturer for any technical assistance.

Warranty

Provides a warranty for 12 months

This warranty only covers manufacturing defects and becomes invalid if the instrument has been subjected to unauthorized intervention and/or use.

5. DISCRPTION OF UNIVERSAL SINGLE TYRE INFLATOR AND SAFETY CAGE



Fig-1: Universal Single Tyre Inflator and Safety Cage

The equipment consists of following major systems:-

1) Pneumatic System

- Ball valve
- Pressure Regulator
- Safety Relief Valve
- Filter
- Solenoid Valve
- Pressure Transducer
- Pressure Gauge

2) Electrical System

- Pressure Indicator with Controller
- Monitoring Display with Camera
- SMPS 24V DC
- Relay Module 2 Pole
- Switches
- Potentio-Meter



Fig-2: Front Panel of Universal Single Tyre Inflator and Safety Cage

6. TECHNICAL SPECIFICATIONS

Range and Accuracy : 10-400 PSIG; ± 4 PSIG

Electrical Requirements : 230V AC, 50/60 HZ, Single-phase, 15 A

Air/Nitrogen Requirements : 400 PSIG, 40 SCFM Dimensions

Panel Dimension : 610mm W x 340mm D x 610mm H

Lp Tank capacity :- 90 Ltr max pressure 100 PSI

Safety Cage: Dimensions - Single 850mm W x 2050mm D x 1600mm H, 1030 Kg.

7. PURPOSE AND APPLICATION

Universal Single Tyre Inflator and Safety Cage is designed to inflate aircraft tyres to desired pressure automatically. Indicating lights and audible alarms announce Tyre Fill/ Tire Fault conditions. The system provides faster fill times by calculating the fill rate required for each tyre.

Tyre Inflation Safety Cage is a steel walled, wood lined structure designed to contain the tyre and any debris in the event of a failure during tyre inflation. A trolley with rollers within the cage allows the operator to easily position and index the tyre to make connecting the supply hose easier.

8. SAFETY INSTRUCTION- DOs & DO NOTs

Tyre charging system is a High Pressure system and requires handling by trained personnel. Kindly go through the User Manual in detail before operating the equipment.

DOs



Read this manual carefully before using the equipment.

Please follow the instructions and procedures described in this manual. It is mandatory for optimum utilization and to avoid any personal injuries and / or damage to the instrument.

- i. Genuine parts should be used for replacement.
- ii. Do check the inlet and outlet port for proper fitment before pressurizing the equipment.
- iii. Ensure all hoses are properly blanked when not in use.
- iv. All valves should be closed before starting the operation.
- v. Do follow the standard operating procedure (SOP)
- vi. Make sure that all joints are properly tightened before starting the test.
- vii. Please ensure that the drive Air/ Nitrogen must be 40 PSI more than the output Requirement (Min.)
- viii. If any leakage is detected close the system.

DO NOTs



- i. Do not leave the unit in UN ATTENDED during operation.
- ii. Never remove/connect the hoses when equipment in pressurized condition.
- iii. Do not use cotton waste for cleaning purpose (Use lint free cleaning cloth)
- iv. Do not operate the equipment when any part of the system is removed.
- v. Do not operate the equipment, if you are not trained on the system.
- vi. If any leakage is observed do not operate till the leakage is rectified.
- vii. Do not operate any valves/ regulator without knowing the purpose.
- viii. Don't change setting of Pressure Relief Valve.
- ix. Don't change setting of internal pressure Regulators.

9. STANDARD OPERATING PROCEDURE (SOP)

UNIVERSAL SINGLE TYRE INFLATOR AND SAFETY CAGE OPERATING INSTRUCTION

- CONNECT EXTERNAL AIR PRESSURE TO INLET AND OPEN INLET VALVE.
- CONNECT THE FILLING HOSE TO THE TYRE AND CLOSE UPPER PART OF FILLING NOZZLE.
- KEEP THE TYRE INSIDE, CLOSE THE DOOR AND ENGAGE THE DOOR LOCK.
- CONNECT INPUT POWER SUPPLY (230V AC 50Hz) AND SWITCH “ON” THE POWER ON/OFF SWITCH.
- SWITCH “ON” INDOOR CAMERA BY PRESSING CAMERA BUTTON WHICH LOCATED IN CAMERA DISPLAY.
- SELECT TYRE MODE USING TYRE /TANK SELECTION SWITCH TO FILL TYRE.
- SET REQUIRED PRESSURE USING POTENTIO METER – READ ON DIGITAL INDICATOR – GREEN LETTERS.
- PRESS FILLING START BUTTON AND OBSERVE ON DIGITAL INDICATOR FOR FILLING PRESSURE - RED LETTERS .
- ON COMPLETION OF FILLING TYRE FILLED INDICATOR WILL GLOW WITH BUZZER.
- AFTER COMPLETION OF FILLING CLOSE INLET VALVE, OPEN THE CAGE DOOR AND OPEN UPPER PART OF FILLING NOZZLE.
- TO DISCHARGE LINE PRESSURE PRESS “PUSH TO DISCHARGE” BUTTON.
- DISCONNECT TYRE FILLING HOSE AND REMOVE TYRE.
- SWITCH OFF THE POWER “ON/OFF SWITCH AND REMOVE EXTERNAL AIR PRESSURE SOURCE.
- ***NOTE :- IF ANY FAULT OCCURS IN FILLING THEN “FILL FAULT” INDICATOR WILL GLOW WITH BUZZER. THEN CHECK FOR ANY LEAKAGE AND RECTIFY THE SAME AND REPEAT ABOVE PROCEDURE.***
-

10. PSI to Kg/cm2 CONVERSION CHART

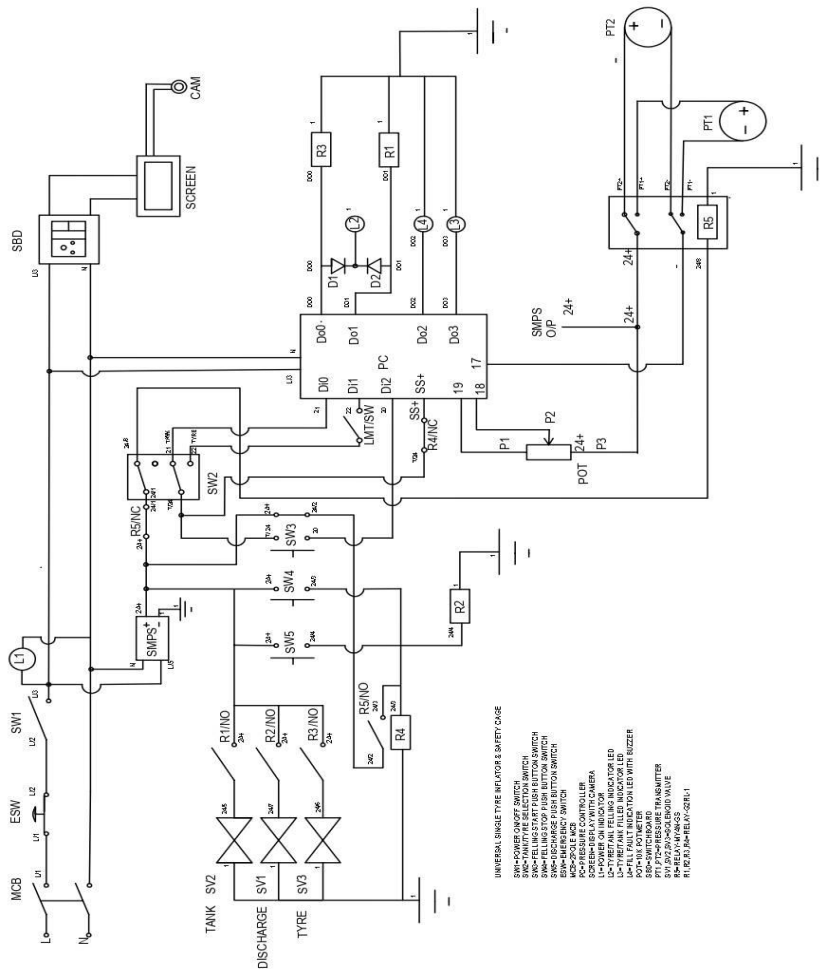
PSI to kg/cm2											
Sr. no.	PSI	kg/cm2	Sr. no.	PSI	kg/cm2	Sr. no.	PSI	kg/cm2	Sr. no.	PSI	kg/cm2
1	5	0.35	21	105	7.38	41	205	14.42	61	305	21.44
2	10	0.7	22	110	7.74	42	210	14.77	62	310	21.8
3	15	1.05	23	115	8.09	43	215	15.12	63	315	22.15
4	20	1.41	24	120	8.44	44	220	15.47	64	320	22.5
5	25	1.76	25	125	8.79	45	225	15.82	65	325	22.85
6	30	2.11	26	130	9.14	46	230	16.17	66	330	23.21
7	35	2.46	27	135	9.45	47	235	16.53	67	335	23.55
8	40	2.81	28	140	9.85	48	240	16.88	68	340	23.91
9	45	3.16	29	145	10.2	49	245	17.23	69	345	24.26
10	50	3.52	30	150	10.55	50	250	17.58	70	350	24.61
11	55	3.87	31	155	10.9	51	255	17.93	71	355	24.96
12	60	4.22	32	160	11.25	52	260	18.28	72	360	25.32
13	65	4.57	33	165	11.6	53	265	18.64	73	365	25.66
14	70	4.92	34	170	11.95	54	270	18.99	74	370	26.02
15	75	5.27	35	175	12.31	55	275	19.34	75	375	26.37
16	80	5.63	36	180	12.66	56	280	19.69	76	380	26.72
17	85	5.98	37	185	13.01	57	285	20.04	77	385	27.07
18	90	6.33	38	190	13.36	58	290	20.39	78	390	27.43
19	95	6.68	39	195	13.71	59	295	20.75	79	395	27.77
20	100	7.03	40	200	14.06	60	300	21.1	80	400	28.13

PSI TO Kg/cm2 OR Kg/cm2 TO PSI CONVERSION IN PRESSURE INDICATOR

1.PRESS **F1** BUTTON 3 TIMES. >2.SET **580** FOR **PSI** OR **40** FOR **Kg/cm2** BY PRESSING **SET** BUTTON>3.AFTER SETTING PRESS **ENT** BUTTON 1 TIME.>4. PRESS **F1** BUTTON 2 TIMES. >5. SET **580** FOR **PSI** OR **40** FOR **Kg/cm2** BY PRESSING **SET** BUTTON>6.AFTER SETTING PRESS **ENT** BUTTON 1 TIME.>7.PRESS **F1** BUTTON 1 TIME.

10. ELECTRICAL AND PNEUMATIC CIRCUIT DIAGRAM

ELECTRICAL CIRCUIT DIAGRAM OF UNIVERSAL SINGLE TYRE INFLATOR AND SAFETY CAGE



DESIGN NO.	REV. NO.	DATE	BY	CHECKED BY	APPROVED BY
PROJECT	UNIVERSAL SINGLE TYRE INFLATOR AND SAFETY CAGE				
DESIGN NO.	MM.SIN.VV.01.0001				
REV. NO.	01				
DATE					
BY					
CHECKED BY					
APPROVED BY					
PROJECT TITLE	UNIVERSAL SINGLE TYRE INFLATOR AND SAFETY CAGE				
DESIGN NO.	MM.SIN.VV.01.0001				
REV. NO.	01				
DATE					
BY					
CHECKED BY					
APPROVED BY					
PROJECT TITLE	UNIVERSAL SINGLE TYRE INFLATOR AND SAFETY CAGE				
DESIGN NO.	MM.SIN.VV.01.0001				
REV. NO.	01				
DATE					
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CHECKED BY					
APPROVED BY					
PROJECT TITLE	UNIVERSAL SINGLE TYRE INFLATOR AND SAFETY CAGE				
DESIGN NO.	MM.SIN.VV.01.0001				
REV. NO.	01				
DATE					
BY					
CHECKED BY					
APPROVED BY					
PROJECT TITLE	UNIVERSAL SINGLE TYRE INFLATOR AND SAFETY CAGE				

Fig-3: Electrical circuit diagram for Universal Single Tyre Inflator and Safety Cage

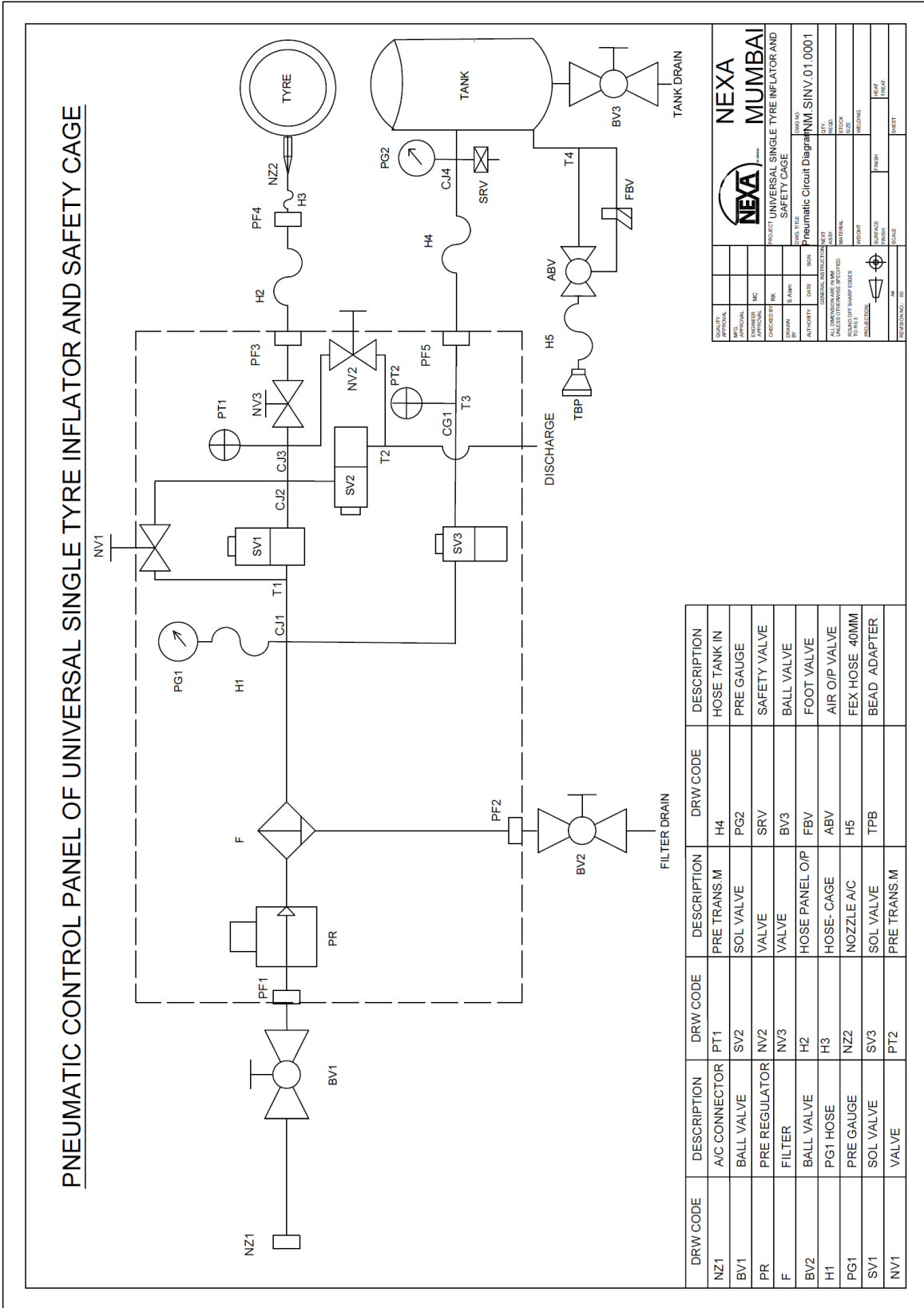


Fig-4: Pneumatic circuit diagram for Universal Single Tyre Inflator and Safety Cage

12. BILL OF MATERIAL

BILL OF MATERIALS OF UNIVERSAL SINGLE TYRE INFLATOR & SAFETY CAGE

SL NO	CKT CODE	DESCRIPTION	SPECIFICATION	MODEL	QTY	MAKE
1	PC	PRESSURE INDICATOR WITH CONTROLLER	230V AC	UNIX-1	1	SELEC
2	SCREEN	MONITORING DISPLAY WITH CAMERA	VIDEO INTERCOM	UVK-701A	1	CP PLUS
3	MCB	MCB	32A 2 POLE	BHW-T10 C32	1	MITSUBISHI
4	SMPS	SMPS	24VOLT/2.2A	S8FS-C05024	1	OMRON
5	R1,R2,R3,R4	RELAY MODULE 2 POLE	24VOLT DC	AE-04-024D-2-B-C	1	OMRON
6	R5	RELAY 4 POLE WITH BASE	24VOLT DC	MY4N-GS	1	OMRON
7	D1,D2	DIODE	1000V 3A	1N5408	2	E4U
8	SBD	SWITCHBOARD	5A	14619	1	ANCHOR
9	ESW	EMERGENCY STOP SWITCH	RED MAINTAINED NC CONTACT	3SB58018AM3	1	SIEMENS
10	SW1	POWER ON SWITCH (ILLUMINATED GREEN)	CURRENT:10A MP	3SB50-01-2AE01,3SB5400-7TC,3SB5400-0B	1	SIEMENS
11	SW2	TYRE/TANK SELECTION SWITCH	CURRENT:10A MP	3SB50-00-2AB01,3SB5400-0B,3SB5400-0C	1	SIEMENS
12	SW3	BLACK PUSH BUTTON	CURRENT:10A MP	35B50 00-0AB01,3SB5400-0B	1	SIEMENS
13	SW4, SW5	RED PUSH BUTTON	CURRENT:10A MP	35B50 00-0AC01,3SB5400-0B,3SB5400-0C	2	SIEMENS

14	L2	22MM GREEN LED	24V DC	3SB5285-6HE01	1	SIEMENS
15	L3,L4	22MM RED LED WITH BUZZER	24V DC	LB22-D24	2	TNI
16	POT	POT METER	10KOHM-10TURN	3590S-2-103L	1	BOURNS
17	LMT S/W	LIMIT SWITCH	10A 250V AC	SZL-VL-S-D-N	1	HONEYWELL
18	PG1,PG2	PRESSURE GAUGE	DIAL:100MM, 0-42KG/CM2	5-34	2	FIEBIG
19	BV	BALL VALVE	SIZE:1/4 INCH	OKD	3	AIRA EURO
20	PR	PRESSURE REGULATOR	O/P PRE.50BAR	LE51-6-L-300-50-0-0- M-M-O-A-B-NFG	1	SPECTRON
21	F	FILTER DSC	MAX-600 PSI	LF-D-MINI	1	NEXA MUMBAI
22	SV1,SV2,SV3	SOLENOID VALVE	1/4 PIPE SIZE,N/C,24VDC,8W	BSD	3	AIRA EURO
23	SRV	SAFETY RELIEF VALVE	RELIEF-5-150PSIG/0.3-10BAR	RELIEF-5-150PSIG	1	NORGREN
24	PT1,PT2	PRESSURE TRANSDUCER	PRE:580 PSI	PX3 SERIES	2	HONEYWELL
25	ABV	SINGLE ACTING PNEUMATIC ACTUATOR	SIZE:20MM	ARA-63-S	1	AIRA EURO
26	FTV	FOOT OPERATED VALVE	1/4"NPT	KI PNEUMATIC	1	KI PNEUMATIC
27	#	PRESSURE VESSEL	91LTR.(MS)	#	1	NEXA MUMBAI
28	#	TYRE CHARGING ADOPTER	AS PER NATO STANDARD	#	1	NEXA MUMBAI
29	#	AIR INLET ADOPTER (QDC)	AS PER RUSSIAN DRAWING	#	1	NEXA MUMBAI
30	#	NITROGEN INLET ADOPTER	M14 X 1 MM	#	1	NEXA MUMBAI

13. TROUBLE SHOOTING

S.NO	PROBLEM	PROBABLE CAUSE	SOLUTION
1	Fault filling caption coming on during charging	I. Leak in the Charging Line II. Filter Chocked III. In sufficient Air / nitrogen in the external source	I. Check and arrest leakage after closing the inlet pressure source. II. Clean/ replace the Filter. III. Check pressure of inlet source it should be above 400 PSI
2	No reading on Pressure Gauge after connecting external source	i. Inlet valve not opened ii. Filter Chocked iii. In sufficient Air / nitrogen in the external source	i. Check & Open Inlet valve ii. Clean/ replace the Filter. iii. Check pressure of inlet source it should be above 400 PSI
3	In Sufficient Output Pressure & Flow	i. Wheel adopter fitment is not proper ii. Leak in charging line iii. Filter Drain line open	I. Check and correct Wheel adopter fitment. II. Check and arrest leakage after closing the inlet pressure source. III. Check and close Filter drain.
4	Tyre filled warning comes before set pressure	i. Wrong setting on internal needle valve <i>Note :- Excess flow in the line can lead to wrong signal</i>	i. Reduce needle valve flow to achieve proper flow.

14. PERIODIC SERVICE & MAINTENANCE INSTRUCTION

Daily Before Use

- i. Check the Hose for physical condition.
- ii. Check the inlet and out let adapters for any FOD

Every Monthly:

- i. Connect external source and pressurize the system.
- ii. Check for the Leakage on the tubing/Piping and fittings, arrest if any.
- iii. Clean the complete system to ensure Dust & Dirt Free system.
- iv. Check all nuts and bolts for tightness.
- v. Visually inspect the condition of wiring and contacts

Every 12 Months:

- i. Internal & External cleaning of the complete System.
- ii. Test & calibrate all Pressure Gauge, calibrate them with OEM or NABL accredited LAB.
- iii. Check the setting of safety relief valve, and reset the pressure range for safety relief valve if required as per manual.
- iv. Carry out thorough inspection of the Hydraulic & Pneumatic hose.
- v. Check the entire pneumatic pipe lines for proper tightness and do a leak check after pressurizing.

- vi. Check the complete trolley for corrosion, if anything found do Painting.
- vii. Follow a DUMMY Charging Procedure (i.e. follow SOP) Check for the leakage of tubing/Piping and fittings with soap water in Pneumatic Pipe Line.

15. RECORD OF PERIODIC INSPECTION

Date	Serial No and type of Servicing	Operator-in charge of the Servicing	Time of servicing	Signature of the TID
1	2	3	4	5

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RECORD OF PERIODIC SERVICING

Date	Serial No and type of overhaul	Operator-in charge of the overhaul	Time of servicing	Signature of the TID
1	2	3	4	5

16. CUSTOMER FEEDBACK FORM

Dear customer,
Hope you are satisfied with the content of this manual. Kindly let us know if there are any corrections in this manual. We welcome your valuable suggestions for improvement in content, structure etc. Please fill in your comments here and mails it to us.

Remark _____

Customer Name: _____

Address: _____

Phone: _____ Fax: _____

Email: _____
