VISIONTECH
SHOP

TPS
PALLET JACK SCALE

# TECHNICAL MANUAL
V1.09(V1.10B)

CONTENTS

PRECAUTIONS

	⚠ **WARNING**
	DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, CLEANING, OR SERVICING. FAILURE TO DO SO COULD RESULT IN BODILY HARM OR DAMAGE THE UNIT.

⚠ **CAUTION**

- **Permit only qualified persons to service the instrument**
- **Before connecting or disconnecting any components, remove the power.**
- **Failure to observe these precautions bodily harm or damage to or destruction of the equipment.**

- The weighing indicator is a precision electronic instrument, handle it carefully.
- Do not install the scale in direct sunlight.
- Verify the local voltage and receptacle type are correct for the scale.
- Only use original adaptor, other could cause damage to the scale.
- Pluggable equipment must be installed near an easily accessible socket outlet.
- Avoid unstable power sources. Do not use near large users of electricity such as welding equipment or large motors.
- Avoid sudden temperature changes, vibration, wind and water.
- Avoid heavy RF noise.
- Keep the indicator clean

SAFETY NOTE

For safe operation of the truck, please read all warning signs and instructions here and on the truck before using this truck.
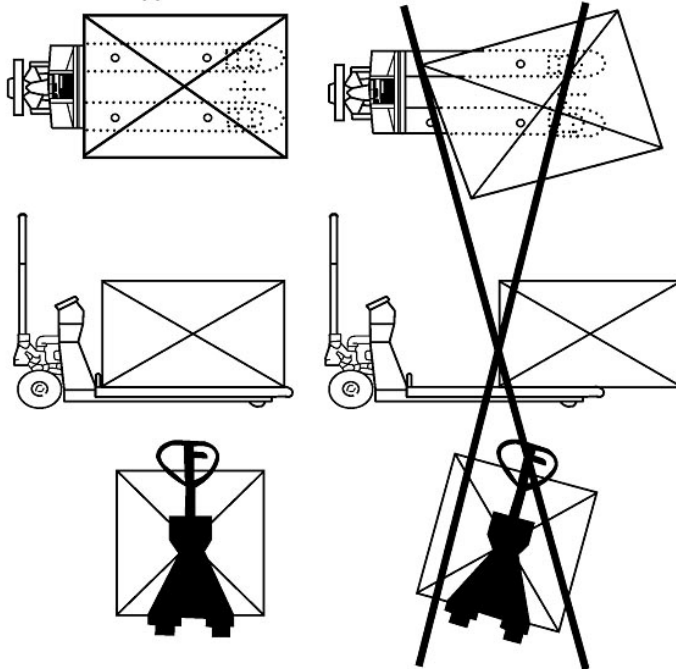
- Do not operate the pallet truck unless you are familiar with it and have been trained or authorized to do so.
- Do not operate the truck unless you have checked its condition. Give special attention to the wheels, handle assembly, forks, lift and lower control.
- Do not use the truck on slope place.
- Don't place any part of your body in the lifting mechanism or under the forks or load.
- Do not carry passengers.
- The operator should be wear gloves and security shoes for protecting.
- Do not handle unstable or loosely stacked loads.
- Do not overload the truck.
- Do not subject to unbalanced load, either side to side or along the length of the frame.
- The capacity of the truck assumes an evenly distributed load with the centre of the load being at the halfway point of the length of the forks.
- Make sure that length of the forks matches the length of the pallet.
- Lower the forks to lowest height when the truck is not being used.
- At other specific conditions or places, the operator should be carefully to operate the pallet truck.

1. SPECIFICATION

Dimension
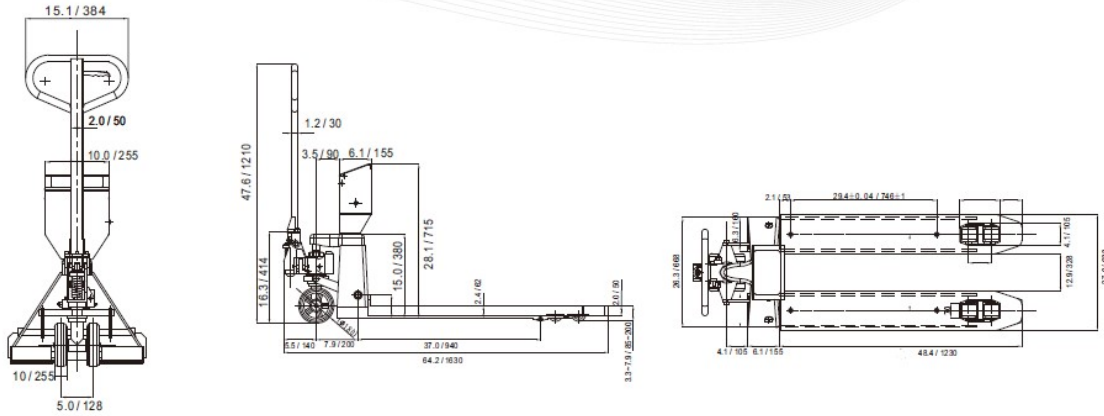
Specification

Model	TPS
Max Lifting weight	5000lb / 2000kg
Min. Fork Height	3.3inch / 85mm
Max. Fork height	7.9inch / 200mm
Fork length	48.4inch /1230mm
Fork overall width	27inch / 688mm
Individual fork width	7.0inch / 180mm
Capacity	5000lb / 2500kg
Division	1lb / 0.5kg
External resolution	1/5,000
Internal resolution	1/600,000
Stabilisation Time	1 Seconds typical

Operating Temperature	0°C - 40°C / 32°F - 104°F
Power supply	External AC adapter, 9V 500mA, built-in rechargeable Battery (6V/4Ah)
Calibration	Automatic External
Display	$5^{1}/_{2}$ digits LCD digital display with 52mm high digits (EL backlight)
Interface	RS-232 Output standard
Load cells	4 load cells

2. INTRODUCTION

➢ The TPS series pallet scale that amplifies signals from a load cell, converts it to digital data and displays it as a mass value.

➢ It can set weighing units change, pretare, gross/net change and accumulation applications.

➢ It can connect the indicator to a printer or a PC.

➢ Large LCD with white LED back light display

➢ 6 mechanical switch keys

➢ Battery provides up to 40 hours to continue (without backlight).

3. INSTALLATION

3.1 Unpacking

When you receive the scale, inspect it to make sure that it is not damaged and that all are parts are included:
- Remove the Indicator from the carton.
- Remove the protective covering. Store the packaging and to use if you need to transport the scale later.
- Inspect the indicator for damage.
- Make sure all components are included.
  1. Indicator
  2. Adaptor
  3. Pallet
  4. Handle
  5. Manual

3.2 Installation

3.2.1 Install handle
Handle is packed separate.

- Loosen the setting screw (140H) from the crank link.
- Remove the screws (H109) and three spring washers (H110) from the base (103)
- Place the handle (H107) through the centre of the base (103) and axle (109)
- Insert three screws (H109) with spring washers (H110) into the base (103). Then tighten them securely.
- Lift the crank link (139H) and place the pin rod and chain (H107) into the slot of the crank link(139H)
-

3.2.2 To set release device

On the handle of the pallet truck, there is control lever (H106) which can be set in three positions

- Tighten the setting screw (140H) to the crank link (139H) until the lower position function start to work.
- If the forks lift up while pumping in the NEUTRAL position, turn the setting screw (140H) clockwise until pumping the handle does not raise the forks and the NEUTRAL position functions correctly.
- If the forks come down while pumping in the NEUTRAL position, turn the setting screw (140H) counter-clockwise until the forks stop to come down.
- If the forks do not come down when the control lever (H106) is in the LOWER position, turn the setting screw (140H) clockwise until the forks start to come down. Then check the NEUTRAL position as per item 2 and 3.
- If the forks do not lift while pumping in the ASCENT position, turn the setting screw (140H) counter-clockwise until the forks lift up while pumping in the ASCENT position. Then check the NEUTRAL and LOWER position as per item 2, 3 and 4.
- Connect the adaptor pin in to the indicator adaptor jack.
  Adaptor jack is locating, back side of the indicator.
- Adaptor connects into your AC power socket.
  Pluggable equipment must be installed near an easily accessible socket outlet with a protective ground/ earth contact.
- Turn on the On/Off key. If you want to turn off, press the key again.
- Display will be show the scale capacity and will be starting self checking.
- After self checking, display will be come to normal weighing mode.
- Warm-up time of 15 minutes stabilizes the measured values after switching on.
- Calibrate with exact calibration weights, minimum 1/3 of the scale capacity want to use for calibration. For calibration see details in parameter.

Note: Recharge the battery before using the scale for the first time.

Then you can start your operation

3.3 Load cell connections

- Connect the load cell cables to the terminal as shown below.

5Pin Connection	
Pin 1	Signal +
Pin 2	Signal -
Pin 3	Shield
Pin 4	Exc -
Pin 5	Exc +

- It can connect four 350 ohm load cells.
- The load cell drive voltage is 5V DC ±5% between Excitation + and Excitation -.

3.4 Connect Adaptor and Charging

- To charge the battery insert the adaptor pin to jack. Adaptor simply plug into the mains power. The scale no needs to be turned on.
- The battery should be charged for 12 hours for full capacity.
- Left down side of the keyboard there is an LED to indicate the status of battery charging. When the scale is plugged into the mains power the internal battery will be recharged. If the LED is green, the battery has a full charge. If it is red, the battery is nearly discharged and if yellow, the battery is being charged.
- Do not use any other type of power adaptor than the one supplied with the scale.
- Verify that the AC power socket outlet is properly protected.

Note: Please charge the battery before using the scale for the first time.

4. PALLET TRUCK OPERATION

4. 1 CONTROL LEVER

The control lever (H106) which can be set in three positions

LOWER: to lower the forks

**NEUTRAL**: to move the load

ASCENT: to raise the forks. After assembling the handle, you can adjust the three positions.

4.2 MAINTENANCE

4.2.1 OIL

Please check the oil level every six months. The volume of oil is about 0.3lt. Use the hydraulic type oil according to temperature scale below.

Temperature	Oil
-5℃~+45℃	L-HM68 Hydraulic oil (equivalent to ISO VG68)
-15℃~-5℃	L-HM46 Hydraulic oil (equivalent to ISO VG46)
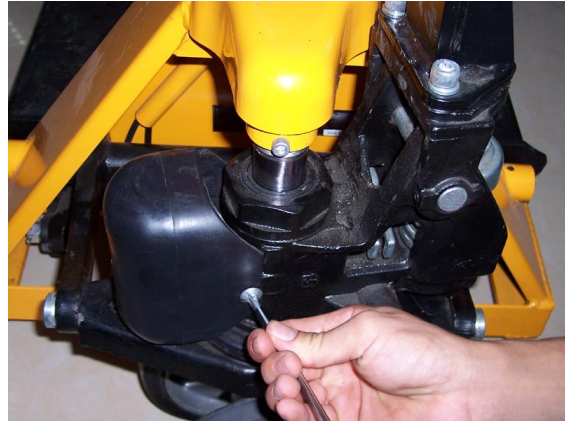
4.2.2 HOW TO EXPEL AIR FROM THE PUMP UNIT

The air may come into the hydraulic because of transportation or pump in upset position. It can cause that forks do not elevate while pumping in the ASCENT position. The air can be banished in the following way: Let the control lever (H106) to the LOWER position, then move the handle (H1501) up and down for several times.

4.2.3 DAILY CHECK AND MAINTENANCE

Daily check of the pallet truck can limit wear as much as possible. Give special attention to the wheels (127, F116 or F117), the axles (F114, F118, F121, F122), the handle (H101), the forks (F110) and lift and lower control. The forks should be unloaded and lowered in the lowest position when the job is over.

4.2.4 LUBRICATION

Use motor oil or grease to lubricate all moveable parts.

5. KEYS DESCRIPTION

Key Board

Keys	Description
ON/OFF	Power turn ON/OFF
ZERO	Set the Zero Display
TARE	To perform a tare function, Subtracts weights.
ACC/TTL Print	Accumulator key, current values will store to the memory to send the data to printer or PC
G/N	Shift to Gross / Net Weight.
PCS	Counting
UNIT	To change the unit (kg/g/lb/oz)

Secondary functions of the keys

Function	Keys
To confirm the selected menu	ZERO
To change the menu and active digit	TARE
To move the active digit to right	ACC/TTL Print
To move the active digit to left	G/N
To enter the menu	SET PCS
Escape from the menu to normal operation.	ESC UNIT

Display

Battery low

PCS%
HOLD
AUTO

STABLE
ZERO

GROSS
NET
TARE

kg

Check Weighing

In

Weighing unit

Warm-up time of 15 minutes stabilizes the measured values after switching on.
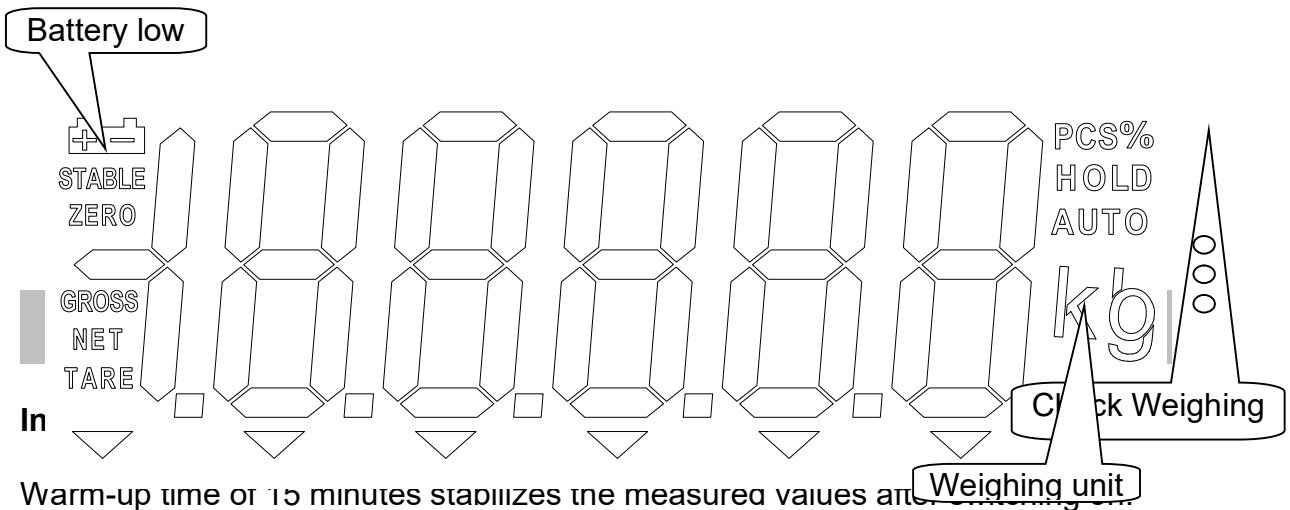
6.1. Basic Operation

1. **Power On/Off:**

   Switch on the indicator by pressing ![ON/OFF] key.
   The display is switched on and the test is started and if want to switched off, press again the key.

2. **Zero**

   Environmental conditions can lead to the balance exactly zero in spite of the platform not taking any strain. However, you can set the display of

   your balance to zero any time by pressing ![ZERO] key and therefore ensure that the weighing starts at zero.

3. **Tare**

   The weight of any container can be tared by pressing ![TARE] button so that with subsequent weighing the net weight of the object being weighed is always displayed.

   - Load weight on the platform.

   - Press ![TARE] key. Zero is displayed, and tare is subtracted.

   - Remove weight on the platform. Tared weight is displayed. It can set only one tare value. It will be shown with a minus value.

   - Press ![G/N] to change between gross weight and net weight.

   - To clear the tare value, remove the load and press ![TARE] key. Zero is displayed, tare weight is cleared.

4. **Select Unit**

   Press and hold three seconds ![UNIT] key, it can change to unit.

6.2. Check Weighing

It can set an upper or lower limit when weighing with the limits range.
During the limit controls dividing the unit will indicate whether a value
upper or lower limits with an alarm sound .

6.2.1. Set Limits

- Press ![UNIT/ESC] and ![PRINT/SET] key together, display will be show **set h.**

- Press ![TARE] key to select **set h** or **set l**

- Press ![ZERO] key to confirm, display will show **00000** and will blink the last digit.

- Enter the high limit value by using ![G/N] and ![MR] keys to change the active digits and press ![TARE] key to increment the value.

- Press ![ZERO] key to confirm, display will show **set l**

- Enter the high limit value by using ![G/N] and ![ACC/TTL Print] keys to change the active digits and press ![TARE] key to increment the value.

- Press ![ZERO] key to confirm.

- To escape from the settings press ![UNIT/ESC] key.

6.2.2. Set Check Weighing

- Press ![UNIT/ESC] and ![PRINT/SET] key together, display will be show **set h.**

- Press ![TARE] key to select display **beep.**

- Press ![ZERO] key to confirm, display will be shown **no** or **ok** or **ng**

- **Check mode no** : No beep sound in the limits. Function turned off.

- **Check mode ok** : When the weight is between the limits. OK will shown and beeper will be sounded.

- **Check mode ng** : When the weight is out of the limits, the beeper will be sounded and OK will shown.

Note: Check weighing available only when weight more than 20d

6.3. Accumulation

The scale can be set to accumulate manually by pressing ![ACC/TTL Print] key. For settings, see the parameter `p 2 Com » mode » ACC ON`
Before operation scale should be stable and return to zero, accumulation available only when weight more than 20d
Note: if connected USB memory card or printer, saved data will get into the memory in Excel document or printer will be print

Accumulation Operation

- Place the load on the platform.

- Press ![ACC/TTL Print] key, when displayed STABLE indication.
- Display will be show `acc 1` then will be show the total saved value. These displays will be shown only three seconds.
- Remove the weight from the pan.
- When display get zero and stable then place the second weight.
- It can continue until the memory gets fully or 99 items.

6.3.1 Memory Recall

To recall the memory press ![ACC/TTL Print] key.

Display will be show `acc X` (X: Total number of accumulation) then will be show the total saved value. These displays will be shown only three seconds.

6.3.2. Memory Clear

To clear the memory, press ![G/N] and ![ACC/TTL Print] keys together.

Display will be show `Acc 0` , all accumulation memory cleared from the memory.

6.3.3. Automatically accumulation.

The scale can be set to accumulate automatically. For settings, see the parameter `p 2 Com » mode »` auto, after set, AUTO indicator on

Automatic Accumulation Operation

- Place the load on the platform.
- When display gets STABLE indication, beep on twice will be heard ,display will be show `acc 1,` then will be show the total saved value. These displays will be shown only three seconds.
- Remove the weight from the pan.
- When display get zero and stable then place the second weight.
- It can continue until the memory gets fully or 99 items.

6.4. Parts Counting

To enter the parts counting, press and hold ![PCS SET] key display will be show `p 10`

Press ![TARE] to change the parts quantity.
Options: `p10` / `p 20` / `p 50` / `p100` / `p 200`

Parts Counting Operation

- Select the parts quantity as per the option
- Place the load on the platform
- Press ![ZERO] key to confirm, display will be shown `----` then will show the quantity
- Then can add goods on the platform, display will update the parts quantity automatically

Press ![UNIT ESC] key to change normal mode, when in counting mode.

6.5. Animal Weighing

BW can use for vibrate loads weigh. This function can use for animal weighing.
For settings, see the parameter `p 4 oth » anm`

Bring the load on the platform, when the load few seconds get stable, the reading will be locked for few seconds.
It can add or remove loads also update the weighing locked values.

To enter or exit animal weighing mode, press ![PCS/SET] key until HOLD indicator will be displayed or not.

When in animal weighing mode **HOLD** indicator will be displayed.

6.6. Keyboard Lock

It can set lock key board, for settings, see the parameter `p 4 oth » lock`

When the keys are not using with in 10 minutes, the keys will be lock automatically.

After entering into the lock function, when we press the keys display will be show `k-lok.` Then will come to normal display.

If want to unlock and want to use the keys press and hold ![PCS/SET] , ![ACC/TTL Print] and ![ZERO] keys three seconds. Display will be show `u lck` Then will come to normal display

6.7. Set auto power off

It can set auto power off the scale, when scale not in use, scale will turn off after the setting time.

- Hold ![ZERO] key three seconds display will show `setbl`

- Press ![TARE] key to change `Set of` and press ![ZERO] key to confirm

- Press ![TARE] key to change the options.

Set of	Of 0	To set auto off function turn off, for scale always on
	Of 3	Set to turn off three minutes later
	Of 5	Set to turn off five minutes later
	Of 15	Set to turn off 15 minutes later
	Of 3 0	Set to turn off 30 minutes later

- After select the auto off option press ![ZERO] key to confirm and press ![UNIT/ESC] key to escape from the settings.

6.8. Set Back Light

It can set back light when scale in use.

- Hold **ZERO** key three seconds display will show `setbl`

- Press **ZERO** key to confirm.

setbl	Bl au	To set auto option. When start to use back light will be on and when stop the operation back light also will off.
	Bl on	To set always on. After turn on the power, back light also will be on.
	Bl off	To set back light turn off. No back light in the operations

- After select the back light option press **ZERO** key to confirm and press **UNIT** key to escape from the settings.

6.9 Bluetooth Operation（optional）

It can set Bluetooth (optional) function, For settings, see the parameter
`P8 uw b > uw b`

Set Communication `P 2 COM > MODE > CONT`
                    `P 2 COM > BAUD > 9600`
                    `P 2 COM > Pr > 8 n1`

- Turn on all device
- Scale should be in the allowed limits of the distance to connect Bluetooth.
- Search the new Bluetooth device in the PC.
- Select the device. If ask password, enter 1234

Set the current COM port and settings as per scale device.

7. PARAMETERS

To set parameter, turn on the scale.

- Press **PCS** key during the self checking.
- Display will be show `pn`
- Press **G/N** , **UNIT** and **TARE** to enter, display will be show `po chk`
- (To access parameters **P2 mod; P4 ST; P5CLR** ,the jumper K2 need to make short; if K2 is not shorted ,press K3 button inside the unit to enter)

Menu	Sub Menu		Description
P 0 chk	**Set H**		Set high limits for check weighing
	Set l		Set low limits for check weighing
	beep	**None**	No beep for check weighing
		Ok	Beep, when check weighing between the limits
		ng	Beep, when check weighing out of the limits
P 1 com	**Mode**		**This option is used to set accumulation and RS-232 communication** Options: **Cont** : data send continues **St 1** : Send data one time, when stable. **St c** : Send data continuously, when stable **P r1** : Send data one time, when press print Key (in printer mode) **Pr 2** : Send data to print and accumulation, When press key **Auto** : Auto accumulate and auto print mode. When weight stable and return to zero. **Ask** : Ask mode, Command R: read data Command T: Tare Command Z: Zero **Wirel**: Optional Wireless mode (communication through wireless) **KIT 1:** Optional Wireless Mode
	Baud		To set the baud rate. Options: **600 / 1200 / 2400 / 4800 / 9600**
	Pr		To set the parity Options: **7 e1 / 7 o1 / 8 n1**
	Ptype		To set printer model Options: **Lp50**: Set the scale printer LP-50 **EP50**: Set the scale printer EP-50
	SinGLE	**To select single range operation**	
		Count	To check internal counts
		Deci	To set decimal points
		Div	To set increment

		Cap	Set Capacity		
P 2 mod		Cal	Calibration		
		gra	Gravity		
	duAL 1	**To select dual range - mode 1** Note: Once active second interval (div 2), Then second interval will work until display return to zero			
		Count	To check internal counts		
		Deci	To set decimal points		
		Div	Di v 1	To select first division	
			Di v 2	To select second division	
		Cap	Cap 1	To select first capacity	
			Cap 2	To select second capacity	
		Cal	Calibration		
		gra	Gravity		
	duAL 2	**To select dual interval - mode 2** **Note:** First interval will active in CAP 1 Second interval will active in CAP 2			
		Count	To check internal counts		
		Deci	To set decimal points		
		Div	Di v 1	To select first division	
			Di v 2	To select second division	
		Cap	Cap 1	To select first capacity	
			Cap 2	To select second capacity	
		Cal	Calibration		
		gra	Gravity		
P3 oth	**Lock**		To set keypad lock Options: **on / off**		
	anm		To set animal mode. Options: **on / off**		
P4 S T	**ST ON**		Mutli Tare Function On		
	ST OFF		Mutli Tare Function Off		
P5 CLR	**CLRCAL**		Clear the calibration record		
	CLROPT		Clear the parameter modification record		
P6 Unt	**g**		Weighing units select to turn on / off		
	Oz				

Print format

	Gross :	0. 500 lb
	Tare :	0. 000 lb
	Net :	0. 500 lb

```
-------------------
            1    1.100  lb
            2    1. 100  lb
            3    1.105  lb
            4    1.100  lb
            5    1.100  lb
            6    1.100  lb
-------------------

TOTAL   :   6. 605 lb
COUNT   :        6
-------------------
```

```
Gross :   0. 500 lb
Tare   :   0. 000 lb
Net    :   0. 500 lb

Gross :   0. 106 lb
Tare   :   0. 000 lb
Net    :   0. 106 lb

Gross :   0. 606 lb
Tare   :   0. 106 lb
Net    :   0. 500 lb
-------------------

TOTAL : 1. 106 lb
-------------------
```

THANK YOU

Weight: **1.745lb**

Label Format   Receipt Format # 1   Receipt Format # 2

8. CALIBRATION

To set calibration, turn on the scale.

- Press [PCS/SET] key during the self-checking.
- Display will be show **pn**
- Press [G/N], [UNIT/ESC], and [TARE] to enter, display will be show **po chk**
- Press [TARE] until display will be show **p 2 mod.**
-
  Open the display by unscrewing and locate K3 on mainboard. Upon locating, press the button to enter calibration mode.

- Press [ZERO] key to confirm and press [TARE] to select **sinGLE /dual 1 /dual 2**
- Press [ZERO] key to confirm and press [TARE] to select **cal**
- Press [ZERO] key to confirm

- 20

Calibration　Cal

- Press ![ZERO] key to enter calibration, display will be show　unld
- Remove all the weight from the platform.

- When indicator get stable, press ![ZERO] key to confirm.
- Display will show the last calibration weight. If want to change the

  calibration weight value, press ![G/N] and ![ACC/TTL Print] keys to change the active

  digits and press ![TARE] key to increment the value.

- When the calibration value is correct, press ![ZERO] key to confirm.
- Display will be show　load.
- Place the calibration weight on the platform.

- When indicator becomes stable, press ![ZERO] key to confirm.
- Display will come to normal weighing mode.

9. RS-232 OUTPUT

9.1. Specifications:

RS-232 output of weighing data
Code　　　　:　ASCII
Data bits　　:　8 data bits
Parity　　　　:No Parity
Baud rate　　: 600bps to 9600bps selectable

9.2. RS-232 (9pin D type connector)

Pin 2	RXD	Input	Receiving data
Pin 3	TXD	Output	Transmission data
Pin 5	GND	—	Signal ground

9pin D Connecter:

Indicator	Computer
Pin 2:	Pin 3
Pin 3:	Pin 2

Pin 5:   Pin 5

Check Weighing Output

Pin 1 : VB
Pin 4: Vcc 5v (Output)
Pin 5: Com (Ground)
Pin 6: Ok (Output)
Pin 7: Low (Output)
Pin 8: Hi (Output)
Pin 9: Beep (Output)

9. 3. Continuously output protocol

Weighing mode

		,			-/⊔							k	g	CR	LF

-HEADER1-- - HEADER2-   --- WEIGHT DATA --   -WEIGHT UNIT- TERMINATOR
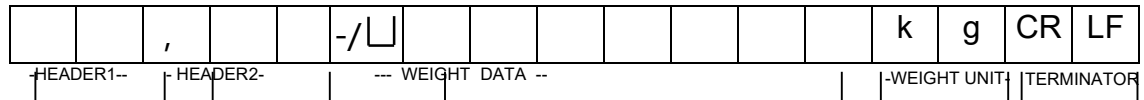
10. DRAWING

Drawing and Parts list
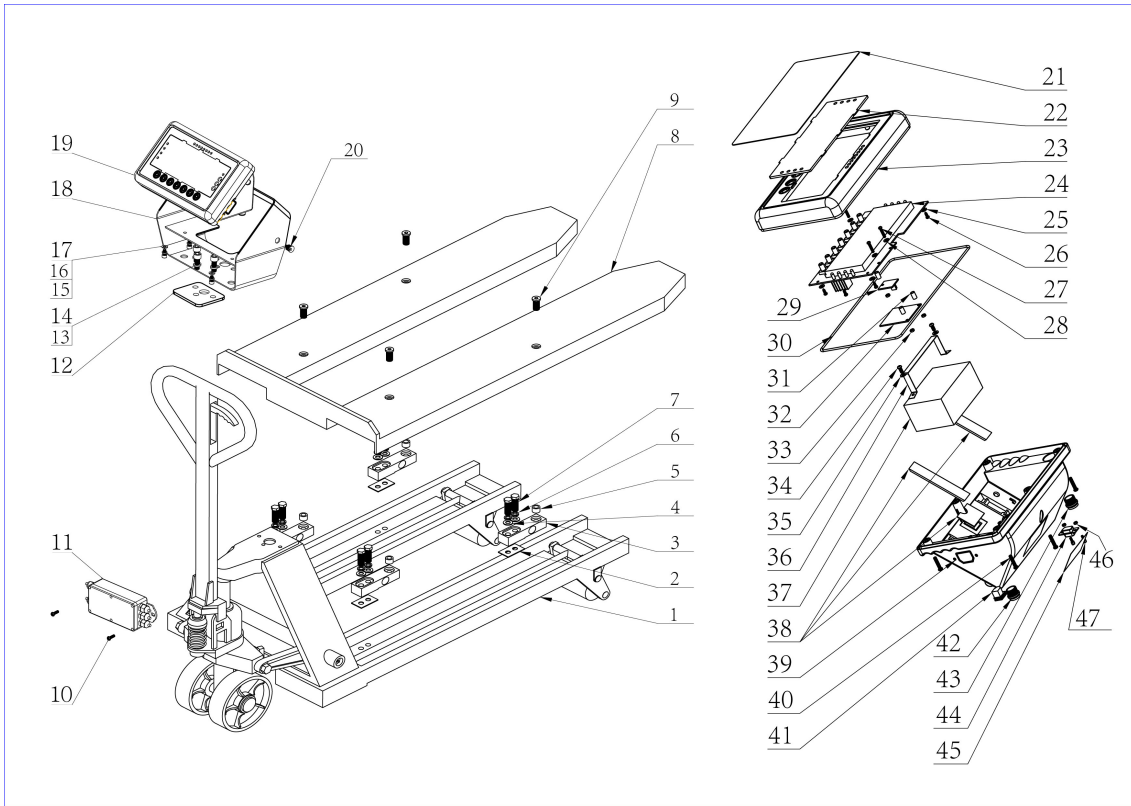
Parts list

No	parts name	qty	material	spec
1	Pallet Base	1		
2	Load cell gasket	4	SST	
3	Load cell	4	Alloy steel	
4	Washer	8	SST	M12
5	Screw	4	SST	
6	Spring washer	8	SST	M12
7	Hexagon screw	8	SST	M12*35
8	Cover plate	1	Q235	
9	Internal screw	4	Q235	M12*35
10	Screw	2	Q235	M6
11	Junction box	1	Plastic	
12	Rubber mat	1	Rubber	
13	Spring washer	3	SST	M10
14	Internal screw	3	SST	M10*25
15	Internal screw	4	SST	M6*12
16	Washer	4	SST	M6
17	Spring washer	4	SST	M6
18	Indicator support housing	1	Q235	
19	BW indicator	1		
20	AC socket	1		
21	key panel	1		
22	LCD protection sheet	1	PMMA	transparent
23	fonrt cover	1	ABS	
24	main PCBA	1		
25	insulative washer	6	EDPM	8x3.1x1.5t
26	self thread screw	6	S18C	3x10
27	"+" screw	3	S18C	M3x16, optional
28	insulative washer	3	EPDM	8x3.1x1.5t, optional
29	RS-232 PCBA	1		
30	seal loop	1	PFB	
31	tube	3	PVC	5.8x3.8x10, optional
32	analog output PCBA	1		optional
33	hexagon nut	3	S18C	optional
34	self thread screw	2	S18C	M4x10
35	washer	2	SPCC	9x4.4x0.8
36	battery bar	1	SPCC	
37	rechargeable battery	1	lead acid	6V/4Ah
38	seal paster	3	EVA	optional
39	back cover	1	ABS	
40	self thread screw	6	S18C	4x16
41	AC adapter jack	1		

42	air connector	1		5pin, for load cell
43	air connector	1		9pin, optional
44	D type connector	1		female, 9pin, optional
45	name plate	1		
46	hexagon nut	2	S18C	optional, M3
47	D type connector screw	2	S18C	M3, optional
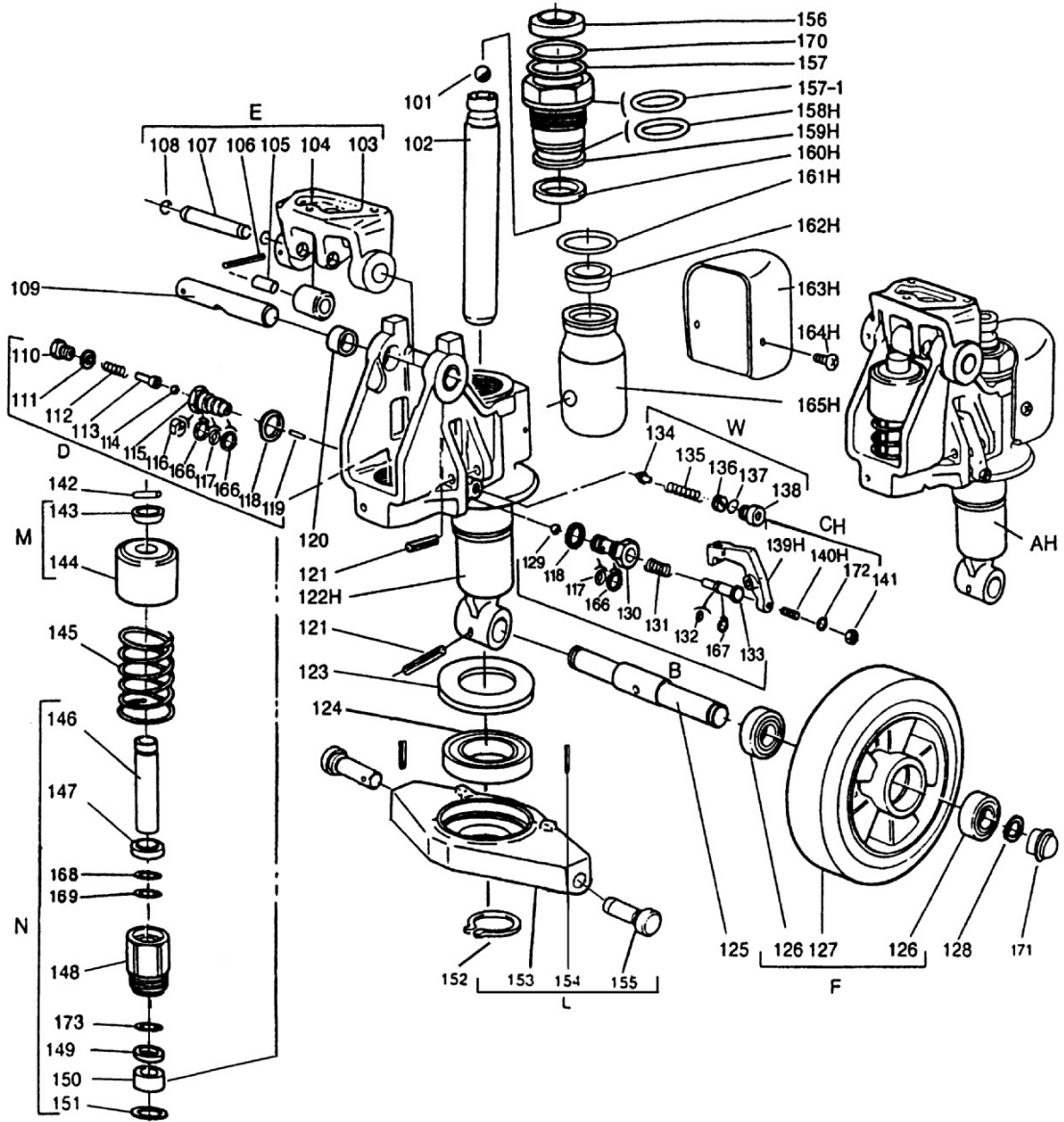
Parts List of Pump Assembly

Part No.	Description	Q'ty	Part No.	Description	Q'ty
101	Steel ball	1	136	Pressure regulating	1
102	Rod	1	137	screw O-ring	1
103	Base	1	138	Screw	1
104	Steel roller	1	139H	Crank link	1
105	Bushing	1	140H	Setting screw	1
106	Pin	1	141	Nut	1
107	Shaft	2	142	Parallel pin	1
108	Retaining ring	1	143	Retaining cover	1
109	Axle	1	144	Spring cover	1
110	Screw	1	145	Spring	1
111	Washer	1	146	Pump rod	1
112	Spring	1	147	Dust proof ring	1
113	Pressure rod	1	148	Pump cylinder	1
114	Steel ball	1	149	Seal ring	1
115	Pressure valve body	1	150	Nylon bushing	1
116	Split ring	1	151	Red copper washer	1
117	O-ring	2	152	Retaining ring	1
118	Washer	2	153	Rhombus plate	1
119	Steel needle	1	154	Pin	2
120	Bushing	2	155	Dowel pin	2
121	Pin	2	156	Dust proof ring	1
122H	Pump body	1	157	O-ring	1
123	Dust cover	1	157-1	O-ring	1
124	Bearing	1	158H	O-ring	1
125	Steering wheel axle	1	159H	Cylinder	1
126	Bearing	4	160H	Seal ring	1
127A	Steering wheel, Nylon	2	161H	O-ring	1
127B	Steering wheel,	2	162H	Filler plug	1
127C	Polyurethane	2	163H	Reservoir cover	1
127D	Steering wheel, Poly/Nylon	2	164H	Screw	2
128	Steering wheel, Rubber	2	165H	Reservoir	1
129	Retaining ring	1	166	Retainer	3
130	Steel ball	1	167	Retainer	1
131	Discharge valve body	1	168	Retainer	1
132	Spring	1	169	O-ring	1
133	O-ring	1	170	Retainer	1
134	Discharge valve shaft	1	171	Dust cover	2
135	Valve taper core	1	172	Spring washer	1
	Spring		173	O-ring	1

H101

H102

H103

H104

H111

G

H105

H112

H106
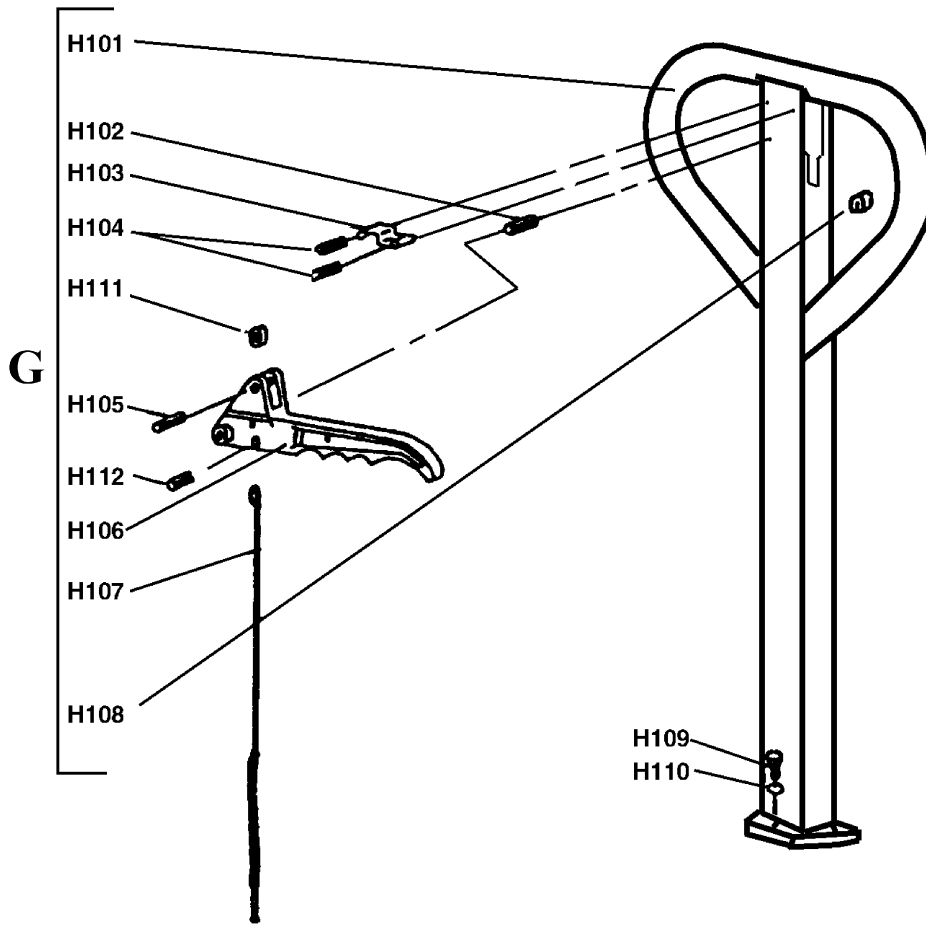
H107

H108

H109

H110

Parts List of Handle

Part No.	Description	Q'ty	Part No.	Description	Q'ty
H101	Handle	1	H107	Rod and chain	1
H102	Spring pin	1	H108	Rubber cushion	1
H103	Spring leaf	1	H109	Screw	3
H104	Spring pin	2	H110	Spring washer	3
H105	Spring pin	1	H111	Nylon roller	1
H106	Control lever	1	H112	Spring pin	1
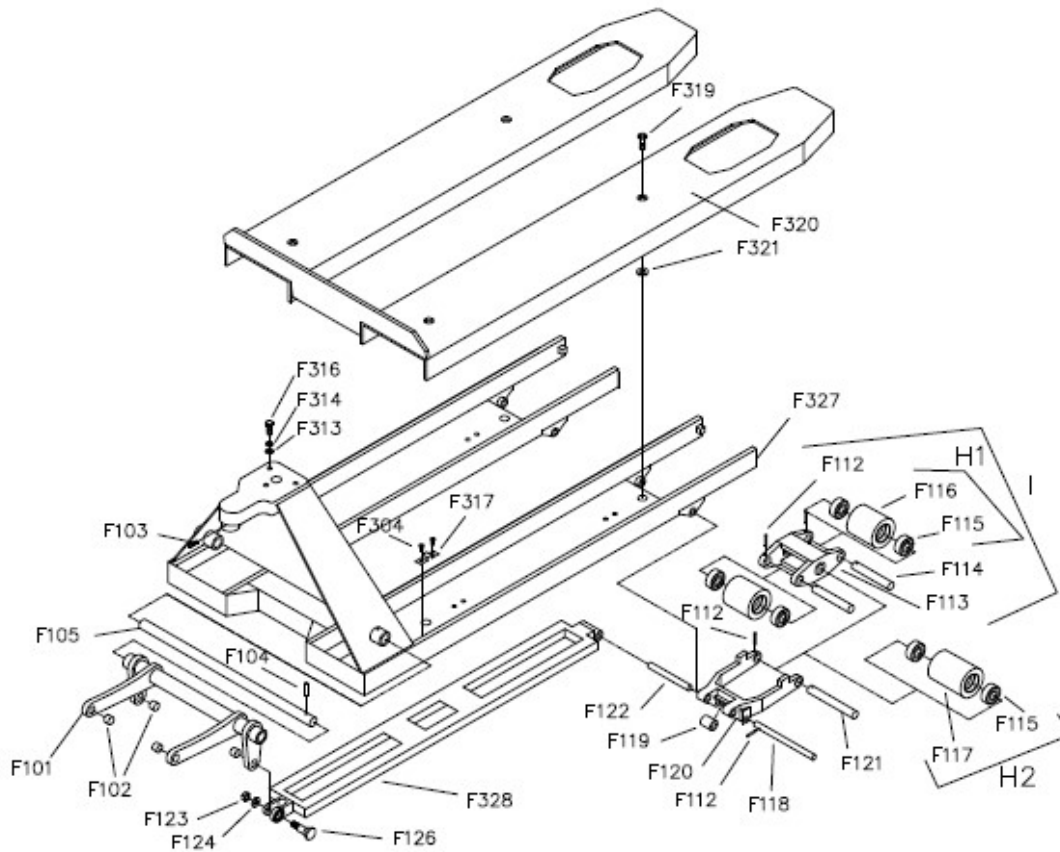
Parts List of Frame

Part No.	Description	Q'ty	Part No.	Description	Q'ty
F304	Screw	4	F101	Torsion tube assembly	1
F313	Washer	4	F102	Bushing	4
F314	Spring washer	4	F103	Hexagon socket screw	1
F316	Bolt	4	F104	Spring pin	1
F317	Wire clip	2	F105	Torsion tube shaft	1
F320S	Cover plate assembly	1	F112	Spring pin	8/4*
F320L	(555mm)	1	F113	H-link	2
F327S	Cover plate assembly	1	F114	Load roller axle	4
F327L	(690mm)	1	F115	Bearing	8/4*
F328	Frame（555mm）	2	F116B	Poly load roller, tandem type	4
	Frame（690mm）	4	F117B	Poly load roller, single type	2
	Pull rod	4	F118	Axle	2
			F119	Roller	2
			F120	Wheel frame	2
			F121	H-link axle	2
			F122	Pull rod axle	2
			F123	Nut	2
			F124	Split pin	2
			F126	Eccentric pin	2

Note*: Quantity for tandem roller is 8, for single roller is 4.

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