Manual Handling

How can we help our customers?

Andrew Pye

Manual Handling – how we can help our customers

Key Facts

Key Facts from the HSE Summary Statistics for Great Britain 2019 (Below)

- 1.4 million working people suffering from a work-related illness, of which, musculoskeletal disorders attributed to 37% of all working days lost in 2018/ 2019
- 81% of work related musculoskeletal disorders were related to upper limb, neck or back injuries.
- A total of 498,000 workers are suffering from work related musculoskeletal disorders.
- 6.9 million working days were lost due to work related musculoskeletal disorders in 2018/ 2019

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Manual Handling

Background

Manual handling injuries are part of a wider group of musculoskeletal disorders (MSDs). The term ‘musculoskeletal disorders’ covers any injury, damage or disorder of the joints or other tissues in the upper/lower limbs or the back.

What do the Manual Handling Operations Regulations require?

The regulations require employers to:

- **Avoid** the need for hazardous manual handling, ‘so far as is reasonably practicable’;
- **Assess** the risk of injury from any hazardous manual handling that can’t be avoided;
- **Reduce** the risk of injury from hazardous manual handling, ‘so far as is reasonably practicable’.

Pushing and Pulling activities

Pushing and Pulling activities also fall under the same regulations and it is suggested by the Health and Safety Executive that a Suitable RAPP (**R**isk **A**ssessment for **P**ushing and **P**ulling) is completed for these activities.

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Example of Bad Practice

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RAPP Tool

Structure of the Tool

There are two types of pushing and pulling operations you can assess using the HSE designed RAPP Tool:

- moving loads on wheeled equipment, such as hand trolleys, pump trucks, carts or wheelbarrows.
- moving loads **without** wheels, which might involve actions such as dragging/ sliding, churning (pivoting and rolling) and rolling.

This assessment focuses on moving loads on wheeled equipment, such as hand trolleys, pump trucks, carts or wheelbarrows and should be used to assist customers with their Manual Handling Risks carrying out this operation.

For Moving loads without wheels, the customer can follow the guidance and RAPP tool provided by the HSE.

Use of the tool may not comprise a full risk assessment

HSE's guidance booklet L23 *Manual handling. Manual Handling Operations Regulations 1992: Guidance on Regulations*3 contains more information on conducting full risk assessments. Always consider individual and psychosocial issues when completing the RAPP score sheet.

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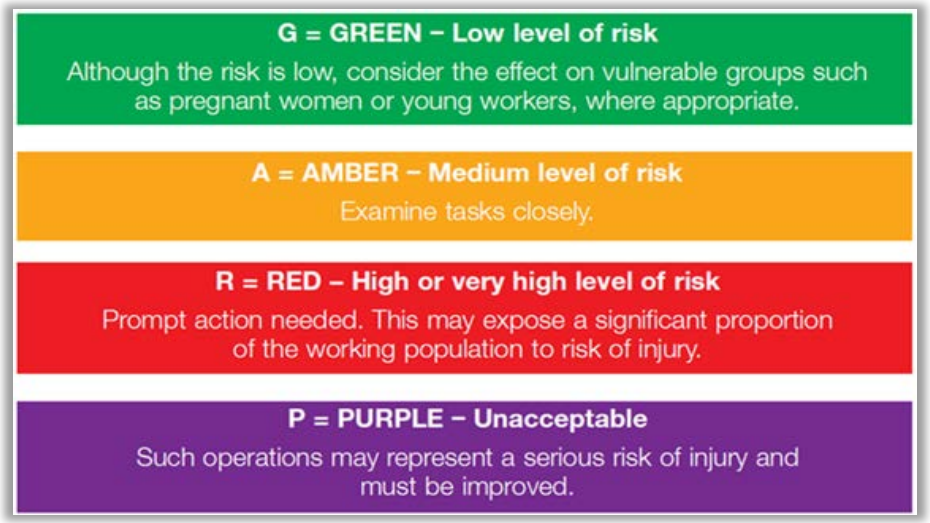
How to complete an Assessment

- Spend some time observing the workers and the work activity to ensure that what you are seeing is representative of normal working practice. Always consider the 'worst-case scenario'.
- Consult employees and safety representatives during the assessment process.
- Where several people do the same activity, make sure you get the views of workers about the demands of the operation.
- Ensure you read this assessment guide in full before you make your assessment.
- Follow the appropriate flow chart and assessment guide to determine the level of risk for each risk factor. The levels of risk are:



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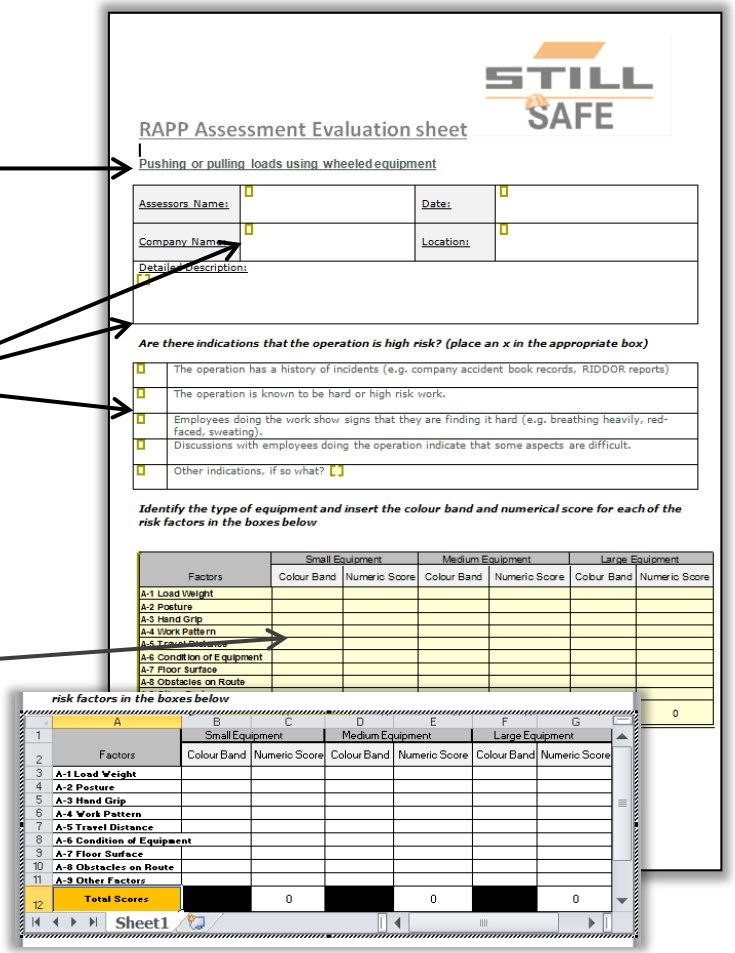
- Open the RAPP Assessment Evaluation Sheet.
- Complete the required fields by typing into the boxes provided.
- Double click within the evaluation section to open up the working areas.



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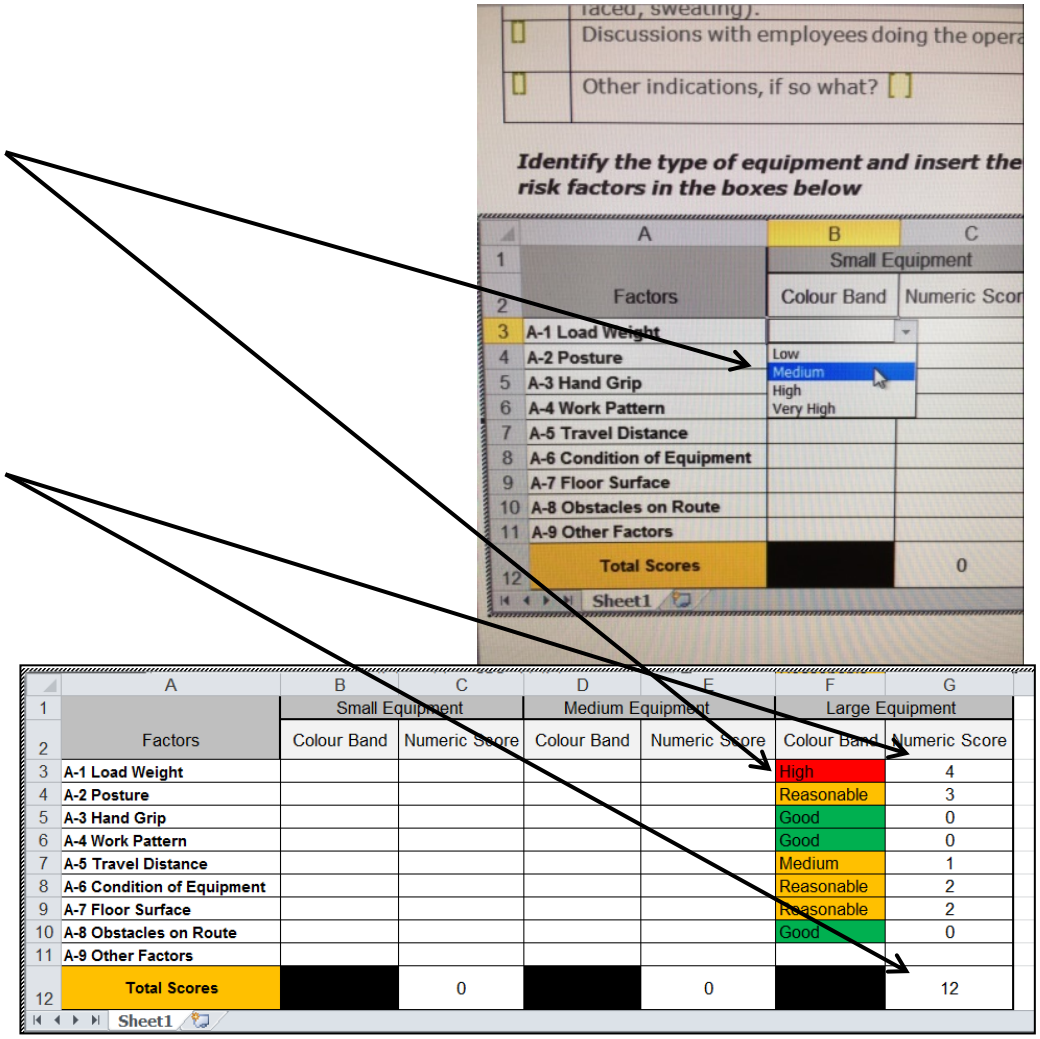
How to Complete an Assessment

- Enter the colour band and corresponding numerical score in the appropriate column of the score sheet following the guidance set out in slides 6 onwards of this presentation. Enter the remaining task information asked for on the score sheet.
- Add up the scores to obtain the total score for the operation. The total scores help prioritise those activities/operations that need most urgent attention and help check the effectiveness of any risk-reduction measures. The colour bands help determine which risk factors of the operation require attention.
- The scores can be used for comparison purposes but the total scores do not relate to specific action levels.
- Where tasks require attention, first look for solutions where it is reasonably practicable to eliminate the hazard, for example through redesign of the work or automation of the task. Where these measures are not practicable, identify how tasks might be improved to avoid or reduce those factors that score red. Then consider how to reduce the amber scores



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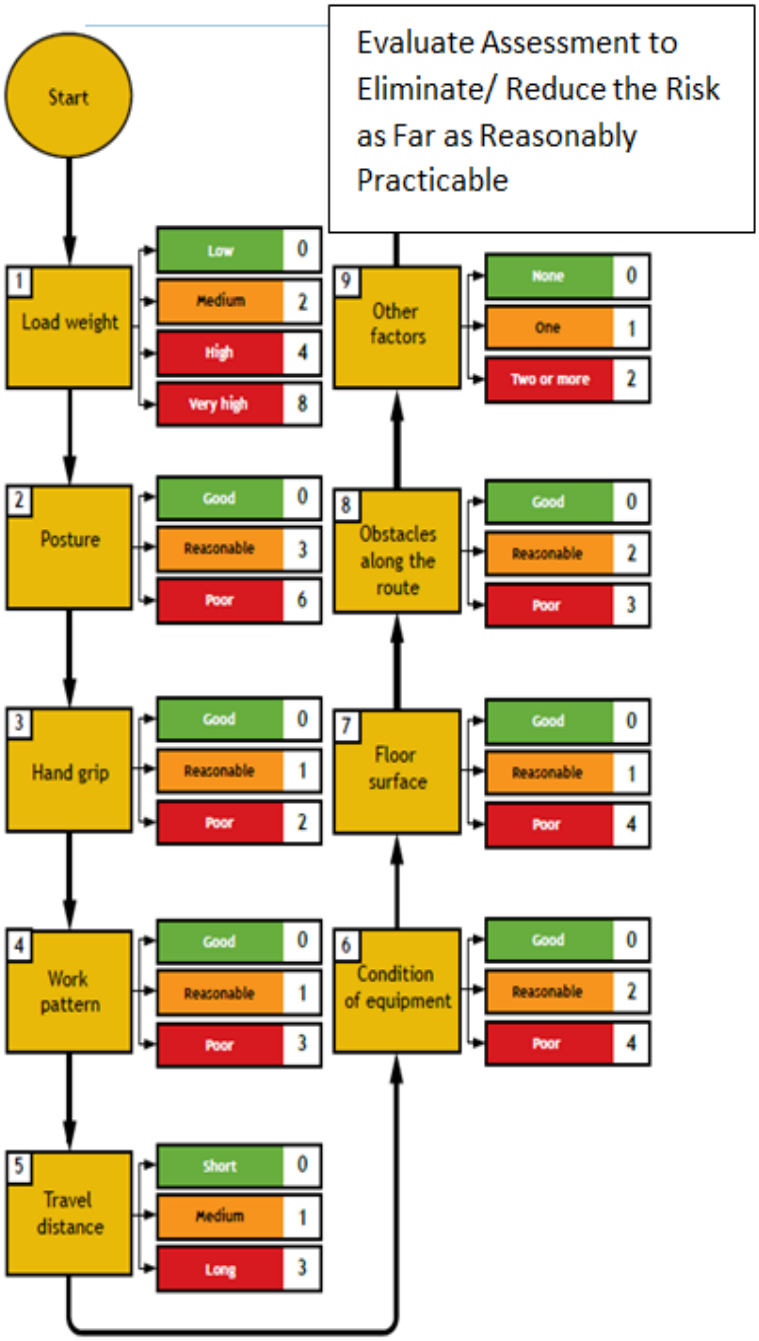
Risk levels and scores of pushing or pulling loads on wheeled equipment



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Assessment Guide

Question:- A-1 Type of equipment/Load weight (kg)

Identify the type of equipment used – **small, medium** or **large**. If different types of equipment are used to move loads, do an assessment for each type. If more than one piece of loaded equipment is moved at a time (e.g. two trolleys), assess the total load moved.

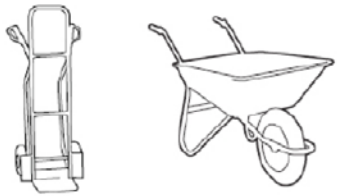
	A	B	C	D	E	F	G
1		Small Equipment		Medium Equipment		Large Equipment	
2	Factors	Colour Band	Numeric Score	Colour Band	Numeric Score	Colour Band	Numeric Score
3	A-1 Load Weight						
4	A-2 Posture						
5	A-3 Hand Grip						
6	A-4 Work Pattern						
7	A-5 Travel Distance						
8	A-6 Condition of Equipment						
9	A-7 Floor Surface						
10	A-8 Obstacles on Route						
11	A-9 Other Factors						
12	Total Scores		0		0		0

Sheet1

Find out the total load moved (weight of the equipment and weight of loads carried) from labelling, by asking the workers or by weighing. If the same equipment is used to move different loads, then assess the equipment with the heaviest load that is likely to be moved. The illustrations in each section are only a guide to help you – they are not comprehensive.

Note: If the load exceeds the rated capacity of the equipment then this is classified P – Unacceptable. In this case, either the weight must be reduced or suitable equipment provided. Do not proceed until this has been improved. There is no score for 'P' on the flow chart or score sheet.

Small with one or two wheels: *e.g. wheelbarrows, wheelie bins or sack trucks. With this equipment the worker supports some of the load.*



Less than 50 kg	Low G/0
50 kg to 100 kg	Medium A/2
100 kg to 200 kg	High R/4
More than 200 kg	Very high R/8
Load exceeds equipment's rated capacity (manufacturer's recommended maximum weight)	Unacceptable P

Medium, with three or more fixed wheels and/or castors: *eg roll cages, Euro bins.*

Less than 250 kg	Low G/0
250 kg to 500 kg	Medium A/2
500 kg to 750 kg	High R/4
More than 750 kg	Very high R/8
Load exceeds equipment's rated capacity (manufacturer's recommended maximum weight)	Unacceptable P

Large, steerable or running on rails: *eg pallet truck or overhead rail system.*

Less than 600 kg	Low G/0
600 kg to 1000 kg	Medium A/2
1000 kg to 1500 kg	High R/4
More than 1500 kg	Very high R/8
Load exceeds equipment's rated capacity (manufacturer's recommended maximum weight)	Unacceptable P

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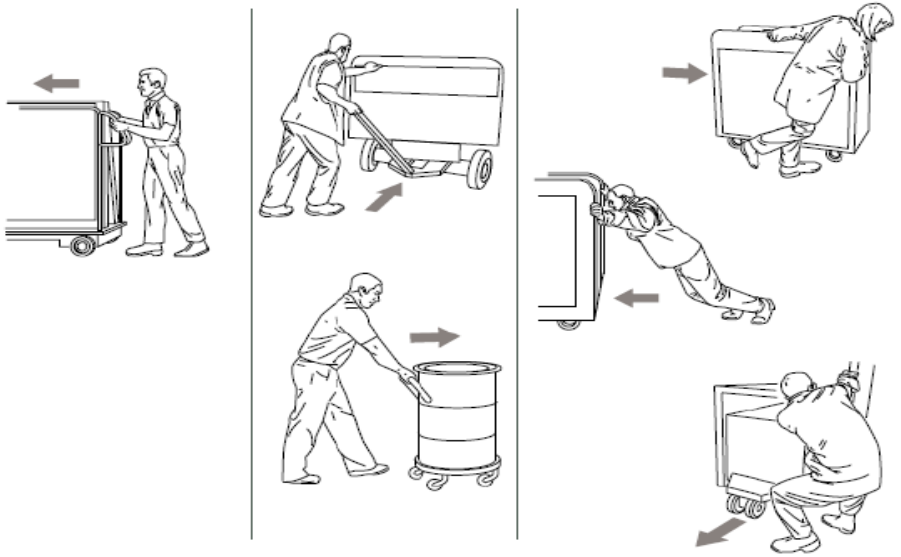
Question:- A-2 Posture

Observe the general positions of the hands and the body during the operation.

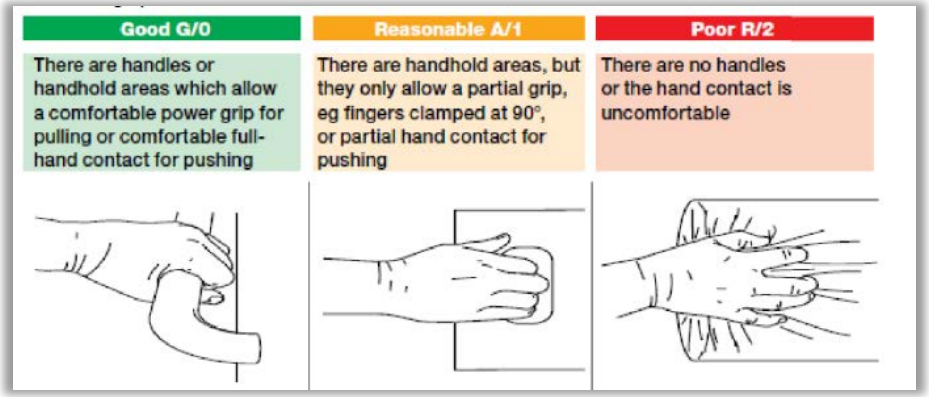
Good G/0	Reasonable A/3	Poor R/6
Torso is largely upright, and	Body is inclined in direction of exertion, or	Body is severely inclined, or worker squats, kneels or needs to push with their back against the load, or
Torso is not twisted, and	Torso is noticeably bent or twisted, or	Torso is severely bent or twisted, or
Hands are between hip and shoulder height	Hands are below hip height	Hands are behind or on one side of body or above shoulder height



Question:- A-3 Hand grip

Observe how the hand(s) grip or contact the equipment during pushing or pulling. If the operation involves both pushing and pulling, assess the hand grip for both actions.

Good G/0	Reasonable A/1	Poor R/2
There are handles or handhold areas which allow a comfortable power grip for pulling or comfortable full-hand contact for pushing	There are handhold areas, but they only allow a partial grip, eg fingers clamped at 90°, or partial hand contact for pushing	There are no handles or the hand contact is uncomfortable



Question:- A-4 Work pattern

Observe the work, noting whether the operation is repetitive (five or more transfers per minute) and whether the worker sets the pace of work. Ask workers about their pattern of breaks and other opportunities to rest or recover from the work.

Good G/0	Reasonable A/1	Poor R/3
The work is not repetitive (fewer than five transfers per minute), and	The work is repetitive, but	The work is repetitive, and
The pace of work is set by the worker	There is opportunity for rest or recovery through formal and informal breaks or job rotation	No formal/informal breaks or job rotation opportunities are provided

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Question:- A-5 Travel distance

Determine the distance from start to finish for a single trip.
If the operation is not repetitive, do an assessment for the longest trip.
If the operation is repetitive, determine the average distance for at least five trips.

Short G/0	Medium A/1	Long R/3
10 m or less	Between 10 m and 30 m	More than 30 m

Question:- A-6 Condition of equipment

Enquire about the maintenance programme and observe the general state of repair of the equipment (condition of the wheels, bearings and brakes).

Good G/0	Reasonable A/2	Poor R/4
Maintenance is planned and preventive, and	Maintenance occurs only as problems arise, or	Maintenance is not planned (there is no clear system in place), or
Equipment is in a good state of repair	Equipment is in a reasonable state of repair	Equipment is in a poor state of repair

Question:- A-7 Floor surface

Identify the condition of the surfaces along the route and determine the level of risk using the following criteria.

Good G/0	Reasonable A/1	Poor R/4
Dry and clean, and	Mostly dry and clean (damp or debris in some areas), or	Contaminated (wet or debris in several areas), or
Level, and	Sloping (gradient is between 3° and 5°), or	Steep slope (gradient is more than 5°), or
Firm, and	Reasonably firm underfoot (eg carpet), or	Soft or unstable underfoot (gravel, sand, mud), or
Good condition (not damaged or uneven)	Poor condition (minor damage)	Very poor condition (severe damage)

Question:- A-8 Obstacles along the route

Check the route for obstacles. Note if the equipment is moved over trailing cables, across raised edges, up or down steep ramps (gradient of more than 5°), up or down steps, through closed/narrow doors, screens or confined spaces, around bends and corners or objects. Each type of obstacle should only be counted once no matter how many times it occurs.

Good G/0	Reasonable A/2	Poor R/3
No obstacles	One type of obstacle but no steps or steep ramps	Steps, steep ramps or two or more other types of obstacle

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Assessment Guide

Question:- A-9 Other factors

Identify any other factors, for example:

- the equipment or load is unstable;
- the load is large and obstructs the worker's view of where they are moving;
- the equipment or load is sharp, hot or otherwise potentially damaging to touch;
- there are poor lighting conditions;
- there are extreme hot or cold temperatures or high humidity;
- there are gusts of wind or other strong air movements;
- personal protective equipment or clothing makes using the equipment more difficult.

None G/0	One A/1	Two or more R/2
No other factors present	One factor present	Two or more factors present

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Conclusion

Review of Evaluation Sheet:-

Once the RAPP Assessment Evaluation sheet is complete, an assessment of the risks should be made following the HSE hierarchy of control:-

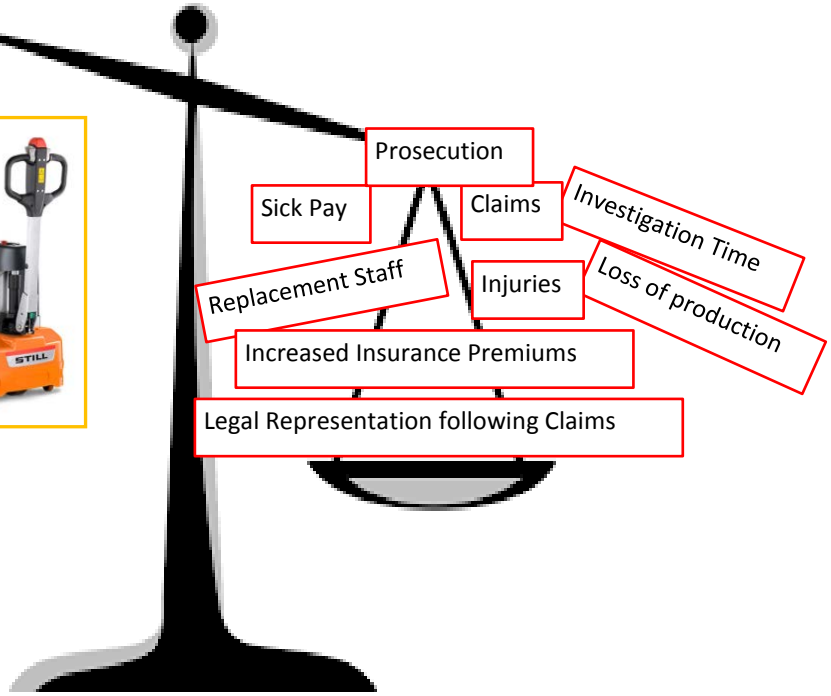
1) Elimination of the task/ risk
2) Substitution of the task/ equipment
3) Engineering controls
4) Safe systems of work
5) Personal protective equipment

The Possible Solution

STILL ECU 15

The Risk

Musculoskeletal Injuries



"By using a STILL Powered Pallet Truck you will eliminate the risk of pushing and pulling"

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Impressive goods handling: 1500 kg capacity and incredibly low service weight make it possible to take on any transportation task anywhere

Outstanding flexibility: compact size allows for operation even in the most confined spaces

Easy handling: moving goods electrically without strain and an on-board charger

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The Specification

ECU 15 C Low Lift Pallet Truck
Powerful Energy Pack

In accordance with VDI guidelines 2198, this specification applies to the standard model only.
Alternative tyres, mast types, ancillary equipment, etc. could result in different values.

Distinguishing marks	1.1	Manufacturer				STILL
	1.2	Manufacturer's type designation				**ECU 15 C**
	1.3	Drive				Electric
	1.4	Operation				Walking
	1.5	Rated capacity/rated load		Q	kg	1500
	1.6	Load centre distance		c	mm	600
	1.8	Load distance, centre of drive axle to fork		x	mm	946
	1.9	Wheel base		y	mm	1293
Weights	2.1	Service weight incl. battery			kg	200
	2.2	Axle loading, laden	drive end/load end		kg	510/1180
	2.3	Axle loading, unladen	drive end/load end		kg	160/40
Tyres/chassis	3.1	Tyres				Polyurethane
	3.2	Tyre size	drive end		mm	Ø 200 x 70 (Ø 230 x 73) [1]
	3.3	Tyre size	load end		mm	Ø 80 x 93 (Ø 80 x 70) [2]
	3.4	Support castor size			mm	Ø 80 x 30
	3.5	Number of wheels (x = driven)	drive end/load end			1x + 2/2
	3.6	Tread	drive end/load end	b_{10}/b_{11}	mm	410/380
Dimensions	4.4	Lift		h_3	mm	115
	4.9	Height drawbar in driving position	min./max.	h_{14}	mm	800/1170
	4.15	Fork height, lowered		h_{13}	mm	85
	4.19	Overall length		l_1	mm	1660
	4.20	Length to face of forks		l_2	mm	510
	4.21	Overall width		b_1	mm	574
	4.22	Fork dimensions		s/e/l	mm	48/160/1150
	4.25	Distance between fork arms		b_5	mm	540
	4.32	Ground clearance, centre of wheel base		m_2	mm	37
	4.34	Working aisle width with pallets 800 x 1200 lengthways		A_{st}	mm	1880
	4.35	Turning radius		W_a	mm	1540
Performance data	5.1	Travel speed	laden/unladen		km/h	4.2/4.6
	5.2	Lift speed	laden/unladen		m/s	0.03/0.053
	5.3	Lowering speed	laden/unladen		m/s	0.049/0.036
	5.8	Max. gradeability kB 5	laden/unladen		%	4/10
	5.9	Acceleration time	laden/unladen			10.7/9.5
	5.10	Service brake				Electromagnetic
Electric engine	6.1	Drive motor, rating S2 = 60 min			kW	0.45
	6.2	Lift motor, rating S3 = 10%			kW	0.8
	6.3	Battery according to DIN 43531/35/36 A, B, C, no				Nein
	6.4	Battery voltage/rated capacity K_5			V/Ah	2x 12 V/85
	6.5	Battery weight ±5% (depends on make)			kg	52
	6.6	Energy consumption according to VDI cycle			kWh/h	0.39
Misc.	8.1	Drive control				DC control
	8.4	Sound pressure level at driver's ear			dB(A)	69

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