Build Health Annual Conference

HSE and Musculoskeletal disorders (MSDs)

17th October 2018

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What are musculoskeletal disorders?

Disorders in the **tissues** of the **body**

Disorders:

Effects of tissue change: stiffness, weakness, pain, swelling, restricted motion, tingling and sensations, etc.

Tissues:

Muscles
ligaments
tendons
nerves
blood vessels
bursae
bone

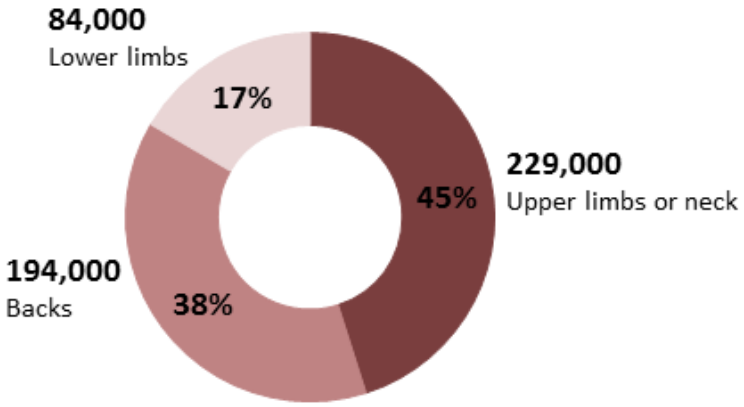
Back

Upper limbs (and neck)

Lower limbs

The burden of WRMSDs

- 507,000 workers suffering from MSDs (new or long-standing) in 2016/17
- 8.9 million working days lost due to MSDs in 2016/17
- Total case breakdown



Costs of MSDs to employers

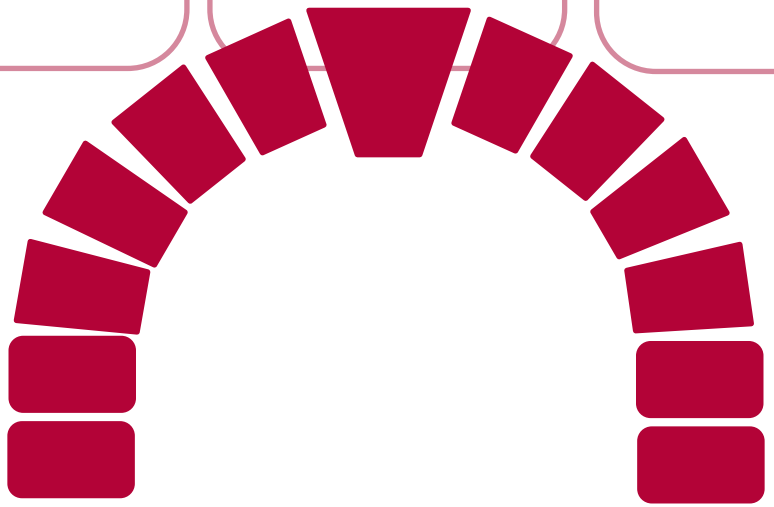
- Preventing and managing discomfort, pain and injury makes good business sense.
  - Reduced absenteeism
    - Lower costs of hiring or training replacement staff
    - No ‘overload’ or drop in moral on the remaining staff to pick up any slack from absent workers
  - Smoother running of your business
    - Increased productivity
    - Fewer stops and starts at work
    - Keeping your experienced staff at work
  - … and hopefully reduced insurance costs

From your experience…think about..

- Have you had an MSD?
- What symptoms did it present?
- What do you think caused it?
- What impact did it have on your work?... quality of life?

The Approach to MSD Management

Identify	Avoid	Assess	Reduce	Manage
Engagement Observe Indicators	*Hazardous* tasks	*Hazardous* tasks	Eliminate or reduce	Training SOPs Indicators



Why assess?

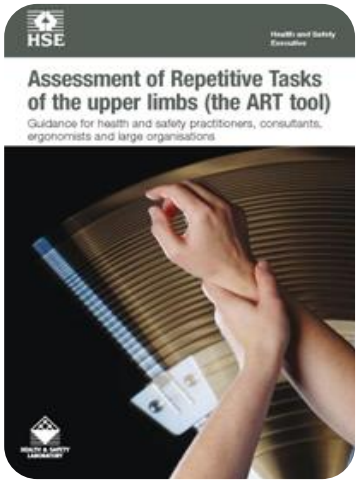
- Main aim is to avoid any manual handling that presents a risk of injury or apply controls to reduce risk of injury to the lowest level reasonably practicable

- Assessment is part of this but sometimes it only needs to be brief, where the risk factors and controls are very evident and straightforward.

- The level of detail in a risk assessment should be proportionate to the risk.

The HSE MSD quick assessment tools

Use ART



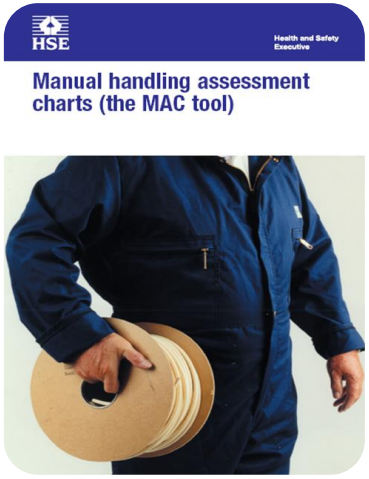
Items weigh less than 2.5 kg

The task is mostly upper-limb

Use RAPP

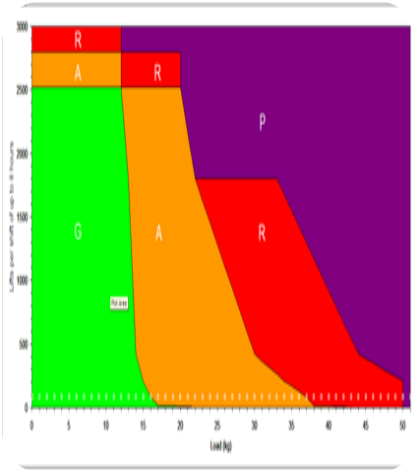
For pushing and pulling

Use MAC



All items lifted or carried weigh about the same

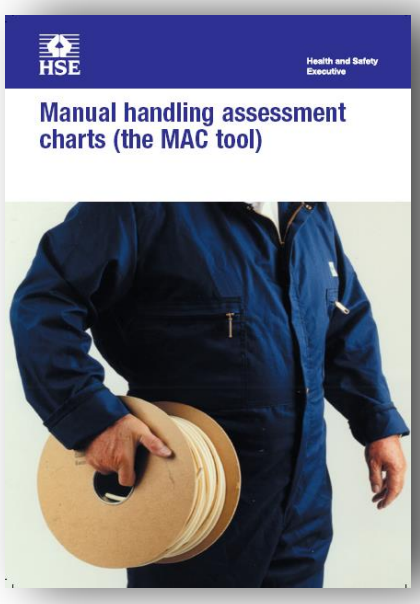
Use MAC & V-MAC



The heaviest item lifted is at least 2 kg heavier than the lightest

Manual handling risk assessment

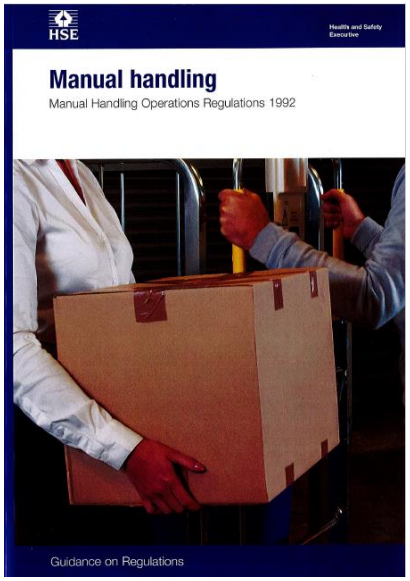
MAC



- Quick check
- Highlights high risk
- Highlights key risks
- Enables communication

RAPP

L23



- Full risk assessment
- Wide scope
- Adheres to “Schedule 1”
- Complies with European Directive 90/269/EEC

MHOR (L23) requirements

AVOID (Reg 4(1)(a))

- hazardous operations SFARP

ASSESS **(Reg 4(1)(b)(i))**

- **any hazardous operations that cannot be avoided**

REDUCE (Reg 4(1)(b)(ii))

- the risk of injury ALARP

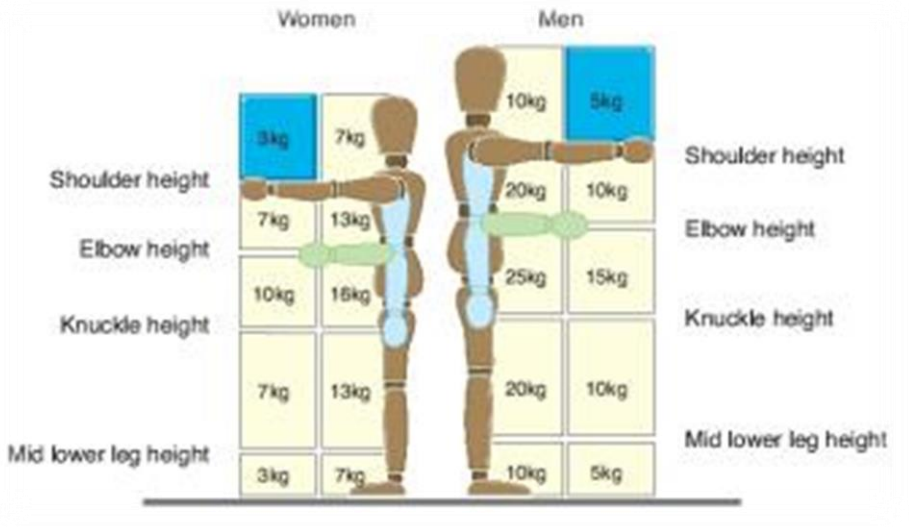
MONITOR / REVIEW (Reg 4(2))

- to monitor risks

...any transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving thereof) by hand or bodily force.

MHOR (1992) requirements

Simple risk assessment filter in MHOR



What is hazardous?

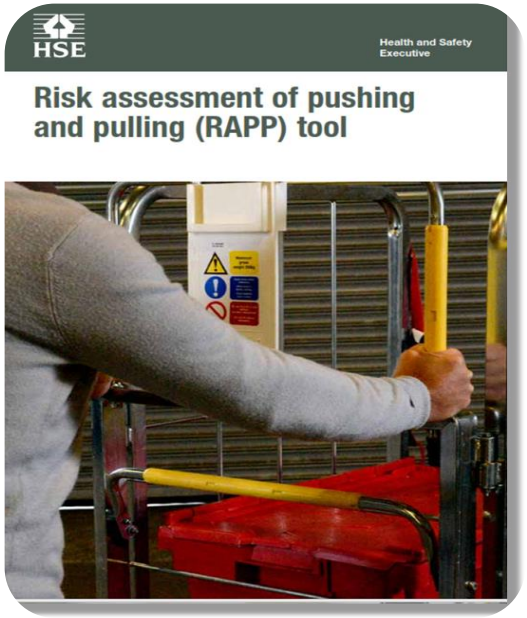
L23: Stage 1 - Risk Filter

MAC and RAPP

Use MAC

For lifting and carrying operations

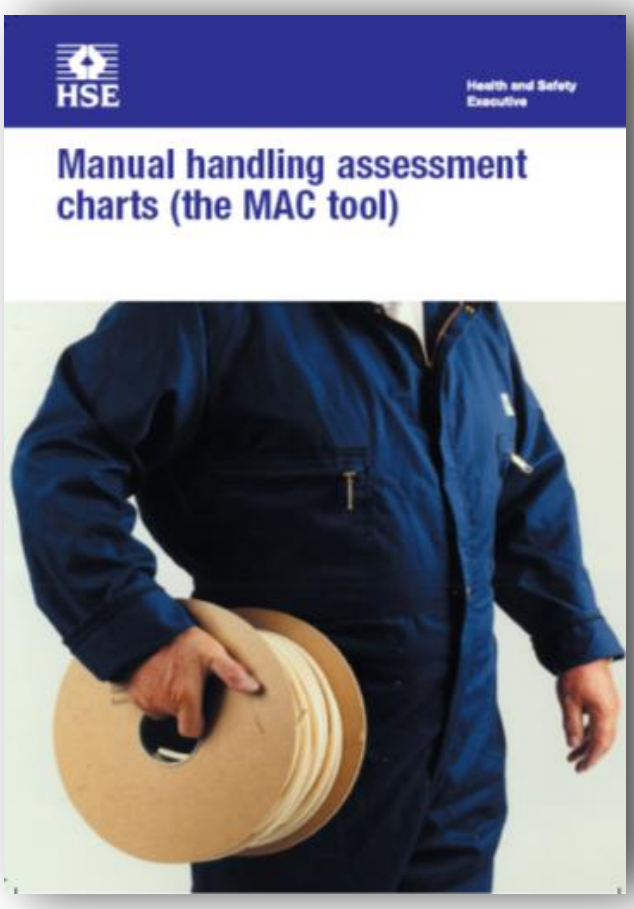
Use RAPP



For pushing and pulling

What are the MH risk factors from from this…..

MAC tool: classification of risks



G = GREEN - Low level of risk
Although the risk is low, consider the exposure levels for vulnerable groups such as pregnant women or young workers, where appropriate.

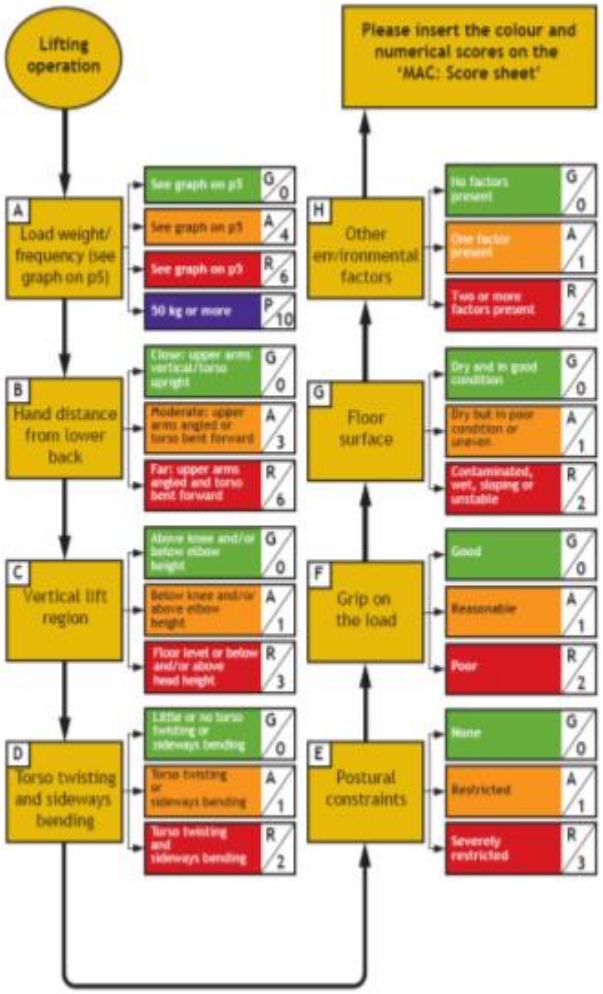
A = AMBER - Medium level of risk
Examine tasks closely.

R = RED - High level of risk
Prompt action needed. This may expose a significant proportion of the working population to risk of injury.

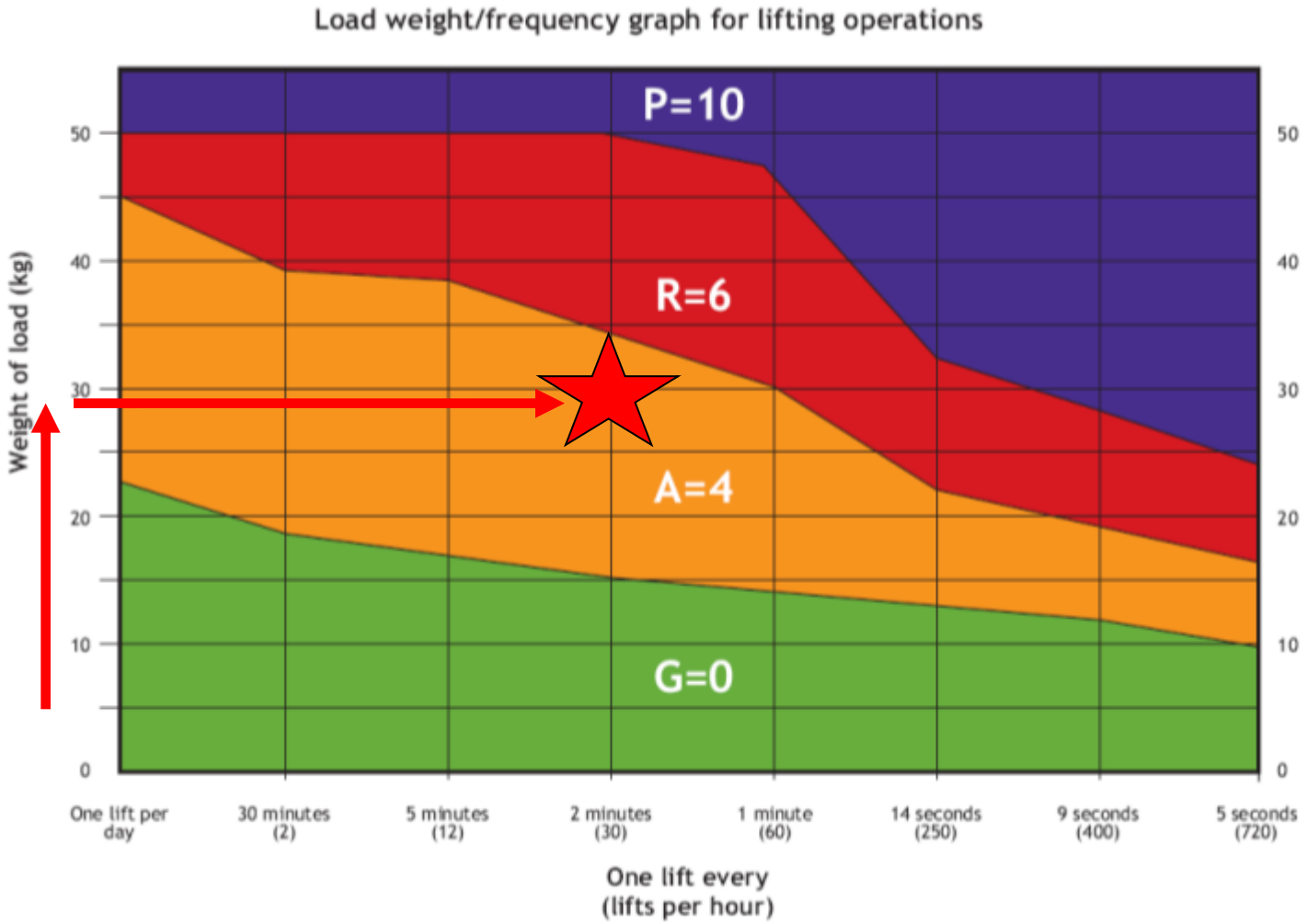
P = PURPLE - Very high level of risk
Such operations may represent a serious risk of injury and should come under close scrutiny, particularly when the entire weight of the load is supported by one person.

- Separate flowcharts for:
  - Lifting
  - Carrying
  - Team handling

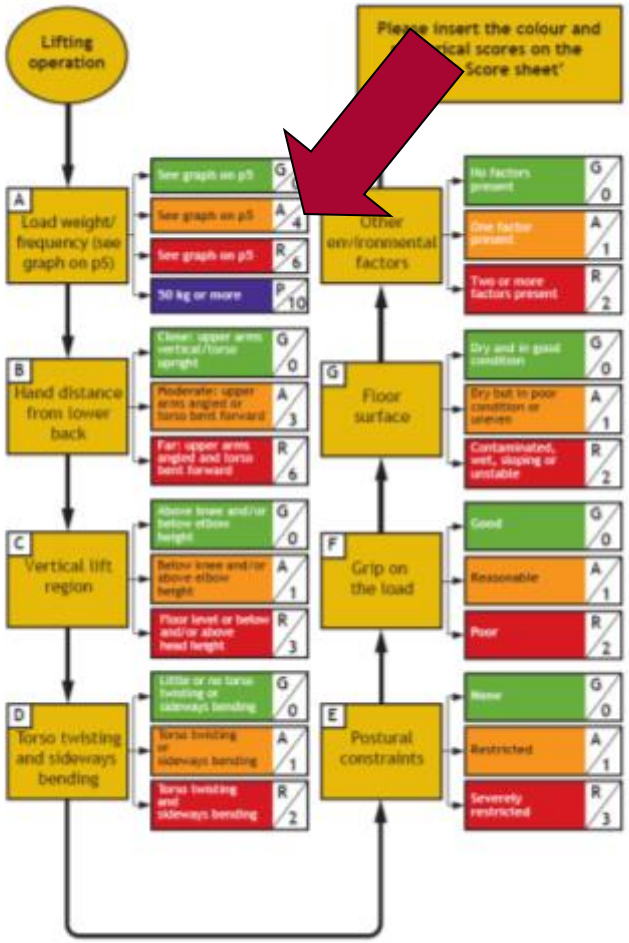
Flowcharts – Lifting/Carrying/Team



Classification of load weight/frequency



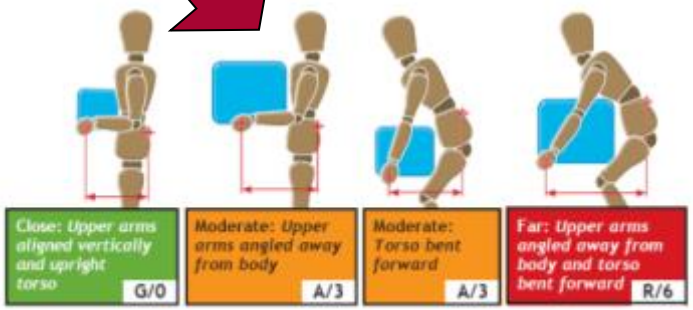
Classification of risks



Classification of risks

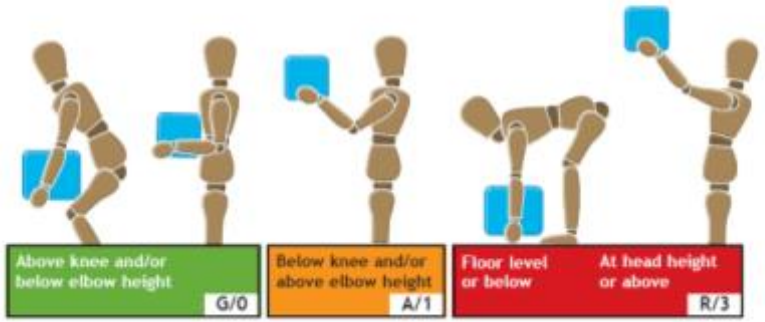
B Han[illegible]ance from the lower back

Observe t[illegible]nd examine the horizontal distance between the operative's hands and t[illegible]r back. Always assess the 'worst case scenario'. Use the following to gu[illegible]sessment:

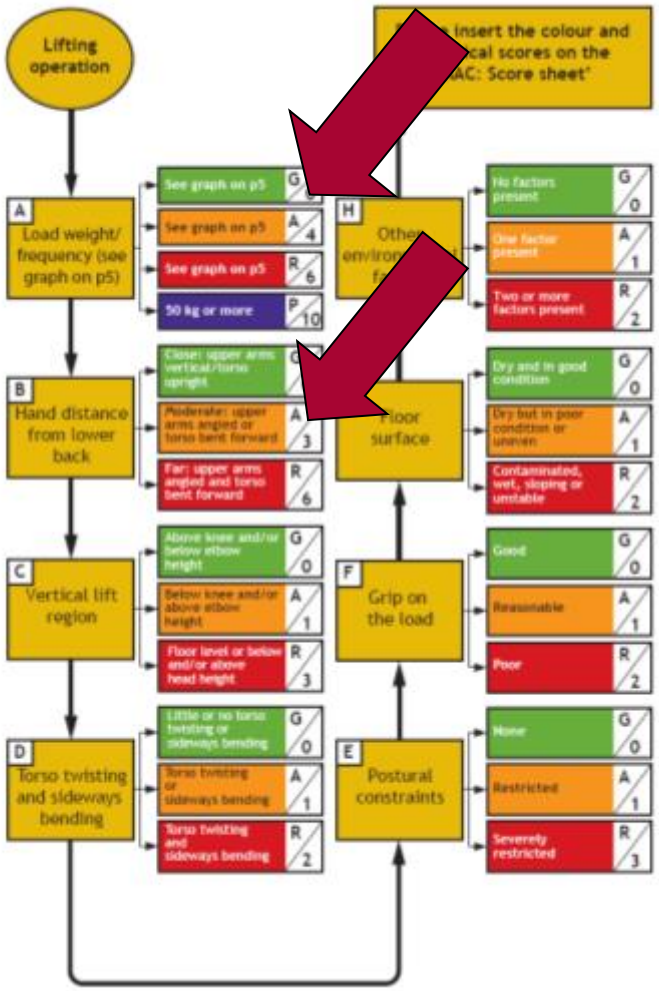


C Vertical lift region

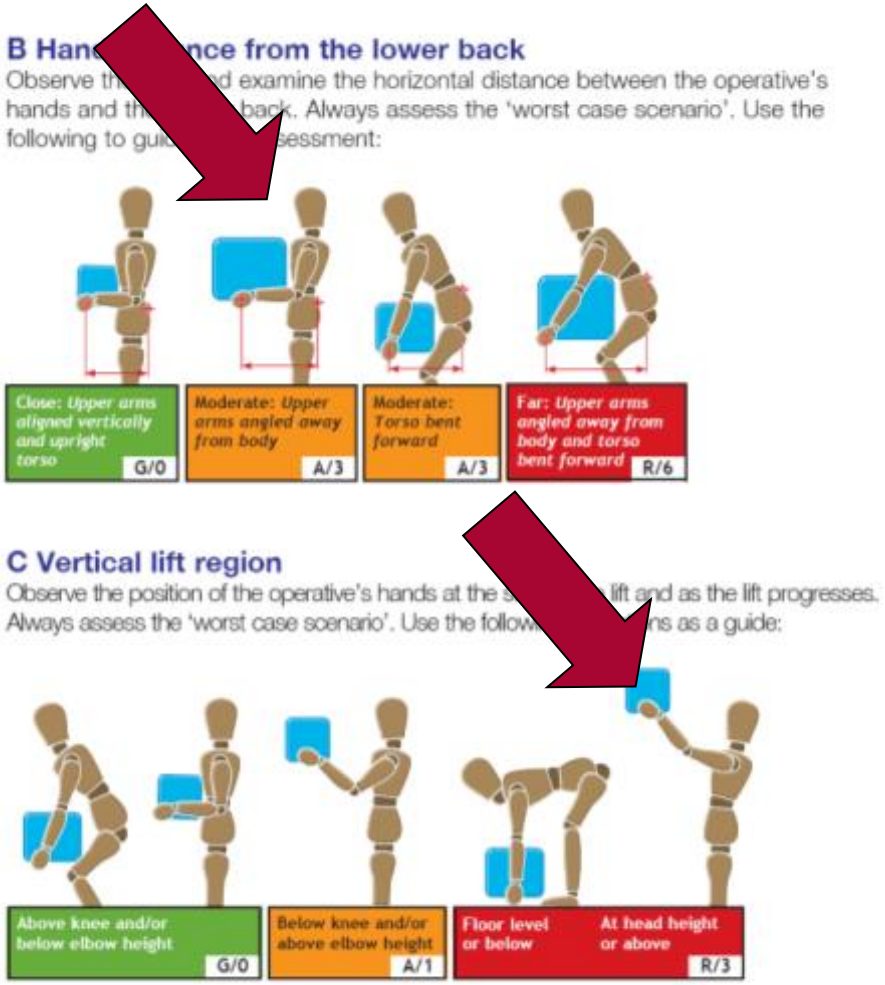
Observe the position of the operative's hands at the start of the lift and as the lift progresses. Always assess the 'worst case scenario'. Use the following illustrations as a guide:



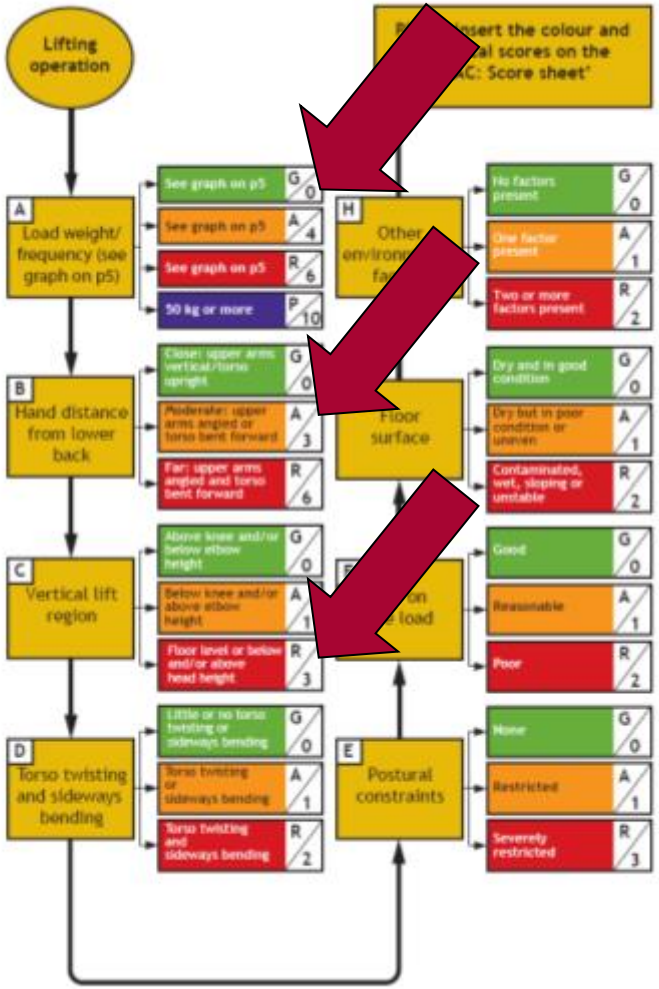
Classification of risks



Classification of risks

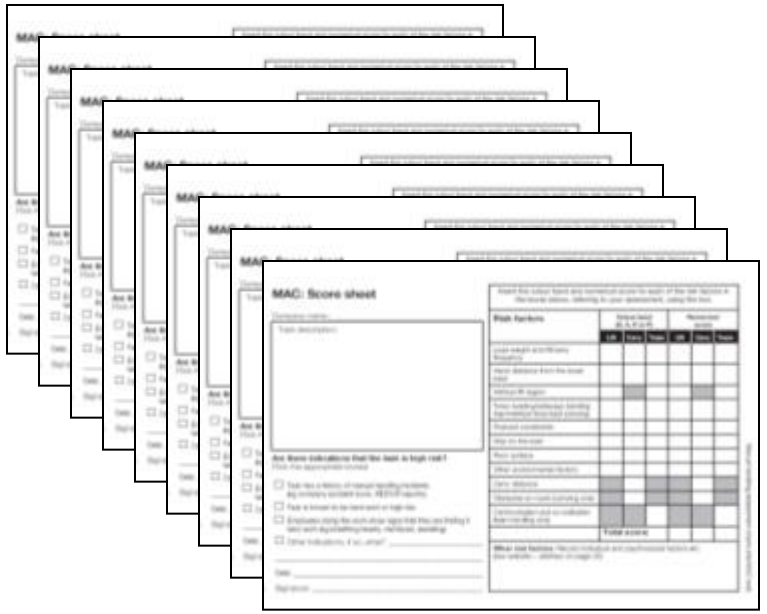


Classification of risks

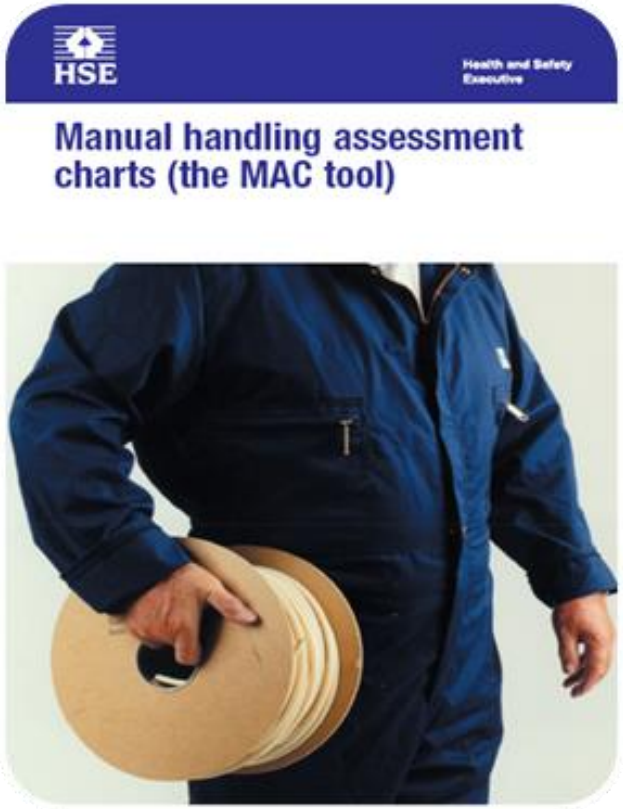


Prioritisation of tasks

- Where you have more than one Manual Handling task, use MAC scores to priorities



The New MAC tool V3.0!! Published End of October 2018



MAC tool changes - Purple !

Was/is:

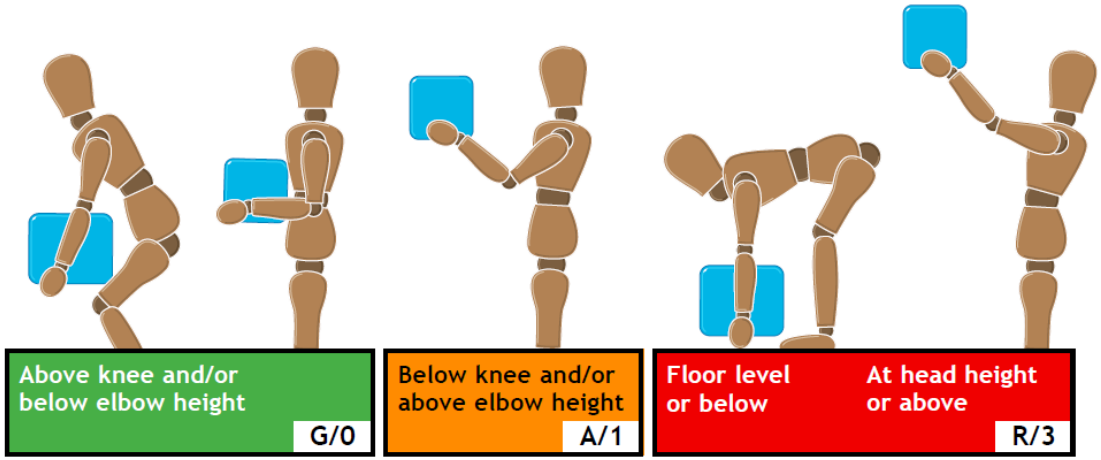
P = PURPLE - Very high level of risk
Such operations may represent a serious risk of injury and should come under close scrutiny, particularly when the entire weight of the load is supported by one person.

Will be:

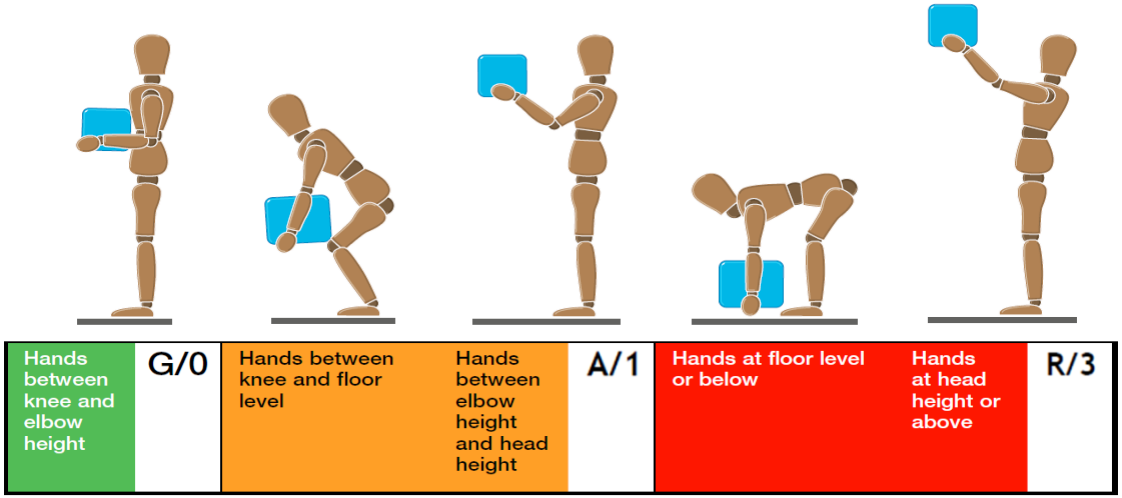
P = PURPLE - Unacceptable level of risk Such operations may represent a serious risk of injury and must be improved.

MAC tool changes – vertical lift

Was/is:

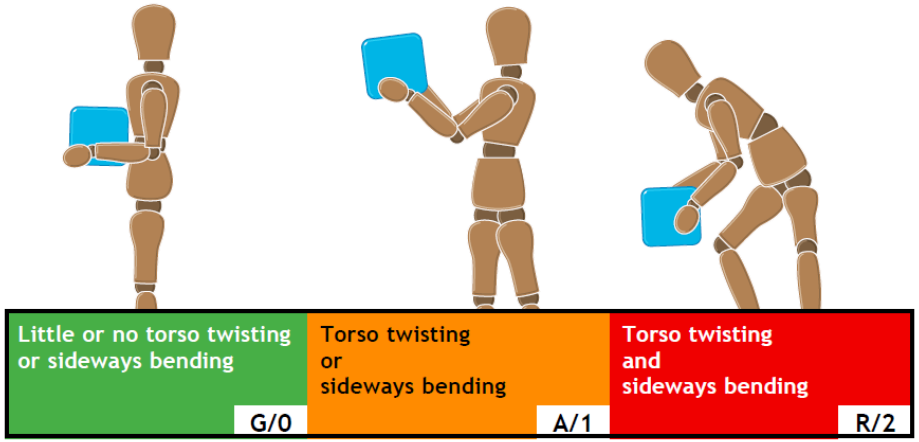


Will be:

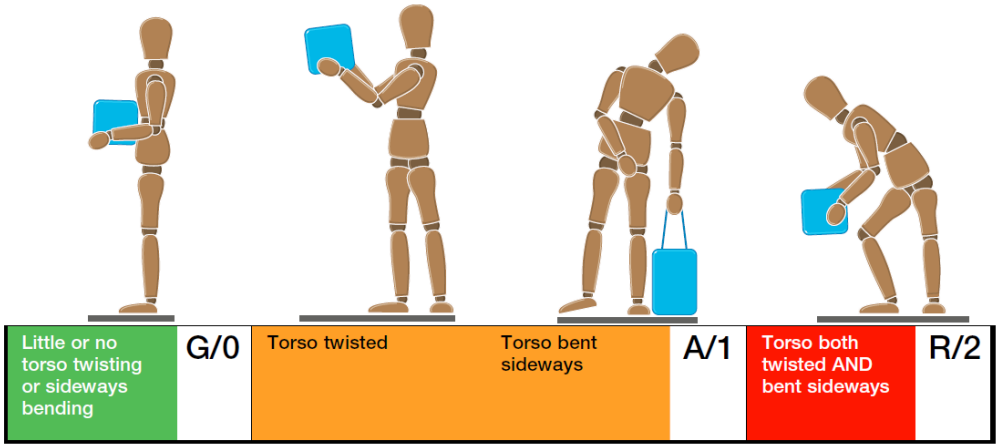


MAC tool changes – bending twisting

Was/is:



Will be:

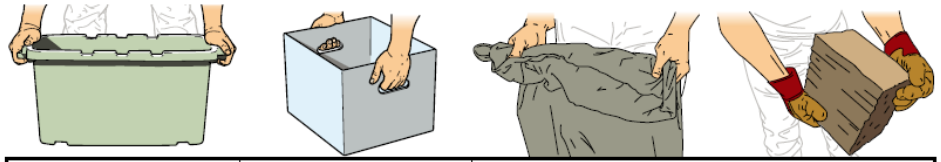


MAC tool changes – grip on load

Was/is:

Good grip G/0	Reasonable grip A/1	Poor grip R/2
Containers with well-designed handles or handholds, fit for purpose	Containers with poor handles or handholds	Containers of poor design. Loose parts, irregular objects, bulky or difficult to handle
Loose parts enabling comfortable grip	Fingers to be clamped at 90 degrees under the container	Non-rigid sacks or unpredictable loads

Will be:

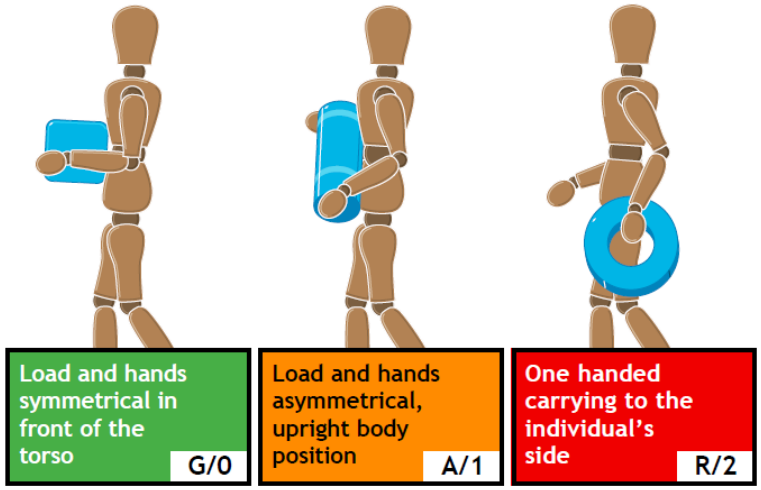


Fit-for-purpose handles/handholds matched to the size and weight of the load	Handles or handholds too small or lack finger clearance or only the fingers support the load	No handles or handhold areas	Rough, slippery or with pressure points

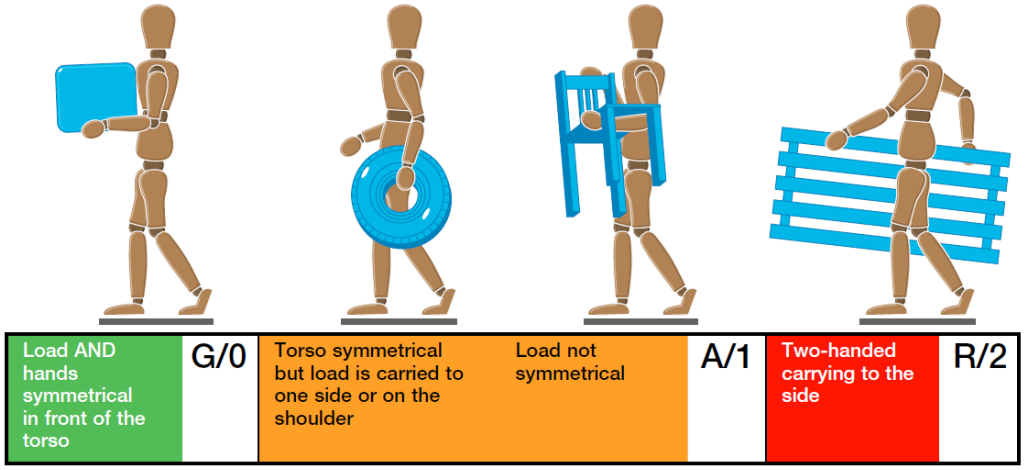
Cylindrical handles or items the whole hand can wrap round comfortably	No handles or handholds but can be held underneath, or has strap or loop handles	Palm, pinch or fingertip grip or force used to keep items together	Irregular, bulky or non-rigid
Good grip G/0	Reasonable grip A/1	Poor grip R/2	

MAC tool changes – carry symmetry

Was/is:

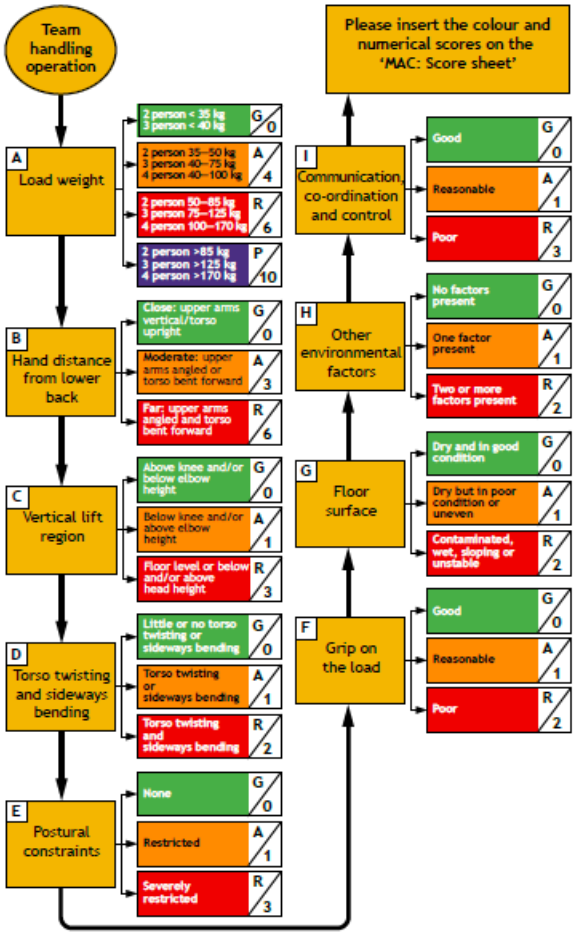


Will be:

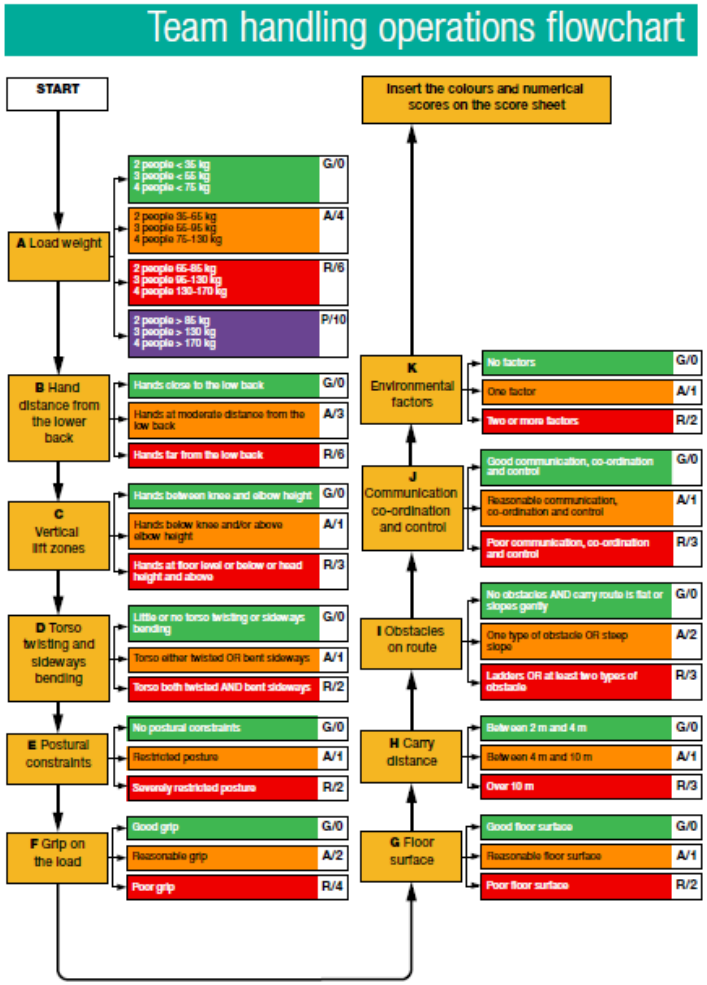


MAC tool changes – team handling

Was/is:



Will be:

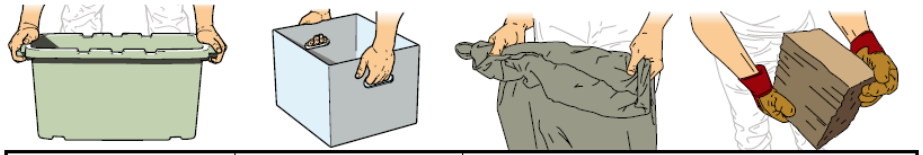


MAC tool changes – team grip

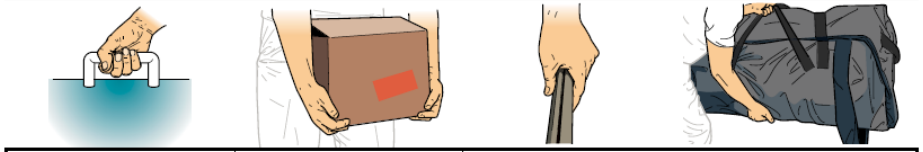
Was/is:

Good grip G/0	Reasonable grip A/1	Poor grip R/2
Containers with well-designed handles or handholds, fit for purpose	Containers with poor handles or handholds	Containers of poor design. Loose parts, irregular objects, bulky or difficult to handle
Loose parts enabling comfortable grip	Fingers to be clamped at 90 degrees under the container	Non-rigid sacks or unpredictable loads

Will be:



Fit-for-purpose handles/handholds matched to the size and weight of the load	Handles or handholds too small or lack finger clearance or only the fingers support the load	No handles or handhold areas	Rough, slippery or with pressure points



Cylindrical handles or items the whole hand can wrap round comfortably	No handles or handholds but can be held underneath, or has strap or loop handles	Palm, pinch or fingertip grip or force used to keep items together	Irregular, bulky or non-rigid
Good grip G/0	Reasonable grip A/2	Poor grip R/4	

MAC tool changes – other factors

L Other risk factors

Identify if there are any other relevant risk factors not included in the MAC, which may mean you need to carry out a full risk assessment (look at the appendix in L23 for more information). There are no scores for this section.

The additional risk factors are:

- large vertical movement, eg lifting from floor to head height;
- risk of sudden movement of loads;
- a rate of work imposed by a process;
- load unstable or with contents likely to shift;
- load sharp, hot or otherwise potentially damaging;
- task requires unusual strength, height etc;
- task requires special information or training for its safe performance;
- movement or posture is hindered by personal protective equipment (PPE) or clothing.

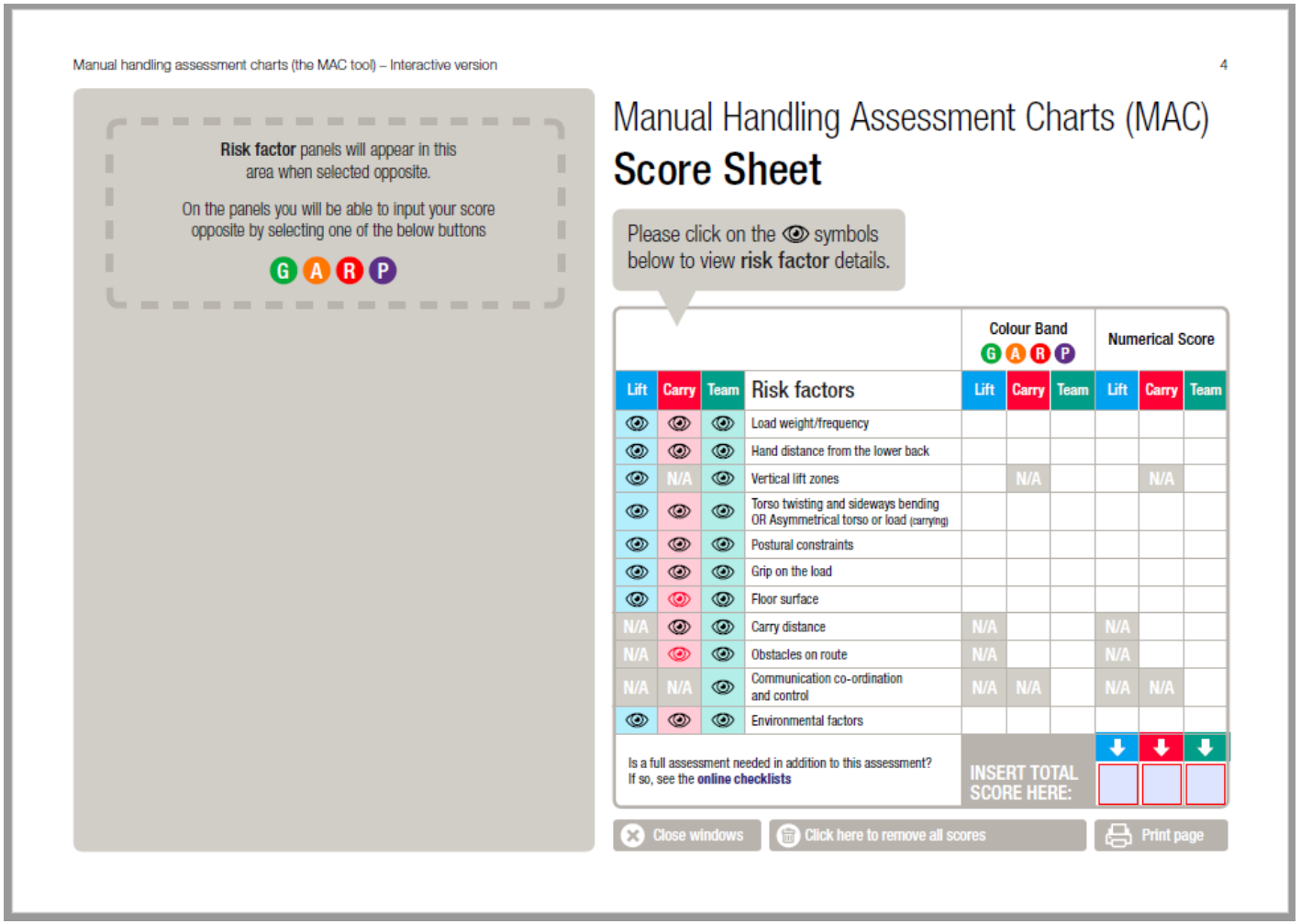
MAC tool changes

HSE

Health and Safety Executive

Manual handling assessment charts (the MAC tool) – Interactive version

MAC tool changes



Manual handling assessment charts (the MAC tool) – Interactive version 4

Risk factor panels will appear in this area when selected opposite.

On the panels you will be able to input your score opposite by selecting one of the below buttons

G A R P

Manual Handling Assessment Charts (MAC)
Score Sheet

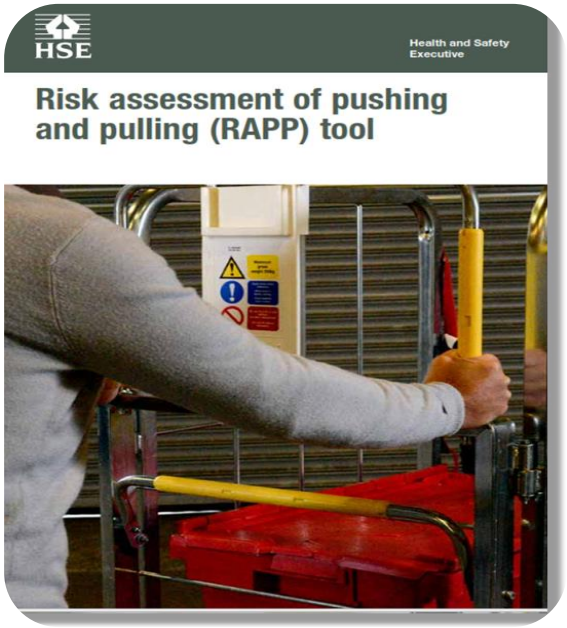
Please click on the 👁 symbols below to view **risk factor** details.

				Colour Band G A R P			Numerical Score		
Lift	Carry	Team	Risk factors	Lift	Carry	Team	Lift	Carry	Team
👁	👁	👁	Load weight/frequency						
👁	👁	👁	Hand distance from the lower back						
👁	N/A	👁	Vertical lift zones		N/A			N/A	
👁	👁	👁	Torso twisting and sideways bending OR Asymmetrical torso or load (carrying)						
👁	👁	👁	Postural constraints						
👁	👁	👁	Grip on the load						
👁	👁	👁	Floor surface						
N/A	👁	👁	Carry distance	N/A			N/A		
N/A	👁	👁	Obstacles on route	N/A			N/A		
N/A	N/A	👁	Communication co-ordination and control	N/A	N/A		N/A	N/A	
👁	👁	👁	Environmental factors						
Is a full assessment needed in addition to this assessment? If so, see the **online checklists**				INSERT TOTAL SCORE HERE:			↓	↓	↓

Close windows | Click here to remove all scores | Print page

Risk assessment for Pushing and Pulling

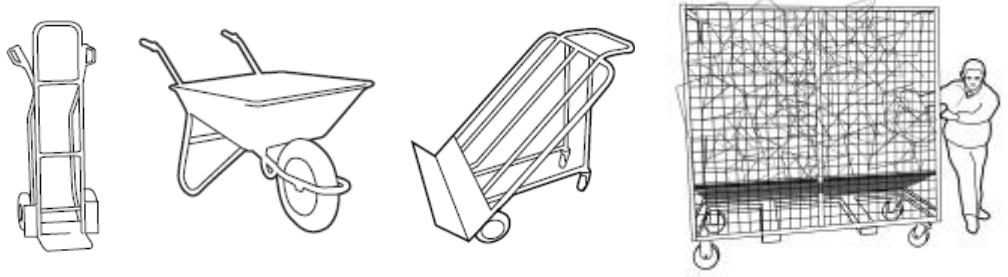
Use RAPP



For pushing and pulling

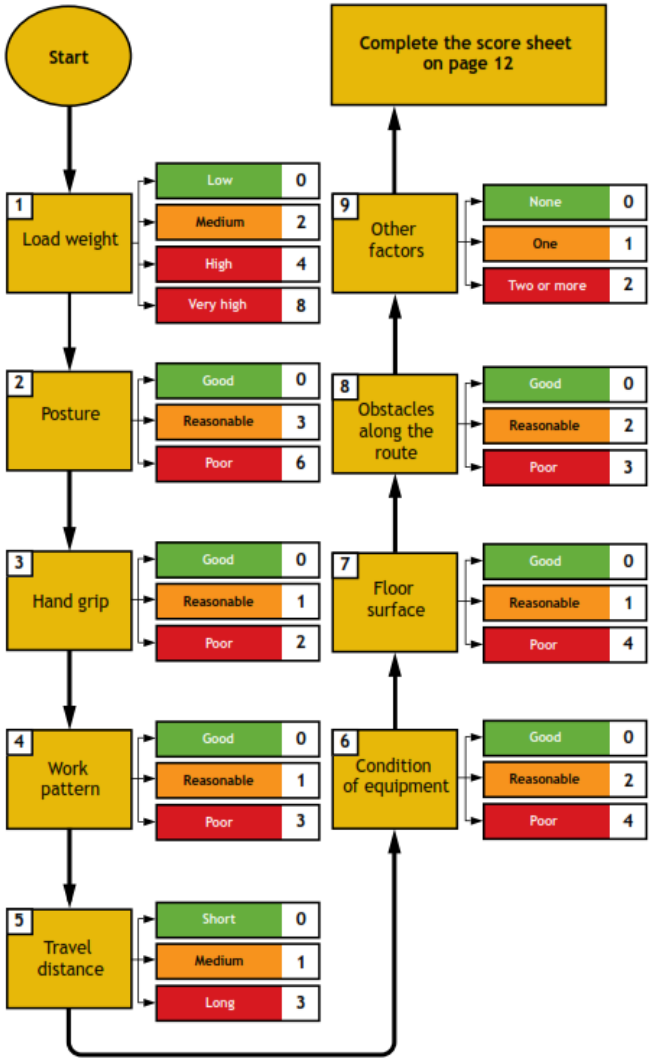
The RAPP tool

wheeled equipment operations



non-wheeled item operations

Wheeled items flow chart



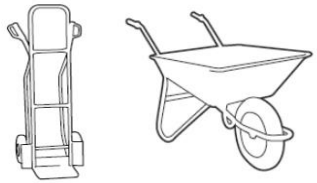
A1 - Size of Equipment

Small (One/two wheels)

Medium (Three/four wheels)

Large (Large or on rails)

Small with one or two wheels: *eg 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

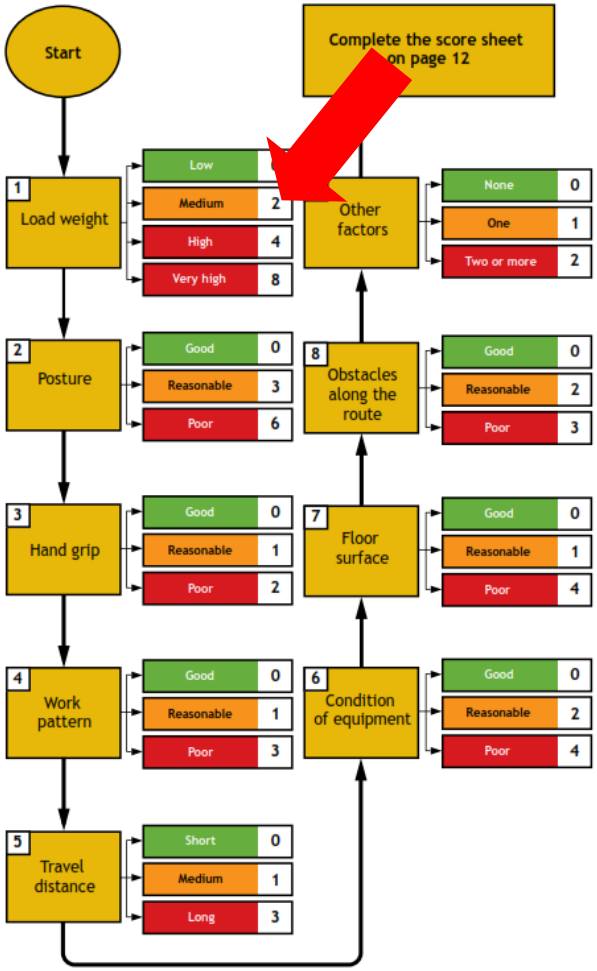
Medium, with three or more fixed wheels and/or castors: *eg roll cages, Euro bins.*

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

Wheeled items flow chart



Future HSE Construction activities

- In 2018/9 HSE undertaking Health Initiative Targeted Campaign. Consider the whole material handling tasks from delivery to installation…..
- Not MSD Focussed this year (due to new MAC) but will be next year
- Looking for activities that pose a *risk of serious personal injury**
- The following slides present common high risk MH activities/tasks.

**risk of serious personal injury*

- A '*risk of serious personal injury' are for those activities identified by the 'purple' zone in the MAC/RAPP*

- A PN may be issued for such activities if reasonably practical controls are available and not considered.

Case Study 1 - Plasterboard

- Manually handling plasterboard from delivery point to installation. What are the issues…….

Plasterboard sheets can weigh……

1800 x 900 x 9.5mm = 11.5kg
2700 x 1200 x 12.5mm = 30kg
3000 x 1200 x 15mm = 39.6kg

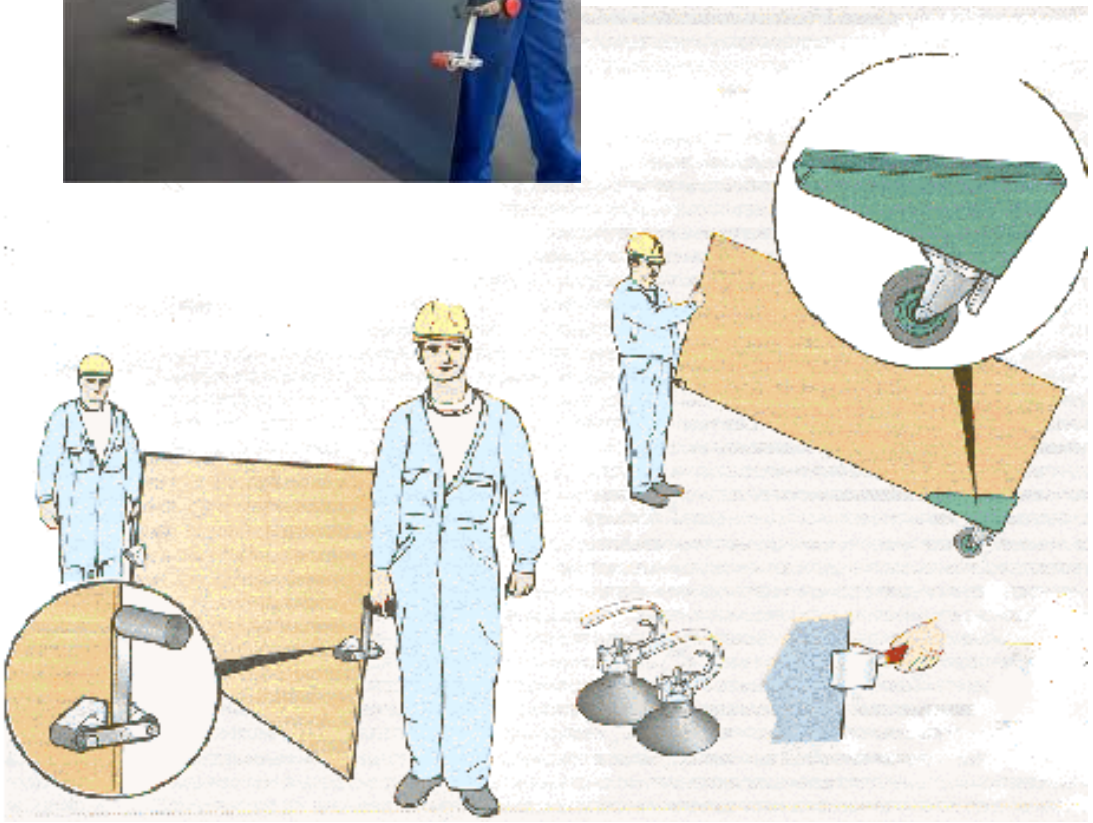
Remember, noise reduction boards (SoundBloc) can weigh considerably more 12.5mm = 10.6kg/m^2 15mm = 12.6 kg/m^2

…..or load out on floor required?

Transporting plasterboard sheets

Moving and cutting on same trolley

Other handling solutions



Reduce – manual handling

- Rather than carrying boards upstairs……

……can a letter box system be used……..

Plasterboard on ceilings

- Use a panel lifter

Case Study 2 – Kerbs, Paving Flags, Bricks/Blocks etc…

- Manually handling and positioning kerbs and paving flags into position.

- *Kerbs can weigh approximately **67kg (**CIS57) but feature kerbs and stone kerbs can weigh considerably more*

- Paving slabs
  900 x 600 x 50mm approx. **60kg**
  900 x 600 x 63mm approx. **77kg**
  600 x 600 x 50mm approx. **40kg**

Kerbs – use mechanical handling

Photo courtesy of Loughborough University

Paving – use mechanical handling

More paving handling aids

Block laying - general

- Specify blocks less than 20kg
- Deliver close to the point of use and keep dry
- Prevent work above shoulder height or at feet level
- Adjust scaffold height and use spot boards

Blocks laying – above head height

Blocks laying – raise platforms

Block laying – handling aids

Handling aids – transporting bricks/tiles

Handling aids - Hooka

Case Study 3 – Glazing Installation

- Glazing delivered to site and handled from delivery point to installation

Glazing can weigh approximately…

3mm = 7.5 kg/m^2

4mm = 10 kg/m^2 (Standard window is 4mm double glazed so 20 kg/m^2)

10mm = 24 kg/m^2

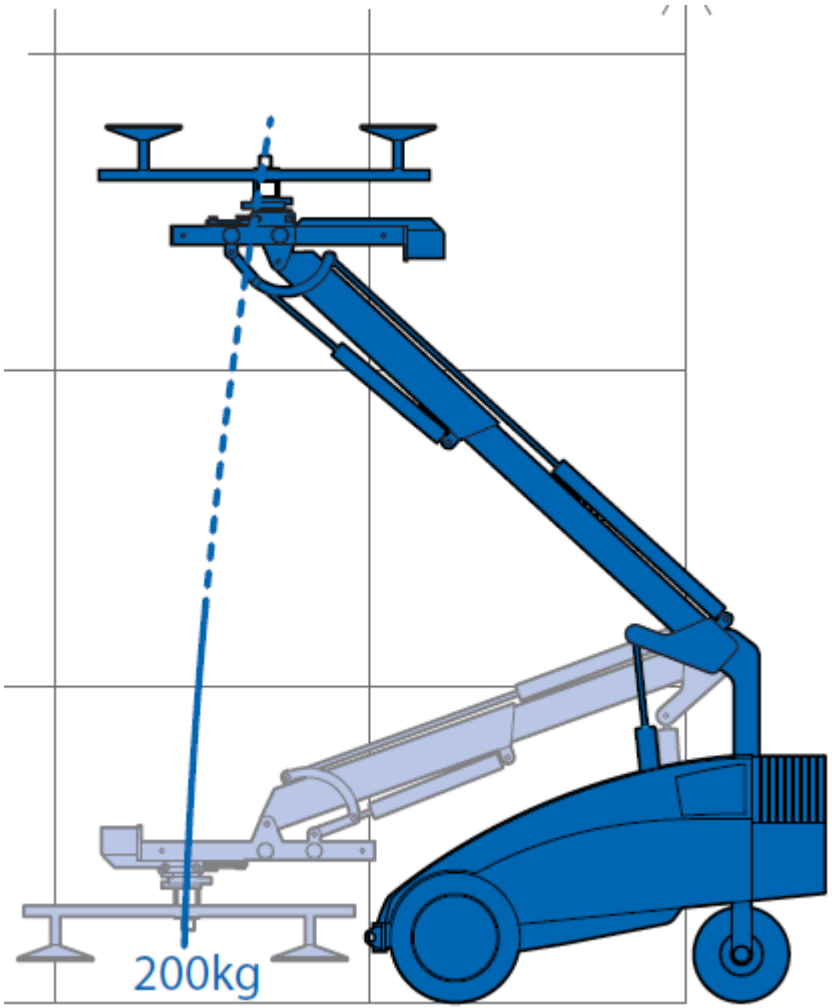
19mm = 47 kg/m2

For double glazed units multiply by 2 and then 3 for triple glazed units

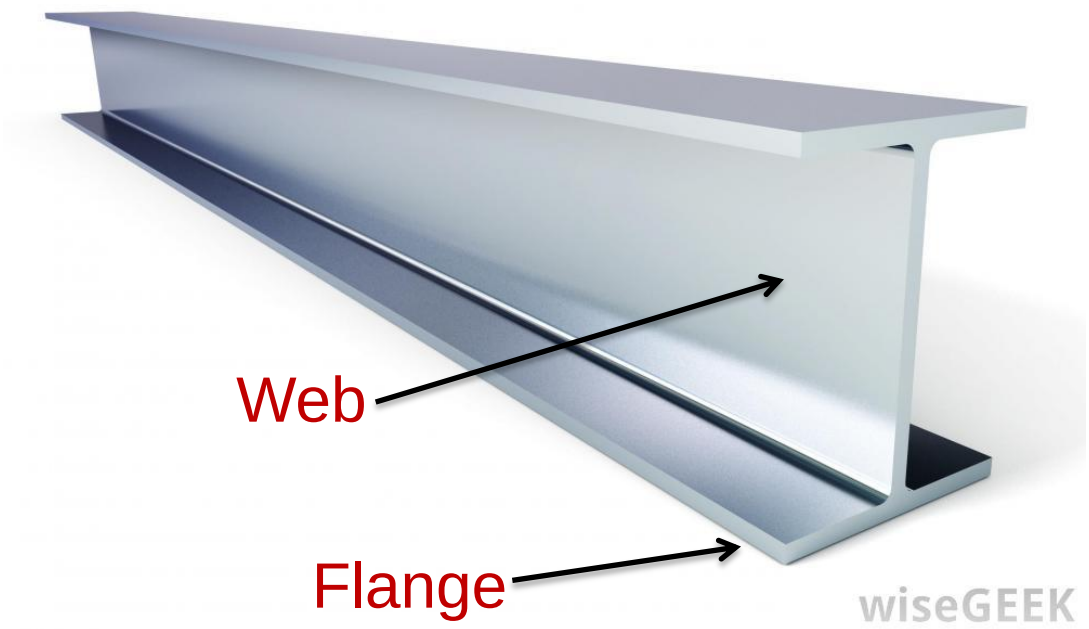
Window installation - external

- Using vacc lift (also see COH07)

Window installation - internal



Case study 4 Steel beams



Weights of beams vary depending on size (length X width X height) and also the thickness of the flange and the web.

See
https://britishsteel.co.uk/media/40515/british-steel-universal-beams-ub-datasheet.pdf

Handling aids – beam lift

Handling aids

Handling aids

Handling aids - beams

Handling aids – beam trolleys

Enforcement based on OC 313/4

MAC colour band and description		MAC Chart type		
		Lifting	Carrying	Team Handling
		Likelihood and consequence of heath effect and risk gap (RG)		
Load weight freq is purple	A **purple**	Probable or possible / serious RG: Extreme	Probable or possible / serious RG: Extreme	Probable or possible / serious RG: Extreme
Load weight freq is red and hand distance is red	A **red** and B **red**	Probable / significant RG: Substantial	Probable / significant RG: Substantial	Probable / significant RG: Substantial
Load weight freq is red and hand distance is amber and vertical lift region is red	A **red** and B **amber** and C **red**	Probable / significant RG: Substantial	N/A	Probable / significant RG: Substantial
Load weight freq is red and communication is red	A **red** and I red	N/A	N/A	Probable / significant RG: Substantial
Load weight freq is red and either asymmetrical trunk load or carrying on a ladder (obstacle) is red	A red and C red or I red	N/A	Probable / significant RG: Substantial	N/A
Load weight freq is red and any of D,E,F,G or H is red	A red and D,E,F,G or H red	Possible / significant RG: Moderate	Possible / significant RG: Moderate	Possible / significant RG: Moderate
Load weight freq is amber and B,C,D or E score red or amber	A amber and any of B,C,D or E score red or amber	Possible / significant RG: Moderate	Possible / significant RG: Moderate	Possible / significant RG: Moderate
Any MAC score is red	Any of A, B, C, D, E, F, G, H, or I red	Possible / minor RG: Nominal	Possible / minor RG: Nominal	Possible / minor RG: Nominal
Any MAC score is amber	Any of A, B, C, D, E, F, G, H, or I amber	Possible / minor RG: Nominal	Possible / minor RG: Nominal	Possible / minor RG: Nominal

Risk gap:	Extreme	Substantial	Moderate	Nominal

Thank you…….

Any Questions?

If not now catch me later……..