



**IRATA International code of practice
for industrial rope access**

Part 3: Informative annexes

**Annex M: Use of tools and other work
equipment**

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Annex M (informative)

Use of tools and other work equipment

Introduction

Annex M gives advice and other information that could be relevant to users of rope access methods and is one of a number of informative annexes in Part 3 of this code of practice. This informative annex should be read in conjunction with other parts of this code of practice, should not be used in isolation and is not intended to be exhaustive. For further advice, readers should refer to relevant specialist publications.

M.1 General

M.1.1 It is essential that rope access technicians are competent in the use of their tools, especially power tools, and other work equipment when using them from anchor lines. Appropriate training should be given on their correct use in such a situation. The advice given may be different from that given for similar work on the ground and may involve additional precautions to be taken.

M.1.2 It is important that all tools and equipment are suitable for the work intended and compatible with rope access techniques. In particular, they should not present a danger to the safe operation or integrity of the suspension system.

M.1.3 Where tools and equipment are carried by the rope access technician, appropriate steps should be taken to prevent them being dropped or falling on to people below.

M.1.4 All electrical equipment, plugs, sockets, couplers, leads etc. should be suitable for the environment in which they are to be used.

M.1.5 Control measures should be implemented to minimize the potential for injury in the event of the rope access technician losing control of tools or equipment. Examples of control measures include self-actuating cut-off devices (so-called dead-man's handles) or rigging tools in such a way that, if control is lost, they swing away from the user.

M.1.6 Where a rope access technician has to work with restricted vision and/or hearing (e.g. when using a welding mask), it is recommended that consideration be given to providing a second rope access technician to act as a watchman to protect against potential problems, e.g. fire or damage to equipment. The watchman should be positioned close by the rope access technician who is working with restricted vision and/or hearing.

M.2 Small tools and equipment

M.2.1 Work using rope access techniques is generally more exposed than most other work methods. It usually requires the rope access technician to be in close proximity to the work itself and to any power source being used. As a result, certain tools, which can be used quite safely with conventional access systems, could cause risks to the rope access technician or to their suspension equipment, unless great care is taken. The site-specific additional risks posed by using tools and equipment in conjunction with rope access should be identified as part of the risk assessment and briefed to all rope access technicians and supporting staff before work begins.

M.2.2 In many cases, the greatest danger is of dropping the tools on to people below. Therefore, to guard against this, small tools such as hammers, trowels and drills should be securely attached to the rope access technician's harness, e.g. by appropriate cords or lanyards, or to an independently suspended line. Alternatively, small items could be carried in a suitable container, e.g. a bucket or bag, securely attached to the rope access technician's harness. Where tools are carried like this, it is assumed that they will not be of such a weight that they might cause a significant reduction in the factor of safety of the suspension system, either as a whole or any part of it.

M.2.3 Where a tool needs to be pressed hard against the work face, measures may be necessary to stabilize the rope access technician to counter the reactive force, e.g. by using an anchor lanyard of appropriate length attached to the structure.

M.2.4 It is essential that moving parts of tools are kept clear of the operator, power leads and the suspension equipment.

M.3 Power leads

M.3.1 Power leads (e.g. electrical cables or pneumatic hoses) could become entangled with the suspension system or be cut or fractured through abrasion or by any tools being used. Therefore, they should be kept clear of the rope access technician and of the tool's moving parts.

M.3.2 The connections between the various lengths of a lead should be constructed or assembled to be self-supporting for the length of their drops. In some cases, they might need to be adequately supported or secured to enable them to carry their own weight. For instance, they could be secured to and supported by a suitable suspension rope. Particular care should be taken to avoid placing tensile or dynamic loads on plugs, terminals etc.

M.3.3 Cordless power tools avoid the difficulties associated with leads (see **M.3.1**) and are recommended where they are suitable for the work to be carried out.

M.4 Bulky, awkward or heavy equipment

M.4.1 Bulky, awkward or heavy equipment (e.g. over 8 kg), that might interfere with safe working or affect the safety of the suspension equipment or any part of it, e.g. by the increase in mass, should be fitted with a separate suspension system secured to an independent anchor. Anchors and suspension ropes used for equipment should be clearly identified to avoid confusion with those used to support persons.

M.4.2 Equipment should be suspended correctly balanced so that it can be positioned and moved easily to its various work locations. It should be properly supported against the work face and be stable while in use. Several suspension lines may have to be fitted to the tool to enable it to be moved easily about the work face. This can normally be achieved by fixing light anchors around the work face.

M.4.3 Workers using bulky, awkward or heavy equipment should be able to position themselves and their suspension equipment well away from any moving parts. If this is not possible, then extra guards or shields should be fitted. Effective communication between those working the tools and those manipulating the suspension ropes is essential. Two-way radios may be necessary to achieve this.

M.4.4 When working in conjunction with an alternative or ancillary lifting system, rope access technicians and their equipment should be protected, e.g. against the risk of entanglement or crushing.

M.5 Hot work

M.5.1 Care should be taken by the rope access technician to protect against potential personal injury while carrying out hot work, e.g. by sealing the gap between overalls and boots or sleeves and gloves to prevent hot material such as weld or grit entering.

M.5.2 For certain types of hot work, rope access equipment such as anchor lines and harnesses may need special protection, e.g. anchor lines could be protected in the immediate hot-work area by attaching heat resistant anchor line protectors around them.

M.6 Blasting, spraying and jetting from anchor lines

M.6.1 Before work commences, training is necessary to cover the precautions and techniques required to deal with the additional hazards of using high-pressure tools when associated with rope access, over and above standard safety measures for using this equipment on the ground.

M.6.2 Where equipment is operated by air or water, consideration should be given to supporting or guarding the hoses and ancillary equipment, where appropriate, to ensure that they will not be damaged or come uncoupled through carrying their own weight and thus become a hazard for the rope access technician and his/her equipment. Hose connections to the tools should be checked before use and provision should be made so that the air/water supply can be turned off in an emergency. Only certified hoses and fittings should be used. Hose whip checks or hose coupling safety locks or both should be fitted to the hoses. Hoses should be firmly secured close to the operator. Hoses should be fully uncoiled when in use.

M.6.3 Before carrying out ultra-high-pressure water jetting, blasting or spraying, steps should be taken to minimize the likelihood of injury or damage to rope access equipment, e.g. if the lance or blast nozzle is inadvertently pointed at any part of the user's body (or that of another person) or at vulnerable rope access equipment. Protection could be achieved by various means, e.g. using a lower pressure and/or, for the prevention of injury, by providing suitable protection to the legs and feet such as leg guards, protective over-boots or metatarsal guards. The length of the lance could be extended to make it difficult for the user to point the blast nozzle at his/her body. Appropriate attachments with resistance to cutting, melting and abrasion should be used when any grinding /welding/ blasting /ultra-high-pressure water jetting works are undertaken.

M.6.4 Where the reaction from the high-pressure tools could unbalance the rope access technician and cause an accident, subsidiary anchor lines should be used to tension the rope access technician in position.

M.6.5 Exclusion zones (buffer zones) should be established to keep unauthorised personnel away from the blast area and to protect against other hazards, e.g. falling or flying debris and noise, and the possibility of the lance being dropped onto them.

M.6.6 It is essential that a good communications system is established. Pre-arranged hand signals are often used because a microphone is unsuitable when blasting, due to the noise. A common and effective technique to attract the blaster's attention is for the Level 3 to cut off the air supply.