ANSI/CAN/UL 12402-6:2023

JOINT CANADA-UNITED STATES NATIONAL ADOPTION

STANDARD FOR SAFETY

Personal Flotation Devices – Part 6: Special Application Lifejackets and Buoyancy Aids – Safety Requirements and Additional Test Methods

(ISO 12402-6:2020, MOD)

ANSI/UL 12402-6-2023

SCC FOREWORD

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UL Standard for Safety for Personal Flotation Devices – Part 6: Special Application Lifejackets and Buoyancy Aids – Safety Requirements and Additional Test Methods, ANSI/CAN/UL 12402-6

First Edition, Dated August 24, 2023

Summary of Topics

ANSI/CAN/UL 12402-6 dated August 24, 2023 is an adoption with binational deviations of ISO Standard for Personal Flotation Devices – Part 6: Special Application Lifejackets and Buoyancy Aids – Safety Requirements and Additional Test Methods, first edition of ISO 12402-6: 2020-07-31.

The requirements are substantially in accordance with Proposal(s) on this subject dated September 13, 2022 and March 10, 2023.

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AUGUST 24, 2023

ANSI/CAN/UL 12402-6:2023

Standard for Personal Flotation Devices – Part 6: Special Application Lifejackets and Buoyancy Aids – Safety Requirements and Additional Test Methods

First Edition

August 24, 2023

This ANSI/CAN/UL Standard for Safety consists of the First Edition.

The most recent designation of ANSI/UL 12402-6 as an American National Standard (ANSI) occurred on August 24, 2023. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, Preface, and SCC Foreword.

This standard has been designated as a National Standard of Canada (NSC) on August 24, 2023.

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Bibliography

Preface (UL)

This is the First Edition of the UL 12402-6, Standard for Personal Flotation Devices – Part 6: Special Application Lifejackets and Buoyancy Aids – Safety Requirements and Additional Test Methods, which is a National Adoption of the second edition of ISO 12402-6: 2020-07-31.

ULSE is accredited by the American National Standards Institute (ANSI) and the Standards Council of Canada (SCC) as a Standards Development Organization (SDO).

This Standard has been developed in compliance with the requirements of ANSI and SCC for accreditation of a Standards Development Organization.

This ANSI/CAN/UL 12402-6 Standard for Safety is under continuous maintenance, whereby each revision is approved in compliance with the requirements of ANSI and SCC for accreditation of a Standards Development Organization. In the event that no revisions are issued for a period of four years from the date of publication, action to revise, reaffirm, or withdraw the standard shall be initiated.

In Canada, there are two official languages, English and French. All safety warnings must be in French and English. Attention is drawn to the possibility that some Canadian authorities may require additional markings and/or installation instructions to be in both official languages.

Comments or proposals for revisions on any part of the Standard may be submitted to ULSE at any time. Proposals should be submitted via a Proposal Request in ULSE's Collaborative Standards Development System (CSDS) at http://csds.ul.com.

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This Edition of the Standard has been formally approved by the Technical Committee (TC) for Personal Flotation Devices, TC 1123.

This list represents the TC 1123 membership when the final text in this standard was balloted. Since that time, changes in the membership may have occurred.

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This Standard is intended to be used for conformity assessment.

The intended primary application of this standard is stated in its scope. It is important to note that it remains the responsibility of the user of the standard to judge its suitability for this particular application.

CETTE ADOPTION NATIONALE DU CANADA EST DISPONIBLE EN VERSIONS FRANÇAISE ET ANGLAISE

Reasons for Differences from ISO

National Differences from the ISO standard are being added in order to address regulatory and safety situations present in the US and Canada.

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NATIONAL DIFFERENCES

There are six types of National Differences as noted below. The difference type is noted on the first line of the National Difference in the standard. The standard may not include all types of these National Differences. The National Differences in this standard were developed via a binational effort by the Canada / US 12402 Task Group.

DR – These are National Differences based on the **national regulatory requirements**.

D1 – These are National Differences which are based on **basic safety principles and requirements**, elimination of which would compromise safety for consumers and users of products.

D2 – These are national differences from ISO requirements based on existing **safety practices**. These requirements reflect national safety practices, where empirical substantiation (for the IEC or national requirement) is not available or the text has not been included in the IEC standard.

DC – These are National Differences based on the **component standards** and will not be deleted until a particular component standard is harmonized with the ISO component standard.

DE – These are National Differences based on **editorial comments or corrections**. Some examples of editorial comments or corrections include replacing “lifejacket" with “PFD" or vice versa and correcting paragraph references.

DT – These are National Differences that are the result of pending changes that have been tentatively agreed internationally by ISO TC188/SC1 for the next edition of the standard and therefore are expected outcomes of the second edition of ISO 12402. These changes include both clarifications and substantive changes in requirements and that will be reviewed when the next edition of ISO 12402 is published.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base ISO text:

Addition / Add – An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base ISO text.

Modification / Modify – A modification is an altering of the existing base ISO text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base ISO text

Deletion / Delete – A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html. This document was prepared by Technical Committee ISO/TC 188, *Small craft*, Subcommittee SC 1, *Personal safety equipment*.

This second edition cancels and replaces the first edition (ISO 12402-6:2006), which has been technically revised. It also incorporates the Amendment ISO 12402-6:2006/Amd. 1:2010.

The main changes compared to the previous edition are as follows:

a) complete new structure;

b) new clauses for requirements for user-assisted PFDs (Clause 6) and requirements for application-specific PFDs (Clause 7);

c) new definitions for application-specific PFDs;

d) amendment of Table 1, for loads and durations for tensile test of white-water PFDs;

e) new Table 2, for loads and durations for tensile test of swift water rescue PFDs.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

ISO 12402 (all parts):2020 deals with personal floatation devices (PFDs) for persons engaged in activities, whether in relation to their work or their leisure, in or near water. PFDs manufactured, selected, and maintained to this International Standard give a reasonable assurance of safety from drowning to a person who is immersed in water. ISO 12402 (all parts):2020 does not include the following:

– requirements for lifejackets on seagoing ships, which are regulated by the International Maritime Organization (IMO)[1] under the International Convention for the Safety of Life at Sea (SOLAS);

[1] The International Maritime Organization (IMO) is an institution with domicile in London issuing regulations which are then published as laws by its Member States.

– throwable devices and flotation cushions.

ISO 12402 (all parts):2020 allows for the buoyancy of a PFD to be provided by a variety of materials or designs, some of which can require preparation before entering the water (e.g. inflation of chambers by gas from a cylinder or blown in orally). PFDs can be divided into the following two main classes:

– those which provide face up in-water support to the user regardless of physical conditions (lifejackets), and

– those which require the user to make swimming and other postural movements to position the user with the face out of the water (buoyancy aids).

Within these main two classes there are a number of levels of support, types of buoyancy, activation methods for inflatable devices, and auxiliary items (such as location aids), which all affect the user‘s probability of survival. Within the different types of buoyancy allowed, inflatable PFDs either provide full buoyancy without any user intervention other than arming (i.e. PFDs inflated by a fully automatic method) or require the user to initiate the inflation. Hybrid PFDs always provide some buoyancy but rely on the same methods as inflatable PFDs to achieve full buoyancy. With inherently buoyant PFDs, the user only needs to put the PFD on to achieve the performance of its class.

PFDs that do not require intervention (automatically operating PFDs) are suited to activities where persons are likely to enter the water unexpectedly; whereas PFDs requiring intervention (e.g. manually inflated PFDs) are only suitable for use if the user believes there will be sufficient time to produce full buoyancy, if automatic operation would result in entrapment, or if help is close at hand. In every circumstance, the user should ensure that the operation of the PFD is suited to the specific application. The conformity of a PFD to this part of the ISO 12402 series:2020 does not imply that it is suitable for all circumstances. The relative amount of required inspection and maintenance is another factor of paramount importance in the choice and application of specific PFDs.

ISO 12402 (all parts):2020 is intended to serve as a guide to manufacturers, purchasers, and users of such safety equipment in ensuring that the equipment provides an effective standard of performance in use. Equally essential is the need for the designer to encourage the wearing of the equipment by making it comfortable and attractive for continuous wear on or near water, rather than for it to be stored in a locker for emergency use. The primary function of a PFD is to support the user in reasonable safety in the water. Within the two classes, alternative attributes make some PFDs better suited to some circumstances than others or make them easier to use and care for than others. Important alternatives provided by ISO 12402 (all parts):2020 are the following:

– to provide higher levels of support (levels 100, 150, or 275) that generally float the user with greater water clearance, when required for increasingly severe conditions; or to provide lighter or less bulky PFDs (levels 50 or 100);

– to provide the kinds of flotation (inherently buoyant foam, hybrid, and inflatable) that accommodate the sometimes conflicting needs of reliability and durability, in-water performance, and continuous wear;

– to provide automatically operating (inherently buoyant or automatically inflated) PFDs that float users without any intervention on their part, except in initially donning the PFD (and regular inspection and rearming of inflatable types), or to provide user control of the inflatable PFDs buoyancy by manual and oral operation; and

– to assist in detection (location aids) and recovery of the user.

PFDs provide various degrees of buoyancy in garments that are light in weight and only as bulky and restrictive as needed for their intended use. They need to be secure when worn, in order to provide positive support in the water and to allow users to swim or actively assist themselves or others. The PFD selected ensures that the user is supported with the mouth and nose clear of the water under the expected conditions of use and the user's ability to assist.

Under certain conditions (such as rough water and waves), the use of watertight and multilayer clothing, which provide (intentionally or otherwise) additional buoyancy, or the use of equipment with additional weight (such as tool belts) can alter the performance of the PFD. Users, owners and employers need to ensure that this is taken into account when selecting a PFD. Similarly, it is possible that PFDs do not perform as well in extremes of temperature, although meeting ISO 12402 (all parts):2020 requirements. PFDs can also be affected by other conditions of use, such as chemical exposure and welding, and can require additional protection to meet the specific requirements of use. Taking a PFD into such conditions necessitates the assurance that the PFD will not be adversely affected. ISO 12402 (all parts):2020 also allows a PFD to be an integral part of a safety harness designed to conform to ISO 12401:2009, or an integral part of a garment with other uses, for example to provide thermal protection during immersion, in which case the complete assembly as used is expected to conform to ISO 12402 (all parts):2020.

In compiling the attributes required of a PFD, consideration has also been given to the potential length of service that the user might expect. Whilst a PFD needs to be of substantial construction and material, its potential length of service often depends on the conditions of use and storage, which are the responsibility of the owner, user and/or employer. Furthermore, whilst the performance tests included are believed to assess relevant aspects of performance in real-life use, they do not accurately simulate all conditions of use. For example, the fact that a device passes the self-righting tests in swimming attire, as described herein, does not guarantee that it will self-right an unconscious user wearing clothing; neither can it be expected to completely protect the airway of an unconscious person in rough water. Waterproof clothing can trap air and further impair the self-righting action of a lifejacket.

It is essential that owners, users and employers choose those PFDs that meet the correct standards for the circumstances in which they will be used.

The characteristics of the product properties, alternative choices and the limitations to normal use are to be explained to potential buyers by manufacturers and distributors of PFDs prior to purchase.

Similarly, it is advised that regulators regarding the use of these garments consider carefully which class and performance levels are most appropriate for the foreseeable conditions of use, allowing for the higher risk circumstances. These higher risk circumstances should account for the highest probabilities of occurrence of accidental immersion and expected consequences. Requirements and recommendations for the correct selection and application of PFDs are given in ISO 12402-10:2020.

1 Scope

This document specifies the safety requirements and additional test methods for special application lifejackets and buoyancy aids (hereafter named PFD) for adults, children or infants. It is intended to be used in conjunction with ISO 12402-2:2020, ISO 12402-3:2020, ISO 12402-4:2020 and ISO 12402-5:2020, as applicable.

1DV.1 DR *Addition to clause 1 as follows:*

1DV.1.1 Where references are made to ISO 12402 standards, they shall be considered to be to UL 12402 with the applicable Canadian/US National Differences where UL Standards exist. Where references are made to particular requirements within a part they shall include the associated DVs contained in that standard, as applicable.

1DV.1.2 Where references are made to the use of at least in the official language(s) of the country of destination, this shall at a minimum include English and French.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 12401:2009, *Small craft – Deck safety harness and safety line – Safety requirements and test methods*

ISO 12402-2:2020, *Personal flotation devices – Part 2: Lifejackets, performance level 275 – Safety requirements*

ISO 12402-3:2020, *Personal flotation devices – Part 3 Lifejackets, performance level 150 – Safety requirements*

ISO 12402-4:2020, *Personal flotation devices – Part 4: Lifejackets, performance level 100 – Safety requirements*

ISO 12402-5:2020, *Personal flotation devices – Part 5: Buoyancy aids (level 50) – Safety requirements*

ISO 12402-7:2020, *Personal flotation devices – Part 7: Materials and components – Safety requirements and test methods*

ISO 12402-8:2020, *Personal flotation devices – Part 8: Accessories – Safety requirements and test methods*

ISO 12402-9:2020, *Personal flotation devices – Part 9: Evaluation*

ISO 13688:2013, *Protective clothing – General requirements*

ISO 15025:2016, *Protective clothing – Protection against flame – Method of test for limited flame spread*

ISO 14116:2015, *Protective clothing – Protection against flame – Limited flame spread materials, material assemblies and clothing*

ISO 17493:2016, *Clothing and equipment for protection against heat – Test method for convective heat resistance using a hot air circulating oven*

ISO 20471:2013+Amd.1:2016, *High visibility clothing – Test methods and requirements*

EN 1621-1:2012, *Motorcyclists' protective clothing against mechanical impact – Part 1: Motorcyclists' limb joint impact protectors – Requirements and test methods*

EN 1621-2:2014, *Motorcyclists' protective clothing against mechanical impact – Part 2: Motorcyclists' back protectors – Requirements and test methods*

EN 1621-3:2018, *Motorcyclists' protective clothing against mechanical impact – Part 3: Motorcyclist's chest protectors – Requirements and test methods*

EN 12275:2013, *Mountaineering equipment – Connectors – Safety requirements and test methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

– ISO Online browsing platform: available at http://www.iso.org/obp

– IEC Electropedia: available at http://www.electropedia.org/

3.1
personal flotation device
PFD
garment or device which, when correctly worn and used in water, provides the user with a specific amount of buoyancy which increases the likelihood of survival

3.2
inherently buoyant
permanently less dense than water

3.3
automatic inflation
inflation of the *PFD* (3.1) without the user carrying out any action at the time of water immersion

3.4
manual inflation
inflation of the *PFD* (3.1) resulting from the user operating a mechanism

3.5
oral inflation
inflation resulting from the user blowing air into the *PFD* (3.1) by mouth

3.6
emergency position indicating light
device which emits light so as to increase the chances of a user being located

3.7
multi-chamber buoyancy system
PFD (3.1) with buoyancy to meet the applicable PFD performance requirement provided by two or more independent chambers

Note 1 to entry: This excludes supplemental inflation chambers.

3.7DV D2 *Modification by replacing the multi-chamber buoyancy system definition as follows:*

multi-chamber buoyancy system
PFD with buoyancy to meet the applicable PFD performance requirement provided by multiple sources including, for example, devices with a combination of inherent buoyancy and inflatable chamber(s), or devices with two or more independent inflatable chambers that collectively provide the in-water performance conforming to the relevant part.

3.8
deck safety harness
device that allows a user to be securely attached to a strong point on a vessel or on shore, preventing a fall into the water or, if falling occurs, preventing separation from the vessel or shore

3.9
sprayhood
cover brought or placed in front of the airways of a user in order to reduce or eliminate the splashing of water from waves or the like onto the airways, and thereby promoting the survival of the user in rough water conditions

3.10
hybrid PFD
PFD (3.1) of combined buoyancy types, i.e. inherent and inflatable

3.10DV D2 *Modification by replacing the hybrid-type PFD definition as follows:*

3.10DV
hybrid-type PFD
PFD of combined buoyancy types, i.e. inherent and inflatable that provides a prescribed minimum inherent buoyancy

NOTE – An inflatable PFD with minimal inherent buoyancy to meet the uninflated buoyancy test (see 5.3.1.2 of UL 12402-5) is not considered a hybrid-type PFD

3.11
sheltered waters
water with protection from significant breaking waves, current, or strong winds, where the possibility of being blown or carried away from shore or place of safety is minimal

3.12
offshore
water that is unprotected and influenced by a variety of threat conditions such as waves, tide, currents, or wind, at sea or on inland waters

3.13
primary means of inflation
means of inflating an inflation chamber that meets the applicable PFD performance requirements and that requires the least amount of intervention by the user, generally according to the following order of precedence: automatic (easiest), manual (second), and oral (most difficult)

3.14
primary chamber
inflation chamber associated with the *primary means of inflation* (3.13) that alone meets the applicable *PFD* (3.1) performance requirements

3.15
back-up chamber
inflation chamber other than the *primary chamber*(s) (3.14) or *supplemental chamber* (3.16) that, when used alone, provides performance in case the primary chamber fails to function

3.16
supplemental chamber
inflation chamber other than a *primary chamber* (3.14) or *back-up chamber* (3.15) that is intended for deployment after stabilization in the water, and provides enhanced performance such as higher freeboard, improved head support, additional stability, splash protection, location detection

3.17
status indicator
part or parts of an inflation system which provide user feedback to assist in keeping an inflatable *PFD* (3.1) in an armed and ready condition

3.18
adult lifejacket
PFD (3.1) intended for users with a body mass of greater than 40 kg

3.19
infant lifejacket
lifejacket intended for users with a body mass less than or equal to 15 kg

3.20
child PFD
PFD intended for users with a body mass of greater than 15 kg and less than or equal to 40 kg

3.21
structural parts, materials and components
parts, materials, or components that are integral to the device and that are essential for its correct function and performance

3.22
ride-up prevention system
system that helps to secure the *PFD* (3.1) in its functional position on the body and prevent the PFD from riding up the body towards the head

Note 1 to entry: A crotch strap is one example of a ride-up prevention system.

3.23
collar handle
device on the upper back of a *PFD* (3.1) which facilitates getting hold of the wearer

3.24
personal locator device
PLD
device that aids the (electronic) detection and location of people in distress and emergency situations

3.25
cylinder seal indicator
part or parts of an inflation system which provide feedback to the user to indicate whether the gas cylinder fitted has or has not been pierced

3.26DV D2 ***Modification by adding the special application PFD definition as follows:***

special application PFD
a PFD having additional features or requiring additional action by the user, so as to be possibly only suitable for certain activities or user groups

3.27DV D2 ***Modification by adding the application-specific PFD definition as follows:***

application-specific PFD
a PFD having additional features or requiring additional action by the user, so as to be suitable only for certain activities or user groups

3.28DV D2 ***Modification by adding the user-assisted PFD definition as follows:***

user-assisted PFD
a special application PFD requiring certain actions from the user to reach the intended performance

4 Classification of PFDs

4.1 Classes

4.1.1 Buoyancy aids

A buoyancy aid is a garment or device that, when worn correctly, provides support without significant face-up turning ability and therefore can require an action by the user to position the face clear of the water.

A buoyancy aid provides suitable performance in sheltered waters and, at higher levels of support, it can be suitable for use in other waters.

4.1.2 Lifejackets

A lifejacket is a garment or device that, when worn correctly, maintains the user in a face-up flotation position, without additional action, with various levels of performance suitable for sheltered and unsheltered waters.

A lifejacket has a buoyancy distribution sufficient to turn most users to a position where the mouth is clear of the water even when exhausted.

4.1.3 Special application PFDs

A special application PFD shall have performance equivalent to a lifejacket or buoyancy aid, but has additional features and requirements related to specific applications for use. These PFDs can require additional action by the user, or can only be suitable for certain activities or user groups according to ISO 12402-6:2020.

4.2 Performance levels

4.2.1 Level 50

This level is intended for use by those who have help or a means of rescue close at hand, and who are able to swim. This device often has minimal bulk, but requires active participation by the user and cannot be expected to keep the user safe for a long period of time.

As tested in swimming attire (when fully inflated, if inflatable) the device helps to support the user in a position with the mouth and nose clear of the water. It can support a fully clothed user in this position.

4.2.1DV.1 D2 ***Modification by adding Level 70 to clause 4.2***

4.2.1DV.1 Level 70

This level is intended for use by those who have help or a means of rescue close at hand, or who are near to bank or shore. These devices have minimal bulk, but cannot be expected to keep the user safe for a long period of time in disturbed water.

4.2.2 Level 100

This level is intended for use in sheltered or calm water, where users may have to wait for rescue.

As tested in swimming attire (when fully inflated, if inflatable) the device has some turning ability to bring the user into a position with the mouth and nose clear of the water. It is intended to maintain a fully clothed user in this position without active participation.

4.2.3 Level 150

This level is intended for general, offshore, and rough water use.

As tested in swimming attire (when fully inflated, if inflatable) the device is capable of turning an unconscious user into a position with the mouth and nose clear of the water. It is intended to maintain a fully clothed user in this position without active participation.

4.2.4 Level 275

This level is intended primarily for offshore use under severe weather or sea conditions. It is of value to those who are wearing clothing which traps air and adversely affects the self-righting capacity of the lifejacket. It is also intended for a user who requires a high level of buoyancy, for example when carrying heavy objects.

As tested in swimming attire, (when fully inflated, if inflatable) it is capable of turning an unconscious user into a position with the mouth and nose clear of the water. It is intended to maintain a fully clothed user in this position without active participation.

5 Special application PFDs

5.1 General

A special application PFD (lifejackets and buoyancy aids) has performance equivalent to a lifejacket or buoyancy aid, but has modifications related to its use. These modifications can require additional action by the user, special knowledge, skills, training or participation of the user and are possibly only suitable for certain activities or user groups.

PFDs can have additional features or performance capabilities in certain areas, and can have added/integrated accessories or other special devices. Some categories or designs of such PFDs are not always suitable for uses outside the marked special or specific application. The special application, any limitations of use, special knowledge, skills or training requirements shall be stated clearly in the information supplied by the manufacturer.

These types of special application PFDs belong to two main categories: application-specific PFDs and user-assisted PFDs.

The PFD shall meet the requirements of ISO 13688:2013, 4.2 (innocuousness), and 4.4 (comfort).

5.1DV D1 ***Modified by revising the first and second paragraphs and deleting the fourth paragraph:***

A special application PFD (lifejacket or buoyancy aid) has performance equivalent to a lifejacket or buoyancy aid, but has modifications related to its use. Depending on the characteristics of the PFD, these modifications can require additional action by the user, special knowledge, skills, training or participation of the user and are likely only suitable for certain activities or user groups.

Other special application PFDs can have additional features or performance capabilities in certain areas, and can have added/integrated accessories or other special devices that do not rely on user action to meet the base standards, but nevertheless require user awareness of their special features.

5.2 Application-specific PFDs

PFDs having enhancements not covered by the applicable clauses of ISO 12402-2:2020 to ISO 12402-5:2020 shall have performance equivalent to a lifejacket or buoyancy aid of its marked performance level. When evaluating PFDs with such enhancements, the following shall be taken into consideration:

a) additional features that allow the PFD to be used for a specific application that somehow could be a detriment in normal use;

b) additional features or configurations that can be misused in a way that prevents the PFD from meeting the intended level of safety; and

c) additional features or configurations that have no notable harmful effects when used in normal applications, but which are restricted to specific applications for reasons of ensuring that the user is aware of the differences from the base standard; or

d) additional warnings stating that this equipment should only be used by trained or qualified persons.

In addition, application-specific PFDs shall be evaluated for both the intended specific application and for normal use, to determine the scope of any additional test requirements, warnings, instructions and limitations that shall be applied to and, or in some cases, shall accompany the PFD as part of the manufacturer's instructions for use.

5.2DV D1 ***Modification by replacing clause as follows:***

Application-specific PFDs have enhancements to increase performance or provide additional functionality not covered by the applicable clauses of ISO 12402-2:2020 to ISO 12402-5:2020.

Application-specific PFDs shall have performance equivalent to a lifejacket or buoyancy aid of its marked performance level when properly used.

5.3 User-assisted PFDs

User-assisted PFDs require certain actions from the user to reach the intended performance.

User-assisted PFDs having different features not covered by the applicable clauses of ISO 12402-2:2020, ISO 12402-3:2020, ISO 12402-4:2020 or ISO 12402-5:2020 shall have performance equivalent to a lifejacket or buoyancy aid of its marked performance level. When evaluating user-assisted PFDs, the following shall be taken into consideration:

a) features that allow the PFD to be used for a specific application that somehow could be a detriment in normal use;

b) features or configurations that may be misused in a way that prevents the PFD from meeting the intended level of safety of the related performance level; and

c) features or configurations that have no notable harmful effects when used in normal applications, but which are restricted to specific applications for reasons of ensuring that the user is aware of the differences from the base standard; or

d) additional warnings stating that this equipment should only be used by trained or qualified persons.

5.3DV D1 ***Modified by revising the second paragraph and deleting the sub-paragraphs as follows:***

User-assisted PFDs having different features not covered by the applicable clauses of ISO 12402-2:2020 to ISO 12402-5:2020 shall have performance equivalent to a lifejacket or buoyancy aid of its marked class/performance level when properly used.

6 Requirements for user-assisted PFDs

6.1 Principles

User-assisted special-application PFDs rely on the skill, knowledge, special training and/or participation of the user and are generally not suitable for uses outside the marked specific purpose. This shall be stated clearly in the information supplied by the manufacturer.

Any manufacturer's modification of a PFD otherwise meeting the relevant part of ISO 12402-2:2020 to ISO 12402-5:2020 for use as a user-assisted PFD that reduces the performance of the PFD, may require

– a downgrade and testing of the product to the next suitable performance level of the PFD (see 4.2); or

– the product to be classified to the next suitable lower performance class (see 4.1); or

– measures to ensure that the users are always aware of the required actions to ensure the PFD provides the performance equivalent to the marked performance level.

User-assisted special application PFDs shall meet the requirements specified in ISO 12402-2:2020 to ISO 12402-5:2020, as applicable. In addition, the PFD shall meet the requirements of this document

6.1DV D1 ***Modified by changing the heading of 6.1 from "Principles" to "General", and renumbering and revising as follows:***

6.1DV General

User-assisted special-application PFDs have features that require the assistance of the user to achieve the marked performance level for their intended use.

6.1.1DV Principles

User-assisted special-application PFDs rely on the skill, knowledge, special training and/or participation of the user and are generally not suitable for uses outside the marked specific purpose. This shall be stated clearly in the information supplied by the manufacturer.

6.1.2DV D1 ***Modified by adding a new clause 6.1.2DV as follows:***

6.1.2DV Basic requirements

The requirements specified in ISO 12402-2:2020 to ISO 12402-5:2020 are also the basic requirements for user-assisted PFDs. The PFD shall meet the requirements of the relevant part of the ISO 12402 series:2020, except as modified by this document.

6.2 User-convertible inflatable PFDs

6.2.1 General

The users of these devices shall be trained in the proper use of the PFD and the special accessories and features provided.

User-convertible inflatable PFDs (lifejackets and buoyancy aids) are designed to accommodate switching between automatic and manual inflation activation, depending on the operating conditions or user risk assessment.

A user-convertible inflatable PFD shall enable the user to convert the device from automatic mode to manual-only mode, and vice versa. User-convertible inflatable PFDs shall comply with all requirements specified in ISO 12402-2:2020 to ISO 12402-5:2020 as appropriate, except as modified or superseded by this clause.

6.2.2 Additional requirements for user-convertible inflatable PFDs

6.2.2.1 Conversion component(s)

a) User-convertible inflatable PFDs shall be provided with any required manual conversion component(s), stowed securely and permanently affixed to the PFD or stowed in a pocket on the PFD. The performance testing of the PFD shall be conducted with the conversion components in their designated stowage configuration. In addition, an assessment shall be made to prove that the automatic function can be disabled effectively by jumping from 1 m according to ISO 12402-9:2020, 5.6.3.2.3.

b) The component(s) used for conversion to manual-only inflation, if any, shall have a distinctive contrasting colour compared to the colour of the packed PFD and inflator when armed for auto-actuation.

6.2.2.1DV D2 ***Modification by adding new sub-clause c) of 6.2.2.1 as follows:***

c) When a Use Code 6F inflation system is used, a place to store a spare CO_2 cylinder shall be provided within the PFD. Instructions shall be provided on the PFD for arming the inflation system in manual-auto or automatic, and manual-only modes of inflation, and shall address how to stow components that are not being used while in either mode but which will be needed to convert the inflator.

6.2.2.2 Indicator(s)

When armed for manual activation, the PFD shall have a visual indicator clearly prominent on the PFD to show that the device is only armed for manual use. The visual indicator for the manual-only mode shall be viewable before and after donning the PFD when armed in the manual-only mode and shall not interfere with the operation of the manual inflator.

It shall be clearly visible to the end-user which mode the lifejacket is in, by providing a means to access and check the status indicator(s) so it can be seen when the automatic mode has been disabled by:

a) visual indicator, such as a hang tag or flag, to show when the automatic mode has been disabled, or

b) an indicator viewing window, so it can be seen when the automatic mode has been disabled.

6.2.3 Additional marking, information supplied by the manufacturer, and consumer information at point of sale for user-convertible inflatable PFDs

In addition to the marking and information requirements of the relevant part(s) of ISO 12402-2:2020 to ISO 12402-5:2020, Clauses 6 to 8, the following shall be marked on the PFD and included in the user information:

a) the text: "USER-CONVERTIBLE INFLATABLE PFD" (shall be more prominent and at least twice the size than all other markings);

6.2.3DV D1 ***Modification by revising 6.2.3 a) as follows:***

a) the text: "USER-CONVERTIBLE INFLATABLE PFD" (shall be more prominent and at least twice the size of markings as defined by UL 12402-5, 6DV.2.1);

b) the number of this part of ISO, i.e. ISO 12402-6:2020;

c) the text: "Familiarize yourself with the method of convertible operation. Practice auto to manual and manual to auto conversion";

d) the text: "WARNING: When in manual-only mode, the user must inflate the lifejacket for flotation and face-up righting";

6.3 Manual-only inflatable PFDs

6.3DV D2 ***Modification by deleting the entire clause 6.3.***

6.3.1 General

Manual-only inflatable PFDs are designed to be inflated manually where the risk of non-automatic inflation is clearly understood and assumed by the user. These PFDs do not float the wearer without human intervention.

Manual-only inflatable PFDs shall comply with all requirements specified in the relevant part of ISO 12402-2:2020 to ISO 12402-5:2020, except as modified or superseded by this clause. Under the provisions of this clause, manual-only inflation shall be permitted.

6.3.2 Additional requirements for manual-only inflatable PFDs

Each manual means of inflation shall be readily accessible and operable by either hand after donning the PFD. It should also be possible to be inflated by another person.

When the PFD is provided with a multi-chamber inflation system, where the minimum performance required is provided by the aggregate buoyancy of multiple chambers, all of the required manual means of inflation shall collectively be operable by a single manual motion.

If the PFD is provided with any back-up inflation chamber and/or supplemental chamber other than the primary chamber(s), then any additional manual means of inflation shall be readily accessible and operable to both hands of the user, individually, after the primary inflation chamber(s) is(are) inflated. The primary means of inflation shall be clearly identified and differentiated from each additional manual means of inflation.

All tests shall be verified according to ISO 12402-9:2020, 5.6.3.2.2.

6.3.3 Additional marking, information supplied by the manufacturer, and consumer information at point of sale for manual-only inflatable PFDs

In addition to the marking and information requirements of the relevant part(s) of ISO 12402-2:2020 to ISO 12402-5:2020, Clauses 6 to 8, the following shall be marked on the PFD and included in the user information:

a) the text: "User-assisted PFD – manual-only";

b) the number of this part of ISO, i.e. "ISO 12402-6:2020";

c) the text: "MANUAL INFLATION ONLY" (shall be more prominent and at least twice the size of all other markings);

d) the text "WARNING: User must inflate the PFD for flotation and face-up righting".

6.4 Inherently buoyant flotation suit PFDs

6.4.1 General

Inherently buoyant flotation suit PFDs are essentially buoyancy aids in the form of garments, that:

a) require user donning in advance of any potential emergency;

b) can require user efforts to maintain adequate flotation position.

6.4.1DV.1 D2 *Modification by revising sub-clauses a) and b) as follows:*

a) require user donning in advance of any potential emergency;

Note: See "Must be worn" requirement in marking section, 6.4.3.

b) can require user efforts to maintain adequate flotation position.**

Note: See 3rd clause below regarding wearer turning to a safe floating position.

Inherently buoyant flotation suit PFDs shall comply with all requirements specified in ISO 12402-5:2020 except as modified or superseded by this clause. The in-water performance shall comply with ISO 12402-5:2020 as a minimum.

A flotation suit shall provide, by its inherent buoyancy alone, the buoyancy required for an equivalent sized Level 50 device as a minimum.

6.4.1DV.2 D2 *Modification of the third paragraph follows:*

A flotation suit shall provide, by its inherent buoyancy alone, the buoyancy required for an equivalent sized Level 70 device as a minimum. Additionally, the suit shall not inhibit the wearer from turning or positioning him or herself to a safe floating position when starting from a facedown position in water.

Two-piece suits shall address the possibility of misuse of being worn as a single item. The combination of a two-piece suit, as well as the jacket and trousers (i.e. waders or dungarees) individually, shall meet all requirements of ISO 12402-5:2020, and shall meet the requirements of this clause.

6.4.2 Specific requirements for inherently buoyant flotation suit PFDs

6.4.2.1 Total buoyancy provided

When tested in accordance with ISO 12402-9:2020, 5.5.10, the minimum buoyancy provided shall be as specified in ISO 12402-5:2020.

Each piece of a two-piece-suit shall individually meet the minimum buoyancy requirements according to ISO 12402-5:2020.

6.4.2.1DV D2 *Modification of first paragraph as follows:*

When tested in accordance with UL 12402-9, 5.5.10, the minimum buoyancy provided shall be Level 70 as specified in UL 12402-5, Table 2DV.

6.4.2.2 Donning test

When tested as specified in ISO 12402-9:2020, 5.6.2, the donning time for each test subject shall be not greater than 2 min.

6.4.2.3 Encumbrance assessment

The flotation suit shall not impede movements when getting out of the water or during encumbrance tests according to ISO 12402-9:2020, 5.6.1.7.

Additionally, during the test in ISO 12402-9:2020, 5.6.1.7.2.2 b), the ladder is positioned to climb directly up from the water, and the suit shall drain sufficiently so as to not impede the test subjects from getting out of the water. If the opening of any of the secondary closures on the arms and/or legs is required to achieve this effectively, marking/information shall be provided on the actions needed to ease climbing out of the water, and the test subjects shall be instructed accordingly.

6.4.2.3DV D2 *Modification by revising the second paragraph and adding a third and fourth paragraph as follows:*

Additionally, during the test in UL 12402-9, 5.6.3DV (Boarding test) as modified by 6.4.2.4DV below at least two thirds of the test subjects (i.e., 4 of 6 test subjects; see 6.4.2.4DV) shall be capable of emerging within 30 seconds from the water into a SOLAS liferaft or the top of the 1-foot (305-mm) platform. Subjects are to be qualified using the reference vest. The test is to be conducted with the test subject wearing the reference vest and then repeated wearing the candidate suit. Successful emergence attempts in the candidate suit by subjects unable to qualify in the reference vest are acceptable.

Due to physical limitations of the subject group, fewer than two thirds of the subjects may be used to qualify in the extreme sizes (e.g., extra-large), provided it is demonstrated that the construction does not hamper the subject's emergence attempts to an extent greater than the reference vest and the dimensional progression relative to the other sizes is consistent.

If the opening of any of the secondary closures on the arms and/or legs is required to achieve this effectively, marking/information shall be provided on the actions needed to ease climbing out of the water, and the test subjects shall be instructed accordingly.

6.4.2.4DV D2 *Modification by adding a Section 6.4.2.4 as follows:*

6.4.2.4DV Water emergence test

6.4.2.4.1DV Six subjects wearing the reference vest (Type I Adult, Model 3 constructed in accordance with 46 CFR 160.002) are to enter the water and station themselves within 3 feet (0.9 m) of the platform, and then are to attempt to climb into the liferaft or onto the platform within 30 seconds. The time period is to start when the subject's hands touch the

liferaft or platform. The subjects are to repeat the procedure while wearing the candidate suit, as specified in 6.4.2.4.2DV.

6.4.2.4.2DV After donning the candidate suit, each subject is to enter the water feet-first with all the closures open. While the subject swims or treads water for at least 1 minute the suit is to be allowed to flood completely. Prior to emerging from the water into the liferaft on the top of the platform, the subject is to fasten all closures.

6.4.2.4.3DV A subject unable to emerge successfully in the candidate suit is to be instructed to open any wrist, ankle, thigh, or the like, closures fully and try again.

6.4.2.4.4DV If the required number of subjects are unable to emerge in the candidate suit and less than two thirds of the subjects have qualified in the reference vest, then additional subjects shall be substituted for subjects who couldn't emerge in either device until the required number of subjects emerges in either the candidate suit or the reference vest.

6.4.2.5DV D2 *Modification by adding a Section 6.4.2.5 as follows:*

6.4.2.5DV Test with lifejacket(s)

6.4.2.5.1DV If the flotation suit is to be marked as suitable for use with one or more models of lifejacket(s), the suit shall be tested while being worn with the lifejacket(s). Each marked combination of suit and lifejacket model shall be tested in accordance with UL 12402-9, 5.6.2, 5.6.5, 5.6.6, 5.6.7, 5.6.8, 5.6.11, and 6.4.2.3 – 6.4.2.4 of this section. The tests in 5.6.6 shall be used to ascertain whether self righting is achieved, and the suit shall be marked accordingly.

6.4.3 Additional marking, information supplied by the manufacturer, and consumer information at point of sale for inherently buoyant flotation suit PFDs

In addition to the marking and information requirements of ISO 12402-5:2020, Clauses 6 to 8, the following shall be marked on the PFD and included in the user information:

a) the text: "Inherently buoyant flotation suit";

b) a reference to this document, i.e. "ISO 12402-6:2020";

c) the text: "This type of PFD is intended for constant wear and must be fully donned with all primary closures fastened to provide the appropriate protection level as marked";

d) the text: "When worn and used away from a bank or shore where help or means of rescue are NOT close at hand, the suit shall be worn in conjunction with a lifejacket, performance level 275";

e) the text: "Train yourself in the use of the suit; also with an appropriate lifejacket";

f) for a 2-piece design, the trousers shall be marked with the word "CAUTION" and the following or equivalent text: "For optimum performance and protection, the jacket and trouser shall be worn together";

g) for a 2-piece design, the jacket shall be marked with the model or designation of the trousers that are tested for use with it, and the trousers shall be marked with the model or designation of the jacket that is tested for use with it;

h) the text "CAUTION – This PFD may increase the difficulty of climbing out of the water";

i) if it is necessary to open any closures for compliance with the encumbrance assessment and boarding test, according to ISO 12402-9:2020, 5.6.1.7 and 5.6.7, the suit shall be marked "CAUTION:" and the following, or equivalent, wording: "Trapped water shall be released by opening closures (e.g., wrist, ankle, thigh) when climbing out of the water".

6.4.3DV D1 ***Modification by revising 6.4.3 a) through i) as follows:***

English	French	Spanish
a) the text: "Inherently buoyant flotation suit; Must be worn";	**a) le texte : « Combinaison de flottaison intrinsèquement flottante; Doit être portée »;**	**a) el texto: "Traje de flotación intrínsecamente flotante; debe usarse";**
b) a reference to this document, i.e. "UL 12402-6";	**b) une référence à ce document, c'est-à-dire « UL 12402-6 »;**	**b) una referencia a este documento, es decir, "UL 12402-6";**
c) the text: "This type of PFD is intended for constant wear and must be fully donned with all primary closures fastened to provide the appropriate protection level as marked";	**c) le texte : « Ce type de VFI est destiné à un port constant et doit être entièrement enfilé avec toutes les fermetures principales fermées pour fournir le niveau de protection approprié indiqué »;**	**c) el texto: "Este tipo de PFD está diseñado para uso constante y se debe usar por completo con todos los cierres principales abrochados para proporcionar el nivel de protección adecuado como se indica";**
d) if the flotation suit is qualified to be used with one or more lifejackets, the model(s) of lifejacket(s) shall be listed on the label along with whether self righting is achieved with the combination.	**d) si la combinaison de flottaison est qualifiée pour être utilisée avec un ou plusieurs gilets de sauvetage, le(s) modèle(s) de gilet(s) de sauvetage doit(vent) être inscrit(s) sur l'étiquette ainsi que si l'auto-redressement est atteint avec la combinaison.**	**d) si el traje de flotación está calificado para usarse con uno o más chalecos salvavidas, el modelo o modelos de chalecos salvavidas se deben enumerar en la etiqueta junto con si se logra el autoadrecimiento con la combinación.**
e) the text: "Train yourself in the use of the suit or combination of devices as labeled";	**e) le texte : « Entraînez-vous à l'utilisation de la combinaison ou de la combinaison d'appareils comme indiqué »;**	**e) el texto: "Entrénese en el uso del traje o combinación de dispositivos como se indica;**
f) for a 2-piece design, the trousers shall be marked with the word "CAUTION" and the following or equivalent text: "For optimum performance and protection, the jacket and trouser shall be worn together";	**f) pour une conception 2 pièces, le pantalon doit être marqué du mot « ATTENTION » et du texte suivant ou équivalent : « Pour une performance et une protection optimales, la veste et le pantalon doivent être portés ensemble »;**	**f) para un diseño de 2 piezas, los pantalones deben estar marcados con la palabra "PRECAUCIÓN" y el siguiente texto o equivalente: "Para un rendimiento y protección óptimos, la chaqueta y el pantalón deben usarse juntos";**
g) for a 2-piece design, the jacket shall be marked with the model or designation of the trousers that are tested for use with it, and the trousers shall be marked with the model or designation of the jacket that is tested for use with it;	**g) pour un modèle 2 pièces, la veste doit être marquée du modèle ou de la désignation du pantalon testé pour être utilisé avec elle, et le pantalon doit être marqué du modèle ou de la désignation de la veste testée pour être utilisée avec elle;**	**g) para un diseño de 2 piezas, la chaqueta debe estar marcada con el modelo o designación de los pantalones que se prueban para usar con ella, y los pantalones deben estar marcados con el modelo o designación de la chaqueta que se prueba para usar con ella;**

h) the text "CAUTION – This PFD may increase the difficulty of climbing out of the water";	**h) le texte « ATTENTION – Ce VFI peut augmenter la difficulté de sortir de l'eau »;**	**h) el texto "PRECAUCIÓN: este PFD puede aumentar la dificultad para salir del agua";**
i) if it is necessary to open any closures for compliance with the testing in 6.4.2.4 of this section, the suit shall be marked "CAUTION:" and the following, or equivalent, wording: "Open [wrist, ankle, thigh, or the like, closures] to easy getting out of the water."	**i) s'il est nécessaire d'ouvrir des fermetures pour se conformer aux essais du 6.4.2.4 de cette section, la combinaison doit porter la mention « ATTENTION : » et la mention suivante, ou équivalente : « Ouvrez [le poignet, la cheville, la cuisse ou la comme, les fermetures] pour sortir facilement de l'eau. »**	**i) si es necesario abrir cualquier cierre para cumplir con las pruebas en 6.4.2.4 de esta sección, el traje debe estar marcado "PRECAUCIÓN:" y la siguiente frase, o equivalente: "Abrir [muñeca, tobillo, muslo o la como cierres] para salir fácilmente del agua".**

6.5 Hybrid PFDs

6.5DV D2 ***Modification by deleting the entire clause 6.5.***

6.5.1 General

Hybrid PFDs shall have a minimum inherent buoyancy in accordance with ISO 12402-5:2020 without inflation but may be inflated to meet an increased level of performance as defined by the manufacturer.

Hybrid PFDs shall meet the requirements of the relevant part of the ISO 12402 series:2020.

6.5.2 Specific requirements for hybrid PFDs

6.5.2.1 Minimum inherent buoyancy

Hybrid PFDs shall have at least a minimum inherent buoyancy in accordance with ISO 12402-5:2020.

6.5.2.2 Test requirements

The PFD shall be tested both with the inherent buoyancy alone and with each additional source of buoyancy independently and as a full combination. In each condition, the PFD shall meet the requirements of the relevant part of the ISO 12402 series:2020.

6.5.3 Additional marking, information supplied by the manufacturer, and consumer information at point of sale for hybrid PFDs

In addition to the marking and information requirements of the relevant part(s) of the ISO 12402 series:2020, Clauses 6 to 8, the following shall be marked on the PFD and included in the user information:

a) the text: "User-assisted PFD – Hybrid";

b) a reference to this document, i.e. "ISO 12402-6:2020";

c) a clear designation of the protection level, for each combination of buoyancy;

d) where applicable, the text: "WARNING: This PFD requires user intervention to reach the maximum buoyancy and protection level stated".

6.6 PFDs without a cylinder seal indicator

6.6DV D2 *Modification by deleting the entire clause 6.6.*

6.6.1 General

The user of a PFD shall be able to check that the PFD has a non-pierced cylinder, either by checking a cylinder seal indicator or by checking the gas cylinder itself.

PFDs that incorporate inflation mechanisms which do not have a cylinder seal indicator require additional instructions about how to check the gas cylinder; how to ensure that the cylinder has not been pierced. Knowledge of the correct use, checking and repacking of the lifejacket is essential.

PFDs without a cylinder seal indicator shall comply with all requirements specified in the relevant part of ISO 12402-2:2020 to ISO 12402-4:2020, except as modified or superseded by this clause. If the provisions of ISO 12402-6:2020, 6.6.2, are met, PFDs without a cylinder seal indicator shall be permitted.

NOTE A cylinder seal indicator does not indicate whether or not the cylinder is correctly fitted. It indicates whether or not the cylinder is pierced.

6.6.2 Additional marking, information supplied by the manufacturer, and consumer information at point of sale for PFDs without cylinder seal indication

In addition to the marking and information requirements of ISO 12402-2:2020 to ISO 12402-5:2020, Clauses 6 to 8, the following shall be marked on the PFD and included in the user information:

a) the text: "User-assisted PFD – without a cylinder seal indicator";

b) a reference to this document, i.e. "ISO 12402-6:2020";

c) the text : "WARNING: "Check the status of the gas cylinder before each use. Ensure the cylinder is not pierced and is screwed in tight. Failure to do this may result in the PFD failing to inflate correctly."

The user information shall also include the following:

d) detailed instructions about how to check the gas cylinder; how to ensure that the cylinder has not been pierced and that it is securely attached to the inflation system.

7 Requirements for application-specific PFDs

7.1 General

Application-specific PFDs have additional features appropriate to their intended use.

7.1.1 Principles

Application-specific PFDs can rely on the skill, knowledge, special training and/or participation of the user. Some categories or designs of such PFDs may not always be suitable for uses outside the marked special or specific purpose. The special application, any limitations of use, special knowledge or training requirements shall be stated clearly in the information supplied by the manufacturer.

7.1.2 Basic requirements

The requirements specified in ISO 12402-2:2020 to ISO 12402-5:2020 are also the basic requirements for application-specific PFDs. The PFD shall meet the requirements of the relevant part of the ISO 12402 series:2020, except as modified by this document.

7.2 Offshore sailing lifejackets

7.2.1 General

Offshore sailing lifejackets are intended for offshore sailing yacht use and provide an enhanced level of protection for those sailing offshore. Under these conditions, the lifejacket can be worn for prolonged periods and often in darkness or rough water with spray. They shall not hinder the mobility of the user or endanger the user's safety in other respects. Safety harnesses and lines are essential to reduce the risk of a fall overboard.

Offshore sailing lifejackets shall comply with all requirements specified in ISO 12402-3:2020 as a minimum, except as modified or superseded by this clause.

7.2.2 Specific requirements for offshore sailing lifejackets

7.2.2.1 Equipment

This type of application-specific lifejacket shall be equipped with:

a) an automatic inflation system with a manual and oral backup;

b) a ride-up prevention system;

c) a deck safety harness in compliance with ISO 12401:2009;

d) a PLD storage facility as specified in 7.2.2.2.

As an alternative to a), the PFD may be equipped with an automatic/manual conversion facility for the inflation system. The PFD shall then additionally meet all the requirements of 6.2.

Offshore sailing lifejackets shall also be fitted with the following accessories in accordance with ISO 12402-8:2020.

e) a sprayhood, and

f) an emergency position-indicating light.

7.2.2.2 PLD storage and integration requirements

The lifejacket shall be provided with a means of storing a personal locator device (PLD). When tested in accordance with ISO 12402-8:2020, 5.11, with the PLD fitted in its stored position, the PLD shall not be dislodged or damaged and shall not cause harm to the wearer or damage the lifejacket. When the lifejacket is inflated, the PLD shall be accessible to the wearer.

7.2.3 Additional marking, information supplied by the manufacturer, and consumer information at point of sale for offshore sailing lifejackets

In addition to the marking and information requirements of the relevant part(s) of the ISO 12402 series:2020, Clauses 6 to 8, the following shall be marked on the PFD and included in the user information:

a) the text: "Application-specific PFD suitable for offshore sailing";

7.2.3DV D1 ***Modification by revising sub-clause 7.2.3 a) as follows:***

English	French	Spanish
the text: "Application-specific PFD suitable for offshore sailing";	**le texte : "VFI spécifique à l'application adapté à la navigation hauturière" ;**	**el texto: "PFD específico de la aplicación adecuado para la navegación en alta mar";**

b) a reference to this document, i.e. "ISO 12402-6:2020";

c) the information and markings specified in ISO 12401:2009.

7.3 PFDs for firefighting application

7.3.1 General

PFDs for firefighting application are designed to be compatible with firefighting equipment.

PFDs for firefighting application shall comply with all requirements specified in the relevant part of ISO 12402-2:2020 to ISO 12402-5:2020 except as modified or superseded by this clause.

7.3.2 Specific requirements for PFDs for firefighting application

7.3.2.1 Fabric and webbing flammability testing

External fabric and webbing which may be exposed to direct flames shall be tested in accordance with procedure A of ISO 15025:2016 and shall achieve limited flame spread of index 3 of ISO 14116:2015.

7.3.2.2 Surface finishes or additives

To prevent accidental removal of protective additives, cleaning shall be carried out according to the care label prior to the flammability test specified in 7.3.2.1.

7.3.2.3 Temperature test

The PFD, in a packed and ready-to-use condition, shall be tested in accordance with ISO 17493:2016 at a temperature of (180 ± 5) °C for 5 min. After exposure, the performance of the PFD shall be proved by an in-water test in accordance with ISO 12402-9:2020, 5.6.

WARNING – This test is dangerous. Extreme caution is required.

7.3.3 Additional marking, information supplied by the manufacturer, and consumer information at point of sale for PFDs for firefighting application

In addition to the marking and information requirements of the relevant part(s) of the ISO 12402 series:2020, Clauses 6 to 8, the following shall be marked on the PFD and included in the user information:

a) the text: "Application-specific PFD suitable for firefighting application";

7.3.3DV.1 D1 ***Modification by revising sub-clause 7.3.3 a) as follows:***

English	French	Spanish
the text: "Application-specific PFD suitable for firefighting application";	**le texte suivant: « VFI spécifique à l'application adapté à la lutte contre l'incendie »;**	**el texto: "PFD específico para aplicaciones adecuadas para la lucha contra incendios";**

b) a reference to this document, i.e. "ISO 12402-6:2020";

In addition, the following shall be added in the product marking information:

c) the text: "FOR USE BY PERSONS ENGAGED IN FIRE FIGHTING" (in a larger size or more prominently than all other markings);

7.3.3DV.2 D1 ***Modification by revising sub-clause 7.3.3 c) as follows:***

English	French	Spanish
c) the text: "FOR USE BY PERSONS ENGAGED IN FIRE FIGHTING" (in a larger size or more prominently than all other markings);	**c) le texte : "À UTILISER PAR LES PERSONNES ENGAGÉES DANS LA LUTTE CONTRE L'INCENDIE" (dans une taille plus grande ou plus visible que toutes les autres marques) ;**	**c) el texto: "PARA USO DE PERSONAS QUE SE ENCUENTRAN EN LA LUCHA CONTRA INCENDIOS" (en un tamaño más grande o más prominente que todas las demás marcas);**

d) The text: "RISK ASSESSMENT: BEFORE USE, EVALUATE AGAINST THE EQUIPMENT LISTED FOR COMPATIBILITY IN EXPLANATORY LEAFLET."

7.3.3DV.3 D1 ***Modification by revising sub-clause 7.3.3 d) as follows:***

English	French	Spanish
The text: "RISK ASSESSMENT: BEFORE USE, EVALUATE AGAINST THE EQUIPMENT LISTED FOR COMPATIBILITY IN EXPLANATORY LEAFLET."	**Le texte : "ÉVALUATION DES RISQUES : AVANT UTILISATION, ÉVALUER PAR RAPPORT À L'ÉQUIPEMENT ÉNUMÉRÉ POUR LA COMPATIBILITÉ DANS LA NOTICE EXPLICATIVE."**	**El texto: "EVALUACIÓN DE RIESGO: ANTES DE UTILIZAR, EVALUAR CONTRA EL EQUIPO LISTA DE COMPATIBILIDAD EN EL FOLLETO EXPLICATIVO".**

The user information shall also include the following:

e) a list of the firefighting equipment with which the lifejacket has been evaluated for compatibility, if applicable.

7.4 Commercial white-water PFDs

7.4.1 General

Commercial white-water PFDs have performance similar to a buoyancy aid but with enhanced buoyancy and with specific features needed for the device to be marked as suitable for commercial white-water rafting applications, where the users are untrained in these activities but guided by trained individuals.

Commercial white-water PFDs shall comply with all requirements specified in ISO 12402-5:2020 except as modified or superseded by this clause.

The risk of snagging shall be evaluated during the donning test and in-water performance testing in accordance with ISO 12402-9:2020, 5.6. The construction of a PFD intended for commercial white-water service shall minimise the likelihood of snagging, such as by providing means to secure the free ends of body straps and the like. Decorative non-structural D-rings and the like shall not be provided.

7.4.1DV DC *Modified by adding requirements for components in clause 7.4.1 as follows:*

A component covered in Table 1ADV shall have at least the minimum properties specified in Table 1ADV when tested in accordance with the applicable specifications in the Standard for Components for Personal Flotation Devices, UL 1191 for Use Code 5.

Table 1ADV
Components

Component	Applicable UL 1191 test	Conditioning	Minimum required values
Fabric	Breaking Strength	As-received and after accelerated weathering	Either 470 N average in direction of greater thread count and 310 N average in direction of lesser thread count; or 400 N average in each direction
Webbing	Breaking Strength	As-received and after accelerated weathering	1600 N average
Hardware	Strength	After salt spray exposure (metal), as-received and after accelerated weathering and high and low temperatures (plastic)	1600 N[a]
Tie Tape	Breaking Strength	As-received and after accelerated weathering	880 N average

[a] Minimum value is 1000 N if:

1) Two or more body straps are provided on the device,

2) The intended method of securement of the straps is obvious, and

3) The construction of the device is such that it is apparent that all straps are likely to be secured.

Webbing shall be at least 25.4 mm wide.

A polymeric coating shall be no less than 0.25 mm thick.

The buoyant material of a device shall be foam flotation material.

The primary means of closure of a device shall consist of one or more body straps.

7.4.2 Specific requirements for PFDs intended for commercial white-water

7.4.2.1 Back pad

A PFD intended for commercial white-water service shall have a back pad. Foam provided in the back pad shall be at least 12 mm thick and shall extend at least from the top of the shoulders to the bottom of the rib cage on each test subject (determined prior to entry into the water).

7.4.2.2 Collar pad

A PFD intended for commercial white-water service shall have a collar pad constructed to provide head support. Foam provided in the collar shall be at least 12 mm thick and shall extend beyond each side of the head of each test subject and at least 150 mm above the shoulders of each test subject.

7.4.2.3 User mass limitation

A PFD intended for commercial white-water service shall not be constructed for use by persons weighing less than 30 kg.

7.4.2.3DV D2 *Modified by revising the paragraph in clause 7.4.2.3 as follows:*

A device shall not be constructed for use by persons weighing less than 23 kg.

For adult devices, the chest range of 760 to 1320 mm shall be covered by no more than two different sizes of devices. One additional adult size for larger persons may be provided.

A youth device shall be constructed to fit the 610 to 740 mm chest sizes.

7.4.2.4 Conspicuousness

A PFD intended for commercial white-water service shall comply with the colour requirements of ISO 12402-7:2020, 4.3.3.

7.4.2.4DV D2 *Modified by revising clause 7.4.2.4 as follows:*

Devices shall be made highly visible using one of the following means:

a) A minimum of the upper 50 percent of the external surfaces (the surfaces facing away from the body) of the device shall be a highly visible color; or

b) At least two contrasting colors shall be used with each color covering a minimum of 25 percent of the upper front and back external surfaces of the device. Contrasting colors that comply include combinations such as white and black, yellow and bright/dark blue, pale blue and orange, yellow and dark green, and white and dark blue.

7.4.2.5 In-water removal test (in case of entrapment)

The subjects shall be positioned in a pool at a point where there is sufficient depth for the subjects to float freely and that is at least 600 mm from the edge of the pool.

The subjects then shall be given the instructions: "At the command of 'go' remove the PFD as quickly as possible … ready … go." The time from the command "go" until complete removal of the PFD shall be recorded. To simulate an emergency situation, the subjects may be given additional instructions during the removal attempt indicating that quick removal is imperative.

For an adult PFD intended for commercial white-water service, the average time taken to remove the PFD by the group of test subjects according to ISO 12402-9:2020, 5.6.1.2 shall be less than 10 s, and no test subject shall take more than 30 s to remove the PFD.

For a child (>30 kg) PFD intended for commercial white-water service, the average time taken to remove the PFD by the group of test subjects according to ISO 12402-9:2020, 5.6.1.3 shall be less than 15 s, and no subject shall take more than 30 s to remove the PFD.

7.4.2.5DV.1 D2 ***Modified by revising the fourth paragraph in clause 7.4.2.5 as follows:***

For a youth PFD intended for commercial white-water service, the average time taken to remove the PFD by the group of test subjects according to ISO 12402-9:2020, 5.6.1.3 shall be less than 15 s, and no subject shall take more than 30 s to remove the PFD.

7.4.2.5DV.2 D2 ***Modified by adding a fifth paragraph in clause 7.4.2.5 as follows:***

A subject is to be disqualified and a new subject used for the test, if:

a) For tests on an adult device, the subject is unable to remove the USCG Model 3 reference vest within 30 seconds; or

b) For tests on a youth device, the subject is unable to remove the USCG Model 3 or USCG Model 5, as applicable, reference vest within 45 seconds.

7.4.2.6 Buoyancy test

An adult and a child (>30 kg) PFD intended for commercial white-water service shall comply with Table 2 of ISO 12402-4:2020 when subjected to the buoyancy test specified in ISO 12402-9:2020, 5.5.10.

7.4.2.6DV D2 ***Modified by replacing the paragraph in clause 7.4.2.6 as follows:***

A candidate device shall comply with the minimum buoyancy value specified in Table 1BDV

Table 1BDV
Minimum buoyancies for white water PFD's

Device	Minimum buoyancy N
Adult	97
Youth	69

7.4.2.7 Horizontal and vertical load test

Testing shall be in accordance with ISO 12402-9:2020, 5.5.4. The loads and durations specified in Table 1 shall be applied. No damage shall occur impairing the function of the PFD. The means of adjustment shall not have a slippage exceeding 25 mm when subjected to the test.

Table 1
Loads and durations for tensile test of white-water PFDs

Component or area under test	PFDs used for	Load N	Duration min
Primary closure body strap[a,b]	Adults and children (>30 kg)	3 200	10
Secondary closures[c]	Adults and children (>30 kg)	550	5
Collar, collar handle	Adults	900	5
	Children (>30 kg)	500	5
Shoulder section	Adults and children (>30 kg)	1 500	5

[a] Includes any body-encircling strap, which may be tested independent of the PFD.

[b] The PFD may be tested with any combination of two adjacent body straps secured, provided that each strap alone complies with the requirements when subjected to a load of 1 960 N.

[c] Includes tie tapes and chest straps. Does not include collar or ride-up prevention systems.

Table 1DV D2 *Modification by replace Table 1 as follows:*

Table 1DV
Loads and durations for tensile test of white-water PFDs

Component or area under test	PFD's used for	Load N	Duration Minutes
Primary closure body strap[a,b]	**Any**	**3200**	**10**
Secondary closures[c]	**Any**	**528**	**5**
Shoulder section, collar, collar strap, or crotch strap	**Adults**	**889**	**5**
	Youth	**510**	**5**

[a] Includes any body encircling strap, which may be tested independent of the device.

[b] A device as specified in note a of Table 1ADV may be tested with any combination to two adjacent body straps secured, provided that each strap alone complies with the requirement in 7.4.2.7 when subjected to a load of 2000 N.

[c] Includes tie tapes and chest straps. Does not include collar or crotch straps.

7.4.2.8DV D2 *Modified by adding a new clause 7.4.2.8 as follows:*

7.4.2.8DV Secondary closure attachment-strength test

For a device provided with a secondary closure attached directly to the cover fabric, the average breaking strength of the closure/fabric combination shall be not less than 528 N, when subjected to the test specified in UL 12402-9, 5.5.2.9.

7.4.2.9DV D2 *Modified by adding a new clause 7.4.2.9 as follows:*

7.4.2.9DV Test of resistance to burning test

A device shall comply with the requirements in 7.4.2.7 when subjected to 75 percent of the applicable tensile load specified in Table 1DV, applied for the applicable duration specified in Table 1DV, following the test in UL 12402-9, 5.5.12.

7.4.2.10DV D2 *Modified by adding a new clause 7.4.2.10 as follows:*

7.4.2.10DV Flotation Stability Test

7.4.2.10.1DV An adult candidate device shall comply with the following (see 7.4.2.10.3DV):

a) When tested as specified in UL 12402-9, 5.6 the back pad shall extend at least from the top of the shoulders to the bottom of the rib cage on each test subject (determined prior to entry into the water).

b) When tested as specified in UL 12402-9, 5.6:

1) The average freeboard of the group of test subjects shall not be less than 85 percent of that of the USCG Model 3 reference vest.

2) The average distance of the ear canal from the surface of the water of the group of test subjects shall not be less than 40 percent of the USCG Model 3 reference vest.

3) The average value of the lowest marks that can be viewed on the vertical scale by the group of test subjects shall not be greater than 200 percent of that value for the USCG Model 3 reference vest, or the average face plane angle for the group of test subjects shall not be less than 50 percent of that value for the USCG Model 3 reference vest providing vision to the scale is not obscured by the candidate device to a degree greater than the USCG Model 3 reference vest.

4) The number of test subjects provided with chin support shall be at least 60 percent of that number for the USCG Model 3 reference vest.

5) The collar shall extend beyond each side of the head of each test subject.

6) The collar shall extend at least 150 mm above the shoulders of each test subject.

7.4.2.10.2DV A youth candidate device shall comply with the following (see 7.4.2.10.3DV):

a) When tested as specified in UL 12402-9, 5.6, as applicable:

1) The device shall comply with the requirements in UL 12402-9 5.6.5, 5.6.6 and 5.6.11.

2) The back pad shall extend at least from the top of the shoulders to the bottom of the rib cage on each test subject (determined prior to entry into the water).

b) When tested as specified in UL 12402-9, 5.6 as applicable:

1) The average freeboard for the group of test subjects shall not be less than that of the USCG Model 3 or Model 5 reference vest, as applicable, by more than 6.4 mm.

2) The average distance of the ear canal from the surface of the water of the group of test subjects shall not be less than that of the USCG Model 3 or Model 5 reference vest, as applicable, by more than 6.4 mm.

3) The average value of the lowest marks that can be viewed on the vertical scale by the group of test subjects shall not be greater than 135 percent of that value for the USCG Model 3 or Model 5 reference vest, as applicable, or the average face plane angle for the group of test subjects shall not be less than 67.5 percent of that value for the USCG Model 3 or Model 5 reference vest, as applicable, providing vision to the scale is not obscured by the candidate device to the degree greater than the USCG Model 3 or Model 5 reference vest, as applicable.

4) The number of test subjects provided with chin support shall be at least 60 percent of that number for the USCG Model 3 or Model 5 reference vest, as applicable.

5) The collar shall extend beyond each side of the head of each test subject.

6) The collar shall extend at least 114 mm above the shoulders of each test subject.

7.4.2.10.2DV Test subjects as specified in UL 12402-9, 5.6.1 are to be used. The tests are to be repeated twice on each test subject; first with each subject wearing the Model 3 or Model 5, as applicable, reference vest and then with each subject wearing the candidate device.

7.4.3 Additional marking, information supplied by the manufacturer, and consumer information at point of sale for commercial white-water PFDs

In addition to the marking and information requirements of ISO 12402-5:2020, Clauses 6 to 8, the following shall be marked on the PFD and included in the user information:

a) the text: "Application-specific PFD – Commercial White Water";

b) a reference to this document, i.e. "ISO 12402-6:2020".

In addition, the following shall be added in the product marking information:

c) the text: "NOTICE: BEFORE BOARDING, PUT THIS LIFEJACKET ON AND ADJUST TO FIT PROPERLY" in letters at least 5 mm high.

7.5 PFDs for personal water craft, water skiing, or similar towed uses

7.5.1 General

PFDs for personal water craft, water skiing or similar towed uses have enhanced fit and securement to inhibit them from being dislodged when the user engages in high speed water sports.

PFDs for personal water craft, water skiing or similar towed uses shall comply with all requirements specified in the relevant parts of ISO 12402-2:2020 to ISO 12402-5:2020 except as modified or superseded by this clause.

7.5.2 Specific requirements for PFDs for personal water craft, water skiing, or similar towed uses

7.5.2.1 Secure closures

PFDs that are intended for personal water craft use, water skiing, or similar towed uses shall be constructed with at least three front closures, at least two of these shall be primary encircling body straps.

7.5.2.1DV D2 *Modification by deleting clause 7.5.2.1*

7.5.2.2 Securement features

A PFD with an alternative means of securement or enhanced fit, such as integral legs or pullover vest, that prevent dislodging of the PFD during water impact, is not required to comply with the requirement in 7.5.2.1. This shall be verified during the water entry test according to ISO 12402-9:2020, 5.6.3.

7.5.2.2DV D2 *Modification by deleting clause 7.5.2.2*

7.5.2.3 Impact protection

Where PFDs are designated for impact protection, the PFD shall provide a minimum level of impact protection with a mean value of ≤9 kN and a single strike of ≤12 kN and shall be tested according to EN 1621-1:2012, EN 1621-2:2014 or EN 1621-3:2018. The impact performance value shall be marked on the PFD and included in the user information supplied by the manufacturer. Removable protectors are not allowed.

7.5.2.3DV D2 *Modification by deleting clause 7.5.2.3*

7.5.3 Additional marking

7.5.3.1 Additional marking, information supplied by the manufacturer, and consumer information at point of sale for PFDs for personal water craft, water skiing, or similar towed uses

In addition to the marking and information requirements of the relevant parts of the ISO 12402 series:2020, Clauses 6 to 8, the following shall be marked on the PFD and included in the user information:

a) the text: "Application-specific PFD suitable for personal water craft and water skiing or similar towed uses";

b) a reference to this document, i.e. "ISO 12402-6:2020".

7.5.3.1DV D2 *Modification by deleting clause 7.5.3.1*

7.5.3.2 Additional markings and information for PFDs with impact protection

The following shall be marked on the PFD and included in the user information:

a) the value of impact protection provided and a description of the part(s) of the body which is(are) protected, e.g. back, chest;

b) the dimensions of the zone of the protection, relative to the coverage provided by the whole product together with the following text:

– the text "WARNING: No scapula protection in case of back protection",

– the text "WARNING: No upper back protection in case of lumbar protection";

7.5.3.2DV D1 *Modification by revising sub-clause 7.5.3.2 b) as follows:*

English	French	Spanish
the dimensions of the zone of the protection, relative to the coverage provided by the whole product together with the following text:	**les dimensions de la zone de protection, par rapport à la couverture fournie par l'ensemble du produit, accompagnées du texte suivant :**	**las dimensiones de la zona de protección, relativas a la cobertura proporcionada por el producto completo junto con el siguiente texto:**
– the text "WARNING: No scapula protection in case of back protection",	**– le texte « ATTENTION : Pas de protection de l'omoplate en cas de protection dorsale »,**	**– el texto "ADVERTENCIA: Sin protección de la escápula en caso de protección de la espalda",**
– the text "WARNING: No upper back protection in case of lumbar protection";	**– le texte « ATTENTION : pas de protection du haut du dos en cas de protection lombaire »;**	**– el texto "ADVERTENCIA: Sin protección de la parte superior de la espalda en caso de protección lumbar";**

c) instructions concerning inspection of the PFD, when to replace it and how to decide if it no longer provides adequate protection;

d) a warning that no PFD can offer full protection against injury;

e) a specific warning that spinal injuries will not be prevented by the PFD;

f) a warning about any changes in environmental conditions, such as temperature, that would significantly reduce the performance;

g) information on the importance of selection of the correct size of the PFD.

7.6 Inflatable PFDs for cold environment

7.6.1 General

Inflatable PFDs for cold environment are designed to provide reliable inflation and performance to meet the requirements in the relevant parts of ISO 12402-2:2020 to ISO 12402-5:2020, at temperatures lower than –5 °C, and to be classified as an application-specific PFD.

Where inflatable PFDs are designated for use in cold environments and intended to be fully operable at temperatures below –5 °C they shall comply with all requirements specified in the relevant parts of ISO 12402-2:2020 to ISO 12402-5:2020 and as modified or superseded by this clause.

7.6.2 Specific Requirements for PFDs for cold environment

Following the temperature cycling tests according to ISO 12402-9:2020, 5.5.3, and the inflation tests according to ISO 12402-9:2020, 5.5.9, the following additional inflation tests shall be conducted. In these tests, "*T*" is the lowest marked temperature at which the device is stated to operate.

7.6.2DV.1 D2 *Modification of first paragraph of 7.6.2 as follows:*

Following the temperature cycling tests according to UL 12402-9, Section 5.5.4, and the inflation tests according to UL 12402-9, Section 5.5.10, the following additional inflation tests shall be conducted. In these tests, "*T*" is the lowest marked temperature at which the device is stated to operate.

Inflation tests shall be carried out at (*T* ± 1) °C of the specified lowest air temperature of the range that the PFD is required to be operable. For automatic and manual PFDs, the inflation tests shall be carried out in accordance with the below (as applicable).

a) Each PFD shall be placed securely on a test form, as described in Figure 8 of ISO 12402-9:2020, or in a weighted cage. The test frame or weighted cage shall have an in-water weight equal to the required minimum buoyancy to conform to the relevant part of the ISO 12402 series:2020.

7.6.2DV.2 D2 *Modification of sub-clause of 7.6.2 a) as follows:*

a) Each PFD shall be placed securely on a test form, as described in Figure 6DV of UL 12402-9, or in a weighted cage. The test frame or weighted cage shall have an in-water weight equal to the required minimum buoyancy to conform to the relevant part of the ISO 12402 series:2020.

b) Two inflatable PFDs shall be conditioned by exposing them for (5,0 ± 0,1) h to the specified lowest air temperature of the range that the PFD is required to be operable within (*T* ± 1) °C. The two inflatable PFDs shall then be inflated. One shall be activated using the automatic inflation system by placing it in fresh water at a temperature of (0,5 ± 0,5) °C and the other shall be activated using the manual inflation system. The time required for the assembly to begin to rise to the surface is to be recorded.

c) The two inflatable PFDs shall be conditioned by exposing them for (5,0 ± 0,1) h to the specified lowest air temperature of the range that the PFD is required to be operable within (*T* ± 1) °C. The two inflatable PFDs shall then be inflated. One shall be activated using the automatic inflation system by placing it in salt water at a temperature of (–1 ± 2) °C and the other shall be activated using the manual inflation system. The time required for the assembly to begin to rise to the surface shall be recorded.

For a PFD with automatic inflation, the PFD and weighted cage or frame shall begin to rise to the surface within 10 s after submersion.

For a PFD with manual inflation, the PFD and weighted cage or frame shall begin to rise to the surface within 5 s after firing the inflation mechanism.

The PFD shall be placed securely on a test frame. After conditioning by exposure for (5,0 ± 0,1) h to the specified lowest air temperature of the range that the PFD is required to be operable within (*T* ± 1) °C, a force shall be applied to the pull toggle in the correct direction to fire the operating head. The head shall not fire below 13 N and shall fire between 13 N and 120 N.

7.6.3 Additional marking, information supplied by the manufacturer, and consumer information at point of sale for PFDs for cold environment

In addition to the marking and information requirements of the relevant part(s) of the ISO 12402 series:2020, Clauses 6 to 8, the following shall be marked on the PFD and included in the user information:

a) the text: "Application-specific PFD suitable for use in cold environments not below [*T*] °C". The PFD shall be marked as being suitable for use within the temperature range as tested.

7.6.3DV.1 D1 ***Modification by revising sub-clause 7.6.3 a) as follows:***

English	French	Spanish
the text: "Application-specific PFD suitable for use in cold environments not below [*T*] °C". The PFD shall be marked as being suitable for use within the temperature range as tested.	**le texte : "VFI spécifique à l'application adapté à une utilisation dans des environnements froids non inférieurs à [*T*] °C". Le VFI doit être marqué comme étant adapté à une utilisation dans la plage de température testée.**	**el texto: "PFD específico de la aplicación adecuado para su uso en ambientes fríos no por debajo de [*T*] °C". El PFD debe estar marcado como adecuado para su uso dentro del rango de temperatura probado.**

b) a reference to this document, i.e. "ISO 12402-6:2020";

c) only on inflatable PFDs, the warning statement: "WARNING: In cold environments inflation may be slower and lower performance may result";

7.6.3DV.2 D1 ***Modification by revising sub-clause 7.6.3 c) as follows:***

English	French	Spanish
only on inflatable PFDs, the warning statement: "WARNING: In cold environments inflation may be slower and lower performance may result";	**uniquement sur les VFI gonflables, l'avertissement : « AVERTISSEMENT : dans les environnements froids, le gonflage peut être plus lent et des performances réduites peuvent en résulter »;**	**solo en PFD inflables, la declaración de advertencia: "ADVERTENCIA: en ambientes fríos, el inflado puede ser más lento y puede resultar en un rendimiento más bajo";**

d) Products shall carry the cold environment icon to indicate compliance with this document (see Figure 1). This shall also be clearly displayed on the products packaging. The unit of temperature may be added within or in the vicinity of the graphical symbol.

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Figure 1

Example of graphical symbol for cold environment for −25 °C [IEC 60417-6292]

7.7 PFDs for swift water rescue

7.7.1 General

PFDs for swift water rescue shall have performance similar to a buoyancy aid but may have higher buoyancy and specific features needed to perform functions associated with rescue in moving and often aerated water. The users of these devices shall be trained in the proper use of the PFD and the special accessories and features provided.

Factors to consider for buoyancy of a swift water rescue PFD are the following.

The minimum buoyancy of PFDs for swift water rescue is dependent upon a number of factors. Whereas this document sets a minimum buoyancy, it does not mean that this buoyancy is appropriate for all (or any particular) swift water rescue situation.

NOTE Most of the PFDs for this use have at least 70 N of buoyancy and many organizations recommend at least 100 N.

PFDs for swift water rescue shall comply with all requirements specified in ISO 12402-5:2020, except as modified or superseded by this clause. The risk of snagging shall be evaluated during the donning test and in-water performance testing in accordance with ISO 12402-9:2020, 5.6. The construction of a PFD used for swift water rescue shall minimize the likelihood of snagging, such as by providing means to secure the free ends of body straps and the like. Non-structural D-rings, storage systems, attachment points and the like may be provided for use with essential equipment used in swift water rescue as required.

7.7.2 Specific requirements for PFDs used for swift water rescue

7.7.2.1 Back pad

A PFD used for swift water rescue shall have a back pad. Foam provided in the back pad shall be at least 12 mm thick and shall extend at least from the top of the shoulders to the bottom of the rib cage on each test subject (determined prior to entry into the water).

7.7.2.1DV D2 *Modification by deleting clause 7.7.2.1*

7.7.2.2 User mass limitation

A PFD used for swift water rescue shall not be constructed for use by persons weighing less than 40 kg.

7.7.2.3 Colour

A conspicuous colour is optional. If applicable, the PFD shall comply with the colour requirements of ISO 12402-7:2020, 4.3.3.

7.7.2.3DV D2 *Modification by deleting clause 7.7.2.3*

7.7.2.4 Retro reflective material

A total of at least 100 cm^2 of retroreflective material conforming to the specifications in IMO Resolution A.658 (16), Annex 2, or ISO 20471:2013+Amd.1:2016, shall be affixed to the upper surface of the PFD and visible from the front and back when worn out of the water.

7.7.2.4DV D2 *Modification by deleting clause 7.7.2.4*

7.7.2.5 Quick-release harness systems

A quick-release harness system for swift water rescue shall be provided that complies with 7.9. and shall not be completely separated from the PFD when the quick release is activated.

The additional features on the device (pockets, etc.) shall not obstruct the wearer's access to the quick release hardware during the testing according to ISO 12402-9:2020, 5.6.

7.7.2.5DV D2 *Modification by revising the first sentence of clause 7.7.2.5 as follows:*

A quick-release harness system for swift water rescue shall be provided that complies with 7.7.3.4DV – 7.7.3.8DV and shall not be completely separated from the PFD when the quick release is activated.

7.7.2.6 Cowtail

If provided, a cowtail for swift water rescue shall consist of a ring attached to elasticated webbing in turn attached to a karabiner. The karabiner shall comply with EN 12275:2013.

The total length of the cowtail in a relaxed state shall be such that it can be stowed on the PFD to reduce the risk of snagging. The karabiner shall be positioned so it can be grasped with ease and the method of stowing shall be such that the karabiner only needs to be unclipped to render the cowtail ready for use with a lifeline or other safety line. When the quick release is activated the cowtail shall release from any retention system without needing to physically open the karabiner according to 7.9.2.