ISO TC 184/SC4/ WG3___ N 822__ **Date:** 1999–12–30

Supersedes ISO TC 184/SC4/ WG3___ N ____

ISO/DTS 10303-314
Product data representation and exchange: Abstract test suite:
Core data for automotive mechanical design process

COPYRIGHT NOTICE: This ISO document is a working draft or committee draft and is copyright protected by ISO. While the reproduction of working drafts or committee drafts in any form for use by Participants in the ISO standards development process is permitted without prior permission from ISO, neither this document nor any extract from it may be reproduced, stored or transmitted in any form for any other purpose without prior written permission from ISO.
Requests for permission to reproduce this document for the purposes of selling it should be addressed as shown below (*via* the ISO TC184/SC4 Secretariat's member body) or to ISO's member body in the country of the requester.

Copyright Manager
ANSI
11 West 42nd Street
New York, New York 10036
USA
phone: +1–212–642–4900
fax: +1–212–398–0023

Reproduction for sales purposes may be subject to royalty payments or a licensing agreement.
Violators may be prosecuted.

ABSTRACT:
This part of ISO 10303 defines the abstract test suite for ISO 10303-214, Application protocol: Core data for automotive mechanical design processes. It contains the test purposes and the abstract test cases for use in conformance testing implementations of ISO 10303-214.

KEYWORDS: abstract test suite, abstract test case, test purpose, automotive, mechanical design

COMMENTS TO READER:
This document has been reviewed and noted by the ISO TC 184/SC4 Quality Committee and SC4 Secretariat and has been determined to be ready for this ballot cycle. It is based on the ISO/DIS 10303-214. It reflects the latest version of the Guidelines for the development of abstract test suites, edition 2 (ISO TC184/SC4 N873, 1999-08-10).

Project Leader: Manfred Fischer
Address: ProSTEP GmbH
Rudower Chaussee 29
D–12489 Berlin
Germany

Telephone: +49 6392 6035
Telefacsimile: +49 30 6392 6050
Email: fischer@prostep.FTA-Berlin.de

Project Editor: Manfred Fischer
Address: ProSTEP GmbH
Rudower Chaussee 29
D–12489 Berlin
Germany

Telephone: +49 6392 6035
Telefacsimile: +49 30 6392 6050
Email: fischer@prostep.FTA-Berlin.de

Contents

Page

1 Scope . . . 1

2 Normative references . . . 2

3 Terms, definitions, and abbreviations . . . 6
3.1 Terms defined in ISO 10303–1 . . . 6
3.2 Terms defined in ISO 10303–31 . . . 6
3.3 Terms defined in ISO 10303–42 . . . 7
3.4 Terms defined in ISO 10303–46 . . . 7
3.5 Abbreviations . . . 7

4 Test purposes . . . 8

5 General test purposes and verdict criteria . . . 9
5.1 General test purposes . . . 9
5.2 General verdict criteria for preprocessor abstract test cases . . . 9
5.3 General verdict criteria for postprocessor abstract test cases . . . 9

6 Abstract test cases . . . 10
6.1 Minimum set . . . 10
6.1.1 Preprocessor . . . 10
6.1.2 Postprocessor . . . 12
6.2 Product management data . . . 12
6.2.1 Preprocessor . . . 12
6.2.2 Postprocessor . . . 18
6.3 Element structur . . . 18
6.3.1 Preprocessor . . . 18
6.3.2 Postprocessor . . . 21
6.4 Item definition structure . . . 21
6.4.1 Preprocessor . . . 21
6.4.2 Postprocessor . . . 28
6.5 Effectivity and Specification control . . . 28
6.5.1 Preprocessor . . . 28
6.5.2 Postprocessor . . . 42
6.6 Work management . . . 42
6.6.1 Preprocessor . . . 42
6.6.2 Postprocessor . . . 47
6.7 Classification . . . 47
6.7.1 Preprocessor . . . 47
6.7.2 Postprocessor . . . 50
6.8 Process plan . . . 50
6.8.1 Preprocessor . . . 50
6.8.2 Postprocessor . . . 54
6.9 Surface condition . . . 54

6.9.1 Preprocessor . . . 54
6.9.2 Postprocessor . . . 59
6.10 Explicit draughting . . . 59
6.10.1 Preprocessor . . . 59
6.10.2 Postprocessor . . . 61
6.11 External reference mechanism . . . 61
6.11.1 Preprocessor . . . 61
6.11.2 Postprocessor . . . 69
6.12 Feature . . . 69
6.12.1 Preprocessor . . . 69
6.12.2 Postprocessor . . . 101
6.13 Wireframe model 2d . . . 101
6.13.1 Preprocessor . . . 101
6.13.2 Postprocessor . . . 105
6.14 Wireframe model 3d . . . 105
6.14.1 Preprocessor . . . 105
6.14.2 Postprocessor . . . 109
6.15 Connected surface model . . . 109
6.15.1 Preprocessor . . . 109
6.15.2 Postprocessor . . . 114
6.16 Faceted brep model . . . 114
6.16.1 Preprocessor . . . 114
6.16.2 Postprocessor . . . 118
6.17 Brep model . . . 118
6.17.1 Preprocessor . . . 118
6.17.2 Postprocessor . . . 122
6.18 Compound model . . . 122
6.18.1 Preprocessor . . . 122
6.18.2 Postprocessor . . . 126
6.19 CSG model . . . 126
6.19.1 Preprocessor . . . 126
6.19.2 Postprocessor . . . 131
6.20 Geometrically bounded surface model . . . 131
6.20.1 Preprocessor . . . 131
6.20.2 Postprocessor . . . 134
6.21 3d example . . . 134
6.21.1 Preprocessor . . . 134
6.21.2 Postprocessor . . . 142
6.22 Kinematics . . . 142
6.22.1 Preprocessor . . . 142
6.22.2 Postprocessor . . . 147
6.23 Measured data . . . 147
6.23.1 Preprocessor . . . 147
6.23.2 Postprocessor . . . 150
6.24 Geometric and annotated presentation . . . 150
6.24.1 Preprocessor . . . 150

6.24.2 Postprocessor . . . 154
6.25 Item property . . . 154
6.25.1 Preprocessor . . . 154
6.25.2 Postprocessor . . . 160
6.26 Dimension tolerance . . . 160
6.26.1 Preprocessor . . . 160
6.26.2 Postprocessor . . . 164
6.27 Geometric tolerance . . . 164
6.27.1 Preprocessor . . . 164
6.27.2 Postprocessor . . . 171
6.28 Associative dimension example . . . 171
6.28.1 Preprocessor . . . 171
6.28.2 Postprocessor . . . 189

Annex A (normative) Conformance classes . . . 190
A.1 Conformance class 1 . . . 190
A.2 Conformance class 2 . . . 190
A.3 Conformance class 3 . . . 191
A.4 Conformance class 4 . . . 191
A.5 Conformance class 5 . . . 192
A.6 Conformance class 6 . . . 193
A.7 Conformance class 7 . . . 193
A.8 Conformance class 8 . . . 194
A.9 Conformance class 9 . . . 194
A.10 Conformance class 10 . . . 195
A.11 Conformance class 11 . . . 196
A.12 Conformance class 12 . . . 197
A.13 Conformance class 13 . . . 198
A.14 Conformance class 14 . . . 199
A.15 Conformance class 15 . . . 200
A.16 Conformance class 16 . . . 201
A.17 Conformance class 17 . . . 201
A.18 Conformance class 18 . . . 202
A.19 Conformance class 19 . . . 203
A.20 Conformance class 20 . . . 204

Annex B (normative) Information object registration . . . 206

Annex C (normative) Postprocessor input specification file names . . . 207

Annex D (informative) Bibliography . . . 208

Index . . . 209

Tables

Table 1 Application elements for ATC Minimum set . . . 11

Table 2 Application elements for ATC Product management data 13
Table 3 Application elements for ATC Element structur 19
Table 4 Application elements for ATC Item definition structure 22
Table 5 Application elements for ATC Effectivity and Specification control 29
Table 6 Application elements for ATC Work management 43
Table 7 Application elements for ATC Classification 48
Table 8 Application elements for ATC Process plan 51
Table 9 Application elements for ATC Surface condition 55
Table 10 Application elements for ATC Explicit draughting 60
Table 11 Application elements for ATC External reference mechanism 62
Table 12 Application elements for ATC Feature 70
Table 13 Application elements for ATC Wireframe model 2d 102
Table 14 Application elements for ATC Wireframe model 3d 106
Table 15 Application elements for ATC Connected surface model 110
Table 16 Application elements for ATC Faceted brep model 115
Table 17 Application elements for ATC Brep model 119
Table 18 Application elements for ATC Compound model 123
Table 19 Application elements for ATC CSG model 127
Table 20 Application elements for ATC Geometrically bounded surface model 132
Table 21 Application elements for ATC 3d example 135
Table 22 Application elements for ATC Kinematics 143
Table 23 Application elements for ATC Measured data 148
Table 24 Application elements for ATC Geometric and annotated presentation 151
Table 25 Application elements for ATC Item property 155
Table 26 Application elements for ATC Dimension tolerance 161
Table 27 Application elements for ATC Geometric tolerance 165
Table 28 Application elements for ATC Associative dimension example 172
Table C.1 Postprocessor input specification file names 207

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 main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard (”state of the art”, for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/DTS 10303-314, which is a Technical Report of type 2, was prepared by Technical Committee ISO/TC 184, Industrial automation systems and integration, Subcommittee SC4, Industrial data.

There is an urgent need for guidance on how to test implementations of ISO 10303 application protocols for conformance to the standard. This Technical Report contains abstract test cases that can be used to test implementations for conformance to ISO 10303-214.

This document is being issued in the Technical Report (type 2) series of publications (according to subclause G.3.2.2 of part 1 of the ISO/IEC Directives 1995 as a ”prospective standard for provisional application” in the field of conformance testing of ISO 10303 application protocols because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

This document is not to be regarded as an ”International Standard”. It is proposed for provisional application so that experience of its use in practice may be gathered. Comments on the content of this document should be sent to the ISO Central Secretariat.

A review of this Technical Report (type 2) will be carried out not later than three years after its publication with the options of: extension for another three years; conversion into an International Standard; or withdrawal.

Annexes A, B and C form an integral part of this part of ISO 10303. Annex D is for information only.

ISO 10303 consists of the following parts under the general title *Industrial automation systems and integration – Product data representation and exchange:*

— Part 1, Overview and fundamental principles;

— Part 11, Description methods: The EXPRESS language reference manual;

— Part 12, Description method: The EXPRESS-I language reference manual;

— Part 21, Implementation methods: Clear text encoding of the exchange structure;

— Part 22, Implementation method: Standard data access interface specification;

— Part 23, Implementation method: C++ language binding to the standard data access interface;

— Part 24, Implementation method: C language binding to the standard data access interface;

— Part 26, Implementation method: Interface definition language binding to the standard data access;

— Part 31, Conformance testing methodology and framework: General concepts;

— Part 32, Conformance testing methodology and framework: Requirements on testing laboratories and clients;

— Part 34, Conformance testing methodology and framework: Abstract test methods;

— Part 35, Conformance testing methodology and framework: Abstract test methods for SDAI implementations;

— Part 41, Integrated generic resources: Fundamentals of product description and support;

— Part 42, Integrated generic resources: Geometric and topological representation;

— Part 43, Integrated generic resources: Representation structures;

— Part 44, Integrated generic resources: Product structure configuration;

— Part 45, Integrated generic resource: Materials;

— Part 46, Integrated generic resources: Visual presentation;

— Part 47, Integrated generic resource: Shape variation tolerances;

— Part 49, Integrated generic resource: Process structure and properties;

— Part 101, Integrated application resource: Draughting;

— Part 104, Integrated application resource: Finite element analysis;

— Part 105, Integrated application resource: Kinematics;

— Part 106, Integrated application resource: Building construction core model;

— Part 107, Engineering Analysis Core Application reference model (EA C-ARM);

— Part 108, Integrated application resource: Parameterization and constraints for explicit geometric product models

— Part 201, Application protocol: Explicit draughting;

— Part 202, Application protocol: Associative draughting;

— Part 203, Application protocol: Configuration controlled design;

— Part 204, Application protocol: Mechanical design using boundary representation;

— Part 205, Application protocol: Mechanical design using surface representation;

— Part 207, Application protocol: Sheet metal die planning and design;

— Part 208, Application protocol: Life cycle management - Change process;

— Part 209, Application protocol: Composite and metallic structural analysis and related design;

— Part 210, Application protocol: Electronic assembly, interconnet, and packaging design;

— Part 212, Application protocol: Electrotechnical design and installation

— Part 213, Application protocol: Numerical control process plans for machined parts;

— Part 214, Application protocol: Core data for automotive mechanical design processes;

— Part 215, Application protocol: Ship arrangement;

— Part 216, Application protocol: Ship moulded forms;

— Part 217, Application protocol: Ship piping;

— Part 218, Application protocol: Ship structures;

— Part 220, Application protocol: Process planning, manufacture, and assembly of layered electronic products

— Part 221, Application protocol: Functional data and their schematic representation for process plant;

— Part 222, Application protocol: Exchange of product data for composite structures;

— Part 223, Application protocol: Exchange of design and manufacturing product information for casting parts;

— Part 224, Application protocol: Mechanical product definition for process plans using machining features;

— Part 225, Application protocol: Building elements using explicit shape representation;

— Part 226, Application protocol: Ship mechanical systems;

— Part 227, Application protocol: Plant spatial configuration;

— Part 229, Application protocol: Exchange of design and manufacturing product information for forged parts;

— Part 230, Application protocol: Building structural frame: Steelwork;

— Part 231, Application protocol: Process engineering data: Process design and process specification of major equipment;

— Part 232, Application protocol: Technical data packaging core information and exchange;

— Part 233, Application Protocol: Systems engineering data representation

— Part 234, Application protocol: Ship Operational logs, records, and messages

— Part 235, Application Protocol: Materials information for the design and verification of products

— Part 301, Abstract test suite: Explicit draughting;

— Part 302, Abstract test suite: Associative draughting;

— Part 303, Abstract test suite: Configuration controlled design;

— Part 304, Abstract test suite: Mechanical design using boundary representation;

— Part 305, Abstract test suite: Mechanical design using surface representation;

— Part 307, Abstract test suite: Sheet metal die planning and design;

— Part 308, Abstract test suite: Life cycle management - Change process;

— Part 309, Abstract test suite: Composite and metallic structural analysis and related design;

— Part 310, Abstract test suite: Electronic assembly, interconnect, and packaging design;

— Part 312, Abstract test suite: Electrotechnical design and installation;

— Part 313, Abstract test suite: Numerical control process plans for machined parts;

— Part 314, Abstract test suite: Core data for automotive mechanical design processes;

— Part 315, Abstract test suite: Ship arrangement;

— Part 316, Abstract test suite: Ship moulded forms;

— Part 317, Abstract test suite: Ship piping;

— Part 318, Abstract test suite: Ship structures;

— Part 321, Abstract test suite: Functional data and their schematic representation for process plant;

— Part 322, Abstract test suite: Exchange of product data for composite structures;

— Part 323, Abstract test suite: Exchange of design and manufacturing product information for casting parts;

— Part 324, Abstract test suite: Mechanical product definition for process plans using machining features;

— Part 325, Abstract test suite: Building elements using explicit shape representation;

— Part 326, Abstract test suite: Ship mechanical systems;

— Part 327, Abstract test suite: Plant spatial configuration;

— Part 329, Abstract test suite: Exchange of design and manufacturing product information for forged parts;

— Part 330, Abstract test suite: Building structural frame: Steelwork;

— Part 331, Abstract test suite: Process engineering data: Process design and process specification of major equipment;

— Part 332, Abstract test suite: Technical data packaging core information and exchange;

— Part 334, Abstract test suitel: Ship Operational logs, records, and messages

— Part 335, Abstract test suite: Materials information for the design and verification of products

— Part 501, Application interpreted construct: Edge-based wireframe;

— Part 502, Application interpreted construct: Shell-based wireframe;

— Part 503, Application interpreted construct: Geometrically bounded 2D wireframe;

— Part 504, Application interpreted construct: Draughting annotation;

— Part 505, Application interpreted construct: Drawing structure and administration;

— Part 506, Application interpreted construct: Draughting elements;

— Part 507, Application interpreted construct: Geometrically bounded surface;

— Part 508, Application interpreted construct: Non-manifold surface;

— Part 509, Application interpreted construct: Manifold surface;

— Part 510, Application interpreted construct: Geometrically bounded wireframe;

— Part 511, Application interpreted construct: Topologically bounded surface;

— Part 512, Application interpreted construct: Faceted boundary representation;

— Part 513, Application interpreted construct: Elementary boundary representation;

— Part 514, Application interpreted construct: Advanced boundary representation;

— Part 515, Application interpreted construct: Constructive solid geometry;

— Part 517, Application interpreted construct: Mechanical design geometric presentation;

— Part 518, Application interpreted construct: Mechanical design shaded presentation;

— Part 519, Application interpreted construct: Geometric tolerances;

— Part 520, Application interpreted construct: Associative draughting.

The structure of this International Standard is described in ISO 10303-1. The numbering of the parts of this International Standard reflects its structure:

— Parts 11 to 12 specify the description methods,

— Parts 21 to 26 specify the implementation methods,

— Parts 31 to 35 specify the conformance testing methodology and framework,

— Parts 41 to 49 specify the integrated generic resources,

— Parts 101 to 108 specify the integrated application resources,

— Parts 201 to 235 specify the application protocols,

— Parts 301 to 335 specify the abstract test suites, and

— Parts 501 to 520 specify the application interpreted constructs.

Should further parts of ISO 10303 be published, they will follow the same numbering pattern.

Annexes A, B and C are an integral part of this part of ISO 10303. Annex D is for information only.

Introduction

ISO 10303 is an International Standard for the computer-interpretable representation and exchange of product data. The objective is to provide a neutral mechanism capable of describing product data throughout the life cycle of a product independent from any particular system. The nature of this description makes it suitable not only for neutral file exchange, but also as a basis for implementing and sharing product databases and archiving.

This International Standard is organized as a series of parts, each published separately. The parts of ISO 10303 fall into one of the following series: description methods, integrated resources, application interpreted constructs, application protocols, abstract test suites, implementation methods, and conformance testing. The series are described in ISO 10303–1. This part of ISO 10303 is a member of the abstract test suites series.

The purpose of an abstract test suite is to provide a basis for evaluating whether a particular implementation of an application protocol actually conforms to the requirements of that application protocol. A standard abstract test suite helps ensure that evaluations of conformance are conducted in a consistent manner by different test laboratories.

This part of ISO 10303 specifies the abstract test suite for ISO 10303–214, Application protocol: Core data for automotive design processes. The abstract test cases presented here are the basis for conformance testing of implementations of ISO 10303–214.

This abstract test suite is made up of two major parts:

— the test purposes, the specific items to be covered by conformance testing;

— the set of abstract test cases that meet those test purposes.

The test purposes are statements of the application protocol requirements that are to be addressed by the abstract test cases. Test purposes are derived primarily from the application protocol's AEs and AIM, as well as from other sources such as standards referenced by the application protocol and other requirements stated in the application protocol conformance requirement clause.

The abstract test cases address the test purposes by:

— specifying the requirement for input data to be used when testing an implementation of the application protocol;

— specifying the verdict criteria to be used when evaluating whether the implementation successfully converted the input data to a different form.

The abstract test cases set the requirements for the executable test cases that are required to actually conduct a conformance test. Executable test cases contain scripts, detailed values, and other explicit information required to conduct a conformance test on a specific implementation of the application protocol.

At the time of publication of this document, conformance testing requirements had been established for implementations of application protocols in combination with ISO 10303–21 and ISO 10303–22. Accordingly, this part of ISO 10303 only specifies test purposes and abstract test cases appropriate to such implementations. For either ISO 10303–21 or ISO 10303–22, two kinds of implementations must be tested, preprocessors and postprocessors. The nature of the input data and verdict criteria are different for these two kinds of implementations. Both are addressed in this abstract test suite.

Industrial automation systems and integration — Product data representation and exchange — Part 314: Abstract test suite: Core data for automotive mechanical design processes

1 Scope

This part of ISO 10303 specifies the abstract test suite to be used in the conformance testing of implementations of ISO 10303–214.

The following are within the scope of this part of ISO 10303:

— the specification of the test purposes associated with ISO 10303–214;

— the verdict criteria to be applied during conformance testing of an implementation of ISO 10303–214 using ISO 10303–21 or ISO 10303–22;

— the abstract test cases to be used as the basis for the executable test cases for conformance testing.

The following are outside the scope of this part of ISO 10303:

— the creation of executable test cases;

— testing other than conformance testing;

— other implementation methods.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 10303. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 10303 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 286–1:1988, *ISO system of limits and fits – Part 1: Bases of tolerances, deviations, and fits.*

ISO 286–2:1988, *ISO system of limits and fits – Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts.*

ISO/DIS 639–2:—[1)], *Codes for the representation of names of languages – Part 2: Alpha-3 code.*

ISO 965–1:1980, *ISO general purpose metric screw threads – Tolerances – Part 1: Principles and basic data.*

ISO 1101:1983, *Technical drawings – Geometric tolerancing – Tolerancing of form, orientation, location and run-out – Generalities, definitions, symbols, indications on drawings.*

ISO 2692:1988, *Technical drawings – Geometric tolerancing – Maximum material principle.*

ISO 2768–1:1989, *General tolerances – Part 1: Tolerances for linear and angular dimensions without individual tolerance indications.*

ISO 2768–2:1989, *General tolerances – Part 2: Geometrical tolerances for features without individual tolerance indications.*

ISO 3098–1:1974, *Technical drawings; lettering; part 1: Currently used characters.*

ISO 3098–2:1984, *Technical drawings; lettering; part 2: Greek characters.*

ISO 5458:1987, *Technical drawings – Geometric tolerancing – Positional tolerancing.*

ISO 5459:1981, *Technical drawings – Geometric tolerancing – Datums and datum-systms for geometrical tolerances.*

ISO 8015:1985, *Technical drawings – Fundamental tolerancing principle.*

ISO 8824–1:1994, *Information Technology – Open systems interconnection – Abstract syntax notation one (ASN.1) – Part 1: Specification of basic notation.*

[1)] To be published.

ISO 10303–1:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Overview and fundamental principles

ISO 10303–11:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Description methods: The EXPRESS *language reference manual*

ISO 10303–21:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Implementation methods: Clear text encoding of the exchange structure

ISO 10303–22:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Implementation methods: Standard data access interface

ISO 10303–31:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Conformance testing methodology and framework: General concepts

ISO 10303–41:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resource: Fundamentals of product description and support
– ISO TC 184/SC4 N539

ISO 10303–42:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resources: Geometric and topological representation

ISO 10303–43:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resource: Representation structures
– ISO TC 184/SC4 N540

ISO 10303–44:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resource: Product structure configuration
– ISO TC 184/SC4 N541

ISO 10303–45:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resources: Materials

ISO 10303–46:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resources: Visual presentation

ISO 10303–47:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resources: Shape variation tolerances

ISO 10303–49:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated generic resources: Process structure and properties

ISO 10303–101:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated application resources: Draughting

ISO 10303–105:1996, *Industrial automation systems and integration*
– Product data representation and exchange:
– Integrated application resources: Kinematics

ISO 10303–201:1994, *Industrial automation systems and integration*
– Product data representation and exchange:
– Application protocol: Explicit draughting

ISO 10303–202:1996, *Industrial automation systems and integration*
– Product data representation and exchange:
– Application protocol: Associative draughting

ISO 10303–501:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Edge-based wireframe

ISO 10303–503:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Geometrically bounded 2d wireframe

ISO 10303–504:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Draughting annotation

ISO 10303–506:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Draughting elements

ISO 10303–507:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Geometrically bounded wireframe

ISO 10303–508:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Non-manifold surface

ISO 10303–509:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Manifold surface

ISO 10303–510:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Geometrically bounded wireframe

ISO 10303–511:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Topologically bounded surface

ISO 10303–512:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Faceted boundary representation

ISO 10303–514:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Advanced boundary representation

ISO 10303–515:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Constructive solid geometry

ISO 10303–517:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Mechanical design geometric presentation

ISO 10303–5x1:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Geometric tolerances
– ISO TC 184/SC4 N542

ISO 10303–5x2:—[1)], *Industrial automation systems and integration*
– Product data representation and exchange:
– Application interpreted construct: Associative draughting elements
– ISO TC 184/SC4 N543

ISO 10578:1992, *Technical drawings – Tolerancing of orientation and location – Projected tolerance zone.*

ISO 13584–42:—[1)], *Industrial automation systems and integration*
– Parts library:
– Part 42: Description methodology: Methodology for structuring part families

3 Terms, definitions, and abbreviations

For the purpose of this part of ISO 10303, the following definitions and abbreviations apply.

3.1 Terms defined in ISO 10303–1

This part of ISO 10303 makes use of the following terms defined in ISO 10303–1:

— abstract test suite (ATS);

— application interpreted model (AIM);

— application object;

— application protocol (AP);

— application reference model (ARM);

— implementation method;

— information;

— product data;

— unit of functionality (UoF).

3.2 Terms defined in ISO 10303–31

This part of ISO 10303 makes use of the following terms defined in ISO 10303–31:

— abstract test case (ATC);

— conformance testing;

— executable test case;

— implementation under test (IUT);

— postprocessor;

— preprocessor;

— test purpose;

— verdict criteria.

3.3 Terms defined in ISO 10303–42

This part of ISO 10303 makes use of the following terms defined in ISO 10303–42:

— constructive solid geometry.CSG

3.4 Terms defined in ISO 10303–46

This part of ISO 10303 makes use of the following terms defined in ISO 10303–46:

— layer;

— planar;

— presentation.

3.5 Abbreviations

For the purpose of this part of ISO 10303, the following abbreviations apply:

AE	Application element
CAD	Computer Aided Design
CSG	Constructive Solid Geometry
GVC	General verdict criteria
P1	geometric_presentation UoF
S1	product_management_data UoF
S2	element_structure UoF

4 Test purposes

This clause specifies the test purposes for this part of ISO 10303.

Test purposes are implicitely derived from the AP information requirement application elements and are not explicitely documented here. They shall be interpreted as given in the following statement: the IUT shall preserve the semantic associated with the unique application element from which the test purpose was implicitely derived. This implies that the semantics of the application element are preserved by the IUT between the input and output of a test, according to the reference path specified in the mapping table of the AP. AE test purposes apply to the input specifications of both preprocessor and postprocessor test cases. AE test purposes are implicitely derived from the AP information requirements as follows:

— application objects (see 4.2 pf ISO 10303–214). A test purpose derived from an application object is a simple statement of the object's name.

— application object attributes (see 4.2 of ISO 10303–214). Test purposes derived from application object attributes are statements of the application object name with a specific attribute name.

— application assertions (see 4.3 of ISO 10303–214). Test purposes derived from application assertions are statements describing the relationship between two application objects. Application assertion test purposes address the directions of relationships as well as the number (cardinality) of relationships.

Test purposes are implicitely derived from the AP AIM EXPRESS, and are not explicitely documented here. They shall be interepreted as given in the following statement: The postprocessor shall accept the input in accordance with the AIM EXPRESS structure corresponding to this test purpose. This implies that the semantics of the application element represented by the AIM element are preserved by the IUT between the input and output of a test according to the reference path specified in the mapping table of the AP. This also implied no violations of any constraints (where rules or global rules) that apply to the AIM element. AIM test purposes apply to the input specifications of postprocessor test cases only. AIM test purposes are implicitely derived from the expanded EXPRESS listing contained in annex A of ISO 10303–214 as follows:

— AIM entities. A test purpose derived from an AIM entity is a simple statement of the entity name.

— AIM entity attributes. A test purpose derived from an AIM entity attribute is a statement of the AIM entity with a given attribute.

5 General test purposes and verdict criteria

General test purposes are statements of requirements that apply to all abstract test cases, all preprocessor abstract test cases, or all postprocessor test cases. General verdict criteria are the means for evaluating whether the general test purposes are met. General verdict criteria shall be evaluated as a part of every executable test case to which they apply.

5.1 General test purposes

The following are the general test purposes for this part of ISO 10303:

— g1 Output of preprocessor conforms to the implementation method the IUT claims conformance to.

— g2 Instances in output of preprocessor are encoded according to the AIM EXPRESS expanded listing as defined in annex A of ISO 10303–214.

— g3 Preprocessor translates input data according to the mapping tables presented in clause 5 of ISO 10303–214.

— g4 Postprocessor accepts input data which is encoded following the implementation method the IUT claims conformance to.

— g5 Output of postprocessor covers full semantics of given input data.

5.2 General verdict criteria for preprocessor abstract test cases

The following verdict criteria apply to all preprocessor abstract test cases contained in this part of ISO 10303.

— gv1: Preprocessor output conforms to the implementation method to which the IUT claims conformance to.

— gv2: Preprocessor output represents an instance graph that belongs to the set of all instance graphs possible for the AIM schema to which the IUT claims conformance to.

— gv3: Preprocessor translates the input according to clause 5 of ISO 10303–214.

5.3 General verdict criteria for postprocessor abstract test cases

The following verdict criteria apply to all postprocessor abstract test cases contained in this part of ISO 10303.

— gv4: Postprocessor accepts input data according to the implementation method the IUT claims conformance to.

— gv5: Postprocessor output covers full semantics of the input data.

6 Abstract test cases

This clause specifies the abstract test cases for this part of ISO 10303. Each abstract test case addresses one or more test purposes from clause 4.

The title for an abstract test case signifies a key aspect of the abstract test case and is unique within this part of ISO 10303.

NOTE 1 - The abstract test cases are organized into categories of UoFs. Some UoFs are summarized into one test case. The input is described in terms of application elements of ISO 10303-214. Attribute values refer - if possible - to corresponding attributes of application elements.

NOTE 2 - Boilerplate is expected to be provided by the ATS Guidelines for a description of the preprocessor input. However, here is a short explanation. The input is described in terms of application elements of ISO 10303–214 which are to be instantiated, which is accompanied by plots of geometric portions where necessary (the reason for this is that the AE level description of geometric elements in ISO 10303–214 is very abstract, but an unambiguous description of the input is required). The table's "Id" column gives an identifier for each AE (be it an instance of an application object, an attribute, or an assertion). This identifier is assembled from the test purpose associated with the entry, and an additional numeric identifier in the case the complete identifier needs to be unique as it is used for referencing purposes. The "V" column presents an asterisk with all entries whose correct processing by the IUT has to be verified when assigning a test verdict in order to guarantee full coverage of all test purposes defined in clause 4. The given attribute values are suggested values if the entry in the "M/S" column is "S". They are mandatory values if the entry in the "M/S" column is "M". If this column contains entries in the form of ISO 10303–21 instance names then the values are found encoded in the corresponding instance of the postprocessor input specification.

6.1 Minimum set

Test case summary:

This abstract test case represents the minimum set of required application elements.

6.1.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 1

Table 1 – Application elements for ATC Minimum set

Id	V	Application elements	Value	Req
@261	∗	Item	#20	M
	∗	Item.id	#20, ”Item.id”	M
	∗	Item.name	#20, ”Item.name”	M
@21	∗	Application_context	#40	M
	∗	Application_context.application_domain	#42, ”ApplContext.application_	M
	∗		domain”	M
	∗	Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@139	∗	Design_discipline_item_definition	#41	M
	∗	Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
	∗	Design_discipline_item_definition.is_	(@21)	M
	∗	relevant_for		M
	∗	Design_discipline_item_definition to	@269	M
	∗	Item_version (as		M
	∗	associated_item_version)		M
@450	∗	Specific_item_classification	#23	M
	∗	Specific_item_classification.associated_	(@261)	M
	∗	item		M
	∗	Specific_item_classification.	#23, ”SpecItemClass.classification_	M
	∗	classification_name	name”	M
@269	∗	Item_version	#30	M
	∗	Item_version.id	#30, ”ItemVersion.id”	M
	∗	Item_version to Item (as	@261	M
	∗	associated_item)		M

6.1.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.2 Product management data

Test case summary:

This abstract test case covers application elements of the Unit of Functionality S1 (product management data).

6.2.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 2

Table 2 – Application elements for ATC Product management data

Id	V	Application elements	Value	Req
@50	∗	Certification	#160	M
	∗	Certification.name	#160, ”Certification.name”	M
	∗	Certification.purpose	#160, ”Certification.purpose”	M
	∗	Certification.certification_type	#161, ”Certification.certification_	M
	∗		type”	M
	∗	Certification.is_applied_to	(@269)	M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@337	∗	Person	#134	M
	∗	Person.id	#134, ”Person.id”	M
	∗	Person.person_name	#134, ”Person.name”	M
@22	∗	Approval	#120	M
	∗	Approval.is_applied_to	(@269)	M
	∗	Approval to Approval_status (as status)	@24	M
@22.2		Approval	#147	M
		Approval.is_applied_to	(@269)	M
		Approval to Approval_status (as status)	@24.2	M
@21		Application_context	#41	M
		Application_context.application_domain	#42,”mechanical design”	M
		Application_context.life_cycle_stage	#41,”preliminary design”	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40,”Ddid.id”	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@450		Specific_item_classification	#23	M
		Specific_item_classification.associated_	(@261)	M
		item		M
		Specific_item_classification.	#23, ”part”	M
		classification_name		M
@461	∗	String_with_language	#105	M
	∗	String_with_language.language	#106,”eng”	M
	∗	String_with_language.contents	#101,”AliasDescription”	M
	∗	String_with_language.primary	.T.	M
@461.2		String_with_language	#108&#111	M
		String_with_language.language	#109,”deu”	M

Table 2 (continued)

Id	V	Application elements	Value	Req
		String_with_language.contents	#111,"AliasBeschreibung"	M
		String_with_language.primary	.F.	M
@115	*	Date_and_person_assignment	#191&#190	M
	*	Date_and_person_assignment.is_applied_to	(@269)	M
	*	Date_and_person_assignment.role	#192, "DateAndPersonAss.role"	M
	*	Date_and_person_assignment to	@116	M
	*	Date_and_person_organization (as		M
	*	assigned_date_and_person)		M
@116	*	Date_and_person_organization	#123&#133	M
	*	Date_and_person_organization to	@338	M
	*	Person_in_organization (as		M
	*	person_or_organization)		M
	*	Date_and_person_organization to	@117	M
	*	Date_time (as actual_date)		M
@116.2		Date_and_person_organization	#127&#133	M
		Date_and_person_organization to	@338	M
		Person_in_organization (as		M
		person_or_organization)		M
		Date_and_person_organization to	@117.4	M
		Date_time (as actual_date)		M
@116.3		Date_and_person_organization	#138&#133	M
		Date_and_person_organization to	@338	M
		Person_in_organization (as		M
		person_or_organization)		M
		Date_and_person_organization to	@117.5	M
		Date_time (as actual_date)		M
@116.4		Date_and_person_organization	#151&#133	M
		Date_and_person_organization to	@338	M
		Person_in_organization (as		M
		person_or_organization)		M
		Date_and_person_organization to	@117.2	M
		Date_time (as actual_date)		M
@116.5		Date_and_person_organization	#123&#116	M
		Date_and_person_organization to	@323	M
		Organization (as person_or_organization)		M
		Date_and_person_organization to	@117	M
		Date_time (as actual_date)		M
@116.6		Date_and_person_organization	#127&#116	M
		Date_and_person_organization to	@323	M
		Organization (as person_or_organization)		M

Table 2 (continued)

Id	V	Application elements	Value	Req
		Date_and_person_organization to	@117.4	M
		Date_time (as actual_date)		M
@116.7		Date_and_person_organization	#138&#116	M
		Date_and_person_organization to	@323	M
		Organization (as person_or_organization)		M
		Date_and_person_organization to	@117.5	M
		Date_time (as actual_date)		M
@116.8		Date_and_person_organization	#151&#116	M
		Date_and_person_organization to	@323	M
		Organization (as person_or_organization)		M
		Date_and_person_organization to	@117.2	M
		Date_time (as actual_date)		M
@116.9		Date_and_person_organization	#137&#133	M
		Date_and_person_organization to	@338	M
		Person_in_organization (as		M
		person_or_organization)		M
		Date_and_person_organization to	@117.3	M
		Date_time (as actual_date)		M
@116.10		Date_and_person_organization	#137&#116	M
		Date_and_person_organization to	@323	M
		Organization (as person_or_organization)		M
		Date_and_person_organization to	@117.3	M
		Date_time (as actual_date)		M
@338	∗	Person_in_organization	#133	M
	∗	Person_in_organization.role	#133, ”Person.role”	M
	∗	Person_in_organization to Person (as	@337	M
	∗	associated_person)		M
	∗	Person_in_organization to Organization	@323	M
	∗	(as associated_organization)		M
@117	∗	Date_time	#123	M
	∗	Date_time.date	#123	M
@117.2		Date_time	#151	M
		Date_time.date	#151	M
@117.3		Date_time	#137	M
		Date_time.date	#138	M
@117.4		Date_time	#127	M
		Date_time.date	#127	M
@117.5		Date_time	#138	M
		Date_time.date	#138	M
@313	∗	Multi_language_string	#105&#108&#111	M

Table 2 (continued)

Id	V	Application elements	Value	Req
	∗	Multi_language_string.language_	(@461, @461.2)	M
	∗	dependent_string		M
@429	∗	Security_level	#171	M
	∗	Security_level.level_name	#171, ”SecurityLevel.level_name”	M
@269		Item_version	#30	M
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M
@323	∗	Organization	#116	M
	∗	Organization.organization_name	#116, ”Org.name”	M
	∗	Organization.organization_type	#116, ”company”	M
	∗	Organization.id	#116, ”Org.id”	M
@8	∗	Alias_identification	#100	M
	∗	Alias_identification.alias_id	#100, ”AliasIden.alias_id”	M
	∗	Alias_identification to Item_version	@269	M
	∗	(as is_applied_to)		M
@428	∗	Security_classification	#170	M
	∗	Security_classification.is_applied_to	(@269)	M
	∗	Security_classification.name	#170, ”SecurityClassification.name”	M
	∗	Security_classification.purpose	#170, ”SecurityClassification.	M
	∗		purpose”	M
	∗	Security_classification to	@429	M
	∗	Security_level (as level)		M
@24	∗	Approval_status	#121	M
	∗	Approval_status.status_name	#121, ”approved”	M
@24.2		Approval_status	#148	M
		Approval_status.status_name	#148, ”withdrawn”	M
@23	∗	Approval_relationship	#154	M
	∗	Approval_relationship.relation_type	#154, ”next in sequence”	M
	∗	Approval_relationship to Approval (as	@22	M
	∗	relating)		M
	∗	Approval_relationship to Approval (as	@22.2	M
	∗	related)		M
@118	∗	Date_time_assignment	#195	M
	∗	Date_time_assignment.role	#196, ”DateTimeAss.role”	M
	∗	Date_time_assignment.is_applied_to	(@269)	M
	∗	Date_time_assignment to Date_time (as	@117.3	M
	∗	assigned_date_time)		M
@339	∗	Person_organization_assignment	#180&#181&#182	M
	∗	Person_organization_assignment.is_	(@269)	M

Table 2 (concluded)

Id	V	Application elements	Value	Req
	∗	applied_to		M
	∗	Person_organization_assignment.role	#181, ”PersOrgAss.role”	M
	∗	Person_organization_assignment to	@338	M
	∗	Person_in_organization (as		M
	∗	assigned_person_organization)		M

6.2.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.3 Element structur

Test case summary:

This abstract test case covers application elements of the Unit of Functionality S2 (element structure).

6.3.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 3

Table 3 – Application elements for ATC Element structur

Id	V	Application elements	Value	Req
@247	*	Half_space_solid		M
@140	*	Detailed_element		M
@142	*	Detailed_model_element		M
@141	*	Detailed_geometric_model_element		M
@246	*	Group_relationship	#4010	M
	*	Group_relationship.relation_type	#4010, ”GroupRel.relation_type”	M
	*	Group_relationship to Group (as related)	@245.2	M
	*	Group_relationship to Group (as	@245	M
	*	relating)		M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@21		Application_context	#41	M
		Application_context.application_domain	#42, ”ApplContext.application_	M
			domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@462	*	Structuring_method_hierarchy		M
	*	Structuring_method_hierarchy to Group	@245	M
	*	(as relating)		M
	*	Structuring_method_hierarchy to Group	@245.2	M
	*	(as related)		M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@245	*	Group	#4000	M
	*	Group.name	#4000, ”Group.name”	M
@245.2		Group		M
		Group.name	#4011, ”Group.name1”	M
@450		Specific_item_classification	#23	M
		Specific_item_classification.associated_	(@261)	M
		item		M
		Specific_item_classification.	#23, ”SpecItemClass.classification_	M
		classification_name	name”	M
@269		Item_version	#30	M
		Item_version.id	#30, ”ItemVersion.id”	M

Table 3 (concluded)

Id	V	Application elements	Value	Req
		Item_version to Item (as associated_item)	@261	M M
@285	∗ ∗ ∗	Layer Layer.id Layer.element	#4020 #4020, ”Layer.id” (@247)	M M M

6.3.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.4 Item definition structure

Test case summary:

This abstract test case covers application elements of the Unit of Functionality S3 (item definition structure).

6.4.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 4

Table 4 – Application elements for ATC Item definition structure

Id	V	Application elements	Value	Req
@403	*	Quantified_instance	#150	M
@384	*	Product_constituent		M
@265	*	Item_instance		M
	*	Item_instance.id	#150,"ItemInstance.id_4"	M
	*	Item_instance to	@139	M
	*	Design_discipline_item_definition (as		M
	*	definition)		M
	*	Quantified_instance to Nominal_value	@317	M
	*	(as quantity)		M
@27	*	Assembly_definition	#110	M
	*	Design_discipline_item_definition.id	#110, "AssemblyDefinition.assembly_	M
	*		type"	M
	*	Design_discipline_item_definition.is_	(@21)	M
	*	relevant_for		M
	*	Design_discipline_item_definition to	@269	M
	*	Item_version (as		M
	*	associated_item_version)		M
@315	*	Next_higher_assembly	#170	M
@262	*	Item_definition_instance_relationship		M
@26	*	Assembly_component_relationship		M
	*	Item_definition_instance_relationship	@27	M
	*	to Design_discipline_item_definition		M
	*	(as relating)		M
	*	Item_definition_instance_relationship	@430	M
	*	to Item_instance (as related)		M
	*	Assembly_component_relationship to	@27	M
	*	Assembly_definition (as relating)		M
@455	*	Specified_instance	#120	M
	*	Item_instance.id	#120,"ItemInstance.id_1"	M
	*	Item_instance to	@139.2	M
	*	Design_discipline_item_definition (as		M
	*	definition)		M
	*	Specified_instance to Item_instance (as	@430	M
	*	upper_usage)		M
	*	Specified_instance to Item_instance (as	@403	M
	*	related_instance)		M
@395	*	Promissory_usage	#180	M
	*	Item_definition_instance_relationship	@27	M
	*	to Design_discipline_item_definition		M

Table 4 (continued)

Id	V	Application elements	Value	Req
	∗	(as relating)		M
	∗	Item_definition_instance_relationship	@430	M
	∗	to Item_instance (as related)		M
	∗	Assembly_component_relationship to	@27	M
	∗	Assembly_definition (as relating)		M
@509	∗	Tool_part_relationship	#210	M
@263	∗	Item_definition_relationship		M
	∗	Item_definition_relationship to	@139.4	M
	∗	Design_discipline_item_definition (as		M
	∗	relating)		M
	∗	Item_definition_relationship to	@139	M
	∗	Design_discipline_item_definition (as		M
	∗	related)		M
@416	∗	Replaced_definition_relationship	#220	M
	∗	Item_definition_relationship to	@139	M
	∗	Design_discipline_item_definition (as		M
	∗	relating)		M
	∗	Item_definition_relationship to	@139.2	M
	∗	Design_discipline_item_definition (as		M
	∗	related)		M
@242	∗	Geometrical_relationship	#240	M
	∗	Geometrical_relationship to	@493	M
	∗	Template_instance (as		M
	∗	definition_placement)		M
	∗	Item_definition_relationship to	@139	M
	∗	Design_discipline_item_definition (as		M
	∗	relating)		M
	∗	Item_definition_relationship to	@139.2	M
	∗	Design_discipline_item_definition (as		M
	∗	related)		M
@297	∗	Make_from_relationship	#200	M
	∗	Item_definition_relationship to	@139	M
	∗	Design_discipline_item_definition (as		M
	∗	relating)		M
	∗	Item_definition_relationship to	@139.3	M
	∗	Design_discipline_item_definition (as		M
	∗	related)		M
@430	∗	Selected_instance	#130	M
	∗	Item_instance.id	#130,”ItemInstance.id_2”	M
	∗	Selected_instance.selection_control	#134,”SelectedInstance.selection_	M

Table 4 (continued)

Id	V	Application elements	Value	Req
	*		control”	M
	*	Item_instance to	@139	M
	*	Design_discipline_item_definition (as		M
	*	definition)		M
	*	Selected_instance to Value_with_unit	@317	M
	*	(as selected_quantity)		M
@442	*	Single_instance	#140	M
	*	Item_instance.id	#140,”ItemInstance.id_3”	M
	*	Item_instance to	@139	M
	*	Design_discipline_item_definition (as		M
	*	definition)		M
@26		Assembly_component_relationship	#160	M
		Item_definition_instance_relationship	@27	M
		to Design_discipline_item_definition		M
		(as relating)		M
		Item_definition_instance_relationship	@430	M
		to Item_instance (as related)		M
		Assembly_component_relationship to	@27	M
		Assembly_definition (as relating)		M
@317	*	Nominal_value		M
@530	*	Value_with_unit		M
	*	Nominal_value.value_component	#135,”1.0”	M
@220	*	General_item_definition_relationship	#230	M
	*	General_item_definition_relationship.	#230, ”GeneralItemDefRel.relation_	M
	*	relation_type	type”	M
	*	Item_definition_relationship to	@139	M
	*	Design_discipline_item_definition (as		M
	*	relating)		M
	*	Item_definition_relationship to	@139.2	M
	*	Design_discipline_item_definition (as		M
	*	related)		M
@183	*	External_geometric_model		M
@186	*	External_model		M
	*	External_model.model_id		M
	*	External_model to Digital_file (as	@145	M
	*	is_defined_as)		M
	*	External_model to	@45	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@145	*	Digital_file		M

Table 4 (continued)

Id	V	Application elements	Value	Req
@156	∗	Document_file		M
	∗	Document_file.file_id		M
@45	∗	Cartesian_coordinate_space_2d		M
@44	∗	Cartesian_coordinate_space		M
@515	∗	Transformation_2d		M
@514	∗	Transformation		M
@417	∗	Replaced_usage_relationship	#260	M
@266	∗	Item_instance_relationship		M
	∗	Item_instance_relationship to	@442	M
	∗	Item_instance (as relating)		M
	∗	Item_instance_relationship to	@403	M
	∗	Item_instance (as related)		M
@493	∗	Template_instance		M
	∗	Template_instance.id		M
	∗	Template_instance to External_model (as	@183	M
	∗	template_definition)		M
	∗	Template_instance to Transformation (as	@515	M
	∗	model_placement)		M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@261.2		Item	#27	M
		Item.id	#27, ”Item.id_2”	M
		Item.name	#27, ”Item.name”	M
@261.3		Item	#26	M
		Item.id	#26, ”Item.id_1”	M
		Item.name	#26, ”Item.name”	M
@261.4		Item	#28	M
		Item.id	#28, ”Item.id_3”	M
		Item.name	#28, ”Item.name”	M
@261.5		Item	#102	M
		Item.id	#102, ”Item.id1”	M
		Item.name	#102, ”Item.name1”	M
@21		Application_context	#112	M
		Application_context.application_domain	#22, ”ATS 314”	M
		Application_context.life_cycle_stage	#112, ””	M
@21.2		Application_context	#41	M
		Application_context.application_domain	#42, ”mechanical design”	M
		Application_context.life_cycle_stage	#41, ”preliminary design”	M
@139		Design_discipline_item_definition	#40	M

Table 4 (continued)

Id	V	Application elements	Value	Req
		Design_discipline_item_definition.id Design_discipline_item_definition.is_relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	#40, ”DdidId” (@21.2) @269	M M M M M M
@139.2		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition to Item_version (as associated_item_version)	#49 #49, ”Ddid.id” @269.4	M M M M M
@139.3		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition to Item_version (as associated_item_version)	#47 #47, ”Ddid.id” @269.2	M M M M M
@139.4		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition to Item_version (as associated_item_version)	#48 #48, ”Ddid.id” @269.3	M M M M M
@450		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification. classification_name	#13 (@261.2) #13, ”tool”	M M M M M
@450.2		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification. classification_name	#23 (@261, @261.3, @261.4, @261.5) #23, ”part”	M M M M M
@269		Item_version Item_version.id Item_version to Item (as associated_item)	#30 #30, ”ItemVersion.id” @261	M M M M
@269.2		Item_version Item_version.id Item_version to Item (as associated_item)	#31 #31, ”ItemVersion.id” @261.3	M M M M
@269.3		Item_version	#32	M

Table 4 (concluded)

Id	V	Application elements	Value	Req
		Item_version.id	#32, ”ItemVersion.id”	M
		Item_version to Item (as	@261.2	M
		associated_item)		M
@269.4		Item_version	#33	M
		Item_version.id	#33, ”ItemVersion.id”	M
		Item_version to Item (as	@261.4	M
		associated_item)		M
@269.5		Item_version	#103	M
		Item_version.id	#103, ”ItemVersion.id”	M
		Item_version to Item (as	@261.5	M
		associated_item)		M
@28	∗	Assembly_substitute_relationship	#190	M
	∗	Assembly_substitute_relationship to	@26	M
	∗	Assembly_component_relationship (as		M
	∗	base)		M
	∗	Assembly_substitute_relationship to	@315	M
	∗	Assembly_component_relationship (as		M
	∗	substitute)		M
@522	∗	Unit		M
@9	∗	Alternate_item_relationship	#100	M
	∗	Alternate_item_relationship.fulfilled_	#100, ”AlternateItemRel.fulfilled_	M
	∗	requirements	requirements”	M
	∗	Alternate_item_relationship to Item (as	@261.5	M
	∗	base)		M
	∗	Alternate_item_relationship to Item (as	@261	M
	∗	alternate)		M

6.4.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.5 Effectivity and Specification control

Test case summary:

This abstract test case covers application elements of the Unit of Functionality S4 (effectivity) and S7 (specification control).

6.5.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 5

Table 5 – Application elements for ATC Effectivity and Specification control

Id	V	Application elements	Value	Req
@386	*	Product_function	#1220	M
@80	*	Complex_product		M
	*	Complex_product.id	#1220, ”ComplexProduct.id”	M
	*	Product_function.is_relevant_for	(@21)	M
@383	*	Product_component	#1240	M
	*	Complex_product.id	#1240, ”ComplexProduct.id”	M
	*	Product_component.is_influenced_by	(@65)	M
	*	Product_component.is_relevant_for	(@21)	M
	*	Product_component.instance_required	.T.	M
@10	*	Alternative_solution	#1260	M
	*	Complex_product.id	#1260, ”ComplexProduct.id”	M
	*	Alternative_solution to	@383	M
	*	Product_component (as base_element)		M
@470	*	Supplier_solution	#1270	M
	*	Complex_product.id	#1270, ”ComplexProduct.id”	M
	*	Alternative_solution to	@383	M
	*	Product_component (as base_element)		M
	*	Supplier_solution to Organization (as	@323	M
	*	supplier)		M
@491	*	Technical_solution	#1280	M
	*	Complex_product.id	#1280, ”ComplexProduct.id”	M
	*	Technical_solution.description	#1280, ”TechnicalSolution.	M
	*		description”	M
	*	Alternative_solution to	@383	M
	*	Product_component (as base_element)		M
@203	*	Final_solution	#1290	M
	*	Complex_product.id	#1290, ”ComplexProduct.id”	M
	*	Final_solution.final_specification	(@134)	M
	*	Final_solution.final_status	#1295, ”FinalSolution.final_	M
	*		status”	M
	*	Alternative_solution to	@383	M
	*	Product_component (as base_element)		M
@388	*	Product_specification	#1310	M
@387	*	Product_identification		M
	*	Product_identification.id	#1310, ”ProductIdentification.id”	M
	*	Product_specification.defining_	(@451)	M
	*	specification		M
	*	Product_identification to Product_class	@381	M
	*	(as associated_product_class)		M

Table 5 (continued)

Id	V	Application elements	Value	Req
@138	*	Design_constraint_version	#1360	M
@135	*	Design_constraint		M
	*	Design_constraint.constraint_id	#1362, ”DesignConstraint.	M
	*		constraint_id”	M
	*	Design_constraint.is_valid_for	(@381)	M
	*	Design_constraint_version.version_id	#1364, ”DesignConstraintVersion.	M
	*		version_id”	M
@442		Single_instance	#1400	M
		Item_instance.id	#1400 ,”ItemInstance.id”	M
		Item_instance to	@139.3	M
		Design_discipline_item_definition (as		M
		definition)		M
@493		Template_instance	#1421	M
		Template_instance.id	#1421, ”TemplateInstance.id”	M
		Template_instance to Geometric_model	@236	M
		(as template_definition)		M
		Template_instance to Transformation (as	@515	M
		model_placement)		M
@236	*	Geometric_model_version	#1427	M
@233	*	Geometric_model		M
	*	Geometric_model.model_id	#14271, ”GeometricModel.model_id”	M
	*	Geometric_model_version.version_id	#14273, ”GeometricModelVersion.	M
	*		version_id”	M
	*	Geometric_model to	@45	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@45		Cartesian_coordinate_space_2d	#14275	M
@515		Transformation_2d	#1423	M
@221	*	General_item_instance_relationship	#1430	M
	*	General_item_instance_relationship.	#1430, ”GeneralItemInstancerel.	M
	*	relation_type	relation_type”	M
	*	Item_instance_relationship to	@442.2	M
	*	Item_instance (as relating)		M
	*	Item_instance_relationship to	@442	M
	*	Item_instance (as related)		M
@442.2		Single_instance		M
		Item_instance.id	#1431 ,”ItemInstance.id1”	M
		Item_instance to	@139.3	M
		Design_discipline_item_definition (as		M
		definition)		M

Table 5 (continued)

Id	V	Application elements	Value	Req
@427	∗	Same_time_machining_relationship	#1440	M
	∗	Item_instance_relationship to	@442.2	M
	∗	Item_instance (as relating)		M
	∗	Item_instance_relationship to	@442	M
	∗	Item_instance (as related)		M
@78	∗	Collection_definition	#1450	M
	∗	Design_discipline_item_definition.id	#1450, ”Ddid.id2”	M
	∗	Design_discipline_item_definition.is_	(@21.2)	M
	∗	relevant_for		M
	∗	Design_discipline_item_definition to	@269	M
	∗	Item_version (as		M
	∗	associated_item_version)		M
@77	∗	Collected_item_association	#1460	M
	∗	Item_definition_instance_relationship	@78	M
	∗	to Design_discipline_item_definition		M
	∗	(as relating)		M
	∗	Item_definition_instance_relationship	@442	M
	∗	to Item_instance (as related)		M
	∗	Collected_item_association to	@78	M
	∗	Collection_definition (as relating)		M
@77.2		Collected_item_association	#1461	M
		Item_definition_instance_relationship	@78	M
		to Design_discipline_item_definition		M
		(as relating)		M
		Item_definition_instance_relationship	@442.2	M
		to Item_instance (as related)		M
		Collected_item_association to	@78	M
		Collection_definition (as relating)		M
@219	∗	General_item_definition_instance_relationship	#1470	M
	∗	General_item_definition_instance_	#1470, ”GeneralItemDefinitionInsta)\	M
	∗	relationship.relation_type	nceRel.relation_type”	M
	∗	Item_definition_instance_relationship	@139.2	M
	∗	to Design_discipline_item_definition		M
	∗	(as relating)		M
	∗	Item_definition_instance_relationship	@442	M
	∗	to Item_instance (as related)		M
@306	∗	Mating_definition	#1480	M
	∗	Design_discipline_item_definition.id	#1480, ”Ddid.id3”	M
	∗	Design_discipline_item_definition.is_	(@21.2)	M
	∗	relevant_for		M

Table 5 (continued)

Id	V	Application elements	Value	Req
	*	Mating_definition.mating_type	#1480, ”MatingDefinition.mating_	M
	*		type”	M
	*	Design_discipline_item_definition to	@269	M
	*	Item_version (as		M
	*	associated_item_version)		M
@300	*	Mated_item_association	#1490	M
	*	Item_definition_instance_relationship	@306	M
	*	to Design_discipline_item_definition		M
	*	(as relating)		M
	*	Item_definition_instance_relationship	@442	M
	*	to Item_instance (as related)		M
	*	Mated_item_association to	@306	M
	*	Mating_definition (as relating)		M
@300.2		Mated_item_association	#1491	M
		Item_definition_instance_relationship	@306	M
		to Design_discipline_item_definition		M
		(as relating)		M
		Item_definition_instance_relationship	@442.2	M
		to Item_instance (as related)		M
		Mated_item_association to	@306	M
		Mating_definition (as relating)		M
@403		Quantified_instance	#1500	M
		Item_instance.id	#1500 ,”ItemInstance.id2”	M
		Item_instance to	@139.3	M
		Design_discipline_item_definition (as		M
		definition)		M
		Quantified_instance to Nominal_value	@317	M
		(as quantity)		M
@317		Nominal_value	#1506	M
		Nominal_value.value_component	2	M
@306.2		Mating_definition	#1485	M
		Design_discipline_item_definition.id	#1485, ”Ddid.id4”	M
		Design_discipline_item_definition.is_	(@21.2)	M
		relevant_for		M
		Mating_definition.mating_type	#1485, ”MatingDefinition.mating_	M
			type”	M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@300.3		Mated_item_association	#1492	M

Table 5 (continued)

Id	V	Application elements	Value	Req
		Item_definition_instance_relationship	@306.2	M
		to Design_discipline_item_definition		M
		(as relating)		M
		Item_definition_instance_relationship	@442	M
		to Item_instance (as related)		M
		Mated_item_association to	@306.2	M
		Mating_definition (as relating)		M
@300.4		Mated_item_association	#1493	M
		Item_definition_instance_relationship	@306.2	M
		to Design_discipline_item_definition		M
		(as relating)		M
		Item_definition_instance_relationship	@442.2	M
		to Item_instance (as related)		M
		Mated_item_association to	@306.2	M
		Mating_definition (as relating)		M
@296	∗	Lot_configuration	#1610	M
@298	∗	Manufacturing_configuration		M
	∗	Lot_configuration.lot_id	#1610, ”LotConfiguration.lot_id”	M
	∗	Lot_configuration.lot_size	1	M
	∗	Manufacturing_configuration to	@269	M
	∗	Item_version (as is_solution_for)		M
	∗	Manufacturing_configuration to	@442	M
	∗	Item_instance (as configured_element)		M
@431	∗	Serial_configuration	#1620	M
	∗	Serial_configuration.serial_start_number	#1620, ”SerialConfiguration.serial_	M
	∗		start_number”	M
	∗	Manufacturing_configuration to	@269	M
	∗	Item_version (as is_solution_for)		M
	∗	Manufacturing_configuration to	@442	M
	∗	Item_instance (as configured_element)		M
@119	∗	Dated_configuration	#1630	M
	∗	Dated_configuration.start_date	#1637-start_date	M
	∗	Manufacturing_configuration to	@269	M
	∗	Item_version (as is_solution_for)		M
	∗	Manufacturing_configuration to	@442	M
	∗	Item_instance (as configured_element)		M
@301	∗	Mated_item_relationship	#1510	M
	∗	Mated_item_relationship.mating_material	(@403)	M
	∗	Mated_item_relationship to	@300	M
	∗	Mated_item_association (as relating)		M

Table 5 (continued)

Id	V	Application elements	Value	Req
	*	Mated_item_relationship to	@300.3	M
	*	Mated_item_association (as related)		M
@451	*	Specification	#1030	M
	*	Specification.id	#1030, ”Specification.id”	M
	*	Specification.package	.F.	M
	*	Specification to Specification_category	@452	M
	*	(as category)		M
@451.2		Specification	#1040	M
		Specification.id	#1040, ”Specification.id1”	M
		Specification.package	.T.	M
		Specification to Specification_category	@452.2	M
		(as category)		M
@451.3		Specification	#1050	M
		Specification.id	#1050, ”Specification.id2”	M
		Specification.package	.F.	M
		Specification to Specification_category	@452	M
		(as category)		M
@451.4		Specification	#1060	M
		Specification.id	#1060, ”Specification.id3”	M
		Specification.package	.T.	M
		Specification to Specification_category	@452	M
		(as category)		M
@340	*	Physical_assembly_relationship	#1540	M
	*	Physical_assembly_relationship to	@342	M
	*	Physical_instance (as		M
	*	physical_component)		M
	*	Physical_assembly_relationship to	@342.2	M
	*	Physical_instance (as physical_assembly)		M
	*	Physical_assembly_relationship to	@442	M
	*	Item_instance (as is_realization_of)		M
@454	*	Specification_inclusion	#1120	M
	*	Specification_inclusion to	@451	M
	*	Specification (as if_condition)		M
	*	Specification_inclusion to	@451.3	M
	*	Specification (as		M
	*	included_specification)		M
@134	*	Descriptive_specification	#1295	M
	*	Descriptive_specification.description	#1295, ”FinalSolution.final_status”	M
@134.2		Descriptive_specification	#1520	M
		Descriptive_specification.description	#1520, ”DescriptiveSpecification.	M

Table 5 (continued)

Id	V	Application elements	Value	Req
			description”	M
@381	∗	Product_class	#1000	M
	∗	Product_class.id	#1000, ”ProductClass.id”	M
	∗	Product_class.level_type	#1000, ”ProductClass.level_type”	M
@381.2		Product_class	#1010	M
		Product_class.id	#1010, ”ProductClass.id1”	M
		Product_class.level_type	#1010, ”ProductClass.level_type”	M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@21		Application_context	#1221	M
		Application_context.application_domain	#1229, ”ApplicationContext.	M
			application_domain”	M
		Application_context.life_cycle_stage	#1221, ”ApplicationContext.life_	M
			cycle_stage”	M
@21.2		Application_context	#41	M
		Application_context.application_domain	#42, ”ApplContext.application_	M
			domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@21.3		Application_context	#52	M
		Application_context.application_domain	#52, ”ApplContext.application_	M
			domain1”	M
		Application_context.life_cycle_stage	#51, ”ApplContext.life_cycle_	M
			stage1”	M
@135		Design_constraint	#1340	M
		Design_constraint.constraint_id	#1342, ”DesignConstraint.	M
			constraint_id”	M
		Design_constraint.is_valid_for	(@381)	M
@139		Design_discipline_item_definition		M
		Design_discipline_item_definition.id	id01	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@139.2		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_	(@21.2)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M

Table 5 (continued)

Id	V	Application elements	Value	Req
		Item_version (as associated_item_version)		M M
@139.3		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_ relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	#50 #50, ”Ddid.id2” (@21.3) @269	M M M M M M M
@65	∗ ∗ ∗ ∗ ∗ ∗ ∗ ∗	Class_category_association Class_category_association.mandatory Class_category_association to Specification_category (as associated_category) Class_category_association to Product_class (as associated_product_class)	 .T. @452 @381	M M M M M M M M
@65.2		Class_category_association Class_category_association.mandatory Class_category_association to Specification_category (as associated_category) Class_category_association to Product_class (as associated_product_class)	#1095 .F. @452 @381	M M M M M M M M
@136	∗ ∗ ∗ ∗ ∗	Design_constraint_association Design_constraint_association to Design_constraint (as is_based_on) Design_constraint_association to Complex_product (as is_constraining)	 @138 @383	M M M M M
@342	∗	Physical_instance	#1530	M
@342.2		Physical_instance	#1550	M
@382	∗ ∗ ∗ ∗ ∗ ∗ ∗	Product_class_relationship Product_class_relationship.relation_type Product_class_relationship to Product_class (as relating) Product_class_relationship to Product_class (as related)	#1020 #1020, ”ProductClassRel.relation_ type” @381 @381.2	M M M M M M M
@450		Specific_item_classification	#23	M

Table 5 (continued)

Id	V	Application elements	Value	Req
		Specific_item_classification.associated_	(@261)	M
		item		M
		Specific_item_classification.	#23, ”SpecItemClass.classification_	M
		classification_name	name”	M
@343	∗	Physical_instance_test_result	#1560	M
	∗	Physical_instance_test_result.id	#1560, ”PhysicalInstanceTestResult.	M
	∗		id”	M
	∗	Physical_instance_test_result to	@342	M
	∗	Physical_instance (as tested_instance)		M
@66	∗	Class_condition_association	#1110	M
	∗	Class_condition_association.condition_	#1110, ”ClassConditionAsso.	M
	∗	type	condition_type”	M
	∗	Class_condition_association to	@381	M
	∗	Product_class (as		M
	∗	associated_product_class)		M
	∗	Class_condition_association to	@453	M
	∗	Specification_expression (as		M
	∗	associated_condition)		M
@420	∗	Retention_period	#1700	M
	∗	Retention_period.is_applied_to	(@451)	M
	∗	Retention_period to Date_time (as	@117	M
	∗	start_definition)		M
	∗	Retention_period to Date_time (as	@117.2	M
	∗	earliest_end_definition)		M
	∗	Retention_period to Date_time (as	@117.3	M
	∗	latest_end_definition)		M
@178	∗	Effectivity_relationship	#1690	M
	∗	Effectivity_relationship.relation_type	#1690, ”EffectivityRel.relation_	M
	∗		type”	M
	∗	Effectivity_relationship to Effectivity	@176	M
	∗	(as relating)		M
	∗	Effectivity_relationship to Effectivity	@176.2	M
	∗	(as related)		M
@176	∗	Effectivity	#1660	M
@176.2		Effectivity	#1691	M
@264	∗	Item_function_association	#1230	M
	∗	Item_function_association.association_	#1230, ”ItemFunctionAsso.	M
	∗	type	association_type”	M
	∗	Item_function_association to	@386	M
	∗	Product_function (as		M

Table 5 (continued)

Id	V	Application elements	Value	Req
	*	associated_function)		M
	*	Item_function_association to	@139	M
	*	Design_discipline_item_definition (as		M
	*	associated_item)		M
@385	*	Product_design	#1320	M
	*	Product_design to Item_version (as	@269	M
	*	design)		M
	*	Product_design to	@387	M
	*	Product_identification (as product)		M
@117		Date_time	#1637	M
		Date_time.date	#1720-start_date	M
@117.2		Date_time	#1641	M
		Date_time.date	#1705-earliest_end_date	M
@117.3		Date_time	#1711	M
		Date_time.date	#1705-latest_end_date	M
@259	*	Instance_placement	#1410	M
	*	Instance_placement to Product_component	@383	M
	*	(as reference_product_component)		M
	*	Instance_placement to Single_instance	@442	M
	*	(as placed_instance)		M
	*	Instance_placement to Template_instance	@493	M
	*	(as placement)		M
@387		Product_identification	#1300	M
		Product_identification.id	#1300, ”ProductIdentification.id”	M
		Product_identification to Product_class	@381	M
		(as associated_product_class)		M
@137	*	Design_constraint_relationship	#1380	M
	*	Design_constraint_relationship.relation_	#1380, ”DesignContraintRel.	M
	*	type	relation_type”	M
	*	Design_constraint_relationship to	@138	M
	*	Design_constraint (as related)		M
	*	Design_constraint_relationship to	@135	M
	*	Design_constraint (as relating)		M
@181	*	Event_reference	#1650	M
	*	Event_reference.event_type	#1650, ”EventReference.event_type”	M
@181.2		Event_reference	#1670	M
		Event_reference.event_type	#1670, ”EventReference.event_type1”	M
@269		Item_version	#30	M
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M

Table 5 (continued)

Id	V	Application elements	Value	Req
		associated_item)		M
@81	*	Complex_product_relationship	#1390	M
	*	Complex_product_relationship.relation_	#1390, ”ComplexProductRel.relation_	M
	*	type	type”	M
	*	Complex_product_relationship to	@383	M
	*	Complex_product (as relating)		M
	*	Complex_product_relationship to	@10	M
	*	Complex_product (as related)		M
@323		Organization	#1274	M
		Organization.organization_name	#1274, ”Organization.organization_	M
			name”	M
		Organization.organization_type		M
		Organization.id	#1274, ”Organization.id”	M
@522		Unit	#14276	M
@522.2		Unit		M
@522.3		Unit		M
@177	*	Effectivity_assignment	#1680	M
	*	Effectivity_assignment.role	#1682, ”EffectivityAssignment.role”	M
	*	Effectivity_assignment to Effectivity	@176	M
	*	(as assigned_effectivity)		M
	*	Effectivity_assignment to Product_class	@381	M
	*	(as effective_element)		M
@92	*	Configuration	#1200	M
	*	Configuration.configuration_type	#1202, ”Configuration.	M
	*		configuration_type”	M
	*	Configuration.inheritance_type	#1202, ”Configuration.inheritance_	M
	*		type”	M
	*	Configuration to Item_instance (as	@442	M
	*	configured_element)		M
	*	Configuration to	@68	M
	*	Class_specification_association (as		M
	*	is_solution_for)		M
@67	*	Class_inclusion_association	#1130	M
	*	Class_inclusion_association to	@454	M
	*	Specification_inclusion (as		M
	*	associated_inclusion)		M
	*	Class_inclusion_association to	@381	M
	*	Product_class (as		M
	*	associated_product_class)		M
@68	*	Class_specification_association	#1080	M

Table 5 (continued)

Id	V	Application elements	Value	Req
	*	Class_specification_association.	#1080, ”ClassSpecificationAsso.	M
	*	association_type	association_type”	M
	*	Class_specification_association to	@381	M
	*	Product_class (as		M
	*	associated_product_class)		M
	*	Class_specification_association to	@451	M
	*	Specification (as		M
	*	associated_specification)		M
@68.2		Class_specification_association	#1082	M
		Class_specification_association.	#1082, ”ClassSpecificationAsso.	M
		association_type	association_type”	M
		Class_specification_association to	@381	M
		Product_class (as		M
		associated_product_class)		M
		Class_specification_association to	@451.2	M
		Specification (as		M
		associated_specification)		M
@68.3		Class_specification_association	#1084	M
		Class_specification_association.	#1084, ”ClassSpecificationAsso.	M
		association_type	association_type”	M
		Class_specification_association to	@381	M
		Product_class (as		M
		associated_product_class)		M
		Class_specification_association to	@451.3	M
		Specification (as		M
		associated_specification)		M
@68.4		Class_specification_association	#1086	M
		Class_specification_association.	#1086, ”ClassSpecificationAsso.	M
		association_type	association_type”	M
		Class_specification_association to	@381	M
		Product_class (as		M
		associated_product_class)		M
		Class_specification_association to	@451.4	M
		Specification (as		M
		associated_specification)		M
@69	*	Class_structure_relationship	#1330	M
	*	Class_structure_relationship.relation_	#1332, ”ClassStructureRel.relation_	M
	*	type	type”	M
	*	Class_structure_relationship to	@386	M
	*	Product_function (as related)		M

Table 5 (concluded)

Id	V	Application elements	Value	Req
	∗	Class_structure_relationship to	@381	M
	∗	Product_class (as relating)		M
@389	∗	Product_structure_relationship	#1570	M
	∗	Product_structure_relationship.relation_	#1570, ”ProductStructureRel.	M
	∗	type	relation_typ”	M
	∗	Product_structure_relationship to	@386	M
	∗	Complex_product (as relating)		M
	∗	Product_structure_relationship to	@442	M
	∗	Product_constituent (as related)		M
@452	∗	Specification_category	#1070	M
	∗	Specification_category.implicit_	.F.	M
	∗	exclusive_condition		M
	∗	Specification_category.id	#1070, ”SpecificationCategory.id”	M
	∗	Specification_category.description	#1070, ”SpecificationCategory.	M
	∗		description”	M
@452.2		Specification_category	#1075	M
		Specification_category.implicit_	.T.	M
		exclusive_condition		M
		Specification_category.id	#1075, ”SpecificationCategory.id”	M
		Specification_category.description	#1075, ”SpecificationCategory.	M
			description”	M
@453	∗	Specification_expression	#1100	M
	∗	Specification_expression.operation	#1102, ”SpecificationExpression.	M
	∗		operator”	M
	∗	Specification_expression.operand	(@451.2, @451.4)	M

6.5.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.6 Work management

Test case summary:

This abstract test case covers application elements of the Unit of Functionality S5 (work management).

6.6.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 6

Table 6 – Application elements for ATC Work management

Id	V	Application elements	Value	Req
@145		Digital_file	#245	M
		Document_file.file_id	#245, ”DocumentFile.file_id”	M
@317		Nominal_value	#264	M
		Nominal_value.value_component	1	M
@439	∗	Simultaneous_activity	#310	M
	∗	Simultaneous_activity.element	(@2, @2.2)	M
@2	∗	Activity	#100	M
	∗	Activity.activity_type	#100, ”Action.activity_type”	M
	∗	Activity.id	#100, ”Action.id”	M
	∗	Activity.resolved_request	(@546)	M
	∗	Activity.concerned_organization	(@323)	M
	∗	Activity.supplying_organization	(@323.2)	M
@2.2		Activity	#236	M
		Activity.activity_type	#236, ”Action.activity_type1”	M
		Activity.id	#237, ”Action.id1”	M
@392	∗	Project_relationship	#185	M
	∗	Project_relationship.relation_type	#185, ”ProjectRel.relation_type”	M
	∗	Project_relationship to Project (as	@391.2	M
	∗	related)		M
	∗	Project_relationship to Project (as	@391	M
	∗	relating)		M
@4	∗	Activity_method	#104	M
	∗	Activity_method.description	#104, ”ActivityMethod.description”	M
	∗	Activity_method.name	#104, ”ActivityMethod.name”	M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@337		Person	#210	M
		Person.id	#210, ”Person.id”	M
		Person.person_name	#210, ”Person.name”	M
@3	∗	Activity_element	#240	M
	∗	Activity_element.role	#243, ”ActivityElement.role”	M
	∗	Activity_element to Document_file (as	@145	M
	∗	element)		M
	∗	Activity_element to Activity (as	@2.2	M
	∗	associated_activity)		M
@21		Application_context	#41	M
		Application_context.application_domain	#42, ”ApplContext.application_	M
			domain”	M

Table 6 (continued)

Id	V	Application elements	Value	Req
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@545	∗	Work_order	#230	M
	∗	Work_order.is_controlling	(@2.2)	M
	∗	Work_order.id	#230, ”WorkOrder.id”	M
	∗	Work_order.work_order_type	#230, ”WorkOrder.work_order_type”	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@325	∗	Organization_relationship	#350	M
	∗	Organization_relationship.relation_type	#350, ”OrganizationRel.name”	M
	∗	Organization_relationship to	@323	M
	∗	Organization (as related)		M
	∗	Organization_relationship to	@323.2	M
	∗	Organization (as relating)		M
@450		Specific_item_classification	#16	M
		Specific_item_classification.associated_	(@261)	M
		item		M
		Specific_item_classification.	#23, ”SpecItemClass.classification_	M
		classification_name	name”	M
@5	∗	Activity_method_assignment	#220	M
	∗	Activity_method_assignment.relation_type	#222,”ActivityMethodAss.relation_	M
	∗		type”	M
	∗	Activity_method_assignment to	@4	M
	∗	Activity_method (as assigned_method)		M
	∗	Activity_method_assignment to	@546	M
	∗	Work_request (as associated_request)		M
@102	∗	Contract	#160	M
	∗	Contract.id	#160, ”Contract.id”	M
	∗	Contract.contracted_element	(@2)	M
@116		Date_and_person_organization	#204	M
		Date_and_person_organization to	@338	M
		Person_in_organization (as		M
		person_or_organization)		M
		Date_and_person_organization to	@117.2	M
		Date_time (as actual_date)		M
@338		Person_in_organization	#208	M

Table 6 (continued)

Id	V	Application elements	Value	Req
		Person_in_organization.role	#209, ”PersInOrg.role”	M
		Person_in_organization to Person (as	@337	M
		associated_person)		M
		Person_in_organization to Organization	@323	M
		(as associated_organization)		M
@324	∗	Organization_in_contract	#170	M
	∗	Organization_in_contract.role_of_	#174, ”OrgInContract.role_of_org”	M
	∗	organization		M
	∗	Organization_in_contract.signed_contract	(@102)	M
	∗	Organization_in_contract to	@323.2	M
	∗	Organization (as		M
	∗	contracted_organization)		M
@117		Date_time	#112	M
		Date_time.date	1999-31-3	M
@117.2		Date_time	#108	M
		Date_time.date	1999-31-1	M
@55	∗	Change	#315	M
	∗	Change to Item_version_relationship (as	@270	M
	∗	described_change)		M
@6	∗	Activity_relationship	#300	M
	∗	Activity_relationship.relation_type	#300, ”ActivityRel.relation_type”	M
	∗	Activity_relationship to Activity (as	@2.2	M
	∗	related)		M
	∗	Activity_relationship to Activity (as	@2	M
	∗	relating)		M
@181		Event_reference	#132	M
		Event_reference.event_type	#132, ”EventReference.event_type”	M
@269		Item_version	#30	M
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M
@269.2		Item_version	#31	M
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M
@270	∗	Item_version_relationship	#316	M
	∗	Item_version_relationship.relation_type	#316, ”ItemVersionRel.relation_	M
	∗		type”	M
	∗	Item_version_relationship to	@269	M
	∗	Item_version (as relating)		M

Table 6 (concluded)

Id	V	Application elements	Value	Req
	*	Item_version_relationship to	@269.2	M
	*	Item_version (as related)		M
@179	*	Element_delivery	#250	M
	*	Element_delivery to Organization (as	@323	M
	*	destination)		M
	*	Element_delivery to Value_with_unit (as	@317	M
	*	quantity)		M
	*	Element_delivery to Activity_element	@3	M
	*	(as deliverable_element)		M
@391	*	Project	#180	M
	*	Project.id	#180, ”Project.id”	M
	*	Project.name	#180, ”Project.name”	M
	*	Project.work_program	(@2)	M
@391.2		Project	#186	M
		Project.id	#186, ”Project.id1”	M
		Project.name	#186, ”Project.name1”	M
		Project.work_program	(@2.2)	M
@171	*	Duration	#138	M
	*	Duration.time	100	M
	*	Duration.time_unit	day	M
@323		Organization	#117	M
		Organization.organization_name	#117, ”Org.name”	M
		Organization.organization_type	#117, ”Org.organization_type”	M
		Organization.id	#117, ”Org.id”	M
@323.2		Organization	#122	M
		Organization.organization_name	#122, ”Org.name1”	M
		Organization.organization_type	#122, ”Org.organization_type1”	M
		Organization.id	#122, ”Org.id1”	M
@522		Unit	#268	M
@546	*	Work_request	#200	M
	*	Work_request.id	#200, ”WorkRequest.id”	M
	*	Work_request.request_type	#200, ”WorkRequest.request_type”	M
	*	Work_request.status	#202, ”WorkRequest.status”	M
	*	Work_request.notified_person	(@116)	M
	*	Work_request.scope	(@4)	M

6.6.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.7 Classification

Test case summary:

This abstract test case covers application elements of the Unit of Functionality S6 (classification).

6.7.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 7

Table 7 – Application elements for ATC Classification

Id	V	Application elements	Value	Req
@226	*	General_property	#60	M
@396	*	Property		M
	*	Property.allowed_unit	(@522)	M
	*	Property.id	#60, ”Property.id”	M
	*	General_property.property_type	#60, ”GeneralProperty.property_	M
	*		type”	M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@70	*	Classification_association	#160	M
	*	Classification_association to	@213	M
	*	General_classification (as		M
	*	associated_classification)		M
	*	Classification_association to Item (as	@261	M
	*	classified_element)		M
@21		Application_context		M
		Application_context.application_domain	#42, ”ApplContext.application_	M
			domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@139		Design_discipline_item_definition		M
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@214	*	General_classification_hierarchy	#175	M
	*	General_classification_hierarchy to	@213	M
	*	General_classification (as		M
	*	super_classification)		M
	*	General_classification_hierarchy to	@213.2	M
	*	General_classification (as		M
	*	sub_classification)		M
@450		Specific_item_classification	#23	M
		Specific_item_classification.associated_	(@261)	M
		item		M
		Specific_item_classification.	#23, ”SpecItemClass.classification_	M
		classification_name	name”	M
@351	*	Plib_class_reference	#120	M

Table 7 (concluded)

Id	V	Application elements	Value	Req
	*	Plib_class_reference.version	#127, ”PLIBClassRef.version”	M
	*	Plib_class_reference.supplier_bsu	#123, ”PLIBClassRef.supplier_bsu”	M
	*	Plib_class_reference.code	#120, ”PLIBClassRef.code”	M
@185	*	External_library_reference	#110	M
	*	External_library_reference.external_id	#110, ”ExternalLibRef.external_id”	M
	*	External_library_reference.library_type	#111, ”ExternalLibRef.library_type”	M
@399	*	Property_value	#105	M
	*	Property_value.specified_value	#105, ”PropertyValue.specified_	M
	*		value”	M
	*	Property_value.value_name	#105, ”PropertyValue.value_name”	M
	*	Property_value to Property (as	@226	M
	*	definition)		M
@352	*	Plib_property_reference	#130	M
	*	Plib_property_reference.code	#130, ”PLIBPropertyRef.code”	M
	*	Plib_property_reference.version	#133, ”PLIBPropertyRef.version”	M
	*	Plib_property_reference to	@351	M
	*	Plib_class_reference (as name_scope)		M
@269		Item_version	#30	M
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M
@72	*	Classification_system	#140	M
	*	Classification_system.id	#140, ”ClassificationSystem.id”	M
@71	*	Classification_attribute	#100	M
	*	Classification_attribute.id	#101, ”ClassificationAttribute.id”	M
	*	Classification_attribute.attribute_value	(@399)	M
@522		Unit		M
@213	*	General_classification	#150	M
	*	General_classification.attribute	(@71)	M
	*	General_classification.id	#150, ”GeneralClassification.id”	M
@213.2		General_classification	#170	M
		General_classification.id	#170, ”GeneralClassification.id1”	M

6.7.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.8 Process plan

Test case summary:

This abstract test case covers application elements of the Unit of Functionality S8 (process plan).

6.8.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 8

Table 8 – Application elements for ATC Process plan

Id	V	Application elements	Value	Req
@378	*	Process_plan_version	#310	M
@375	*	Process_plan		M
	*	Process_plan.plan_id	#312, ”ProcesPlan.plan_id”	M
	*	Process_plan_version.version_id	#314, ”ProcesPlan.version_id”	M
@373	*	Process_operation_relationship	#345	M
	*	Process_operation_relationship.relation_	#345, ”ProcessOperationRel.	M
	*	type	relation_type”	M
	*	Process_operation_relationship to	@371.2	M
	*	Process_operation (as related)		M
	*	Process_operation_relationship to	@371	M
	*	Process_operation (as relating)		M
@134		Descriptive_specification	#401	M
		Descriptive_specification.description	#401, ”DescriptiveSpecification.id”	M
@372	*	Process_operation_input_or_output	#390	M
	*	Process_operation_input_or_output.role	#390, ”ProcessOperationInputOrOutpi\	M
	*		ut.role”	M
	*	Process_operation_input_or_output to	@376.2	M
	*	Process_plan_operation_assignment (as		M
	*	operation)		M
	*	Process_operation_input_or_output to	@139	M
	*	Design_discipline_item_definition (as		M
	*	element)		M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@21		Application_context	#41	M
		Application_context.application_domain	#42, ”ApplContext.application_	M
			domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@371	*	Process_operation	#330	M
	*	Process_operation.id	#332, ”ProcessOperation.id”	M
	*	Process_operation.process_type	#334, ”ProcessOperation.process_	M

Table 8 (continued)

Id	V	Application elements	Value	Req
	*		type”	M
@371.2		Process_operation Process_operation.id Process_operation.process_type	#340 #342, ”ProcessOperation.id1” #344, ”ProcessOperation.process_type1”	M M M M
@371.3		Process_operation Process_operation.id Process_operation.process_type	#391 #3911, ”ProcessOperation.id1” #3912, ”ProcessOperation.process_type1”	M M M M
@450		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification.classification_name	#23 (@261) #23, ”SpecItemClass.classification_name”	M M M M M
@440	* *	Simultaneous_process_operation Simultaneous_process_operation.element	#370 (@371, @371.2)	M M
@182	* *	Exclusive_process_operation Exclusive_process_operation.element	#360 (@371, @371.2)	M M
@376	* * * * *	Process_plan_operation_assignment Process_plan_operation_assignment to Process_plan (as plan) Process_plan_operation_assignment to Process_operation (as operation)	#380 @375 @371	M M M M M
@376.2		Process_plan_operation_assignment Process_plan_operation_assignment to Process_plan (as plan) Process_plan_operation_assignment to Process_operation (as operation)	#396 @375 @371.3	M M M M M
@269		Item_version Item_version.id Item_version to Item (as associated_item)	#30 #30, ”ItemVersion.id” @261	M M M M
@377	* * * * * *	Process_plan_relationship Process_plan_relationship.relation_type Process_plan_relationship to Process_plan (as relating) Process_plan_relationship to Process_plan (as related)	#324 #324, ”ProcesPlanRel.relation_type” @375 @375.2	M M M M M M
@374	* *	Process_operation_resource_assignment Process_operation_resource_assignment.	#400 .F.	M M

Table 8 (concluded)

Id	V	Application elements	Value	Req
	∗	reference_tool		M
	∗	Process_operation_resource_assignment	@371	M
	∗	to Process_operation (as operation)		M
	∗	Process_operation_resource_assignment	@134	M
	∗	to Descriptive_specification (as		M
	∗	resource_definition)		M
@375		Process_plan	#300	M
		Process_plan.plan_id	#302, ”ProcesPlan.plan_id”	M
@375.2		Process_plan	#320	M
		Process_plan.plan_id	#322, ”ProcesPlan.plan_id1”	M

6.8.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.9 Surface condition

Test case summary:

This abstract test case covers application elements of the Unit of Functionality C1 (surface condition).

6.9.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 9

Table 9 – Application elements for ATC Surface condition

Id	V	Application elements	Value	Req
@519	*	Treatment_result	#2000	M
@474	*	Surface_condition		M
	*	Surface_condition.described_element	(@268)	M
	*	Treatment_result.description	#2010, ”TreatmentResult.	M
	*		description”	M
@541	*	Visual_appearance	#2020	M
	*	Surface_condition.described_element	(@268)	M
	*	Visual_appearance.colour_id	#2023, ”VisualAppearance.colour_id”	M
	*	Visual_appearance.lustre	#2026, ”VisualAppearance.lustre”	M
@485	*	Tactile_appearance	#2030	M
	*	Surface_condition.described_element	(@268)	M
@317		Nominal_value		M
		Nominal_value.value_component	#2035, ”1.0”	M
@249	*	Hardness	#2040	M
	*	Surface_condition.described_element	(@268)	M
	*	Hardness.measuring_method	#2042, ”Hardness.measuring_method”	M
	*	Hardness to Value_with_unit (as	@317.2	M
	*	hardness_value)		M
@317.2		Nominal_value		M
		Nominal_value.value_component	#2044, ”1.0”	M
@100	*	Contact_ratio	#2050	M
	*	Surface_condition.described_element	(@268)	M
	*	Contact_ratio to Value_with_unit (as	@317.3	M
	*	ratio_value)		M
	*	Contact_ratio to Physical_model (as	@344	M
	*	measuring_gauge)		M
@317.3		Nominal_value		M
		Nominal_value.value_component	#2054, ”0.5”	M
@344	*	Physical_model	#2057	M
@159	*	Document_representation		M
@345	*	Physical_representation		M
	*	Document_representation.id	#2057, ”DocRep.id”	M
	*	Document_representation to	@164	M
	*	Document_version (as		M
	*	associated_document_version)		M
@481	*	Surface_texture	#2060	M
	*	Surface_condition.described_element	(@268)	M
	*	Surface_texture.measuring_method	#2061, ”SurfaceTexture.measuring_	M
	*		method”	M

Table 9 (continued)

Id	V	Application elements	Value	Req
@317.4		Nominal_value		M
		Nominal_value.value_component	#2070, ”2.0”	M
@46	∗	Cartesian_coordinate_space_3d		M
@108	∗	Curve_on_surface		M
@106	∗	Curve		M
@76	∗	Coating_layer	#2090	M
@434	∗	Shape_element		M
	∗	Shape_element to Item_shape (as	@268	M
	∗	composition)		M
	∗	Coating_layer to Material (as	@302	M
	∗	used_material)		M
@497	∗	Thickness_dimension	#2091	M
@232	∗	Geometric_dimension		M
@443	∗	Size_dimension		M
	∗	Geometric_dimension.id	#2093, ”GeometricDimension.id”	M
	∗	Geometric_dimension to Value_with_unit	@317.5	M
	∗	(as dimension_value)		M
	∗	Size_dimension to Shape_element (as	@76	M
	∗	is_applied_to)		M
@317.5		Nominal_value		M
		Nominal_value.value_component	#20953, ”1.0”	M
@145		Digital_file		M
		Document_file.file_id	#2113, ”DocFile.file_id”	M
@268	∗	Item_shape		M
	∗	Item_shape to Design_discipline_item_	@139	M
	∗	definition (as described_object)		M
@130	∗	Default_surface_texture	#2073	M
	∗	Default_surface_texture.measuring_method	#2075, ”DefaultSurfaceTexture.	M
	∗		measuring_method”	M
@130.2		Default_surface_texture	#2100	M
		Default_surface_texture.measuring_method	#2102, ”DefaultSurfaceTexture.	M
			measuring_method”	M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@21		Application_context	#41	M
		Application_context.application_domain	#42, ”ApplContext.application_	M
			domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@21.2		Application_context		M

Table 9 (continued)

Id	V	Application elements	Value	Req
		Application_context.application_domain	#52, ”ApplContext.application_domain1”	M M
		Application_context.life_cycle_stage	#51, ”ApplContext.life_cycle_stage1”	M M
@307	∗ ∗ ∗ ∗ ∗ ∗	Measurement_path Measurement_path to Cartesian_coordinate_space (as is_defined_in) Measurement_path to Curve (as is_defined_as)	#2080 @46 @108	M M M M M M
@139		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	#40 #40, ”Ddid.id1” (@21) @269	M M M M M M M
@139.2		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	 #50, ”Ddid.id2” (@21.2) @269	M M M M M M M
@450		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification. classification_name	#23 (@261) #23, ”SpecItemClass.classification_name”	M M M M M
@129	∗ ∗ ∗ ∗ ∗	Default_setting_association Default_setting_association.default_value Default_setting_association to Digital_file (as default_context)	#2110 (@130.2) @145	M M M M M
@152	∗ ∗ ∗	Document Document.document_id Document.name	#20591 #20591, ”Document.document_id” #20591, ”Document.name”	M M M
@482	∗ ∗ ∗	Surface_texture_parameter Surface_texture_parameter.parameter_name	#2070 #2070, ”SurfaceTextureParameter. parameter_name”	M M M

Table 9 (concluded)

Id	V	Application elements	Value	Req
	∗	Surface_texture_parameter to	@317.4	M
	∗	Value_with_unit (as parameter_value)		M
	∗	Surface_texture_parameter to	@130	M
	∗	Default_surface_texture (as		M
	∗	described_texture)		M
@164	∗	Document_version	#2059	M
	∗	Document_version.id	#2059, ”DocumentVersion.id”	M
	∗	Document_version to Document (as	@152	M
	∗	associated_document)		M
@302	∗	Material	#2096	M
	∗	Material.material_name	#2096, ”Material.material_name”	M
	∗	Material to Design_discipline_item_	@139	M
	∗	definition (as described_element)		M
@269		Item_version	#30	M
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M
@522		Unit		M
@522.2		Unit		M
@522.3		Unit		M
@522.4		Unit		M
@522.5		Unit		M
@522.6		Unit		M
@522.7		Unit		M

6.9.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.10 Explicit draughting

Test case summary:

This abstract test case covers application elements of the Unit of Functionality D1 (explicit draughting).

6.10.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 10

Table 10 – Application elements for ATC Explicit draughting

Id	V	Application elements	Value	Req
@197	∗	Feature_occurrence	#50	M
	∗	Shape_element to Item_shape (as	@268	M
	∗	composition)		M
@227	∗	General_size_dimension	#2270	M
	∗	General_size_dimension.dimension_type	#2270, ””	M
	∗	Size_dimension to Shape_element (as	@197	M
	∗	is_applied_to)		M
@268		Item_shape	#51	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@261		Item	#20	M
		Item.id	#20, ”Part.id”	M
		Item.name	#20, ”Part.name”	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, ”DdidId”	M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@450		Specific_item_classification	#23	M
		Specific_item_classification.associated_	(@261)	M
		item		M
		Specific_item_classification.	#23, ”part”	M
		classification_name		M
@269		Item_version	#30	M
		Item_version.id	#30, ”PartVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M

6.10.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.11 External reference mechanism

Test case summary:

This abstract test case covers application elements of the Unit of Functionality E1 (external reference mechanism).

6.11.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 11

Table 11 – Application elements for ATC External reference mechanism

Id	V	Application elements	Value	Req
@45		Cartesian_coordinate_space_2d	#2410	M
@46		Cartesian_coordinate_space_3d	#2415	M
@515		Transformation_2d	#2420	M
@516	*	Transformation_3d	#2425	M
@333	*	Partial_document_assignment	#2450	M
@153	*	Document_assignment		M
	*	Document_assignment.role	#2452, ”DocAssignment.role”	M
	*	Partial_document_assignment.document_	#2451, ”PartialDocAss.document_	M
	*	portion	portion”	M
	*	Document_assignment to Document (as	@152	M
	*	assigned_document)		M
	*	Document_assignment to	@139	M
	*	Design_discipline_item_definition (as		M
	*	is_assigned_to)		M
@144	*	Digital_document		M
	*	Document_representation.id	#2460, ”DocRep.id”	M
	*	Digital_document.file	(@145)	M
	*	Document_representation to	@164	M
	*	Document_version (as		M
	*	associated_document_version)		M
@145		Digital_file	#2465	M
		Document_file.file_id	#2465, ”DocFile.file_id”	M
@341	*	Physical_document	#2470	M
	*	Document_representation.id	#2470, ”DocRep.id”	M
	*	Physical_document.component	(@248)	M
	*	Document_representation to	@164	M
	*	Document_version (as		M
	*	associated_document_version)		M
@344		Physical_model	#2475	M
		Document_representation.id	#2475, ”DocRep.id”	M
		Document_representation to	@164	M
		Document_version (as		M
		associated_document_version)		M
@248	*	Hardcopy	#2480	M
	*	Document_file.file_id	#2465, ”DocFile.file_id”	M
@317		Nominal_value		M
		Nominal_value.value_component	2.0	M
@145.2		Digital_file		M
		Document_file.file_id		M

Table 11 (continued)

Id	V	Application elements	Value	Req
@317.2		Nominal_value		M
		Nominal_value.value_component	2.0	M
@317.3		Nominal_value		M
		Nominal_value.value_component	10.0	M
@183		External_geometric_model	#2560	M
		External_model.model_id	#2563, ”ExternalModel.model_id”	M
		External_model to Digital_file (as	@145.3	M
		is_defined_as)		M
		External_model to	@45.2	M
		Cartesian_coordinate_space (as		M
		is_defined_in)		M
@145.3		Digital_file	#2569	M
		Document_file.file_id	#2465, ”DocFile.file_id”	M
@45.2		Cartesian_coordinate_space_2d		M
@184	∗	External_geometric_model_with_parameters	#2570	M
	∗	External_model.model_id	#2563, ”ExternalModel.model_id”	M
	∗	External_geometric_model_with_	(@399)	M
	∗	parameters.parameter_value		M
	∗	External_model to Digital_file (as	@145.4	M
	∗	is_defined_as)		M
	∗	External_model to	@45.2	M
	∗	Cartesian_coordinate_space (as		M
	∗	is_defined_in)		M
@145.4		Digital_file	#25751	M
		Document_file.file_id	#2465, ”DocFile.file_id”	M
@226		General_property	#25795	M
		Property.id	#25795, ”Property.id”	M
		General_property.property_type	#25795, ”GeneralProperty.property_	M
			type”	M
@187	∗	External_picture		M
	∗	External_model.model_id	#2583, ”ExternalModel.model_id”	M
	∗	External_model to Digital_file (as	@145	M
	∗	is_defined_as)		M
	∗	External_model to	@45.2	M
	∗	Cartesian_coordinate_space (as		M
	∗	is_defined_in)		M
	∗	External_picture to	@45.2	M
	∗	Cartesian_coordinate_space_2d (as		M
	∗	is_defined_in)		M
@235	∗	Geometric_model_relationship_with_transformation	#2595	M

Table 11 (continued)

Id	V	Application elements	Value	Req
@234	*	Geometric_model_relationship		M
	*	Geometric_model_relationship.relation_	#2595, ”GeoModelRel.relation_type”	M
	*	type		M
	*	Geometric_model_relationship to	@187	M
	*	External_model (as relating)		M
	*	Geometric_model_relationship to	@183	M
	*	External_model (as related)		M
	*	Geometric_model_relationship_with_	@515.2	M
	*	transformation to Transformation (as		M
	*	model_placement)		M
@515.2		Transformation_2d	#2596	M
@317.4		Nominal_value		M
		Nominal_value.value_component	10.0	M
@317.5		Nominal_value		M
		Nominal_value.value_component	10.0	M
@317.6		Nominal_value		M
		Nominal_value.value_component	20.0	M
@493		Template_instance		M
		Template_instance.id	#2730, ”TemplateInstance.id”	M
		Template_instance to External_model (as	@183	M
		template_definition)		M
		Template_instance to Transformation (as	@516.2	M
		model_placement)		M
@516.2		Transformation_3d		M
@268		Item_shape	#2600	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@134		Descriptive_specification	#2445	M
		Descriptive_specification.description	#2445, ”DescriptiveSpecification.	M
			description”	M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@434		Shape_element	#2610	M
		Shape_element to Item_shape (as	@268	M
		composition)		M
@434.2		Shape_element		M
		Shape_element to Item_shape (as	@268	M
		composition)		M
@21		Application_context	#41	M

Table 11 (continued)

Id	V	Application elements	Value	Req
		Application_context.application_domain	#42, ”ApplContext.application_domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@163	*	Document_type_property	#2540	M
	*	Document_type_property.document_type_name	#2540, ”DocTypeProp.document_type_name”	M
	*	Document_type_property to Document_file (as is_applied_to)	@145.2	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_relevant_for	(@21)	M
		Design_discipline_item_definition to Item_version (as associated_item_version)	@269	M
@435	*	Shape_element_relationship	#2620	M
	*	Shape_element_relationship.relation_type	#2620, ”ShapeElementRel.relation_type”	M
	*	Shape_element_relationship to Shape_element (as relating)	@434	M
	*	Shape_element_relationship to Shape_element (as related)	@434.2	M
@450		Specific_item_classification	#23	M
		Specific_item_classification.associated_item	(@261)	M
		Specific_item_classification.classification_name	#23, ”SpecItemClass.classification_name”	M
@154	*	Document_content_property	#2520	M
	*	Document_content_property.languages	(#2526, ”DocContentProp.languages”)	M
	*	Document_content_property to Document_file (as is_applied_to)	@145	M
@399		Property_value	#2578	M
		Property_value.specified_value	#2578, ”PropertyValue.specified_value”	M
		Property_value.value_name	#2578, ”PropertyValue.value_name”	M
		Property_value to Property (as definition)	@226	M
@234		Geometric_model_relationship	#2590	M
		Geometric_model_relationship.relation_type	#2590, ”GeoModelRel.relation_type”	M

Table 11 (continued)

Id	V	Application elements	Value	Req
		Geometric_model_relationship to	@187	M
		External_model (as relating)		M
		Geometric_model_relationship to	@183	M
		External_model (as related)		M
@152		Document	#2430	M
		Document.document_id	#2430, ”Document.document_id”	M
		Document.name	#2430, ”Document.name”	M
@165	∗	Document_version_relationship	#2438	M
	∗	Document_version_relationship.relation_	#2438, ”DocVersionRel.relation_	M
	∗	type	type”	M
	∗	Document_version_relationship to	@164	M
	∗	Document_version (as relating)		M
	∗	Document_version_relationship to	@164.2	M
	∗	Document_version (as related)		M
@314	∗	Named_size	#2536	M
	∗	Named_size.size_format	#2536, ”NamedSize.size_format”	M
@314.2		Named_size	#2700	M
		Named_size.size_format	#2700, ”NamedSize.size_format”	M
@164		Document_version	#2435	M
		Document_version.id	#2435, ”DocumentVersion.id”	M
		Document_version to Document (as	@152	M
		associated_document)		M
@164.2		Document_version	#2437	M
		Document_version.id	#2435, ”DocumentVersion.id1”	M
		Document_version to Document (as	@152	M
		associated_document)		M
@161	∗	Document_source_property	#2500	M
	∗	Document_source_property.source_name	#2502, ”DocSourceProp.source_name”	M
	∗	Document_source_property to	@145	M
	∗	Document_file (as is_applied_to)		M
@269		Item_version	#30	M
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M
@1	∗	Accuracy	#2404	M
	∗	Accuracy.accuracy_value	#2401, 0.001	M
	∗	Accuracy.accuracy_type	#2401, ”Accuracy.accuracy_type”	M
	∗	Accuracy.is_defined_for	(@183)	M
@413	∗	Rectangular_size		M
	∗	Rectangular_size to Value_with_unit (as	@317.5	M

Table 11 (continued)

Id	V	Application elements	Value	Req
	∗	size_in_x)		M
	∗	Rectangular_size to Value_with_unit (as	@317.6	M
	∗	size_in_y)		M
@157	∗	Document_file_relationship	#2490	M
	∗	Document_file_relationship.relation_type	#2490, ”DocFileRel.relation_type”	M
	∗	Document_file_relationship to	@145	M
	∗	Document_file (as relating)		M
	∗	Document_file_relationship to	@248	M
	∗	Document_file (as related)		M
@522		Unit		M
@522.2		Unit		M
@522.3		Unit		M
@522.4		Unit		M
@522.5		Unit		M
@522.6		Unit		M
@522.7		Unit		M
@162	∗	Document_structure	#2485	M
	∗	Document_structure.relation_type	#2485, ”DocStructure.relation_type”	M
	∗	Document_structure to	@144	M
	∗	Document_representation (as relating)		M
	∗	Document_structure to	@344	M
	∗	Document_representation (as related)		M
@160	∗	Document_size_property	#2550	M
	∗	Document_size_property to Document_file	@145	M
	∗	(as is_applied_to)		M
@155	∗	Document_creation_property	#2510	M
	∗	Document_creation_property.creating_	#2515, ”DocCreationProp.creating_	M
	∗	system	system”	M
	∗	Document_creation_property to	@145	M
	∗	Document_file (as is_applied_to)		M
@433	∗	Shape_description_association	#2720	M
	∗	Shape_description_association.role	#2721, ”ShapeDescrAsso.role”	M
	∗	Shape_description_association to	@434	M
	∗	Shape_element (as is_defining_shape_for)		M
	∗	Shape_description_association to	@183	M
	∗	External_geometric_model (as		M
	∗	defining_geometry)		M
@158	∗	Document_format_property	#2530	M
	∗	Document_format_property to	@145	M
	∗	Document_file (as is_applied_to)		M

Table 11 (concluded)

Id	V	Application elements	Value	Req
@153		Document_assignment	#2440	M
		Document_assignment.role	#2441, ”DocAssignment.role”	M
		Document_assignment to Document (as	@152	M
		assigned_document)		M
		Document_assignment to	@134	M
		Descriptive_specification (as		M
		is_assigned_to)		M

6.11.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.12 Feature

Test case summary:

This abstract test case covers application elements of the Unit of Functionality F1 (user defined feature), F2 (included feature), and F3 (generative featured shape).

6.12.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 12

Table 12 – Application elements for ATC Feature

Id	V	Application elements	Value	Req
@317		Nominal_value		M
		Nominal_value.value_component	1.0	M
@317.2		Nominal_value		M
		Nominal_value.value_component	0.39269908	M
@51	*	Chamfer	#230	M
@518	*	Transition_feature		M
	*	Transition_feature to Face (as face_1)	@188	M
	*	Transition_feature to Face (as face_2)	@188.2	M
	*	Chamfer to Chamfer_definition (as	@53	M
	*	is_defined_by)		M
@188	*	Face	#233	M
	*	Face.bound	(@189)	M
	*	Face to Surface (as face_geometry)	@319	M
@319	*	Offset_surface		M
@471	*	Surface		M
@47	*	Cartesian_point		M
@357	*	Point		M
@188.2		Face	#240	M
		Face.bound	(@189.2)	M
		Face to Surface (as face_geometry)	@319.2	M
@319.2		Offset_surface		M
@47.2		Cartesian_point		M
@174	*	Edge_round	#250	M
	*	Transition_feature to Face (as face_1)	@188.3	M
	*	Transition_feature to Face (as face_2)	@188.4	M
@188.3		Face	#253	M
		Face.bound	(@189)	M
		Face to Surface (as face_geometry)	@319	M
@188.4		Face	#256	M
		Face.bound	(@189.2)	M
		Face to Surface (as face_geometry)	@319.2	M
@95	*	Constant_radius_edge_round	#260	M
	*	Transition_feature to Face (as face_1)	@188.5	M
	*	Transition_feature to Face (as face_2)	@188.6	M
	*	Constant_radius_edge_round to	@198.4	M
	*	Feature_parameter (as radius)		M
@317.3		Nominal_value		M
		Nominal_value.value_component	5.0	M
@317.4		Nominal_value		M

Table 12 (continued)

Id	V	Application elements	Value	Req
		Nominal_value.value_component	10.0	M
@317.5		Nominal_value		M
		Nominal_value.value_component	20.0	M
@188.5		Face	#263	M
		Face.bound	(@189)	M
		Face to Surface (as face_geometry)	@319	M
@188.6		Face	#265	M
		Face.bound	(@189.2)	M
		Face to Surface (as face_geometry)	@319.2	M
@202	*	Fillet	#280	M
	*	Transition_feature to Face (as face_1)	@188.7	M
	*	Transition_feature to Face (as face_2)	@188.8	M
@188.7		Face	#283	M
		Face.bound	(@189)	M
		Face to Surface (as face_geometry)	@319	M
@188.8		Face	#285	M
		Face.bound	(@189.2)	M
		Face to Surface (as face_geometry)	@319.2	M
@96	*	Constant_radius_fillet	#290	M
	*	Transition_feature to Face (as face_1)	@188.9	M
	*	Transition_feature to Face (as face_2)	@188.10	M
	*	Constant_radius_fillet to	@198.7	M
	*	Feature_parameter (as radius)		M
@188.9		Face	#293	M
		Face.bound	(@189)	M
		Face to Surface (as face_geometry)	@319	M
@188.10		Face	#295	M
		Face.bound	(@189.2)	M
		Face to Surface (as face_geometry)	@319.2	M
@317.6		Nominal_value		M
		Nominal_value.value_component	5.0	M
@317.7		Nominal_value		M
		Nominal_value.value_component	10.0	M
@317.8		Nominal_value		M
		Nominal_value.value_component	20.0	M
@223	*	General_path	#310	M
@334	*	Path		M
	*	Path to Cartesian_coordinate_space (as	@46	M
	*	is_defined_in)		M
	*	General_path to Curve (as path_geometry)	@36	M

Table 12 (continued)

Id	V	Application elements	Value	Req
@46		Cartesian_coordinate_space_3d	#314	M
@36	*	B_spline_curve	#317	M
@293	*	Linear_path	#320	M
	*	Path to Cartesian_coordinate_space (as	@46	M
	*	is_defined_in)		M
	*	Linear_path to Feature_parameter (as	@198.10	M
	*	distance)		M
	*	Linear_path to Axis_placement (as	@33.2	M
	*	is_defined_by)		M
@317.9		Nominal_value		M
		Nominal_value.value_component	20.0	M
@79	*	Complete_circular_path	#330	M
@61	*	Circular_path		M
	*	Path to Cartesian_coordinate_space (as	@46	M
	*	is_defined_in)		M
	*	Circular_path to Feature_parameter (as	@198.11	M
	*	radius)		M
	*	Circular_path to Axis_placement (as	@33.3	M
	*	rotation_axis_defined_by)		M
@317.10		Nominal_value		M
		Nominal_value.value_component	20.0	M
@331	*	Partial_circular_path	#340	M
	*	Path to Cartesian_coordinate_space (as	@46	M
	*	is_defined_in)		M
	*	Circular_path to Feature_parameter (as	@198.12	M
	*	radius)		M
	*	Circular_path to Axis_placement (as	@33.4	M
	*	rotation_axis_defined_by)		M
	*	Partial_circular_path to	@198.13	M
	*	Feature_parameter (as sweep_angle)		M
@317.11		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.12		Nominal_value		M
		Nominal_value.value_component	3.141592617	M
@58	*	Circular_closed_profile	#350	M
@390	*	Profile		M
@73	*	Closed_profile		M
	*	Profile to Cartesian_coordinate_space	@46	M
	*	(as is_defined_in)		M
	*	Circular_closed_profile to	@198.14	M

Table 12 (continued)

Id	V	Application elements	Value	Req
	*	Feature_parameter (as diameter)		M
@317.13		Nominal_value		M
		Nominal_value.value_component	10.0	M
@316	*	Ngon_profile	#360	M
	*	Ngon_profile.number_of_sides	6	M
	*	Profile to Cartesian_coordinate_space	@46	M
	*	(as is_defined_in)		M
	*	Ngon_profile to Feature_parameter (as	@198.15	M
	*	circumscribed_radius)		M
@317.14		Nominal_value		M
		Nominal_value.value_component	10.0	M
@317.15		Nominal_value		M
		Nominal_value.value_component	10.0	M
@408	*	Rectangular_closed_profile	#370	M
	*	Profile to Cartesian_coordinate_space	@46	M
	*	(as is_defined_in)		M
	*	Rectangular_closed_profile to	@198.17	M
	*	Feature_parameter (as profile_width)		M
	*	Rectangular_closed_profile to	@198.18	M
	*	Feature_parameter (as profile_length)		M
@317.16		Nominal_value		M
		Nominal_value.value_component	10.0	M
@317.17		Nominal_value		M
		Nominal_value.value_component	10.0	M
@317.18		Nominal_value		M
		Nominal_value.value_component	10.0	M
@215	*	General_closed_profile	#380	M
	*	Profile to Cartesian_coordinate_space	@46	M
	*	(as is_defined_in)		M
	*	General_closed_profile to Curve (as	@255	M
	*	profile_shape)		M
@255	*	Hyperbola	#388	M
@459	*	Square_u_profile	#390	M
@321	*	Open_profile		M
	*	Profile to Cartesian_coordinate_space	@46	M
	*	(as is_defined_in)		M
	*	Square_u_profile to Feature_parameter	@198.20	M
	*	(as width)		M
	*	Square_u_profile to Feature_parameter	@198.21	M
	*	(as first_angle)		M

Table 12 (continued)

Id	V	Application elements	Value	Req
	*	Square_u_profile to Feature_parameter	@198.22	M
	*	(as second_angle)		M
@317.19		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.20		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.21		Nominal_value		M
		Nominal_value.value_component	1.5707963	M
@317.22		Nominal_value		M
		Nominal_value.value_component	10.0	M
@317.23		Nominal_value		M
		Nominal_value.value_component	20.0	M
@332	*	Partial_circular_profile	#400	M
	*	Profile to Cartesian_coordinate_space	@46	M
	*	(as is_defined_in)		M
	*	Partial_circular_profile to	@198.25	M
	*	Feature_parameter (as sweep_angle)		M
	*	Partial_circular_profile to	@198.26	M
	*	Feature_parameter (as radius)		M
@317.24		Nominal_value		M
		Nominal_value.value_component	0.78539816	M
@317.25		Nominal_value		M
		Nominal_value.value_component	20.0	M
@426	*	Rounded_u_profile	#410	M
	*	Profile to Cartesian_coordinate_space	@46	M
	*	(as is_defined_in)		M
	*	Rounded_u_profile to Feature_parameter	@198.27	M
	*	(as width)		M
@317.26		Nominal_value		M
		Nominal_value.value_component	20.0	M
@532	*	Vee_profile	#420	M
	*	Profile to Cartesian_coordinate_space	@46	M
	*	(as is_defined_in)		M
	*	Vee_profile to Feature_parameter (as	@198.28	M
	*	tilt_angle)		M
	*	Vee_profile to Feature_parameter (as	@198.29	M
	*	profile_angle)		M
@317.27		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.28		Nominal_value		M

Table 12 (continued)

Id	V	Application elements	Value	Req
		Nominal_value.value_component	0.78539816	M
@317.29		Nominal_value		M
		Nominal_value.value_component	20.0	M
@492	∗	Tee_profile	#430	M
	∗	Profile to Cartesian_coordinate_space	@46	M
	∗	(as is_defined_in)		M
	∗	Tee_profile to Feature_parameter (as	@198.31	M
	∗	first_offset)		M
	∗	Tee_profile to Feature_parameter (as	@198.32	M
	∗	second_offset)		M
	∗	Tee_profile to Feature_parameter (as	@198.33	M
	∗	first_angle)		M
	∗	Tee_profile to Feature_parameter (as	@198.34	M
	∗	second_angle)		M
	∗	Tee_profile to Feature_parameter (as	@198.35	M
	∗	depth)		M
	∗	Tee_profile to Feature_parameter (as	@198.36	M
	∗	width)		M
	∗	Tee_profile to Feature_parameter (as	@198.37	M
	∗	cross_bar_depth)		M
	∗	Tee_profile to Feature_parameter (as	@198.38	M
	∗	cross_bar_width)		M
@317.30		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.31		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.32		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.33		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.34		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.35		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.36		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.37		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.38		Nominal_value		M
		Nominal_value.value_component	20.0	M

Table 12 (continued)

Id	V	Application elements	Value	Req
@222	*	General_open_profile	#440	M
	*	Profile to Cartesian_coordinate_space	@46	M
	*	(as is_defined_in)		M
	*	General_open_profile to Curve (as	@329	M
	*	profile_shape)		M
@329	*	Parabola	#448	M
@320	*	Open_bead_end_type	#450	M
@38	*	Bead_end_type		M
	*	Bead_end_type.is_applied_to	.START.	M
@404	*	Radiused_bead_end_type		M
	*	Bead_end_type.is_applied_to	.START.	M
@291	*	Linear_bead_end_type	#470	M
	*	Bead_end_type.is_applied_to	.START.	M
	*	Linear_bead_end_type.end_length	#476,"end length"	M
	*	Linear_bead_end_type.end_shape	.STRAIGHT.	M
@39	*	Bead_feature	#480	M
@196	*	Feature_definition		M
@369	*	Process_feature_in_panel		M
	*	Bead_feature.end_condition	(@320, @404)	M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Bead_feature to Open_profile (as	@222	M
	*	bead_profile)		M
	*	Bead_feature to Path (as sweep_path)	@223	M
@317.39		Nominal_value		M
		Nominal_value.value_component	10.0	M
@516		Transformation_3d	#489	M
@253	*	Hole_feature_in_panel	#500	M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Hole_feature_in_panel to	@74	M
	*	Closed_profile_usage (as hole_profile)		M
@328	*	Panel_hole_with_barring	#510	M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Hole_feature_in_panel to	@74	M
	*	Closed_profile_usage (as hole_profile)		M

Table 12 (continued)

Id	V	Application elements	Value	Req
	*	Panel_hole_with_barring to	@74	M
	*	Closed_profile_usage (as		M
	*	barring_profile)		M
@317.40		Nominal_value		M
		Nominal_value.value_component	0.0	M
@209	*	Form_feature_in_panel	#530	M
	*	Form_feature_in_panel.feature_type	.BOSS.	M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Form_feature_in_panel to	@11	M
	*	Angle_specification (as		M
	*	target_boundary_defined_by)		M
	*	Form_feature_in_panel to	@198.42	M
	*	Feature_parameter (as		M
	*	base_fillet_radius)		M
	*	Form_feature_in_panel to	@198.43	M
	*	Feature_parameter (as		M
	*	target_fillet_radius)		M
	*	Form_feature_in_panel to	@11	M
	*	Angle_specification (as		M
	*	base_boundary_defined_by)		M
@317.41		Nominal_value		M
		Nominal_value.value_component	10.0	M
@317.42		Nominal_value		M
		Nominal_value.value_component	20.0	M
@190	*	Face_termination	#545	M
@272	*	Joggle_termination		M
@529	*	Value_termination	#550	M
	*	Value_termination to Feature_parameter	@198.44	M
	*	(as depth)		M
	*	Value_termination to Feature_parameter	@198.45	M
	*	(as angle)		M
@317.43		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.44		Nominal_value		M
		Nominal_value.value_component	0.0	M
@271	*	Joggle_feature	#560	M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M

Table 12 (continued)

Id	V	Application elements	Value	Req
	*	is_defined_in)		M
	*	Joggle_feature to Linear_path (as	@293	M
	*	defining_path)		M
	*	Joggle_feature to Feature_parameter (as	@198.46	M
	*	slope_angle_1)		M
	*	Joggle_feature to Feature_parameter (as	@198.47	M
	*	slope_angle_2)		M
	*	Joggle_feature to Feature_parameter (as	@198.48	M
	*	height)		M
	*	Joggle_feature to Joggle_termination	@529	M
	*	(as termination)		M
	*	Joggle_feature to Feature_parameter (as	@198.49	M
	*	direction_angle_2)		M
	*	Joggle_feature to Feature_parameter (as	@198.50	M
	*	direction_angle_1)		M
@317.45		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.46		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.47		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.48		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.49		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.50		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.51		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.52		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.53		Nominal_value		M
		Nominal_value.value_component	20.0	M
@295	*	Locator_feature	#580	M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Locator_feature to Feature_parameter	@198.55	M
	*	(as diameter)		M
	*	Locator_feature to Feature_parameter	@198.56	M

Table 12 (continued)

Id	V	Application elements	Value	Req
	*	(as tip_angle)		M
@317.54		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.55		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.56		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.57		Nominal_value		M
		Nominal_value.value_component	20.0	M
@84	*	Compound_feature_in_panel	#600	M
	*	Compound_feature_in_panel.feature_type	#600, ”CompoudFeatureInPanel.	M
	*		feature_type”	M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
@322	*	Open_slot_end_type	#630	M
@444	*	Slot_end_type		M
	*	Slot_end_type.is_applied_to	.TERMINATION.	M
@405	*	Radiused_slot_end_type	#640	M
	*	Slot_end_type.is_applied_to	.START.	M
@544	*	Woodruff_slot_end_type	#650	M
	*	Slot_end_type.is_applied_to	.START.	M
	*	Woodruff_slot_end_type to	@198.59	M
	*	Feature_parameter (as radius)		M
@317.58		Nominal_value		M
		Nominal_value.value_component	20.0	M
@205	*	Flat_slot_end_type	#660	M
	*	Slot_end_type.is_applied_to	.START.	M
	*	Flat_slot_end_type to Feature_parameter	@198.60	M
	*	(as first_radius)		M
	*	Flat_slot_end_type to Feature_parameter	@198.61	M
	*	(as second_radius)		M
@317.59		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.60		Nominal_value		M
		Nominal_value.value_component	20.0	M
@445	*	Slot_feature	#670	M
@370	*	Process_feature_in_solid		M
	*	Slot_feature.end_condition	(@544, @205)	M
	*	Feature_definition to	@46	M

Table 12 (continued)

Id	V	Application elements	Value	Req
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Slot_feature to Open_profile (as	@532	M
	*	slot_profile)		M
	*	Slot_feature to Path (as sweep_path)	@223	M
@317.61		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.62		Nominal_value		M
		Nominal_value.value_component	120.0	M
@317.63		Nominal_value		M
		Nominal_value.value_component	0.0	M
@348	*	Planar_bottom_condition	#720	M
@355	*	Pocket_bottom_condition		M
	*	Pocket_bottom_condition.is_applied_to	.START.	M
	*	Planar_bottom_condition.floor_normal	#727, ”floor normal”	M
	*	Planar_bottom_condition.floor_location	#727, ”floor location”	M
@317.64		Nominal_value		M
		Nominal_value.value_component	120.0	M
@500	*	Through_bottom_condition	#735	M
	*	Pocket_bottom_condition.is_applied_to	.START.	M
@212	*	General_bottom_condition	#740	M
	*	Pocket_bottom_condition.is_applied_to	.START.	M
	*	General_bottom_condition to Surface (as	@521	M
	*	floor_face)		M
@521	*	Trimmed_surface		M
@317.65		Nominal_value		M
		Nominal_value.value_component	120.0	M
@407	*	Rectangular_closed_pocket	#750	M
@356	*	Pocket_feature		M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Pocket_feature to Linear_path (as	@293	M
	*	sweep_path)		M
	*	Pocket_feature to	@212	M
	*	Pocket_bottom_condition (as		M
	*	bottom_condition)		M
	*	Rectangular_closed_pocket to	@408	M
	*	Rectangular_closed_profile (as boundary)		M
@317.66		Nominal_value		M

Table 12 (continued)

Id	V	Application elements	Value	Req
		Nominal_value.value_component	120.0	M
@411	*	Rectangular_open_pocket	#770	M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Pocket_feature to Linear_path (as	@293	M
	*	sweep_path)		M
	*	Pocket_feature to	@212	M
	*	Pocket_bottom_condition (as		M
	*	bottom_condition)		M
	*	Rectangular_open_pocket to	@459	M
	*	Square_u_profile (as boundary)		M
@317.67		Nominal_value		M
		Nominal_value.value_component	120.0	M
@225	*	General_pocket	#790	M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Pocket_feature to Linear_path (as	@293	M
	*	sweep_path)		M
	*	Pocket_feature to	@212	M
	*	Pocket_bottom_condition (as		M
	*	bottom_condition)		M
	*	General_pocket to Profile (as boundary)	@222	M
@317.68		Nominal_value		M
		Nominal_value.value_component	120.0	M
@349	*	Planar_top_condition	#810	M
@43	*	Boss_top_condition		M
	*	Boss_top_condition.is_applied_to	.START.	M
	*	Planar_top_condition.top_location	#818, ”top location”	M
	*	Planar_top_condition.top_normal	#818, ”top normal”	M
@317.69		Nominal_value		M
		Nominal_value.value_component	90.0	M
@231	*	General_top_condition	#820	M
	*	Boss_top_condition.is_applied_to	.START.	M
	*	General_top_condition to Surface (as	@458	M
	*	top_face)		M
@317.70		Nominal_value		M
		Nominal_value.value_component	90.0	M
@458	*	Spherical_surface		M

Table 12 (continued)

Id	V	Application elements	Value	Req
@57	*	Circular_boss	#830	M
@42	*	Boss_feature		M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Boss_feature to Linear_path (as	@293	M
	*	sweep_path)		M
	*	Boss_feature to Boss_top_condition (as	@231	M
	*	top_condition)		M
	*	Circular_boss to	@58	M
	*	Circular_closed_profile (as boundary)		M
@317.71		Nominal_value		M
		Nominal_value.value_component	120.0	M
@406	*	Rectangular_boss	#850	M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Boss_feature to Linear_path (as	@293	M
	*	sweep_path)		M
	*	Boss_feature to Boss_top_condition (as	@231	M
	*	top_condition)		M
	*	Rectangular_boss to	@408	M
	*	Rectangular_closed_profile (as boundary)		M
@317.72		Nominal_value		M
		Nominal_value.value_component	120.0	M
@211	*	General_boss	#870	M
	*	Feature_definition to	@46	M
	*	Cartesian_coordinate_space_3d (as		M
	*	is_defined_in)		M
	*	Boss_feature to Linear_path (as	@293	M
	*	sweep_path)		M
	*	Boss_feature to Boss_top_condition (as	@231	M
	*	top_condition)		M
	*	General_boss to General_closed_profile	@215	M
	*	(as boundary)		M
@317.73		Nominal_value		M
		Nominal_value.value_component	120.0	M
@204	*	Flat_bottom	#900	M
@252	*	Hole_bottom_condition		M
	*	Hole_bottom_condition.is_applied_to	.START.	M

Table 12 (continued)

Id	V	Application elements	Value	Req
@501	∗	Through_hole_condition	#910	M
	∗	Hole_bottom_condition.is_applied_to	.START.	M
@206	∗	Flat_with_chamfer_bottom	#920	M
	∗	Hole_bottom_condition.is_applied_to	.START.	M
	∗	Flat_with_chamfer_bottom to	@53	M
	∗	Chamfer_definition (as		M
	∗	bottom_definition)		M
@207	∗	Flat_with_radius_bottom	#930	M
	∗	Hole_bottom_condition.is_applied_to	.START.	M
	∗	Flat_with_radius_bottom to	@198.75	M
	∗	Feature_parameter (as radius)		M
@317.74		Nominal_value		M
		Nominal_value.value_component	20.0	M
@457	∗	Spherical_bottom	#940	M
	∗	Hole_bottom_condition.is_applied_to	.START.	M
	∗	Spherical_bottom to Feature_parameter	@198.75	M
	∗	(as radius)		M
@317.75		Nominal_value		M
		Nominal_value.value_component	20.0	M
@93	∗	Conical_bottom	#950	M
	∗	Hole_bottom_condition.is_applied_to	.START.	M
	∗	Conical_bottom to Feature_parameter (as	@198.77	M
	∗	tip_angle)		M
@317.76		Nominal_value		M
		Nominal_value.value_component	0.78539816	M
@317.77		Nominal_value		M
		Nominal_value.value_component	20.0	M
@425	∗	Round_hole	#960	M
	∗	Feature_definition to	@46	M
	∗	Cartesian_coordinate_space_3d (as		M
	∗	is_defined_in)		M
	∗	Round_hole to Linear_path (as	@293	M
	∗	sweep_path)		M
	∗	Round_hole to Circular_closed_profile	@58	M
	∗	(as boundary)		M
	∗	Round_hole to Hole_bottom_condition (as	@204	M
	∗	bottom_condition)		M
@421	∗	Rib_feature		M
	∗	Feature_definition to	@46	M
	∗	Cartesian_coordinate_space_3d (as		M

Table 12 (continued)

Id	V	Application elements	Value	Req
	∗	is_defined_in)		M
	∗	Rib_feature to Open_profile (as	@222	M
	∗	rib_profile)		M
	∗	Rib_feature to Path (as sweep_path)	@293	M
@317.78		Nominal_value		M
		Nominal_value.value_component	20.0	M
@317.79		Nominal_value		M
		Nominal_value.value_component	20.0	M
@87	∗	Compound_feature_in_solid	#1000	M
	∗	Compound_feature_in_solid.feature_type	#1000, ”CompoundFeatureInSolid.	M
	∗		feature_type”	M
	∗	Feature_definition to	@46	M
	∗	Cartesian_coordinate_space_3d (as		M
	∗	is_defined_in)		M
@412	∗	Rectangular_pattern	#1040	M
@419	∗	Replicate_feature		M
	∗	Rectangular_pattern.rows	#1051, ”number of rows”	M
	∗	Rectangular_pattern.columns	#1054, ”number of columns”	M
	∗	Rectangular_pattern.row_layout_direction	#1053, ”row layout bdirection”	M
	∗	Rectangular_pattern.column_layout_	#1048, ”column layout bdirection”	M
	∗	direction		M
	∗	Feature_definition to	@46	M
	∗	Cartesian_coordinate_space_3d (as		M
	∗	is_defined_in)		M
	∗	Replicate_feature to	@418	M
	∗	Replicate_base_assignment (as		M
	∗	replicate_base)		M
	∗	Rectangular_pattern to	@198.81	M
	∗	Feature_parameter (as row_spacing)		M
	∗	Rectangular_pattern to	@198.82	M
	∗	Feature_parameter (as column_spacing)		M
@317.80		Nominal_value		M
		Nominal_value.value_component	2.0	M
@317.81		Nominal_value		M
		Nominal_value.value_component	2.0	M
@317.82		Nominal_value		M
		Nominal_value.value_component	2.0	M
@62	∗	Circular_pattern	#1080	M
	∗	Circular_pattern.number_of_features	#1087, ”number of features”	M
	∗	Feature_definition to	@46	M

Table 12 (continued)

Id	V	Application elements	Value	Req
	∗	Cartesian_coordinate_space_3d (as		M
	∗	is_defined_in)		M
	∗	Replicate_feature to	@418	M
	∗	Replicate_base_assignment (as		M
	∗	replicate_base)		M
	∗	Circular_pattern to Feature_parameter	@198.85	M
	∗	(as rotation)		M
	∗	Circular_pattern to Feature_parameter	@198.86	M
	∗	(as angular_spacing)		M
@317.83		Nominal_value		M
		Nominal_value.value_component	2.0	M
@317.84		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.85		Nominal_value		M
		Nominal_value.value_component	0.78539816	M
@224	∗	General_pattern	#1120	M
	∗	General_pattern.added_instance	(@33.35)	M
	∗	Feature_definition to	@46	M
	∗	Cartesian_coordinate_space_3d (as		M
	∗	is_defined_in)		M
	∗	Replicate_feature to	@418	M
	∗	Replicate_base_assignment (as		M
	∗	replicate_base)		M
@48	∗	Catalogue_thread	#1140	M
@499	∗	Thread_specification		M
	∗	Thread_specification.form_type	#1145, ”ThreadSpecification.form_	M
	∗		type”	M
	∗	Thread_specification.inner	.T.	M
	∗	Thread_specification to	@198.87	M
	∗	Feature_parameter (as major_diameter)		M
	∗	Thread_specification to	@198.88	M
	∗	Feature_parameter (as density)		M
@317.86		Nominal_value		M
		Nominal_value.value_component	2.0	M
@317.87		Nominal_value		M
		Nominal_value.value_component	120.0	M
@132	∗	Defined_thread		M
	∗	Thread_specification.form_type	#1155, ”ThreadSpecification.form_	M
	∗		type”	M
	∗	Thread_specification.inner	.T.	M

Table 12 (continued)

Id	V	Application elements	Value	Req
	*	Thread_specification to	@198.89	M
	*	Feature_parameter (as major_diameter)		M
	*	Thread_specification to	@198.90	M
	*	Feature_parameter (as density)		M
	*	Defined_thread to Feature_parameter (as	@198.91	M
	*	minor_diameter)		M
	*	Defined_thread to Feature_parameter (as	@198.92	M
	*	pitch_diameter)		M
	*	Defined_thread to Feature_parameter (as	@198.93	M
	*	crest)		M
@317.88		Nominal_value		M
		Nominal_value.value_component	2.0	M
@317.89		Nominal_value		M
		Nominal_value.value_component	120.0	M
@317.90		Nominal_value		M
		Nominal_value.value_component	2.0	M
@317.91		Nominal_value		M
		Nominal_value.value_component	2.0	M
@317.92		Nominal_value	#1150	M
		Nominal_value.value_component	2.0	M
@317.93		Nominal_value		M
		Nominal_value.value_component	1.0	M
@317.94		Nominal_value		M
		Nominal_value.value_component	1.0	M
@317.95		Nominal_value		M
		Nominal_value.value_component	1.0	M
@317.96		Nominal_value		M
		Nominal_value.value_component	1.0	M
@317.97		Nominal_value		M
		Nominal_value.value_component	1.0	M
@256	*	Included_feature	#1252	M
	*	Shape_element to Item_shape (as	@268	M
	*	composition)		M
	*	Included_feature to General_feature (as	@217	M
	*	definition)		M
@346	*	Placed_feature	#1260	M
	*	Shape_element to Item_shape (as	@268	M
	*	composition)		M
	*	Placed_feature to Feature_placement (as	@199	M
	*	is_placed_by)		M

Table 12 (continued)

Id	V	Application elements	Value	Req
@236		Geometric_model_version	#1274	M
		Geometric_model.model_id	#1276, ”GeoModel.model_id”	M
		Geometric_model_version.version_id	#1281,”GeoModelVersion.version_id”	M
		Geometric_model to	@46.2	M
		Cartesian_coordinate_space (as		M
		is_defined_in)		M
@46.2		Cartesian_coordinate_space_3d		M
@516.2		Transformation_3d		M
@200	∗	Featured_shape	#1290	M
	∗	Item_shape to Design_discipline_item_	@139	M
	∗	definition (as described_object)		M
	∗	Featured_shape to Item_shape (as	@268	M
	∗	base_shape)		M
@216	∗	General_compound_feature	#1300	M
@217	∗	General_feature		M
	∗	General_feature.additional_parameter	(@218)	M
	∗	General_feature.feature_type	#1301, ”GeneralFeature.feature_	M
	∗		type1”	M
	∗	General_feature.feature_category	#1301, ”GeneralFeature.feature_	M
	∗		category1”	M
	∗	General_compound_feature.elements	(@217, @51)	M
@11	∗	Angle_specification	#522	M
	∗	Angle_specification.angle_reference	.PROFILE_NORMAL_DIRECTION.	M
	∗	Angle_specification to	@198.41	M
	∗	Feature_parameter (as angle)		M
@86	∗	Compound_feature_in_panel_element_relationship	#620	M
	∗	Compound_feature_in_panel_element_	@85	M
	∗	relationship to		M
	∗	Compound_feature_in_panel_element (as		M
	∗	predecessor)		M
	∗	Compound_feature_in_panel_element_	@85.2	M
	∗	relationship to		M
	∗	Compound_feature_in_panel_element (as		M
	∗	successor)		M
@89	∗	Compound_feature_in_solid_element_relationship	#1020	M
	∗	Compound_feature_in_solid_element_	@88	M
	∗	relationship to		M
	∗	Compound_feature_in_solid_element (as		M
	∗	predecessor)		M
	∗	Compound_feature_in_solid_element_	@88.2	M

Table 12 (continued)

Id	V	Application elements	Value	Req
	*	relationship to		M
	*	Compound_feature_in_solid_element (as		M
	*	successor)		M
@268		Item_shape	#1250	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@189	*	Face_bound		M
	*	Face_bound.outer	.T.	M
	*	Face_bound to Vertex_loop (as loop)	@533	M
@189.2		Face_bound		M
		Face_bound.outer	.T.	M
		Face_bound to Vertex_loop (as loop)	@533.2	M
@53	*	Chamfer_definition	#220	M
	*	Chamfer_definition to Chamfer_angle (as	@52	M
	*	value_2)		M
	*	Chamfer_definition to Chamfer_offset	@54	M
	*	(as offset_1)		M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@60	*	Circular_omit_pattern	#1110	M
	*	Circular_omit_pattern.index	#1115, ”omit index”	M
@21		Application_context	#41	M
		Application_context.application_domain	#42, ”ApplContext.application_	M
			domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@21.2		Application_context	#71	M
		Application_context.application_domain	#52, ”ApplContext.application_	M
			domain1”	M
		Application_context.life_cycle_stage	#51, ”ApplContext.life_cycle_	M
			stage1”	M
@127	*	Default_edge_round	#1220	M
	*	Default_edge_round to Feature_parameter	@198.96	M
	*	(as radius_value)		M
@218	*	General_feature_parameter	#110	M
	*	General_feature_parameter.parameter_role	#110, ”GeneralFeatureParameter.	M
	*		parameter_role”	M
	*	General_feature_parameter to	@198	M
	*	Feature_parameter (as parameter_value)		M
@139		Design_discipline_item_definition	#40	M

Table 12 (continued)

Id	V	Application elements	Value	Req
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@139.2		Design_discipline_item_definition	#70	M
		Design_discipline_item_definition.id	#50, ”Ddid.id2”	M
		Design_discipline_item_definition.is_	(@21.2)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@139.3		Design_discipline_item_definition	#80	M
		Design_discipline_item_definition.id	#80, ”Ddid.id2”	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@139.4		Design_discipline_item_definition	#81	M
		Design_discipline_item_definition.id	#81, ”Ddid.id3”	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@74	∗	Closed_profile_usage	#519	M
	∗	Closed_profile_usage to Closed_profile	@215	M
	∗	(as used_profile)		M
@151	∗	Directed_taper	#710	M
	∗	Directed_taper.draft_direction	#716, ”draft direction”	M
	∗	Directed_taper to Feature_parameter (as	@198.64	M
	∗	draft_angle)		M
@33	∗	Axis_placement	#125	M
@33.2		Axis_placement	#325	M
@33.3		Axis_placement	#335	M
@33.4		Axis_placement	#345	M
@33.5		Axis_placement	#356	M
@33.6		Axis_placement	#366	M

Table 12 (continued)

Id	V	Application elements	Value	Req
@33.7		Axis_placement	#376	M
@33.8		Axis_placement	#386	M
@33.9		Axis_placement	#396	M
@33.10		Axis_placement	#406	M
@33.11		Axis_placement	#416	M
@33.12		Axis_placement	#426	M
@33.13		Axis_placement	#436	M
@33.14		Axis_placement	#446	M
@33.15		Axis_placement	#484	M
@33.16		Axis_placement	#504	M
@33.17		Axis_placement	#514	M
@33.18		Axis_placement	#534	M
@33.19		Axis_placement		M
@33.20		Axis_placement		M
@33.21		Axis_placement		M
@33.22		Axis_placement		M
@33.23		Axis_placement		M
@33.24		Axis_placement		M
@33.25		Axis_placement		M
@33.26		Axis_placement		M
@33.27		Axis_placement		M
@33.28		Axis_placement		M
@33.29		Axis_placement		M
@33.30		Axis_placement		M
@33.31		Axis_placement		M
@33.32		Axis_placement		M
@33.33		Axis_placement		M
@33.34		Axis_placement		M
@33.35		Axis_placement		M
@33.36		Axis_placement		M
@54	*	Chamfer_offset	#200	M
	*	Chamfer_offset to Feature_parameter (as	@198.2	M
	*	offset)		M
@418	*	Replicate_base_assignment	#1030	M
	*	Replicate_base_assignment to	@39	M
	*	Feature_definition (as base_feature)		M
@450		Specific_item_classification	#23	M
		Specific_item_classification.associated_	(@261)	M
		item		M
		Specific_item_classification.	#23, ”SpecItemClass.classification_	M

Table 12 (continued)

Id	V	Application elements	Value	Req
		classification_name	name”	M
@199	∗	Feature_placement	#1270	M
	∗	Feature_placement to Transformation (as	@516.2	M
	∗	placement)		M
	∗	Feature_placement to Feature_definition	@39	M
	∗	(as placed_definition)		M
	∗	Feature_placement to Geometric_model	@236	M
	∗	(as placement_reference)		M
@88	∗	Compound_feature_in_solid_element	#1010	M
	∗	Compound_feature_in_solid_element to	@87	M
	∗	Compound_feature_in_solid (as		M
	∗	is_element_for)		M
	∗	Compound_feature_in_solid_element to	@51	M
	∗	Transition_feature (as feature)		M
@88.2		Compound_feature_in_solid_element	#1012	M
		Compound_feature_in_solid_element to	@87	M
		Compound_feature_in_solid (as		M
		is_element_for)		M
		Compound_feature_in_solid_element to	@174	M
		Transition_feature (as feature)		M
@59	∗	Circular_offset_pattern	#1100	M
	∗	Circular_offset_pattern.index	#1106,”offset index”	M
	∗	Circular_offset_pattern.angular_offset	#1105,”angular offset”	M
@12	∗	Angle_taper		M
	∗	Angle_taper to Feature_parameter (as	@198.62	M
	∗	angle)		M
@409	∗	Rectangular_offset_pattern	#1060	M
	∗	Rectangular_offset_pattern.offset_	#1068,”offset direction”	M
	∗	direction		M
	∗	Rectangular_offset_pattern.column_index	#1065,”column index”	M
	∗	Rectangular_offset_pattern.row_index	#1066,”row index”	M
	∗	Rectangular_offset_pattern to	@198.83	M
	∗	Feature_parameter (as offset_distance)		M
@410	∗	Rectangular_omit_pattern	#1070	M
	∗	Rectangular_omit_pattern.row_index	#1076, ”row index”	M
	∗	Rectangular_omit_pattern.column_index	#1075, ”column index”	M
@125	∗	Default_chamfer	#1200	M
	∗	Default_chamfer to Feature_parameter	@198.94	M
	∗	(as offset_value)		M
@128	∗	Default_fillet	#1230	M

Table 12 (continued)

Id	V	Application elements	Value	Req
	∗ ∗	Default_fillet to Feature_parameter (as radius_value)	@198.97	M M
@198	∗ ∗ ∗	Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#100 @317	M M M
@198.2		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#204 @317.2	M M M
@198.3		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#214 @317	M M M
@198.4		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#268 @317.3	M M M
@198.5		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#269 @317.4	M M M
@198.6		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#270 @317.5	M M M
@198.7		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#297 @317.6	M M M
@198.8		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#299 @317.7	M M M
@198.9		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#300 @317.8	M M M
@198.10		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#324 @317.9	M M M
@198.11		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#334 @317.10	M M M
@198.12		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#344 @317.11	M M M
@198.13		Feature_parameter Feature_parameter to Value_with_unit	#346 @317.12	M M

Table 12 (continued)

Id	V	Application elements	Value	Req
		(as parameter_value)		M
@198.14		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#357 @317.13	M M M
@198.15		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#3690 @317.14	M M M
@198.16		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#3691 @317.15	M M M
@198.17		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#377 @317.16	M M M
@198.18		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#378 @317.16	M M M
@198.19		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#379 @317.16	M M M
@198.20		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#3991 @317.19	M M M
@198.21		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#397 @317.19	M M M
@198.22		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#399 @317.19	M M M
@198.23		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#398 @317.19	M M M
@198.24		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#3990 @317.19	M M M
@198.25		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#407 @317.24	M M M
@198.26		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#408 @317.25	M M M

Table 12 (continued)

Id	V	Application elements	Value	Req
@198.27		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#417 @317.26	M M M
@198.28		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#429 @317.27	M M M
@198.29		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#427 @317.28	M M M
@198.30		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#428 @317.29	M M M
@198.31		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#4391 @317.30	M M M
@198.32		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#4394 @317.31	M M M
@198.33		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#4390 @317.32	M M M
@198.34		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#4393 @317.33	M M M
@198.35		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#439 @317.34	M M M
@198.36		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#4395 @317.35	M M M
@198.37		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#437 @317.36	M M M
@198.38		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#438 @317.37	M M M
@198.39		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#4392 @317.38	M M M
@198.40		Feature_parameter	#487	M

Table 12 (continued)

Id	V	Application elements	Value	Req
		Feature_parameter to Value_with_unit (as parameter_value)	@317.39	M M
@198.41		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#526 @317.40	M M M
@198.42		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#539 @317.41	M M M
@198.43		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#542 @317.42	M M M
@198.44		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#557 @317.43	M M M
@198.45		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#556 @317.44	M M M
@198.46		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.44	M M M
@198.47		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.44	M M M
@198.48		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.44	M M M
@198.49		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.44	M M M
@198.50		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.44	M M M
@198.51		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.44	M M M
@198.52		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.44	M M M
@198.53		Feature_parameter Feature_parameter to Value_with_unit	@317.44	M M

Table 12 (continued)

Id	V	Application elements	Value	Req
		(as parameter_value)		M
@198.54		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.44	M M M
@198.55		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.54	M M M
@198.56		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.55	M M M
@198.57		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.56	M M M
@198.58		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.57	M M M
@198.59		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.58	M M M
@198.60		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.59	M M M
@198.61		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.59	M M M
@198.62		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	#690 @317.61	M M M
@198.63		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.62	M M M
@198.64		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.63	M M M
@198.65		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.64	M M M
@198.66		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.65	M M M

Table 12 (continued)

Id	V	Application elements	Value	Req
@198.67		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.66	M M M
@198.68		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.67	M M M
@198.69		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.68	M M M
@198.70		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.69	M M M
@198.71		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.70	M M M
@198.72		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.71	M M M
@198.73		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.72	M M M
@198.74		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.73	M M M
@198.75		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.74	M M M
@198.76		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.75	M M M
@198.77		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.76	M M M
@198.78		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.77	M M M
@198.79		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.78	M M M
@198.80		Feature_parameter		M

Table 12 (continued)

Id	V	Application elements	Value	Req
		Feature_parameter to Value_with_unit (as parameter_value)	@317.79	M M
@198.81		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.80	M M M
@198.82		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.81	M M M
@198.83		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.82	M M M
@198.84		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.83	M M M
@198.85		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.84	M M M
@198.86		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.85	M M M
@198.87		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.86	M M M
@198.88		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.87	M M M
@198.89		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.88	M M M
@198.90		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.89	M M M
@198.91		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.90	M M M
@198.92		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	@317.91	M M M
@198.93		Feature_parameter Feature_parameter to Value_with_unit	@317.92	M M

Table 12 (continued)

Id	V	Application elements	Value	Req
		(as parameter_value)		M
@198.94		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.93	M M M
@198.95		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.94	M M M
@198.96		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.95	M M M
@198.97		Feature_parameter Feature_parameter to Value_with_unit (as parameter_value)	 @317.96	M M M
@131	* * *	Default_thickness Default_thickness to Value_with_unit (as thickness_value)	#1240 @317.97	M M M
@269		Item_version Item_version.id Item_version to Item (as associated_item)	#30 #30, ”ItemVersion.id” @261	M M M M
@269.2		Item_version Item_version.id Item_version to Item (as associated_item)	#31 #31, ”ItemVersion.id1” @261	M M M M
@85	* * * * * *	Compound_feature_in_panel_element Compound_feature_in_panel_element to Process_feature_in_panel (as feature) Compound_feature_in_panel_element to Compound_feature_in_panel (as is_element_for)	#610 @39 @84	M M M M M M
@85.2		Compound_feature_in_panel_element Compound_feature_in_panel_element to Process_feature_in_panel (as feature) Compound_feature_in_panel_element to Compound_feature_in_panel (as is_element_for)	#613 @209 @84	M M M M M M
@126	* * *	Default_draft_angle Default_draft_angle to Feature_parameter (as draft_angle_value)	#1210 @198.95	M M M
@52	*	Chamfer_angle	#210	M

Table 12 (concluded)

Id	V	Application elements	Value	Req
	∗	Chamfer_angle to Feature_parameter (as	@198.3	M
	∗	angle)		M
@498	∗	Thread_feature	#1170	M
	∗	Thread_feature.effective_thread_length	#1173, ”effective length”	M
	∗	Thread_feature to Thread_specification	@132	M
	∗	(as thread_definition)		M
	∗	Thread_feature to Axis_placement (as	@33.36	M
	∗	orientation)		M
@143	∗	Diameter_taper	#700	M
	∗	Diameter_taper to Feature_parameter (as	@198.63	M
	∗	final_diameter)		M
@522		Unit		M
@522.2		Unit		M
@522.3		Unit		M
@522.4		Unit		M
@522.5		Unit		M
@522.6		Unit		M
@522.7		Unit		M
@533	∗	Vertex_loop		M
	∗	Vertex_loop to Vertex_point (as	@534	M
	∗	loop_vertex)		M
@533.2		Vertex_loop		M
		Vertex_loop to Vertex_point (as	@534.2	M
		loop_vertex)		M
@534	∗	Vertex_point		M
	∗	Vertex_point to Point (as	@47	M
	∗	vertex_geometry)		M
@534.2		Vertex_point		M
		Vertex_point to Point (as	@47.2	M
		vertex_geometry)		M
@217		General_feature	#120	M
		General_feature.additional_parameter	(@218)	M
		General_feature.feature_type	#120, ”GeneralFeature.feature_type”	M
		General_feature.feature_category	#120, ”GeneralFeature.feature_	M
			category”	M

6.12.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.13 Wireframe model 2d

Test case summary:

This abstract test case covers application elements of the Unit of Functionality G1 (wireframe model 2d).

6.13.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 13

Table 13 – Application elements for ATC Wireframe model 2d

Id	V	Application elements	Value	Req
@236.2		Geometric_model_version	#100	M
		Geometric_model.model_id	#102,"GeoModel.model_id"	M
		Geometric_model_version.version_id	#107,"GeoModelVersion.version_id"	M
		Geometric_model to	@45	M
		Cartesian_coordinate_space (as		M
		is_defined_in)		M
@45		Cartesian_coordinate_space_2d	#101	M
@47		Cartesian_point	#110	M
@363	*	Point_on_curve	#120	M
@289	*	Line	#130	M
@367	*	Polyline	#140	M
@56	*	Circle	#150	M
@180	*	Ellipse	#160	M
@255		Hyperbola	#170	M
@329		Parabola		M
@36		B_spline_curve	#190	M
@82	*	Composite_curve	#200	M
@318	*	Offset_curve	#210	M
@520	*	Trimmed_curve	#220	M
@106	*	Curve	#230	M
@109	*	Curve_set_2d		M
	*	Curve_set_2d.element	(@47, @56)	M
@236	*	Geometric_model_version	#240	M
@542	*	Wireframe_model_2d		M
	*	Geometric_model.model_id	#242,"GeoModel.model_id1"	M
	*	Geometric_model_version.version_id	#247,"GeoModelVersion.version_id1"	M
	*	Wireframe_model_2d.element	(@106)	M
	*	Geometric_model to	@45	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@99	*	Constructive_geometry_association	#270	M
	*	Constructive_geometry_association to	@98	M
	*	Constructive_geometry (as		M
	*	auxiluary_geometry)		M
	*	Constructive_geometry_association to	@236.2	M
	*	Geometric_model (as base_geometry)		M
@268		Item_shape	#50	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M

Table 13 (continued)

Id	V	Application elements	Value	Req
@268.2		Item_shape Item_shape to Design_discipline_item_definition (as described_object)	#60 @139	M M M
@261		Item Item.id Item.name	#20 #20, ”Item.id” #20, ”Item.name”	M M M
@21		Application_context Application_context.application_domain Application_context.life_cycle_stage	#41 #42, ”ApplContext.application_domain” #41, ”ApplContext.life_cycle_stage”	M M M M
@139		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	#40 #40, ”Ddid.id1” (@21) @269	M M M M M M M
@450		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification. classification_name	#23 (@261) #23, ”SpecItemClass.classification_name”	M M M M M
@98	∗ ∗	Constructive_geometry Constructive_geometry.element	#260 (@97, @97.2)	M M
@269		Item_version Item_version.id Item_version to Item (as associated_item)	#30 #30, ”ItemVersion.id” @261	M M M M
@97	∗ ∗ ∗	Constructive_geometric_element Constructive_geometric_element to Point (as element)	#250 @47	M M M
@97.2		Constructive_geometric_element Constructive_geometric_element to Curve (as element)	#251 @367	M M M
@522		Unit		M
@522.2		Unit		M
@433		Shape_description_association Shape_description_association.role Shape_description_association to Item_shape (as is_defining_shape_for)	#51 #50, ”ShapeDescriptionAsso.role” @268	M M M M

Table 13 (concluded)

Id	V	Application elements	Value	Req
		Shape_description_association to	@236.2	M
		Geometric_model (as defining_geometry)		M
@433.2		Shape_description_association	#61	M
		Shape_description_association.role	#60, ”ShapeDescriptionAsso.role1”	M
		Shape_description_association to	@268.2	M
		Item_shape (as is_defining_shape_for)		M
		Shape_description_association to	@236	M
		Geometric_model (as defining_geometry)		M

6.13.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.14 Wireframe model 3d

Test case summary:

This abstract test case covers application elements of the Unit of Functionality G2 (wireframe model 3d).

6.14.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 14

Table 14 – Application elements for ATC Wireframe model 3d

Id	V	Application elements	Value	Req
@236.3		Geometric_model_version	#100	M
		Geometric_model.model_id	#102,"GeoModel.model_id"	M
		Geometric_model_version.version_id	#107,"GeoModelVersion.version_id"	M
		Geometric_model to	@46	M
		Cartesian_coordinate_space (as		M
		is_defined_in)		M
@46		Cartesian_coordinate_space_3d	#101	M
@47		Cartesian_point	#110	M
@363		Point_on_curve	#120	M
@289		Line	#130	M
@367		Polyline	#140	M
@56		Circle	#150	M
@180		Ellipse	#160	M
@255		Hyperbola	#170	M
@329		Parabola		M
@36		B_spline_curve	#190	M
@82		Composite_curve	#200	M
@318		Offset_curve	#210	M
@520		Trimmed_curve	#220	M
@106	*	Curve	#230	M
@110	*	Curve_set_3d		M
	*	Curve_set_3d.element	(@47, @56)	M
@236	*	Geometric_model_version	#240	M
@543	*	Wireframe_model_3d		M
	*	Geometric_model.model_id	#422,"GeoModel.model_id1"	M
	*	Geometric_model_version.version_id	#427,"GeoModelVersion.version_id1"	M
	*	Wireframe_model_3d.element	(@106)	M
	*	Geometric_model to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@236.2	*	Geometric_model_version	#280	M
@254	*	Hybrid_geometric_model_3d		M
	*	Geometric_model.model_id	#282,"GeoModel.model_id2"	M
	*	Geometric_model_version.version_id	#287,"GeoModelVersion.version_id2"	M
	*	Hybrid_geometric_model_3d.element	(@106)	M
	*	Geometric_model to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@99		Constructive_geometry_association	#270	M

Table 14 (continued)

Id	V	Application elements	Value	Req
		Constructive_geometry_association to Constructive_geometry (as auxiluary_geometry) Constructive_geometry_association to Geometric_model (as base_geometry)	@98 @236.3	M M M M M
@268		Item_shape Item_shape to Design_discipline_item_ definition (as described_object)	#50 @139	M M M
@268.2		Item_shape Item_shape to Design_discipline_item_ definition (as described_object)	#60 @139	M M M
@268.3		Item_shape Item_shape to Design_discipline_item_ definition (as described_object)	#62 @139	M M M
@261		Item Item.id Item.name	#20 #20, ”Item.id” #20, ”Item.name”	M M M
@21		Application_context Application_context.application_domain Application_context.life_cycle_stage	#41 #42, ”ApplContext.application_ domain” #41, ”ApplContext.life_cycle_stage”	M M M M
@139		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_ relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	#40 #40, ”Ddid.id1” (@21) @269	M M M M M M M
@450		Specific_item_classification Specific_item_classification.associated_ item Specific_item_classification. classification_name	#23 (@261) #23, ”SpecItemClass.classification_ name”	M M M M M
@98		Constructive_geometry Constructive_geometry.element	#260 (@97, @97.2)	M M
@269		Item_version Item_version.id Item_version to Item (as associated_item)	#30 #30, ”ItemVersion.id” @261	M M M M
@97		Constructive_geometric_element	#250	M

Table 14 (concluded)

Id	V	Application elements	Value	Req
		Constructive_geometric_element to Point	@47	M
		(as element)		M
@97.2		Constructive_geometric_element	#251	M
		Constructive_geometric_element to Curve	@367	M
		(as element)		M
@522		Unit		M
@522.2		Unit		M
@433		Shape_description_association	#51	M
		Shape_description_association.role	#50, ”ShapeDescriptionAsso.role”	M
		Shape_description_association to	@268	M
		Item_shape (as is_defining_shape_for)		M
		Shape_description_association to	@236.3	M
		Geometric_model (as defining_geometry)		M
@433.2		Shape_description_association	#61	M
		Shape_description_association.role	#60, ”ShapeDescriptionAsso.role1”	M
		Shape_description_association to	@268.2	M
		Item_shape (as is_defining_shape_for)		M
		Shape_description_association to	@236	M
		Geometric_model (as defining_geometry)		M
@433.3		Shape_description_association	#63	M
		Shape_description_association.role	#62, ”ShapeDescriptionAsso.role2”	M
		Shape_description_association to	@268.3	M
		Item_shape (as is_defining_shape_for)		M
		Shape_description_association to	@236.2	M
		Geometric_model (as defining_geometry)		M

6.14.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.15 Connected surface model

Test case summary:

This abstract test case covers application elements of the Unit of Functionality G3 (connected surface model).

6.15.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 15

Table 15 – Application elements for ATC Connected surface model

Id	V	Application elements	Value	Req
@236		Geometric_model_version Geometric_model.model_id Geometric_model_version.version_id Geometric_model to Cartesian_coordinate_space (as is_defined_in)	#100 #102,"GeoModel.model_id" #107,"GeoModelVersion.version_id" @46	M M M M M M
@46		Cartesian_coordinate_space_3d	#101	M
@47		Cartesian_point	#110	M
@363		Point_on_curve	#120	M
@289		Line	#130	M
@367		Polyline	#140	M
@56		Circle	#150	M
@180		Ellipse	#160	M
@255		Hyperbola	#170	M
@329		Parabola		M
@36		B_spline_curve	#190	M
@82		Composite_curve	#200	M
@318		Offset_curve	#210	M
@520		Trimmed_curve	#220	M
@37	*	B_spline_surface	#280	M
@94	*	Conical_surface	#290	M
@112	*	Cylindrical_surface	#300	M
@458		Spherical_surface	#310	M
@511	*	Toroidal_surface	#320	M
@478	*	Surface_of_linear_extrusion	#330	M
@479	*	Surface_of_revolution	#340	M
@319		Offset_surface	#250	M
@364	*	Point_on_surface	#360	M
@108		Curve_on_surface	#370	M
@47.2		Cartesian_point	#392	M
@47.3		Cartesian_point	#394	M
@289.2		Line	#396	M
@47.4		Cartesian_point	#412	M
@289.3		Line	#414	M
@188		Face Face.bound Face to Surface (as face_geometry)	#450 (@189) @478	M M M
@188.2		Face Face.bound	 (@189)	M M

Table 15 (continued)

Id	V	Application elements	Value	Req
		Face to Surface (as face_geometry)	@478.2	M
@478.2		Surface_of_linear_extrusion		M
@436	*	Shell	#480	M
	*	Shell.included_face	(@188)	M
@236.2	*	Geometric_model_version	#490	M
@477	*	Surface_model		M
	*	Geometric_model.model_id	#492,"GeoModel.model_id2"	M
	*	Geometric_model_version.version_id	#497,"GeoModelVersion.version_id2"	M
	*	Surface_model.element	(@436)	M
	*	Geometric_model to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@350	*	Plane	#500	M
@99		Constructive_geometry_association	#270	M
		Constructive_geometry_association to	@98	M
		Constructive_geometry (as		M
		auxiluary_geometry)		M
		Constructive_geometry_association to	@236	M
		Geometric_model (as base_geometry)		M
@268		Item_shape	#50	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@268.2		Item_shape	#60	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@189		Face_bound	#440	M
		Face_bound.outer	.T.	M
		Face_bound to Edge_loop (as loop)	@173	M
@261		Item	#20	M
		Item.id	#20, "Item.id"	M
		Item.name	#20, "Item.name"	M
@21		Application_context	#41	M
		Application_context.application_domain	#42, "ApplContext.application_	M
			domain"	M
		Application_context.life_cycle_stage	#41, "ApplContext.life_cycle_stage"	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, "Ddid.id1"	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M

Table 15 (continued)

Id	V	Application elements	Value	Req
		Item_version (as associated_item_version)		M M
@175	∗ ∗ ∗ ∗ ∗ ∗ ∗ ∗	Edge_transition Edge_transition.transition Edge_transition to Oriented_edge_curve (as edge_1) Edge_transition to Oriented_edge_curve (as edge_2) Edge_transition to Vertex_point (as vertex_joint)	#400 #, ”EdgeTransition.transition” @326 @326.2 @534.3 	M M M M M M M M
@450		Specific_item_classification Specific_item_classification.associated_ item Specific_item_classification. classification_name	#23 (@261) #23, ”SpecItemClass.classification_ name”	M M M M M
@173	∗ ∗	Edge_loop Edge_loop.edge	#430 (@326.2)	M M
@326	∗ ∗ ∗ ∗ ∗ ∗ ∗	Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#390 @534.2 @534.3 @289.2 	M M M M M M M
@326.2		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#410 @534.3 @534.4 @289.3 	M M M M M M M
@191	∗ ∗ ∗ ∗ ∗ ∗	Face_transition Face_transition.transition Face_transition to Oriented_edge_curve (as edge_joint) Face_transition to Face (as face_2) Face_transition to Face (as face_1)	#460 #460, ”FaceTransition.transition” @326.2 @188 @188.2	M M M M M M
@98		Constructive_geometry Constructive_geometry.element	#260 (@97, @97.2)	M M
@269		Item_version	#30	M

Table 15 (concluded)

Id	V	Application elements	Value	Req
		Item_version.id Item_version to Item (as associated_item)	#30, ”ItemVersion.id” @261	M M M
@97		Constructive_geometric_element Constructive_geometric_element to Point (as element)	#250 @47	M M M
@97.2		Constructive_geometric_element Constructive_geometric_element to Curve (as element)	#251 @367	M M M
@522		Unit		M
@522.2		Unit		M
@533		Vertex_loop Vertex_loop to Vertex_point (as loop_vertex)	#420 @534.4	M M M
@534		Vertex_point Vertex_point to Point (as vertex_geometry)	#380 @47	M M M
@534.2		Vertex_point Vertex_point to Point (as vertex_geometry)	#391 @47.2	M M M
@534.3		Vertex_point Vertex_point to Point (as vertex_geometry)	#393 @47.3	M M M
@534.4		Vertex_point Vertex_point to Point (as vertex_geometry)	#411 @47.4	M M M
@433		Shape_description_association Shape_description_association.role Shape_description_association to Item_shape (as is_defining_shape_for) Shape_description_association to Geometric_model (as defining_geometry)	#51 #50, ”ShapeDescriptionAsso.role” @268 @236	M M M M M M
@433.2		Shape_description_association Shape_description_association.role Shape_description_association to Item_shape (as is_defining_shape_for) Shape_description_association to Geometric_model (as defining_geometry)	#61 #60, ”ShapeDescriptionAsso.role1” @268.2 @236.2	M M M M M M

6.15.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.16 Faceted brep model

Test case summary:

This abstract test case covers application elements of the Unit of Functionality G4 (faceted brep model).

6.16.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 16

Table 16 – Application elements for ATC Faceted brep model

Id	V	Application elements	Value	Req
@236		Geometric_model_version	#100	M
		Geometric_model.model_id	#102,"GeoModel.model_id"	M
		Geometric_model_version.version_id	#107,"GeoModelVersion.version_id"	M
		Geometric_model to	@46	M
		Cartesian_coordinate_space (as		M
		is_defined_in)		M
@46		Cartesian_coordinate_space_3d	#101	M
@47		Cartesian_point	#110	M
@357		Point		M
@367		Polyline		M
@350		Plane	#500	M
@47.2		Cartesian_point		M
@47.3		Cartesian_point		M
@47.4		Cartesian_point		M
@350.2		Plane	#540	M
@47.5		Cartesian_point		M
@350.3		Plane	#546	M
@350.4		Plane	#552	M
@192	*	Faceted_b_rep	#560	M
	*	Faceted_b_rep to Faceted_closed_shell	@194	M
	*	(as outer)		M
@236.2	*	Geometric_model_version	#570	M
@193	*	Faceted_b_rep_model		M
	*	Geometric_model.model_id	#102,"GeoModel.model_id"	M
	*	Geometric_model_version.version_id	#107,"GeoModelVersion.version_id"	M
	*	Faceted_b_rep_model.element	(@192)	M
	*	Geometric_model to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@99		Constructive_geometry_association	#270	M
		Constructive_geometry_association to	@98	M
		Constructive_geometry (as		M
		auxiluary_geometry)		M
		Constructive_geometry_association to	@236	M
		Geometric_model (as base_geometry)		M
@195	*	Faceted_face	#520	M
	*	Faceted_face.bound	(@366)	M
	*	Faceted_face to Plane (as face_geometry)	@350	M
@195.2		Faceted_face	#531	M

Table 16 (continued)

Id	V	Application elements	Value	Req
		Faceted_face.bound Faceted_face to Plane (as face_geometry)	(@366.2) @350.2	M M
@195.3		Faceted_face Faceted_face.bound Faceted_face to Plane (as face_geometry)	#533 (@366.3) @350.3	M M M
@195.4		Faceted_face Faceted_face.bound Faceted_face to Plane (as face_geometry)	#535 (@366.4) @350.4	M M M
@268		Item_shape Item_shape to Design_discipline_item_definition (as described_object)	#50 @139	M M M
@268.2		Item_shape Item_shape to Design_discipline_item_definition (as described_object)	#60 @139	M M M
@261		Item Item.id Item.name	#20 #20, ”Item.id” #20, ”Item.name”	M M M
@21		Application_context Application_context.application_domain Application_context.life_cycle_stage	#41 #42, ”ApplContext.application_domain” #41, ”ApplContext.life_cycle_stage”	M M M M
@139		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	#40 #40, ”Ddid.id1” (@21) @269	M M M M M M M
@450		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification.classification_name	#23 (@261) #23, ”SpecItemClass.classification_name”	M M M M M
@98		Constructive_geometry Constructive_geometry.element	#260 (@97, @97.2)	M M
@269		Item_version Item_version.id Item_version to Item (as associated_item)	#30 #30, ”ItemVersion.id” @261	M M M M
@97		Constructive_geometric_element	#250	M

Table 16 (concluded)

Id	V	Application elements	Value	Req
		Constructive_geometric_element to Point	@47	M
		(as element)		M
@97.2		Constructive_geometric_element	#251	M
		Constructive_geometric_element to Point	@357	M
		(as element)		M
@522		Unit		M
@522.2		Unit		M
@433		Shape_description_association	#51	M
		Shape_description_association.role	#50, ”ShapeDescriptionAsso.role”	M
		Shape_description_association to	@268	M
		Item_shape (as is_defining_shape_for)		M
		Shape_description_association to	@236	M
		Geometric_model (as defining_geometry)		M
@433.2		Shape_description_association	#61	M
		Shape_description_association.role	#60, ”ShapeDescriptionAsso.role1”	M
		Shape_description_association to	@268.2	M
		Item_shape (as is_defining_shape_for)		M
		Shape_description_association to	@236.2	M
		Geometric_model (as defining_geometry)		M
@194	*	Faceted_closed_shell	#530	M
	*	Faceted_closed_shell.shell_boundary	(@195, @195.2, @195.3, @195.4)	M
@366	*	Poly_loop	#510	M
	*	Poly_loop.polygon	(@47.2, @47.3, @47.4, @47.2)	M
	*	Poly_loop.outer	.T.	M
@366.2		Poly_loop	#537	M
		Poly_loop.polygon	(@47.2, @47.3, @47.5, @47.2)	M
		Poly_loop.outer	.T.	M
@366.3		Poly_loop	#544	M
		Poly_loop.polygon	(@47.2, @47.4, @47.5, @47.2)	M
		Poly_loop.outer	.T.	M
@366.4		Poly_loop	#550	M
		Poly_loop.polygon	(@47.3, @47.4, @47.5, @47.3)	M
		Poly_loop.outer	.T.	M

6.16.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.17 Brep model

Test case summary:

This abstract test case covers application elements of the Unit of Functionality G5 (Brep model).

6.17.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 17

Table 17 – Application elements for ATC Brep model

Id	V	Application elements	Value	Req
@236		Geometric_model_version	#100	M
		Geometric_model.model_id	#102,"GeoModel.model_id"	M
		Geometric_model_version.version_id	#107,"GeoModelVersion.version_id"	M
		Geometric_model to	@46	M
		Cartesian_coordinate_space (as		M
		is_defined_in)		M
@46		Cartesian_coordinate_space_3d	#101	M
@47		Cartesian_point	#110	M
@289		Line	#130	M
@478		Surface_of_linear_extrusion	#330	M
@47.2		Cartesian_point	#392	M
@47.3		Cartesian_point	#394	M
@289.2		Line	#396	M
@47.4		Cartesian_point	#412	M
@289.3		Line	#414	M
@188		Face	#450	M
		Face.bound	(@189)	M
		Face to Surface (as face_geometry)	@478	M
@236.2	*	Geometric_model_version	#490	M
@35	*	B_rep_model		M
	*	Geometric_model.model_id	#492,"GeoModel.model_id2"	M
	*	Geometric_model_version.version_id	#497,"GeoModelVersion.version_id2"	M
	*	B_rep_model.element	(@34)	M
	*	Geometric_model to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@34	*	B_rep	#510	M
	*	B_rep to Closed_shell (as outer)	@75	M
@268		Item_shape	#50	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@268.2		Item_shape	#60	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@189		Face_bound	#440	M
		Face_bound.outer	.T.	M
		Face_bound to Edge_loop (as loop)	@173	M
@261		Item	#20	M
		Item.id	#20, "Item.id"	M

Table 17 (continued)

Id	V	Application elements	Value	Req
		Item.name	#20, ”Item.name”	M
@21		Application_context	#41	M
		Application_context.application_domain	#42, ”ApplContext.application_domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_relevant_for	(@21)	M
		Design_discipline_item_definition to Item_version (as associated_item_version)	@269	M
@175		Edge_transition	#400	M
		Edge_transition.transition	#, ”EdgeTransition.transition”	M
		Edge_transition to Oriented_edge_curve (as edge_1)	@326	M
		Edge_transition to Oriented_edge_curve (as edge_2)	@326.2	M
		Edge_transition to Vertex_point (as vertex_joint)	@534.3	M
@450		Specific_item_classification	#23	M
		Specific_item_classification.associated_item	(@261)	M
		Specific_item_classification.classification_name	#23, ”SpecItemClass.classification_name”	M
@173		Edge_loop	#430	M
		Edge_loop.edge	(@326.2)	M
@326		Oriented_edge_curve	#390	M
		Oriented_edge_curve to Vertex_point (as edge_start)	@534.2	M
		Oriented_edge_curve to Vertex_point (as edge_end)	@534.3	M
		Oriented_edge_curve to Line (as edge_geometry)	@289.2	M
@326.2		Oriented_edge_curve	#410	M
		Oriented_edge_curve to Vertex_point (as edge_start)	@534.3	M
		Oriented_edge_curve to Vertex_point (as edge_end)	@534.4	M
		Oriented_edge_curve to Line (as	@289.3	M

Table 17 (concluded)

Id	V	Application elements	Value	Req
		edge_geometry)		M
@269		Item_version Item_version.id Item_version to Item (as associated_item)	#30 #30, ”ItemVersion.id” @261	M M M M
@75	* *	Closed_shell Closed_shell.shell_boundary	#500 (@188)	M M
@522		Unit		M
@522.2		Unit		M
@533		Vertex_loop Vertex_loop to Vertex_point (as loop_vertex)	#420 @534.4	M M M
@534		Vertex_point Vertex_point to Point (as vertex_geometry)	#380 @47	M M M
@534.2		Vertex_point Vertex_point to Point (as vertex_geometry)	#391 @47.2	M M M
@534.3		Vertex_point Vertex_point to Point (as vertex_geometry)	#393 @47.3	M M M
@534.4		Vertex_point Vertex_point to Point (as vertex_geometry)	#411 @47.4	M M M
@433		Shape_description_association Shape_description_association.role Shape_description_association to Item_shape (as is_defining_shape_for) Shape_description_association to Geometric_model (as defining_geometry)	#51 #50, ”ShapeDescriptionAsso.role” @268 @236	M M M M M M
@433.2		Shape_description_association Shape_description_association.role Shape_description_association to Item_shape (as is_defining_shape_for) Shape_description_association to Geometric_model (as defining_geometry)	#61 #60, ”ShapeDescriptionAsso.role1” @268.2 @236.2	M M M M M M

6.17.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.18 Compound model

Test case summary:

This abstract test case covers application elements of the Unit of Functionality G6 (compound model).

6.18.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 18

Table 18 – Application elements for ATC Compound model

Id	V	Application elements	Value	Req
@236		Geometric_model_version	#100	M
		Geometric_model.model_id	#102,"GeoModel.model_id"	M
		Geometric_model_version.version_id	#107,"GeoModelVersion.version_id"	M
		Geometric_model to	@46	M
		Cartesian_coordinate_space (as		M
		is_defined_in)		M
@46		Cartesian_coordinate_space_3d	#101	M
@47		Cartesian_point	#110	M
@289		Line	#130	M
@478		Surface_of_linear_extrusion	#330	M
@47.2		Cartesian_point	#392	M
@47.3		Cartesian_point	#394	M
@289.2		Line	#396	M
@47.4		Cartesian_point	#412	M
@289.3		Line	#414	M
@188		Face	#450	M
		Face.bound	(@189)	M
		Face to Surface (as face_geometry)	@478	M
@236.2	*	Geometric_model_version	#490	M
@90	*	Compound_model		M
	*	Geometric_model.model_id	#492,"GeoModel.model_id2"	M
	*	Geometric_model_version.version_id	#497,"GeoModelVersion.version_id2"	M
	*	Compound_model.element	(@510)	M
	*	Geometric_model to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@510	*	Topologically_connected_set	#500	M
	*	Topologically_connected_set.element	(@188)	M
@268		Item_shape	#50	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@268.2		Item_shape	#60	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@189		Face_bound	#440	M
		Face_bound.outer	.T.	M
		Face_bound to Edge_loop (as loop)	@173	M
@261		Item	#20	M
		Item.id	#20, "Item.id"	M

Table 18 (continued)

Id	V	Application elements	Value	Req
		Item.name	#20, ”Item.name”	M
@21		Application_context	#41	M
		Application_context.application_domain	#42, ”ApplContext.application_domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_relevant_for	(@21)	M
		Design_discipline_item_definition to Item_version (as associated_item_version)	@269	M
@175		Edge_transition	#400	M
		Edge_transition.transition	#, ”EdgeTransition.transition”	M
		Edge_transition to Oriented_edge_curve (as edge_1)	@326	M
		Edge_transition to Oriented_edge_curve (as edge_2)	@326.2	M
		Edge_transition to Vertex_point (as vertex_joint)	@534.3	M
@450		Specific_item_classification	#23	M
		Specific_item_classification.associated_item	(@261)	M
		Specific_item_classification.classification_name	#23, ”SpecItemClass.classification_name”	M
@173		Edge_loop	#430	M
		Edge_loop.edge	(@326.2)	M
@326		Oriented_edge_curve	#390	M
		Oriented_edge_curve to Vertex_point (as edge_start)	@534.2	M
		Oriented_edge_curve to Vertex_point (as edge_end)	@534.3	M
		Oriented_edge_curve to Line (as edge_geometry)	@289.2	M
@326.2		Oriented_edge_curve	#410	M
		Oriented_edge_curve to Vertex_point (as edge_start)	@534.3	M
		Oriented_edge_curve to Vertex_point (as edge_end)	@534.4	M
		Oriented_edge_curve to Line (as	@289.3	M

Table 18 (concluded)

Id	V	Application elements	Value	Req
		edge_geometry)		M
@269		Item_version Item_version.id Item_version to Item (as associated_item)	#30 #30, ”ItemVersion.id” @261	M M M M
@522		Unit		M
@522.2		Unit		M
@533		Vertex_loop Vertex_loop to Vertex_point (as loop_vertex)	#420 @534.4	M M M
@534		Vertex_point Vertex_point to Point (as vertex_geometry)	#380 @47	M M M
@534.2		Vertex_point Vertex_point to Point (as vertex_geometry)	#391 @47.2	M M M
@534.3		Vertex_point Vertex_point to Point (as vertex_geometry)	#393 @47.3	M M M
@534.4		Vertex_point Vertex_point to Point (as vertex_geometry)	#411 @47.4	M M M
@433		Shape_description_association Shape_description_association.role Shape_description_association to Item_shape (as is_defining_shape_for) Shape_description_association to Geometric_model (as defining_geometry)	#51 #50, ”ShapeDescriptionAsso.role” @268 @236	M M M M M M
@433.2		Shape_description_association Shape_description_association.role Shape_description_association to Item_shape (as is_defining_shape_for) Shape_description_association to Geometric_model (as defining_geometry)	#61 #60, ”ShapeDescriptionAsso.role1” @268.2 @236.2	M M M M M M

6.18.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.19 CSG model

Test case summary:

This abstract test case covers application elements of the Unit of Functionality G7 (CSG model).

6.19.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 19

Table 19 – Application elements for ATC CSG model

Id	V	Application elements	Value	Req
@236		Geometric_model_version	#100	M
		Geometric_model.model_id	#102,"GeoModel.model_id"	M
		Geometric_model_version.version_id	#107,"GeoModelVersion.version_id"	M
		Geometric_model to	@46	M
		Cartesian_coordinate_space (as		M
		is_defined_in)		M
@46		Cartesian_coordinate_space_3d	#101	M
@47		Cartesian_point	#110	M
@289		Line	#130	M
@478		Surface_of_linear_extrusion	#330	M
@47.2		Cartesian_point	#392	M
@47.3		Cartesian_point	#394	M
@289.2		Line	#396	M
@47.4		Cartesian_point	#412	M
@289.3		Line	#414	M
@188		Face	#450	M
		Face.bound	(@189)	M
		Face to Surface (as face_geometry)	@478	M
@456	*	Sphere	#500	M
@105	*	Csg_primitive		M
@40	*	Block		M
@422	*	Right_angular_wedge	#520	M
@423	*	Right_circular_cone	#530	M
@424	*	Right_circular_cylinder	#540	M
@512	*	Torus	#550	M
@447	*	Solid_of_linear_extrusion	#560	M
@483	*	Swept_face_solid		M
	*	Swept_face_solid to Face (as swept_face)	@188	M
@448	*	Solid_of_revolution	#570	M
	*	Swept_face_solid to Face (as swept_face)	@188	M
@449	*	Solid_replica	#580	M
	*	Solid_replica to Csg_primitive (as	@40	M
	*	replicated_solid)		M
@247		Half_space_solid	#590	M
@41	*	Boolean_result	#600	M
	*	Boolean_result.boolean_operation	#,"BooleanResult.boolean_operation"	M
	*	Boolean_result to Csg_primitive (as	@40	M
	*	first_operand)		M
	*	Boolean_result to Csg_primitive (as	@424	M

Table 19 (continued)

Id	V	Application elements	Value	Req
	*	second_operand)		M
@236.2	*	Geometric_model_version	#610	M
@104	*	Csg_model		M
	*	Geometric_model.model_id	#102,"GeoModel.model_id"	M
	*	Geometric_model_version.version_id	#107,"GeoModelVersion.version_id"	M
	*	Csg_model.tree_root_expression	(@41)	M
	*	Geometric_model to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@268		Item_shape	#50	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@268.2		Item_shape	#60	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@189		Face_bound	#440	M
		Face_bound.outer	.T.	M
		Face_bound to Edge_loop (as loop)	@173	M
@261		Item	#20	M
		Item.id	#20, "Item.id"	M
		Item.name	#20, "Item.name"	M
@21		Application_context	#41	M
		Application_context.application_domain	#42, "ApplContext.application_	M
			domain"	M
		Application_context.life_cycle_stage	#41, "ApplContext.life_cycle_stage"	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, "Ddid.id1"	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@175		Edge_transition	#400	M
		Edge_transition.transition	#, "EdgeTransition.transition"	M
		Edge_transition to Oriented_edge_curve	@326	M
		(as edge_1)		M
		Edge_transition to Oriented_edge_curve	@326.2	M
		(as edge_2)		M
		Edge_transition to Vertex_point (as	@534.3	M
		vertex_joint)		M

Table 19 (continued)

Id	V	Application elements	Value	Req
@450		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification.classification_name	#23 (@261) #23, ”SpecItemClass.classification_name”	M M M M M
@173		Edge_loop Edge_loop.edge	#430 (@326.2)	M M
@326		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#390 @534.2 @534.3 @289.2	M M M M M M M
@326.2		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#410 @534.3 @534.4 @289.3	M M M M M M M
@269		Item_version Item_version.id Item_version to Item (as associated_item)	#30 #30, ”ItemVersion.id” @261	M M M M
@522		Unit		M
@522.2		Unit		M
@533		Vertex_loop Vertex_loop to Vertex_point (as loop_vertex)	#420 @534.4	M M M
@534		Vertex_point Vertex_point to Point (as vertex_geometry)	#380 @47	M M M
@534.2		Vertex_point Vertex_point to Point (as vertex_geometry)	#391 @47.2	M M M
@534.3		Vertex_point Vertex_point to Point (as vertex_geometry)	#393 @47.3	M M M
@534.4		Vertex_point	#411	M

Table 19 (concluded)

Id	V	Application elements	Value	Req
		Vertex_point to Point (as	@47.4	M
		vertex_geometry)		M
@433		Shape_description_association	#51	M
		Shape_description_association.role	#50, ”ShapeDescriptionAsso.role”	M
		Shape_description_association to	@268	M
		Item_shape (as is_defining_shape_for)		M
		Shape_description_association to	@236	M
		Geometric_model (as defining_geometry)		M
@433.2		Shape_description_association	#61	M
		Shape_description_association.role	#60, ”ShapeDescriptionAsso.role1”	M
		Shape_description_association to	@268.2	M
		Item_shape (as is_defining_shape_for)		M
		Shape_description_association to	@236.2	M
		Geometric_model (as defining_geometry)		M

6.19.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.20 Geometrically bounded surface model

Test case summary:

This abstract test case covers application elements of the Unit of Functionality G8 (geometrically bounded surface model).

6.20.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 20

Table 20 – Application elements for ATC Geometrically bounded surface model

Id	V	Application elements	Value	Req
@236	*	Geometric_model_version	#100	M
@243	*	Geometrically_bounded_surface_model		M
	*	Geometric_model.model_id	#100, ”GeoModel.model_id”	M
	*	Geometric_model_version.version_id	#107, ”GeoModelVersion.version_id”	M
	*	Geometrically_bounded_surface_model.	(@237)	M
	*	element		M
	*	Geometric_model to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@46		Cartesian_coordinate_space_3d	#101	M
@237	*	Geometric_set_3d	#320	M
	*	Geometric_set_3d.element	(@458)	M
@458		Spherical_surface	#310	M
@268		Item_shape	#50	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@21		Application_context	#41	M
		Application_context.application_domain	#42, ”ApplContext.application_	M
			domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@450		Specific_item_classification	#23	M
		Specific_item_classification.associated_	(@261)	M
		item		M
		Specific_item_classification.	#23, ”SpecItemClass.classification_	M
		classification_name	name”	M
@269		Item_version	#30	M
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M

Table 20 (concluded)

Id	V	Application elements	Value	Req
@433		Shape_description_association	#51	M
		Shape_description_association to	@268	M
		Item_shape (as is_defining_shape_for)		M
		Shape_description_association to	@236	M
		Geometric_model (as defining_geometry)		M

6.20.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.21 3d example

Test case summary:

This abstract test case contains an example of a manifold solid brep.

6.21.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 21

Table 21 – Application elements for ATC 3d example

Id	V	Application elements	Value	Req
@47		Cartesian_point	#100	M
@47.2		Cartesian_point	#120	M
@289		Line	#90	M
@47.3		Cartesian_point	#200	M
@289.2		Line	#190	M
@47.4		Cartesian_point	#280	M
@289.3		Line	#270	M
@289.4		Line	#350	M
@47.5		Cartesian_point	#520	M
@47.6		Cartesian_point	#500	M
@289.5		Line	#490	M
@47.7		Cartesian_point	#600	M
@289.6		Line	#590	M
@47.8		Cartesian_point	#680	M
@289.7		Line	#670	M
@289.8		Line	#750	M
@289.9		Line	#900	M
@289.10		Line	#970	M
@289.11		Line	#1120	M
@289.12		Line	#1310	M
@34		B_rep B_rep to Closed_shell (as outer)	#1920 @75	M M
@188		Face Face.bound Face to Surface (as face_geometry)	#800 (@189) @350	M M M
@350		Plane	#450	M
@188.2		Face Face.bound Face to Surface (as face_geometry)	#1020 (@189.2) @350.2	M M M
@350.2		Plane	#850	M
@188.3		Face Face.bound Face to Surface (as face_geometry)	#1190 (@189.3) @350.3	M M M
@350.3		Plane	#1070	M
@188.4		Face Face.bound Face to Surface (as face_geometry)	#1360 (@189.4) @350.4	M M M
@350.4		Plane	#1240	M
@188.5		Face	#1480	M

Table 21 (continued)

Id	V	Application elements	Value	Req
		Face.bound Face to Surface (as face_geometry)	(@189.5) @350.5	M M
@350.5		Plane	#1410	M
@188.6		Face Face.bound Face to Surface (as face_geometry)	#400 (@189.6) @350.6	M M M
@350.6		Plane	#50	M
@436		Shell Shell.included_face	#1490 (@188, @188.2, @188.3, @188.4, @188.5, @188.6)	M M M
@189		Face_bound Face_bound to Edge_loop (as loop)	#790 @173.2	M M
@189.2		Face_bound Face_bound to Edge_loop (as loop)	#1010 @173.3	M M
@189.3		Face_bound Face_bound to Edge_loop (as loop)	#1180 @173.4	M M
@189.4		Face_bound Face_bound to Edge_loop (as loop)	#1350 @173.5	M M
@189.5		Face_bound Face_bound to Edge_loop (as loop)	#1470 @173.6	M M
@189.6		Face_bound Face_bound to Edge_loop (as loop)	#390 @173	M M
@173		Edge_loop Edge_loop.edge	#380 (@326.4, @326.3, @326.2, @326)	M M
@173.2		Edge_loop Edge_loop.edge	#780 (@326.8, @326.7, @326.6, @326.5)	M M
@173.3		Edge_loop Edge_loop.edge	#1000 (@326.12, @326.11, @326.10, @326.9)	M M
@173.4		Edge_loop Edge_loop.edge	#1170 (@326.16, @326.15, @326.14, @326.13)	M M M
@173.5		Edge_loop Edge_loop.edge	#1340 (@326.20, @326.19, @326.18, @326.17)	M M M
@173.6		Edge_loop Edge_loop.edge	#1460 (@326.24, @326.23, @326.22, @326.21)	M M M
@326		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start)	#150 @534	M M M

Table 21 (continued)

Id	V	Application elements	Value	Req
		Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	@534.2 @289	M M M M
@326.2		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#230 @534.3 @534 @289.2	M M M M M M M
@326.3		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#310 @534.4 @534.3 @289.3	M M M M M M M
@326.4		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#370 @534.2 @534.4 @289.4	M M M M M M M
@326.5		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#550 @534.5 @534.6 @289.5	M M M M M M M
@326.6		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#630 @534.7 @534.5 @289.6	M M M M M M M
@326.7		Oriented_edge_curve	#710	M

Table 21 (continued)

Id	V	Application elements	Value	Req
		Oriented_edge_curve to Vertex_point (as edge_start)	@534.8	M M
		Oriented_edge_curve to Vertex_point (as edge_end)	@534.7	M M
		Oriented_edge_curve to Line (as edge_geometry)	@289.7	M M
@326.8		Oriented_edge_curve	#770	M
		Oriented_edge_curve to Vertex_point (as edge_start)	@534.6	M M
		Oriented_edge_curve to Vertex_point (as edge_end)	@534.8	M M
		Oriented_edge_curve to Line (as edge_geometry)	@289.8	M M
@326.9		Oriented_edge_curve	#860	M
		Oriented_edge_curve to Vertex_point (as edge_start)	@534.7	M M
		Oriented_edge_curve to Vertex_point (as edge_end)	@534.8	M M
		Oriented_edge_curve to Line (as edge_geometry)	@289.7	M M
@326.10		Oriented_edge_curve	#920	M
		Oriented_edge_curve to Vertex_point (as edge_start)	@534.3	M M
		Oriented_edge_curve to Vertex_point (as edge_end)	@534.7	M M
		Oriented_edge_curve to Line (as edge_geometry)	@289.9	M M
@326.11		Oriented_edge_curve	#930	M
		Oriented_edge_curve to Vertex_point (as edge_start)	@534	M M
		Oriented_edge_curve to Vertex_point (as edge_end)	@534.3	M M
		Oriented_edge_curve to Line (as edge_geometry)	@289.2	M M
@326.12		Oriented_edge_curve	#990	M
		Oriented_edge_curve to Vertex_point (as edge_start)	@534.8	M M
		Oriented_edge_curve to Vertex_point (as edge_end)	@534	M M
		Oriented_edge_curve to Line (as	@289.10	M

Table 21 (continued)

Id	V	Application elements	Value	Req
		edge_geometry)		M
@326.13		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#1080 @534.2 @534 @289	M M M M M M M
@326.14		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#1140 @534.6 @534.2 @289.11	M M M M M M M
@326.15		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#1150 @534.8 @534.6 @289.8	M M M M M M M
@326.16		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#1160 @534 @534.8 @289.10	M M M M M M M
@326.17		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#1250 @534.6 @534.5 @289.5	M M M M M M M
@326.18		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as	#1260 @534.2 @534.6	M M M M

Table 21 (continued)

Id	V	Application elements	Value	Req
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.11	M
		edge_geometry)		M
@326.19		Oriented_edge_curve	#1270	M
		Oriented_edge_curve to Vertex_point (as	@534.4	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.2	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.4	M
		edge_geometry)		M
@326.20		Oriented_edge_curve	#1330	M
		Oriented_edge_curve to Vertex_point (as	@534.5	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.4	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.12	M
		edge_geometry)		M
@326.21		Oriented_edge_curve	#1420	M
		Oriented_edge_curve to Vertex_point (as	@534.3	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.4	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.3	M
		edge_geometry)		M
@326.22		Oriented_edge_curve	#1430	M
		Oriented_edge_curve to Vertex_point (as	@534.7	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.3	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.9	M
		edge_geometry)		M
@326.23		Oriented_edge_curve	#1440	M
		Oriented_edge_curve to Vertex_point (as	@534.5	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.7	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.6	M
		edge_geometry)		M
@326.24		Oriented_edge_curve	#1450	M
		Oriented_edge_curve to Vertex_point (as	@534.4	M

Table 21 (concluded)

Id	V	Application elements	Value	Req
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.5	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.12	M
		edge_geometry)		M
@20	*	Appearance_assignment	#1620	M
	*	Appearance_assignment.component	(@107)	M
@75		Closed_shell	#1490	M
		Closed_shell.shell_boundary	(@188, @188.2, @188.3, @188.4,	M
			@188.5, @188.6)	M
@107	*	Curve_appearance	#1610	M
	*	Curve_appearance.width	0.100	M
	*	Curve_appearance.colour	#1590	M
	*	Curve_appearance.font	#1600	M
@534		Vertex_point	#110	M
		Vertex_point to Point (as	@47	M
		vertex_geometry)		M
@534.2		Vertex_point	#130	M
		Vertex_point to Point (as	@47.2	M
		vertex_geometry)		M
@534.3		Vertex_point	#210	M
		Vertex_point to Point (as	@47.3	M
		vertex_geometry)		M
@534.4		Vertex_point	#290	M
		Vertex_point to Point (as	@47.4	M
		vertex_geometry)		M
@534.5		Vertex_point	#530	M
		Vertex_point to Point (as	@47.5	M
		vertex_geometry)		M
@534.6		Vertex_point	#510	M
		Vertex_point to Point (as	@47.6	M
		vertex_geometry)		M
@534.7		Vertex_point	#610	M
		Vertex_point to Point (as	@47.7	M
		vertex_geometry)		M
@534.8		Vertex_point	#690	M
		Vertex_point to Point (as	@47.8	M
		vertex_geometry)		M

6.21.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.22 Kinematics

Test case summary:

This abstract test case covers application elements of the Unit of Functionality K1 (kinematics).

6.22.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 22

Table 22 – Application elements for ATC Kinematics

Id	V	Application elements	Value	Req
@236		Geometric_model_version	#100	M
		Geometric_model.model_id	#102,"GeoModel.model_id"	M
		Geometric_model_version.version_id	#107,"GeoModelVersion.version_id"	M
		Geometric_model to	@46	M
		Cartesian_coordinate_space (as		M
		is_defined_in)		M
@46		Cartesian_coordinate_space_3d	#101	M
@47		Cartesian_point	#110	M
@507	*	Tool_attachment_point_frame	#130	M
@517	*	Transformation_to_reference_frame		M
@508	*	Tool_centre_point_frame	#140	M
@281	*	Kinematic_pair	#150	M
@276	*	Kinematic_element		M
	*	Kinematic_pair.pair_type	KinematicPair.pair_type	M
	*	Kinematic_pair to	@507	M
	*	Transformation_to_reference_frame (as		M
	*	transformation_item_1)		M
	*	Kinematic_pair to	@508	M
	*	Transformation_to_reference_frame (as		M
	*	transformation_item_2)		M
@278	*	Kinematic_link	#230	M
	*	Kinematic_link to	@279	M
	*	Kinematic_link_representation (as		M
	*	representation)		M
@277	*	Kinematic_joint	#240	M
	*	Kinematic_joint to Kinematic_link (as	@278	M
	*	first_link)		M
	*	Kinematic_joint to Kinematic_link (as	@278.2	M
	*	second_link)		M
	*	Kinematic_joint to Kinematic_pair (as	@281	M
	*	pair)		M
@278.2		Kinematic_link	#241	M
		Kinematic_link to	@279	M
		Kinematic_link_representation (as		M
		representation)		M
@327	*	Pair_value	#180	M
	*	Pair_value to Kinematic_pair (as	@281	M
	*	is_applied_to)		M
@327.2		Pair_value	#181	M

Table 22 (continued)

Id	V	Application elements	Value	Req
		Pair_value to Kinematic_pair (as is_applied_to)	@281	M M
@261		Item Item.id Item.name	#20 #20, ”Item.id” #20, ”Item.name”	M M M
@7	∗ ∗ ∗ ∗	Actuator Actuator.name Actuator to Kinematic_pair (as is_applied_to)	#160 #160, ”Actuator.name” @281	M M M M
@21		Application_context Application_context.application_domain Application_context.life_cycle_stage	#41 #42, ”ApplContext.application_domain” #41, ”ApplContext.life_cycle_stage”	M M M M
@284	∗ ∗ ∗ ∗	Kinematic_transformation_result Kinematic_transformation_result.result Kinematic_transformation_result to Kinematic_mechanism (as is_applied_to)	#300 (@260) @280	M M M M
@139		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	#40 #40, ”Ddid.id1” (@21) @269	M M M M M M M
@279	∗ ∗ ∗ ∗ ∗ ∗	Kinematic_link_representation Kinematic_link_representation. additional_reference_frame Kinematic_link_representation to Geometric_model (as physical_description)	#220 (@517) @236	M M M M M M
@450		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification.classification_name	#23 (@261) #23, ”SpecItemClass.classification_name”	M M M M M
@282	∗ ∗ ∗ ∗ ∗	Kinematic_simulation_information Kinematic_simulation_information. mechanism Kinematic_simulation_information. described_element	#280 (@280) (@139)	M M M M M

Table 22 (continued)

Id	V	Application elements	Value	Req
	*	Kinematic_simulation_information to	@244	M
	*	Ground_representation (as ground)		M
@283	*	Kinematic_structure	#250	M
	*	Kinematic_structure.joint	(@277)	M
@517		Transformation_to_reference_frame	#120	M
@280	*	Kinematic_mechanism	#260	M
	*	Kinematic_mechanism to	@283	M
	*	Kinematic_structure (as		M
	*	structure_definition)		M
	*	Kinematic_mechanism to Kinematic_link	@278	M
	*	(as base_link)		M
	*	Kinematic_mechanism to	@517	M
	*	Transformation_to_reference_frame (as		M
	*	base_placement)		M
@258	*	Initial_configuration	#290	M
	*	Initial_configuration.initial_pair_	(@327)	M
	*	values		M
	*	Initial_configuration to	@280	M
	*	Kinematic_mechanism (as is_applied_to)		M
@269		Item_version	#30	M
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M
@335	*	Path_approximation	#190	M
@273	*	Kinematic_configuration_definition	#190	M
	*	Kinematic_configuration_definition.pair_	(@327)	M
	*	values		M
	*	Kinematic_configuration_definition to	@335	M
	*	Path_approximation (as t_parameter)		M
@273.2		Kinematic_configuration_definition	#191	M
		Kinematic_configuration_definition.pair_	(@327.2)	M
		values		M
		Kinematic_configuration_definition to	@335	M
		Path_approximation (as t_parameter)		M
@260	*	Interpolated_configuration_sequence	#210	M
	*	Interpolated_configuration_sequence.	(@274)	M
	*	interpolation		M
@244	*	Ground_representation	#270	M
	*	Ground_representation to	@236	M
	*	Geometric_model (as shape_description)		M

Table 22 (concluded)

Id	V	Application elements	Value	Req
@522		Unit		M
@522.2		Unit		M
@275	*	Kinematic_control	#310	M
	*	Kinematic_control.program	(@260)	M
	*	Kinematic_control.related_result	(@284)	M
	*	Kinematic_control to	@280	M
	*	Kinematic_mechanism (as is_controlling)		M
@438	*	Simple_pair_range	#170	M
	*	Simple_pair_range to Kinematic_pair (as	@281	M
	*	is_applied_to)		M
@274	*	Kinematic_configuration_interpolation	#200	M
	*	Kinematic_configuration_interpolation.	#200, ”KinematicConfigInterpolatior\	M
	*	interpolation_type	n.interpolation_type”	M
	*	Kinematic_configuration_interpolation	@273	M
	*	to Kinematic_configuration_definition		M
	*	(as next_definition)		M
	*	Kinematic_configuration_interpolation	@273.2	M
	*	to Kinematic_configuration_definition		M
	*	(as previous_definition)		M

6.22.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.23 Measured data

Test case summary:

This abstract test case covers application elements of the Unit of Functionality MD1 (measured data).

6.23.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 23

Table 23 – Application elements for ATC Measured data

Id	V	Application elements	Value	Req
@359	∗	Point_direction	#2800	M
	∗	Point_direction.vector	#2802	M
	∗	Point_direction to Cartesian_point (as	@47	M
	∗	location)		M
@47		Cartesian_point	#2801	M
@359.2		Point_direction	#2811	M
		Point_direction.vector	#2813	M
		Point_direction to Cartesian_point (as	@47.2	M
		location)		M
@47.2		Cartesian_point	#2812	M
@46		Cartesian_coordinate_space_3d	#60	M
@361	∗	Point_direction_sequence	#2810	M
@365	∗	Point_sequence	#2820	M
@360	∗	Point_direction_model	#2830	M
	∗	Point_direction_model.point_direction_	(@361)	M
	∗	elements		M
	∗	Point_direction_model.point_elements	(@365)	M
	∗	Geometric_model to	@46	M
	∗	Cartesian_coordinate_space (as		M
	∗	is_defined_in)		M
@268		Item_shape	#61	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@21		Application_context	#41	M
		Application_context.application_domain	#42, ”ApplContext.application_	M
			domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@450		Specific_item_classification	#23	M
		Specific_item_classification.associated_	(@261)	M

Table 23 (concluded)

Id	V	Application elements	Value	Req
		item		M
		Specific_item_classification.	#23, ”SpecItemClass.classification_	M
		classification_name	name”	M
@269		Item_version	#30	M
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M
@433		Shape_description_association	#62	M
		Shape_description_association to	@268	M
		Item_shape (as is_defining_shape_for)		M
		Shape_description_association to	@360	M
		Geometric_model (as defining_geometry)		M

6.23.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.24 Geometric and annotated presentation

Test case summary:

This abstract test case covers application elements of the Unit of Functionality P1 (geometric presentation) and P2 (annotated presentation).

6.24.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 24

Table 24 – Application elements for ATC Geometric and annotated presentation

Id	V	Application elements	Value	Req
@18	*	Annotation_subfigure	#230	M
@464	*	Styled_element		M
@17	*	Annotation_element		M
	*	Styled_element.invisible	.T.	M
	*	Styled_element to Appearance_assignment	@20	M
	*	(as appearance)		M
@19	*	Annotation_symbol	#240	M
	*	Styled_element.invisible	.T.	M
	*	Styled_element to Appearance_assignment	@20	M
	*	(as appearance)		M
	*	Annotation_symbol to General_symbol (as	@228	M
	*	symbol_definition)		M
@495	*	Text	#250	M
	*	Styled_element.invisible	.T.	M
	*	Styled_element to Appearance_assignment	@20	M
	*	(as appearance)		M
@16	*	Annotation_curve	#260	M
	*	Styled_element.invisible	.T.	M
	*	Styled_element to Appearance_assignment	@20	M
	*	(as appearance)		M
@201	*	Fill_area	#270	M
	*	Styled_element.invisible	.T.	M
	*	Fill_area.boundary	(@16)	M
	*	Styled_element to Appearance_assignment	@20	M
	*	(as appearance)		M
@148	*	Dimension_curve	#280	M
	*	Styled_element.invisible	.T.	M
	*	Dimension_curve.terminator	(@494)	M
	*	Styled_element to Appearance_assignment	@20	M
	*	(as appearance)		M
@286	*	Leader	#290	M
	*	Styled_element.invisible	.T.	M
	*	Styled_element to Appearance_assignment	@20	M
	*	(as appearance)		M
@394	*	Projection_curve	#300	M
	*	Styled_element.invisible	.T.	M
	*	Styled_element to Appearance_assignment	@20	M
	*	(as appearance)		M
@446	*	Solid_fill_area	#190	M

Table 24 (continued)

Id	V	Application elements	Value	Req
@150	*	Dimension_symbol	#150	M
@228	*	General_symbol	#100	M
@261		Item Item.id Item.name	#20 #20, ”Item.id” #20, ”Item.name”	M M M
@21		Application_context Application_context.application_domain Application_context.life_cycle_stage	#41 #42, ”ApplContext.application_domain” #41, ”ApplContext.life_cycle_stage”	M M M M
@21.2		Application_context Application_context.application_domain Application_context.life_cycle_stage	 #52, ”ApplContext.application_domain1” #51, ”ApplContext.life_cycle_stage1”	M M M M M
@139		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	#40 #40, ”Ddid.id1” (@21) @269	M M M M M M M
@139.2		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	 #50, ”Ddid.id2” (@21.2) @269	M M M M M M M
@450		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification. classification_name	#23 (@261) #23, ”SpecItemClass.classification_name”	M M M M M
@531	* * * *	Vector_appearance Vector_appearance.arrow_line_font Vector_appearance to Terminator_symbol (as arrow_head_type)	#200 #172 @494	M M M M
@494	*	Terminator_symbol	#140	M
@20		Appearance_assignment Appearance_assignment.component	#220 (@496)	M M

Table 24 (concluded)

Id	V	Application elements	Value	Req
@362	∗	Point_marker_symbol	#110	M
@269		Item_version Item_version.id Item_version to Item (as associated_item)	#30 #30, ”ItemVersion.id” @261	M M M M
@358	∗ ∗ ∗ ∗	Point_appearance Point_appearance.colour Point_appearance to Point_marker_symbol (as marker)	#210 #211 @362	M M M M
@250	∗	Hatching	#170	M
@496	∗	Text_appearance	#160	M
@502	∗	Tiling	#180	M
@476	∗	Surface_condition_symbol	#130	M
@241	∗	Geometric_tolerance_symbol	#120	M

6.24.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.25 Item property

Test case summary:

This abstract test case covers application elements of the Unit of Functionality PR1 (item property tem property).

6.25.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 25

Table 25 – Application elements for ATC Item property

Id	V	Application elements	Value	Req
@303	∗	Material_property	#510	M
	∗	Property.id	#510, ”Property.id”	M
	∗	Material_property.property_name	#510, ”MaterialProperty.property_	M
	∗		name”	M
@305	∗	Material_property_value	#520	M
	∗	Property_value.specified_value	#528, ”PropertyValue.specified_	M
	∗		value”	M
	∗	Property_value.value_name	#526, ”PropertyValue.value_name”	M
	∗	Property_value to Property (as	@303	M
	∗	definition)		M
	∗	Material_property_value to	@114	M
	∗	Data_environment (as		M
	∗	environment_condition)		M
	∗	Material_property_value to	@303	M
	∗	Material_property (as definition)		M
@414	∗	Recyclability_property	#550	M
	∗	Property.id	#550, ”Property.id”	M
@299	∗	Mass_property	#560	M
	∗	Property.id	#560, ”Property.id”	M
@402	∗	Quality_property	#570	M
	∗	Property.id	#570, ”Property.id”	M
@103	∗	Cost_property	#580	M
	∗	Property.id	#580, ”Property.id”	M
@172	∗	Duration_property	#590	M
	∗	Property.id	#590, ”Property.id”	M
@226		General_property	#600	M
		Property.allowed_unit	(@522)	M
		Property.id	#600, ”Property.id”	M
		General_property.property_type	#600, ”GeneralProperty.property_	M
			type”	M
@317		Nominal_value	#630	M
		Nominal_value.value_component	#630, ”2.0”	M
@525	∗	Value_limit	#640	M
	∗	Value_limit.limit_qualifier	#643, ”max”	M
	∗	Value_limit.limit	#640, ”5.0”	M
@528	∗	Value_range	#650	M
	∗	Value_range.upper_limit	#654, ”5.0”	M
	∗	Value_range.lower_limit	#652, ”1.0”	M
@267	∗	Item_property_association	#670	M

Table 25 (continued)

Id	V	Application elements	Value	Req
@400	∗	Property_value_association		M
	∗	Property_value_association to	@399	M
	∗	Property_value (as		M
	∗	describing_property_value)		M
	∗	Item_property_association to	@139	M
	∗	Design_discipline_item_definition (as		M
	∗	described_element)		M
@379	∗	Process_property_association	#681	M
	∗	Property_value_association to	@305	M
	∗	Property_value (as		M
	∗	describing_property_value)		M
	∗	Process_property_association to	@375	M
	∗	Process_plan (as described_element)		M
@236		Geometric_model_version	#695	M
		Geometric_model.model_id	#6991, ”GeoModel.model_id”	M
		Geometric_model_version.version_id	#6992, ”GeoModelVersion.version_id”	M
		Geometric_model to	@46	M
		Cartesian_coordinate_space (as		M
		is_defined_in)		M
@46		Cartesian_coordinate_space_3d		M
@49	∗	Centre_of_mass	#700	M
@432	∗	Shape_dependent_property		M
	∗	Centre_of_mass.centre_point	#707, ”centre point”	M
	∗	Shape_dependent_property to Item_shape	@268	M
	∗	(as described_element)		M
	∗	Shape_dependent_property to	@46	M
	∗	Cartesian_coordinate_space (as		M
	∗	is_defined_in)		M
@312	∗	Moments_of_inertia	#710	M
	∗	Moments_of_inertia.inertia_value	((@317.2, @317.2, @317.3), (@317.2,	M
	∗		@317.3, @317.2), (@317.3, @317.2,	M
	∗		@317.2))	M
	∗	Shape_dependent_property to Item_shape	@268.2	M
	∗	(as described_element)		M
	∗	Shape_dependent_property to	@46	M
	∗	Cartesian_coordinate_space (as		M
	∗	is_defined_in)		M
@317.2		Nominal_value		M
		Nominal_value.value_component	0.0	M
@317.3		Nominal_value		M

Table 25 (continued)

Id	V	Application elements	Value	Req
		Nominal_value.value_component	1.0	M
@304	*	Material_property_association	#540	M
	*	Material_property_association to	@302	M
	*	Material (as described_material)		M
	*	Material_property_association to	@305	M
	*	Material_property_value (as		M
	*	associated_property_value)		M
@268		Item_shape	#705	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@268.2		Item_shape	#715	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@527	*	Value_list		M
	*	Value_list.values	(@317, @525)	M
@114	*	Data_environment	#530	M
	*	Data_environment.environment_name	#530, ”DataEnvironment.environment_	M
	*		name”	M
	*	Data_environment.description	#530, ”DataEnvironment.description”	M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@21		Application_context	#41	M
		Application_context.application_domain	#42, ”ApplContext.application_	M
			domain”	M
		Application_context.life_cycle_stage	#41, ”ApplContext.life_cycle_stage”	M
@21.2		Application_context	#51	M
		Application_context.application_domain	#52, ”ApplContext.application_	M
			domain1”	M
		Application_context.life_cycle_stage	#51, ”ApplContext.life_cycle_	M
			stage1”	M
@139		Design_discipline_item_definition	#40	M
		Design_discipline_item_definition.id	#40, ”Ddid.id1”	M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@139.2		Design_discipline_item_definition	#50	M
		Design_discipline_item_definition.id	#50, ”Ddid.id2”	M

Table 25 (continued)

Id	V	Application elements	Value	Req
		Design_discipline_item_definition.is_relevant_for	(@21.2)	M
		Design_discipline_item_definition to Item_version (as associated_item_version)	@269	M
@398	*	Property_relationship	#610	M
	*	Property_relationship.relation_type	#610, "PropertyRel.relation_type"	M
	*	Property_relationship to Property (as relating)	@303	M
	*	Property_relationship to Property (as related)	@103	M
@450		Specific_item_classification	#23	M
		Specific_item_classification.associated_item	(@261)	M
		Specific_item_classification.classification_name	#23, "SpecItemClass.classification_name"	M
@399		Property_value	#620	M
		Property_value.specified_value	#622, "PropertyValue.specified_value"	M
		Property_value.value_name	#622, "PropertyValue.value_name"	M
		Property_value to Property (as definition)	@226	M
@401	*	Property_value_relationship	#627	M
	*	Property_value_relationship.relation_type	#627, "PropValRel.relation_type"	M
	*	Property_value_relationship to Property_value (as related)	@305	M
	*	Property_value_relationship to Property_value (as relating)	@399	M
@310	*	Model_property_association	#690	M
	*	Model_property_association to Process_plan (as described_element)	@375	M
	*	Model_property_association to Model_property_value (as associated_property_value)	@311	M
@302		Material	#500	M
		Material.material_name	#500, "Material.material_name"	M
		Material to Design_discipline_item_definition (as described_element)	@139	M
@269		Item_version	#30	M

Table 25 (concluded)

Id	V	Application elements	Value	Req
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M
@311	∗	Model_property_value	#695	M
	∗	Model_property_value to Geometric_model	@236	M
	∗	(as describing_model)		M
	∗	Model_property_value to	@226	M
	∗	General_property (as definition)		M
@323		Organization	#693	M
		Organization.organization_name	#693, ”Org.organization_name”	M
		Organization.organization_type	#693, ”Org.organization_type”	M
		Organization.id	#693, ”Org.id”	M
@522		Unit	#604	M
@522.2		Unit		M
@522.3		Unit		M
@522.4		Unit		M
@375		Process_plan	#682	M
		Process_plan.plan_id	#685, ”ProcessPlan.plan_id”	M
@400		Property_value_association	#665	M
		Property_value_association to	@399	M
		Property_value (as		M
		describing_property_value)		M

6.25.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.26 Dimension tolerance

Test case summary:

This abstract test case covers application elements of the Unit of Functionality T1 (dimension tolerance).

6.26.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 26

Table 26 – Application elements for ATC Dimension tolerance

Id	V	Application elements	Value	Req
@317		Nominal_value		M
		Nominal_value.value_component	#3028, ”2.”	M
@497		Thickness_dimension	#3030	M
		Geometric_dimension.id	#3031, ”GeometricDimension.id”	M
		Geometric_dimension to Value_with_unit	@317.2	M
		(as dimension_value)		M
		Size_dimension to Shape_element (as	@434	M
		is_applied_to)		M
@317.2		Nominal_value		M
		Nominal_value.value_component	#3037, ”2.”	M
@227		General_size_dimension	#3040	M
		Geometric_dimension.id	#3041, ”GeometricDimension.id”	M
		General_size_dimension.dimension_type	#3040, ”GenSizeDim.dimension_type”	M
		Geometric_dimension to Value_with_unit	@317.3	M
		(as dimension_value)		M
		Size_dimension to Shape_element (as	@434	M
		is_applied_to)		M
@317.3		Nominal_value		M
		Nominal_value.value_component	#3047, ”2.”	M
@14	∗	Angular_size_dimension	#3050	M
	∗	Geometric_dimension.id	#3041, ”GeometricDimension.id”	M
	∗	Angular_size_dimension.major_angle	.T.	M
	∗	Angular_size_dimension.full	.T.	M
	∗	Geometric_dimension to Value_with_unit	@317.4	M
	∗	(as dimension_value)		M
	∗	Size_dimension to Shape_element (as	@434	M
	∗	is_applied_to)		M
@317.4		Nominal_value		M
		Nominal_value.value_component	#3057, ”2.”	M
@437	∗	Significant_number_of_digits	#3090	M
	∗	Significant_number_of_digits.number_of_	#3090	M
	∗	digits		M
@268		Item_shape		M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@434		Shape_element		M

Table 26 (continued)

Id	V	Application elements	Value	Req
		Shape_element to Item_shape (as composition)	@268	M M
@21		Application_context Application_context.application_domain Application_context.life_cycle_stage	#41 #42, ”ApplContext.application_domain” #41, ”ApplContext.life_cycle_stage”	M M M M
@21.2		Application_context Application_context.application_domain Application_context.life_cycle_stage	 #52, ”ApplContext.application_domain1” #51, ”ApplContext.life_cycle_stage1”	M M M M M
@523	∗ ∗ ∗	Upper_lower_limit Upper_lower_limit.upper_limit Upper_lower_limit.lower_limit	#3080&#3081 #3080 #3081	M M M
@139		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	#40 #40, ”Ddid.id1” (@21) @269	M M M M M M M
@139.2		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	 #50, ”Ddid.id2” (@21.2) @269	M M M M M M M
@354	∗ ∗ ∗	Plus_minus_toleranced_datum Plus_minus_toleranced_datum.tolerance_value	#3070 #3070	M M M
@450		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification. classification_name	#23 (@261) #23, ”SpecItemClass.classification_name”	M M M M M
@229	∗ ∗ ∗	General_tolerance_table General_tolerance_table.tolerance_type	#3100 #3100, ”GeneralTolTable.tolerance_type”	M M M
@526	∗	Value_limitation	#3020	M

Table 26 (concluded)

Id	V	Application elements	Value	Req
	*	Value_limitation to Limits_and_fits (as	@288	M
	*	is_defined_by)		M
	*	Value_limitation to Nominal_value (as	@317	M
	*	limited_value)		M
@230	*	General_tolerances	#3120&#3121&#3122	M
	*	General_tolerances.tolerance_class	#3121, ”GeneralTolerances.	M
	*		tolerance_class”	M
	*	General_tolerances to	@229	M
	*	General_tolerance_table (as		M
	*	table_definition)		M
@524	*	Upper_lower_toleranced_datum	#3060&#3061	M
	*	Upper_lower_toleranced_datum.lower_	#3060	M
	*	tolerance_value		M
	*	Upper_lower_toleranced_datum.upper_	#3061	M
	*	tolerance_value		M
@269		Item_version	#30	M
		Item_version.id	#30, ”ItemVersion.id”	M
		Item_version to Item (as	@261	M
		associated_item)		M
@288	*	Limits_and_fits	#3000	M
	*	Limits_and_fits.deviation	#3000, ”LimitsAndFits.deviation”	M
	*	Limits_and_fits.grade	#3000, ”LimitsAndFits.grades”	M
@353	*	Plus_minus_bounds	#3010	M
	*	Plus_minus_bounds.upper_bound	#3014, ”50.0”	M
	*	Plus_minus_bounds.lower_bound	#3011, ”10.0”	M
@504	*	Tolerance_table_cell	#3110&#3111	M
	*	Tolerance_table_cell.tolerance_class	#3110, ”TolTabCell.tolerance_class”	M
	*	Tolerance_table_cell to	@524	M
	*	Upper_lower_toleranced_datum (as		M
	*	cell_value)		M
	*	Tolerance_table_cell to	@437	M
	*	Significant_number_of_digits (as limit)		M
	*	Tolerance_table_cell to	@229	M
	*	General_tolerance_table (as table)		M

6.26.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.27 Geometric tolerance

Test case summary:

This abstract test case covers application elements of the Unit of Functionality T2 (geometric tolerance).

6.27.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 27

Table 27 – Application elements for ATC Geometric tolerance

Id	V	Application elements	Value	Req
@486	*	Target_area	#140	M
@122	*	Datum_target		M
	*	Datum_target.id	#140, ”DatumTarget.id”	M
	*	Target_area to Shape_element (as	@434	M
	*	is_defined_by)		M
@489	*	Target_point	#150	M
@347	*	Placed_target		M
	*	Datum_target.id	#140, ”DatumTarget.id”	M
	*	Placed_target to Axis_placement (as	@33	M
	*	parameter_reference)		M
	*	Placed_target to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@46		Cartesian_coordinate_space_3d		M
@488	*	Target_line	#160	M
	*	Datum_target.id	#140, ”DatumTarget.id”	M
	*	Target_line.target_length	#166	M
	*	Placed_target to Axis_placement (as	@33	M
	*	parameter_reference)		M
	*	Placed_target to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@490	*	Target_rectangle	#170	M
	*	Datum_target.id	#140, ”DatumTarget.id”	M
	*	Target_rectangle.target_length	#176	M
	*	Target_rectangle.target_width	#178	M
	*	Placed_target to Axis_placement (as	@33	M
	*	parameter_reference)		M
	*	Placed_target to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M
@487	*	Target_circle	#180	M
	*	Datum_target.id	#140, ”DatumTarget.id”	M
	*	Target_circle.diameter	#186	M
	*	Placed_target to Axis_placement (as	@33	M
	*	parameter_reference)		M
	*	Placed_target to	@46	M
	*	Cartesian_coordinate_space (as		M
	*	is_defined_in)		M

Table 27 (continued)

Id	V	Application elements	Value	Req
@441	*	Single_datum	#200	M
@120	*	Datum		M
	*	Datum.precedence	#201	M
	*	Single_datum.datum_name	#200, ”SingleDatum.datum_name”	M
	*	Single_datum to Datum_target_set (as	@124	M
	*	is_defined_by)		M
@441.2		Single_datum	#205	M
		Datum.precedence	#206	M
		Single_datum.datum_name	#205, ”SingleDatum.datum_name”	M
		Single_datum to Datum_target_set (as	@124.2	M
		is_defined_by)		M
@83	*	Compound_datum	#210	M
	*	Datum.precedence	#211	M
	*	Compound_datum.is_made_up_by	(@441, @441.2)	M
@336	*	Perpendicularity_tolerance	#220	M
@238	*	Geometric_tolerance		M
	*	Geometric_tolerance.tolerance_value	#222	M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
	*	Perpendicularity_tolerance to Datum (as	@441	M
	*	reference_datum)		M
@330	*	Parallelism_tolerance	#240	M
	*	Geometric_tolerance.tolerance_value	#241	M
	*	Parallelism_tolerance.reference_datum	(@441)	M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
@15	*	Angularity_tolerance	#250	M
	*	Geometric_tolerance.tolerance_value	#251	M
	*	Angularity_tolerance.reference_datum	(@441)	M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
@91	*	Concentricity_tolerance	#260	M
	*	Geometric_tolerance.tolerance_value	#261	M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
	*	Concentricity_tolerance to Datum (as	@441	M
	*	reference_datum)		M
@484	*	Symmetry_tolerance	#270	M
	*	Geometric_tolerance.tolerance_value	#271	M
	*	Geometric_tolerance to Shape_element	@434	M

Table 27 (continued)

Id	V	Application elements	Value	Req
	*	(as is_applied_to)		M
	*	Symmetry_tolerance to Datum (as	@441	M
	*	reference_datum)		M
@368	*	Position_tolerance	#280	M
	*	Geometric_tolerance.tolerance_value	#281	M
	*	Position_tolerance.reference_datum	(@441)	M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
@63	*	Circular_runout_tolerance	#290	M
	*	Geometric_tolerance.tolerance_value	#291	M
	*	Circular_runout_tolerance.reference_	(@441)	M
	*	datum		M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
@513	*	Total_runout_tolerance	#300	M
	*	Geometric_tolerance.tolerance_value	#301	M
	*	Total_runout_tolerance.reference_datum	(@441)	M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
@290	*	Line_profile_tolerance	#310	M
	*	Geometric_tolerance.tolerance_value	#311	M
	*	Line_profile_tolerance.reference_datum	(@441)	M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
@480	*	Surface_profile_tolerance	#320	M
	*	Geometric_tolerance.tolerance_value	#321	M
	*	Surface_profile_tolerance.reference_	(@441)	M
	*	datum		M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
@460	*	Straightness_tolerance	#330	M
	*	Geometric_tolerance.tolerance_value	#311	M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
@208	*	Flatness_tolerance	#340	M
	*	Geometric_tolerance.tolerance_value	#311	M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
@64	*	Circularity_tolerance	#350	M
	*	Geometric_tolerance.tolerance_value	#311	M

Table 27 (continued)

Id	V	Application elements	Value	Req
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
@113	*	Cylindricity_tolerance	#360	M
	*	Geometric_tolerance.tolerance_value	#311	M
	*	Geometric_tolerance to Shape_element	@434	M
	*	(as is_applied_to)		M
@393	*	Projection	#390	M
@506	*	Tolerance_zone_definition		M
	*	Projection.projection_length	#392	M
	*	Tolerance_zone_definition to	@505	M
	*	Tolerance_zone (as is_defining)		M
	*	Tolerance_zone_definition to	@434	M
	*	Shape_element (as first_element)		M
	*	Projection to Shape_element (as	@434.2	M
	*	projection_end)		M
@268		Item_shape	#50	M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@268.2		Item_shape		M
		Item_shape to Design_discipline_item_	@139	M
		definition (as described_object)		M
@415	*	Reference_plane	#110	M
	*	Reference_plane.plane_location	#113	M
	*	Reference_plane.plane_normal	#114	M
@415.2		Reference_plane	#120	M
		Reference_plane.plane_location	#123	M
		Reference_plane.plane_normal	#124	M
@415.3		Reference_plane	#130	M
		Reference_plane.plane_location	#133	M
		Reference_plane.plane_normal	#134	M
@124	*	Datum_target_set	#190	M
	*	Datum_target_set.target	(@490, @487)	M
@124.2		Datum_target_set	#205	M
		Datum_target_set.target	(@489, @488)	M
@261		Item	#20	M
		Item.id	#20, ”Item.id”	M
		Item.name	#20, ”Item.name”	M
@434		Shape_element	#140	M
		Shape_element to Item_shape (as	@268	M
		composition)		M

Table 27 (continued)

Id	V	Application elements	Value	Req
@434.2		Shape_element Shape_element to Item_shape (as composition)	#391 @268.2	M M M
@21		Application_context Application_context.application_domain Application_context.life_cycle_stage	#41 #42, ”ApplContext.application_domain” #41, ”ApplContext.life_cycle_stage”	M M M M
@505	∗ ∗ ∗	Tolerance_zone Tolerance_zone.form_type Tolerance_zone.is_zone_for	#228 #228,”TolZone.form_type” (@336)	M M M
@139		Design_discipline_item_definition Design_discipline_item_definition.id Design_discipline_item_definition.is_relevant_for Design_discipline_item_definition to Item_version (as associated_item_version)	#40 #40, ”Ddid.id1” (@21) @269	M M M M M M M
@33		Axis_placement	#160	M
@450		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification.classification_name	#23 (@261) #23, ”SpecItemClass.classification_name”	M M M M M
@269		Item_version Item_version.id Item_version to Item (as associated_item)	#30 #30, ”ItemVersion.id” @261	M M M M
@506		Tolerance_zone_definition Tolerance_zone_definition to Tolerance_zone (as is_defining) Tolerance_zone_definition to Shape_element (as first_element)	#380 @505 @434	M M M M M
@240	∗ ∗ ∗ ∗ ∗ ∗ ∗	Geometric_tolerance_precedence Geometric_tolerance_precedence to Geometric_tolerance (as primary_tolerance) Geometric_tolerance_precedence to Geometric_tolerance (as secondary_tolerance)	#370 @63 @513	M M M M M M M
@503	∗	Tolerance_condition	#202	M

Table 27 (concluded)

Id	V	Application elements	Value	Req
	*	Tolerance_condition.condition	#202	M
@522		Unit		M
@522.2		Unit		M

6.27.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

6.28 Associative dimension example

Test case summary:

This abstract test case covers an associative dimension example

6.28.1 Preprocessor

Test purposes covered:

The following general test purposes are coverd: g1, g2, and g3. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part beyond the decimal point, if any), whose rows are not empty in the V column identify the application objects that are covered by this test case. These Id numbers refer directly to the sub-clause numbers under 4.2 of the Application Protocol where the application object is defined.

Input specification:

See Table 28

Table 28 – Application elements for ATC Associative dimension example

Id	V	Application elements	Value	Req
@465	*	Styled_geometric_model	#1532	M
@466	*	Styled_model		M
	*	Styled_model.element	(@20)	M
	*	Styled_model.model_id	#1532, ”DRAUGHTING_MODEL_1”	M
	*	Styled_geometric_model to	@35	M
	*	Geometric_model (as		M
	*	styled_geometry_context)		M
@47		Cartesian_point	#32	M
@47.2		Cartesian_point	#30	M
@289		Line	#28	M
@47.3		Cartesian_point	#40	M
@289.2		Line	#38	M
@47.4		Cartesian_point	#48	M
@289.3		Line	#46	M
@289.4		Line	#54	M
@47.5		Cartesian_point	#70	M
@47.6		Cartesian_point	#72	M
@289.5		Line	#68	M
@289.6		Line	#78	M
@47.7		Cartesian_point	#87	M
@289.7		Line	#85	M
@289.8		Line	#93	M
@47.8		Cartesian_point	#111	M
@47.9		Cartesian_point	#109	M
@289.9		Line	#107	M
@47.10		Cartesian_point	#119	M
@289.10		Line	#117	M
@289.11		Line	#125	M
@289.12		Line	#133	M
@47.11		Cartesian_point	#149	M
@289.13		Line	#147	M
@47.12		Cartesian_point	#159	M
@289.14		Line	#157	M
@289.15		Line	#165	M
@47.13		Cartesian_point	#181	M
@289.16		Line	#179	M
@289.17		Line	#187	M
@47.14		Cartesian_point	#205	M
@289.18		Line	#203	M

Table 28 (continued)

Id	V	Application elements	Value	Req
@289.19		Line	#212	M
@289.20		Line	#220	M
@289.21		Line	#247	M
@46		Cartesian_coordinate_space_3d	#-	M
@45		Cartesian_coordinate_space_2d	#-	M
@35		B_rep_model B_rep_model.element Geometric_model to Cartesian_coordinate_space (as is_defined_in)	#274 (@34) @46	M M M M M
@34		B_rep B_rep to Closed_shell (as outer)	#273 @75	M M
@188		Face Face.bound Face to Surface (as face_geometry)	#64 (@189) @350	M M M
@350		Plane	#63	M
@188.2		Face Face.bound Face to Surface (as face_geometry)	#103 (@189.2) @350.2	M M M
@350.2		Plane	#102	M
@188.3		Face Face.bound Face to Surface (as face_geometry)	#143 (@189.3) @350.3	M M M
@350.3		Plane	#142	M
@188.4		Face Face.bound Face to Surface (as face_geometry)	#175 (@189.4) @350.4	M M M
@350.4		Plane	#174	M
@188.5		Face Face.bound Face to Surface (as face_geometry)	#199 (@189.5) @350.5	M M M
@350.5		Plane	#198	M
@188.6		Face Face.bound Face to Surface (as face_geometry)	#230 (@189.6) @350.6	M M M
@350.6		Plane	#229	M
@188.7		Face Face.bound Face to Surface (as face_geometry)	#242 (@189.7) @350.7	M M M
@350.7		Plane	#241	M

Table 28 (continued)

Id	V	Application elements	Value	Req
@188.8		Face Face.bound Face to Surface (as face_geometry)	#259 (@189.8) @350.8	M M M
@350.8		Plane	#258	M
@188.9		Face Face.bound Face to Surface (as face_geometry)	#271 (@189.9) @350.9	M M M
@350.9		Plane	#270	M
@520		Trimmed_curve	#507	M
@520.2		Trimmed_curve	#530	M
@520.3		Trimmed_curve	#538	M
@520.4		Trimmed_curve	#807	M
@520.5		Trimmed_curve	#830	M
@520.6		Trimmed_curve	#838	M
@520.7		Trimmed_curve	#1107	M
@520.8		Trimmed_curve	#1130	M
@520.9		Trimmed_curve	#1136	M
@520.10		Trimmed_curve	#1144	M
@520.11		Trimmed_curve	#1150	M
@82		Composite_curve	#1155	M
@289.22		Line	#506	M
@289.23		Line	#529	M
@289.24		Line	#537	M
@289.25		Line	#806	M
@289.26		Line	#829	M
@289.27		Line	#837	M
@289.28		Line	#1106	M
@289.29		Line	#1129	M
@289.30		Line	#1135	M
@289.31		Line	#1143	M
@289.32		Line	#1149	M
@436		Shell Shell.included_face	#272 (@188, @188.2, @188.3, @188.4, @188.5, @188.6, @188.7, @188.8, @188.9)	M M M M
@47.15		Cartesian_point	#25	M
@47.16		Cartesian_point	#35	M
@47.17		Cartesian_point	#43	M
@47.18		Cartesian_point	#51	M
@47.19		Cartesian_point	#59	M

Table 28 (continued)

Id	V	Application elements	Value	Req
@47.20		Cartesian_point	#65	M
@47.21		Cartesian_point	#75	M
@47.22		Cartesian_point	#82	M
@47.23		Cartesian_point	#90	M
@47.24		Cartesian_point	#98	M
@47.25		Cartesian_point	#104	M
@47.26		Cartesian_point	#114	M
@47.27		Cartesian_point	#122	M
@47.28		Cartesian_point	#130	M
@47.29		Cartesian_point	#138	M
@47.30		Cartesian_point	#144	M
@47.31		Cartesian_point	#154	M
@47.32		Cartesian_point	#162	M
@47.33		Cartesian_point	#170	M
@47.34		Cartesian_point	#176	M
@47.35		Cartesian_point	#184	M
@47.36		Cartesian_point	#194	M
@47.37		Cartesian_point	#200	M
@47.38		Cartesian_point	#209	M
@47.39		Cartesian_point	#217	M
@47.40		Cartesian_point	#225	M
@47.41		Cartesian_point	#237	M
@47.42		Cartesian_point	#244	M
@47.43		Cartesian_point	#254	M
@47.44		Cartesian_point	#266	M
@47.45		Cartesian_point	#505	M
@47.46		Cartesian_point	#509	M
@47.47		Cartesian_point	#520	M
@47.48		Cartesian_point	#528	M
@47.49		Cartesian_point	#536	M
@47.50		Cartesian_point	#541	M
@47.51		Cartesian_point	#545	M
@47.52		Cartesian_point	#560	M
@47.53		Cartesian_point	#570	M
@47.54		Cartesian_point	#574	M
@47.55		Cartesian_point	#805	M
@47.56		Cartesian_point	#809	M
@47.57		Cartesian_point	#820	M
@47.58		Cartesian_point	#828	M
@47.59		Cartesian_point	#836	M

Table 28 (continued)

Id	V	Application elements	Value	Req
@47.60		Cartesian_point	#841	M
@47.61		Cartesian_point	#845	M
@47.62		Cartesian_point	#850	M
@47.63		Cartesian_point	#856	M
@47.64		Cartesian_point	#860	M
@47.65		Cartesian_point	#1105	M
@47.66		Cartesian_point	#1109	M
@47.67		Cartesian_point	#1120	M
@47.68		Cartesian_point	#1128	M
@47.69		Cartesian_point	#1134	M
@47.70		Cartesian_point	#1142	M
@47.71		Cartesian_point	#1148	M
@47.72		Cartesian_point	#1176	M
@47.73		Cartesian_point	#1525	M
@47.74		Cartesian_point	#1533	M
@47.75		Cartesian_point	#1534	M
@47.76		Cartesian_point	#1539	M
@47.77		Cartesian_point	#1545	M
@47.78		Cartesian_point	#1555	M
@47.79		Cartesian_point	#1631	M
@47.80		Cartesian_point	#9001	M
@493		Template_instance Template_instance.id Template_instance to Geometric_model (as template_definition)	#1530 #1530, "" @35	M M M M
@150		Dimension_symbol	#490	M
@189		Face_bound Face_bound to Edge_loop (as loop)	#58 @173	M M
@189.2		Face_bound Face_bound to Edge_loop (as loop)	#97 @173.2	M M
@189.3		Face_bound Face_bound to Edge_loop (as loop)	#137 @173.3	M M
@189.4		Face_bound Face_bound to Edge_loop (as loop)	#169 @173.4	M M
@189.5		Face_bound Face_bound to Edge_loop (as loop)	#193 @173.5	M M
@189.6		Face_bound Face_bound to Edge_loop (as loop)	#224 @173.6	M M
@189.7		Face_bound Face_bound to Edge_loop (as loop)	#236 @173.7	M M

Table 28 (continued)

Id	V	Application elements	Value	Req
@189.8		Face_bound	#253	M
		Face_bound to Edge_loop (as loop)	@173.8	M
@189.9		Face_bound	#265	M
		Face_bound to Edge_loop (as loop)	@173.9	M
@309	∗	Model_image	#-	M
	∗	Model_image.view_projection	#1538	M
	∗	Model_image.scale	1.0	M
	∗	Model_image.view_volume_placement		M
	∗	Model_image to View (as is_presented_in)	@535	M
	∗	Model_image to Styled_model (as	@465	M
	∗	is_displaying)		M
@261		Item	#281	M
		Item.id	#281, ”product_0”	M
		Item.name	#281, ””	M
@21		Application_context	#285	M
		Application_context.application_domain	#275, ”AUTOMOTIVE_DESIGN”	M
		Application_context.life_cycle_stage	#285, ”design”	M
@139		Design_discipline_item_definition	#286	M
		Design_discipline_item_definition.id		M
		Design_discipline_item_definition.is_	(@21)	M
		relevant_for		M
		Design_discipline_item_definition to	@269	M
		Item_version (as		M
		associated_item_version)		M
@170	∗	Drawing_sheet	#1630	M
	∗	Drawing_sheet.size	#1634	M
	∗	Drawing_sheet.sheet_id	#1660, ”1”	M
	∗	Drawing_sheet.sheet_revision_id	#1630, ”-”	M
	∗	Drawing_sheet to Drawing (as	@167	M
	∗	associated_drawing)		M
	∗	Drawing_sheet to	@45	M
	∗	Cartesian_coordinate_space_2d (as		M
	∗	sheet_space)		M
@535	∗	View	#1552	M
	∗	View.name	#1552, ”Front view”	M
	∗	View to Drawing_sheet (as layout)	@170	M
	∗	View to Cartesian_coordinate_space_2d	@45	M
	∗	(as view_space)		M
	∗	View to Transformation_2d (as	@515	M
	∗	view_placement)		M

Table 28 (continued)

Id	V	Application elements	Value	Req
@450		Specific_item_classification Specific_item_classification.associated_item Specific_item_classification.classification_name	#282 (@261) #282, ”part”	M M M M M
@173		Edge_loop Edge_loop.edge	#57 (@326, @326.2, @326.3, @326.4)	M M
@173.2		Edge_loop Edge_loop.edge	#96 (@326.5, @326.6, @326.7, @326.8, @326.9)	M M M
@173.3		Edge_loop Edge_loop.edge	#136 (@326.10, @326.11, @326.12, @326.13, @326.14, @326.15)	M M M
@173.4		Edge_loop Edge_loop.edge	#168 (@326.16, @326.17, @326.18, @326.19, @326.20)	M M M
@173.5		Edge_loop Edge_loop.edge	#192 (@326.21, @326.22, @326.23, @326.24)	M M M
@173.6		Edge_loop Edge_loop.edge	#223 (@326.25, @326.26, @326.27, @326.28, @326.29, @326.30)	M M M
@173.7		Edge_loop Edge_loop.edge	#235 (@326.31, @326.32, @326.33, @326.34)	M M M
@173.8		Edge_loop Edge_loop.edge	#252 (@326.35, @326.36, @326.37, @326.38)	M M M
@173.9		Edge_loop Edge_loop.edge	#264 (@326.39, @326.40, @326.41, @326.42)	M M M
@326		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#34 @534 @534.2 @289	M M M M M M M
@326.2		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as	#42 @534.2	M M

Table 28 (continued)

Id	V	Application elements	Value	Req
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.3	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.2	M
		edge_geometry)		M
@326.3		Oriented_edge_curve	#50	M
		Oriented_edge_curve to Vertex_point (as	@534.3	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.4	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.3	M
		edge_geometry)		M
@326.4		Oriented_edge_curve	#56	M
		Oriented_edge_curve to Vertex_point (as	@534.4	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.4	M
		edge_geometry)		M
@326.5		Oriented_edge_curve	#74	M
		Oriented_edge_curve to Vertex_point (as	@534.5	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.6	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.5	M
		edge_geometry)		M
@326.6		Oriented_edge_curve	#80	M
		Oriented_edge_curve to Vertex_point (as	@534.6	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.2	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.6	M
		edge_geometry)		M
@326.7		Oriented_edge_curve	#81	M
		Oriented_edge_curve to Vertex_point (as	@534.2	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289	M
		edge_geometry)		M

Table 28 (continued)

Id	V	Application elements	Value	Req
@326.8		Oriented_edge_curve	#89	M
		Oriented_edge_curve to Vertex_point (as	@534	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.7	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.7	M
		edge_geometry)		M
@326.9		Oriented_edge_curve	#95	M
		Oriented_edge_curve to Vertex_point (as	@534.7	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.5	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.8	M
		edge_geometry)		M
@326.10		Oriented_edge_curve	#113	M
		Oriented_edge_curve to Vertex_point (as	@534.8	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.9	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.9	M
		edge_geometry)		M
@326.11		Oriented_edge_curve	#121	M
		Oriented_edge_curve to Vertex_point (as	@534.9	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.10	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.10	M
		edge_geometry)		M
@326.12		Oriented_edge_curve	#127	M
		Oriented_edge_curve to Vertex_point (as	@534.10	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.7	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.11	M
		edge_geometry)		M
@326.13		Oriented_edge_curve	#128	M
		Oriented_edge_curve to Vertex_point (as	@534.7	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534	M
		edge_end)		M

Table 28 (continued)

Id	V	Application elements	Value	Req
		Oriented_edge_curve to Line (as edge_geometry)	@289.7	M M
@326.14		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#129 @534 @534.4 @289.4	M M M M M M M
@326.15		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#135 @534.4 @534.8 @289.12	M M M M M M M
@326.16		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#151 @534.11 @534.8 @289.13	M M M M M M M
@326.17		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#152 @534.8 @534.4 @289.12	M M M M M M M
@326.18		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#153 @534.4 @534.3 @289.3	M M M M M M M
@326.19		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start)	#161 @534.3	M M M

Table 28 (continued)

Id	V	Application elements	Value	Req
		Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	@534.12 @289.14	M M M M
@326.20		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#167 @534.12 @534.11 @289.15	M M M M M M M
@326.21		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#183 @534.10 @534.13 @289.16	M M M M M M M
@326.22		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#189 @534.13 @534.5 @289.17	M M M M M M M
@326.23		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#190 @534.5 @534.7 @289.8	M M M M M M M
@326.24		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#191 @534.7 @534.10 @289.11	M M M M M M M
@326.25		Oriented_edge_curve	#207	M

Table 28 (continued)

Id	V	Application elements	Value	Req
		Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	@534.14 @534.11 @289.18	M M M M M M
@326.26		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#208 @534.11 @534.12 @289.15	M M M M M M M
@326.27		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#214 @534.12 @534.6 @289.19	M M M M M M M
@326.28		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#215 @534.6 @534.5 @289.5	M M M M M M M
@326.29		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#216 @534.5 @534.13 @289.17	M M M M M M M
@326.30		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as	#222 @534.13 @534.14 @289.20	M M M M M M

Table 28 (continued)

Id	V	Application elements	Value	Req
		edge_geometry)		M
@326.31		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#231 @534.12 @534.3 @289.14	M M M M M M M
@326.32		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#232 @534.3 @534.2 @289.2	M M M M M M M
@326.33		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#233 @534.2 @534.6 @289.6	M M M M M M M
@326.34		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#234 @534.6 @534.12 @289.19	M M M M M M M
@326.35		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as edge_end) Oriented_edge_curve to Line (as edge_geometry)	#243 @534.11 @534.14 @289.18	M M M M M M M
@326.36		Oriented_edge_curve Oriented_edge_curve to Vertex_point (as edge_start) Oriented_edge_curve to Vertex_point (as	#249 @534.14 @534.9	M M M M

Table 28 (continued)

Id	V	Application elements	Value	Req
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.21	M
		edge_geometry)		M
@326.37		Oriented_edge_curve	#250	M
		Oriented_edge_curve to Vertex_point (as	@534.9	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.8	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.9	M
		edge_geometry)		M
@326.38		Oriented_edge_curve	#251	M
		Oriented_edge_curve to Vertex_point (as	@534.8	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.11	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.13	M
		edge_geometry)		M
@326.39		Oriented_edge_curve	#260	M
		Oriented_edge_curve to Vertex_point (as	@534.14	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.13	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.20	M
		edge_geometry)		M
@326.40		Oriented_edge_curve	#261	M
		Oriented_edge_curve to Vertex_point (as	@534.13	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.10	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.16	M
		edge_geometry)		M
@326.41		Oriented_edge_curve	#262	M
		Oriented_edge_curve to Vertex_point (as	@534.10	M
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.9	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.10	M
		edge_geometry)		M
@326.42		Oriented_edge_curve	#263	M
		Oriented_edge_curve to Vertex_point (as	@534.9	M

Table 28 (continued)

Id	V	Application elements	Value	Req
		edge_start)		M
		Oriented_edge_curve to Vertex_point (as	@534.14	M
		edge_end)		M
		Oriented_edge_curve to Line (as	@289.21	M
		edge_geometry)		M
@494		Terminator_symbol	#440	M
@168	*	Drawing_assignment	#1650	M
	*	Drawing_assignment to Drawing (as	@167	M
	*	associated_drawing)		M
@20		Appearance_assignment	#430	M
		Appearance_assignment.component	(@107)	M
@20.2		Appearance_assignment	#480	M
		Appearance_assignment.component	(@496)	M
@167	*	Drawing	#1640	M
	*	Drawing.drawing_id	#1637, ”Drawing of product_0”	M
	*	Drawing.language	(English)	M
	*	Drawing.drawing_revision_id	#1640, ”A”	M
@515		Transformation_2d		M
@269		Item_version	#284	M
		Item_version.id	#284, ” ”	M
		Item_version to Item (as	@261	M
		associated_item)		M
@335		Path_approximation	#11	M
@335.2		Path_approximation	#410	M
@335.3		Path_approximation	#19	M
@335.4		Path_approximation	#15	M
@75		Closed_shell	#272	M
		Closed_shell.shell_boundary	(@188, @188.2, @188.3, @188.4,	M
			@188.5, @188.6, @188.7, @188.8,	M
			@188.9)	M
@1		Accuracy	#-	M
		Accuracy.accuracy_value	#19, 0.000	M
		Accuracy.accuracy_type	#19, ”DISTANCE_ACCURACY_VALUE”	M
		Accuracy.is_defined_for	(@35)	M
@496		Text_appearance	#470	M
@107		Curve_appearance	#425	M
		Curve_appearance.width	#410	M
		Curve_appearance.colour	#420	M
		Curve_appearance.font	#400	M
@534		Vertex_point	#33	M

Table 28 (continued)

Id	V	Application elements	Value	Req
		Vertex_point to Point (as vertex_geometry)	@47	M M
@534.2		Vertex_point Vertex_point to Point (as vertex_geometry)	#31 @47.2	M M M
@534.3		Vertex_point Vertex_point to Point (as vertex_geometry)	#41 @47.3	M M M
@534.4		Vertex_point Vertex_point to Point (as vertex_geometry)	#49 @47.4	M M M
@534.5		Vertex_point Vertex_point to Point (as vertex_geometry)	#71 @47.5	M M M
@534.6		Vertex_point Vertex_point to Point (as vertex_geometry)	#73 @47.6	M M M
@534.7		Vertex_point Vertex_point to Point (as vertex_geometry)	#88 @47.7	M M M
@534.8		Vertex_point Vertex_point to Point (as vertex_geometry)	#112 @47.8	M M M
@534.9		Vertex_point Vertex_point to Point (as vertex_geometry)	#110 @47.9	M M M
@534.10		Vertex_point Vertex_point to Point (as vertex_geometry)	#120 @47.10	M M M
@534.11		Vertex_point Vertex_point to Point (as vertex_geometry)	#150 @47.11	M M M
@534.12		Vertex_point Vertex_point to Point (as vertex_geometry)	#160 @47.12	M M M
@534.13		Vertex_point Vertex_point to Point (as vertex_geometry)	#182 @47.13	M M M
@534.14		Vertex_point Vertex_point to Point (as	#206 @47.14	M M

Table 28 (concluded)

Id	V	Application elements	Value	Req
		vertex_geometry)		M
@534.15		Vertex_point Vertex_point to Point (as vertex_geometry)	#9000 @47.80	M M M

6.28.2 Postprocessor

Test purposes coverage:

The following general test purposes are covered: g1, g4, and g5. In the preprocessor input specification table of this test case, the numbers in the Id column (ignoring the part behind the decimal point, if any) whose rows are not emtpy in the V column identify the application objects that are covered by this test case.

Input specification:

See annex C.

Annex A
(normative)

Conformance classes

A.1 Conformance class 1

To conform to conformance class 1 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.19

— atc6.20

— atc6.21

A.2 Conformance class 2

To conform to conformance class 2 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.11

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.19

— atc6.20

— atc6.21

A.3 Conformance class 3

To conform to conformance class 3 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.13

— atc6.14

— atc6.15

— atc6.24

A.4 Conformance class 4

To conform to conformance class 4 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.11

— atc6.13

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.19

— atc6.21

— atc6.24

— atc6.26

— atc6.28

A.5 Conformance class 5

To conform to conformance class 5 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.11

— atc6.15

— atc6.16

— atc6.17

— atc6.18

— atc6.19

— atc6.21

— atc6.24

A.6 Conformance class 6

To conform to conformance class 6 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.4

— atc6.6

— atc6.7

— atc6.11

— atc6.25

A.7 Conformance class 7

To conform to conformance class 7 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.6

— atc6.7

— atc6.11

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.19

— atc6.20

— atc6.21

— atc6.25

A.8 Conformance class 8

To conform to conformance class 8 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.4

— atc6.5

— atc6.6

— atc6.7

— atc6.11

— atc6.25

A.9 Conformance class 9

To conform to conformance class 9 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.5

— atc6.6

— atc6.7

— atc6.11

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.19

— atc6.20

— atc6.21

— atc6.25

A.10 Conformance class 10

To conform to conformance class 10 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.5

— atc6.6

— atc6.7

— atc6.11

— atc6.13

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.19

— atc6.20

— atc6.21

— atc6.24

— atc6.25

— atc6.26

— atc6.28

A.11 Conformance class 11

To conform to conformance class 11 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.7

— atc6.8

— atc6.11

— atc6.13

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.18

— atc6.19

— atc6.21

— atc6.23

— atc6.24

— atc6.25

— atc6.28

A.12 Conformance class 12

To conform to conformance class 12 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.7

— atc6.8

— atc6.9

— atc6.10

— atc6.11

— atc6.12

— atc6.13

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.18

— atc6.19

— atc6.21

— atc6.23

— atc6.24

— atc6.25

— atc6.26

— atc6.27

— atc6.28

A.13 Conformance class 13

To conform to conformance class 13 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.7

— atc6.8

— atc6.9

— atc6.10

— atc6.11

— atc6.12

— atc6.13

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.18

— atc6.19

— atc6.21

— atc6.23

— atc6.24

— atc6.25

— atc6.26

— atc6.27

— atc6.28

A.14 Conformance class 14

To conform to conformance class 14 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.9

— atc6.10

— atc6.11

— atc6.12

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.19

— atc6.21

— atc6.25

— atc6.26

— atc6.27

A.15 Conformance class 15

To conform to conformance class 15 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.9

— atc6.10

— atc6.11

— atc6.12

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.19

— atc6.21

— atc6.25

— atc6.26

— atc6.27

A.16 Conformance class 16

To conform to conformance class 16 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.11

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.19

— atc6.21

— atc6.22

— atc6.25

A.17 Conformance class 17

To conform to conformance class 17 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.11

— atc6.14

— atc6.23

— atc6.25

A.18 Conformance class 18

To conform to conformance class 18 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.11

— atc6.15

— atc6.16

— atc6.17

— atc6.18

— atc6.19

— atc6.21

— atc6.22

— atc6.25

— atc6.26

A.19 Conformance class 19

To conform to conformance class 19 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

— atc6.10

— atc6.11

— atc6.12

— atc6.15

— atc6.16

— atc6.17

— atc6.18

— atc6.19

— atc6.21

— atc6.22

— atc6.25

— atc6.26

— atc6.27

A.20 Conformance class 20

To conform to conformance class 20 of ISO 10303–214, an implementation shall pass executable versions of the following abstract test cases:

— atc6.1

— atc6.2

— atc6.3

— atc6.4

— atc6.5

— atc6.6

— atc6.7

— atc6.8

— atc6.9

— atc6.10

— atc6.11

— atc6.12

— atc6.13

— atc6.14

— atc6.15

— atc6.16

— atc6.17

— atc6.18

— atc6.19

— atc6.20

— atc6.21

— atc6.22

— atc6.23

— atc6.24

— atc6.25

— atc6.26

— atc6.27

— atc6.28

Annex B
(normative)

Information object registration

To provide for unambiguous identification of an information object in an open system, the object identifier

{ iso standard 10303 part(314) version(-1) }

is assigned to this part of ISO 10303. The meaning of this value is defined in ISO/IEC 8824-1, and is described in ISO 10303-1.

Annex C
(normative)

Postprocessor input specification file names

The postprocessor input specifications for each test case is supplied electronically on magnetic media (floppy diskette). Table C.1 lists the file name of the postprocessor input specification that is associated with the postprocessor subclause of a test case.

Table C.1 – Postprocessor input specification file names

Subclause	Test case	File name
6.1	atc6.1: Minimum set	atc6_1.p21
6.2	atc6.2: Product management data	atc6_2.p21
6.3	atc6.3: Element structur	atc6_3.p21
6.4	atc6.4: Item definition structure	atc6_4.p21
6.5	atc6.5: Effectivity and Specification control	atc6_5.p21
6.6	atc6.6: Work management	atc6_6.p21
6.7	atc6.7: Classification	atc6_7.p21
6.8	atc6.8: Process plan	atc6_8.p21
6.9	atc6.9: Surface condition	atc6_9.p21
6.10	atc6.10: Explicit draughting	atc6_10.p21
6.11	atc6.11: External reference mechanism	atc6_11.p21
6.12	atc6.12: Feature	atc6_12.p21
6.13	atc6.13: Wireframe model 2d	atc6_13.p21
6.14	atc6.14: Wireframe model 3d	atc6_14.p21
6.15	atc6.15: Connected surface model	atc6_15.p21
6.16	atc6.16: Faceted brep model	atc6_16.p21
6.17	atc6.17: Brep model	atc6_17.p21
6.18	atc6.18: Compound model	atc6_18.p21
6.19	atc6.19: CSG model	atc6_19.p21
6.20	atc6.20: Geometrically bounded surface model	atc6_20.p21
6.21	atc6.21: 3d example	atc6_21.p21
6.22	atc6.22: Kinematics	atc6_22.p21
6.23	atc6.23: Measured data	atc6_23.p21
6.24	atc6.24: Geometric and annotated presentation	atc6_24.p21
6.25	atc6.25: Item property	atc6_25.p21
6.26	atc6.26: Dimension tolerance	atc6_26.p21
6.27	atc6.27: Geometric tolerance	atc6_27.p21
6.28	atc6.28: Associative dimension example	atc6_28.p21

Annex D
(informative)

Bibliography

[1] ISO-87 *I* SO 8859–1:1987 : Information processing – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1

[2] ISO-93a *P* almer, mark: Guidelines for the Development and Approval of STEP Application Protocols, Version 1.1. ISO TC 184/SC4/WG4 N66 (P5). December 1993

[3] ISO-93b *P* helps, Thomas: Guidelines for the development of STEP Abstract Test Suites. ISO TC 184/SC4/WG6 N 76. March 1993

[4] ISO-93c *S* haw, Nigel: Supplementary directives for the drafting and presentation of ISO 10303 Version 1.1. ISO TC 184/SC4 Editing N-23. July 1993.

[5] ISO-99 *I* SO TC 184/SC4: Guidelines for the development of abstract test suites, edition 2 ISO TC 184/SC4 Editing N-873. August 1999.

Index

abstract test case (ATC); 6
abstract test suite (ATS); 6
Accuracy
    abstract test cases 66, 186
Activity
    abstract test cases 43
Activity_element
    abstract test cases 43
Activity_method
    abstract test cases 43
Activity_method_assignment
    abstract test cases 44
Activity_relationship
    abstract test cases 45
Actuator
    abstract test cases 144
Alias_identification
    abstract test cases 16
Alternate_item_relationship
    abstract test cases 27
Alternative_solution
    abstract test cases 29
Angle_specification
    abstract test cases 87
Angle_taper
    abstract test cases 91
Angular_size_dimension
    abstract test cases 161
Angularity_tolerance
    abstract test cases 166
Annotation_curve
    abstract test cases 151
Annotation_element
    abstract test cases 151
Annotation_subfigure
    abstract test cases 151
Annotation_symbol
    abstract test cases 151
Appearance_assignment
    abstract test cases 141, 152, 186
application interpreted model (AIM); 6
application object; 6
application protocol (AP); 6
application reference model (ARM); 6

Application_context
abstract test cases . . 11, 13, 19, 25, 35, 43, 48, 51, 56, 64, 88, 103, 107, 111, 116, 120, 124, 128, 132, 144, 148, 152, 157, 162, 169, 177
Approval
abstract test cases 13
Approval_relationship
abstract test cases 16
Approval_status
abstract test cases 16
Assembly_component_relationship
abstract test cases 22, 24
Assembly_definition
abstract test cases 22
Assembly_substitute_relationship
abstract test cases 27
Axis_placement
abstract test cases 89, 90, 169

B_rep
abstract test cases 119, 135, 173
B_rep_model
abstract test cases 119, 173
B_spline_curve
abstract test cases 72, 102, 106, 110
B_spline_surface
abstract test cases 110
Bead_end_type
abstract test cases 76
Bead_feature
abstract test cases 76
Block
abstract test cases 127
Boolean_result
abstract test cases 127
Boss_feature
abstract test cases 82
Boss_top_condition
abstract test cases 81

Cartesian_coordinate_space
abstract test cases 25
Cartesian_coordinate_space_2d
abstract test cases 25, 30, 62, 63, 102, 173
Cartesian_coordinate_space_3d
abstract test cases 56, 62, 72, 87, 106, 110, 115, 119, 123, 127, 132, 143, 148, 156, 165, 173
Cartesian_point
abstract test cases 70, 102, 106, 110, 115, 119, 123, 127, 135, 143, 148, 172, 174–176

Catalogue_thread
abstract test cases 85
Centre_of_mass
abstract test cases 156
Certification
abstract test cases 13
Chamfer
abstract test cases 70
Chamfer_angle
abstract test cases 99
Chamfer_definition
abstract test cases 88
Chamfer_offset
abstract test cases 90
Change
abstract test cases 45
Circle
abstract test cases 102, 106, 110
Circular_boss
abstract test cases 82
Circular_closed_profile
abstract test cases 72
Circular_offset_pattern
abstract test cases 91
Circular_omit_pattern
abstract test cases 88
Circular_path
abstract test cases 72
Circular_pattern
abstract test cases 84
Circular_runout_tolerance
abstract test cases 167
Circularity_tolerance
abstract test cases 167
Class_category_association
abstract test cases 36
Class_condition_association
abstract test cases 37
Class_inclusion_association
abstract test cases 39
Class_specification_association
abstract test cases 39, 40
Class_structure_relationship
abstract test cases 40
Classification_association
abstract test cases 48

Classification_attribute
abstract test cases 49
Classification_system
abstract test cases 49
Closed_profile
abstract test cases 72
Closed_profile_usage
abstract test cases 89
Closed_shell
abstract test cases 121, 141, 186
Coating_layer
abstract test cases 56
Collected_item_association
abstract test cases 31
Collection_definition
abstract test cases 31
Complete_circular_path
abstract test cases 72
Complex_product
abstract test cases 29
Complex_product_relationship
abstract test cases 39
Composite_curve
abstract test cases 102, 106, 110, 174
Compound_datum
abstract test cases 166
Compound_feature_in_panel
abstract test cases 79
Compound_feature_in_panel_element
abstract test cases 99
Compound_feature_in_panel_element_relationship
abstract test cases 87
Compound_feature_in_solid
abstract test cases 84
Compound_feature_in_solid_element
abstract test cases 91
Compound_feature_in_solid_element_relationship
abstract test cases 87
Compound_model
abstract test cases 123
Concentricity_tolerance
abstract test cases 166
Configuration
abstract test cases 39
conformance testing; 6
Conical_bottom

abstract test cases 83
Conical_surface
abstract test cases 110
Constant_radius_edge_round
abstract test cases 70
Constant_radius_fillet
abstract test cases 71
constructive solid geometry. 7
Constructive_geometric_element
abstract test cases 103, 107, 108, 113, 116, 117
Constructive_geometry
abstract test cases 103, 107, 112, 116
Constructive_geometry_association
abstract test cases 102, 106, 111, 115
Contact_ratio
abstract test cases 55
Contract
abstract test cases 44
Cost_property
abstract test cases 155
Csg_model
abstract test cases 128
Csg_primitive
abstract test cases 127
Curve
abstract test cases 56, 102, 106
Curve_appearance
abstract test cases 141, 186
Curve_on_surface
abstract test cases 56, 110
Curve_set_2d
abstract test cases 102
Curve_set_3d
abstract test cases 106
Cylindrical_surface
abstract test cases 110
Cylindricity_tolerance
abstract test cases 168

Data_environment
abstract test cases 157
Date_and_person_assignment
abstract test cases 14
Date_and_person_organization
abstract test cases 14, 15, 44
Date_time

abstract test cases 15, 38, 45
Date_time_assignment
abstract test cases 16
Dated_configuration
abstract test cases 33
Datum
abstract test cases 166
Datum_target
abstract test cases 165
Datum_target_set
abstract test cases 168
Default_chamfer
abstract test cases 91
Default_draft_angle
abstract test cases 99
Default_edge_round
abstract test cases 88
Default_fillet
abstract test cases 91
Default_setting_association
abstract test cases 57
Default_surface_texture
abstract test cases 56
Default_thickness
abstract test cases 99
Defined_thread
abstract test cases 85
Descriptive_specification
abstract test cases 34, 51, 64
Design_constraint
abstract test cases 30, 35
Design_constraint_association
abstract test cases 36
Design_constraint_relationship
abstract test cases 38
Design_constraint_version
abstract test cases 30
Design_discipline_item_definition
abstract test cases .. 11, 13, 19, 25, 26, 35, 36, 44, 48, 51, 57, 60, 65, 88, 89, 103, 107, 111, 116, 120, 124, 128, 132, 144, 148, 152, 157, 162, 169, 177
Detailed_element
abstract test cases 19
Detailed_geometric_model_element
abstract test cases 19
Detailed_model_element
abstract test cases 19

Diameter_taper
abstract test cases 100
Digital_document
abstract test cases 62
Digital_file
abstract test cases 24, 43, 56, 62, 63
Dimension_curve
abstract test cases 151
Dimension_symbol
abstract test cases 152, 176
Directed_taper
abstract test cases 89
Document
abstract test cases 57, 66
Document_assignment
abstract test cases 62, 68
Document_content_property
abstract test cases 65
Document_creation_property
abstract test cases 67
Document_file
abstract test cases 25
Document_file_relationship
abstract test cases 67
Document_format_property
abstract test cases 67
Document_representation
abstract test cases 55
Document_size_property
abstract test cases 67
Document_source_property
abstract test cases 66
Document_structure
abstract test cases 67
Document_type_property
abstract test cases 65
Document_version
abstract test cases 58, 66
Document_version_relationship
abstract test cases 66
Drawing
abstract test cases 186
Drawing_assignment
abstract test cases 186
Drawing_sheet
abstract test cases 177

Duration
abstract test cases 46
Duration_property
abstract test cases 155

Edge_loop
abstract test cases 112, 120, 124, 129, 136, 178
Edge_round
abstract test cases 70
Edge_transition
abstract test cases 112, 120, 124, 128
Effectivity
abstract test cases 37
Effectivity_assignment
abstract test cases 39
Effectivity_relationship
abstract test cases 37
Element_delivery
abstract test cases 46
Ellipse
abstract test cases 102, 106, 110
Event_reference
abstract test cases 38, 45
Exclusive_process_operation
abstract test cases 52
executable test case; 6
External_geometric_model
abstract test cases 24, 63
External_geometric_model_with_parameters
abstract test cases 63
External_library_reference
abstract test cases 49
External_model
abstract test cases 24
External_picture
abstract test cases 63

Face
abstract test cases 70, 71, 110, 119, 123, 127, 135, 136, 173, 174
Face_bound
abstract test cases 88, 111, 119, 123, 128, 136, 176, 177
Face_termination
abstract test cases 77
Face_transition
abstract test cases 112
Faceted_b_rep
abstract test cases 115

Faceted_b_rep_model
abstract test cases 115
Faceted_closed_shell
abstract test cases 117
Faceted_face
abstract test cases 115, 116
Feature_definition
abstract test cases 76
Feature_occurrence
abstract test cases 60
Feature_parameter
abstract test cases 92–99
Feature_placement
abstract test cases 91
Featured_shape
abstract test cases 87
Fill_area
abstract test cases 151
Fillet
abstract test cases 71
Final_solution
abstract test cases 29
Flat_bottom
abstract test cases 82
Flat_slot_end_type
abstract test cases 79
Flat_with_chamfer_bottom
abstract test cases 83
Flat_with_radius_bottom
abstract test cases 83
Flatness_tolerance
abstract test cases 167
Form_feature_in_panel
abstract test cases 77

General_boss
abstract test cases 82
General_bottom_condition
abstract test cases 80
General_classification
abstract test cases 49
General_classification_hierarchy
abstract test cases 48
General_closed_profile
abstract test cases 73
General_compound_feature

abstract test cases 87
General_feature
abstract test cases 87, 100
General_feature_parameter
abstract test cases 88
General_item_definition_instance_relationship
abstract test cases 31
General_item_definition_relationship
abstract test cases 24
General_item_instance_relationship
abstract test cases 30
General_open_profile
abstract test cases 76
General_path
abstract test cases 71
General_pattern
abstract test cases 85
General_pocket
abstract test cases 81
General_property
abstract test cases 48, 63, 155
General_size_dimension
abstract test cases 60, 161
General_symbol
abstract test cases 152
General_tolerance_table
abstract test cases 162
General_tolerances
abstract test cases 163
General_top_condition
abstract test cases 81
Geometric_dimension
abstract test cases 56
Geometric_model
abstract test cases 30
Geometric_model_relationship
abstract test cases 64, 65
Geometric_model_relationship_with_transformation
abstract test cases 63
Geometric_model_version
abstract test cases 30, 87, 102, 106, 110, 111, 115, 119, 123, 127, 128, 132, 143, 156
Geometric_set_3d
abstract test cases 132
Geometric_tolerance
abstract test cases 166
Geometric_tolerance_precedence

abstract test cases 169
Geometric_tolerance_symbol
abstract test cases 153
Geometrical_relationship
abstract test cases 23
Geometrically_bounded_surface_model
abstract test cases 132
Ground_representation
abstract test cases 145
Group
abstract test cases 19
Group_relationship
abstract test cases 19

Half_space_solid
abstract test cases 19, 127
Hardcopy
abstract test cases 62
Hardness
abstract test cases 55
Hatching
abstract test cases 153
Hole_bottom_condition
abstract test cases 82
Hole_feature_in_panel
abstract test cases 76
Hybrid_geometric_model_3d
abstract test cases 106
Hyperbola
abstract test cases 73, 102, 106, 110

implementation method; 6
implementation under test (IUT); 6
Included_feature
abstract test cases 86
information; 6
Initial_configuration
abstract test cases 145
Instance_placement
abstract test cases 38
Interpolated_configuration_sequence
abstract test cases 145
Item
abstract test cases ... 11, 13, 19, 25, 35, 43, 48, 51, 56, 60, 64, 88, 103, 107, 111, 116, 119, 123, 128, 132, 144, 148, 152, 157, 161, 168, 177
Item_definition_instance_relationship
abstract test cases 22

Item_definition_relationship
abstract test cases 23
Item_function_association
abstract test cases 37
Item_instance
abstract test cases 22
Item_instance_relationship
abstract test cases 25
Item_property_association
abstract test cases 155
Item_shape
abstract test cases 56, 60, 64, 88, 102, 103, 107, 111, 116, 119, 123, 128, 132, 148, 157, 161, 168
Item_version
abstract test cases 11, 16, 19, 26, 27, 38, 45, 49, 52, 58, 60, 66, 99, 103, 107, 112, 116, 121, 125, 129, 132, 145, 149, 153, 158, 163, 169, 186
Item_version_relationship
abstract test cases 45

Joggle_feature
abstract test cases 77
Joggle_termination
abstract test cases 77

Kinematic_configuration_definition
abstract test cases 145
Kinematic_configuration_interpolation
abstract test cases 146
Kinematic_control
abstract test cases 146
Kinematic_element
abstract test cases 143
Kinematic_joint
abstract test cases 143
Kinematic_link
abstract test cases 143
Kinematic_link_representation
abstract test cases 144
Kinematic_mechanism
abstract test cases 145
Kinematic_pair
abstract test cases 143
Kinematic_simulation_information
abstract test cases 144
Kinematic_structure
abstract test cases 145
Kinematic_transformation_result
abstract test cases 144

Layer
abstract test cases 20
layer; 7
Leader
abstract test cases 151
Limits_and_fits
abstract test cases 163
Line
abstract test cases 102, 106, 110, 119, 123, 127, 135, 172–174
Line_profile_tolerance
abstract test cases 167
Linear_bead_end_type
abstract test cases 76
Linear_path
abstract test cases 72
Locator_feature
abstract test cases 78
Lot_configuration
abstract test cases 33

Make_from_relationship
abstract test cases 23
Manufacturing_configuration
abstract test cases 33
Mass_property
abstract test cases 155
Mated_item_association
abstract test cases 32, 33
Mated_item_relationship
abstract test cases 33
Material
abstract test cases 58, 158
Material_property
abstract test cases 155
Material_property_association
abstract test cases 157
Material_property_value
abstract test cases 155
Mating_definition
abstract test cases 31, 32
Measurement_path
abstract test cases 57
Model_image
abstract test cases 177
Model_property_association
abstract test cases 158

Model_property_value
abstract test cases 159
Moments_of_inertia
abstract test cases 156
Multi_language_string
abstract test cases 15

Named_size
abstract test cases 66
Next_higher_assembly
abstract test cases 22
Ngon_profile
abstract test cases 73
Nominal_value
abstract test cases 24, 32, 43, 55, 56, 62–64, 70–86, 155, 156, 161

Offset_curve
abstract test cases 102, 106, 110
Offset_surface
abstract test cases 70, 110
Open_bead_end_type
abstract test cases 76
Open_profile
abstract test cases 73
Open_slot_end_type
abstract test cases 79
Organization
abstract test cases 16, 39, 46, 159
Organization_in_contract
abstract test cases 45
Organization_relationship
abstract test cases 44
Oriented_edge_curve
abstract test cases 112, 120, 124, 129, 136–140, 178–185

Pair_value
abstract test cases 143
Panel_hole_with_barring
abstract test cases 76
Parabola
abstract test cases 76, 102, 106, 110
Parallelism_tolerance
abstract test cases 166
Partial_circular_path
abstract test cases 72
Partial_circular_profile
abstract test cases 74

Partial_document_assignment
abstract test cases 62
Path
abstract test cases 71
Path_approximation
abstract test cases 145, 186
Perpendicularity_tolerance
abstract test cases 166
Person
abstract test cases 13, 43
Person_in_organization
abstract test cases 15, 44
Person_organization_assignment
abstract test cases 16
Physical_assembly_relationship
abstract test cases 34
Physical_document
abstract test cases 62
Physical_instance
abstract test cases 36
Physical_instance_test_result
abstract test cases 37
Physical_model
abstract test cases 55, 62
Physical_representation
abstract test cases 55
Placed_feature
abstract test cases 86
Placed_target
abstract test cases 165
planar; 7
Planar_bottom_condition
abstract test cases 80
Planar_top_condition
abstract test cases 81
Plane
abstract test cases 111, 115, 135, 136, 173, 174
Plib_class_reference
abstract test cases 48
Plib_property_reference
abstract test cases 49
Plus_minus_bounds
abstract test cases 163
Plus_minus_toleranced_datum
abstract test cases 162
Pocket_bottom_condition

abstract test cases 80
Pocket_feature
abstract test cases 80
Point
abstract test cases 70, 115
Point_appearance
abstract test cases 153
Point_direction
abstract test cases 148
Point_direction_model
abstract test cases 148
Point_direction_sequence
abstract test cases 148
Point_marker_symbol
abstract test cases 153
Point_on_curve
abstract test cases 102, 106, 110
Point_on_surface
abstract test cases 110
Point_sequence
abstract test cases 148
Poly_loop
abstract test cases 117
Polyline
abstract test cases 102, 106, 110, 115
Position_tolerance
abstract test cases 167
postprocessor; 6
preprocessor; 6
presentation. 7
Process_feature_in_panel
abstract test cases 76
Process_feature_in_solid
abstract test cases 79
Process_operation
abstract test cases 51, 52
Process_operation_input_or_output
abstract test cases 51
Process_operation_relationship
abstract test cases 51
Process_operation_resource_assignment
abstract test cases 52
Process_plan
abstract test cases 51, 53, 159
Process_plan_operation_assignment
abstract test cases 52

Process_plan_relationship
abstract test cases 52
Process_plan_version
abstract test cases 51
Process_property_association
abstract test cases 156
product data; 6
Product_class
abstract test cases 35
Product_class_relationship
abstract test cases 36
Product_component
abstract test cases 29
Product_constituent
abstract test cases 22
Product_design
abstract test cases 38
Product_function
abstract test cases 29
Product_identification
abstract test cases 29, 38
Product_specification
abstract test cases 29
Product_structure_relationship
abstract test cases 41
Profile
abstract test cases 72
Project
abstract test cases 46
Project_relationship
abstract test cases 43
Projection
abstract test cases 168
Projection_curve
abstract test cases 151
Promissory_usage
abstract test cases 22
Property
abstract test cases 48
Property_relationship
abstract test cases 158
Property_value
abstract test cases 49, 65, 158
Property_value_association
abstract test cases 156, 159
Property_value_relationship

abstract test cases 158

Quality_property
abstract test cases 155
Quantified_instance
abstract test cases 22, 32

Radiused_bead_end_type
abstract test cases 76
Radiused_slot_end_type
abstract test cases 79
Rectangular_boss
abstract test cases 82
Rectangular_closed_pocket
abstract test cases 80
Rectangular_closed_profile
abstract test cases 73
Rectangular_offset_pattern
abstract test cases 91
Rectangular_omit_pattern
abstract test cases 91
Rectangular_open_pocket
abstract test cases 81
Rectangular_pattern
abstract test cases 84
Rectangular_size
abstract test cases 66
Recyclability_property
abstract test cases 155
Reference_plane
abstract test cases 168
Replaced_definition_relationship
abstract test cases 23
Replaced_usage_relationship
abstract test cases 25
Replicate_base_assignment
abstract test cases 90
Replicate_feature
abstract test cases 84
Retention_period
abstract test cases 37
Rib_feature
abstract test cases 83
Right_angular_wedge
abstract test cases 127
Right_circular_cone
abstract test cases 127

Right_circular_cylinder
abstract test cases 127
Round_hole
abstract test cases 83
Rounded_u_profile
abstract test cases 74

Same_time_machining_relationship
abstract test cases 31
Security_classification
abstract test cases 16
Security_level
abstract test cases 16
Selected_instance
abstract test cases 23
Serial_configuration
abstract test cases 33
Shape_dependent_property
abstract test cases 156
Shape_description_association
abstract test cases 67, 103, 104, 108, 113, 117, 121, 125, 130, 133, 149
Shape_element
abstract test cases 56, 64, 161, 168, 169
Shape_element_relationship
abstract test cases 65
Shell
abstract test cases 111, 136, 174
Significant_number_of_digits
abstract test cases 161
Simple_pair_range
abstract test cases 146
Simultaneous_activity
abstract test cases 43
Simultaneous_process_operation
abstract test cases 52
Single_datum
abstract test cases 166
Single_instance
abstract test cases 24, 30
Size_dimension
abstract test cases 56
Slot_end_type
abstract test cases 79
Slot_feature
abstract test cases 79
Solid_fill_area

abstract test cases 151
Solid_of_linear_extrusion
abstract test cases 127
Solid_of_revolution
abstract test cases 127
Solid_replica
abstract test cases 127
Specific_item_classification
abstract test cases ... 11, 13, 19, 26, 36, 44, 48, 52, 57, 60, 65, 90, 103, 107, 112, 116, 120, 124, 129, 132, 144, 148, 152, 158, 162, 169, 178
Specification
abstract test cases 34
Specification_category
abstract test cases 41
Specification_expression
abstract test cases 41
Specification_inclusion
abstract test cases 34
Specified_instance
abstract test cases 22
Sphere
abstract test cases 127
Spherical_bottom
abstract test cases 83
Spherical_surface
abstract test cases 81, 110, 132
Square_u_profile
abstract test cases 73
Straightness_tolerance
abstract test cases 167
String_with_language
abstract test cases 13
Structuring_method_hierarchy
abstract test cases 19
Styled_element
abstract test cases 151
Styled_geometric_model
abstract test cases 172
Styled_model
abstract test cases 172
Supplier_solution
abstract test cases 29
Surface
abstract test cases 70
Surface_condition
abstract test cases 55

Surface_condition_symbol
abstract test cases 153
Surface_model
abstract test cases 111
Surface_of_linear_extrusion
abstract test cases 110, 111, 119, 123, 127
Surface_of_revolution
abstract test cases 110
Surface_profile_tolerance
abstract test cases 167
Surface_texture
abstract test cases 55
Surface_texture_parameter
abstract test cases 57
Swept_face_solid
abstract test cases 127
Symmetry_tolerance
abstract test cases 166

Tactile_appearance
abstract test cases 55
Target_area
abstract test cases 165
Target_circle
abstract test cases 165
Target_line
abstract test cases 165
Target_point
abstract test cases 165
Target_rectangle
abstract test cases 165
Technical_solution
abstract test cases 29
Tee_profile
abstract test cases 75
Template_instance
abstract test cases 25, 30, 64, 176
Terminator_symbol
abstract test cases 152, 186
test purpose; 6
Text
abstract test cases 151
Text_appearance
abstract test cases 153, 186
Thickness_dimension
abstract test cases 56, 161

Thread_feature
abstract test cases 100
Thread_specification
abstract test cases 85
Through_bottom_condition
abstract test cases 80
Through_hole_condition
abstract test cases 83
Tiling
abstract test cases 153
Tolerance_condition
abstract test cases 169
Tolerance_table_cell
abstract test cases 163
Tolerance_zone
abstract test cases 169
Tolerance_zone_definition
abstract test cases 168, 169
Tool_attachment_point_frame
abstract test cases 143
Tool_centre_point_frame
abstract test cases 143
Tool_part_relationship
abstract test cases 23
Topologically_connected_set
abstract test cases 123
Toroidal_surface
abstract test cases 110
Torus
abstract test cases 127
Total_runout_tolerance
abstract test cases 167
Transformation
abstract test cases 25
Transformation_2d
abstract test cases 25, 30, 62, 64, 186
Transformation_3d
abstract test cases 62, 64, 76, 87
Transformation_to_reference_frame
abstract test cases 143, 145
Transition_feature
abstract test cases 70
Treatment_result
abstract test cases 55
Trimmed_curve
abstract test cases 102, 106, 110, 174

Trimmed_surface
abstract test cases 80

Unit
abstract test cases . . 27, 39, 46, 49, 58, 67, 100, 103, 108, 113, 117, 121, 125, 129, 146, 159, 170
unit of functionality (UoF). 6
Upper_lower_limit
abstract test cases 162
Upper_lower_toleranced_datum
abstract test cases 163

Value_limit
abstract test cases 155
Value_limitation
abstract test cases 162
Value_list
abstract test cases 157
Value_range
abstract test cases 155
Value_termination
abstract test cases 77
Value_with_unit
abstract test cases 24
Vector_appearance
abstract test cases 152
Vee_profile
abstract test cases 74
verdict criteria. 6
Vertex_loop
abstract test cases 100, 113, 121, 125, 129
Vertex_point
abstract test cases 100, 113, 121, 125, 129, 141, 186–188
View
abstract test cases 177
Visual_appearance
abstract test cases 55

Wireframe_model_2d
abstract test cases 102
Wireframe_model_3d
abstract test cases 106
Woodruff_slot_end_type
abstract test cases 79
Work_order
abstract test cases 44
Work_request
abstract test cases 46