



## Machinery and Equipment Specification

Global Common

SD-000

ISSUED  
REVISED

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May 13, 2020

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## 1. Scope

The intent of this document is to identify all Nexteer Automotive Specifications and Industrial Standards associated with the purchase of Custom Equipment.

NOTE: Changes since the last revision are highlighted.

## 2. Reference

The following specifications shall apply to this equipment unless otherwise amended. The latest revision is published on the Data Exchange website at [www.nexteerdtaexchange.com](http://www.nexteerdtaexchange.com) under Vendor Documents.

### Nexteer Automotive Specifications

SD-001	General Manufacturing Equipment Specification
SD-002	Manufacturing Equipment Statistical Qualifications Requirements
SD-003	General Drawing and Manuals Specification
SD-004	Electrical Specification for Industrial Machinery
SD-005	General Gage Specification
SD-007	Approved Components List
SD-011	Specification for the Application of Safety Circuits
SD-012	Design-In Health and Safety Specification
SD-013	Hydraulic Fluid Power – General rules and safety requirements for systems and their components Addendum to ISO 4413
SD-014	Pneumatic Fluid Power – General rules and safety requirements for systems and their components Addendum to ISO 4414
SD-015	Lean Equipment Design
SD-016	Lean Equipment Controls Design
SD-017	Design-In Ergonomics Guideline
SD-1020	Human Machine Interface Application Specification
SD-1022	Label Error Proofing Requirements for New Assembly Systems
SD-1032	Programmable Logic Controller Application Specification
SD-1033	RFID Application Specification
SD-1034	Machine Control Traceability Interface Specification
SD-1038	Specification for the Application of Automatic Operator-Interface Safety Doors
SD-1039	Traceability Systems Bill of Process
SD-1040	Fanuc Robot Specification
SD-1049	Specification for Data Matrix Marking

### Industry Standards

SL 1.0	Sound Level Specification
GM 1720	GM Basic Lubrication Standard – LS1
GM 1721	GM Maintenance Standard – LS2
IEC 60204-1	Electrical Standard for Industrial Machinery, 6 <sup>th</sup> Edition 2016
ISO 4413	Hydraulic fluid power – General rules relating to systems, 2010 Edition
ISO 4414	Pneumatic fluid power – General rules relating to systems, 2010 Edition
GM-7EH	High-Efficiency Industrial AC Electric Motors
GM-1716	GM Vibration Standard – V1.0
RIA / ANSI R15.06-2012	American National Standard for Industrial Robots and Robotic Systems – Safety Requirements

AIAG Measurement System Analysis Reference Manual, 3<sup>rd</sup> Edition

AIAG Statistical Process Control (SPC) Reference Manual, 2<sup>nd</sup> Edition

The following specifications shall apply to this equipment and is the Vendor's responsibility to obtain current regulations from the appropriate government agency:

OSHA, MIOSHA (Saginaw Site)

## 3. Specification Hierarchy

- 3.1 There are three (3) levels of specifications in the Nexteer Automotive hierarchy of Manufacturing Equipment Purchase Specifications in the following order of precedence.
  - 3.1.1 The **Technical Purchasing Specification (T-Spec)** provides information specific to the equipment and process being purchased. Additionally, the T-Spec may also be used to clarify or provide guidance for deviations from individual Nexteer Automotive "SD" Specifications.
  - 3.1.2 The **SD-1000 Series of Specifications** covers the basic requirements for a specific type of equipment, where applicable (e.g. draw furnace). The SD-1000 Series specifications take precedence over SD-000 in the event of a conflict between the two.
  - 3.1.3 The SD-000 Series of Specifications covers the basic requirements for Custom Equipment.
- 3.2 Nomenclature in these specifications is as follows:
  - Shall – indicates requirement
  - Should – indicates recommendation
  - May – indicates permission or allowance

#### 4. Specification Changes

All 6-axis robots, regardless of installation type (full body access or table-top mount), require the SV OFF / SV Disable feature to be included and functional with equipment delivered to Nexteer Automotive. This includes an electrical disconnect, in accordance with SD-007, to be wired into the SV OFF / SV Disable contacts of the robot controller. Fanuc can provide an SV OFF / SV Disable lockout kit that is acceptable; please contact Fanuc for this device.

All SCARA 4-axis robots do not require this feature.

Nexteer Automotive Specification SD-012 and SD-011 will be updated to include this requirement at a later date.

## RECORD OF REVISIONS

Revision No	Date	Section	Description
001	30NO95	ALL	ORIGINAL APPROVAL & ISSUE DATE.
002	04AP97	3	Add modifications to SD-001, SD-002, and SD-004.
003	01MR99	2, 3	Revised version reference to SD-002 and GM Sound Level, Ergonomics, Vibration and Robot Standards / Specifications.
004	15AU99	2, 3	Revised version reference to several documents. The GM documents for Hydraulics, Pneumatics, Ergonomics, and Robots have been replaced with Delphi Automotive Systems, ISO, and RIA / ANSI standards.
005	07JA02	2	Revised referenced document revision dates and revised specification reference list.
006	01MR03	2, 3	Revised referenced document revision dates, revised specification reference list, and revised specification changes.
007	15OC03	2	Revised SD-002, SD-003, SL 1.0, and DEG revision dates.
008	15MY04	2	Revised SD-003 revision date.
009	15SE06	2	Revised revision dates for SD-001, SD-002, SD-003, SD-005, DA-2004, DA-2006, and DEG. SD-004 and SD-007 have been deleted. SD-007-NA, SD-1020, and SD-1022 have been added.
010	30MR07	2	SD-007 should have been SD-007-NA in 15SE06 revision.
011	15MY07	3	SD-001 specification changes – added Mexico plant utilities.
012	10NO08	2	Revised SD-002 revision date.
013	02FE09	2	Revised SD-002 revision date. Revised SD-005 revision date and moved from 2.25 to 2.4.
014	08JU09	2, 3, 4	Revised specification revision dates and added specification hierarchy section. Issued as global common specification and replaces SD-000 and all SD-000-xxx specifications.
015	06NO09	1, 2	Company name updated and “GC” removed from specification number. All SD documents are global common. All SD Specifications updated.
016	17DE10	2	Revised SD-000, SD-007, SD-012 revision dates and added reference to SD-1032, SD-1033, and SD-1034.
017	15OC12	2, 4	Revised SD-000, SD-001, SD-007, SD-1033 revision and added reference to SD-1035. Reference specification changes to Section 4.
018	27NO12	2	Revised SD-000 and SD-002.
019	04MR14	2	Revised SD-000, SD-001, SD-002, SD-011 revision and added reference to SD-1038.
020	30JU14	2	Revised SD-000, SD-001, SD-007, SD-013, SD-014, SD-1033, SD-1034, revision and added reference to SD-1039.
021	31JL14	2, 4	Revised SD-000, SD-004, SD-1020, SD-1032. Removed SD-004 modification for items 7.2.1 and 16.4 (50,000 amps).

022	10FE15	2	Revised SD-000, SD-017, SL 1.0.
023	16MA15	2	Revised SD-000, SD-003. Removed temporary SD-000 Specification changes adding Chongqing and Liuzhou sites. Sites are now in SD-003 Section 2.2.1 – 2.2.3.
024	23JL15	2	Revised SD-000, SD-002, and SD-004.
025	150C15	2	Revised SD-000, SD-003, SD-007, and GM 1720.
026	15DE15	2	Revised SD-007 for corrections in Green Highlight.
027	13JA16	2	RE-written SD-1034 to Specification from Guideline.
028	01MY16	2	Revised SD-000, SD-002, and SD-003.
029	22AU16	2	Revised SD-003, SD-1035 obsoleted.
030	28FE17	2	Revised SD-007, SD-1032, and SD-1033.
031	27JL17	2	Revised SD-003.
032	04JU18	2	Revised SD-003.
033	28JU18	2	Updated SD-001, SD-003, SD-007, and SD-012.
034	12N018	2	Updated SD-001 and SD-005.
035	11JA19	2	Updated SD-002.
036	03JN19	2	Updated SD-1034, added SD-1040.
037	100C19	2	Updated SD-003
038	15N019	2	Updated SD-001, SD-007
039	02MR20	4	Updated for SV OFF / SV Disable.
040	23MR20	2	Updated SD-017, added SD-1049
041	13MY20	1, 2, 3	Updated SD-015. Removed all revision level and added Data Exchange website publishing. Updated Specification Hierarchy.
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