



E1-QSL Qualified Source List North American Electrical Equipment

The E1-CCL Conforming Components List - Electrical Equipment has been extensively rewritten and replaced by this E1-QSL Qualified Source List.



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0.0.0 RETROACTIVITY

The E1-CCL Conforming Components List - Electrical Equipment has been extensively rewritten and replaced by this E1-QSL Qualified Source List.

Components shown on this Qualified Source List have demonstrated high levels of performance and reliability and have been approved by the members of the Global Manufacturing Standards - Electrical Technical Committee for use on new machines and equipment purchases as well as the retrofit/rehab of existing installations. **Revisions to, or approvals of new components, do not imply a requirement to remove or replace previously approved components.**

0.0.1 UL Listing and CSA Certification

All components SHALL be tested by an OSHA approved Nationally Recognized Testing Laboratory and in accordance with 29CFR1910.7. All components for use in North America shall be UL (Underwriters Laboratories) Listed and CSA (Canadian Standards Association) Certified and bear the appropriate UL and/or CSA marks.

NOTE: The Underwriters Recognized, backwards UR, mark is NOT equivalent to a UL Listed mark. Certain components on this E1-QSL are indicated as being acceptable for use in industrial machinery if they are "Underwriters Recognized". For a more complete explanation, refer to the following page. Descriptions below are paraphrased interpretations of what appear on www.ul.com/mark/ulmark/htm and www.csa.ca/product%5Fservices/ps%5Fcert%5Fcsa.html.

0.0.2 Underwriters Laboratory and Canadian Standards Association Marks



UL Listing Mark

UL Listed by Underwriters Laboratories to UL Safety Standards for US Applications.



C-UL Listing Mark

UL Listed by Underwriters Laboratories to CSA Safety Standards for Canadian Applications.



C-UL US Listing Mark

UL Listed by Underwriters Laboratories to UL Safety Standards and CSA Safety Standards for both US and Canadian Applications.



Recognized Component Mark

Recognized by Underwriters Laboratories to no given UL Safety Standard for US Applications. Used specifically on component parts that are part of a larger product or system. These components may have restrictions on their performance or may be incomplete in construction. Components typically considered part of a system are severe duty motors (non-explosion proof), SOO Cable, and terminal blocks. UL Recognized products for use in Canada carry the Recognized Component Mark "C".



Recognized Component Mark for Canada and United States

Recognized by Underwriters Laboratories to no given UL or CSA Safety Standard for both Canadian and US Applications. Used specifically on component parts that are part of a larger product or system. These components may have restrictions on their performance or may be incomplete in construction. Components typically considered part of a system are severe duty motors (non-explosion proof), SOO Cable, and terminal blocks.



CSA Mark

CSA Certified by the Canadian Standards Association to CSA Safety Standards for Canadian Applications.



CSA with NRTL Qualifier Mark

CSA Certified by the Canadian Standards Association to UL Safety Standards for US Applications.



CSA with NRTL/C Qualifier Mark

CSA Certified by the Canadian Standards Association to CSA Safety Standards and UL Safety Standards for both Canadian and US Applications.

0.1.0 SCOPE

Section 0 provides the process for approving sources for machinery and equipment components for use by Ford. The approval process falls into two sections, Part A and Part B. Part A (Section 0.2.0) gives the requirements for full line suppliers, and Part B (Sections 0.3.0 through 0.7.0) gives the requirements for limited line suppliers and all electrical suppliers.

0.1.1 Forward

Ford Specified Suppliers and Components:

Commercially available machinery and equipment components have a direct effect on the **safety**, performance, reliability, and maintainability of facilities and tools. Classifications of machinery and equipment components covered are: electrical, hydraulic, pneumatic, lubrication, and welding. Ford generally specifies components for use by the machine builder and range from routine sensor and actuator items like relays, switches, valves, and cylinders to more sophisticated devices such as motors, programmable controllers, and safety devices, including safety light curtains and safety relay modules. Components from suppliers (Original Equipment Manufacturers) are selected from this Qualified Source List.

Ford specifies components for machines and equipment based on environmental operating conditions, production rates, and conformance to **Ford Global Manufacturing Standards**, industry Standards, and government regulations. If the machine builder has reasons for using an alternative component to those specified, they shall explicitly include this information with their bid proposals, with appropriate justification, for components not listed on this Qualified Source List.

Full Line Suppliers, Limited Line Suppliers, and Individual Component Suppliers:

Sources for machinery and equipment components are selected depending on needs expressed in the **Ford Global Manufacturing Standards** and on the results of quality system evaluations and subsequent reviews. To meet the broad requirements of various Ford machinery and equipment, it is necessary to have an approval procedure, which accommodates both full line suppliers, limited line suppliers and individual component suppliers. Full line suppliers provide all related components for a complete functional system (e.g. a hydraulic system). Limited line suppliers can provide several individual components within a system, but do not provide all components required for a complete functional system.



0.1.2 Supplier's Responsibilities

The manufacturer and/or their distributor(s) are responsible for reviewing their components listed on this Qualified Source List and notify the appropriate Global Manufacturing Standards Technical Committee if corrections are required.

Changes, updates, revisions, or other modifications to an existing approved component require prior written approval from the appropriate Global Manufacturing Standards Technical Committee.

Any changes to an existing approved component without the Technical Committee's review and approval, shall constitute consideration for removal from this Qualified Source List.

0.2.0 Source Selection for Full Line Suppliers:

Suppliers of complete OEM systems will be evaluated using Part A. A comprehensive supplier evaluation is reviewed by a cross-functional Ford team to assure that the performance of these components meet all necessary **Ford Global Manufacturing Standards** and machine builder requirements.

0.2.1 Supplier Self-Evaluation

The supplier starts by performing a self-evaluation based on the ISO 9000 Quality Standard, and a self-rating based on the Tooling and Equipment Supplement to QS 9000 Quality System. Ordering information for these documents is given in Section 0.5.0. The supplier is expected to compile an "evidence book" to document their ratings and provide actual cases which substantiate their ratings.

After completing the self-evaluation and submitting the "evidence report" to the Manufacturing Standards Technical Committee, the supplier notifies Purchasing that they have completed their self-evaluation and are ready to review their results with Ford. Purchasing will contact the Manufacturing Standards Technical Committee to schedule a review meeting. The Ford review may include an on-site visit to the manufacturer's facilities to verify the self-evaluated ratings.

0.2.2 Team Review

The Manufacturing Standards Technical Committee members, in conjunction with Purchasing, will establish the evaluation team members. The supplier's "evidence book" will be the focal point of the evaluation team's review. When conditions permit, team members will visit the supplier's manufacturing facility to provide a technical evaluation and review of the ISO 9000 Quality Standard and/or the Tooling and Equipment Supplement to the QS 9000 Quality System to verify the supplier's ratings.

0.2.3 Global Manufacturing Standards - Electrical Technical Committee Approval

After completion of the supplier review, the results and team recommendations shall be reported to the appropriate Manufacturing Standards Technical Committee. Based on the evaluation team's recommendations in conjunction with Purchasing's supply base management, the Global Manufacturing Standards Electrical Technical Committee will approve or disapprove the listing of the supplier on this Qualified Source List.

0.3.0 Source Selection for Limited Line and Individual Component Suppliers

0.3.1 Evaluation Process

Suppliers of individual components used as part of a system will be evaluated using Part B. To assure that the performance of these components meets all necessary Ford Motor Company and machine tool builder requirements, **Shop Trials** are performed in production environments. The results are reported to the appropriate Manufacturing Standards Technical Committee for review and recommendation (refer to Section 0.3.9).

0.3.2 Standards Compliance

If a **Ford Global Manufacturing Standard** covers the component; the supplier shall submit a written report to the Manufacturing Standards Technical Committee indicating their conformance (or nonconformance) with each requirement in that Standard. This report must be signed by the component manufacturer's vice



president of engineering or higher. Submittals by distributors or product line representatives are not acceptable. The report shall include evidence of conformance to any national or industry Standards as required by the **Ford Global Manufacturing Standard**, e.g. "UL Listing" information such as listing cards and UL Test Reports indicating conformance, and to which Standard(s) the test was made to.

0.3.3 Shop Trials

Manufacturing Standards Technical Committee shall authorize **Shop Trials** for "Safety Devices and Components" before they are performed. Such authorization shall require the unanimous vote of all Ford Divisions represented on the Technical Committee including **Ford Corporate Safety**. Safety devices and components shall also conform to the appropriate **Ford Global Manufacturing Standards** and/or industry Standards and government regulations.

0.3.4 Documentation Requirements

A **Shop Trial Report** form, shown in Section 0.4.0, shall be used to document and track production tests. Upon completion of the Shop Trial, the form shall be kept on file with the Ford Technical Affairs - Global Manufacturing Standards Department.

0.3.5 Shop Trial Performance Criteria

The Global Manufacturing Standards Electrical Technical Committee will establish the test criteria to be used when conducting Shop Trials. These test criteria may differ depending on the type of component, the operating environment (e.g. wet, dry, oily, high temperature, high humidity, etc.), the production rate, and the length of time the test must run.

0.3.6 Initiating A Shop Trial

A Shop Trial can be initiated by a request from plant personnel, Division personnel, or a member of the Technical Committee. The following procedure will be used to conduct **Shop Trials**:

0.3.6.1 Plant Personnel

Plant personnel shall contact their respective Division's Manufacturing Standards Representative (e.g. Electrical, Fluid Power, Process, Machine Component, Welding, etc.) prior to initiating any production test for new technology components or for additional machine component suppliers.

0.3.6.2 The Division Standards Representative will:

- Review the Request for a Production Shop Trial.**
Technical Committee authorization is required for all safety-related components, before proceeding with a Shop Trial test.
- Contact Purchasing**
Contract Purchasing for conformance with the supply base management process and Corporate Safety for precautions conducting the **Shop Trial** test.
- Notify the plant to proceed with the Shop Trial.**
When a Plant has not initiated the request, the Division Standards Representative will arrange with a Plant to conduct the Shop Trial, and proceed with Sections 0.3.6.2.1 through 0.3.6.2.3, stated above.

0.3.7 Listing and Tracking Shop Trials

The Manufacturing Standards Technical Committee will assign a tracking number to the approved **Shop Trial** request. The Manufacturing Standards Technical Committee will add the **Shop Trial** to the list of the on-going tests being conducted at various locations.

0.3.8 Perform Shop Trial

The plant shall then proceed to conduct the shop trial and provide periodic test status to the Divisional Standards Representative. Upon successful completion, or failure, of the component **Shop Trial**, the plant



shall submit the **Shop Trial** form with appropriate comments and signatures to their Division Manufacturing Standards Representative.

0.3.9 Reporting Status

The Divisional Standards Representative will periodically report status and results of the Shop Trial to the Manufacturing Standards Technical Committee.

0.4.0 REVIEW: Global Manufacturing Standards - Electrical Technical Committee

The Manufacturing Standards Technical Committee will review the results and update the information on the **Shop Trial** list. Based on the results of the test, the Technical Committee will approve or disapprove the addition of a component to the Qualified Source List based on the following criteria:

0.4.1 New Technology Components

These criteria will be used for approving new technology components where Ford has no presently approved suppliers:

1. Approved Shop Trial Reports are required from at least two plants. Each plant must be from different Divisions.
2. At least two of the using Divisions represented on Manufacturing Standards Technical Committee must support approval.
3. Approval vote shall be a simple majority of Technical Committee members.
4. No negative votes from Technical Committee members on safety related components. Negative votes must be resolved before the component in question can be Qualified.
5. Component shall operate in a production environment for a minimum of 6 months.

0.4.2 Additions to Existing Approved Sources

These criteria will be used for approving additional suppliers for components where Ford has approved suppliers:

1. Support from Purchasing and Supply Staff in conjunction with the Supply Base Management Program.
2. Business case is required to add to the existing supply base.
3. Approved Shop Trial Reports are required from at least two plants. Each plant must be from different Divisions.
4. At least two of the using Divisions represented on Manufacturing Standards Technical Committee must support approval.
5. Approval vote shall be a simple majority of Technical Committee members.
6. No negative votes from Technical Committee members on safety related components. Negative votes must be resolved before the component in question can be Qualified.
7. Component shall operate in a production environment for a minimum of 6 months.

Global Manufacturing Standards		Document Number:	E1-QSL
		Issue Date:	03-Jun-1996
		Rev Date:	31-Jan-2008

0.5.0 Reference Documents

<u>Title</u>	<u>Order/Contact</u>
ISO 9000 Quality Standard	AIAG Automotive Industry Action Group (248) 358-3005
QS 9000 Quality System	AIAG Automotive Industry Action Group (248) 358-3005
Tooling and Equipment Supplement to the QS 9000 Quality System	AIAG Automotive Industry Action Group (248) 358-3005
Reliability & Maintainability Guideline for Manufacturing Machinery and Equipment	SAE 400 Commonwealth Drive Warrendale, PA 15096 Phone: (412) 776-4841 National Center for Manufacturing Sciences 900 Victors Way Ann Arbor, MI 48108 (734) 995-0300
Failure Mode and Effects Analysis	AIAG Automotive Industry Action Group (248) 358-3005



0.6.0 Shop Trial Report



Shop Trial Report – Machinery and Equipment Control Components

Send Completed Form to your Divisional Representative on the Global Manufacturing Standards Technical Committee

Division	Plant	Department	
Installation Location (Machine Name, Operation, Brass Tag No., Controls Dwg. No.)			
Description of Component Being Tested	Type of Component/Manufacturer		Model No.
	Supplier/Contact (Name, Phone No., Email)		Series (Letter or #)
Date Test Started	Date Test Completed	# of Cycles Completed	
Reason For Test (New Technology, New Process, etc.)			
Detailed Description of Installation and Operating Parameters (Voltage, Operating Pressure, etc.)			
If A Failure Occurred, State the Reason		8D / Root Cause Analysis Performed (attach report)	Failure Date
Comments (Performance/Advantages/Disadvantages/Cost Comparison, etc.)			
Shop Trial Conducted By		Phone No.	Title
Concurred - Division Standards Representative		Phone No.	Title
Applicable Plant Activities	Concurred By	Date	Comments

* Use attachments if additional space is required.



1.0	AC ELECTRIC MOTORS																				
1.1	Integral - T-Frame, Totally Enclosed Types																				
	T-Frame to U-Frame adaptor bases are available from most distributors. Reference Ford Global Manufacturing Standard w-EM1, Revised 2001. Shall be UL Recognized and CSA Certified																				
	<table> <tr> <th>Manufacturers</th><th>Model Numbers</th></tr> <tr> <td>Marathon Electric</td><td>XRI-Severe Duty</td></tr> <tr> <td>Reliance</td><td>XEX, Manufactured after January 1998</td></tr> <tr> <td>Brook Hansen</td><td>56 Frame</td></tr> </table>	Manufacturers	Model Numbers	Marathon Electric	XRI-Severe Duty	Reliance	XEX, Manufactured after January 1998	Brook Hansen	56 Frame												
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1.2	Fractional - IEC, Totally Enclosed Types																				
	Reference Ford Global Manufacturing Standard w-EM1, Revised 2001. Shall be UL Recognized and CSA Certified																				
	<table> <tr> <th>Manufacturers</th><th>Model Numbers</th></tr> <tr> <td>SEW</td><td>DT-xxx with DT100 Motor Box Option</td></tr> </table>	Manufacturers	Model Numbers	SEW	DT-xxx with DT100 Motor Box Option																
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SEW	DT-xxx with DT100 Motor Box Option																				
2.0	MAIN DISCONNECT MECHANISMS AND DISCONNECT SWITCHES																				
2.1	Operating Mechanisms - Solid Rod and Cable Operated																				
	Switches SHALL BE Variable Depth. Other types are NOT APPROVED . Molded case circuit breakers are to be approved by the requisitioning facility and compliant with SAE HS-1738. Reference SAE HS-1738 and Ford Standard EX1 and Ford Standard w-ES20. Shall be UL 98 Listed, CSA Certified, and CE Marked per EN 60947-3.																				
	<table> <tr> <th>Manufacturers</th><th>Model Numbers</th></tr> <tr> <td>Allen Bradley</td><td>1494V-DH6xx, Series B (Fusible)</td></tr> <tr> <td>Allen Bradley</td><td>Use all above Allen Bradley Switches with 1494V Hardware</td></tr> <tr> <td>Square D</td><td>9422-ATCF331 9422-ATDF631 (Fusible)</td></tr> <tr> <td>Square D</td><td>9422-ATEF101 9422-ATF12 (Fusible)</td></tr> <tr> <td>Square D</td><td>9422-ARG11 9422-ART11 (Circuit Breaker)</td></tr> <tr> <td>Square D</td><td>9422-CGJ50 9422-CSF50 (Cable Operated Circuit Breaker)</td></tr> <tr> <td>Square D</td><td>9422-CKA50 9422-CSJ50 (Cable Operated Circuit Breaker)</td></tr> <tr> <td>Square D</td><td>Use above Cable Operated Disconnects with 9422-A1 Handle</td></tr> <tr> <td>Square D</td><td>Use all above Square D Switches with 9423 Hardware</td></tr> </table>	Manufacturers	Model Numbers	Allen Bradley	1494V-DH6xx, Series B (Fusible)	Allen Bradley	Use all above Allen Bradley Switches with 1494V Hardware	Square D	9422-ATCF331 9422-ATDF631 (Fusible)	Square D	9422-ATEF101 9422-ATF12 (Fusible)	Square D	9422-ARG11 9422-ART11 (Circuit Breaker)	Square D	9422-CGJ50 9422-CSF50 (Cable Operated Circuit Breaker)	Square D	9422-CKA50 9422-CSJ50 (Cable Operated Circuit Breaker)	Square D	Use above Cable Operated Disconnects with 9422-A1 Handle	Square D	Use all above Square D Switches with 9423 Hardware
Manufacturers	Model Numbers																				
Allen Bradley	1494V-DH6xx, Series B (Fusible)																				
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Square D	9422-CKA50 9422-CSJ50 (Cable Operated Circuit Breaker)																				
Square D	Use above Cable Operated Disconnects with 9422-A1 Handle																				
Square D	Use all above Square D Switches with 9423 Hardware																				
2.2	Safety Disconnect Switches - Knife Blade Type, Canadian Applications																				
	FOR USE IN CANADA ONLY! Reference Ford Standard w-ES20. Shall be NEMA 12 Rated and CSA Certified.																				
	<table> <tr> <th>Manufacturers</th><th>Model Numbers</th></tr> <tr> <td>Square D</td><td>3110-CH36xAWK (Fusible)</td></tr> <tr> <td>Square D</td><td>3110-CHU36xAWK (Non-Fusible)</td></tr> </table>	Manufacturers	Model Numbers	Square D	3110-CH36xAWK (Fusible)	Square D	3110-CHU36xAWK (Non-Fusible)														
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2.3	Safety Disconnect Switches - Knife Blade Type, US Applications																				
	FOR USE IN USA ONLY! Reference Ford Standard w-ES20. Shall be NEMA 12 Rated and UL 98 Listed.																				
	<table> <tr> <th>Manufacturers</th><th>Model Numbers</th></tr> <tr> <td>Square D</td><td>3110-H36xAWK (Fusible)</td></tr> <tr> <td>Square D</td><td>3110-HU36xAWK (Non-Fusible)</td></tr> <tr> <td>Siemens</td><td>VBII-HF36xJ (Fusible)</td></tr> <tr> <td>Siemens</td><td>VBII-HNF36xJ (Non-Fusible)</td></tr> <tr> <td>Allen Bradley</td><td>1494F-FNP-xxx (Non-Fusible)</td></tr> </table>	Manufacturers	Model Numbers	Square D	3110-H36xAWK (Fusible)	Square D	3110-HU36xAWK (Non-Fusible)	Siemens	VBII-HF36xJ (Fusible)	Siemens	VBII-HNF36xJ (Non-Fusible)	Allen Bradley	1494F-FNP-xxx (Non-Fusible)								
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2.4	Secondary and Auxiliary Rotary Disconnect Switches				
	Reference Ford Standard w-ES20. Shall be Rated at 65kA Minimum Withstand at 480/277 VAC. Shall be UL 98 Listed, CSA Certified, and CE Marked per EN 60947-3.				
	<table> <tr> <th>Manufacturers</th><th>Model Numbers</th></tr> <tr> <td>Not Yet Available</td><td>Not Yet Available</td></tr> </table>	Manufacturers	Model Numbers	Not Yet Available	Not Yet Available
Manufacturers	Model Numbers				
Not Yet Available	Not Yet Available				

3.0	SWITCHES												
3.1	Limit, Lever Arm Type												
	Reference Ford Global Manufacturing Standard w-EX0. Shall be UL 508 Listed, CSA Certified, and CE Marked.												
	<table> <tr> <th>Manufacturers</th><th>Model Numbers</th></tr> <tr> <td>Allen Bradley</td><td>802T-A-xP 802M-A-J9-x 802M-A-xYx-x</td></tr> <tr> <td>Telemecanique</td><td>ZCKJ11-ZCKE61 (Metal End Plunger)</td></tr> <tr> <td>Telemecanique</td><td>ZCKJ11-ZCKE67 (Steel Roller Plunger)</td></tr> <tr> <td>Telemecanique</td><td>ZCKJ11-ZCKE05-ZCKYxx (Lever Style)</td></tr> <tr> <td>Telemecanique</td><td>XCK-J12-SPEC-05xx (Being Obsoleted)</td></tr> </table>	Manufacturers	Model Numbers	Allen Bradley	802T-A-xP 802M-A-J9-x 802M-A-xYx-x	Telemecanique	ZCKJ11-ZCKE61 (Metal End Plunger)	Telemecanique	ZCKJ11-ZCKE67 (Steel Roller Plunger)	Telemecanique	ZCKJ11-ZCKE05-ZCKYxx (Lever Style)	Telemecanique	XCK-J12-SPEC-05xx (Being Obsoleted)
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3.2	Proximity, 40mm x 40mm Head Style																																		
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	<table> <tr> <th>Manufacturers</th><th>Model Numbers</th></tr> <tr> <td>ifm/Efector</td><td>IM-5078 (Sn=20mm, Shielded)</td></tr> <tr> <td>ifm/Efector</td><td>IM-5053 (Sn=35mm, Non Shielded)</td></tr> <tr> <td>Telemecanique</td><td>XS8-C40PC-440D (Sn=20mm, Non Shielded)</td></tr> <tr> <td>Telemecanique</td><td>XS8-C40PC-449D (Sn=40mm, Non Shielded - Being Obsoleted)</td></tr> <tr> <td>Telemecanique</td><td>XS7-C1A1-PAM8 (Sn=XXmm, Non Shielded)</td></tr> <tr> <td>Balluff</td><td>BES-517-132-P6-H-S4 (Sn=20mm, Shielded, Long Body)</td></tr> <tr> <td>Balluff</td><td>BES-517-132-P7-H-S4 (Sn=40mm, Non Shielded, Long Body)</td></tr> <tr> <td>Balluff</td><td>BES-Q40KEU-PAH20B-S04G (Sn=20mm, Shielded, Short Body)</td></tr> <tr> <td>Balluff</td><td>BES-Q40KEU-PAH25F-S04G (Sn=25mm, Non Shielded, Short Body)</td></tr> <tr> <td>Pepperl + Fuchs</td><td>NBB-20-L2-E2-V1 (Sn=20mm, Shielded, Short Body)</td></tr> <tr> <td>Pepperl + Fuchs</td><td>NBN-30-L2-E2-V1 (Sn=30mm, Non Shielded, Short Body)</td></tr> <tr> <td>Pepperl + Fuchs</td><td>NBN-40-L2-E2-V1 (Sn=40mm, Non Shielded, Short Body)</td></tr> <tr> <td>Pepperl + Fuchs</td><td>NJ15-U4-E2-V1 (Sn=15mm, Shielded, Long Body)</td></tr> <tr> <td>Pepperl + Fuchs</td><td>NJ20-U4-E2-V1 (Sn=20mm, Shielded, Long Body)</td></tr> <tr> <td>Pepperl + Fuchs</td><td>NJ30-U4-E2-V1 (Sn=30mm, Non Shielded, Long Body)</td></tr> <tr> <td>Pepperl + Fuchs</td><td>NCN40-U4-E2-V1 (Sn=40mm, Non Shielded, Long Body)</td></tr> </table>	Manufacturers	Model Numbers	ifm/Efector	IM-5078 (Sn=20mm, Shielded)	ifm/Efector	IM-5053 (Sn=35mm, Non Shielded)	Telemecanique	XS8-C40PC-440D (Sn=20mm, Non Shielded)	Telemecanique	XS8-C40PC-449D (Sn=40mm, Non Shielded - Being Obsoleted)	Telemecanique	XS7-C1A1-PAM8 (Sn=XXmm, Non Shielded)	Balluff	BES-517-132-P6-H-S4 (Sn=20mm, Shielded, Long Body)	Balluff	BES-517-132-P7-H-S4 (Sn=40mm, Non Shielded, Long Body)	Balluff	BES-Q40KEU-PAH20B-S04G (Sn=20mm, Shielded, Short Body)	Balluff	BES-Q40KEU-PAH25F-S04G (Sn=25mm, Non Shielded, Short Body)	Pepperl + Fuchs	NBB-20-L2-E2-V1 (Sn=20mm, Shielded, Short Body)	Pepperl + Fuchs	NBN-30-L2-E2-V1 (Sn=30mm, Non Shielded, Short Body)	Pepperl + Fuchs	NBN-40-L2-E2-V1 (Sn=40mm, Non Shielded, Short Body)	Pepperl + Fuchs	NJ15-U4-E2-V1 (Sn=15mm, Shielded, Long Body)	Pepperl + Fuchs	NJ20-U4-E2-V1 (Sn=20mm, Shielded, Long Body)	Pepperl + Fuchs	NJ30-U4-E2-V1 (Sn=30mm, Non Shielded, Long Body)	Pepperl + Fuchs	NCN40-U4-E2-V1 (Sn=40mm, Non Shielded, Long Body)
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Pepperl + Fuchs	NCN40-U4-E2-V1 (Sn=40mm, Non Shielded, Long Body)																																		

3.3	Proximity, Weld Field Immune, 40mm x 40mm Head Style																		
	Types listed are for sensing ferrous material.																		
	Reference Ford Global Manufacturing Standard w-EX0. Shall be UL 508 Listed, CSA Certified, and CE Marked.																		
	<table> <tr> <th>Manufacturers</th><th>Model Numbers</th></tr> <tr> <td>ifm/Efector</td><td>IM-5058 (Sn=15mm, Flush Mount, Universal Sensing)</td></tr> <tr> <td>ifm/Efector</td><td>IM-5084 (Sn=20mm, Flush Mount, Universal Sensing)</td></tr> <tr> <td>Telemecanique</td><td>XSEC-107-1301 (Sn=10mm, Flush Mount, End Sensing)</td></tr> <tr> <td>Telemecanique</td><td>XSEC-107-1331 (Sn=10mm, Flush Mount, Side Sensing)</td></tr> <tr> <td>Balluff</td><td>BES-Q40KEU-PAH15A-S04G (Sn=15mm, Shielded, Universal Sensing)</td></tr> <tr> <td>Balluff</td><td>BES-Q40KFU-PAC35E-S04G (Sn=35mm, Non Shielded, Universal Sensing)</td></tr> <tr> <td>Namco</td><td>EE510-15440 (Sn=25mm, Non Shielded, Front Sensing)</td></tr> <tr> <td>Namco</td><td>EE510-19440 (Sn=25mm, Non Shielded, Top Sensing)</td></tr> </table>	Manufacturers	Model Numbers	ifm/Efector	IM-5058 (Sn=15mm, Flush Mount, Universal Sensing)	ifm/Efector	IM-5084 (Sn=20mm, Flush Mount, Universal Sensing)	Telemecanique	XSEC-107-1301 (Sn=10mm, Flush Mount, End Sensing)	Telemecanique	XSEC-107-1331 (Sn=10mm, Flush Mount, Side Sensing)	Balluff	BES-Q40KEU-PAH15A-S04G (Sn=15mm, Shielded, Universal Sensing)	Balluff	BES-Q40KFU-PAC35E-S04G (Sn=35mm, Non Shielded, Universal Sensing)	Namco	EE510-15440 (Sn=25mm, Non Shielded, Front Sensing)	Namco	EE510-19440 (Sn=25mm, Non Shielded, Top Sensing)
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Namco	EE510-15440 (Sn=25mm, Non Shielded, Front Sensing)																		
Namco	EE510-19440 (Sn=25mm, Non Shielded, Top Sensing)																		



3.4 Proximity, Tubular Style

Not suitable for use in intense magnetic fields (closer than 12mm to welder throat).

Reference Ford Global Manufacturing Standard w-EX0.

Shall be UL 508 Listed, CSA Certified, and CE Marked.

Manufacturers	Model Numbers
ifm/Efector	IE-5318 (8mm, Sn=2mm)
ifm/Efector	IFC-204 IFC-210 (12mm, Sn=4mm)
ifm/Efector	IGC-204 IGC-210 (18mm, Sn=8mm)
ifm/Efector	II-5742 (30mm, Sn=15mm)
Balluff	BES-516-324-G-S4-C BES-516-324-G-E5-D-S4 (8mm)
Balluff	BES-516-325-G-S4-C BES-516-325-G-E5-Y-S4 (12mm)
Balluff	BES-516-326-G-S4-H BES-516-326-G-E5-Y-S4 (18mm)
Balluff	BES-516-327-G-S4-H BES-516-327-G-E5-Y-S4 (30 mm)
Telemecanique	XS1-M08-PA370D (8mm - Being Obsolete)
Telemecanique	XS1-N08-PA349D XS6-08B1-PAM12 (8mm)
Telemecanique	XS1-M12-PA370D (12mm - Being Obsolete)
Telemecanique	XS1-N12-PA349D XS6-12B1-PAM12 (12mm)
Telemecanique	XS1-M18-PA370D (18mm - Being Obsolete)
Telemecanique	XS1-N18-PA349D XS6-18B1-PAM12 (18mm)
Telemecanique	XS1-M30-PA370D (30mm - Being Obsolete)
Telemecanique	XS1-N30-PA349D XS6-30B1-PAM12 (30mm)
Pepperl + Fuchs	NBB2-8GM40-E2-V1 (8mm, Sn=2mm)
Pepperl + Fuchs	NBB4-12GM50-E2-V1 (12mm, Sn=4mm)
Pepperl + Fuchs	NBB8-18GM50-E2-V1 (18mm, Sn=8mm)
Pepperl + Fuchs	NBB15-30GM50-E2-V1 (30mm, Sn=15mm)
Turck	BI-xU-xTxx-AP4X-H1141 BI-5-Q08-VP6X2-V-1131
Turck	NI-xU-M1x-AP4X-H1141 NI-xU-xxx0-xP4Xx-H1141

3.5 Proximity, Weld Field Immune, Tubular Style

Reference Ford Global Manufacturing Standard w-EX0.

Shall be UL 508 Listed, CSA Certified, and CE Marked.

Manufacturers	Model Numbers
ifm/Efector	IG-5951 (18mm, Sn=8mm)
ifm/Efector	II-5858 (30mm, Sn=15mm)
Telemecanique	XS1-M12-PAW01D (12mm)
Telemecanique	XS1-M18-PAW01D (18mm)
Telemecanique	XS1-M30-PAW01D (30mm)
Balluff	BES-516-325-S4-W (12mm)
Balluff	BES-516-326-S4-W (18mm)
Balluff	BES-516-327-S4-W (30mm)
Namco	EE510-78442 (12mm, Sn=2mm)
Namco	EE510-73442 (18mm, Sn=5mm)
Namco	EE510-77442 (30mm, Sn=10mm)