

|                                                                                                                                                                                                                                                                                                                                         |                                         |                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------|
| <b>NAVISTAR, INC.</b>                                                                                                                                                                                                                                                                                                                   |                                         |                                                    |
| <b>Material, Parts, and Process Specifications<br/>(MPAPS)</b>                                                                                                                                                                                                                                                                          |                                         | <b>NUMBER:</b><br><b>MPAPS S-BM-30.101-GS/PL</b>   |
|                                                                                                                                                                                                                                                                                                                                         |                                         | <b>Former Designation:</b> <b>ESP-BM-30.101-GS</b> |
| <b>TITLE:</b><br><b>Projection Weld Studs - Metric Series<br/>(Noun Code 0810)</b>                                                                                                                                                                                                                                                      | <b>CURRENT REV No.:</b><br><b>1704</b>  | <b>DATE:</b><br><b>April 2017</b>                  |
| <b>WRITTEN/EDITED BY:</b><br><b>A. Bourdon</b>                                                                                                                                                                                                                                                                                          | <b>APPROVED BY:</b><br><b>R. Goluch</b> | <b>SUPERSEDES:</b><br><b>Rev. 1506 - June 2015</b> |
| <b>PRINTED COPIES OF THIS DOCUMENT MUST BE VERIFIED FOR CURRENT REVISION</b>                                                                                                                                                                                                                                                            |                                         |                                                    |
| <i>This specification may involve hazardous materials, equipment, and procedures. This specification does not purport to address all of the safety issues associated with its use. The user is responsible to consult appropriate safety and health practices and to determine the applicability of regulatory limits prior to use.</i> |                                         |                                                    |
| <b>Change Notice:</b>                                                                                                                                                                                                                                                                                                                   |                                         |                                                    |

- 1.0 GENERAL:** There are no national or international standards on this product. The specifications are based on suppliers' manufacture and user requirements.
- Inch dimensioned weld studs may be found in MPAPS S-B-30.101-GS/PL.
- 2.0 RESTRICTED CHEMICAL SUBSTANCES:** Effective January 1, 2007, all product supplied to the requirements of this specification must comply with the requirements of the MPAPS B-50 specification.
- 3.0 POLICY FOR SELECTING PARTS FOR NEW DESIGN:** Approved parts are so designated to reduce variety of parts and assure maximum availability, interchangeability, and cost savings in volume buying.
- For new design, parts shall be selected from "Approved" part list only.

Material: Steel  
Finish: Plain  
Type of Head: Three Projections under Head

Nominal Sizes &  
Length Incrementation:

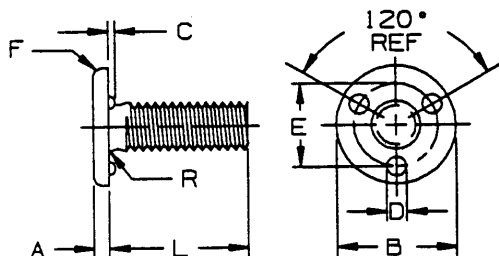
| Lengths | Nominal Sizes |   |   |   |    |    |
|---------|---------------|---|---|---|----|----|
|         | 4             | 5 | 6 | 8 | 10 | 12 |
| 8       | X             |   |   |   |    |    |
| 10      | X             | X |   |   |    |    |
| 12      | X             | X | X |   |    |    |
| 16      | X             | X | X | X |    |    |
| 20      | X             | X | X | X | X  |    |
| 25      | X             | X | X | X | X  | X  |
| 30      |               | X | X | X | X  | X  |
| 35      |               |   | X | X | X  | X  |
| 40      |               |   |   | X | X  | X  |
| 45      |               |   |   |   | X  | X  |
| 50      |               |   |   |   | X  | X  |

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|                                                  |                                               |                                 |
|--------------------------------------------------|-----------------------------------------------|---------------------------------|
| <b>NUMBER:</b><br><b>MPAPS S-BM-30.101-GS/PL</b> | <b>TITLE:</b><br><b>Projection Weld Studs</b> | <b>REVISION:</b><br><b>1704</b> |
|--------------------------------------------------|-----------------------------------------------|---------------------------------|

- 4.0 HEAD:** The bearing surface of the head will be at right angles to the axis of the shank within 2 degrees.
- 5.0 LENGTH:** The length of weld studs will be measured as indicated in the illustration for each type.  
The tolerance for length will be as follows:
- |                           |              |
|---------------------------|--------------|
| Up to and including 25 mm | = 0, -0.8 mm |
| Over 25 mm thru 50 mm     | = 0, -1.6 mm |
| Over 50 mm                | = 0, -2.3 mm |
- 6.0 POINTS:** Projection weld studs are furnished with plain sheared ends.
- 7.0 THREADS:** Thread form, diameters, and associated pitches are in accordance with ISO Recommendations for coarse pitch series. Threads will be made to the tolerances of the medium class of fit (6g) for plain or unplated screws as shown in ISO R965/11, General Purpose Metric Screw Threads. Full formed thread will extend to within one and one half pitches of the projection under the head.
- 8.0 MARKING:** Weld studs may carry some form of manufacturers identification on top of head. Each stud will show an "M" embossed or indented on top of head to designate this product as metric.
- 9.0 MATERIAL:** Steel, high welding quality low carbon steel, 0-100W per MPAPS A-0. Part II.
- 10.0 FINISH:** Plain (PLN).
- 11.0 WORKMANSHIP:** Weld studs must be free from burrs, loose scale, sharp edges and all other defects that might affect their serviceability.
- 12.0 TYPE U3 PROJECTION WELD STUDS:**



Dimensions in millimeters:

| Nominal Size        |       | M4   | M5   | M6   | M8   | M10  |
|---------------------|-------|------|------|------|------|------|
|                     | Pitch | 0.7  | 0.8  | 1    | 1.25 | 1.5  |
| A Head Height       | Max   | 1.43 | 1.73 | 2.03 | 2.63 | 3.23 |
|                     | Min   | 1.17 | 1.47 | 1.77 | 2.37 | 2.97 |
| B Head Diameter     | Max   | 9.5  | 11.8 | 14.3 | 19.2 | 23.4 |
|                     | Min   | 9.0  | 11.3 | 13.7 | 18.4 | 22.6 |
| C Projection Height | Max   | 0.69 | 0.90 | 1.07 | 1.25 | 1.45 |
|                     | Min   | 0.59 | 0.80 | 0.97 | 1.15 | 1.35 |
| D Projection Width  | Max   | 1.91 | 2.39 | 2.67 | 3.23 | 3.69 |
|                     | Min   | 1.65 | 2.13 | 2.41 | 2.97 | 3.43 |
| E Locating Circle   | Ref   | 6.75 | 7.92 | 10.3 | 13.4 | 15.8 |
| F Head Radius       | Max   | 0.9  | 1.0  | 1.3  | 1.4  | 1.7  |
| R Fillet Radius     | Max   | 0.6  | 0.8  | 1.0  | 1.2  | 1.5  |

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