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TPC assembly tolling and procedure

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The Multi-Purpose Detector (MPD) is designed to study heavy-ion collisions at the Nuclotron-based heavy Ion Collider fAcility (NICA) at JINR. Theory predicts that at the energy density above $1 \text{ GeV}/\text{fm}^3$ the nuclear matter undergoes a phase transition to the state of deconned quark and gluons - Quark-Gluon Plasma (QGP). Such energy densities are released in head-on collisions of heavy ions at energies (\sqrt{s}) of several GeV. However, the region of the QCD phase diagram of non-zero baryon densities is mostly unexplored up to now. The Time-Projection Chamber (TPC) is the main tracking detector and used for charge particles identification. The multi wire proportional chamber (MWPC) with cathode pads is used for readout. The TPC being a large but conceptually simple detector must be constructed with very high precision to reduce nonlinear systematic effects. High stability of the mechanical structure, uniformity of the drift electric field, stability of the temperature, purity of the gas mixture and the gas gain uniformity are needed to provide precise track reconstruction and particle energy-loss measurements.

TPC assembly tooling is designed and manufactured. Procedure of TPC assembly is presented.

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