

## API 685 Canned Motor Pumps



## Specifying and installing an API 685 pump is not just a matter of compliance. It's about working together to meet plant requirements for safety and risk management to assure project success.

With Teikoku sealless canned motor pump solutions, you can decide the exact level of API 685 compliance needed to configure a pump to individual user/plant specifications. You choose the options based on project cost, fluid, QA and safety parameters. Only Teikoku's unique menu-driven manufacturing approach gives you this flexibility. What else would you expect from the global leader in canned motor pump technology?

When it comes to configuring and operating an API 685 pump, we realize there is no such thing as "one size fits all." With the numerous fluid circulation plans, containment systems, support and instrumentation options available under API 685, you need assurance for supply of required features. However, you shouldn't have to pay for more pump than your application requires. That's why the experts at Teikoku developed the only menu-based system for ordering, configuring and documenting API 685 pumps that considers individual user requirements in all designs.

This brochure highlights a high-temperature application. Start with our standard Plan 23-S pump and build on further API 685 compliance. Add accessories and upgrades to



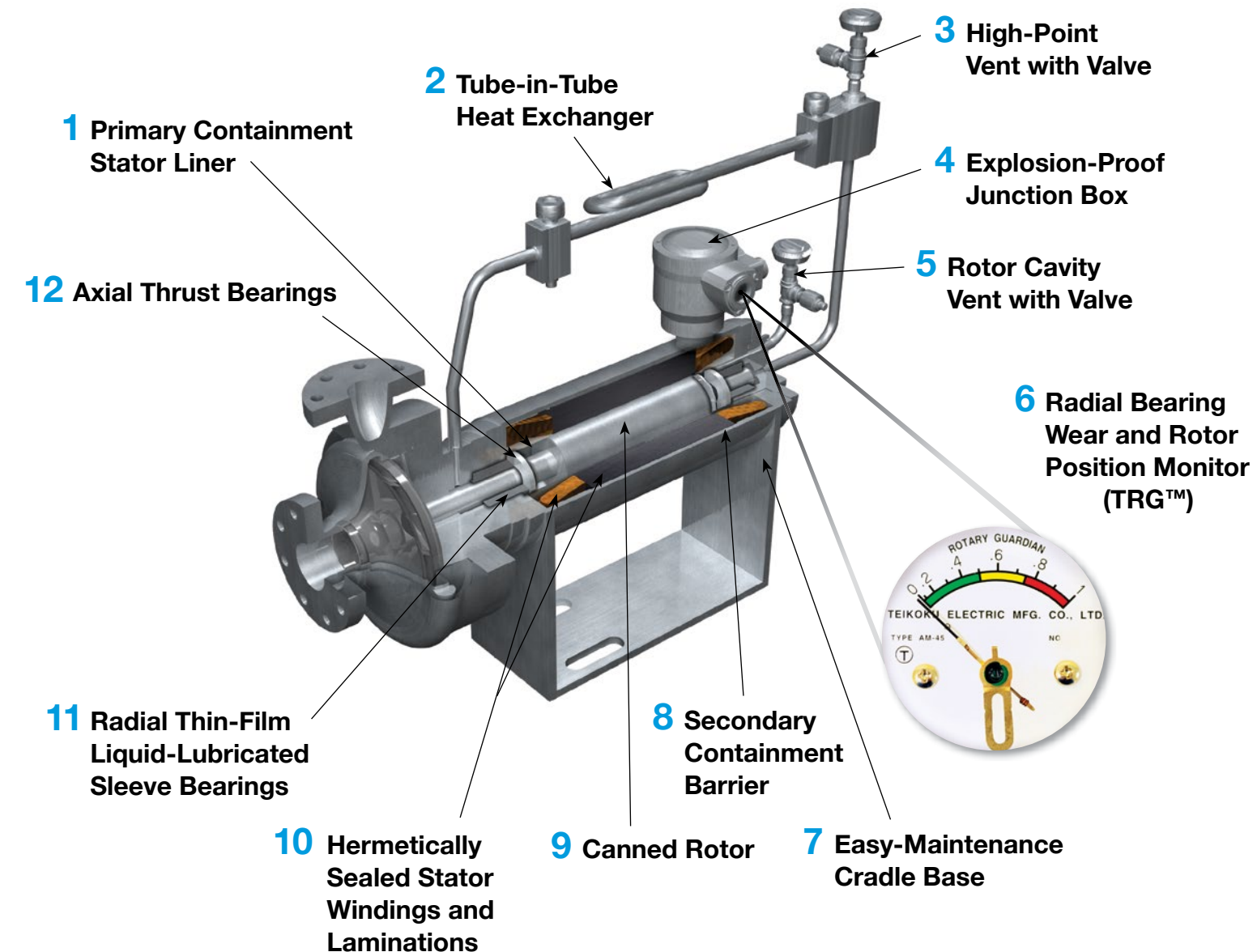
*API 685 Plan 23-S Sealless Canned Motor Pump designed and manufactured to exact user requirements for API 685 compliance, instrument selection, enclosure area classification and documented Quality Assurance*

achieve the precise levels of plant compliance, safety and emission control needed to meet end-user or engineering firm standards. All Teikoku pumps are engineered for peak performance – with pumps and hermetically sealed motors designed to work in concert for maximum efficiency and long-term operating reliability. And it's all backed by the design, manufacturing, field support and start-up resources of the global Teikoku Group.

### Teikoku API 685 Benefits:

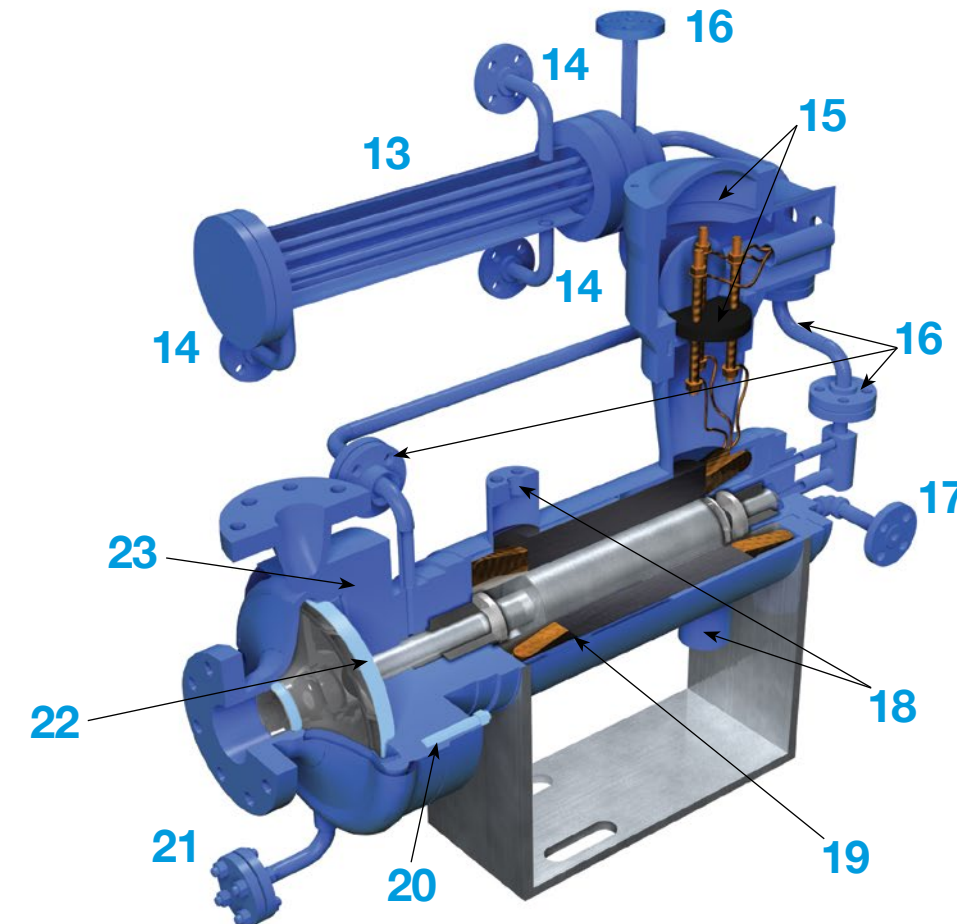
- Secondary containment is standard issue
- Instrumentation to meet user-/client-established standards and local compliance for safety and reliability monitoring
- Rotating assembly position monitors for real-time bearing wear indication and preventative maintenance scheduling
- Third-party labeled explosion-proof designs to global standards
- Operator and maintenance personnel training and start-up assistance offered at no cost to users

## Standard High-Temperature Service Canned Motor Pump



<b>13</b>	Design Pressure Rated Shell and Tube Heat Exchanger	6.1.20
<b>14</b>	Design Pressure Rated Utility Piping and Connections	6.1.24
<b>15</b>	Design Pressure Rated Terminal Plate Seal and Junction Box	7.4.2.4
<b>16</b>	Design Pressure Rated Process Piping and Connections	6.3.1.1
<b>17</b>	Design Pressure Rated Rotor Cavity Drain with Gussets (Gussets omitted for clarity)	6.1.11
<b>18</b>	Design Pressure Rated Stator Cavity Flush and Drain Connections	6.7.9
<b>19</b>	Design Pressure Rated Secondary Containment	6.7.5
<b>20</b>	Stud Bolts	6.1.34
<b>21</b>	Design Pressure Rated Pump Casing Drain with Gussets (Gussets omitted for clarity)	6.3.3.5
<b>22</b>	Replaceable Impeller Wear Rings	6.6
<b>23</b>	Design Pressure Rated Pump Casing and Adapter	6.2.1

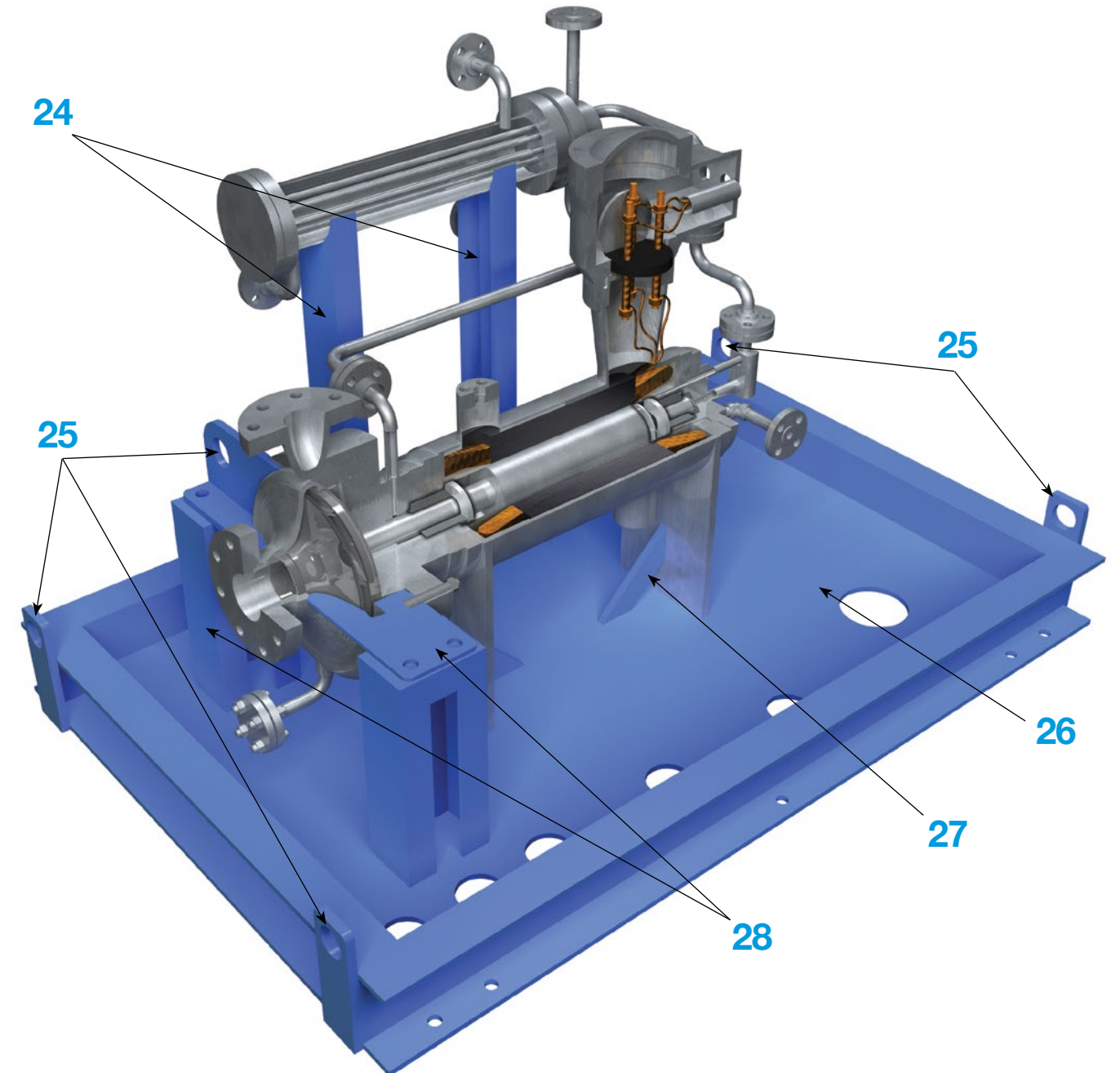
## Mechanical Design





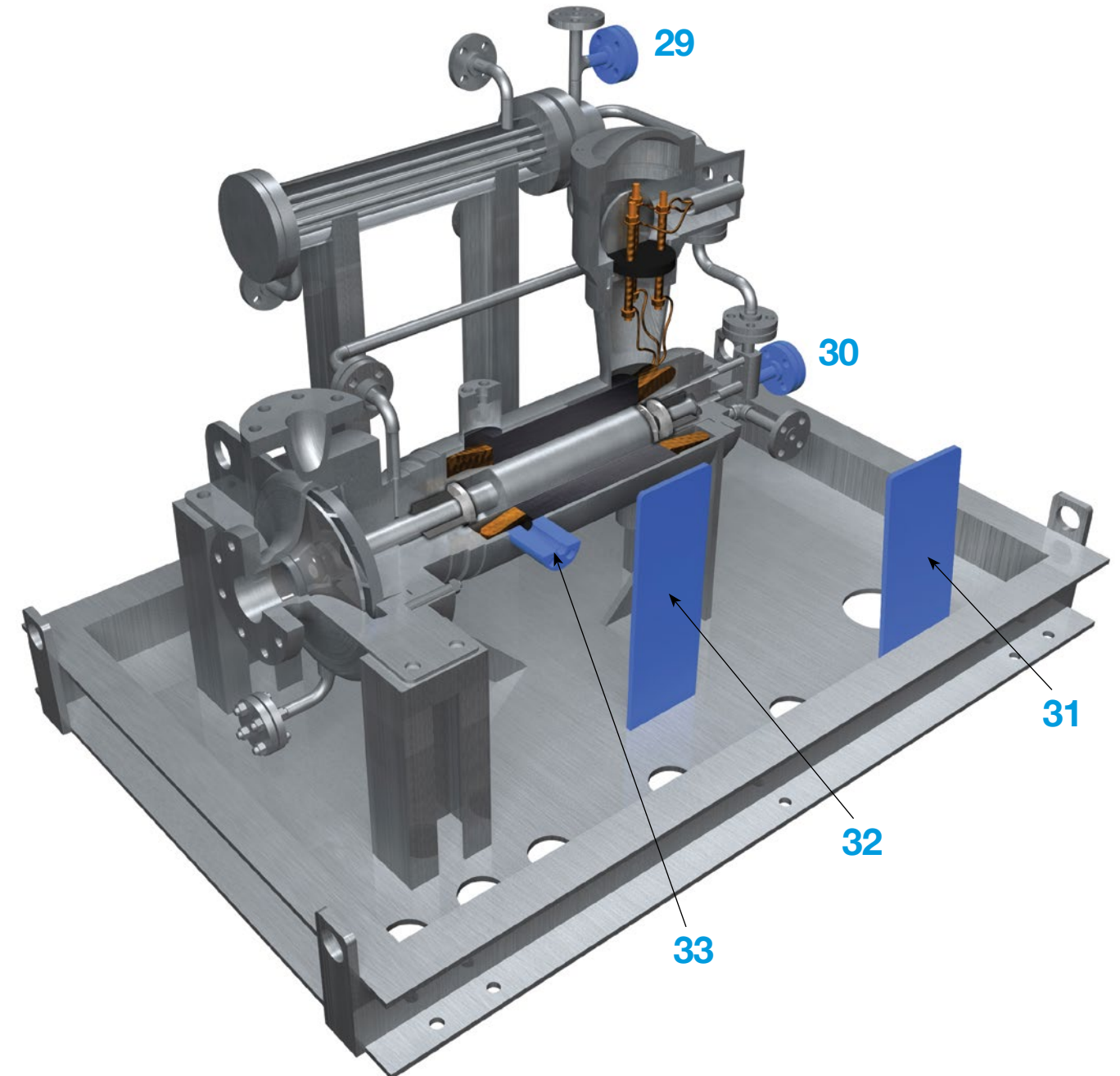
<b>24</b>	Heat Exchanger Supports	7.3
<b>25</b>	Lifting Brackets	7.3
<b>26</b>	Extended Baseplate with Drain Pan (Optional for Canned Motor Pumps) If specified, design details available.	7.3 9.1.5.3
<b>27</b>	Cradle Gussets	7.3
<b>28</b>	Pump Casing Centerline Supports	6.2.9

## Unit Support



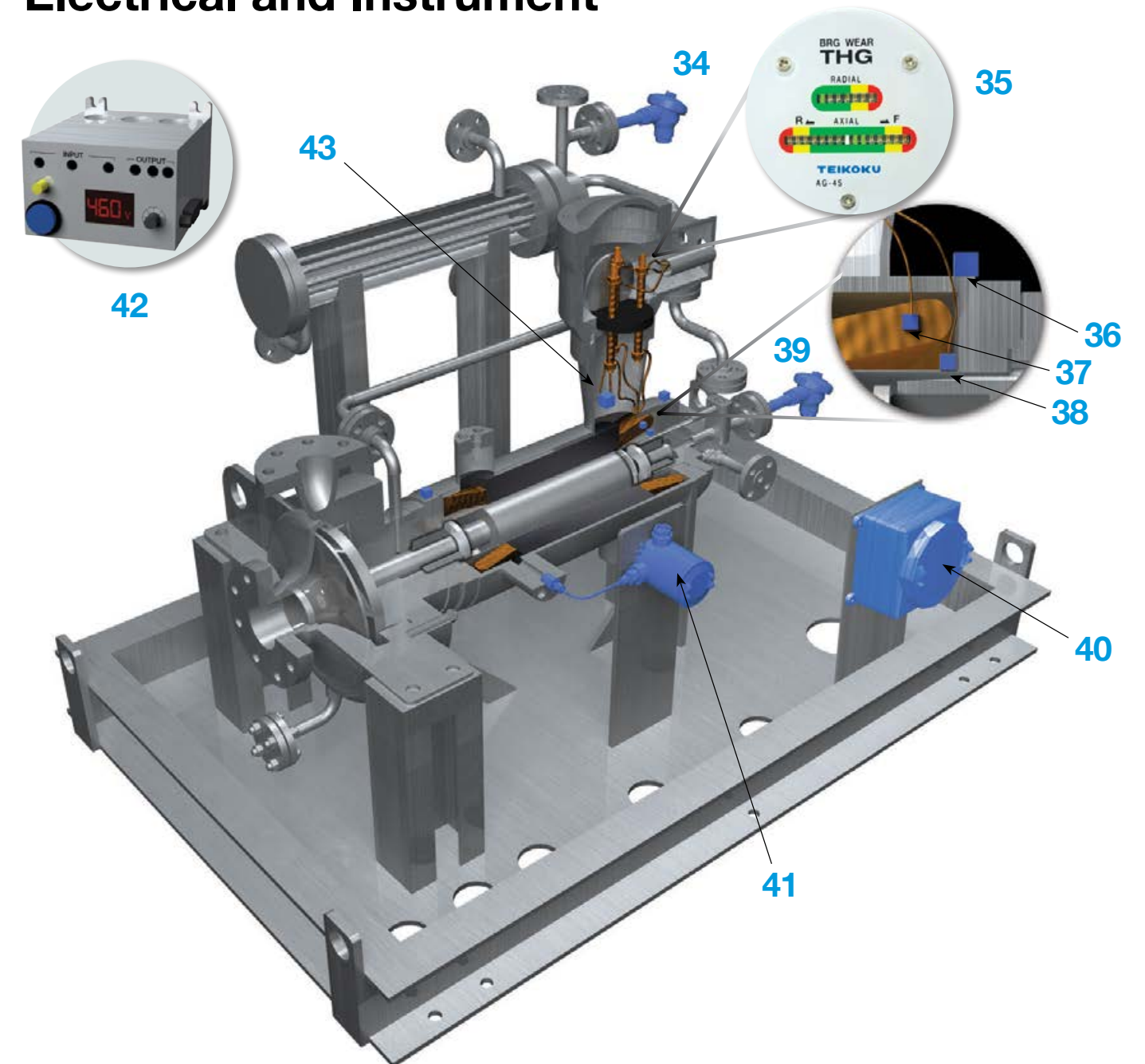
<b>29</b>	Heat Exchanger Access Connection	6.3.3
<b>30</b>	Rotor Cavity Access Connection	6.3.3
<b>31</b>	Instrument Junction Box Support – First Edition	7.2.1.4
<b>32</b>	Transmitter Support Bracket	6.3.3
<b>33</b>	Secondary Containment Access Connection	6.3.3

## Electrical and Instrument Connection



<b>34</b> Heat Exchanger Level Sensor	Annex E.LE1
<b>35</b> Radial and Axial Rotor Position Monitor (THG™)	7.4.1.3
<b>36</b> Vibration Pads	Annex E.VE
<b>37</b> Stator Winding RTD	Annex E.TE1
<b>38</b> Stator Liner Temperature Sensor	7.4.2.1
<b>39</b> Rotor Cavity Temperature Probe	Annex E.TE2
<b>40</b> Instrument Junction Box – First Edition	7.2.1.4
<b>41</b> Secondary Containment Pressure Transmitter	7.4.2.3
<b>42</b> Power Monitor	7.4.2.1
<b>43</b> Secondary Containment Pressure Sensor (TPS)	7.4.2.3

## Electrical and Instrument



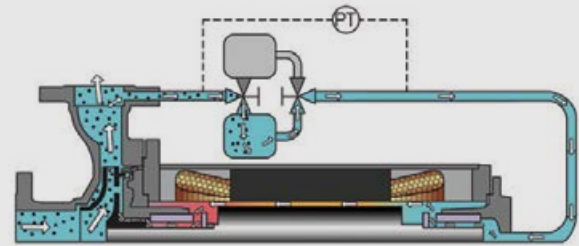


# Annex D Dirty or Special Circulation Fluid Plans

# Annex D Clean Circulating Fluid Plans

All sealless Teikoku Canned Motor Pumps can be designed and manufactured for use as envisioned under API 685 Annex D, Circulation Piping Schematics. These canned motor pump circulation plans offer users a view into handling a variety of clean and dirty fluid pumping applications in the emission-free, safe

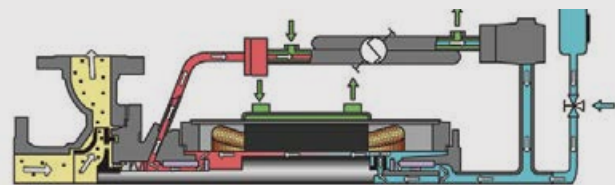
and highly reliable way that can only be achieved with canned motor pumps. The API 685 Circulation Plan possibilities are characterized here in generic cross sections of applied canned motor pump technology designed for applications to accommodate volatile, solids-laden, hot and temperature-sensitive fluids.



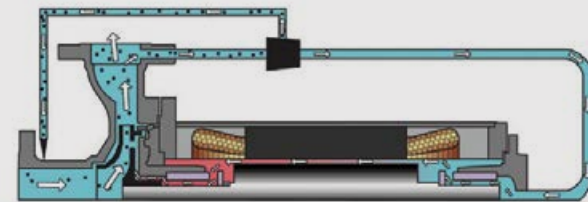
Plan 12-SE Filtered External Circulation



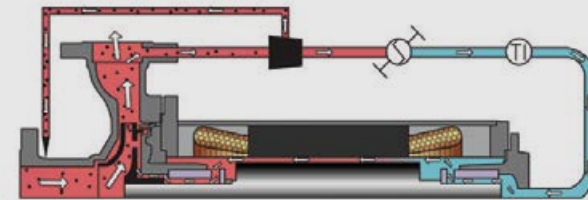
Plan 32-S External Fluid Flush Circulation



Plans 53-S & 54-S Pressurized or External Make-Up and Cooled Flush for Isolated Motor

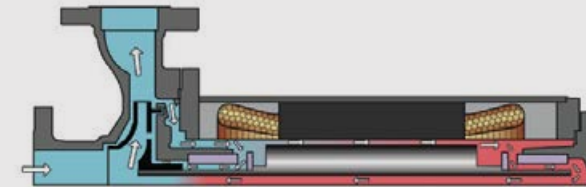


Plan 31-S External Circulation with Separator

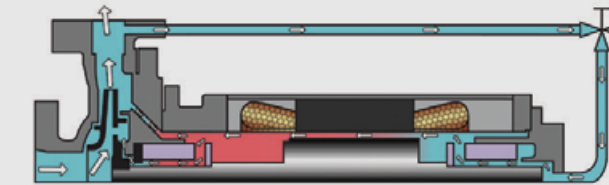


Plan 41-S Cooled External Circulation with Separator

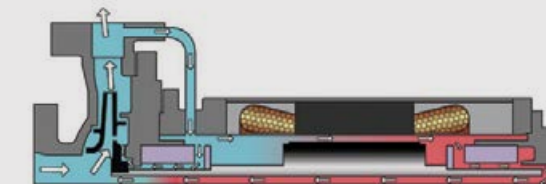
For even more varieties of Teikoku solutions under API 685 Plans, visit our Pump Circulation Paths at [www.TeikokuPumps.com](http://www.TeikokuPumps.com).



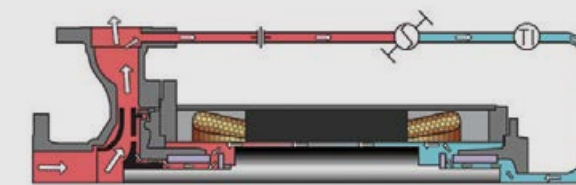
Plan 1-S Internal Circulation



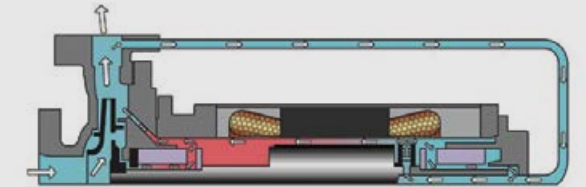
Plan 2-S External Circulation for Start-Up Flush



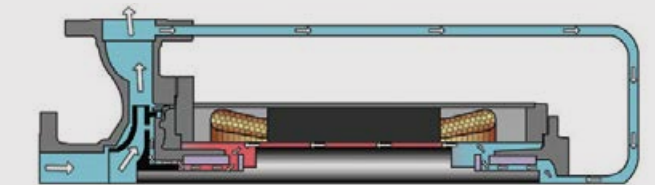
Plan 13-S Inboard Return External Circulation



Plan 21-S Cooled External Circulation



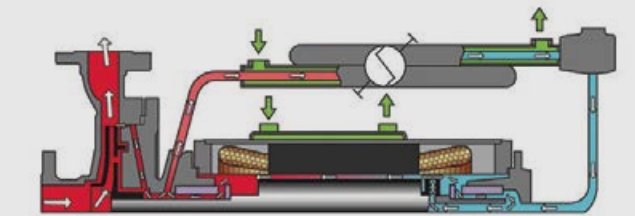
Plan 1-SD Pressurized Circulation



Plan 11-S Outboard Return External Circulation



Plan 13-SE Reverse Circulation



Plan 23-S Auxiliary Impeller Circulated and Cooled Isolated Motor

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