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使用说明书 Operation instructions

21X 套结钉扣机（液晶按键 K）

21X Bar-tacking and Button Sewing Machine (LCD Keys K)

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1. 控制面板图示及说明

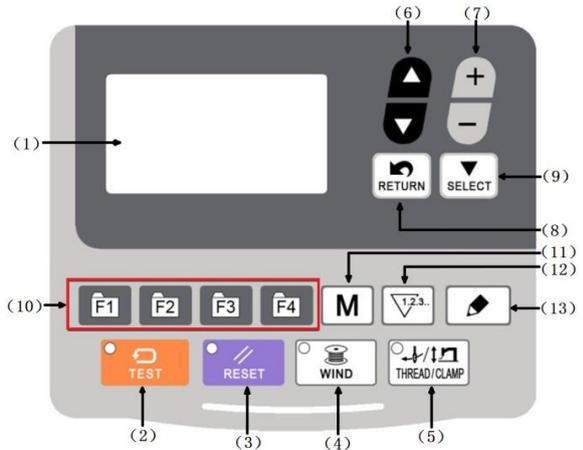
(1) 液晶显示屏：显示图案编号、形状等各种数据。

(2) 试缝键：在缝纫准备状态下（此时压脚在抬起位置）按此键可以进入花样单步试缝功能界面。

(3) 复位键：退出故障界面或将参数设定值返回到初始值时使用。

卷线键：按此键可以进入卷线（即卷绕底线）功能。

(4) 穿线/压脚高度设定键：提升、下降压脚。上升时，把针杆移动到原点；下降时，把针杆移



动到右侧。按此键后再按可以进入压脚高度设定功能。

(5) 项目选择键：切换花样号、菜单项或参数。

(6) 数据变更键：修改参数值，在试缝模式中单针移动送布等。

(7) 返回键：返回前一个画面。

(8) 选择键：进入当前选中的项目或在多个选项之间循环切换。

(9) 快速花样选择键（快速选择花样）：根据参数的设定值，可以快速选择设定的花样，在某些功能下有特殊作用。

(10) 模式键（M键）：进入功能菜单界面。

(11) 计数器键：在缝纫模式编辑（未准备）状态下，按下后可以直接进入计数器设置模式。

(12) 编辑键：在缝纫原点检测待命状态或缝纫准备状态下按此键可以进入花样参数修改界面。在部分功能下有特殊作用。

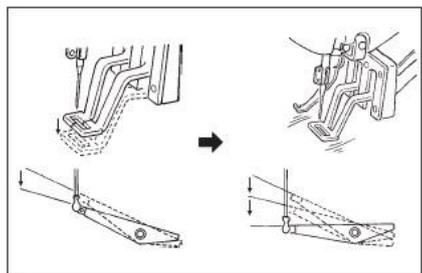
1.1 缝制

(1) 把缝制品放到压脚部。

(2) 踩踏板开关至第一级，压脚下降；松开踏板后，压脚上升。

(3) 踩踏板开关至第二级之后开始缝制。

(4) 缝制结束后，压脚上升返回到起始缝的位置。



2. 设置 P 花样与 C 花样

2.1 设置 P 花样

可以把电控系统内置的花样或者追加的外部花样（No.1~199）登记到 P01~P99 上。变更扩大缩小率、最高转速限制、缝制位置就可以登记。按 M 键进入功能菜单，选中“03 登记/删除 P 花样”，按 SELECT 键进入登记/删除 P 花样功能界面。

在登记/删除 P 花样功能界面下按项目选



择键可以选择 P 花样号，按选择键



可以选中花样号、缩放率和缝制速度等选项，按数据变更键  可以修改当前选中的选项的值。

(1) 登记内置花样或者外部追加花样为 P 花样

设定例：把内置 3 号花样的 X 扩大缩小 50%、最高速度限制 2,000sti/min 的设定登记到 P2。



1) 打开电源，然后按模式键 。进



入功能菜单。按项目选择键 ，把

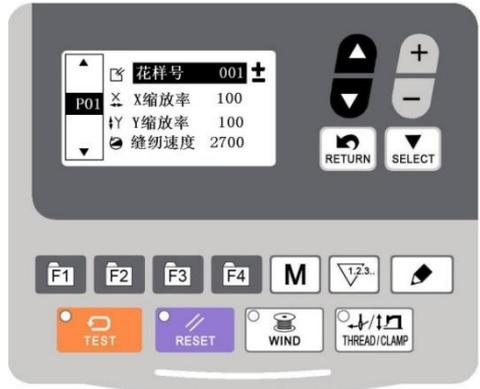
「03 登记/删除 P 花样」设定为选择状

态。按选择键 ，进入 P 花样登记/

删除功能界面。



2) 按项目选择键  选择一个未登记任何花样的 P 花样号（如：P01），按选择键  选中



“花样号”选项，按数据变更键把花样号设定为3。

3)缩放率和缝纫速度的设定与设定花样号的方法相同。

设定好需要设定的项目后按返回键  退出即可。

2.2 登记循环花样 (C 花样)

本缝纫机可以顺次地缝制复数的循环缝制图案数据。

最多可以输入 99 个花样，缝制具有多个不同的图案的缝制物时可以使用。

另外，最多还可以登记 99 个花样数据。

需要时，请拷贝之后使用。

(2)循环数据的选择

1)进入循环花样登记功能

打开电源，按模式键  进入功能菜

单，按项目选择键 ，把「04 登记/删除 C 花样」设定为选择状态。按选择键

，进入 C 花样登记/删除功能界面。

2)登记循环花样

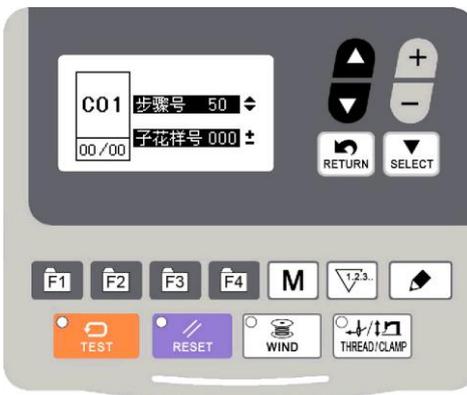
按项目选择键  选择一个未登记任何

子花样的 C 花样号，之后按数据变更键 

激活步骤号和子花样号区域，此时再按选择键  可以修改步骤号，按数据变更键  则可以修改子花样号，完成一个 C 花样登记后按 RETURN 键退出即可。

3)进行缝制

在 C 花样原点检测待命状态下踩踏板到二档可以使系统进行找原点，之后绣框自动运动到第一个子花样的起缝点，压脚抬起，系统进入缝纫准备状态，此时再踩踏板到二档就开始缝制，



缝纫完成后绣框自动运动到下一个子花样起缝点，压脚抬起，系统再次进入缝纫准备状态。

(3)循环缝花样的修改

1)进入登记/删除 C 花样功能

按 M 功能键进入菜单功能，选中“04 登记/删除 C 花样”功能，按选择键  进入功能界面。

2)修改子花样

按选择键  激活步骤号和子花样号编辑，再按项目选择键  就可以修改步骤号，按数

据变更键  可以修改子花样号。修改完成后按 RETURN 直接退出即可。

3. 恢复出厂默认设置

当用户无意中修改了某些出厂时设置好的参数或者电控系统出现故障时，可以尝试使用“恢复出厂默认设置”功能，进行系统恢复。

注意：恢复出厂默认设置，用户以前设定的数据参数将会被覆盖，使用此功能时，请慎重考虑，如不清楚，应及时联系厂家技术人员，在其指导下进行操作。

具体操作步骤如下：

1. 系统开电后按模式键 ，然后按  键选中“09 恢复出厂设置”，然后按选择

键 ，进入恢复出厂设置功能，再按项目选择键  选择要恢复的项目，之后按确认键

，确认执行恢复操作。面板会先提示“正在执行请稍等！”表示正在执行恢复操作，此时不可以关闭电源。当经过一段时间恢复完成后面板会自动切换状态到原点检测待命状态。

2. **注意：在确认恢复操作后，系统进行恢复过程中，面板会提示“正在执行请稍等！”**，如果断电，恢复过程将被迫中断，将不能完成恢复出厂默认设置，会导致操作失败。

4. 通过 U 盘升级花样

可支持 VDT 花样的单个导入(追加):

(01) 导入花样: 导入(追加)花样, 如果导入的花样号已经存在则进行覆盖;

(02) 导出花样: 导出所有外置花样到 USB 存储设备;

(03) 删除花样: 清除(格式化)面板外置花样存储区域;

电控可以使用 U 盘将 VDT 格式的花样输入到系统中, 升级后的花样编号为 100~199。也可以将电控中 100~199 号已经存在的花样导出到 U 盘中。



1) 使用花样编辑软件制作 VDT 格式的花样文件, 并命名为“XXX.VDT”(注: XXX 必需为 100~199 的花样号码, 同时该号码也是升级后的花样号)。

2) 在 U 盘根目录下建立一个名为 DH_PAT 的文件夹, 将步骤 1 中制作好的花样保存到 U 盘中的这个 DH_PAT 目录下, 一次可以导入多个花样文件。

3) 在原点检测待命状态或缝纫准备状态下按模式键  进入系统菜单, 按项目选择键

 选中“06 外部花样管理”, 再按选择键  进入该模式。

4) 按项目选择键  选中“导入花样到电控”, 并将存入花样的 U 盘插入到面板右侧的 USB 接口上。

5) 按选择键  , 面板显示“操作执行中, 请勿关机!”, 开始执行花样导入操作。

注意: 在此步骤操作之前, 请确认已经先将 U 盘插入面板 USB 接口, 如若未插入 U 盘而执行该步骤操作, 则无法进行升级操作, 面板会提示“请确认 U 盘是否连接”, 按 RETURN 键返回即可。

6) 当升级完毕后, 面板显示“操作成功!”并自动回到导入花样模式界面, 表示花样升级完成。

注意: 如果电控中已经存在 100~199 号升级的某些花样, 也可以通过在 U 盘中存入命名编号

与电控中已存在花样不同的花样文件，并按照上述操作进行花样追加；如果 U 盘中存入命名编号与电控中已存在花样相同的花样文件，则进行升级操作后，电控中那些编号相同的花样将被替换。

另外，在第 4 步中，除了进行花样升级导入操作外，还可以选择“导出花样到 U 盘”或“删除导入电控的花样”分别进行相对应的操作。“导出花样到 U 盘”是将面板中已导入的花样备份到 U 盘中，而“删除导入电控的花样”是将所有 100~199 号花样全部删除。

5. 附录

5.1 电控系统故障信息一览表

报错序号	信息描述
与开关相关的错误	
E002	缝纫过程中返踩踏板急停。 按 RESET 键进入急停状态。 按 ENTER 键剪线，剪线后可以按上下实芯箭头单步动框。
E007	IPM 过压（输入电压过压或欠压或 IPM 过流） 主控板坏的可能性比较大。
E014	主轴电机堵转
E017	缝纫过程中断线。
E019	进入缝纫准备状态时急停开关信号不正确 关电后确认急停开关的连接正常
E025	电源接入时，脚踏踏板开关被踩到 2 档的位置。 切断电源，确认脚踏板开关。 如果踏板返回到 0 档位置则此故障会自动消失。
E034	供电电源不正常
E035	电源接入时，脚踏踏板开关被踩到 1 档的位置。 切断电源，确认脚踏板开关 如果踏板返回到 0 档位置则此故障会自动消失。
E036	电源接入时，脚踏踏板开关被反踩到 3 档的位置或者踏板未连接。 切断电源，确认脚踏板开关。 如果踏板返回到 0 档位置则此故障会自动消失。
E050	电源接入后缝纫机头翻倒 切断电源，扶起机头。 确认机头翻倒开关位置正确。
E051	进入缝纫准备状态前机头翻倒 切断电源，确认机头翻倒开关位置正确。
E052	进入缝纫准备状态时机头翻倒。 切断电源，扶起机头。 确认机头翻倒开关位置正确。

E053	<p>进入缝纫准备状态后机头翻倒。</p> <p>切断电源，扶起机头。</p> <p>确认机头翻倒开关位置正确。</p>
E054	<p>缝纫机缝纫过程中机头翻倒。</p> <p>切断电源，扶起机头。</p> <p>确认机头翻倒开关位置正确。</p>
E056	<p>主控与第一路步进（X14 和 X15）通信错误</p> <p>1， 关电，确认电控箱内部的主控与步进板连接线缆是否有虚接的情况。</p> <p>2， 关电，更换电控箱。</p>
E057	<p>X 电机过流。</p> <p>关电，更换步进板。</p>
E058	<p>X 电机超差。</p> <p>1， 关电后确认 X 方向机械上是否卡死。</p> <p>2， 关电后确认 X 方向绣框运动是否顺畅。</p> <p>3， 关电后检查 X 电机的驱动和反馈线缆是否连接好。</p> <p>4， 关电，更换步进板。</p>
E059	<p>X 电机超速。</p> <p>关电，更换步进板。</p>
E060	<p>Y 电机过流。</p> <p>关电，更换步进板。</p>
E061	<p>Y 电机超差</p> <p>1， 关电后确认 Y 方向机械上是否卡死。</p> <p>2， 关电后确认 Y 方向绣框运动是否顺畅。</p> <p>3， 关电后检查 Y 电机的驱动和反馈线缆是否连接好。</p> <p>4， 关电，更换步进板。</p>
E062	<p>Y 电机超速。</p> <p>关电，更换步进板。</p>
E063	<p>主控与第二路步进（X12 和 X13）通信错误</p> <p>1， 关电，确认电控箱内部的主控与步进板连接线缆是否有虚接的情况。</p> <p>2， 关电，更换电控箱。</p>
E064	<p>抓线电机过流。</p> <p>关电，更换步进板。</p>
E065	<p>抓线电机超差。</p> <p>1， 关电后确认抓线机构是否卡死。</p> <p>2， 关电后确认抓线机构运动是否顺畅。</p> <p>3， 关电后检查抓线电机的驱动和反馈线缆是否连接好。</p> <p>4， 关电，更换步进板。</p>
与主轴电机相关的错误	
E066	<p>抓线电机超速。</p> <p>关电，更换步进板。</p>
E067	<p>压脚电机过流。</p> <p>关电，更换步进板。</p>

E068	<p>压脚电机超差。</p> <ol style="list-style-type: none"> 1, 关电后确认压脚机构是否卡死。 2, 关电后确认压脚机构运动是否顺畅。 3, 关电后检查压脚电机的驱动和反馈线缆是否连接好。 4, 关电, 更换步进板。
E069	<p>压脚电机超速。</p> <p>关电, 更换步进板。</p>
E070	<p>X 电机找不到原点。</p> <ol style="list-style-type: none"> 1, 关电, 检查 X 电机的驱动线缆和反馈线缆是否连接好。 2, 关电, 更换步进板或电控箱。
E071	<p>Y 电机找不到原点。</p> <ol style="list-style-type: none"> 1, 关电, 检查 Y 电机的驱动线缆和反馈线缆是否连接好。 2, 关电, 更换步进板或电控箱。
E072	<p>抓线电机找不到原点</p> <ol style="list-style-type: none"> 1, 关电, 检查抓线电机的驱动线缆和反馈线缆是否连接好。 2, 关电, 更换步进板或电控箱。
E073	<p>压脚电机找不到原点。</p> <ol style="list-style-type: none"> 1, 关电, 检查压脚电机的驱动线缆和反馈线缆是否连接好。 2, 关电, 更换步进板或电控箱。
E065	<p>电源接入时, 面板有不应被摁下的键处于被摁下的状态, 或者按键接触不良。</p> <p>切断电源, 确认操作面板按键。</p>
E099	<p>没找到外部花样 (外部花样是指用 U 盘升级的那些花样号是 100 到 199 的花样)。</p>
E100	<p>出现加油报警通知后, 若不添加润滑脂, 继续使用一段时间后此显示会再次出现。</p> <p>添加润滑脂之后执行清除计数的操作。</p>
E101	<p>缝制针数累积到加油报警通知针数后, 主控发送给面板的错误码, 面板在收到这个错误码后, 会显示 “GrE” “AS. UP”</p>
E110	<p>上电后主轴电机找原点时机针不在正确位置, 请手动旋转至合适位置 (即主轴电机后编码器上的红色灯亮起时) 后此故障会自动消失 (此故障只对 430D 起作用)。</p>
E111	<p>上电后针杆位置异常</p> <p>切断电源, 确认缝纫机电机是否出现异常。</p>
E121	<p>剪刀位置异常。(E018)</p> <p>切断电源, 确认固定刀移动刀的刀刃部分是否受损。</p>
E131	<p>编码器故障或编码器未连接。</p>
E132	<p>主轴超速</p>
E133	<p>缝纫完成后缝纫主马达停止位置不正确。</p> <p>切断电源</p>
E135	<p>电机运行异常(E014)</p>
E136	<p>IPM 频繁过流 1</p>
E137	<p>IPM 频繁过流 2</p>
E138	<p>电机堵转 1</p>
E139	<p>电机堵转 2</p> <p>切断电源, 确认机构运转正常, 确认主轴电机电源线连接正确。</p>

E140	停车过流
E141	电机过载
E142	母线电压异常
E143	异常电流(EB034)
与传送设备相关的错误	
E200	无法检测 X 马达原点。X 马达不正常或者 X 编码器接触不良。 切断电源，确认 X 电机连接是否正常。
E201	X 脉冲马达校验错误。 切断电源，确认 X 送布方向是否异常。
E210	无法检测 Y 马达原点。Y 马达不正常或者 Y 编码器接触不良。 切断电源，确认 Y 电机连接是否正常。
E211	Y 脉冲马达校验错误。 切断电源，确认 Y 送布方向是否异常。
E217	步进软件版本错误
E218	步进驱动电源异常
E219	步进电机过流
E220	MD1 步进过流
E221	MD1 X 方向未走完
E222	MD1 Y 方向未走完
E223	MD2 步进过流
E224	MD2 X 方向未走完
E225	MD2 Y 方向未走完
与压紧设备相关的错误	
E300	无法进行压脚原点检测，抬压脚马达异常或者压紧编码器接触不良。 切断电源，确认压脚电机和编码器连接正确。
E301	压脚电机失步。 关电。
E302	开始缝纫时剪线梢所处位置不正确。（只针对 430F） 按 RESET 键恢复。
E303	缝纫结束剪线电磁铁长时间吸合。 请检测主轴电机最后一针速度是否太慢；剪线机构是否有卡死的情况。
与通信及存储设备相关的错误	
E400	检测出操作面板和主控之间的连结通信错误。 切断电源，确认操作面板和主控的插头连接状况是否良好。
E401	步进驱动器通讯异常（EB030）
E410	检测出主板和控电板主板之间的通信错误。 切断电源，再次接入电源。
E420	进行 U 盘数据读写时发现未插入 U 盘。 摁 RESET 键，排除错误。
E421	U 盘中的数据内容不正确，无法使用，或者无数据。 摁 RESET 键，排除错误。

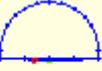
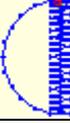
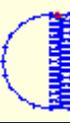
	确认 U 盘中是否存入该花样序号的数据。
E422	读取 U 盘信息时发生错误。 摁 RESET 键，排除错误。 确认 U 盘内的数据。
E424	U 盘内空间不足。 摁 RESET 键，排除错误。 使用其它 U 盘。
E425	写入 U 盘时发生错误。 摁 RESET 键，排除错误。请使用指定 U 盘。 确认是否是禁止写入，或者是否还有空间。
E427	注册在循环程序中的花样被删除。 摁 RESET 键，排除错误。重新注册循环程序，添加花样。
E428	设定在程序中的花样被删除。 摁 RESET 键，排除错误。 重新设定程序，添加花样。
E430	花样数据无法存储到主板。 切断电源，并重新接入电源。
E450	机头板 EEPROM 读取错误。 切断电源，确认机头板的插头状况是否良好。
E474	内部存储已满无法复制。 摁 RESET 键排除错误。 清除不需要的添加花样。
与数据编辑设备相关的错误	
E500	做扩大设定之后，缝纫数据超过可以缝纫的区域。 摁 RESET 键，排除错误。 再次设定扩大倍率或者缝纫区域。
E501	超过缝制区域 (EB015)
E502	做扩大设定之后，数据螺距超过最大螺距 12.7mm。 摁 RESET 键，排除错误。 从存储工具中重新读取程序数据，或者重新输入程序数据。
E503	花样针数超过了 1000 针。
E504	X 缩放率过大，导致花样单针超过 12.7 毫米。
E505	Y 缩放率过大，导致花样单针超过 12.7 毫米。
E510	未检测到花样数据。 请确认此花样是否存在。
E511	完成代码无法输入到程序数据中。 摁 RESET 键，排除错误。 重做输入完成代码的程序数据，或者变更读取程序的序号。
E512	超过可以使用的针数。 摁 RESET 键，排除错误。 变更读取程序的序号。
与装置相关的错误	

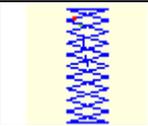
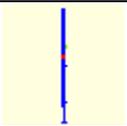
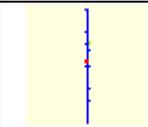
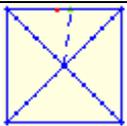
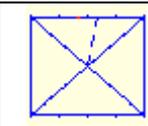
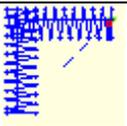
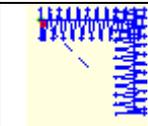
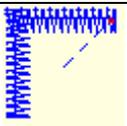
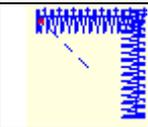
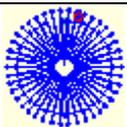
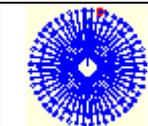
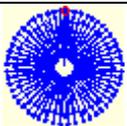
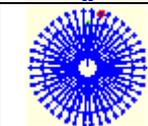
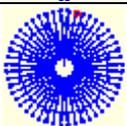
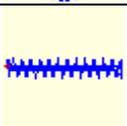
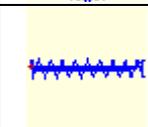
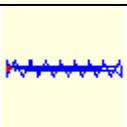
E600	发生面线断裂。 摁 RESET 键，排除错误。
E690	无法检出底线夹线马达的原点。底线夹线马达异常或者底线夹线马达编码器接触不良。 切断电源，清除针板底部的飞绒。
E692	底线夹线马达位置异常。 切断电源
与主板相关的错误	
E701	缝纫机主马达驱动电压异常上升。主电压（300V）过高 切断电源，确认电压。
E702	缝纫机主马达驱动电压异常下降。主电压（300V）过低 切断电源，确认电压。
E704	辅助设备电压（24V）过高 切断电源，确认输入电压。
E705	辅助设备电压（24V）过低 切断电源，确认输入电压。
E706	辅助设备电压（24V）过流 切断电源，确认电控箱风扇连接正确并且电磁铁未短路。
E710	IPM 过压或过流 切断电源，确认缝纫机是否出现异常。
与版本升级相关的错误	
E888	主控与面板软件机型不符（比如 430F 的主控程序配 430D 的面板）
E889	主控与面板软件厂家不符（比如美机 430D 的主控配汇字的 430D 面板）
E890	闭环 430D 缝纫超过 50 万针锁定系统，此时只能手动将 52 号参数设定为 ON 才能消除此故障，恢复出厂参数，恢复机头板参数和清除加油报警针数都不能消除此故障。主控软件是大豪版的 152 版。

5.2 缝纫花样列表（KE-430D/KE-430F）

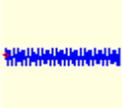
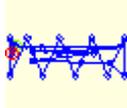
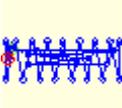
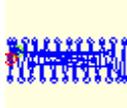
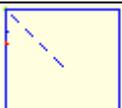
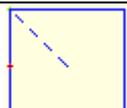
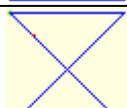
NO.	缝纫图案	针数	长×宽 (mm)	NO.	缝纫图案	针数	长×宽 (mm)
1		41	16×2	2		41	20×3
3		34	19.8×3	4		30	16×2

5		28	10×2	6		29	16×3
7		27	8×2	8		20	7×2
9		20	6.9×2	10		20	10×0.3
11		27	10×0.3	12		27	20×0.3
13		34	10×2	14		34	15.9×3
15		41	10×2	16		42	16×3
17		41	24×3	18		55	24×3
19		63	24×3	20		27	7×2
21		34	7×2	22		13	6.9×2
23		34	25×0.3	24		41	25×0.3

25		44	25×0.3	26		27	3×10
27		34	3×10	28		18	0.3×10
29		20	0.3×10	30		27	0.3×10
31		27	8×2	32		21	8×2
33		14	8×2	34		34	12×7.2
35		57	12×7	36		56	7×12
37		56	7×12	38		52	7×10
39		52	7×10	40		31	3×16
41		35	3×16	42		43	3×20
43		67	3×24	44		45	9×15

45		69	9×25	46		26	0.3×20
47		43	0.4×25	48		69	10×10
49		92	10×10	50		83	16×16
51		104	30×26	52		59	11×11
53		59	11×11	54		77	15×15
55		77	15×15	56		105	9×9
57		115	9×9	58		126	9×9
59		103	10×10	60		113	10×10
61		123	10×10	62		41	20×3
63		34	19.8×3	64		29	16×2

65		42	16×2	66		31	16×2
67		29	10×2	68		21	7×2
69		35	10×2	70		41	10×2
71		28	7×2	72		35	7×2
73		28	8×2	74		21	7×2
75		14	7×2	76		28	8×2
77		22	8×2	78		42	20×3
79		35	19.8×3	80		30	16×3
81		35	15.9×3	82		43	16×3
83		42	24×3	84		56	24×3

85		64	24×3	86		20	6×2
87		27	6×2	88		34	6×2
89		89	24×3	90		42	30×30
91		44	30×30	92		28	30×30
93		36	30×30	94		35	30×30

5.3 缝纫花样列表 (BE-438D/BE-438F)

下面所示的缝纫花样已预先设置好，可以根据规格予以选择使用。(只要能够确认是在压脚、送布板的工作范围内，就可以选择使用任一种缝纫花样。)

请使用符合各种缝纫花样要求的压脚和送布板。缝纫尺寸为 **100%** 缩放率时的长度。

号码	组孔数	花样	线数	包缝线	针数	尺寸 (mm)	
						X	Y
1	2		6	-	12	3.4	0
※1			6	-	12		
54			8	-	14		
2			8	-	14		
※2			10	-	16		
55			12	-	18		
3							
4							

※2 5			16	-	22	0	3.4
※2 6			20	-	26		
※1 56			6	-	11		
※3 7			6	-	12		
※3 23			10	-	16		
※3 8			12	-	18		
※3 9	3		5-5-5	-	21	2.6	2.4
※3 24			7-7-7	-	27		
※3 25			5-5-5	-	21		
※3 26			7-7-7	-	27		
※1 57	4		6-6	1	18	3.4	3.4
10			6-6	1	19		
※1 58			8-8	1	22		
11			8-8	1	23		
12			8-8	3	25		
13			10-10	1	27		
27			12-12	1	31		

※4 14		6-6	0	24	3.4	3.4
※5 36		6-6	0	24		
※4 28		8-8	0	28		
※5 37		8-8	0	28		
※4 15		10-10	0	32		
※5 38		10-10	0	32		
※4 29		12-12	0	36		
※5 39		12-12	0	36		
※1 59			6-5	1		
16	6-5		1	18		
※1 60	8-7		1	21		
17	8-7		1	22		
30	10-9		1	26		
※1 61		6-6	1	18		
18		6-6	1	19		
※1 62		8-8	1	22		
19		8-8	1	23		

※1 63			10-10	1	26		
31			10-10	1	27		
45			12-12	1	31		
※4 20			6-6	0	24		
※5 40			6-6	0	24		
※4 32			8-8	0	28		
※5 41			8-8	0	28		
※4 33			10-10	0	32		
※5 42			10-10	0	32		
※1 64			6-6	1	18		
※3 21			6-6	1	19		
※3 34			10-10	1	27		
※3※4 22			6-6	0	24		
※3※5 43			6-6	0	24		
※3※4 35			10-10	0	32		
※3※5 44			10-10	0	32		
46			6-7	1	19	2.4	3.4
						3.4	3.4

47			8-9	1	23		
48			10-11	1	27		
49			12-13	1	31		
65	4		6-6	1	19	2.8	2.8
66			8-8	1	23		
67			8-8	3	25		
68			10-10	1	26	2.6	2.6
69			12-12	1	31		

*1 用于小孔纽扣。

*2 使用程序前，请检查钮孔直径不小于 2mm。

*3 不可使用纽扣抬起弹簧。

*4 在完成一边缝纫后，纽扣夹就上升并进行拨线动作。为了将缝纫进行到底，在另一边的缝纫开始之前，请继续踩下脚踏开关；或在完成一边缝纫后，请再次踩下脚踏开关。

*5 在完成一边缝纫后，纽扣夹不上升而只进行拨线动作，并继续进行另一边的缝纫。

用于带柄纽扣					
号码	花样	线数	针数	尺寸 (mm)	
				X	Y
50		6	12	3.4	0
51		8	14		
52		10	16		
53		12	18		

1. Instructions of Operation

Panel

(1) LCD

Display pattern number, shape and various other data.

(2) Test

To press this key under sewing ready status (with presser foot at upper position) is to enter pattern trial sewing function interface.

(3) Reset

This key is used for canceling error or returning the set value to the initial value.

(4) Wind

This key is used for winding (bobbin thread).

(5) Threading/Clamp

Lift up or lower down the presser foot. When presser foot goes up, move the needle bar to the origin;

and, when presser foot goes down, move the needle bar to the right side. Then, press  to enter

the function of presser foot height setting.

(6) Item Selection

This key is used to select among various pattern types, menu items or parameters.

(7) Data Modification

This key is used to modify the parameter value. Under trial sewing mode, this key is used to move single needle and feed cloth.

(8) Return

Return to the previous interface.

(9) Select

This key is used to enter the selected item or make cyclic shift among various items.

(10) Pattern Shortcut (select pattern fast)

According to the set value of parameters, these keys can be used to make quick selection of patterns or for some special purposes.

(11) Mode (M Key)

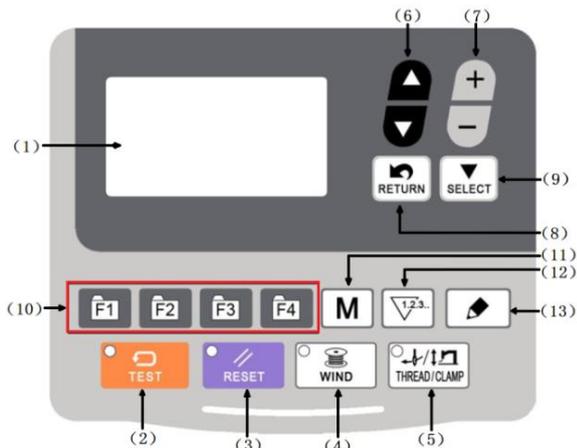
Enter the function menu interface.

(12) Counter

Under sewing editing mode (unready for sewing), press it to enter counter setting mode directly.

(13) Edit

Under sewing origin detection standby status or sewing ready status, this key is used to enter the

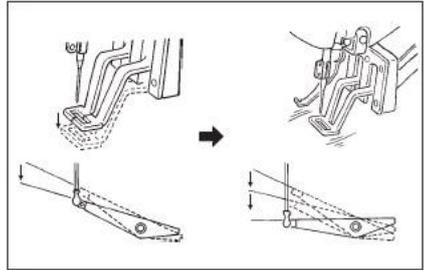


interface for editing pattern parameters. For certain functions, this key can be used for special purposes.

1.1 Sewing

Sewing:

- (1) Put sewing material under presser foot.
- (2) Step pedal to level 1 to lower the presser foot and release the pedal to lift the presser foot.
- (3) Step pedal to level 2 to start sewing.
- (4) At sewing end, presser foot will lift and return to sewing start.



2. Settings of P Pattern and C Pattern

2.1 Settings of P Pattern

User can register patterns stored in memory or imported from external device (No.100-199) to P01-P99 and at the same time set up X/Y scale rate and maximum rotation speed of these patterns. Press M key to enter function list, where user can select

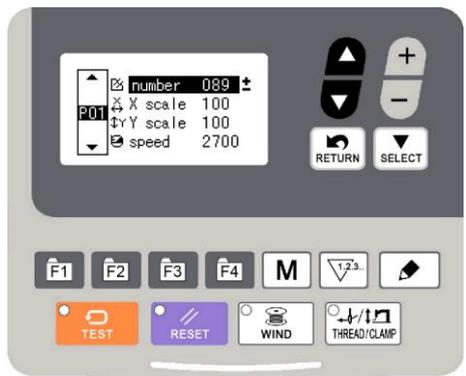
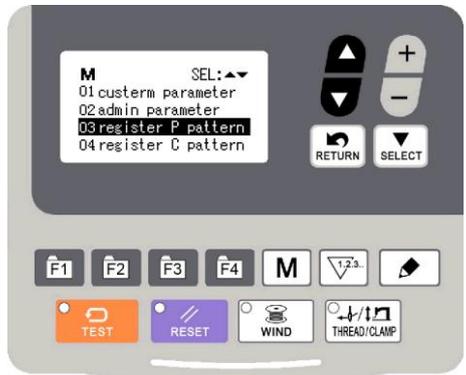
“03 register/delete P patter” and press  to

enter the corresponding interface.

Under such interface, press  to select P pattern number and press  to select pattern number, scale rate and sewing speed,

where user can press  to change the value of the selected item.

Example: register memory pattern No.3 to P2, with X scale rate being 50% and maximum speed being 2,000 sti/min.



4) Turn on the power and then press  to enter function menu. Press  to select “03 register/delete P pattern” and press  to enter the corresponding function interface.

5) Press  to select an unregistered P pattern number (e.g. P01), press  to select pattern number and set it as 3 by data modification key.

6) The settings of scale rate and sewing speed are the same as the settings of pattern number

7) After settings, press  to quit

2.2 Register Cyclic Pattern (C Pattern)

This machine can be used to sew several patterns in order cyclically.

Up to 99 patterns can be inputted. It can be used to sew materials with various different patterns.

In addition, 99 data of group sewing can be registered.

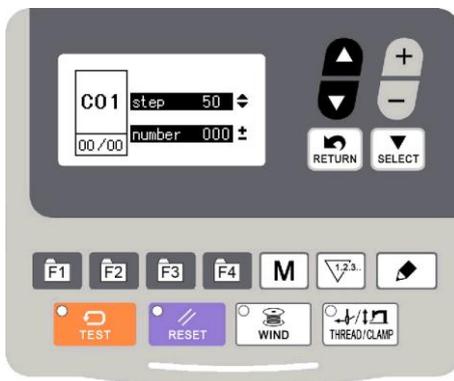
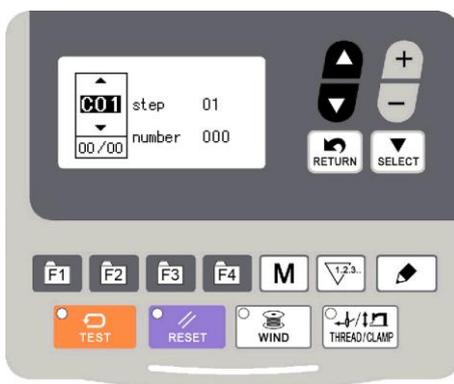
(1) Cyclic Data Selection

1) Enter cyclic pattern registration function

Turn on power, press  to enter function menu, press  to set [04 register/delete C patter] under selection, and then press  to enter the corresponding function interface.

2) Register cyclic pattern

Press  to select an unregistered C pattern number and then press  to activate the step number and the sub-pattern number



functions. Press  to change the step number and press  to change the sub-pattern number.

After finishing one C pattern, press  to quit.

Note: the step number shall be increased in order; otherwise the C pattern will not become effective.

3) Conduct sewing

Under the origin detection standby status of C pattern, step pedal to level 2 to search origin, where the frame will move automatically to the sewing start of the first sub-pattern, the presser foot will lift up and the system will enter sewing ready status. At this time, step pedal to level 2 to start sewing and after finishing sewing one sub-pattern, the frame will move automatically to the sewing start of the next sub-pattern. The presser foot will lift up and the system will enter sewing ready status again.

(4) Cyclic Pattern Modification

1) Enter cyclic pattern registration function

Press M key to enter function menu, select 「04 register/delete C patter」, and then press  to enter the corresponding function interface.

2) Modify sub-pattern

Press  to activate step number and sub-pattern number, then press  to change the step number and press  to change the sub-pattern number. After modification, press  to quit.

3.Restore Default Settings

If the user changes some parameters by mistake, which are properly set at delivery, the function of “restore default settings” can be used to restore the system.

Note: At restoring the default settings, the entire parameters that are set by user before will be covered. Therefore, please take caution in using this function. If necessary, please contact the technicians of the manufacturer, and operate the machine with the instruction from the professionals.

The specific operation procedure is as follows:

Press  after power on, then press  to select “09 restore default settings” and then

press  to enter the function. Press  to select the item to be restored and then press  to confirm and execute the operation. The panel will hint “executing, please do not turn off the machine”, which means the recovery operation is undergoing and the power supply shall not be shut down. After completing the restoring operation, the panel will automatically return to origin detection standby status.

Note: During the restoring process, if the power supply is shut down by accident, the restoring process has to be aborted and the restoring operation will fail.

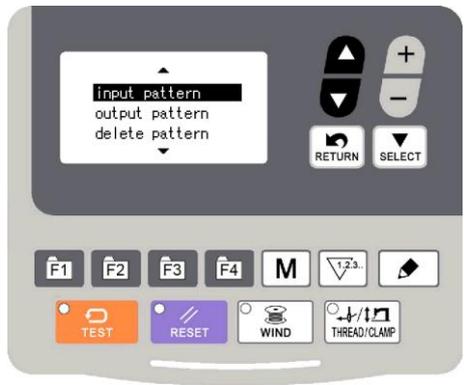
4.Update Pattern Data by USB Disk

Support import (addition) of single VDT pattern:

- (1) Import pattern: import (add) pattern, and cover the pattern of the same number with imported pattern;
- (2) Export pattern: export all external patterns to USB storage device;
- (3) Delete pattern: clear (format) the panel’s storage area for external patterns;

User can import VDT format patterns to the control system via U disk, with the updated pattern number from 101 to 200.

User can also export existing patterns numbered 101~200 that are stored in the control system to U disk.



7) Use pattern-editing software to make pattern file in VDT format and name it by “XXX.VDT”. (Note: XXX shall be a number between 101~200 which at the same time is the updated pattern number.)

8) Create a new file folder named DH_PAT under the root directory of U disk, and save the pattern made at the previous step under the directory of DH-PAT (many patterns can be imported at one time).

9) Under origin detection standby status or sewing ready status, press  to enter system

menu, press  to select “06 External Pattern Management” and press  to enter.

10) Press  to select “import pattern to control system” and insert the U disk containing patterns to the USB interface at the right side of the panel.

11) Press  and the panel will hint “operation executing, please do not turn off the power”, which means the patterns are being imported.

Note: before this operation, please confirm that U disk has been connected to USB interface; if not, this update operation cannot be done and the panel will hint “please check the U disk”. At this time, press RETURN to return.

12) After the update, the panel will display “Operation succeeded!” and the system will automatically return to the interface for importing patterns.

Note: if there are already patterns numbered 100~199 in the panel, patterns named with different numbers can be added to the system via U disk following the above operations; if the pattern numbers in the U disk are the same with those in the panel, the patterns with the same number in the panel will be replaced.

In addition, apart from the pattern update import operation, user can also select the function to export patterns to U disk or delete imported patterns. To export patterns to U disk means to back up imported patterns in U disk, while to delete imported patterns means to delete all imported patterns numbered 100~199.

If the size of single pattern goes beyond 1000 stitches or 6 kb, such pattern will be filtered out by the software automatically when imported.

5. Appendix

5.1 Control System Error List

Code	Description
Errors related to switch	
E002	Step pedal for emergency stop during sewing. Press RESET to enter emergency stop status. Press ENTER to trim thread and then press solid arrows to move frame.
E007	IPM over-voltage Check the main control board
E014	main motor stops
E017	Disconnect during sewing.
E019	The emergency stop switch signal is not correct when entering the sewing preparation state Confirm the connection of emergency stop switch is normal after power off
E025	Pedal has been stepped to level 2 when power on. Turn off the power and check the pedal switch.
E034	The power supply is out of order
E035	Pedal has been stepped to level 1 when power on. Turn off the power and check the pedal switch.
E036	Pedal has been stepped to level 3 or pedal is not connected when power on. Turn off the power and check the pedal switch.
E050	Sewing machine head is tilted when power on. Turn off the power and erect the head. Check the position of the head turnover switch.
E051	Head is tilted when sewing is started. Turn off the power and check the position of the head turnover switch .
E052	Head is tilted under sewing ready status. Turn off the power and erect the head. Check the position of the head turnover switch.
E053	Head is tilted when sewing is ready. Turn off the power and erect the head. Check the position of the head turnover switch.
E054	Head is tilted during sewing. Turn off the power and erect the head. Check the position of the head turnover switch.
E056	Master communication error with first step (X14 and X15)" 1. Turn off the power and confirm whether there is any virtual connection between the main control in the electric cabinet and the stepper board. 2. Turn off the electricity and replace the Controller Box
E057	X motor overcurrent. Turn off the power and replace the stepping plate.

E058	<p>X motor out of tolerance.</p> <ol style="list-style-type: none"> 1. Confirm whether the direction is stuck mechanically after power off. 2. After power off, confirm whether the motion of the embroidery frame in the direction is smooth. 3. Check whether the drive and feedback cables of the motor are connected properly after power off. 4. Turn off the power and replace the stepping plate.
E059	<p>X motor overspeed.</p> <p>Turn off the power and replace the stepping plate.</p>
E060	<p>Y motor overcurrent.</p> <p>Turn off the power and replace the stepping plate.</p>
E061	<p>Y motor out of tolerance.</p> <ol style="list-style-type: none"> 1. Confirm whether the Y direction is mechanically stuck after power off. 2. Check whether the frame motion in the Y direction is smooth after power off. 3. Check whether the drive and feedback cables of Y motor are connected properly after power off. 4. Turn off the power and replace the stepping plate.
E062	<p>Y motor overspeed.</p> <p>Turn off the power and replace the stepping plate.</p>
E063	<p>Master and second step (X12 and X13) communication error</p> <ol style="list-style-type: none"> 1. Turn off the power and confirm whether there is any virtual connection between the main control in the electric cabinet and the stepper board. 2. Turn off the electricity and replace the Controller Box
E064	<p>Thread Clamp Stepping Motor overcurrent</p> <p>Turn off the power and replace the stepping plate.</p>
E065	<p>Thread Clamp Stepping Motor is out of tolerance.</p> <ol style="list-style-type: none"> 1. Confirm whether the wire grasping mechanism is stuck after power off. 2. Confirm whether the grasping mechanism is smooth after power off. 3. Check whether the drive and feedback cables of the grasping motor are connected properly after power off. 4. Turn off the power and replace the stepping plate.
Errors related to main shaft motor	
E066	<p>Thread Clamp Stepping Motor overspeed. Turn off the power and replace the stepping plate.</p>
E067	<p>Foot motor overcurrent. Close the electricity. Turn off the power and replace the stepping plate.</p>
E068	<p>Foot motor out of tolerance.</p> <ol style="list-style-type: none"> 1. Confirm whether the presser foot mechanism is stuck after power off. 2. Confirm whether the pressure mechanism A moves smoothly after power off. 3. Check whether the drive and feedback cables of the presser foot motor are connected properly after power off. 4. Turn off the power and replace the stepping plate.

E069	Foot motor overspeed. Turn off the power and replace the stepping plate.
E070	X motor cannot find origin 1. Turn off the power and check whether the drive cable and feedback cable of the motor are connected properly. 2. Turn off the power and replace the stepping plate or the Controller Box
E071	Y motor cannot find origin. 1. Turn off the power and check whether the drive cable and feedback cable of Y motor are connected properly. 2. Turn off the power and replace the stepping plate or the Controller Box
E072	The catch motor cannot find the origin 1. Turn off the power and check whether the drive cable and feedback cable of the grasping motor are connected properly. 2. Turn off the power and replace the stepping plate or the Controller Box
E073	The foot motor cannot find the origin. . 1. Turn off the power and check whether the drive cable and feedback cable of the presser foot motor are connected properly. 2. Turn off the power and replace the stepping plate or the Controller Box
E065	When power on, some key on the panel stays pressed or is of bad contact. Turn off the power and check the operation panel.
E099	No external pattern found (external pattern refers to those patterns with usb flash disk upgrade whose pattern Numbers are 100 to 199). .
E100	In case of lubricating alarm, if no grease is added, the alarm will come up again after a while. Please add grease and clear the counter.
E101	When the total number of stitches activates the lubricating alarm, the main control will send error code to the panel and after receiving the error code, the panel will hint that the "GrE""AS.UP".
E110	If the needle is not at the proper position when the main shaft motor searches origin after power on, please manually turn it to proper position to release the error (only for 430D).
E111	Needle bar position abnormal after power on. Turn off the power and check the motor.
E121	Knife position abnormal (EB018). Turn off the power and check the blade of fixed knife and moving knife.
E131	Encoder fault or disconnection
E132	Main shaft over-speed
E133	Main motor stops at the wrong position after sewing. Turn off the power.
E135	Motor runs abnormally(EB014).
E136	IPM frequent over-current 1
E137	IPM frequent over-current 2
E138	Motor stalling 1

E139	Motor stalling 2 Turn off the power and check the device structure and the cable connection of the main shaft motor
E140	Stop over-current
E141	Motor over-load
E142	Busbar voltage abnormal
E143	Abnormal current(EB034)
Errors related to transmission equipment	
E200	Origin of X motor is not detected. X motor is abnormal or X encoder is disconnected. Turn off the power and check the connection of X motor.
E201	X pulse motor check error. Turn off the power and check the cloth-feeding at X direction.
E210	Origin of Y motor is not detected. Y motor is abnormal or X encoder is disconnected. Turn off the power and check the connection of Y motor.
E211	Y pulse motor check error. Turn off the power and check the cloth-feeding at Y direction.
E217	Stepping software version error
E218	Stepping drive power supply error
E219	Stepping motor over-current
E220	MD1 stepping over-current
E221	MD1 X direction unfinished
E222	MD1 Y direction unfinished
E223	MD2 stepping over-current
E224	MD2 X direction unfinished
E225	MD2 Y direction unfinished
Errors related to clamp equipment	
E300	Origin of presser foot cannot be detected. There may be problem with presser foot motor or connection of clamp encoder. Turn off the power and check the connection between presser foot motor and encoder.
E301	Foot motor out of step. Turn off the power
E302	Position of thread trimming tip is wrong at sewing(only for 430D). Press RESET to recover.
E303	Response time of thread trimming solenoid is too long.
Errors related to communication and storage equipment	
E400	Communication error between operation panel and main control is detected. Turn off the power and check the plug connection between operation panel and main control.
E401	Stepping drive communication error (EB030)
E410	Communication error between main board and electricity control board is detected. Turn off the power and power on again.

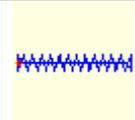
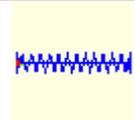
E420	U disk is not found when reading U disk. Press RESET to clear error.
E421	Data content of the U disk is wrong, unable to use or no data is found. Press RESET to clear error. Make sure pattern data has been stored in the U disk.
E422	There is error when reading U disk. Press RESET to clear error. Check the data of U disk.
E424	U disk is full. Press RESET to clear error. Use other U disks.
E425	There is error when writing in U disk. Press RESET to clear error. Please use designated U disk. Check whether U disk is prohibited to write in or there is any space.
E427	Pattern registered in cyclic pattern is deleted. Press RESET to clear error. Add new pattern to re-register the cyclic pattern.
E428	Pattern set in the program is deleted.
E430	Pattern data cannot be stored to main board. Turn off the power and power on again.
E450	Head board EEPROM reads error. Turn off the power and check the plug connection of the head board.
E474	Memory is full and it's unable to make copy.
Errors related to data editing equipment	
E500	Sewing data is beyond the sewing area. Press RESET to clear error. Set the scale rate or the sewing area again.
E501	Beyond sewing area
E502	Thread pitch is beyond the maximum 12.7mm. Press RESET to clear error. Reload program data from storage device or re-input program data.
E503	The number of pattern stitches exceeded 1,000.
E504	X bound to putThe rate is too high, resulting in a single needle pattern exceeding 12.7 mm.
E505	Y scaling is too large, resulting in a single needle pattern exceeding 12.7 mm.
E510	No pattern data detected. Please confirm whether this pattern exists. .
E511	Completion code cannot be inputted into program data.
E512	Beyond permitted number of stitches. Press RESET to clear error. Change the serial number of the program to be read.
Errors related to devices	
E600	Needle thread breaks.

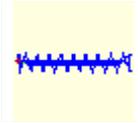
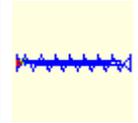
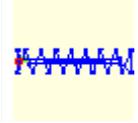
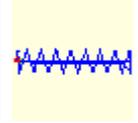
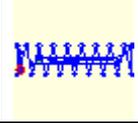
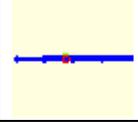
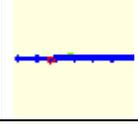
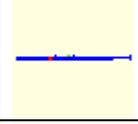
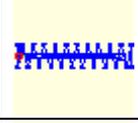
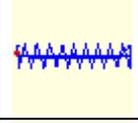
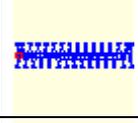
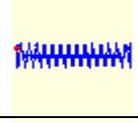
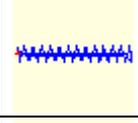
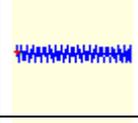
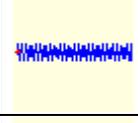
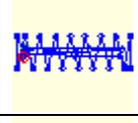
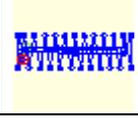
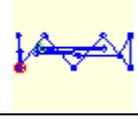
	Press RESET to clear error.
E690	Origin of bobbin thread holding motor cannot be detected. There is error with bobbin thread holding motor or disconnection of bobbin thread holding motor encoder. Turn off the power and clear the bottom of the needle plate.
E692	Position of bobbin thread holding motor is abnormal. Turn off the power.
Errors related to main board	
E701	Voltage of main motor drive becomes extremely high. Main voltage (300V) is too high. Turn off the power and check the voltage.
E702	Voltage of main motor drive becomes extremely low. Main voltage (300V) is too low. Turn off the power and check the voltage.
E704	Voltage of auxiliary equipment (24V) is too high. Turn off the power and check the input voltage.
E705	Voltage of auxiliary equipment (24V) is too low. Turn off the power and check the input voltage.
E706	Voltage of auxiliary equipment (24V) is over-current. Turn off the power and check the connection of fun within the control box and make sure there is no short circuit with the solenoid.
E710	IPM over-voltage or over-current. Turn off the power and check the sewing machine.
Errors related to version upgrade	
E888	Main control and panel software don't match.
E889	Main control and panel software don't match.
E890	The closed loop 430D sewing system has more than 500,000 stitches. At this time, you can only manually set the no. 52 parameter as ON to eliminate the fault, restore the factory parameters, restore the headboard parameters and clear the number of refueling alarm stitches..

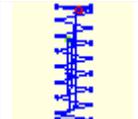
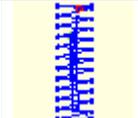
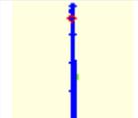
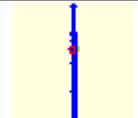
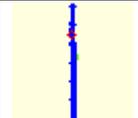
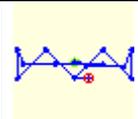
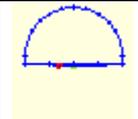
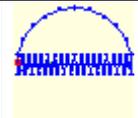
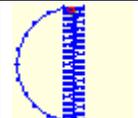
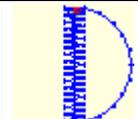
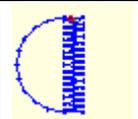
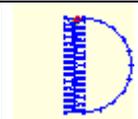
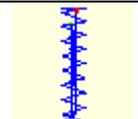
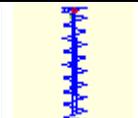
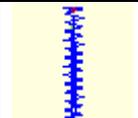
5.2 Sewing Pattern List (KE-430D/KE-430F)

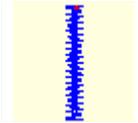
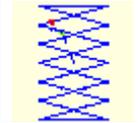
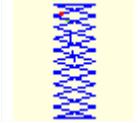
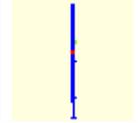
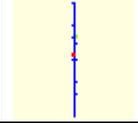
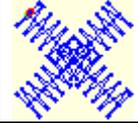
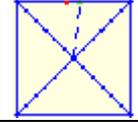
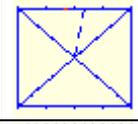
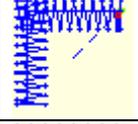
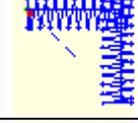
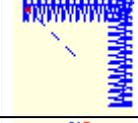
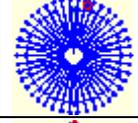
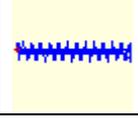
The following patterns are pre-set for users to select according to specifications. (If the work range of the presser foot and the cloth feeding plate can be confirmed, user can select any of the following sewing patterns.)

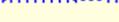
Please use the proper presser foot and cloth feeding plate. The sewing size is length under the scaling of 100%.

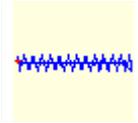
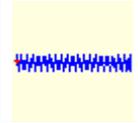
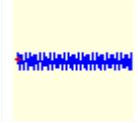
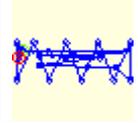
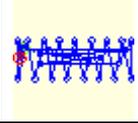
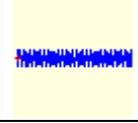
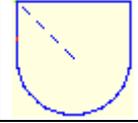
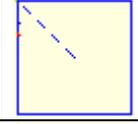
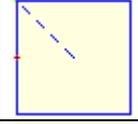
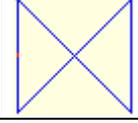
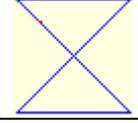
NO.	Pattern	Stitches	L×W (mm)		NO.	Pattern	Stitches	L×W (mm)
1		41	16×2		2		41	20×3

3		34	19.8×3	4		30	16×2
5		28	10×2	6		29	16×3
7		27	8×2	8		20	7×2
9		20	6.9×2	10		20	10×0.3
11		27	10×0.3	12		27	20×0.3
13		34	10×2	14		34	15.9×3
15		41	10×2	16		42	16×3
17		41	24×3	18		55	24×3
19		63	24×3	20		27	7×2
21		34	7×2	22		13	6.9×2

23		34	25×0.3	24		41	25×0.3
25		44	25×0.3	26		27	3×10
27		34	3×10	28		18	0.3×10
29		20	0.3×10	30		27	0.3×10
31		27	8×2	32		21	8×2
33		14	8×2	34		34	12×7.2
35		57	12×7	36		56	7×12
37		56	7×12	38		52	7×10
39		52	7×10	40		31	3×16
41		35	3×16	42		43	3×20

43		67	3×24	44		45	9×15
45		69	9×25	46		26	0.3×20
47		43	0.4×25	48		69	10×10
49		92	10×10	50		83	16×16
51		104	30×26	52		59	11×11
53		59	11×11	54		77	15×15
55		77	15×15	56		105	9×9
57		115	9×9	58		126	9×9
59		103	10×10	60		113	10×10
61		123	10×10	62		41	20×3

63		34	19.8×3	64		29	16×2
65		42	16×2	66		31	16×2
67		29	10×2	68		21	7×2
69		35	10×2	70		41	10×2
71		28	7×2	72		35	7×2
73		28	8×2	74		21	7×2
75		14	7×2	76		28	8×2
77		22	8×2	78		42	20×3
79		35	19.8×3	80		30	16×3
81		35	15.9×3	82		43	16×3

83		42	24×3	84		56	24×3
85		64	24×3	86		20	6×2
87		27	6×2	88		34	6×2
89		89	24×3	90		42	30×30
91		44	30×30	92		28	30×30
93		36	30×30	94		35	30×30

5.3 Sewing Pattern List (BE-438D/BE-438F)

The following patterns are pre-set for users to select according to specifications. (If the work range of the presser foot and the cloth feeding plate can be confirmed, user can select any of the following sewing patterns.)

Please use the proper presser foot and cloth feeding plate. The sewing size is length under the scaling of 100%.

No.	Button Hole Number	Pattern	Line Number	Over-seam Line	Stitch Number	Size (mm)	
						X	Y
1	2		6	-	12	3.4	0
※1 54			6	-	12		
2			8	-	14		

※2 55			8	-	14		
3			10	-	16		
4			12	-	18		
※2 5			16	-	22		
※2 6			20	-	26		
※1 56			6	-	11	0	3.4
※3 7			6	-	12		
※3 23			10	-	16		
※3 8			12	-	18		
※3 9	3		5-5-5	-	21	2.6	2.4
※3 24			7-7-7	-	27		
※3 25			5-5-5	-	21		
※3 26			7-7-7	-	27		
※1 57	4		6-6	1	18	3.4	3.4
10			6-6	1	19		
※1 58			8-8	1	22		
11			8-8	1	23		

12			8-8	3	25			
13			10-10	1	27			
27			12-12	1	31			
※4 14			6-6	0	24			
※5 36			6-6	0	24			
※4 28			8-8	0	28			
※5 37			8-8	0	28			
※4 15			10-10	0	32			
※5 38			10-10	0	32			
※4 29			12-12	0	36			
※5 39			12-12	0	36			
※1 59				6-5	1	17	3.4	3.4
16				6-5	1	18		
※1 60		8-7		1	21			
17		8-7		1	22			
30		10-9		1	26			
※1 61			6-6	1	18			
18			6-6	1	19			

※1 62			8-8	1	22		
19			8-8	1	23		
※1 63			10-10	1	26		
31			10-10	1	27		
45			12-12	1	31		
※4 20			6-6	0	24		
※5 40			6-6	0	24		
※4 32			8-8	0	28		
※5 41			8-8	0	28		
※4 33			10-10	0	32		
※5 42			10-10	0	32		
※1 64			6-6	1	18		
※3 21			6-6	1	19		
※3 34			10-10	1	27		
※3※4 22			6-6	0	24	2.4	3.4
※3※5 43			6-6	0	24		
※3※4 35			10-10	0	32		

※3※5 44			10-10	0	32	3.4	3.4
46			6-7	1	19		
47			8-9	1	23		
48			10-11	1	27		
49			12-13	1	31		
65	4		6-6	1	19	2.8	2.8
66			8-8	1	23		
67			8-8	3	25		
68			10-10	1	26	2.6	2.6
69			12-12	1	31		

*1 Used for small buttons

*2 Buttonhole's diameter shall be no less than 2mm.

*3 Button shall not be used to lift spring.

*4 After finishing sewing one side, the button clamp will lift and the wiper will act. In order to continuing sewing the other side, user need step the pedal again.

*5 If the button clamp doesn't lift and only the wiper acts after sewing one side, the sewing machine will continue sewing the other side.

Used for buttons with handles						
No.	Pattern	Line Number	Stitch Number	Size (mm)		
				X	Y	
50		6	12	3.4	0	
51		8	14			
52		10	16			
53		12	18			



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