

3 桥式起重机电气设备部分故障及排除 (表 6-5, 表 6-6)

Problems and solutions of electrical equipment (table 6 -5, table 6 -6)

表 6-5 桥式起重机电气设备部分故障与排除

Table 6-5 electrical part malfunction and methods

故障名称 name	故障原因 reasons	排除方法 methods
交流电动机 AC motor	接电率(JC%)加大,引起过载; JC% too big, cause over load	减低起重机繁重程度或更换JC%相应电动机 lower down working duty or change high JC% motor
	整个电动机均匀过热 Evenly overheat of the whole motor	在低电压下工作 working at low voltage
		起重机供电电压低于10%额定电压、停止工作 stop working when working voltage is 10% lower than rated voltage
		电动机选择不当 motor selection is not right
		选择合适电动机 select right motor
		检修后改变了起重机性能参数 crane parameters changed after checking
	维修,保持起重机设计参数。 Check and adjust to ensure specification	
定子局部过热 local overheat of stator	定子硅钢片之间局部短路 silicon-steel plate is short circuited	消除引起短路的原因,用绝缘漆抹在修理的地方 use insulation paint to the places where short circuit happened
定子绕组局部过热 local overheat of stator winding	接线错误 Wiring fault	检查并排除接线错误 Check and eliminate the wrongly wiring
	某相绕组中的两处,与外壳短路 2 points on winding have short circuit with shell	修复某相绕组 repair winding of phase

通用桥式起重机说明书

转子温度升高,定子有大电流冲击,电动机在额定负荷时不能达到全速 temperature of rotor raise, heavy current impact stator, motor cannot get full speed at rated current.	绕组端头、中性点或并联绕组间接接触不良 End winding terminals, neutrality points and parallel winding get poor contact	检查焊接处,消除缺陷 check welds and eliminate defects
	绕组与滑环间接接触不良 winding group and sliding loops have loos connection	检查连接状况 check connection condition
	电刷器械中有接触不良处 dynamo brushes have loose connection	检查调整电刷器械 check and adjust brushes
	转子电路中有接触不良。 Poor contact in rotator circuit	检查松动与接触不良的情况并修理;检查电阻,断裂的更换 Check loose and poor contact condition and rectify; Check the resistance and change the broken one.
电动机在工作时振动 motor vibration when working	电动机轴和减速器轴不同心 Motor and reducer axes are not at the same line	重新对线安装 Re-install
	轴承损坏和磨损 Bearing damage and wear	更换轴承 replace bearing
	转子变形 Deformation of rotor	检修 check
电动机工作时发出不正常的声响	定子相位错移 phase of stator error	检查接线并改正 check wiring and modify

通用桥式起重机说明书

abnormal noise when working	定子铁芯没压 in stator iron core is not pressed	检查定子并修理 check stator and repair
	轴承磨损 bearing wear	更换轴承 replace bearing
	槽楔子膨胀 wedge expands	锯掉膨胀的楔子或更换 cut expanded part or replace wedge
电动机在承受负荷后转速变慢 After motor is loaded, its rotation speed slow down	转子端部连接处发生短路 转子绕组有两处接地 ends of rotator short circuit or 2 earthing locations of rotor winding	检查并消除短路现象 检查每匝线圈,修理破损,消除短路 eliminate short circuit and check each loop, repair the damaged and eliminate short circuit.
电动机运行时定子与转子摩擦 friction of stator and rotator when motor is working	轴承端部连接处发生短路 end of bearing connection is short circuited	更换失效轴承;检查端盖的位置;清除定子、转子铁芯上的飞刺 replace damaged bearing and check the cover position, eliminate rag on stator and rotor
	转子绕组的线圈连接不正确,使磁通不平衡 loop connection is not right, flux is not balanced	检查并使线圈接线正确,测定子每相中的电流应相等 make connection right and check if each phase is equal in stator
电动机工作时电刷	电刷研磨不好 brush bad grinding	磨好电刷 grinde brush

通用桥式起重机说明书

	上冒火花或滑环被烧焦 spark on brush or sliding ring is burned	电刷在刷握中太松 brush is too loose when working	调整电刷或研磨合适 adjust brush or grinding properly
		电刷及滑环脏 brush or loop dirty	用酒精将滑环擦干净 clean with alcohol
		滑环不平,造成电刷跳动 loop not flat, cause brush jumping	车削和磨光滑滑环 machining and grinding loop
		电刷压力不足 low pressure of brush	调整电刷压力(18~20KPa) (18-20KPa)adjust brush pressure
		电刷牌号不对 brush grade is wrong	更换 replace
		电刷间电流分布不均匀 current distribution of brush is not even	检查刷架馈电线及电刷,并矫正 check power-feeding wire and brush, and adjust
	滑环开路 sliding ring open circuit	滑环与电刷器械脏污 loop and brush dirty	清污除垢 clean dirt
交流电 磁铁 AC elec- tric-magn et	线圈过热 overheat of loop	电磁铁吸力过载 Overload of magnetic iron force	调整弹簧拉力 Adjust the spring pulling force
		磁流通路的固定部分与活动部分之间存在着间隙 Fixed part and stationary part of close circuit have gap	消除间隙 eliminate gap
		线圈电压与电网电压不相符合。 Loop voltage and power voltage are not match	更换线圈,或改变接法 replace loop or change connection method
	工作时声响较大 too noisy when	电磁铁过载 Magnetic iron overload	调整弹簧 Adjust the spring

通用桥式起重机说明书

	working	磁流通路的工作表面上有污垢 dirt on magnetic flow circuit surface	消除污垢 clean dirt
		磁力系统偏斜 Deflection of magnetic system	调整制动器机械部分,消除偏斜 Adjust mechanical part of brake and eliminate deflection
	不能克服弹簧作用力 Unable to overcome the spring force	电磁铁过载 Magnetic iron overload	调整制动器主弹簧力 Adjust the main spring of break
		主弹簧力过大 spring force is too big	调整制动器主弹簧力 Adjust the main spring of break
		电网中电压低 low voltage	暂停工作 stop working
交流接触器和继电器 AC contactor and relay	线圈发热 Overheat of loop	线圈过载 loop overload	减小活动触头对固定触头的压力 reduce the pressure that the movable terminal acts on the fixed terminal
		磁流通路的活动部分接触不到固定部分 magnetic flow movable part cannot contact with fixed part	消除偏斜、卡塞、污垢或更换线圈。 Eliminate deflection jamming, dirt or change loop
	接触器嗡嗡声增高 contact too noisy	线圈过载;磁流通路表面上污垢 loop overload, dirt on magnetic flow surface	减小触头压力;消除脏污 reducer contact pressure, clean dirty
		磁力通路自动调整系统中卡塞现象 Magnetic flow self-adjust system jamming	消除卡塞 eliminate jam
	接触器发热或烧毁(损)	触头压力不足 contact lacks of pressure	调整压力 adjust pressure

	contact overheat or burned	触头脏污 contact is dirty	排除或更换 clean or replace
主接触器不能接通 main contact cannot connect		闸刀开关没合上,紧急开关没合 Switch not close, EM switch not close	闭合开关 close switch
		上仓口开关没合上 upper door switch not close	闭合开关 close switch
		控制器手柄没放回零位 control stick is not at 0 position	手柄回零 put lever to 0 position
		控制电路熔断器烧断 control circuit fuse burned	检查或者更换熔断器 check or replace fuse
		线路无电 no power in circuit	检查线路有无电压 check if voltage is on
起重机运行中经常掉闸 Power-off protection happens frequently		触头压力不足 contact pressure is not enough	调整触头压力 adjust contact pressure
		触头烧损 contact burned	更换或者打磨修理触头 replace or grinde contact
		触头肮污 contact is not clean	清洗 clean
		超负荷运行,造成电流过大 working overload, over current	减少负荷 reduce current load
		滑线不平行,集电器和滑线接触不良 slide wire is not parallel, loose contact between current collector and slide wire	修整轨道或地沟滑触线 adjust the rail or wire
吸合时动作迟缓 contact too slow	动静磁铁极面间隙过大 clearance of magnet pole surface is too large	缩短极面间隙 Shorten pole surface clearance	

通用桥式起重机说明书

		机械底板上部较下部突出 upper part of base plate is more protruding than lower part	将器件垂直安放 install parts vertically
--	--	--	-------------------------------------

表 6-6 桥式起重机电气控制及线路故障分析与排除

Table 6-6 electrical part malfunction and methods

故障名称 name	故障原因 reason	排除方法 method
保护箱的刀开关闭合时,控制回路的熔断器烧毁 fuse in control circuit burned after knife switch closed	在控制回路中该相接地 This phase earthing in control circuit	用兆欧表检查该相接地部分,予以排除 check earthing part by ohmmeter and eliminate malfunction
某机构控制器转动后,过电流继电器动作 after mechanism transmission, over current relay still work	保护该电动机的过电流继电器的整定值不符合要求 setting value of over current relay cannot meet requirements	按下式调整继电器原整定值 $I_{\text{额定}} = (2.25 \sim 2.5) I_{\text{额}}$; adjust relay as following formula $I_{\text{rated}} = (2.25 \sim 2.5) I_{\text{rated}}$
	该机构的机械传动部分某环节卡住而造成电动机过载 mechanical transmission part jammed led to motor overload	检修传动部分,排除卡住现象 check transmission part and eliminate jam
控制器合上后电动机不转 Motor cannot rotate after controller is closed	一相断电,电动机发出声响 first phase power cut and motor has noise	找出损坏处,接好线 find damage and rewiring
	转子电路断线 wire breakage in rotator circuit	找出损坏处,接好线 find damage and rewiring
	线路无电压 loop has no voltage	找出损坏处,接好线 find damage and rewiring

	控制器内触头没真正接触 Contacts in controller cannot contact	检修控制器 repair controller
	集电刷发生故障 current collector brush failure	检修集电刷 repair brush of collector
	制动器故障,不能松闸 brake malfunction and cannot release	检修制动器 repair brake
控制器合上后电动机仅能单向转动 motor can only rotate to one direction after controller is closed	控制器反向触头接触不好或控制转动机构有故障 reverse contact loose connection or malfunction with steering mechanism	检修控制器调整触头 check controller and adjust contact terminal
	配电线路发生故障 distribution wire failure	用短接法找出故障并消除 find malfunction by short method
	工作机构运动到极点,压开了限位开关 working mechanism travel to limit and press limit switch	只能单方向运转时,将故障排除 Eliminate malfunction
	限位开关发生故障 limit switch malfunction short circuit of terminal	检查限位开关,消除故障 check switch and eliminate malfunction
终点限位开关动作后,主接触器不释放 terminal limit switch is on, main contactor not release	终点开关电路中发生短路 switch circuit	检修,消除短路 check, eliminate short circuit
	接至控制器时导线错乱 connect with controller cause disorder	纠正配线错误 correct wrong wire distribution
控制器工作时发生卡塞和冲击 controller jam and impact when	定位机构发生故障 malfunction when positioning	消除故障 eliminate fault

通用桥式起重机说明书

working	触头撑住于弧形室内 contact jam in curve chamber	调整触头位置 adjust contact position
运行中控制器扳不动 controller cannot pull when working	定位机构故障 Positioning mechanism malfunction	调整压力 adjust pressure
	触头烧灼粘接 contactors burning and bonding	清洗触头 clean contactor
发电机不激磁 generator cannot excitant	激磁回路断线 Excitation loop wiring broke	检查激磁回路 check excitation loop
	发电机转向相反 reverse rotation of generator	调换驱动电动机转子两相 接线 replace 2 phase wiring of driving motor
电源切断后(控制回路分断)保 护箱接触器不掉闸 After disconnecting power (control circuit break) the contactor of protection box won't break-off	控制回路中有接地或短路之 处 short circuit or earthing in control circuit	检查出接地或短路,排除故 障 find those places and solve problems
	接触器触头焊住,对主回路继 续供电。 Weld contact terminal, give power supply to main circuit	锉削烧焦的触头,使接触良 好。 Cut burned contact terminal to make it function again